LaserJet Pro M402, M403
LaserJet Pro MFP M426, M427

Troubleshooting Manual

M426dw
M426fdn
M426fdw
M427dw
M427fdn
M427fdw

M402d
M402n
M402dn
M402dw
M403n
M403d
M403dn
M403dw

www.hp.com/support/ljM402
www.hp.com/support/ljM403
www.hp.com/support/ljM426MFP
www.hp.com/support/ljM427MFP
For printer theory and troubleshooting information, see the Repair Manual.

HP LaserJet Pro M402, M403 and HP LaserJet Pro MFP M426, M427

Troubleshooting Manual

Copyright and License

© Copyright 2015 HP Development Company, L.P.

Reproduction, adaptation, or translation without prior written permission is prohibited, except as allowed under the copyright laws.

The information contained herein is subject to change without notice.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Edition 1, 9/2015

Trademark Credits

Microsoft®, Windows®, Windows® XP, and Windows Vista® are U.S. registered trademarks of Microsoft Corporation.

Conventions used in this guide

TIP: Helpful hints or shortcuts.

Reinstallation tip: Reinstallation helpful hints, shortcuts, or considerations.

NOTE: Information that explains a concept or how to complete a task.

IMPORTANT: Information that help the user to avoid potential printer error conditions.

CAUTION: Procedures that the user must follow to avoid losing data or damaging the printer.

WARNING! Procedures that the user must follow to avoid personal injury, catastrophic loss of data, or extensive damage to the printer.

For additional service and support information

HP service personnel, go to the Service Access Work Bench (SAW) at http://h41302.www4.hp.com/km/saw/home.do.

Channel partners, go to HP Channel Services Network (CNS) at https://h30125.www3.hp.com/hpcsn.

At these locations, find information on the following topics:

- Install and configure
- Printer specifications
- Up-to-date control panel message (CPMD) troubleshooting
- Solutions for printer issues and emerging issues
- Remove and replace part instructions and videos
- Service advisories
- Warranty and regulatory information

To access HP PartSurfer information from any mobile device, go to http://partsurfermobile.hp.com/ or scan the Quick Response (QR) code below.

Table of contents

1 Theory of operation 1
Related documentation and software 2
Basic operation 3
Sequence of operation 4
Engine-control system 5
DC controller 6
Motor control 8
Fan control 8
Low-voltage power supply 9
Over-current/over-voltage protection 10
Safety 10
Low-voltage power supply functions 10
High-voltage power supply 11
High-voltage power supply circuits 12
Fuser bias 12
Fuser control 12
Fuser circuits 13
Fuser control functions 14
Fuser heater protection 15
Engine laser/scanner system 16
Laser/scanner failure detection 17
Safety 17
Image-formation process 18
Step 1: Primary charging 21
Step 2: Laser-beam exposure 22
Step 3: Development 22
Step 4: Transfer 23
Step 5: Separation 24
Step 6: Fusing 24
Step 7: Drum cleaning 24
Toner cartridges 25
Design 25

Memory chip 27
Toner level and cartridge life detection 27
Pickup, feed, and delivery system 27
Sensors and switches 29
Motors, clutches, and solenoids 31
Jam detection/prevention 31
Paper feeder (optional Tray 3) 35
Basic operation 35
Paper path 35
Paper feeder controller 35
Motor control 36
Pickup and feed operation 36
Electrical components, pickup and feed 36
Other functions 37
Jam detection 38

2 Solve problems 39
For additional service and support 40
Solve problems checklist 41
Solve problems checklist 41
Print the menu map 42
Print a configuration page 42
Print the service page (includes the event log) 43
Print the demo page 43
Troubleshooting process 44
Determine the problem source 44
Pre-troubleshooting checklist 44
Determine the problem source 46
Power subsystem 47
Power-on checks 47
Control panel checks 47
Tools for troubleshooting 49
Component diagnostics 49
LED diagnostics 49
Network LEDs (network models only) 49
Control panel LEDs 49
Engine diagnostics 50
Engine test 50
Diagrams 51
Diagrams: Block diagrams 51
Cross-sectional view of printer 51

Cross-sectional view of 550–sheet paper feeder 52
Diagrams: Printed circuit assembly (PCA) connector locations 53
Diagrams: DC controller connections 53
Paper feeder controller PCA 54
Diagrams: External plug and port locations 54
Diagrams: Locations of major components 56
Major components (printer base) 56
Motor and fan 57
Rollers and pads (printer base) 58
PCAs (printer base) 59
Diagrams: Timing chart 60
Diagrams: Circuit diagrams 61
Advanced configuration with HP Embedded Web Server (EWS) and HP Device Toolbox (Windows 7) 62
Internal print-quality test pages 64
Clean the paper path 64
Clean the paper path (LCD control panel) 64
Clean the paper path (touchscreen control panel) 65
Print the configuration page 65
Print the configuration page from an LCD control panel 65
Print the configuration page from a touchscreen control panel 65
Print-quality troubleshooting tools 66
Repetitive image defect ruler 66
Use a ruler to measure between repetitive defects 66
Control panel menus 70
HP Web Services menu 70
Reports menu 70
Quick Forms menu 71
USB Flash Drive menu 71
System Setup menu 72
Service menu 74
Network Setup menu 77
Control panel message document (CPMD) 79
Control-panel message types 79
Control-panel messages and event log entries 79
30.XX Error Messages 79
49.XX.YY Error Messages 80
50.XX fuser errors 80
51.XX and 52 Laser/Scanner Errors 81
55.XXXX Error Messages 82
57.XX Error Messages 83

58.XX Error Messages 83
59.XX Error Messages 84
79 Errors 85
Alpha Error Messages 85
Event-log messages 96
Print the event log 96
Print the event log (LCD control panel) 96
Print the event log (touchscreen control panel) 97
Show an event log 97
Event-log messages 97
Clear paper jams 101
Clear paper jams (M402, M403) 101
Introduction 101
Experiencing frequent or recurring paper jams? 101
Jam locations 102
Clear paper jams in Tray 1 103
Clear paper jams in Tray 2 104
Clear paper jams in optional Tray 3 108
Clear paper jams in the fuser 111
Clear paper jams in the output bin 115
Clear paper jams in the duplexer 117
Clear paper jams (M426, M427) 119
Introduction 119
Experiencing frequent or recurring paper jams? 119
Jam locations 120
Clear paper jams in the document feeder 122
Clear paper jams in Tray 1 125
Clear paper jams in Tray 2 126
Clear paper jams in optional Tray 3 130
Clear paper jams in the fuser 134
Clear paper jams in the output bin 137
Clear paper jams in the duplexer 140
Solve paper-handling problems 142
The printer picks up multiple sheets of paper 142
The printer does not pick up paper 142
Solve image quality problems 143
Print quality examples 143
Clean the printer 150
Clean the pickup and separation rollers 150
Clean the paper path 150
Clean the paper path (LCD control panel) 150

Clean the paper path (touchscreen control panel) 150
Clean the touchscreen 150
Solve performance problems 152
Factors affecting print performance 152
Print speeds 152
The product does not print or it prints slowly 153
The product does not print 153
The product prints slowly 154
Solve connectivity problems 155
Solve direct-connect problems 155
Solve network problems 155
Poor physical connection 155
The computer is using the incorrect IP address for the product 155
The computer is unable to communicate with the product 156
The product is using incorrect link and duplex settings for the network 156
New software programs might be causing compatibility problems 156
The computer or workstation might be set up incorrectly 156
The product is disabled, or other network settings are incorrect 156
Solve wireless network problems 157
Wireless connectivity checklist 157
The control panel displays the message: The wireless feature on this product has been turned off 157
The product does not print after the wireless configuration completes 158
The product does not print, and the computer has a third-party firewall installed ... 158
The wireless connection does not work after moving the wireless router or product 158
Cannot connect more computers to the wireless product 158
The wireless product loses communication when connected to a VPN 159
The network does not appear in the wireless networks list 159
The wireless network is not functioning 159
Service mode functions 160
Service menu 160
Service menu settings 160
Restore the factory-set defaults 160
Restore the factory-set defaults (LCD control panel) 160
Restore the factory-set defaults (touchscreen control panel) 161
Secondary service menu 161
Open the secondary service menu 161
Open the secondary service menu (LCD control panel) 161
Open the secondary service menu (touchscreen control panel) 161
Secondary service menu structure 162

Developer's menu 162
Open the Developer's menu (LCD control panel) 162
Open the Developer's menu (touchscreen control panel) 163
Product resets 164
NVRAM initialization 164
Solve fax problems (fax models only) 165
Introduction 165
Fax troubleshooting checklist 165
Solve general fax problems 166
Faxes are sending slowly 166
Fax quality is poor 167
Fax cuts off or prints on two pages 168
Solve email problems (M426, M427 printes) 169
Cannot connect to the email server 169
Validate the SMTP gateway (Windows) 169
Validate the LDAP gateway (Windows) 169
Manually update the firmware 170
Manually update the firmware (LCD control panel) 170
Manually update the firmware (touchscreen control panel) 170

Appendix A Printer specifications 171
Printer dimensions M426 and M427 172
Printer dimensions M402 and M403 174
Printer space requirements 176
Power consumption, electrical specifications, and acoustic emissions 176
Operating-environment range 176
Certificate of Volatility 177

Index 181

List of tables

Table 1-1 Sequence of operation 4
Table 1-2 Motors 8
Table 1-3 Fans 8
Table 1-4 List of DC voltages 9
Table 1-5 Low-voltage power supply functions 10
Table 1-6 High-voltage power supply circuits 12
Table 1-7 Fuser components 13
Table 1-8 Fuser control functions 14
Table 1-9 Sensors 20
Table 1-10 Image formation process 21
Table 1-11 Toner cartridge functions 26
Table 1-12 Pickup, feed, and delivery system functions 28
Table 1-13 Photo sensors and switches 30
Table 1-14 Motors, solenoids, and clutches 31
Table 1-15 Jams that the printer detects 32
Table 1-16 Electrical component list, paper feeder 36
Table 1-17 Motors, paper feeder 36
Table 1-18 Electrical components, pickup and feed 37
Table 1-19 Other functions, paper feeder 37
Table 2-1 DC controller connectors 53
Table 2-2 Paper feeder controller PCA connectors 54
Table 2-3 M402, M403 external plugs and ports 54
Table 2-4 M426, M427 external plugs and ports 55
Table 2-5 Major components (printer base) 56
Table 2-6 Motor and fan (printer base) 57
Table 2-7 Rollers and pads (printer base) 58
Table 2-8 Main PCAs (printer base) 59
Table 2-9 Repetitive defects 66
Table 2-10 Event-log messages (X=0: black cartridge) 97
Table 2-11 Fax event log codes 100
Table 2-12 Print quality examples 143
Table 2-13 Secondary Service menu 162

Table A-1 Operating-environment specifications 176

List of figures

Figure 1-1 Relationship between the main printer systems 3
Figure 1-2 Engine-control system 5
Figure 1-3 DC controller block diagram 6
Figure 1-4 Low-voltage power-supply circuit 9
Figure 1-5 High-voltage power supply circuits 12
Figure 1-6 Fuser components 13
Figure 1-7 Fuser control 14
Figure 1-8 Laser/scanner system 16
Figure 1-9 Image-formation system 18
Figure 1-10 Fuser motor (M1) and image formation components 19
Figure 1-11 Toner-level sensor 20
Figure 1-12 Image-formation process 20
Figure 1-13 Primary charging 21
Figure 1-14 Laser-beam exposure 22
Figure 1-15 Development 22
Figure 1-16 Primary transfer 23
Figure 1-17 Separation 24
Figure 1-18 Fusing 24
Figure 1-19 Drum cleaning 25
Figure 1-20 Toner cartridge system 26
Figure 1-21 Pickup, feed, and delivery system 28
Figure 1-22 Sensors and switches for the pickup, feed, and delivery system 29
Figure 1-23 Motors, solenoids, and clutches 31
Figure 1-24 Jam detection sensors 32
Figure 1-25 Optional Tray 3 paper path 35
Figure 1-26 Paper feeder controller 36
Figure 1-27 Electrical components, pickup and feed 37
Figure 2-1 Cross-sectional view of printer 51
Figure 2-2 Cross-sectional view of 500–sheet paper feeder 52
Figure 2-3 DC controller PCA connectors 53
Figure 2-4 Paper feeder controller PCA connectors 54
Figure 2-5 M402, M403 external plugs and ports locations 54

Figure 2-6 M426, M427 external plug and port locations 55
Figure 2-7 Major components (printer base) 56
Figure 2-8 Motor and fan 57
Figure 2-9 Rollers and pads (printer base) 58
Figure 2-10 Main PCAs (printer base) 59
Figure 2-11 General timing chart 60
Figure 2-12 General circuit diagram (printer base) 61
Figure 2-13 Examples of repetitive defects 67
Figure 2-14 Place the ruler on the page 68
Figure 2-15 Locate the next repetitive defect 68
Figure 2-16 Determine the defective assembly 69
Figure A-1 Dimensions for the M426 and M427 models 172
Figure A-2 Dimensions for the optional 550-sheet tray 172
Figure A-3 Dimensions for the printer with the optional 550-sheet tray 173
Figure A-4 Dimensions for the M402 and M403 models 174
Figure A-5 Dimensions for the optional 550-sheet tray 174
Figure A-6 Dimensions for the printer with the optional 550-sheet tray 175
Figure A-7 Certificate of Volatility M402/M403 (1 of 2) 177
Figure A-8 Certificate of Volatility M402/M403 (2 of 2) 178
Figure A-9 Certificate of Volatility M426/M427 (1 of 2) 179
Figure A-10 Certificate of Volatility M426/M427 (2 of 2) 180

1 Theory of operation

- Related documentation and software
- Basic operation
- Engine-control system
- Engine laser/scanner system
- Pickup, feed, and delivery system
- Paper feeder (optional Tray 3)

Related documentation and software

HP service personnel, go to the Service Access Work Bench (SAW) at http://h41302.www4.hp.com/km/saw/home.do.

Channel partners, go to HP Channel Services Network (CSN) at https://h30125.www3.hp.com/hpcsn.

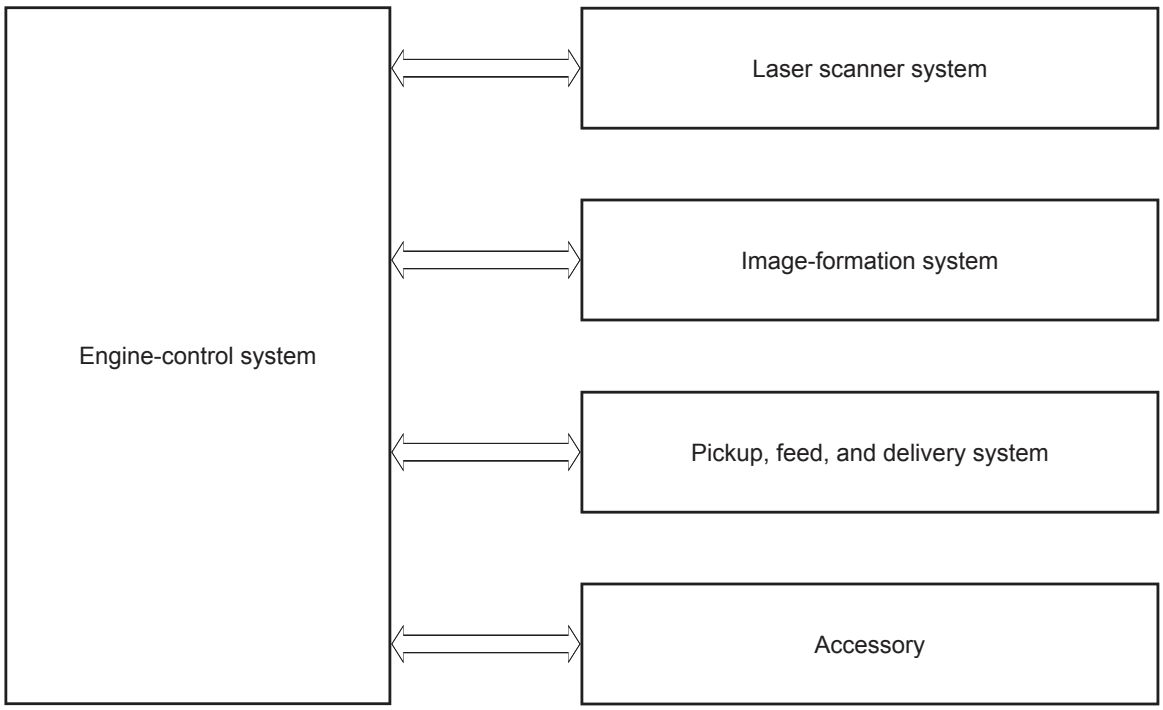
Basic operation

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

The basic printer operation comprises the following systems:

- Engine-control system
- Laser/scanner system
- Image-formation system
- Pickup, feed, and delivery system
- Accessory (optional paper feeder)

Figure 1-1 Relationship between the main printer systems



Sequence of operation

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

Table 1-1 Sequence of operation

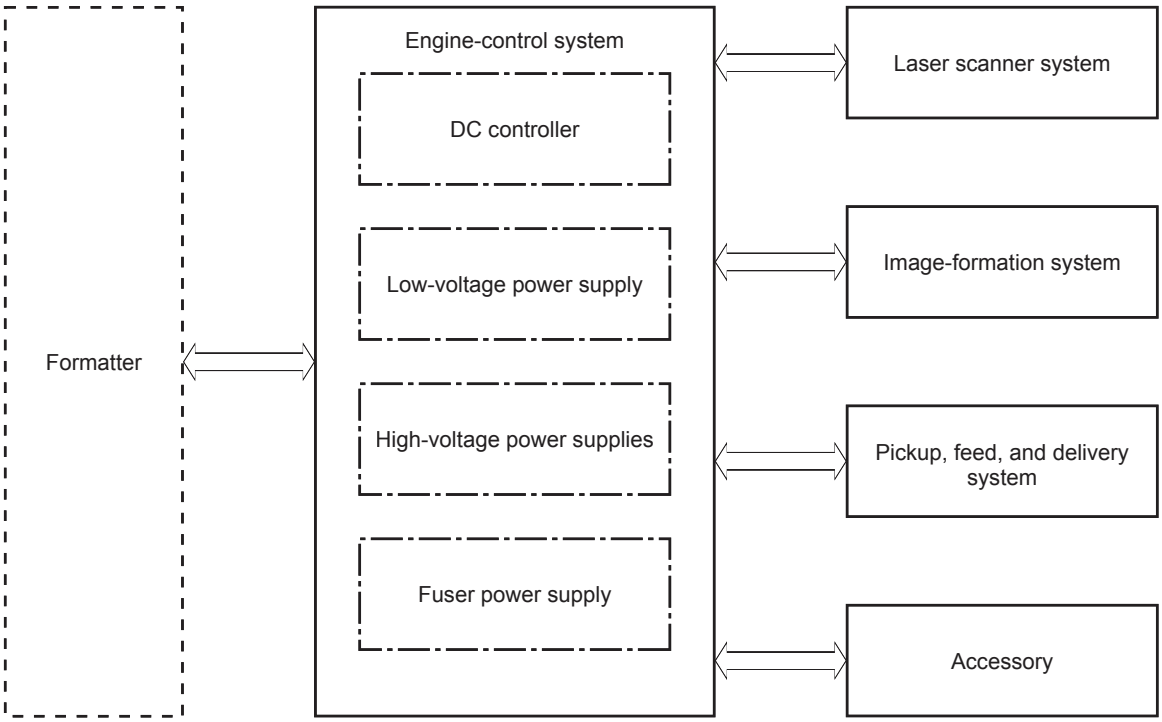
Period	Duration	Description
Waiting	From the time the power is turned on, the door is closed, or when the printer exits Sleep mode until the printer is ready for printing.	• Heats the fuser film in the fuser • Detects the toner cartridge • Rotates and stops each motor • Rotates and stops each fan • Cleans the transfer roller
Standby	From the end of the waiting sequence or the last rotation until the formatter receives a print command, or until the printer is turned off.	• Is in the Ready state • Enters Sleep mode if the formatter sends the sleep command • Rotates and stops each fan
Initial rotation	From the time the formatter receives a print command until the paper enters the paper path.	• Rotates each motor • Rotates each fan • Activates the high-voltage power supply (high-voltage bias) • Prepares the 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 passes through the fuser.	• Forms the image on the photosensitive drums • Transfers the toner to the paper • Fuses the toner image onto the paper
Last rotation	From the time the last sheet of paper exits the fuser until the motors stop rotating.	• Stops each motor • Stops each fan • Stops the high-voltage power supply (high-voltage bias) • Stops the laser/scanner unit • Turns the fuser heater off • If another print command is received, the printer enters the initial rotation period when the last rotation is complete.

Engine-control system

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

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

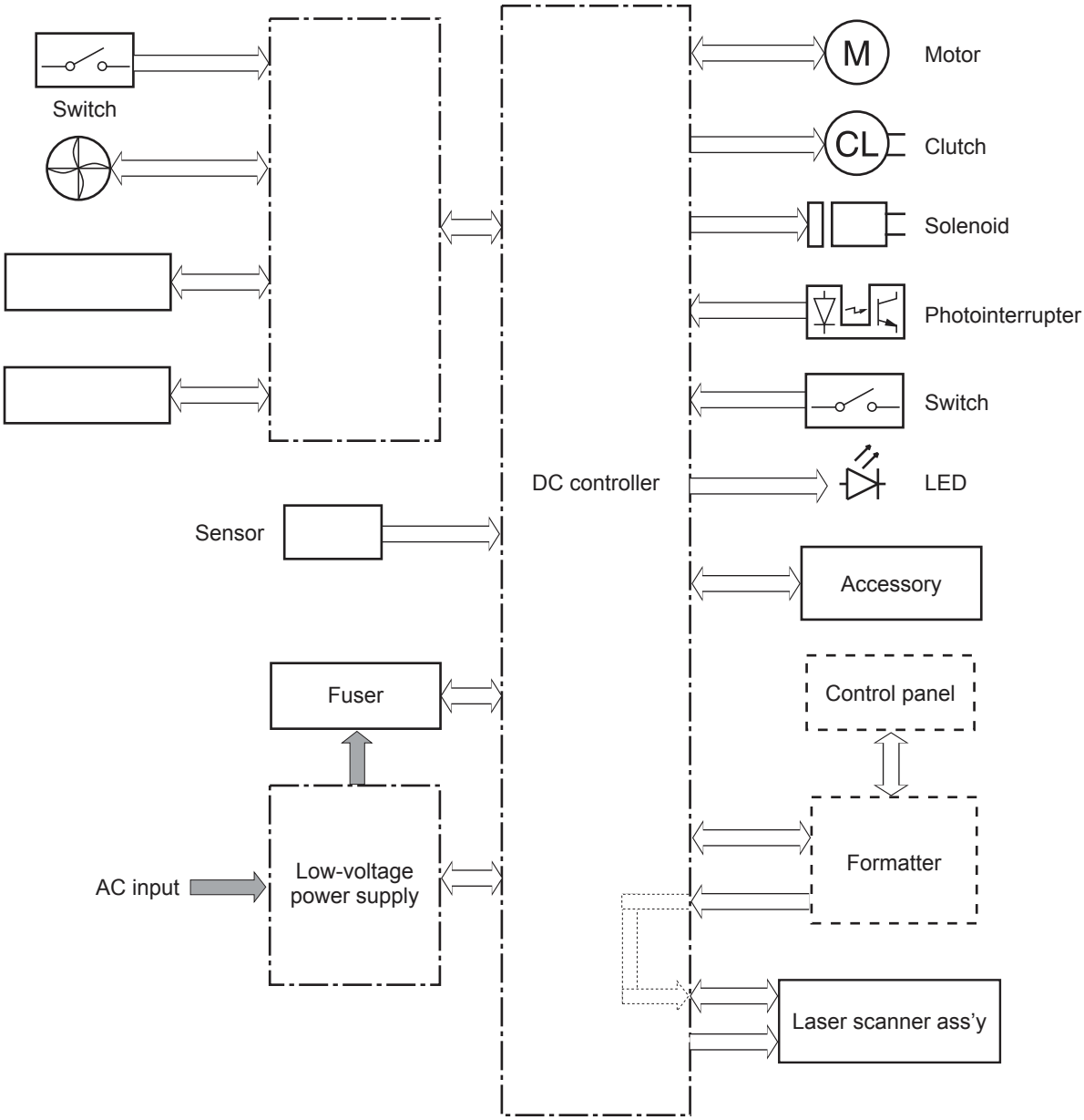
Figure 1-2 Engine-control system



DC controller

The DC controller controls the operation of the printer and its components. The DC controller starts the printer operation when the printer power is turned on and the power supply sends DC voltage to the DC controller. After the printer enters the standby period, the DC controller sends out various signals to operate motors, solenoids, and other printer components based on the print command and image data that the host computer sends.

Figure 1-3 DC controller block diagram



Component type	Abbreviation	Description
Motor	M1	Fuse motor
	M3	Scanner motor
Fan	Fm1	Main fan

Component type	Abbreviation	Description
Solenoid	SL1	Cassette pickup solenoid
	SL2	MP tray pickup solenoid
	SL3	Duplex switchback solenoid
Clutch	CL1	Duplex re-pickup clutch
Switch	SW1	Power switch
	SW101	Cartridge door switch
Photointerrupter	PS1a	Media width sensor
	PS2b	Duplex feed sensor
	PS1	Cassette media out sensor
	PS2	Top sensor
	PS3	MP tray media out sensor
	PS4	Output bin media-full sensor
	PS13	Fuser output sensor
Sensor	TH1	Environment sensor
LED	LED1	Power supply LED

[1] Duplex models only.

Motor control

The printer has two motors. The motors drive the components in the paper-feed and image-formation systems.

The DC controller monitors the fuser motor and the scanner motor to determine if a motor has failed. It notifies the formatter when it encounters the following conditions:

- Startup failure: the motor does not reach a specified speed within a specified time from when the motor starts.
- Rotational failure: the rotational speed of the motor is not in the specified range for a specified time after the motor reaches a specified speed.

Table 1-2 Motors

Abbreviation	Name	Purpose	Failure detection
M1	Fuser motor	Drives the pressure roller and delivery roller; the pressurization and release of the pressure roller; and the engagement and disengagement of the primary and secondary transfer rollers	Yes
M3	Scanner motor	Drives the scanner mirror	Yes

Fan control

The printer has one fan for preventing the temperature from rising in the printer and for cooling the printed pages.

The DC controller determines if there is a fan failure and notifies the formatter if the fan locks for a specified time from when the fan starts.

Table 1-3 Fans

Abbreviation	Name	Cooling area	Type	Speed
FM1	Main fan	Inside of printer	Intake	Full

Low-voltage power supply

The low-voltage power-supply (LVPS) circuit converts the AC power from the wall receptacle into the DC voltage that the printer components use.

Figure 1-4 Low-voltage power-supply circuit

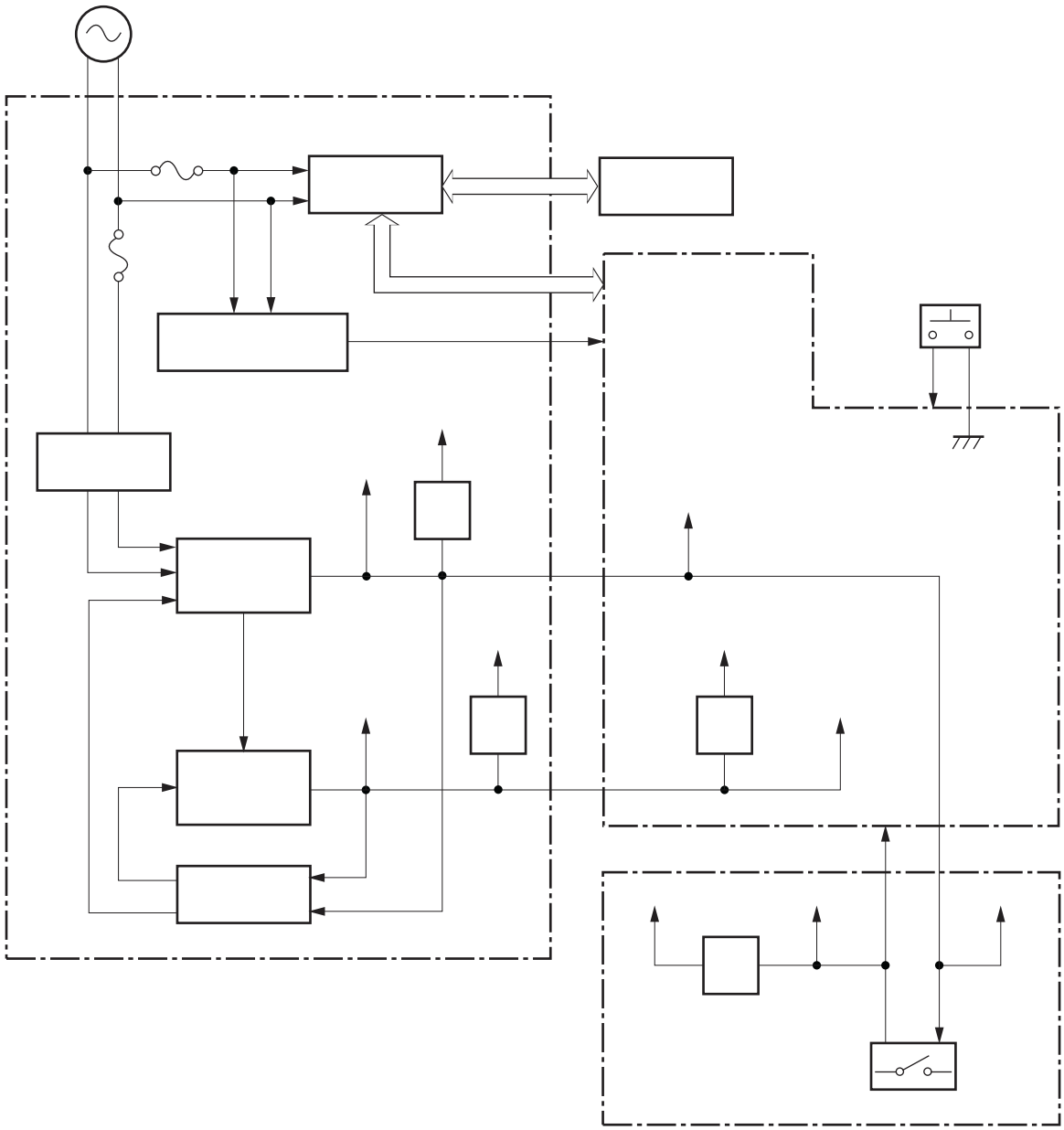


Table 1-4 List of DC voltages

DC power supply		Description
+24V	+24VA	Constantly supplied
		Becomes 4.5V during active OFF or inactive OFF

Table 1-4 List of DC voltages (continued)

DC power supply		Description
	+24VB	Stopped when cartridge door is opened. (SW101) Stopped during active OFF or inactive OFF
	+24VC	Stopped when cartridge door is opened. (SW101) Stopped during active OFF or inactive OFF
	+24VD	Constantly supplied Stopped during active OFF or inactive OFF
+3.3V	+3.3VA	Constantly supplied
	+3.3VB	Constantly supplied Stopped during active OFF or inactive OFF
	+3.3VC	Constantly supplied Stopped during inactive OFF

Over-current/over-voltage protection

The low-voltage power supply has a protective function against overcurrent and overvoltage conditions to prevent failures in the power supply circuit. If an overcurrent or overvoltage event occurs, the system automatically cuts off the output voltage.

If the DC power is not being supplied from the low-voltage power supply, the protective function might have activated. In this case, turn off the power switch, and then unplug the power cord. Do not plug in the power cord or turn the power switch on again until the root cause is found.

In addition, two fuses in the low-voltage power supply protect against an overcurrent event. If an overcurrent event occurs in the AC line, the fuse blows and cuts off the power distribution.

Safety

For personal safety, the printer interrupts +24VB and +24VC power when the cartridge door detection switch is turned off. This stops DC power supply to the high-voltage power supply (HVPS).

The remote switch control circuit turns on or off the printer power so that the AC power flows even the power switch is turned off. Unplug the printer power cord before disassembling the printer.

Low-voltage power supply functions

The printer has the following low-voltage power supply functions.

Table 1-5 Low-voltage power supply functions

Failure detective function	Applied
Sleep mode	NA
Power supply voltage detection	NA
Automatic power OFF	NA
Automatic power ON/OFF	NA

Table 1-5 Low-voltage power supply functions (continued)

Failure detective function	Applied
Active OFF	Yes
Inactive OFF	Yes
Network mode	NA
Power switch illumination	Yes
Low-voltage power supply failure detection	Yes
Power save mode	NA

High-voltage power supply

The DC controller controls the high-voltage power supply (HVPS) to generate biases. 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 toner cartridge)
- Developing roller (in the toner cartridge)
- Transfer roller
- Pressure roller

High-voltage power supply circuits

The high-voltage power supply contains the following separate circuits.

Figure 1-5 High-voltage power supply circuits

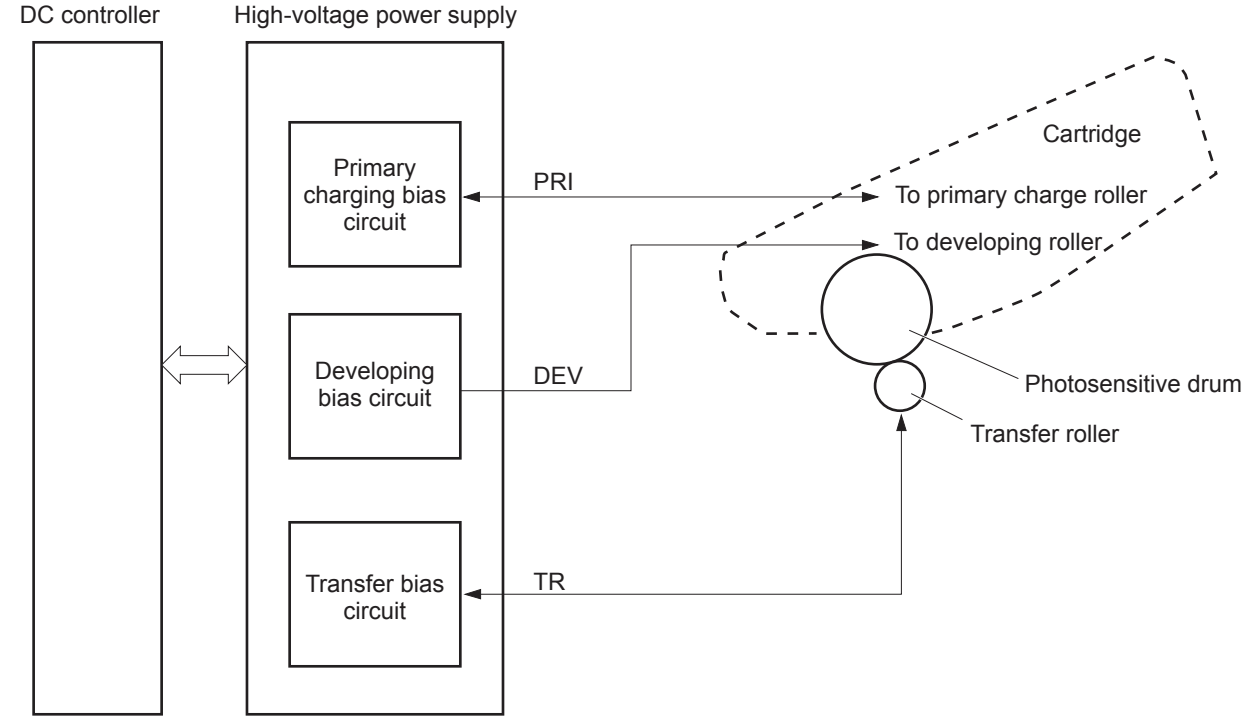


Table 1-6 High-voltage power supply circuits

Circuit	Description
Primary-charging-bias generation	The primary charging bias negatively charges the surface of the photosensitive drum to prepare for image formation.
Developing-bias generation	The developing bias adheres toner to an electrostatic latent image formed on the photosensitive drums.
Transfer-bias generation	The primary transfer bias transfers the toner from each photosensitive drum onto the page.

Fuser bias

The printer uses on-demand fusing. The fuser bias is DC positive for improved print quality. The fuser bias circuit is located in the high-voltage power supply, HVPS (T).

Fuser control

The DC controller and components in the fuser perform the following functions related to fuser operation:

- Control fuser temperature
- Detect fuser failures
- Prevent excessive temperature rise

- Detect remaining life in the fuser
- Determine if the correct fuser is installed

Fuser circuits

The fuser heater control circuit and the fuser heater safety circuit control the fuser temperature according to commands from the DC controller. The fuser consists of the following major components:

Figure 1-6 Fuser components

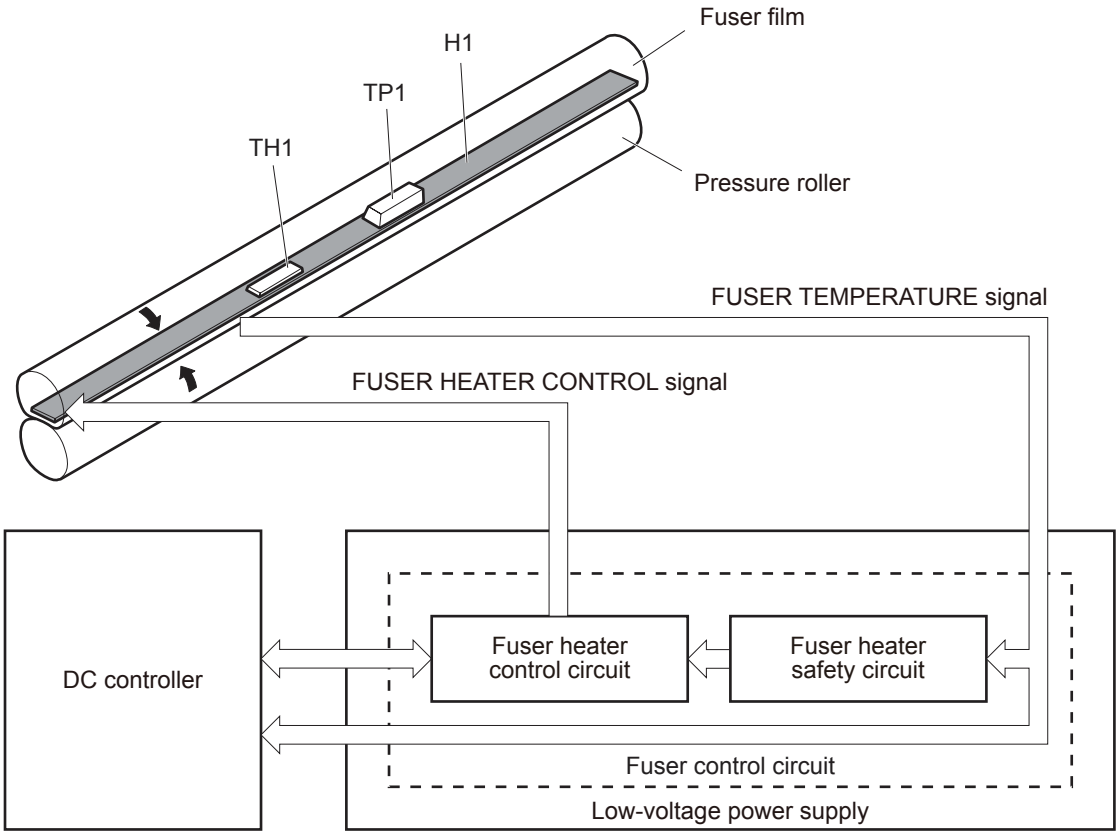
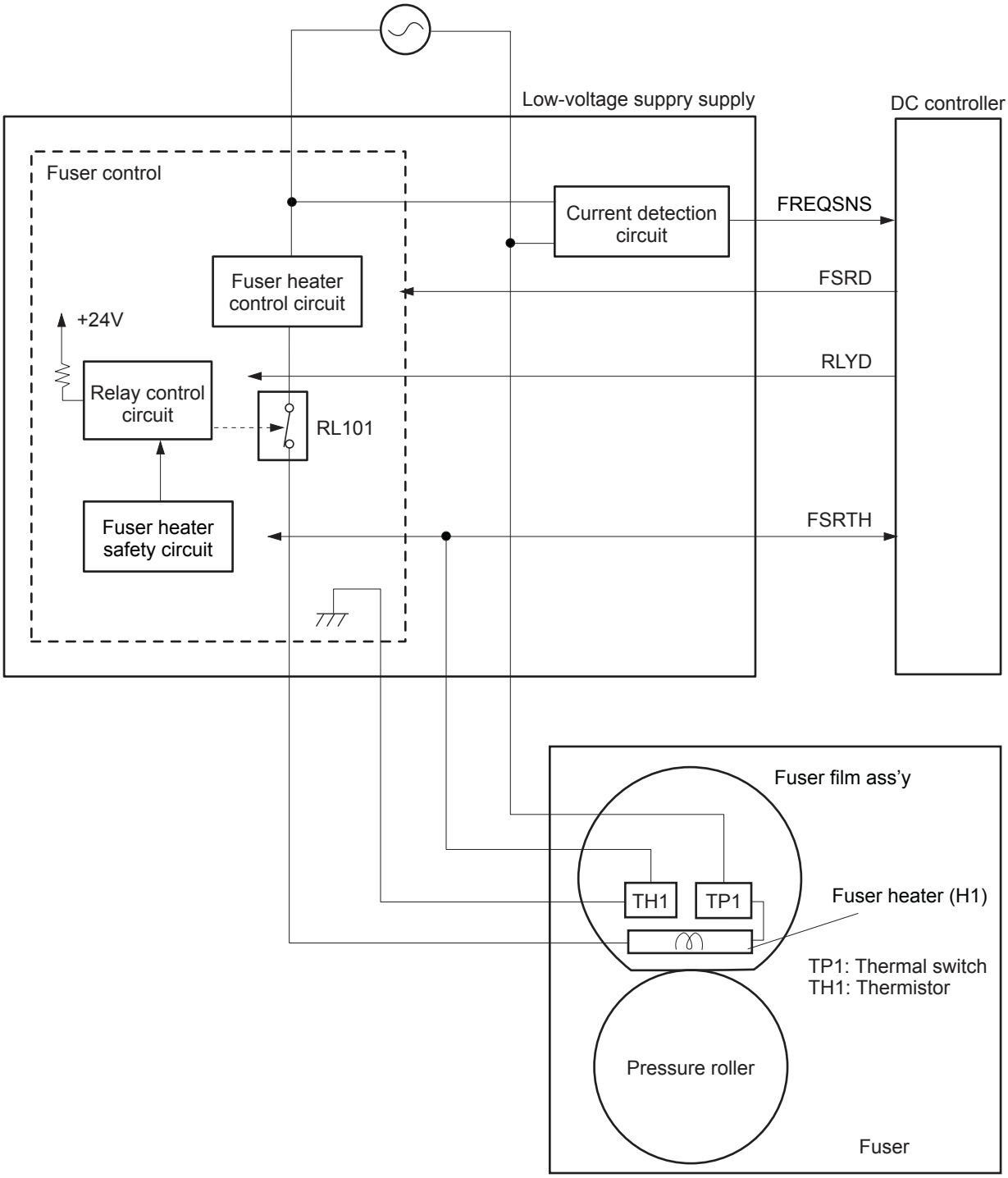


Table 1-7 Fuser components

Type of component	Abbreviation	Name	Function
Heaters	H1	Fuser main heater	Heats the center of the fuser film assembly
Thermistors (Contact type)	TH1	Main thermistor	Detects the center temperature of the fuser heater
Thermoswitch (Contact type)	TP1	Thermoswitch	Prevents an abnormal temperature rise in the fuser heater

Fuser control functions

Figure 1-7 Fuser control



The printer has the following fuser control functions.

Table 1-8 Fuser control functions

Failure detection function	Supported feature
Fuser temperature control	Yes

Table 1-8 Fuser control functions (continued)

Failure detection function	Supported feature
Fuser failure detection	Yes
Frequency detection circuit failure detection	Yes
Fuser pressure release mechanism failure detection	No
Fuser type discrepancy detection	No
Fuser type identification detection	Yes
Fuser presence detection	No
Fuser life detection	No
Relay failure detection	No
Pressure roller cleaning	Yes

Fuser heater protection

Fuser heater protection is a feature that detects excessive temperatures in the fuser and interrupts the power supply to the fuser heater.

The following three protective components prevent the fuser heater from excessive rising temperature:

- **DC controller**: When a thermistor or sub-thermistor detects a temperature above a certain threshold, the DC controller interrupts power to the specific heater.
- **Fuser-heater safety circuit**: The fuser heater safety circuit monitors the detected temperature of the sub thermistors.
- **Thermoswitch**: If the temperature in the heaters is abnormally high, and the temperature in the thermoswitch exceeds a specified value, the contact to the thermoswitch breaks.

Engine laser/scanner system

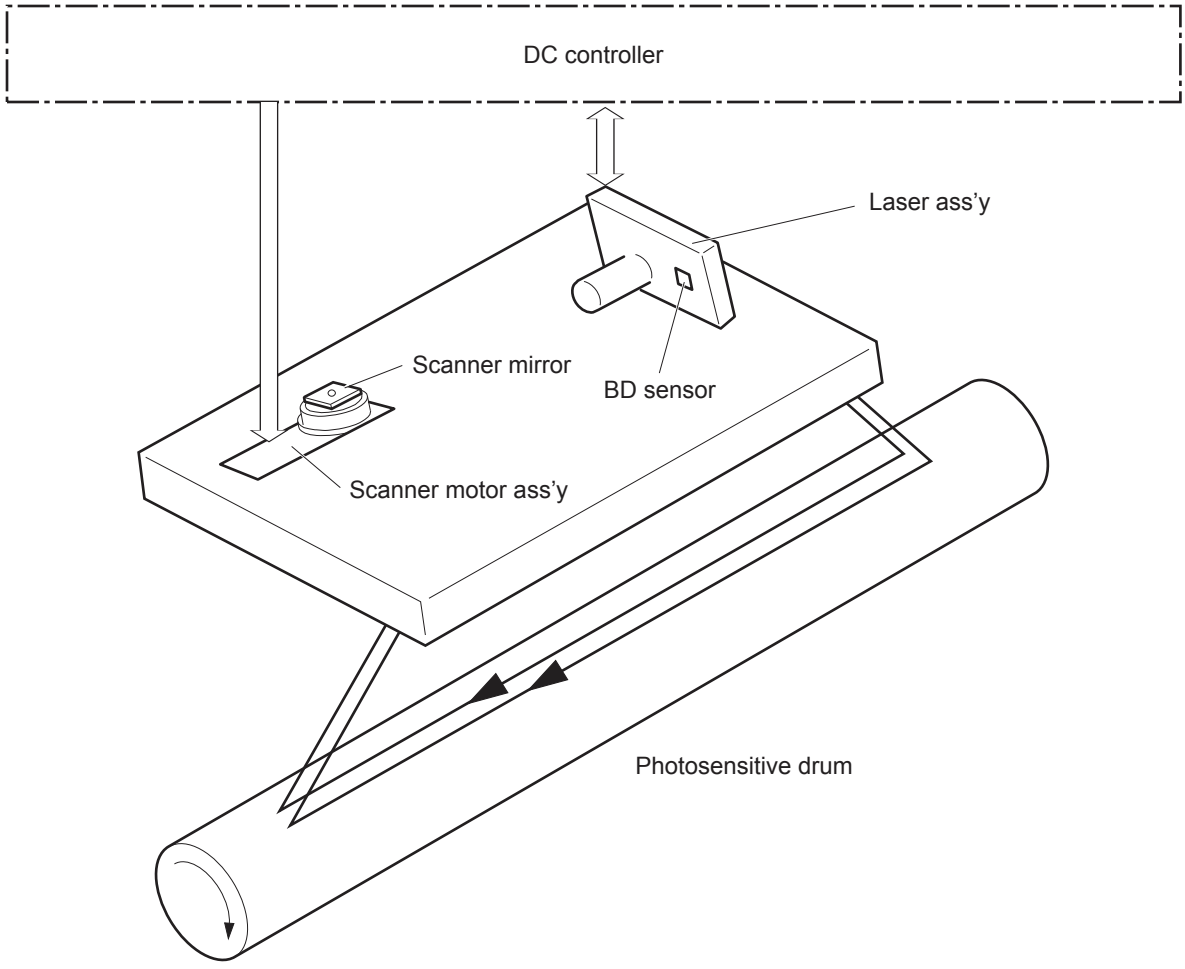
The laser/scanner system forms the latent electrostatic image on the photosensitive drums inside each of the toner cartridges.

The DC controller receives instructions from the formatter regarding 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 required for the image, exposing the surface of the drum so it can receive toner.

The main components of the laser/scanner system, which are controlled by signals sent from the DC controller, are:

- Laser assembly
- Scanner motor assembly
- Beam detect (BD) sensor
- Scanner mirror

Figure 1-8 Laser/scanner system



Laser/scanner failure detection

The DC controller determines an optical unit failure and notifies the formatter of the error status for the following supported conditions:

Failure detection function	Supported feature
Beam detect (BD) failure detection: A specified BD interval is not detected within a specified period during the scanner motor drive.	Yes
Laser/scanner motor startup failure: The scanner motor does not reach a specified rotation frequency within a specified period of time from when the laser/scanner starts up.	Yes
Laser/scanner motor abnormal rotation: The laser/scanner motor does not reach a specified rotational frequency within a specified period of time during a print operation.	Yes
Laser scanner failure detection A specified laser intensity is not detected.	No

Safety

The laser/scanner assembly has a mechanical laser shutter. For the safety of users and service technicians, the laser shutter interrupts the optical path of the laser/scanner assembly when the top door is opened (SW101).

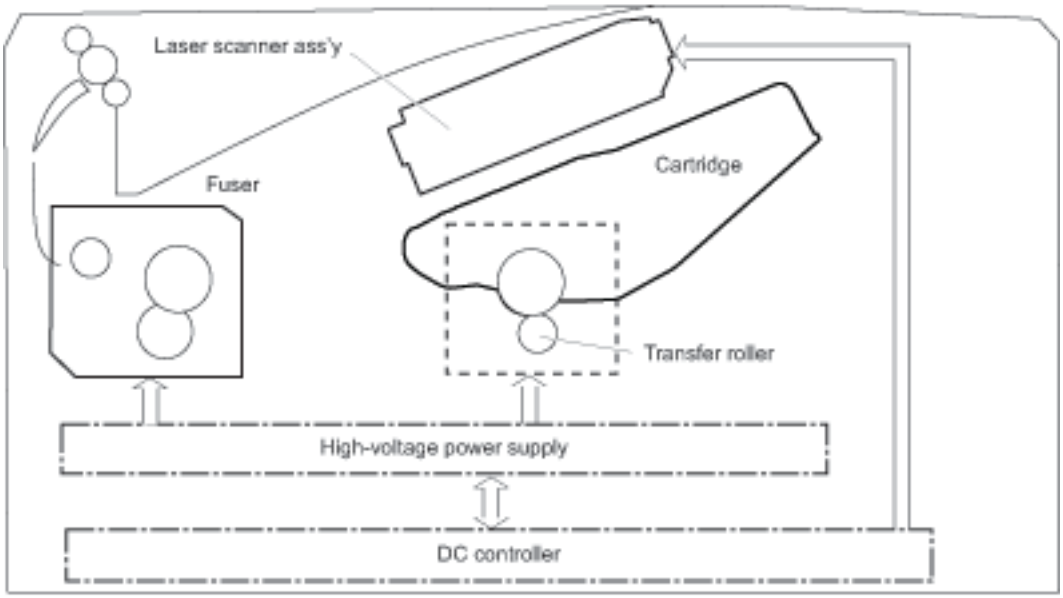
Image-formation process

The image-formation system creates the printed image on the paper. The system consists of the following components:

- Toner cartridge
- Transfer roller
- Fuser
- Laser/scanner
- High-voltage power supply

The DC Controller controls the internal components of the image formation system (according to commands received from the formatter) to form the toner image on the photosensitive drum surface. The toner image is then transferred to the print media and fused.

Figure 1-9 Image-formation system

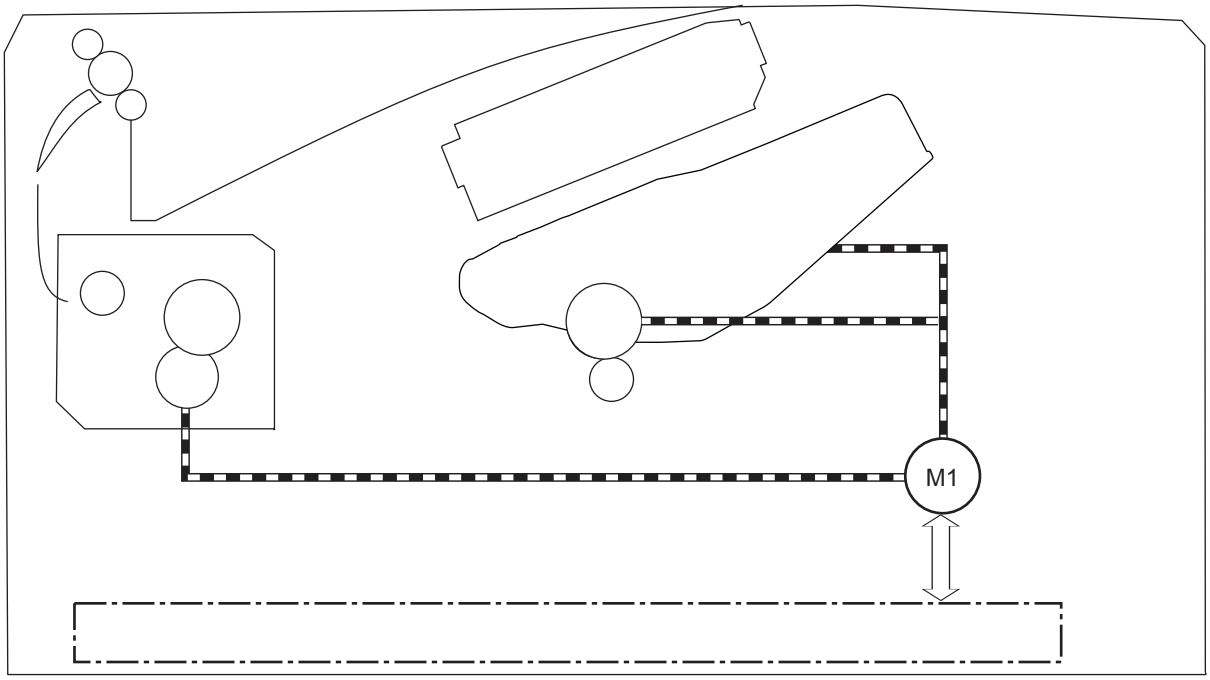


The fuser motor (M1) drives the following image formation components:

- Photosensitive drum
- Developing roller
- Primary charging roller (follows the photosensitive drum)
- Transfer roller (follows the photosensitive drum)
- Pressure roller
- Fuser film (follows the pressure roller)

NOTE: The primary charging roller and developer roller are located in the toner cartridge.

Figure 1-10 Fuser motor (M1) and image formation components



Abbreviation	Component
M1	Fuser motor

The following figure shows the toner-level sensor for the image-formation system.

Figure 1-11 Toner-level sensor

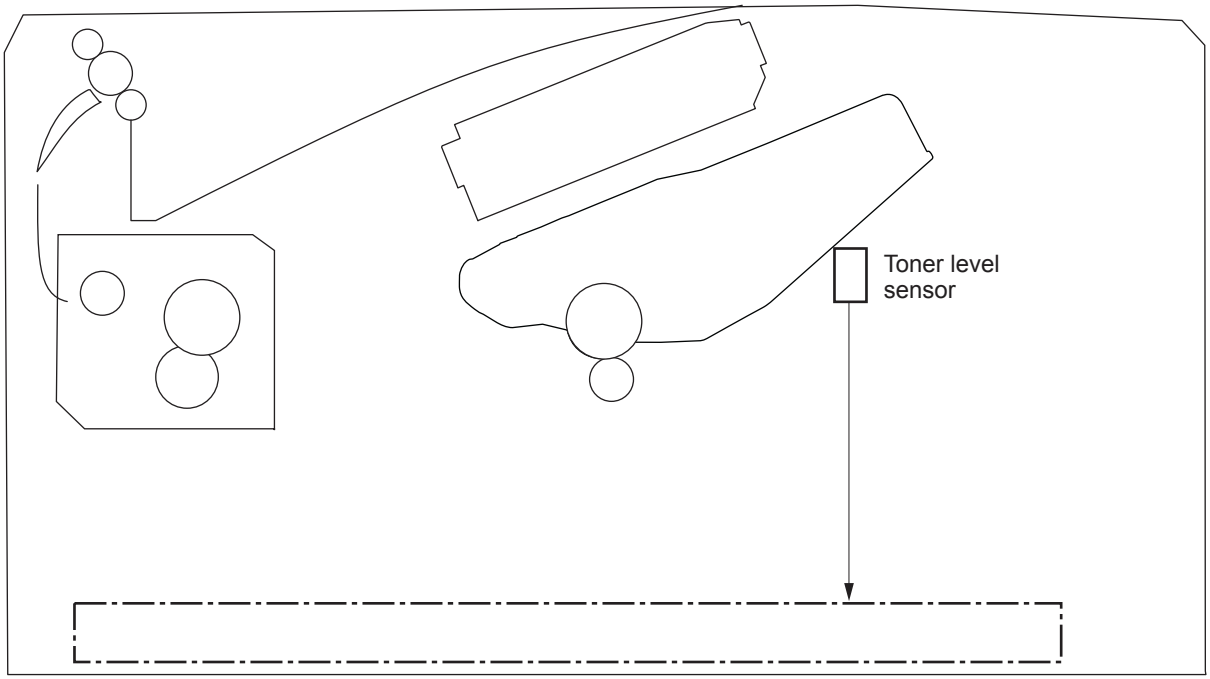


Table 1-9 Sensors

Abbreviation	Component	Replacement part number
	Toner-level sensor	

The image-formation process consists of ten steps divided into five functional blocks.

Figure 1-12 Image-formation process

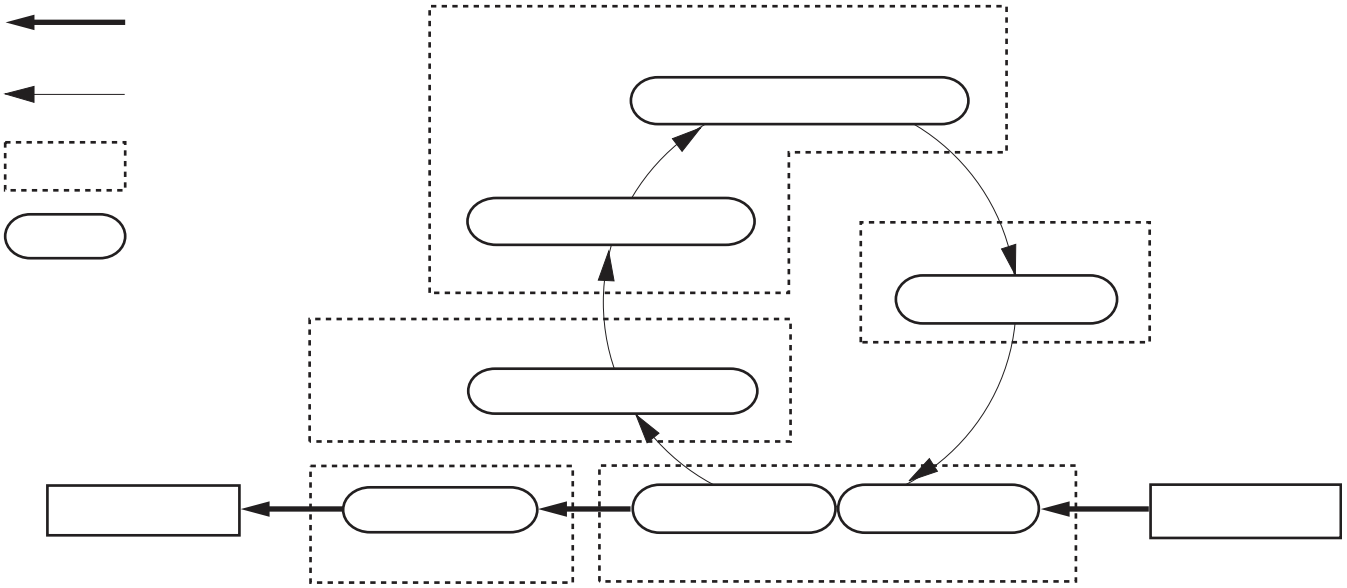


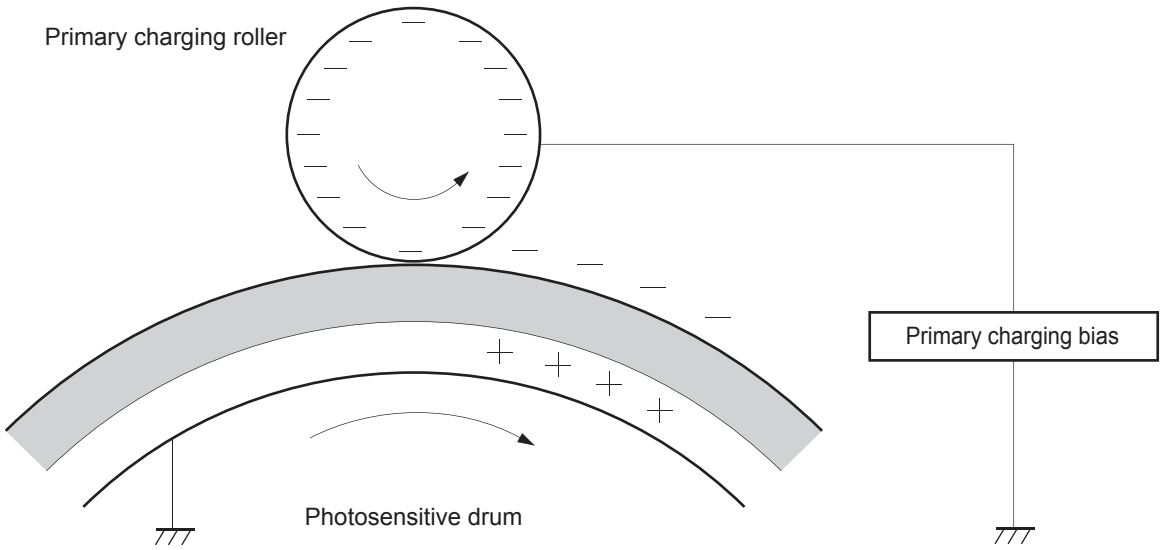
Table 1-10 Image formation process

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

Step 1: Primary charging

To prepare for latent image formation, the surface of the photosensitive drum is charged with a uniform negative charge. The primary charging roller receives the primary charging bias, and then the roller charges the drum directly.

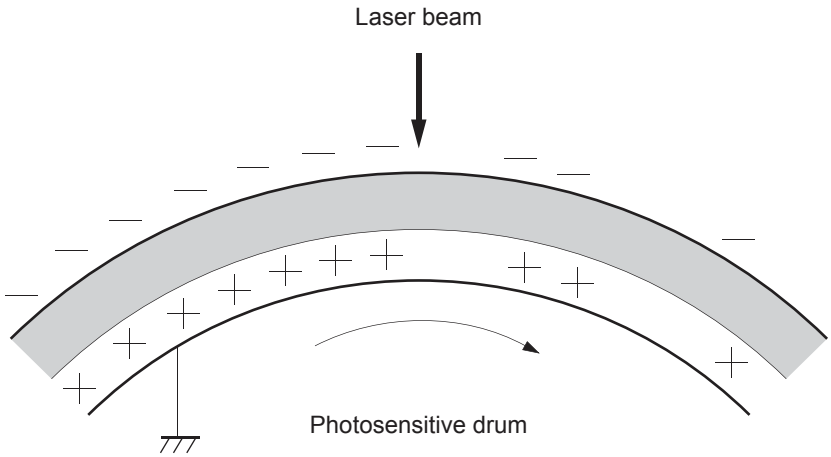
Figure 1-13 Primary charging



Step 2: Laser-beam exposure

The laser beam scans the photosensitive drum to neutralize the negative charge on portions of the drum surface. An electrostatic latent image forms where the negative charge was neutralized.

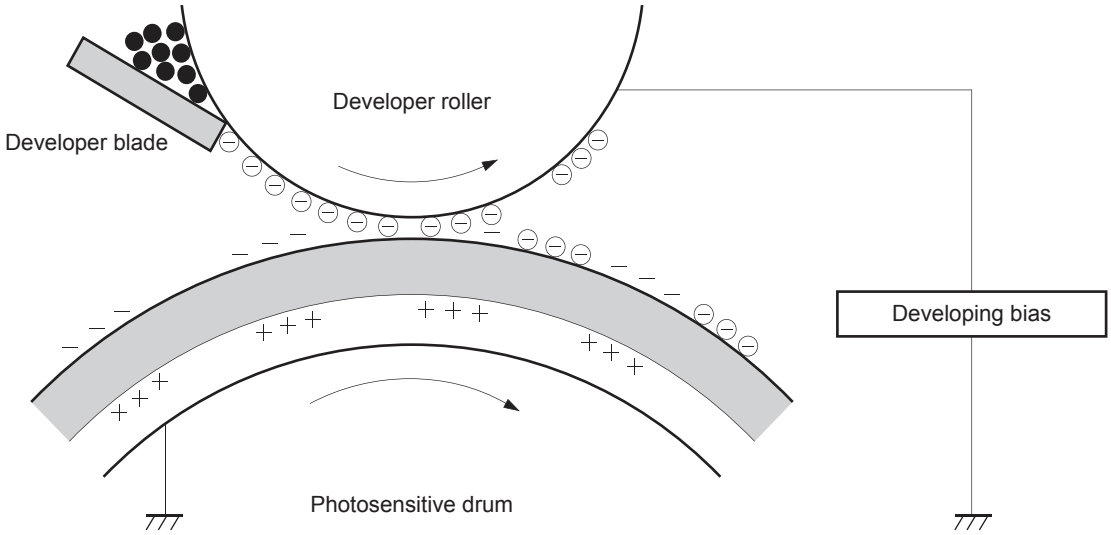
Figure 1-14 Laser-beam exposure



Step 3: Development

Toner acquires a negative charge as a result of the friction from the developing roller rotating against the developing blade. When the negatively charged toner comes in contact with the drum, it adheres to the electrostatic latent image. When the toner is on the drum, the image becomes visible. The developing bias is applied to the developing roller.

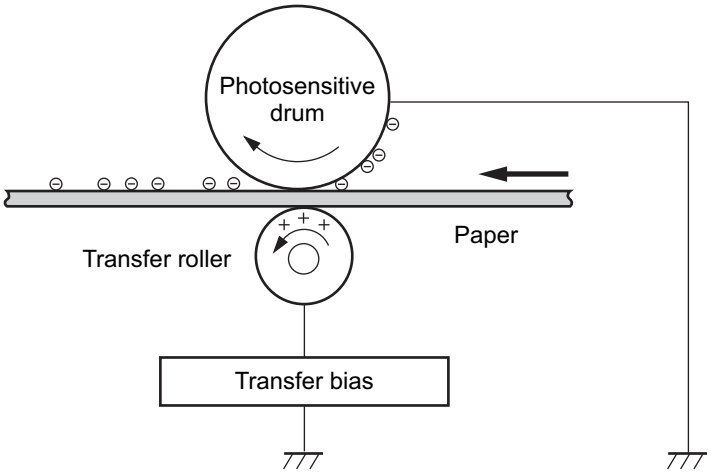
Figure 1-15 Development



Step 4: Transfer

The transfer bias is applied to the transfer roller to give the paper a positive charge. The positively charged paper attracts the negatively charged toner from the photosensitive drum surface.

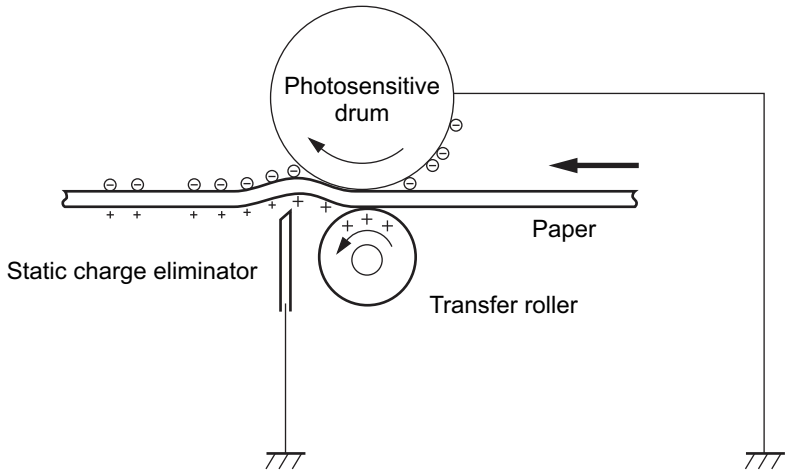
Figure 1-16 Primary transfer



Step 5: Separation

The elasticity of the paper and the curvature of the photosensitive drum cause the paper to separate from the drum surface. The static charge eliminator reduces back side static discharge of the paper for stable paper feeding and image quality.

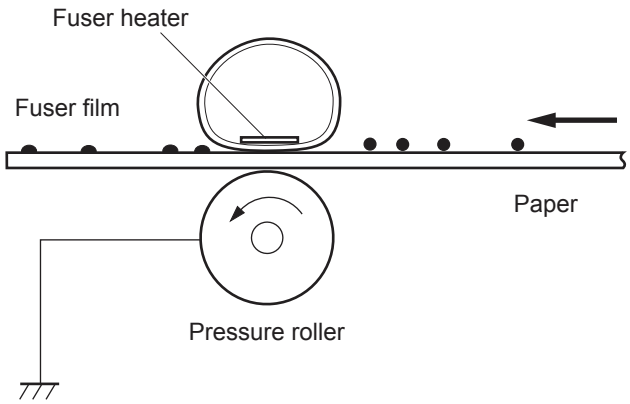
Figure 1-17 Separation



Step 6: Fusing

The product uses an on-demand fusing method to fuse the toner image onto the media. The toner image is permanently affixed to the print media by the heat and pressure. The fusing bias is applied to the pressure roller to improve image quality.

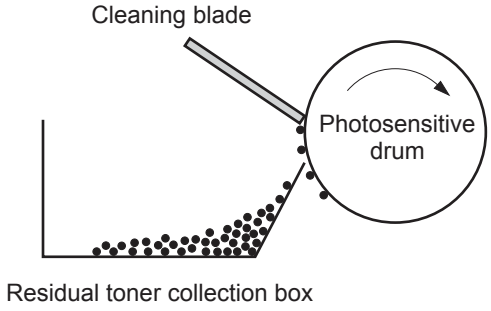
Figure 1-18 Fusing



Step 7: Drum cleaning

The cleaning blade scrapes the residual toner off the surface of the photosensitive drum and deposits it in the toner collection box. The drum is now clear and ready for the next image-formation process.

Figure 1-19 Drum cleaning



Toner cartridges

The printer has one toner cartridge.

Design

The toner cartridge is filled with toner and consists of the following components:

- Photosensitive drum
- Developer
- Primary-charging roller
- Memory chip

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

Figure 1-20 Toner cartridge system

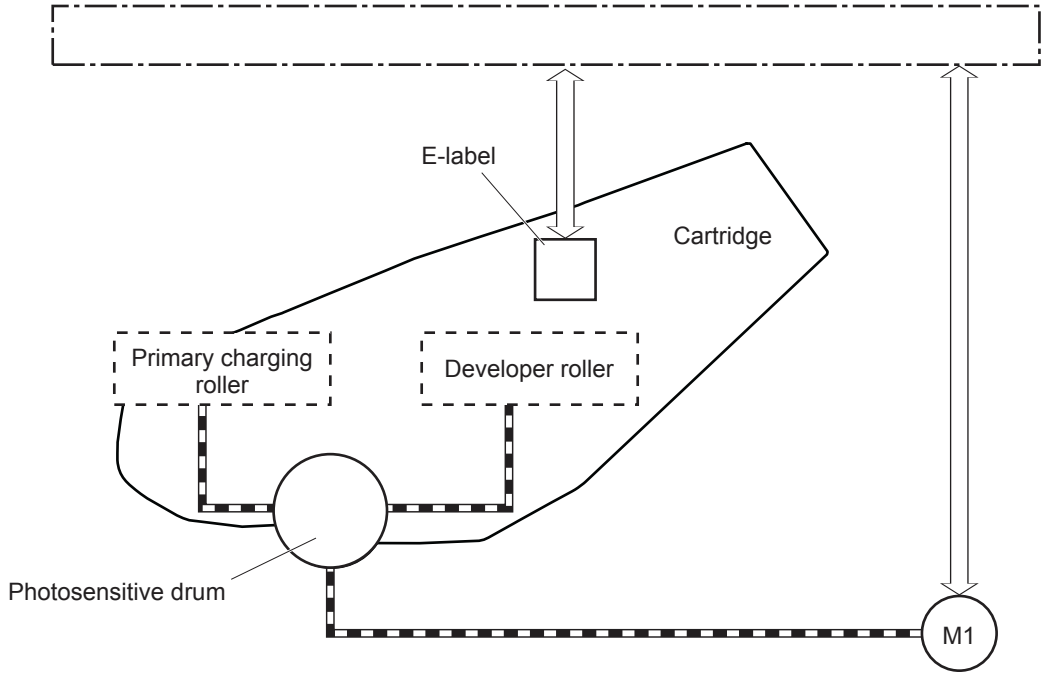


Table 1-11 Toner cartridge functions

Function	Supported feature
Toner cartridge presence detection	Yes
Toner level detection	Yes
Toner cartridge life detection	Yes
Toner cartridge mis-installation detection	No
Drum discharge	No
Transfer cleaning	Yes

Memory chip

The memory chip is non-volatile memory that stores information about the usage of the toner cartridge and helps protect the customer from counterfeit cartridges. The chip is also used to detect the presence of a cartridge within the printer or when a cartridge is installed in the wrong slot. The printer reads and writes the data in the memory chip.

Toner level and cartridge life detection

Toner level detection: The DC controller detects the remaining toner in a cartridge by the optical detection method and then notifies the formatter of the remaining toner level.

Cartridge life detection: The DC controller detects the cartridge life by monitoring the total operating time or remaining toner level of the toner cartridge. The DC controller determines a cartridge end of life and notifies the formatter when total operating time of the cartridge reaches a specified time or the cartridge runs out of toner.

Pickup, feed, and delivery system

The DC controller controls the pickup, feed, and delivery system according to commands from the formatter. The pickup, feed, and delivery system uses a series of rollers to move the paper through the printer.

The pickup, feed, and delivery system consists of the following three functional blocks. The DC controller controls each block to pick up, feed and deliver the paper.

- **Pickup-and-feed-block**: Controls the movement of the paper from each pickup source to the fuser inlet
- **Fuser-and-delivery-block**: Controls the movement of the paper from the fuser to the delivery destination
- **Duplex block**: Controls the movement of the paper from the duplex switchback unit to the duplex re-pickup unit (duplex models only)

Figure 1-21 Pickup, feed, and delivery system

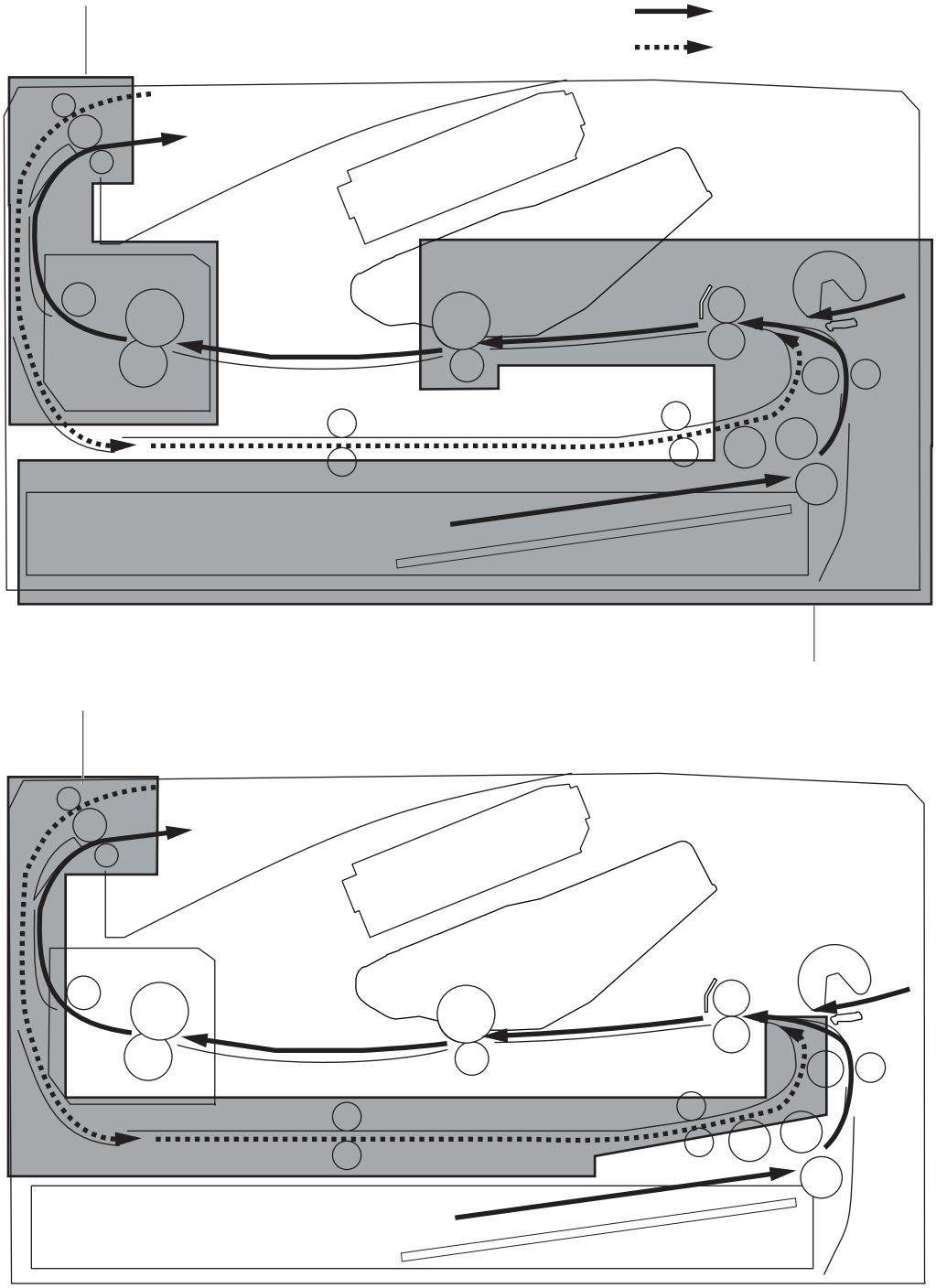


Table 1-12 **Pickup, feed, and delivery system functions**

Function	Supported feature
Cassette media size detection	No
Cassette media presence detection	Yes
Cassette media level detection	No

Table 1-12 Pickup, feed, and delivery system functions (continued)

Function	Supported feature
Cassette lift-down control	No
Cassette multiple-feed prevention mechanism	Yes
Multipurpose tray media presence detection	Yes
Multipurpose tray media width detection	No
Multipurpose tray last-media detection	No
Skew-feed prevention mechanism	Yes
Loop control	No
Media detection	No
OHT detection	No
Image leading edge positioning	Yes
Media length detection	Yes
Media width detection	Yes
Pressure roller pressure release control	No
Output bin media-full detection	Yes
Automatic delivery	Yes
Duplex switchback control (duplex models only)	Yes
Duplex feed control (duplex models only)	Yes

Sensors and switches

The following figure shows the sensors and switches for the pickup, feed, and delivery system.

Figure 1-22 Sensors and switches for the pickup, feed, and delivery system

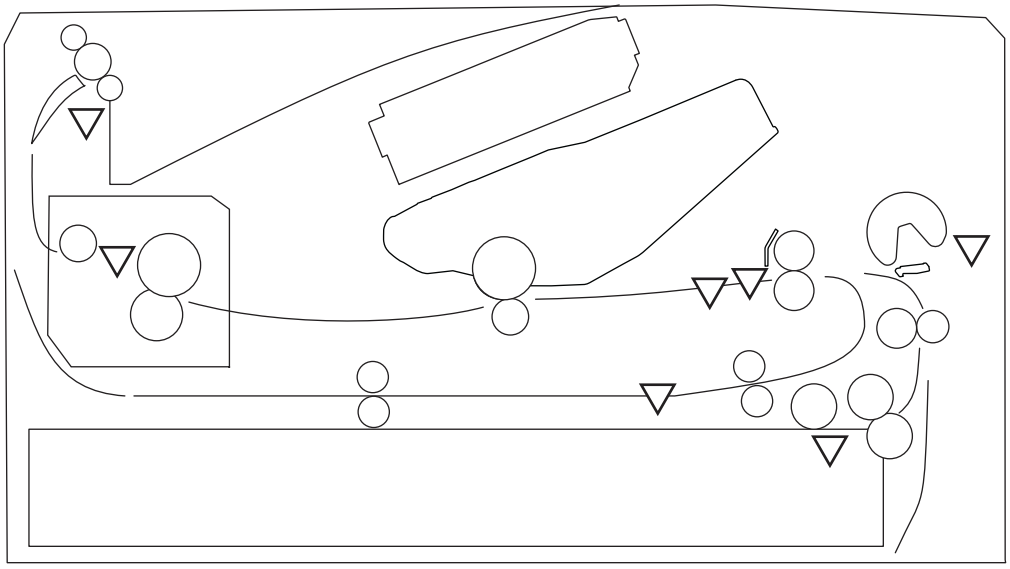


Table 1-13 Photo sensors and switches

Abbreviation	Component
SR1a	Media width sensor
SR2b	Duplex feed sensor (duplex models only)
SR1	Cassette media out sensor
SR2	TOP sensor
SR3	Multipurpose tray media out sensor
SR4	Output bin media-full sensor
SR13	Fuser output sensor

Motors, clutches, and solenoids

The following figure shows the motors, clutches, and solenoids for the pickup, feed, and delivery system.

Figure 1-23 Motors, solenoids, and clutches

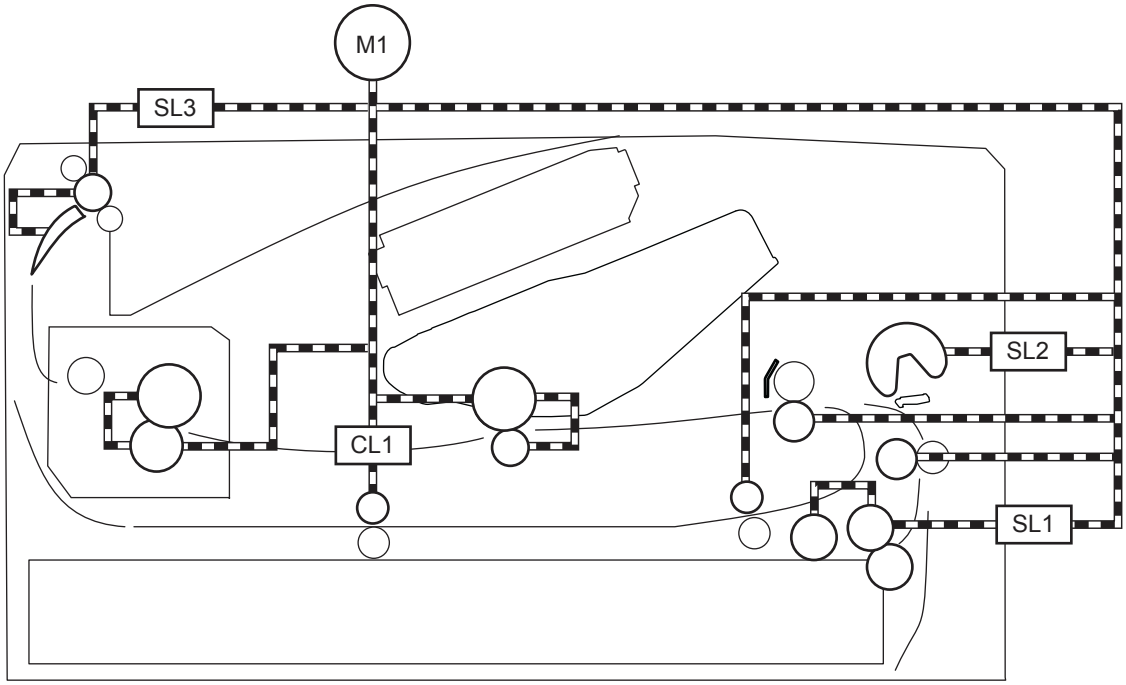


Table 1-14 Motors, solenoids, and clutches

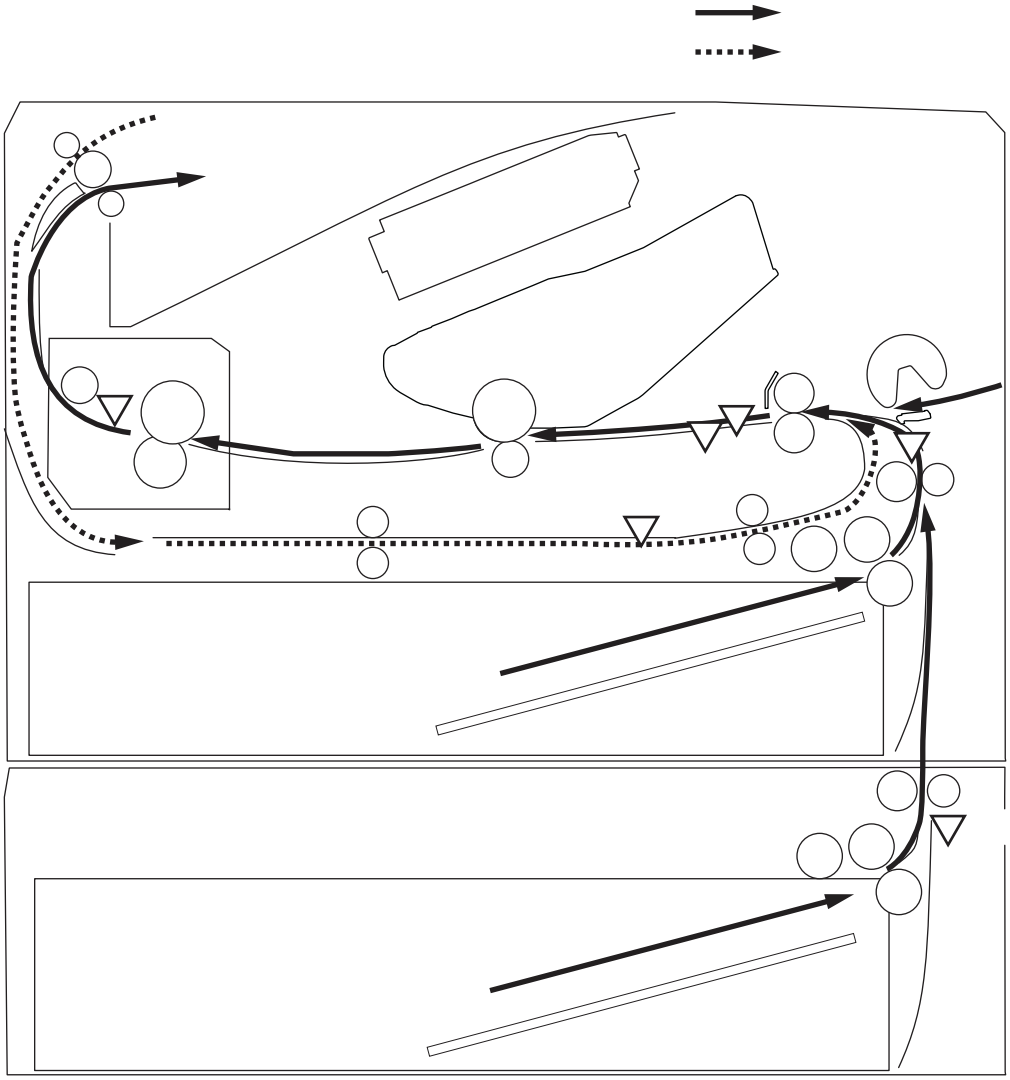
Abbreviation	Component
M1	Fuser motor
SL1	Cassette pickup solenoid
SL2	Multipurpose tray pickup solenoid
SL3	Duplex switchback solenoid (duplex models only)
CL1	Duplex re-pickup clutch (duplex models only)

Jam detection/prevention

The printer 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.

- Top of page (TOP) sensor (SR2)
- Media width sensor (SR1a)
- Fuser output sensor (SR13)
- Duplex feed sensor (SR2a)

Figure 1-24 Jam detection sensors



The printer 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 printer detects

Jam	Supported feature
No pick jam 1	Yes
No pick jam 2	Yes
No pick jam 3	Yes
No pick jam 4	No
Pickup stay jam 1	Yes
Pickup stay jam 2	No
Pickup stay jam 3	No
Pickup stay jam 4	No
Fuser delivery delay jam 1	Yes

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

Jam	Supported feature
Fuser delivery delay jam 2	No
Fuser delivery delay jam 3	No
Fuser delivery delay jam 4	No
Fuser delivery stay jam 1	Yes
Fuser delivery stay jam 2	No
Fuser delivery stay jam 3	No
Fuser delivery stay jam 4	No
Residual paper jam 1	Yes
Residual paper jam 2	Yes
Residual paper jam 3	No
Residual paper jam 4	No
Door open jam 1	Yes
Door open jam 2	No
Door open jam 3	No
Door open jam 4	No
Fuser wrap jam1	Yes
Fuser wrap jam2	Yes
Fuser wrap jam3	No
Fuser wrap jam4	No
Duplex switchback jam1	No
Duplex switchback jam2	No
Duplex switchback jam3	No
Duplex switchback jam4	No
Duplex re-pickup jam 1	Yes
Duplex re-pickup jam 2	No
Duplex re-pickup jam 3	No
Duplex re-pickup jam 4	No
Delivery delay jam 1	No
Delivery delay jam 2	No
Delivery delay jam 3	No
Delivery delay jam 4	No
Delivery stay jam 1	No
Delivery stay jam 2	No

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

Jam	Supported feature
Delivery stay jam 3	No
Delivery stay jam 4	No
Multiple feed jam 1	No
Multiple feed jam 2	No
Multiple feed jam 3	No
Multiple feed jam 4	No

Paper feeder (optional Tray 3)

This section describes the paper feeder (optional Tray 3).

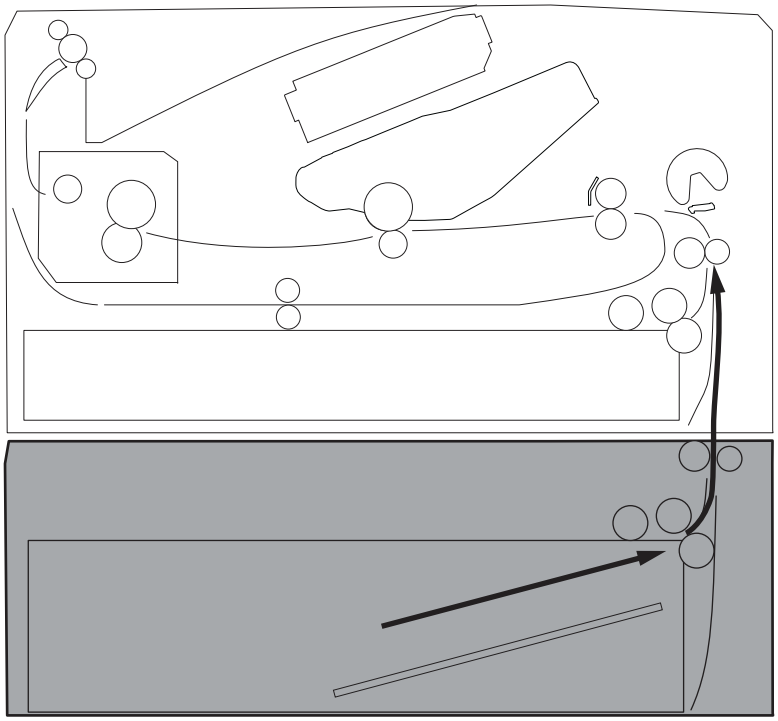
Basic operation

The paper feeder is optionally installed at bottom of the printer. It picks up the print media and feeds it to the printer. The paper DC controller controls the operational sequence of the paper feeder.

Paper path

The figure below shows the optional Tray 3 paper path.

Figure 1-25 Optional Tray 3 paper path



Paper feeder controller

The figure below shows the paper feeder controller block diagram. The table in this section describes the paper feeder electrical components.

Figure 1-26 Paper feeder controller

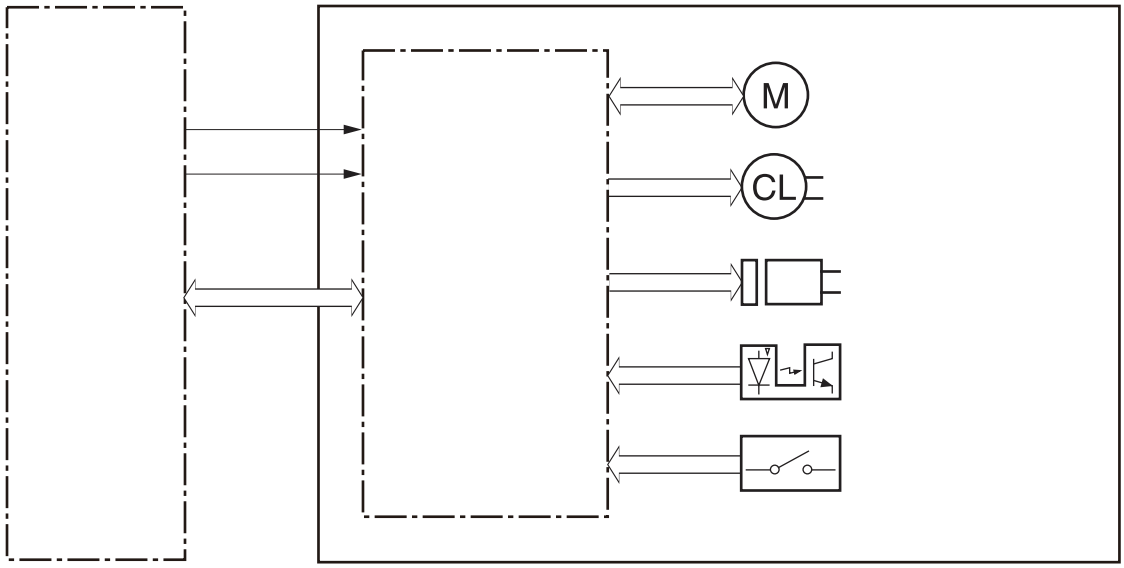


Table 1-16 **Electrical component list, paper feeder**

Component type	Abbreviation	Component name
Motor	M5	Lifter motor
Solenoid	SL4	Cassette pickup solenoid
Clutch	CL2	Feed clutch (Note)
Switch	SW3	Cassette detection switch
Photointerrupter	PS460	Media surface sensor
	PS461	Cassette media out sensor

Motor control

The paper feeder uses one motor for the cassette lift-up operation.

Table 1-17 **Motors, paper feeder**

Component name		Components driven
M5	Lifter motor[1]	Lifts up the cassette

[1] The paper feeder does not detect lifter motor failures.

Pickup and feed operation

The paper feeder picks up the sheet of paper one by one in the paper feeder cassette and feeds it to the printer.

Electrical components, pickup and feed

The figure below shows the paper feeder electrical components. The table in this section describes the electrical components.

Figure 1-27 Electrical components, pickup and feed

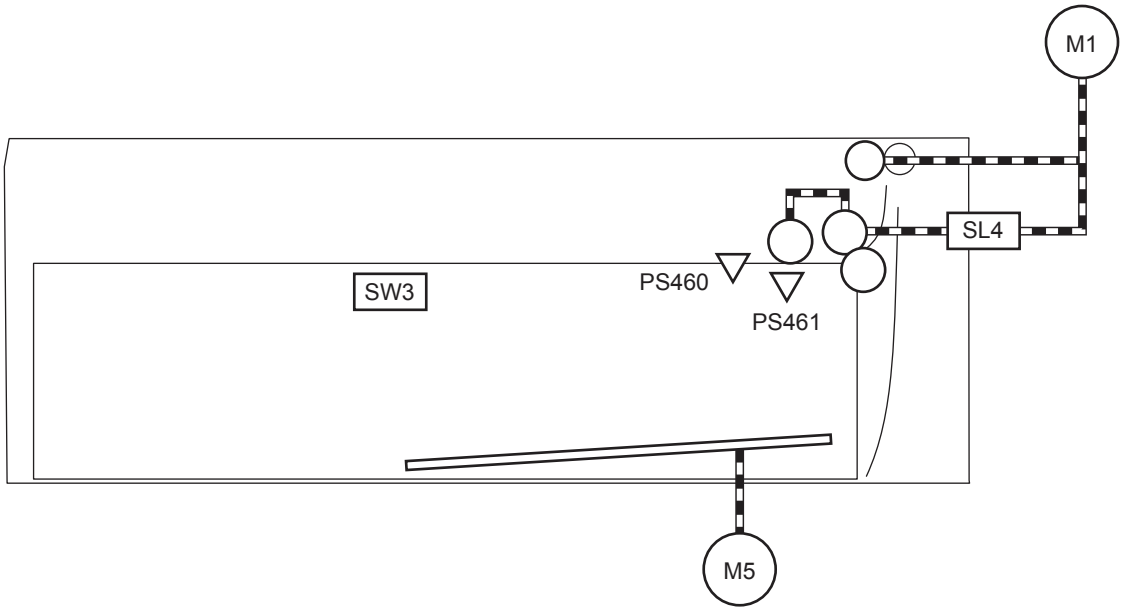


Table 1-18 Electrical components, pickup and feed

Abbreviation	Component name
M1	Fuser motor[1]
M5	Lifter motor
SL4	Cassette pickup solenoid
SW3	Cassette detection switch
PS460	Media surface sensor
PS461	Cassette media out sensor

[1] This motor is located in the printer.

Other functions

The paper feeder has the following pickup and feed functions.

Table 1-19 Other functions, paper feeder

Function	Supported feature
Cassette lift-up control	Yes
Cassette presence detection	Yes
Cassette media size detection	No
Cassette media stack surface detection	Yes
Cassette media out detection	Yes
Cassette media level detection	No
Multiple-feed prevention	Yes
Automatic delivery	Yes

Jam detection

The DC controller in the printer detects jams during the paper feeder pickup and feed operation. See Jam detection/prevention on page 31.

2 Solve problems

- For additional service and support
- Solve problems checklist
- Troubleshooting process
- Tools for troubleshooting
- Clear paper jams
- Solve paper-handling problems
- Solve image quality problems
- Clean the printer
- Solve performance problems
- Solve connectivity problems
- Service mode functions
- Solve fax problems (fax models only)
- Solve email problems (M426, M427 printes)
- Manually update the firmware

For additional service and support

HP service personnel, go to the Service Access Work Bench (SAW) at http://h41302.www4.hp.com/km/saw/home.do.

Channel partners, go to HP Channel Services Network (CSN) at https://h30125.www3.hp.com/hpcsn.

At these locations, find information on the following topics:

- Install and configure
- Printer specifications
- Up-to-date control panel message (CPMD) troubleshooting
- Solutions for printer issues and emerging issues
- Remove and replace part instructions and videos
- Service advisories
- Warranty and regulatory information

To access HP PartSurfer information from any mobile device, go to http://partsurfermobile.hp.com/ or scan the Quick Response (QR) code below.

Solve problems checklist

- Solve problems checklist

Solve problems checklist

If the printer is not correctly functioning, complete the steps (in the order given) in the following checklist. If the printer fails a checklist step, follow the corresponding troubleshooting suggestions for that step. If a checklist step resolves the problem, skip the remaining checklist items.

1. Make sure that the printer is set up correctly.
   a. Press the power button to turn on the printer or to deactivate the Auto-Off mode.
   b. Check the power-cable connections.
   c. Make sure that the line voltage is correct for the printer power configuration. See the label that is on the printer for voltage requirements. If you are using a power strip and its voltage is not within specifications, plug the printer 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 printer and the computer. Make sure that the connection is secure.
   b. Make sure that the cable itself is not faulty, by using a different cable if possible.
   c. Check the network connection: Make sure that the network light is lit. The network light is next to the network port on the back of the printer.

      If the printer remains unable to connect to the network, uninstall and then reinstall the printer. If the error persists, contact a network administrator.
3. Check to see if any messages appear on the control panel.
4. Make sure that the paper you are using meets specifications.
5. Make sure that the paper is loaded correctly in the input tray.
6. Make sure that the printer software is installed correctly.
7. Verify that you have installed the printer driver for this printer, and that you are selecting this printer from the list of available printers.
8. Print a configuration page.
   a. **2-line control panels**: On the printer control panel, press the OK button.

      Touchscreen control panels: From the Home screen on the printer control panel, touch the Setup button.
   b. Open the Reports menu.
   c. Select Configuration Report.

After printing the configuration page, check the following:

a. If the page does not print, verify that the input tray contains paper and that the paper is properly loaded.

b. Make sure that the toner cartridge is installed correctly.

c. If the page jams in the printer, 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 printer software installed.

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

Print the menu map

To more easily navigate individual settings, print a report of the complete printer menus.

1. **2-line control panels**: On the printer control panel, press the OK button.

   Touchscreen control panels: From the Home screen on the printer control panel, touch the Setup button.

2. Open the Reports menu.

3. Select Menu Structure.

Print a configuration page

Print a configuration page to test the printer.

1. **2-line control panels**: On the printer control panel, press the OK button.

   Touchscreen control panels: From the Home screen on the printer control panel, touch the Setup button.

2. Open the Reports menu.

3. Select Configuration Report.

Print the service page (includes the event log)

Printing the service page provides a list of printer settings that might be helpful in the troubleshooting process, as well as the event log, which stores the last 10 error events that the printer experienced.

1. **2-line control panels**: On the printer control panel, press the OK button.

   Touchscreen control panels: From the Home screen on the printer control panel, touch the Setup button.

2. Open the Reports menu.
3. Select the Service Page option to print the report.

The event log is located in the lower right-hand corner of the service page.

Print the demo page

Print a product demo page.

2-line control panels

- With the printer in the **Ready** state, press the OK button and the Cancel button at the same time.

Touchscreen control panels

1. From the Home screen on the printer control panel, touch the Setup button.
2. Open the Reports menu.
3. Select Demo Page.

Troubleshooting process

- Determine the problem source
- Power subsystem
- Control panel checks

Determine the problem source

When the printer malfunctions or encounters an unexpected situation, the printer control panel alerts the user to the situation. This section contains a pre-troubleshooting checklist to filter out many possible causes of the problem. Use the troubleshooting flowchart to help diagnose the root cause of the problem. The remainder of this chapter provides steps for correcting problems.

- Use the troubleshooting flowchart to pinpoint the root cause of hardware malfunctions. The flowchart provides guides to the sections of this chapter that contain steps to correct 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 printer 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 printer and the outlet? • Is the operating environment within the specified parameters? • Is the printer 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 printer components (for example, the toner cartridge OPC). • Is the printer 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 printer?

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 toner cartridge door closed?
Condensation	• Does condensation occur following a temperature change (particularly in winter following cold storage)? If so, wipe affected parts dry or leave the printer on for 10 to 20 minutes. • Was a 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 printer. • 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 printer. • Remove the printer from the network and ensure that the failure is associated with the printer before beginning troubleshooting. • For any print-quality issues, calibrate the printer.

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 printer 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 printer and the outlet? • Is the operating environment within the specified parameters? • Is the printer 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 printer components (for example, the toner cartridge imaging drum). • Is the printer 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 printer 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 printer. • Remove the printer from the network and make sure that the failure is with the printer before beginning troubleshooting.

Power subsystem

Power-on checks

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

- Verify that the printer is plugged directly into an active electrical outlet that has the correct voltage. Do not plug the printer 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 printer 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

The printer includes diagnostic tests for the control panel. This mode allows for troubleshooting issues with the LEDs (2-line control panels), display, and the buttons.

1. Open the secondary service menu.

   ### 2-line control panels

   a. From the printer control panel, press the OK button.

   b. Press and hold the left arrow ◀ button.

   c. Press the Cancel ✕ button.

   d. Press the OK button to reopen the **Setup** menu.

   e. Scroll to the **2ndary Service** menu, and then press the OK button.

   ### Touchscreen control panels

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

   b. Touch the space between the Home and Help buttons.

   c. Touch the Back button.

   d. Touch the Setup button.

   e. Scroll to and touch the 2ndary Service menu.

2. Select one of the following tests:

- LED test: Test the LED lights on 2-line control panels. The touchscreen control panels do not have any LEDs.
- Display Test: Test the control panel display.
- Button Test: Test the control panel buttons.

Tools for troubleshooting

The section describes the tools that can help solve problems with the printer.

Component diagnostics

LED diagnostics

Network LEDs (network models only)

The onboard network solution has two network port LEDs. When the printer 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 printer control-panel.

Change the Link Speed setting on an LCD control panel

1. At the printer control panel, press the OK button to open the menus.
2. Select the Network Setup menu, and then press the OK button.
3. Select the Link Speed item, and then press the OK button.
4. Select the appropriate link speed, and then press the OK button.

Change the Link Speed setting on a touchscreen control panel

1. From the Home screen on the printer 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 printer signal the printer status. The following table outlines the possible control-panel light states.

Printer 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 printer will power off and then power on after one of these errors occurs.

Engine diagnostics

Engine test

When the engine test is performed, a test page with horizontal lines prints if the engine is functioning correctly.

To perform the test do one of the following (with the printer in the Ready state):

- **Simplex printers**: Depress and hold the cartridge door release button, and then open and shut the cartridge door three times within a three second time period. A single-sided test page prints.
- **Duplex printers**: Depress and hold the cartridge door release button, and then open and shut the cartridge door four times within a three second time period. A double-sided test page prints.

NOTE: A single-sided test page prints if the duplex function is disabled.

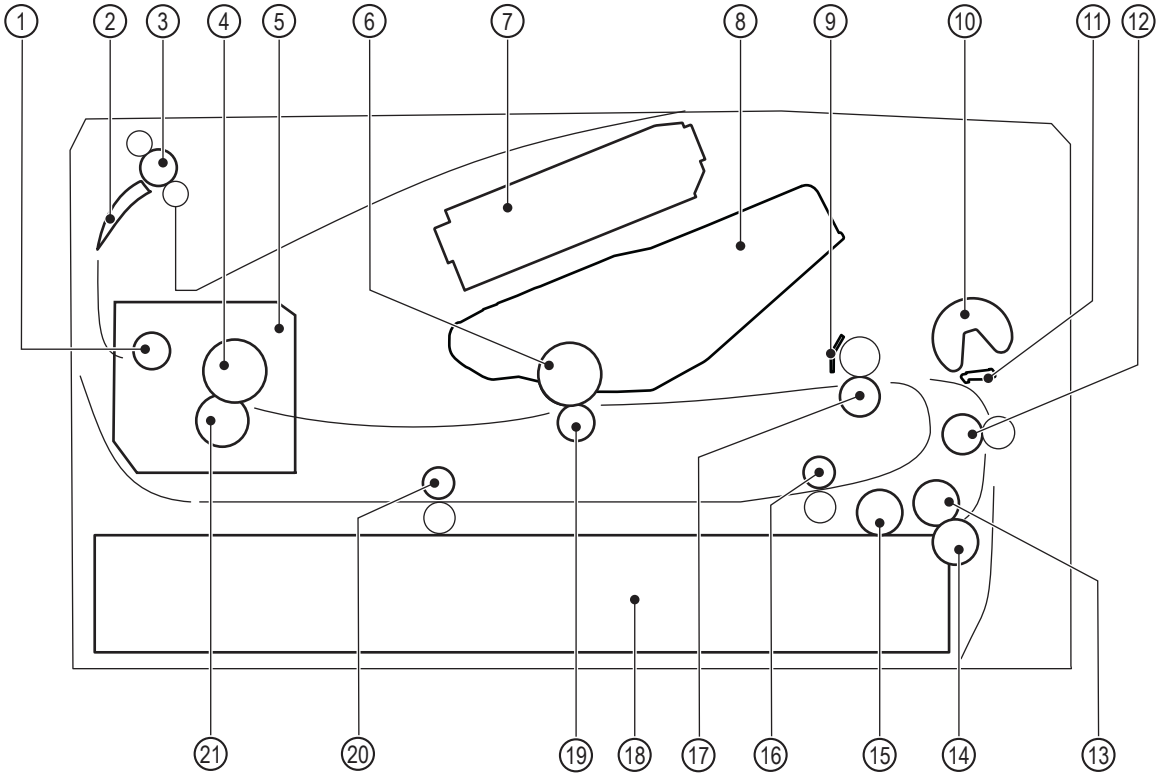
Diagrams

Use the diagrams in this section to identify printer components.

Diagrams: Block diagrams

Cross-sectional view of printer

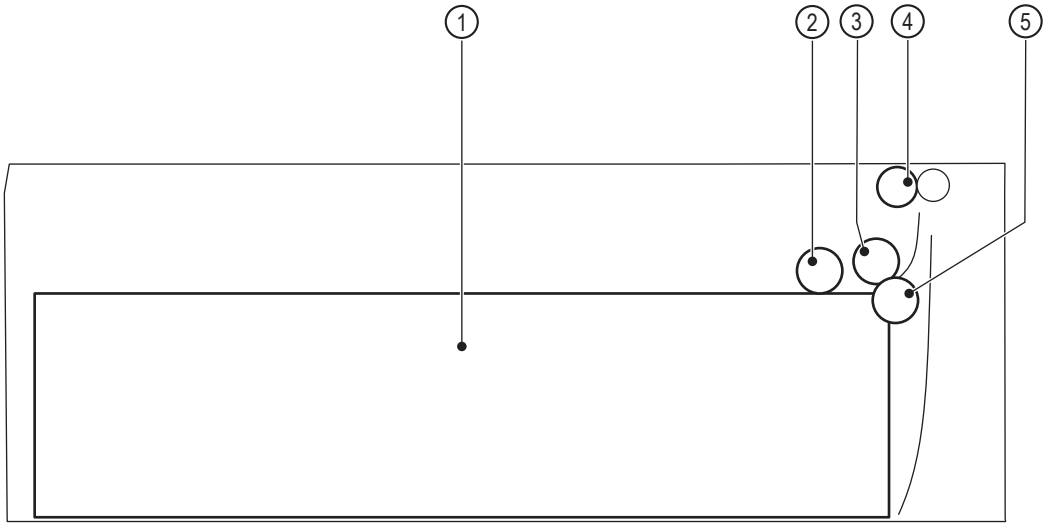
Figure 2-1 Cross-sectional view of printer



Item	Description	Item	Description
1	Fuser output roller	12	Feed roller
2	Duplex flapper (duplex models only)	13	Cassette feed roller
3	Output roller	14	Cassette separation roller
4	Fuser film	15	Cassette pickup roller
5	Fuser	16	Duplex re-pickup roller (duplex models only)
6	Photosensitive drum	17	Registration roller
7	Laser scanner assembly	18	Cassette
8	Toner cartridge	19	Transfer roller
9	Registration shutter	20	Duplex feed roller (duplex models only)
10	Multipurpose tray pickup roller	21	Pressure roller
11	Multipurpose tray separation pad		

Cross-sectional view of 550–sheet paper feeder

Figure 2-2 Cross-sectional view of 500–sheet paper feeder



Item	Description	Item	Description
1	Cassette	4	Feed roller
2	Cassette pickup roller	5	Cassette separation roller
3	Cassette feed roller		

Diagrams: Printed circuit assembly (PCA) connector locations

- Diagrams: DC controller connections
- Paper feeder controller PCA

Diagrams: DC controller connections

Each of the connections on the DC controller PCA is indicated in the following figure.

Figure 2-3 DC controller PCA connectors

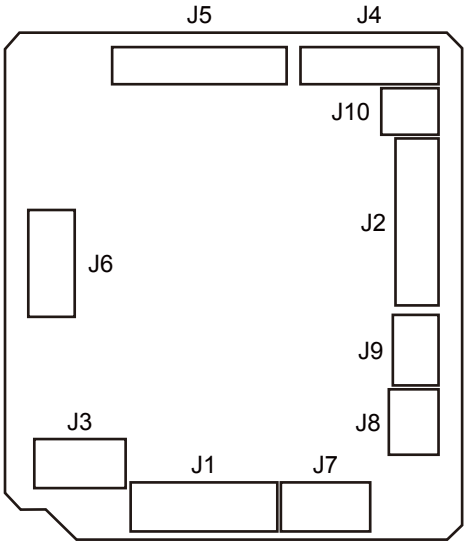


Table 2-1 DC controller connectors

Item	Description	Item	Description
J1	Low-voltage power supply assembly	J7	Media-width sensor
J2	High-voltage power supply PCA		Duplex feed sensor (duplex models only)
J3	Formatter		TOP sensor
J4	Laser assembly	J8	Cassette media out sensor
J5	Connector PCA	J9	Multipurpose tray media out sensor
J6	Output bin media-full sensor	J10	Memory tag (E-label)
	Fuser output sensor		Loop sensor
	Thermistor		

Paper feeder controller PCA

Figure 2-4 Paper feeder controller PCA connectors

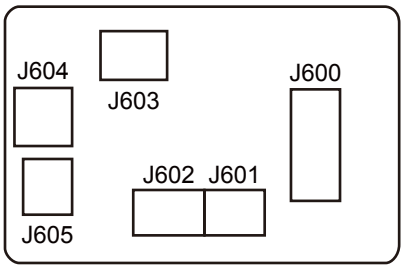


Table 2-2 Paper feeder controller PCA connectors

Item	Description	Item	Description
J600	Printer	J603	Media surface sensor
J601	Cassette detection switch	J604	Cassette pickup solenoid
J602	Cassette media out sensor	J605	Lifter motor

Diagrams: External plug and port locations

Figure 2-5 M402, M403 external plugs and ports locations

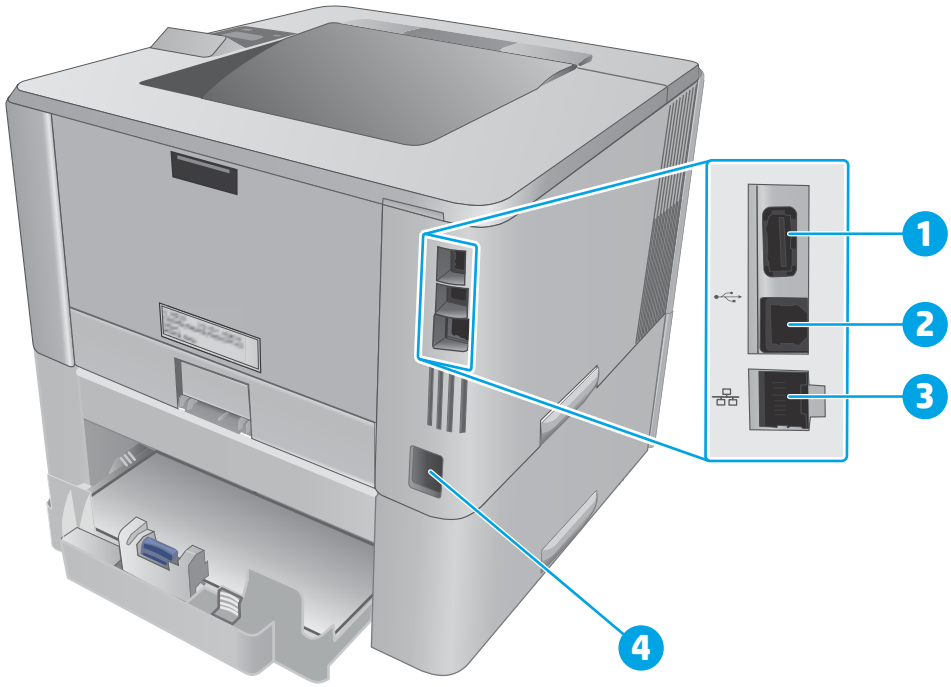


Table 2-3 M402, M403 external plugs and ports

Item	Description
1	USB port (for job storage and private printing) **NOTE:** This port might be covered

Table 2-3 M402, M403 external plugs and ports (continued)

Item	Description
2	USB interface port
3	Ethernet port
4	Power connection

Figure 2-6 M426, M427 external plug and port locations

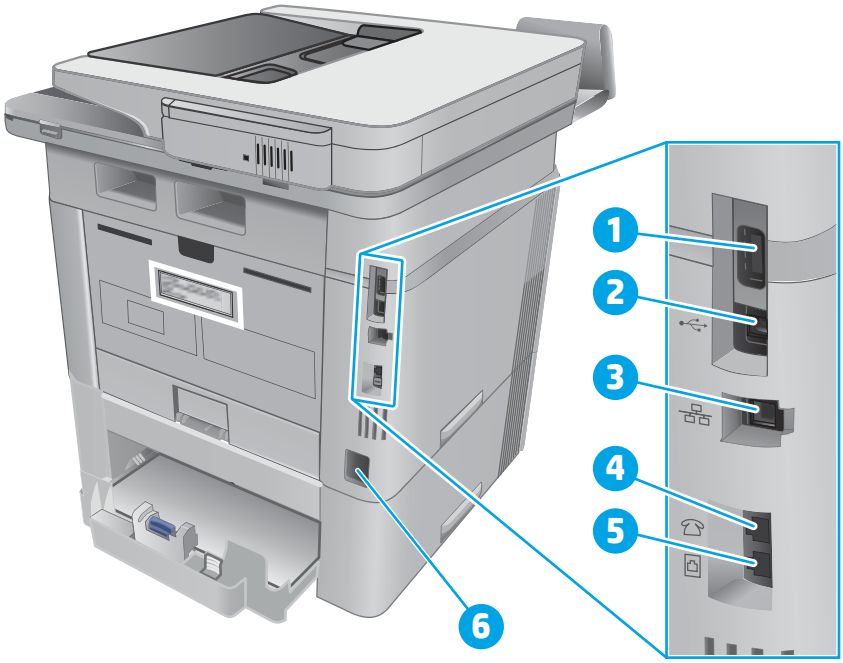


Table 2-4 M426, M427 external plugs and ports

Item	Description
1	USB port (for job storage and private printing) **NOTE:** This port might be covered
2	USB interface port
3	Ethernet port
4	Telephone “line out” port (for attaching an extension phone, answering machine, or other device)
5	Fax “line in” port (for attaching the fax phone line to the printer)
6	Power connection

Diagrams: Locations of major components

Major components (printer base)

Figure 2-7 Major components (printer base)

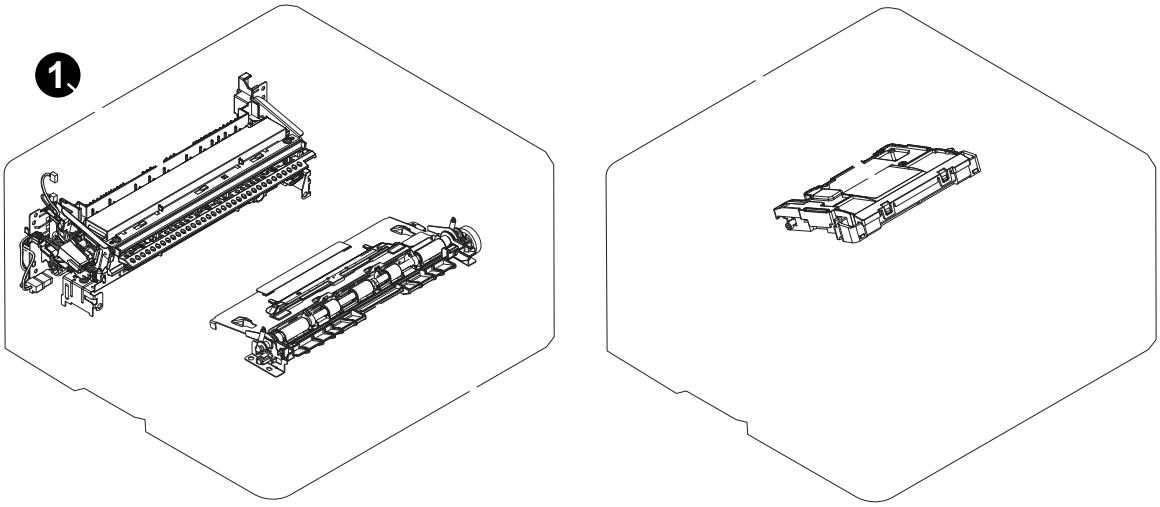


Table 2-5 Major components (printer base)

Item	Description
1	Fuser
2	Registration assembly
3	Laser/scanner assembly

Motor and fan

Figure 2-8 Motor and fan

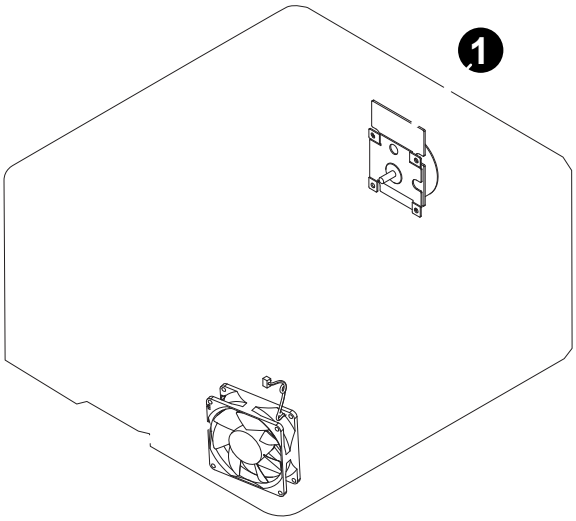


Table 2-6 Motor and fan (printer base)

Item	Description
1	Fuser motor (M1)
2	Main fan (FM1)

Rollers and pads (printer base)

Figure 2-9 Rollers and pads (printer base)

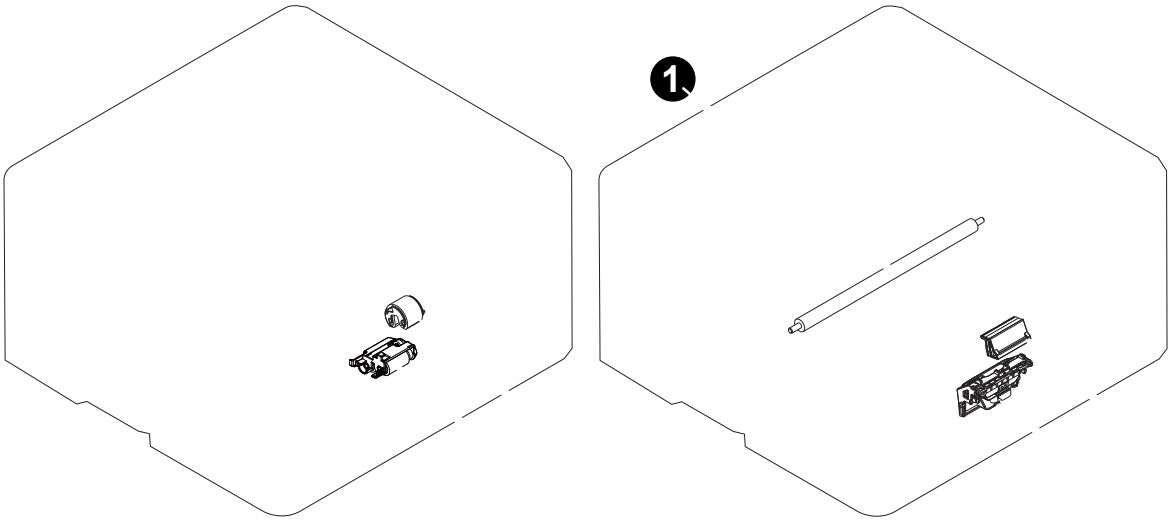


Table 2-7 Rollers and pads (printer base)

Item	Description	Item	Description
1	Transfer roller	4	MP tray pickup roller
2	MP tray separation pad	5	Pickup roller assembly
3	Separation roller assembly		

PCAs (printer base)

Figure 2-10 Main PCAs (printer base)

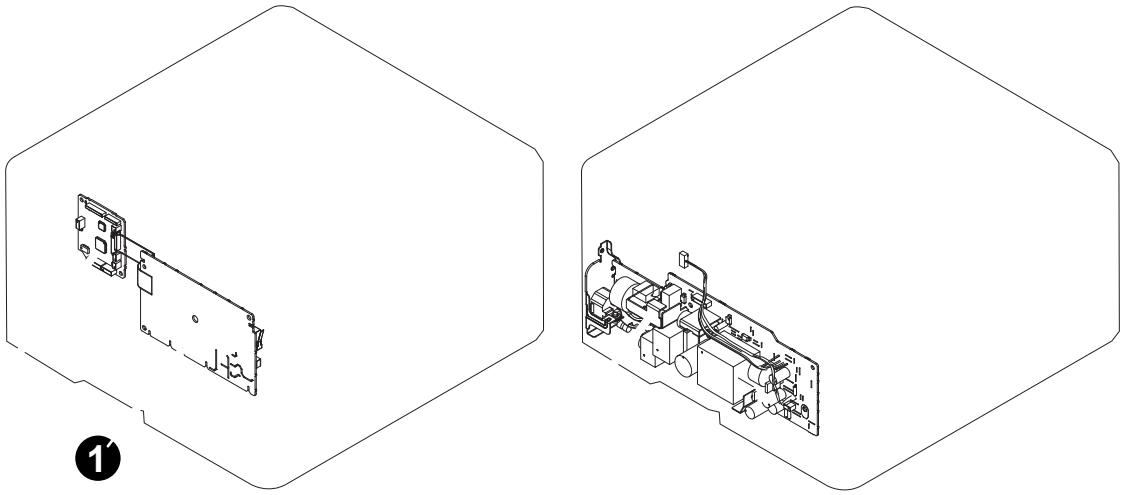
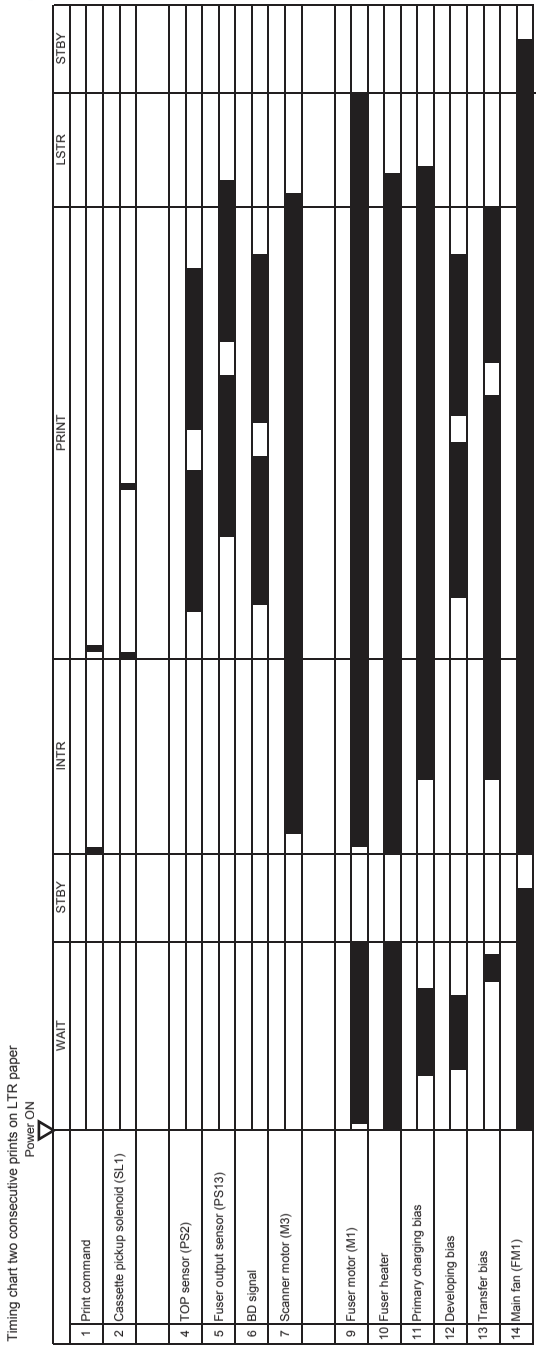


Table 2-8 **Main PCAs (printer base)**

Item	Description	Item	Description
1	High-voltage power supply assembly	Not shown	Formatter PCA
2	DC controller PCA	Not shown	Wireless PCA (wireless models only)
3	Low-voltage power supply assembly	Not shown	Fax PCA (fax models only)

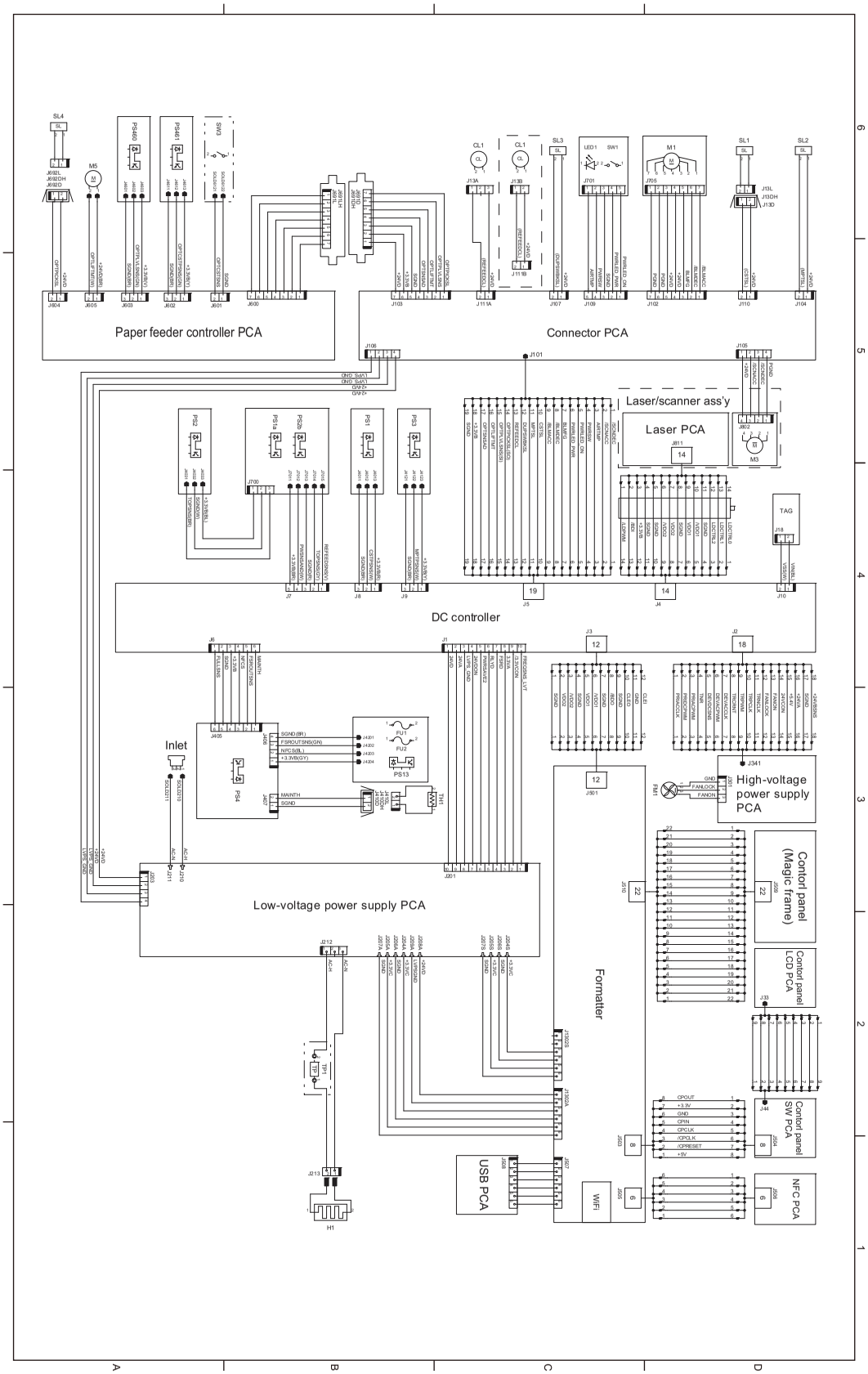
Diagrams: Timing chart

Figure 2-11 General timing chart



Diagrams: Circuit diagrams

Figure 2-12 General circuit diagram (printer base)



Advanced configuration with HP Embedded Web Server (EWS) and HP Device Toolbox (Windows 7)

Use the HP Embedded Web Server to manage printing functions from a computer instead of the printer control panel.

- View printer status information
- Determine the remaining life for all supplies and order new ones
- View and change tray configurations
- View and change the printer control-panel menu configuration
- View and print internal pages
- Receive notification of printer and supplies events
- View and change network configuration

The HP Embedded Web Server works when the printer is connected to an IP-based network. The HP Embedded Web Server does not support IPX-based printer connections. Internet access is not needed to open and use the HP Embedded Web Server.

When the printer is connected to the network, the HP Embedded Web Server is automatically available.

NOTE: HP Device Toolbox is software used to connect to the HP Embedded Web Server when the printer is connected to a computer via USB. It is available only if a full installation was performed when the printer was installed on a computer. Depending on how the printer is connected, some features might not be available.

NOTE: The HP Embedded Web Server is not accessible beyond the network firewall.

Method one: Open the HP Embedded Web Server (EWS) from the Start menu

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

Method two: Open the HP Embedded Web Server (EWS) from a Web browser

1. Use one of the following methods to obtain the IP address based on your printer model:

M402, M403

- On the printer control panel, press the OK button. Open the **Network Setup** menu, and then select **Show IP Address** to display the IP address or host name.

M426, M427

- From the Home screen on the printer control panel, touch the Connection Information button, and then touch the Network Connected button or the Network Wi-Fi ON button to display the IP address or host name.

2. Open a Web browser, and in the address line, type the IP address or host name exactly as it displays on the printer control panel. Press the Enter key on the computer keyboard. The EWS opens.

NOTE: If the Web browser displays a **There is a problem with this website's security certificate** message when attempting to open the EWS, click **Continue to this website (not recommended)**.

Choosing **Continue to this website (not recommended)** will not harm the computer while navigating within the EWS for the HP printer.

Tab or section	Description
Home tab Provides printer, status, and configuration information.	• **Device Status**: Shows the printer 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 printer configuration page. • **Network Summary**: Shows the information found on the printer network configuration page. • **Reports**: Print the configuration and supplies status pages that the printer generates. • **Job Storage Log**: Shows a summary of all jobs stored in the printer memory. • **Event Log**: Shows a list of all printer events and errors.
System tab Provides the ability to configure the printer from your computer.	• **Device Information**: Provides basic printer and company information. • **Paper Setup**: Change the default paper-handling settings for the printer. • **Print Quality**: Change the default print-quality settings for the printer. • **Energy Settings**: Change the default times for entering Sleep/Auto Off mode or automatic shut down. • **Job Storage Setup**: Configure the job storage settings for the printer. • **Print Density**: Change the print density of contrasts, highlights, midtones, and shadows • **Paper Types**: Configure print modes that correspond to the paper types that the printer accepts. • **System Setup**: Change the system defaults for the printer. • **Supply Settings**: Change the settings for **Cartridge is low** alerts and other supplies information. • **Service**: Perform the cleaning procedure on the printer. • **Save and Restore**: Save the current settings for the printer to a file on the computer. Use this file to load the same settings onto another printer or to restore these settings to this printer at a later time. • **Administration**: Set or change the printer password. Enable or disable printer features. **NOTE:** The **System** tab can be password-protected. If this printer 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 printer 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.
Fax tab (M426, M427 models only)	• **Receive Options**: Configure how the printer handles incoming faxes. • **Phone Book**: Add or delete entries in the fax phone book. • **Junk Fax List**: Set fax numbers to block from sending faxes to the printer. • **Fax Activity Log**: Review recent fax activity for the printer.
Scan tab (M426, M427 models only)	Configure the Scan to Network Folder and Scan to E-mail features. • **Network Folder Setup**: Configure folders on the network to which the printer can save a scanned file. • **Scan to E-mail Setup**: Begin the process to set up the Scan to E-mail feature. • **Outgoing E-mail Profiles**: Set an email address that will appear as the “from” address for all emails sent from the printer. • **Default SMTP Configuration**: Configure the SMTP Server information. • **E-mail Address Book**: Add or delete entries in the email address book. • **Network Contacts Setup**: Configure the printer to connect to a network address book. • **E-mail Options**: Configure a default subject line and body text. Configure default scan settings for emails.
Networking tab (Network-connected printers only) Provides the ability to change network settings from your computer.	Network administrators can use this tab to control network-related settings for the printer when it is connected to an IP-based network. It also allows the network administrator to set up Wi-Fi Direct functionality. This tab does not appear if the printer is directly connected to a computer.
HP Web Services tab	Use this tab to set up and use various Web tools with the printer.

Internal print-quality test pages

Clean the paper path

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

Clean the paper path (LCD control panel)

1. On the printer control panel, press the OK button to open the menus.
2. Open the following menus:

- Service
- Cleaning Page

3. Load plain paper in Tray 1, and then press the OK button to start the cleaning process.

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

Clean the paper path (touchscreen control panel)

1. From the Home screen on the printer 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

The configuration page lists current printer settings and properties. This page also contains a status log report. To print a configuration page, complete one of the following procedures.

Print the configuration page from an LCD control panel

1. On the printer control panel, press the OK button to open the menus.
2. Use the arrow buttons to select the Reports menu, and then press the OK button.
3. Use the arrow buttons to select the Configuration Report item, and then press the OK button to print the report.

Print the configuration page from a touchscreen control panel

1. From the Home screen on the printer 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 printer 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 (See Use a ruler to measure between repetitive defects on page 66). 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 the following table.

! **CAUTION:** Do not use solvents or oils to clean rollers. Instead, rub the roller with a lint-free cloth. If dirt is difficult to remove, rub the roller with a lint-free cloth 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 2-9 Repetitive defects

Component	Distance between defects
Primary charging roller[1]	28 mm (1.10 in)
Developer roller[1]	31 mm (1.22 in)
Transfer roller	39 mm (1.54 in)
Registration roller	43 mm (1.69 in)
Cassette separation roller	44 mm (1.73 in)
Cassette pickup roller Cassette feed roller	50 mm (1.97 in)
Fuser film	57 mm (2.24 in)
Pressure roller[2]	63 mm (2.48 in)
Photosensitive drum[1]	75 mm (2.95 in)

1 The primary charging roller, photosensitive drum and developer roller cannot be cleaned as these rollers are located inside the toner cartridge. If any of these rollers are indicated, replace the toner cartridge.

2 The primary fuser sleeve unit or pressure roller cannot be cleaned because they are internal assemblies in the fuser. If one of these assemblies is causing the defect, replace the fuser.

Use a ruler to measure between repetitive defects

The figures in this section shows color repetitive defect pages. However, the process for measuring repetitive defects is valid for mono pages.

1. Identify a repetitive defect on the page.

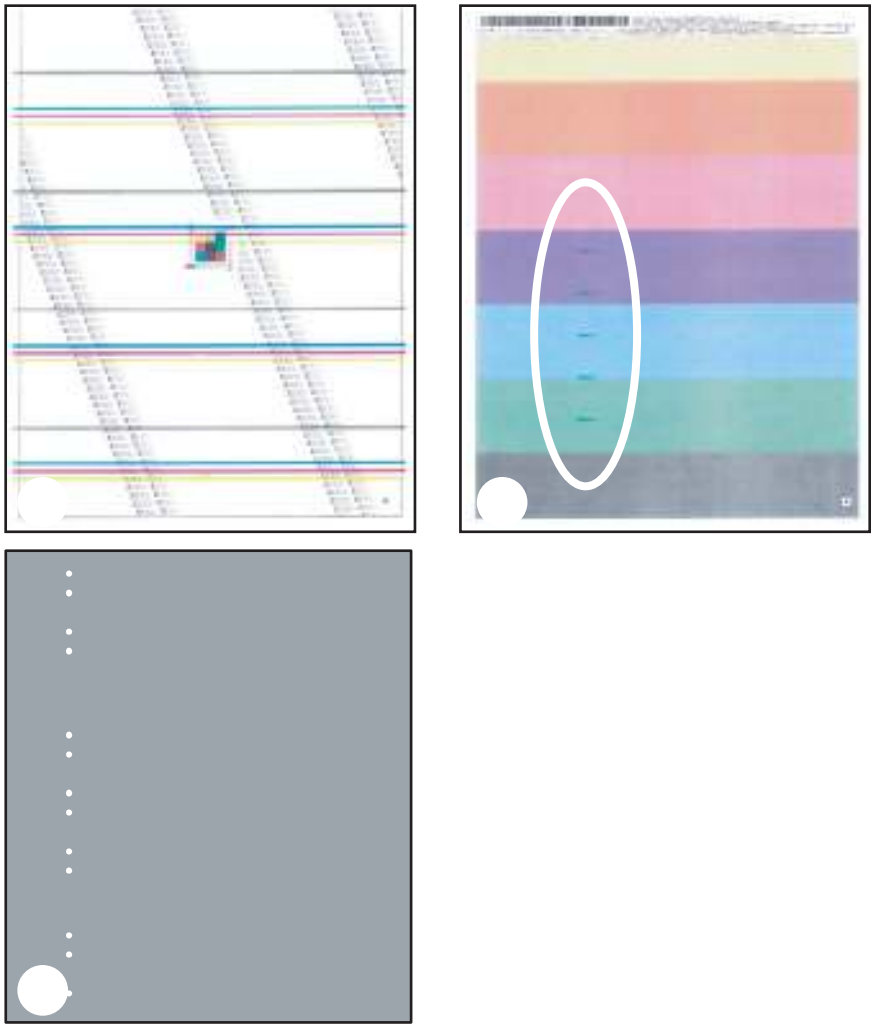
TIP: Print a cleaning page to see if that resolves the defect.

The example pages below show the following types of repetitive defects.

NOTE: These are examples only, other types of repetitive defects might appear on a page.

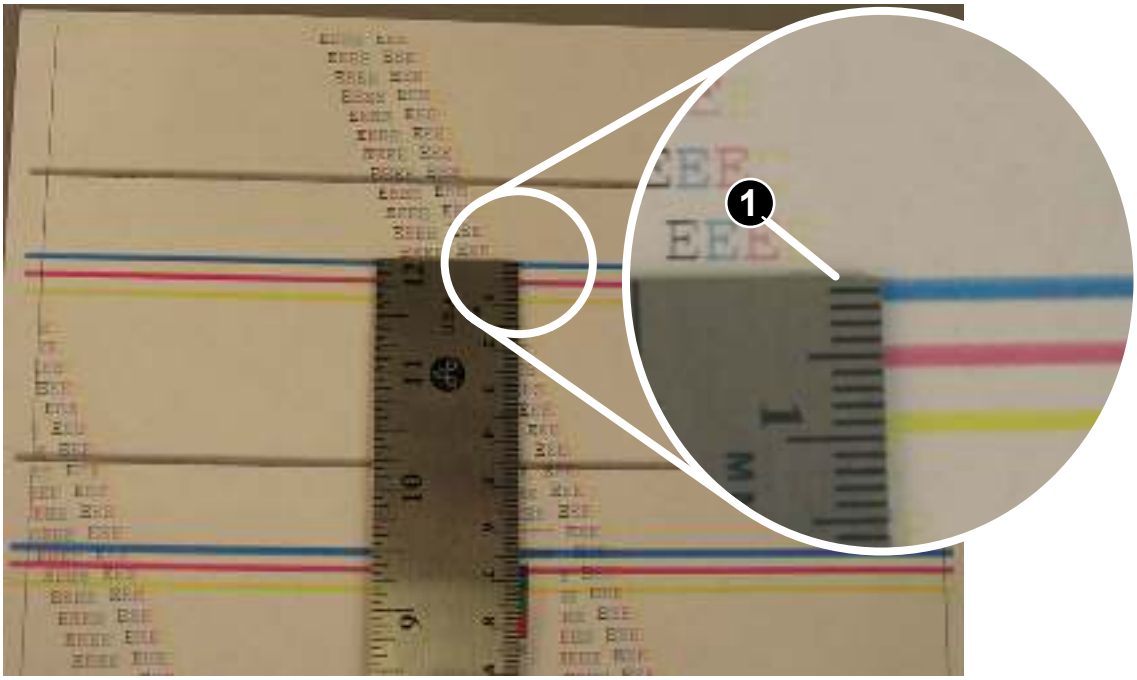
- Lines (callout 1)
- Smudges (callout 2)
- Dots or spots (callout 3)

Figure 2-13 Examples of repetitive defects



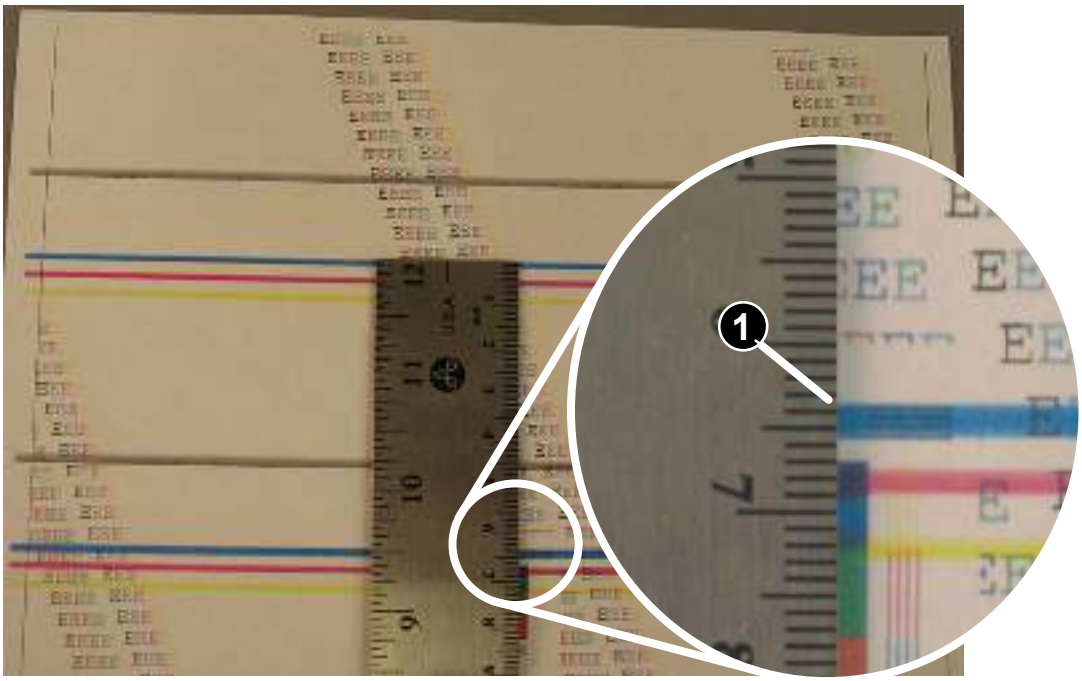
2. Position a metric ruler on the page with the “zero” ruler mark at one occurrence of the defect (callout 1).

Figure 2-14 Place the ruler on the page



3. Locate the next occurrence of the defect (callout 1).

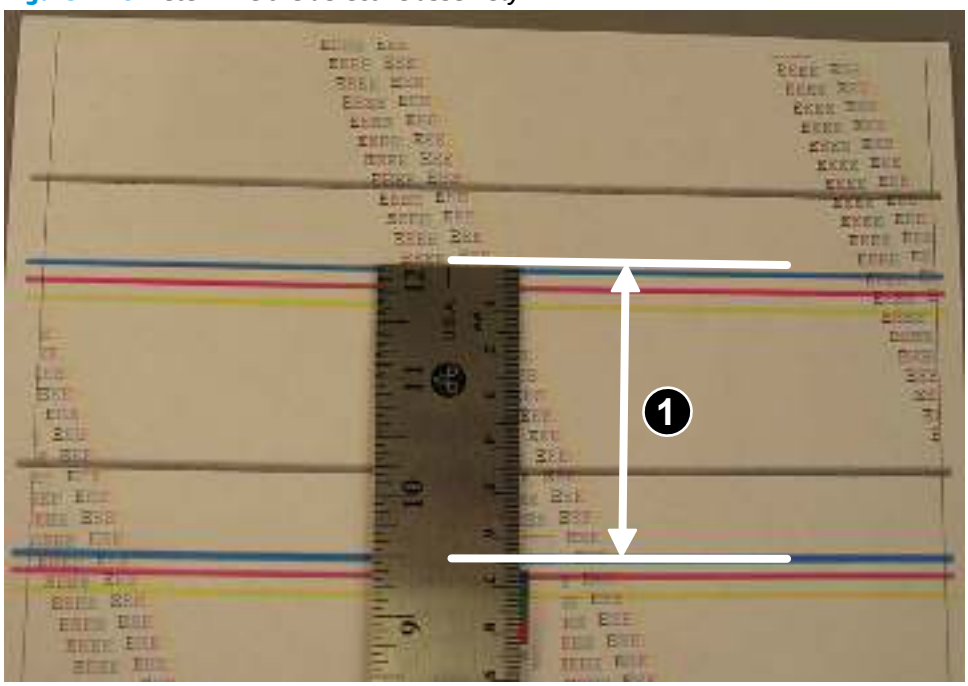
Figure 2-15 Locate the next repetitive defect



4. Measure the distance (in millimeters) between the two occurrences (callout 1), and then use Table 2-9 Repetitive defects on page 66 to determine the defective assembly.

TIP: Always measure from and to the same point on the defects. For example, if the ruler is “zeroed” at the top edge of a defect, measure to the top edge of the next occurrence of that defect.

Figure 2-16 Determine the defective assembly



Control panel menus

- HP Web Services menu
- Reports menu
- Quick Forms menu
- USB Flash Drive menu
- System Setup menu
- Service menu
- Network Setup menu

HP Web Services menu

Use the HP Web Services menu to set up the HP Web Services features.

Menu item	Description
Print Information Sheet	Prints a report that instructs the user how to set up the HP Web Services features.
Display Address	Displays the printer email address.
Turn ePrint On/Off	Enables or disables the printer HP ePrint functionality.
Turn Apps On/Off	Enables or disables the printer HP Web Services applications.
Enable Web Services	Enables the HP Web Services features.
Remove Services	Removes the HP Web Services features from the printer.
Clear Apps History	Deletes the stored history of the printer HP Web Services applications.
Proxy Settings	Allows you to enter proxy server information for the printer internet connection.

Reports menu

Use the Reports menu to print reports that provide information about the printer.

Menu item	Description
Demo Page	Prints a sample page that demonstrates print quality.
Menu Structure	Prints a map of the control panel-menu layout. The active settings for each menu are listed.
Configuration Report	Prints a list of all the printer settings. Includes network information when the printer is connected to a network.

Menu item	Description
Supplies Status	Prints the status for each toner cartridge, including the following information: • Estimated percentage of cartridge life remaining • Approximate pages remaining • Part numbers for HP toner cartridge • Number of pages printed • Information about ordering new HP toner cartridges and recycling used HP toner cartridges
Network Summary	Prints a list of all printer network settings
Usage Page	Prints a page that lists PCL pages, PCL 6 pages, PS pages, pages that were jammed or mispicked in the printer, and reports the page count
PCL Font List	Prints a list of all the PCL fonts that are installed
	Prints a list of all the PostScript (PS) fonts that are installed
PCL6 Font List	Prints a list of all the PCL6 fonts that are installed
Service Page	Provides information on supported paper types, copy settings, and other miscellaneous settings that are not on the configuration page

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	

USB Flash Drive menu

Print Documents	Prints documents stored on the USB drive. Use the arrow buttons to scroll through the documents. Touch the names of documents that you want 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 when you are ready to print the documents.

Easy Photo Print	Prints photo files directly from the printer. **NOTE:** This menu item is available for LCD control panel models only.
Thumbnail Sheet(s)	Prints a page or pages of 30 “thumbnail” graphic images. **NOTE:** This menu item is available for LCD control panel models only.
View and Print Photos	Previews photos on the USB drive. Use the arrow buttons to scroll through the photos. Touch the preview image for each photo that you want to print. You can adjust the settings, and you can save the changes as the new default settings. When you are ready to print the photos, touch the Print button.
Scan to USB Drive	Scans a document and stores it as a .PDF document or .JPEG image on the USB flash drive.

System Setup menu

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

Menu item	Sub-menu item	Sub-menu item	Description
Language			Select the language for the control panel display messages and the printer reports.
Paper Setup	Def. Paper Size	Letter A4 Legal	Sets the size for printing internal reports or any print job that does not specify a size. **NOTE:** The default setting is determined by the choice of location during the initial printer setup.
	Def. Paper Type	A list of available paper types appears.	Select the paper type for printing internal reports or any print job that does not specify a type.
	Tray 1	Paper Type Paper Size	Select the default size and type for Tray 1 from the list of available sizes and types.
	Tray 2	Paper Type Paper Size	Select the default size and type for Tray 2 from the list of available sizes and types.

Menu item	Sub-menu item	Sub-menu item		Description
	Paper Out Action	Wait Forever**		Select how the printer should react when a print job requires a size or type that is not available or when a specified tray is empty. Select the Wait Forever option to make the printer wait until you load the correct paper and press the OK button. This is the default setting. Select the Override option to print on a different size or type after a specified delay. Select the Cancel option to automatically cancel the print job after a specified delay. If you select either the Override or Cancel options, the control panel prompts you to specify the number of seconds to delay. Use the arrow buttons to increase (up to 3600 seconds) or decrease the time.
		Cancel		
		Override		
Energy Settings	Sleep Delay	Off		Sets how long the printer remains idle before it enters sleep mode. The printer automatically exits sleep mode when you send a print job or press a control panel button.
		1 Minute		
		15 Minutes*		
		30 Minutes		
		1 Hour		
		2 Hours		
	Auto Power Down	Auto Power Down Delay	Never	Sets the period of time that must elapse before the printer Auto Power Down feature activates.
			30 Minutes	
			1 Hour	
			2 Hours	
			4 Hours	
			8 Hours	
			24 Hours	
		Wake Events	USB Job	Enables or disables certain printer events (like when a control panel button is pressed) that will cause the printer to revert from Auto Power Down mode to Ready status.
			LAN Job	
			Wireless Job (wireless models only)	
			Button Press	
			USB Drive Insert	

Menu item	Sub-menu item	Sub-menu item		Description
Print Density	A range of 1 to 5.			Select the print density level. The default setting is 3
Supply Settings	Black Cartridge	Very Low Setting	Stop Prompt* Continue	Set how the printer behaves when the black toner cartridge reaches the very low threshold. • Stop: The printer stops printing until you replace the toner cartridge. • Prompt: The printer stops printing and prompts you to replace the toner cartridge. You can acknowledge the prompt and continue printing. • Continue: The printer alerts you that the toner cartridge is very low, but it continues printing.
		Low Threshold	A percentage range of 1 to 100.	Set the percentage of estimated life remaining at which the printer alerts you that the toner cartridge is low.
Administration	Product Security (touchscreen control panel models only)			Enable printer security. If turned on, the printer prompts you to set a password. After it is set, the password will be needed to change printer settings.
	USB Flash Drive	On* Off		Enable or disable the walkup USB port.
Display Contrast	Medium* Darker Darkest Lightest Lighter			Select the level of contrast for the display.
Courier Font	Regular* Dark			Selects a version of the Courier font..
Quiet Mode				Enable or Disable the printer Quiet Mode.

Service menu

Use this menu to restore default settings, clean the printer, and activate special modes that affect print output. Items that have asterisks (*) indicate the factory default setting.

Menu item	Sub-menu item	Sub-menu item	Description
Cleaning Page			Use this option to clean the printer if you see toner specks or other marks on the printed output. The cleaning process removes dust and excess toner from the paper path. When you select this item, the printer prompts you to load plain paper in Tray 1 and then press the OK button to start the cleaning process. Wait until the process is complete. Discard the page that prints.
USB Speed	High* Full		Sets the USB speed to High or Full. For the printer 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 also does not reflect the current operating speed of the printer.
Less Paper Curl	On Off*		If printed pages are consistently curled, use this option to set the printer to a mode that reduces curl.
Archive Print	On Off*		If you are printing pages that will be stored for a long time, use this option to set the printer to a mode that reduces toner smearing and dusting.
Firmware Date			Displays the current firmware datecode.
Restore Defaults			Sets all customized copy settings to the factory default values.
Signature Check	Cancel if Invalid* Prompt if Invalid		Configures how the printer proceeds when a firmware upgrade file does not have a valid signature.
HP Smart Install	On* Off		Enables or disables the HP Smart Install functionality.
LaserJet Update	Check For Updates Now		Prompts the printer to search for a newer firmware upgrade file and then upload it.
	Manage Updates	Allow Downgrade	Yes*: Allows the firmware upgrade functionality to upload an older firmware version. No: Prevents the printer from loading older firmware files.
		Check Automatically	On*: Allows the printer to automatically search for new firmware updates. Off: Prevents the printer from loading new firmware update files.

Menu item	Sub-menu item	Sub-menu item	Description
		Prompt Before Install	Install Automatically: Allows the printer to automatically load a firmware update file. Always Prompt*: Causes the printer to display a prompt at the control panel before the printer can load a firmware update file.
		Allow Updates	Yes*: Allows the printer to load firmware update files. No: Prevents the printer from loading firmware update files.

Network Setup menu

Use this menu to establish network configuration settings.

Menu item	Sub-menu item	Description
Wireless Menu (wireless printers only)	Wireless Direct Settings	
	Wireless Setup Wizard	
	Wi-Fi Protected Setup	If your wireless router supports this feature, use this method to set up the printer on a wireless network. This is the simplest method.
	Run Wireless Test	Tests the wireless network and prints a report with the results.
	Turn Wireless On/Off	Enable or disable the wireless network feature.
TCP/IP Config	Automatic* Manual	Select Automatic to automatically configure all the TCP/IP settings. Select Manual manually configure the IP address, subnet mask, and default gateway.
IPv4 Config Method	DHCP BOOTP Auto IP Manual	Set the IPv4 configuration method.
Card Sharing	On* Off	Enable or disable file sharing of a memory card that has been inserted into the printer walkup USB port.
Auto Crossover	On* Off	This item is used when you are connecting the printer directly to a personal computer using an Ethernet cable (you might have to set this to On or Off depending on the computer being used).
Network Services	IPv4 IPv6	This item is used by the network administrator to limit the network services available on this printer. On Off The default setting is On.
Show IP Address	No* Yes	No: The printer IP address will not appear on the control panel display. Yes: The printer IP address will appear on the control panel display.
Link Speed	Automatic (Default) 10T Full 10T Half 100TX Full 100TX Half	Sets the link speed manually if needed. After setting the link speed, the printer automatically restarts.

Menu item	Sub-menu item	Description
Security	Product Security (touchscreen control panel models only)	Enable printer security. If turned on, the printer prompts you to set a password. After it is set, the password will be needed to change printer settings.
	HTTPS Enforcement	Enable or disable the HTTPS Enforcement setting. The default setting is On.
	Firewall	Enable, disable, or reset the printer firewall.
	Access Control List	Enable, disable, or reset the network access control list.
	802.1x (wireless models only)	Enable or disable the 802.1x wireless authentication protocol.
	Reset All Security	Reset the security settings to the factory-set default values.
Restore Defaults		Press the OK button to restore the network configuration settings to the default values.
USB Flash Drive	On Off	Enable or disable the walkup USB port.

Control panel message document (CPMD)

Control-panel message types

The control-panel messages and event code entries indicate the current printer status or situations that might require action.

NOTE: Event log errors do not appear on the control-panel display. Open the event log to view or print the event log errors.

A control-panel message displays temporarily and might require the user to acknowledge the message by touching the OK button to resume printing or by touching the Cancel button to cancel the job. With certain messages, the job might not finish printing or the print quality might be affected. If the message is related to printing and the auto-continue feature is on, the printer will attempt to resume printing after the message has appeared for 10 seconds without acknowledgement.

For some messages, restarting the printer might fix the problem. If a critical error persists, the printer might require service.

Control-panel messages and event log entries

NOTE: Some of the messages in the following sections only appear in the event log.

TIP: Some control-panel messages and event log entries refer to a specific printer sensor or switch in the recommended action to solve the problem. See the diagrams in the clear jams section of this manual for sensor and switch locations.

30.XX Error Messages

30.XXXX Scanner Error

Description

The flatbed or ADF scanner is failing to initialize for the following reasons:

- **30.0013** = Scanner failed to find home
- **30.0016** = Scan sensor communication error
- **30.0017** = Scan motor exceeded max position error
- **30.0023** = ADF scanner calibration error

Recommended action

1. Verify that the product has the most recent firmware from hp.com.
2. Verify that the (flat flexible cables (FFC's) are seated correctly on the formatter board.
3. If the error persists, replace the Scanner/ADF Assembly:

Scanner/ADF Ass'y, Duplex ADF	C5F98-60110
Scanner/ADF Ass'y, Simplex ADF	C5F98-60109

4. If the error persists, escalate to Level 3 so that Technical Marketing has visibility to the problem.

49.XX.YY Error Messages

49 Error, Turn off then on

Description

The product has experienced an internal embedded software error. Under most conditions, the product automatically restarts.

Recommended action

1. Reset the printer:
   a. Turn off the power by using the power switch, and then wait at least 30 seconds.
   b. Turn on the power and wait for the product to initialize.
2. If you are using a surge protector:
   a. Power off the printer.
   b. Remove the surge protector.
   c. Plug the product directly into the wall socket and turn the product power on.
3. If the error persists, disconnect any network or USB cables and power cycle. If the product returns to Ready, check the FW version and update if a newer version is available.
4. If the error persists, print a Service Page from the Reports menu. Also, print an Error Report from the 2ndary Service Menu. On the Service Page, look at the xxxx portion of the 49.xxxx errors listed:
   - If the numbers are all or mostly different, then power quality is a possible problem; try a different wall socket.
   - If the xxxx portion of 49.xxxx contain repeats of the same numbers or groups of numbers, then check the 2ndary Service Error Report printed earlier for indications of a failure in a particular area. The report may indicate whether the error is caused by a network problem or a problem with the job.
5. If the error persists, replace the product.

> **NOTE:** If the 49 Error is caused by the network or a specific file, do not replace the product; it will not resolve the issue. Instead, attempt to isolate the issue in a way that demonstrates the error is caused by something in the environment.

6. If the error persists after product replacement, escalate to Level 3 so that Technical Marketing has visibility to the problem.

50.XX fuser errors

50.XX Fuser Error, Turn off then on

Description

The product has experienced an internal fuser hardware error:

- **50.00** = Generic Fuser error
- **50.10** = Low Fuser temperature error

- **50.11** = High sub thermistor area 3 fuser error
- **50.12** = Low sub thermistor area 3 fuser error
- **50.20** = Slow fuser error
- **50.30** = High fuser temperature error
- **50.40** = Fuser drive circuit error
- **50.70** = Fuser open error
- **50.80** = Low sub thermistor fuser error
- **50.90** = High sub thermistor fuser error

Recommended action

1. Reset the product:
   a. Turn off the power by using the power switch, and then wait at least 30 seconds.
   b. Turn on the power and wait for the product to initialize.
2. If you are using a surge protector:
   a. Power off the product.
   b. Remove the surge protector.
   c. Plug the product directly into the wall socket and turn the product power on.
3. If the error persists, replace the Fusing Assembly:

FUSER ASS'Y (110v)	RM2-5399-000CN
FUSER ASS'Y (220v)	RM2-5425-000CN

4. If the error persists, replace the product.

51.XX and 52 Laser/Scanner Errors

52 Scanner Error, Turn off then on

Description

An error with the laser/scanner assembly has occurred in the product.

Recommended action

1. Reset the printer:
   a. Turn off the power by using the power switch, and then wait at least 30 seconds.
   b. Turn on the power and wait for the product to initialize.
2. If you are using a surge protector:

a. Power off the printer.

b. Remove the surge protector.

c. Plug the product directly into the wall socket and turn the product power on.

3. If the error persists, replace the product.

51.XX Laser Error, Turn off then on

Description

An error with the laser/scanner assembly has occurred in the product.

- **51.00** = Laser error
- **51.20** = Black laser scanner error
- **51.30** = Laser error

Recommended action

1. Reset the printer:

   a. Turn off the power by using the power switch, and then wait at least 30 seconds.

   b. Turn on the power and wait for the product to initialize.

2. If you are using a surge protector:

   a. Power off the printer.

   b. Remove the surge protector.

   c. Plug the product directly into the wall socket and turn the product power on.

3. If the error persists, replace the product.

55.XXXX Error Messages

55.XXXX Error, Turn off then on

Description

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

- **55.0** = DC controller communication error
- **55.0601** = DC controller NVRAM data error
- **55.0602** = DC controller NVRAM access error
- **55.1** = DC controller memory error
- **55.3** = Engine communication error

Recommended action

1. Reset the printer:

a. Turn off the power by using the power switch, and then wait at least 30 seconds.

b. Turn on the power and wait for the product to initialize.

2. If you are using a surge protector:

a. Power off the printer.

b. Remove the surge protector.

c. Plug the product directly into the wall socket and turn the product power on.

3. If the error persists, replace the DC Controller PCB Assembly (HP Part #: RM2-8680-000CN).

4. If the error persists, replace the product.

57.XX Error Messages

57 Fan Error, Turn off then on

Description

The product has experienced an error with its internal fan.

- **57.01** = Fan 1 error

Recommended action

1. Reset the printer:

a. Turn off the power by using the power switch, and then wait at least 30 seconds.

b. Turn on the power and wait for the product to initialize.

2. If you are using a surge protector:

a. Power off the printer.

b. Remove the surge protector.

c. Plug the product directly into the wall socket and turn the product power on.

3. If the error persists, replace the internal cooling fan (HP Part #: RK2-8068-000CN).

4. If the error persists, replace the product.

58.XX Error Messages

58.XX Error, Turn off then on

Description

The product has experienced an error with the low voltage power supply.

- **58.04** = Low voltage power supply malfunction

Recommended action

1. Reset the printer:

a. Turn off the power by using the power switch, and then wait at least 30 seconds.

b. Turn on the power and wait for the product to initialize.

2. If you are using a surge protector:

a. Power off the printer.

b. Remove the surge protector.

c. Plug the product directly into the wall socket and turn the product power on.

3. Check the voltage label on the back of the product. If the product is rated 220V and is plugged into a 110V outlet, this error might occur. In most cases, no damage is caused to the product. If a power transformer is used to convert 220V power to 110V, verify that the transformer power rating is sufficient to operate the product.

4. If the error persists, replace the Low Voltage Power Supply PCB Assembly:

M402, M403	L.V.POWER SUPPLY PCB ASS'Y (110v)	RM2-8516-000CN
M402, M403	L.V.POWER SUPPLY PCB ASS'Y (220v)	RM2-8517-000CN
M426, M427	L.V.POWER SUPPLY PCB ASS'Y (110v)	RM2-8518-000CN
M426, M427	L.V.POWER SUPPLY PCB ASS'Y (220v)	RM2-8519-000CN

5. If the error persists, replace the product.

59.XX Error Messages

59.XX Error, Turn off then on

Description

The product has experienced an error with the internal motor.

Recommended action

1. Reset the printer:

a. Turn off the power by using the power switch, and then wait at least 30 seconds.

b. Turn on the power and wait for the product to initialize.

2. If you are using a surge protector:

a. Power off the printer.

b. Remove the surge protector.

c. Plug the product directly into the wall socket and turn the product power on.

3. If the error persists, replace the Main Motor Assembly (HP Part #: RM2-8684-000CN).

79 Errors

79 Error, Turn off then on

Description

The product has experienced an internal firmware error. Under most conditions, the product automatically restarts.

Recommended action

1. Reset the printer:
   a. Turn off the power by using the power switch, and then wait at least 30 seconds.
   b. Turn on the power and wait for the product to initialize.
2. If you are using a surge protector:
   a. Power off the printer.
   b. Remove the surge protector.
   c. Plug the product directly into the wall socket and turn the product power on.
3. If the error is intermittent, attempt to isolate the issue to something specific in the customers environment.

NOTE: If the 79 Error is caused by the network or a specific file, do not replace the product; it will not resolve the issue. Instead, attempt to isolate the issue in a way that demonstrates the error is caused by something in the environment.

4. If the error is persistent, replace the Formatter PCA:

M402/M403 D	Formatter PCB Assembly	C5F92-60001
M402/M403 N/DN	Formatter PCB Assembly	C5F93-60001
M402/M403 DW	Formatter PCB Assembly	C5F94-60001
M426/M427 4in1	Formatter PCB Assembly	C5F98-60001
M426/ M426 3in1	Formatter PCB Assembly	C5F99-60001

5. If the error persists, replace the product.
6. If the error persists after product replacement, escalate to Level 3 so that Technical Marketing has visibility to the problem.

Alpha Error Messages

<COLOR> cartridge is low.

Description

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

Recommended action

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

<COLOR> cartridge is very low.

Description

The indicated 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 might vary. Once an HP supply has reached Very Low, HP's Premium Protection Warranty on that supply has ended. All print defects or cartridge failures incurred when an HP supply is used in Continue at very low mode will not be considered to be defects in materials or workmanship in the supply 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.

Device error. Press [OK] to continue.

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. Ensure 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.

Device is busy. Try again later.

Description

The product is currently in use.

Recommended action

1. Wait for the product to finish the current job, or to finish initializing.
2. Turn the product off, then on, to see whether it comes to a **Ready** state.
3. Restore the device to the factory default settings. (Setup Menu -> Service Menu -> Restore Defaults)
4. If the issue persists, upgrade to the latest firmware version.

Document feeder jam. Clear and reload.

Description

Paper is jammed in the document feeder tray or a sensor has incorrectly detected media in the document feeder paper path.

Recommended action

1. Remove the paper from the document feeder. If the paper rips, use a thick piece of paper (such as a business card) to clean the paper path.
2. Reset the printer:
   a. Turn off the power by using the power switch, and then wait at least 30 seconds.
   b. Turn on the power and wait for the product to initialize.
3. If the error persists, replace the Scanner/ADF Assembly:

Scanner/ADF Ass'y, Duplex ADF	C5F98-60110
Scanner/ADF Ass'y, Simplex ADF	C5F98-60109

Document feeder mispick. Reload.

Description

The product did not pick up the paper in the document feeder.

Recommended action

1. Remove the paper from the document feeder tray, and then reload it.
2. Verify there are no staples or paper clips on the stack of originals. Verify the originals are straightened out from previous folds or curl.
3. If the control panel displays **Document Feeder Loaded** when the originals are not in the input tray of the document feeder, the sensor on the document feeder might be malfunctioning. Replace the Scanner/ADF Assembly:

Scanner/ADF Ass'y, Duplex ADF	C5F98-60110
Scanner/ADF Ass'y, Simplex ADF	C5F98-60109

Door is open.

Description

The products front door is open.

Recommended action

Close the door.

Engine cable connection issue. Contact HP service. Press [OK] to continue.

Description

The print engine cable diagnostics did not pass due to a cable issue.

Recommended action

Press OK to continue to use the device for scanning and faxing, but printing will not be functional.

Either replace the product or send to HP service.

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

1. Call the recipient to ensure that the fax machine is on and ready.
2. Verify that the fax number is correct.
3. Verify that the Redial if Busy option is enabled.
4. Open the Service menu, and then 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.
5. Additional fax sending/receiving troubleshooting can be found in this document: HP LaserJet Pro MFP - Solve problems sending or receiving faxes (includes fax error messages)(c03491494) (in English) available in Service Access Workbench (SAW) or Channel Service Network (CSN).

Fax receive error.

Description

An error occurred while trying to receive a fax.

Recommended action

1. Ask the sender to resend the fax.
2. To verify that the telephone cord is securely connected, disconnect and reconnect the telephone cord.
3. Verify that you are using the telephone cord that came with the product.
4. 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.
5. Decrease the fax speed. Ask the sender to resend the fax.
6. Turn off error-correction mode. Ask the sender to resend the fax.

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

7. Connect the product to a different phone line.

8. Additional fax sending/receiving troubleshooting can be found in this document: HP LaserJet Pro MFP - Solve problems sending or receiving faxes (includes fax error messages)(c03491494) (in English) available in Service Access Workbench (SAW) or Channel Service Network (CSN).

Fax Send error.

Description

An error occurred while trying to send a fax.

Recommended action

1. Resend the fax.
2. Try faxing to another fax number.
3. To verify that the telephone cord is securely connected, disconnect and reconnect the telephone cord. Check that the telephone cord is securely connected by unplugging and replugging the cord.
4. Verify that you are using the telephone cord that came with the product.
5. 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.
6. Connect the product to a different phone line.
7. Set the fax resolution to Standard instead of the default of Fine .
8. Additional fax sending/receiving troubleshooting can be found in this document: HP LaserJet Pro MFP - Solve problems sending or receiving faxes (includes fax error messages)(c03491494) (in English) available in Service Access Workbench (SAW) or Channel Service Network (CSN).

Fax storage is full. Canceling the fax send/receive.

Description

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

Recommended action

1. If you are using the Private Receive feature, print all received faxes to regain some memory.
2. If the issue persists, clear faxes from memory:
   a. Open the Service menu.
   b. Touch the Fax Service button.
   c. Touch the Clear Saved Faxes menu item.

Genuine HP supply installed.

Description

A genuine HP supply was just installed.

Recommended action

No action necessary.

Install <COLOR> cartridge.

Description

The indicated toner cartridge is missing or not seated correctly.

Recommended action

Remove and reinstall the indicated supply.

Jam in output bin. Open rear door and clear jam.

Description

A paper jam occurred in the output bin area of the printer.

Recommended action

1. Follow the instructions on the control panel to clear the jammed media.
2. If the issue persists:
   a. Use paper that meets HP specifications. Store paper unopened in its original packaging.
   b. Use the product in an area that meets the environmental specifications for this product.

Jam in Tray 1. Clear jam and then press [OK].

Description

A paper jam occurred while printing from the Tray 1 slot.

Recommended action

1. Follow the instructions on the control panel to clear the jammed media.
2. If the issue persists:
   a. Adjust the side paper guides in the tray 1 slot. Allow the printer to pull the media in when inserted in the Tray 1 slot.
   b. Use paper that meets HP specifications. Store paper unopened in its original packaging.
   c. Use the product in an area that meets the environmental specifications for this product.
3. If the issue persists, check the pick-up rollers for wear or damage and replace if necessary.

Jam in Tray 2. Clear jam and then press [OK].

Description

A paper jam occurred while printing from Tray 2.

Recommended action

1. Follow the instructions on the control panel to clear the jammed media.
2. If the issue persists:
   a. Adjust the paper guides in the tray. Ensure the front paper guide is pushing the paper against the back edge of the tray.
   b. Use paper that meets HP specifications. Store paper unopened in its original packaging.
   c. Use the product in an area that meets the environmental specifications for this product.
3. If the issue persists, check the pick-up rollers for wear or damage and replace if necessary.

Jam in Tray 3, Clear jam and then press OK

Description

The product has detected a jam in Tray 3.

Recommended action

1. Clear the jam from the area indicated on the product control panel, and then follow the control panel instructions.
2. Make sure the paper guides in the tray are adjusted correctly for the size of paper.
3. If the issue persists, replace the Optional Tray 3 Paper Pick-up Roller (HP Part #: RM2-5741-000CN).

Load paper

Description

The tray is empty.

Recommended action

Load paper in the tray.

Load tray <X> 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. Press [OK] to continue.

Description

The tray is empty.

Recommended action

Load paper into the tray and press OK to continue printing.

Load tray 1 <TYPE>, <SIZE>. Press [OK] to continue.

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 and press OK to continue printing.

Load tray 1. Plain, <SIZE> / Cleaning mode. Press [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.

Manual Duplex. Load Tray <#>. Press [OK] to continue.

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.

Memory is low. Press [OK] to continue.

Description

The product memory is almost full.

Recommended action

Press the OK button to finish the job, or touch the Cancel button to cancel the job. Break the job into smaller jobs that contain fewer pages.

NFC cable connection issue. Contact HP service. Press [OK] to continue.

Description

The Near Field Communication (NFC) cable diagnostics did not pass due to a cable issue.

Recommended action

Press OK to continue to use the device, but NFC will not be functional.

Either replace the product or send to HP service.

No dial tone.

Description

The product could not detect a dial tone.

Recommended action

1. Check for a dial tone on the phone line by touching the Start Fax button.
2. Unplug the telephone cord from both the product and the wall and replug the cord.
3. Verify that you are using the telephone cord that came with the product.
4. 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.
5. Additional fax sending/receiving troubleshooting can be found in this document: HP LaserJet Pro MFP - Solve problems sending or receiving faxes (includes fax error messages)(c03491494) (in English) available in Service Access Workbench (SAW) or Channel Service Network (CSN).

No fax detected.

Description

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

Recommended action

1. 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.
2. Additional fax sending/receiving troubleshooting can be found in this document: HP LaserJet Pro MFP - Solve problems sending or receiving faxes (includes fax error messages)(c03491494) (in English) available in Service Access Workbench (SAW) or Channel Service Network (CSN).

Non-HP supply installed.

Description

A non-HP supply has been installed.

Recommended action

No action necessary.

NOTE: If customer believes they purchased a new genuine HP supply, direct them to www.hp.com/go/anticounterfeit to verify

NOTE: Service or repairs that are required as a result of using unsupported supplies is not covered under HP warranty.

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.

Protected <COLOR> cartridge.

Description

A previously protected cartridge was installed in a printer other than the one that initiated the cartridge protection.

Recommended action

The cartridge can only be used in the product or fleet of products that initially protected it using Cartridge Protection.

Install a new or unprotected supply.

Rear door open.

Description

The products rear door is open.

Recommended action

Close the door.

Replace <COLOR>.

Description

The indicated 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

Replace the indicated cartridge or change the Very Low Setting for the supply to something other than Stop.

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

Supply memory error.

Description

There is an error with one of the installed cartridges. 'X' indicates the color of the cartridge.

(X=0: Black, X=1: Cyan, X=2: Magenta, X=3: Yellow)

- **10.000X** (Event Code) — cartridge memory error
- **10.010X** (Event Code) — cartridge memory error
- **10.020X** (Event Code) — cartridge memory error
- **10.030X** (Event Code) — cartridge memory error
- **10.100X** (Event Code) — cartridge memory chip is missing

Recommended action

1. Reset the product:
   a. Turn off the power by using the power switch, and then wait at least 30 seconds.
   b. Turn on the power and wait for the product to initialize.
2. If the error persists, check the event-log messages to identify the specific cartridge at fault.
3. Verify the indicated cartridge is HP Genuine.
4. If the error persists, replace the cartridge.
5. If the error persists, replace the product.

The product is unable to calibrate. Close the lid and remove paper from the document feeder.

Description

The scanner is unable to calibrate because either the lid is open or there is paper blocking the scan head.

Recommended action

1. Remove any paper from the scanner glass or the ADF and close the lid.
2. If the error persists, replace the scanner/ADF Assembly:

Scanner/ADF Ass'y, Duplex ADF	C5F98-60110
Scanner/ADF Ass'y, Simplex ADF	C5F98-60109

Unauthorized <COLOR> cartridge.

Description

The administrator has configured this product to use only genuine HP supplies. The product has determined there is a supply not meeting this criteria

Recommended action

Change the Cartridge Policy to Off or replace the cartridge to continue printing.

NOTE: If customer believes they purchased a new genuine HP supply, direct them to www.hp.com/go/anticounterfeit to verify

NOTE: Service or repairs that are required as a result of using unsupported supplies is not covered under HP warranty.

Unexpected size in Tray <#>. Load <SIZE>. Press [OK] to continue.

Description

The product has detected paper in the indicated 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 and press OK to continue printing.

Used or counterfeit <COLOR> cartridge in use.

Description

The indicated cartridge is used or counterfeit.

Recommended action

No action necessary.

NOTE: If customer believes they purchased a new genuine HP supply, direct them to www.hp.com/go/anticounterfeit to verify

NOTE: Service or repairs that are required as a result of using unsupported supplies is not covered under HP warranty.

Used or counterfeit <COLOR> cartridge is installed. Press [OK] to continue.

Description

The indicated cartridge is used or counterfeit.

Recommended action

Replace the indicated cartridge with a new genuine HP supply or press OK to continue using the installed cartridge.

Wireless cable connection issue. Contact HP service. Press [OK] to continue.

Description

The wireless cable diagnostics did not pass due to a cable issue.

Recommended action

Press OK to continue to use the device, but wireless printing will not be functional.

Either replace the product or send to HP service.

Event-log messages

Print the event log

Print the event log (LCD control panel)

1. Make sure the printer is in the ready state.
2. At the printer control panel, press the OK button to open the menus.
3. Press the left arrow button, and then quickly press the Cancel ✕ button.
4. The printer returns to the Ready state. Press the OK button to reopen the menus.
5. Select the 2ndary Service menu, and then press the OK button.
6. Select the Service Reports menu, and then press the OK button.
7. Select the Error Report menu, and then press the OK button.

Print the event log (touchscreen control panel)

1. Make sure the printer is in the ready state.
2. From the Home screen on the printer control panel, touch the Setup button.
3. Touch the left arrow button, and then quickly touch the Cancel button.
4. The printer 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 printer.

1. Click the **Start** button, and then click the **Programs** item.
2. Click your HP printer 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 printer events and errors.

Event-log messages

The following product events do not produce a message that appears on the control panel. Instead, they are recorded in the event log. To print the event log, open the secondary service menu, select **Service Reports**, and then select **Error Report**.

Table 2-10 Event-log messages (X=0: black cartridge)

Event code	Description
10.000X	Cartridge memory error
10.010X	Cartridge memory error
10.020X	Cartridge memory error
10.030X	Cartridge memory error
10.100X	Cartridge memory chip is missing
10.300X	Unauthorized cartridge
10.310X	Non-HP supply in use
10.330X	Used or counterfeit cartridge in use
10.350X	Incompatible supply
10.400X	All installed cartridges are genuine HP
10.410X	Unsupported supply
10.700X	Printing past very low

Table 2-10 Event-log messages (X=0: black cartridge) (continued)

Event code	Description
13.0000	Paper jam
19.0000	Fax modem reset and power cycle
20.0000	Memory out in print
20.0001	Memory out in copy
20.0002	Memory out in scan
20.0003	Memory out in photo
20.0004	Memory out in fax
20.0005	Memory out in fax flash
20.0006	Memory out in scan calibration
21.0000	Page punt
25.0000	SMTP error
31.1301	Document Feeder Mispick
31.1302	Document Feeder Jam
41.2000	Beam detect malfunction
41.3000	Unexpected size
49.<line #>	Firmware asserts
50.0000	Fuser error
50.1000	Low fuser temperature error
50.1100	High subthermistor area 3 fuser error
50.1200	Low subthermistor area 3 fuser error
50.2000	Slow fuser error
50.3000	High fuser temperature error
50.4000	Fuser drive circuit error
50.7000	Fuser open error
50.8000	Low subthermistor fuser error
50.9000	High subthermistor fuser error
51.0000	Beam detect or laser error
52.0000	Scanner error
54.0100	Environmental sensor error
54.0600	Density sensor error
54.1000	Black drum phase control sensor error
54.1100	Black density out of range
54.1200	Black density measurement abnormality

Table 2-10 Event-log messages (X=0: black cartridge) (continued)

Event code	Description
54.1599	Black CPR pattern can't be read
54.1800	Black toner level sensor error
54.1900	Bad TOP sensor
54.2000	Carousel rotation error
54.2100	BD error
54.2500	TOP sensor error
54.2800	Density sensor or CPR contamination warning (54.1C)
55.0000	Engine internal communication error
55.0005	Hardware memory error
55.0601	DC controller NVRAM data error
55.0602	DC controller NVRAM access error
55.1000	DC controller memory error
55.3000	Engine/ formatter communication error
55.4000	Engine communication timeout error
55.9028	DC controller NVRAM restore
56.0100	Illegal input
57.0000	Fan motor error
57.0100	Fan motor error
57.0200	Fan error
57.0600	Fan motor error
58.0400	Low voltage power supply error
59.0160	Main motor rotation error (59.A0)
59.0192	Developer motor rotation error (59.C0)
59.0240	Transfer alienation failure (59.F0)
59.3000	Fuser motor startup error
59.4000	Fuser motor error
59.5000	Image drum motor startup error- black
59.6000	Image drum motor rotation error- black
59.7000	Black developer motor startup error
59.8000	Black developer motor rotation error
59.9000	ETB motor start error
59.9900	T2 Clutch error
65.1200	External device operation error (65.12XX)

Table 2-10 Event-log messages (X=0: black cartridge) (continued)

Event code	Description
66.1200	External device critical error (66.12XX)
66.0015	External device communication error
79.0000	79 service, firmware exception
79.0001	79 service, firmware ASIC fault
90.1101	The cable from the print engine to the formatter is not connected
90.1201	The cable from the fax card to the formatter is not connected
90.1301	The cable from the ADF to the formatter is not connected
90.1401	The cable from the NFC card to the formatter is not connected
90.1501	The cable from the Wireless card to the formatter is not connected
90.1601	The cable from the flatbed scanner to the formatter is not connected
95.0001	A thermal event has occurred
99.0028	Download error - bad signature accepted
99.0029	Download error - bad signature canceled

Table 2-11 Fax event log codes

Event code	Description
20.0016	Receive fax directory missing
20.0032	Send fax directory missing
20.0080	Flash log corrupted
20.0096	Flash init due to firmware upgrade
20.3001	Fax Hardware non-functional
20.4001	Fax Line surge #1 event was detected and the call aborted
20.4002	Fax Line surge #2 event was detected and the call aborted
20.5000	Fax Diagnostics Test Pass
20.5001	Fax Diagnostics Test Failed in Active line test
20.5002	Fax Diagnostics test Failed in Port test
20.5003	Fax Diagnostics test Failed in Line Current test
20.5004	Fax Diagnostics test Failed in Dialtone test
20.5005	Fax Diagnostics test Failed in Parallel phone offhook test

Clear paper jams

Clear paper jams (M402, M403)

Introduction

The following information includes instructions for clearing paper jams from the printer.

- Experiencing frequent or recurring paper jams?
- Jam locations
- Clear paper jams in Tray 1
- Clear paper jams in Tray 2
- Clear paper jams in optional Tray 3
- Clear paper jams in the fuser
- Clear paper jams in the output bin
- Clear paper jams in the duplexer

Experiencing frequent or recurring paper jams?

Follow these steps to solve problems with frequent paper jams. If the first step does not resolve the problem continue with the next step until you have resolved the problem.

1. If paper has jammed in the printer, clear the jam and then print a configuration page to test the printer.
2. Check that the tray is configured for the correct paper size and type on the printer control panel. Adjust paper settings if necessary.
   a. On the printer control panel, press the OK button.
   b. Open the following menus:
      - **System Setup**
      - **Paper Setup**
   c. Select the tray from the list.
   d. Select **Paper Type** and then select the type of paper that is in the tray.
   e. Select **Paper Size** and then select the size of paper that is in the tray.
3. Turn the printer off, wait 30 seconds, and then turn it on again.
4. Print a cleaning page to remove excess toner from inside the printer.
   a. On the printer control panel, press the OK button.
   b. Open the following menus:

- **Service**
- **Cleaning Page**

c. Load plain letter or A4 paper when you are prompted, and then press the OK button.

A **Cleaning** message displays on the printer control panel. Wait until the process is complete. Discard the page that prints.

5. Print a configuration page to test the printer.

a. On the printer control panel, press the OK button.

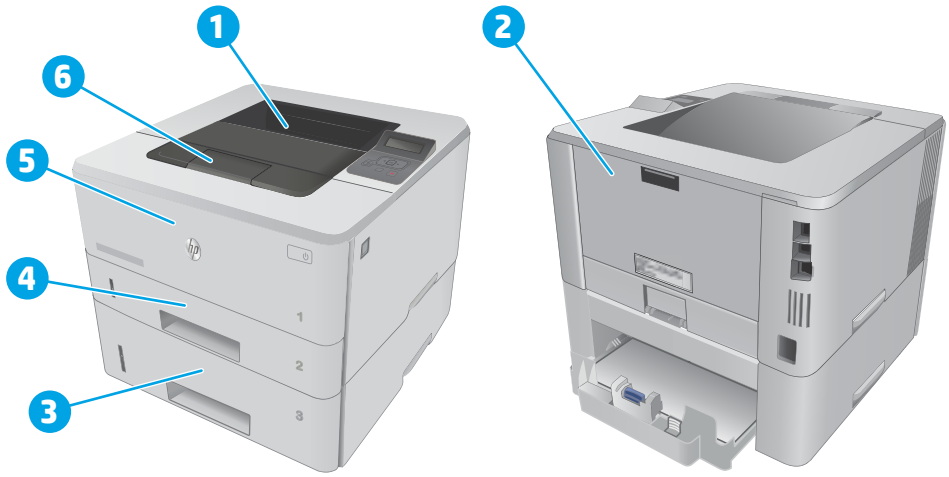
b. Open the **Reports** menu.

c. Select **Configuration Report**.

If none of these steps resolves the problem, the printer might need service. Contact HP customer support.

Jam locations

Jams can occur in these locations:



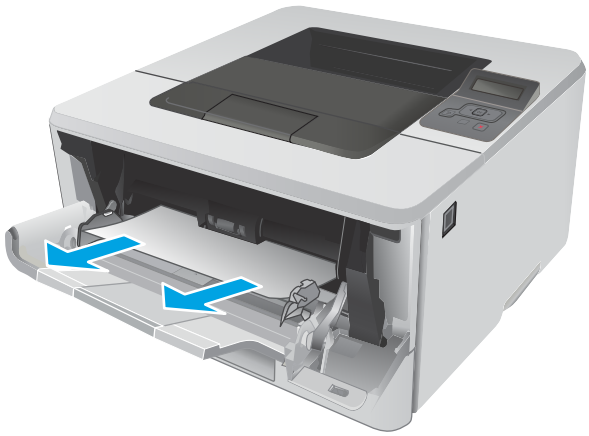
1	Output bin
2	Fuser area
3	Tray 3 (optional)
4	Tray 2 Duplexing area (remove Tray 2 for access)
5	Tray 1
6	Toner cartridge area (open the front door for access)

Loose toner might remain in the printer after a jam. This problem typically resolves itself after a few sheets have been printed.

Clear paper jams in Tray 1

Use the following procedure to clear paper jams in Tray 1.

1. Slowly pull the jammed paper out of the printer.

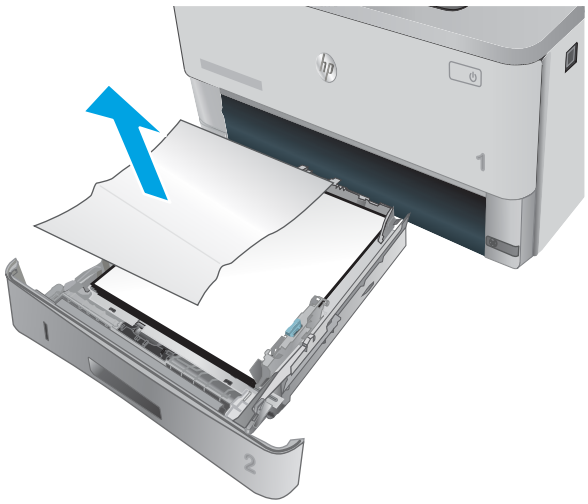


Clear paper jams in Tray 2

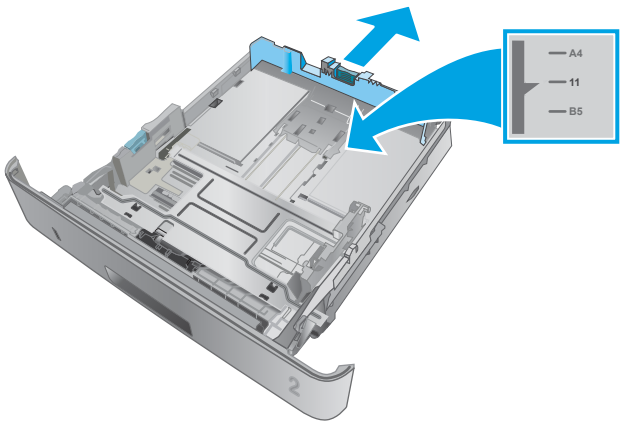
Use the following procedure to check for paper in all possible jam locations related to Tray 2. When a jam occurs, the control panel displays an animation that assists in clearing the jam.

1. Remove the tray from the printer.

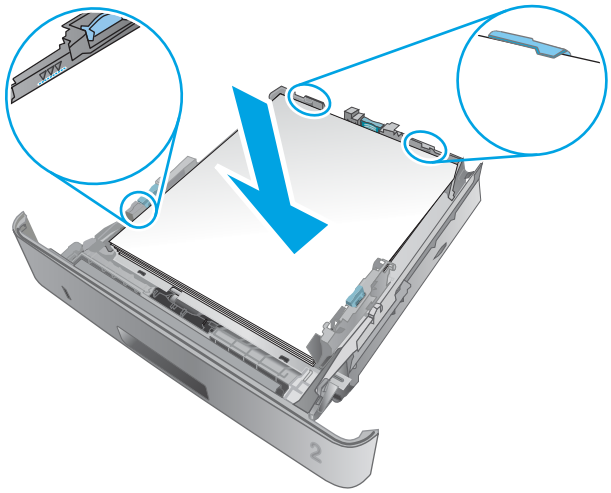
2. Remove the paper from the tray, and discard any damaged paper.



3. Verify that the rear paper guide is adjusted to the indentation for the correct paper size. If necessary, pinch the release and move the rear paper guide to the correct position. It should click into place.



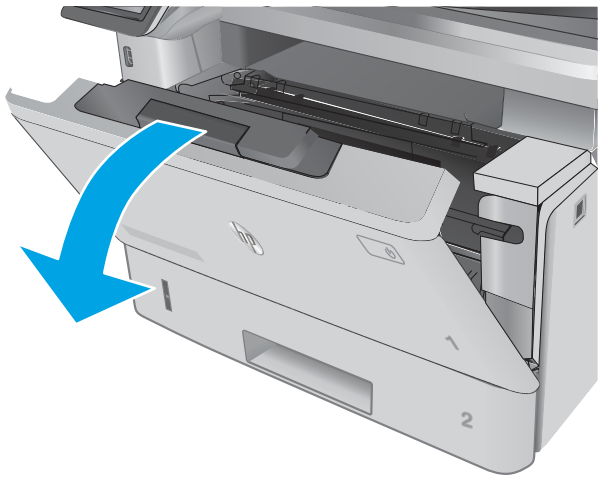
4. Load the paper into the tray. Make sure that the stack is flat at all four corners and that the top of the stack is below the maximum-height indicators.



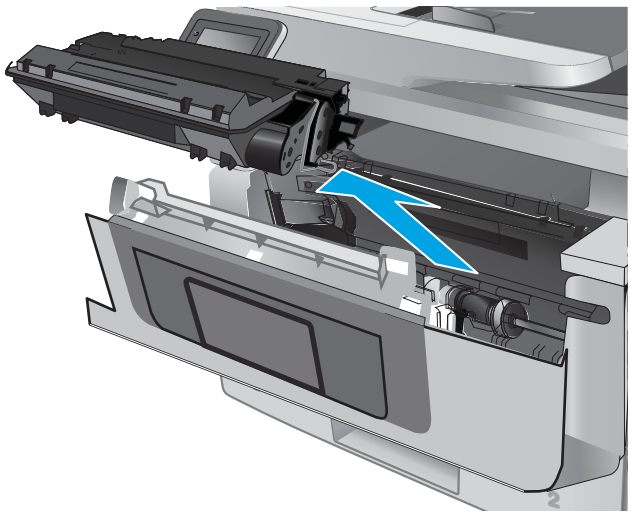
5. Reinsert and close the tray.

6. Press the front-door-release button.

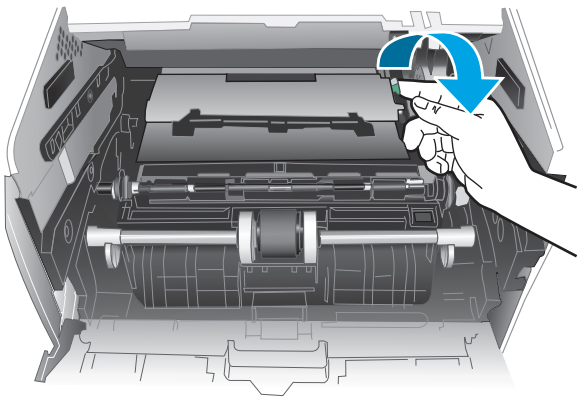
7. Open the front door.



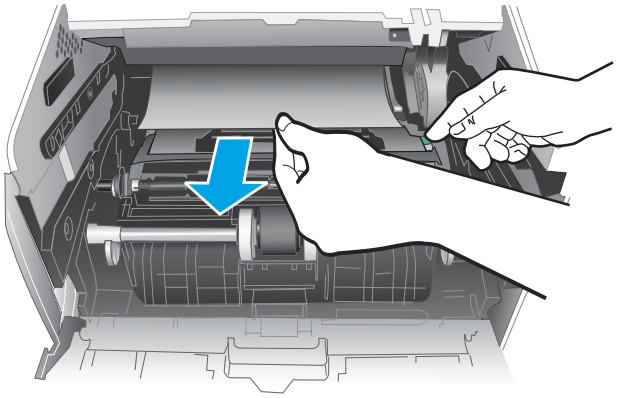
8. Remove the toner cartridge.



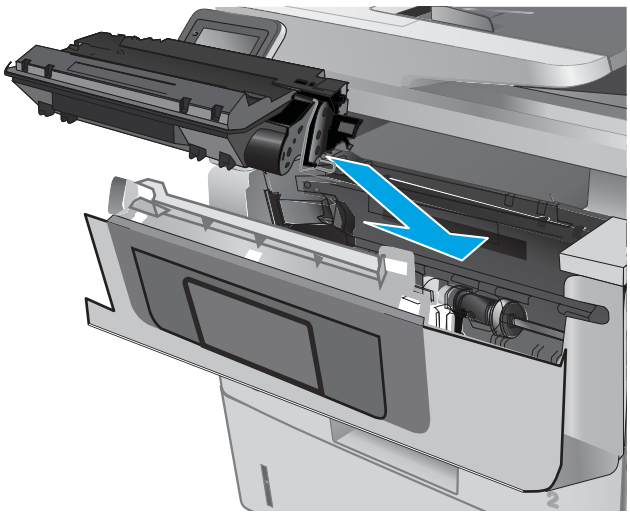
9. Lift the jam-access cover.



10. Remove any jammed paper.



11. Install the toner cartridge.

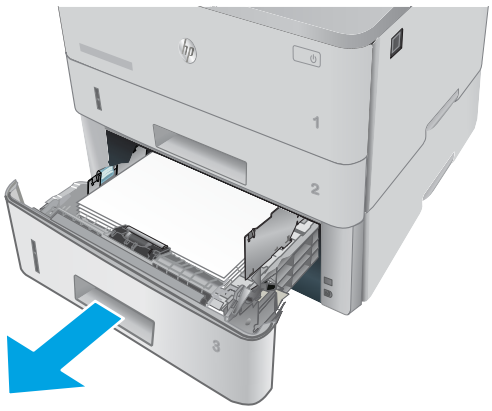


12. Close the front door.

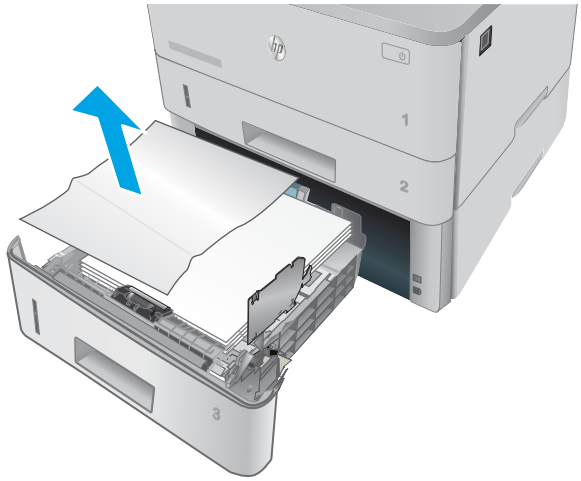
Clear paper jams in optional Tray 3

Use the following procedure to check for paper in all possible jam locations related to Tray 3. When a jam occurs, the control panel displays an animation that assists in clearing the jam.

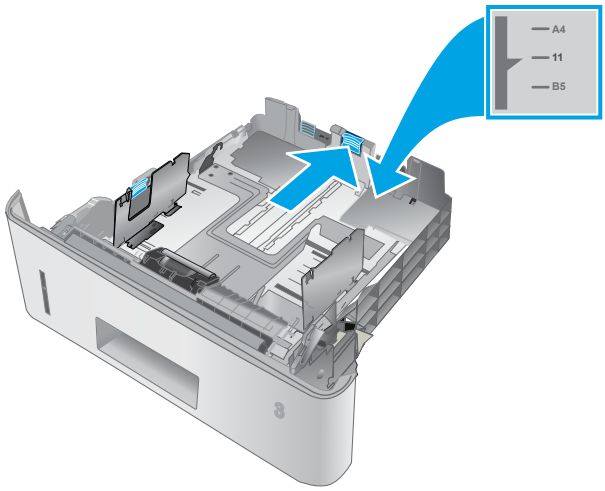
1. Remove the tray from the printer.



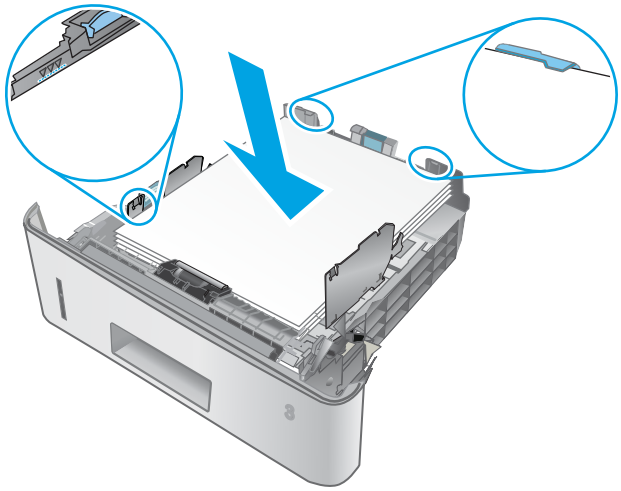
2. Remove the paper from the tray, and discard any damaged paper.



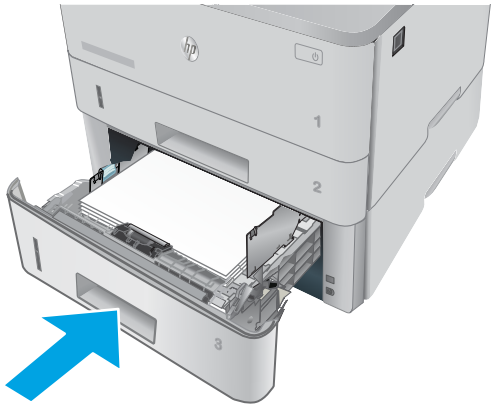
3. Verify that the rear paper guide is adjusted to the indentation for the correct paper size. If necessary, pinch the release and move the rear paper guide to the correct position. It should click into place.



4. Load the paper into the tray. Make sure that the stack is flat at all four corners and that the top of the stack is below the maximum-height indicators.

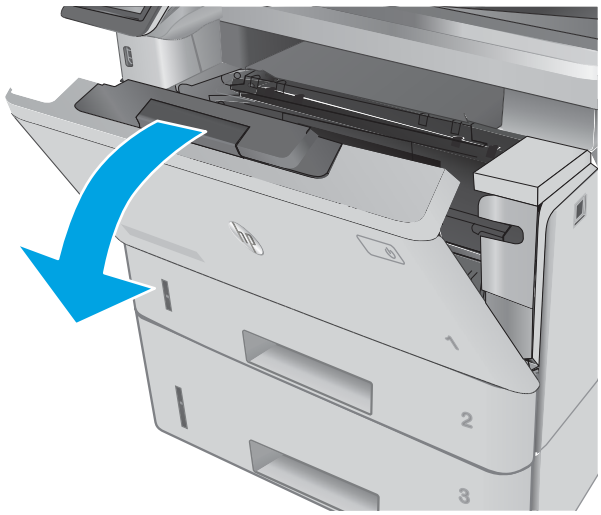


5. Reinsert and close the tray.

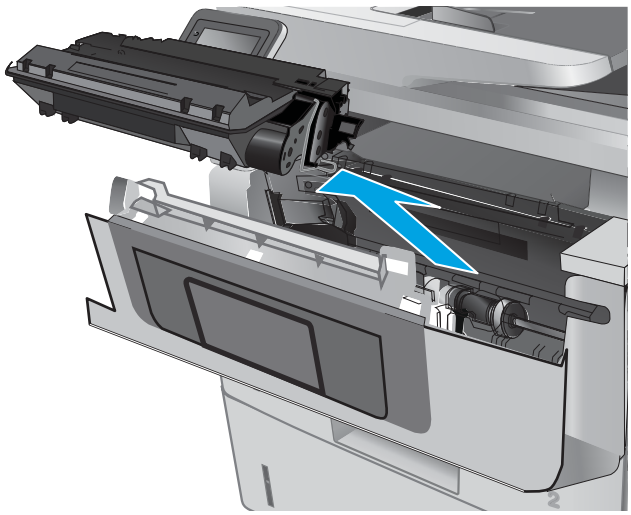


6. Press the front-door-release button.

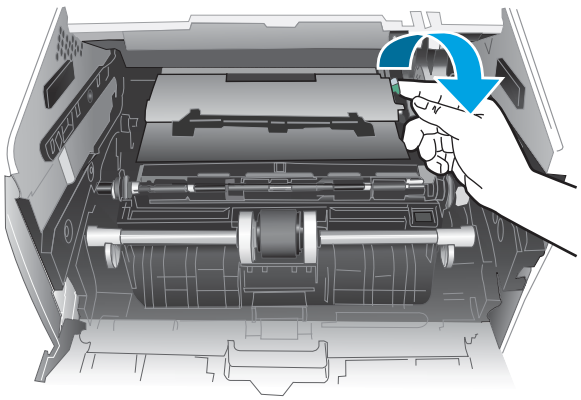
7. Open the front door.



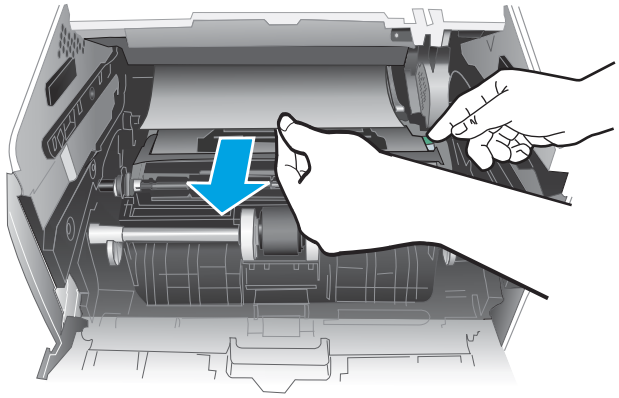
8. Remove the toner cartridge.



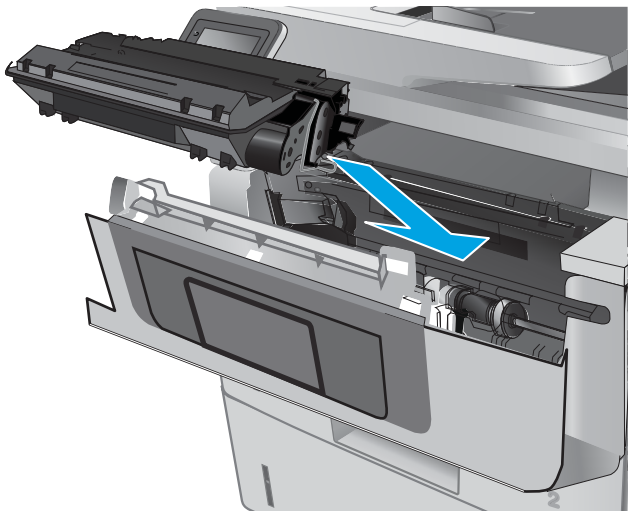
9. Lift the jam-access cover.



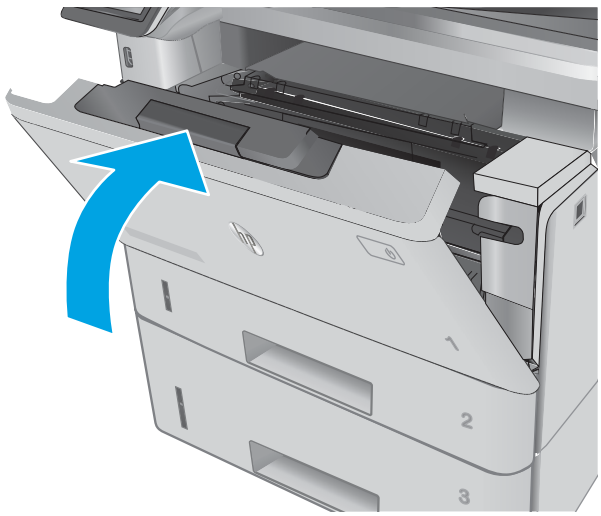
10. Remove any jammed paper.



11. Install the toner cartridge.



12. Close the front door.



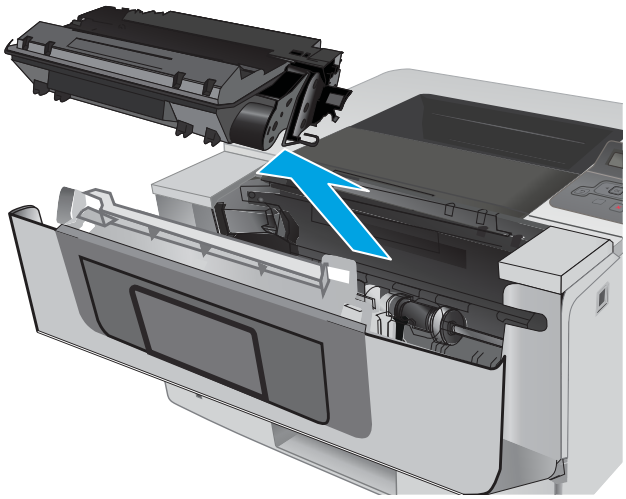
Clear paper jams in the fuser

Use the following procedure to check for paper in all possible jam locations in the fuser area.

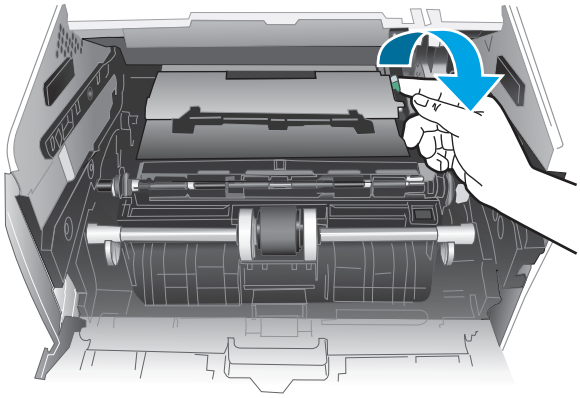
1. Press the front-door-release button.

2. Open the front door.

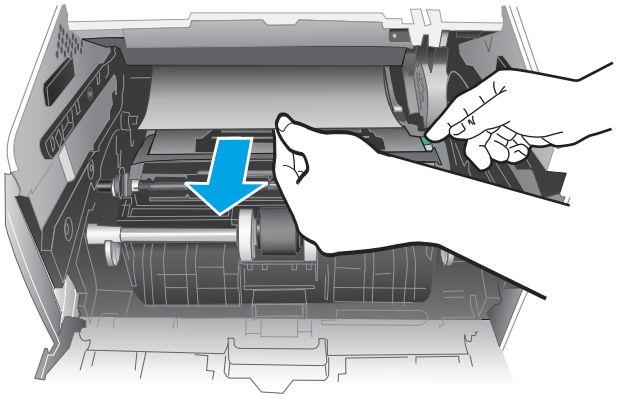
3. Remove the toner cartridge.



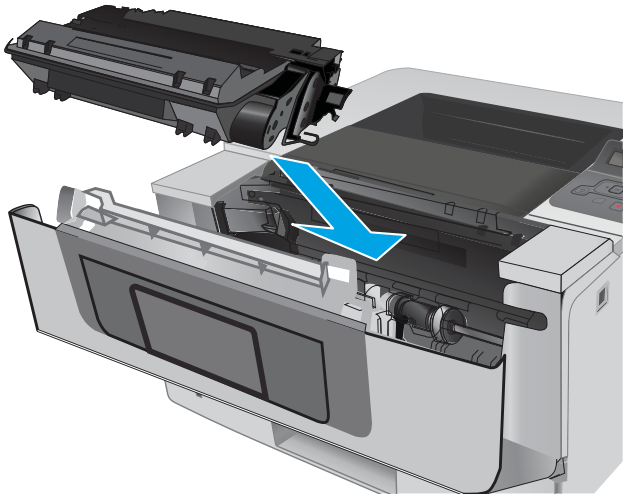
4. Lift the jam-access cover.



5. Remove any jammed paper.



6. Install the toner cartridge.



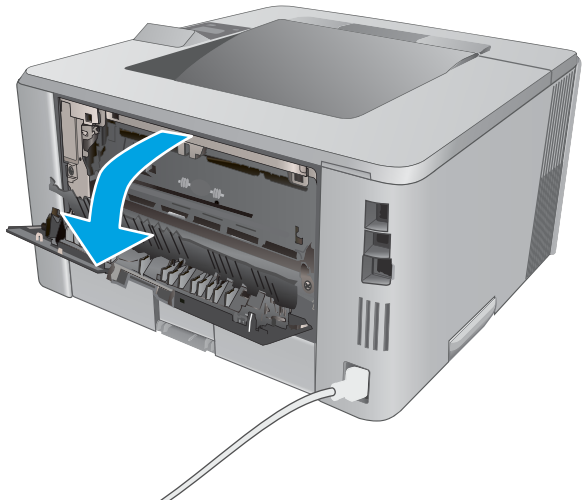
7. Close the front door.

Clear paper jams in the output bin

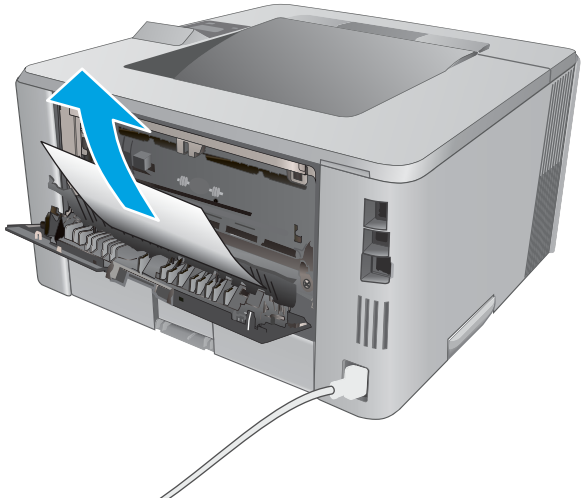
Use the following procedure to check for paper in all possible jam locations in the output bin.

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

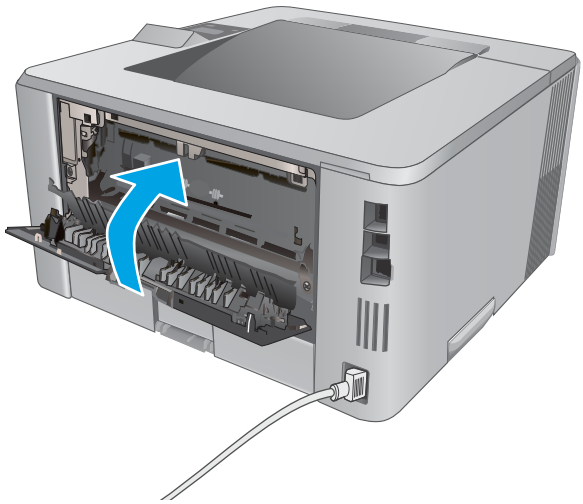
2. Open the rear door.



3. Remove any jammed paper from the rear door area.



4. Close the rear door.

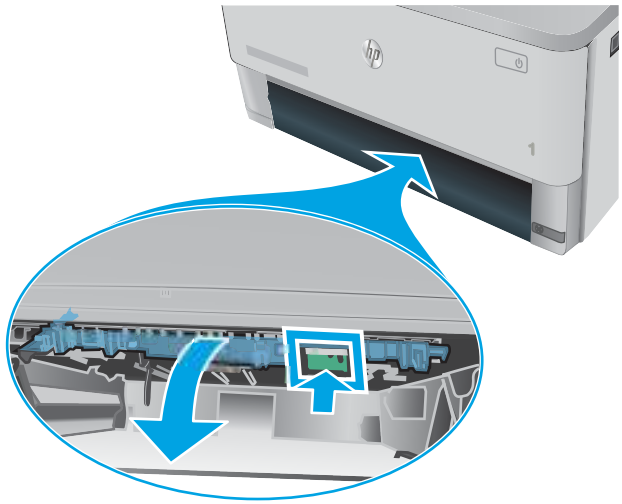


Clear paper jams in the duplexer

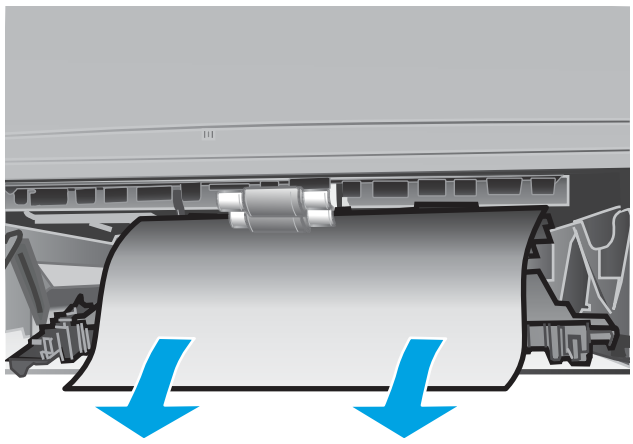
Use the following procedure to check for paper in all possible jam locations in the automatic duplexer.

1. Completely remove Tray 2 from the printer.

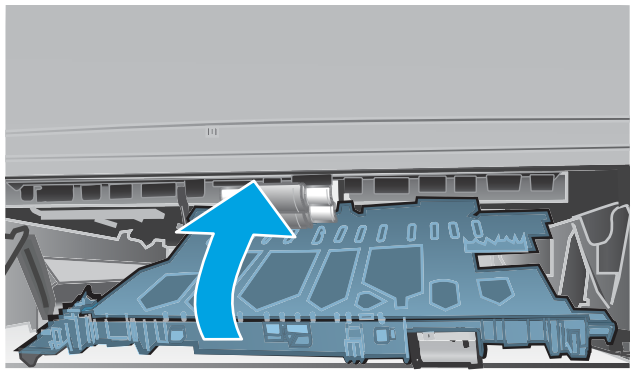
2. Push the green button to release the duplex pan.



3. Remove any jammed paper.



4. Close the duplex pan.



5. Reinsert Tray 2.

Clear paper jams (M426, M427)

Introduction

The following information includes instructions for clearing paper jams from the printer.

- Experiencing frequent or recurring paper jams?
- Jam locations
- Clear paper jams in the document feeder
- Clear paper jams in Tray 1
- Clear paper jams in Tray 2
- Clear paper jams in optional Tray 3
- Clear paper jams in the fuser
- Clear paper jams in the output bin
- Clear paper jams in the duplexer

Experiencing frequent or recurring paper jams?

Follow these steps to solve problems with frequent paper jams. If the first step does not resolve the problem continue with the next step until you have resolved the problem.

1. If paper has jammed in the product, clear the jam and then print a configuration page to test the product.
2. Check that the tray is configured for the correct paper size and type on the product control panel. Adjust paper settings if necessary.
   a. From the Home screen on the product control panel, swipe until the Setup menu displays. Touch the Setup icon to open the menu.
   b. Open the following menus:
      - System Setup
      - Paper setup
   c. Select the tray from the list.
   d. Select Paper Type and then select the type of paper that is in the tray.
   e. Select Paper Size and then select the size of paper that is in the tray.
3. Turn the product off, wait 30 seconds, and then turn it on again.
4. Print a cleaning page to remove excess toner from inside the product.
   a. From the Home screen on the product control panel, swipe until the Setup menu displays. Touch the Setup icon to open the menu.
   b. Touch the Service menu.

c. Touch the Cleaning Page button.

d. Load plain letter or A4 paper when you are prompted.

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

5. Print a configuration page to test the product.

   a. From the Home screen on the product control panel, swipe until the Setup menu displays. Touch the Setup icon to open the menu.

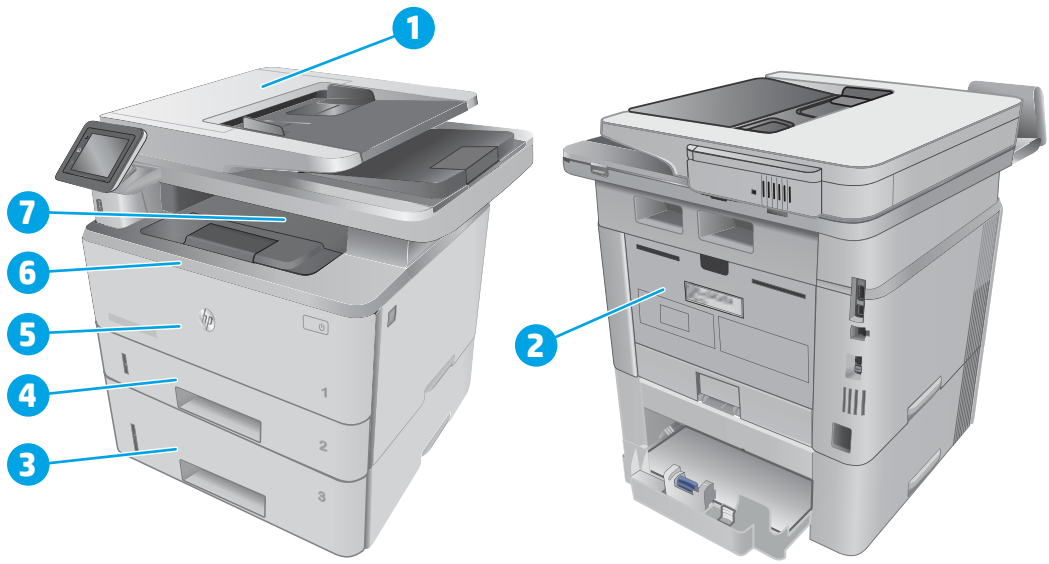
   b. Open the Reports menu.

   c. Select Configuration Report.

If none of these steps resolves the problem, the product might need service. Contact HP customer support.

Jam locations

Jams can occur in these locations:



1	Document feeder
2	Fuser area
3	Tray 3 (optional)
4	Tray 2 Duplexing area (remove Tray 2 for access)
5	Tray 1

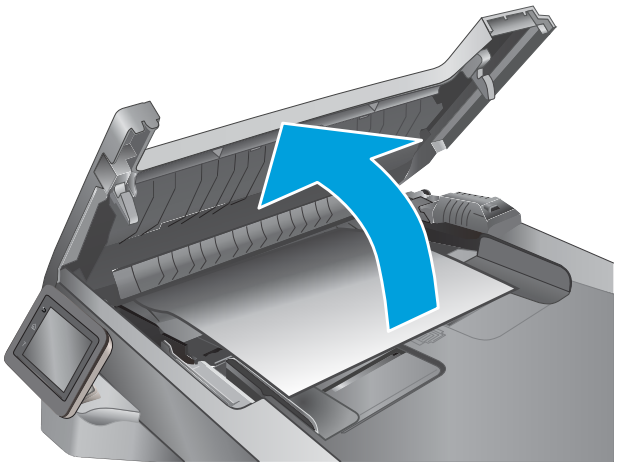
6	Toner cartridge area (open the front door for access)
7	Output bin

Loose toner might remain in the printer after a jam. This problem typically resolves itself after a few sheets have been printed.

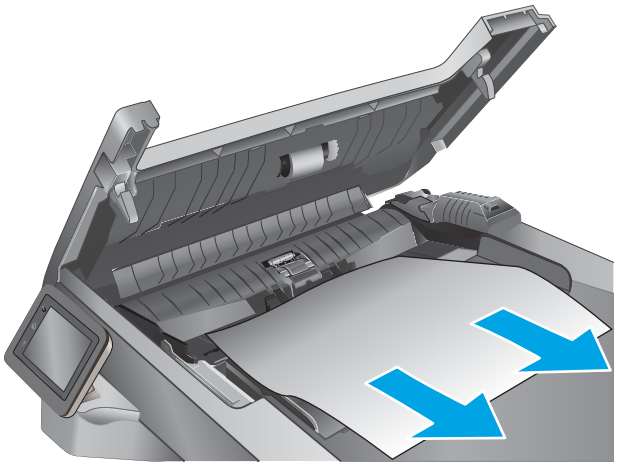
Clear paper jams in the document feeder

The following information describes how to clear paper jams in the document feeder. When a jam occurs, the control panel displays an animation that assists in clearing the jam.

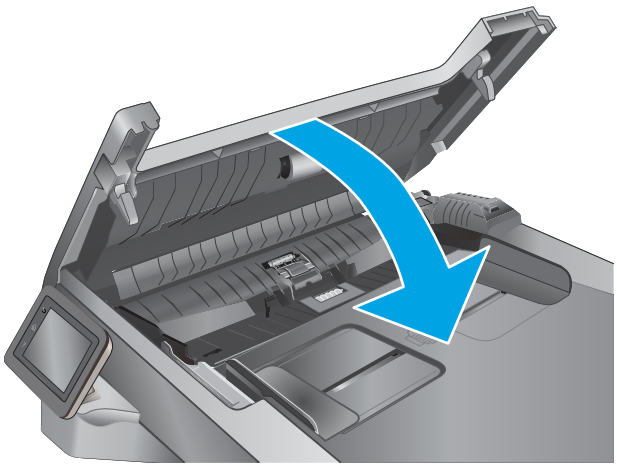
1. Open the document-feeder cover.



2. Gently pull the jammed paper out.



3. Close the document-feeder cover. Make sure it is completely closed.

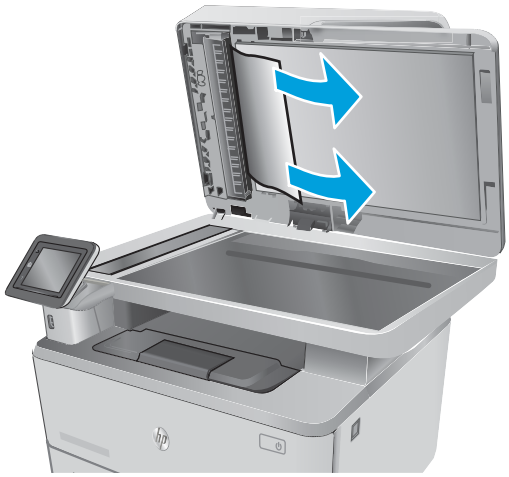


4. Open the document feeder tray cover.

5. Gently pull the jammed paper out.

6. Close the document feeder tray cover.

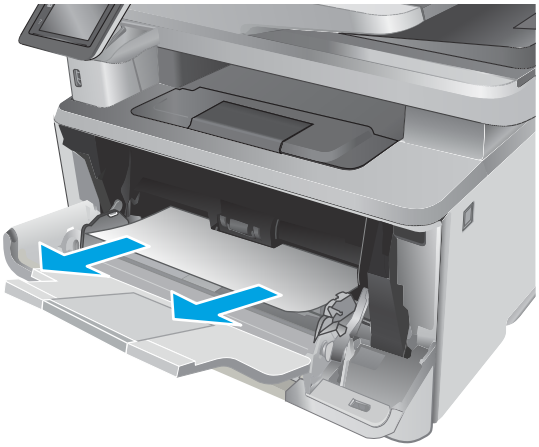
7. Open the scanner lid. If paper is jammed in the scanner lid, gently pull it out, and then close the scanner lid.



Clear paper jams in Tray 1

Use the following procedure to clear paper jams in Tray 1. When a jam occurs, the control panel displays an animation that assists in clearing the jam.

1. Slowly pull the jammed paper out of the printer.

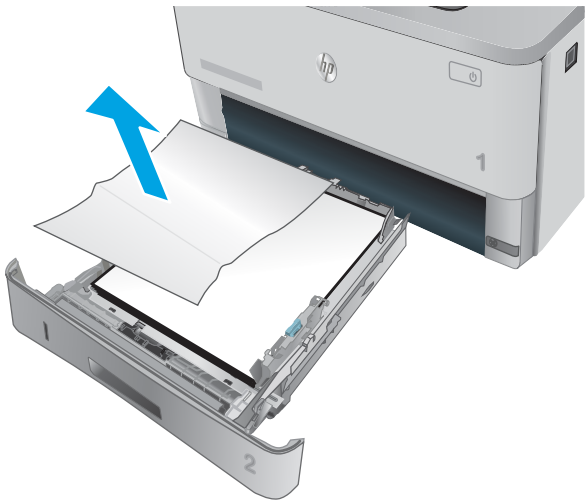


Clear paper jams in Tray 2

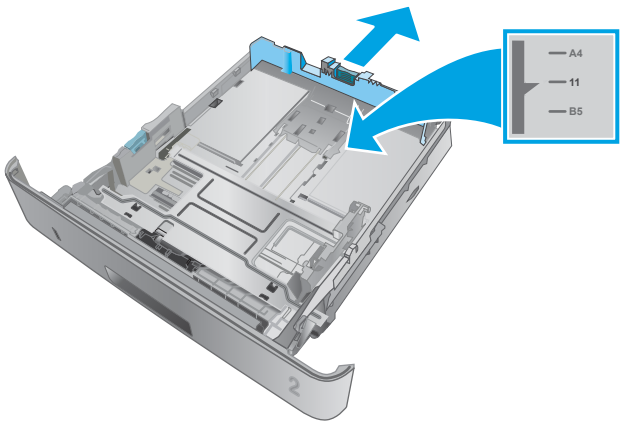
Use the following procedure to check for paper in all possible jam locations related to Tray 2. When a jam occurs, the control panel displays an animation that assists in clearing the jam.

1. Remove the tray from the printer.

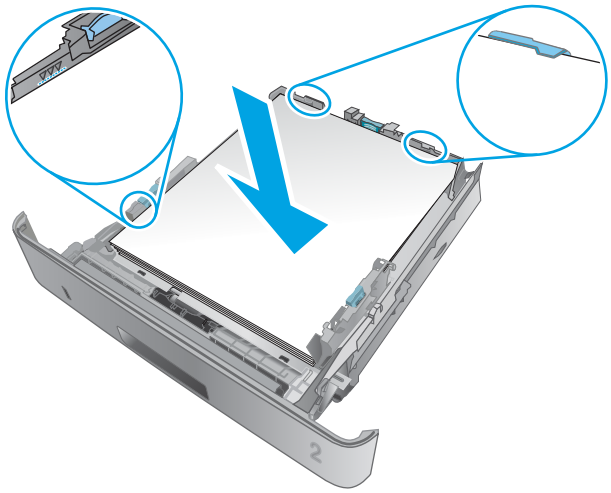
2. Remove the paper from the tray, and discard any damaged paper.



3. Verify that the rear paper guide is adjusted to the indentation for the correct paper size. If necessary, pinch the release and move the rear paper guide to the correct position. It should click into place.



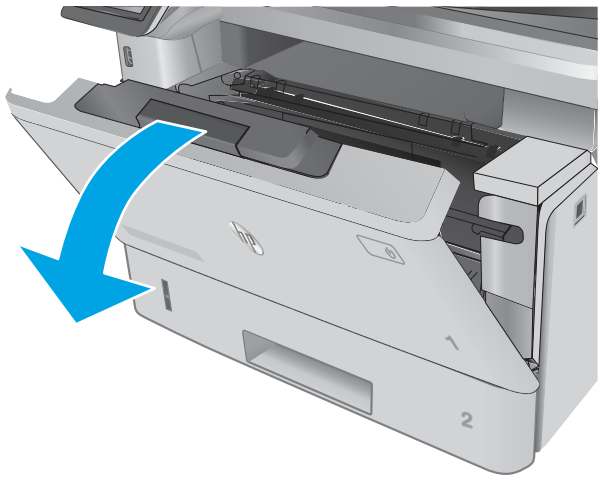
4. Load the paper into the tray. Make sure that the stack is flat at all four corners and that the top of the stack is below the maximum-height indicators.



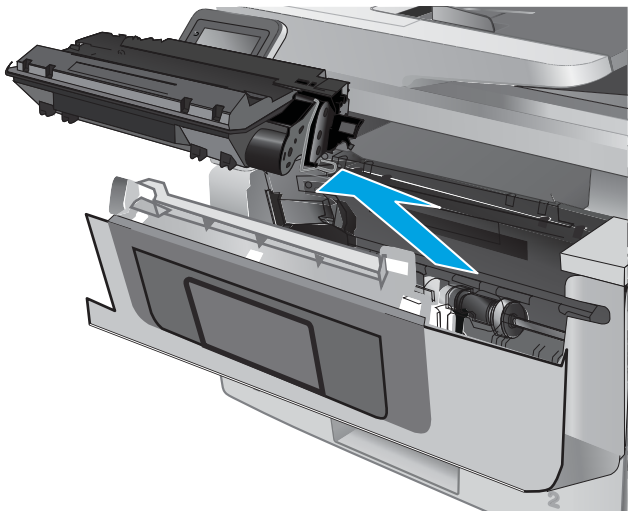
5. Reinsert and close the tray.

6. Press the front-door-release button.

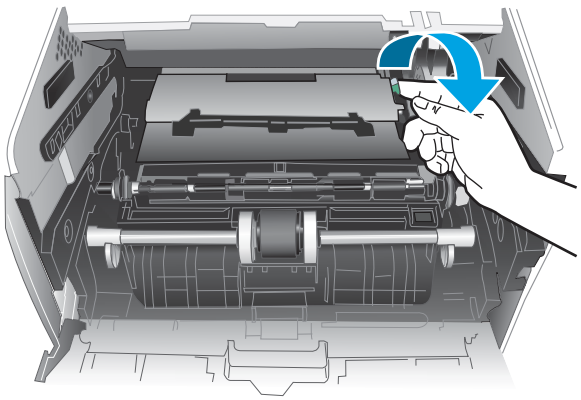
7. Open the front door.



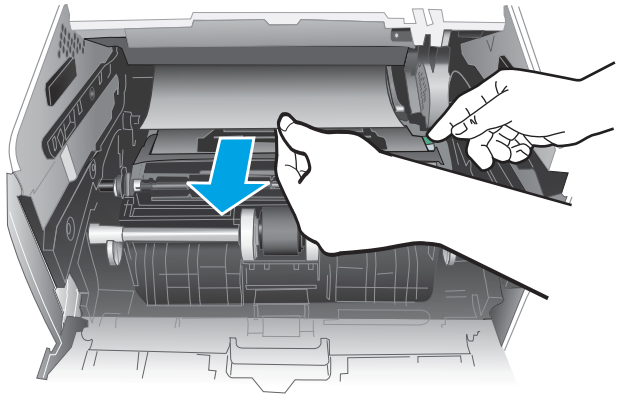
8. Remove the toner cartridge.



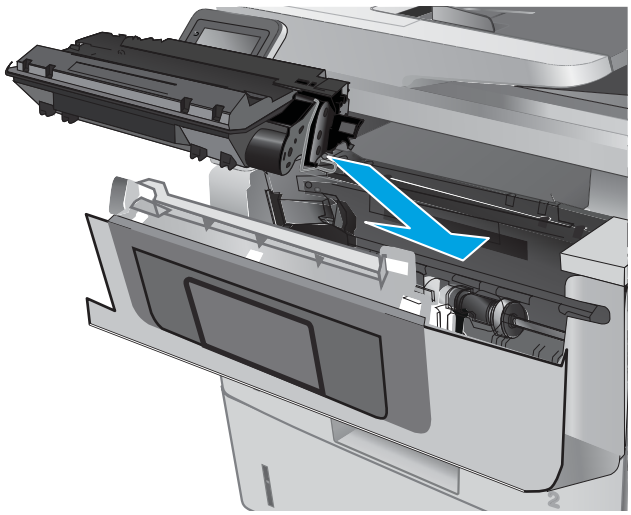
9. Lift the jam-access cover.



10. Remove any jammed paper.



11. Install the toner cartridge.

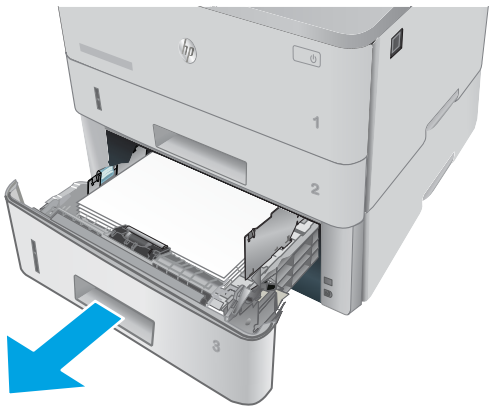


12. Close the front door.

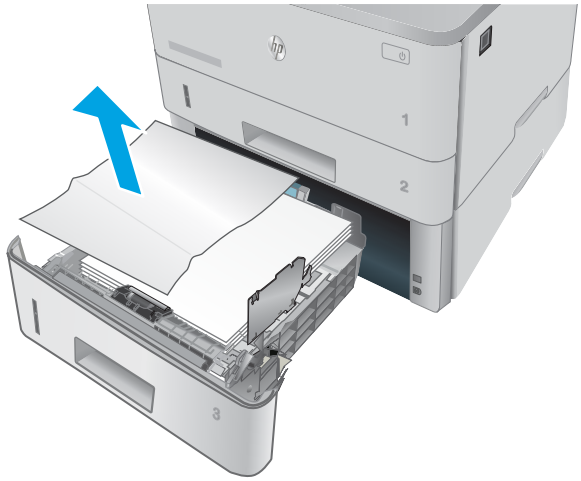
Clear paper jams in optional Tray 3

Use the following procedure to check for paper in all possible jam locations related to Tray 3. When a jam occurs, the control panel displays an animation that assists in clearing the jam.

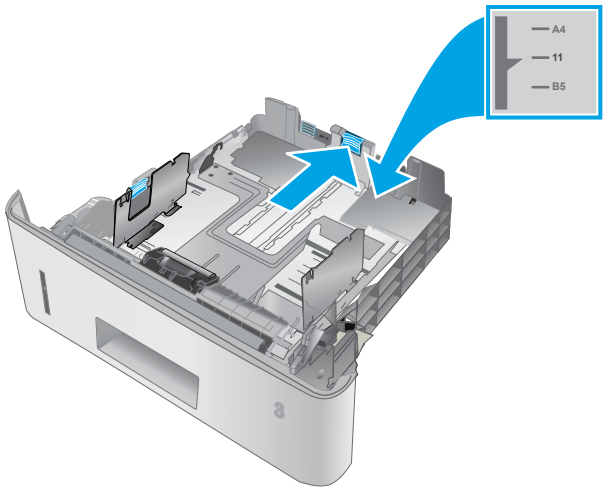
1. Remove the tray from the printer.



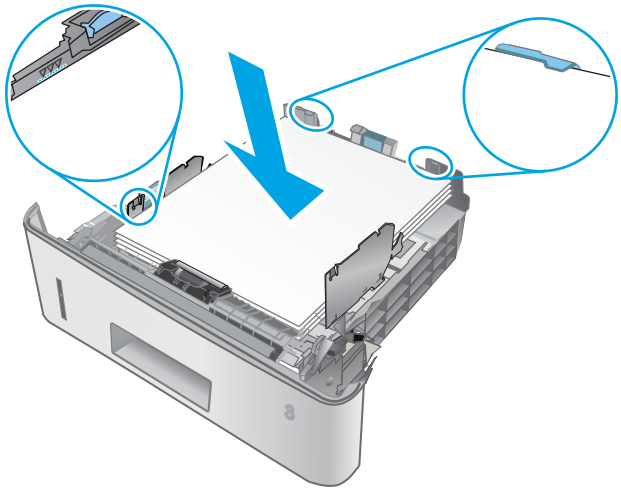
2. Remove the paper from the tray, and discard any damaged paper.



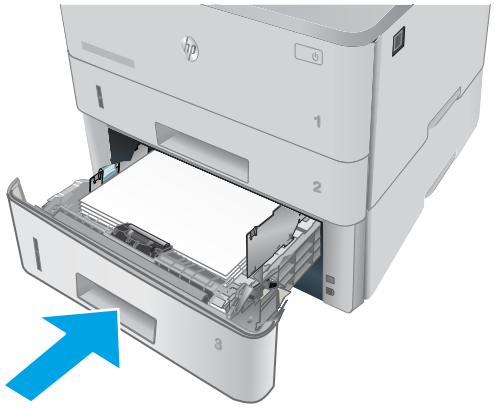
3. Verify that the rear paper guide is adjusted to the indentation for the correct paper size. If necessary, pinch the release and move the rear paper guide to the correct position. It should click into place.



4. Load the paper into the tray. Make sure that the stack is flat at all four corners and that the top of the stack is below the maximum-height indicators.

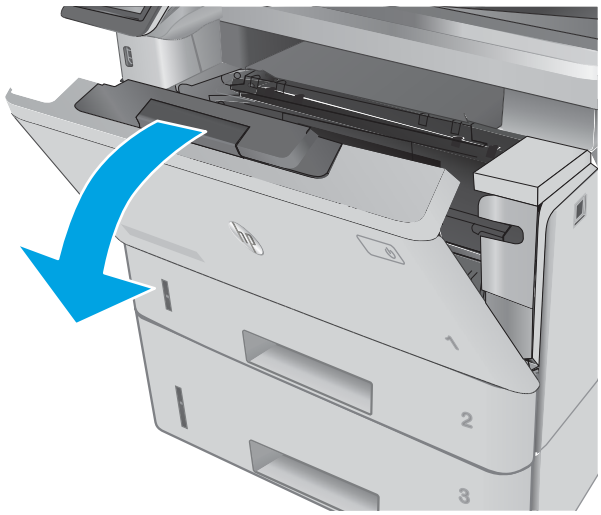


5. Reinsert and close the tray.

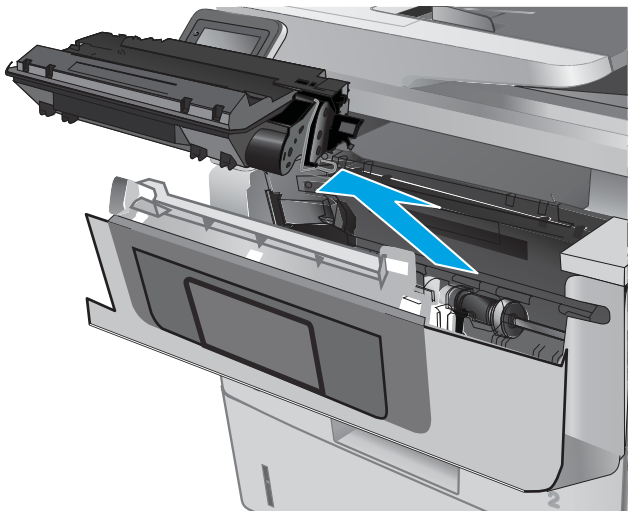


6. Press the front-door-release button.

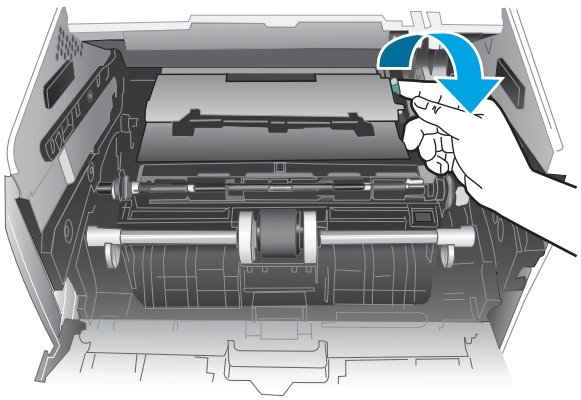
7. Open the front door.



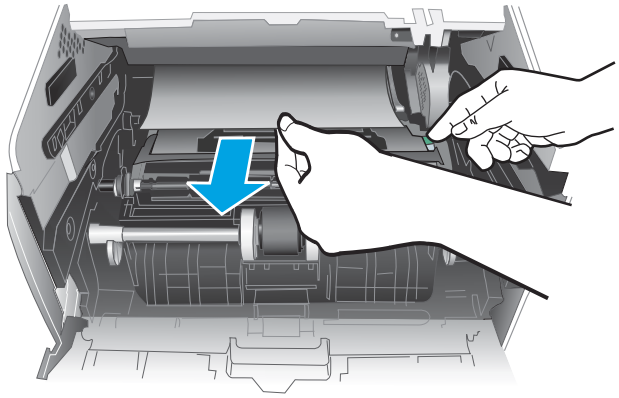
8. Remove the toner cartridge.



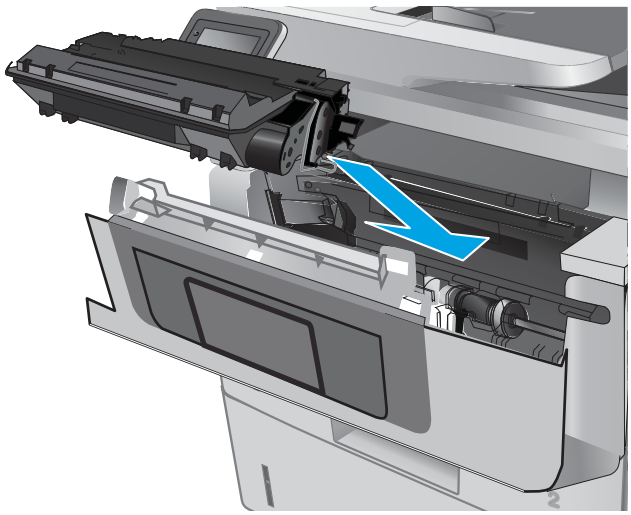
9. Lift the jam-access cover.



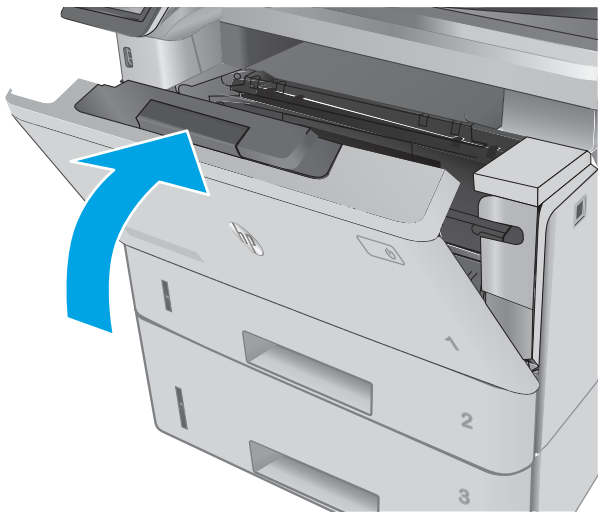
10. Remove any jammed paper.



11. Install the toner cartridge.



12. Close the front door.

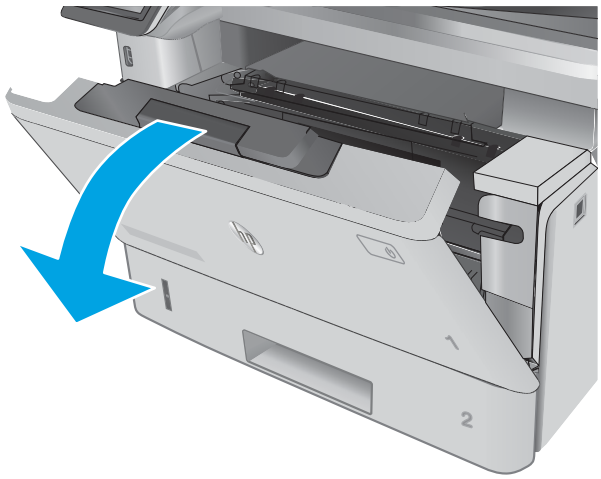


Clear paper jams in the fuser

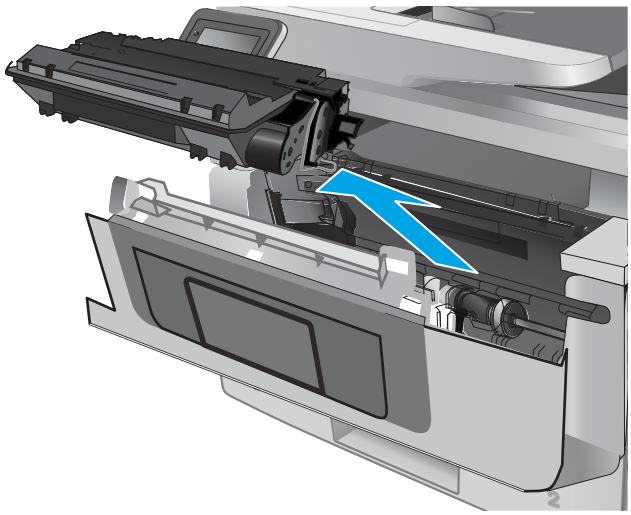
Use the following procedure to check for paper in all possible jam locations in the fuser area. When a jam occurs, the control panel displays an animation that assists in clearing the jam.

1. Press the front-door-release button.

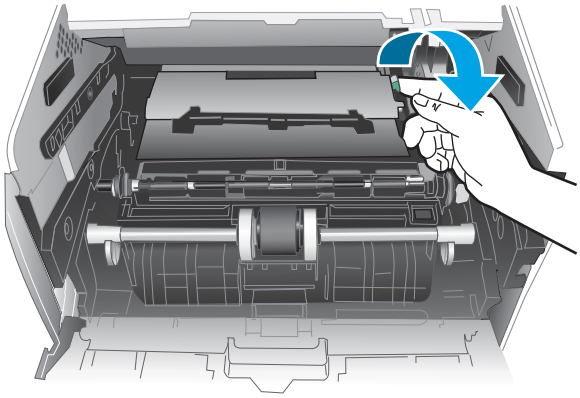
2. Open the front door.



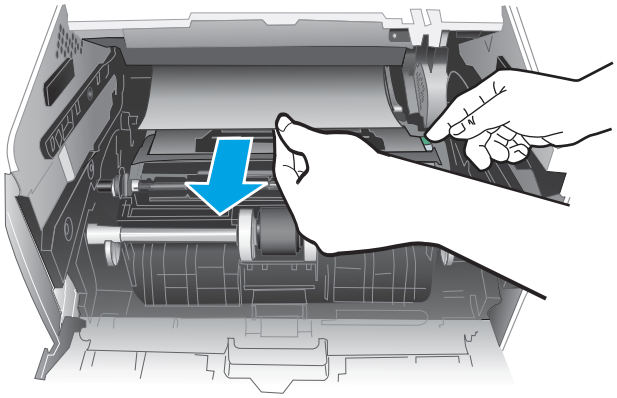
3. Remove the toner cartridge.



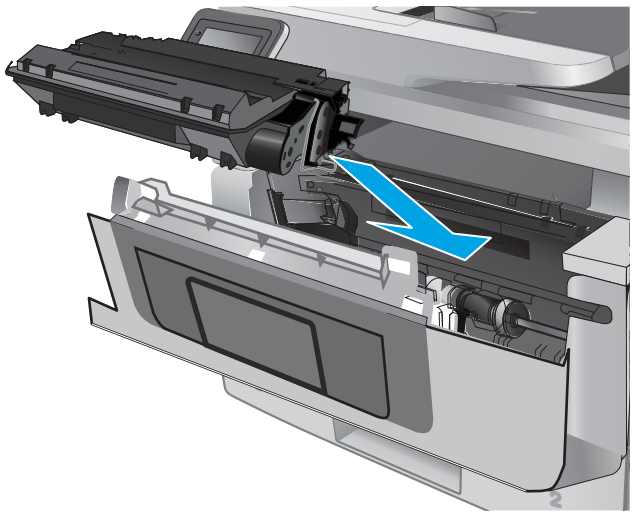
4. Lift the jam-access cover.



5. Remove any jammed paper.



6. Install the toner cartridge.

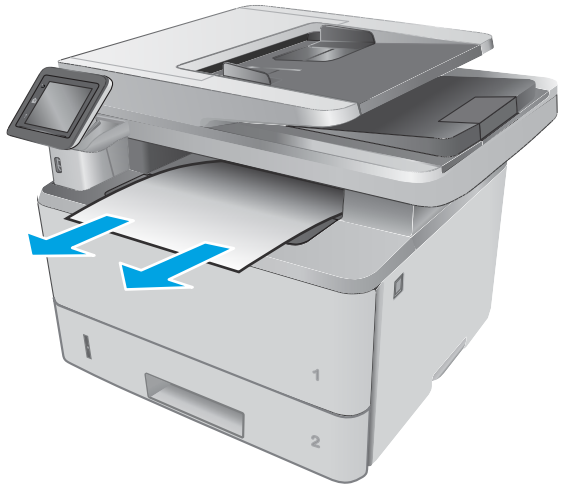


7. Close the front door.

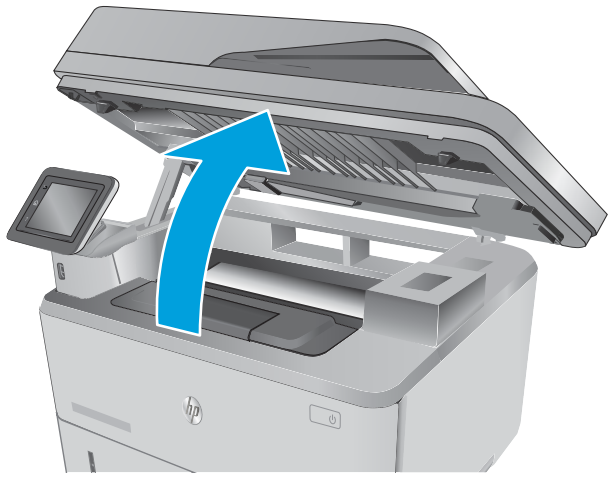
Clear paper jams in the output bin

Use the following procedure to check for paper in all possible jam locations in the output bin. When a jam occurs, the control panel displays an animation that assists in clearing the jam.

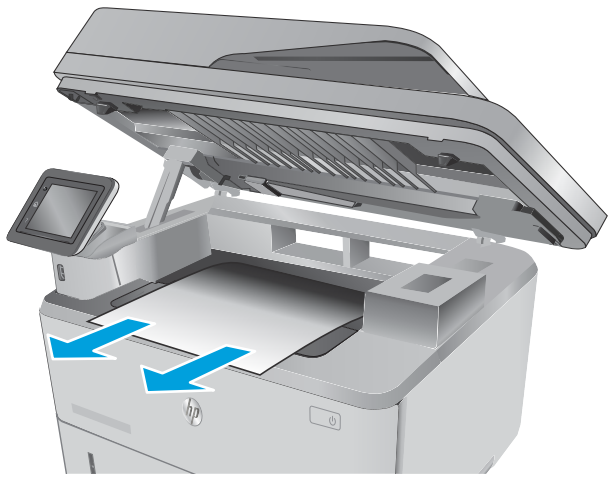
1. If paper is visible in the output bin, grasp the leading edge and remove it.



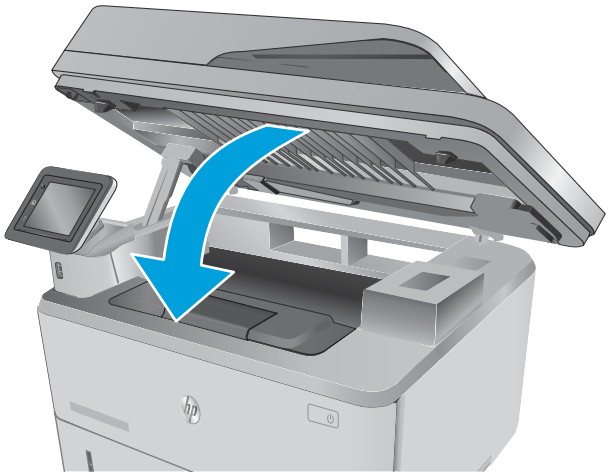
2. Lift the scanner assembly.



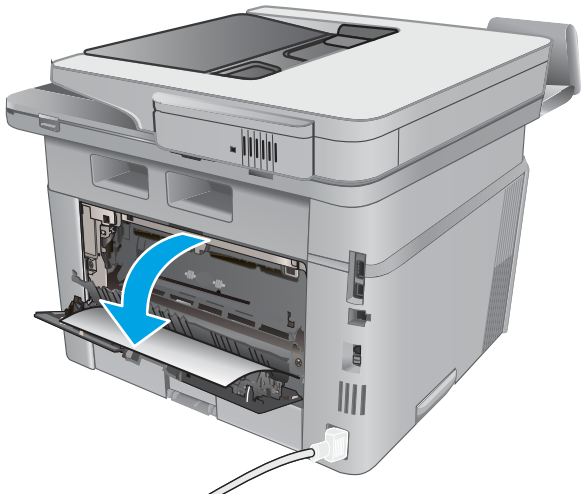
3. Remove any jammed paper.



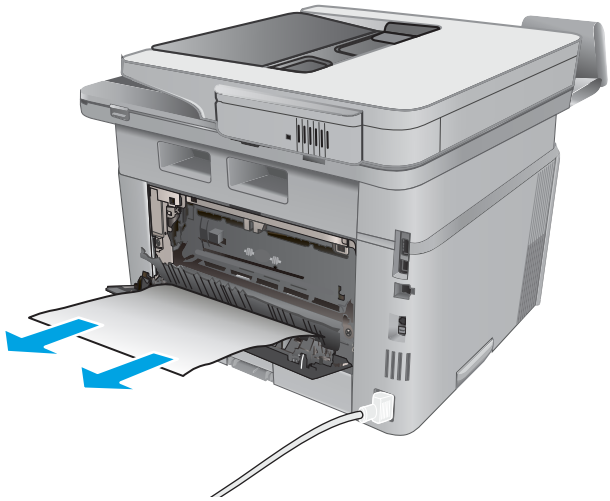
4. Close the scanner assembly.



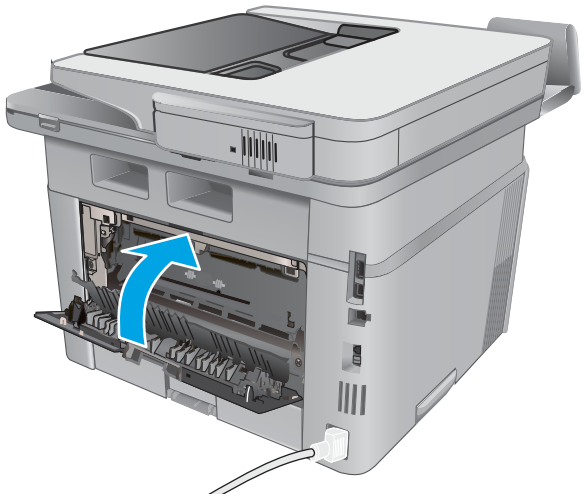
5. Open the rear door.



6. Remove any jammed paper from the rear door area.



7. Close the rear door.

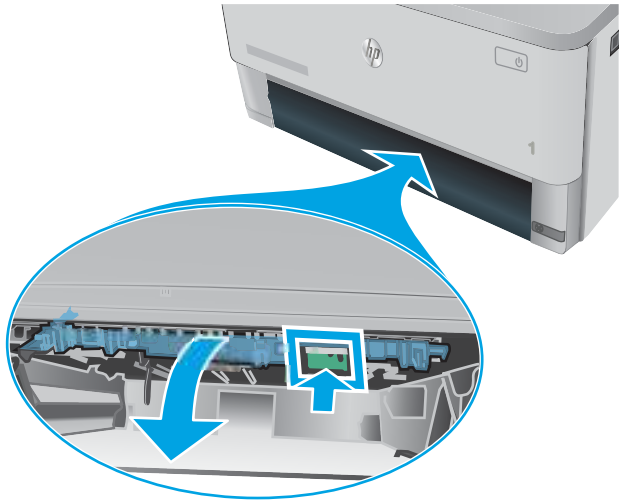


Clear paper jams in the duplexer

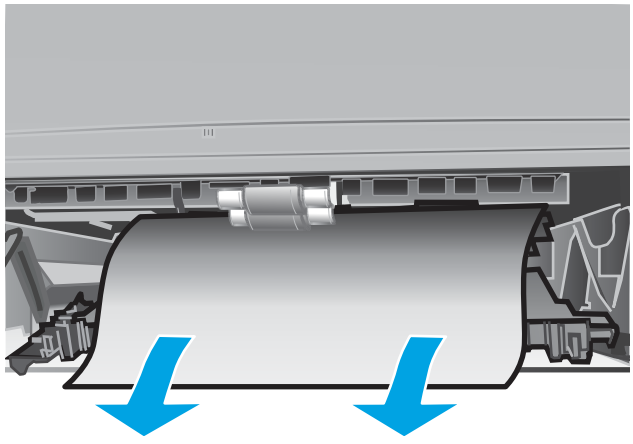
Use the following procedure to check for paper in all possible jam locations in the automatic duplexer. When a jam occurs, the control panel displays an animation that assists in clearing the jam.

1. Completely remove Tray 2 from the printer.

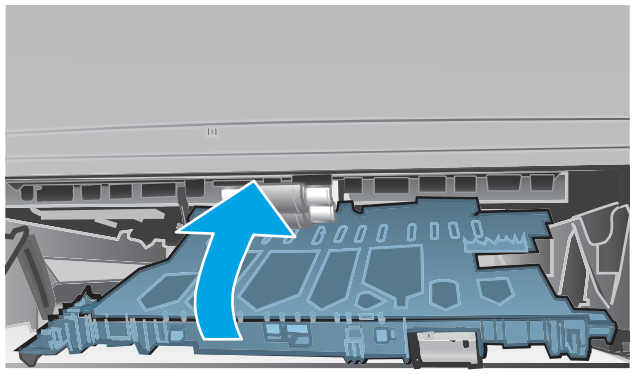
2. Push the green button to release the duplex pan.



3. Remove any jammed paper.



4. Close the duplex pan.



5. Reinsert Tray 2.

Solve paper-handling problems

The printer picks up multiple sheets of paper

If the printer 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 printer.
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. Align the guides with the paper-size markings in the bottom of the tray.

The printer does not pick up paper

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

1. Open the printer 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 guides in the tray are adjusted correctly for the size of paper. Align the guides with the paper-size markings in the bottom of the tray.
4. Check the printer control panel to see if the printer is waiting for you to acknowledge a prompt to feed the paper manually. Load paper, and continue.

Solve image quality problems

You can prevent most print-quality problems by following these guidelines.

- Print quality examples

Print quality examples

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. The topics that follow list the typical cause and solution for each of these examples.

Table 2-12 Print quality examples

Problem	Cause	Solution
Print is light or faded. 	The media might not meet HP specifications.	Use media that meets HP specifications.
	The toner cartridge might be defective.	Print the supplies status page to check the remaining toner cartridge life. Replace the toner cartridge.
	The product is set to override the Replace black cartridge message and to continue printing.	Replace the toner cartridge.
	The print density setting might have been changed.	Set the print density setting to **0**.
	Poor contact exists between the transfer roller contact and the transfer roller shaft.	Clean the contacts. If the problem remains after cleaning, check the contacts for deformation or damage. Replace any defective parts.
Page has dark print. 	Poor contact exists between the drum grounding contact and the toner cartridge.	Clean the grounding contacts. If the problem remains after cleaning, check the contacts for deformation or damage. Replace any defective parts.
	Poor contact exists between the primary charging bias contact and the toner cartridge.	Clean the contacts. If the problem remains after cleaning, check the contacts for deformation or damage. Replace any defective parts.
The page is blank.	The high-voltage power supply is defective (no developing bias output).	Replace the high-voltage power supply PCA.

Table 2-12 Print quality examples (continued)

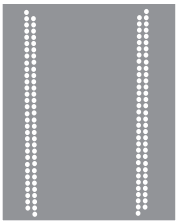
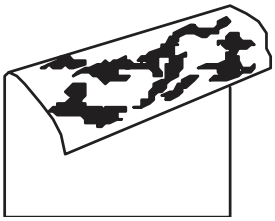
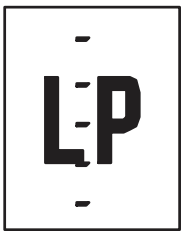
Problem	Cause	Solution
The page is all black. 	Poor contact exists between the primary charging bias contact and the toner cartridge.	Clean the contacts. If the problem remains after cleaning, check the contacts for deformation or damage. Replace any defective parts.
	The primary charging roller is defective.	Replace the toner cartridge.
White spots appear on the page. 	The static charge eliminator is dirty.	Clean the static charge eliminator.
	The transfer roller is deformed or has deteriorated.	Replace the transfer roller.
	Poor contact exists between the transfer roller contact and the transfer roller shaft.	Clean the contacts. If the problem remains after cleaning, check the contacts for deformation or damage. Replace any defective parts.
The back of the page is dirty. 	The transfer roller is dirty.	Replace the transfer roller.
	The fuser inlet guide or separation guide is dirty.	Clean the dirty parts. If the dirt does not come off, replace the fuser.
	The pressure roller is dirty.	Perform a fuser roller cleaning operation of the multi-purpose mode. If the dirt does not come off, replace the fuser.
The front of the page is dirty. 	The photosensitive drum is dirty.	Replace the toner cartridge.
	The fuser film or pressure roller is dirty.	Perform a fuser roller cleaning operation of the multi-purpose mode. If the dirt does not come off, replace the fuser.
Vertical density variation appears on the page. 	The photosensitive drum surface has deteriorated.	Replace the toner cartridge.
	The laser/scanner assembly is defective.	Replace the laser/scanner assembly.

Table 2-12 Print quality examples (continued)

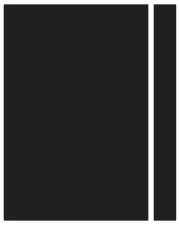
Problem	Cause	Solution
Vertical white lines appear on the page. 	Scratches are present on the circumference of the developer roller or photosensitive drum.	Replace the toner cartridge.
	The laser/scanner mirror is dirty.	Replace the laser/scanner assembly.
Horizontal lines appear on the page. 	Repetitive horizontal lines appear.	Identify the dirty roller which causes the repetitive image defects. Clean the roller. If the dirt does not come off, replace the corresponding assembly including affected rollers.
	Horizontal scratches are present on the photosensitive drum.	Replace the toner cartridge.
	Horizontal scratches are present on the fuser film.	Replace the fuser.
Horizontal white lines appear on the page. 	Repetitive horizontal white lines appear.	Identify the dirty roller which causes the repetitive image defects. Clean the roller. If the dirt does not come off, replace the corresponding assembly including affected rollers.
	Horizontal scratches are present on the photosensitive drum.	Replace the toner cartridge.
Toner specks appear. 	The media might not meet HP specifications.	Use only media that meets HP specifications.
	The paper path might need cleaning.	Clean the paper path.
	The toner cartridge might be leaking.	Check the cartridge for leaks.
Dropouts appear. 	A single sheet of print media might be defective.	Try reprinting the job.
	The moisture content of the paper is uneven or the paper has moist spots on its surface.	Try different paper, such as high-quality paper that is intended for laser printers.
	The media is flawed. The media manufacturing processes can cause some areas to reject toner.	Try different paper, such as high-quality paper that is intended for laser printers.
	The transfer roller is deformed or has deteriorated.	Replace the transfer roller.
	The primary charging roller, developer roller or photosensitive drum is deformed or has deteriorated.	Replace the toner cartridge.

Table 2-12 Print quality examples (continued)

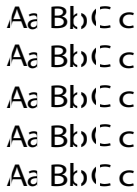
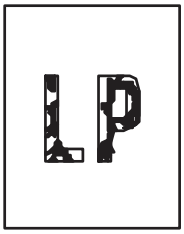
Problem	Cause	Solution
	The fuser film is deformed or has deteriorated.	Replace the fuser.
	The high-voltage power supply is defective (no transfer bias output).	Replace the high-voltage power supply PCA.
Vertical streaks or bands appear on the page. 	The toner cartridge might be defective. Scratches are present on the circumference of the photosensitive drum.	Print the supplies status page to check the remaining life. Use HP Device Toolbox to check the supplies status. Replace the toner cartridge.
	The product is set to override the Replace black cartridge message and to continue printing.	Replace the toner cartridge.
	Scratches are present on the circumference of the fuser film.	Replace the fuser.
The amount of background toner shading becomes unacceptable. 	Extremely dry (low humidity) conditions can increase the amount of background shading.	Check the product environment.
	The toner cartridge might be defective.	Replace the toner cartridge.
	The product is set to override the Replace black cartridge message and to continue printing.	Replace the toner cartridge.
	Smooth media shows more background than plain media	Try using rougher media.
The toner is not fully fused to the media. 	The fuser film or pressure roller is scarred or deformed.	Replace the fuser.
	The thermistor is defective.	Replace the fuser.
	The fuser heater is defective.	Replace the fuser.
	The fuser control circuit is defective.	Replace the low-voltage power supply assembly.
Toner smears appear on the media.	The media might not meet HP specifications.	Use only media that meets HP specifications.
	If toner smears appear on the leading edge of the paper, the media guides are dirty, or debris has accumulated in the print path.	Clean the media guides. Clean the paper path.
	Residual paper in the paper path.	Remove the residual paper.
	Poor contact exists in the grounding of the toner cartridge.	Clean the contacts of both the printer and the cartridge. If the problem remains after cleaning, check the contacts for deformation or damage. Replace any defective parts.
	Foreign substance adheres to the fuser inlet guide or the guide is dirty.	Clean the fuser inlet guide.

Table 2-12 Print quality examples (continued)

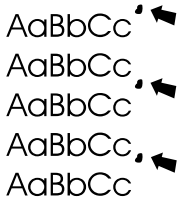
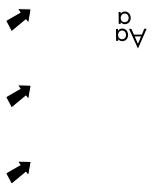
Problem	Cause	Solution
The toner smears easily when touched.	The product is not set to print on the type of media on which you want to print.	In the printer driver, select the **Paper** tab and set **Type is** to match the type of media on which you are printing. Print speed might be slower if you are using heavy paper.
	The media might not meet HP specifications.	Use only media that meets HP specifications.
	The paper path might need cleaning.	Clean the paper path.
Marks repeatedly appear at even intervals on the printed side of the page. 	The product is not set to print on the type of media on which you want to print.	In the printer driver, select the **Paper** tab and set **Type is** to match the type of paper on which you are printing. Print speed might be slower if you are using heavy paper.
	Internal parts might have toner on them.	The problem typically corrects itself after a few more pages.
	The paper path might need cleaning.	Clean the paper path.
	The fuser might be damaged or dirty.	To determine if the fuser has a problem, open HP Device Toolbox, and print the print-quality diagnostics page. Clean the paper path.
	Repetitive white spots appear.	Identify the dirty roller which causes the repetitive image defects. Clean the roller. If the dirt does not come off, replace the corresponding assembly.
	The transfer roller is deformed or has deteriorated.	Replace the transfer roller.
	The toner cartridge might have a problem. Foreign substance adheres to the primary charging roller or photosensitive drum.	Replace the toner cartridge.
Marks repeatedly appear at even intervals on the unprinted side of the page. 	Internal parts might have toner on them.	The problem typically corrects itself after a few more pages.
	The paper path might need cleaning.	Clean the paper path.
	The fuser might be damaged or dirty.	To determine if the fuser has a problem, open HP Device Toolbox and print the print-quality diagnostics page. Clean the paper path.

Table 2-12 Print quality examples (continued)

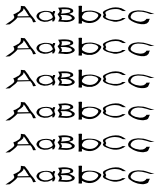
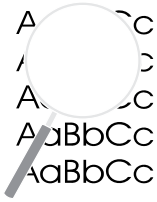
Problem	Cause	Solution
The printed page contains misformed characters. 	The media might not meet HP specifications.	Use a different paper, such as high-quality paper that is intended for laser printers.
	If characters are incorrectly formed so that they produce a wavy effect, the laser/scanner might need service.	Verify that the problem also occurs on the configuration page. Replace the laser scanner assembly.
The printed page is curled or wavy.	The product is not set to print on the type of media on which you want to print.	In the printer driver, select the **Paper** tab and set **Type is** to match the type of paper on which you are printing. Print speed might be slower if you are using heavy paper.
	The Service menu item Less Paper Curl is set to Off.	Use the control-panel menus to change the setting.
	The media might not meet HP specifications.	Use a different paper, such as high-quality paper that is intended for laser printers.
	Both high temperature and humidity can cause paper curl.	Check the product environment.
Text or graphics are skewed on the printed page. 	The media might be loaded incorrectly.	Ensure that the paper or other print media is loaded correctly and that the media guides are not too tight or too loose against the stack. See the user guide.
	The media might not meet HP specifications.	Use a different paper, such as high-quality paper that is intended for laser printers.
	The registration shutter spring is unhooked.	Check the spring and place it in the correct position if is disengaged.
	The registration shutter spring is deformed.	Replace the registration assembly.
The printed page contains wrinkles or creases. 	The media might be loaded incorrectly.	Verify that the media is loaded correctly and that the media guides are not too tight or too loose against the stack. See the user guide. Turn over the stack of paper in the input tray, or try rotating the paper 180° in the input tray.
	The media might not meet HP specifications.	Use a different paper, such as high-quality paper that is intended for laser printers.
	The feed roller or paper feed guide is dirty.	Clean any dirty parts.
	The feed roller is deformed or worn.	Replace the feed roller that is deformed or worn.
	The paper feed guide is damaged.	Replace the paper feed guide.

Table 2-12 Print quality examples (continued)

Problem	Cause	Solution
Toner appears around the printed characters. 	The media might be loaded incorrectly.	Turn over the stack of paper in the tray.
	If large amounts of toner have scattered around the characters, the paper might have high resistivity.	Use a different paper, such as high-quality paper that is intended for laser printers.
An image that appears at the top of the page (in solid black) repeats farther down the page (in a gray field). 	Software settings might affect image printing.	In your software program, change the tone (darkness) of the field in which the repeated image appears. In your software program, rotate the whole page 180° to print the lighter image first.
	The order of images printed might affect printing.	Change the order in which the images are printed. For example, have the lighter image at the top of the page, and the darker image farther down the page.
	A power surge might have affected the product.	If the defect occurs later in a print job, turn the product off for 10 minutes, and then turn on the product to restart the print job.
		Use non-glossy media to help reduce the severity of the defect

Clean the printer

Clean the pickup and separation rollers

1. Turn off the printer, unplug the power cable from the printer, 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 printer 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 printer. Over time, this buildup can cause print-quality problems such as toner specks or smearing. This printer has a cleaning mode that can correct and prevent these types of problems.

Clean the paper path (LCD control panel)

1. On the printer control panel, press the OK button to open the menus.
2. Open the following menus:
   - Service
   - Cleaning Page
3. Load plain paper in Tray 1, and then press the OK button to start the cleaning process.

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

Clean the paper path (touchscreen control panel)

1. From the Home screen on the printer 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 touchscreen

Clean the touch screen whenever it is necessary to remove fingerprints or dust. Wipe the touch screen 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 touch screen.

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/ljM402, www.hp.com/support/ljM403 or www.hp.com/support/ljM426MFP, www.hp.com/support/ljM427MFP.

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 control panel displays the message: The wireless feature on this product has been turned off
- The product does not print after the wireless configuration completes
- The product does not print, and the computer has a third-party firewall installed
- The wireless connection does not work after moving the wireless router or product
- Cannot connect more computers to the wireless product
- The wireless product loses communication when connected to a VPN
- The network does not appear in the wireless networks list
- The wireless network is not functioning

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 IP 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:

- 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.

Restore the factory-set defaults

Restore the factory-set defaults (LCD control panel)

1. On the product control panel, press the OK button to open the menus.
2. Open the following menus:
   - Service
   - Restore Defaults

   The product automatically restarts.

Restore the factory-set defaults (touchscreen control panel)

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

Open the secondary service menu (LCD control panel)

1. Make sure the product is in the Ready state.
2. At the product control panel, press the OK button to open the menus.
3. Press the left arrow button, and then quickly press the Cancel button.
4. The product returns to the Ready state. Press the OK button to reopen the menus.
5. Select the 2ndary Service menu, and then press the OK button.
6. Use the arrow buttons to navigate the 2ndary Service menu.

Open the secondary service menu (touchscreen control panel)

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 empty space (callout 1) between the Home button and the Help button, and then quickly press the Back.

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 2-13 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.
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 printer 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.
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 code of the firmware.
802.11n		(Wireless models only.) 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.
Speed		Use this item to toggle between high and low.

Developer's menu

Only manufacturing engineers, service engineers, and developers should access the developer's menu.

Open the Developer's menu (LCD control panel)

1. Make sure the product is in the Ready state.
2. At the product control panel, press the OK button to open the menus.
3. Press the left arrow button, and then quickly press the Cancel ✕ button.
4. The product returns to the Ready state. Press the OK button to reopen the menus.
5. Select the Developer's menu item, and then press the OK button.
6. Use the arrow buttons to navigate the Developer's menu.

Open the Developer's menu (touchscreen control panel)

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 empty space (callout 1) between the Home button and the Help button, and then quickly press the Home button.

4. The product returns to the Ready state. Touch the Setup button to reopen the menus.
5. Touch the Developer's menu item.
6. Use the scrollbar to navigate the Developer's menu.

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 printer so that the computers can recognize the printer.

1. Turn the printer off.
2. Perform one of the following steps:
   - **LCD control panel models**: Simultaneously press and hold the right arrow button and the Cancel ✕ button. Keep these buttons depressed as you turn the printer on.
   - **Touchscreen control panel models**: Turn the printer on. When the HP logo appears on the display, press and hold the lower right quadrant of the touchscreen.

   NOTE: It takes about 45 seconds before the NVRAM initialization process begins.
3. When the Permanent Storage Init. message appears on the display, release the buttons.
4. When the printer has finished the NVRAM initialization, it returns to the Ready state.

Solve fax problems (fax models only)

Introduction

Use the fax troubleshooting information to help resolve issues.

- Fax troubleshooting checklist
- Solve general fax problems

Fax troubleshooting checklist

- 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 printer is connected directly to the wall phone port. Disconnect all other devices that are connected to the printer.

1. Verify that the telephone cord is connected to the correct port on the back of the printer.
2. Check the phone line by using the fax test:

   a. From the Home screen on the printer control panel, swipe until the Setup menu displays. Touch the Setup icon to open the menu.

   b. Open the following menus:

   - Service
   - Fax Service

   c. Select the Run Fax Test option. The printer 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 printer 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/go/support, click the **Drivers & Software** link, type the printer name in the search field, press the ENTER button, and then select the printer from the list of search results.

   c. Select the operating system.

   d. Under the **Firmware** section, locate the **Firmware Update Utility**.

   NOTE: Make sure to use the firmware update utility that is specific to the printer model.

   e. Click **Download**, click **Run**, and then click **Run** again.

   f. When the utility launches, select the printer from the drop-down list, and then click **Send Firmware**.

NOTE: To print a configuration page to verify the installed firmware version before or after the update process, click **Print Config**.

g. Follow the on-screen instructions to complete the installation, and then click the **Exit** button to close the utility.

4. Verify that the fax was set up when the printer 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 printer. 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.

Solve general fax problems

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

Faxes are sending slowly

The printer 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 (M426, M427 printes)

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 that the printer is connected to a computer or to a network.

Cannot connect to the email server

- Make sure the SMTP or LDAP server name is correct. Check this setting with your system administrator or Internet Service Provider.
- If the printer cannot establish a secure connection to the SMTP or LDAP 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 or LDAP server requires authentication, make sure a valid user name and password are used.
- If the SMTP or LDAP server uses an authentication method that is not supported, try a different server. Check this setting with your system administrator or Internet Service Provider.

Validate the SMTP gateway (Windows)

1. Open an MS-DOS command prompt: click **Start**, click **Run**, type `cmd`, and then press the Enter key.
2. In the command prompt window, type `telnet` followed by the SMTP gateway address and then the number 25, which is the port over which the printer is communicating. For example, type `telnet 123.123.123.123 25` where "123.123.123.123" represents the SMTP gateway address.
3. Press the Enter key. If the SMTP gateway address is not valid, the response contains the message **Could not open connection to the host on port 25: Connect Failed**.
4. If the SMTP gateway address is not valid, contact the network administrator.

Validate the LDAP gateway (Windows)

1. Open Windows Explorer. In the address bar, type `LDAP://` immediately followed by the LDAP gateway address. For example, type `LDAP://12.12.12.12` where "12.12.12.12" represents the LDAP gateway address.
2. Press the Enter key. If the LDAP gateway address is valid, the **Find People** dialog box opens.
3. If the LDAP gateway address is not valid, contact the network administrator.

Manually update the firmware

Manually update the firmware (LCD control panel)

1. On the product control panel, press the OK button to open the menus.
2. Open the following menus:
   - Service
   - LaserJet Update
   - Check For Updates Now
3. Select the Yes option, and then press the OK button to prompt the product to search for firmware updates. If the product detects an upgrade, it will begin the update process.

NOTE: The LaserJet Update menu also contains items that allow you to set up automatic firmware updates for the product, allow you to upload an earlier firmware version, and enable or disable a prompt prior to a firmware file upload.

Manually update the firmware (touchscreen control panel)

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 updates. If the product detects an upgrade, it will begin the update process.

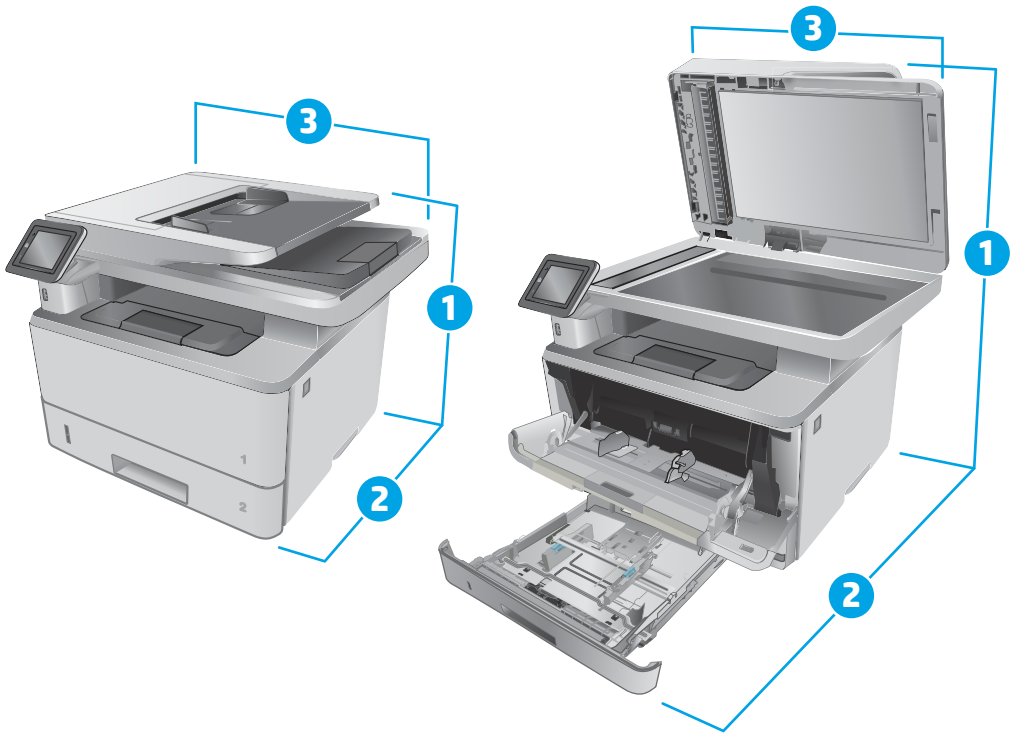
NOTE: The LaserJet Update menu also contains items that allow you to set up automatic firmware updates for the product, allow you to upload an earlier firmware version, and enable or disable a prompt prior to a firmware file upload.

A Printer specifications

- Printer dimensions M426 and M427
- Printer dimensions M402 and M403
- Printer space requirements
- Power consumption, electrical specifications, and acoustic emissions
- Operating-environment range
- Certificate of Volatility

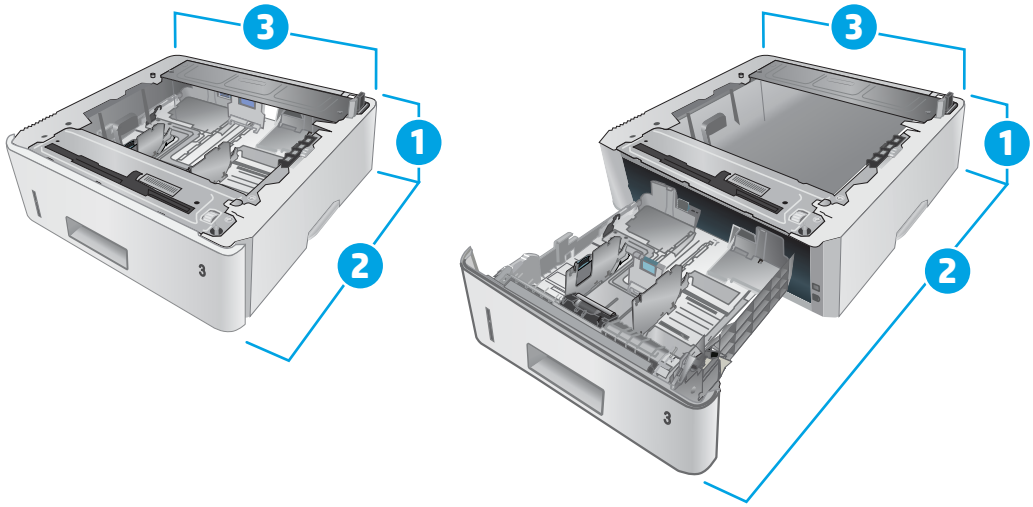
Printer dimensions M426 and M427

Figure A-1 Dimensions for the M426 and M427 models



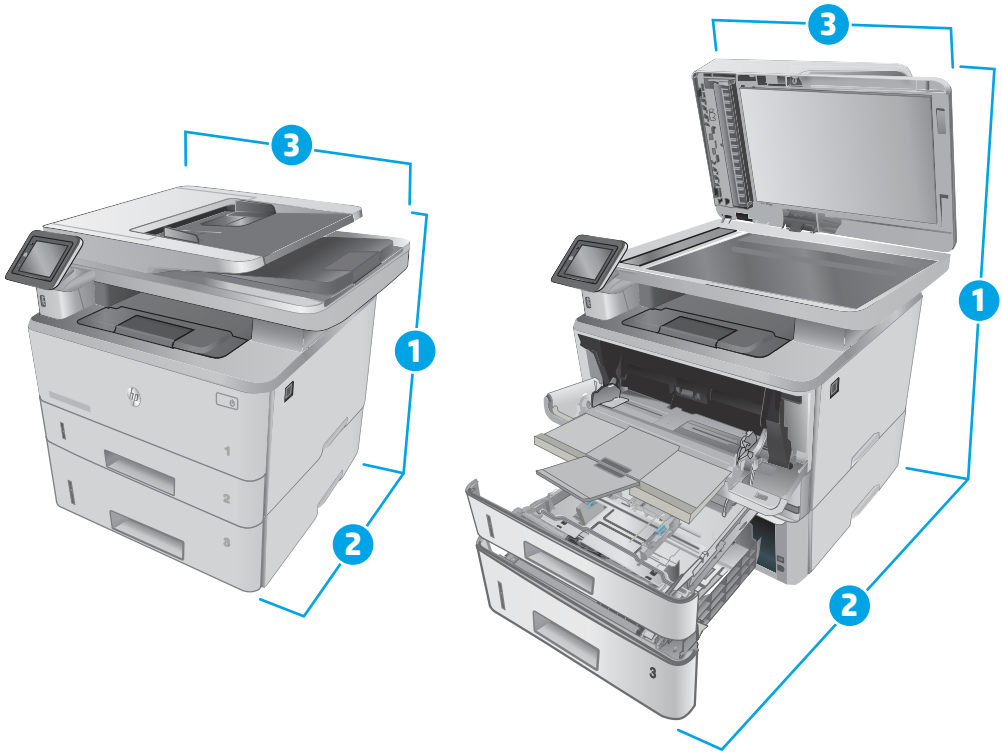
	Printer fully closed	Printer fully open
1. Height	323 mm (12.7 in)	577 mm (22.7 in)
2. Depth	390 mm (15.3 in)	839 mm (33 in)
3. Width	420 mm (16.5 in)	453 mm (17.8 in)
Weight (with cartridges)	13.1 kg (28.8 lb)	

Figure A-2 Dimensions for the optional 550-sheet tray



	Tray fully closed	Tray fully open
1. Height	131 mm (5.1 in)	131 mm (5.1 in)
2. Depth	357 mm (14 in)	781 mm (30.8 in)
3. Width	381 mm (15 in)	381 mm (15 in)
Weight (with cartridges)	3.5 kg (7.7 lb)	

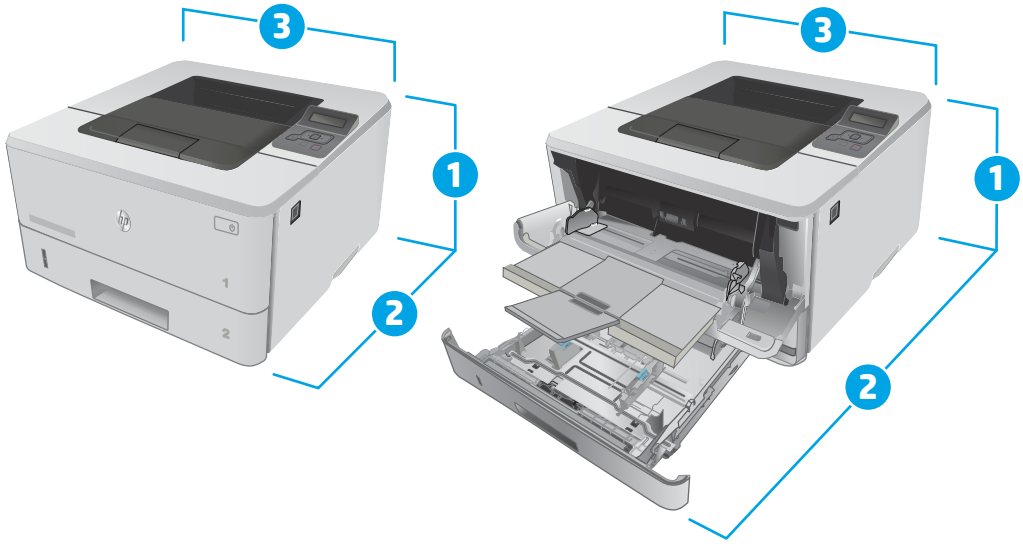
Figure A-3 Dimensions for the printer with the optional 550-sheet tray



	Printer and tray fully closed	Printer and tray fully open
1. Height	452 mm (17.8 in)	706 mm (27.8 in)
2. Depth	390 mm (15.3 in)	839 mm (33 in)
3. Width	420 mm (16.5 in)	453 mm (17.8 in)
Weight (with cartridges)	16.6 kg (36.5 lb)	

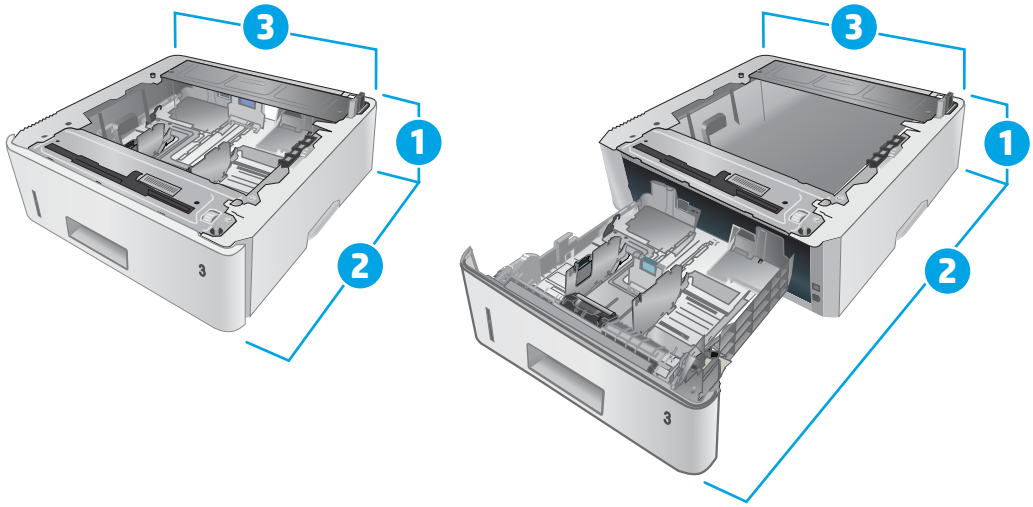
Printer dimensions M402 and M403

Figure A-4 Dimensions for the M402 and M403 models



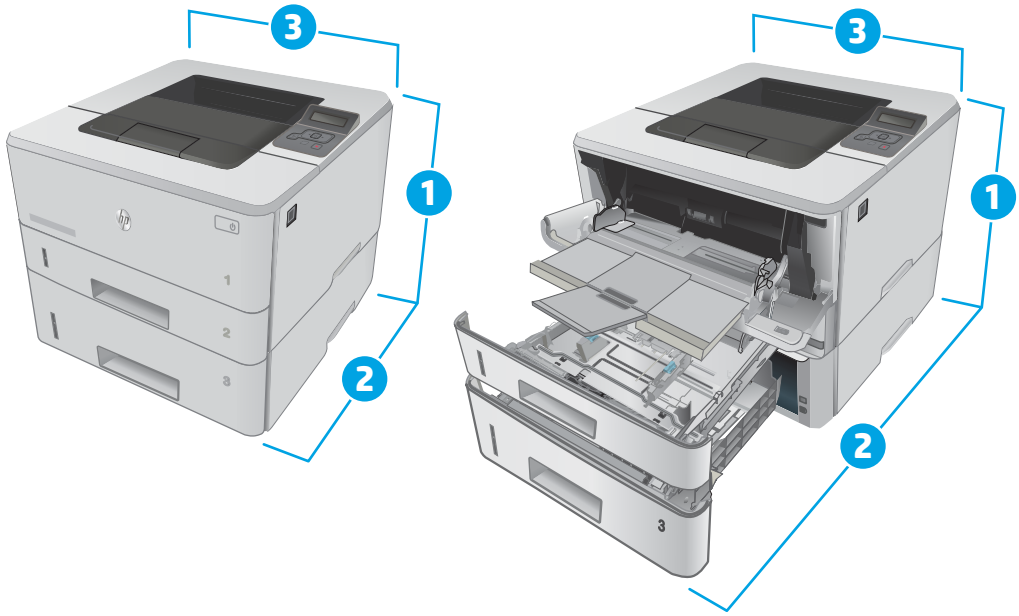
	Printer fully closed	Printer fully open
1. Height	216 mm (8.5 in)	241 mm (9.5 in)
2. Depth	357 mm (14 in)	781 mm (30.8 in)
3. Width	381 mm (15 in)	381 mm (15 in)
Weight (with cartridges)	8.8 kg (19.4 lb)	

Figure A-5 Dimensions for the optional 550-sheet tray



	Tray fully closed	Tray fully open
1. Height	131 mm (5.1 in)	131 mm (5.1 in)
2. Depth	357 mm (14 in)	781 mm (30.8 in)
3. Width	381 mm (15 in)	381 mm (15 in)
Weight	3.5 kg (7.7 lb)	

Figure A-6 Dimensions for the printer with the optional 550-sheet tray



	Printer and tray fully closed	Printer and tray fully open
1. Height	345 mm (13.5 in)	372 mm (14.6 in)
2. Depth	357 mm (14 in)	781 mm (30.8 in)
3. Width	381 mm (15 in)	381 mm (15 in)
Weight (with cartridges)	12.4 kg (27.3 lb)	

Printer space requirements

HP recommends that 30 mm (1.81 in) be added to the printer dimensions provided in this chapter to make sure there is sufficient space to open doors and covers, and to provide proper ventilation. See Printer dimensions M426 and M427 on page 172 and/or Printer dimensions M402 and M403 on page 174.

Power consumption, electrical specifications, and acoustic emissions

See www.hp.com/support/ljM402, www.hp.com/support/ljM403 or www.hp.com/support/ljM426MFP, www.hp.com/support/ljM427MFP for current information.

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

Operating-environment range

Table A-1 Operating-environment specifications

Environment	Recommended	Allowed
Temperature	17.5° to 25°C (63.5° to 77°F)	15° to 32°C (59° to 90.5°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)

Certificate of Volatility

Figure A-7 Certificate of Volatility M402/M403 (1 of 2)

Hewlett-Packard Certificate of Volatility		
Model: HP LaserJet Pro M402 HP LaserJet Pro M403	Part Number: M402n=C5F93A; M402d=C5F92A M402dn=C5F94A/G3V21A; M402dw=C5F95A; M403n=F6J41A; M403d=F6J42A; M403dn=F6J43a; M403dw=F6J44A	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:
SDRAM-DDR3	128MB	☐ Yes ☒ No	Print job specific information, and information stored in RAM disk.	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:
EEPROM	16KB	☐ Yes ☒ No	Printer specific data such as page count, configuration etc.	Perform a NVRAM initialization to clear unprotected data as explained in SM (for service person to perform only).
Type (Flash, EEPROM, etc): NAND Flash	Size: 128MB	User Modifiable: ☐ Yes ☒ No	Function: FW code/partial printer configuration information storage.	Steps to clear memory: Perform a NVRAM initialization to clear unprotected data as explained in SM (for service person to perform only).
Type (Flash, EEPROM, etc):	Size:	User Modifiable: ☐ Yes ☐ No	Function:	Steps to clear memory:

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:
		☐ Yes ☐ No		
Type (HDD, Tape, etc):	Size:	User Modifiable: ☐ Yes ☐ No	Function:	Steps to clear memory:

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

The front USB host can accept print jobs, scan uploads, photos and can be used to upload printer firmware.

Can any data other than scan upload be sent to the USB device)?
☒ Yes ☐ No If Yes please describe below

Rear USB host when configured will accept stored jobs, encrypted files stored and deleted by user.

Figure A-8 Certificate of Volatility M402/M403 (2 of 2)

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: Near field communication	
Frequency: 2.4 GHz	Bandwidth: 802.11n 20Mhz
Modulation:	Effective Radiate Power (ERP): 802.11n 15+-1.5dBm
Specifications: 802.11b/g/n wireless NFC	

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: 06/18/15

Figure A-9 Certificate of Volatility M426/M427 (1 of 2)

Hewlett-Packard Certificate of Volatility		
Model: HP LaserJet Pro M426 HP LaserJet Pro M427	Part Number: M426dw=F6W13A; M426fdn=F6W14A M426fdw=F6W15A; M427dw=C5F97A; M427fdn=C5F98A; M427fdw=C5F99A	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:
SDRAM-DDR3	256MB	☐ Yes ☒ No	Print/Scan/Fax job specific information, and information stored in RAM disk.	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:
EEPROM	16KB	☐ Yes ☒ No	Printer specific data such as page count, configuration etc.	Perform a NVRAM initialization to clear unprotected data as explained in SM (for service person to perform only).
Type (Flash, EEPROM, etc): NAND Flash	Size: 256MB	User Modifiable: ☐ Yes ☒ No	Function: FW code/partial printer configuration information storage.	Steps to clear memory: Perform a NVRAM initialization to clear unprotected data as explained in SM (for service person to perform only).
Type (Flash, EEPROM, etc):	Size:	User Modifiable: ☐ Yes ☐ No	Function:	Steps to clear memory:

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:
Type (HDD, Tape, etc):	Size:	User Modifiable: ☐ Yes ☐ No	Function:	Steps to clear memory:

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

The front USB host can accept print jobs, scan uploads, photos and can be used to upload printer firmware.

Can any data other than scan upload be sent to the USB device)?
☒ Yes ☐ No If Yes please describe below

Rear USB host when configured will accept stored jobs, encrypted files stored and deleted by user.

Figure A-10 Certificate of Volatility M426/M427 (2 of 2)

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: Near field communication	
Frequency: 2.4 GHz	Bandwidth: 802.11n 20Mhz
Modulation:	Effective Radiate Power (ERP): 802.11n 15+-1.5dBm
Specifications: 802.11b/g/n wireless NFC	

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: 06/18/15

Index

Symbols/Numerics

2ndary service menu 161
550-sheet feeder (optional Tray 3)
components 35
operation 35
550-sheet paper feeder
controller and electrical components 35
electrical components, pickup and feed 36
jam detection 38
motor control 36
other functions, pickup and feed 37
paper path 35
pickup and feed operation 36

A

AC to DC conversion 9
acoustic specifications 176
archive setting 74
automatic crossover, setting 77

B

back page dirty 144
back page dirty, troubleshooting 144
back page dirty, troubleshooting 144
background, gray 146
bands, troubleshooting 146
basic printer operation 3
bias generation
high-voltage power supply 12
black page 144
black page, troubleshooting 144
black page, troubleshooting 144
blank page 143
blank page, troubleshooting 143
blank page, troubleshooting 143
blank pages, troubleshooting 152
browser requirements
HP Embedded Web Server 62

C

cables
USB, troubleshooting 152
calibrating touchscreen 162
cartridge
life detection 27
memory chip 27
presence detection 27
toner level detection 27
cartridges
supplies status page 71
cautions iii
certificate of volatility 177
characters, troubleshooting 148
checklist
fax troubleshooting 165
problems 41
checklists
pre-troubleshooting 44
problem source 46
checklists, printing 71
circuit diagrams 61
high-voltage power supply 11
low-voltage power supply 9
clean
touch screen 150
cleaning
mode 160
paper path 64, 150
components
550-sheet feeder (optional Tray 3) 35
DC controller 6
engine-control system 5
fuser 13
pickup, feed, and delivery 27
toner cartridge 25
configuration page 65, 70
connectivity
solving problems 155
connectors, DC controller
locating 53
contrast
display, control panel 74
control functions
fuser 14
control panel
blank, troubleshooting 47
button test 162
clean touch screen 150
cleaning page, printing 64, 150
display contrast 74
display test 162
language 72
menu map, printing 70
messages, types of 79
Network Setup menu 77
Reports menu 70
Service menu 74
System Setup menu 72
controller
paper feeder (optional Tray 3) 35
conventions, document iii
cooling
areas and fans 8
Courier font settings 74
creases, troubleshooting 148

crooked pages 148
cross-sectional printer view
block diagram 51
curl, paper
settings 74
curled media 148

D
dark print 143
dark print, troubleshooting 143
darkness
dark print, troubleshooting 143
DC controller
components 6
fans 8
motors 8
DC motors 8
DC voltages converted from AC 9
default settings, restoring 74
NVRAM initialization 164
defaults
restoring 160
demo page 70
determine problem source 44
developer's 162
developer's menu 162
development process 22
diagrams
block 51
circuit 61
cross-sectional printer view 51
fan 57
main assemblies PCAs 59
main PCAs (printer base) 59
major components (printer base) 56
motor 57
PCA connections 53
rollers (printer base) 58
rollers and pads 58
timing 60
Diagrams: DC controller connectors
locating 53
dimensions, printer, M402 and M403 174
dimensions, printer, M426 and M427 172
display contrast, setting 74
document conventions iii
document feeder
jams 122
dots, troubleshooting 145
drivers
usage page 71
drum cleaning 24
duplexer
clearing jams 117, 140
duplexing unit
motors 8

E
electrical components
paper feeder (optional Tray 3) 35
electrical components, pickup and feed
paper feeder (optional Tray 3) 36
electrical specifications 176
Embedded Web Server (EWS)
features 62
engine-control system
components 5
error messages
error report 96
event log 96, 97
types of 79
exhaust fans 8
Explorer, versions supported
HP Embedded Web Server 62

F
factory defaults, restoring 74
NVRAM initialization 164
faded print 143
failure detection
laser/scanner 17
motors 8
fan (printer base)
block diagram 57
fans
DC controller 8
exhaust 8
intake 8
fax
solve general problems 166
fax troubleshooting
checklist 165
firmware version 162
fonts
Courier settings 74
lists, printing 71
front page dirty 144
front page dirty, troubleshooting 144
front page dirty, troubleshooting 144
fuser 12
clearing jams 111, 134
components 13
control functions 14
control-circuit function 12
temperature protection 15
See also fusing and delivery unit
fusing process 24

G
graph paper, printing 71
gray background, troubleshooting 146

H
heaters
fuser 13
high-voltage power supply (HVPS)
bias generation 12
circuits 12
operations 11
horizontal lines 145
horizontal lines, troubleshooting 145
horizontal lines, troubleshooting 145
horizontal white lines 145
horizontal white lines, troubleshooting 145
horizontal white lines, troubleshooting 145
HP Embedded Web Server (EWS)
features 62
HP Jetdirect print server
NVRAM initialization 164
HVPS (high-voltage power supply)
bias generation 12
circuits 12
operations 11

I
image quality
archive setting 74

solving 143
troubleshooting defects 66
image-formation process
development process 22
drum cleaning 24
fusing process 24
laser-beam exposure 22
primary charging 21
primary transfer process 23
separation process 24
image-information process 18
information pages
configuration page 65
initial rotation period 4
initialization
NVRAM 164
intake fans 8
Internet Explorer, versions supported
HP Embedded Web Server 62
interpret control-panel messages and event log entries 79

J
jam detection
paper feeder (optional Tray 3) 38
jams
causes of 101
document feeder 122
duplexer 117, 140
fuser 111, 134
locating 102, 120
output bin 115, 137
tracking number of 71
Tray 1 103, 125
Tray 2 104, 126
Tray 3 108, 130
Jetdirect print server
NVRAM initialization 164

L
language, control panel 72
laser-beam exposure 22
laser/scanner
failure detection 17
operations 16
safety 17
last rotation period 4
latent image formation 21
LDAP gateway
validating 169
LEDs, troubleshooting 49
light print, troubleshooting 143
lightness
faded print, troubleshooting 143
lines, troubleshooting 146
printed pages 146
location
setting 162
loose toner, troubleshooting 146, 147
low-voltage power supply (LVPS)
operations 9
protection for components 10
safety 10
LVPS (low-voltage power supply)
operations 9
protection for components 10
safety 10

M
main PCAs (printer base)
block diagram 59
major components (printer base)
block diagram 56
media
curled, troubleshooting 148
default settings 72
wrinkled 148
memory
NVRAM initialization 164
toner cartridge 27
menu
Quick Forms 71
menu map 42
menus 162
menus, control panel
map, printing 70
Network Setup 77
Reports 70
Service 74
System Setup 72
messages
types of 79
motor control
paper feeder (optional Tray 3) 36
motors
DC controller 8
failure detection 8
image-formation system 31
stepping 8
movement of paper through printer. *See* pickup, feed, and delivery
music paper, printing 71

N
Netscape Navigator, versions supported
HP Embedded Web Server 62
Network Setup menu 77
networks
configuration page 70
settings 77
settings report 71
notebook paper, printing 71
notes iii
NVRAM initialization 164

O
operation sequence 4
operations
laser/scanner 16
toner cartridge memory 27
other functions, pickup and feed
paper feeder (optional Tray 3) 37
output bin
clearing jams 115, 137
output quality
archive setting 74
over-current protection 10
over-voltage protection 10

P
page count 71
pages
blank 152
not printing 152
printing slowly 152
skewed 148
paper
curl settings 74
curled, troubleshooting 148
default settings 72
jams 101
wrinkled 148

paper feeder
controller and electrical components 35
electrical components, pickup and feed 36
jam detection 38
motor control 36
other functions, pickup and feed 37
paper path 35
pickup and feed operation 36
Paper feeder (optional Tray 3)
operation 35
paper jams
document feeder 122
locating 102, 120
Tray 1 103, 125
Tray 2 104, 126
Tray 3 108, 130
paper movement
operation 27
paper path
550-sheet feeder (optional Tray 3) 35
paper feeder (optional Tray 3) 35
printer 27
paper pickup problems
solving 142
PCL font list 71
periods of the operation sequence 4
pickup and feed operation
paper feeder (optional Tray 3) 36
pickup, feed, and delivery
550-sheet feeder (optional Tray 3) 35
components 27
overview 27
power
consumption 176
power supply 9
See also low-voltage power supply; high-voltage power supply
power-on
troubleshooting 47
powersave 160
pre-troubleshooting checklist 44
primary charging process 21
print quality
archive setting 74
printer space requirements 176
printing
configuration page 65
period in operation sequence 4
troubleshooting 152
problem-solving
messages, types of 79
no response 153
slow response 154
PS font list 71

Q

quality
archive setting 74
troubleshooting repetitive image defects 66

R

repetitive defects, troubleshooting 66, 149
reports
error 96, 97, 162
service 162
Reports menu 70
resets
NVRAM initialization 164
restoring
defaults 160
factory defaults 160
restoring default settings 74
NVRAM initialization 164
rollers and pads (printer base)
block diagram 58

S

safety
laser/scanner 17
low-voltage power supply 10
scatter, troubleshooting 149
secondary service menu 161
sensors
image-formation system 20
pickup, feed, and delivery system 29, 51
separation process 24
service and support information v, 2, 40
Service menu 74
service menu 160
secondary 161
service menu settings 160
cleaning mode 160
powersave 160
restoring defaults 160
service page 43, 71
settings
network report 71
restoring defaults 74
System Setup menu 72
sizes, media
default, setting 72
skewed pages 148
smeared toner, troubleshooting 146
SMTP gateway
validating 169
solve problems 39
fax 166
solving
direct-connect problems 155
network problems 155
space requirements, printer 176
specifications
electrical and acoustic 176
space requirments 176
specks, troubleshooting 145
spots, troubleshooting 145
standby period 4
status
messages, types of 79
supplies, printing report 71
stepping motors 8
streaks, troubleshooting 146
supplies status page 71
switches
pickup, feed, and delivery system 29, 51
system requirements
HP Embedded Web Server 62
System Setup menu 72

T

table, repetitive defect 66
TCP/IP
settings 77
temperature
fuser heater protection 15

text, troubleshooting
misformed characters 148
thermistors
fuser 13
thermoswitches
fuser 13
timing chart 60
tips iii
toner
image formation, use during 21
loose, troubleshooting 146, 147
scatter, troubleshooting 149
smeared, troubleshooting 146
specks, troubleshooting 145
toner cartridge
life detection 27
memory chip 27
presence detection 27
toner level detection 27
toner cartridges 25
components 25
error conditions 25
operations 25
supplies status page 71
touch screen, clean 150
touchscreen
calibrating 162
transfer processes 23
Tray 1
jams 103, 125
settings 72
Tray 2
jams 104, 126
settings 72
Tray 3
controller and electrical components 35
electrical components, pickup and feed 36
jam detection 38
jams 108, 130
motor control 36
operation 35
other functions, pickup and feed 37
paper path 35
pickup and feed operation 36
trays
settings 72
troubleshooting 39
advanced configuration with HP Embedded Web Server (EWS) and HP Device Toolbox (Windows 7) 49
back page dirty 144
black page 144
blank page 143
blank pages 152
checklist 41, 44
component diagnostics 49
configuration page 49
control panel checks 47
control panel message document (CPMD) 49
control-panel menus 49
curled media 148
dark print 143
direct-connect problems 155
engine diagnostics 49
event log messages 49
faded print 143
faxes 165
front page dirty 144
horizontal lines 145
horizontal white lines 145
internal print-quality test pages 49
jams 101
LED diagnostics 49
lines, printed pages 146
loose smear 146
loose toner 147
network problems 155
NVRAM initialization 164
pages not printing 152
pages printing slowly 152
power-on 47
print-quality troubleshooting tools 49
problem source 46
process 44
repetitive defects 149
skewed pages 148
text 148
toner scatter 149
toner smear 146
toner specks 145
USB cables 152
vertical density variation 144
vertical white lines 145
white spots 144
wrinkles 148

U

usage page 71
USB port
speed settings 74
troubleshooting 152

V

vertical density variation 144
vertical density variation, troubleshooting 144
vertical density variation, troubleshooting 144
vertical lines, troubleshooting 146
vertical white lines 145
vertical white lines, troubleshooting 145
vertical white lines, troubleshooting 145

W

waiting period 4
warnings iii
wavy paper, troubleshooting 148
Web browser requirements
HP Embedded Web Server 62
weight, printer 172, 174
white spots 144
white spots, troubleshooting 144
white spots, troubleshooting 144
wrinkles, troubleshooting 148