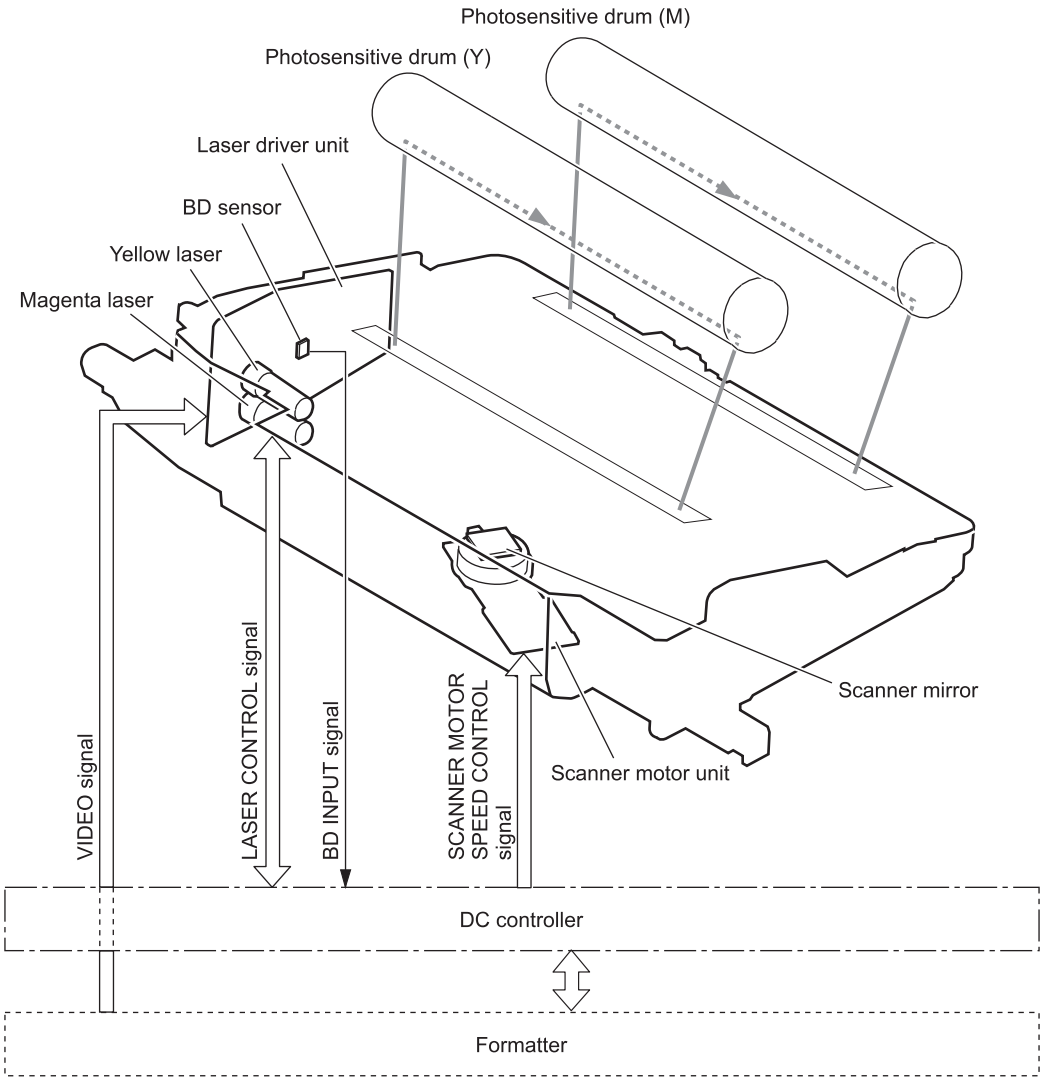
Laser/scanner system

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

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

Figure 5-8 Laser/scanner system



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

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

Image-formation system

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

Figure 5-9 Image-formation system

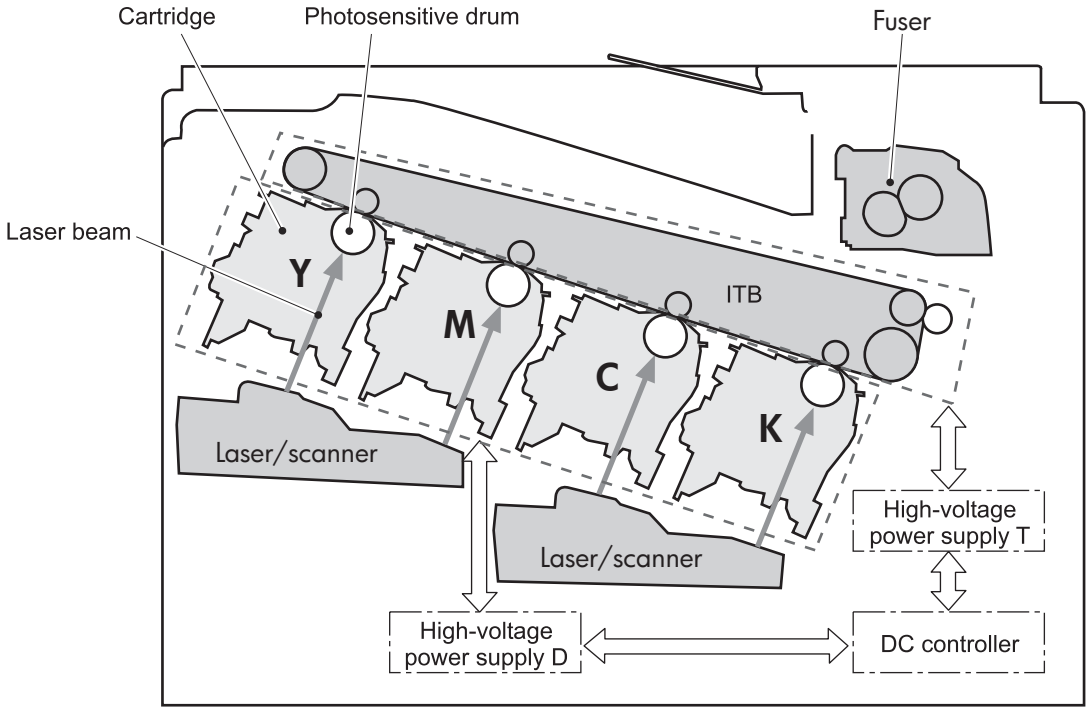
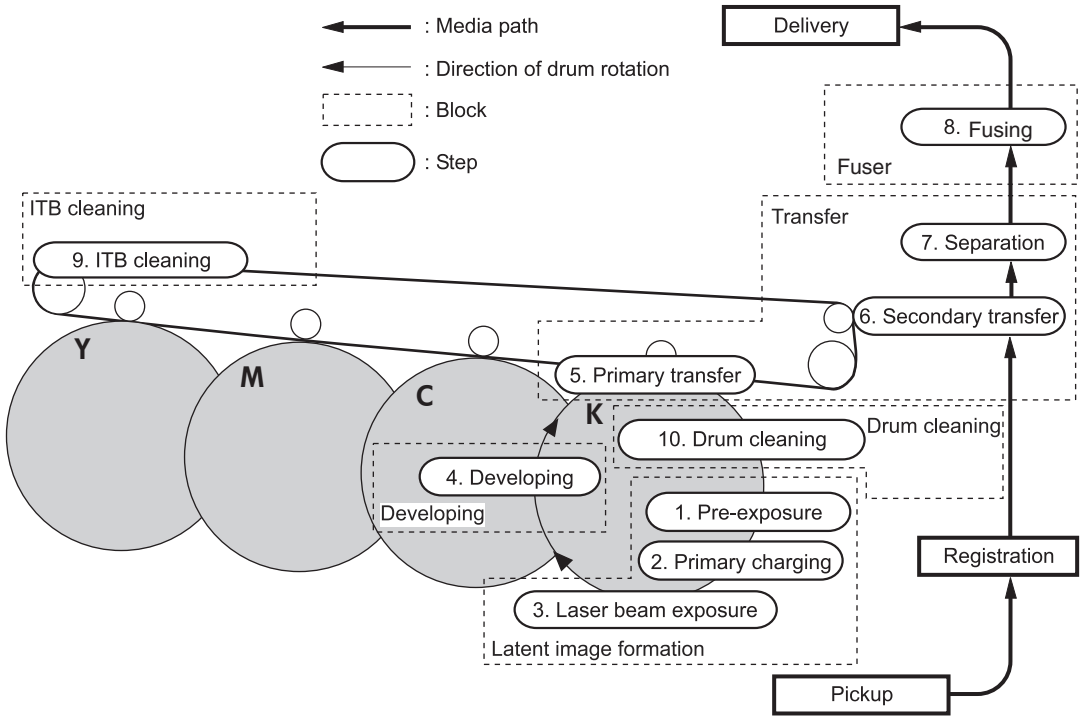


Image-formation process

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

Figure 5-10 Image-formation process

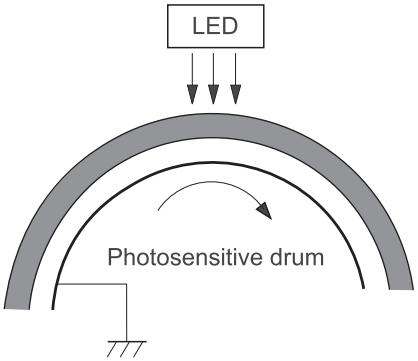


Functional block	Steps	Description
Latent image formation	1. Pre-exposure 2. Primary charging 3. Laser-beam exposure	An invisible latent image forms on the surface of the photosensitive drums.
Development	4. Development	Toner adheres to the electrostatic latent image on the photosensitive drums.
Transfer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

Step 1: Pre-exposure

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

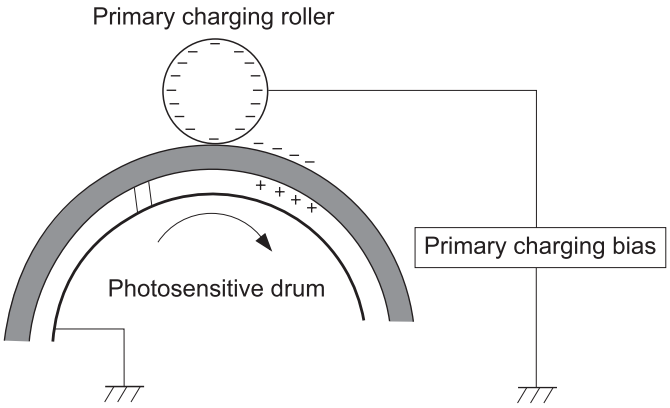
Figure 5-11 Pre-exposure



Step 2: Primary charging

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

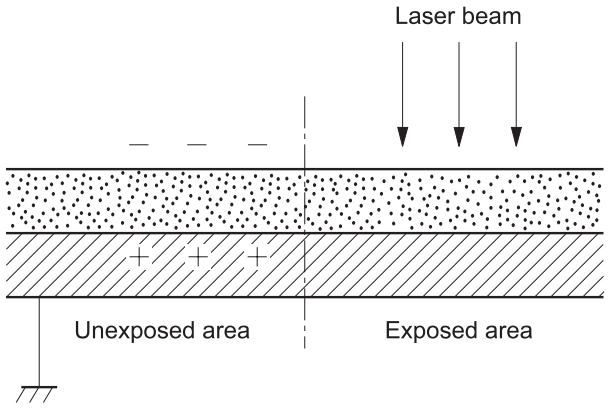
Figure 5-12 Primary charging



Step 3: Laser-beam exposure

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

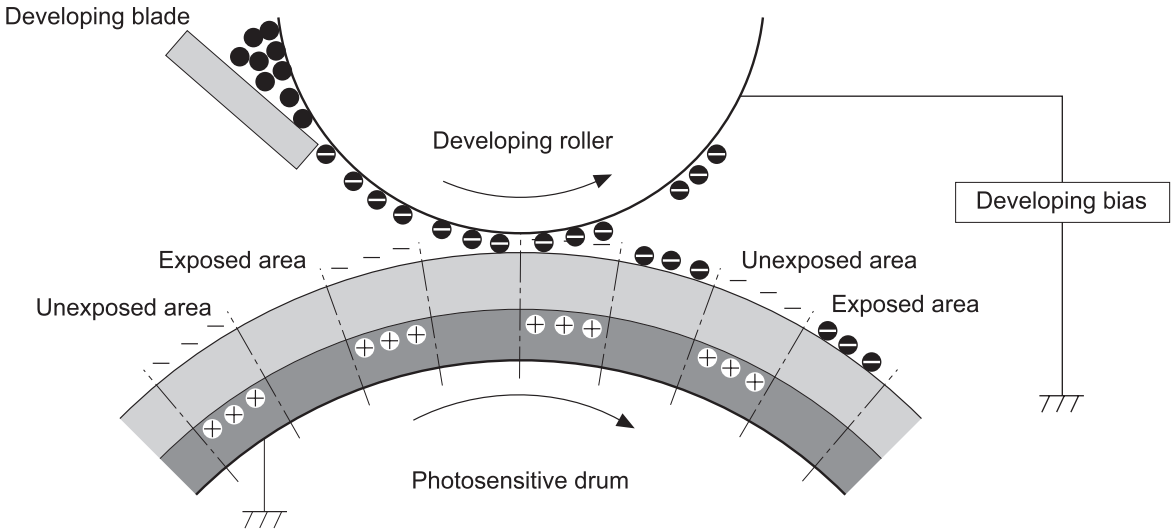
Figure 5-13 Laser-beam exposure



Step 4: Development

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

Figure 5-14 Development

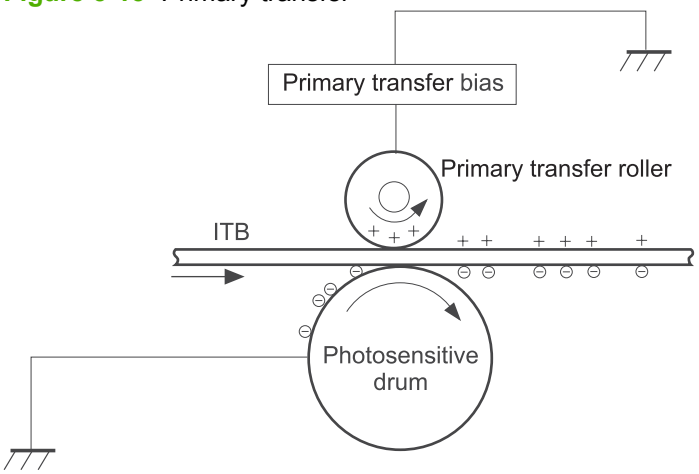


Step 5: Primary transfer

The positively charged primary-transfer rollers contact the ITB, giving the ITB a positive charge. The ITB attracts the negatively charged toner from the surface of each photosensitive drum, and the

complete toner image transfers onto the ITB, beginning with yellow, followed by magenta, cyan, and black.

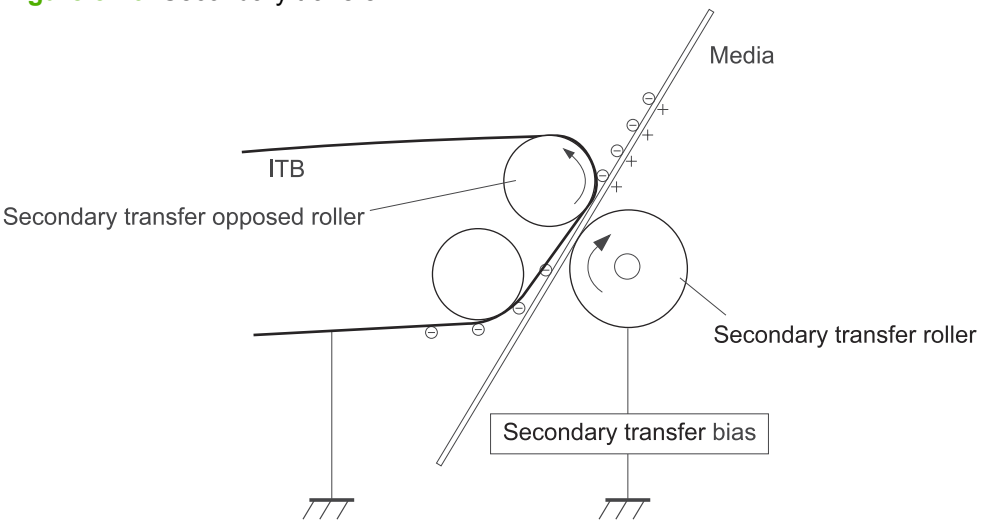
Figure 5-15 Primary transfer



Step 6: Secondary transfer

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

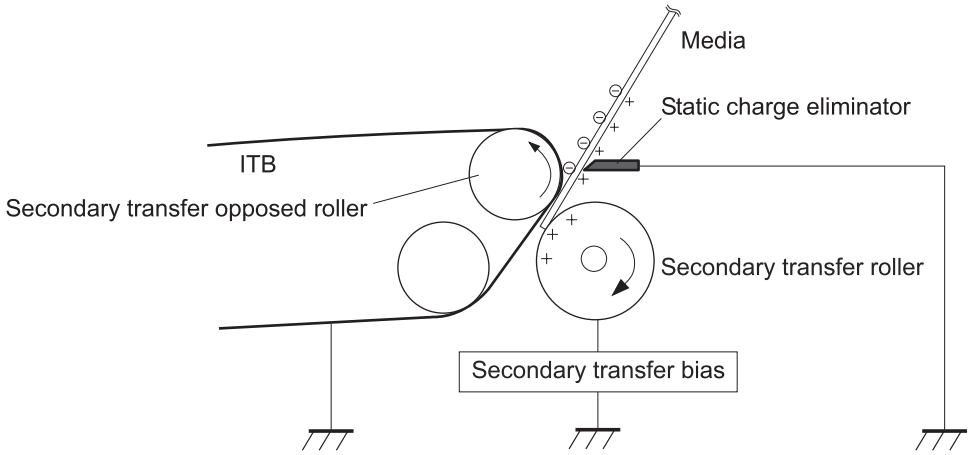
Figure 5-16 Secondary transfer



Step 7: Separation

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

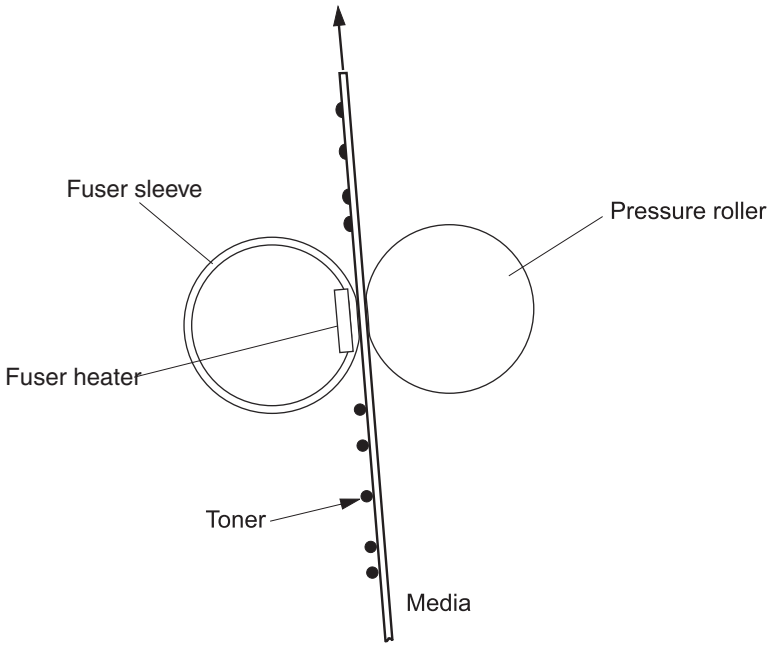
Figure 5-17 Separation



Step 8: Fusing

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

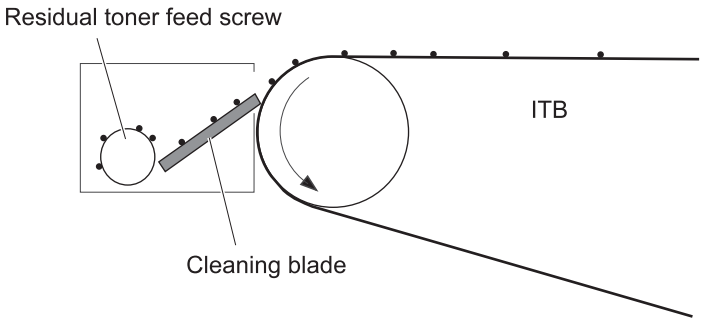
Figure 5-18 Fusing



Step 9: ITB cleaning

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

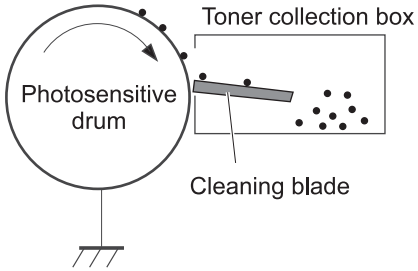
Figure 5-19 ITB cleaning



Step 10: Drum cleaning

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

Figure 5-20 Drum cleaning



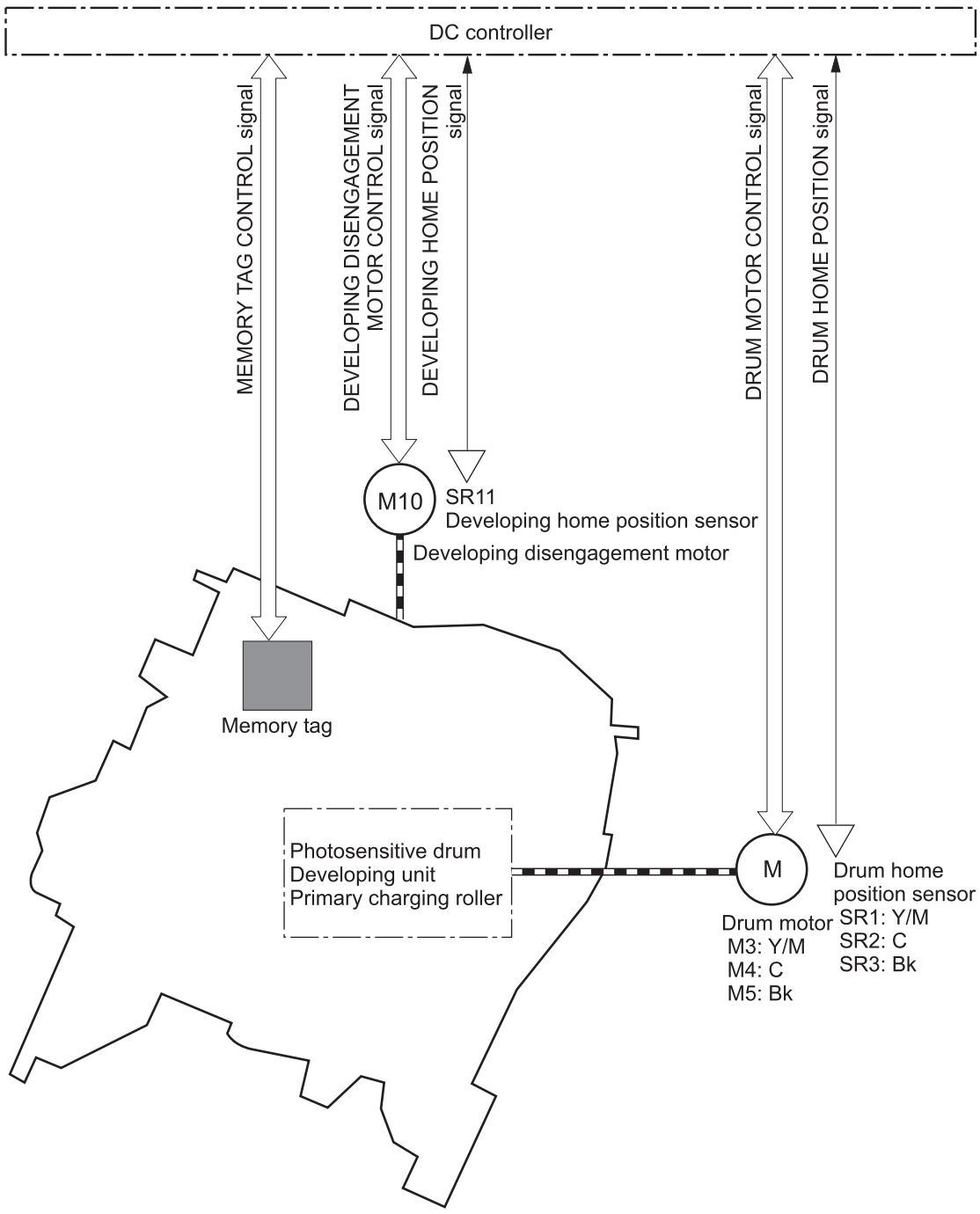
Print cartridge

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

- Photosensitive drum
- Developing roller
- Primary-charging roller

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

Figure 5-21 Print-cartridge system



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

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

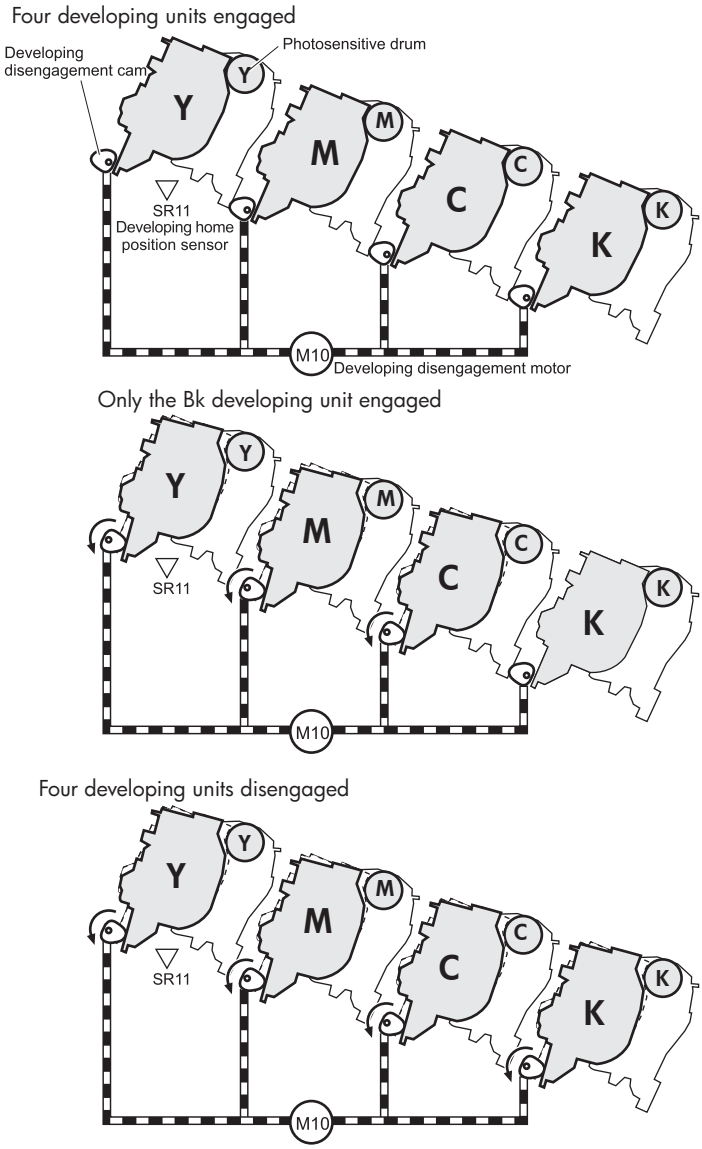
The DC controller notifies the formatter of an error if any of the following conditions exist:

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

Developing-roller engagement and disengagement

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

Figure 5-22 Developing-roller engagement and disengagement control



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

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

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

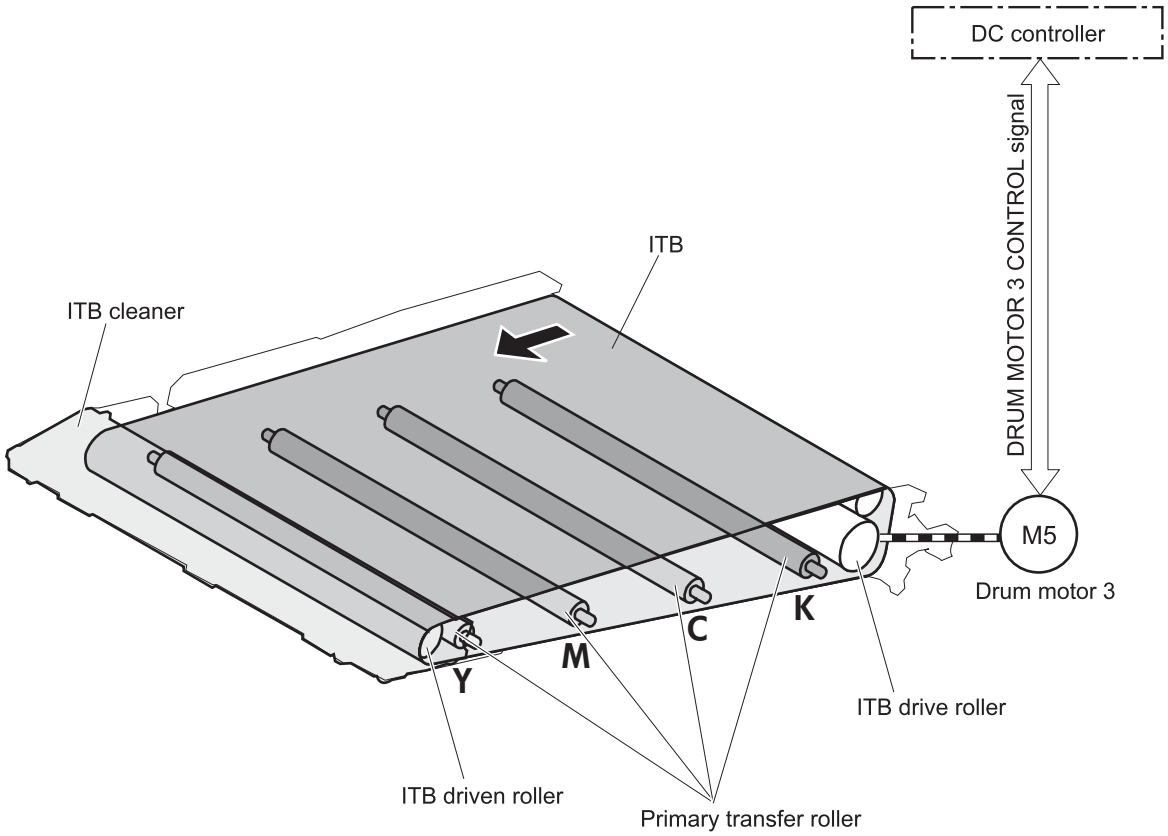
Intermediate transfer belt (ITB) unit

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

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

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

Figure 5-23 ITB unit



Primary-transfer-roller engagement and disengagement

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

Table 5-10 Primary-transfer-roller engagement states

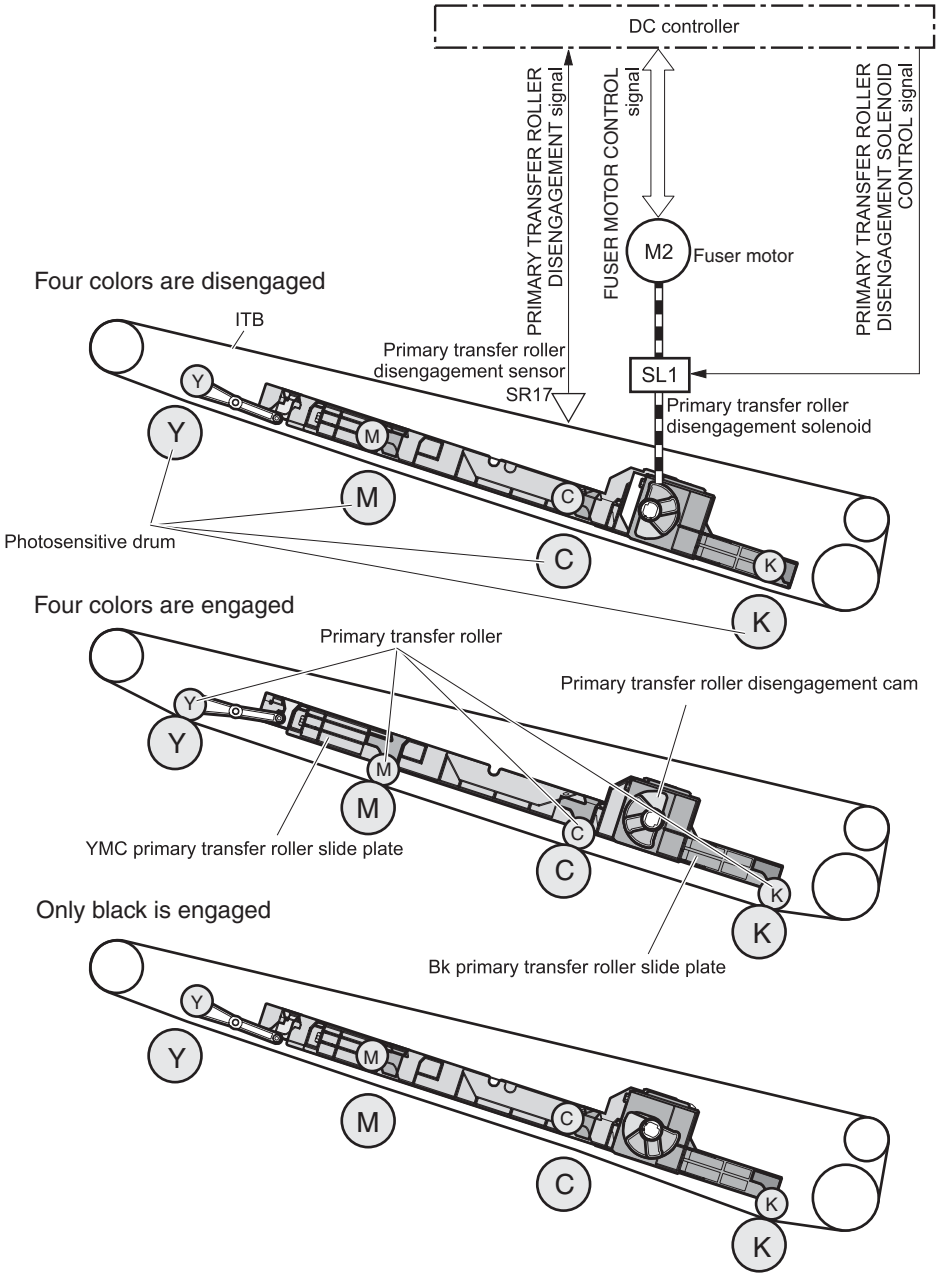
All rollers disengaged	The home position for the ITB unit
All rollers engaged	The state for a full-color print job
Black roller engaged	The state for a black-only print job

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

If the DC controller does not receive the expected signal from the ITB home-position sensor when the primary-transfer-roller engages or disengages, but the primary-transfer-roller disengagement motor is

rotating, the DC controller determines that the primary-transfer-disengagement mechanism has failed, and notifies the formatter.

Figure 5-24 Three states of primary-transfer-roller engagement and disengagement

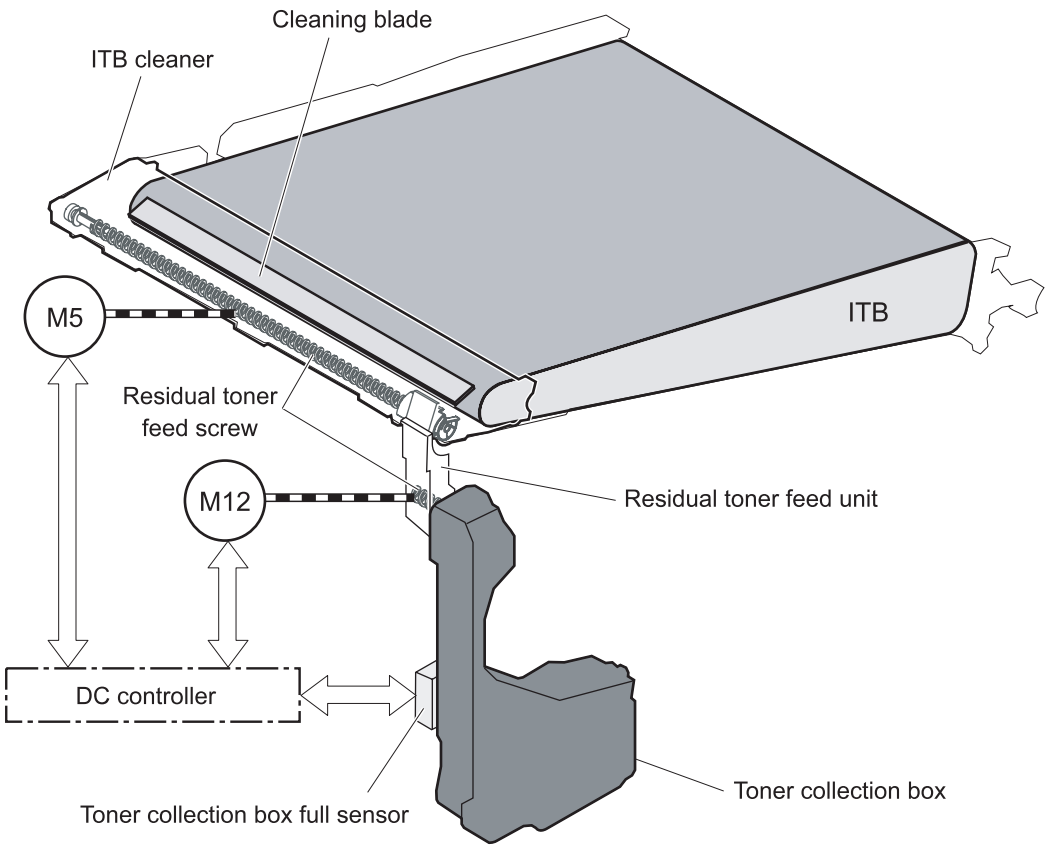


ITB cleaning

The cleaning blade in the ITB cleaner scrapes the residual toner off the ITB surface. The drum motor (M5) drives the residual toner feed screw. The screw feeds the residual toner to the residual toner feed unit. The residual toner feed motor (M12) drives the residual toner feed screw. The residual toner feed

screw deposits the residual toner in the toner collection box. The DC control detects whether the toner collection box is full, using the toner collection-box-full sensor, and then notifies the formatter.

Figure 5-25 ITB cleaning process

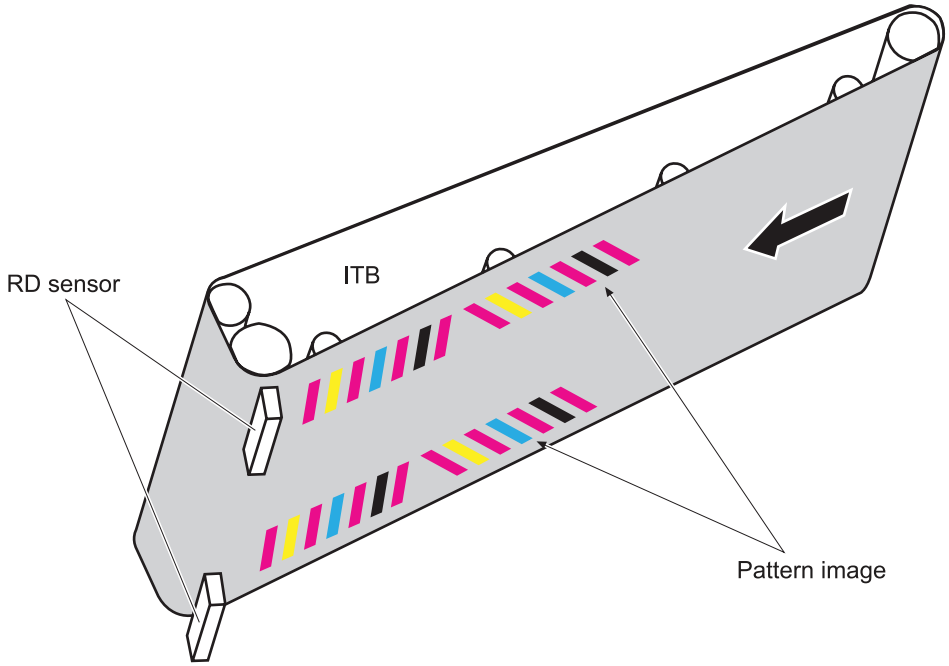


Calibration

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

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

Figure 5-26 Toner patterns for calibration



Color-misregistration control

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

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

The calibration occurs when any of the following occurs:

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

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

Image-stabilization control

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

Table 5-11 Image-stabilization controls

Environment change control	The DC controller monitors environmental information from internal temperature and humidity sensors. The DC controller adjusts the high-voltage bias to accommodate environmental changes. This control occurs under the following circumstances: • The product is turned on. • The print cartridge is replaced. • A change in environmental conditions occurs. The DC controller notifies the formatter when it encounters a communication error with the environmental sensor.
Image density control (DMAX)	This control corrects variations in image density related to deterioration of the photosensitive drum or the toner. The DC controller adjusts the high-voltage biases to correct the problem under the following conditions: • The sub thermistor detects a temperature that is too low when the product is turned on. • A print cartridge is replaced. • A specified number of pages print after replacing the print cartridge. • A specified number of pages have printed. • The formatter sends a command • The product recovers from sleep mode • After a specific period of the completion of a print operation • The environment is relatively charged.
Image halftone control (DHALF)	The formatter performs this control to calibrate the halftone, based on the halftone-density measurements, under the following conditions: • The formatter sends a command. • DMAX is completed.

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

Pickup, feed, and delivery system

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

Figure 5-27 Switches and sensors for the pickup, feed, and delivery system

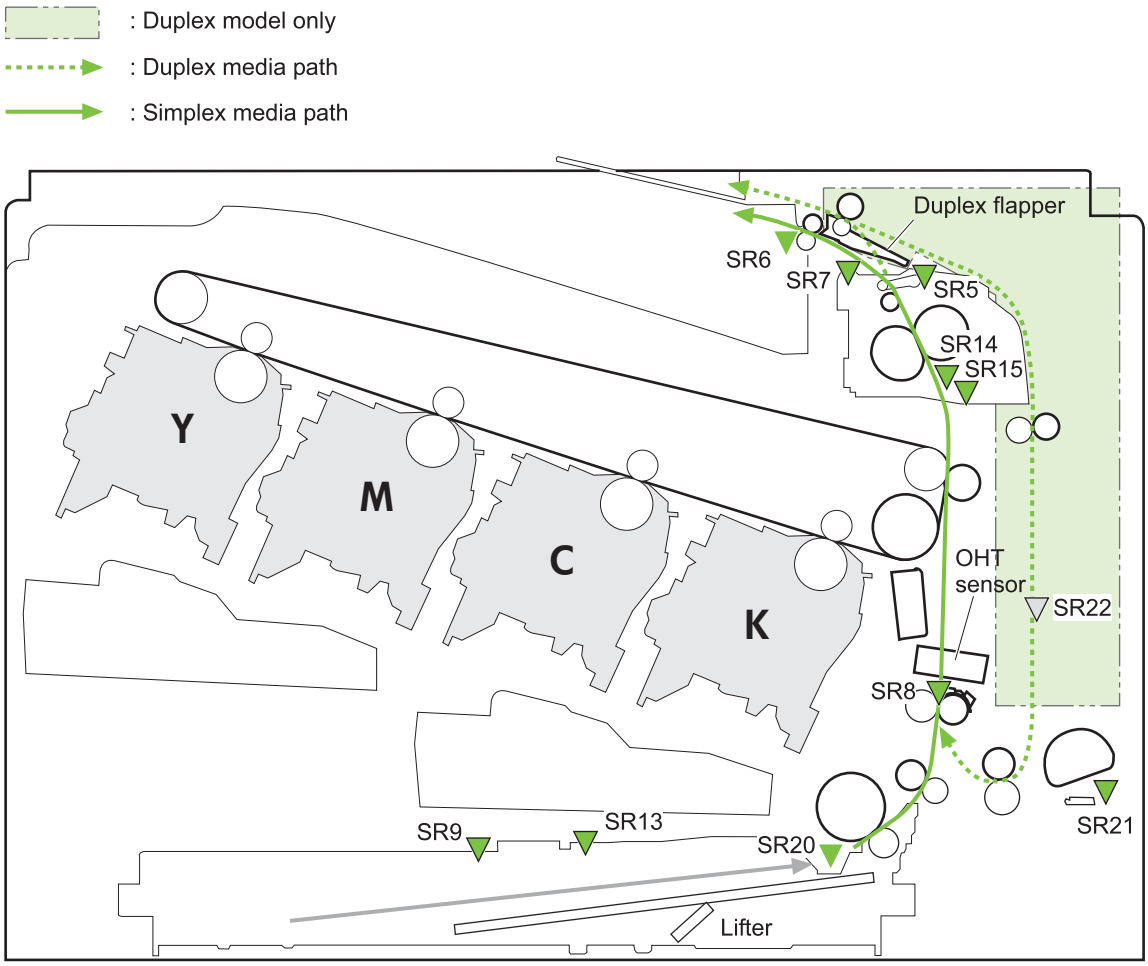


Table 5-12 Switches and sensors for the pickup, feed, and delivery system

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

Table 5-12 Switches and sensors for the pickup, feed, and delivery system (continued)

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

Figure 5-28 Motors and solenoids for the pickup, feed, and delivery system

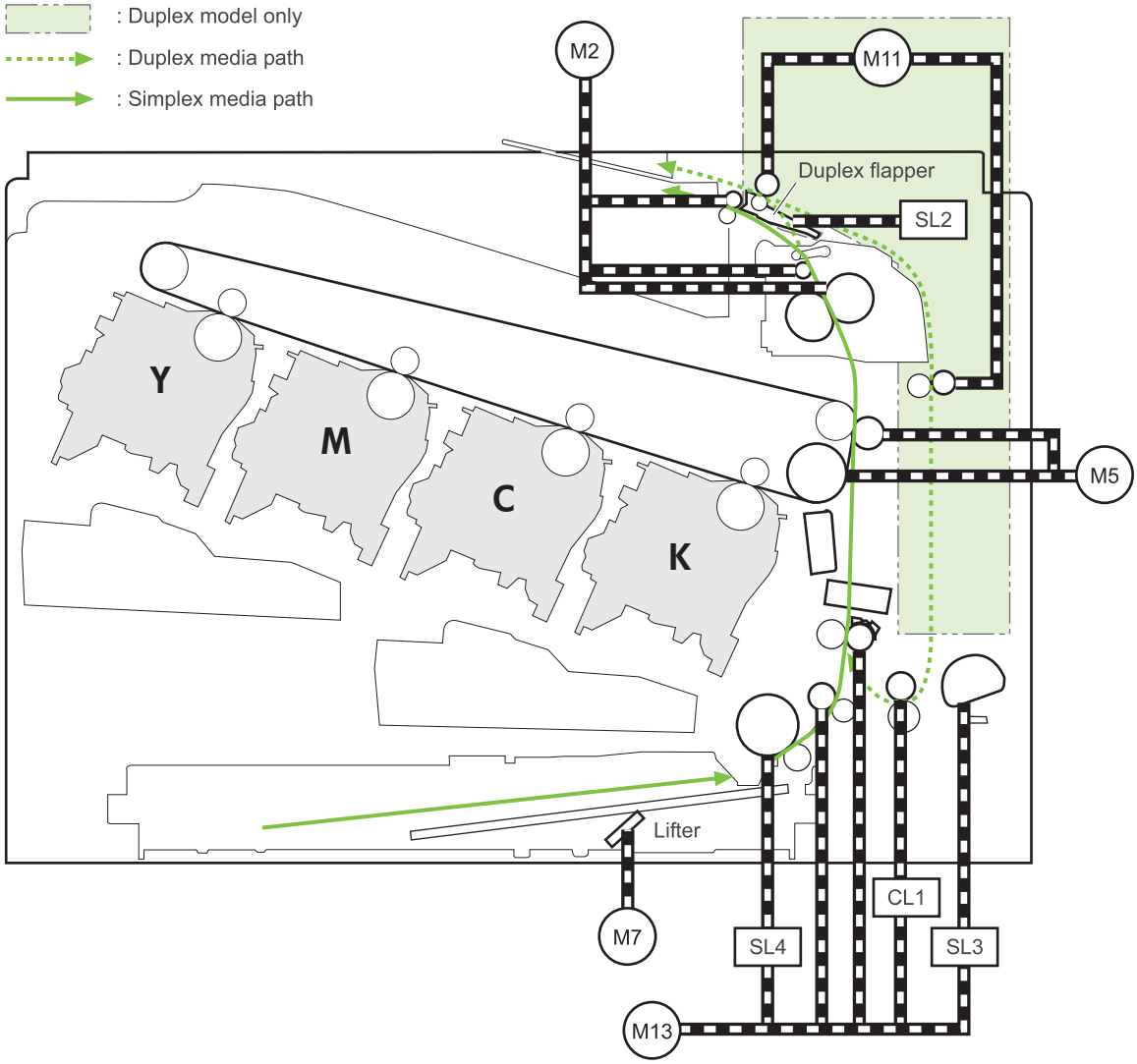


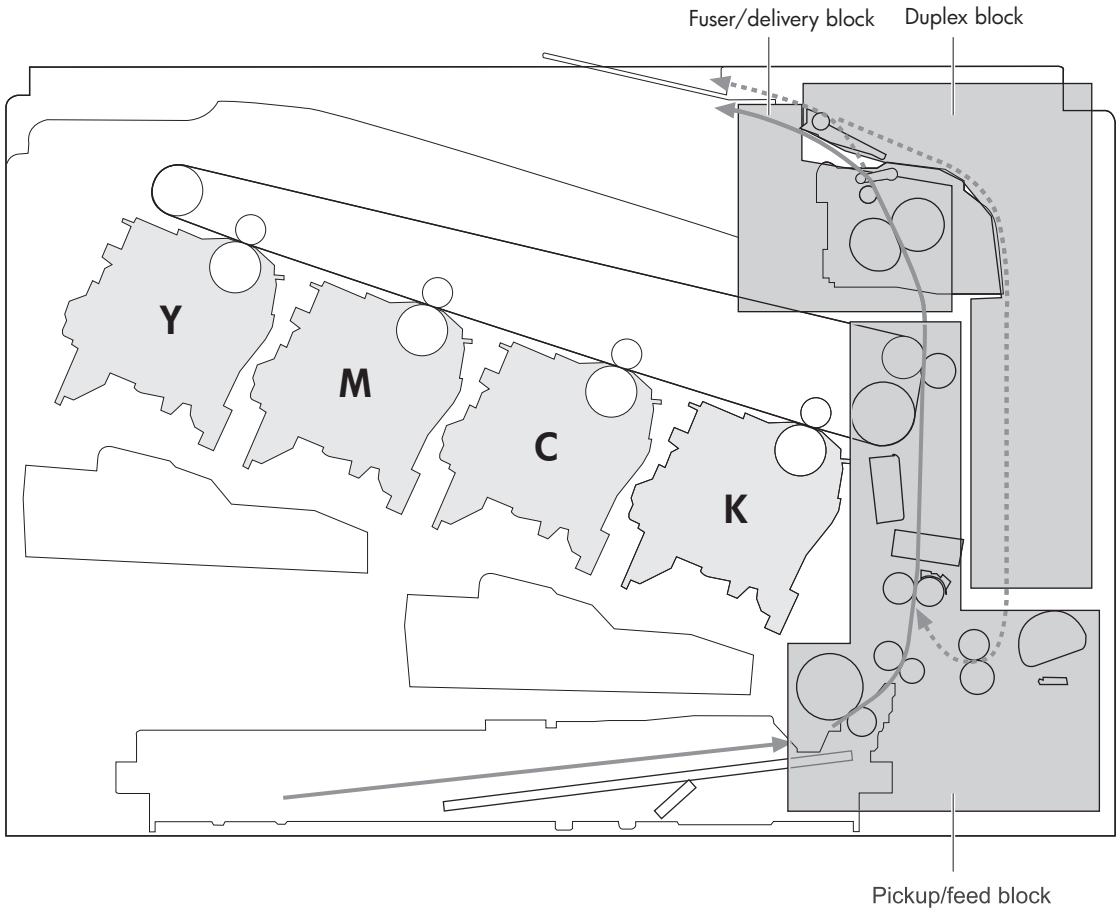
Table 5-13 Motors and solenoids for the pickup, feed, and delivery system

Abbreviation	Component
M2	Fuser (fixing) motor
M5	Drum motor 3
M7	Lifter motor
M11	Duplex reverse motor (duplex models only)
M13	Pickup motor
CL1	Duplex re-pickup clutch (duplex models only)

Table 5-13 Motors and solenoids for the pickup, feed, and delivery system (continued)

Abbreviation	Component
SL2	Duplex reverse solenoid (duplex models only)
SL3	Multipurpose tray pickup solenoid
SL4	Cassette pickup solenoid

Figure 5-29 Three main units of the pickup, feed, and delivery system



Pickup-and-feed unit

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

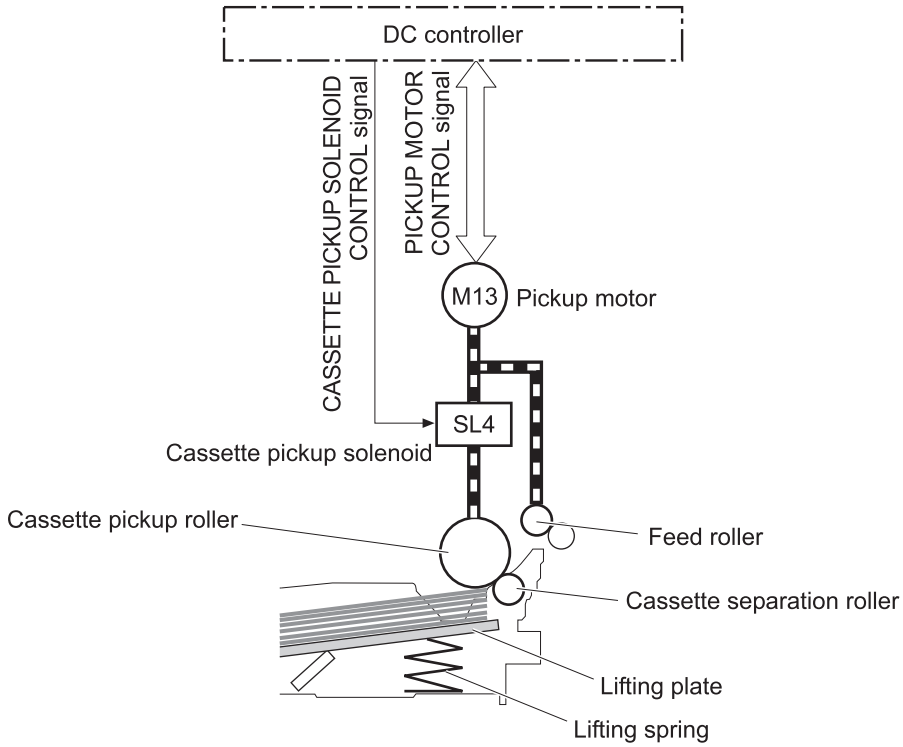
Figure 5-30 Pickup and feed unit

Cassette pickup

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

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

Figure 5-31 Cassette-pickup mechanism

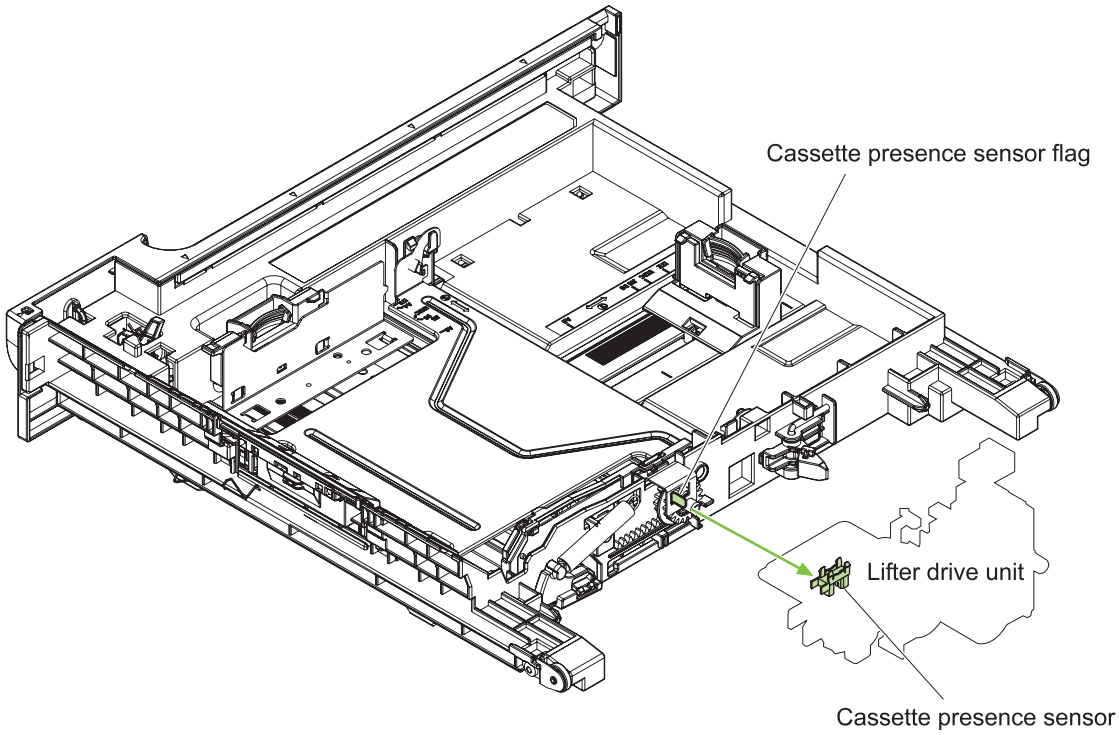


NOTE: The lift-up operation lifts the lifting plate to keep the stack surface of the media at a pickup position. The lifting spring helps support the lifting plate depending on the media size and amount.

Cassette-presence detection

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

Figure 5-32 Cassette presence sensor



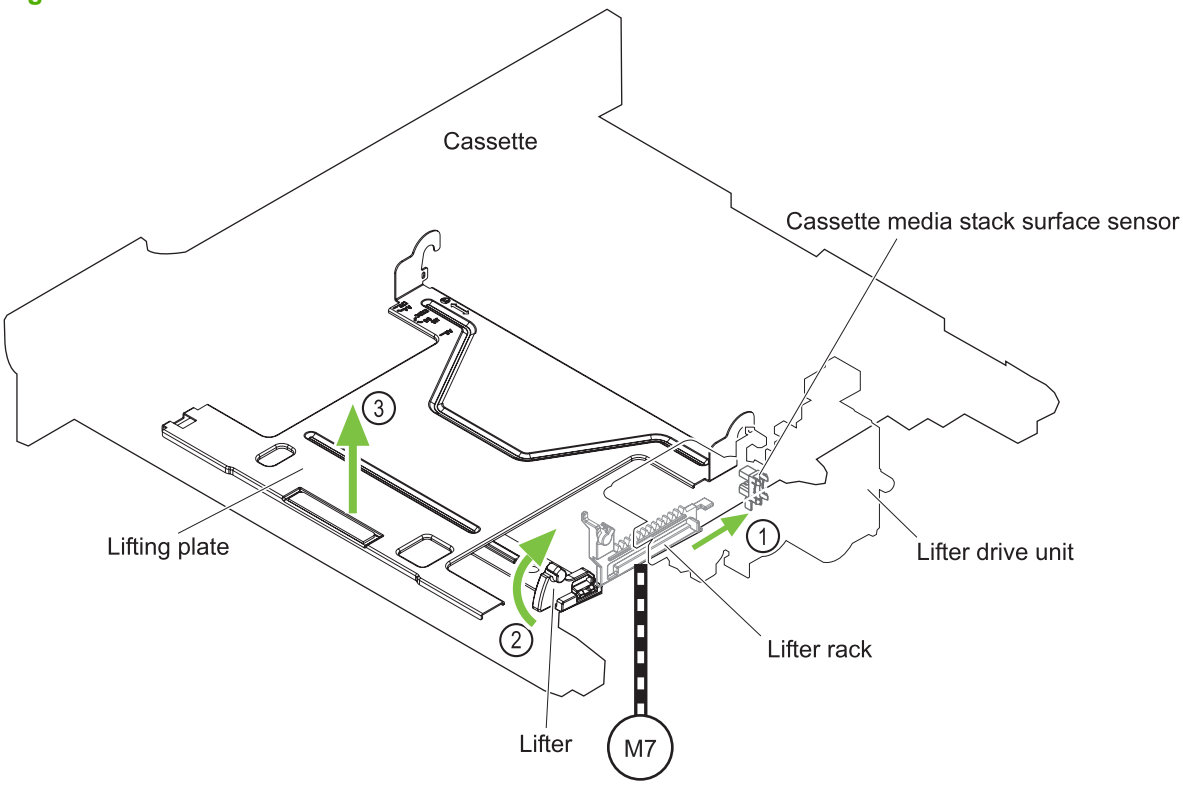
Cassette lift operation

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

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

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

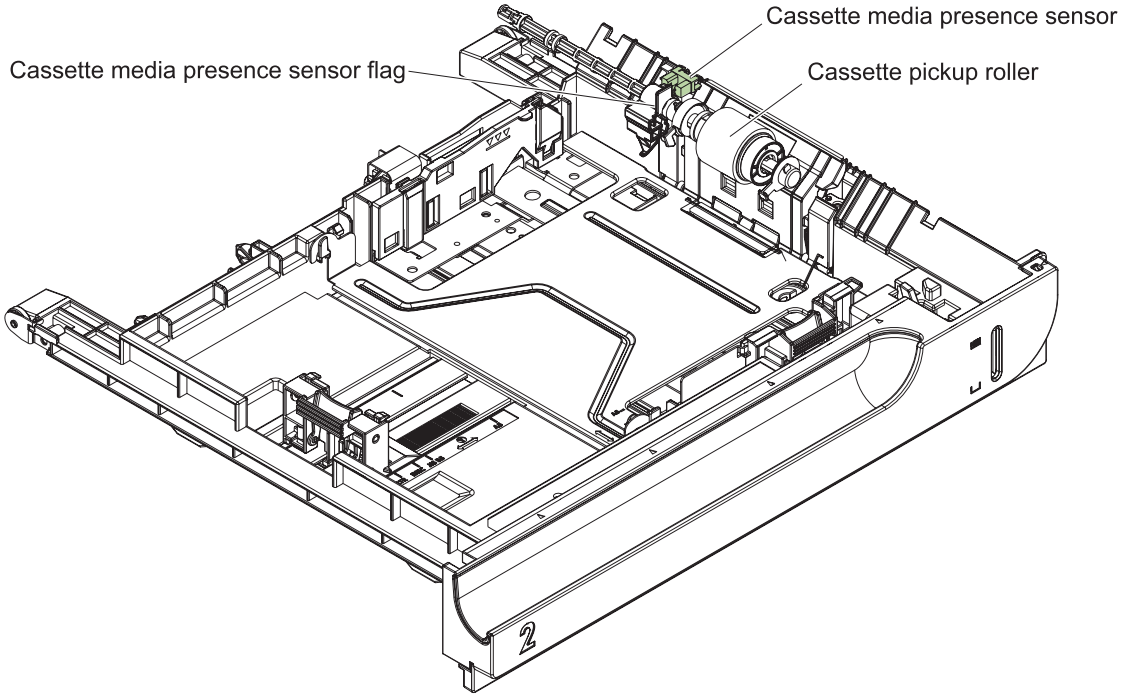
Figure 5-33 Cassette lift mechanism



Cassette paper-presence detection

The cassette media-presence sensor detects whether paper is in the cassette.

Figure 5-34 Paper-level-detection mechanism

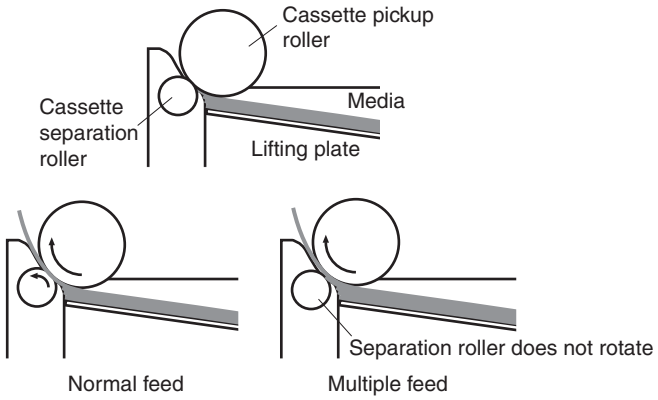


Multifeed prevention

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

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

Figure 5-35 Multifeed prevention



Multipurpose tray pickup

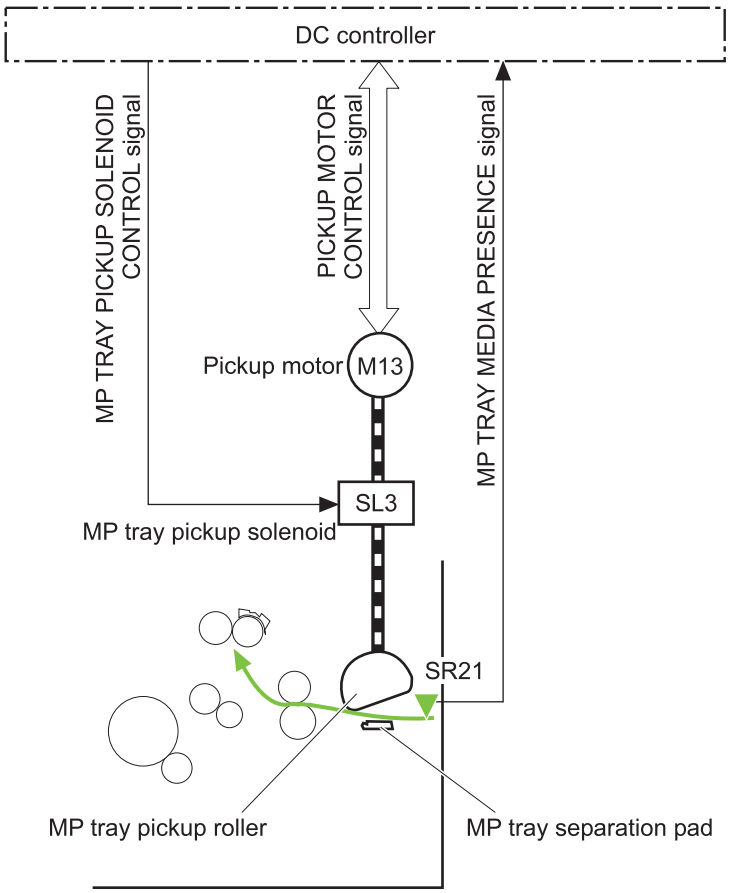
The multipurpose tray paper-presence sensor detects whether paper is in the tray. If no paper is present, the DC controller notifies the formatter. Printing does not occur until paper is in the tray.

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

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

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

Figure 5-36 Multipurpose tray pickup mechanism

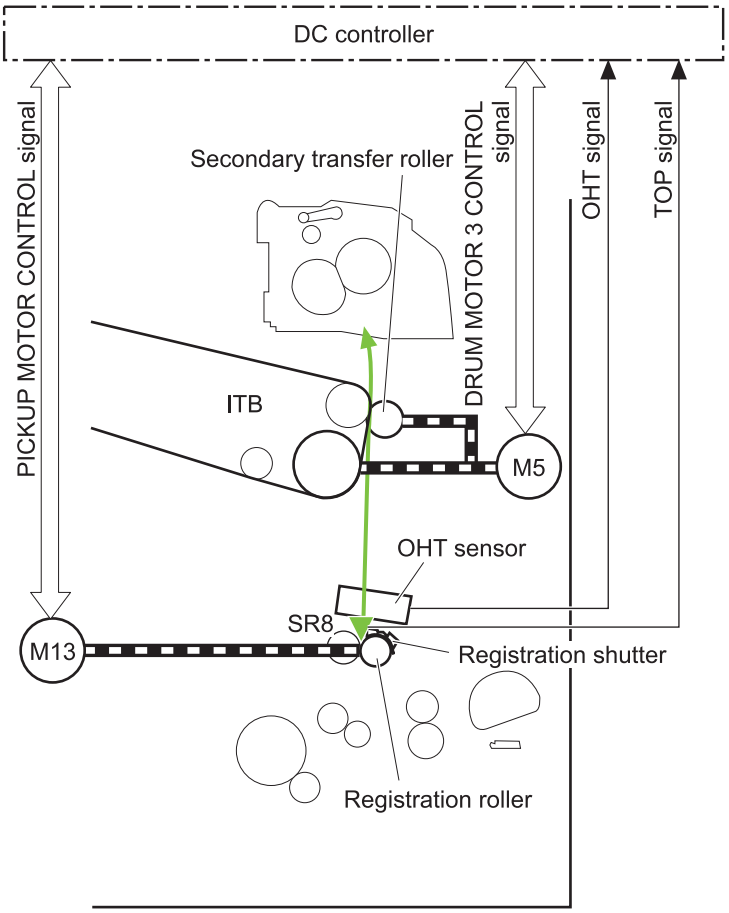


Paper feed

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

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

Figure 5-37 Paper-feed mechanism

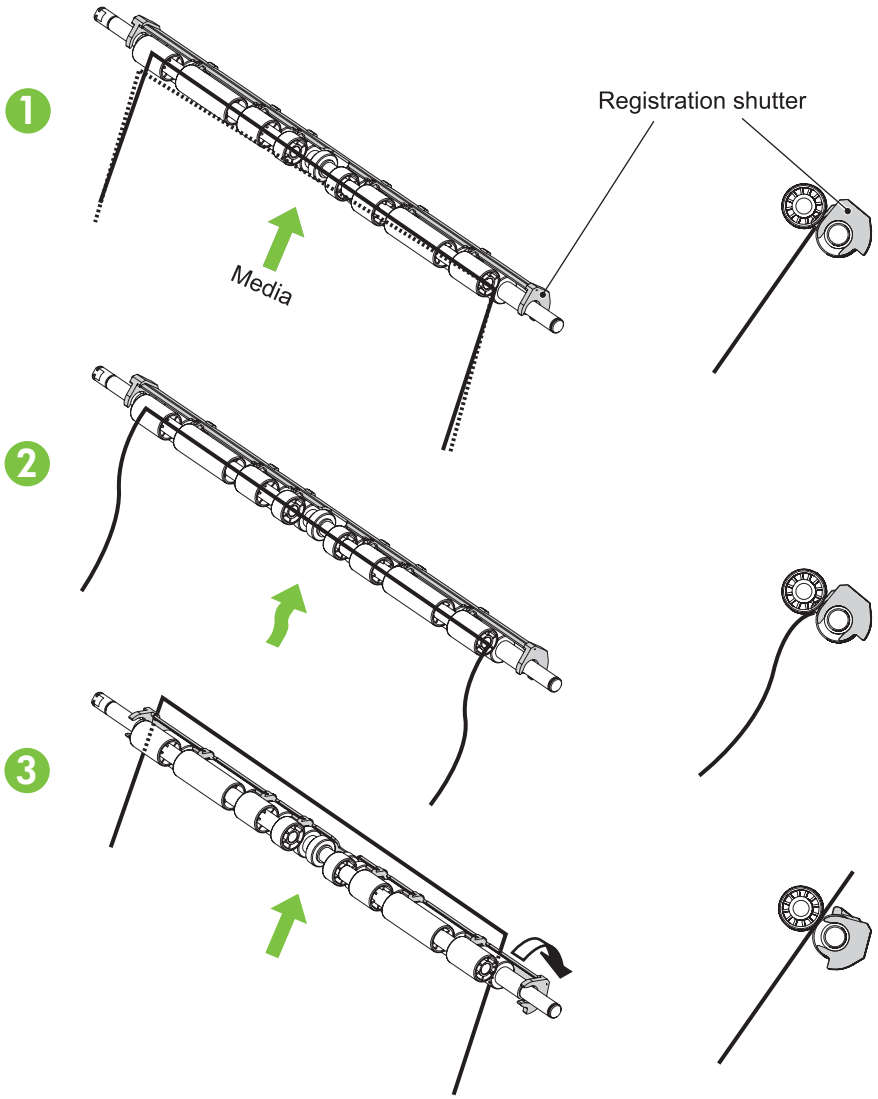


Skew-feed prevention

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

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

Figure 5-38 Skew-feed prevention



OHT detection

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

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

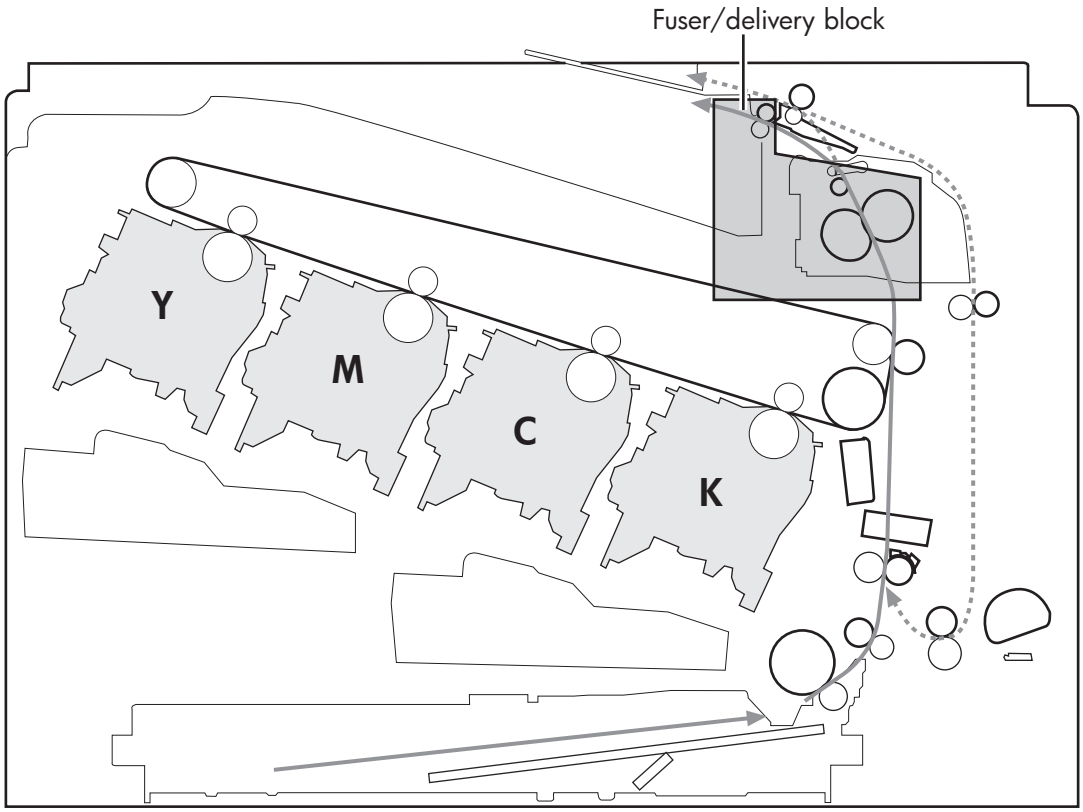
Fusing and delivery unit

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

- Loop control
- Pressure roller pressurization/depressurization control

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

Figure 5-39 Fuser and delivery unit



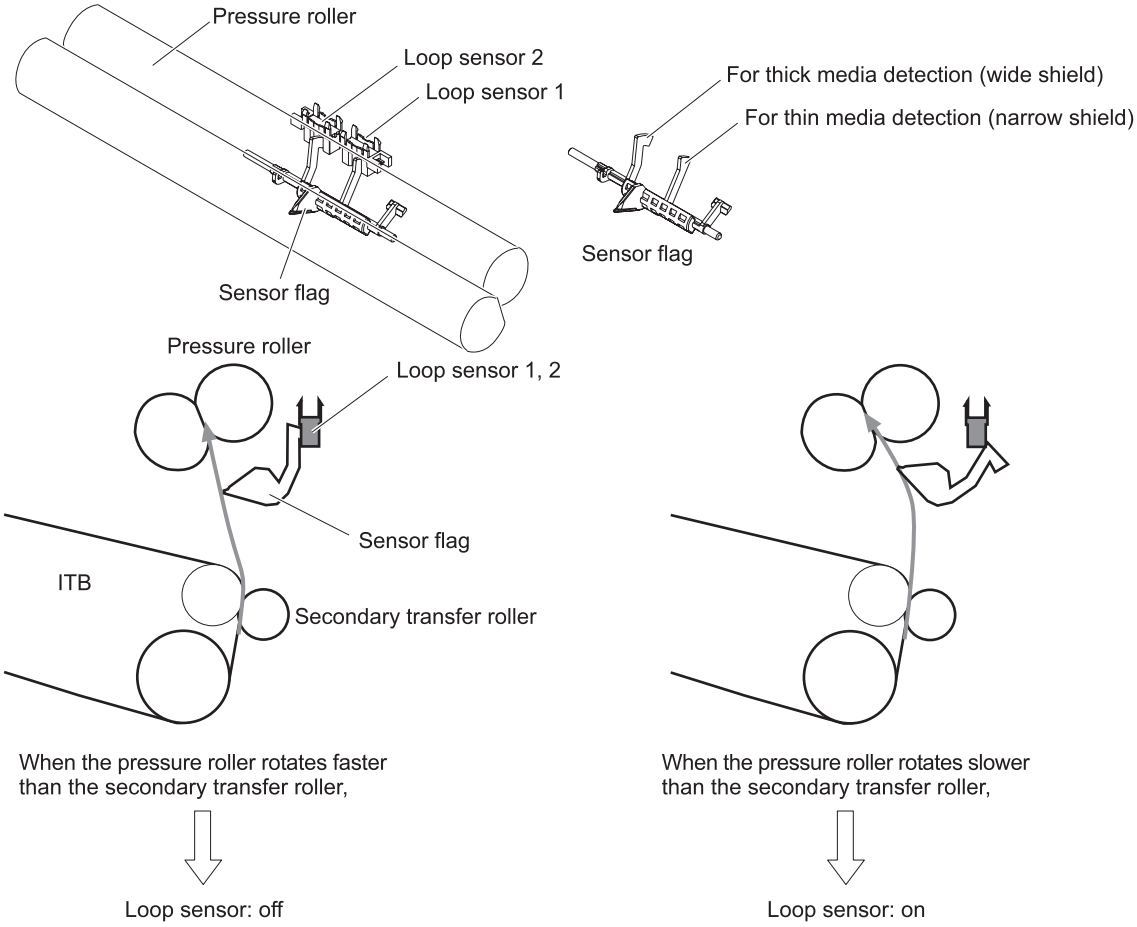
Loop control

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

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

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

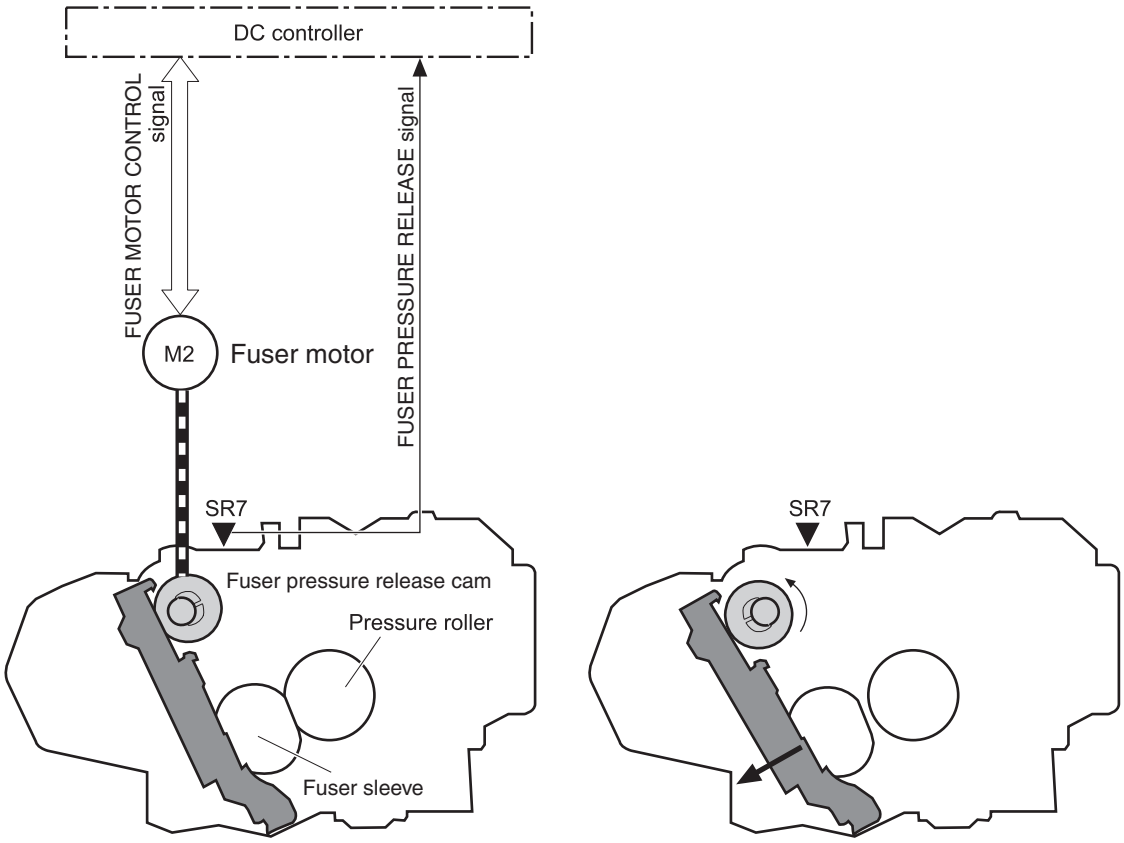
Figure 5-40 Loop-control mechanism



Pressure-roller pressurization control

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

Figure 5-41 Pressure-roller pressurization control



The pressure roller depressurizes under the following conditions:

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

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

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

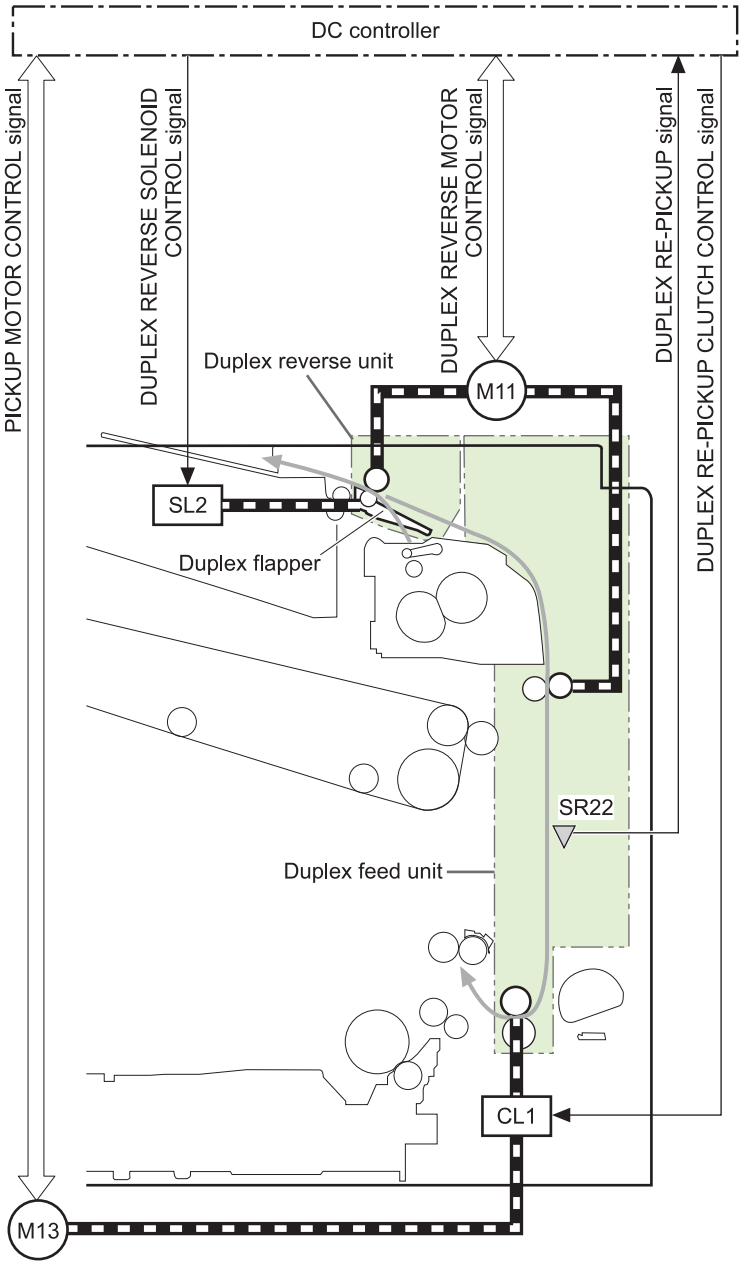
Duplexing unit

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

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

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

Figure 5-42 Duplexing unit



Duplexing reverse and feed control

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

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

Duplex pickup operation

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

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

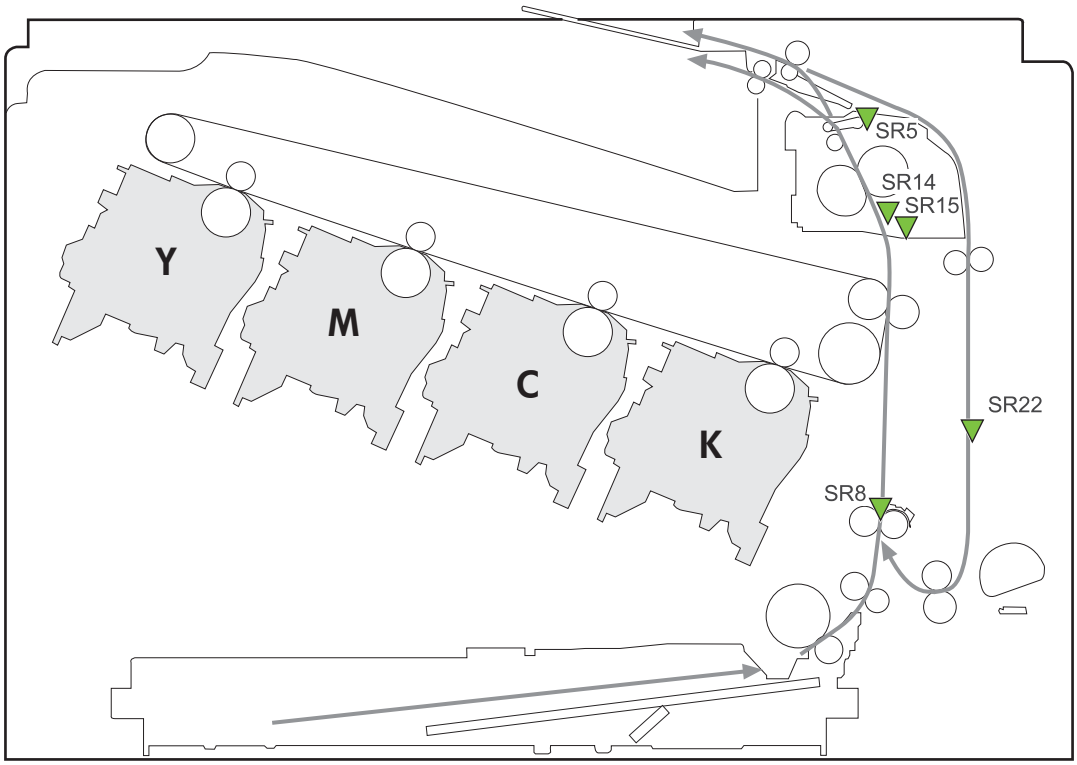
The formatter specifies the duplex-media-feed mode.

Jam detection

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

- Fuser (fixing) delivery sensor (SR5)
- TOP (top of page) sensor (SR8)
- Loop sensor 1 (SR14)
- Loop sensor 2 (SR15)
- Duplex re-pickup sensor (SR22)

Figure 5-43 Jam detection sensors



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

Table 5-14 Jams that the product detects

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

Table 5-14 Jams that the product detects (continued)

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

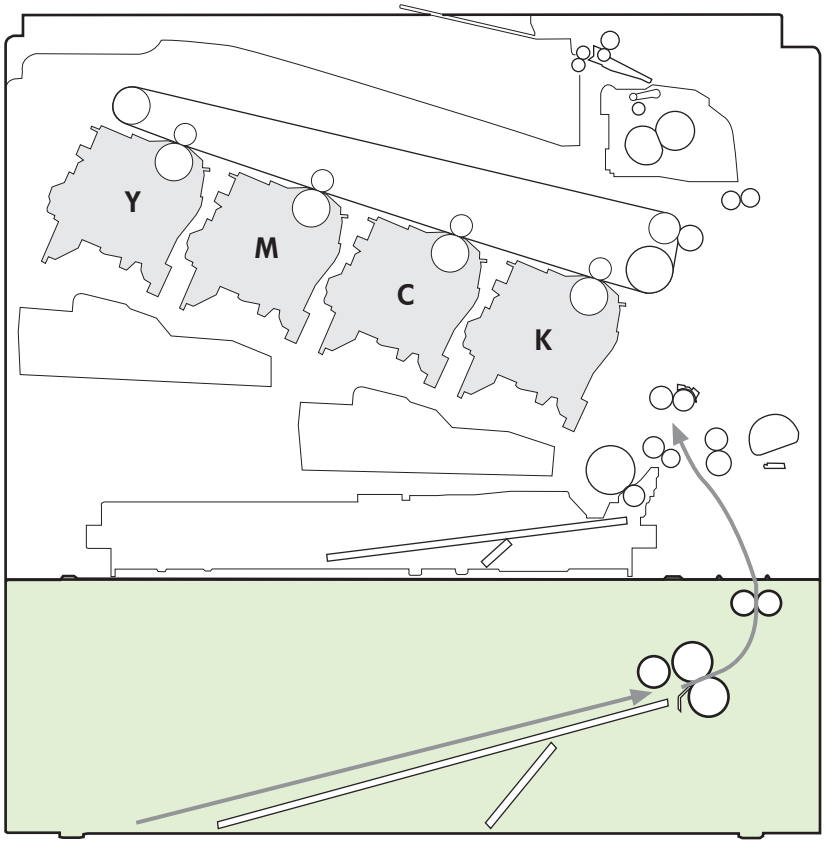
After a jam, some sheets of paper might remain inside the product. If the DC controller detects residual paper after a door closes or after the product is turned on, the product automatically clears itself of those residual sheets.

Optional paper feeder

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

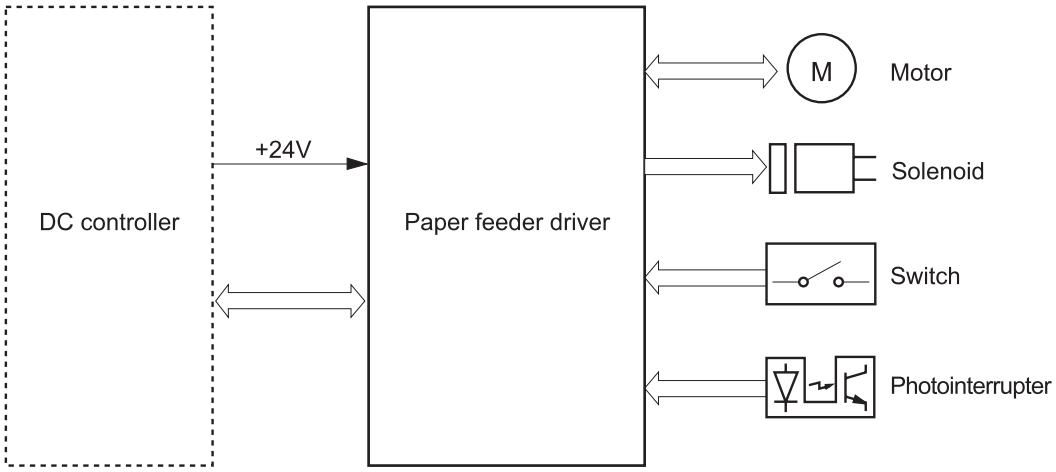
NOTE: These optional trays are *not* identical to the main cassette (Tray 2).

Figure 5-44 Optional paper feeder



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

Figure 5-45 Signals for the paper feeder



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

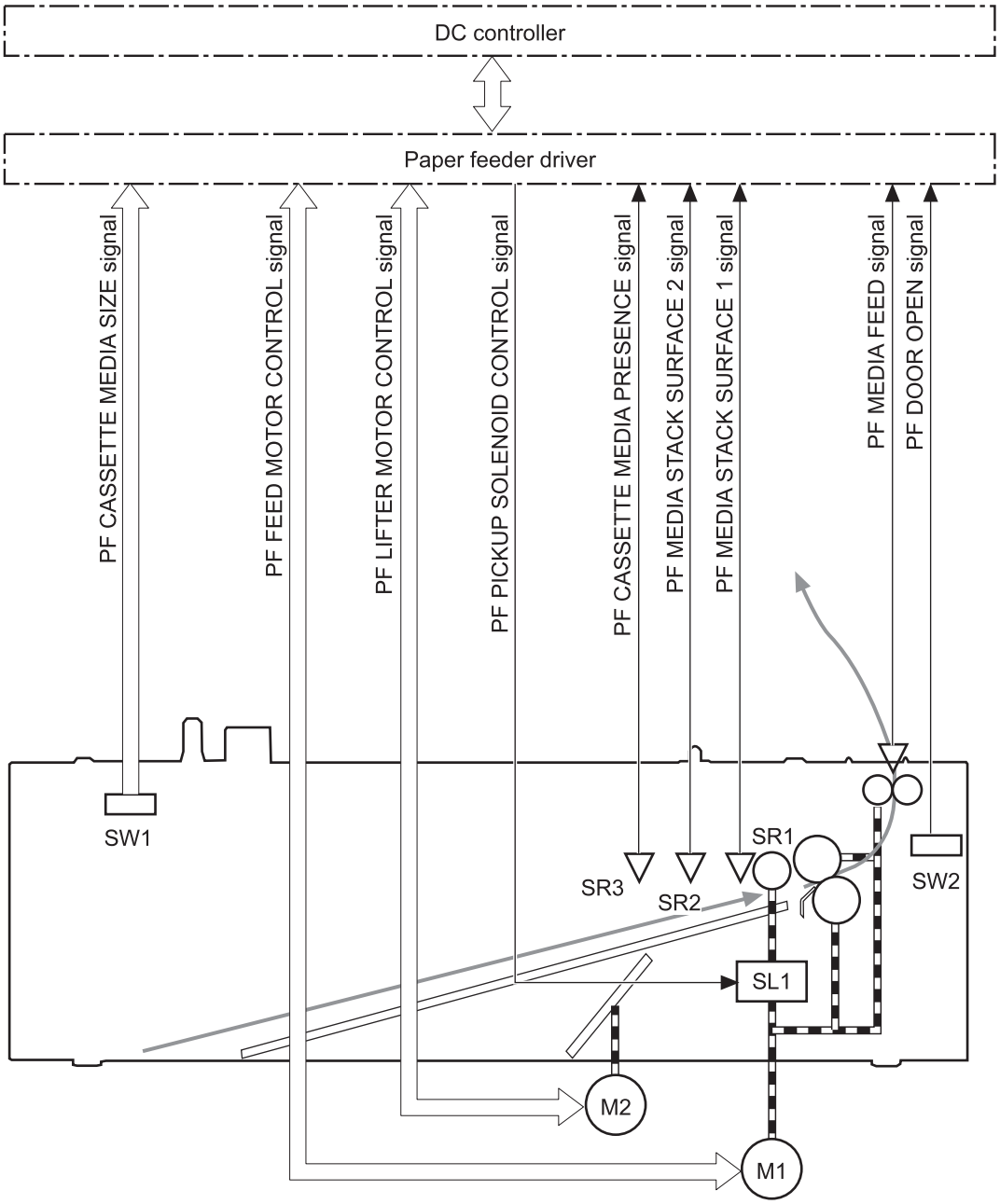
Table 5-15 Electrical components for the paper feeder

Component type	Abbreviation	Component name
Motors	M1	Paper feeder motor
	M2	Paper feeder lift motor
Solenoids	SL1	Paper feeder pickup solenoid
Sensors	SR1	Paper-feeder media-stack surface sensor 1
	SR2	Paper-feeder media-stack surface sensor 2
	SR3	Paper-feeder cassette media-presence sensor
	SR4	Paper-feeder media-feed sensor
Switches	SW1	Paper feeder cassette media-size switch
	SW2	Paper-feeder door switch

Paper-feeder pickup and feed operation

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

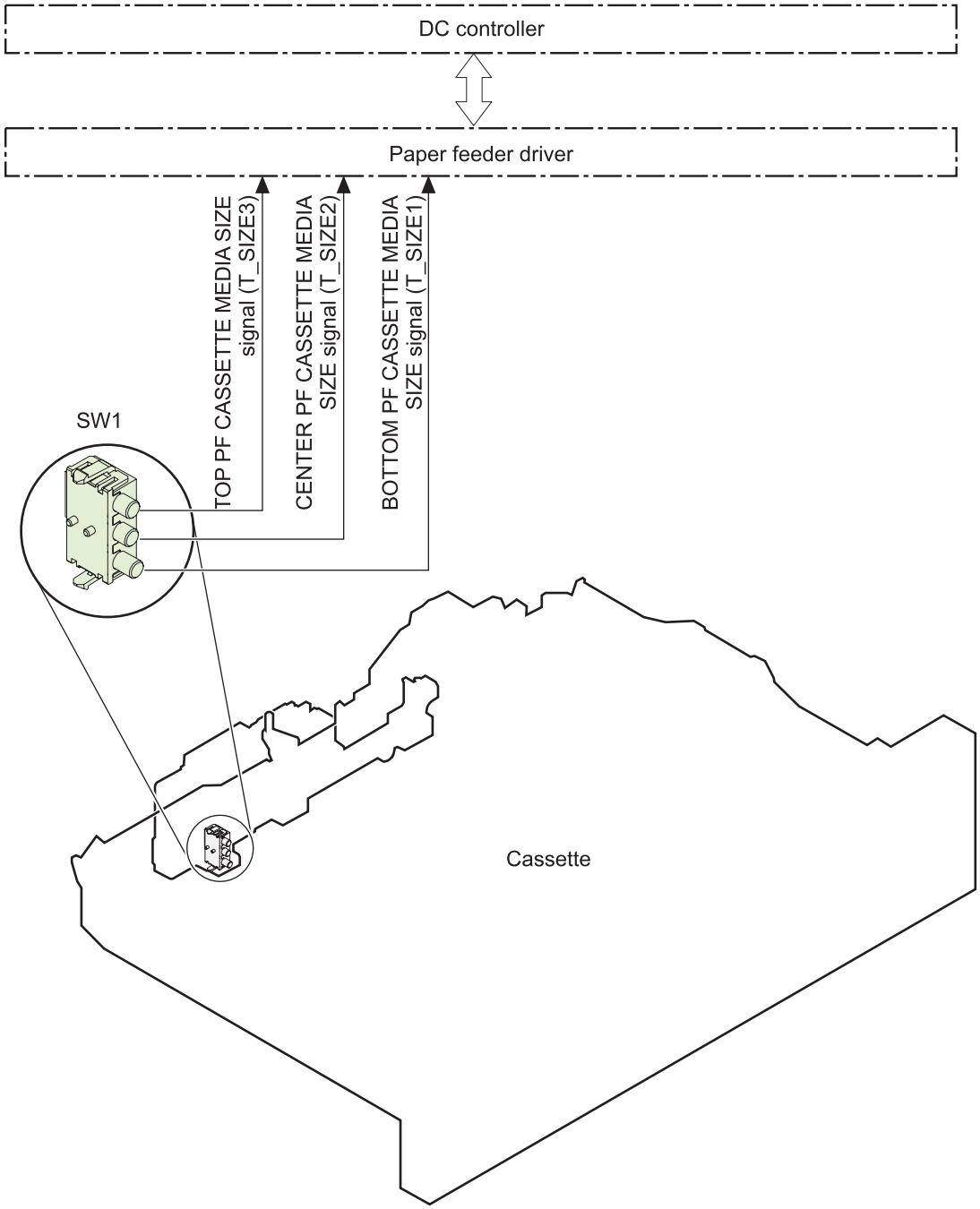
Figure 5-46 Paper-feeder pickup and feed operation



Paper-size detection and cassette-presence detection

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

Figure 5-47 Paper size detection



Paper size	Paper-feeder cassette media-size switch settings		
	Top switch	Center switch	Bottom switch
Universal	On	On	On

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

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

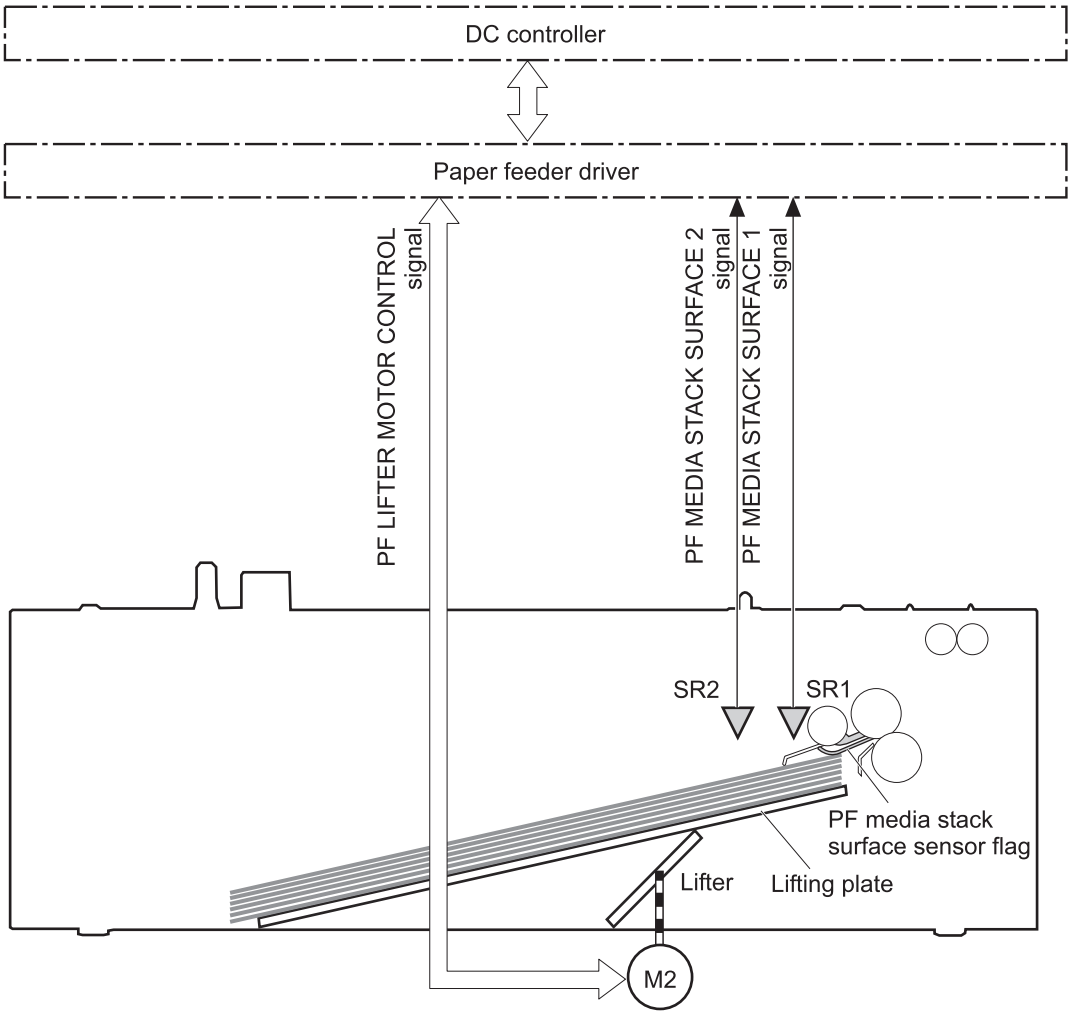
Paper-feeder cassette lift operation

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

printer recovers from sleep mode and when the paper-feeder cassette is installed. The operational sequence of the lift operation is as follows:

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

Figure 5-48 Paper-feeder cassette lift



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

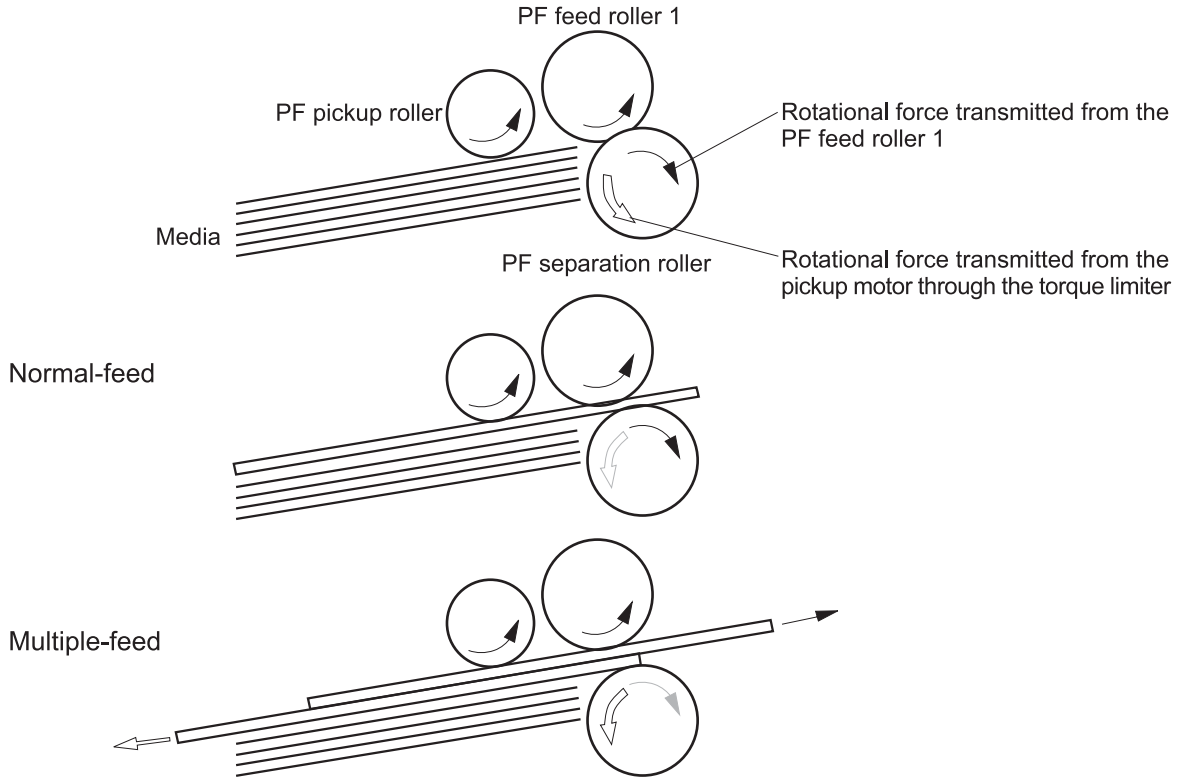
Paper-feeder presence detection

The paper-feeder cassette media-presence sensor (SR3) detects whether the paper is present in the paper-feeder cassette.

Paper-feeder multiple feed prevention

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

Figure 5-49 Paper-feeder multiple feed prevention

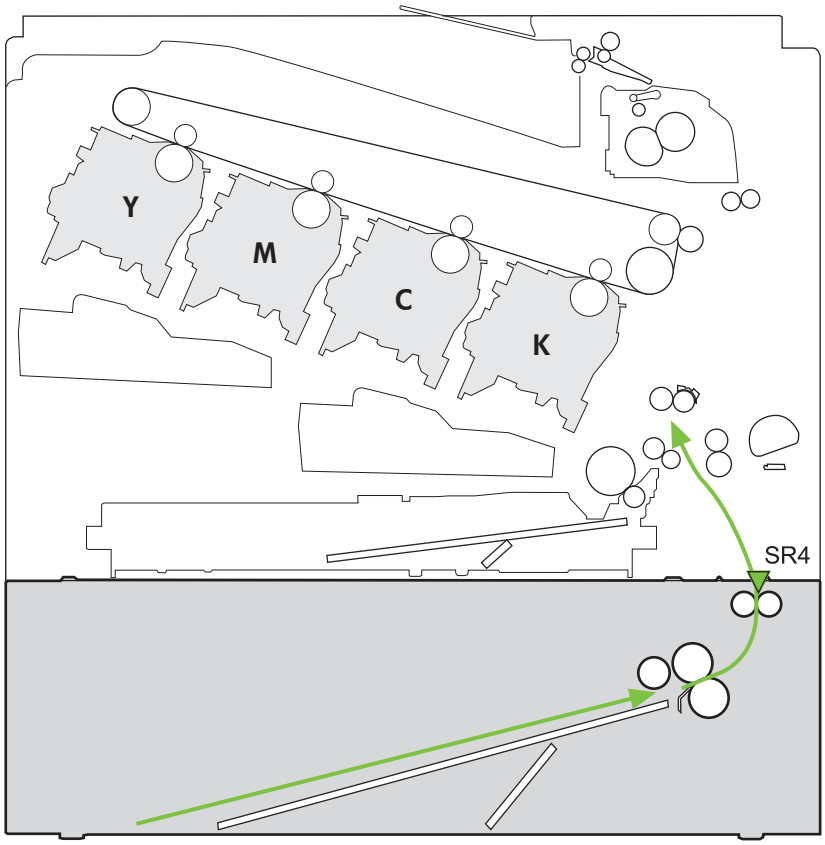


No-load	Rotational force for paper-feeder separation roller: Pushes back the media into the paper-feeder cassette Rotational force for paper-feeder feed roller 1: Feeds media into the printer
Normal feed	Rotational force for paper-feeder separation roller: Pushes back the media into the paper-feeder cassette Rotational force for paper-feeder feed roller 1: Feeds media into the printer
Multiple-feed	The low friction force between the sheets weakens the rotational force from the paper-feeder feed roller 1. The paper-feeder separation roller rotates by its own rotational force and removes the extra sheet.

Paper feeder jam detection

The paper feeder uses the paper-feeder media-feed sensor (SR4) to detect the presence of paper and to check whether paper has jammed.

Figure 5-50 Jam detection



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

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

Scanning/image capture system system

Optical assembly

The scanner is a carriage-type platen scanner which includes the frame, glass, LED optics, and a scanner controller board (SCB) attached to the bottom of the assembly. The scanner has a sensor to detect legal-sized media and a switch to indicate when the ADF is opened.

The ADF and control-panel assembly are attached to the scanner assembly. If the scanner fails, it can be replaced as a whole unit. The scanner replacement part does not include the ADF, SCB, or control-panel assembly.

The HP Color LaserJet CM3530 contains an interconnect board (ICB) which has an NVRAM component that is used to store critical engines values and formatter data. This NVRAM allows for simpler save/restore process. When a formatter or DC controller is replaced, the critical engine values are copied from NVRAM on the ICB to the new component.

Automatic document feed system

If the ADF fails, it can be replaced as a whole-unit replacement part.

Control panel

The control panel is a USB connected device with its own diagnostic capabilities. Calibration of the control-panel touch screen does not require a special boot-key sequence. See .

The control panel also includes a hardware integration pocket where third-party USB solutions, such as card readers, can be installed.

Sensors in the ADF

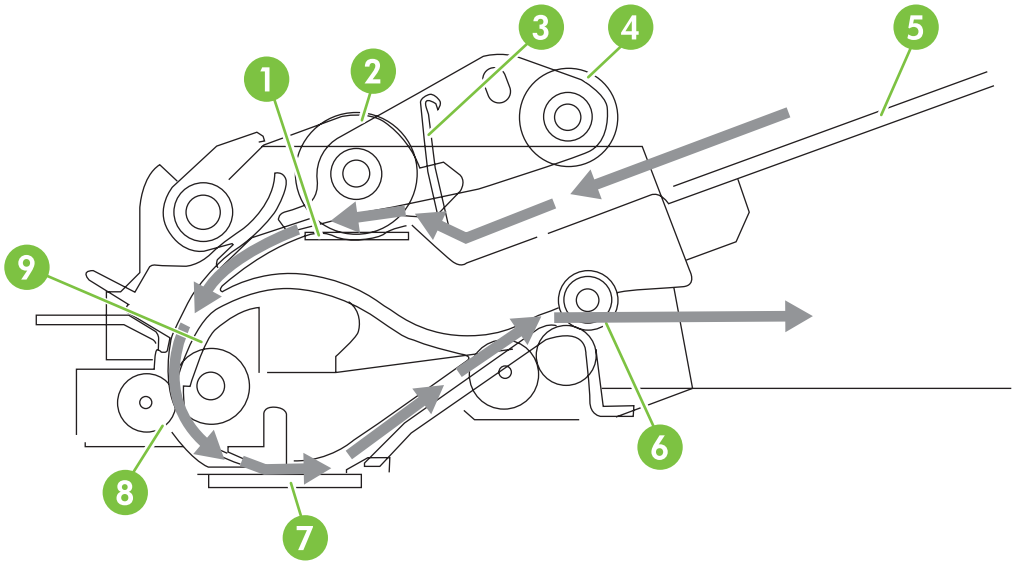
The ADF contains the following sensors:

- **ADF-cover sensor.** Detects whether the ADF cover is open or closed.
- **Top-of-page sensor.** Detects the top of the page before sending a page through the ADF and the end of the page after feeding/scanning is complete.
- **Paper-present sensor.** Detects whether a document is present in the ADF. If paper is present in the ADF when copies are made, the product scans the document using the ADF. If no paper is present when copies are made, the product scans the document using the scanner glass.

ADF paper path

The ADF feeds documents past the ADF glass for scanning. See Figure 5-51 ADF path for single-sided documents on page 175.

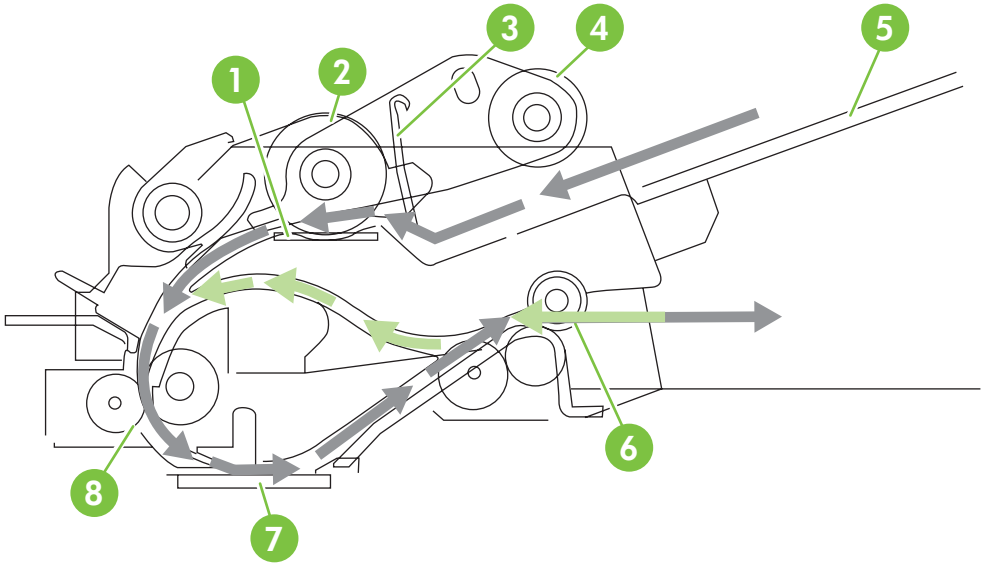
Figure 5-51 ADF path for single-sided documents



1	Separation pad	5	ADF input tray
2	Pickup roller	6	Delivery/duplex-feed rollers
3	Stack stop	7	ADF glass
4	Pre-pick roller	8	ADF feed rollers

For two-sided documents, the delivery rollers reverse the direction of each page to feed the second side of the document past the ADF glass. See Figure 5-52 ADF path for two-sided documents on page 176.

Figure 5-52 ADF path for two-sided documents



NOTE: Callouts in Figure 5-52 ADF path for two-sided documents on page 176 are identical to callouts in Figure 5-51 ADF path for single-sided documents on page 175 .

Stapler

The HP Color LaserJet CM3530fs MFP includes a stapler capable of stapling 20 sheets of (80 g/m^2) (20 lb) paper. The stapler has an AC power connection to the LVPS. Because there are no logic connections to the product, error conditions or out-of-staples indications are not displayed on the control panel.

6 Removal and replacement

NOTE: Your product might not appear exactly as the one shown in the photos in this chapter. Although some photos do not show the ADF/scanner unit, the procedures in this chapter are appropriate for your product.

- Introduction
- Removal and replacement strategy
- Electrostatic discharge
- Required tools
- Before performing service
- After performing service
- Post-service test
- DC controller PCA
- Parts removal order
- Customer self repair (CSR) components
- External panels, covers, doors, and scanner assembly
- Internal assemblies

Introduction

This chapter describes the removal and replacement of field-replaceable units (FRUs) only.

Replacing FRUs is generally the reverse of removal. Occasionally, notes and tips are included to provide directions for difficult or critical replacement procedures.

HP does *not* support repairing individual subassemblies or troubleshooting to the component level.

Note the length, diameter, color, type, and location of each screw. Be sure to return each screw to its original location during reassembly.

Incorrectly routed or loose wire harnesses can interfere with other internal components and can become damaged or broken. Frayed or pinched harness wires can be difficult to find. When replacing wire harnesses, always use the provided wire loops, lance points, or wire-harness guides and retainers.

Removal and replacement strategy

⚠ **WARNING!** Turn the product off, wait 5 seconds, and then remove the power cord before attempting to service the product. If this warning is not followed, severe injury can result, in addition to damage to the product. The power must be on for certain functional checks during troubleshooting. However, disconnect the power supply during parts removal.

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

The sheet-metal parts can have sharp edges. Be careful when handling sheet-metal parts.

△ **CAUTION:** Do not bend or fold the flat flexible cables (FFCs) during removal or installation. Also, do not straighten pre-folds in the FFCs. You *must* fully seat all FFCs in their connectors. Failure to fully seat an FFC into a connector can cause a short circuit in a PCA.

NOTE: To install a self-tapping screw, first turn it counterclockwise to align it with the existing thread pattern, and then carefully turn it clockwise to tighten. Do not overtighten. If a self-tapping screw-hole becomes stripped, repair the screw-hole or replace the affected assembly.

TIP: For clarity, some photos in this chapter show components removed that would not be removed to service the product. If necessary, remove the components listed at the beginning of a procedure before proceeding to service the product.

Electrostatic discharge

△ **CAUTION:** Some parts are sensitive to electrostatic discharge (ESD). Look for the ESD reminder when removing product parts. Always perform service work at an ESD-protected workstation or mat, or use an ESD strap. If an ESD workstation, mat, or strap is not available, ground yourself by touching the sheet-metal chassis *before* touching an ESD-sensitive part.

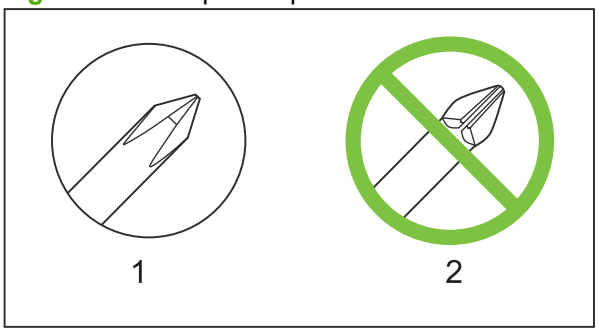
Protect the ESD-sensitive parts by placing them in ESD pouches when they are out of the product.

Required tools

- #1 Phillips screwdriver with a magnetic tip and a 152-mm (6-inch) shaft length
- #2 Phillips screwdriver with a magnetic tip and a 152-mm (6-inch) shaft length
- Small flat blade screwdriver
- Needle-nose pliers
- ESD mat or ESD strap (if one is available)
- Penlight (optional)

△ **CAUTION:** Always use a Phillips screwdriver (callout 1). Do not use a pozidrive screwdriver (callout 2) or any motorized screwdriver. These can damage screws or screw threads.

Figure 6-1 Phillips and pozidrive screwdriver comparison



Before performing service

- Remove all media from the product.
- Turn off the power using the power switch.
- Unplug the power cable and interface cable or cables.
- Place the product on an ESD workstation or mat, or use an ESD strap (if one is available). If an ESD workstation, mat, or strap is not available, ground yourself by touching the sheet-metal chassis *before* touching an ESD-sensitive part.
- Remove the print cartridges. See Print cartridges on page 186.
- Remove the tray cassette or cassettes. See Tray cassette on page 199.

After performing service

- Plug in the power cable.
- Reinstall the print cartridges.
- Reinstall the tray cassette or cassettes.
- If the optional paper feeder was installed, place the product on the feeder.

NOTE: Your product might not appear exactly as the one shown in the photos in this chapter. Although some photos do not show the ADF/scanner unit, the procedures in this chapter are appropriate for your product.

Post-service test

Perform the following test to verify that the repair or replacement was successful.

NOTE: Your product might not appear exactly as the one shown in the photos in this chapter. Although some photos do not show the ADF/scanner unit, the procedures in this chapter are appropriate for your product.

Print-quality test

1. Verify that you have completed the necessary reassembly steps.
2. Make sure that the tray contains clean, unmarked paper.
3. Attach the power cord and interface cable or interface cables, and then turn on the product.
4. Verify that the expected startup sounds occur.
5. Print a configuration page, and then verify that the expected printing sounds occur.
6. Print a demo page, and then verify that the print quality is as expected.
7. Send a print job from the host computer, and then verify that the output meets expectations.
8. If necessary, restore any customer-specified settings.
9. Clean the outside of the product with a damp cloth.

Copy-quality test

1. Verify that you have completed the necessary reassembly steps.
2. Ensure that the input tray contains clean, unmarked paper.
3. Attach the power cord, and then turn on the product.
4. Verify that the expected start-up sounds occur.
5. Print a configuration page, and then verify that the expected printing sounds occur.
6. Place the configuration page in the ADF.
7. Print a copy job, and then verify the results.
8. Place the configuration page on the scanner glass.
9. Print a copy job, and then verify the results.
10. Clean the outside of the product with a damp cloth.

DC controller PCA

Figure 6-2 DC controller PCA

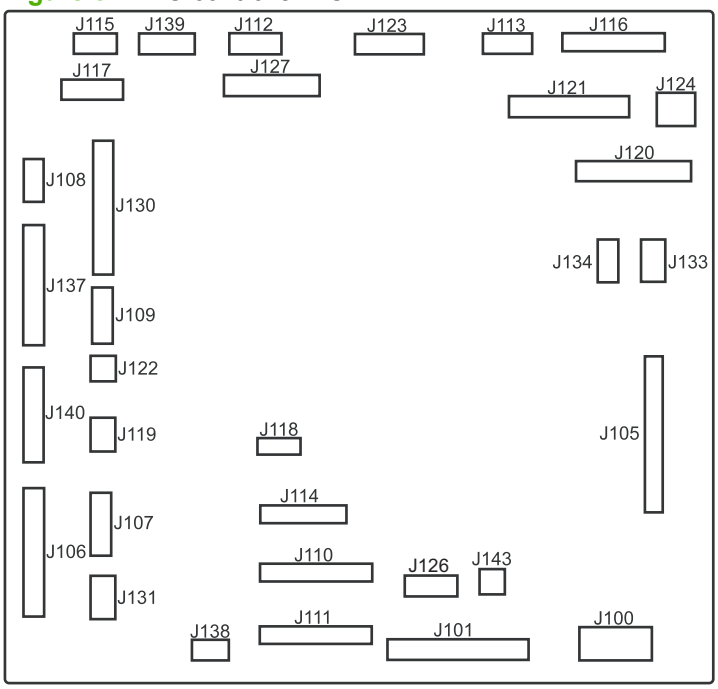


Table 6-1 **DC controller connectors**

J100: 24 v from low-voltage power supply (LVPS) and interlock	**J114**: HVPS lower	**J126**: memory tag connector
J101: LVPS	**J115**: fuser sensors	**J127**: pre-exposure LEDs (rear), SR17, SL1
J105: interconnect board (ICB)	**J116**: HVPS upper	**J130**: registration density (RD) sensors (front and rear)
J106: 500-sheet feeder, developing home position, laser motors	**J117**: fuser motor	**J131**: pickup motor
J107: duplex sensor, tray 1 solenoid, paper present sensor	**J118**: 5 v interlock	**J133**: not used
J108: environmental sensor	**J119**: LVPS fan	**J134**: not used
J109: duplex clutch, overhead transparency (OHT) in, top-of-page sensor	**J120**: drum motor 1 and drum motor 2	**J137**: toner collection unit (TCU) full, TCU motor, toner level detection
J110: YM laser	**J121**: drum motor 3, drum position 1,2,3	**J138**: 24 v to HVPS lower
J111: CK laser	**J122**: OHT out	**J139**: fuser sensors
J112: pre-exposure LEDs (front)	**J123**: pressure release, bin full, fuser delivery	**J140**: lift motor, tray present, stack surface
J113: 24 v to high-voltage power supply (HVPS) upper	**J124**: 24 v to scanner-control board (SCB)	**J143**: 24 v present from LVPS

Parts removal order

Figure 6-3 Parts removal order (1 of 2)

Component	Remove	Remove	Remove	Remove	Remove	Remove	Remove
Print cartridges							
Toner collection unit (TCU)							
Automatic document feeder (ADF)							
Scanner assy							
Formatter							
Memory DIMMS							
Fuser							
Tray 1 pickup roller	Roller cover						
Tray 2 pickup and separation rollers							
Tray 3 pickup feed, and separation rollers							
Transfer roller							
Front-door assy							
Right-door assy							
Right-rear cover							
Left Cover							
Control panel							
Right-front cover	Control panel						
Front-top cover	Left cover	Control panel					
Rear cover	Right-rear cover	Left cover					
Upper-rear cover	Right-rear cover	Left cover	Rear cover				
Rear-top cover	Left cover	Control panel	Front -top cover	Rear cover			
Secondary transfer assy (T2)							
Intermediate transfer belt (ITB)							
Residual-toner feed motor	TCU	ITB	Left cover				
Registration density (RD) sensor	Right-rear cover	Left cover	Rear cover	T2	ITB		
Power-supply (PS) fan and fan duct	Right-rear cover	Left cover	Rear cover				
Interconnect board (ICB)	Formatter	Right-rear cover	Left cover	Rear cover			
DC controller (DCC)	Formatter	Right-rear cover	Left cover	Rear cover	ICB		
Low-voltage power supply (LVPS)	Formatter	Right-rear cover	Left cover	Rear cover	ICB		
Registration assy	Right-rear cover	Left cover	Rear cover	T2	ITB	RD Sensor	
High-voltage power supply (HVPS)-lower	Formatter	Right-rear cover	Left cover	Rear cover	ICB	LVPS	
High-voltage power supply (HVPS)-upper	Formatter	Right-rear cover	Left cover	Rear cover	ICB	DCC	
Developing-disengagement motor	Formatter	Right-rear cover	Left cover	Rear cover	ICB	LVPS	
Pickup motor	Formatter	Right-rear cover	Left cover	Rear cover	ICB	LVPS	
Lifter-drive assy	Formatter	Right-rear cover	Left cover	Rear cover	ICB	LVPS	
Cassette-pickup drive assy	Formatter	Right-rear cover	Left cover	Rear cover	ICB	LVPS	
Cassette-pickup assy	Formatter	Right-rear cover	Left cover	Rear cover	Registration assy	ICB	
Delivery fan, cartridge fan and environmental sensor	Formatter	Right-rear cover	Left cover	Rear cover	ICB	LVPS	
Laser scanner (Y/M)	TCU	Formatter	Right-rear cover	Left cover	Rear cover	ICB	
Laser Scanner (C/Bk)	TCU	Formatter	Right-rear cover	Left cover	Rear cover	ICB	
Drum Motor 1	Right-rear cover	Left cover	Rear cover	ICB	LVPS	HVPS-upper	
Drum motor 2 or drum motor 3	Right-rear cover	Left cover	Rear cover	ICB	LVPS	HVPS-upper	
Main-drive assy	Formatter	T2	ITB	Right-rear cover	Left cover	Rear cover	
Fuser motor	Formatter	Right-rear cover	Left cover	Rear cover	ICB	DCC and tray	
Fuser-drive assy	Formatter	Fuser	T2	Right-rear cover	Left cover	Control panel	
Delivery assy	Fuser	T2	Right-rear cover	Left cover	Control panel	Rear cover	Scanner and ADF assy
Duplex-drive assy	Fuser	T2	Right-rear cover	Left cover	Control panel	Rear cover	Scanner and ADF assy

Figure 6-4 Parts removal order (2 of 2)

Remove	Remove	Remove	Remove	Remove	Remove	Remove	Remove	Remove	Remove
PS fan and fan duct									
LVPS									
HVPS-lower									
HVPS-lower									
HVPS-lower									
HVPS-lower									
LVPS		HVPS-lower	Cassette pick-up drive assy						
HVPS-lower									
LVPS		HVPS-lower							
LVPS		HVPS-lower	Lifter-drive assy	Laser/scanner assy (Y/M)					
PS fan and fan duct		ICB	DCC and tray	LVPS	HVPS-lower and upper				
LVPS		HVPS-upper							
Rear cover	Scanner and ADF assy	Front-top cover	Rear-top cover	PS fan and fan duct	ICB	DCC and tray	LVPS	HVPS-upper	Main-drive assy
Front-top cover		Rear-top cover	PS fan and fan duct	ICB	LVPS	HVPS-lower and upper	Main-drive assy	Fuser-drive assy	
Front-top cover		Rear-top cover	PS fan and fan duct	ICB	LVPS	HVPS-lower and upper	Main-drive assy	Fuser-drive assy	Delivery assy

Customer self repair (CSR) components

NOTE: Your product might not appear exactly as the one shown in the photos in this chapter. Although some photos do not show the ADF/scanner unit, the procedures in this chapter are appropriate for your product.

Print cartridges

CAUTION: If toner gets on your clothing, wipe it off with a dry cloth and wash clothing in cold water. *Hot water sets toner into fabric*.

1. Open the front door. Make sure that the door is completely open.

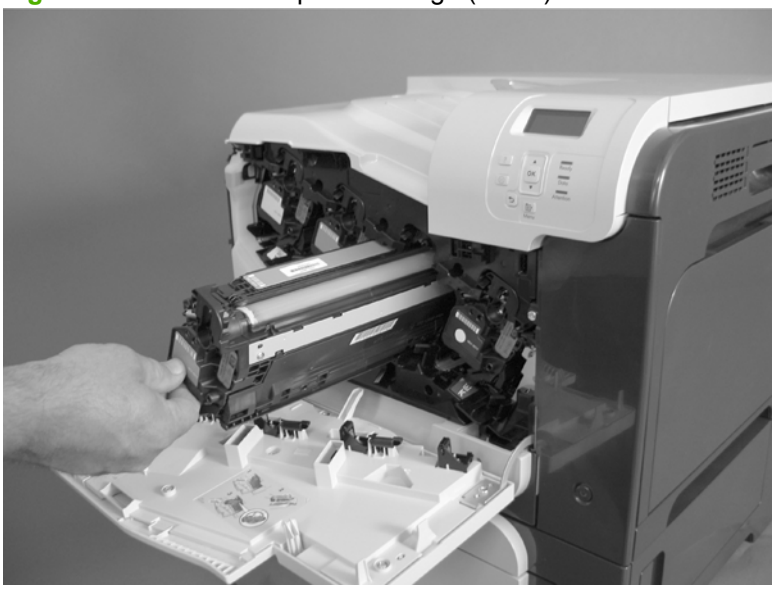
Figure 6-5 Remove the print cartridge (1 of 2)

2. Grasp the print-cartridge handle and pull out to remove.

△ **CAUTION:** Do not touch the green roller. Doing so can damage the cartridge. Do not expose the cartridge to strong light. Cover the cartridge with a sheet of paper to protect it from light.

Reinstallation tip Align the print cartridge with its slot and insert the print cartridge until it clicks into place.

Figure 6-6 Remove the print cartridge (2 of 2)



Stapler cartridge

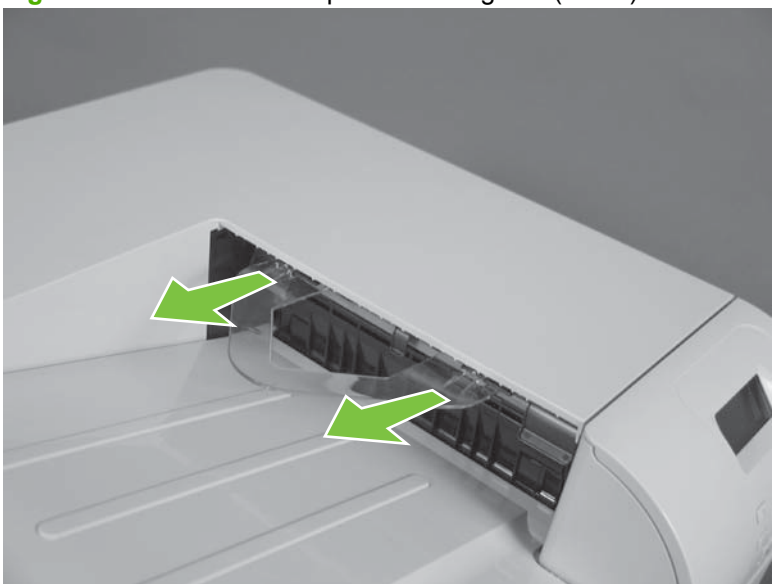
Open the stapler door, and then remove the stapler cartridge.

Figure 6-7 Remove the stapler cartridge

Duplex-reverse guide

1. Grasp the duplex-reverse guide and pull it away from the product to release it.

Figure 6-8 Remove the duplex-reverse guide (1 of 2)



2. Remove the guide.

Figure 6-9 Remove the duplex-reverse guide (2 of 2)

Toner-collection unit

NOTE: The toner-collection unit is designed for a single use. Do not try to empty the toner-collection unit and reuse it. Doing so could cause toner to spill inside the product and result in reduced print quality. For recycling information, see the product user guide.

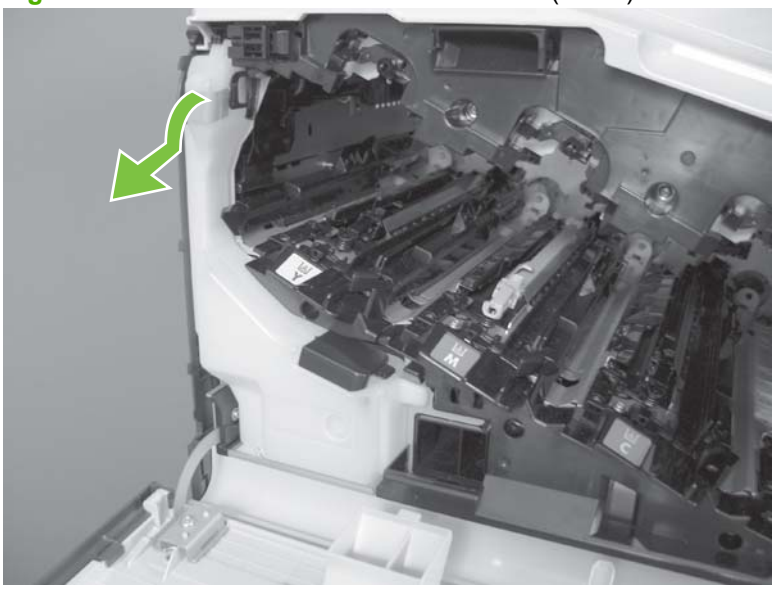
1. Open the front door. Make sure that the door is completely open.

Figure 6-10 Remove the toner-collection unit (1 of 4)

2. Grasp the blue label at the top of the toner-collection unit and remove it from the product.

Reinstallation tip Insert the bottom of the replacement unit into the product first and then push the top of the unit until it clicks into place. If the toner-collection unit is installed incorrectly, the front door will not close completely.

Figure 6-11 Remove the toner-collection unit (2 of 4)



3. To prevent toner spills, place the blue cap (callout 1) over the blue opening at the top of the unit (callout 2).

Figure 6-12 Remove the toner-collection unit (3 of 4)

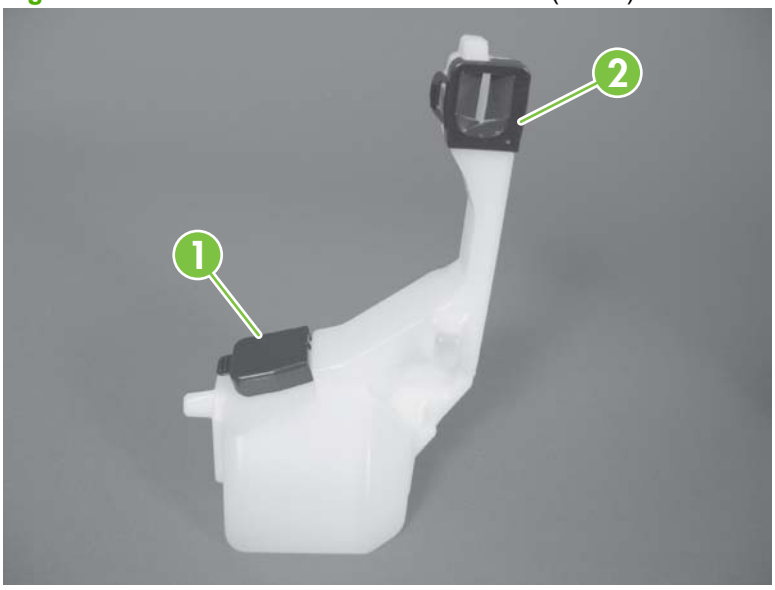


Figure 6-13 Remove the toner-collection unit (4 of 4)

Formatter PCA

△ **CAUTION:** ESD sensitive component.

1. Turn the product off and disconnect the power and interface cable or interface cables.
2. Unscrew the formatter thumb screws, and then firmly pull the formatter from the product. Place the formatter on a clean, flat, grounded surface.

Figure 6-14 Remove the formatter

NOTE: When reinstalling the formatter, push firmly on the right side to make sure the formatter is seated.

Memory DIMM

Before proceeding, remove the following components:

- Formatter PCA. See Formatter PCA on page 192.

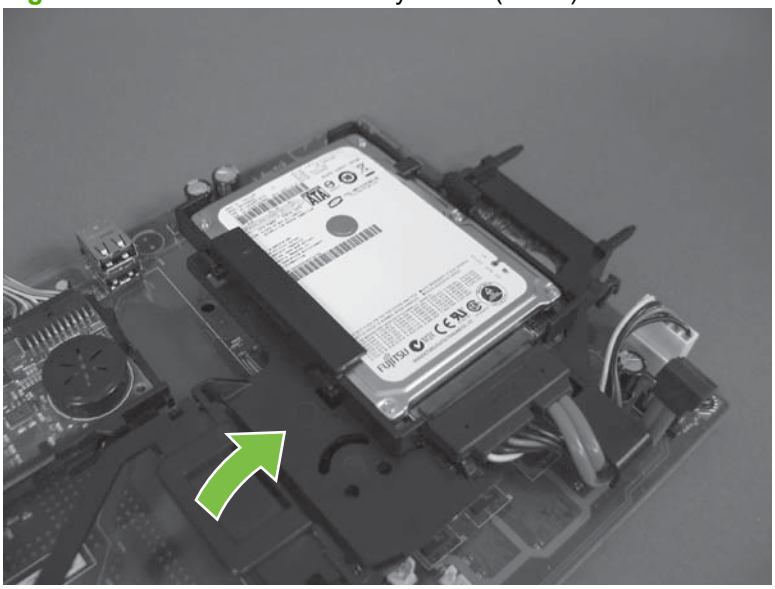
Remove the memory DIMM

△ **CAUTION:** ESD sensitive component.

NOTE: See Enable memory for Windows on page 194 after installing a new memory DIMM.

1. Place the formatter on a clean, flat, grounded surface.
2. Release on tab, and raise the hard drive mounting bracket to access the memory DIMM.

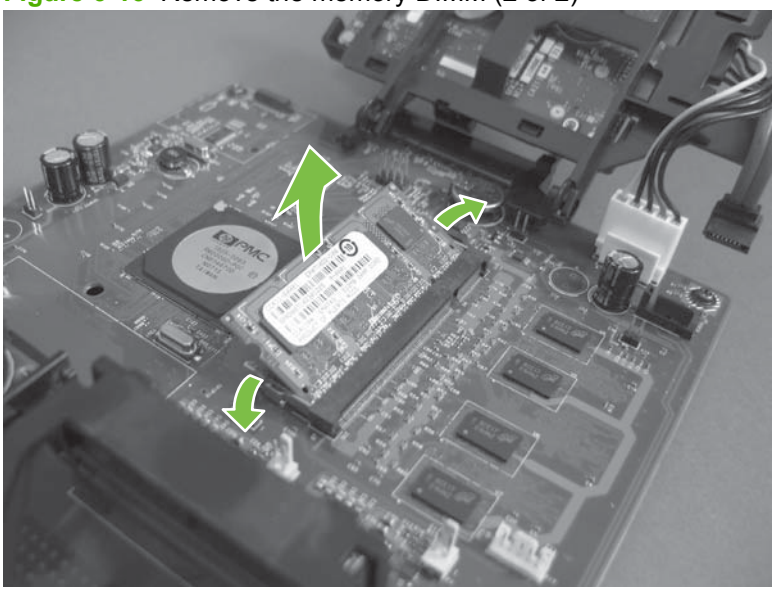
Figure 6-15 Remove the memory DIMM (1 of 2)



3. Spread the latches apart on each side of the DIMM slot. Lift the DIMM up at an angle, and pull it out.

Reinstallation tip Hold the DIMM by the edges. Align the notch on the DIMM with the bar in the DIMM slot at an angle and firmly press the DIMM into the slot until it is fully seated. When installed correctly, the metal contacts are not visible. Push down on the DIMM until both latches engage the DIMM.

Figure 6-16 Remove the memory DIMM (2 of 2)



Enable memory for Windows

Use the following procedure to enable the memory if you are installing a new DIMM.

1. **Windows XP, Windows Server 2003, and Windows Server 2008 (using the default Start menuview)**: Click **Start**, click **Settings**, and then click **Printers and Faxes**.

   -or-

   Windows XP, Windows Server 2003, and Windows Server 2008 (using the Classic Start menuview): Click **Start**, click **Settings**, and then click **Printers**.

   -or-

   Windows Vista: Click **Start**, click **Control Panel**, and then in the category for **Hardware and Sound** click **Printer**.

2. Right-click the driver icon, and then select **Properties**.
3. Click the **Device Settings** tab.
4. Expand the area for **Installable Options**.
5. Select the total amount of memory installed in the product.
6. Next to **Automatic Configuration**, select **Update Now**.
7. Click **OK**.

Hard drive and Serial Advanced Technology Attachment (SATA) cable

Before proceeding, remove the following components:

- Formatter PCA. See Formatter PCA on page 192.

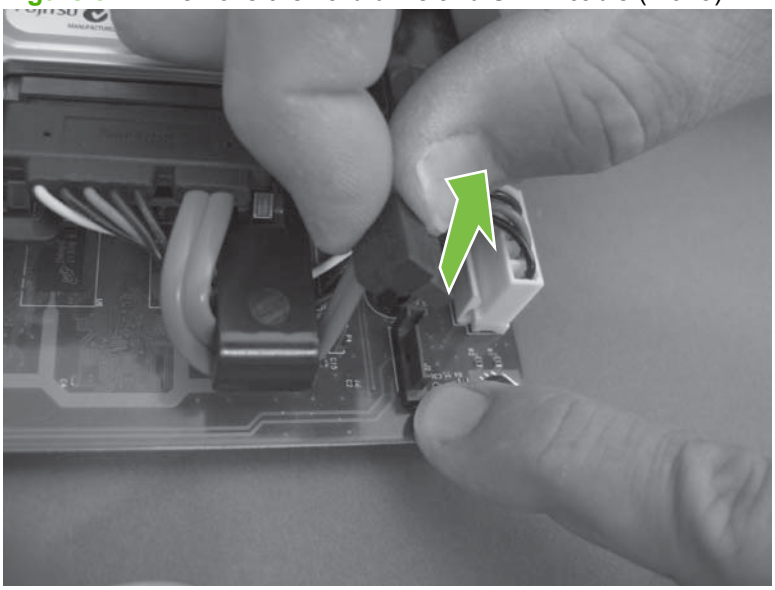
Remove the hard drive and SATA cable

△ **CAUTION:** ESD sensitive component.

1. Disconnect one connector.

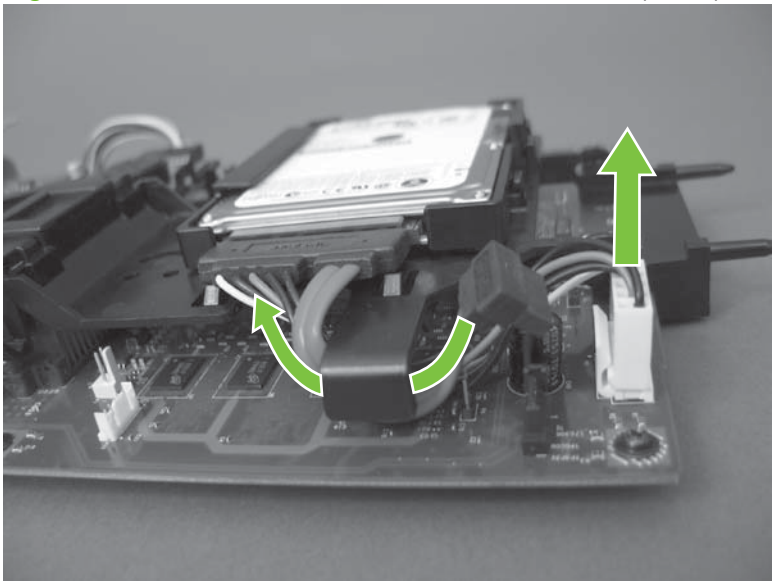
△ **CAUTION:** Use your finger to secure the connector base to the PCA. The connector base can be dislodged and damaged when the connector is removed.

Figure 6-17 Remove the hard drive and SATA cable (1 of 3)



2. Disconnect one connector and release the wire harnesses from the guide.

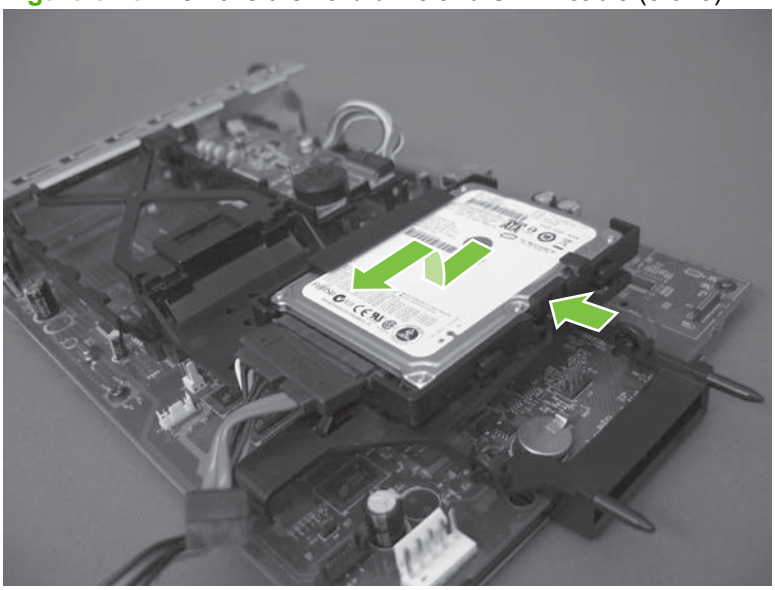
Figure 6-18 Remove the hard drive and SATA cable (2 of 3)



3. Release one tab and then slide the hard drive toward the bottom of the formatter to release it. Remove the hard drive.

NOTE: If necessary, disconnect the SATA cable from the hard drive.

Figure 6-19 Remove the hard drive and SATA cable (3 of 3)



Fax PCA and cable

Before proceeding, remove the following components:

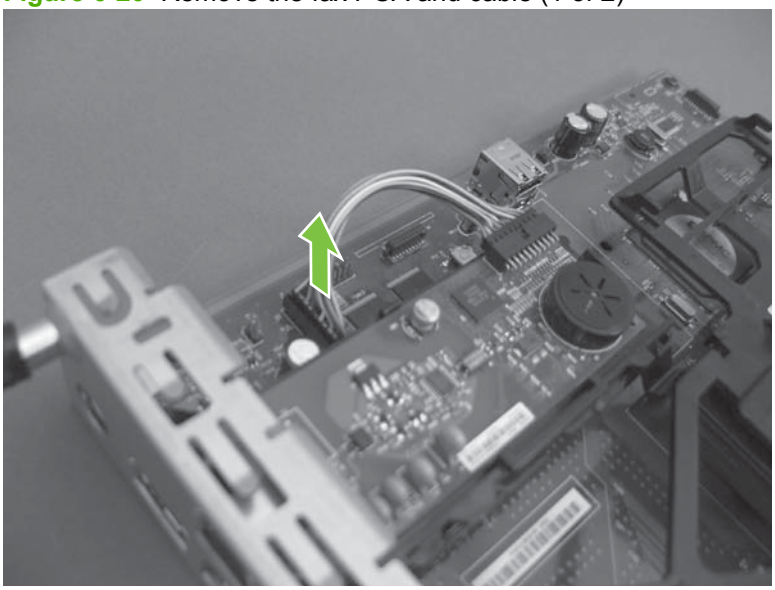
- Formatter PCA. See Formatter PCA on page 192.

Remove the fax PCA and cable

△ **CAUTION:** ESD sensitive component.

1. Disconnect one connector.

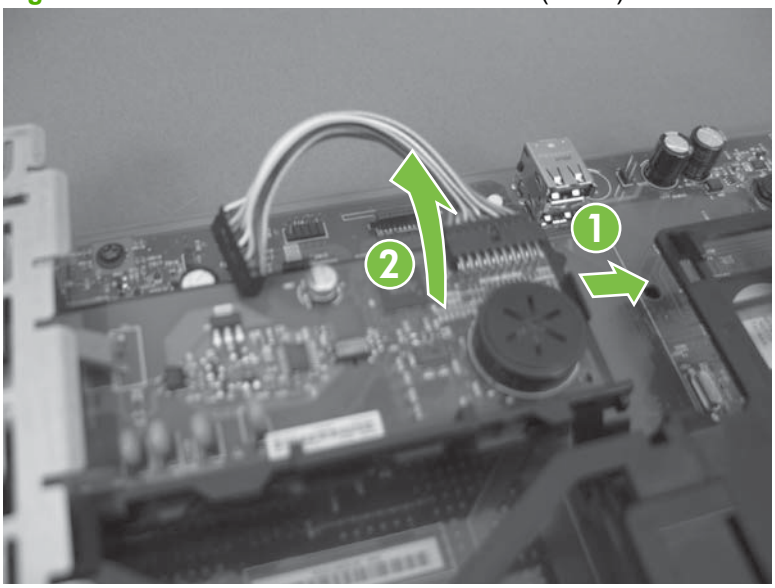
Figure 6-20 Remove the fax PCA and cable (1 of 2)



2. Release one tab, and then rotate the fax PCA away from the formatter to release it. Remove the fax PCA.

NOTE: If necessary, disconnect the cable from the fax PCA.

Figure 6-21 Remove the fax PCA and cable (2 of 2)

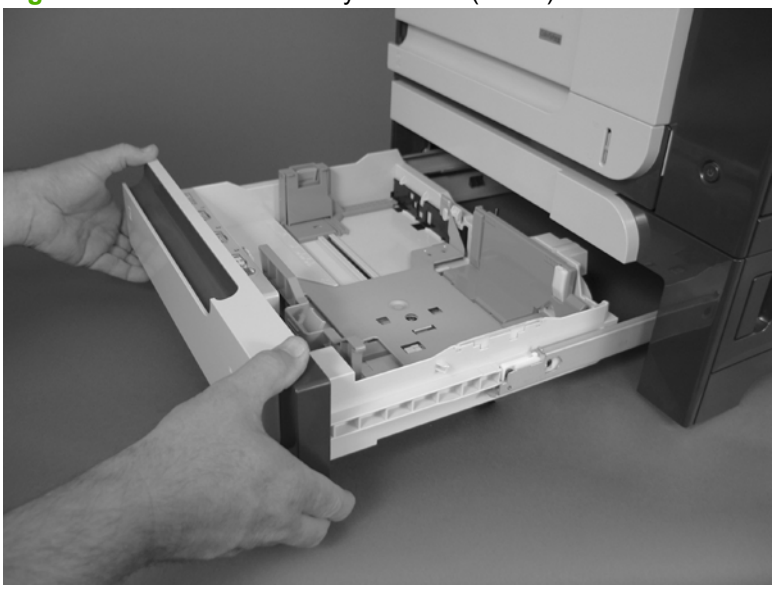


Tray cassette

NOTE: Use this procedure to remove the Tray 2 or optional Tray 3 cassette.

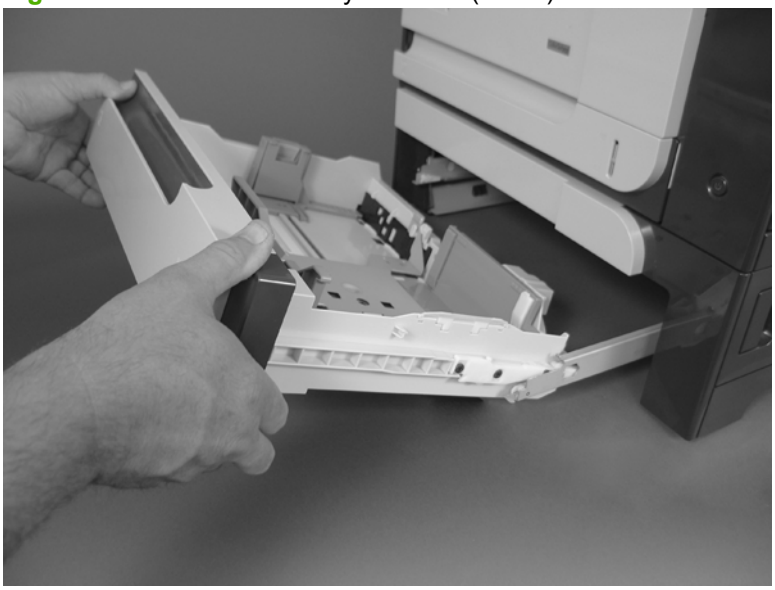
1. Pull the tray straight out of the product until it stops.

Figure 6-22 Remove the tray cassette (1 of 2)



2. Carefully lift up on the tray to release it, and then remove the tray.

Figure 6-23 Remove the tray cassette (2 of 2)



Fuser

△ **CAUTION:** The fuser might be hot. Allow enough time after turning off the product power for the fuser to cool.

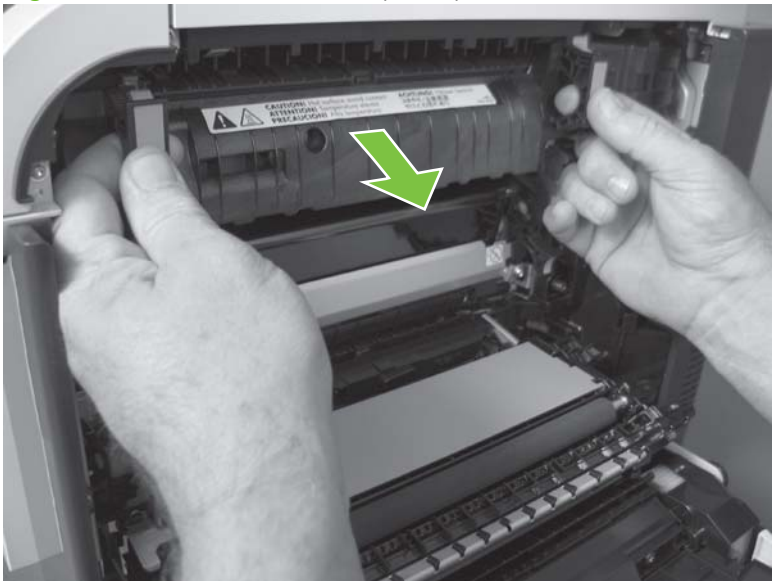
1. Open the right-door assembly.

Figure 6-24 Remove the fuser (1 of 2)

2. Grasp the handles and squeeze the blue release levers.

   Pull the fuser straight out of the product to remove it.

Figure 6-25 Remove the fuser (2 of 2)



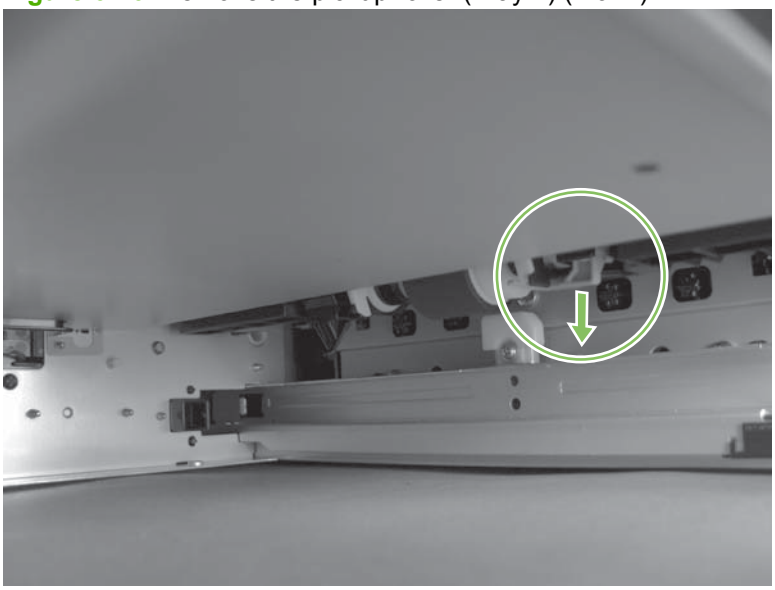
Pickup roller (Tray 2)

△ **CAUTION:** Do not touch the spongy roller surface unless you are replacing the roller. Skin oils on the roller can cause paper pickup problems.

1. Look up into the Tray 2 cavity (where the cassette would be installed), and pull down to release the blue roller-locking lever.

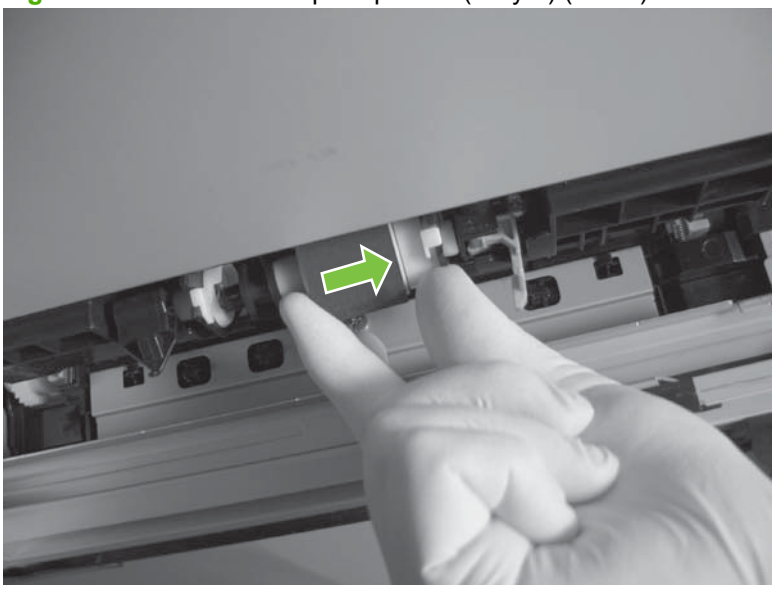
Reinstallation tip When the roller is reinstalled, rotate the roller shaft several times to make sure that the shaft correctly engages the drive mechanism. You should hear a click when the shaft engages the drive mechanism.

Figure 6-26 Remove the pickup roller (Tray 2) (1 of 4)



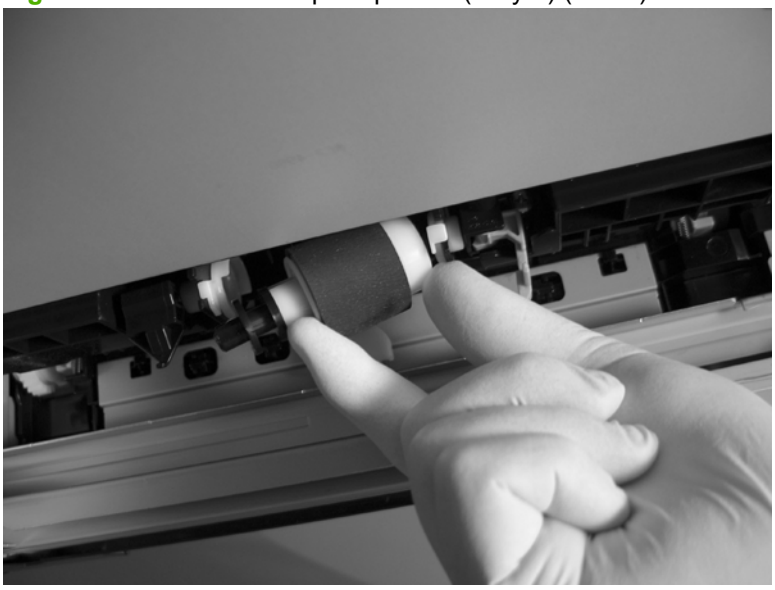
2. Pull the roller toward the front of the product to release the rear of the roller shaft.

Figure 6-27 Remove the pickup roller (Tray 2) (2 of 4)



3. Rotate the roller shaft down and away from the product, and then slide the roller toward the rear of the product to release the front of the roller shaft.

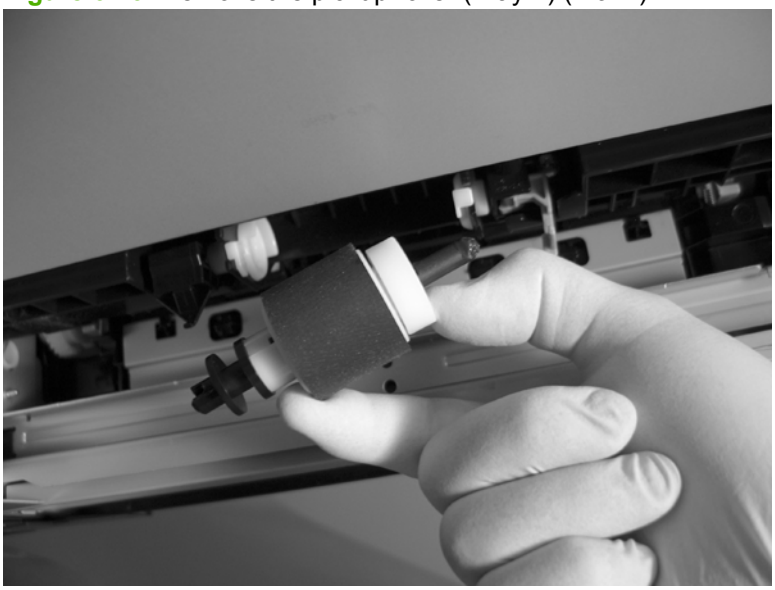
Figure 6-28 Remove the pickup roller (Tray 2) (3 of 4)



4. Remove the pickup roller.

Reinstallation tip Make sure that the roller is orientated correctly when it is reinstalled (the large white collar should be positioned toward the front of the product.

Figure 6-29 Remove the pickup roller (Tray 2) (4 of 4)



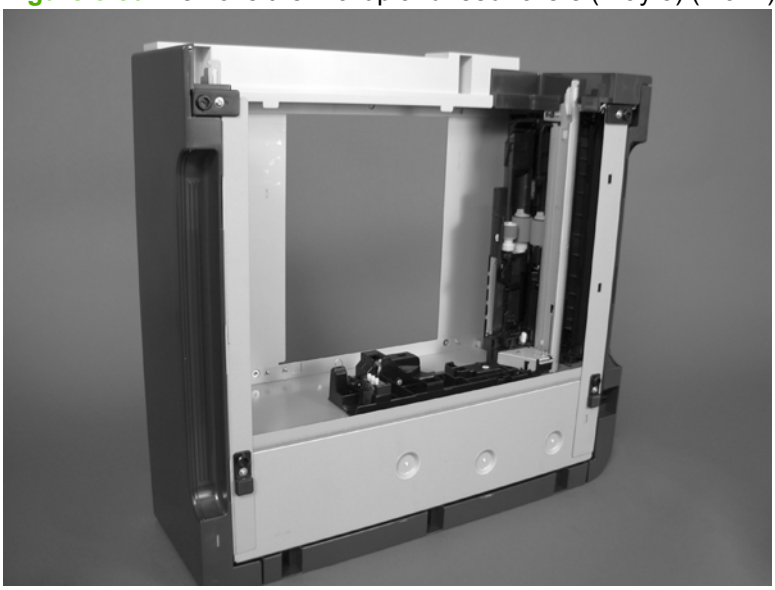
Pickup and feed rollers (Tray 3)

△ **CAUTION:** Do not touch the spongy roller surface unless you are replacing the roller. Skin oils on the roller can cause paper pickup problems.

1. Locate the Tray 3 pickup and feed rollers.

TIP: The feeder is shown front side up in this procedure for clarity. You do not have to separate the product from the feeder to remove these rollers. Remove the cassette, and then reach up into the cavity to remove the rollers.

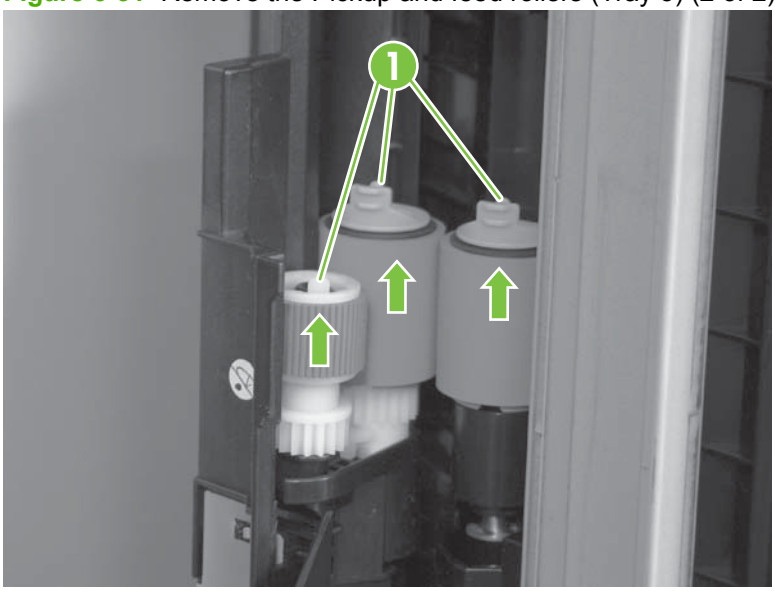
Figure 6-30 Remove the Pickup and feed rollers (Tray 3) (1 of 2)



2. Release three tabs (callout 1), and then remove the rollers.

Reinstallation tip When you reinstall the rollers, make sure that the rollers snap into place.

Figure 6-31 Remove the Pickup and feed rollers (Tray 3) (2 of 2)



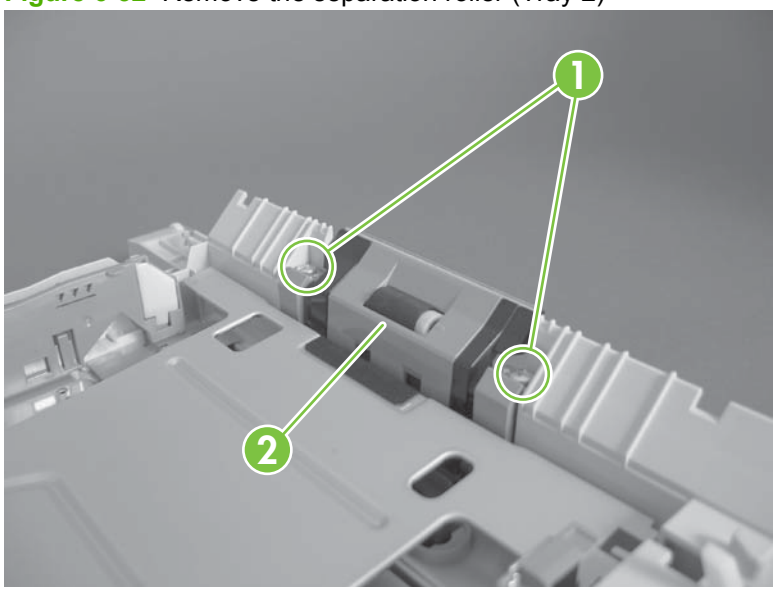
Separation roller (Tray 2)

△ **CAUTION:** Do not touch the spongy roller surface unless you are replacing the roller. Skin oils on the roller can cause paper pickup problems.

NOTE: Remove the Tray 2 cassette if not already removed for service. See Tray cassette on page 199.

Remove two screws (callout 1), and then remove the separation roller assembly (callout 2).

Figure 6-32 Remove the separation roller (Tray 2)



Secondary transfer roller

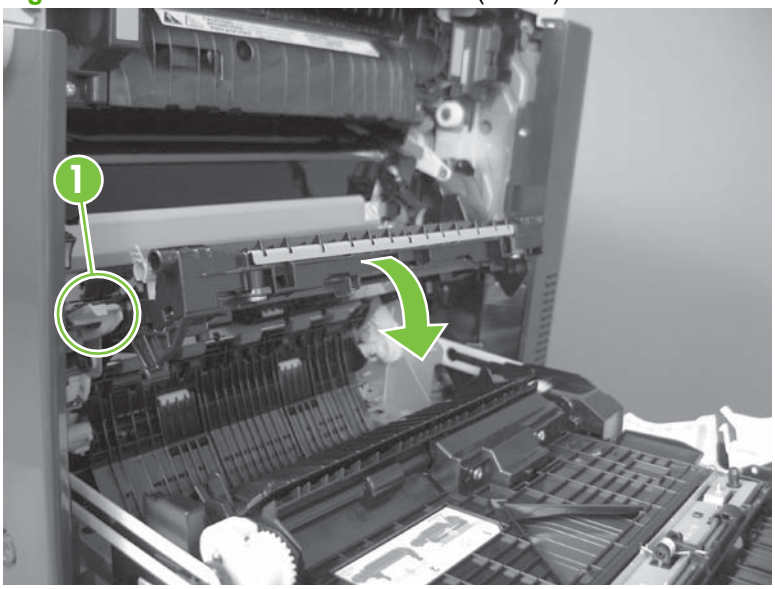
△ **CAUTION:** Do not touch the spongy roller surface unless you are replacing the roller. Skin oils on the roller can cause image quality problems.

1. Open the right-door assembly.

Figure 6-33 Remove the transfer roller (1 of 3)

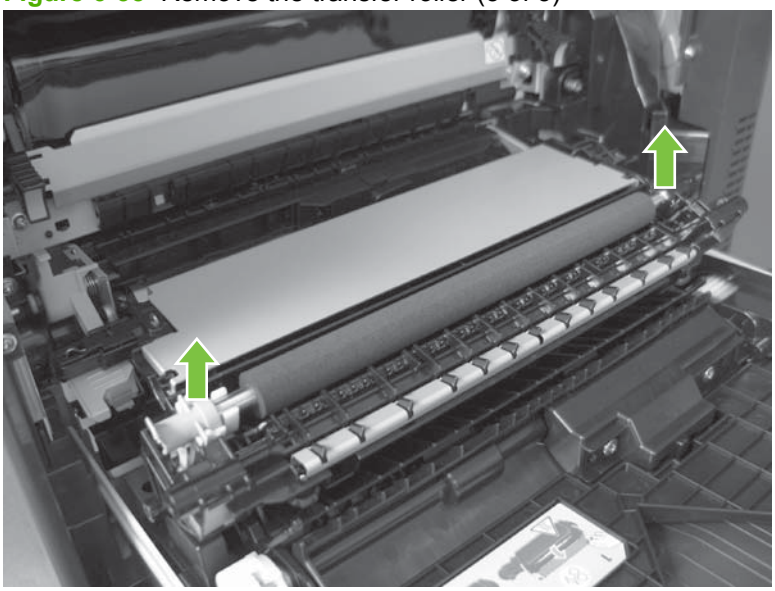
2. Use the blue lever (callout 1) to lower the secondary transfer assembly.

Figure 6-34 Remove the transfer roller (2 of 3)



3. Grasp the roller shaft collars, and lift the transfer roller off of the product.

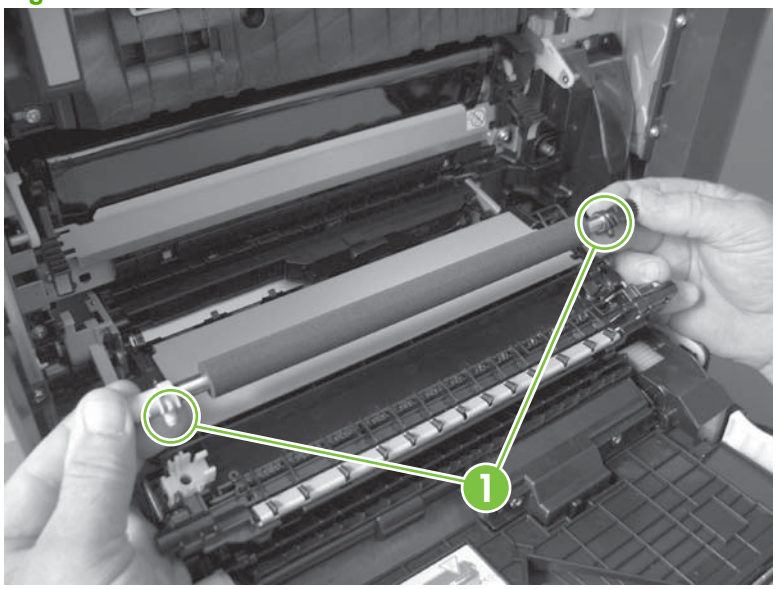
Figure 6-35 Remove the transfer roller (3 of 3)



Reinstall the transfer roller

When you reinstall the transfer roller, make sure that the pins on the shaft collars (callout 1) align with the holes in the mounting assembly.

Figure 6-36 Reinstall the transfer roller

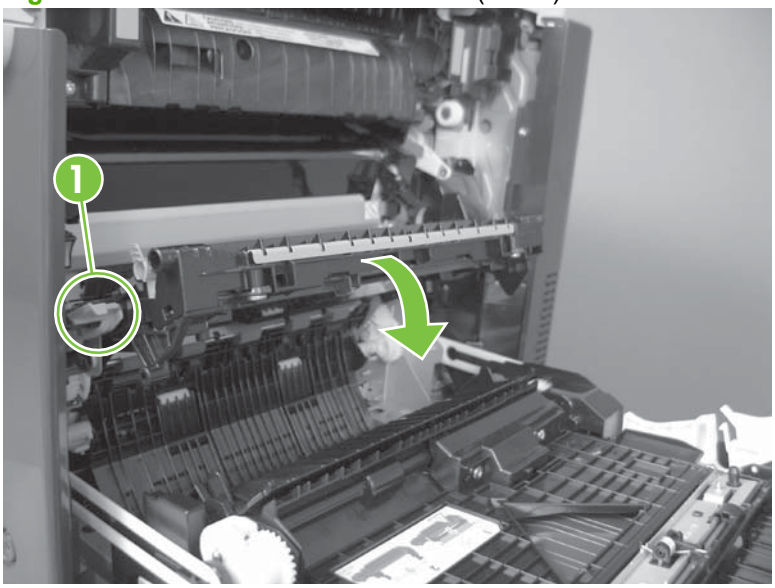


Secondary transfer assembly

The secondary transfer assembly includes the transfer roller.

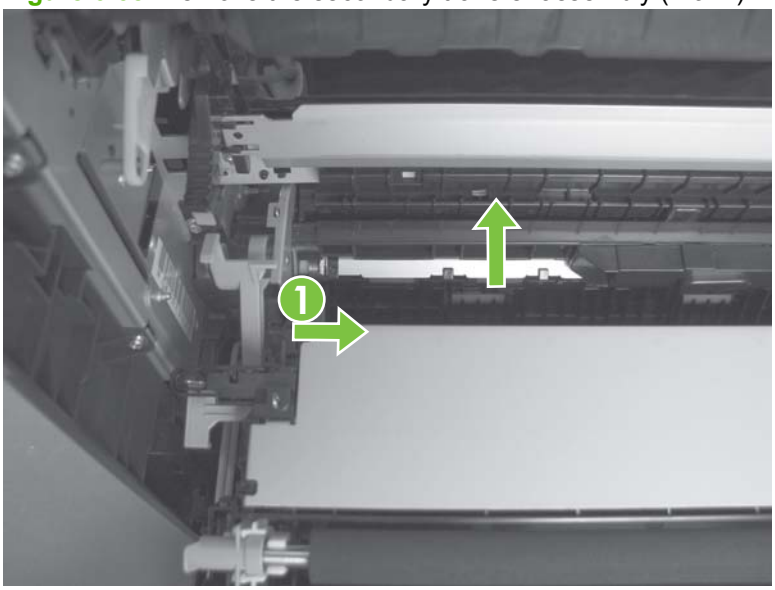
1. Open the right-door assembly.
2. Use the blue lever (callout 1) to lower the secondary transfer assembly.

Figure 6-37 Remove the transfer roller (2 of 3)



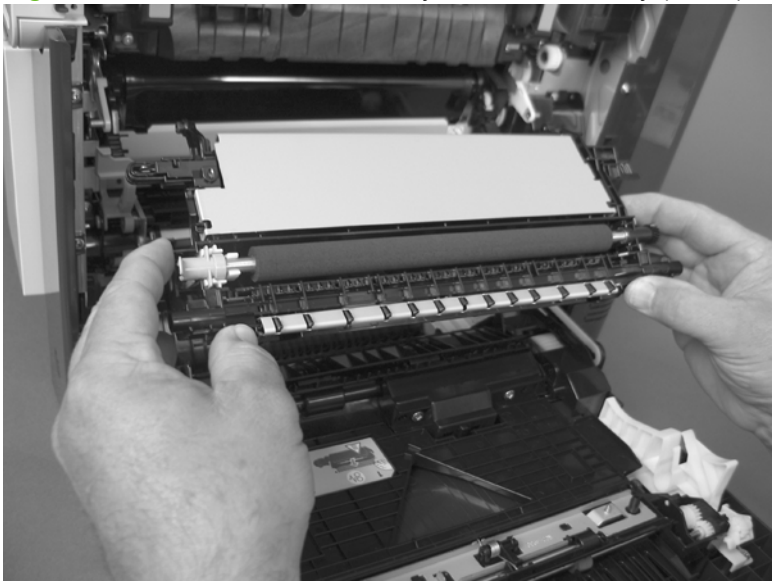
3. Push the pin on the release-lever side of the assembly toward the inside of the product to release it, and then lift the assembly up.

Figure 6-38 Remove the secondary transfer assembly (1 of 2)



4. Pull the assembly straight out of the product to remove it.

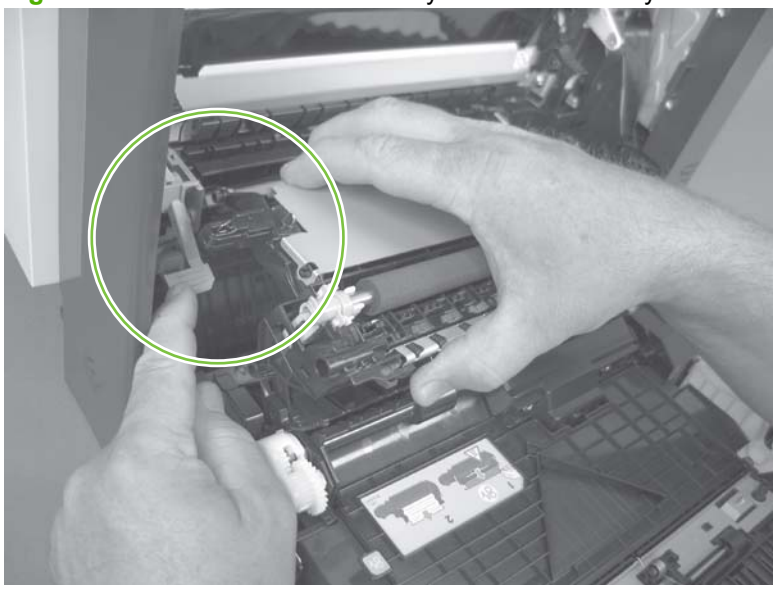
Figure 6-39 Remove the secondary transfer assembly (2 of 2)



Reinstall the secondary transfer assembly

Press and hold down the blue release lever when you reinstall the assembly.

Figure 6-40 Reinstall the secondary transfer assembly

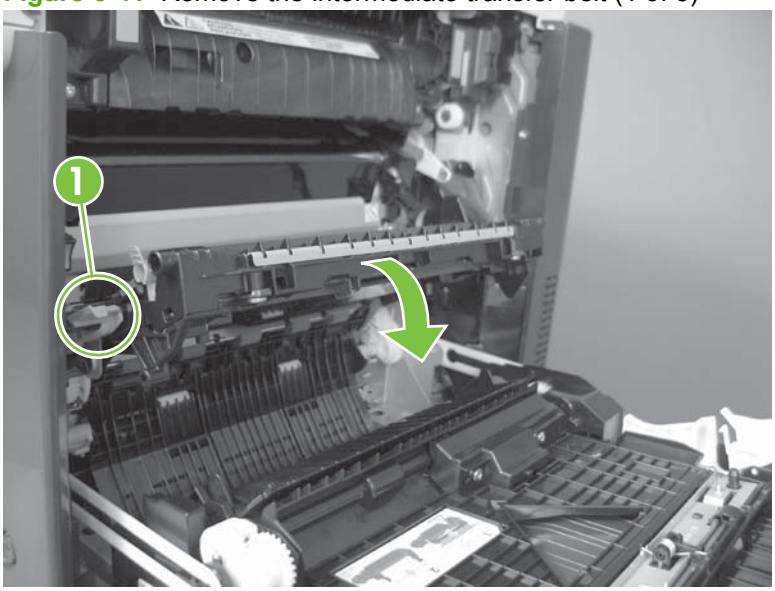


Intermediate transfer belt (ITB)

△ **CAUTION:** Do not touch the black-plastic belt. Skin oils and fingerprints on the belt can cause print-quality problems. Always place the ITB on a flat surface in a safe and protected location.

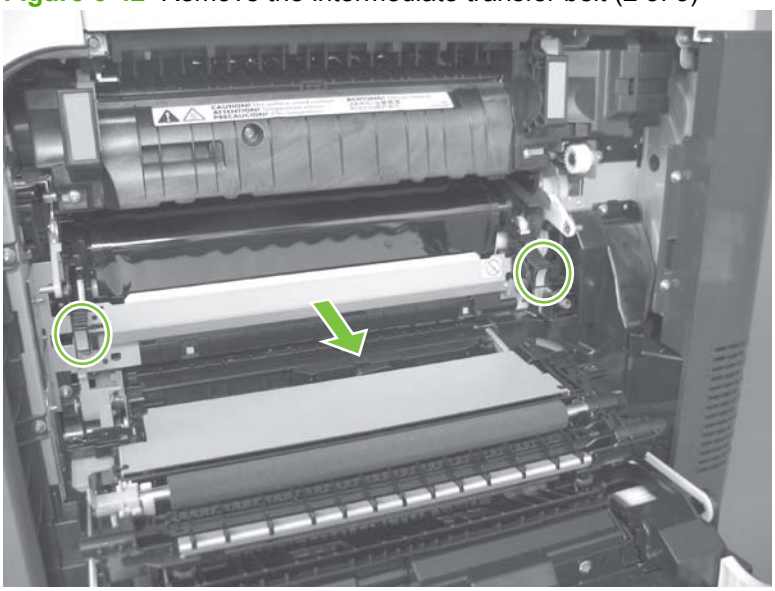
1. Open the right-door assembly.
2. Use the blue lever (callout 1) to lower the secondary transfer assembly.

Figure 6-41 Remove the intermediate transfer belt (1 of 3)



3. Grasp the small handles on the ITB and then pull the ITB out of the product until two large handles expand along the right- and left-side of the ITB.

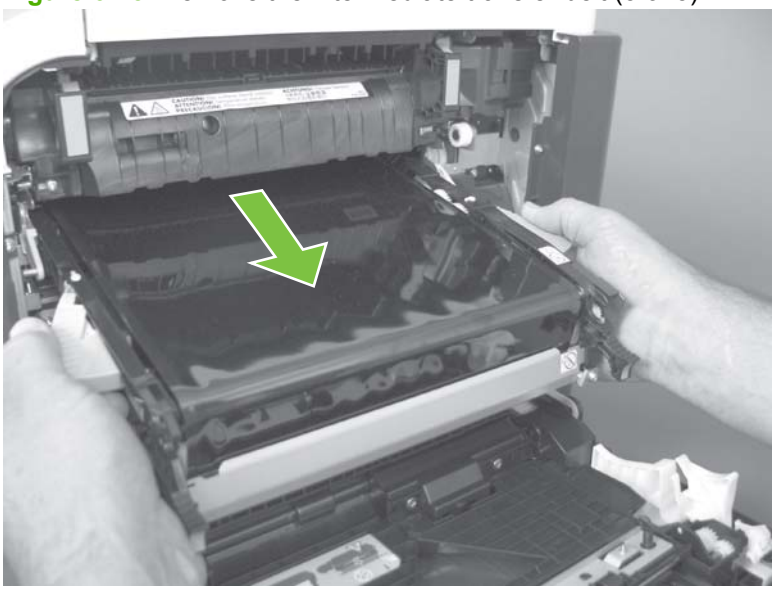
Figure 6-42 Remove the intermediate transfer belt (2 of 3)



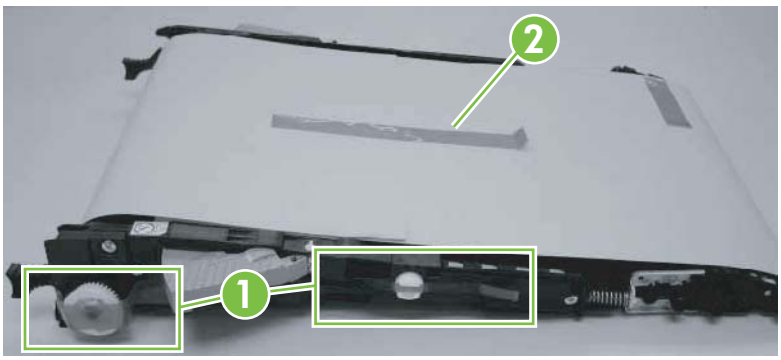
4. Grasp the large handles on the ITB and then pull the ITB straight out of the product to remove it.

△ **CAUTION:** The ITB is a sensitive component. Be careful when handling the ITB so that it is not damaged. Always place the ITB in a safe and protected location.

Figure 6-43 Remove the intermediate transfer belt (3 of 3)



Reinstallation tip If you are installing a replacement ITB, make sure that you remove all of the packing tape (callout 1) and the protective cover sheet (callout 2).



Front-door assembly

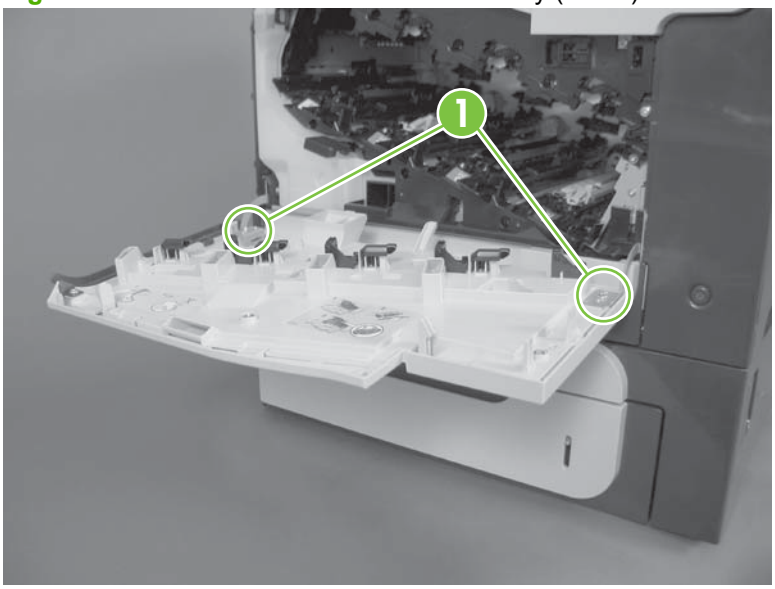
1. Open the front door.

Figure 6-44 Remove the front-door assembly (1 of 2)

2. Remove two screws (callout 1), and then remove the front-door assembly.

NOTE: A small sheet-metal bracket on the left side of the door is not captive. Do not lose the bracket when you remove the screw.

Figure 6-45 Remove the front-door assembly (2 of 2)



3. If you are installing a replacement front-door assembly, install the HP name tag and the appropriate product model number tag on the assembly.

Automatic document feeder (ADF)

NOTE: After removing the ADF assembly, place it on a clean, dry, and smooth surface.

You must calibrate the ADF and scanner after installing the ADF. See Calibrate a replacement ADF assembly on page 214.

1. Release two thumb screws, and then disconnect one connector.

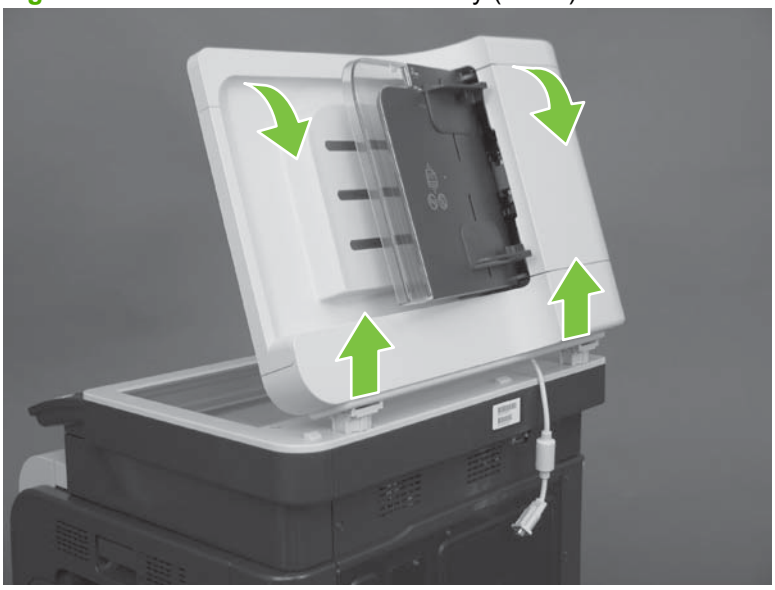
Figure 6-46 Remove the ADF assembly (1 of 4)

2. Open the ADF.

Figure 6-47 Remove the ADF assembly (2 of 4)

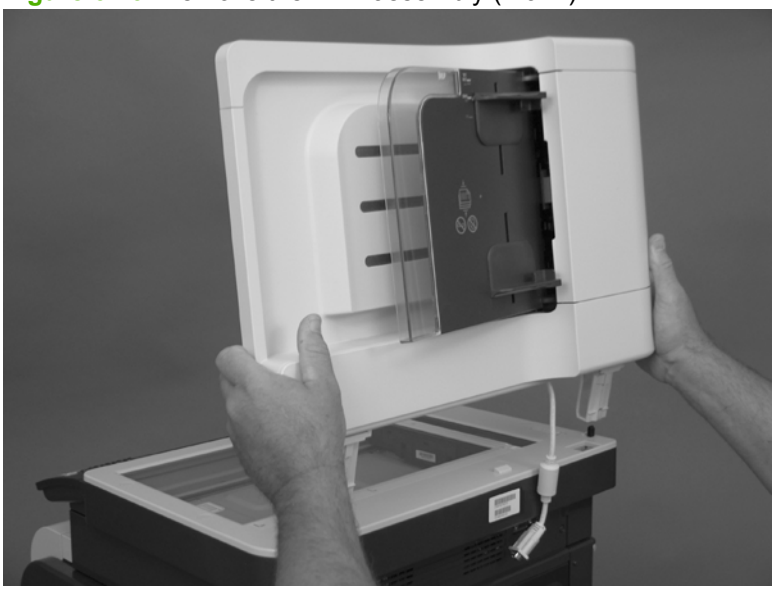
3. Lift the ADF straight up until it stops, and then slightly tilt it toward the rear of the product. Continue lifting the ADF straight up to remove it.

Figure 6-48 Remove the ADF assembly (3 of 4)



4. Remove the ADF.

Figure 6-49 Remove the ADF assembly (4 of 4)



Calibrate a replacement ADF assembly

1. On the control-panel Home screen, scroll to and touch Administration.
2. Touch Troubleshooting.
3. Touch Calibrate Scanner.
4. Touch Calibrate to print the first pass of the calibration target.
5. Follow the instructions on the control-panel display. For more information, see Calibrate the product on page 430.

ADF roller assembly and separation pad

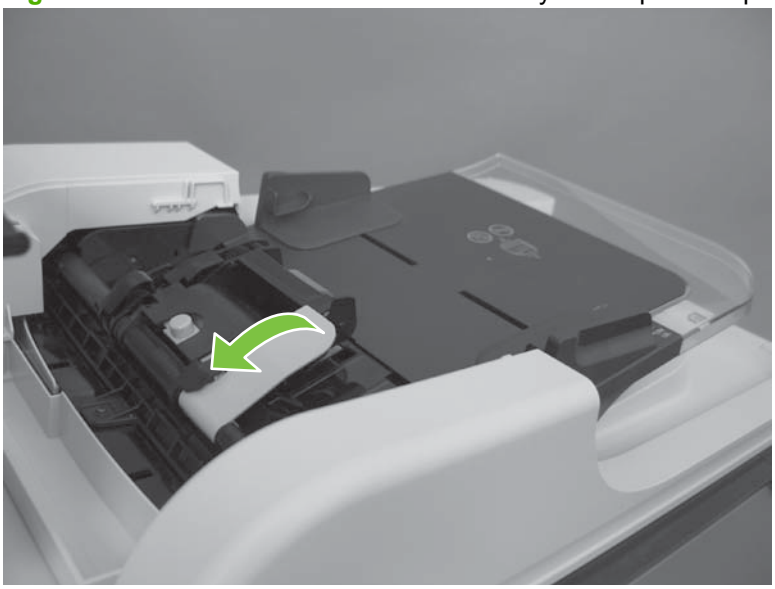
△ **CAUTION:** Do not touch the spongy roller surface unless you are replacing the roller. Skin oils on the roller can cause paper pickup problems.

1. Open the ADF jam door.

Figure 6-50 Remove the ADF roller assembly and separation pad (1 of 5)

2. Lift the green handle.

Figure 6-51 Remove the ADF roller assembly and separation pad (2 of 5)



3. Push the blue button.

Figure 6-52 Remove the ADF roller assembly and separation pad (3 of 5)

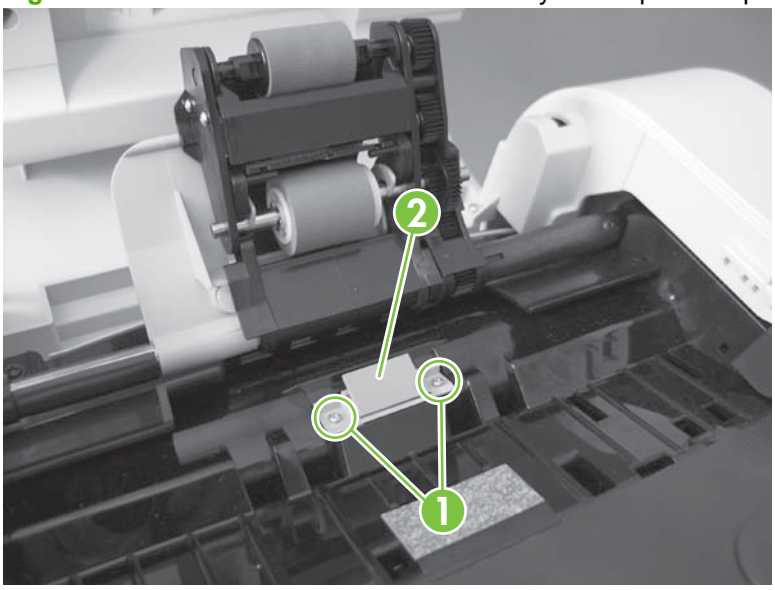
4. Remove the ADF roller assembly.

Figure 6-53 Remove the ADF roller assembly and separation pad (4 of 5)

5. Remove two screws (callout 1), and then remove the separation-pad assembly (callout 2).

TIP: Use a #1 Phillips screwdriver to remove these screws.

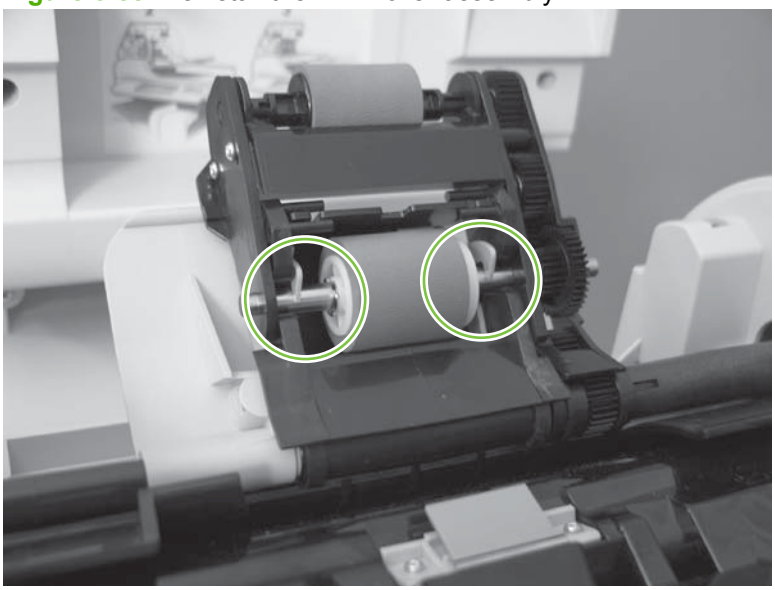
Figure 6-54 Remove the ADF roller assembly and separation pad (5 of 5)



Reinstall the ADF roller assembly

Securely attach the ADF roller assembly to the blue hooks.

Figure 6-55 Reinstall the ADF roller assembly



Control-panel overlay

1. Gently pull up on the control-panel overlay.

Figure 6-56 Remove the control-panel overlay (1 of 2)

2. Remove the control-panel overlay.

Figure 6-57 Remove the control-panel overlay (2 of 2)

Control-panel assembly

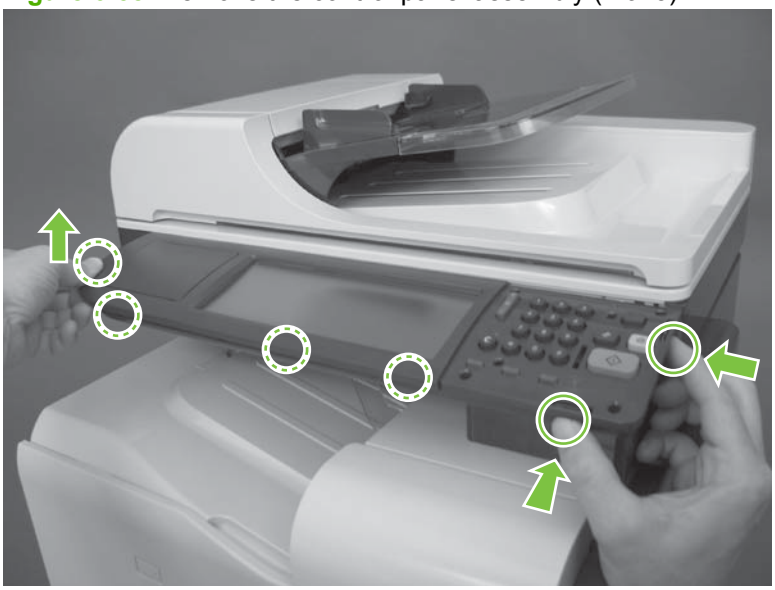
Before proceeding, remove the following components:

- Control-panel overlay. See Control-panel overlay on page 218.

Remove the control-panel assembly

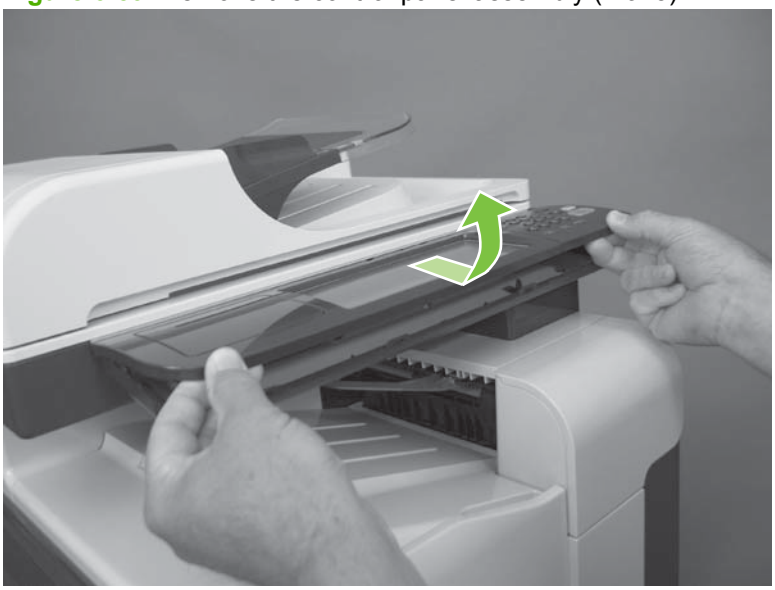
1. Release six tabs.

Figure 6-58 Remove the control-panel assembly (1 of 3)



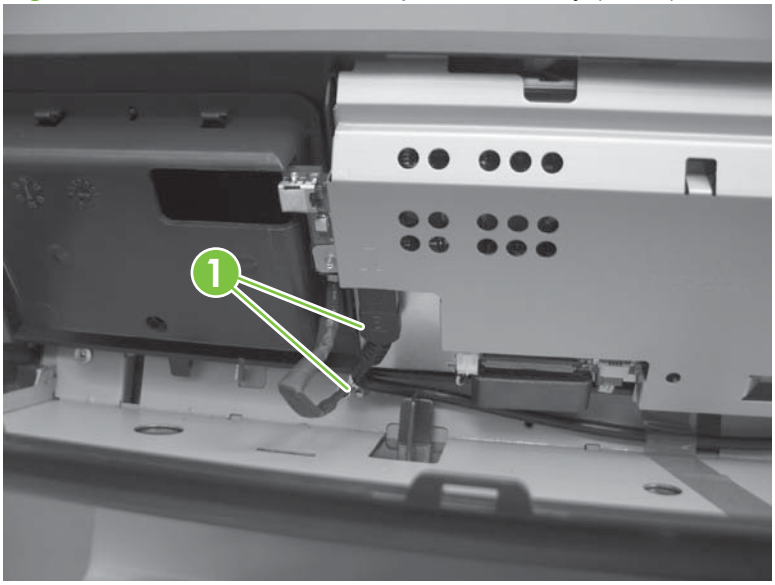
2. Pull the control-panel assembly toward the front of the product and rotate it up.

Figure 6-59 Remove the control-panel assembly (2 of 3)



3. Disconnect two connectors (callout 1), and then remove the control-panel assembly.

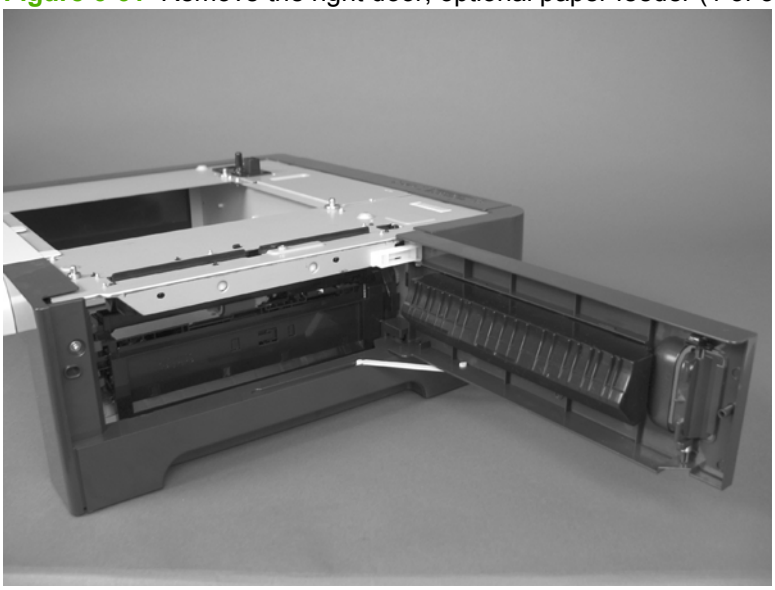
Figure 6-60 Remove the control-panel assembly (3 of 3)



Right door (optional paper feeder)

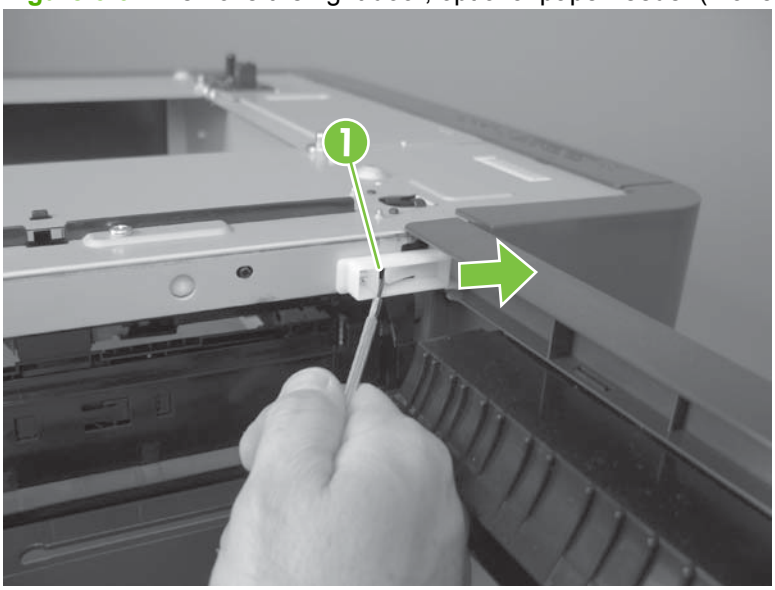
1. Open the right door.

Figure 6-61 Remove the right door; optional paper feeder (1 of 3)



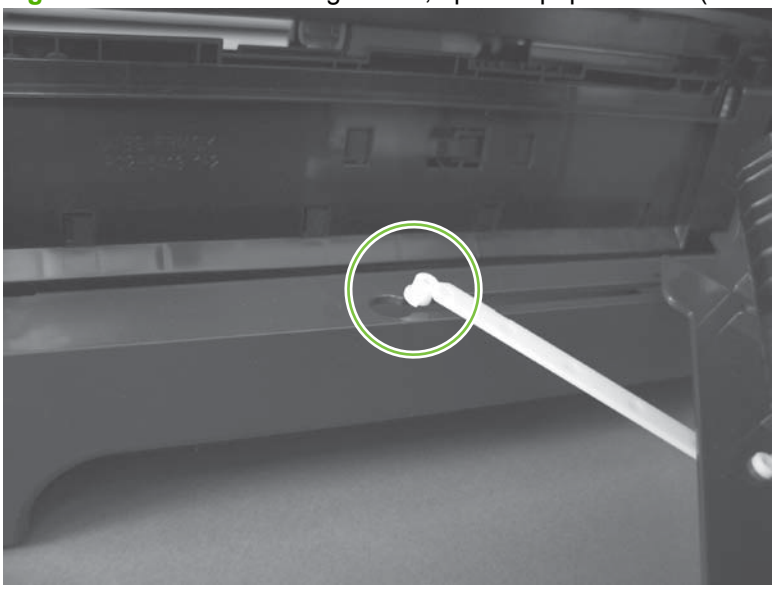
2. Release one tab (callout 1), and then slide the stopper toward the right side of the product to remove it.

Figure 6-62 Remove the right door; optional paper feeder (2 of 3)



3. Support the door, and then release the door-retainer arm at the bottom of the door. Raise the door to release the lower hinge pin, and then remove the door.

Figure 6-63 Remove the right door; optional paper feeder (3 of 3)



External panels, covers, doors, and scanner assembly

Identification and location

NOTE: Your product might not appear exactly as the one shown in the photos in this chapter. Although some photos do not show the ADF/scanner unit, the procedures in this chapter are appropriate for your product.

Figure 6-64 External panels, covers, doors, and scanner assembly; identification and location

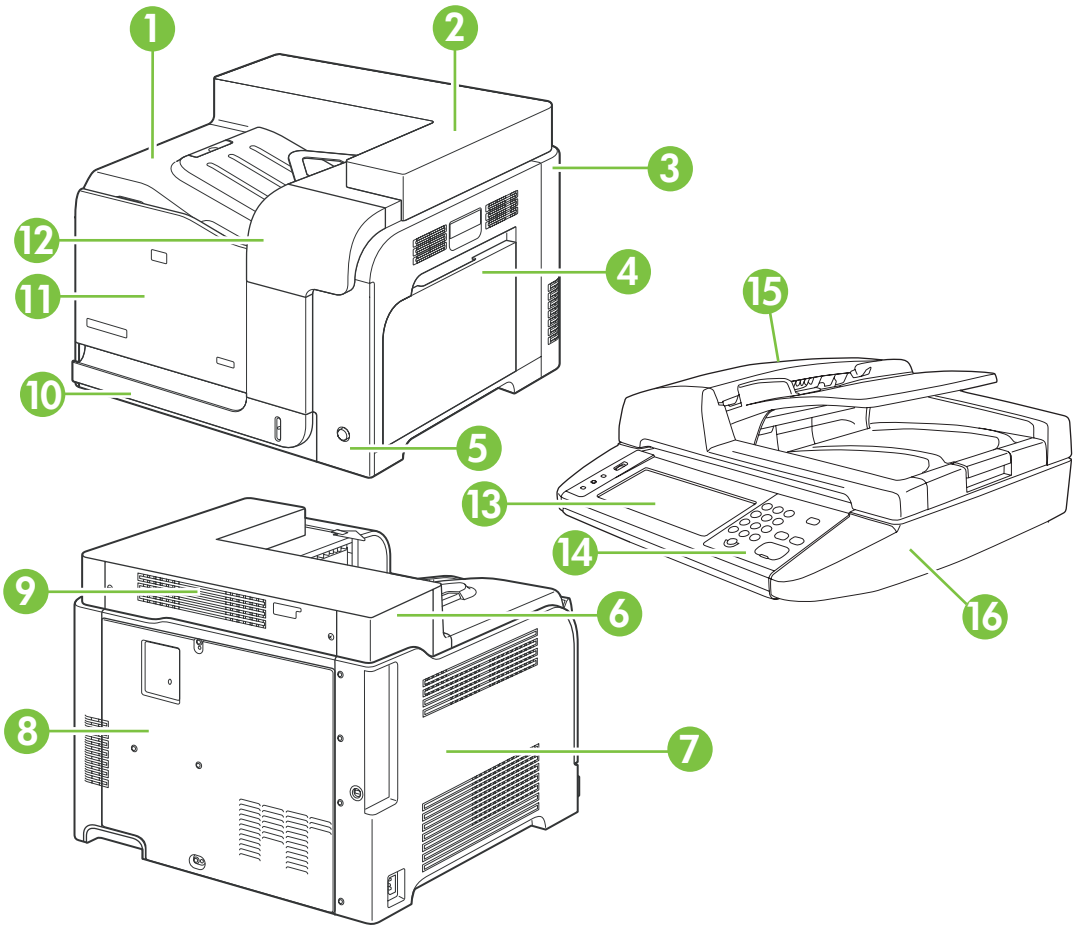


Table 6-2 External panels, covers, doors, and scanner assembly; identification and location

Item	Description
1	Front-top cover (see Front-top cover on page 261)
2	Right-top cover (see Right-top cover on page 258)
3	Right-rear cover (see Right-rear cover on page 231)
4	Right-door assembly (see Right-door assembly on page 227)
5	Right-front cover (see Right-front cover on page 239)
6	Left-upper cover (see Left-upper cover on page 247)
7	Left cover (seeLeft cover on page 233)
8	Rear cover (see Rear cover on page 238)

Table 6-2 External panels, covers, doors, and scanner assembly; identification and location (continued)

Item	Description
9	Rear-upper cover (see Rear-upper cover on page 236)
10	Tray cassette (see Tray cassette on page 199)
11	Front-door assembly (see Front-door assembly on page 211)
12	Front-upper cover (see Front-upper cover on page 225)
13	Control-panel assembly (see Control-panel assembly on page 219)
14	Control-panel overlay (see Control-panel overlay on page 218)
15	Automatic Document Feeder (see ADF roller assembly and separation pad on page 215)
16	Scanner (see Scanner assembly on page 242)

Front-upper cover

1. Open the right door and front door.

Figure 6-65 Remove the front-upper cover (1 of 4)

2. Remove one screw.

Figure 6-66 Remove the front-upper cover (2 of 4)

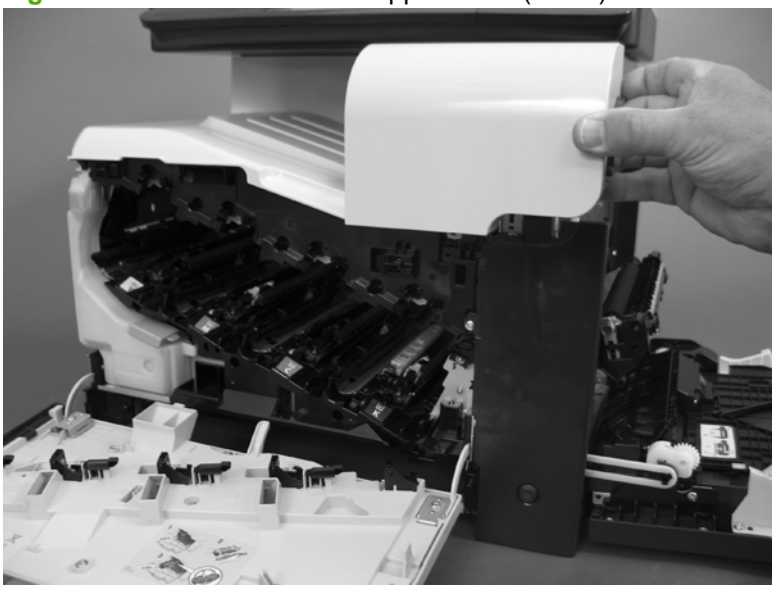
3. Remove one screw.

Figure 6-67 Remove the front-upper cover (3 of 4)

4. Lift the cover up, and then remove the front-upper cover.

NOTE: The cover might be difficult to remove. It might require some flexing to release it.

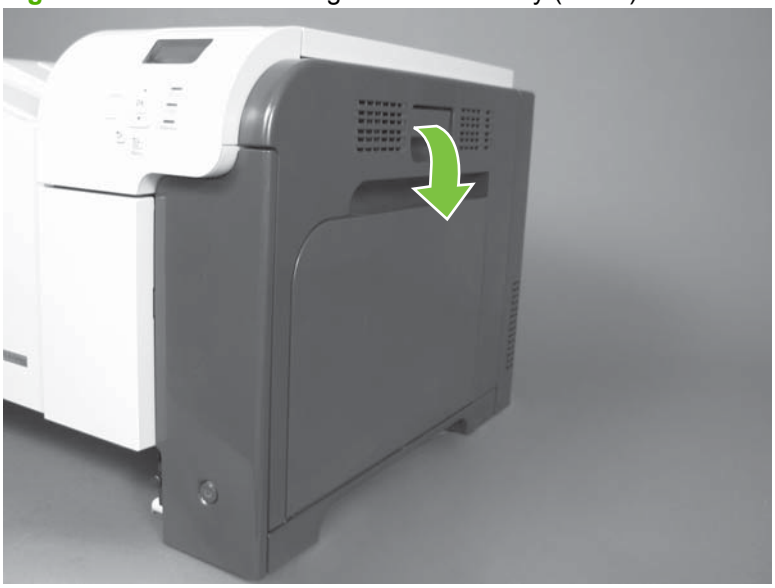
Figure 6-68 Remove the front-upper cover (4 of 4)



Right-door assembly

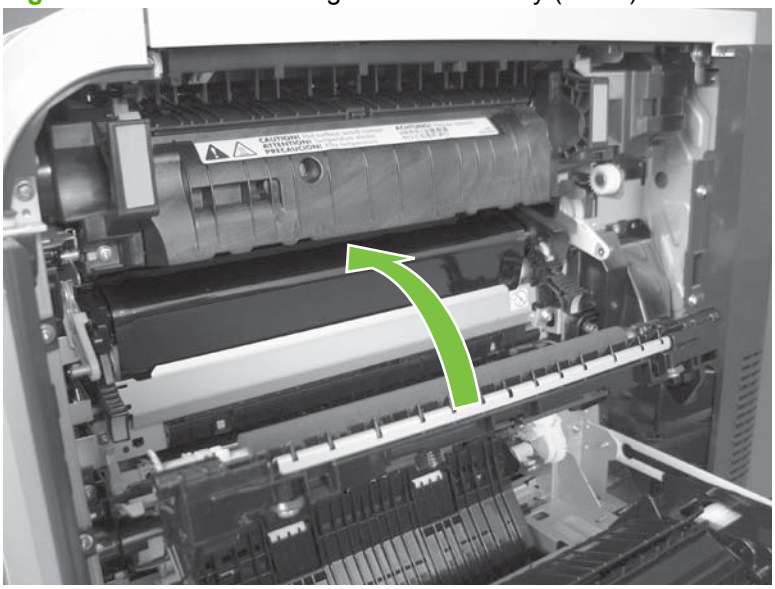
1. Open the right-door assembly

Figure 6-69 Remove the right-door assembly (1 of 8)



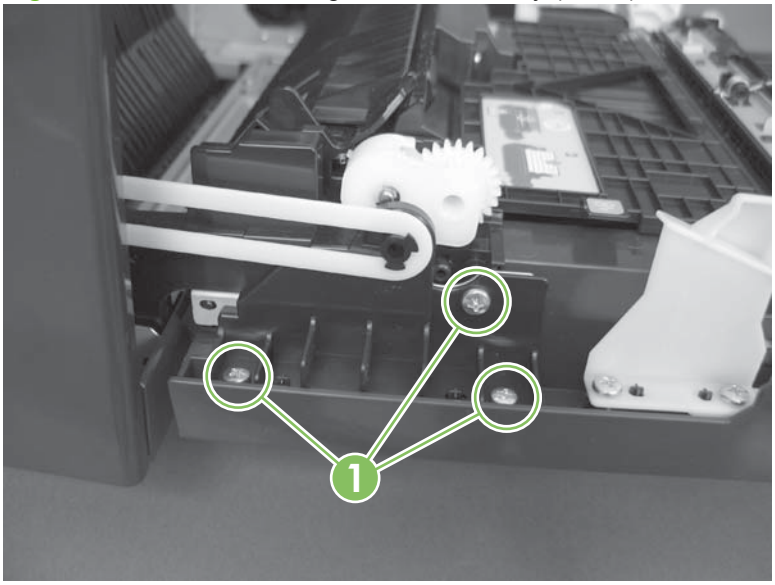
2. Close the secondary transfer assembly.

Figure 6-70 Remove the right-door assembly (2 of 8)



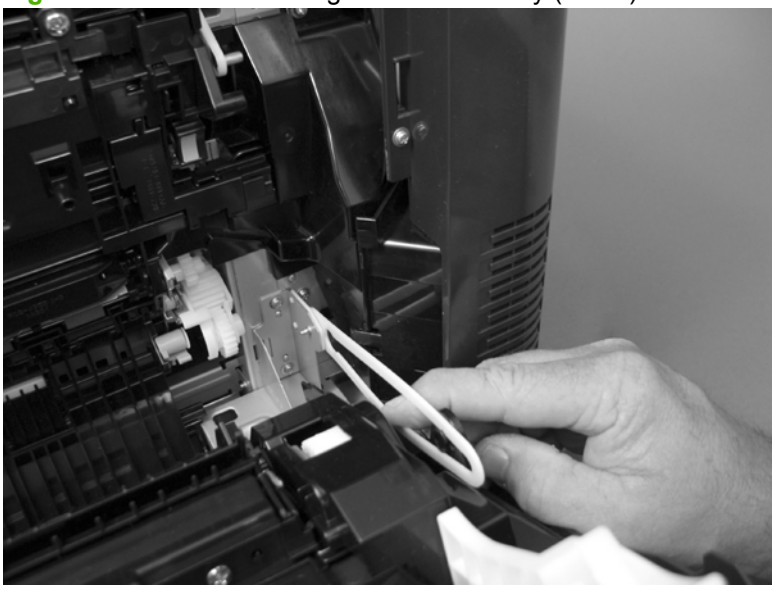
3. Remove three screws (callout 1).

Figure 6-71 Remove the right-door assembly (3 of 8)



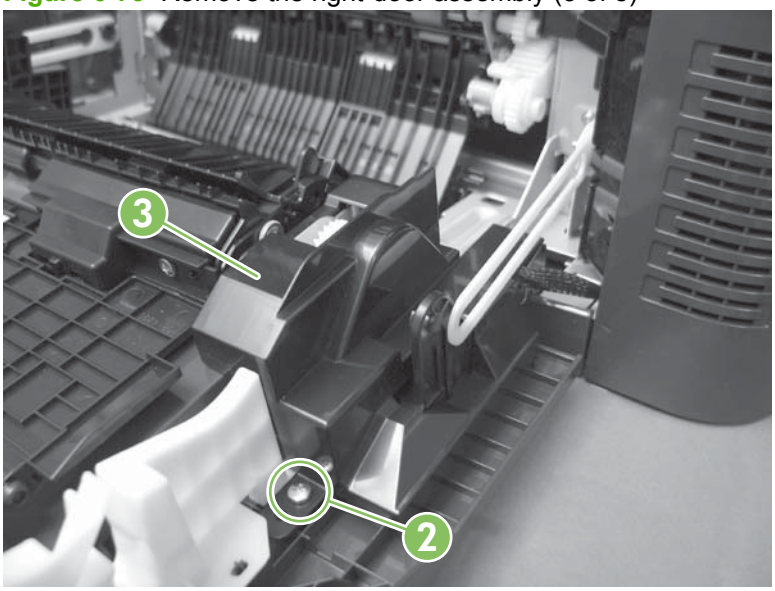
4. Carefully release one link arm.

Figure 6-72 Remove the right-door assembly (4 of 8)



5. Remove one screw (callout 2), and then remove the cover (callout 3).

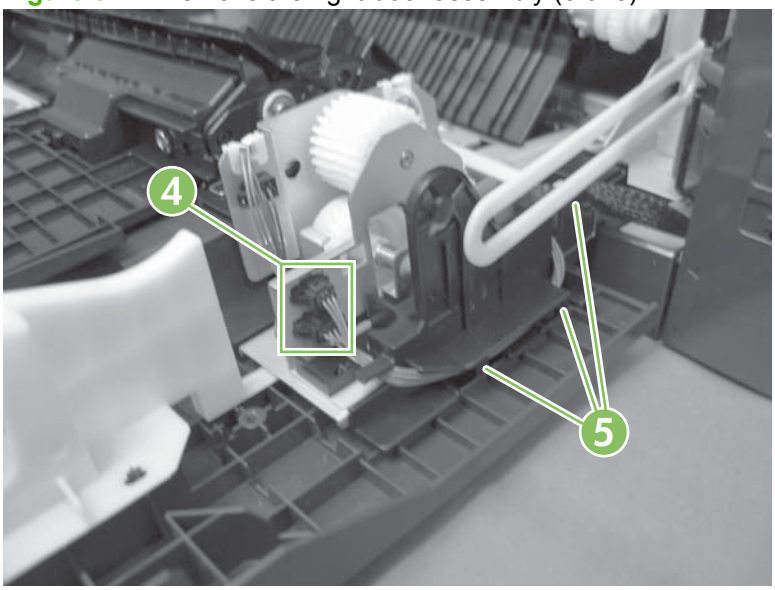
Figure 6-73 Remove the right-door assembly (5 of 8)



6. Disconnect two connectors (callout 4), and then release the wire harness from the guide (callout 5).

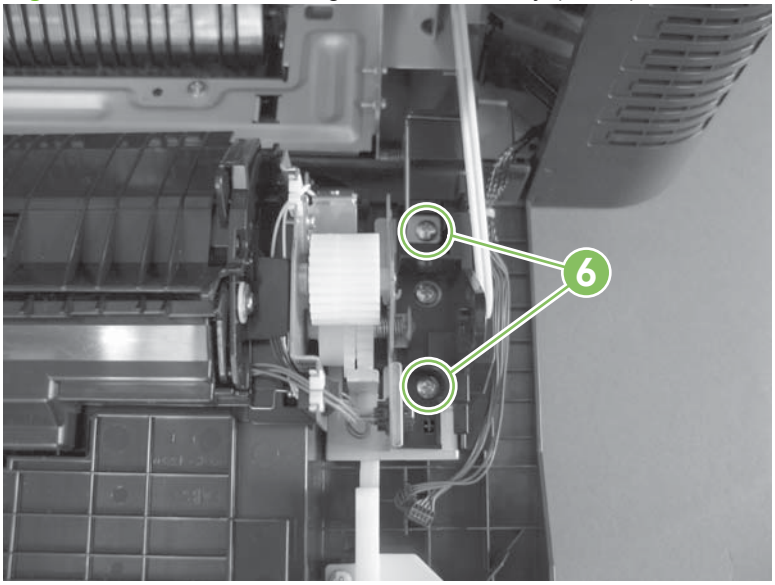
TIP: It is easier to disconnect the lower connector if you first remove the wire harnesses from the guide.

Figure 6-74 Remove the right-door assembly (6 of 8)



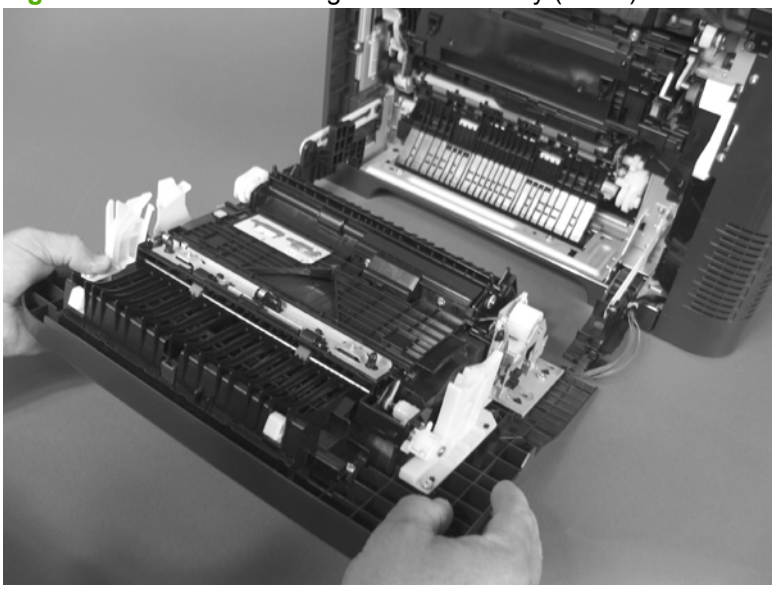
7. Remove two screws (callout 6).

Figure 6-75 Remove the right-door assembly (7 of 8)



8. Remove the right-door assembly.

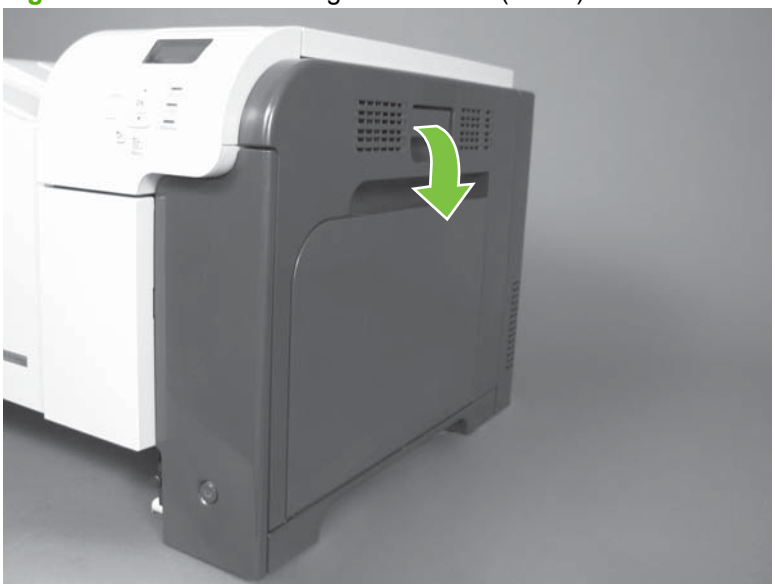
Figure 6-76 Remove the right-door assembly (8 of 8)



Right-rear cover

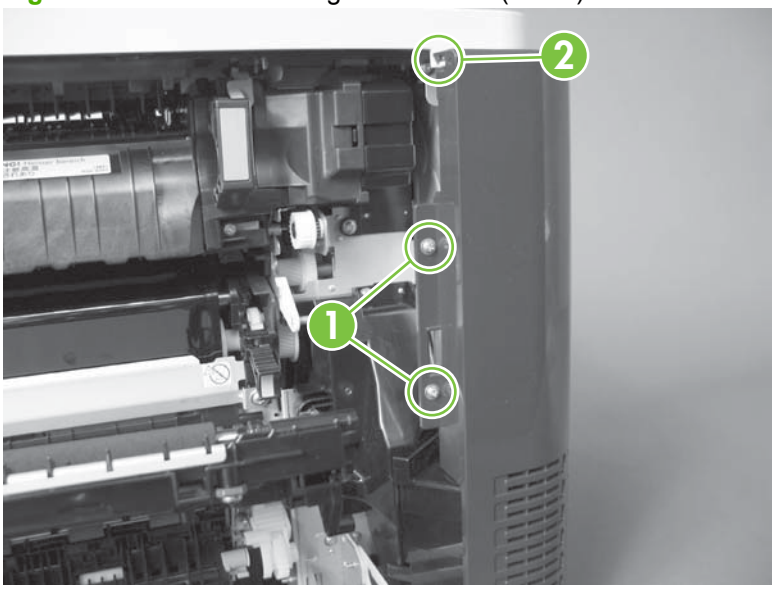
1. Open the right-door assembly.

Figure 6-77 Remove the right-rear cover (1 of 3)



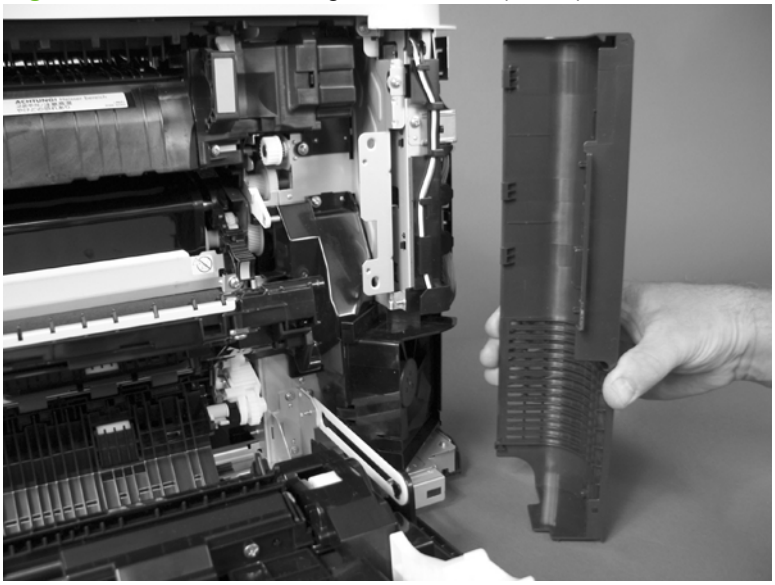
2. Remove two screws (callout 1) and release one tab (callout 2).

Figure 6-78 Remove the right-rear cover (2 of 3)



3. Rotate the bottom of the cover away from the product, and then remove the cover.

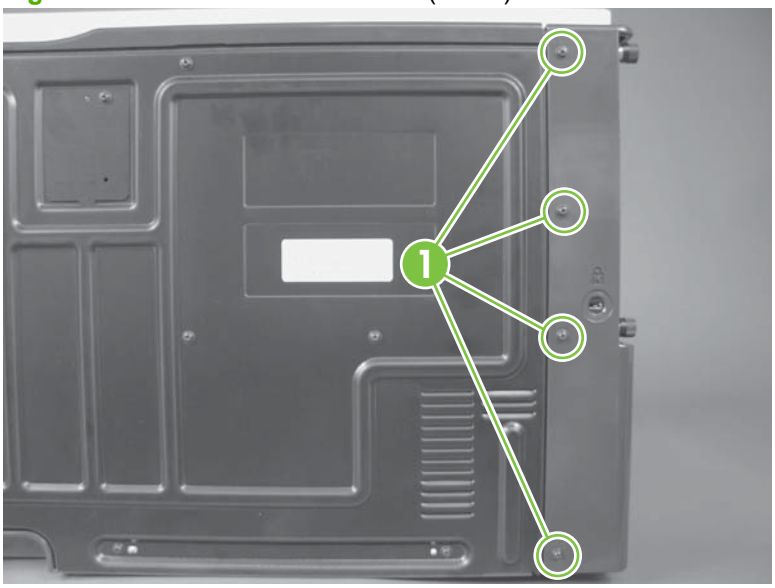
Figure 6-79 Remove the right-rear cover (3 of 3)



Left cover

1. Remove four screws (callout 1).

Figure 6-80 Remove the left cover (1 of 5)



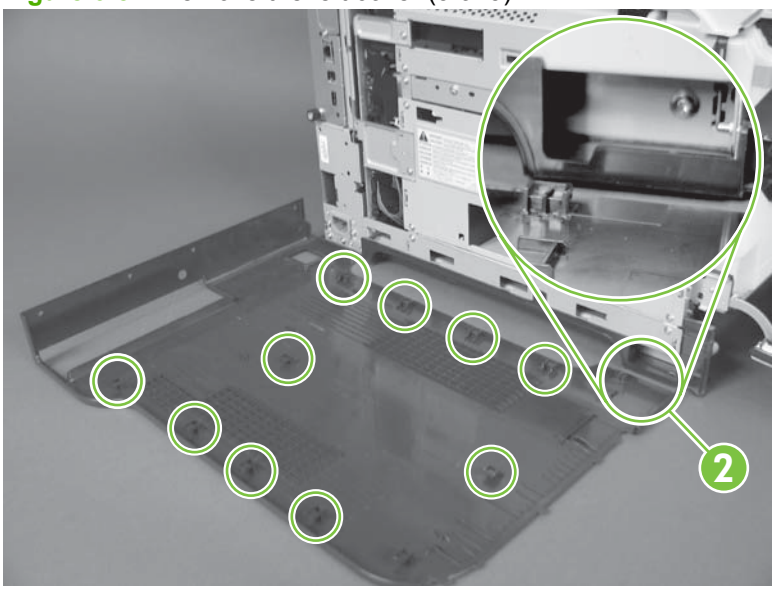
2. Release the rear edge of the cover, and slightly separate the cover from the product.

Figure 6-81 Remove the left cover (2 of 5)

3. The figure below shows the cover removed so that you can see the tab locations. **Before proceeding**, note the location of the mounting tabs.

△ **CAUTION:** One tab (callout 2) is easily damaged when removing the cover. Be careful when removing the cover.

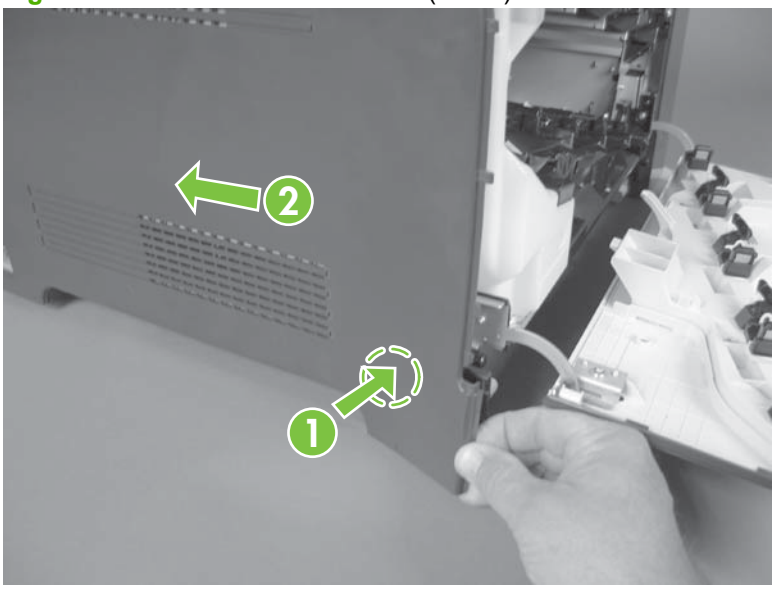
Figure 6-82 Remove the left cover (3 of 5)



4. Use your thumb to press in on the lower-front portion of the cover (near the dashed circle in the figure below), and then slightly slide the cover away from the front door to release one tab.

△ **CAUTION:** You must flex the cover enough to release the front edge of the cover, but do not damage the tab at the bottom-front edge of the cover. See callout 2 in Figure 6-82 Remove the left cover (3 of 5) on page 234.

Figure 6-83 Remove the left cover (4 of 5)



5. Slide the cover toward the rear of the product and rotate it away from the product and then remove the cover.

Figure 6-84 Remove the left cover (5 of 5)

Rear-upper cover

1. Release two thumb screws, and then disconnect one connector.

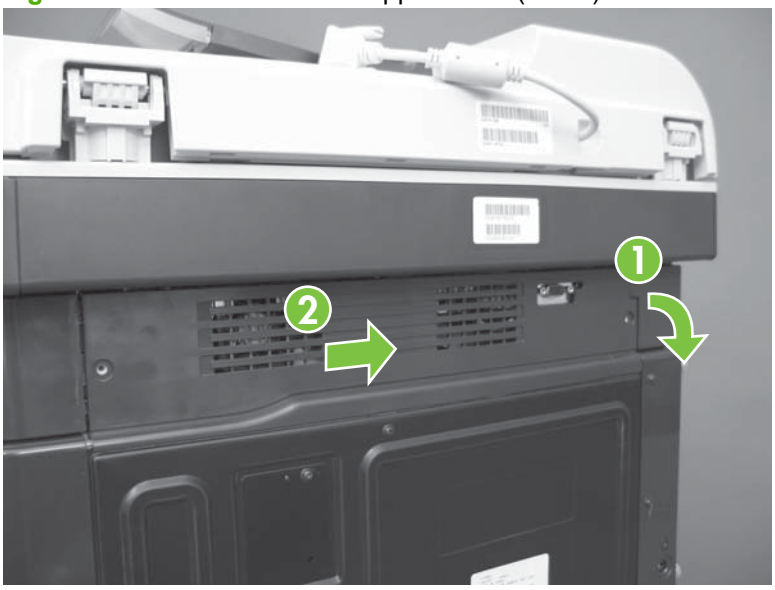
Figure 6-85 Remove the rear-upper cover (1 of 4)

2. Remove two screws.

Figure 6-86 Remove the rear-upper cover (2 of 4)

3. Rotate the rear-upper cover away from the product (callout 1), and then slide it toward the right (callout 2) to release one tab.

Figure 6-87 Remove the rear-upper cover (3 of 4)



4. Remove the rear-upper cover.

Figure 6-88 Remove the rear-upper cover (4 of 4)

Rear cover

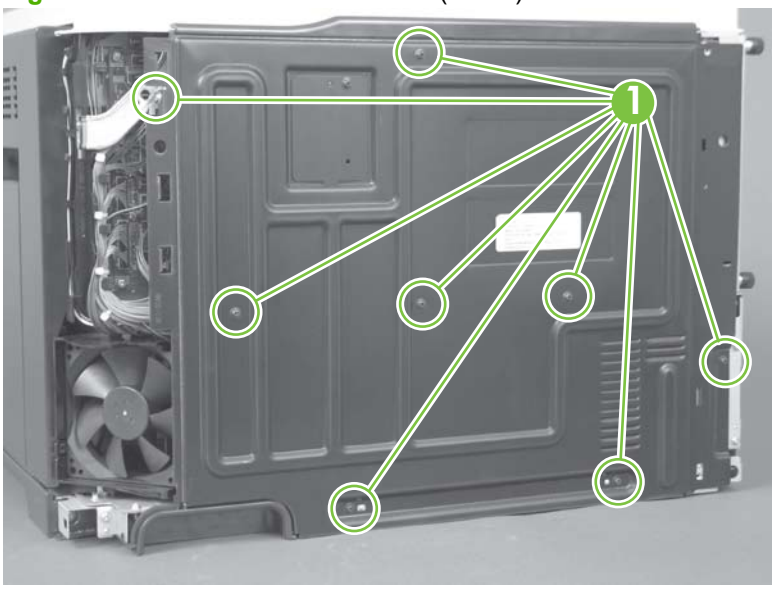
Before proceeding, remove the following components:

- Right-rear cover. See Right-rear cover on page 231.
- Left cover. See Left cover on page 233.
- Rear-upper cover. See Rear-upper cover on page 236.

Remove the rear cover

1. Remove eight screws (callout 1).

Figure 6-89 Remove the rear cover (1 of 2)



2. Slide the cover toward the fan side of the product, and then remove the rear cover.

Figure 6-90 Remove the rear cover (2 of 2)

Right-front cover

Before proceeding, remove the following components:

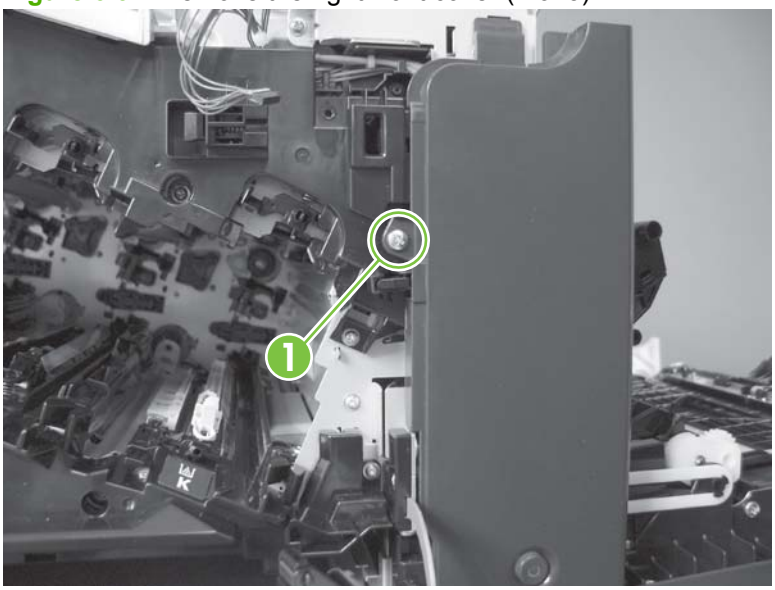
- Front-upper cover. See Front-upper cover on page 225.

Remove the right-front cover

NOTE: Be careful. When removing the cover, do not dislodge the power button. If the button is dislodged, see Reinstall the power button on page 241 to reinstall it.

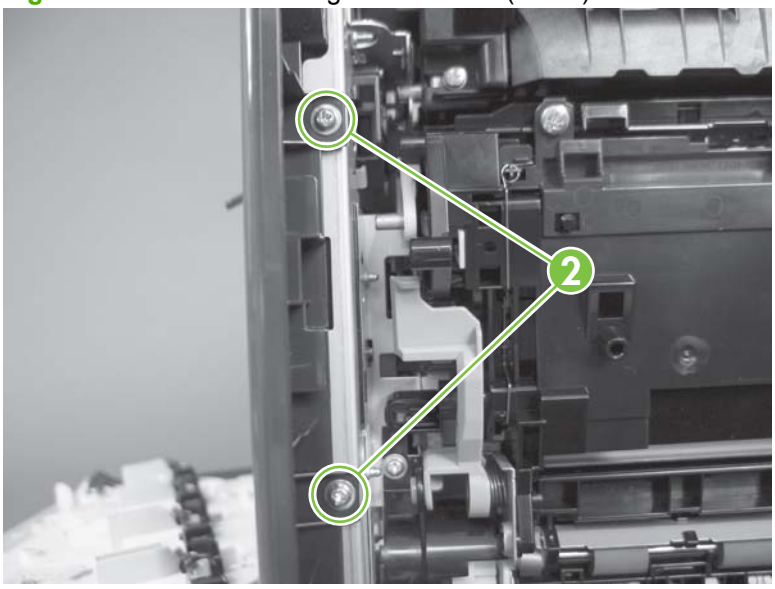
1. Remove one screw (callout 1).

Figure 6-91 Remove the right-front cover (1 of 5)



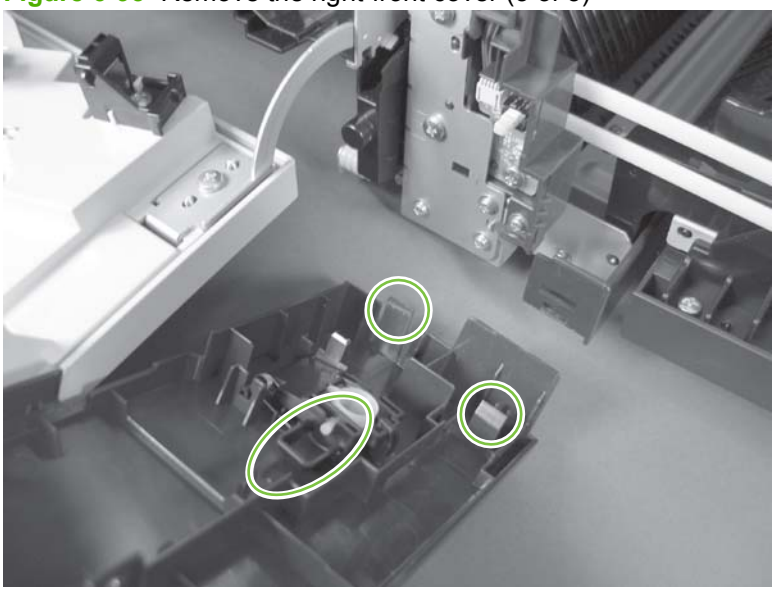
2. Remove two screws (callout 2).

Figure 6-92 Remove the right-front cover (2 of 5)



3. Before you proceed, take note of the tab locations at the bottom of the cover.

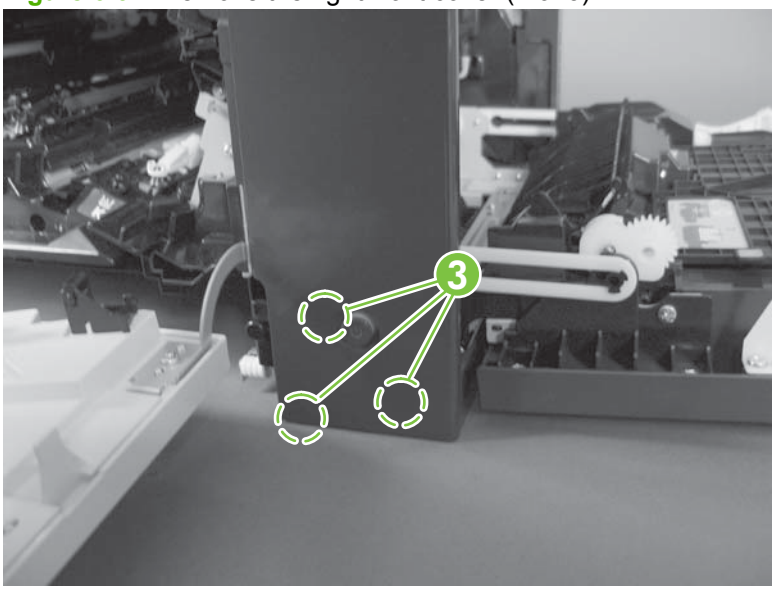
Figure 6-93 Remove the right-front cover (3 of 5)



4. Pull down on the cover to release three tabs (callout 3).

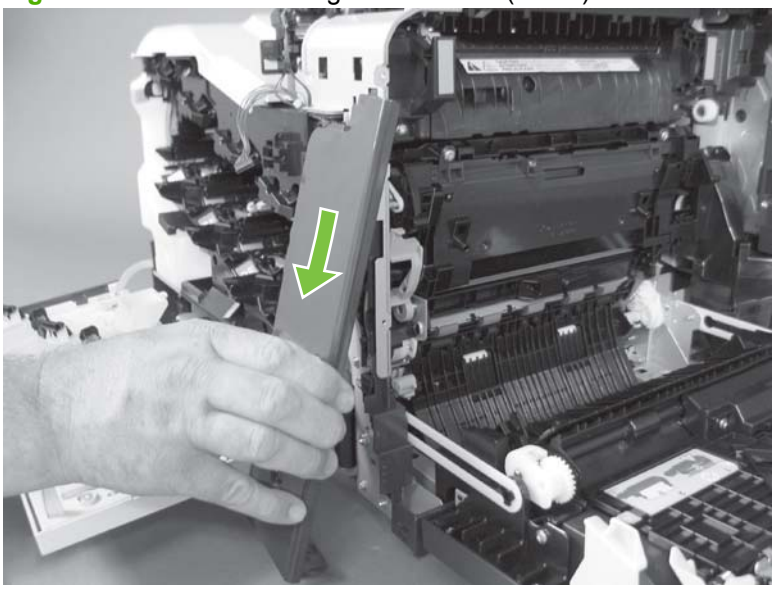
TIP: It might be easier if you position the product at the edge of the work surface so that there is a space for the cover to slide downward. Or, you might try inserting a small flat blade screwdriver behind the cover, and carefully pry the cover away from the product as you pull down on the cover to release the tabs.

Figure 6-94 Remove the right-front cover (4 of 5)



5. Rotate the bottom of the cover away from the product, and then pull down on the cover to remove it.

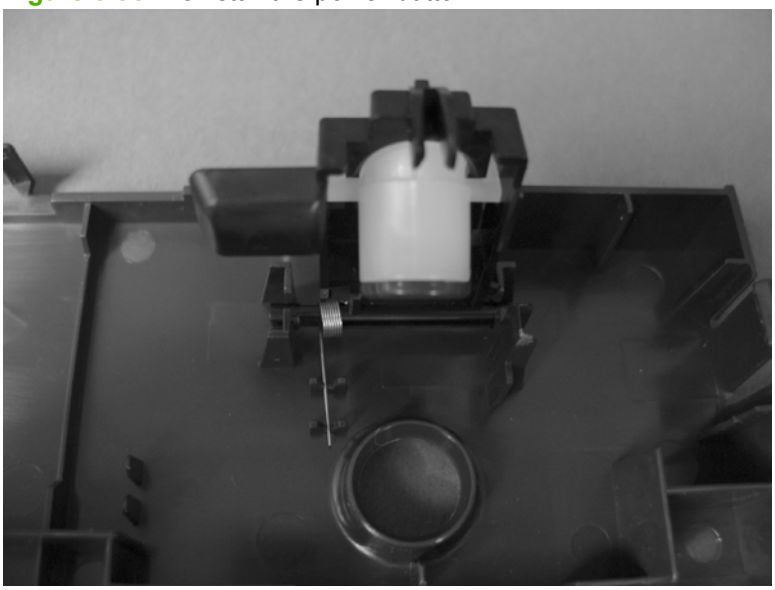
Figure 6-95 Remove the right-front cover (5 of 5)



Reinstall the power button

Snap the power button into the holders on the cover. Make sure that the spring is correctly installed.

Figure 6-96 Reinstall the power button



Scanner assembly

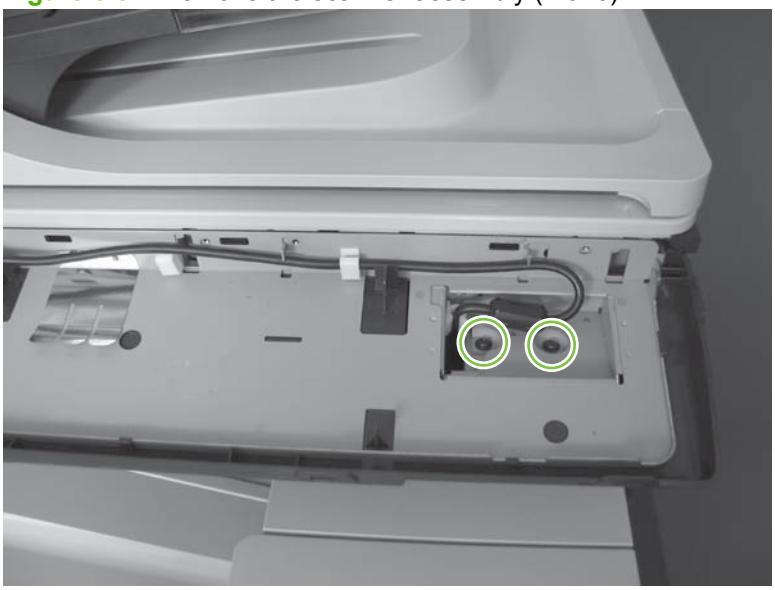
Before proceeding, remove the following components:

- Control-panel overlay. See Control-panel overlay on page 218
- Control-panel assembly. See Control-panel assembly on page 219.
- Rear-upper cover. See Rear-upper cover on page 236.

Remove the scanner assembly

1. Remove two screws.

Figure 6-97 Remove the scanner assembly (1 of 6)

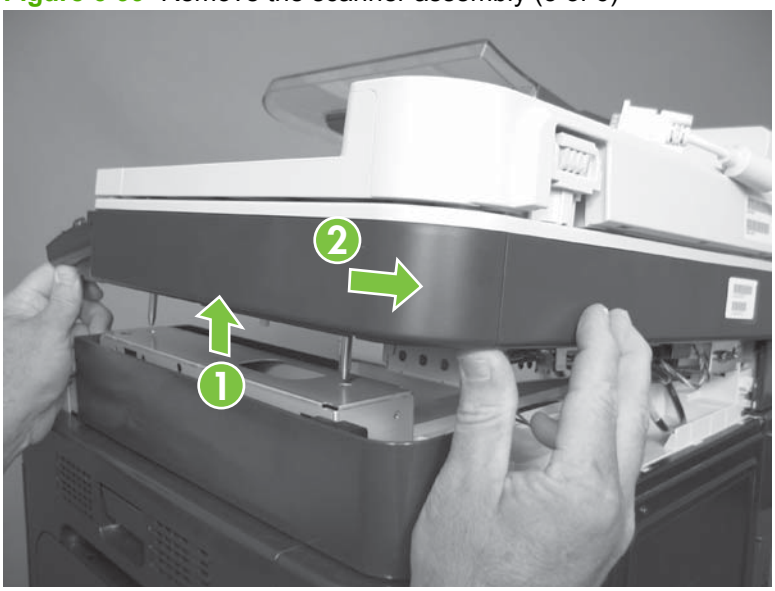


2. Remove two screws.

Figure 6-98 Remove the scanner assembly (2 of 6)

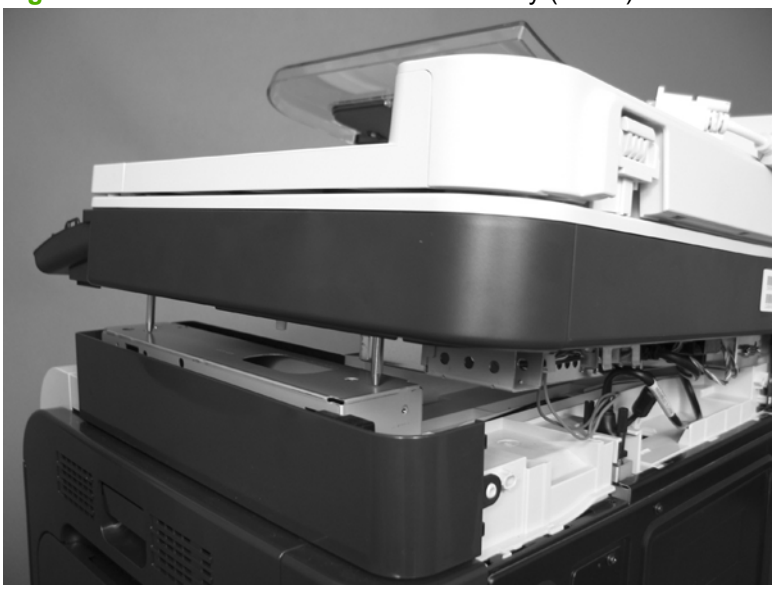
3. Lift the right side of the scanner assembly, and then move it slightly to the rear.

Figure 6-99 Remove the scanner assembly (3 of 6)



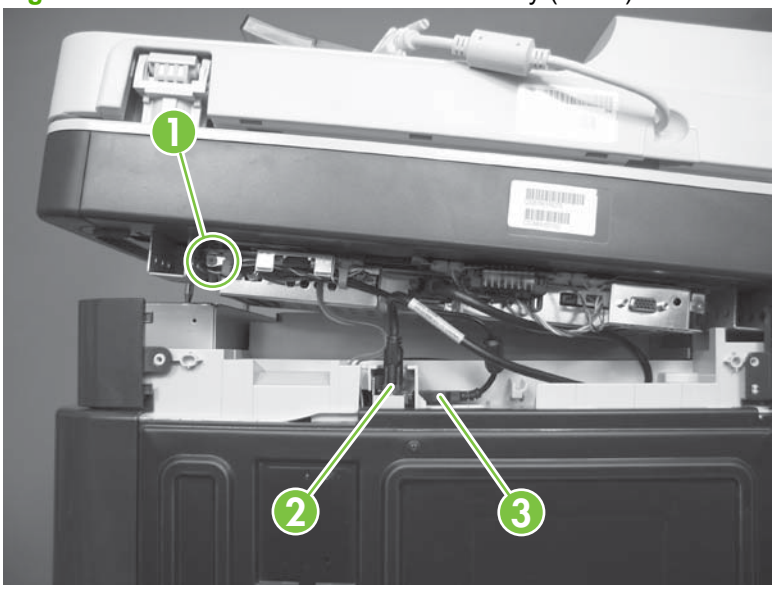
4. Place the scanner assembly on top of the base.

Figure 6-100 Remove the scanner assembly (4 of 6)



5. Disconnect one connector (callout 1), remove two thumb screws (callout 2), and then release one cable (callout 3).

Figure 6-101 Remove the scanner assembly (5 of 6)



6. Remove the scanner assembly.

Figure 6-102 Remove the scanner assembly (6 of 6)

Delivery cover

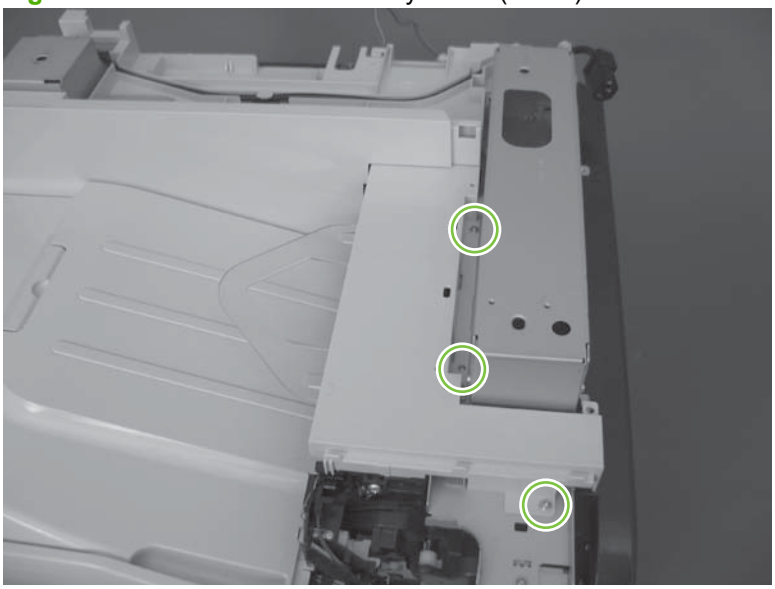
Before proceeding, remove the following components:

- Control-panel overlay. See Control-panel overlay on page 218.
- Control-panel assembly. See Control-panel assembly on page 219.
- Front-upper cover. See Front-upper cover on page 225.
- Rear-upper cover. See Rear-upper cover on page 236.
- Scanner assembly. See Scanner assembly on page 242.
- Right-top cover. See Right-top cover on page 258.

Remove the delivery cover

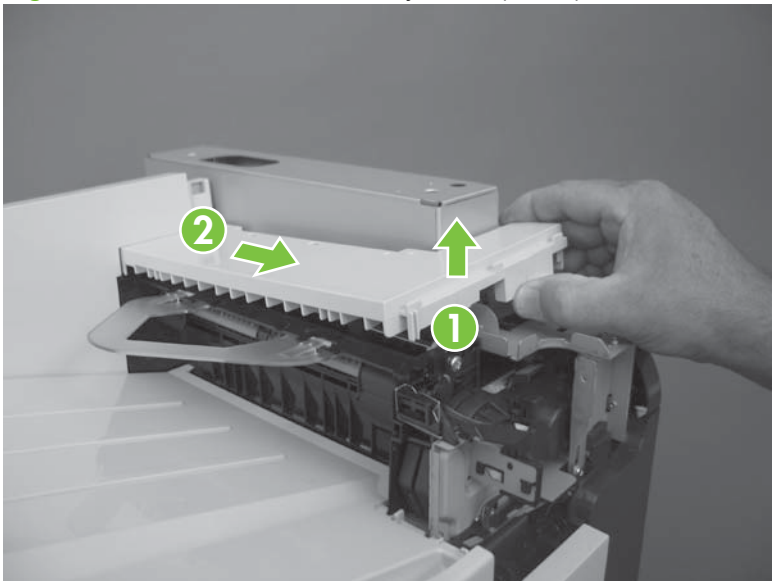
1. Remove three screws.

Figure 6-103 Remove the delivery cover (1 of 3)



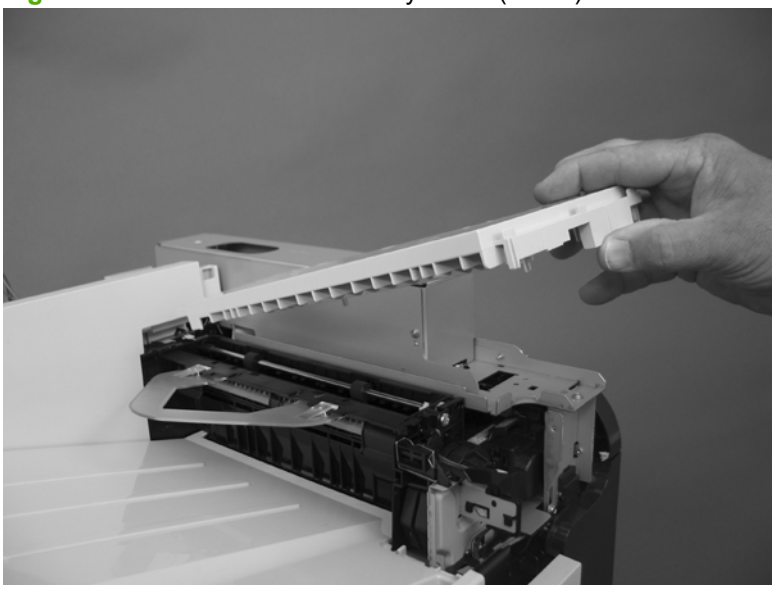
2. Lift up (callout 1) and slide the delivery cover (callout 2).

Figure 6-104 Remove the delivery cover (2 of 3)



3. Remove the delivery cover.

Figure 6-105 Remove the delivery cover (3 of 3)



Left-upper cover

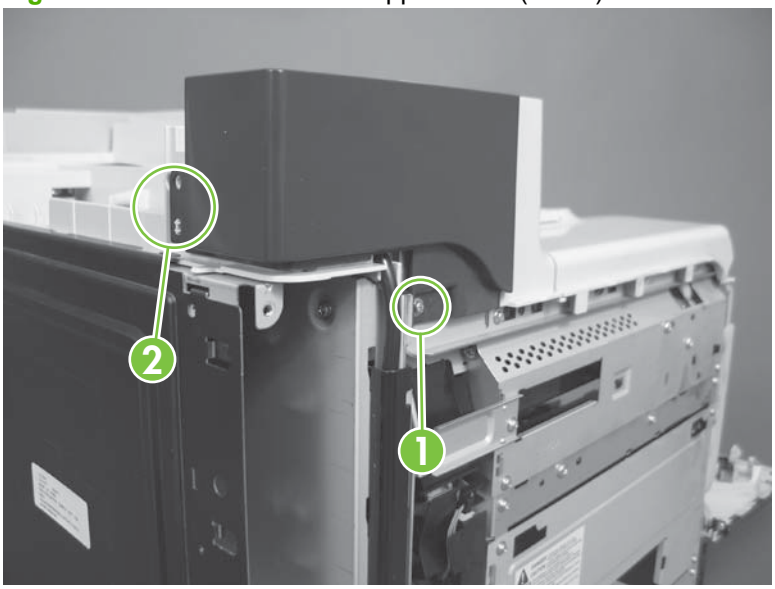
Before proceeding, remove the following components:

- Formatter PCA. See Formatter PCA on page 192.
- Control-panel overlay. See Control-panel overlay on page 218.
- Control-panel assembly. See Control-panel assembly on page 219.
- Left cover. See Left cover on page 233.
- Rear-upper cover. See Rear-upper cover on page 236.
- Scanner assembly. See Scanner assembly on page 242.

Remove the left-upper cover

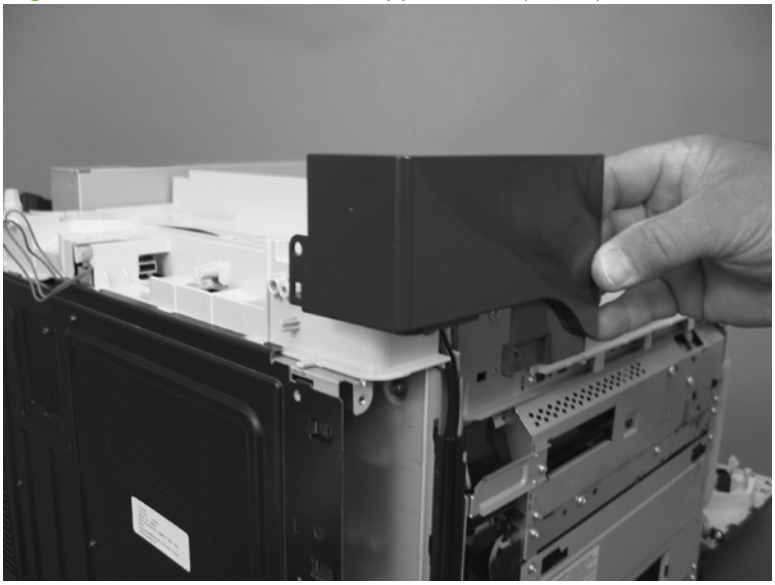
1. Remove one screw (callout 1) and one tab (callout 2).

Figure 6-106 Remove the left-upper cover (1 of 2)



2. Remove the left-upper cover.

Figure 6-107 Remove the left-upper cover (2 of 2)



Front stapler cover and right-side stapler cover

Before proceeding, remove the following components:

- Control-panel overlay. See Control-panel overlay on page 218.
- Control-panel assembly. See Control-panel assembly on page 219.
- Rear-upper cover. See Rear-upper cover on page 236.
- Scanner assembly. See Scanner assembly on page 242.

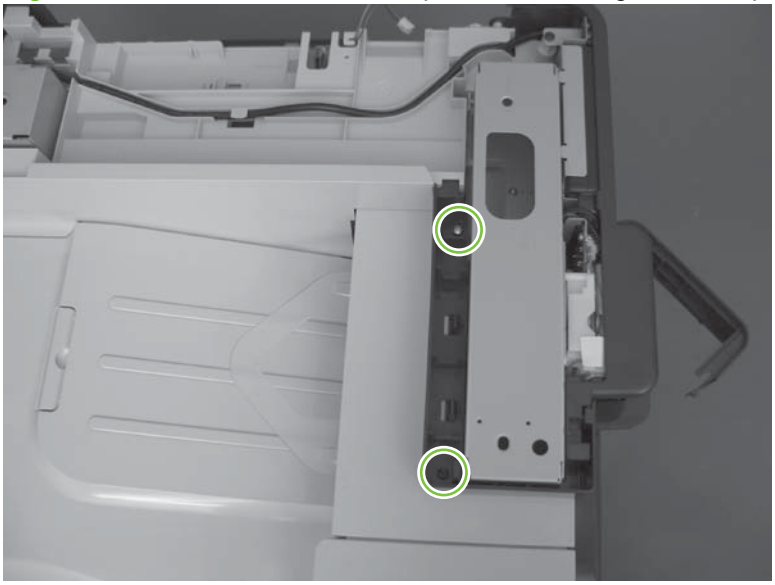
Remove the front stapler cover and right-side stapler cover

1. Open the stapler door, and then remove the stapler cartridge.

Figure 6-108 Remove the front stapler cover and right-side stapler cover (1 of 13)

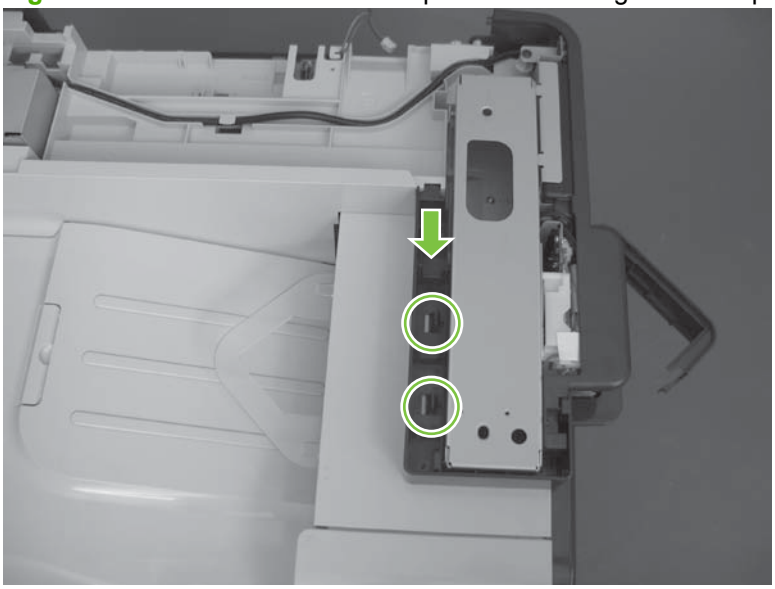
2. Remove two screws.

Figure 6-109 Remove the front stapler cover and right-side stapler cover (2 of 13)



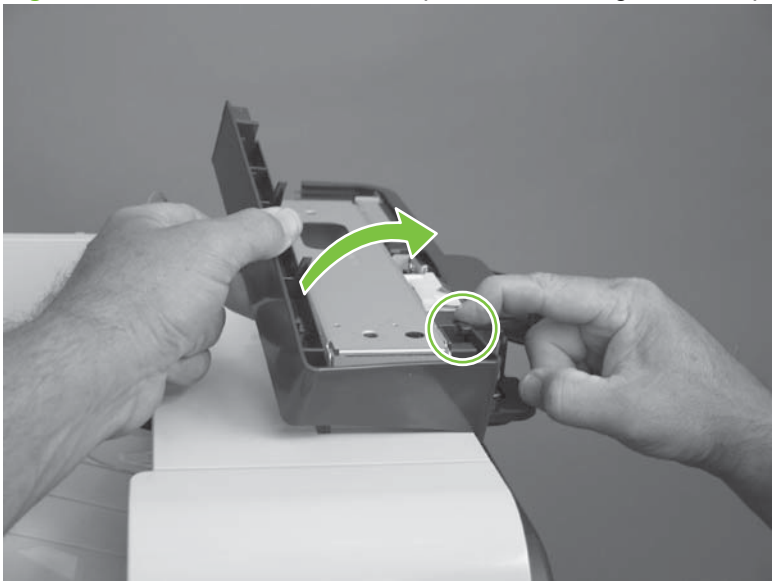
3. Slide the cover toward the front of the product while releasing two tabs.

Figure 6-110 Remove the front stapler cover and right-side stapler cover (3 of 13)



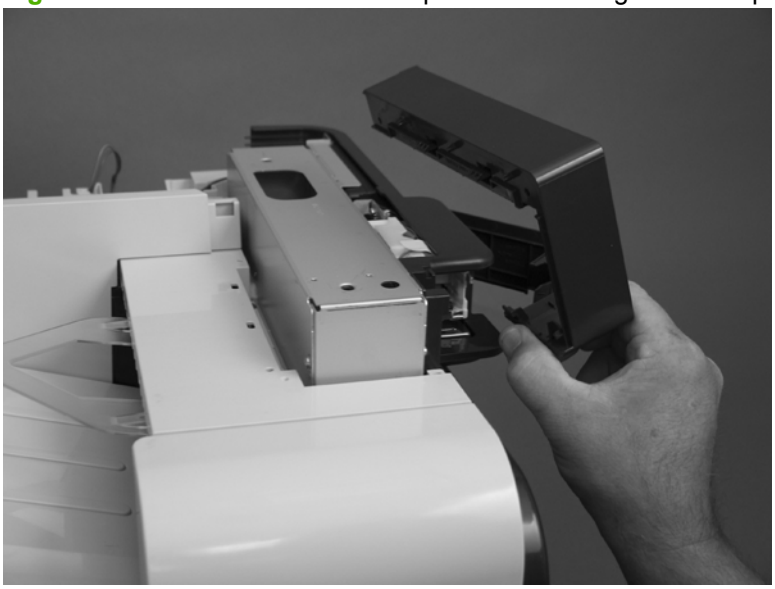
4. Slighty raise the cover and then release one tab.

Figure 6-111 Remove the front stapler cover and right-side stapler cover (4 of 13)



5. Rotate the cover up, and then remove the cover.

Figure 6-112 Remove the front stapler cover and right-side stapler cover (5 of 13)

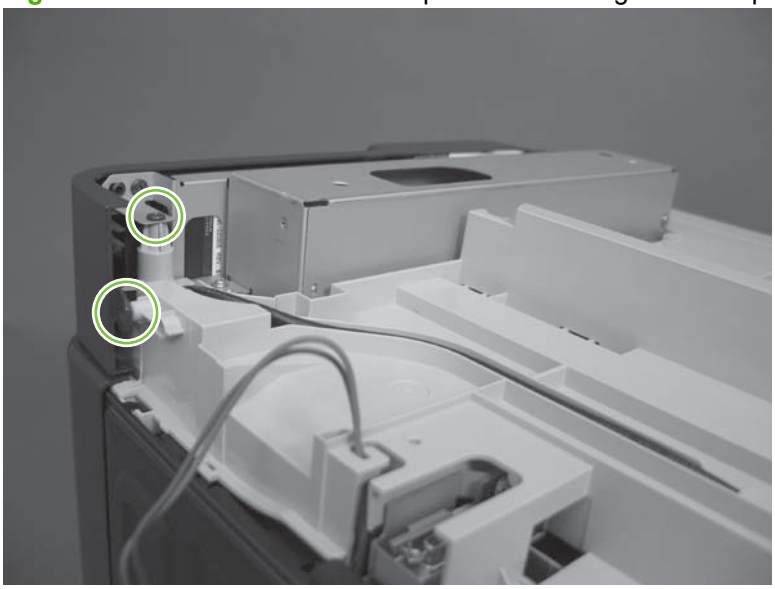


6. Remove one screw.

Figure 6-113 Remove the front stapler cover and right-side stapler cover (6 of 13)

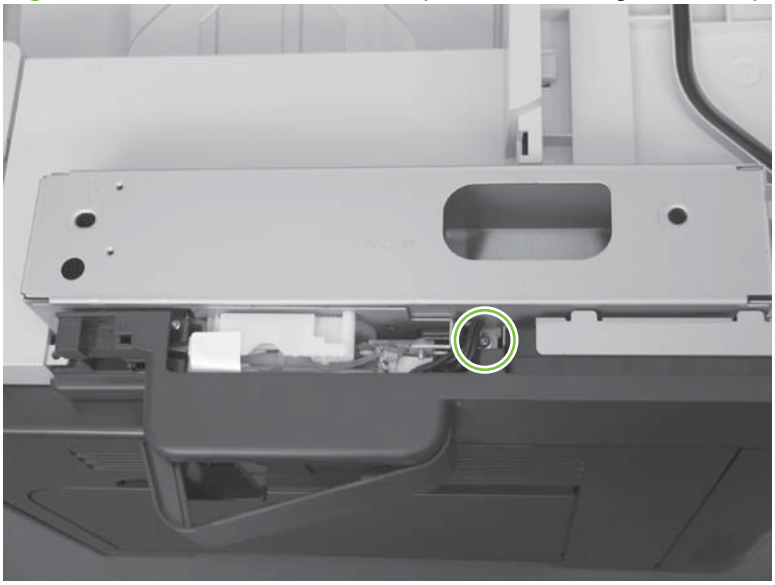
7. Remove two screws.

Figure 6-114 Remove the front stapler cover and right-side stapler cover (7 of 13)



8. Remove one screw.

Figure 6-115 Remove the front stapler cover and right-side stapler cover (8 of 13)



9. Release one tab.

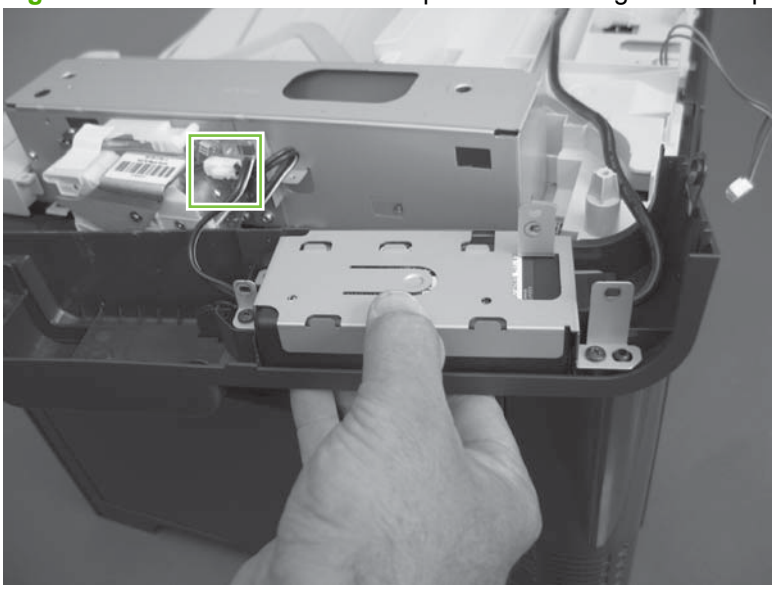
Figure 6-116 Remove the front stapler cover and right-side stapler cover (9 of 13)

10. Rotate the cover.

Figure 6-117 Remove the front stapler cover and right-side stapler cover (10 of 13)

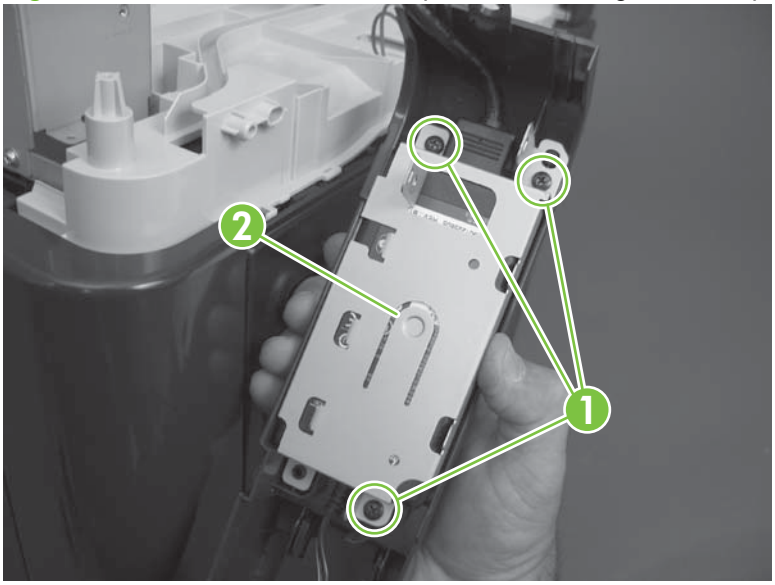
11. Disconnect one connector.

Figure 6-118 Remove the front stapler cover and right-side stapler cover (11 of 13)



12. Remove three screws (callout 1), and then remove the sheet-metal cover (callout 2).

Figure 6-119 Remove the front stapler cover and right-side stapler cover (12 of 13)



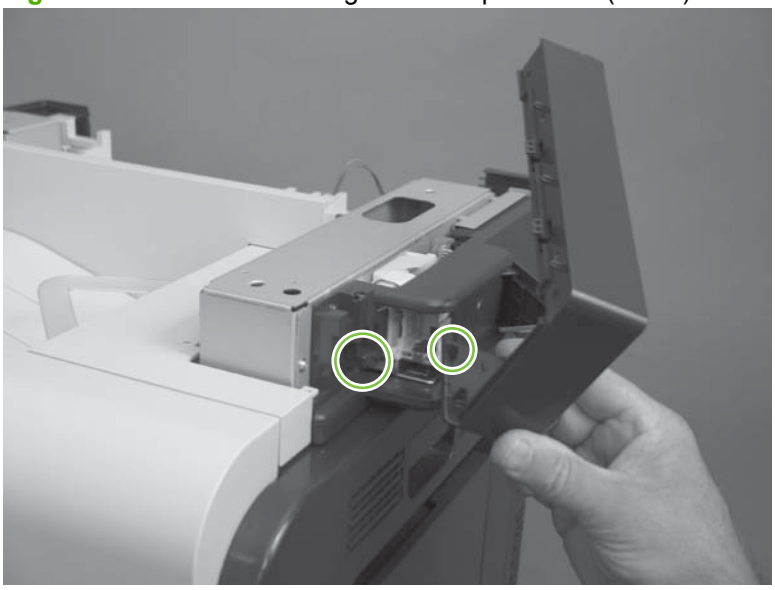
13. Separate the stapler power supply from the cover, and then remove the cover.

Figure 6-120 Remove the front stapler cover and right-side stapler cover (13 of 13)

Reinstall the right-side stapler cover

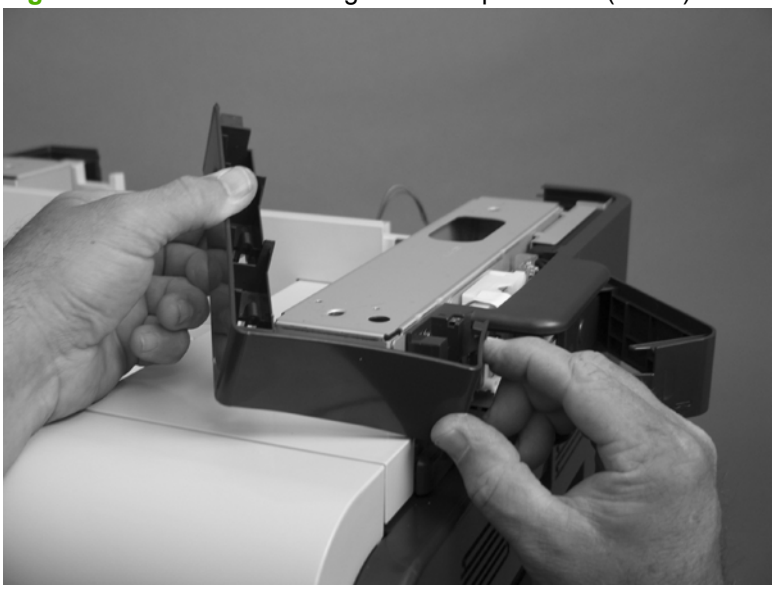
1. Insert one tab.

Figure 6-121 Reinstall the right-side stapler cover (1 of 3)



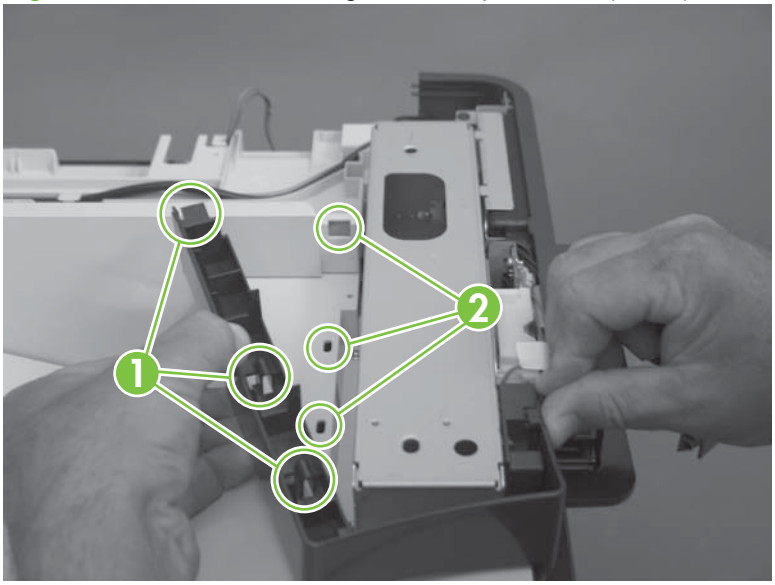
2. Carefully bend the right-upper cover A around the chassis.

Figure 6-122 Reinstall the right-side stapler cover (2 of 3)



3. Insert three tabs (callout 1) into three slots (callout 2).

Figure 6-123 Reinstall the right-side stapler cover (3 of 3)



Right-top cover

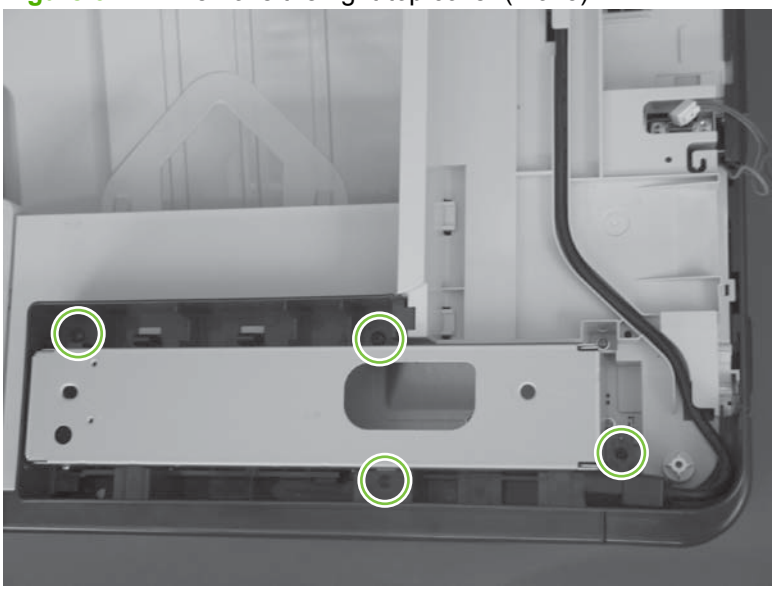
Before proceeding, remove the following components:

- Automatic document feeder (ADF). See Automatic document feeder (ADF) on page 212
- Control-panel overlay. See Control-panel overlay on page 218.
- Control-panel assembly. See Control-panel assembly on page 219.
- Rear-upper cover. See Rear-upper cover on page 236.
- Scanner assembly. See Scanner assembly on page 242.

Remove the right-top cover

1. Remove four screws.

Figure 6-124 Remove the right-top cover (1 of 5)



2. Release one tab.

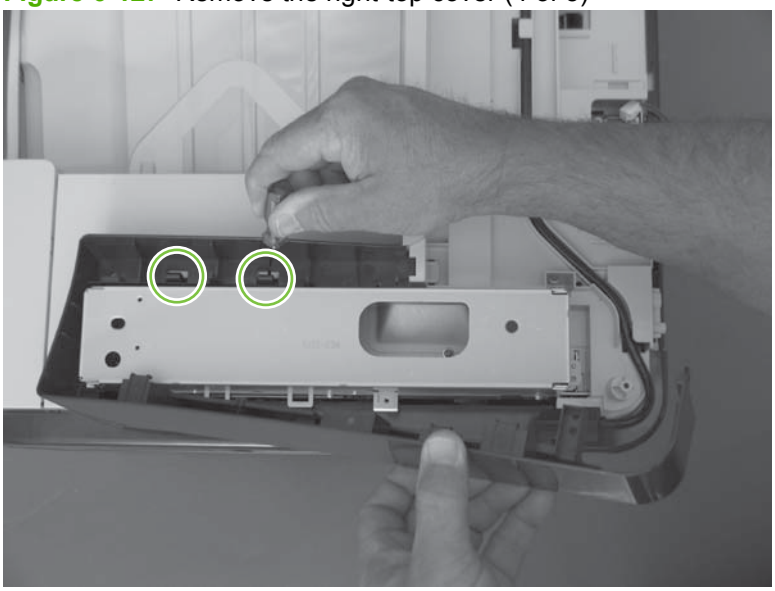
Figure 6-125 Remove the right-top cover (2 of 5)

3. Release three tabs.

Figure 6-126 Remove the right-top cover (3 of 5)

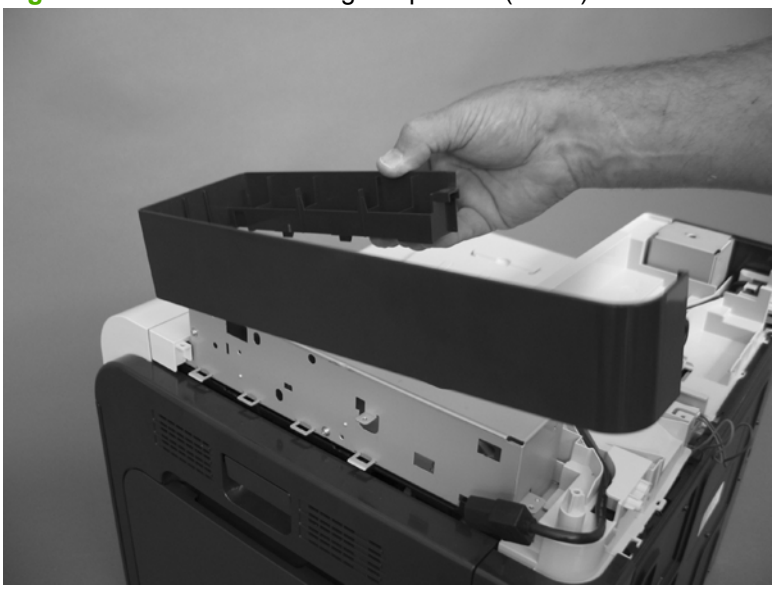
4. Release two tabs.

Figure 6-127 Remove the right-top cover (4 of 5)



5. Remove the right-top cover.

Figure 6-128 Remove the right-top cover (5 of 5)



Front-top cover

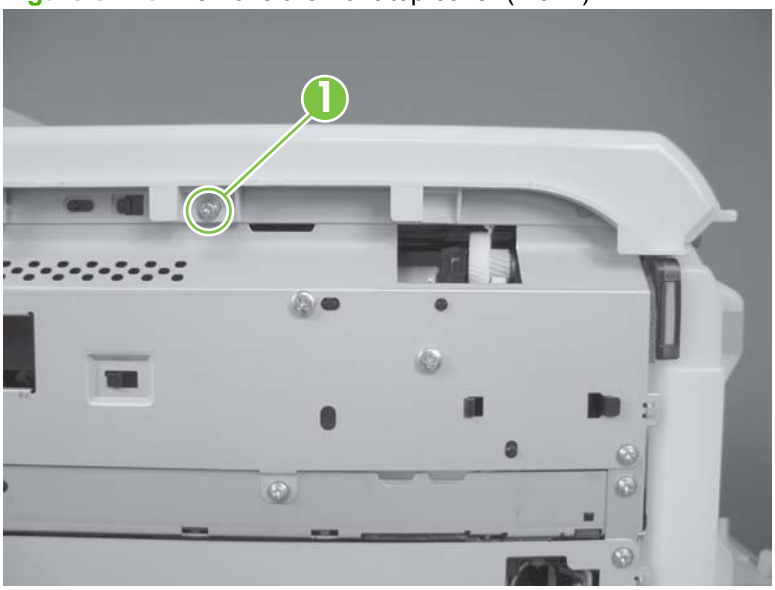
Before proceeding, remove the following components:

- Front-upper cover. See Front-upper cover on page 225.
- Left cover. See Left cover on page 233.
- Scanner assembly. See Scanner assembly on page 242.

Remove the front-top cover

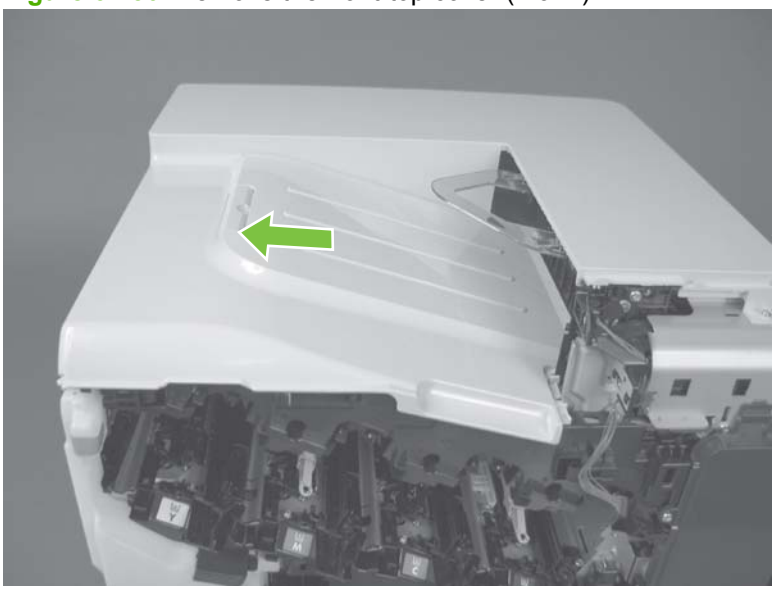
1. Remove one screw (callout 1).

Figure 6-129 Remove the front-top cover (1 of 2)



2. Slide the cover toward the left side of the product to release it, and then remove the cover.

Figure 6-130 Remove the front-top cover (2 of 2)



Rear-top cover

Before proceeding, remove the following components:

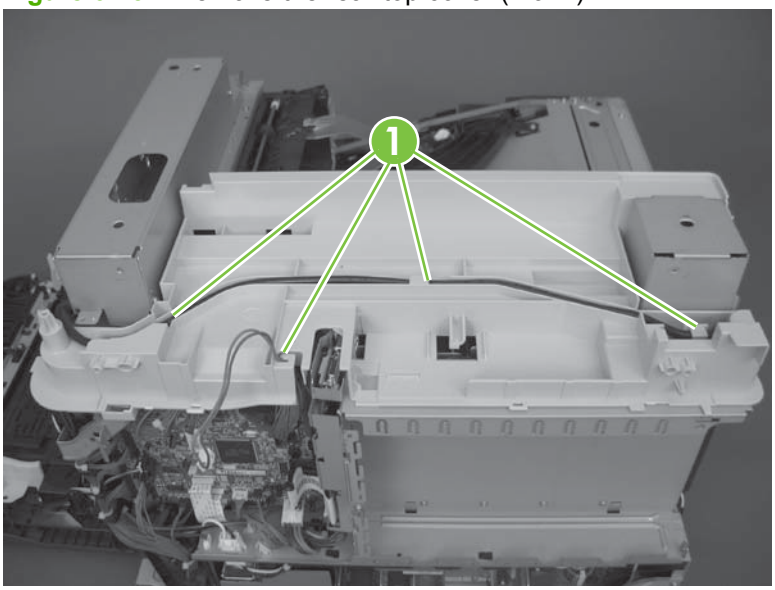
- Rear-upper cover. See Rear-upper cover on page 236.
- Rear cover. See Rear cover on page 238.
- Scanner assembly. See Scanner assembly on page 242.
- Delivery cover. See Delivery cover on page 245.
- Left-upper cover. See Left-upper cover on page 247.
- Front-top cover. See Front-top cover on page 261.

Remove the rear-top cover

1. Release the stapler power supply cable and one wire harness from the retainers (callout 1).

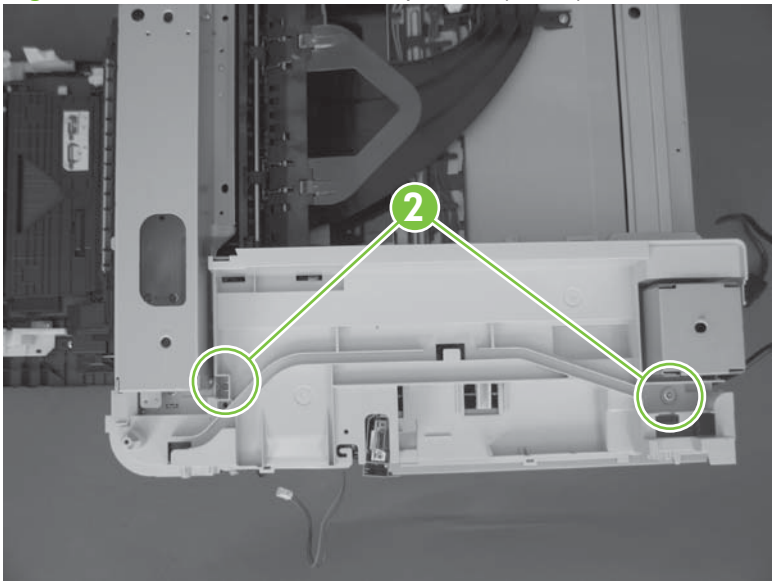
NOTE: You might have to disconnect one end of the power supply cable to release it from the retainers.

Figure 6-131 Remove the rear-top cover (1 of 2)



2. Remove two screws (callout 2), and then remove the cover.

Figure 6-132 Remove the rear-top cover (2 of 2)



Internal assemblies

TIP: For clarity, some photos in this chapter show components removed that would not be removed to service the product. If necessary, remove the components listed at the beginning of a procedure before proceeding to service the product.

Stapler assembly

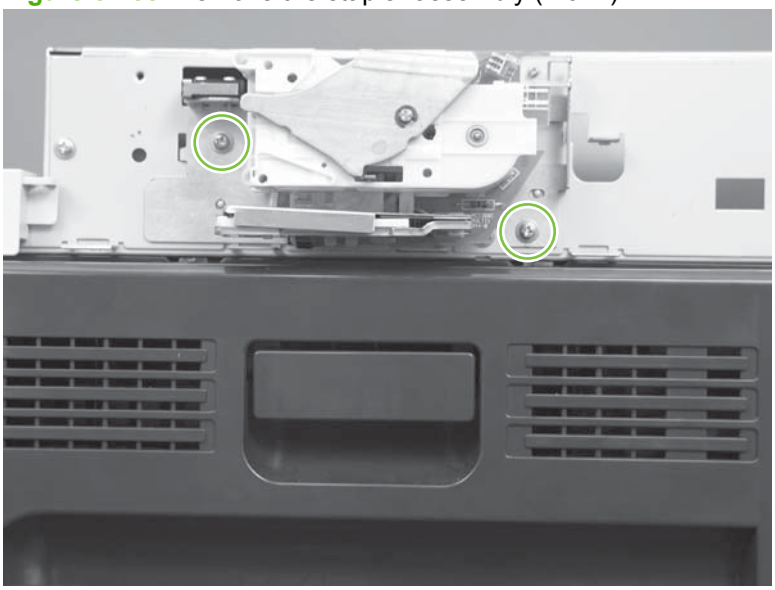
Before proceeding, remove the following components:

- Automatic document feeder (ADF) assembly. See Automatic document feeder (ADF) on page 212.
- Control-panel overlay. See Control-panel overlay on page 218.
- Control-panel assembly. See Control-panel assembly on page 219.
- Rear-upper cover. See Rear-upper cover on page 236.
- Scanner assembly. See Scanner assembly on page 242.
- Front stapler cover and right-side stapler cover. See Front stapler cover and right-side stapler cover on page 249.

Remove the stapler assembly

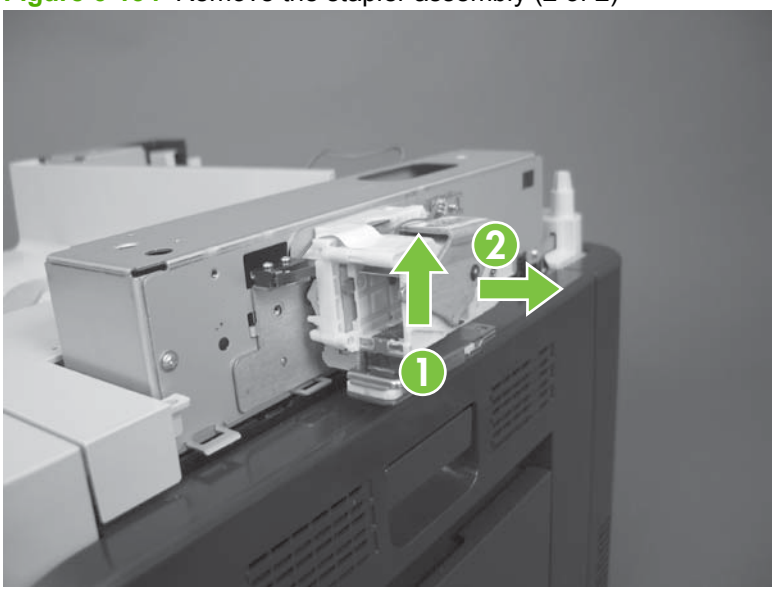
1. Remove two screws.

Figure 6-133 Remove the stapler assembly (1 of 2)



2. Lift up (callout 1) and remove the stapler assembly (callout 2).

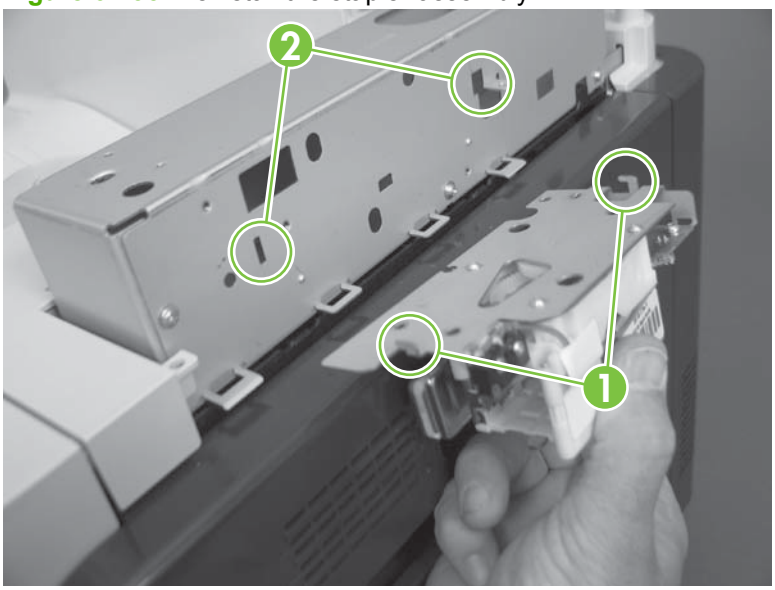
Figure 6-134 Remove the stapler assembly (2 of 2)



Reinstall the stapler assembly

Insert the hooks on the stapler assembly (callout 1) into the chassis (callout 2), and then slide the stapler assembly down to engage the hooks.

Figure 6-135 Reinstall the stapler assembly



Stapler power supply

Before proceeding, remove the following components:

- Automatic document feeder (ADF) assembly. See Automatic document feeder (ADF) on page 212.
- Control-panel overlay. See Control-panel overlay on page 218.
- Control-panel assembly. See Control-panel assembly on page 219.
- Rear-upper cover. See Rear-upper cover on page 236.
- Scanner assembly. See Scanner assembly on page 242.
- Front stapler cover and right-side stapler cover. See Front stapler cover and right-side stapler cover on page 249.

Remove the stapler power supply

Disconnect one connector, and then remove the power supply.

Figure 6-136 Remove the stapler power supply

Interconnect board (ICB)

⚠ **WARNING!** **Do not** remove the ICB from a product and then install it into a **different** product. Failure to follow this warning will result in severe damage to that product and cause it to be unusable. HP recommends that if you remove and replace the ICB, you should destroy the discarded ICB so that it can not accidentally be installed in a different product.

Before proceeding, remove the following components:

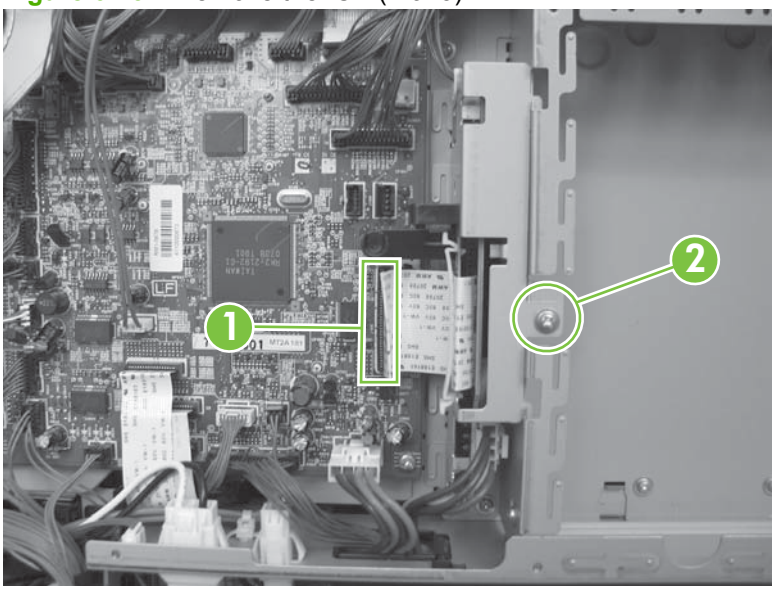
- Formatter PCA. See Formatter PCA on page 192.
- Right-rear cover. See Right-rear cover on page 231.
- Left cover. See Left cover on page 233.
- Rear-upper cover. See Rear-upper cover on page 236.
- Rear cover. See Rear cover on page 238.

Remove the ICB

NOTE: To locate DC controller connector locations, see DC controller PCA on page 183.

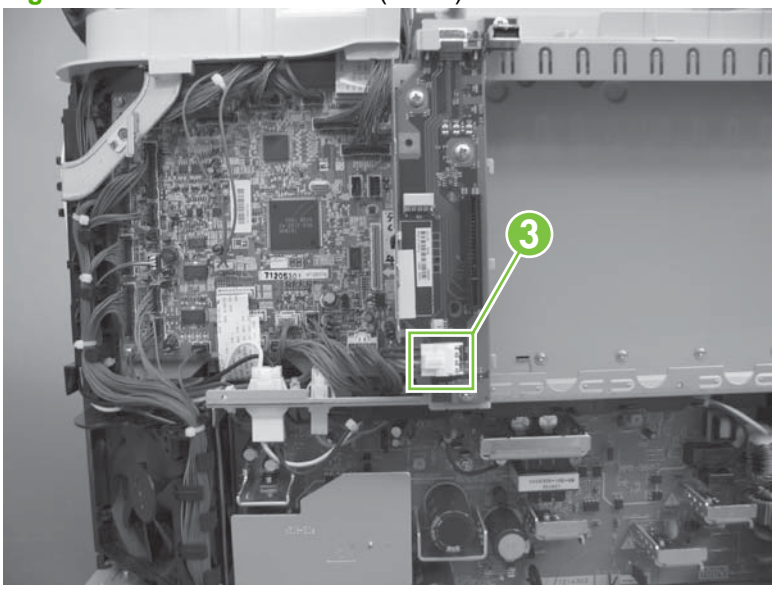
1. Disconnect one connector (callouts 1; J105), and then remove one screw (callout 2).

Figure 6-137 Remove the ICB (1 of 3)



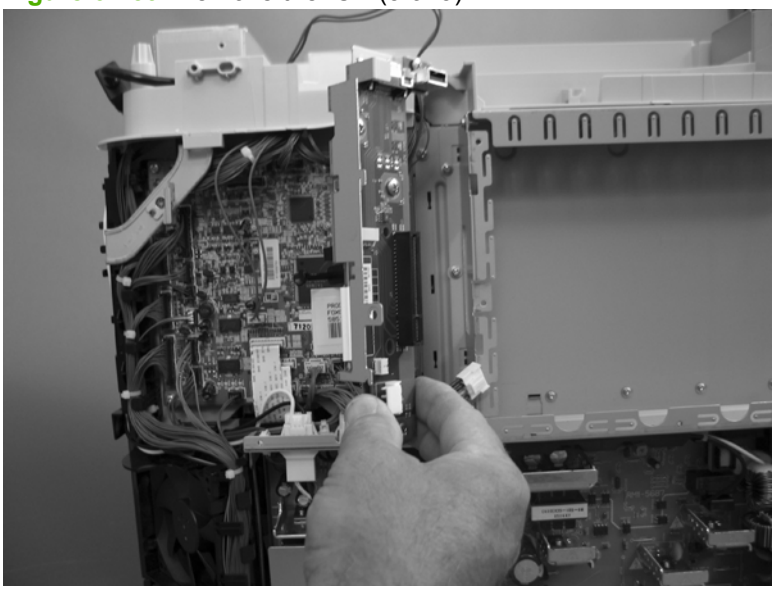
2. Carefully rotate and slide the ICB up and away from the chassis, and then disconnect one connector (callout 3).

Figure 6-138 Remove the ICB (2 of 3)



3. Remove the ICB.

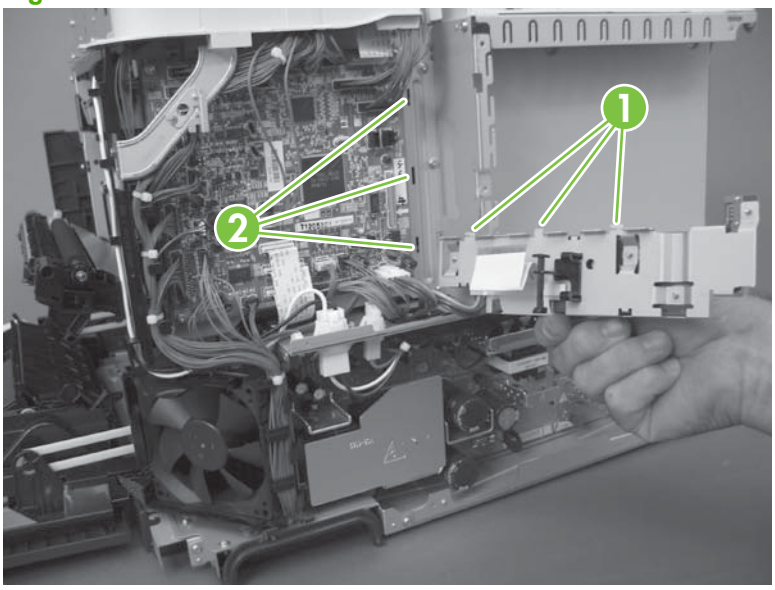
Figure 6-139 Remove the ICB (3 of 3)



Reinstall the ICB

The ICB bracket (callout 1) must be properly engaged on the chassis (callout 2).

Figure 6-140 Reinstall the ICB



DC controller PCA and tray

Before proceeding, remove the following components:

- Formatter PCA. See Formatter PCA on page 192.
- Right-rear cover. See Right-rear cover on page 231.
- Left cover. See Left cover on page 233.
- Rear-upper cover. See Rear-upper cover on page 236.
- Rear cover. See Rear cover on page 238.
- Interconnect board (ICB). See Interconnect board (ICB) on page 267.

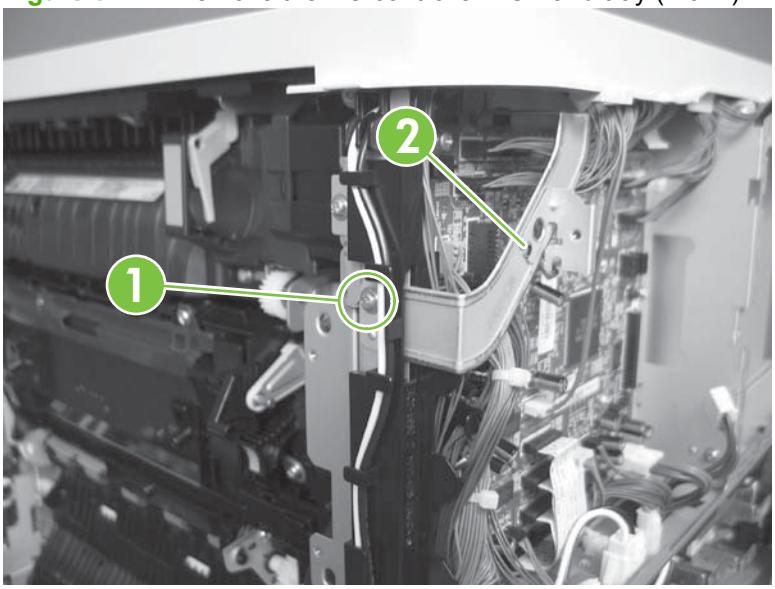
Remove the DC controller PCA and tray

△ **CAUTION:** ESD-sensitive part.

TIP: To access components behind the DC controller PCA, remove the PCA and the sheet-metal tray together. Disconnect all of the connectors on the PCA, and then remove five screws and the bracket, see Figure 6-141 Remove the DC controller PCA and tray (1 of 4) on page 270 and Figure 6-144 Remove the DC controller PCA and tray (4 of 4) on page 272.

1. Remove one screw (callout 1), and then remove the sheet-metal bracket (callout 2).

Figure 6-141 Remove the DC controller PCA and tray (1 of 4)



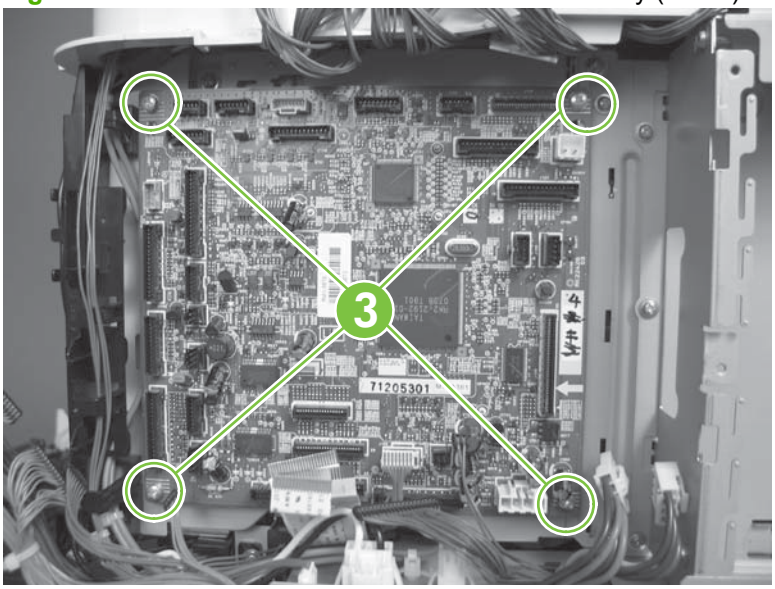
2. Disconnect all the connectors.

Reinstallation tip The connector locations J133 and J134 are not used.

Figure 6-142 Remove the DC controller PCA and tray (2 of 4)

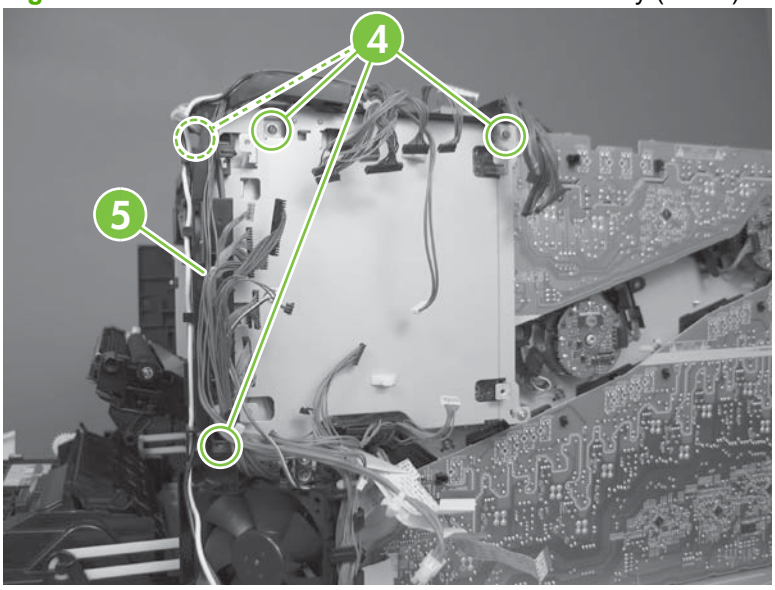
3. Remove four screws (callout 3), and then remove the DC controller PCA.

Figure 6-143 Remove the DC controller PCA and tray (3 of 4)



4. If necessary, remove four screws (callout 4), remove the wire guide (callout 5), and then remove the sheet-metal tray.

Figure 6-144 Remove the DC controller PCA and tray (4 of 4)



Low-voltage power supply (LVPS)

Before proceeding, remove the following components:

- Formatter PCA. See Formatter PCA on page 192.
- Right-rear cover. See Right-rear cover on page 231.
- Left cover. See Left cover on page 233.
- Rear-upper cover. See Rear-upper cover on page 236.
- Rear cover. See Rear cover on page 238.
- Interconnect board (ICB). See Interconnect board (ICB) on page 267.

NOTE: If you are removing the power supply for internal product access, it is recommended that you leave the ICB installed on the power supply assembly.

Remove the LVPS

CAUTION: ESD-sensitive part.

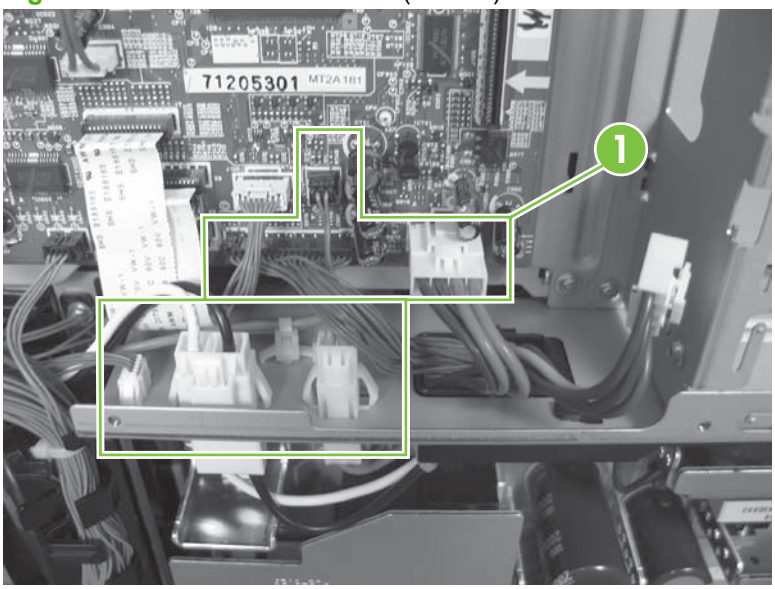
NOTE: The formatter cage is attached to the LVPS. Both components are removed as an assembly, and then the formatter cage is removed from the LVPS.

1. Disconnect six connectors (callout 1; J100, J101, J143 on the DC controller PCA).

NOTE: To locate DC controller connector locations, see DC controller PCA on page 183.

NOTE: If you are removing the power supply for internal product access, it is recommended that you leave the ICB installed on the power-supply assembly.

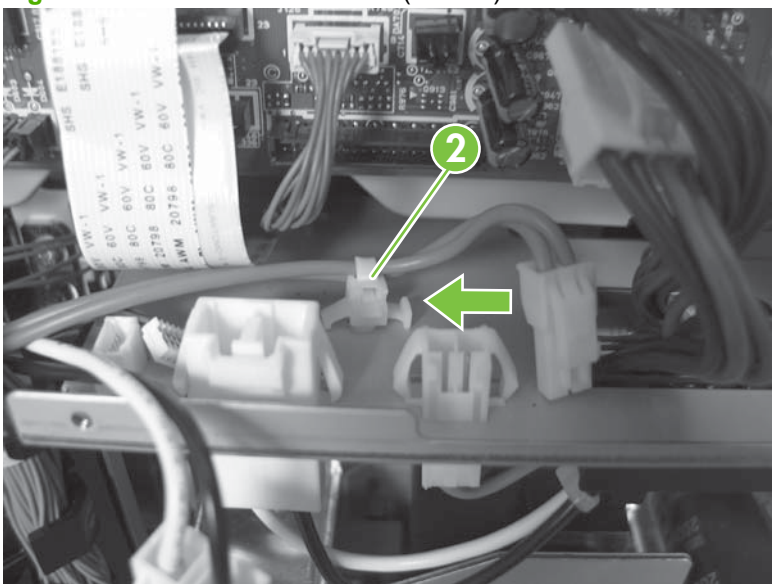
Figure 6-145 Remove the LVPS (1 of 10)



2. Push in on the locking tab to release the retainer (callout 2), and then separate the retainer from the assembly.

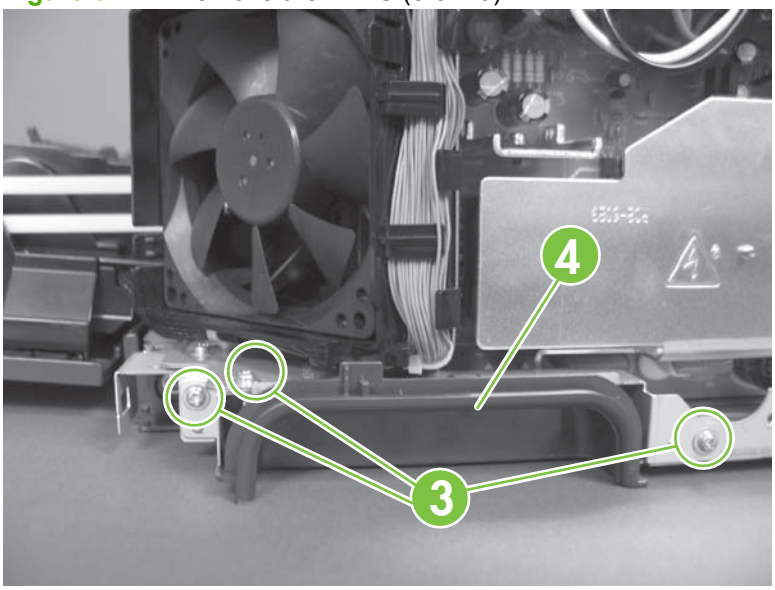
NOTE: The retainer remains attached to the wire harness, and is disengaged from the assembly.

Figure 6-146 Remove the LVPS (2 of 10)



3. Remove three screws (callout 3), and then remove the handle (callout 4).

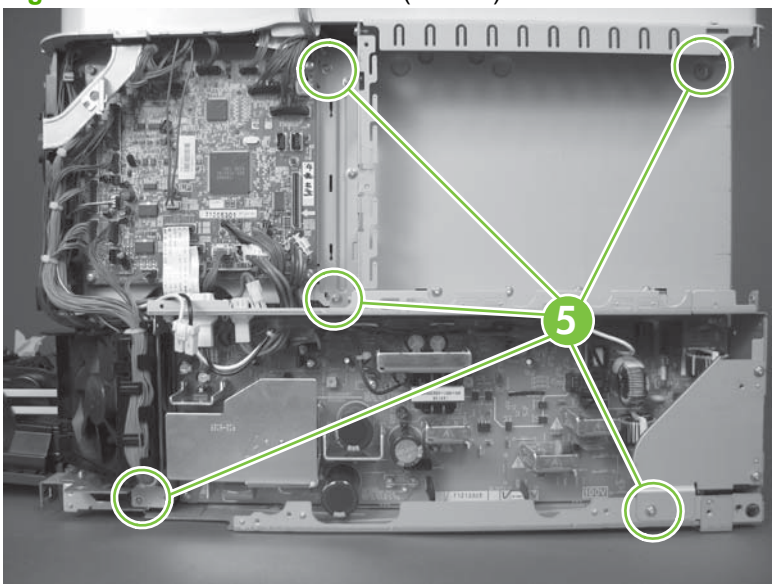
Figure 6-147 Remove the LVPS (3 of 10)



4. Remove five screws (callout 5).

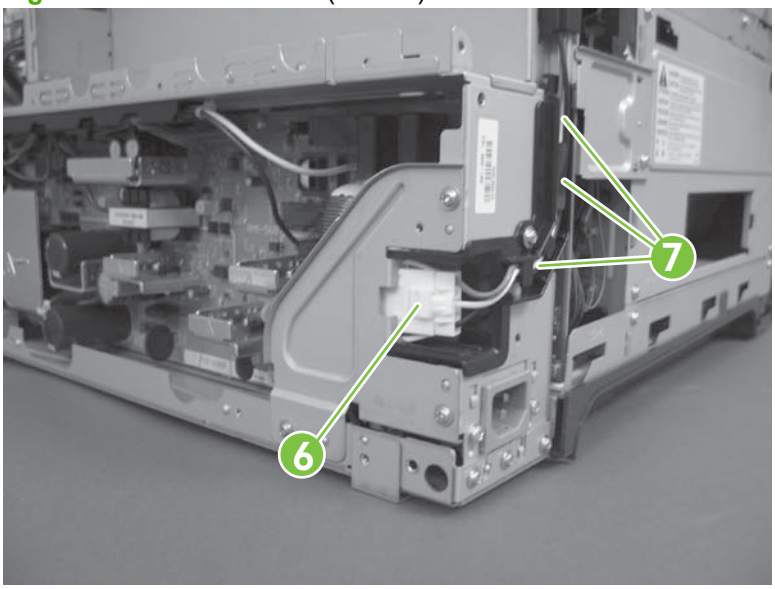
NOTE: The illustration below shows the ICB removed.

Figure 6-148 Remove the LVPS (4 of 10)



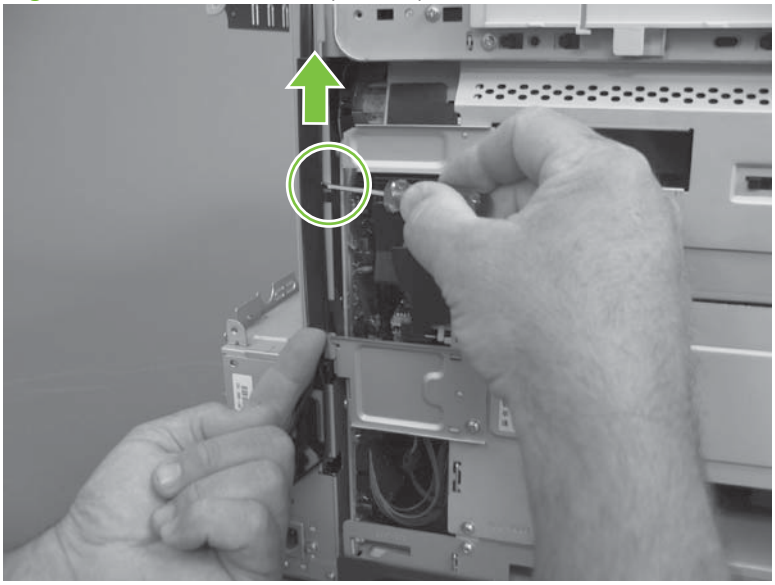
5. Disconnect one connector (callout 6), and then remove the wire from the guide (callout 7).

Figure 6-149 Remove the (5 of 10)



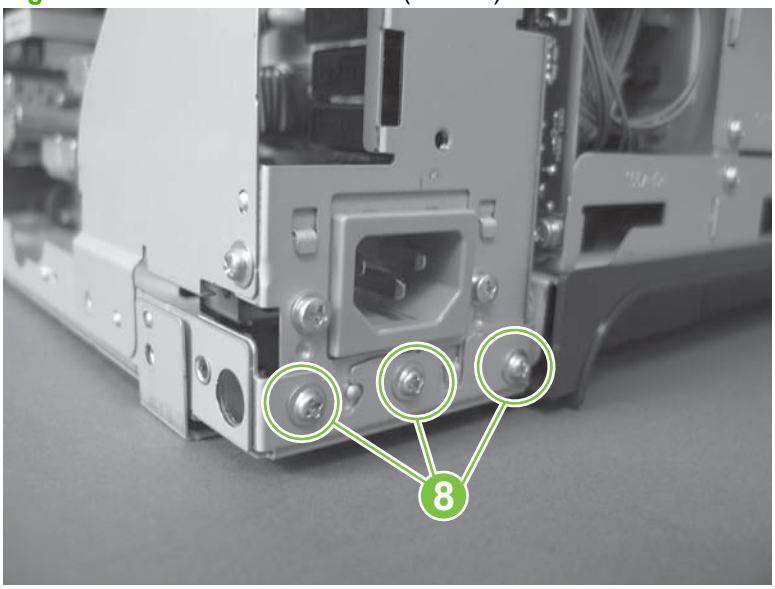
6. Release one tab and lift up the wire cover.

Figure 6-150 Remove the (6 of 10)



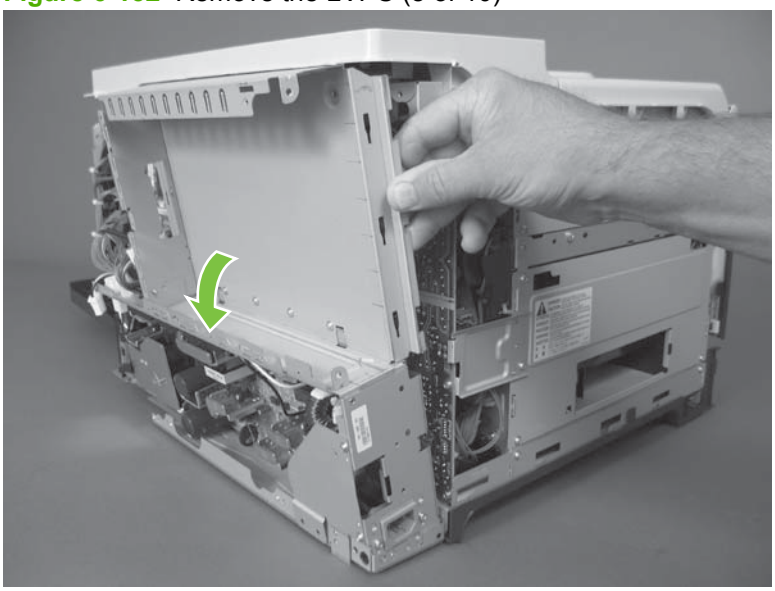
7. Remove three screws (callout 8).

Figure 6-151 Remove the LVPS (7 of 10)



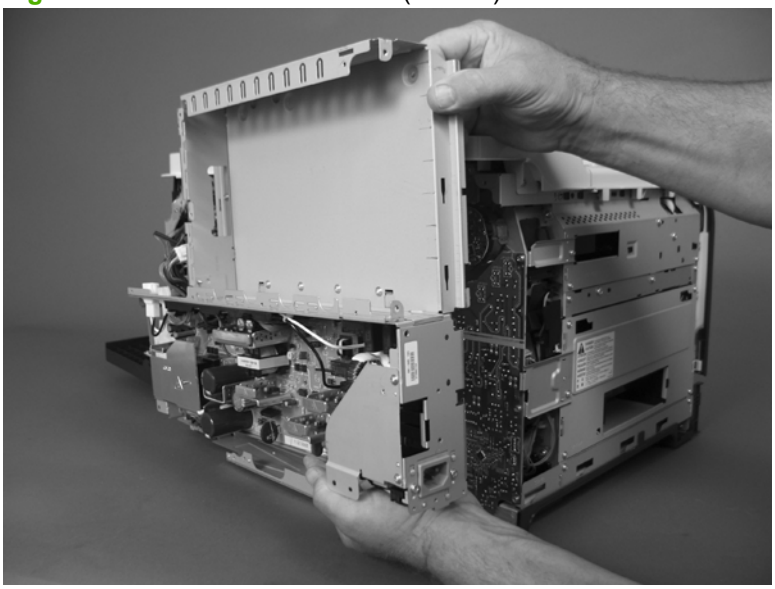
8. Rotate the formatter cage away from the top of the product.

Figure 6-152 Remove the LVPS (8 of 10)



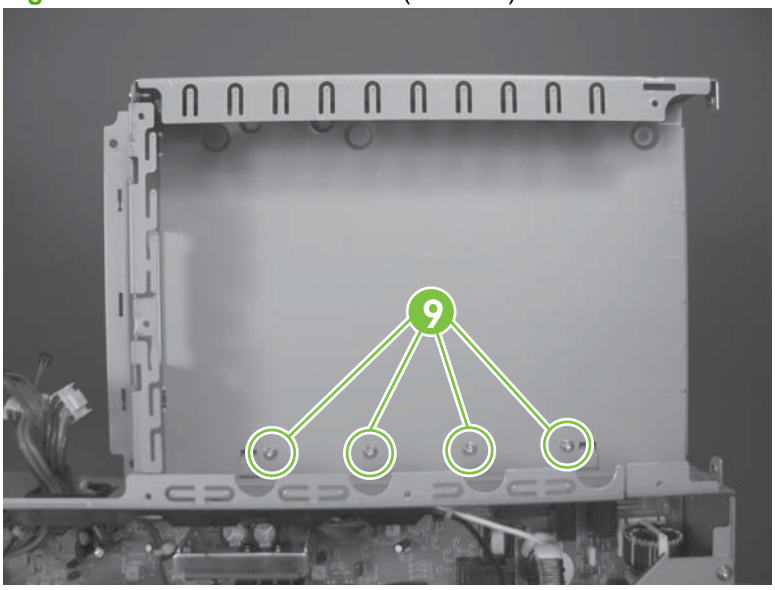
9. Remove the assembly.

Figure 6-153 Remove the LVPS (9 of 10)



10. Remove four screws (callout 9), and then separate the formatter cage from the low-voltage power supply.

Figure 6-154 Remove the LVPS (10 of 10)



Scanner-control board (SCB)

Before proceeding, remove the following components:

- Automatic document feeder (ADF). See Automatic document feeder (ADF) on page 212.
- Control-panel overlay. See Control-panel overlay on page 218.
- Control-panel assembly. See Control-panel assembly on page 219.
- Rear-upper cover. See Rear-upper cover on page 236.
- Scanner assembly. See Scanner assembly on page 242.

Remove the SCB

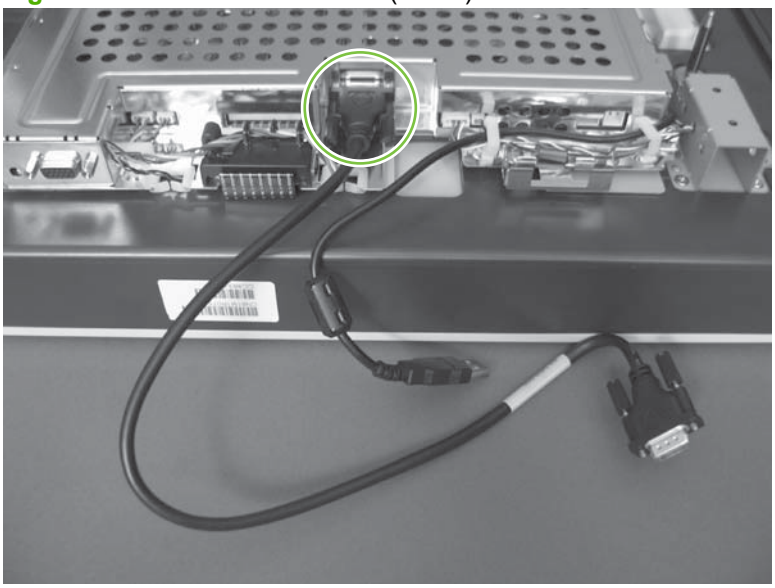
NOTE: To replace the Peripheral Component Interconnect Express (PCI-E) cable, locate and remove the cable that connects the SCB to the ICB.

1. Place the scanner assembly glass-side down on a clean surface or piece of paper.

CAUTION: Dust or debris can scratch the scanner glass and cause print-quality problems. If possible, place the scanner on a clean lint-free cloth.

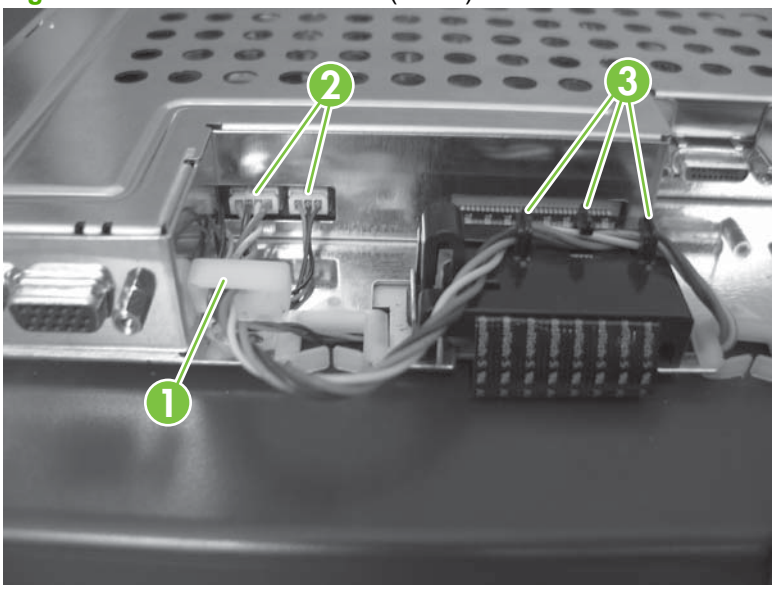
2. Release two thumb screws, and then remove one cable.

Figure 6-155 Remove the SCB (1 of 8)



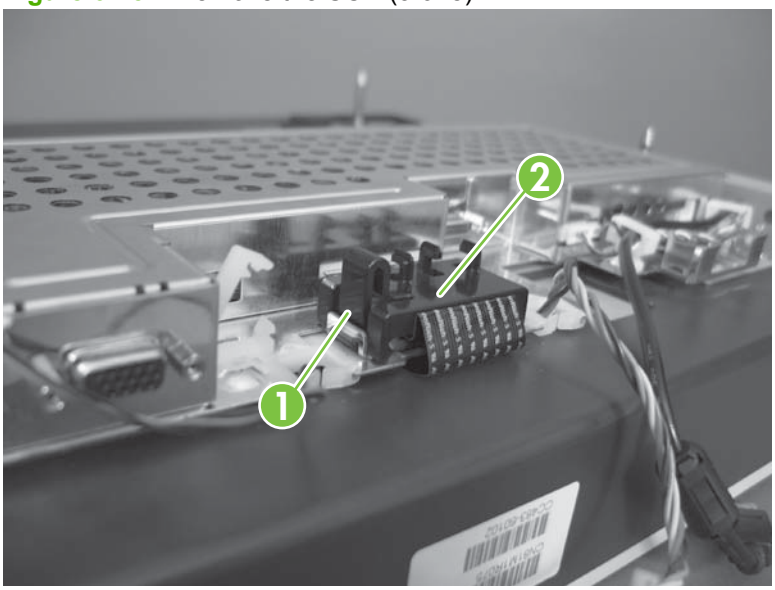
3. Release one retainer (callout 1), disconnect two connectors (callout 2), and then release the wires from the guides (callout 3).

Figure 6-156 Remove the SCB (2 of 8)



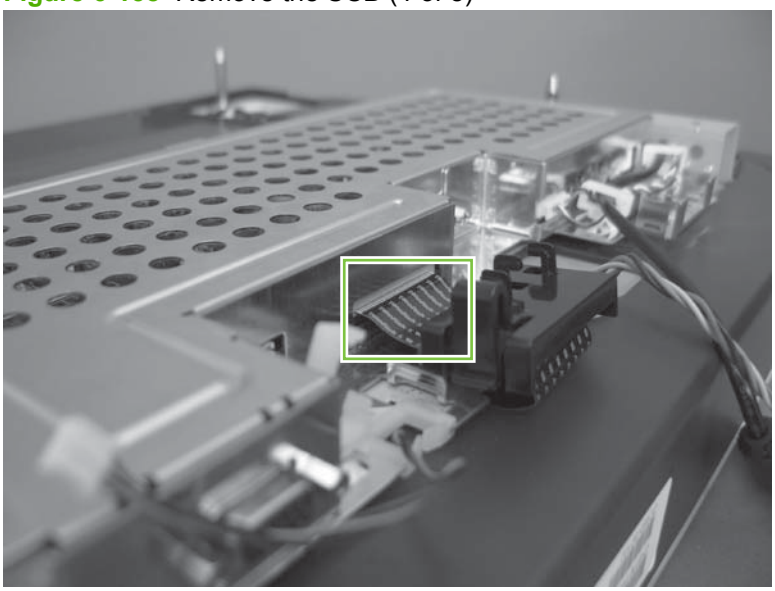
4. Release one tab (callout 1), and then disengage the ferrite assembly (callout 2).

Figure 6-157 Remove the SCB (3 of 8)



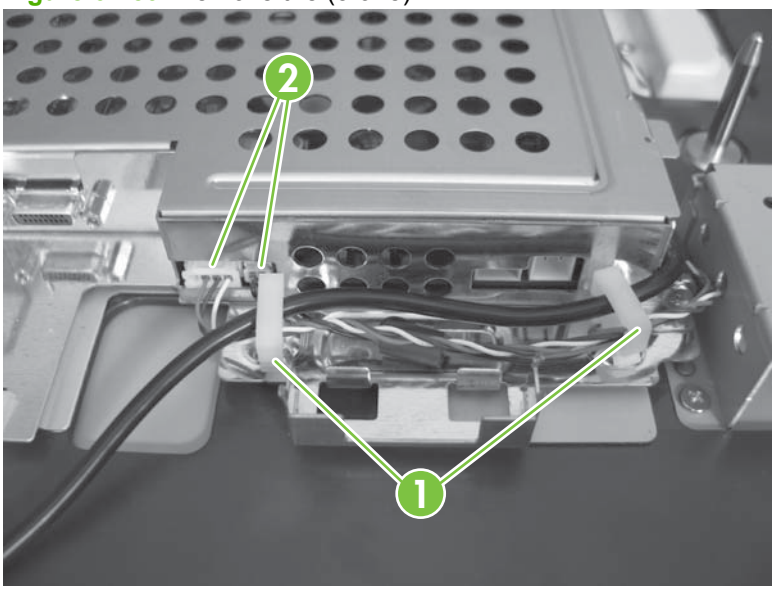
5. Disconnect one FFC, and then remove the ferrite assembly from the FFC.

Figure 6-158 Remove the SCB (4 of 8)



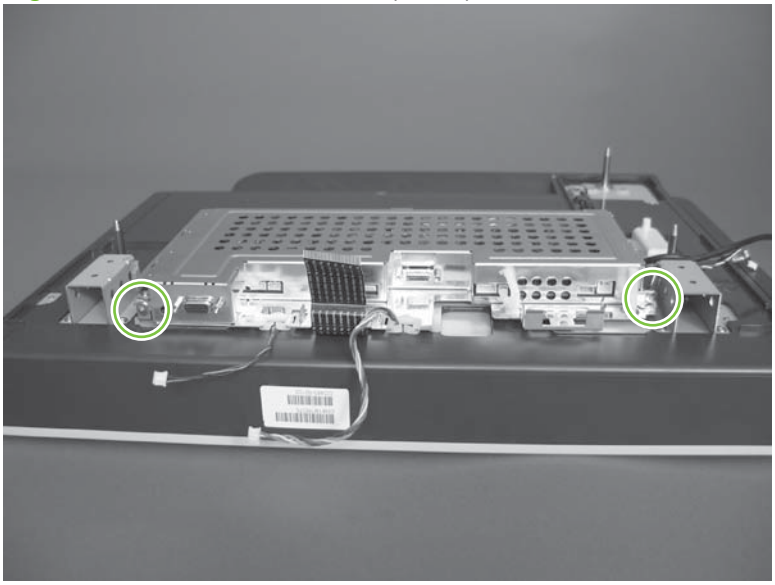
6. Release two retainers (callout 1), disconnect two connectors (callout 2), and then move the wires to the side.

Figure 6-159 Remove the (5 of 8)



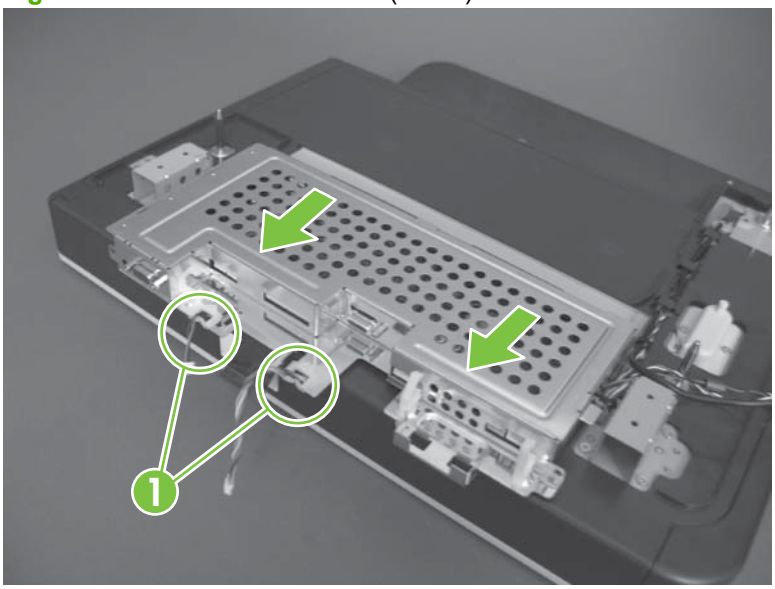
7. Remove two screws.

Figure 6-160 Remove the SCB (6 of 8)



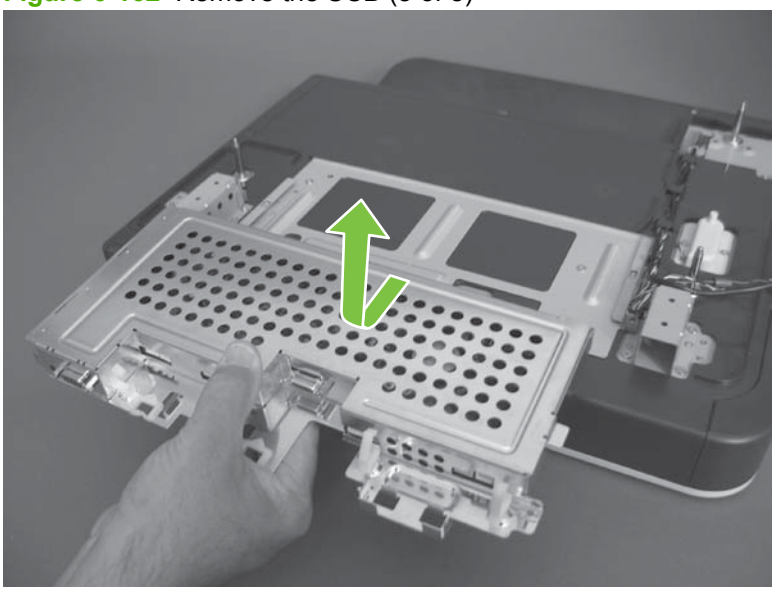
8. Gently slide the SCB, and then release two wire harnesses (callout 1).

Figure 6-161 Remove the SCB (7 of 8)



9. Remove the SCB.

Figure 6-162 Remove the SCB (8 of 8)

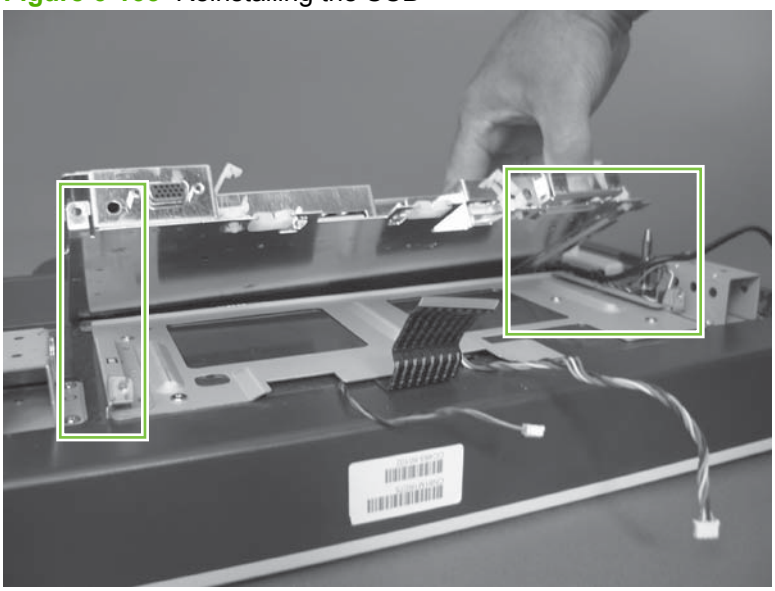


Reinstall the SCB

When reinstalling the SCB, fully engage the guides on both sides of the SCB with the slots on the scanner assembly.

Reinstallation tip Make sure that the control-panel USB cable is properly routed. The scanner assembly will not correctly seat on the product if the cable is not properly routed.

Figure 6-163 Reinstalling the SCB



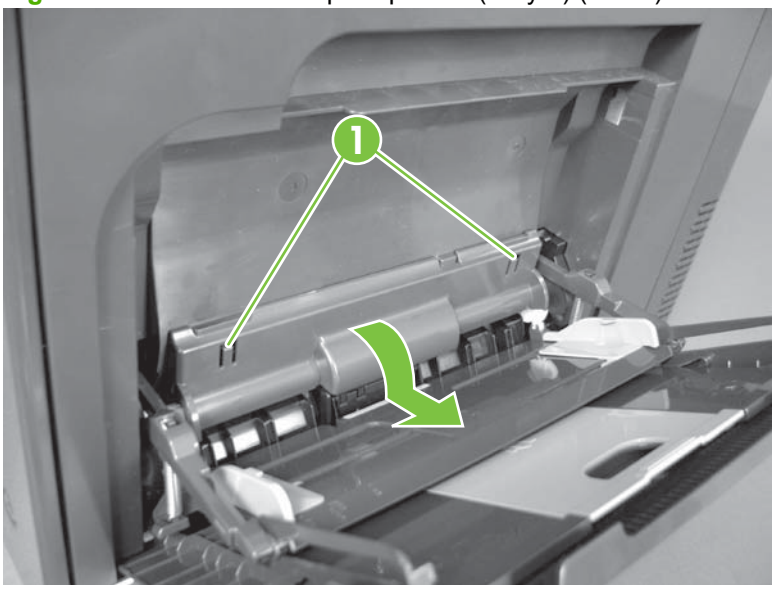
Pickup roller (Tray 1)

△ **CAUTION:** Do not touch the spongy roller surface unless you are replacing the roller. Skin oils on the roller can cause paper pickup problems.

1. Open Tray 1, release two tabs (callout 1), and then rotate the roller cover away from the product to remove it.

TIP: Push down along the top edge of the cover to easily release the tabs.

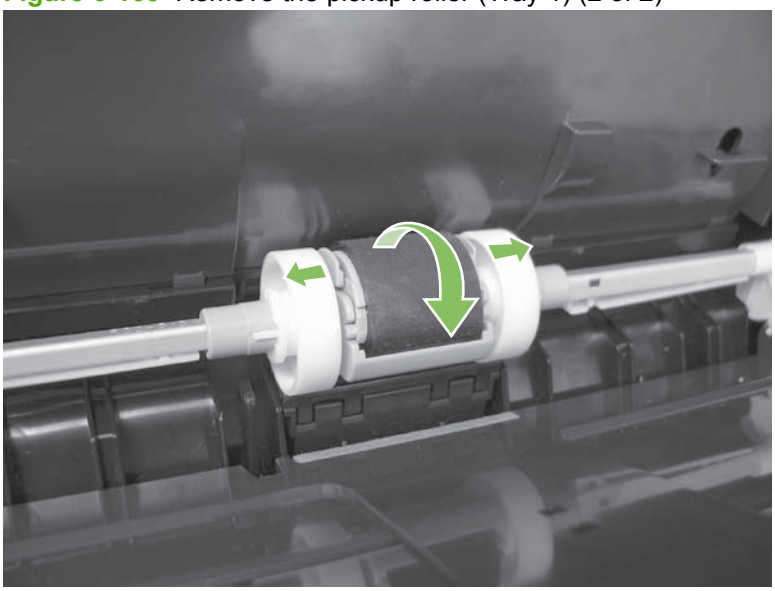
Figure 6-164 Remove the pickup roller (Tray 1) (1 of 2)



2. Release two tabs and rotate the roller body away from the product to remove it.

TIP: It might be easier to release the Tray 1 pickup-roller solenoid plate, and then manually rotate the roller into the correct position to remove the roller.

Figure 6-165 Remove the pickup roller (Tray 1) (2 of 2)



Delivery fan, cartridge fan, and environmental sensor

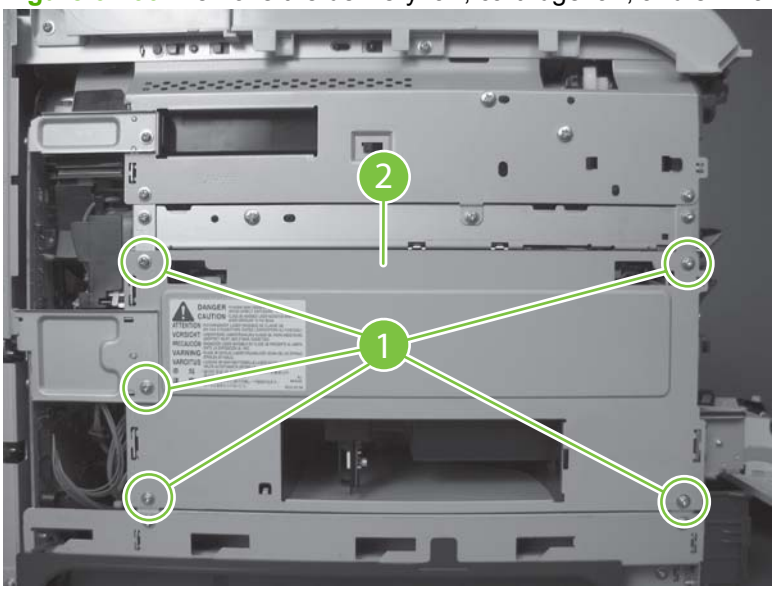
Before proceeding, remove the following components:

- Left cover. See Left cover on page 233.

Remove the delivery fan, cartridge fan, and environmental sensor

1. Remove five screws (callout 1), and then remove the sheet-metal plate (callout 2).

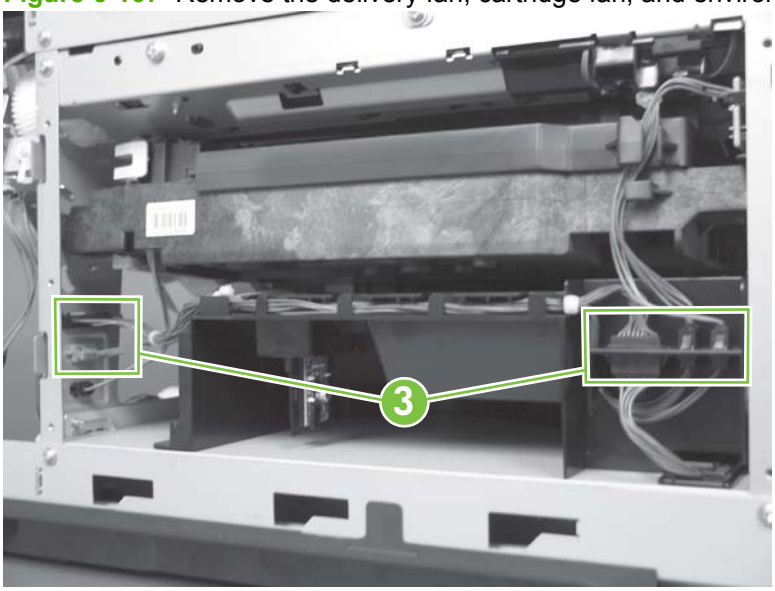
Figure 6-166 Remove the delivery fan, cartridge fan, and environmental sensor (1 of 9)



2. Disconnect five connectors (callout 3).

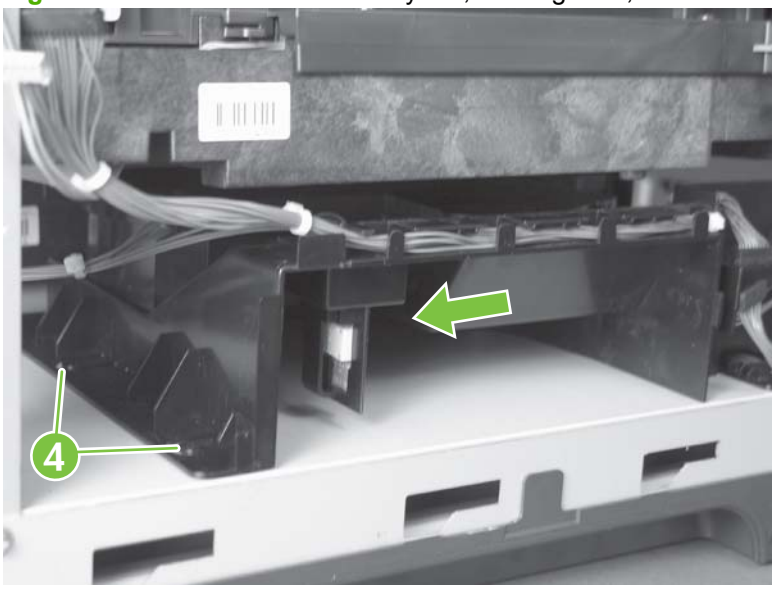
NOTE: Disconnect the larger connector on the right side from the bottom. Disconnect the two smaller connectors on the right side from the top.

Figure 6-167 Remove the delivery fan, cartridge fan, and environmental sensor (2 of 9)



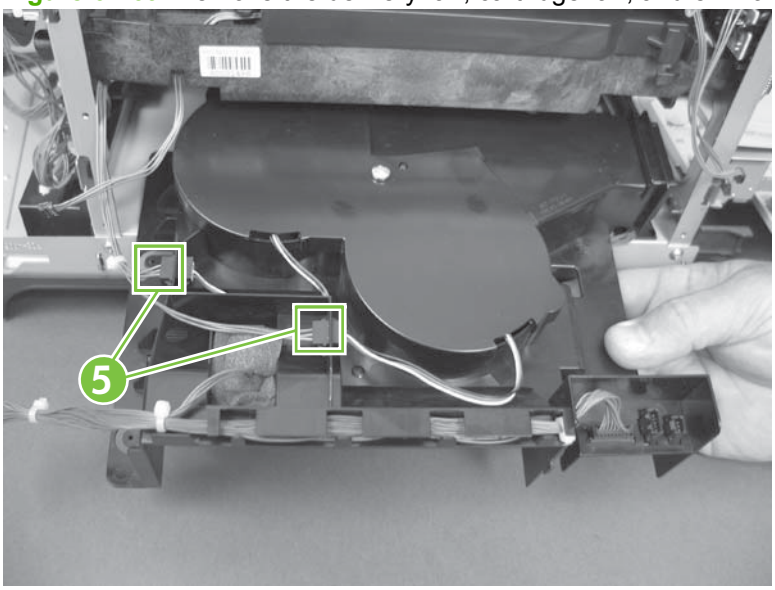
3. Release two tabs (callout 4), and then slide the delivery-fan and cartridge-fan assembly toward the power-supply side of the product to release it.

Figure 6-168 Remove the delivery fan, cartridge fan, and environmental sensor (3 of 9)



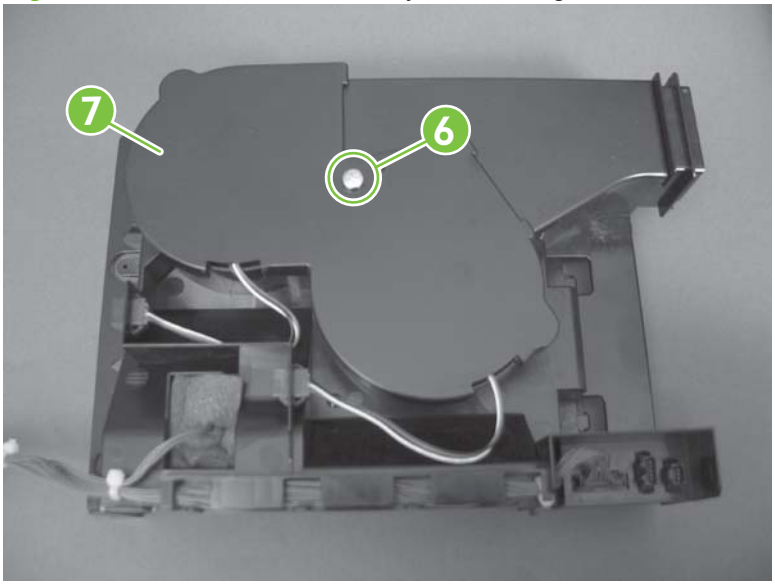
4. Pull the assembly slightly out of the product, disconnect two connectors (callout 5), and then to remove the assembly.

Figure 6-169 Remove the delivery fan, cartridge fan, and environmental sensor (4 of 9)



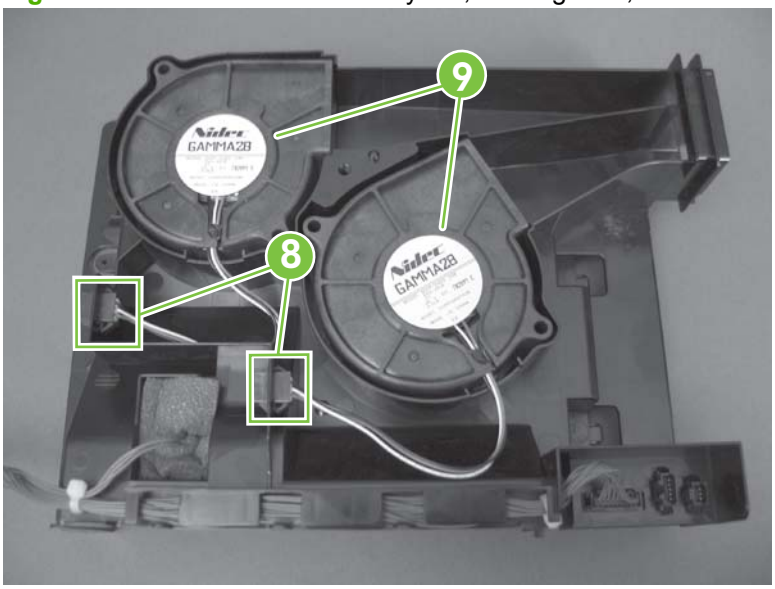
5. Remove one screw (callout 6), and then remove the cover (callout 7).

Figure 6-170 Remove the delivery fan, cartridge fan, and environmental sensor (5 of 9)



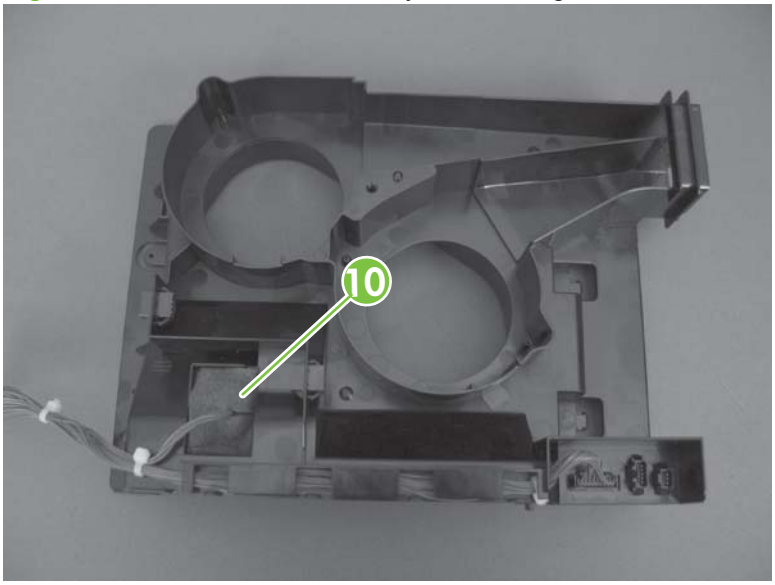
6. Disconnect two connectors (callout 8), and then remove the fans (callout 9).

Figure 6-171 Remove the delivery fan, cartridge fan, and environmental sensor (6 of 9)



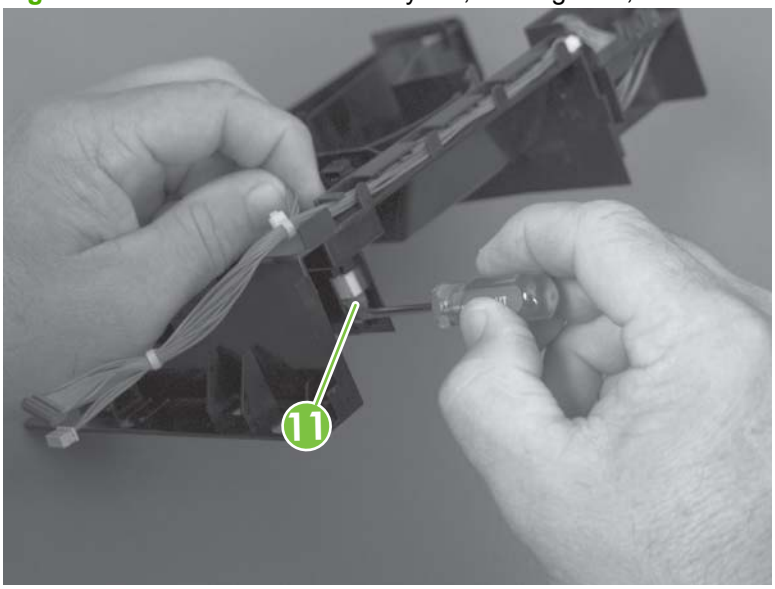
7. Remove the antistatic foam (callout 10).

Figure 6-172 Remove the delivery fan, cartridge fan, and environmental sensor (7 of 9)



8. Release one tab (callout 11).

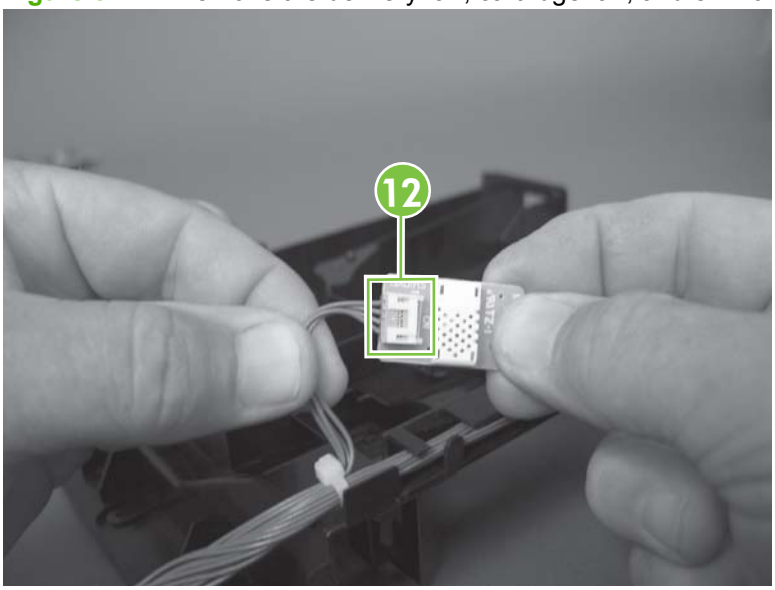
Figure 6-173 Remove the delivery fan, cartridge fan, and environmental sensor (8 of 9)



9. Disconnect one connector (callout 12), and then remove the environmental sensor.

△ **CAUTION:** ESD-sensitive part.

Figure 6-174 Remove the delivery fan, cartridge fan, and environmental sensor (9 of 9)



Toner-collection sensor

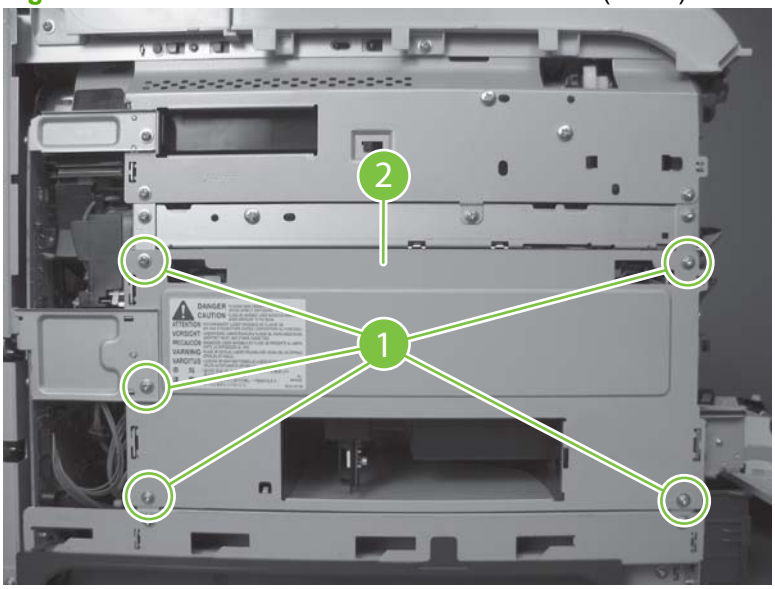
Before proceeding, remove the following components:

- Toner-collection unit. See Toner-collection unit on page 190.
- Left cover. See Left cover on page 233.

Remove the toner-collection sensor

1. Remove five screws (callout 1), and then remove the sheet-metal plate (callout 2).

Figure 6-175 Remove the toner-collection sensor (1 of 4)



2. Disconnect one connector (callout 3).

Figure 6-176 Remove the toner-collection sensor (2 of 4)