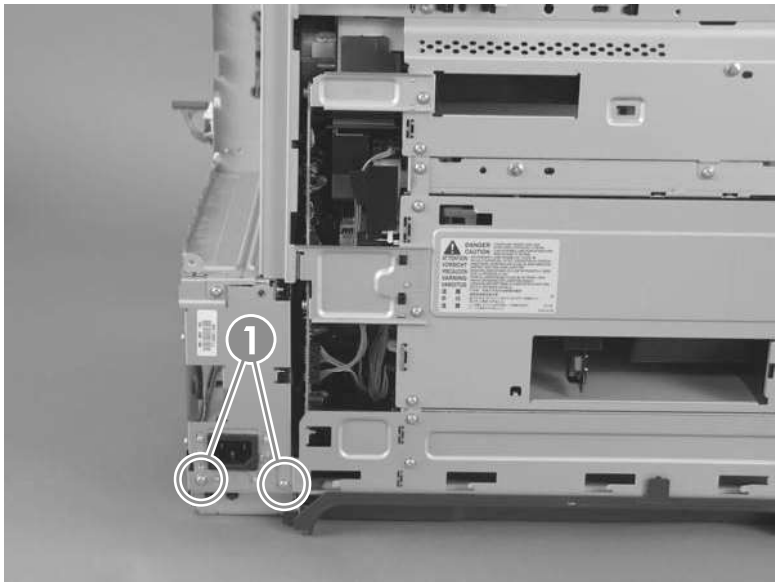
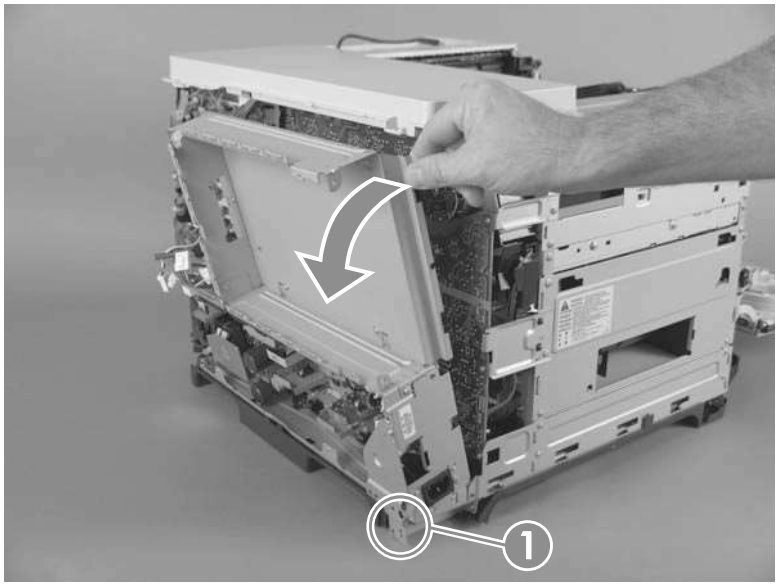
4. Remove two screws (callout 1).

**Figure 2-135** Remove the low voltage power supply (4 of 7)



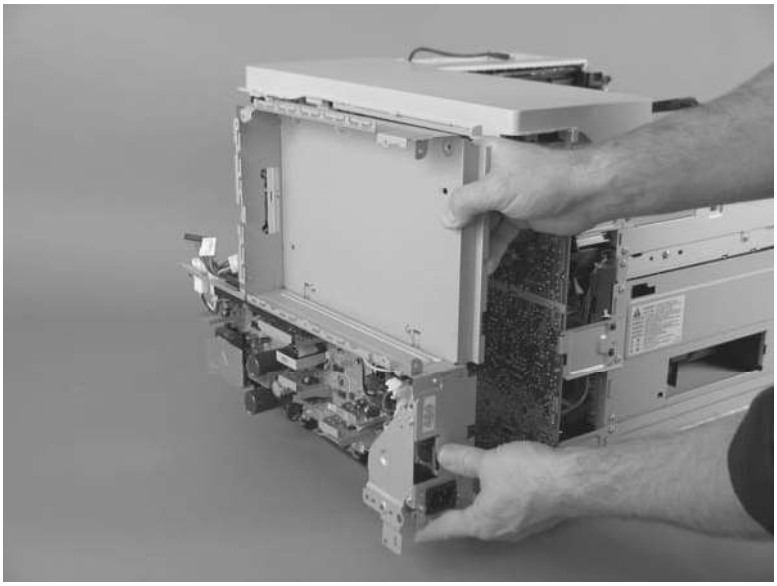

5. Release one tab (callout 1), and then rotate the formatter cage away from the top of the product.

**Figure 2-136** Remove the low voltage power supply (5 of 7)



6. Remove the assembly.

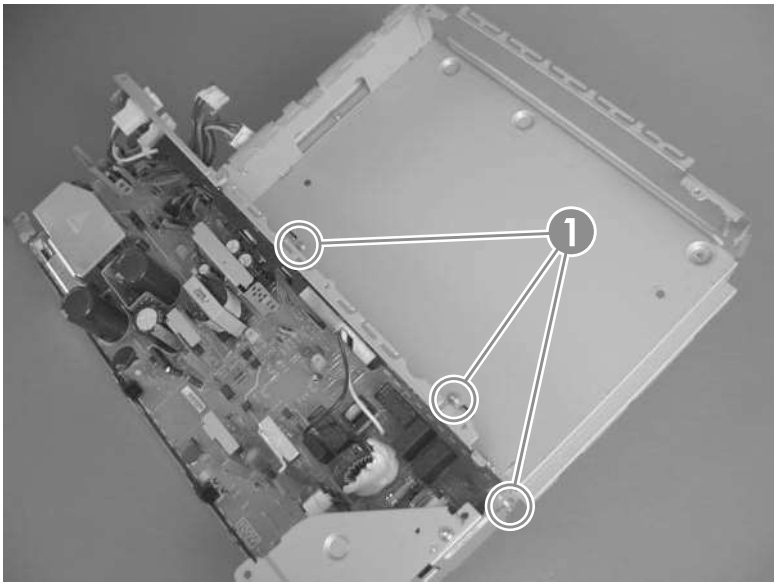
**Figure 2-137** Remove the low voltage power supply (6 of 7)



7. Remove three screws (callout 1), and then separate the formatter cage from the low voltage power supply.

**NOTE:** If you are removing the power supply for internal product access, you can leave the formatter cage installed on the power supply chassis.

**Figure 2-138** Remove the low voltage power supply (7 of 7)



# High voltage power supply lower (HVPS-D)

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter. See Formatter PCA on page 81.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the high voltage power supply lower.

- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- Low voltage power supply. See Low voltage power supply on page 163.

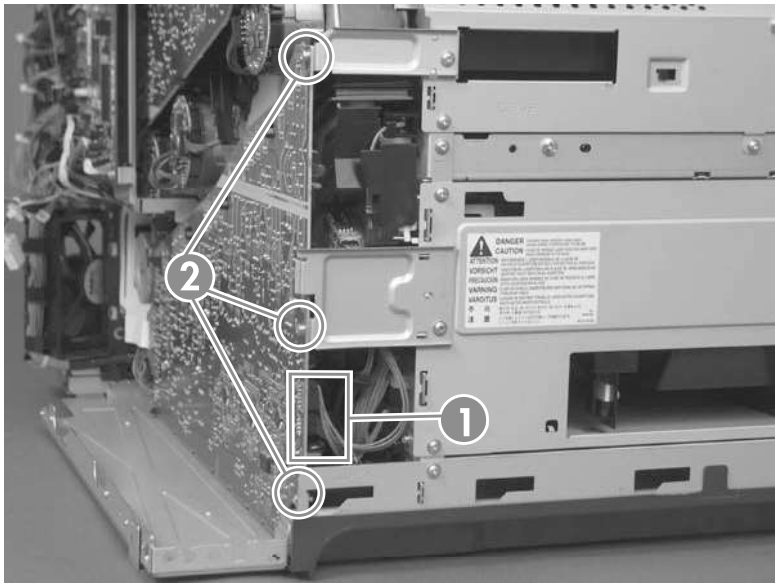
## Remove the high voltage power supply lower

**CAUTION:** ESD sensitive part.

1. Disconnect two connectors (callout 1), and then remove three screws (callout 2).

**NOTE:** The screws include lock washers and are unique to this assembly. Make sure to reinstall with this assembly.

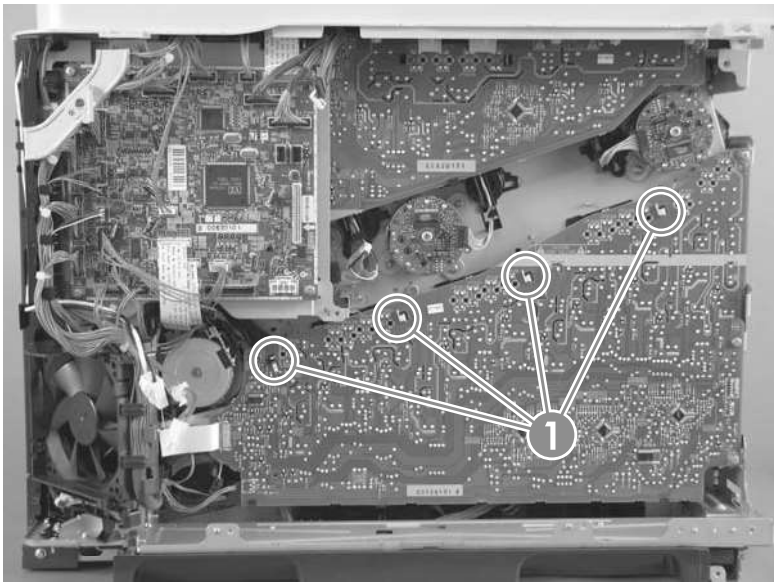
**Figure 2-139** Remove the high voltage power supply lower (1 of 4)



2. Use a small flat blade screwdriver to carefully remove four locking clips (callout 1).

**CAUTION:** Do not damage the PCA with the screwdriver.

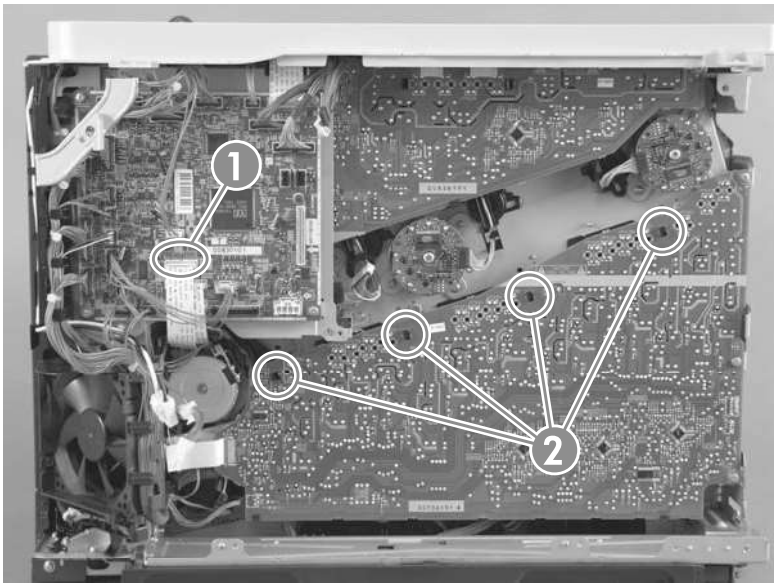
**Figure 2-140** Remove the high voltage power supply lower (2 of 4)




3. Disconnect one connector (callout 1; J114), and then release four clips (callout 2).

**NOTE:** To locate DC controller connector locations, see DC controller PCA on page 284.

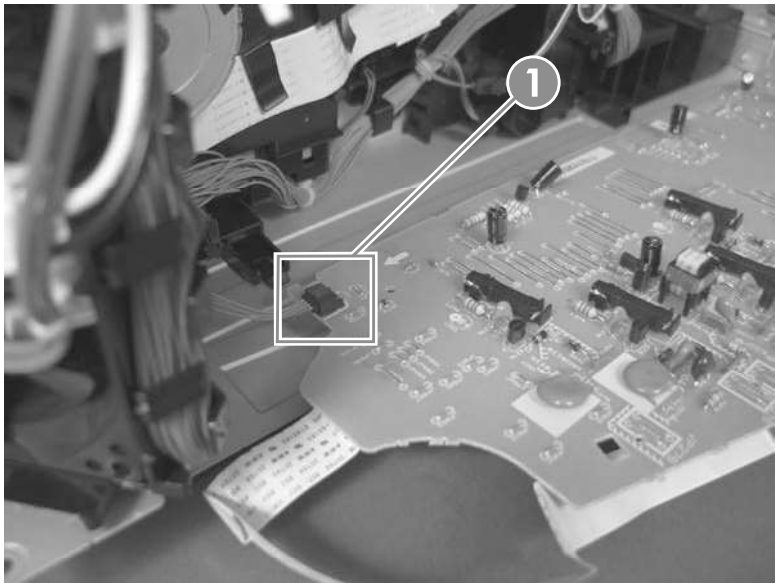
**Figure 2-141** Remove the high voltage power supply lower (3 of 4)



4. Rotate the top of the power supply away from the chassis, and then disconnect one connector (callout 1). Remove the power supply.

**Reinstallation tip** Make sure the cables do not get stuck behind or damaged by the sheet metal.

**Figure 2-142** Remove the high voltage power supply lower (4 of 4)




### Reinstall the high voltage power supply lower

When you reinstall the power supply, look through the holes in the PCA and make sure that the high voltage contact springs are correctly seated against the PCA.

**Figure 2-143** Reinstall the high voltage power supply lower

# Developing disengagement motor

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter. See Formatter PCA on page 81.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

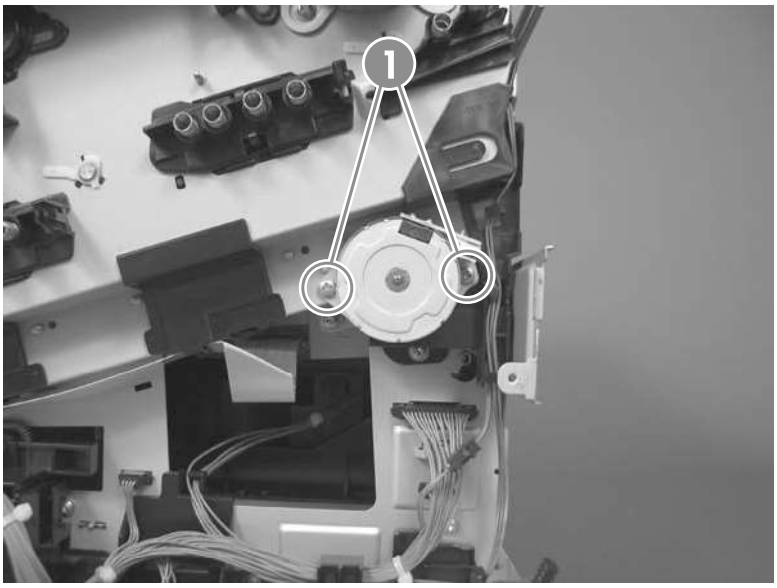
**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the developing disengagement motor.

- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply lower. See High voltage power supply lower (HVPS-D) on page 167.

## Remove the developing disengagement motor

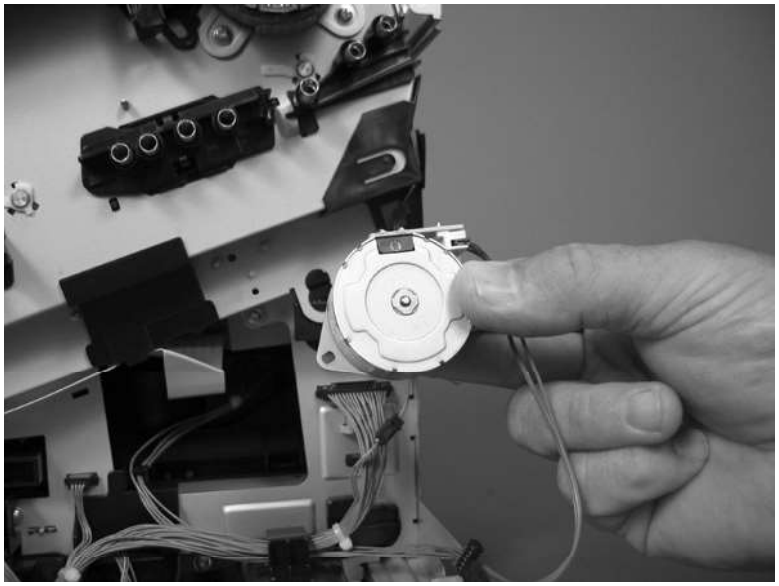
1. Remove two screws (callout 1).

**Figure 2-144** Remove the developing disengagement motor (1 of 2)



2. Remove the motor.

**Figure 2-145** Remove the developing disengagement motor (2 of 2)



# Pickup motor

### Before proceeding, remove the following components:

- Toner collection unit. See Toner collection unit on page 79.
- Formatter. See Formatter PCA on page 81.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

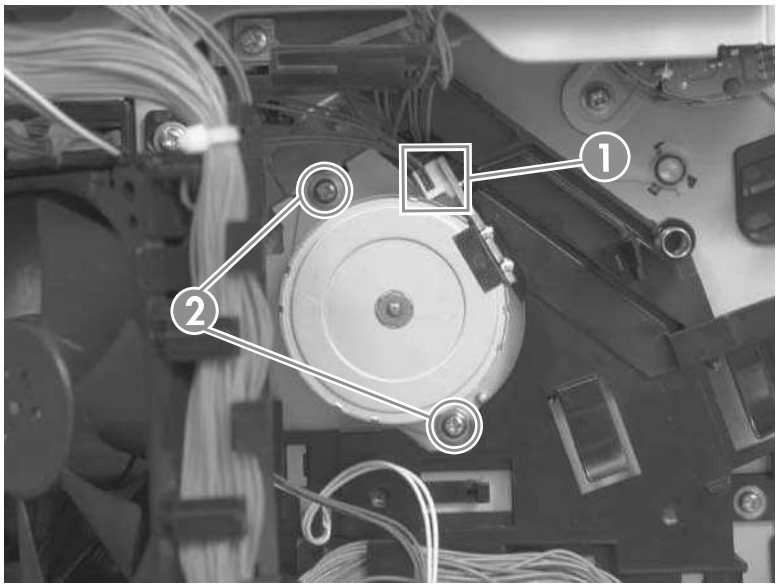
**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the pickup motor.

- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply lower. See High voltage power supply lower (HVPS-D) on page 167.

## Remove the pickup motor

Disconnect one connector (callout 1), remove two screws (callout 2), and then remove the motor.

**Figure 2-146** Remove the pickup motor



# Lifter drive assembly

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter. See Formatter PCA on page 81.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

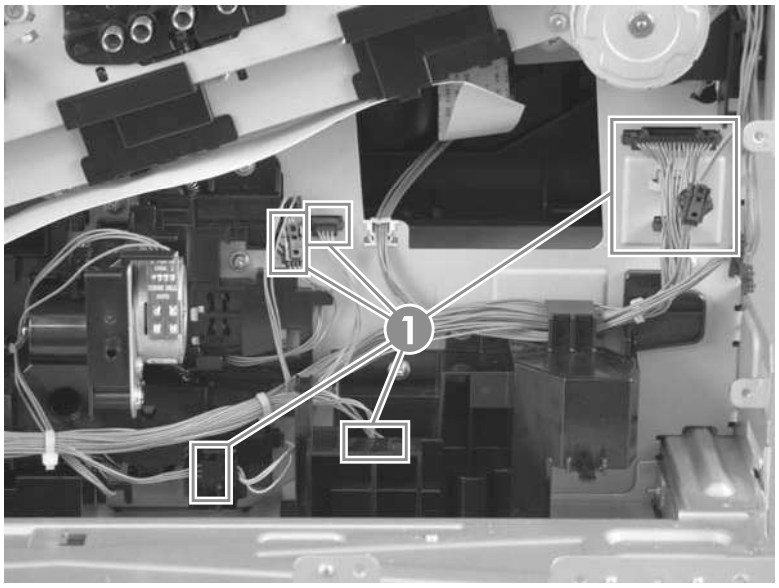
**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the lifter drive assembly.

- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply lower. See High voltage power supply lower (HVPS-D) on page 167.

## Remove the lifter drive assembly

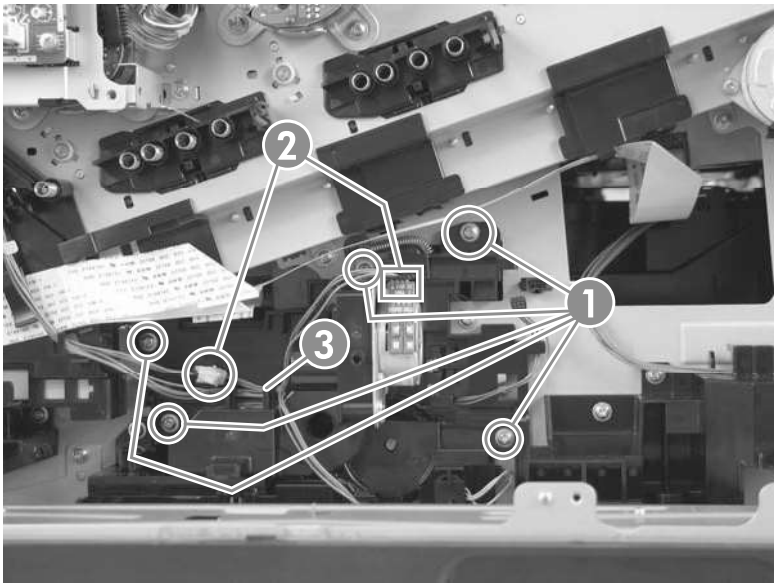
1. Disconnect eight connectors (callout 1), and then release the wire harness from the retainers.

**Figure 2-147** Remove the lifter drive assembly (1 of 2)



2. Remove five screws (callout 1), disconnect two connectors (callout 2), release the wire harness from the retainers (callout 3), and then remove the assembly.

**Figure 2-148** Remove the lifter drive assembly (2 of 2)



# Automatic close assembly

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter. See Formatter PCA on page 81.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

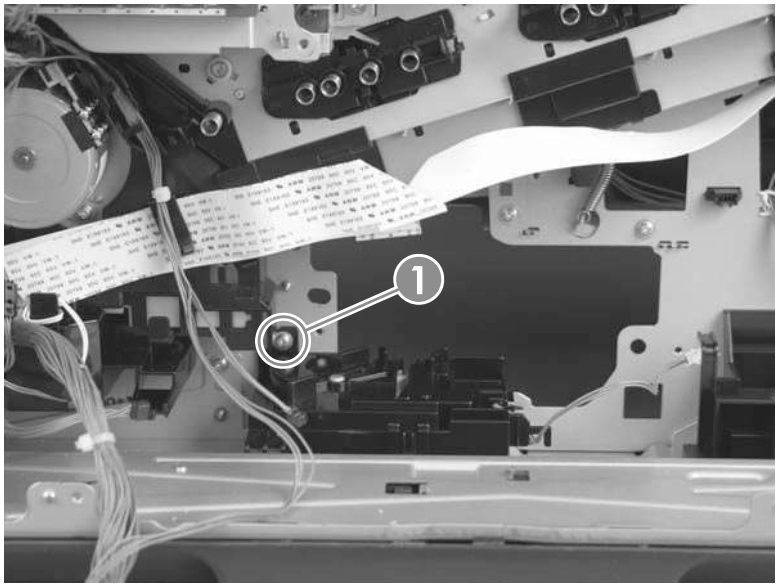
**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the lifter drive assembly.

- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply lower. See High voltage power supply lower (HVPS-D) on page 167.
- Lifter drive assembly. See Lifter drive assembly on page 173.

## Remove the automatic close assembly

▲ Remove one screw (callout 1), and then remove the assembly.

**Figure 2-149** Remove the automatic close assembly



# Cassette pickup drive assembly

### Before proceeding, remove the following components:

- Toner collection unit. See Toner collection unit on page 79.
- Formatter. See Formatter PCA on page 81.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the cassette-pickup drive assembly.

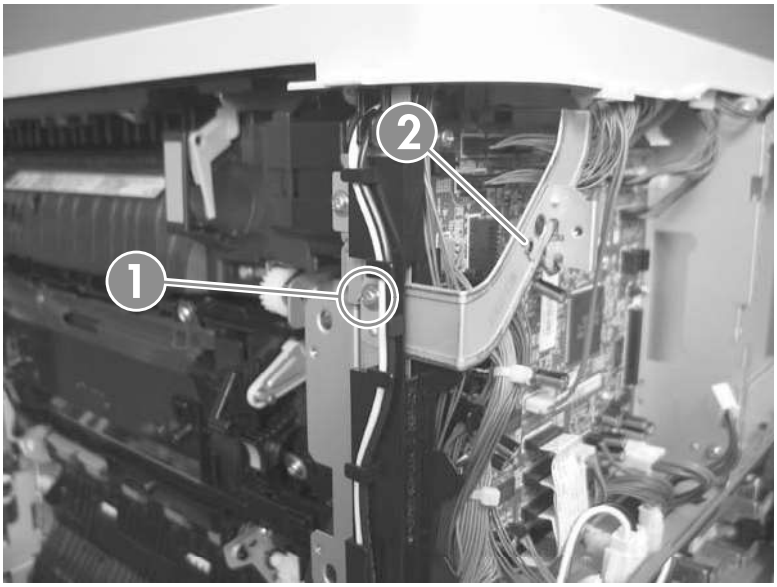
- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply lower. See High voltage power supply lower (HVPS-D) on page 167.

## Remove the cassette pickup drive assembly

**NOTE:** To remove the pickup motor only, see Pickup motor on page 172.

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

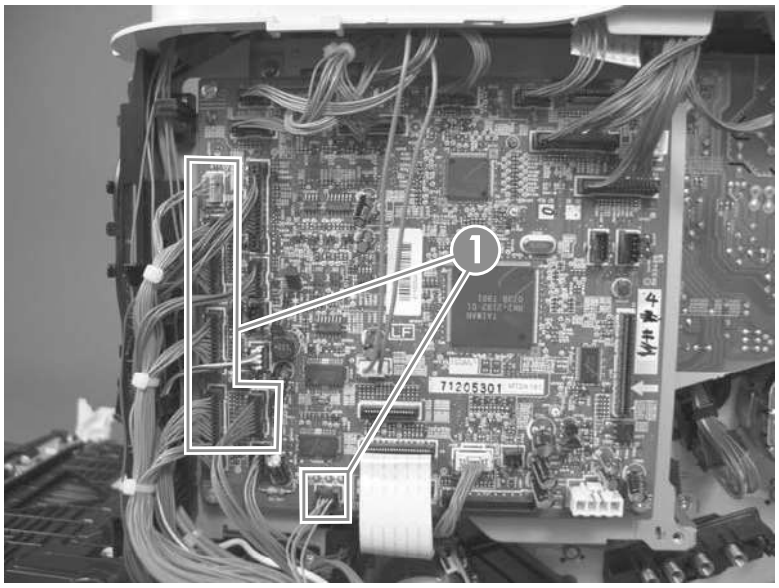
**Figure 2-150** Remove the cassette pickup drive assembly (1 of 10)



2. Disconnect six connectors (callout 1; J106, J107, J108, J137, J138, J140).

**NOTE:** To locate DC controller connector locations, see DC controller PCA on page 284.

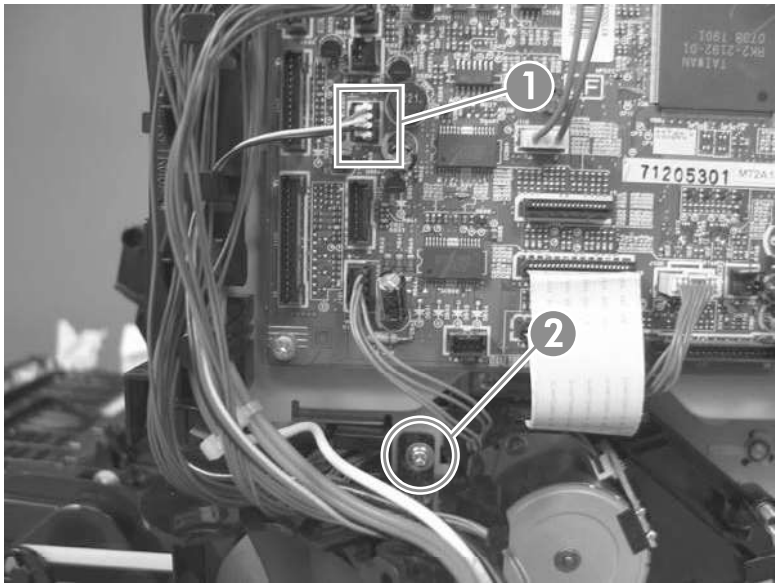
**Figure 2-151** Remove the cassette pickup drive assembly (2 of 10)




3. Disconnect one connector (callout 1; J119), remove one screw (callout 2), and then release the wire harness from the guides.

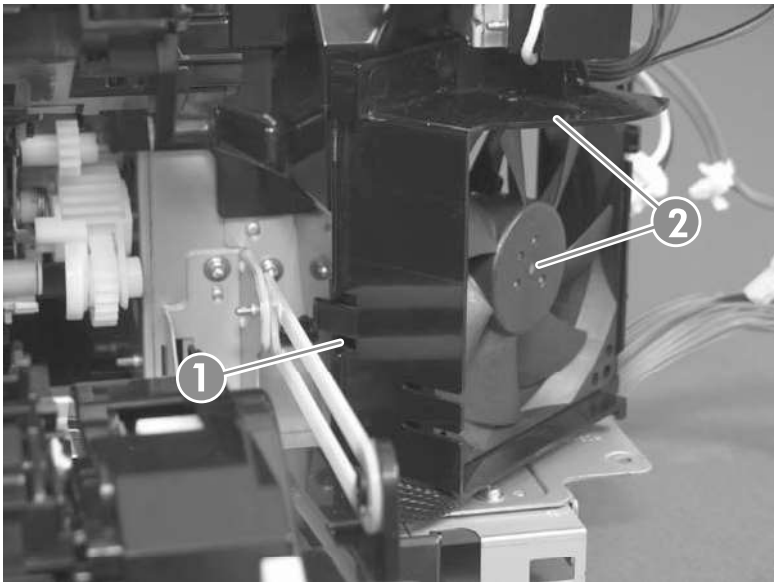
**NOTE:** To locate DC controller connector locations, see DC controller PCA on page 284.

**Figure 2-152** Remove the cassette pickup drive assembly (3 of 10)



4. Release one tab (callout 1), and then remove the fan and fan duct (callout 2).

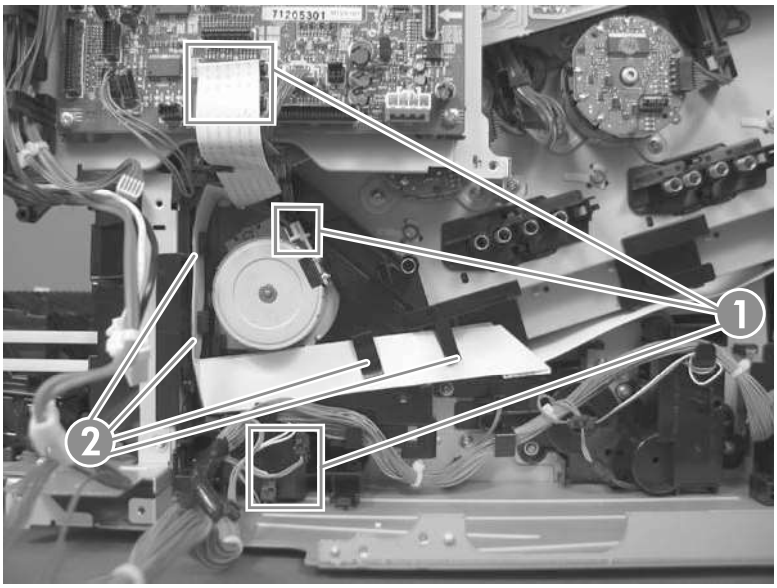
**Figure 2-153** Remove the cassette pickup drive assembly (4 of 10)




5. Disconnect five connectors (callout 1; J110, J111 on the DC controller PCA), release the FFCs from the guide (callout 2), and then release the wire harnesses from the guides.

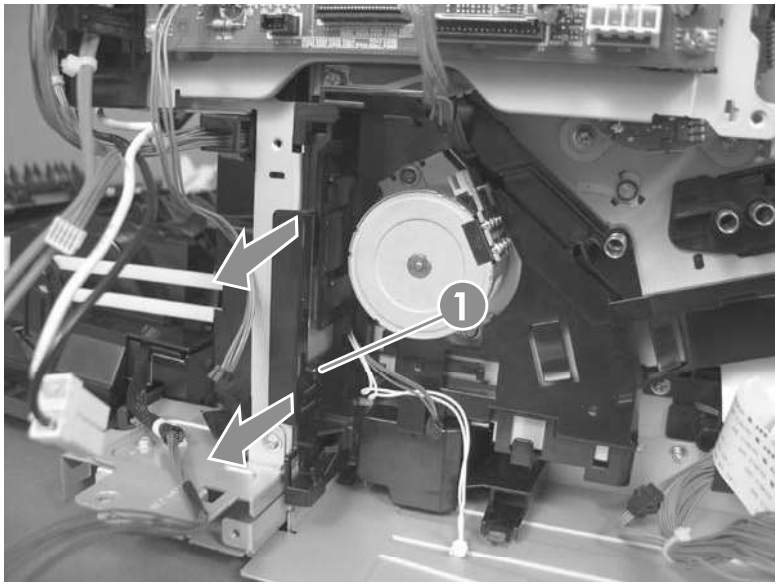
**NOTE:** To locate DC controller connector locations, see DC controller PCA on page 284.

**Figure 2-154** Remove the cassette pickup drive assembly (5 of 10)



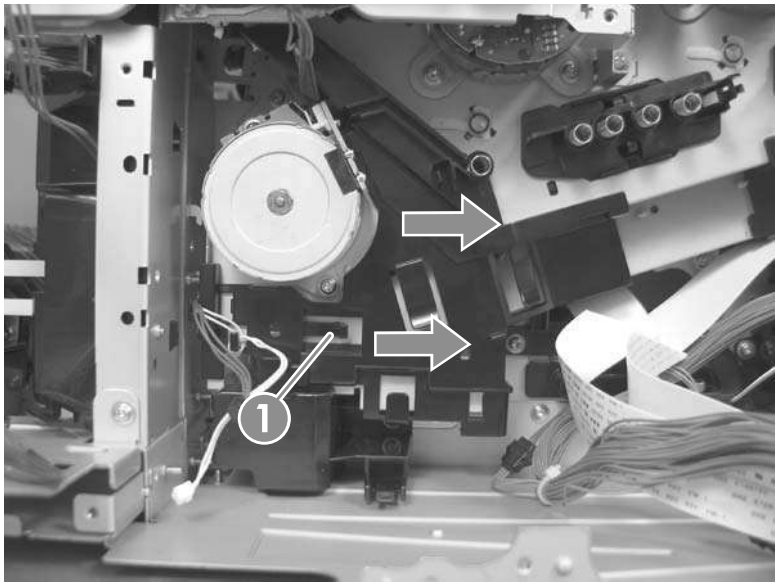
6. Release one tab (callout 1), and then remove the guide.

**Figure 2-155** Remove the cassette pickup drive assembly (6 of 10)



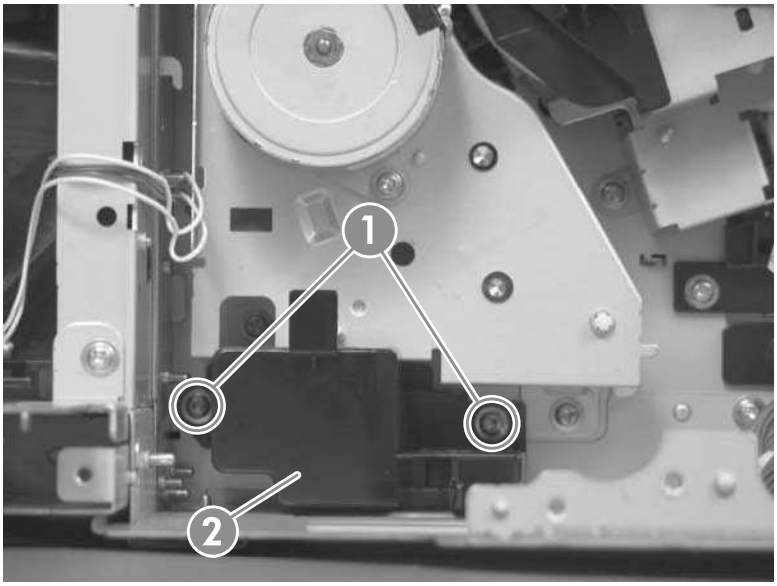

7. Release one tab (callout 1), and then remove the guide.

**Figure 2-156** Remove the cassette pickup drive assembly (7 of 10)



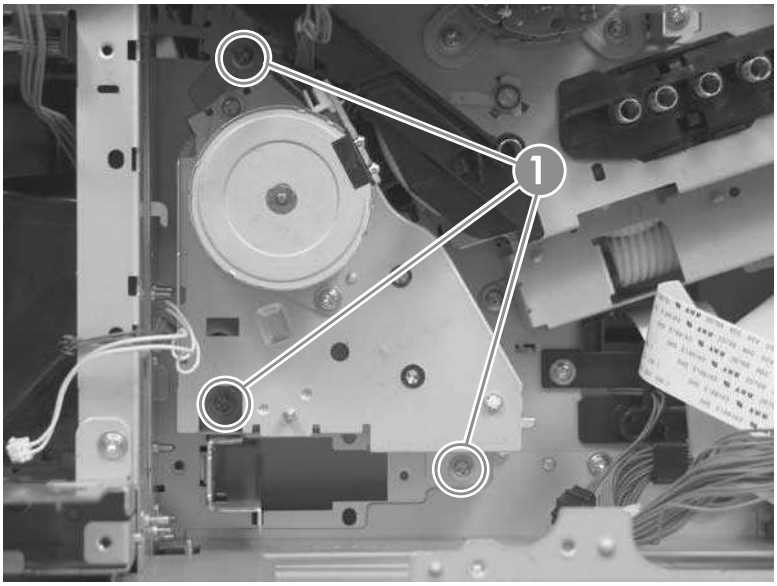
8. Remove two screws (callout 1), and then remove the high voltage bracket (callout 2).

**Figure 2-157** Remove the cassette pickup drive assembly (8 of 10)




9. Remove three screws (callout 1).

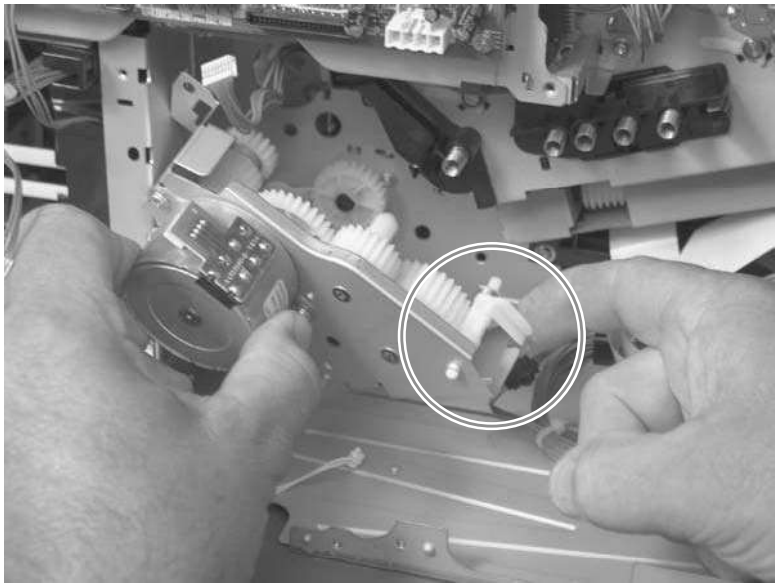
**Figure 2-158** Remove the cassette pickup drive assembly (9 of 10)



10. Carefully remove the assembly.

**CAUTION:** The gears, arm, and spring on the assembly are not captive. Use your finger to secure the arm and spring as you remove the assembly. If the gears, arm, or spring become dislodged, see Reinstall the cassette pickup drive assembly on page 181.

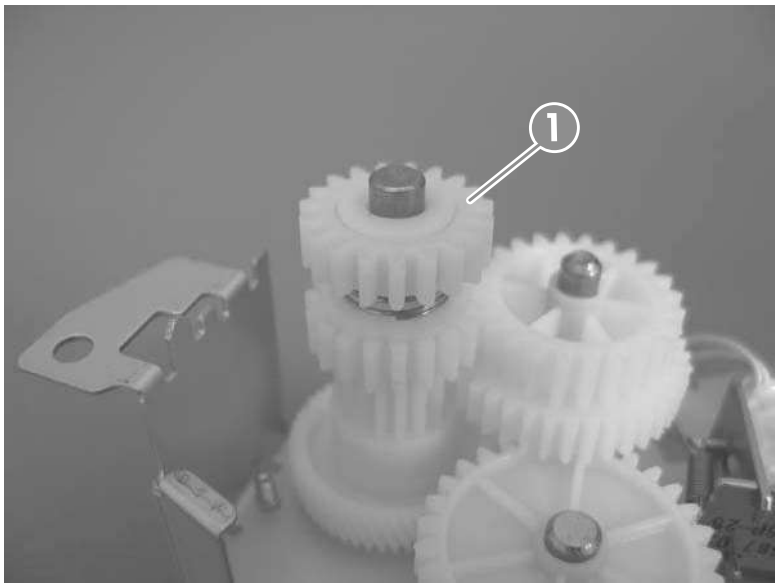
**Figure 2-159** Remove the cassette pickup drive assembly (10 of 10)



## Reinstall the cassette pickup drive assembly

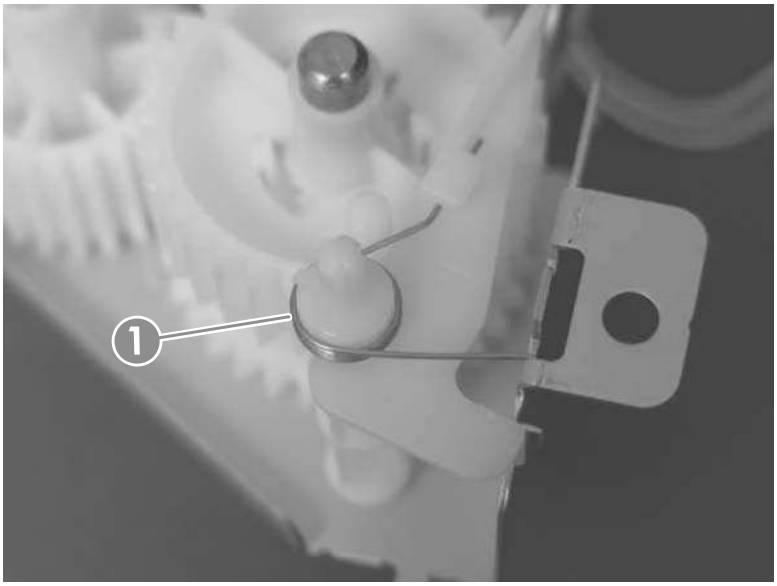
1. Make sure that the spring-loaded gear (callout 1) is correctly installed.

**Figure 2-160** Reinstall the cassette pickup drive assembly (1 of 3)



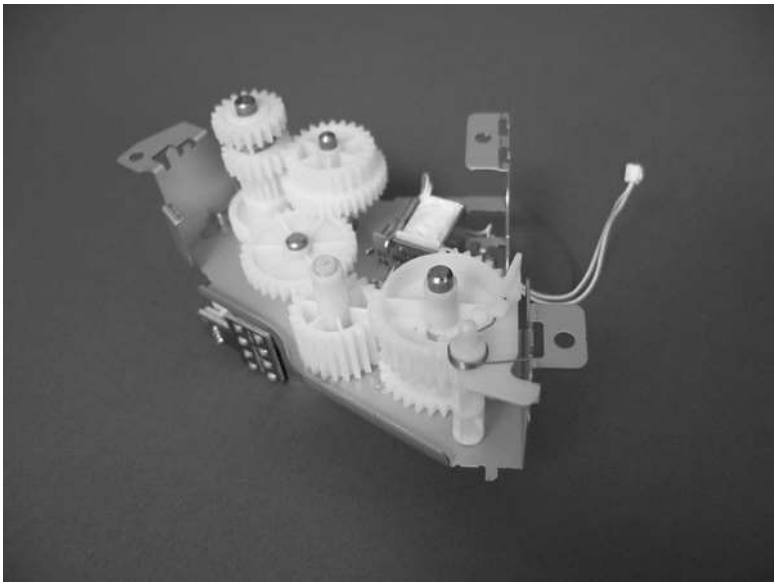
2. Make sure that the spring (callout 1) is correctly installed.

**Figure 2-161** Reinstall the cassette pickup drive assembly (2 of 3)




3. Make sure that the gears, arm, and spring are correctly installed.

**Figure 2-162** Reinstall the cassette pickup drive assembly (3 of 3)



## Cassette pickup assembly

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter. See Formatter PCA on page 81.
- Secondary transfer unit. See Secondary transfer assembly on page 96.
- Intermediate transfer belt. See Intermediate transfer belt (ITB) on page 98.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

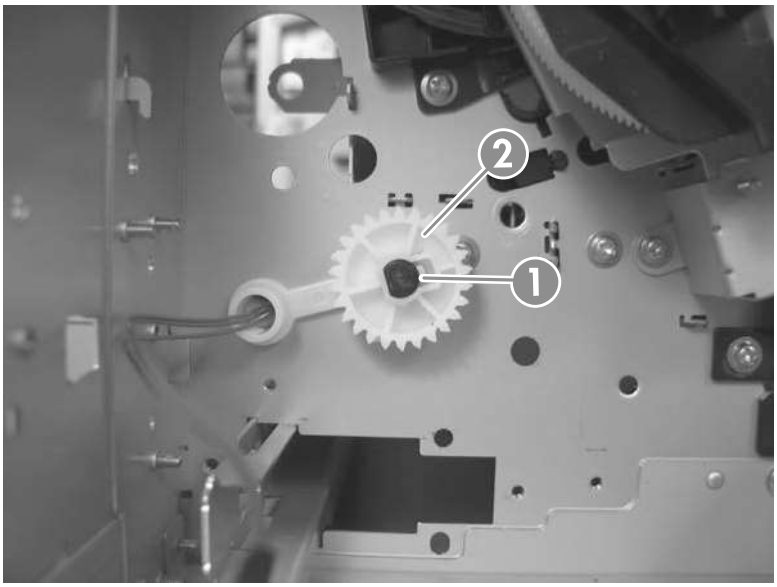
**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the cassette pickup assembly.

- Registration density (RD) sensor assembly. See Registration density (RD) sensor assembly on page 143.
- Power supply fan and fan duct. See Power supply fan and fan duct on page 147.
- Registration assembly. See Registration assembly on page 150.
- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply lower. See High voltage power supply lower (HVPS-D) on page 167.
- Cassette pickup drive assembly. See Cassette pickup drive assembly on page 176.

## Remove the cassette pickup assembly

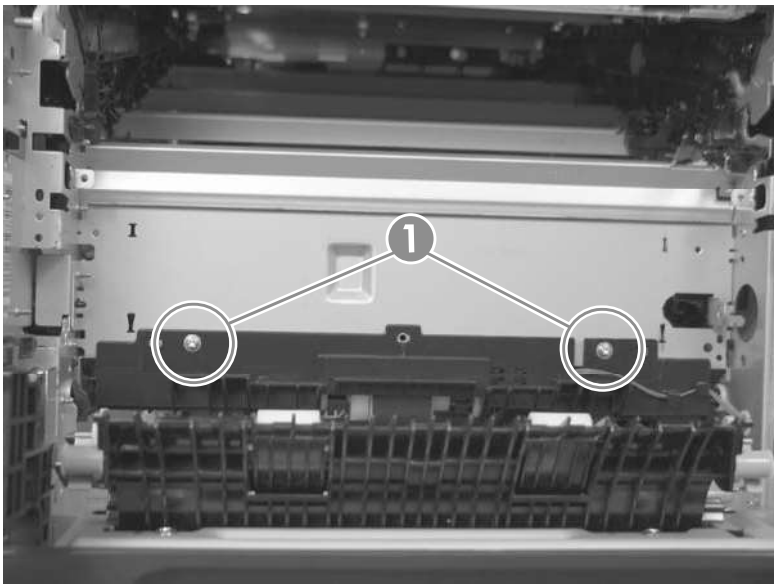
1. Release one tab (callout 1), and then remove the gear (callout 2).

**Figure 2-163** Remove the cassette pickup assembly (1 of 3)




2. Remove two screws (callout 1).

**Figure 2-164** Remove the cassette pickup assembly (2 of 3)



3. Remove the assembly.

**Figure 2-165** Remove the cassette pickup assembly (3 of 3)

# Laser/scanner assembly (Y/M)

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter. See Formatter PCA on page 81.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

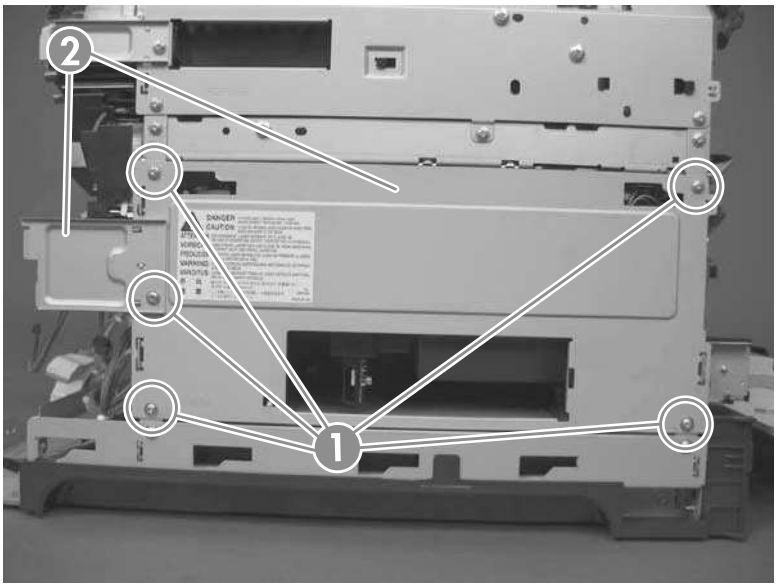
**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the laser/scanner assembly (Y/M).

- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply lower. See High voltage power supply lower (HVPS-D) on page 167.

## Remove the laser/scanner assembly (Y/M)

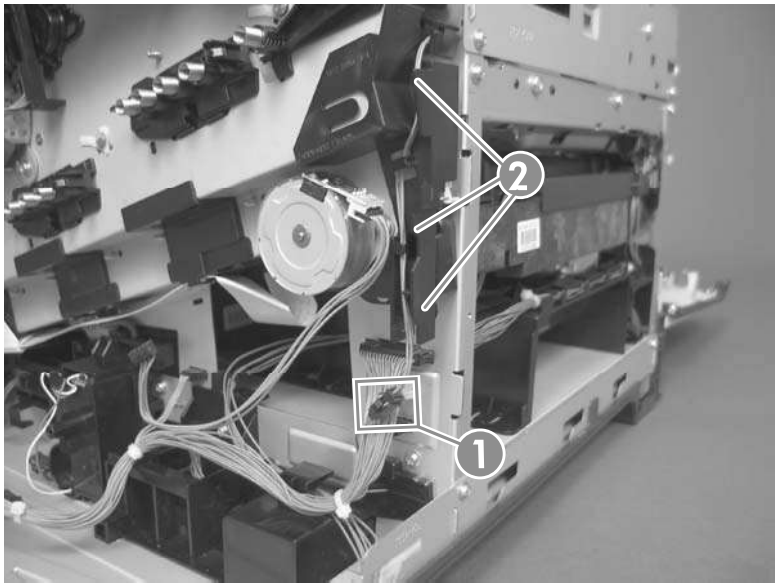
1. Remove five screws (callout 1), and then remove the sheet-metal plate (callout 2).

**Figure 2-166** Remove the laser/scanner assembly (Y/M) (1 of 12)



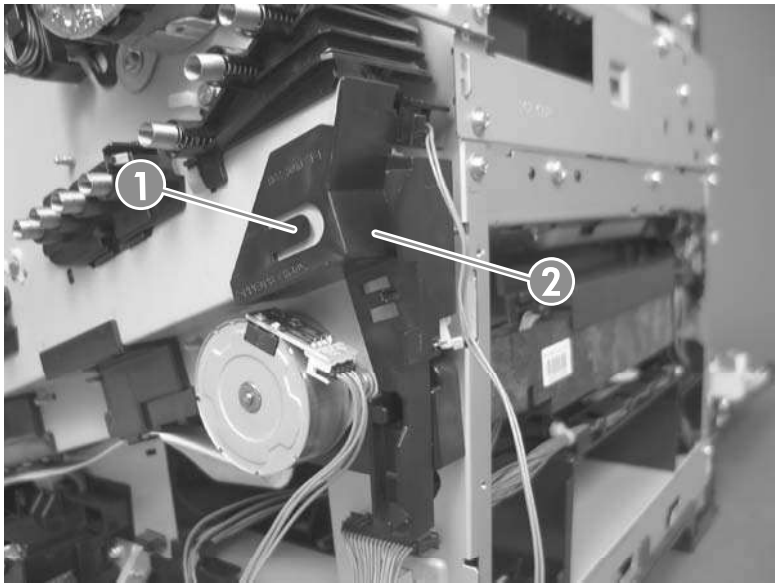
2. Disconnect the in-line one connector (callout 1), and then release the wire harnesses from the guide (callout 2).

**Figure 2-167** Remove the laser/scanner assembly (Y/M) (2 of 12)



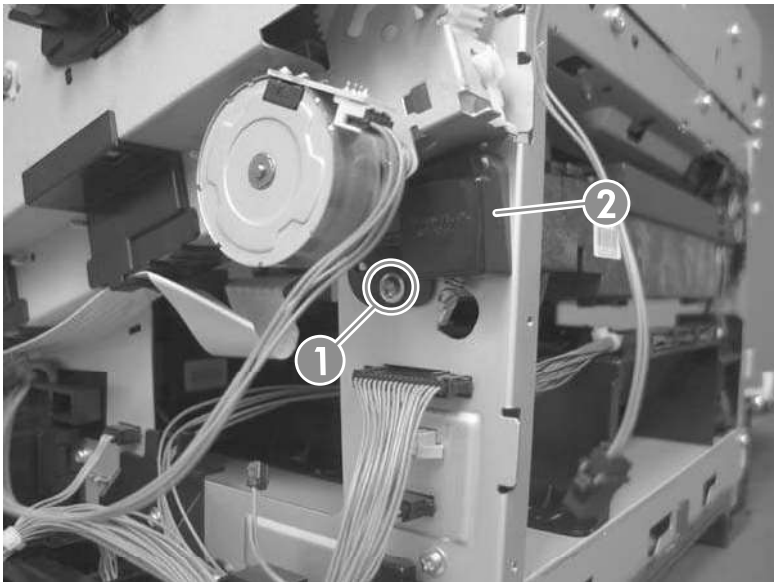

3. Release one tab (callout 1), and then remove the guide (callout 2).

**Figure 2-168** Remove the laser/scanner assembly (Y/M) (3 of 12)



4. Remove one screw (callout 1), and then remove the cover (callout 2).

**Figure 2-169** Remove the laser/scanner assembly (Y/M) (4 of 12)

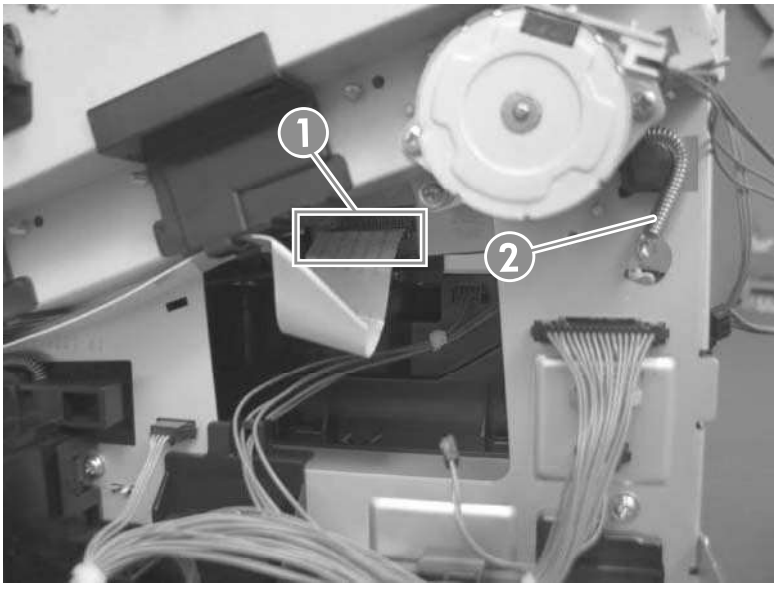



5. Disconnect one FFC (callout 1), and then release one spring (callout 2).

**CAUTION:** The spring is not captive. Do not lose the spring when it is removed. Use a pair of needle-nose pliers to safely retain the spring when it is removed. Do not use a flat blade screwdriver to remove the spring; the spring could forcibly leave the product and strike you.

**Reinstallation tip** When you reinstall the spring, make sure that the laser/scanner fits tightly up against the product chassis, and make sure that the FFC is fully seated in the connector. The locator tabs on the front and rear of the scanner must be firmly seated in the slots in the chassis.

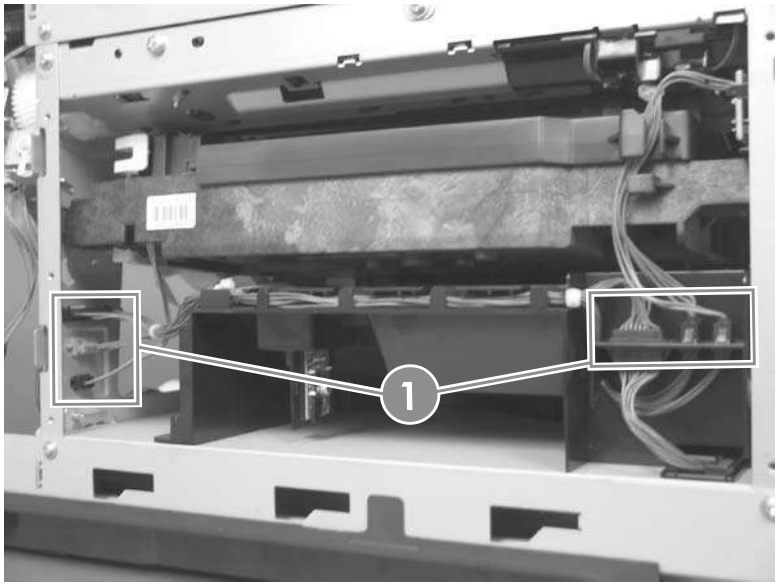
**Figure 2-170** Remove the laser/scanner assembly (Y/M) (5 of 12)



6. Disconnect six connectors (callout 1).

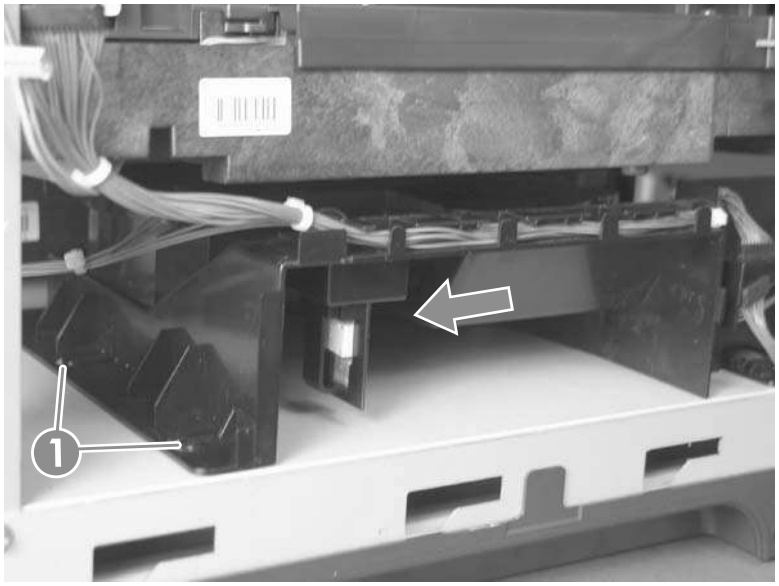
**NOTE:** Disconnect the larger connector on the right side from the bottom. Disconnect the two smaller connectors on the right side from the top.

**Figure 2-171** Remove the laser/scanner assembly (Y/M) (6 of 12)



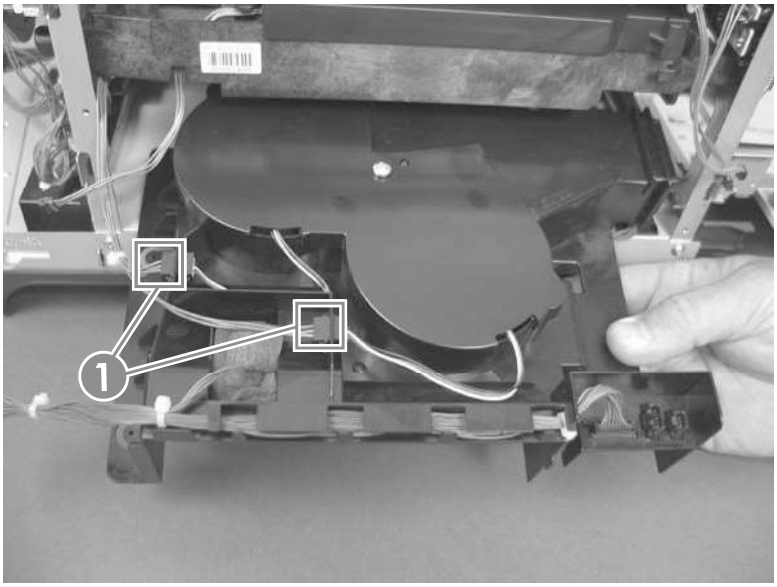

7. Release two tabs (callout 1), and then slide the fan assembly toward the power-supply side of the product to release it.

**Figure 2-172** Remove the laser/scanner assembly (Y/M) (7 of 12)



8. Pull the fan assembly slightly out of the product, disconnect two connectors (callout 1), and then remove the assembly.

**Figure 2-173** Remove the laser/scanner assembly (Y/M) (8 of 12)

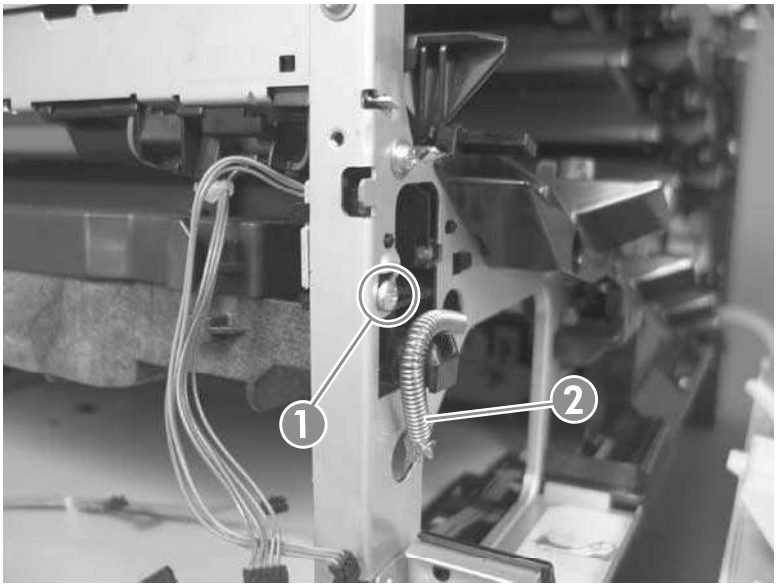



9. Remove one screw (callout 1), and then release one spring (callout 2).

**CAUTION:** The spring is not captive. Do not lose the spring when it is removed. Use a pair of needle-nose pliers to safely retain the spring when it is removed. Do not use a flat blade screwdriver to remove the spring; the spring could forcibly leave the product and strike you.

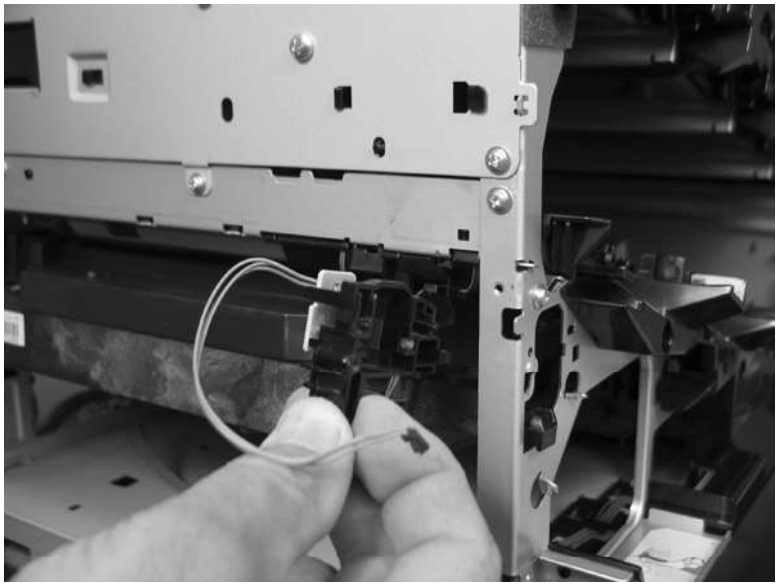
**Reinstallation tip** When the laser/scanner is properly positioned in the chassis, the plastic parts which protrude at the front and rear of the product will be firmly seated against the locator tabs on the chassis. Verify that the assembly is correctly seated, and then install the spring.

**Figure 2-174** Remove the laser/scanner assembly (Y/M) (9 of 12)



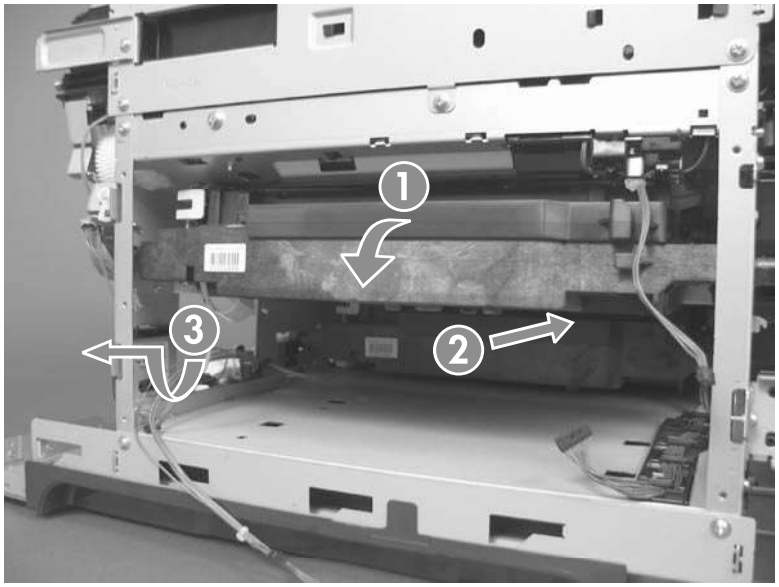
10. Remove the toner collection sensor.

**Figure 2-175** Remove the laser/scanner assembly (Y/M) (10 of 12)



11. Rotate the front of the laser/scanner assembly down (callout 1), and then slide it toward the right (callout 2). Lower the left corner, and then rotate the left corner out of the product (callout 3).

**Figure 2-176** Remove the laser/scanner assembly (Y/M) (11 of 12)



12. Pull the laser/scanner assembly straight out of the product to remove it.

**Figure 2-177** Remove the laser/scanner assembly (Y/M) (12 of 12)

## Laser/scanner assembly (C/Bk)

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter. See Formatter PCA on page 81.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the laser/scanner assembly (C/Bk).

- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply lower. See High voltage power supply lower (HVPS-D) on page 167.
- Lifter drive assembly. See Lifter drive assembly on page 173.
- Laser/scanner assembly (Y/M). See Laser/scanner assembly (Y/M) on page 186.

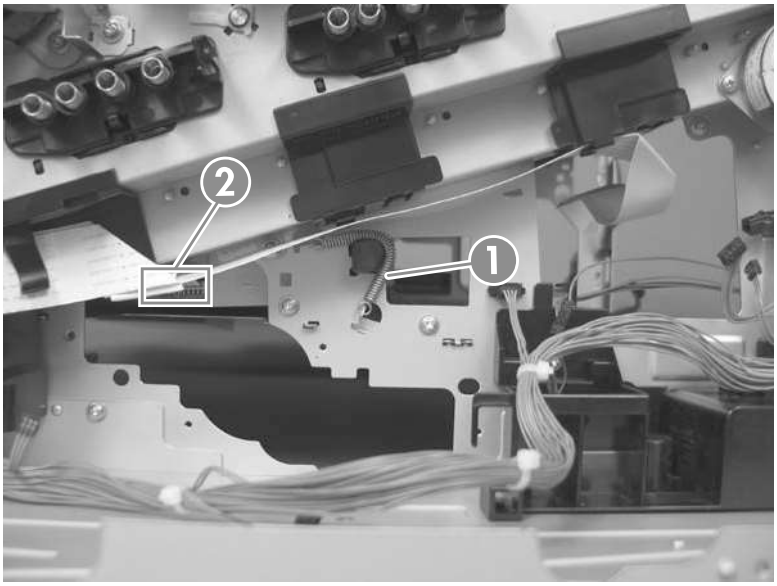
## Remove the laser/scanner assembly (C/Bk)

1. Release one spring (callout 1), and then disconnect one connector (callout 2).

**CAUTION:** The spring is not captive. Do not lose the spring when it is removed. Use a pair of needle-nose pliers to safely retain the spring when it is removed. Do not use a flat blade screwdriver to remove the spring; the spring could forcibly leave the product and strike you.

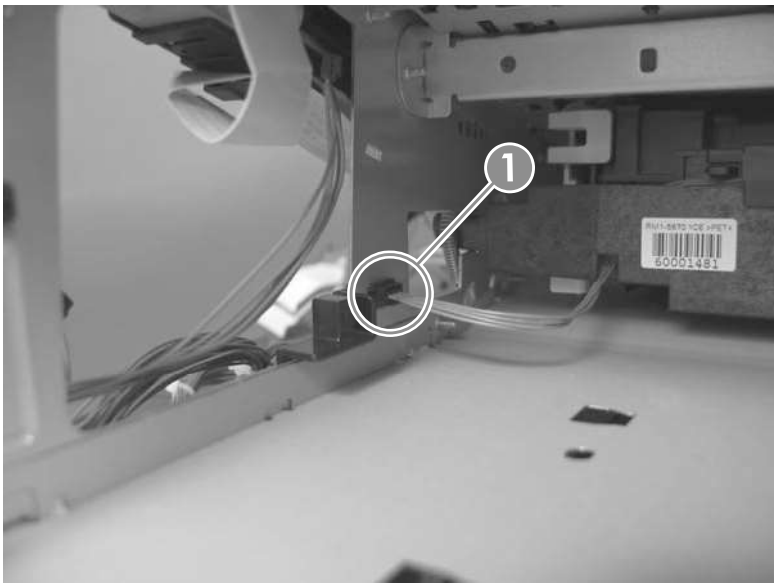
**Reinstallation tip** When you reinstall the spring, make sure that the laser/scanner fits tightly up against the product chassis, and make sure that the FFC is fully seated in the connector. The locator tabs on the front of the scanner must be firmly seated in the slots in the chassis.

**Figure 2-178** Remove the laser/scanner assembly (C/Bk) (1 of 7)



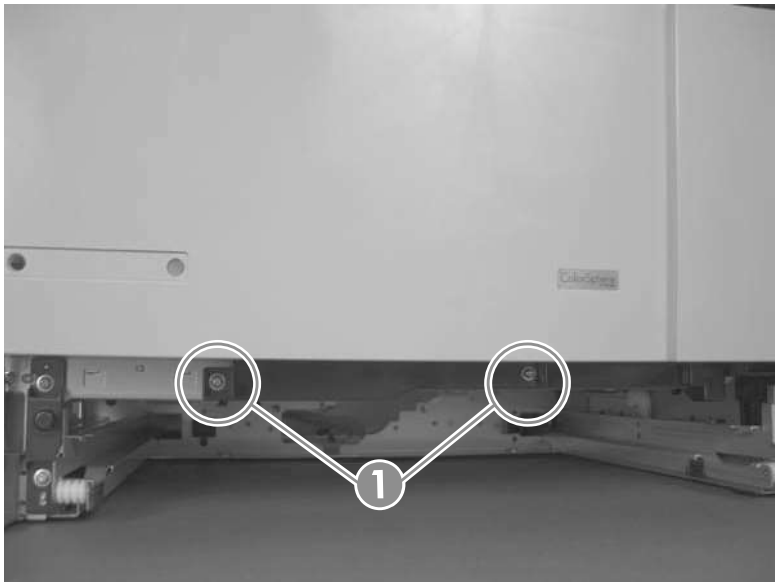

2. Disconnect one connector (callout 1).

**Figure 2-179** Remove the laser/scanner assembly (C/Bk) (2 of 7)



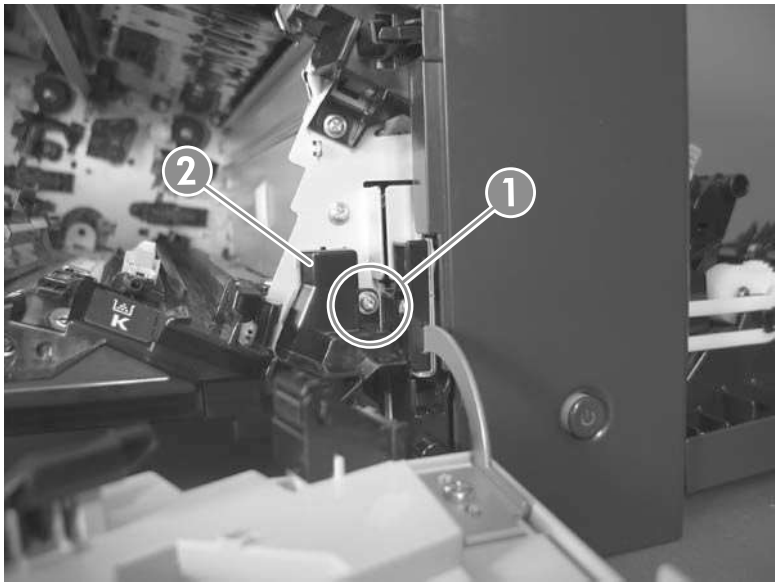
3. Remove two screws (callout 1) located below the front door.

**Figure 2-180** Remove the laser/scanner assembly (C/Bk) (3 of 7)




4. Open the front door, and then remove one screw (callout 1) and the cover (callout 2).

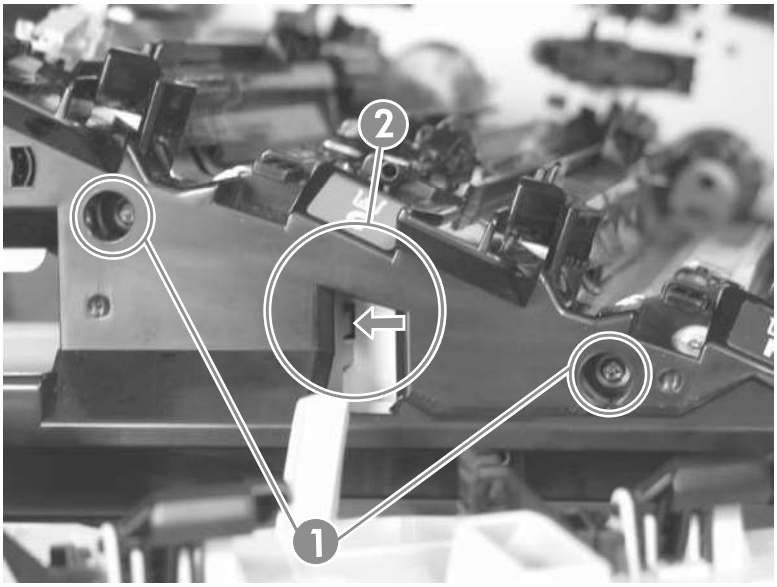
**Figure 2-181** Remove the laser/scanner assembly (C/Bk) (4 of 7)



5. Remove two screws (callout 1). Use your finger to release the locking tab (callout 2), and then remove the cover.

⚠ **CAUTION:** Be careful. The PGC actuators are easily dislodged when the cover is removed. See Figure 2-185 Reinstall the PGC actuators (1 of 5) on page 198. To reinstall the actuators, see Reinstall the protective glass cleaner (PGC) actuators on page 198.

**Figure 2-182** Remove the laser/scanner assembly (C/Bk) (5 of 7)

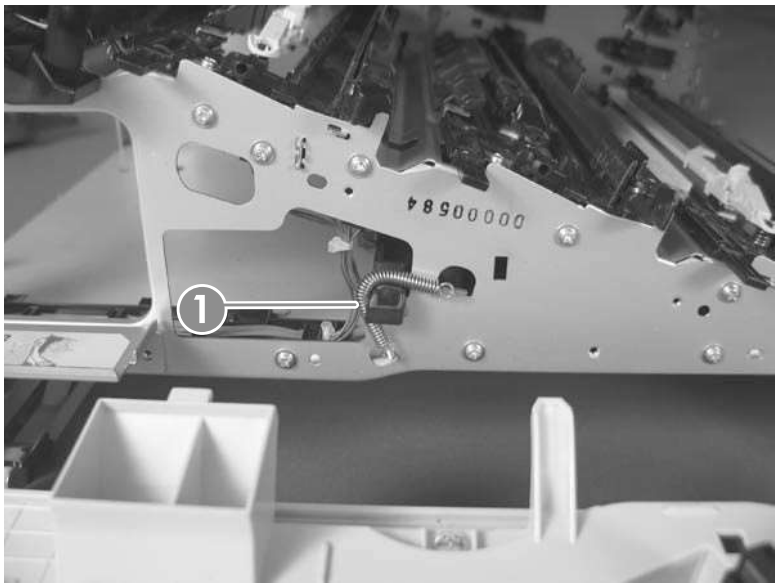


6. Release one spring (callout 1).

**CAUTION:** The spring is not captive. Do not lose the spring when it is removed. Use a pair of needle-nose pliers to safely retain the spring when it is removed. Do not use a flat blade screwdriver to remove the spring; the spring could forcibly leave the product and strike you.

**Reinstallation tip** When you reinstall the spring, make sure that the laser/scanner fits tightly up against the product chassis.

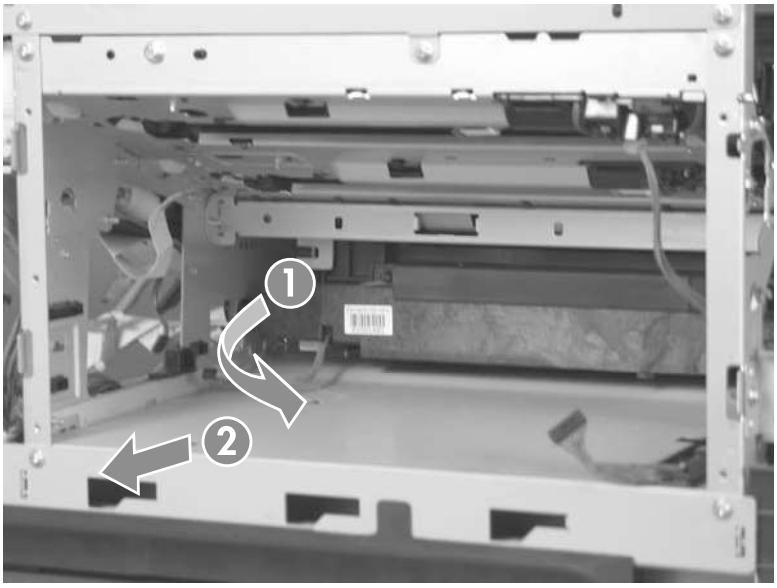
**Figure 2-183** Remove the laser/scanner assembly (C/Bk) (6 of 7)



7. Rotate the corner of the assembly away from the product until you can see the PCA, and then remove the assembly from the product.

**Reinstallation tip** When the laser/scanner is properly positioned in the chassis, the plastic parts which protrude at the front and rear of the product will be firmly seated against the locator tabs on the chassis. Verify that the assembly is correctly seated, and then install the spring.

**Figure 2-184** Remove the laser/scanner assembly (C/Bk) (7 of 7)

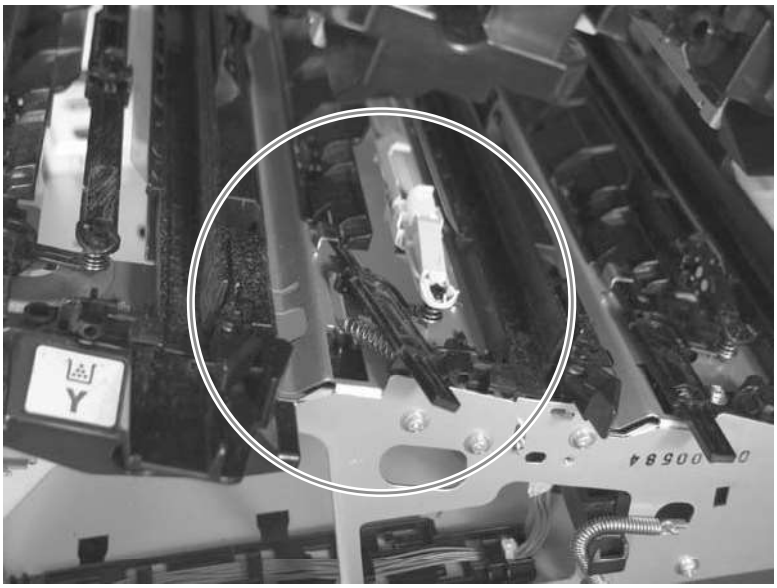



### Reinstall the protective glass cleaner (PGC) actuators

1. The following figure shows a dislodged PGC actuator.

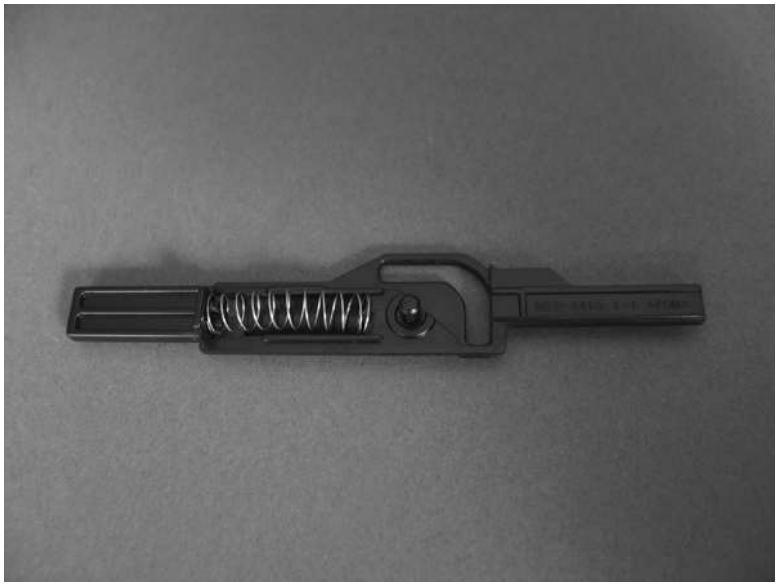
**TIP:** If the actuator and spring are only slightly dislodged, you might be able to easily push them back into place.

**Figure 2-185** Reinstall the PGC actuators (1 of 5)



2. Remove the actuator and spring from the product. Install the spring on the actuator.

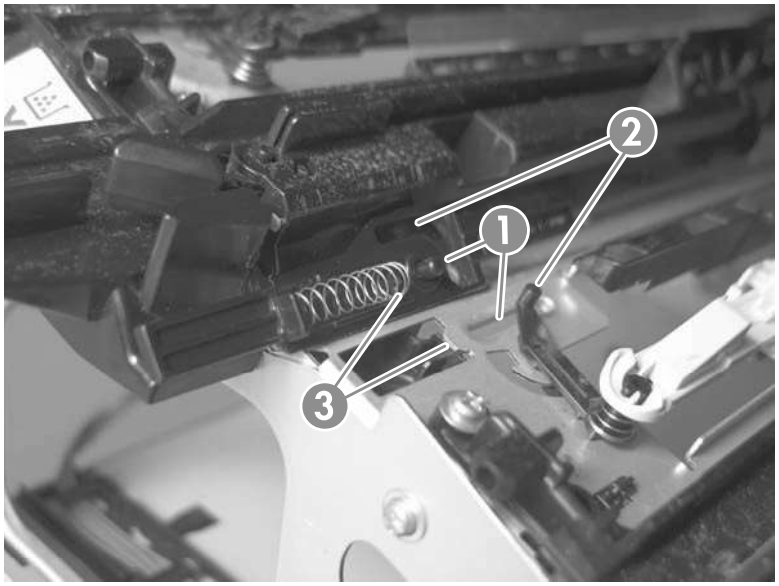
**Figure 2-186** Reinstall the PGC actuators (2 of 5)



3. Before proceeding, take note of the following:

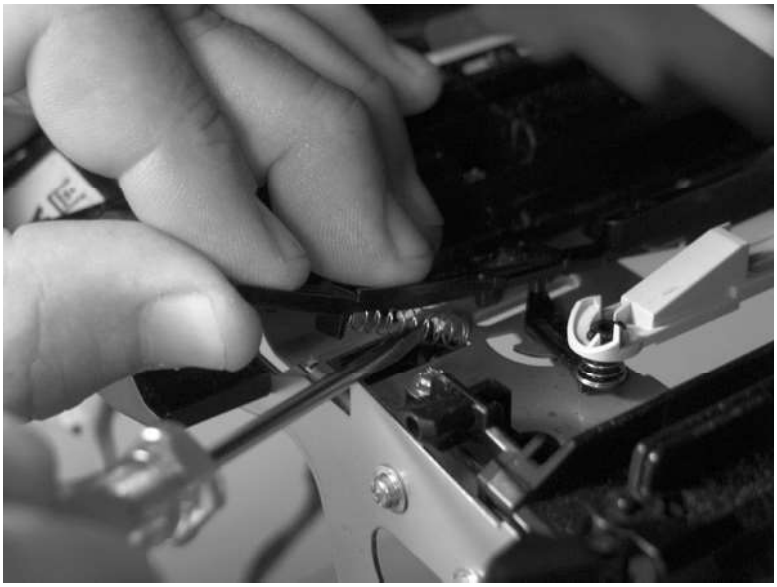
- **Callout 1**: The pin on the actuator will be installed into the slot in the chassis.
- **Callout 2**: The pin on the pivot arm will be installed into the slot on the actuator.
- **Callout 3**: The end of the spring will be installed onto the tab on the chassis.

**Figure 2-187** Reinstall the PGC actuators (3 of 5)



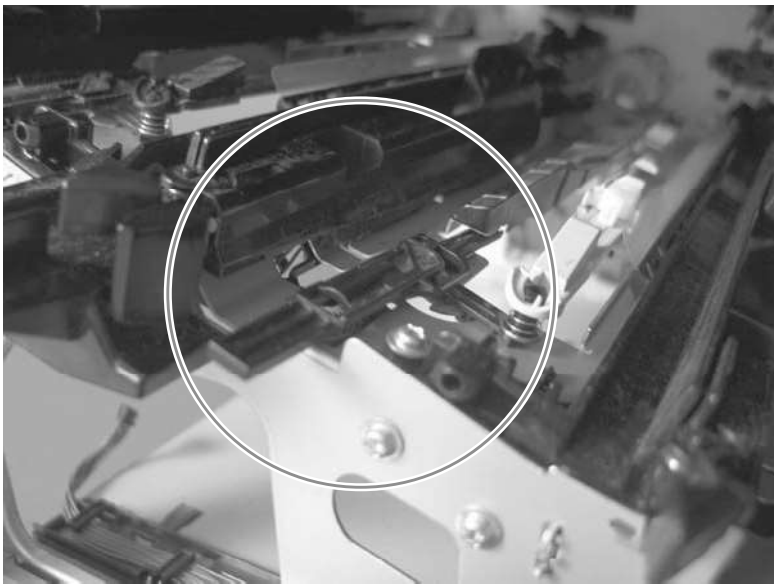
4. Place the end of the actuator into the PGC rod, and then use a small flat blade screw driver to fasten the end of the spring on the tab on the chassis.

**Figure 2-188** Reinstall the PGC actuators (4 of 5)



5. Push down on the actuator to seat it into place. Verify that the actuators is correctly installed. The PGC actuator should freely move when you push in on the actuator.

**Figure 2-189** Reinstall the PGC actuators (5 of 5)



## High voltage power supply upper (HVPS-T)

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter. See Formatter PCA on page 81.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Hardware integration pocket (HIP). See Hardware integration pocket (HIP) (dn and xh models only) on page 115.
- Control panel assembly. See Control panel assembly on page 116
- Front top cover. See Front top cover on page 122.
- Rear top cover. See Rear top cover on page 127.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the high voltage power supply upper.

- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- DC controller. See DC controller PCA and tray on page 160.
- Low voltage power supply. See Low voltage power supply on page 163.

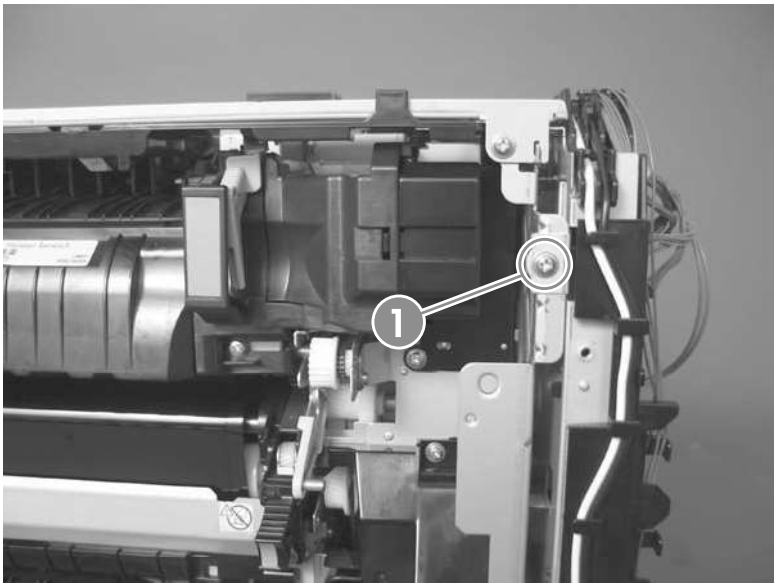
## Remove the high voltage power supply upper

**CAUTION:** ESD sensitive part.

**NOTE:** If the sheet-metal tray was removed with the DC controller, begin at step 3.

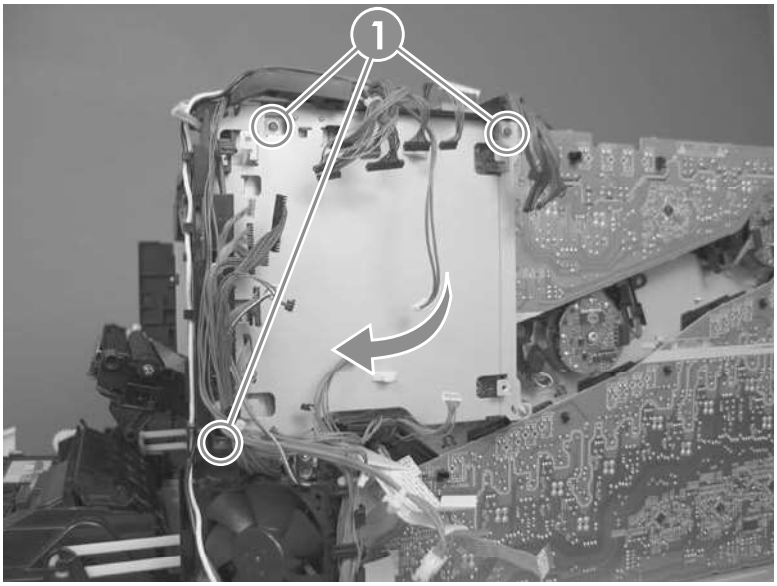
1. Remove one screw (callout 1).

**Figure 2-190** Remove the high voltage power supply upper (1 of 5)



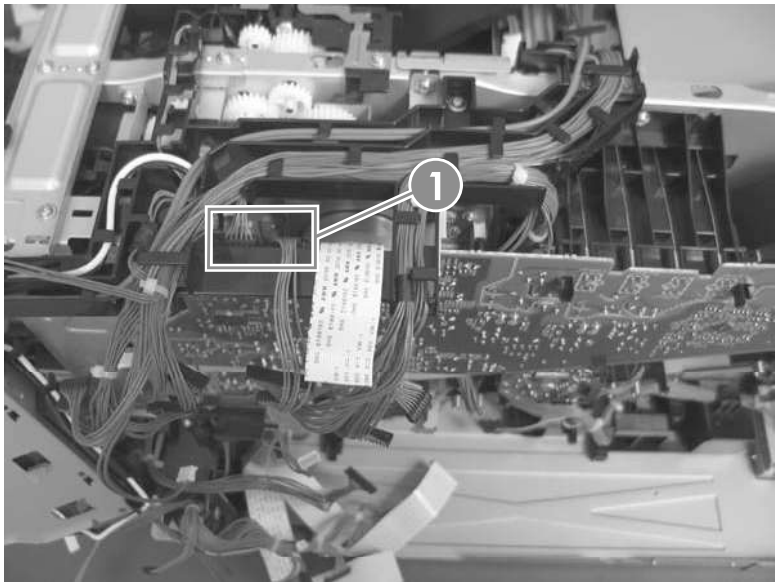

2. Remove three screws (callout 1), and then rotate the sheet-metal plate away from the power supply.

**Figure 2-191** Remove the high voltage power supply upper (2 of 5)



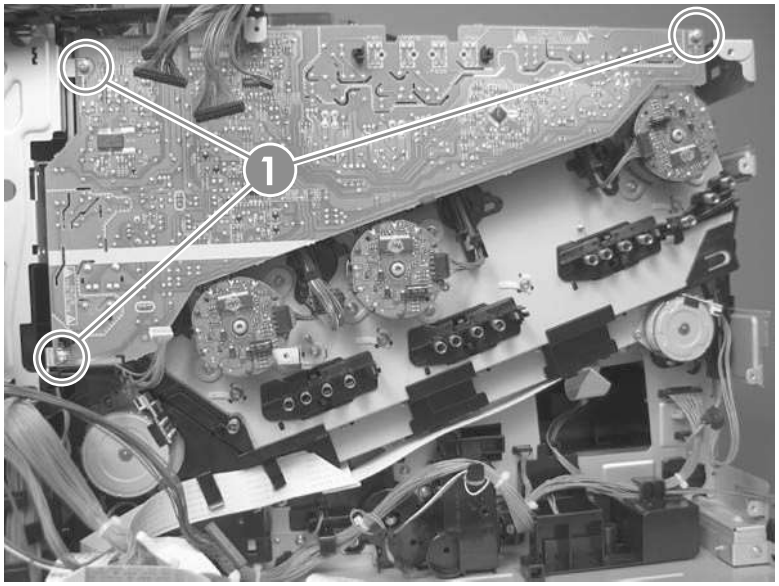
3. **Duplex models only**: Disconnect one connector (callout 1).

**Figure 2-192** Remove the high voltage power supply upper (3 of 5)



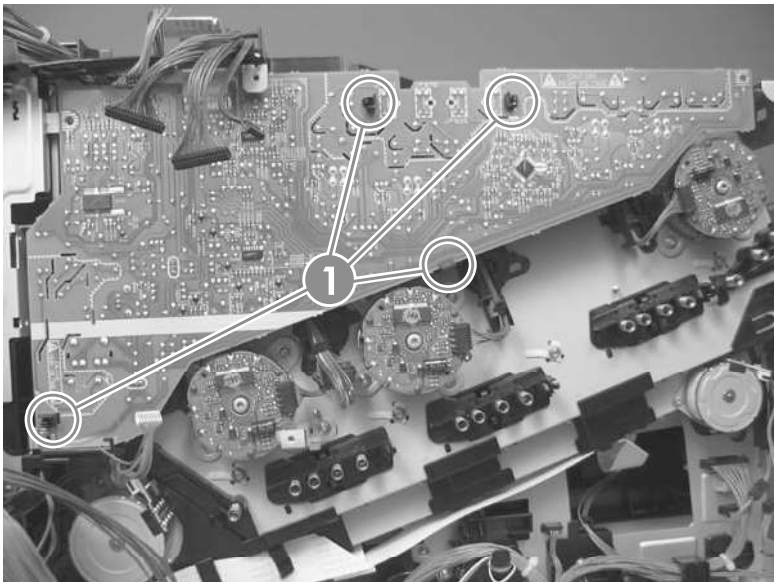

4. Remove three screws (callout 1).

**Figure 2-193** Remove the high voltage power supply upper (4 of 5)



5. Release four tabs (callout 1), and then remove the power supply.

**Figure 2-194** Remove the high voltage power supply upper (5 of 5)

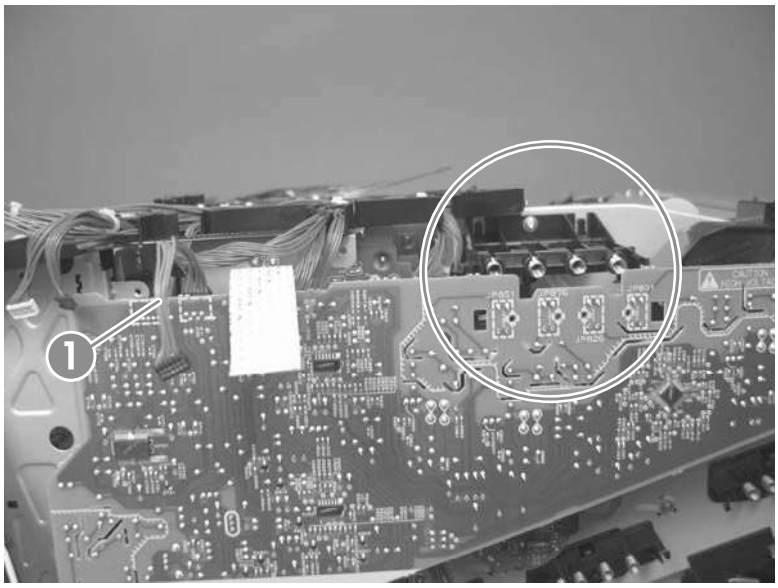


### Reinstall the high voltage power supply upper

When you reinstall the power supply, look through the holes in the PCA and make sure that the high voltage contact springs are correctly seated against the PCA.

**NOTE:** For a replacement power supply, remove one wire harness (callout 1) and then install it on the replacement power supply.

**Figure 2-195** Reinstall the high voltage power supply upper



## Drum motor 1

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter PCA. See Formatter PCA on page 81.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Hardware integration pocket (HIP). See Hardware integration pocket (HIP) (dn and xh models only) on page 115.
- Control panel assembly. See Control panel assembly on page 116
- Front top cover. See Front top cover on page 122.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

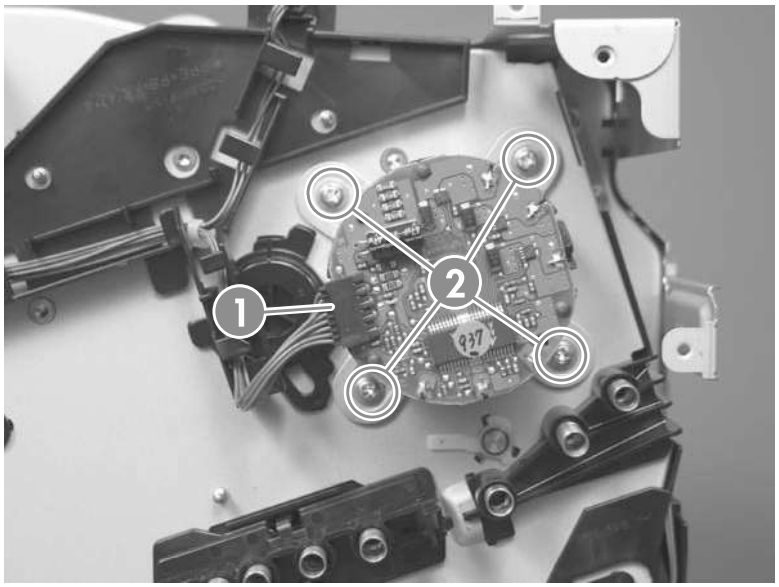
**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove drum motor 1.

- Rear top cover. See Rear top cover on page 127.
- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- DC controller. See DC controller PCA and tray on page 160.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply upper. See High voltage power supply upper (HVPS-T) on page 201.

## Remove the drum motor 1

▲ Disconnect one connector (callout 1), remove four screws (callout 2), and then remove the motor.

**Figure 2-196** Remove the drum motor 1



## Drum motor 2 or drum motor 3

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter PCA. See Formatter PCA on page 81.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Hardware integration pocket (HIP). See Hardware integration pocket (HIP) (dn and xh models only) on page 115.
- Control panel assembly. See Control panel assembly on page 116.
- Front top cover. See Front top cover on page 122.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove drum motor 2 or drum motor 3.

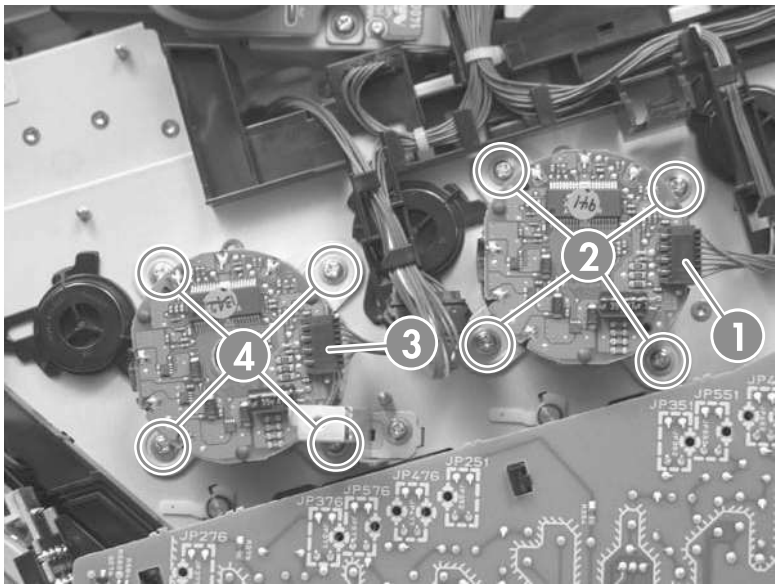
- Rear top cover. See Rear top cover on page 127.
- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- DC controller. See DC controller PCA and tray on page 160.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply upper. See High voltage power supply upper (HVPS-T) on page 201.

## Remove the drum motor 2 or drum motor 3

▲ Do one of the following:

- Remove drum motor 2: Disconnect one connector (callout 1), remove four screws (callout 2), and then remove the motor.
- Remove drum motor 3: Disconnect one connector (callout 3), remove four screws (callout 4), and then remove the motor.

**Figure 2-197** Remove the drum motor 2 or drum motor 3



## Fuser motor

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter. See Formatter PCA on page 81.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Hardware integration pocket (HIP). See Hardware integration pocket (HIP) (dn and xh models only) on page 115.
- Control panel assembly. See Control panel assembly on page 116.
- Front top cover. See Front top cover on page 122.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the fuser motor.

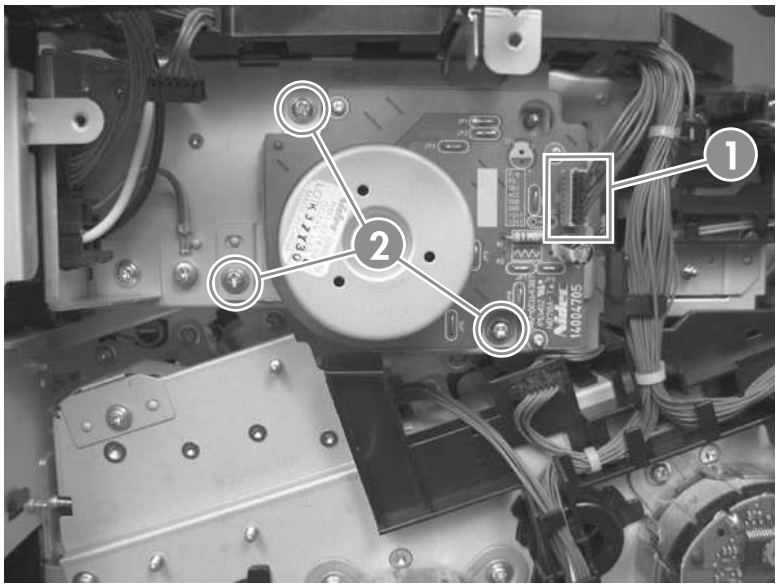
- Rear top cover. See Rear top cover on page 127.
- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- DC controller PCA. See DC controller PCA and tray on page 160.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply upper. See High voltage power supply upper (HVPS-T) on page 201.

**NOTE:** The terms fusing and fixing are synonymous.

## Remove the fuser motor

Disconnect one connector (callout 1), remove three screws (callout 2), and then remove the motor.

**Figure 2-198** Remove the fuser motor



## Main drive assembly

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter. See Formatter PCA on page 81.
- Fuser. See Fuser on page 87.
- Secondary transfer assembly. See Secondary transfer assembly on page 96.
- Intermediate transfer belt (ITB). See Intermediate transfer belt (ITB) on page 98.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Hardware integration pocket (HIP). See Hardware integration pocket (HIP) (dn and xh models only) on page 115.
- Control panel assembly. See Control panel assembly on page 116.
- Front top cover. See Front top cover on page 122.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

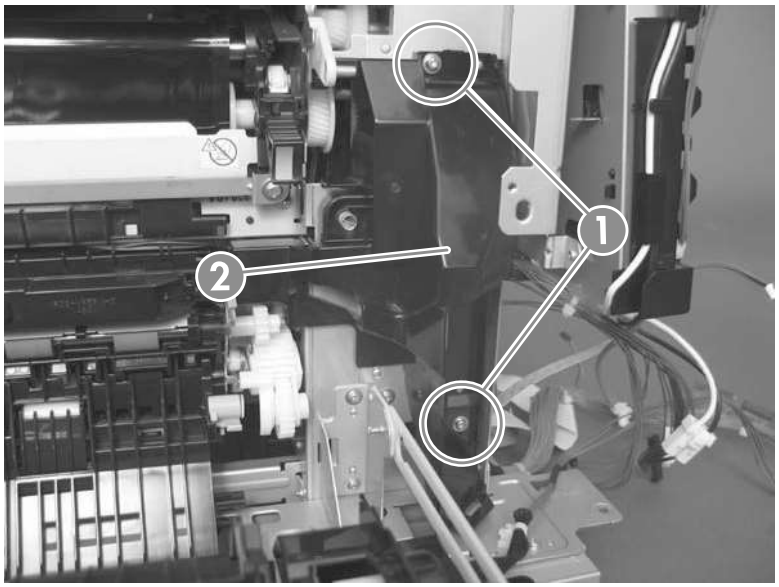
**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the main drive assembly.

- Rear top cover. See Rear top cover on page 127.
- Power supply fan and fan duct. See Power supply fan and fan duct on page 147.
- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- DC controller PCA. See DC controller PCA and tray on page 160.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply lower. See High voltage power supply lower (HVPS-D) on page 167.
- High voltage power supply upper. See High voltage power supply upper (HVPS-T) on page 201.

## Remove the main drive assembly

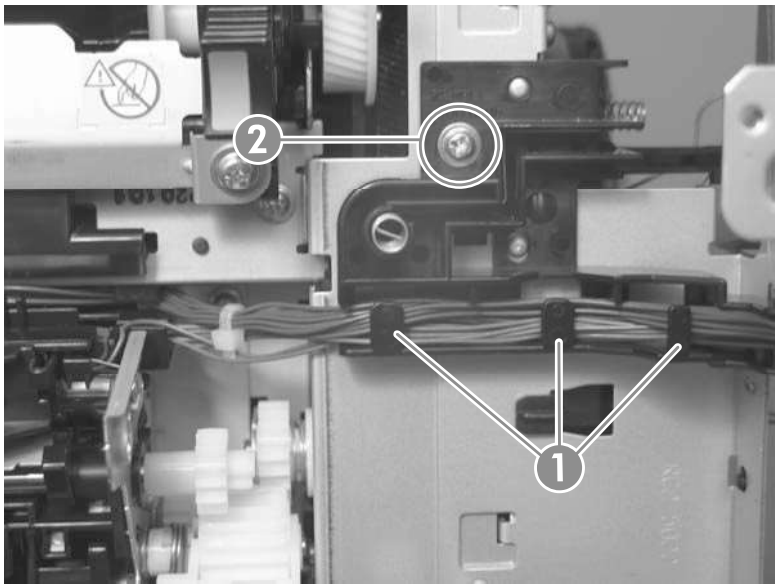
1. Remove two screws (callout 1), and then remove the cover (callout 2).

**Figure 2-199** Remove the main drive assembly (1 of 7)



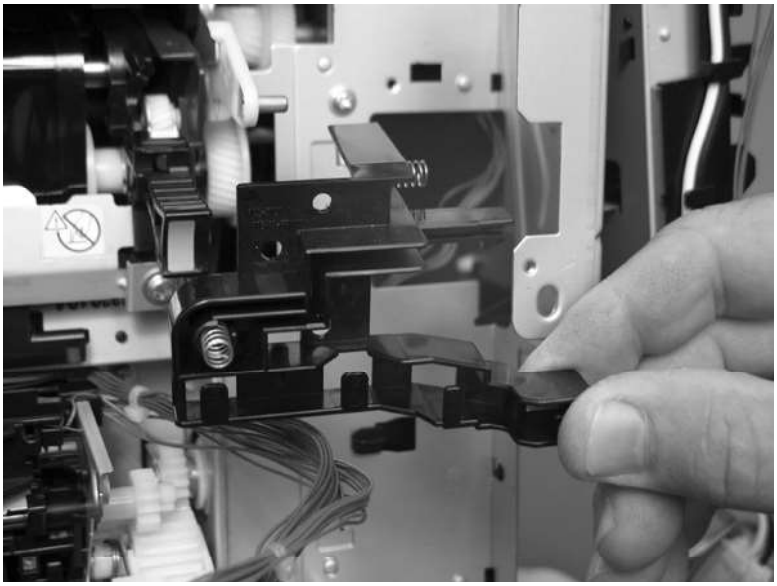

2. Release the wire harnesses from the guide (callout 1), and then remove one screw (callout 2).

**Figure 2-200** Remove the main drive assembly (2 of 7)



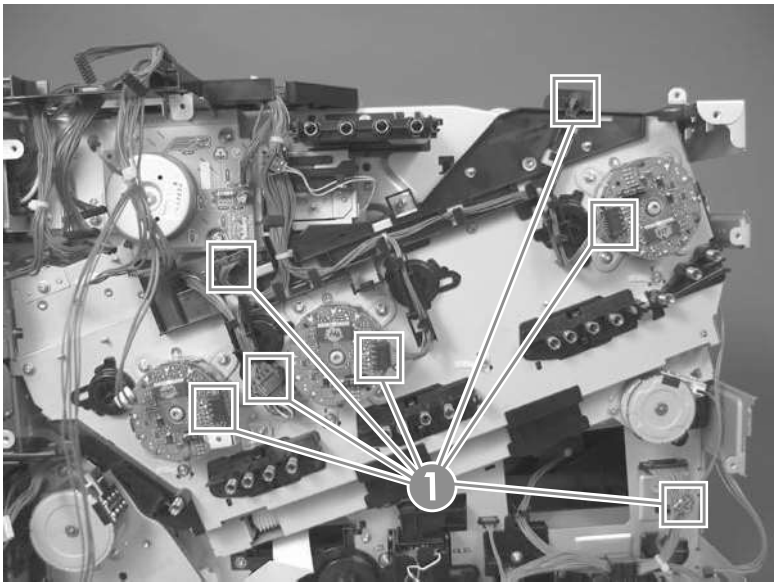
3. Lift the high voltage bracket up to release it, and then remove the bracket.

**Figure 2-201** Remove the main drive assembly (3 of 7)



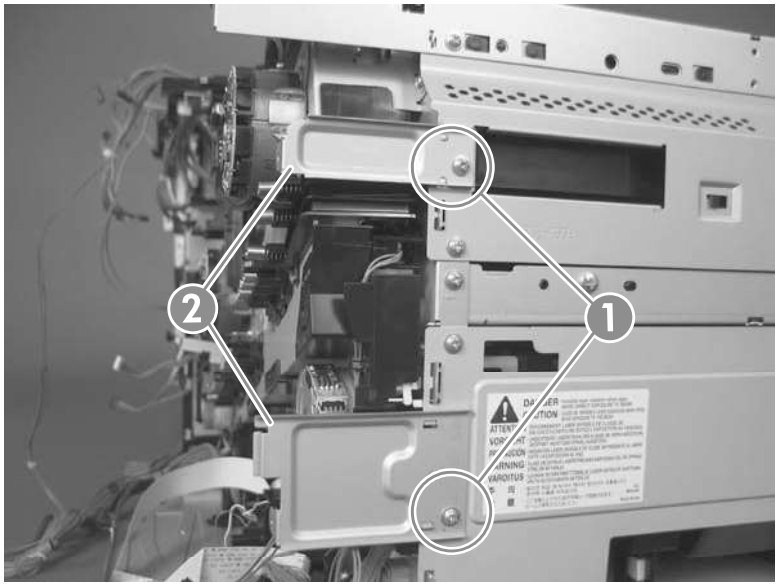
4. Disconnect seven connectors (callout 1), and then release the wire harnesses from the guides.

**Figure 2-202** Remove the main drive assembly (4 of 7)



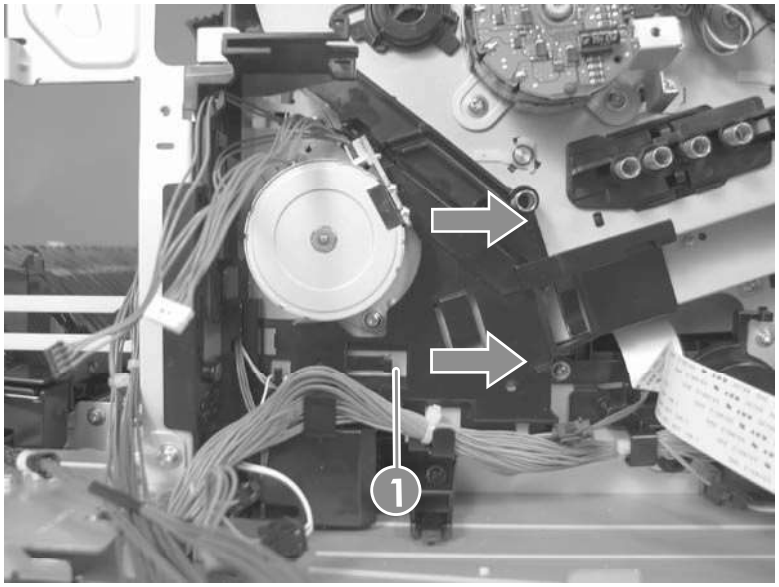
5. Remove two screws (callout 1), and then remove the sheet-metal plates (callout 2).

**Figure 2-203** Remove the main drive assembly (5 of 7)




6. Release the FFCs and lower wiring harness from the guide, and then release one tab (callout 1) and remove the guide.

**Figure 2-204** Remove the main drive assembly (6 of 7)

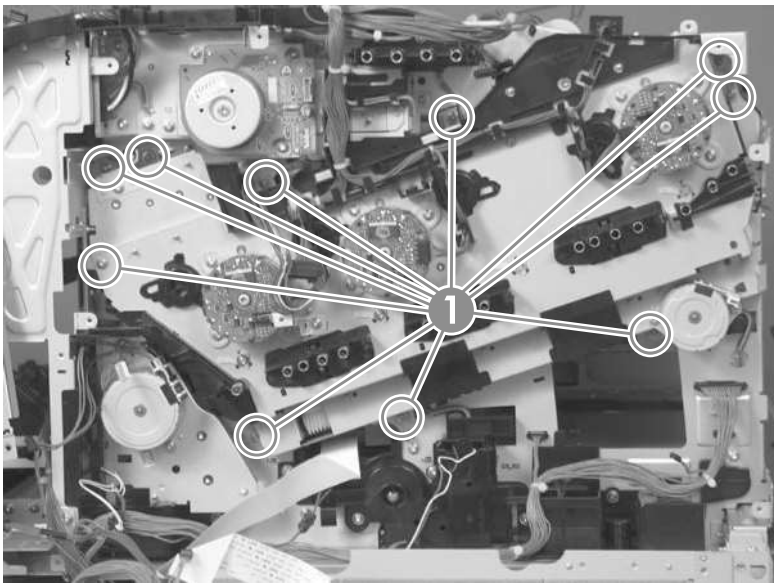


7. Remove ten screws (callout 1), and then carefully remove the assembly.

**CAUTION:** Be careful when you remove the assembly. The cams on the backside of the assembly can be dislodged. If the cams become dislodged, install them on the shafts as shown in Figure 2-207 Reinstall the main drive assembly (2 of 11) on page 217.

The black cam must be installed on the shaft furthest away from the developing disengagement motor. The white cams are interchangeable.

**Figure 2-205** Remove the main drive assembly (7 of 7)



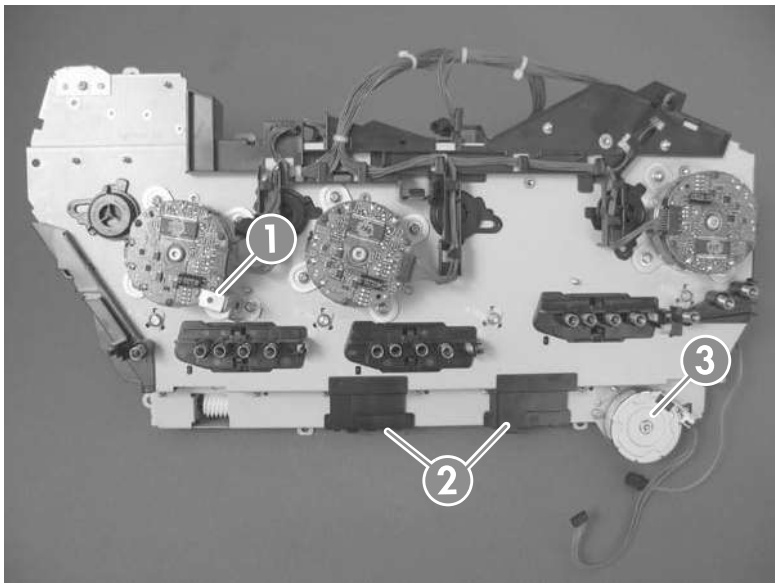
### Reinstall the main drive assembly

1. Remove the bracket (callout 1), two guides (callout 2), and the developing disengagement motor (callout 3).

   Install the bracket and guides on the replacement main drive assembly.

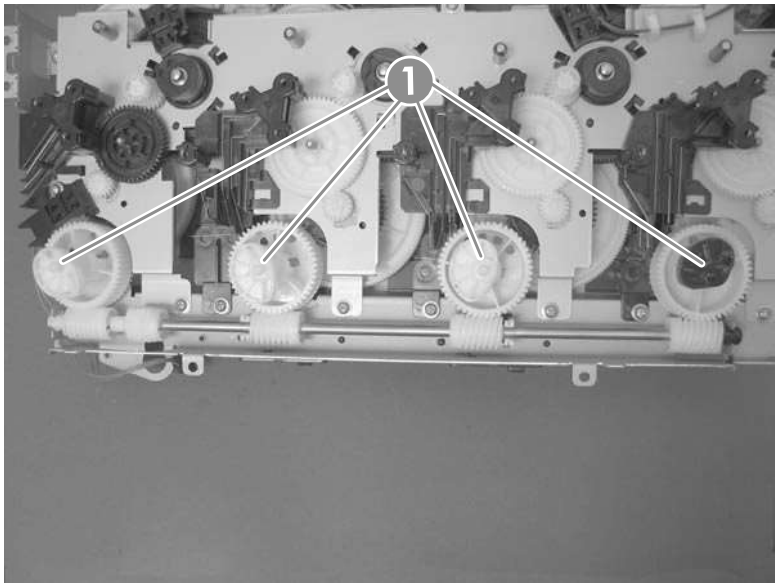
**NOTE:** Do not install the developing disengagement motor on the assembly (this motor must be removed from the assembly to align the main drive cams).

**Figure 2-206** Reinstall the main drive assembly (1 of 11)




2. Locate the cams (callout 1) on the back side of the assembly.

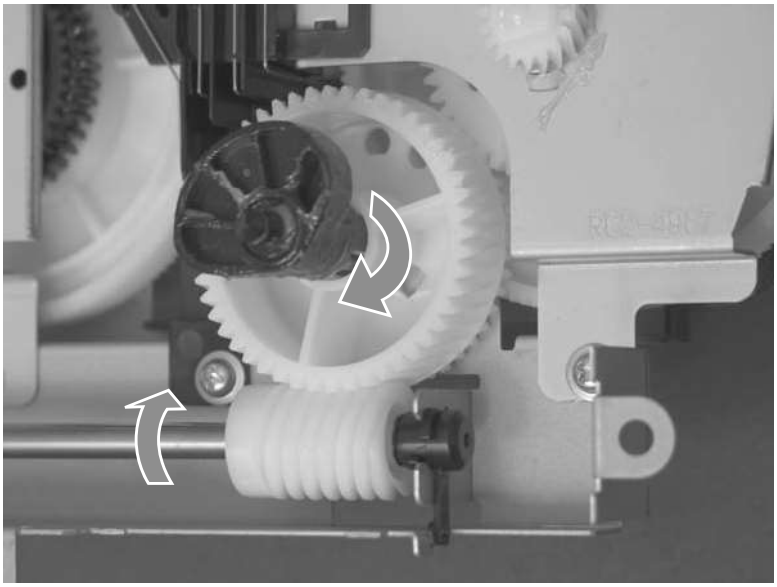
**Figure 2-207** Reinstall the main drive assembly (2 of 11)



3. Slowly rotate the shaft near the black cam.

**WARNING!** Do not touch the plastic gears or cams. You must not wipe away any of the grease that is applied to these components. Always rotate the gears and cams by rotating the metal drive shaft.

**Figure 2-208** Reinstall the main drive assembly (3 of 11)

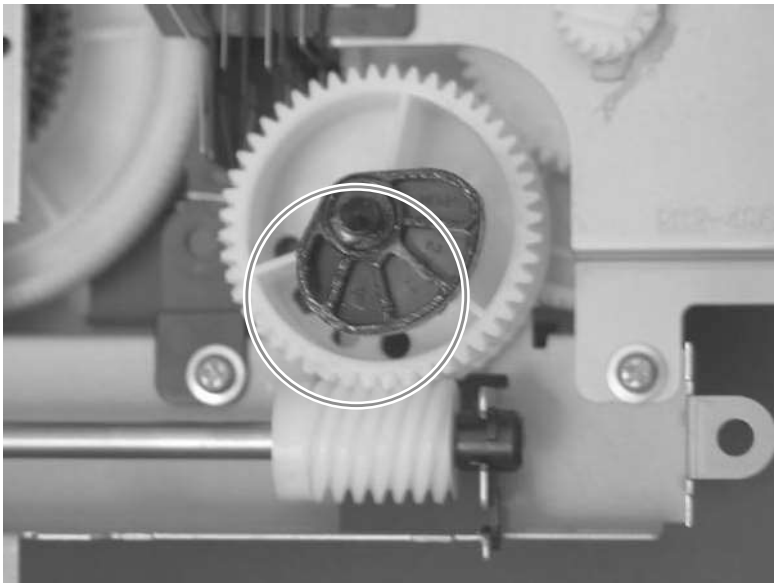


4. Continue to rotate the shaft until the holes in the black-cam gear align as shown below.

   When correctly aligned, the *bottom-most* hole in the gear is aligned with a hole in the sheet-metal chassis.

**NOTE:** The holes in the other cam gears have a different alignment. You must make sure that the holes in the black-cam gear are correctly aligned.

**Figure 2-209** Reinstall the main drive assembly (4 of 11)



5. Verify that the cams (callout 1) align correctly.

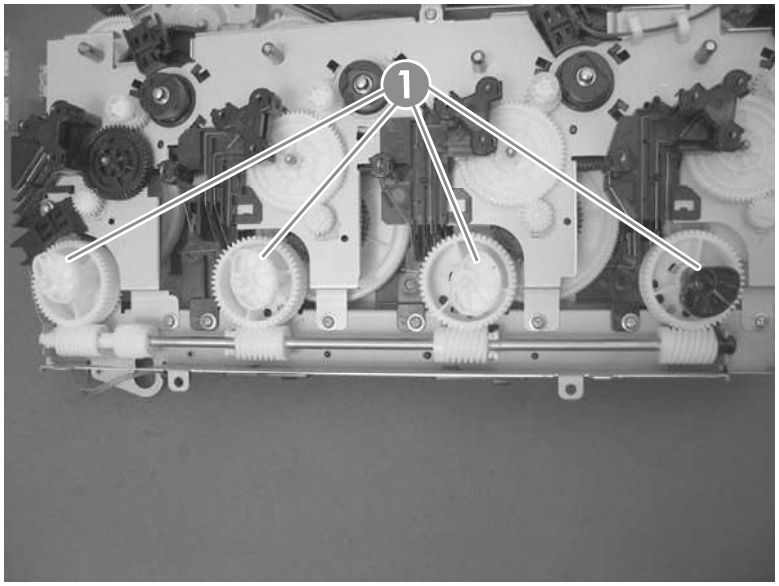
**TIP:** The second cam in from the right (the white cam to the left of the black cam), should have the *second* hole aligned with the hole in the sheet-metal chassis.

The third cam in from the right, should have the *third* hole aligned with the hole in the sheet-metal chassis.

The fourth cam in from the right (the cam nearest the developing disengagement motor), should have the *fourth* hole aligned with the hole in the sheet-metal chassis.

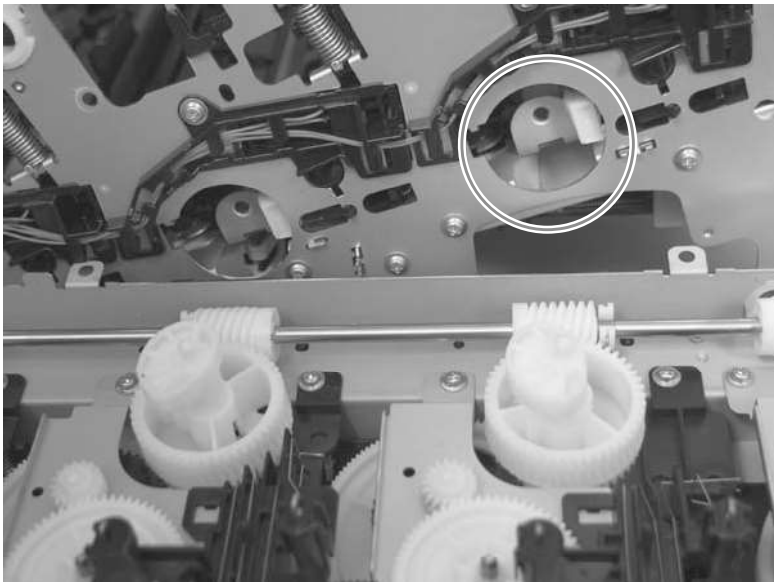
If the second, third, or fourth cams do not correctly align, do the following. Hold the long drive shaft, gently tilt the cam and gear away from the shaft to allow clearance to rotate the gear until the correct hole in the gear aligns with the hole in the chassis.

**Figure 2-210** Reinstall the main drive assembly (5 of 11)



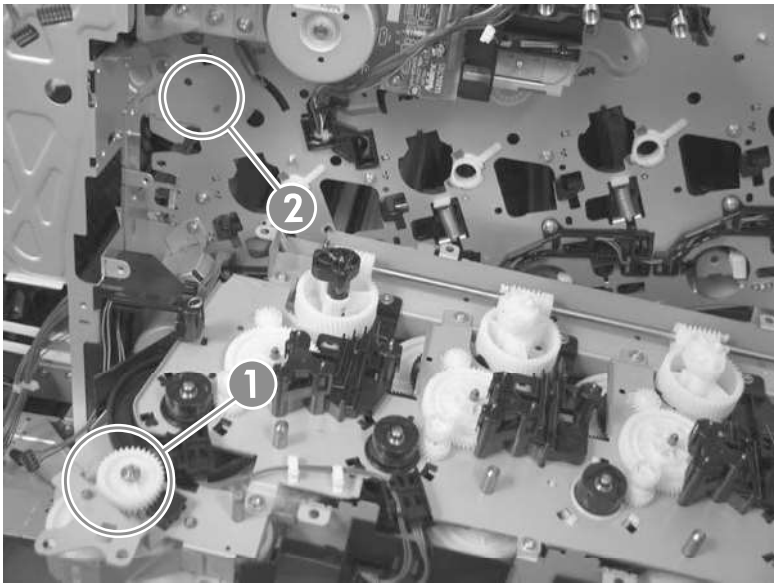
6. When the cams align correctly, they easily fit into the holes in the chassis.

**Figure 2-211** Reinstall the main drive assembly (6 of 11)



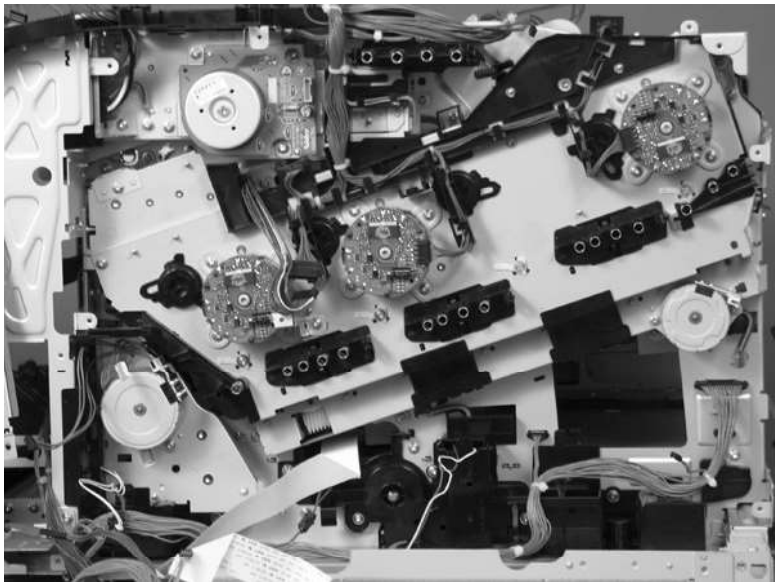
7. When the assembly is placed on the chassis, the pin on the swing gear and on the bracket (callout 1), must align with the holes in the chassis (callout 2).

**Figure 2-212** Reinstall the main drive assembly (7 of 11)



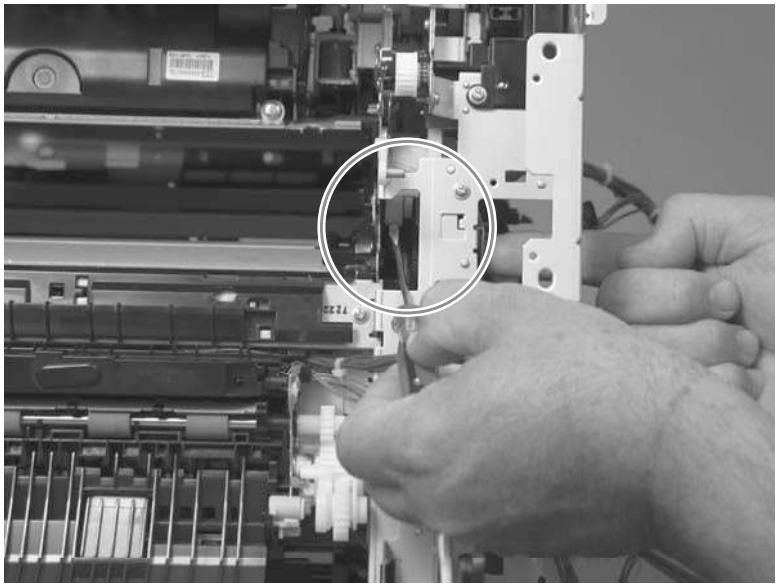
8. Position the assembly on the chassis.

**Figure 2-213** Reinstall the main drive assembly (8 of 11)



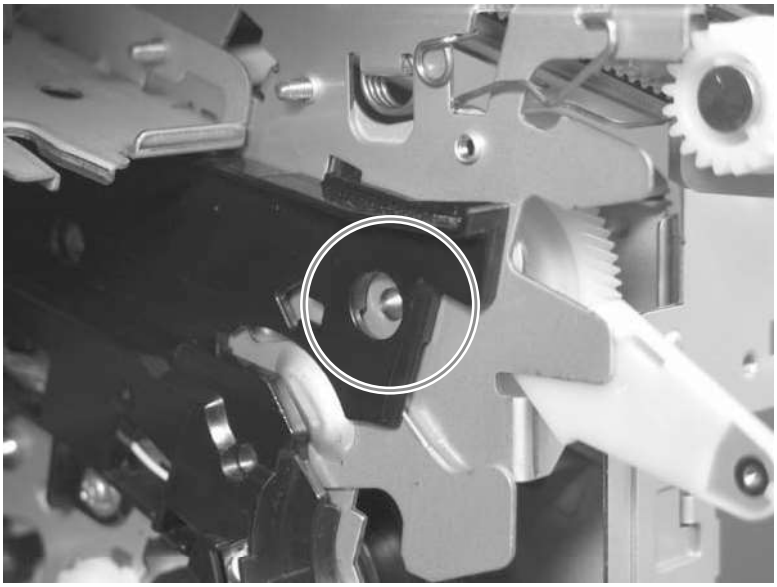
9. Use your finger to push in on the assembly, and use a small flat blade screwdriver to align the pin on the swing gear with the hole in the chassis.

**Figure 2-214** Reinstall the main drive assembly (9 of 11)



10. When the assembly is correctly installed against the chassis, the pin above the swing gear protrudes through the hole in the chassis.

**Figure 2-215** Reinstall the main drive assembly (10 of 11)

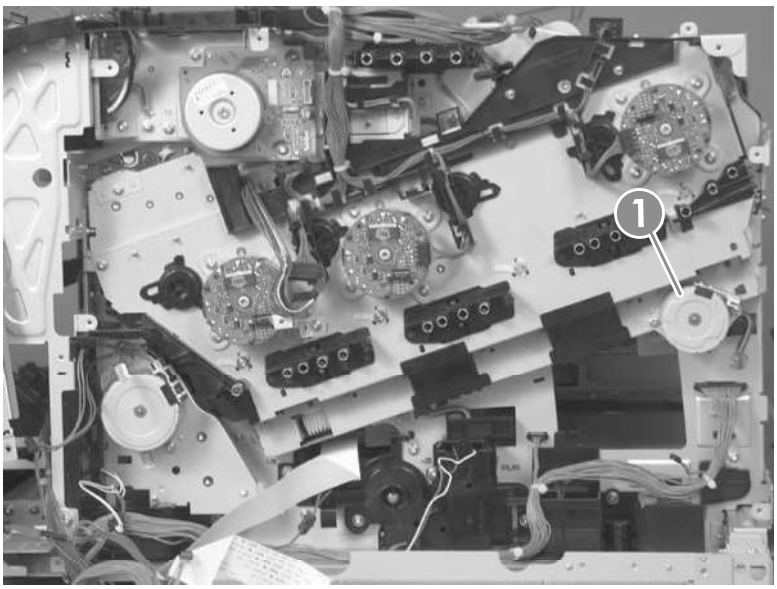


11. Install the main drive assembly mounting screws, and then reinstall the developing disengagement motor (callout 1).

**TIP:** After reassembling the product, use the **Diagnostics** menu to print a **Color Band Test** page.

If the test page shows one or more color planes are not printing (usually in the upper left corner of the page), the cam or cams for the missing color plane are not correctly aligned. Repeat the reinstall the main drive assembly procedure.

**Figure 2-216** Reinstall the main drive assembly (11 of 11)



## Fuser drive assembly

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter. See Formatter PCA on page 81.
- Fuser. See Fuser on page 87.
- Secondary transfer assembly. See Secondary transfer assembly on page 96.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Hardware integration pocket (HIP). See Hardware integration pocket (HIP) (dn and xh models only) on page 115.
- Control panel assembly. See Control panel assembly on page 116.
- Front top cover. See Front top cover on page 122.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

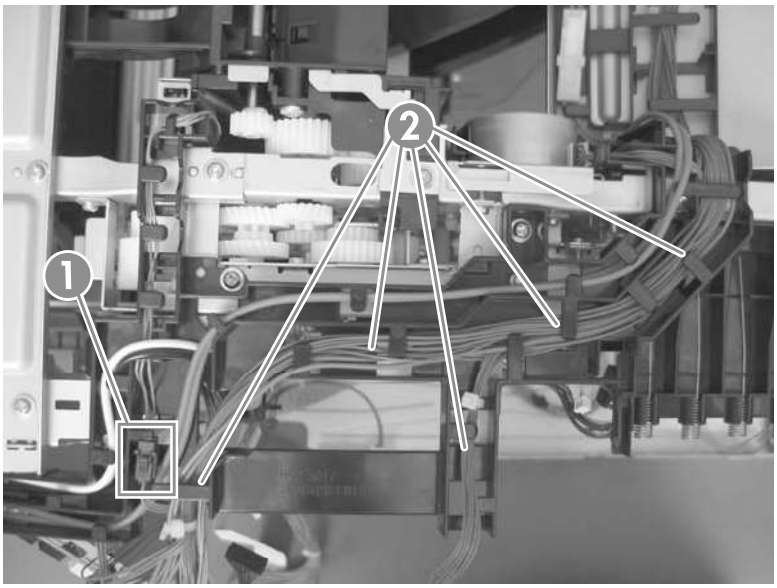
**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the fuser drive assembly.

- Rear top cover. See Rear top cover on page 127.
- Power supply fan and fan duct. See Power supply fan and fan duct on page 147.
- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- DC controller PCA. See DC controller PCA and tray on page 160.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply lower. See High voltage power supply lower (HVPS-D) on page 167.
- High voltage power supply upper. See High voltage power supply upper (HVPS-T) on page 201.
- Main drive assembly. See Main drive assembly on page 212.

## Remove the fuser drive assembly

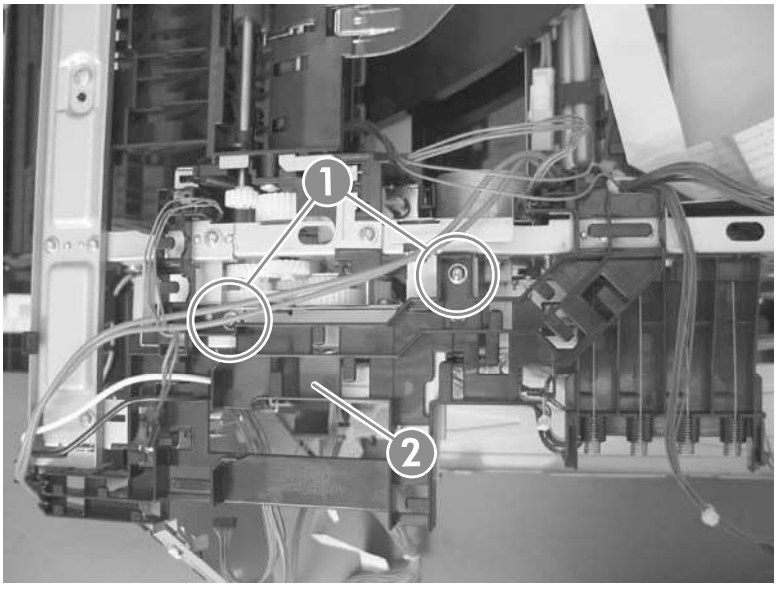
1. Disconnect one connector (callout 1), and then release the wire harnesses from the guide (callout 2).

**Figure 2-217** Remove the fuser drive assembly (1 of 6)



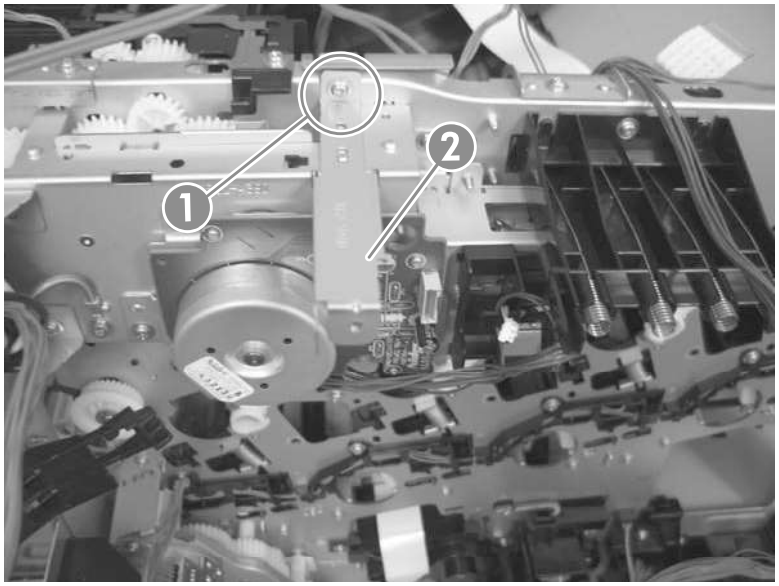

2. Remove two screws (callout 1), and then remove the guide (callout 2).

**Figure 2-218** Remove the fuser drive assembly (2 of 6)



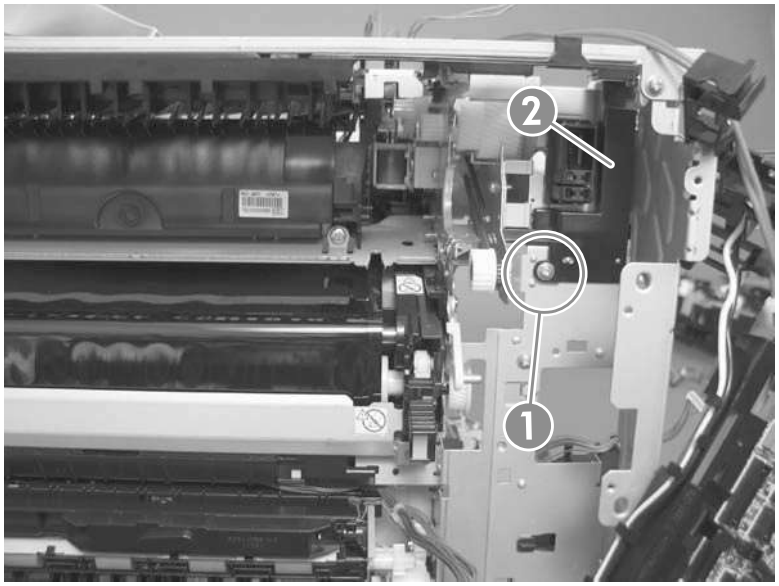
3. Remove one screw (callout 1), and then remove the sheet-metal plate (callout 2).

**Figure 2-219** Remove the fuser drive assembly (3 of 6)



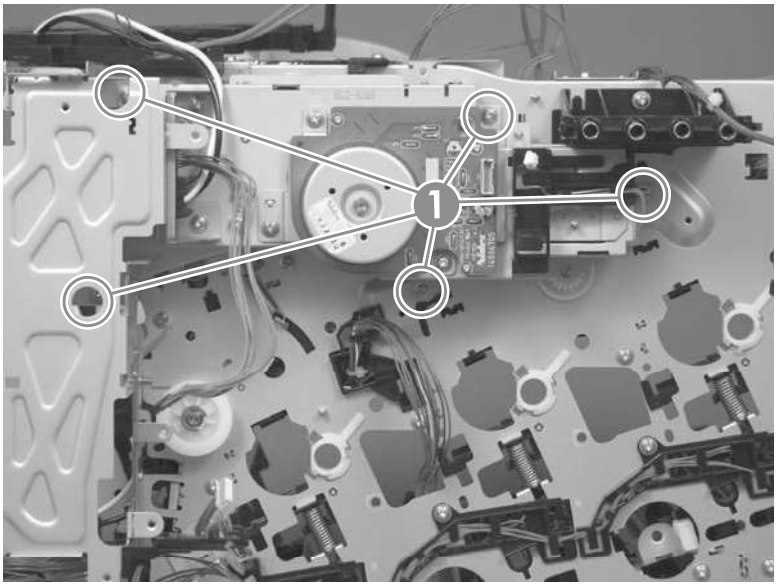

4. Remove one screw (callout 1), and then remove the cover (callout 2).

**Figure 2-220** Remove the fuser drive assembly (4 of 6)



5. Remove five screws (callout 1).

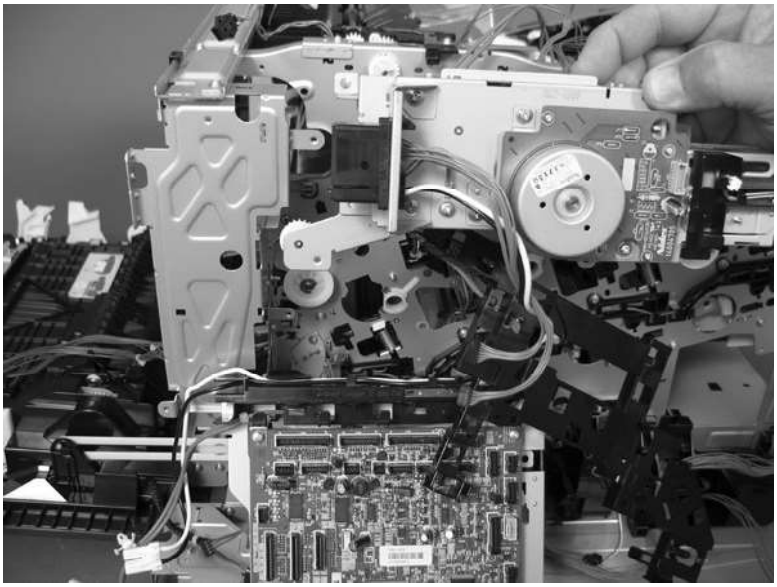
**Figure 2-221** Remove the fuser drive assembly (5 of 6)




6. Carefully remove the assembly.

**CAUTION:** A gear on the assembly is not captive. Do not lose the gear when you remove the assembly. If the gear becomes dislodged, see Reinstall the fuser drive assembly on page 227.

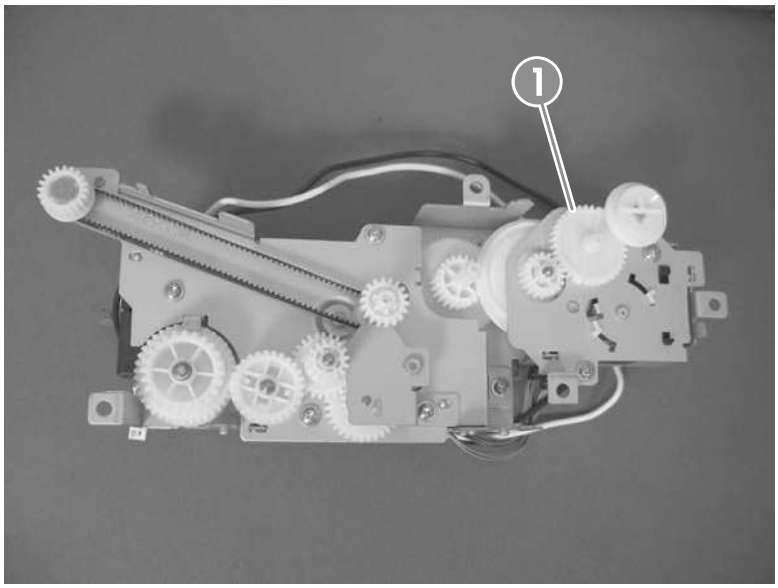
**Figure 2-222** Remove the fuser drive assembly (6 of 6)



### Reinstall the fuser drive assembly

If the gear (callout 1) is dislodged when the assembly is removed, use the figure below to correctly install it on the assembly.

**Figure 2-223** Reinstall the fuser drive assembly



## Delivery assembly

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter PCA. See Formatter PCA on page 81.
- Fuser. See Fuser on page 87.
- Secondary transfer assembly. See Secondary transfer assembly on page 96.
- Intermediate transfer belt (ITB). See Intermediate transfer belt (ITB) on page 98.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Hardware integration pocket (HIP). See Hardware integration pocket (HIP) (dn and xh models only) on page 115.
- Control panel assembly. See Control panel assembly on page 116.
- Front top cover. See Front top cover on page 122.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

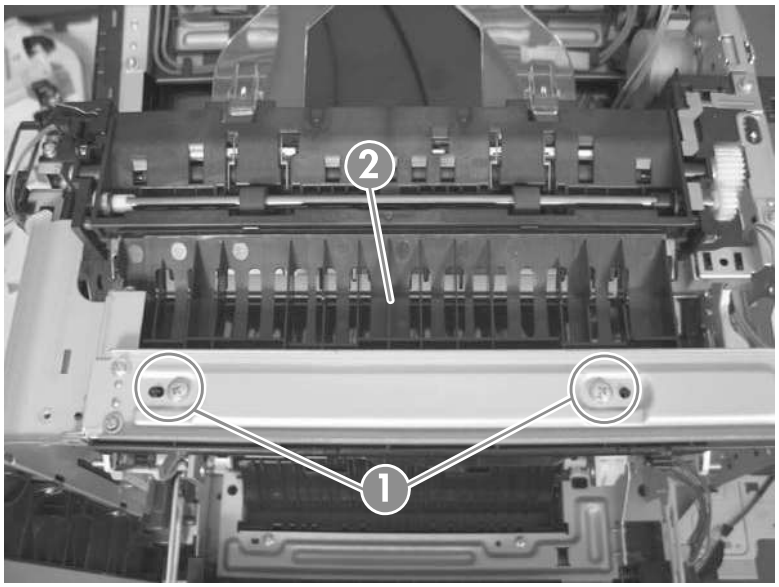
**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the delivery assembly.

- Rear top cover. See Rear top cover on page 127.
- Power supply fan and fan duct. See Power supply fan and fan duct on page 147.
- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply lower. See High voltage power supply lower (HVPS-D) on page 167.
- High voltage power supply upper. See High voltage power supply upper (HVPS-T) on page 201.
- Main drive assembly. See Main drive assembly on page 212.
- Fuser drive assembly. See Fuser drive assembly on page 223.

## Remove the delivery assembly

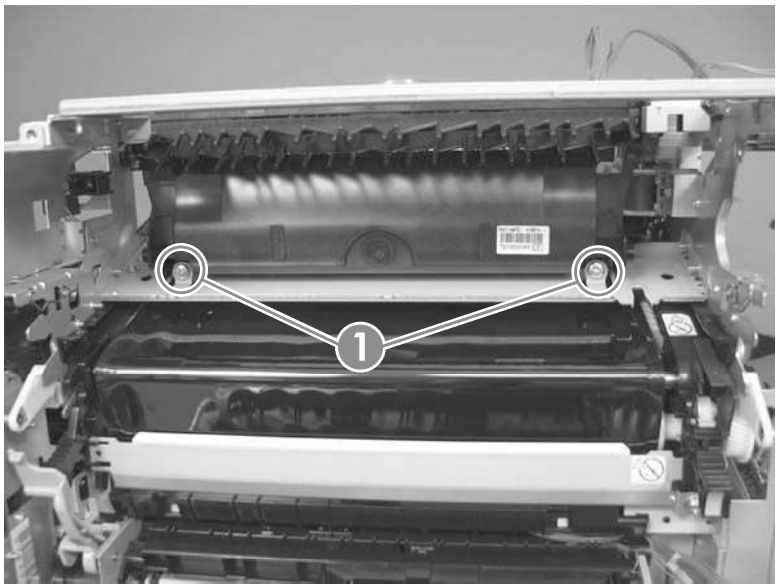
1. Remove two screws (callout 1), and then remove the guide (callout 2).

**Figure 2-224** Remove the delivery assembly (1 of 5)



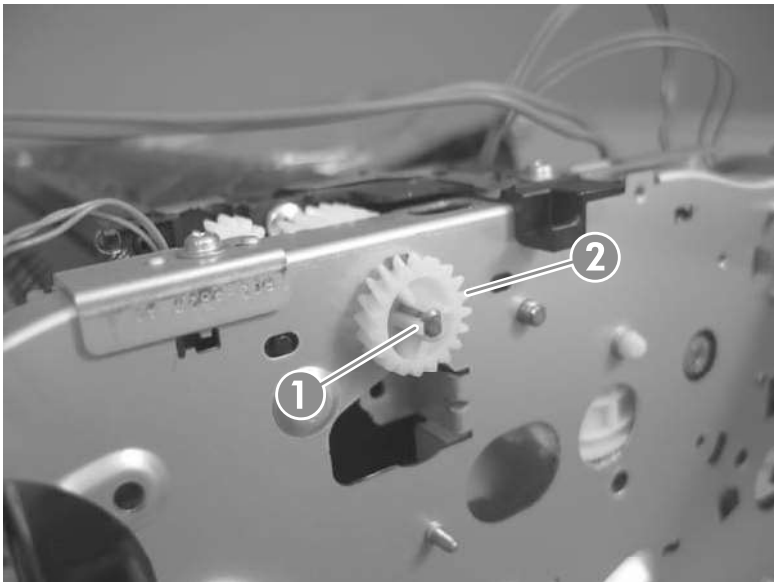

2. Remove two screws (callout 1).

**Figure 2-225** Remove the delivery assembly (2 of 5)



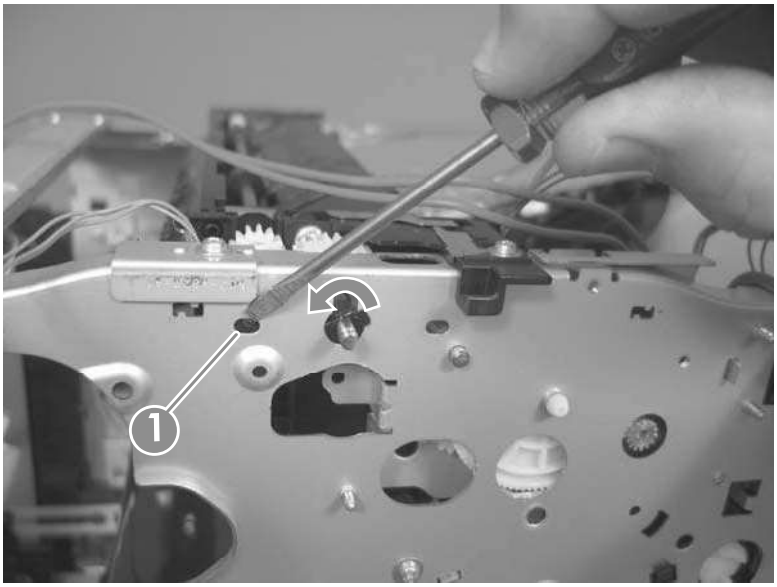
3. Release one tab (callout 1), and then remove the gear (callout 2).

**Figure 2-226** Remove the delivery assembly (3 of 5)




4. Release one tab (callout 1), and then rotate the locking clip until the tab on the clip aligns with the slot in the chassis.

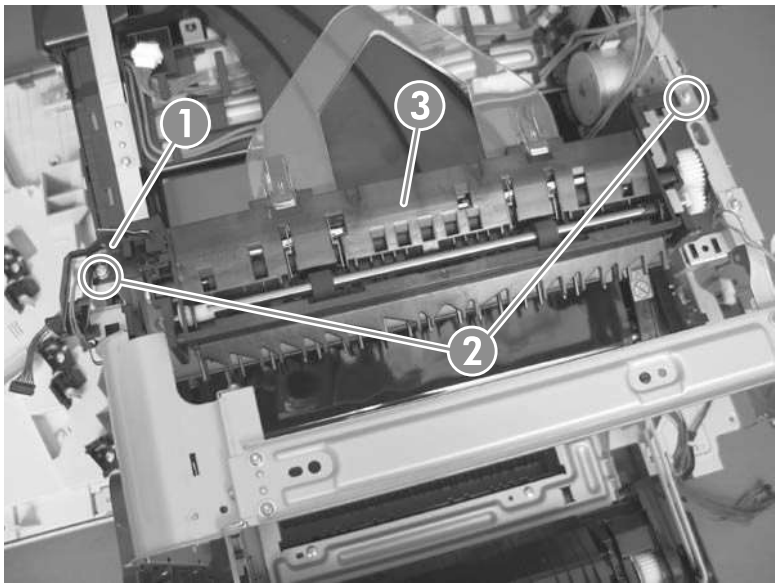
**Figure 2-227** Remove the delivery assembly (4 of 5)



5. Disconnect one connector (callout 1), remove two screws (callout 2), and then carefully lift the assembly (callout 3) off of the product to remove it.

**CAUTION:** A solenoid arm (duplex models only; on the right side) and a spring (on the left side) on the assembly are not captive. Do not lose the solenoid arm or spring when you remove the assembly. If the solenoid arm or spring become dislodged, see Reinstall the delivery assembly on page 232.

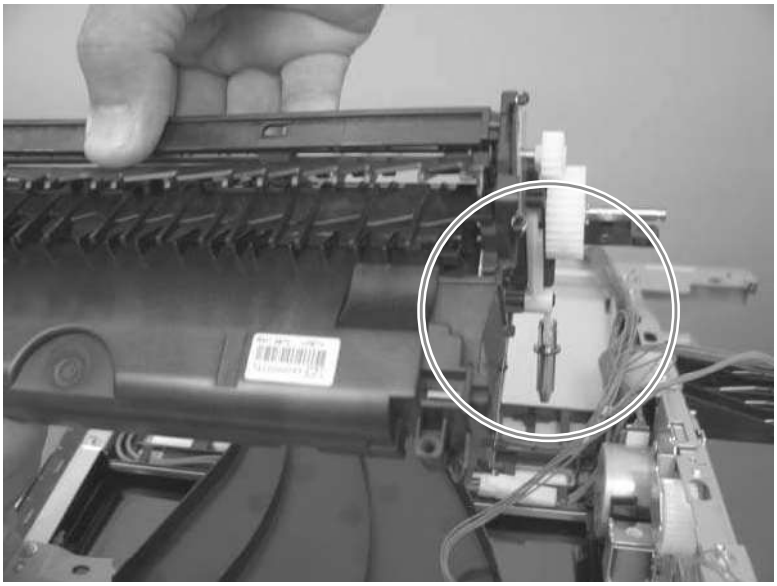
**Figure 2-228** Remove the delivery assembly (5 of 5)



### Reinstall the delivery assembly

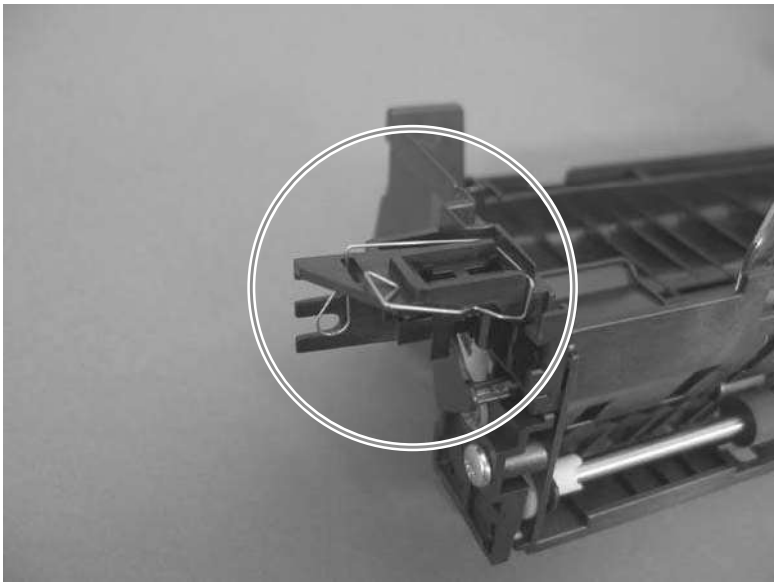
1. **Duplex models only**: Make sure that the solenoid arm is correctly installed on the assembly.

**Figure 2-229** Reinstall the delivery assembly (1 of 2)



2. Make sure that the spring is correctly installed on the assembly.

**Figure 2-230** Reinstall the delivery assembly (2 of 2)



## Duplex drive assembly

**Before proceeding, remove the following components:**

- Toner collection unit. See Toner collection unit on page 79.
- Formatter PCA. See Formatter PCA on page 81.
- Fuser. See Fuser on page 87.
- Secondary transfer assembly. See Secondary transfer assembly on page 96.
- Intermediate transfer belt (ITB). See Intermediate transfer belt (ITB) on page 98.
- Right rear cover. See Right rear cover on page 109.
- Left cover. See Left cover on page 111.
- Hardware integration pocket (HIP). See Hardware integration pocket (HIP) (dn and xh models only) on page 115.
- Control panel assembly. See Control panel assembly on page 116.
- Front top cover. See Front top cover on page 122.
- Rear cover and upper rear cover. See Rear cover and upper rear cover on page 124.

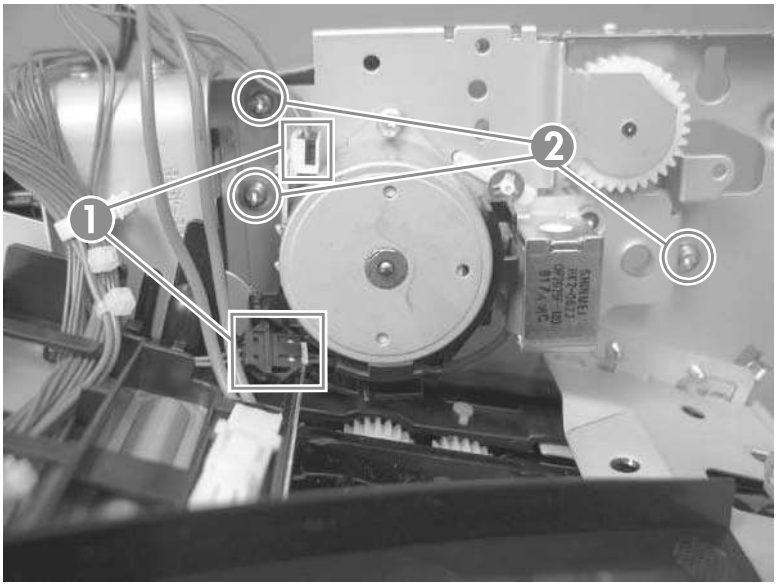
**NOTE:** It is not necessary to separate the upper rear cover from the rear cover to remove the duplex drive assembly.

- Rear top cover. See Rear top cover on page 127.
- Power supply fan and fan duct. See Power supply fan and fan duct on page 147.
- Interconnect board (ICB). See Interconnect board (ICB) on page 158.
- Low voltage power supply. See Low voltage power supply on page 163.
- High voltage power supply lower. See High voltage power supply lower (HVPS-D) on page 167.
- High voltage power supply upper. See High voltage power supply upper (HVPS-T) on page 201.
- Main drive assembly. See Main drive assembly on page 212.
- Fuser drive assembly. See Fuser drive assembly on page 223.
- Delivery assembly. See Delivery assembly on page 228.

## Remove the duplex drive assembly

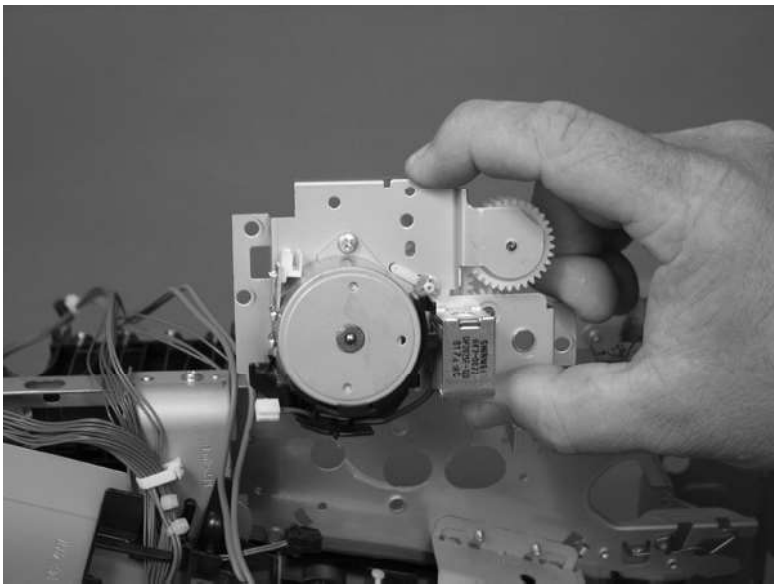
1. Disconnect two connectors (callout 1), and then remove three screws (callout 2).

**Figure 2-231** Remove the duplex drive assembly (1 of 2)




2. Remove the assembly.

**Figure 2-232** Remove the duplex drive assembly (2 of 2)



# Optional paper feeder assembly (Tray 3)

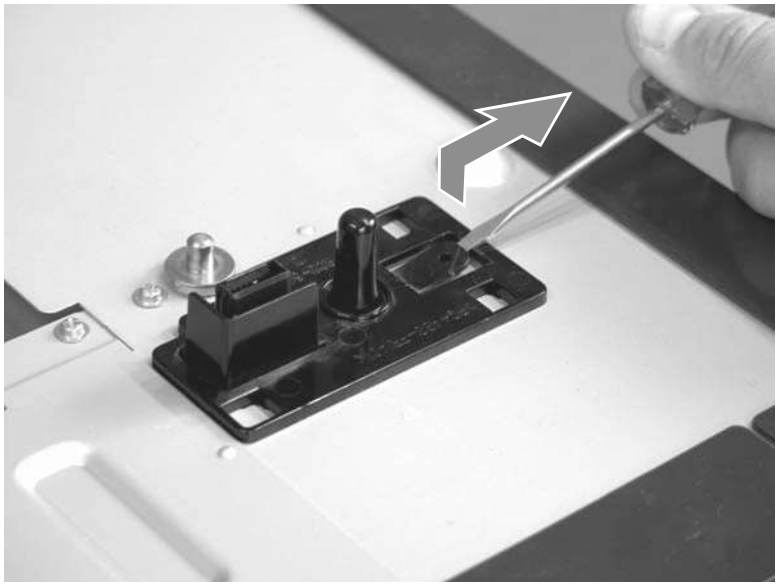
**NOTE:** For information about removing the Tray 3 pickup roller, see Pickup and feed rollers (Tray 3) on page 91.

For information about removing the Tray 3 cassette, see Tray cassette on page 86.

For information about removing the right door (optional paper feeder), see Right door (optional paper feeder) on page 100.

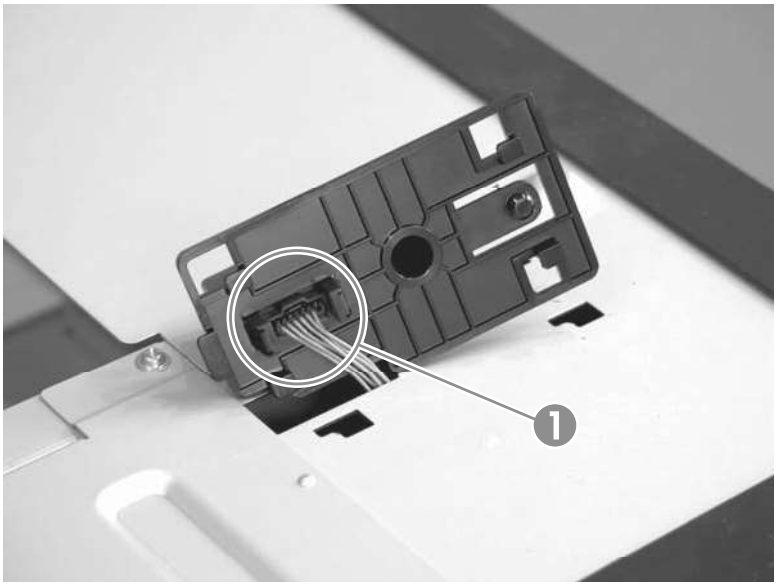
## Drawer connector

1. With a small screwdriver, lift one tab and then slide the drawer connector to release.



2. Remove one connector (callout 1).

**Figure 2-233** Remove the drawer connector; optional paper feeder



# 3 Solve problems

To use the information in this chapter, you should have a basic understanding of the HP LaserJet printing process. Explanations of each mechanical assembly, the printer systems, and the basic theory of operation are contained in the English-language service manual. Do not perform any of these troubleshooting processes unless you understand the function of each product component.

**NOTE:** To perform diagnostic and configuration procedures (for example, resetting page counts) for the HP LaserJet Enterprise 500 color M551, you must install the CP1210 Service Config Tool (available at your HP authorized repair center).

# Solve problems checklist

If the product is not responding correctly, complete the steps in the following checklist, in order. If the product does not pass a step, follow the corresponding troubleshooting suggestions. If a step resolves the problem, you can stop without performing the other steps on the checklist.

1. Make sure one of the following messages display on the control panel: **Ready**, **Paused**, or **Sleep mode on**. If no lights are on or the display does not say **Ready**, **Paused**, or **Sleep mode on**, use the Power-on checks section in the product service manual to troubleshoot the problem.
2. Check the cables.
   a. Check the cable connection between the product and the computer or network port. Make sure that the connection is secure.
   b. Make sure that the cable itself is not faulty by using a different cable, if possible.
   c. Check the network connection.
3. Ensure that the print media that you are using meets specifications.
4. Print a configuration page. If the product is connected to a network, an HP Jetdirect page also prints.
   a. If the pages do not print, check that at least one tray contains print media.
   b. If the page jams in the product, see the jams section.
5. If the configuration page prints, check the following items.
   a. If the page prints correctly, the product hardware is working. The problem is with the computer you are using, with the printer driver, or with the program.
   b. If the page does not print correctly, the problem is with the product hardware.
6. Does the image quality meet the user's requirements? If yes, see step 7. If no, check the following items:
   - Print the print-quality (PQ) troubleshooting pages.
   - Solve the print-quality problems, and then see step 7.
7. At the computer, check to see if the print queue is stopped, paused, or set to print offline.

   **Windows**: Click **Start**, click **Settings**, and then click **Printers** or **Printers and Faxes**. Double-click **HP LaserJet Enterprise 500 color M551**.

   **-or-**

   **Mac OS X**: Open **Printer Setup Utility**, and then double-click the line for the **HP LaserJet Enterprise 500 color M551**.

8. Verify that you have installed the HP LaserJet Enterprise 500 color M551 printer driver. Check the program to make sure that you are using the HP LaserJet Enterprise 500 color M551 printer driver.

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

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

   **b.** If you connected the product to the network, connect the product directly to a computer with a USB cable. Redirect the product to the correct port, or reinstall the software, selecting the new connection type that you are using.

# Menu map

### Print the menu maps

1. At the control panel, press the Home button.
2. Open the following menus:
   - **Administration**
   - **Reports**
   - **Configuration/Status Pages**
3. Use the Down arrow ▼ to highlight the **Administration Menu Map** item, and then press the OK button to select it.
4. Use the Up arrow ▲ button to highlight the **Print** item, and then press the OK button.
5. Press the Home button or back arrow button to exit the menus.

# Current settings pages

Printing the current settings pages provides a map of the user configurable settings that might be helpful in the troubleshooting process.

### Print the current settings pages

1. At the control panel, press the Home button.
2. Open the following menus:
   - **Administration**
   - **Reports**
   - **Configuration/Status Pages**
3. Use the Down arrow ▼ button to highlight the **Current Settings Page** item, and then press the OK button to select it.
4. Use the Up arrow ▲ button to highlight the **Print** item, and then press the OK button.
5. Press the Home button or back arrow button to exit the menus.

# Preboot menu options

If an error occurs while the product is booting, an error message appears on the control-panel display. The user can access the Preboot menus. The Error menu item will not be seen if an error did not occur.

**CAUTION:** The **Clean Disk** option performs a disk initialization for the entire disk. The operating system, firmware files, and third party files (among other files) will be completely lost. HP does not recommend this action.

### Access the Preboot menu

1. Turn the product on.
2. Press the **Stop** ⊗ button when the **Ready**, **Data**, and **Attention** LEDs are illuminated solid.

   **NOTE:** The window for accessing the Preboot menu, while the **Ready**, **Data**, and **Attention** LEDs are illuminated solid, is around one second. You can press the ⊗ button repeatedly while the product is starting up to make you sure you gain access to the Preboot menu.
3. Use the Down arrow ▼ button to navigate the **Preboot** menu options.
4. Press the OK button to select a menu item.

### Cold reset using the Preboot menu

1. Turn the product on.
2. Press the **Stop** ⊗ button when the Ready, Data, and Attention LEDs are illuminated solid.
3. Use the **Down** arrow ▼ button to highlight **Administrator**, and then press the OK button.
4. Scroll to the **Startup Options** item, and then press the OK button.
5. Scroll to the **Cold Reset** item, and then press the OK button.
6. Press the back arrow ⮌ button twice to highlight **Continue**, and then press the OK button.

   **NOTE:** The product will initialize.

# Troubleshooting process

## Determine the problem source

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

- Use the troubleshooting flowchart to pinpoint the root cause of hardware malfunctions. The flowchart guides you to the section of this chapter that contains steps for correcting the malfunction.

Before beginning any troubleshooting procedure, check the following issues:

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

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

## Troubleshooting flowchart

This flowchart highlights the general processes that you can follow to quickly isolate and solve product hardware problems.

Each row depicts a major troubleshooting step. A "yes" answer to a question allows you to proceed to the next major step. A "no" answer indicates that more testing is needed. Go to the appropriate section in this chapter, and follow the instructions there. After completing the instructions, go to the next major step in this troubleshooting flowchart.

**Table 3-1 Troubleshooting flowchart**

| | | | |
|---|---|---|---|
| **1**<br>**Power on** | Is the product on and does a readable message display? | | Follow the power-on troubleshooting checks. See Power subsystem on page 244.<br>After the control panel display is functional, see step 2. |
| | Yes ↓ | No → | |
| **2**<br>**Control panel messages** | Does the message **Ready** display on the control panel? | | After the errors have been corrected, go to step 3. |
| | Yes ↓ | No → | |
| **3**<br>**Event log** | Open the **Troubleshooting** menu and print an event log to see the history of errors with this product.<br>Does the event log print? | | If the event log does not print, check for error messages.<br>If paper jams inside the product, see the jams section of the product service manual.<br>If error messages display on the control panel when you try to print an event log, see the control panel message section of the service manual.<br>After successfully printing and evaluating the event log, see step 4. |
| | Yes ↓ | No → | |

**Table 3-1 Troubleshooting flowchart (continued)**

| | | | |
|---|---|---|---|
| **4**<br><br>**Information pages** | Open the **Reports** menu and print the configuration pages to verify that all the accessories are installed.<br><br>Are all the accessories installed? | | If accessories that are installed are not listed on the configuration page, remove the accessory and reinstall it.<br><br>After evaluating the configuration pages, see step 5. |
| | Yes ↓ | No → | |
| **5**<br><br>**Image quality** | Does the print quality meet the customer's requirements? | | Compare the images with the sample defects in the image defect tables. See the images defects table in the product service manual.<br><br>After the print quality is acceptable, see step 6. |
| | Yes ↓ | No → | |
| **6**<br><br>**Interface** | Can the customer print successfully from the host computer? | | Verify that all I/O cables are connected correctly and that a valid IP address is listed on the Jetdirect configuration page.<br><br>If error messages display on the control panel when you try to print an event log, see the control panel message section of the service manual.<br><br>When the customer can print from the host computer, this is the end of the troubleshooting process. |
| | Yes. This is the end of the troubleshooting process. | No → | |

# Power subsystem

## Power-on checks

The basic product functions should start up when the product is plugged into an electrical outlet and the power switch is pushed to the *on* position. If the product does not start, use the information in this section to isolate and solve the problem.

### Power-on troubleshooting overview

Turn on the product power. If the control panel display remains blank, random patterns display, or asterisks remain on the control panel display, perform power-on checks to find the cause of the problem.

During normal operation, the main cooling fan begins to spin briefly after the product power is turned on. Place your hand over the holes in the left-side cover, near the formatter. If the fan is operating, you will feel air passing out of the product. You can also lean close to the product and hear the fan operating. You can also place your hand over the hole in the right-rear lower corner. If the fan is operating, you should feel air being drawn into the product. When this fan is operational, the DC side of the power supply is functioning correctly.

After the fan is operating, the main motor turns on (unless the right or front cover is open, a jam condition is sensed, or the paper-path sensors are damaged). You might be able to visually and audibly determine if the main motor is turned on.

If the fan and main motor are operating correctly, the next troubleshooting step is to isolate print engine, formatter, and control panel problems. Perform an engine test. If the formatter is damaged, it might interfere with the engine test. If the engine-test page does not print, try removing the formatter

and then performing the engine test again. If the engine test is then successful, the problem is almost certainly with the formatter, the control panel, or the cable that connects them.

If the control panel is blank when you turn on the product, check the following items.

1. Make sure that the product is plugged directly into an active electrical outlet (not a power strip) that delivers the correct voltage.
2. Make sure that the power switch is in the *on* position.
3. Make sure that the fan runs briefly, which indicates that the power supply is operational.
4. Make sure that the control panel display wire harness is connected.
5. Make sure that the formatter is seated and operating correctly. Turn off the product and remove the formatter. Reinstall the formatter, and then verify that the heartbeat LED is flashing.
6. Remove any external solutions, and then try to turn the product on again.

**NOTE:** If the control panel display is blank, but the main cooling fan runs briefly after the product power is turned on, try printing an engine-test page to determine whether the problem is with the control-panel display, formatter, or other product components.

# Tools for troubleshooting

The section describes the tools that can help you solve problems with your device.

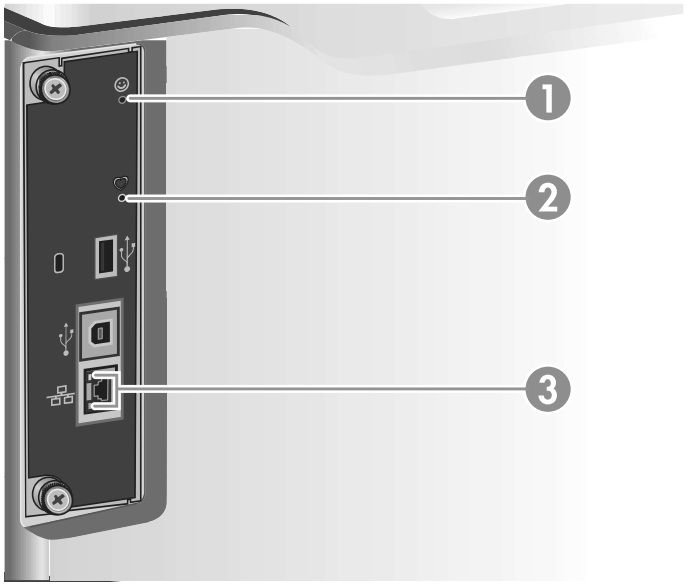
## Individual component diagnostics

### LED diagnostics

LED, engine, and individual diagnostics can identify and troubleshoot product problems.

#### Understand lights on the formatter

Three LEDs on the formatter indicate that the product is functioning correctly.




| | |
|---|---|
| 1 | Connectivity LED |
| 2 | Heartbeat LED |
| 3 | HP Jetdirect LEDs |

#### Heartbeat LED

The heartbeat LED provides information about product operation. If a product error occurs, the formatter displays a message on the control-panel display. However, error situations can occur causing the formatter to control panel communication to be interrupted.

**NOTE:** HP recommends fully troubleshooting the formatter and control panel before replacing either component. Use the hjeartbeat LED to troubleshoot formatter and control panel errors to avoid unnecessarily replacing these components.

### Formatter to control panel communication interruptions

- The firmware does not fully initialize and configure the control panel interface.
- The control panel is not functioning (either a failed component or power problem).
- Interface cabling between the formatter and control panel is damaged or disconnected.

**TIP:** If the heartbeat LED is illuminated—by an error condition or normal operation—the formatter is fully seated and the power is on. The pins for the LED circuit in the formatter connector are recessed so that this LED will not illuminate unless the formatter is fully seated.

The heartbeat LED operates according to the product state. When the product is initializing, see Heartbeat LED, product initialization on page 247. When the product is in **Ready** mode, see Connectivity LED, product operating on page 249.

### Heartbeat LED, product initialization

The following table describes the heartbeat LED operation while the product is executing the firmware boot process.

**NOTE:** When the initialization process completes the heartbeat LED should be illuminated solid green —the LED is off if the product is in **Sleep mode**.

If after initialization the heartbeat LED is not solid green, see Connectivity LED, product operating on page 249.

**Table 3-2 Heartbeat LED, product initialization**

| Product initializing state | Heartbeat LED, normal state | Heartbeat LED, error state |
|---|---|---|
| No power (power cord unplugged or power switch off) | Off | Not applicable |
| Power on (immediately after the power switch pressed) | Red, solid<br>• Duration should be 1 second or less | Red, solid<br>• Firmware error; problem finding hardware and booting the serial peripheral interface flash memory<br>◦ Boot process halted<br>Replace the formatter. |
| Serial peripheral interface (SPI) flash memory boot | Green, solid | Red, solid<br>• Firmware error; problem corrupt or missing SPI flash memory<br>◦ Boot process halted<br>Replace the formatter. |

**Table 3-2 Heartbeat LED, product initialization (continued)**

| Product initializing state | Heartbeat LED, normal state | Heartbeat LED, error state |
|---|---|---|
| HW checks on board DRAM | Green, solid | Red, solid<br>• Power on self check failure<br>◦ Boot process halted<br>Replace the formatter. |
| Control panel connection initializes | Green, solid<br>**NOTE:** Control panel communication successful. If an error occurs, a message should appear on the control-panel display. | Yellow, fast flash<br>• Formatter to control panel connection failed<br>◦ Boot process continues<br>Check the cables between the formatter and control panel for damage. Make sure that the cables are fully seated. |
| **Preboot** menu available (including diagnostics) | Green, solid | Red, solid<br>• Diagnostic failure<br>◦ Follow diagnostic instructions<br>Turn the power off, and then on again to restart the initialization process. |
| Accessing disk for firmware image | Green, solid<br>**NOTE:** If applicable, disk error messages appear on the control-panel display. | Yellow, fast flash<br>• Control panel not connected |
| Firmware boot | Green, solid<br>**NOTE:** If applicable, error messages appear on the control-panel display. | Yellow, fast flash<br>• Control panel not connected |
| Product operational | Green, heartbeat blink<br>**NOTE:** If applicable, error messages appear on the control-panel display. | Yellow, fast flash<br>• Control panel not connected |
| **49.XX.YY** error or initialization freezes | Not applicable | LED off<br>**NOTE:** An error message (for example, **49.XX.YY**) might appear on the control-panel display.<br>Eventually a formatter connection missing message will appear.<br>Turn the power off, and then on again to restart the initialization process.<br>If the error persists, perform a firmware upgrade. |

**Table 3-2 Heartbeat LED, product initialization (continued)**

| Product initializing state | Heartbeat LED, normal state | Heartbeat LED, error state |
|---|---|---|
| Control panel connection interrupted after the product is operational | Not applicable | Yellow, fast flash<br>• Control panel not connected |
| **Sleep mode** | Green, slow blink | Not applicable |
| Approaching **Sleep mode** | Green, slow blink | Not applicable |
| Wake up from **Sleep mode** | Follows initialization progression above. | Follows initialization progression above. |
| Approaching wake up from **Sleep mode** | Follows initialization progression above. | Follows initialization progression above. |

## Connectivity LED, product operating

The following table describes the connectivity operation when the product completes the firmware boot process and is in the **Ready** state.

**Table 3-3 Heartbeat LED, product operational**

| LED color | Description |
|---|---|
| Green | • Normal operation<br>◦ Formatter is operating normally<br>◦ Firmware is operating normally<br>◦ Control panel is connected |
| Yellow | • Formatter cannot connect to the control panel<br>◦ Check control panel connections<br>◦ Verify control panel functionality |

**Table 3-3 Heartbeat LED, product operational (continued)**

| LED color | Description |
|---|---|
| Red | • Formatter error or failure<br>◦ Serial peripheral interface (SPI) flash memory boot error<br>◦ Power on self test (formatter) failed<br>◦ Diagnostic (formatter) failed |
| Off | **TIP:** The connectivity LED is off if the power cord is unplugged, the product power switch is in the off position, or the product is in **Sleep mode**.<br>• Firmware or system freeze<br>◦ Check the control panel for an error message<br>◦ Control panel failure<br>**NOTE:** This condition is not usually caused by a formatter failure.<br>Turn the power off, and then on again.<br>If the error persists, perform a firmware upgrade. |

### Connectivity LED

The connectivity LED provides information about product operation. If a product error occurs, the formatter displays a message on the control-panel display. However, error situations can occur causing the formatter to control panel communication to be interrupted.

**NOTE:** HP recommends fully troubleshooting the formatter and control panel before replacing either component. Use the connectivity LED to troubleshoot formatter and control panel errors to avoid unnecessarily replacing these components.

### Formatter to control panel communication interruptions

- The firmware does not fully initialize and configure the control panel interface.
- The control panel is not functioning (either a failed component or power problem).
- Interface cabling between the formatter and control panel is damaged or disconnected.

**TIP:** If the connectivity LED is illuminated—by an error condition or normal operation—the formatter is fully seated and the power is on. The pins for the LED circuit in the formatter connector are recessed so that this LED will not illuminate unless the formatter is fully seated.

The connectivity LED operates according to the product state. When the product is initializing, see Connectivity LED, product initialization on page 250. When the product is in **Ready** mode, see Connectivity LED, product operating on page 252.

### Connectivity LED, product initialization

The following table describes the connectivity operation while the product is executing the firmware boot process.

**NOTE:** When the initialization process completes the connectivity LED should be illuminated solid green—the LED is off if the product is in **Sleep mode**

If after initialization the connectivity LED is not solid green, see Connectivity LED, product operating on page 252.

**Table 3-4 Connectivity LED, product initialization**

| Product initializing state | Connectivity LED, normal state | Connectivity LED, error state |
|---|---|---|
| No power (power cord unplugged or power button off) | Off | Not applicable |
| Power on (immediately after the power button pressed) | Red, solid<br>• Duration should be 1 second or less | Red, solid<br>• Firmware error; problem finding hardware and booting the serial peripheral interface flash memory<br>◦ Boot process halted<br>Replace the formatter. |
| Serial peripheral interface (SPI) flash memory boot | Green, solid | Red, solid<br>• Firmware error; problem corrupt or missing SPI flash memory<br>◦ Boot process halted<br>Replace the formatter. |
| HW checks on board DRAM | Green, solid | Red, solid<br>• Power on self check failure<br>◦ Boot process halted<br>Replace the formatter. |
| Control panel connection initializes | Green, solid<br>**NOTE:** Control panel communication successful. If an error occurs, a message should appear on the control-panel display. | Yellow, fast flash<br>• Formatter to control panel connection failed<br>◦ Boot process continues<br>Check the cables between the formatter and control panel for damage. Make sure that the cables are fully seated. |
| **Preboot** menu available (including diagnostics) | Green, solid | Red, solid<br>• Diagnostic failure<br>◦ Follow diagnostic instructions<br>Turn the power off, and then on again to restart the initialization process. |

**Table 3-4 Connectivity LED, product initialization (continued)**

| Product initializing state | Connectivity LED, normal state | Connectivity LED, error state |
|---|---|---|
| Accessing disk for firmware image | Green, solid<br><br>**NOTE:** If applicable, disk error messages appear on the control-panel display. | Yellow, fast flash<br><br>• Control panel not connected |
| Firmware boot | Green, solid<br><br>**NOTE:** If applicable, error messages appear on the control-panel display. | Yellow, fast flash<br><br>• Control panel not connected |
| Product operational | Green, heartbeat blink<br><br>**NOTE:** If applicable, error messages appear on the control-panel display. | Yellow, fast flash<br><br>• Control panel not connected |
| **49.XX.YY** error or initialization freezes | Not applicable | LED off<br><br>**NOTE:** An error message (for example, **49.XX.YY**) might appear on the control-panel display.<br><br>Eventually a formatter connection missing message will appear.<br><br>Turn the power off, and then on again to restart the initialization process.<br><br>If the error persists, perform a firmware upgrade. |
| Control panel connection interrupted after the product is operational | Not applicable | Yellow, fast flash<br><br>• Control panel not connected |
| **Sleep mode** | Green, slow blink | Not applicable |
| Approaching **Sleep mode** | Green, slow blink | Not applicable |
| Wake up from **Sleep mode** | Follows initialization progression above. | Follows initialization progression above. |
| Approaching wake up from **Sleep mode** | Follows initialization progression above. | Follows initialization progression above. |

### Connectivity LED, product operating

The following table describes the connectivity operation when the product completes the firmware boot process and is in the **Ready** state.

**Table 3-5 Connectivity LED, product operational**

| LED color | Description |
|---|---|
| Green | • Normal operation<br>◦ Formatter is operating normally<br>◦ Firmware is operating normally<br>◦ Control panel is connected |
| Yellow | • Formatter cannot connect to the control panel<br>◦ Check control panel connections<br>◦ Verify control panel functionality |
| Red | • Formatter error or failure<br>◦ Serial peripheral interface (SPI) flash memory boot error<br>◦ Power on self test (formatter) failed<br>◦ Diagnostic (formatter) failed |
| Off | **TIP:** The connectivity LED is off if the power cord is unplugged, the product power button is in the off position, or the product is in **Sleep mode**.<br>• Firmware or system freeze<br>◦ Check the control panel for an error message<br>◦ Control panel failure<br>**NOTE:** This condition is not usually caused by a formatter failure.<br>Turn the power off, and then on again.<br>If the error persists, perform a firmware upgrade. |

### HP Jetdirect LEDs

The embedded HP Jetdirect print server has two LEDs. The yellow LED indicates network activity, and the green LED indicates the link status. A blinking yellow LED indicates network traffic. If the green LED is off, a link has failed.

For link failures, check all the network cable connections. In addition, you can try to manually configure the link settings on the embedded print server by using the product control-panel menus.

1. Press the Home button.
2. Press the Down arrow ▼ button to highlight the **Administration** menu, and then press the OK button.
3. Press the Down arrow ▼ button to highlight the **Network Settings** menu, and then press the OK button.
4. Press the Down arrow ▼ button to highlight the **Jetdirect Menu** option, and then press the OK button.

5. Press the Down arrow ▼ button to highlight the **Link Speed** menu, and then press the OK button.
6. Select the appropriate link speed, and then press the OK button.

## Engine diagnostics

This section provides an overview of the engine diagnostics that are available in the HP LaserJet Enterprise 500 color M551 product. The product contains extensive internal diagnostics that help in troubleshooting print quality, paper path, noise, component, and timing issues.

### Defeating interlocks

Different tests can be used to isolate different types of issues. For component or noise isolation, you can run the diagnostic test when the front and right doors are open. To operate the product with the doors open, the door switch levers must be depressed to simulate a closed-door position.

⚠ **WARNING!** Be careful when performing printer diagnostics to avoid risk of injury. Only trained service personnel should open and run the diagnostics with the covers removed. Never touch any of the power supplies when the printer is turned on.

1. Open the right and front doors.

2. Locate the slots on the right and front of the product.

**Figure 3-1** Diagnostic test (1 of 3)

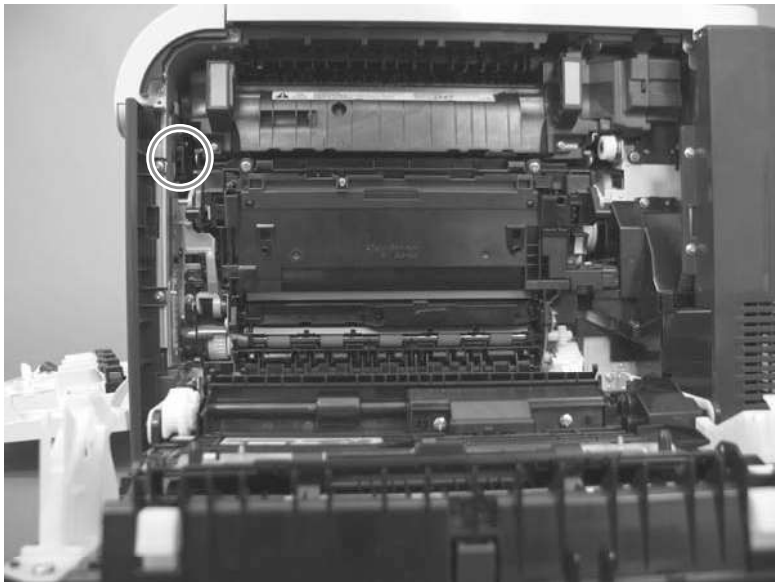


**Figure 3-2** Diagnostic test (2 of 3)

3. Insert a folded piece of paper into each slot at the same time until the product is in a **Ready** state.

**Figure 3-3** Diagnostic test (3 of 3)

### Disable cartridge check

Use this diagnostic test to print internal pages or send an external job to the product when one or more print cartridges are removed or exchanged. Consumable supply errors are ignored while the product is in this mode. When the product is in this mode, you can navigate the troubleshooting menus and print internal pages (the print quality pages will be the most useful). This test can be used isolate problems, such as noise, and to isolate print-quality problems that are related to individual print cartridges.

**NOTE:** Cartridges are not keyed and can be interchanged. An error will display on the control panel if a print cartridge is installed in the wrong position. The **Supplies** menu will explain which print cartridge is misplaced.

**NOTE:** Do not remove or exchange print cartridges until after you start the disable cartridge check diagnostic.

1. Press the Home button.
2. Open the following menus:
   - **Administration**
   - **Troubleshooting**
   - **Diagnostic Tests**
3. Press the Down arrow ▼ button to highlight **Disable Cartridge Check**, and then press the OK button.

To exit this diagnostic test, press the Stop ⊗ button and then select **Exit Troubleshooting**.

### Engine test button

To verify that the product engine is functioning, print an engine test page. Use a small pointed object to depress the test-page switch located on the rear of the product. The test page should have a series of horizontal lines. The test page can use only Tray 2 as the paper source, so make sure that paper is loaded in Tray 2.

**Figure 3-4** Engine-test button

## Paper path test

This diagnostic test generates one or more test pages that you can use to isolate the cause of jams.

To isolate a problem, specify which input tray to use, specify whether to use the duplex path, and specify the number of copies to print. Multiple copies can be printed to help isolate intermittent problems. The following options become available after you start the diagnostic feature:

- **Print Test Page**. Run the paper-path test from the default settings: Tray 2, no duplex, and one copy. To specify other settings, scroll down the menu and select the setting, and then scroll back up and select **Print Test Page** to start the test.
- **Source Tray**. Select Tray 1, Tray 2, or the optional tray.
- **Test Duplex Path**. Enable or disable two-sided printing.

**NOTE:** Duplex models only.

- **Number of Copies**. Set the numbers of copies to be printed; the choices are 1,10, 50, 100, or 500.

1. Press the Home button.
2. Open the following menus:
   - **Administration**
   - **Troubleshooting**
   - **Diagnostic Tests**
3. Press the Down arrow ▼ button to highlight **Paper Path Test**, and then press the OK button.
4. Select the paper-path test options for the test you want to run.

## Paper path sensors test

This test displays the status of each paper-path sensor and allows viewing of sensor status while printing internal pages.

1. Press the Home button.
2. Open the following menus:
   - **Administration**
   - **Troubleshooting**
   - **Diagnostic Tests**

3. Press the Down arrow ▼ button to highlight the **Paper Path Sensors** option, and then press the OK button.

4. Select **Start Test**. Press the Down arrow ▼ button to see the test results.

**NOTE:** Exiting the Paper-path sensor test menu and then reentering it will clear the test values from the previous test.

Viewing the sensor status before you activate the test should show that the sensors PS9, PS11 and SW5 have already been activated. After running the Paper-path sensor test, sensor PS9 does not show any activation status.

**Table 3-6 Paper-path sensors diagnostic tests**

| Sensor name | Sensor number |
|---|---|
| Registration | SR8 |
| Fuser loop 1 | SR14 |
| Fuser loop 2 | SR15 |
| Fuser pressure release | SR7 |
| Fuser output | SR5 |
| Duplexer refeed | SR22 |
| Developer alienation | SR11 |
| ITB alienation | SR17 |
| Output bin full | SR6 |
| Tray 1 paper | SR21 |
| Tray 2 paper | SR20 |
| Tray 2 Cassette Sensor | SR13 |
| Tray 2 Cassette Lifter | SR9 |
| Tray 3 paper | SR3 |
| Tray 3 feed | SR4 |
| Tray 3 installed | SR1 |
| Tray 3 size (top) button | SW1 |
| Tray 3 (middle) button | |
| Tray 3 (bottom) button | |

## Manual sensor test

Use this diagnostic test to manually test the product sensors and switches. Each sensor is represented by a letter and number on the control panel display.

1. Press the Home button.
2. Open the following menus:
   - **Administration**
   - **Troubleshooting**
   - **Diagnostic Tests**
3. Press the Down arrow ▼ button to highlight the **Manual Sensor Test** item, and then press the OK button.

To exit this diagnostic, press the Stop key, and then select **Exit Troubleshooting**.

Menus cannot be opened during this test, so the OK button serves the same function as the Stop ⊗ button.

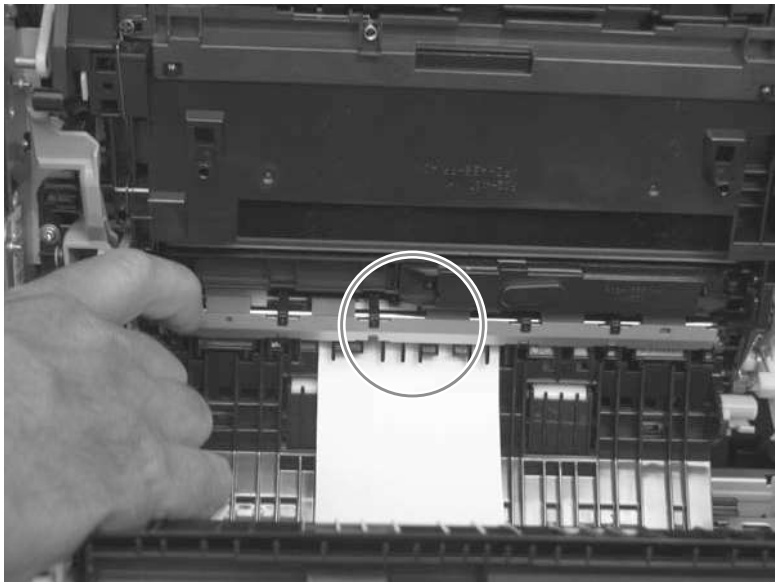
**Table 3-7 Manual sensor diagnostic tests**

| Sensor or switch name | Sensor or switch number |
|---|---|
| Front door switch | SW1 |
| Registration | SR8 |
| Fuser loop 1 | SR14 |
| Fuser loop 2 | SR15 |
| Fuser pressure release | SR7 |
| Fuser output | SR5 |
| Duplexer refeed | SR22 |
| Developer alienation | SR11 |
| ITB alienation | SR17 |
| Output bin full | SR6 |

### Registration sensor

1. Open the right door.
2. Open the registration shutter.
3. Insert a piece of paper to activate the TOP sensor.

**Figure 3-5** Test the registration sensor

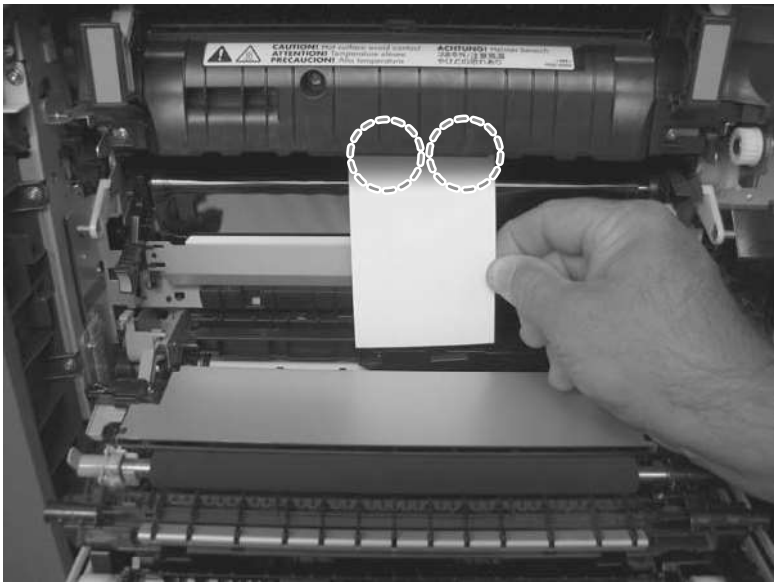


4. Check the control-panel display for sensor response.
5. If no response, replace the registration assembly.

### Fuser loop sensors

1. Open the right door.
2. Lower the secondary transfer assembly.
3. Slowly insert a piece of paper to activate the fuser loop sensors underneath the fuser.

**Figure 3-6** Test the fuser loop sensors

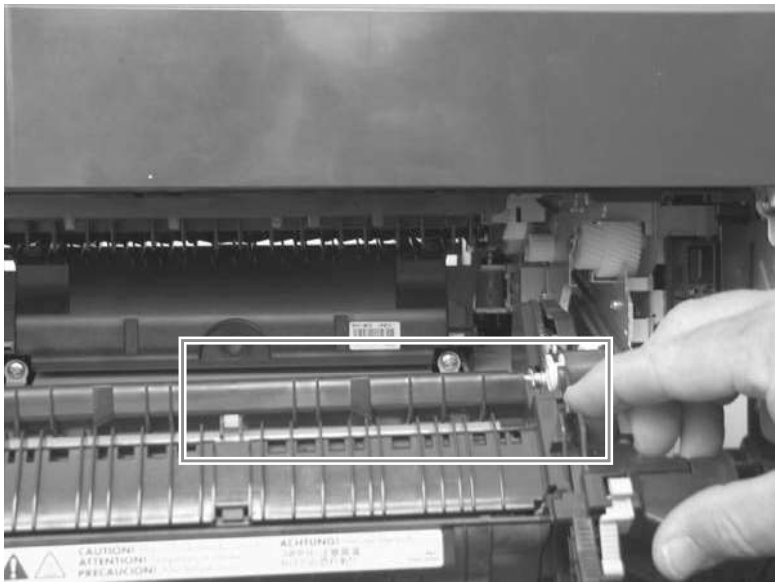


4. Check the control-panel display for a sensor response.
5. If there is no response, replace fuser. See Fuser on page 87.

### Fuser output sensor

1. Open the right door.
2. Lower the secondary transfer assembly.
3. Remove the fuser assembly, and then verify that the sensor flag on the fuser assembly moves freely. If the sensor flag does not move freely, replace the fuser. See Fuser on page 87.

**Figure 3-7** Test the fuser output sensor (1 of 2)



4. Insert a piece of paper to activate the sensor.

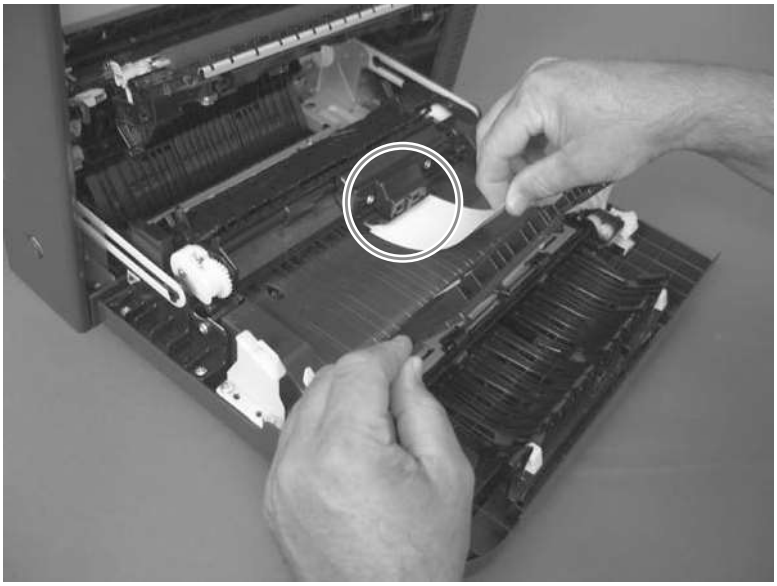
**Figure 3-8** Test the fuser output sensor (2 of 2)

5. Check the control-panel display for a sensor response.
6. If there is no response, replace the fuser output sensor.

### Duplexer refeed sensor

1. Open the right door.
2. Use the green handle to lift the duplex jam cover.
3. Insert a piece of paper to activate the sensor (8492).

**Figure 3-9** Test the duplexer refeed sensor



4. Check the control-panel display for sensor response.
5. If no response, replace the right door assembly.