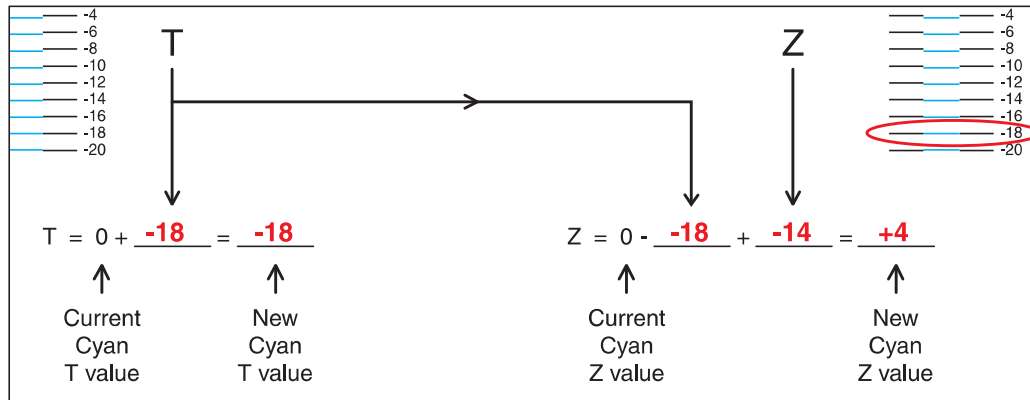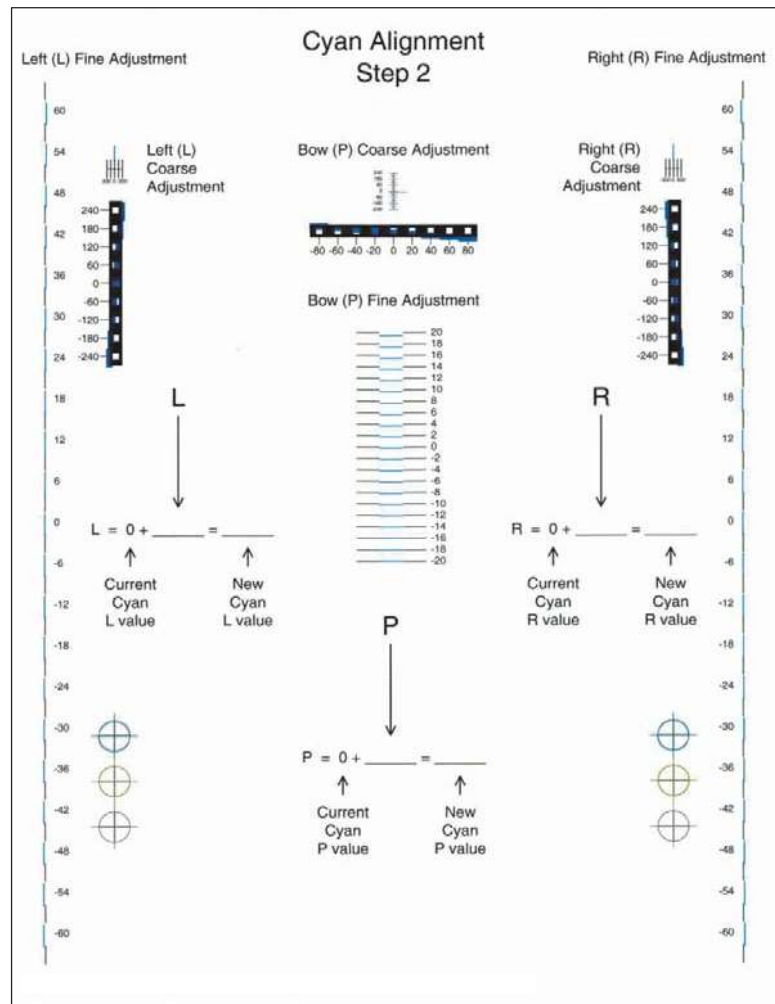**11.** Repeat this process for skew (Z). Don't forget to subtract the T value and add the current cyan Z value to obtain the new skew (Z) value.
An example is shown below:

T = 0 + **-18** = **-18**

Current Cyan T value   New Cyan T value

Z = 0 - **-18** + **-14** = **+4**

Current Cyan Z value   New Cyan Z value

12. Continue to follow the directions on the bottom of the first page to find the Cyan Top Margin (T), the Skew (Z), and on the second page of the Quick Test page, the Left Margin (L), Right Margin (R), and Bow (P).

13. Repeat steps 2 through 11 for yellow and magenta.
Note: Start each color group by setting the Top Margin, Left Margin, Right Margin, Bottom Margin, Skew, and Bow to zero.

Printer removal procedures

Precautions to take before maintenance work

Do not implement any operation, removal, or modification and so on, which is not presented in this manual.

1. Turn the printer power off and unplug the power cable from the outlet prior to starting removals or checks.

2. Prior to starting any repairs, read and understand the warnings in this manual.
- High temperature
- High voltage
- Laser radiation

3. Confirm the direction of all parts and screw lengths during removal/replacement.

4. Utilize the proper cleaning procedures/solvents during maintenance.

5. Confirm that all parts and covers are properly installed and assembled prior to starting the print test.
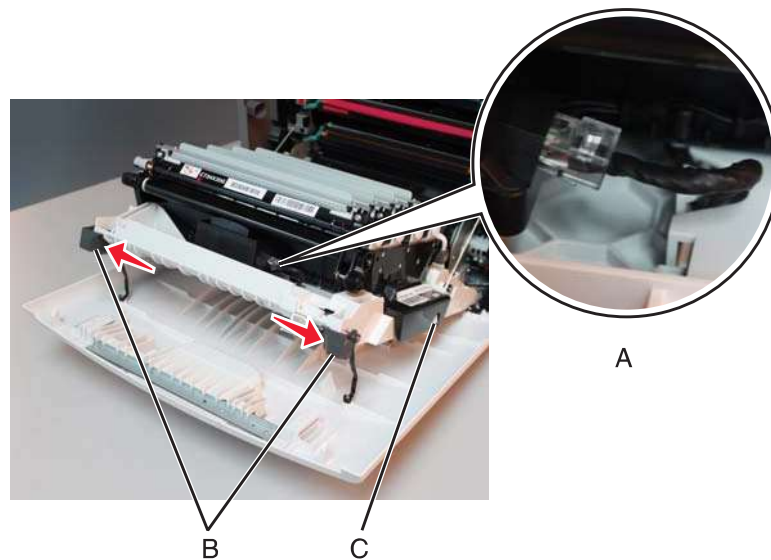
Multifunction printer removals
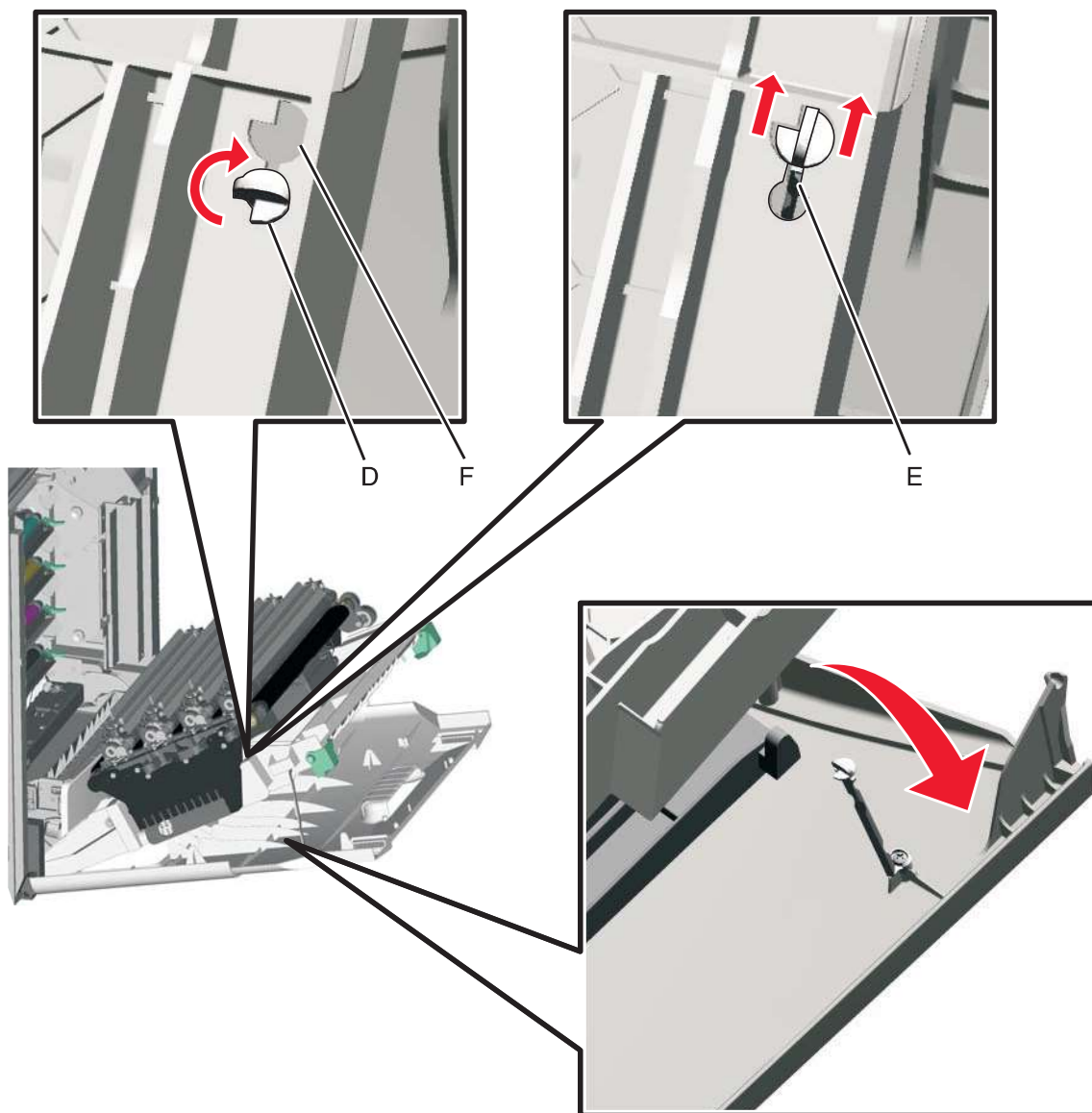
Front access cover assembly removal

See Front access cover assembly for the part number for the models you need on **page 7-3**.

1. Remove the paper tray.
2. Disconnect the transfer module cable (A).
3. Press the two tabs (B) to release the front access door cover assembly.
4. Press the two tabs (C) on either side of the transfer module, and lift out the transfer module.
   Note: Leave the photoconductor units on the transport belt when removing.

   Warning: To avoid damaging the photoconductor drum, hold the photoconductor units by their handle and place the photoconductor units on a clean surface. Never expose the photoconductor units to light for a prolonged period of time. See **"Handing the photoconductor unit" on page 4-3** for additional information.

5. Looking down at the keyed end of the restraint (D), twist the end clockwise, slide the restraint upward through the slit (E), and slip the end of the restraint through the keyed hole (F). Repeat for the other side.
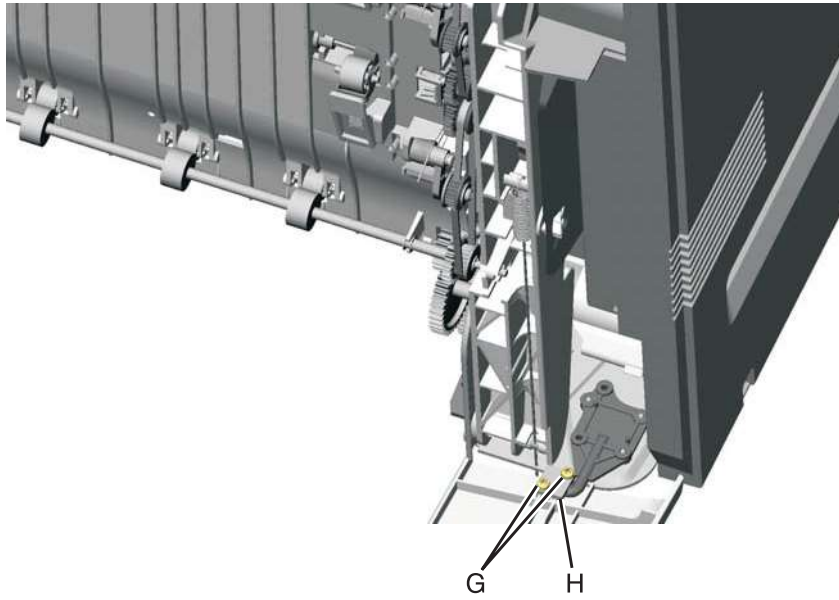

D   F   E

6. Close the front access door assembly.

7. Remove the two screws (G) that attach the pivot pin to the front access door cover assembly.

8. Remove the bracket (H).

G   H

9. Remove the front access cover assembly.

Left cover removal

See **"Left cover" on page 7-3** for the part number.

Remove the left cover with the left door cover attached.

1. Remove the rear cover. See **"Rear cover removal" on page 4-36**.
2. Remove the waste toner assembly. See **"Waste toner assembly removal" on page 4-191**.
3. Open the top access cover.
4. Open the front access cover.
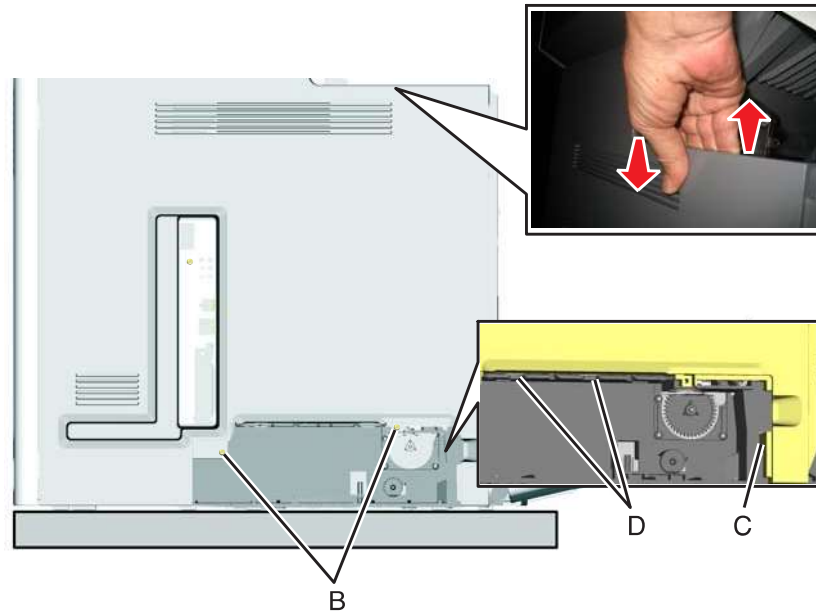5. Remove the screw on the inside (A).

A
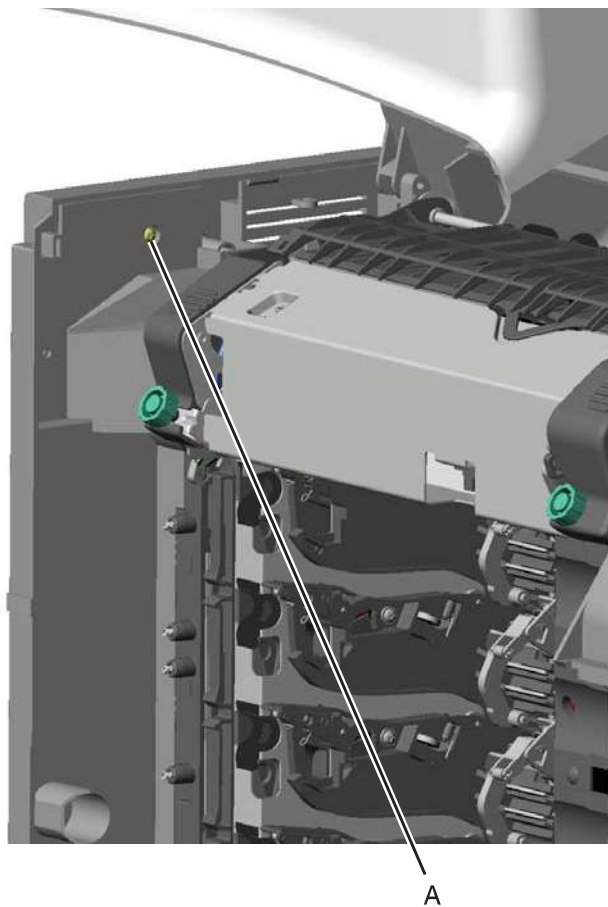
6. Remove the two screws (B).

7. Press the locking tab (C), slide the cover down.

8. Grasp the side at the point shown, and disconnect the tab on the upper edge. Push down with your thumb on the outside while pulling up with the fingers to remove the cover.

Warning: Be careful not to damage the two small locking tabs (D).

Note: If you are removing the left cover to access another part, leave the left cover and the left door cover attached, and you are done. If you need to replace the left cover FRU, continue with the next step to remove the separate left door cover FRU.

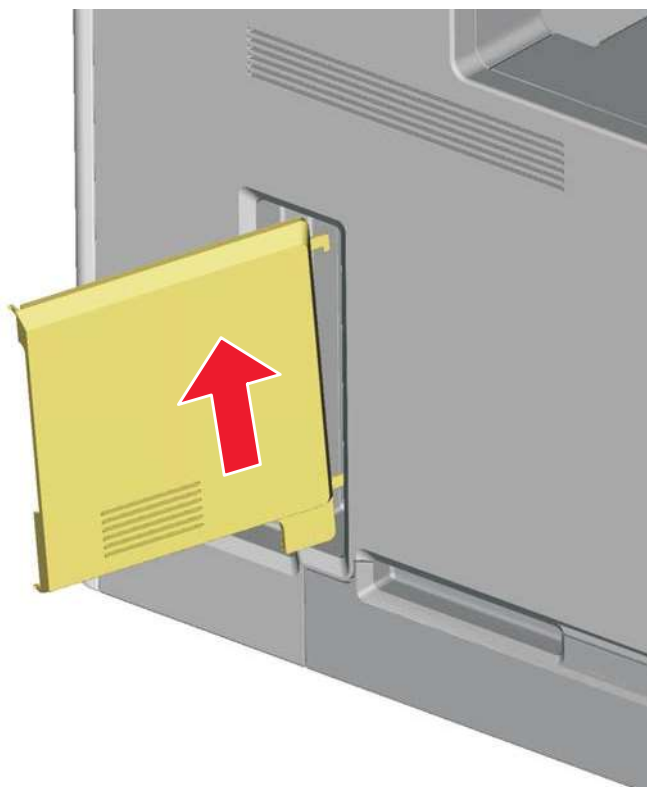**9.** Remove the left door cover. See **"Left door cover removal" on page 4-26**.

Left door cover removal

1. Open the left door cover.
2. Lift up to disengage the hinges.

3. Remove the left door cover.

Operator panel assembly removal

See **"7 inch LCD touch screen" on page 7-3** for the part number.

1. Remove the top access cover assembly. See **"Top access cover assembly removal" on page 4-40**.
2. Place the top access assembly on a soft lint-free cloth with the touchscreen facing down.
3. Remove the six smaller screws (A) securing the position guide cover.
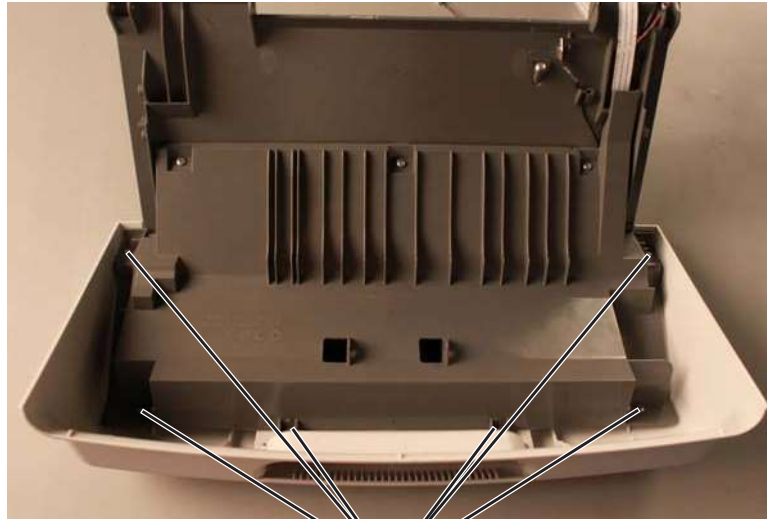
4. Remove the five larger screws (B) and the two smaller screws on the side (C), then remove the position guide cover to access the cables.
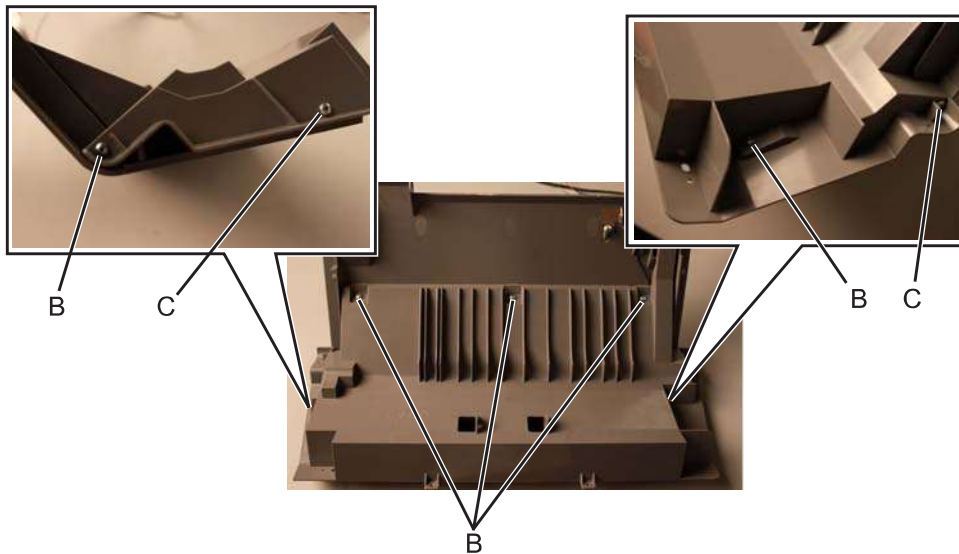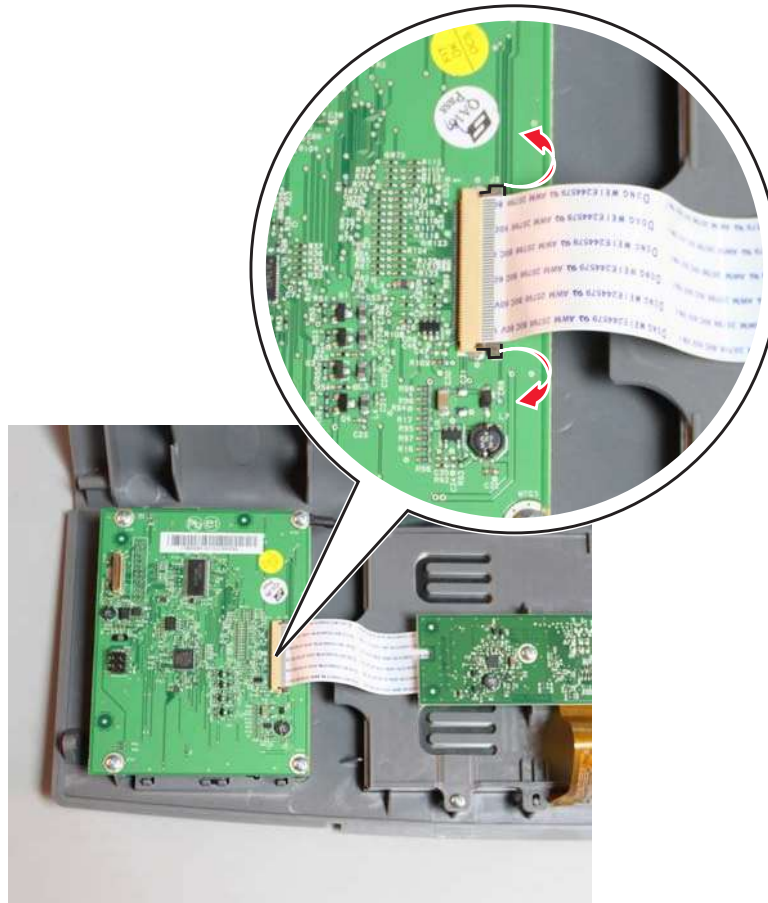
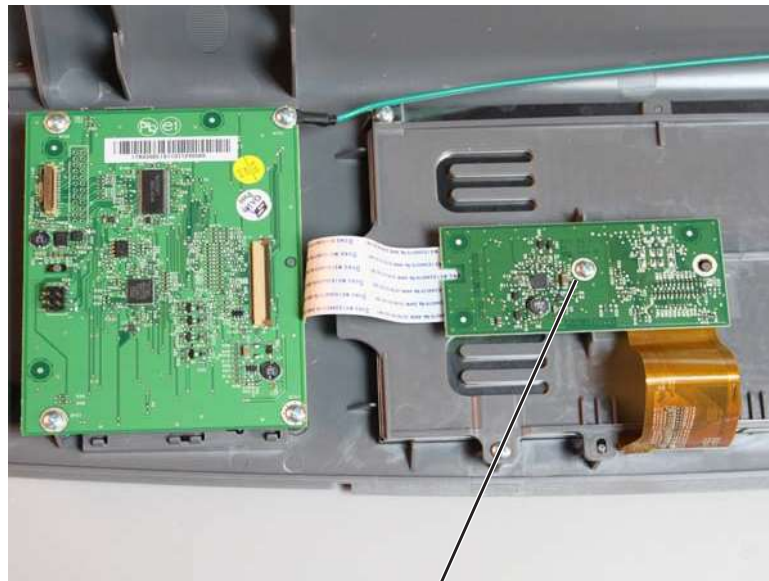**5.** Flip open the lock of the LCD interface card cable connector on the UICC card then remove the cable from the connector.

6. Disconnect the UICC cable from the UICC card. See **"UICC cable removal" on page 4-188**.
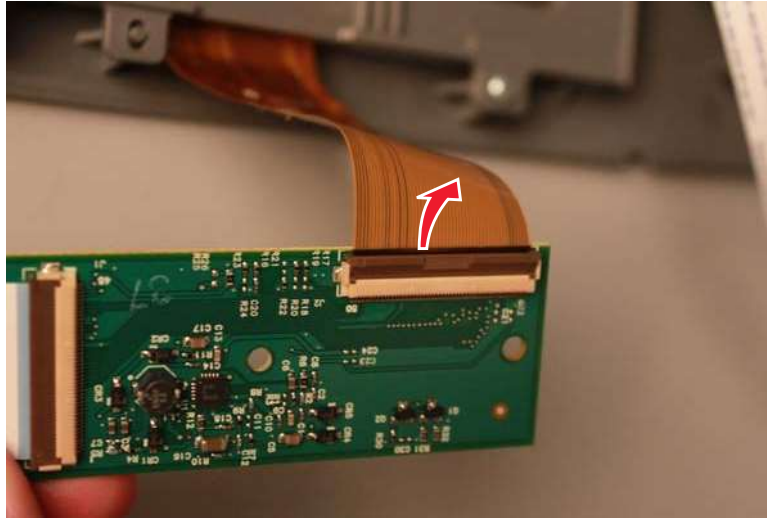
**7.** Remove the screw (D) securing the LCD interface card.

D

8. Turn the LCD interface card over then flip open the lock to disconnect the LCD ribbon cable from the LCD interface card.

Warning: Be careful not to bend the LCD ribbon cable to avoid damaging the resistors soldered on the cable.

Installation note: Make sure to connect the LCD ribbon cable on the LCD interface card first before securing the LCD interface card onto the LCD back plate cover.

9. Remove the four screws (E) securing the LCD back plate cover, and then remove the LCD back plate cover.
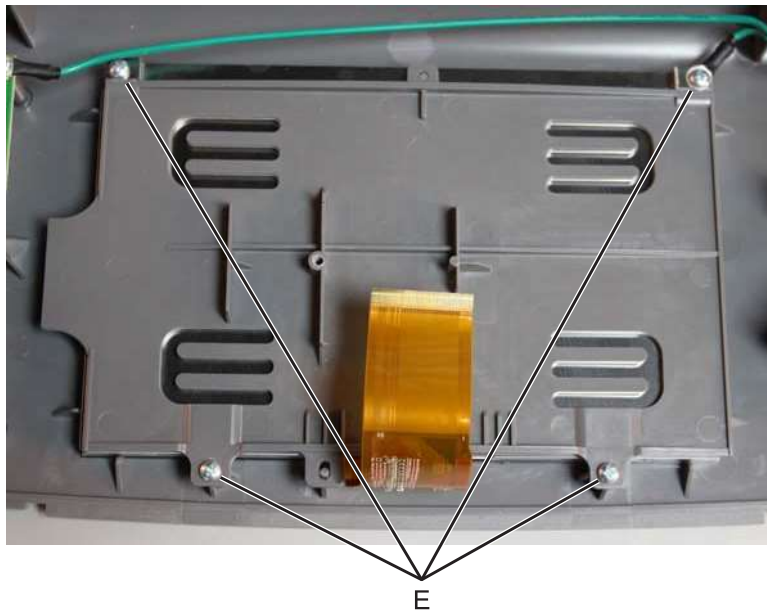
Installation note: When reinstalling the LCD back plate cover, make sure the screw holes on the metal plate sits on top of the screw holes of the plastic back plate.

10. Remove the operator panel touchscreen LCD.

Operator panel bezel removal

See Operator panel bezel on **page 7-3** for the part number.

1. Using a flathead screwdriver or similar tool, unsnap the locking tabs on the bezel as shown.

2. Remove the bezel.
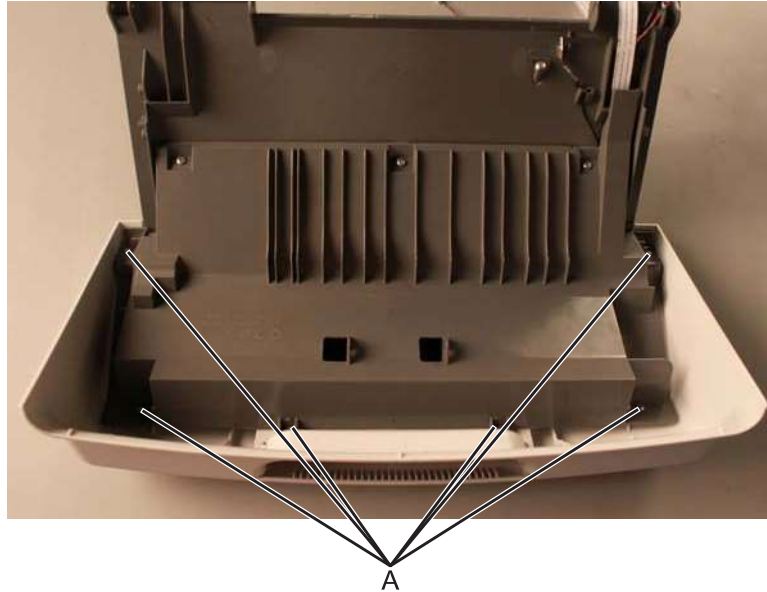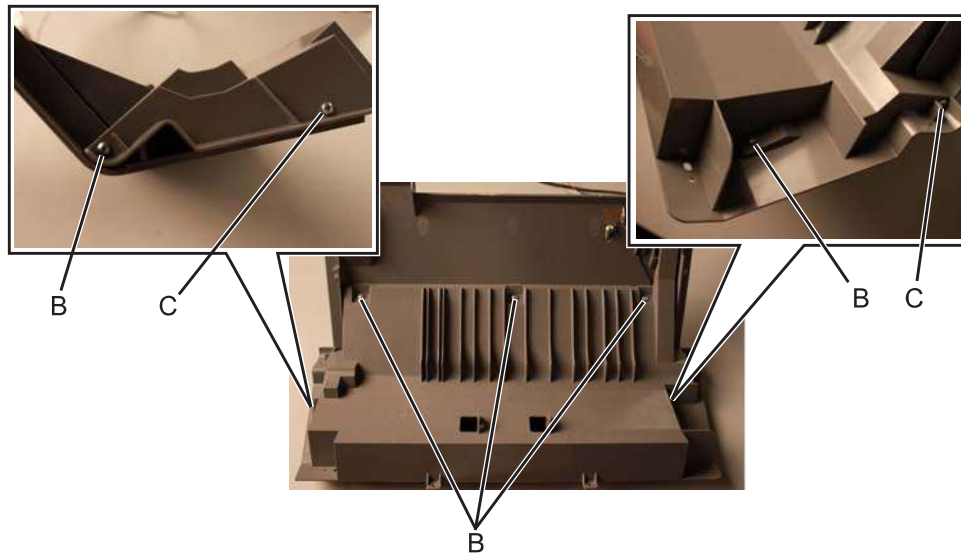
Operator panel buttons removal

1. Remove the top access cover assembly. See **"Top access cover assembly removal" on page 4-40**.
2. Place the top access assembly on a soft lint-free cloth with the touchscreen facing down.
3. Remove the six smaller screws (A) securing the position guide cover.

4. Remove the five larger screws (B) and the two smaller screws (C), then remove the position guide cover to access the cables.

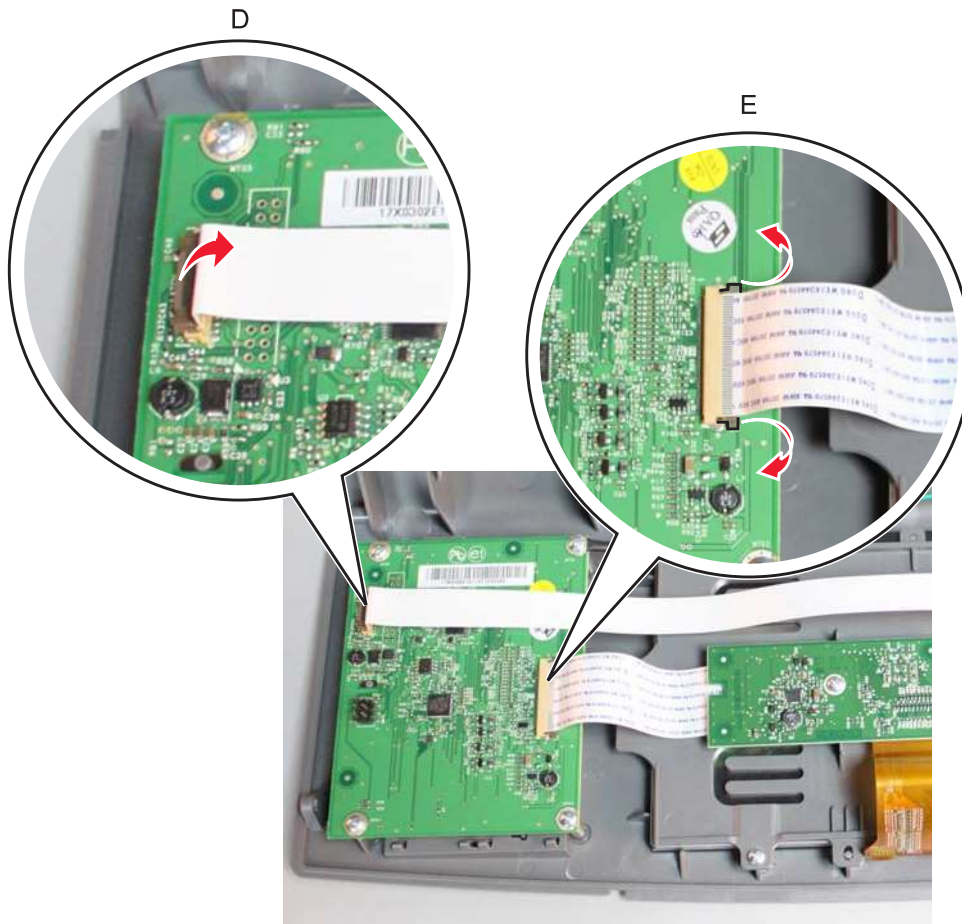**5.** Flip open the locks on the UICC cable (D) and LCD interface card cable (E) connectors, then disconnect the cables from the connector.

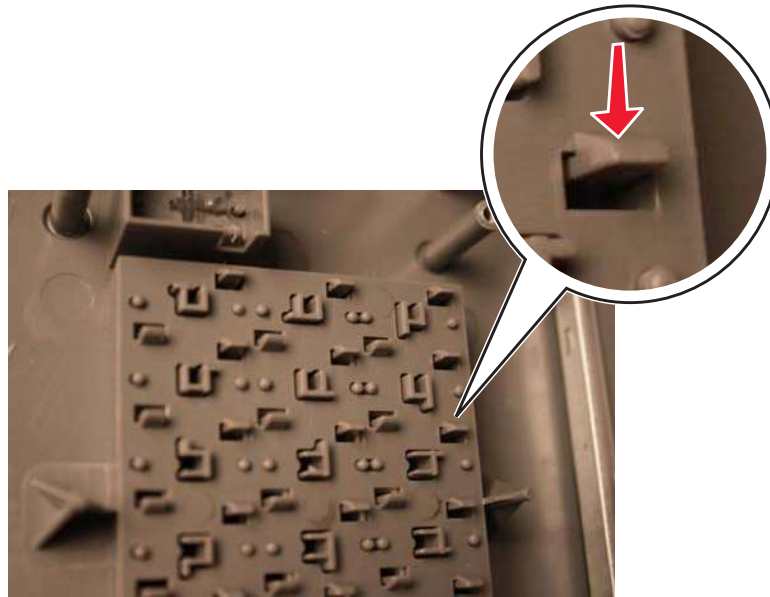**6.** Remove the four screws (F) securing the UICC card, then remove the UICC card.

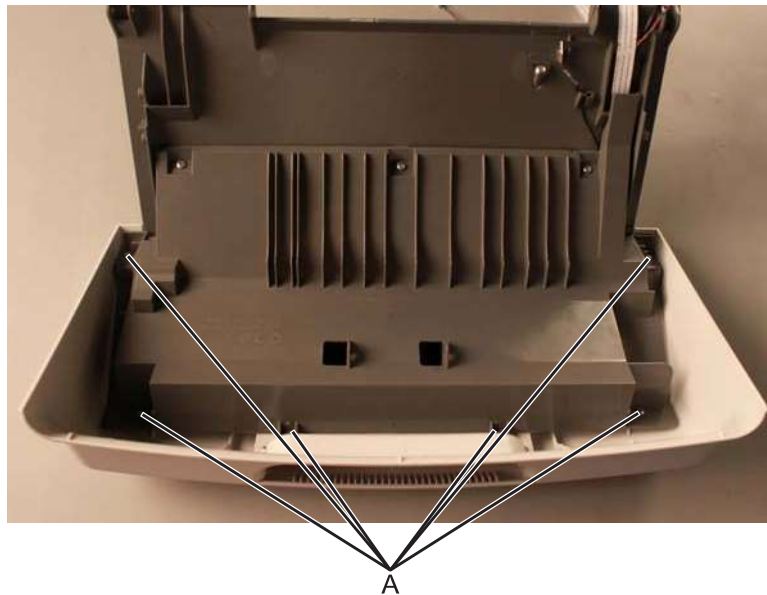**7.** Gently pinch the small latches that secure the buttons and remove them.



Operator panel speaker removal

1. Remove the top access cover assembly. See **"Top access cover assembly removal" on page 4-40**.

2. Place the top access assembly on a soft lint-free cloth with the touchscreen facing down.

3. Remove the six smaller screws (A) securing the position guide cover.

4. Remove the five larger screws (B) and the two smaller screws (C), then remove the position guide cover to access the cables.
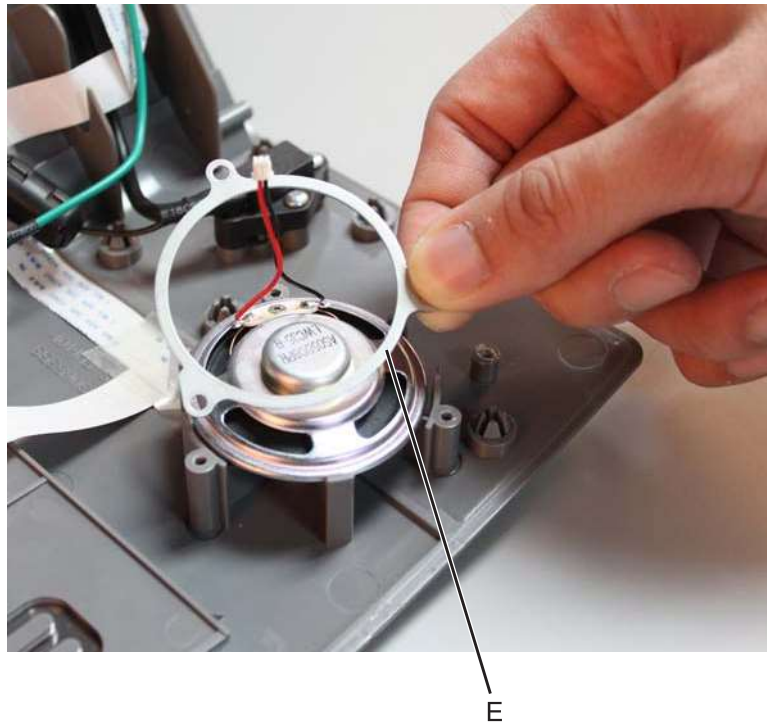

B   C   B   C

B
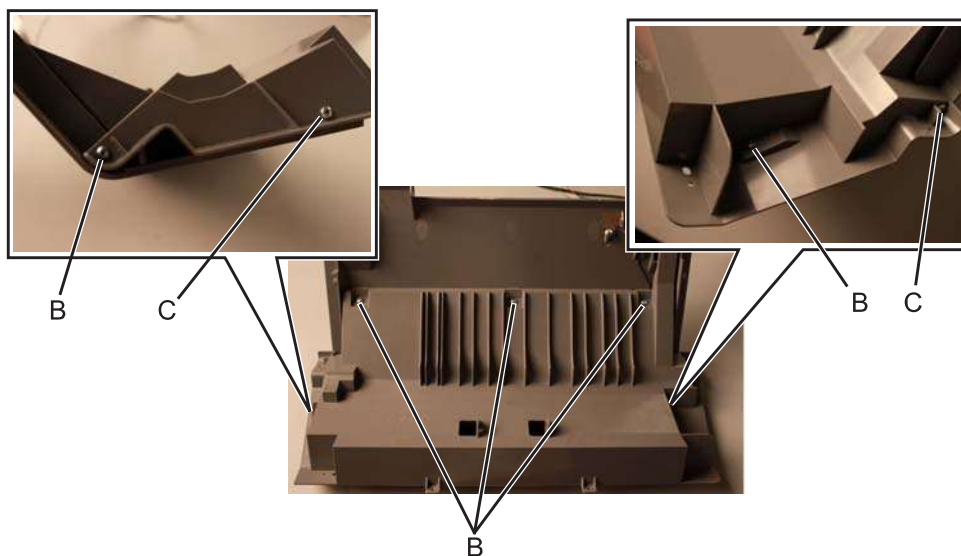
5. Disconnect the speaker connector (C), then remove the three screws (D) securing the speaker.

D   C
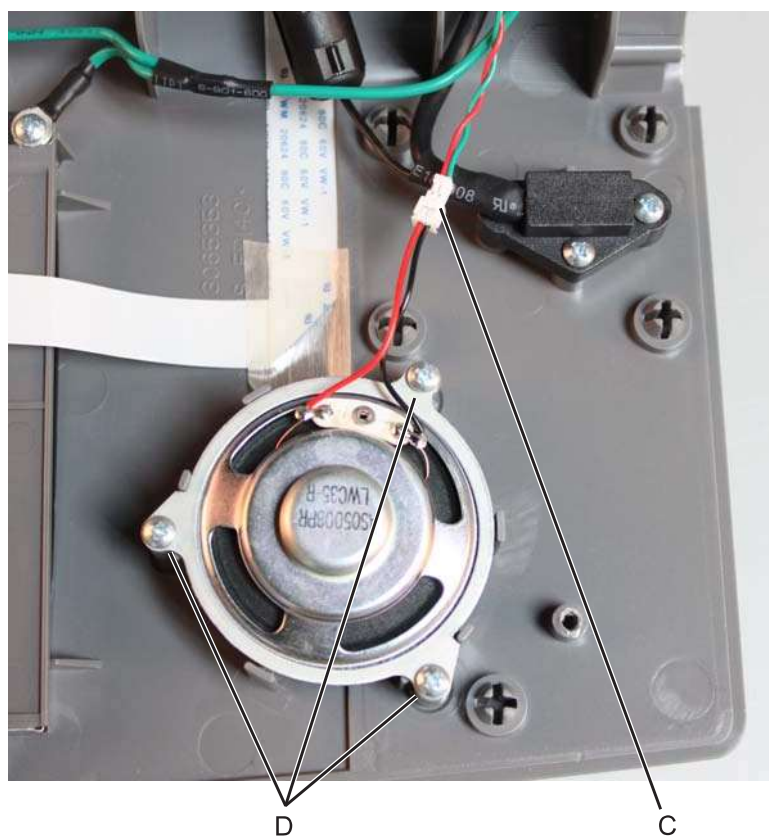
6. Remove the speaker bracket (E), then remove the speaker.

E

Output bin extension cover removal

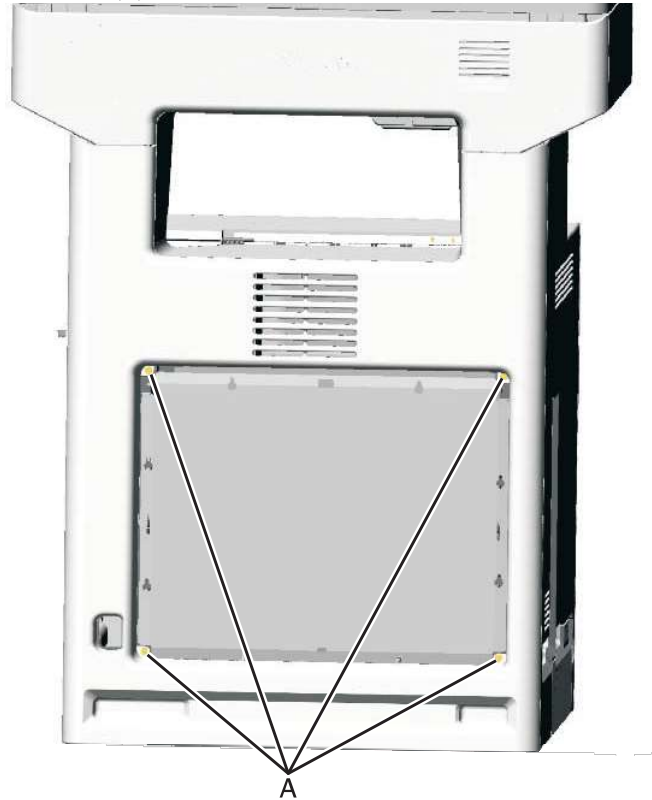See **"Output bin extension cover" on page 7-3** for the part number.

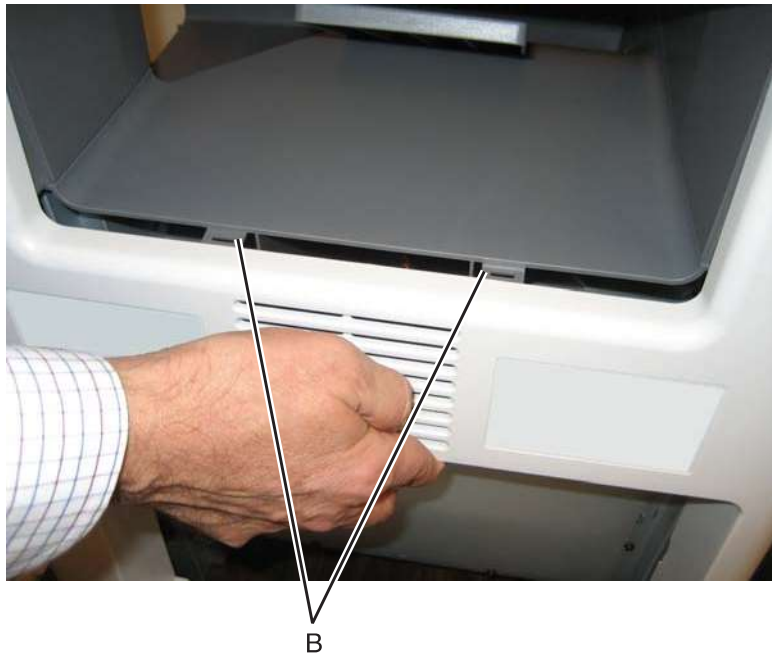Lift to remove the output bin extension cover.

Rear cover removal

1. Remove the four screws (A).

2. Lift up to disengage the two tabs (B).

Note: If you are removing the rear cover to access another part, leave the cooling fan filter in place, and you are done. If you need to replace the rear cover, continue with the next step to remove the separate cooling fan filter.
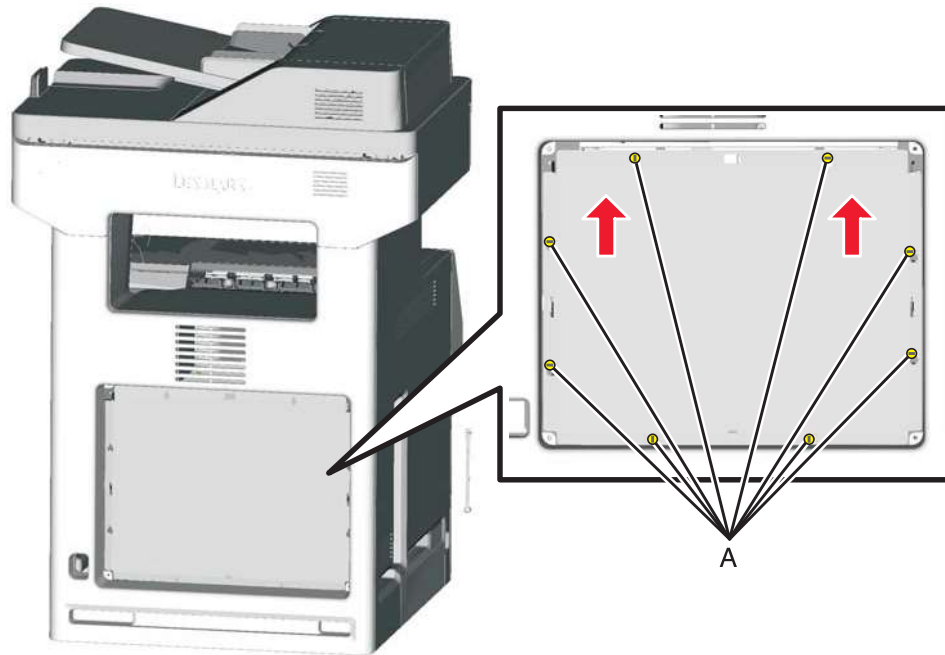
3. Remove the cooling fan filter. See **"Cooling fan removal" on page 4-73**.

Rear frame cover removal

1. **Loosen** the eight screws (A).
2. Lift the rear frame cover, and remove.

A

Right cover removal

1. Remove the rear cover. See **"Rear cover removal" on page 4-36**.
2. Open the top access cover.
3. Open the front access cover.
4. Remove the plastic screw on the front (A).
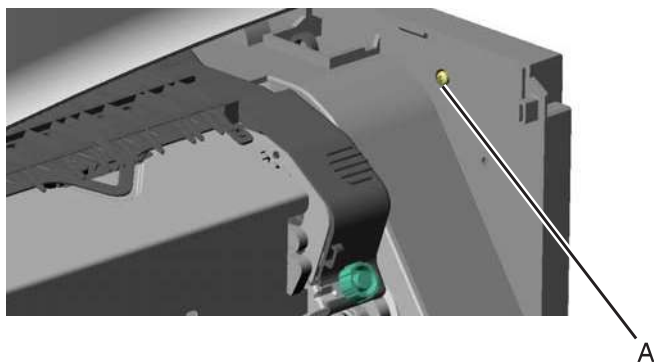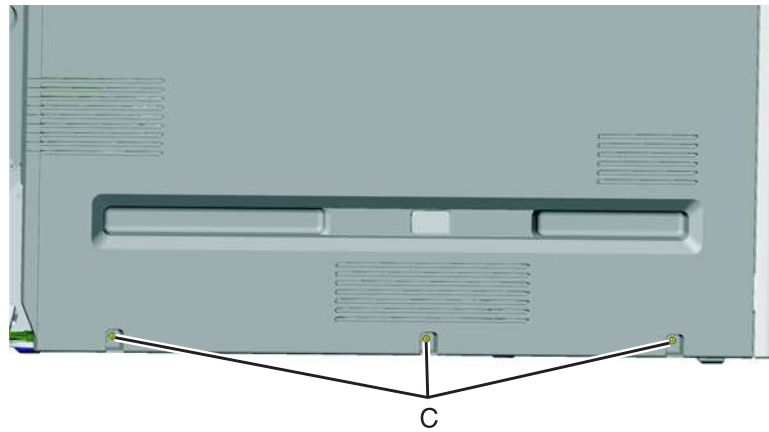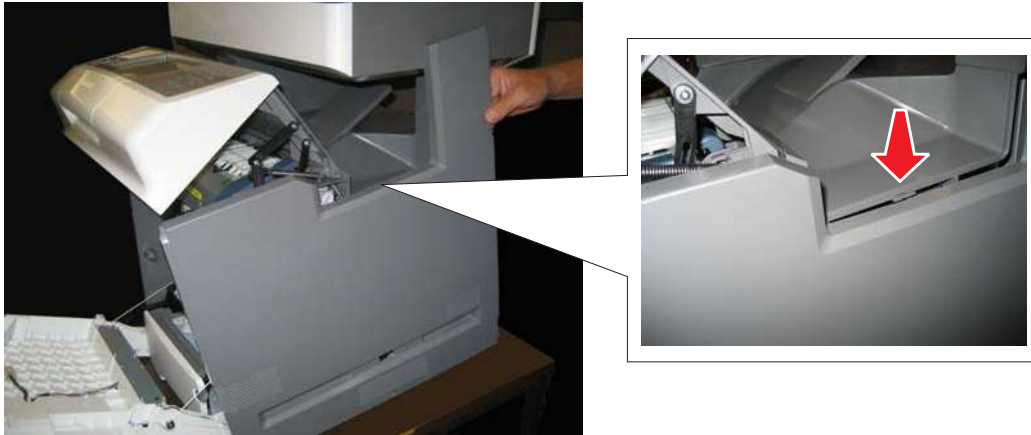

5. Remove the two black screws on the front (B).

6. Remove the three screws (C).

C

**7.** Pull up on the rear of the right cover, and then press down at the indicated location to disengage the tab.

Top access cover assembly removal

See *"Top access cover assembly" on page 7-3* for the part number.

1. Remove the operator panel bezel. See *"Operator panel bezel removal" on page 4-30*
2. Remove the right cover. See *"Right cover removal" on page 4-38*.
3. Remove the rear frame cover. See *"Rear frame cover removal" on page 4-37*.
4. Disconnect the operator cable connector at JOPP1 (A), the USB connector cable in connector JFMUSB1 (B), and the speaker connector (C) on the system board.
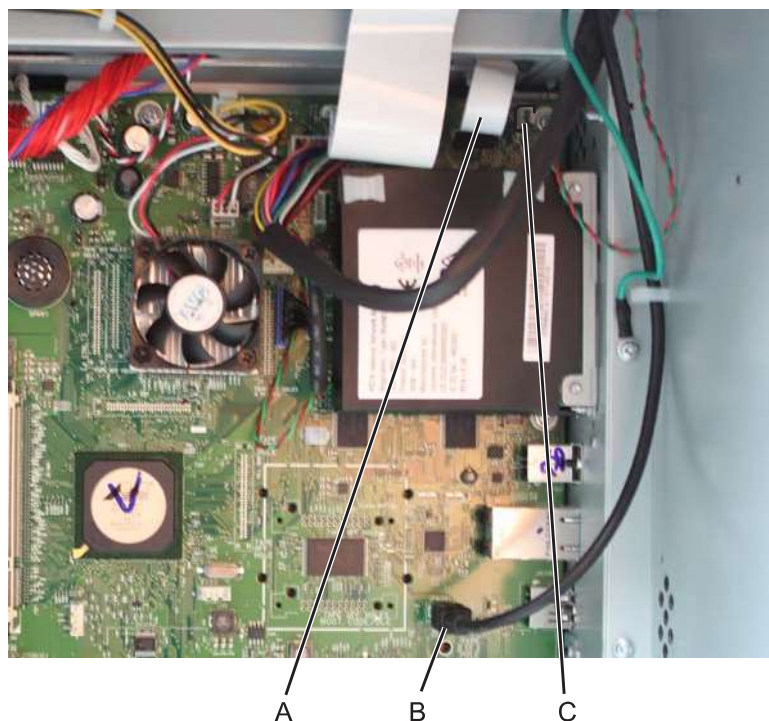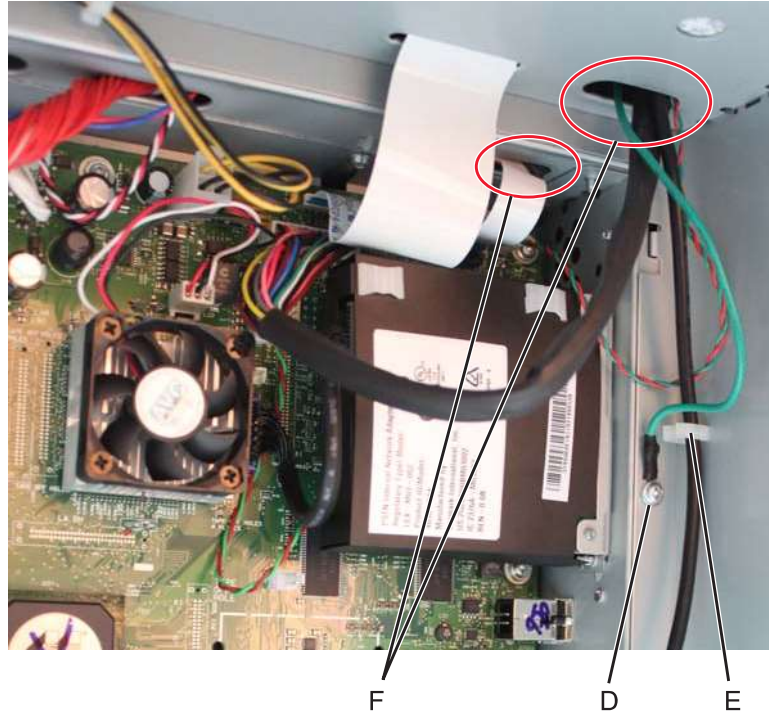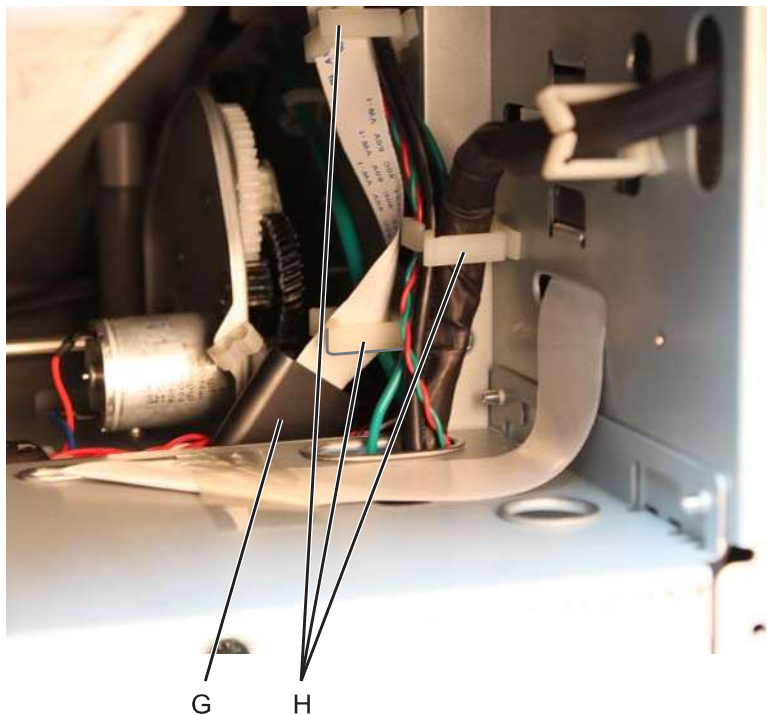
5. Remove the screw securing the ground cable (D) and remove the USB cable from the cable restraints (E).

6. Remove the cables through the openings (F) in the system board frame.

F   D   E

7. Remove the toroid (G) from the UICC cable, and then remove the UICC, USB, speaker, and ground cables from the cable clamps (H) above the system board frame.

G   H

8. Remove the cables through the frame, over the cartridge fan, through the cable clamps (I), and through the frame holes (J) towards the front of the MFP.

I   J
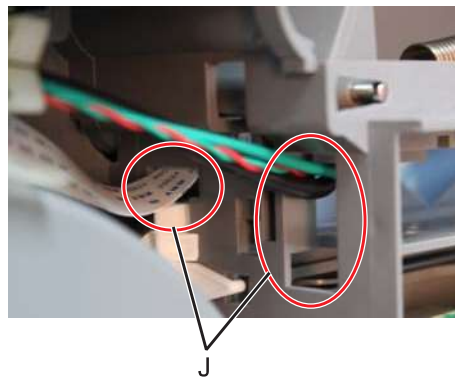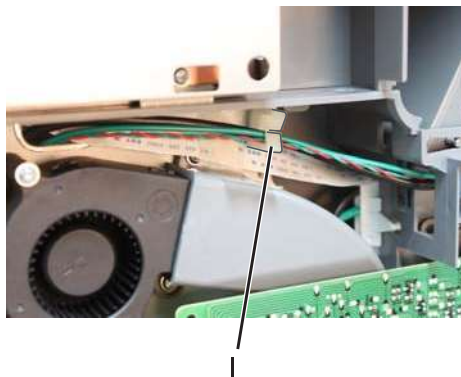
9. Remove the fuser. See **"Fuser assembly removal" on page 4-104**.

10. Remove one screw (K) on the left side and two screws (L) on the right side, that secure the links.

K   L
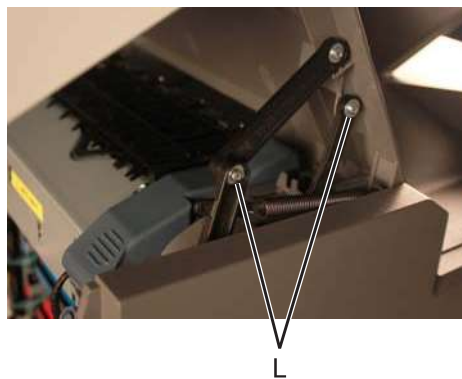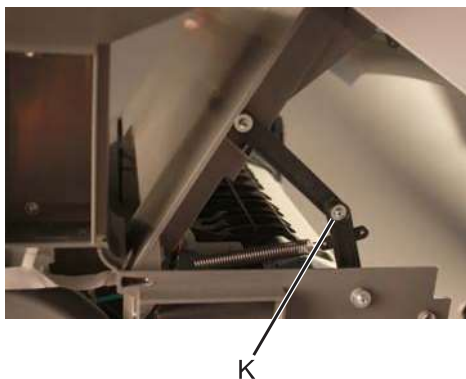
11. Unlatch and rotate the pivots on the left and right side (M) until they are upright, then remove them.
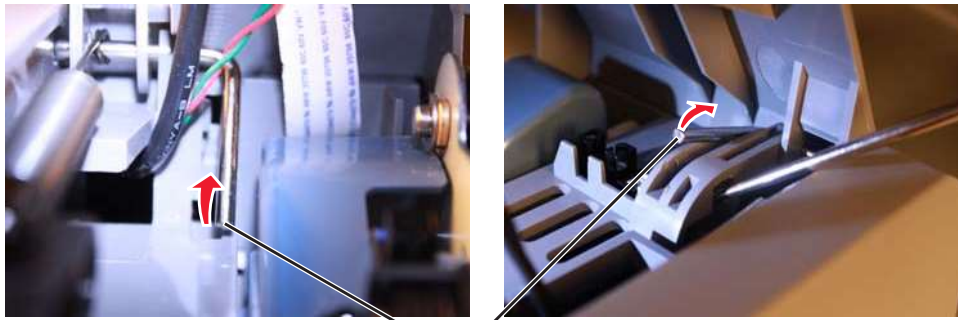
M

Note: If you are removing the top access cover to access another part, leave the top access cover and the operator panel bezel attached, and you are done. If you are replacing the top access cover assembly FRU, then remove the separate operator panel bezel FRU. See **"Top access cover assembly removal" on page 4-40**.

12. Remove the top access cover assembly.

Installation note: When replacing the springs, slip the spring in place to hook onto the pivot (N), and push the pivot back into place to secure the spring on the pivot

N
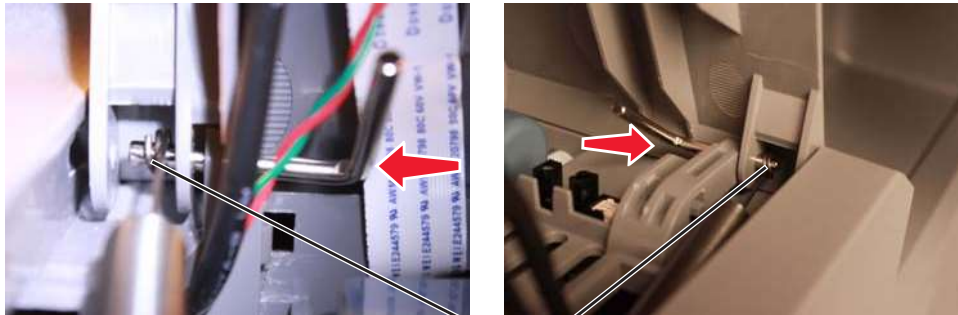
Top cover assembly removal

1. Remove the top access cover. See **"Top access cover assembly removal" on page 4-40**.
2. Remove the flatbed scanner. See **"Flatbed scanner removal" on page 4-255**.
3. Remove the LVPS.

   Note: Make sure you note the routing of the cable for reinstallation. The cable should pass through the cable restraint (A)

A

4. Disconnect the cables in connectors JBIN1 (B), JFDS1 (C), and JFUSER1 (D), on the system board.

5. Remove the output bin sensor cable (A) and the feed through sensor cable (B) through the side of the frame (E).

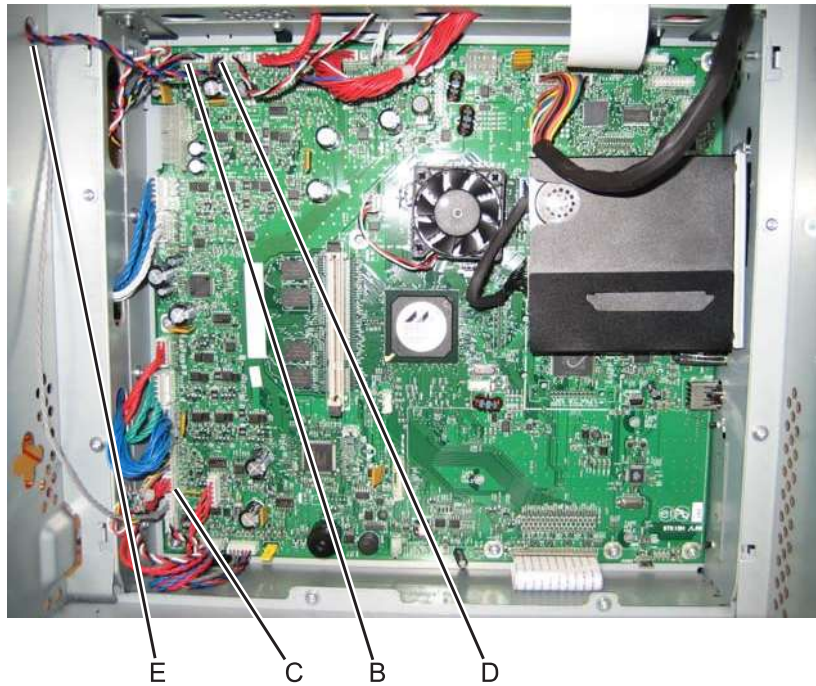E   C   B   D

6. Remove the two screws (F), and disconnect the cooling fan.

Note: If you are removing the top cover to access another part, skip this step and leave the cooling fan in the top cover

F

7. Remove the six screws (G).

G

8. Remove the screw (H) in front.

H
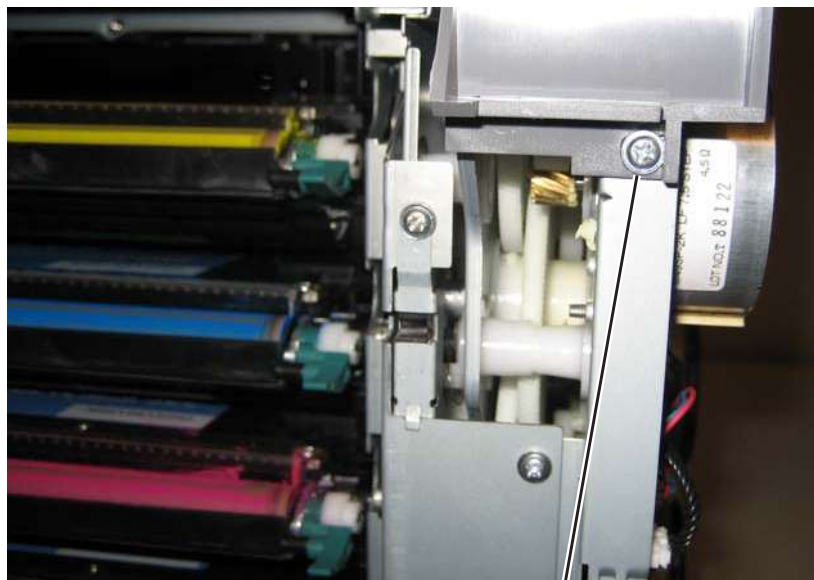
9. Remove the ground screw (J) on the right side, and remove the ground cable from the cable restraint (K).

J   K

Note: If you need to replace the top cover FRU, continue with the next step to remove the separate output bin extension cover FRU.

10. Remove the output bin extension cover. See **"Output bin extension cover removal" on page 4-35**

5 V interlock switch cable removal
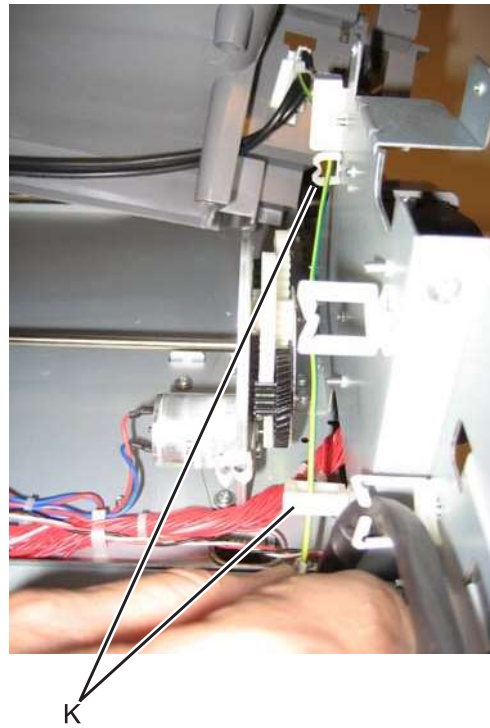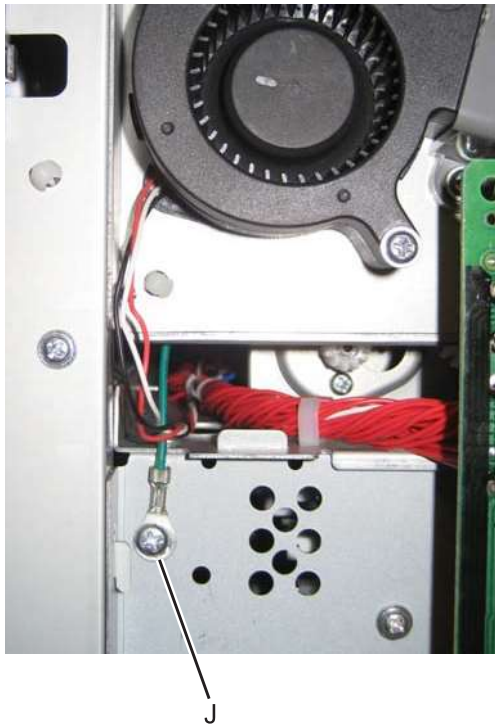
See **"5 V interlock switch" on page 7-7** for the part number.

1. Remove the EP drive assembly. See **"Electrophotographic (EP) drive assembly removal" on page 4-78**.
2. Disconnect the cable in connector at JINT1 (A) on the system board.

A
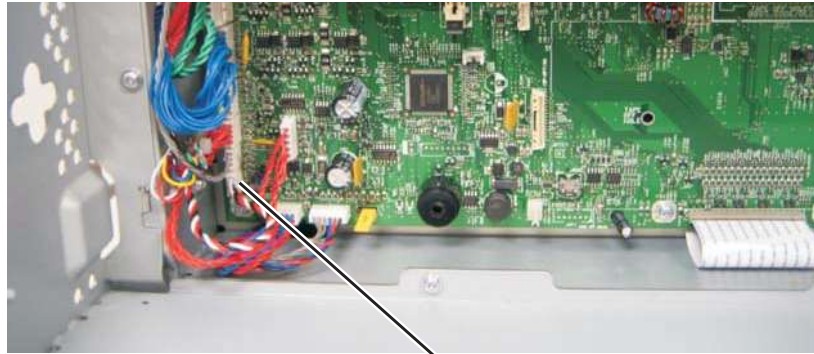
3. Open the front access door cover, and remove the screw (B).

B
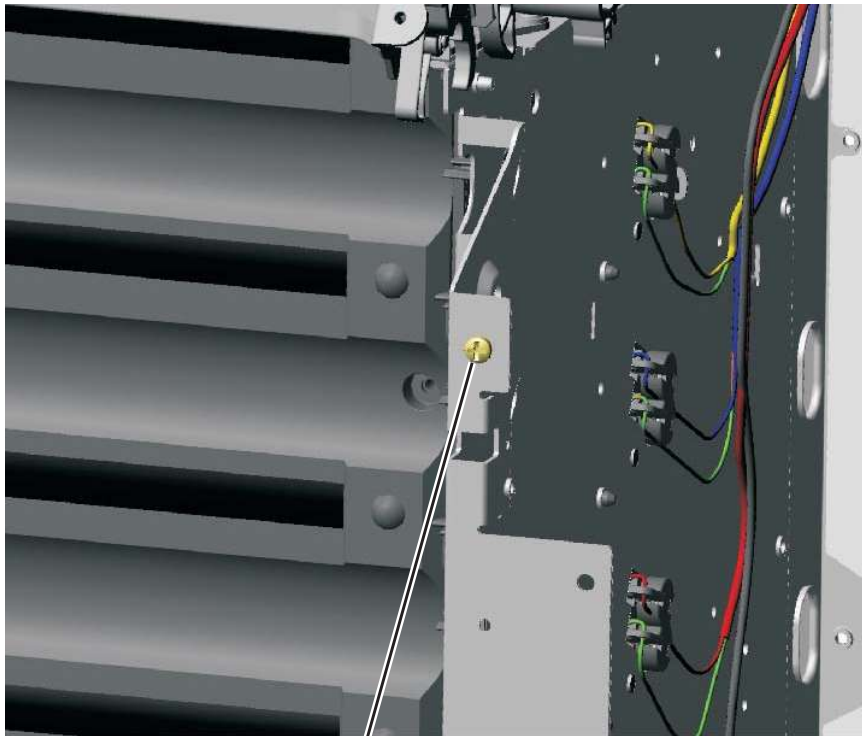
4. Remove the cable from the two cable retainers (C).
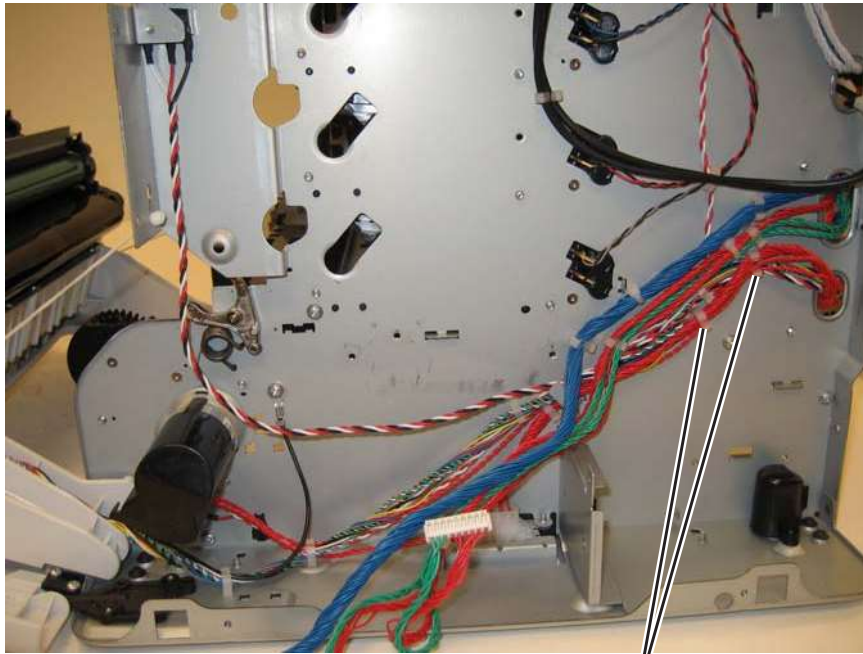
C

5. Remove the 5 V interlock switch and bracket from the printer.
6. Remove the screw (D), and remove the 5 V interlock switch cable from the bracket.

D
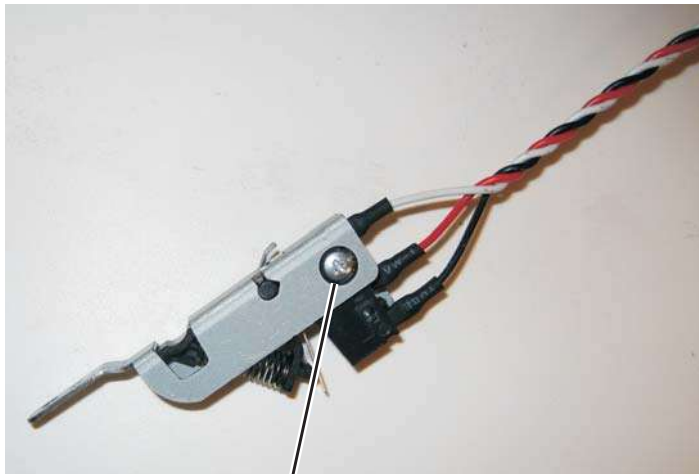
24 V interlock switch removal

See for the part number.

1. Remove the LVPS. See **"24 V interlock switch" on page 7-7**.
2. Disconnect the connector at JCVR1 (A) at system board.

A

3. Remove the screw (B), and the bracket separates from the 24 V interlock switch.

B
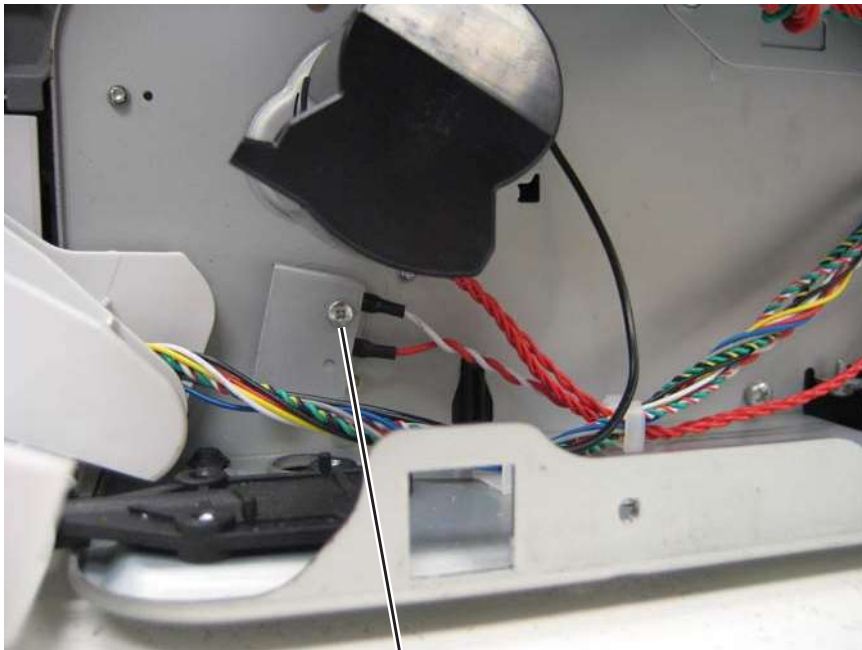
Installation note: Observe the routing of the 24 V interlock switch cable (A).

A   A   A
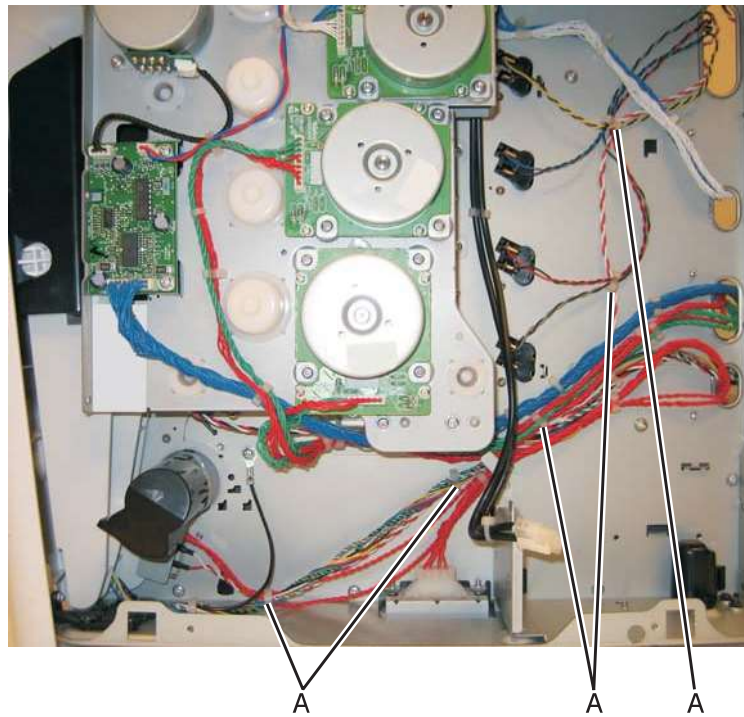
Bin full sensor assembly removal

1. Remove the top cover assembly. See **"Top cover assembly removal" on page 4-44**.
2. Remove the cable from the openings, including the loop through the frame (A).
3. Press up on the tab (B) to remove the flag.

B   A
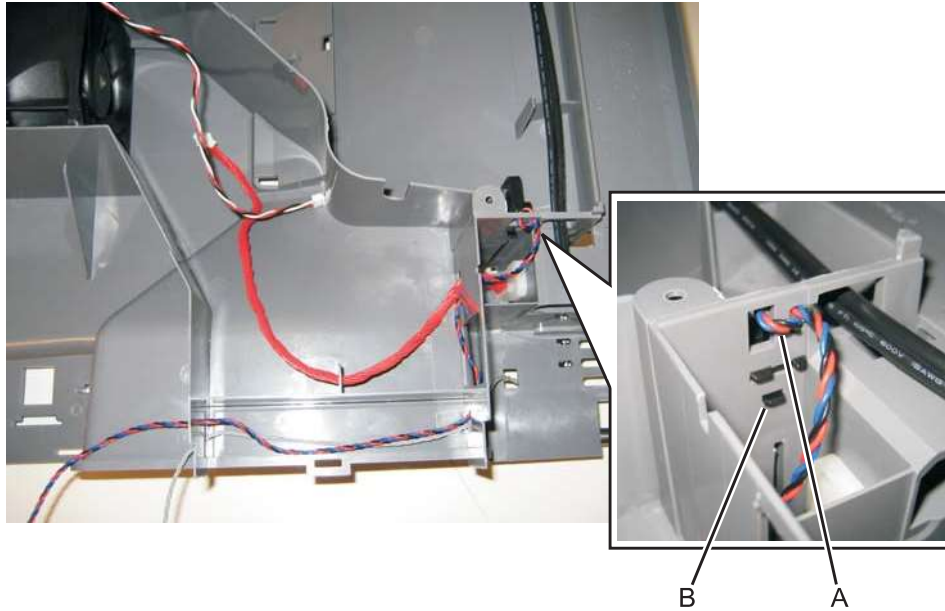
Installation notes:

With the top cover assembly upside down, install the flag with the triangular shape (A) pointing down.

A
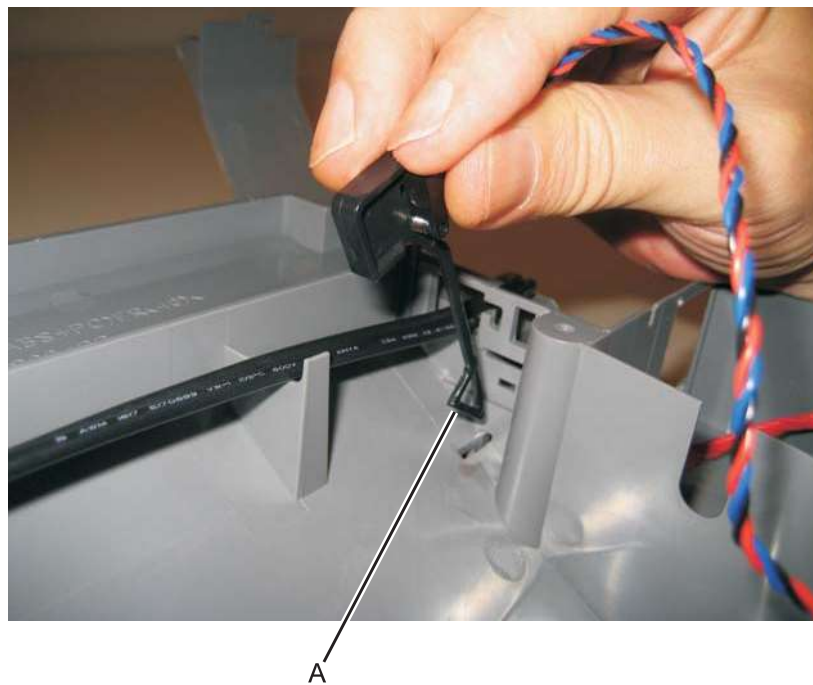
Cartridge cooling fan removal

1. Remove the rear frame cover. See **"Rear frame cover removal" on page 4-37**.
2. Disconnect JBLW1 (A).

A
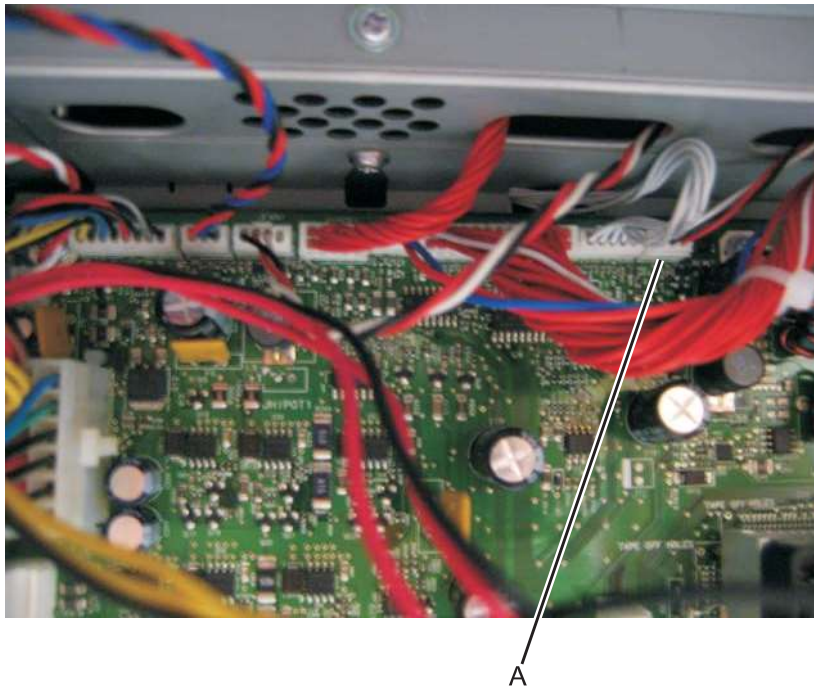
3. Remove the toroid on the cable located above the system board frame.
   Note: Retain the toroid to reinstall later.

B
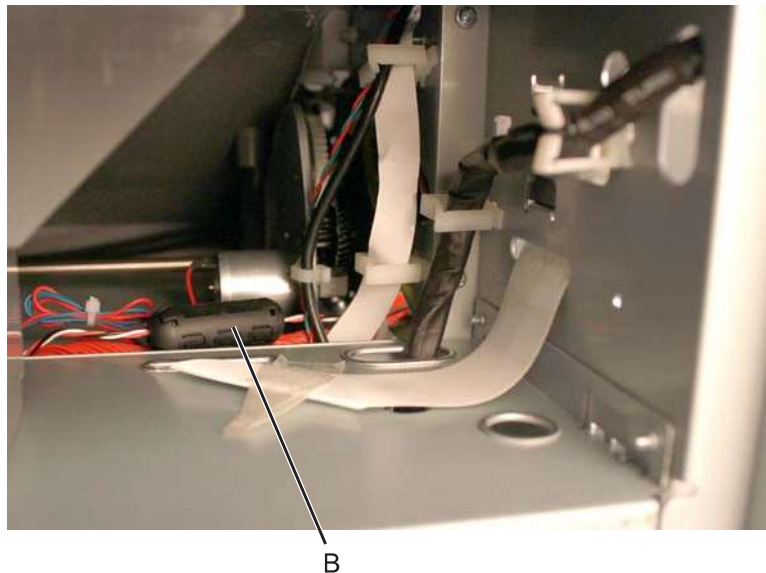
4. Remove the right cover. See **"Right cover removal"**.

5. Remove the two screws (C).

C
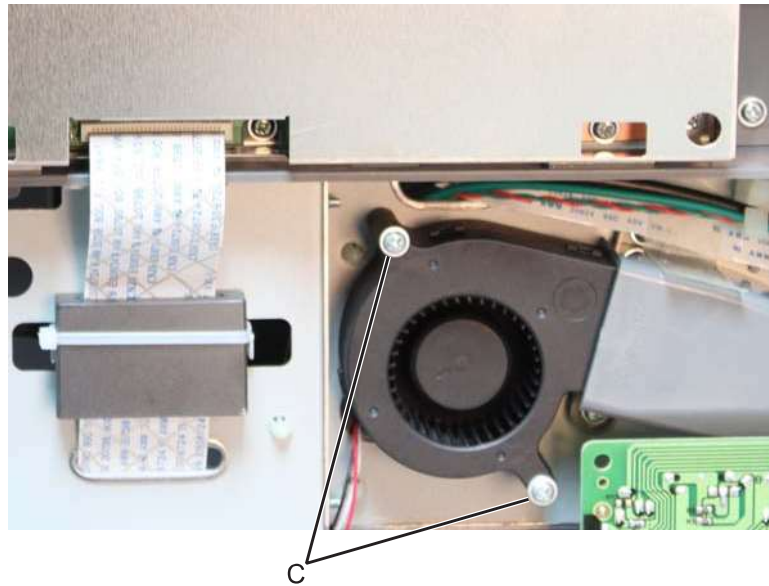
6. Remove the cartridge cooling fan.

Cartridge motor 1/fuser cable removal

1. Remove the LVPS. See **"Low-voltage power supply (LVPS) removal" on page 4-115**.
2. Disconnect the connectors in JCARTP1 (A) and JCARTS1 (B) on the system board.

B   A
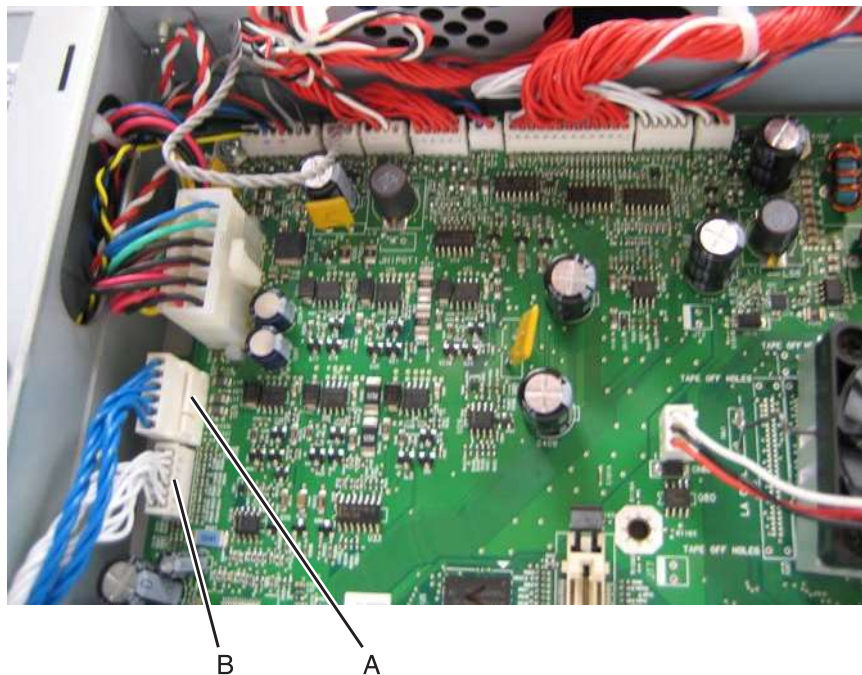
3. Disconnect the connectors from the cartridge motor 1 (C) and the fuser motor (D).
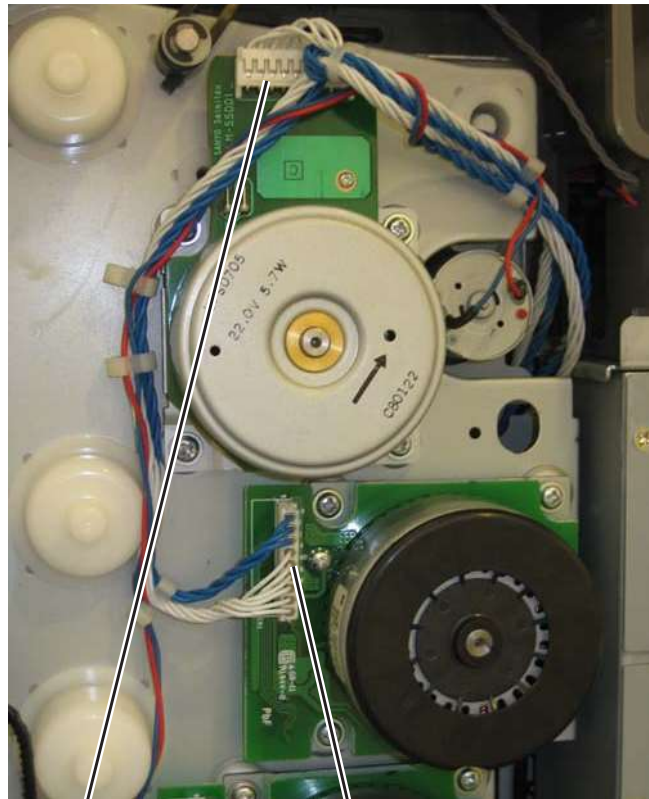
D   C

4. Disconnect the camshaft cable connector (E) from the motor card and unwind the two cables.

E

7526
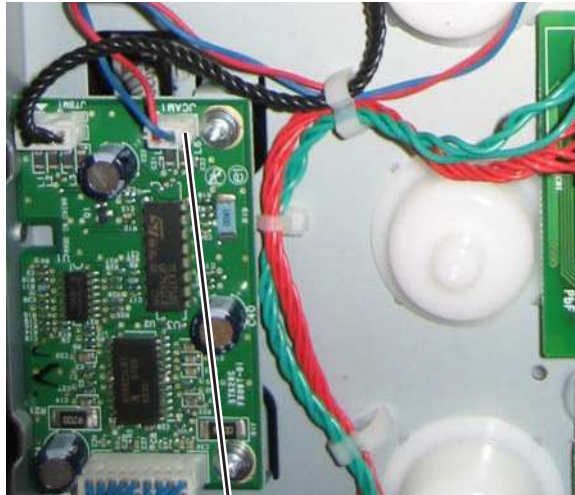
5. Remove the cable from the six retainers (F).

E
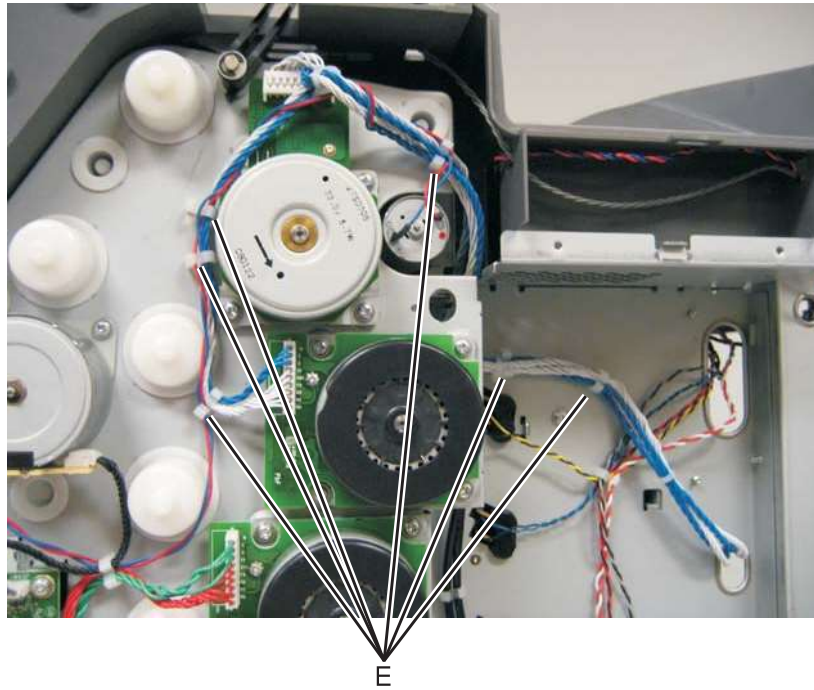
Installation notes:

- Make sure you wrap the camshaft cable around the cartridge motor 1/fuser cable, as shown, to prevent the cables from interfering with the motors or the motors damaging the cables.
- Note the routing of the cables and the cable retainers.

Cartridge motor 2/3 cable removal

1. Remove the LVPS. See **"Low-voltage power supply (LVPS) removal" on page 4-115**.
2. Disconnect the connectors in JCARTP2 (A) and JCARTS2 (B) on the system board.

A   B
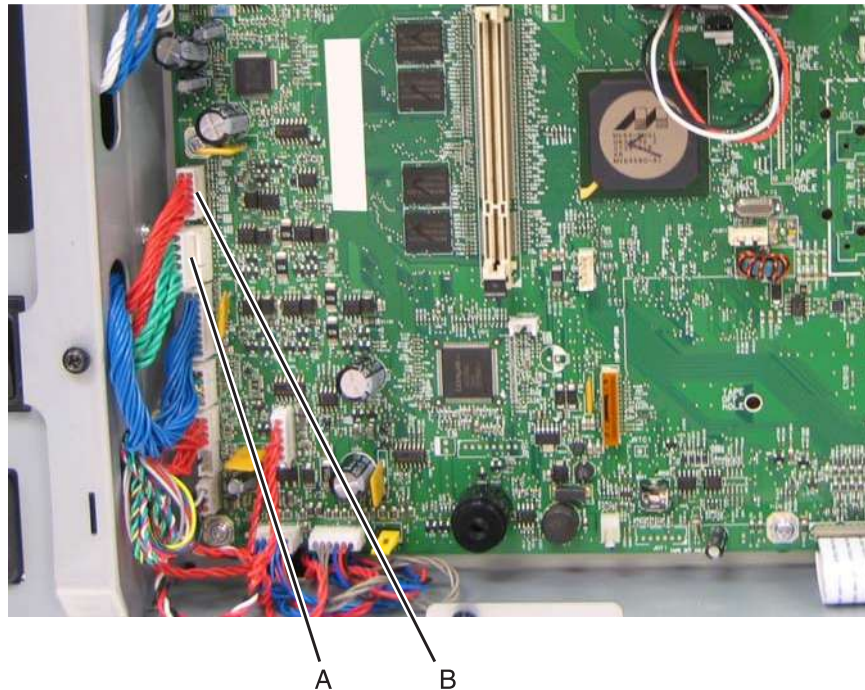
3. Disconnect the connectors from the cartridge motor 2 (C) and cartridge motor 3 (D).

C   D
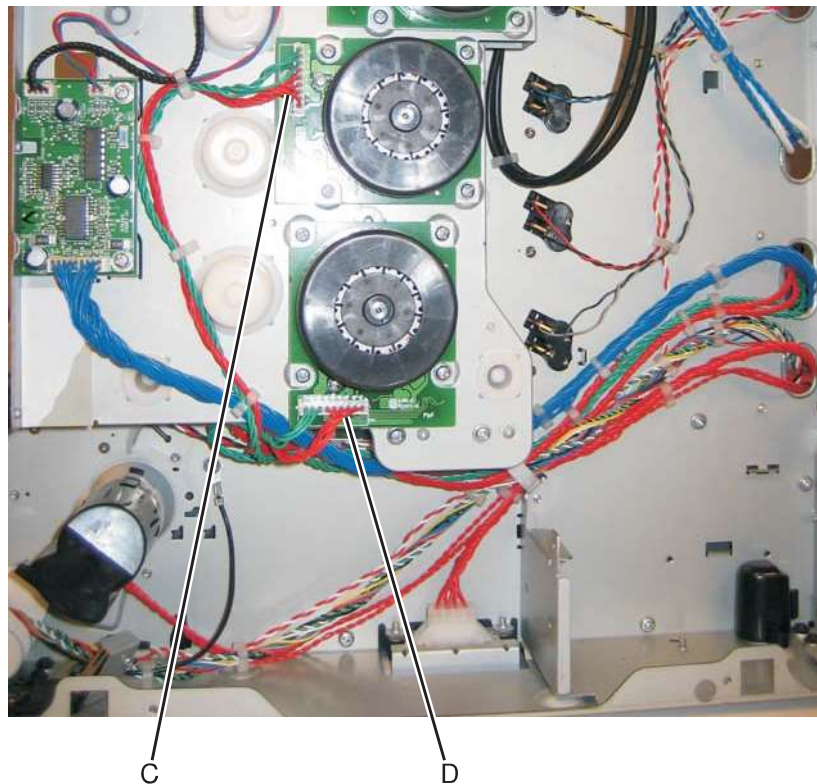
4. Remove the cable from the seven retainers (E).

E   E   E   E
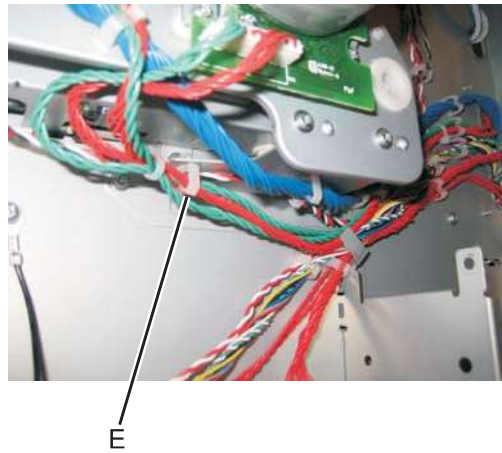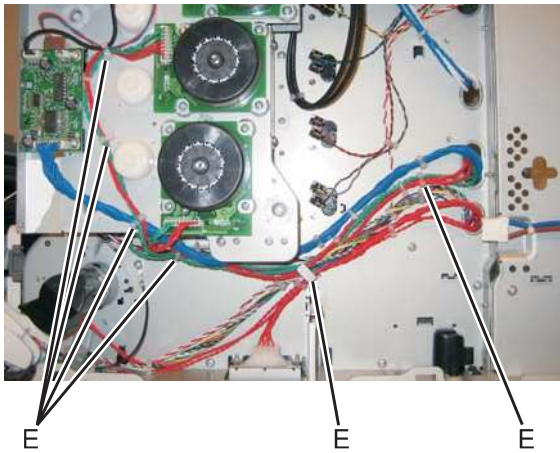
Installation note: Pay attention to the routing of the cables and the cable retainers.

Color on demand assembly removal

1. Remove the print cartridges.
2. Remove the top cover assembly. See **"Top cover assembly removal" on page 4-44**.
3. Disconnect the connector at JBOR1 (A) on the system board.

A
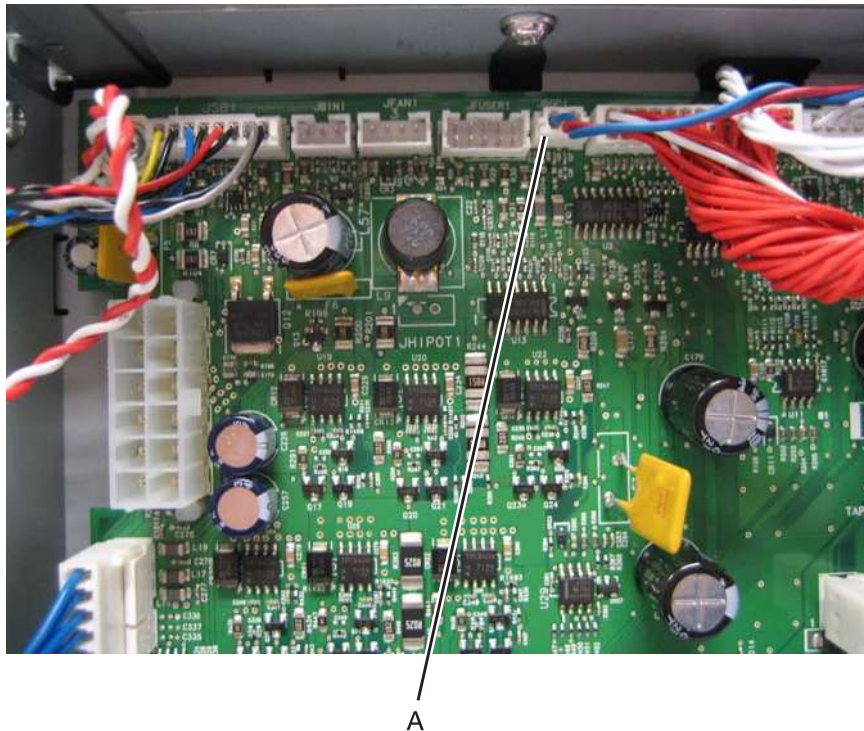
4. Remove the five screws (B).

B   B
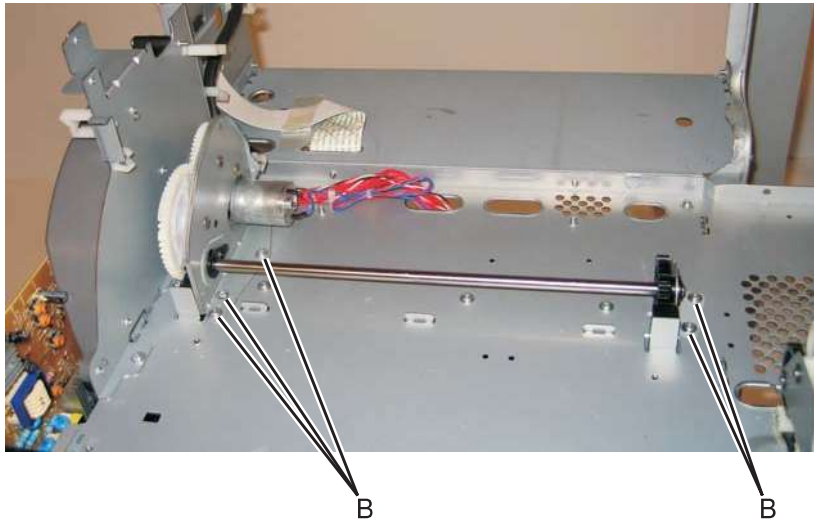
5. Remove the COD assembly.

Installation notes:

1. Push the actuators (A) all the way down.
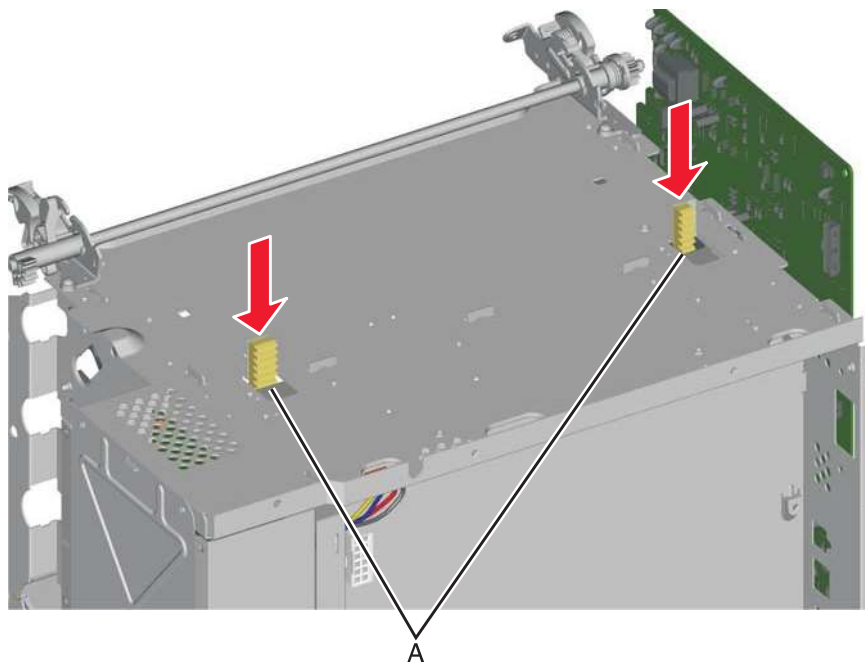
2. Turn the printer around, and verify the actuators are in the correct location by looking inside the front of the printer. The actuators (B) should be visible in the triangular holes in the frame, as shown.
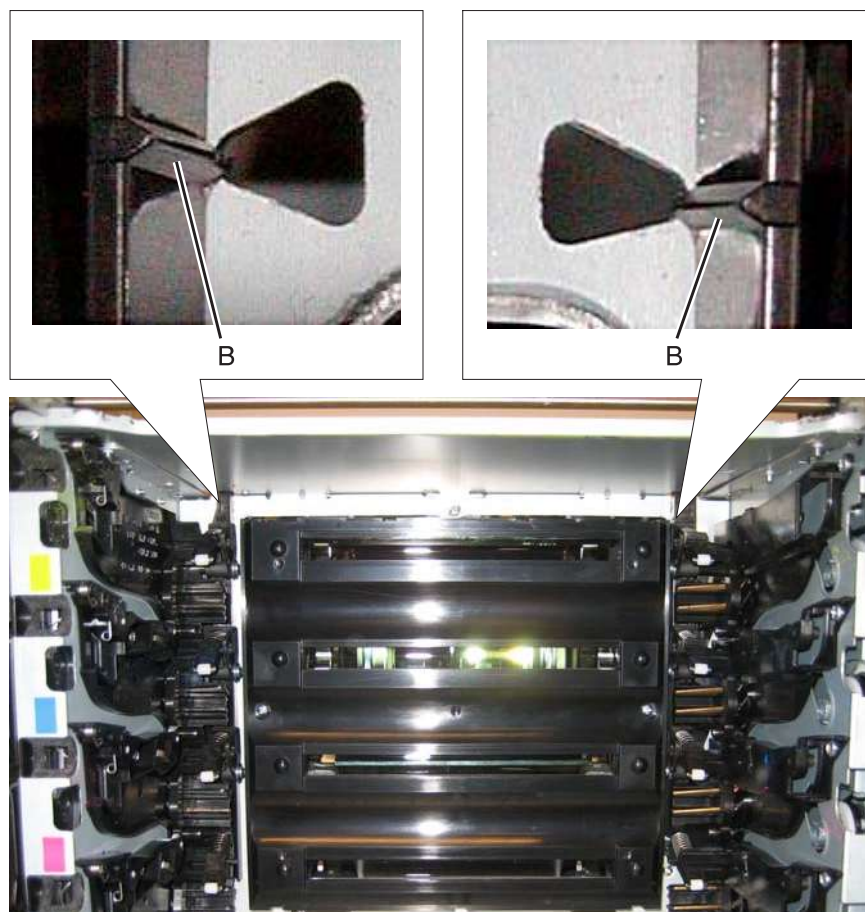
3. Rotate the large COD gear until the stop (C) on the gear is against the housing.

C
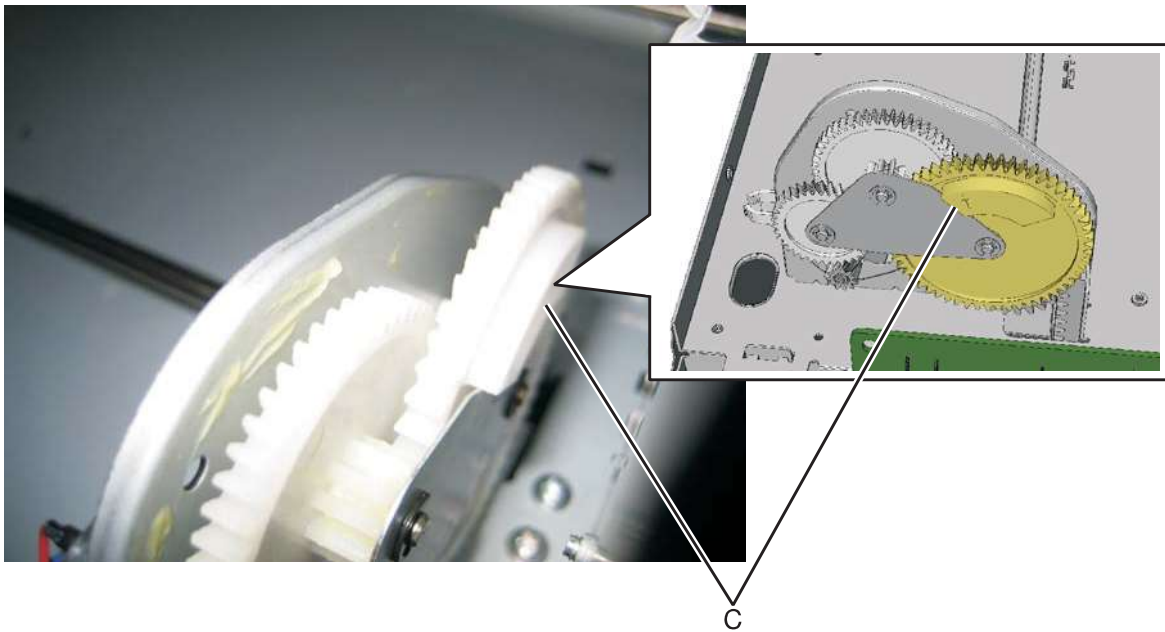
4. Engage the gears on the left side of the COD.
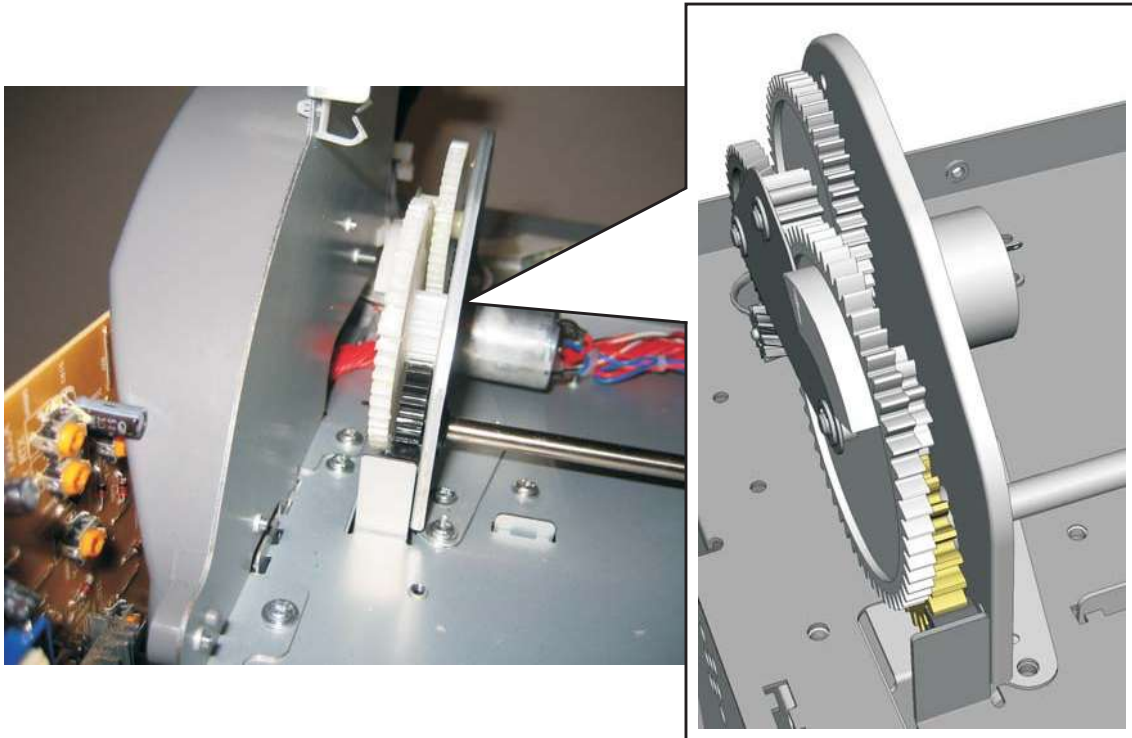
5. Engage the gears (D) on the right side of the COD.

6. Replace the five screws (E).

E   D   E
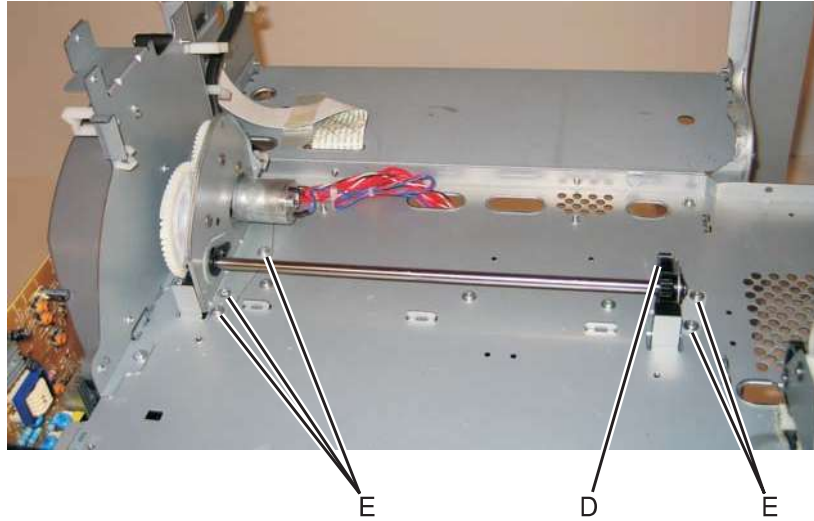
7. Verify the actuators can be seen by looking inside the printer at the triangular holes, as in step 2.

8. Check to make sure you can rotate the large COD gear from stop to stop.
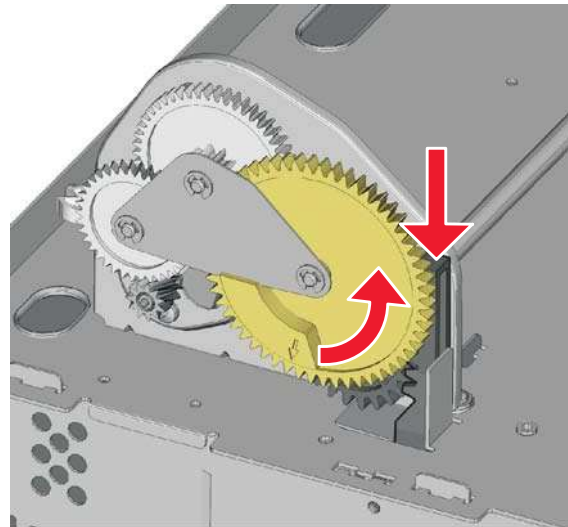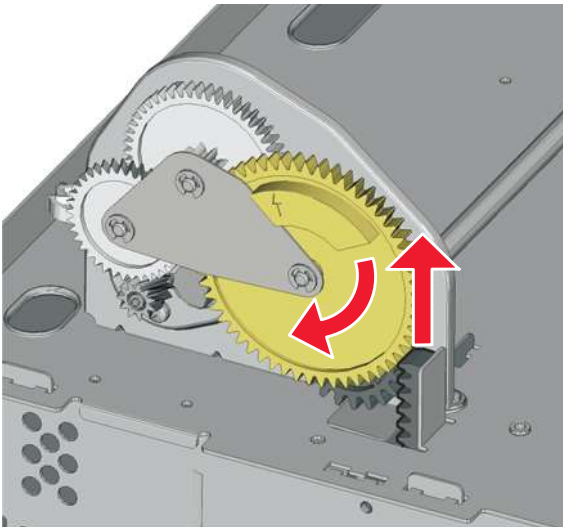
9. Reconnect the cable connector to JBOR1 connector on the system board.

10. Reinstall the top cover assembly, the fuser, and the covers.

Contact springs kit removal

Toner cartridge contacts removal

1. Remove the LVPS. See **"Low-voltage power supply (LVPS) removal" on page 4-115**.
2. Remove the printhead. See **"Printhead removal, installation, and adjustment" on page 4-140**.
3. Remove contact spring cables from the cable restraints (A).

   Note: Pay attention to the routing of the cartridge contact cables, and the appropriate slots where each cartridge contact is installed.

4. Remove the three screws (B) securing the top three bell crank links.

B

5. Remove the bell crank link (C) together with its bell crank spring (D).

C   D
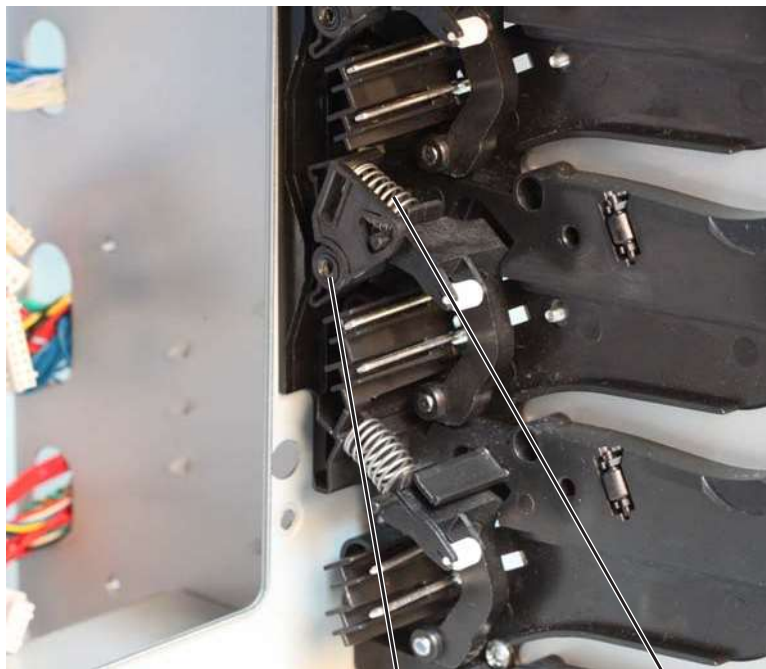
Installation notes:

a. When installing the bell crank link and spring back to the machine, guide the mounting hole on the bell crank link to the mounting pin on the cartridge guide (E), and guide one end of the spring onto the boss rest on the bell crank link and the other end onto the boss rest on the bell crank (F).

b. Make sure the locator pin on the bell crank rests on the locator hole of the bell crank link (G).

F   E   F   G

6. Use a prying tool to remove the bell crank.

Note: The bell crank must be replaced due to the damage that can occur to the retention features of this bellcrank.
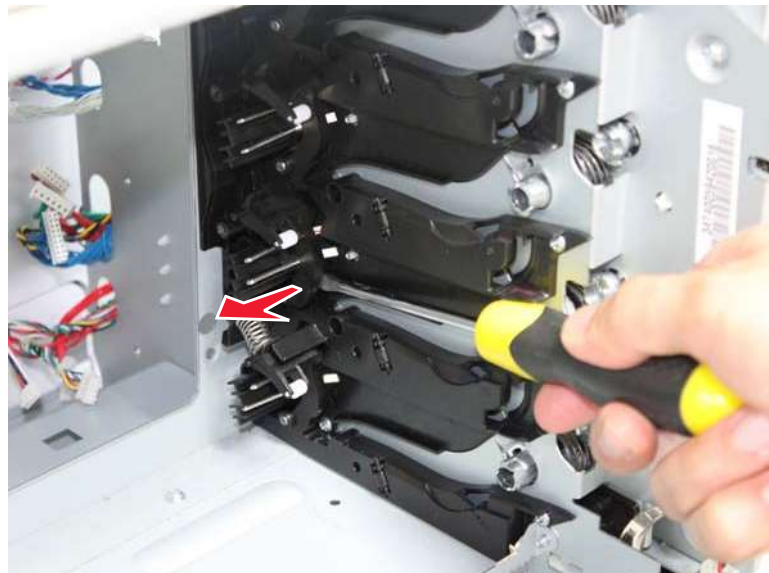
7. Perform steps 5 and 6 to the other bell crank links and bellcranks, except for the one found at the lower-most portion of the cartridge guide.

8. Remove the lower-most bell crank spring (H) and bell crank (I).

H   I
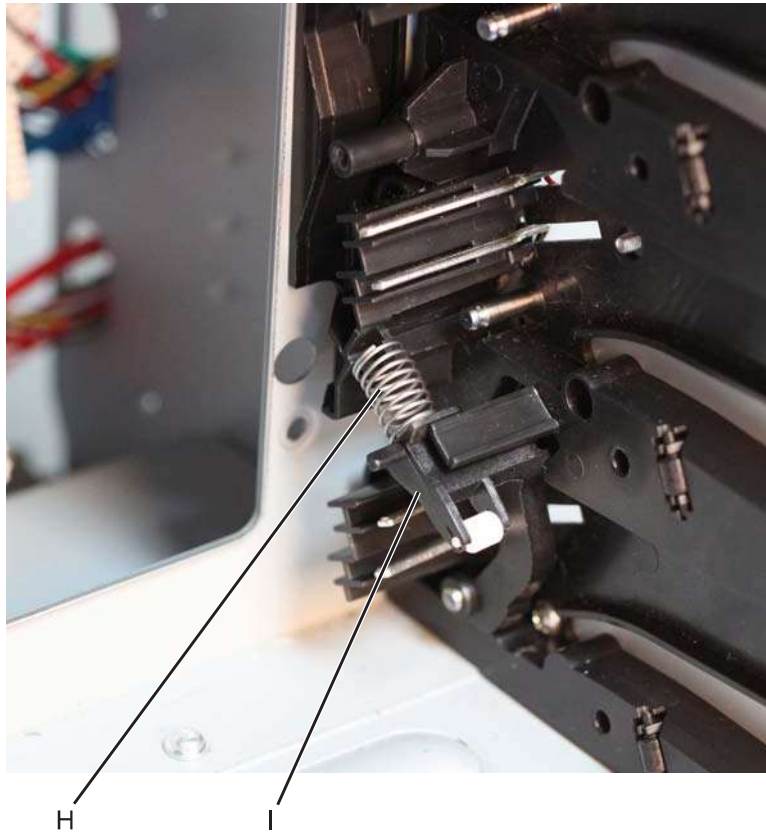
9. Using a spring compression tool (J), align its opening to the rib on the cartridge guide as shown, then push and hold the spring compression tool into the cartridge contact spring.

Note: Make sure to properly align the opening on the spring compression tool to the rib on the cartridge guide.

J
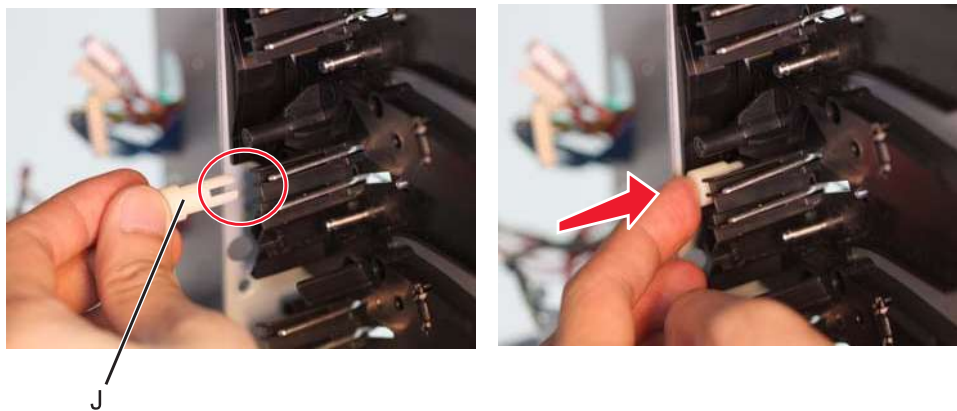
10. Remove the cartridge contacts from the right side of the machine, then release the spring compression tool.

Note: Pay attention to the color coding of the cartridge contact cables, and the appropriate slots where each cartridge contact is installed.
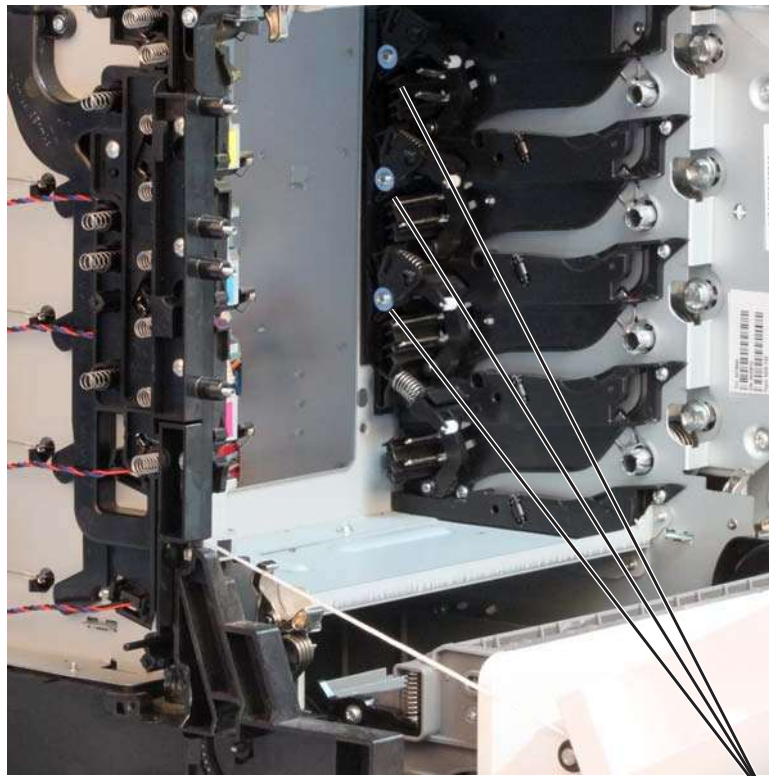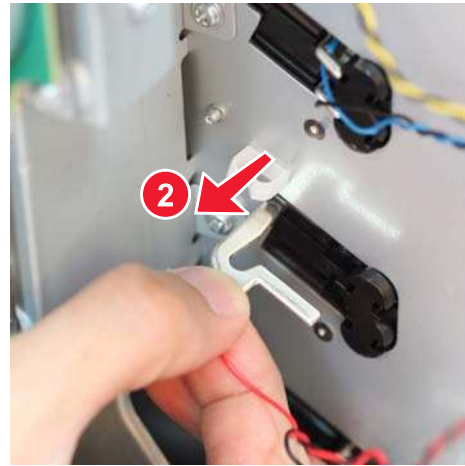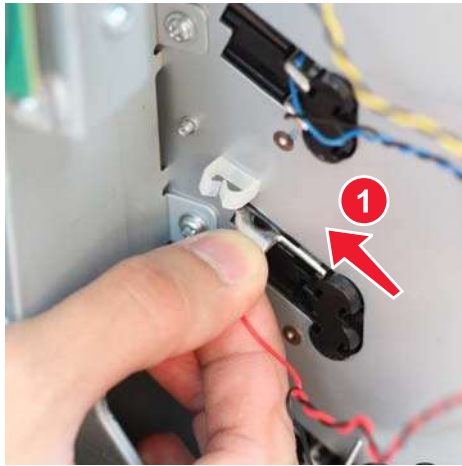

Installation notes:

a. Insert the cartridge contact spring into the slot on the cartridge guide.
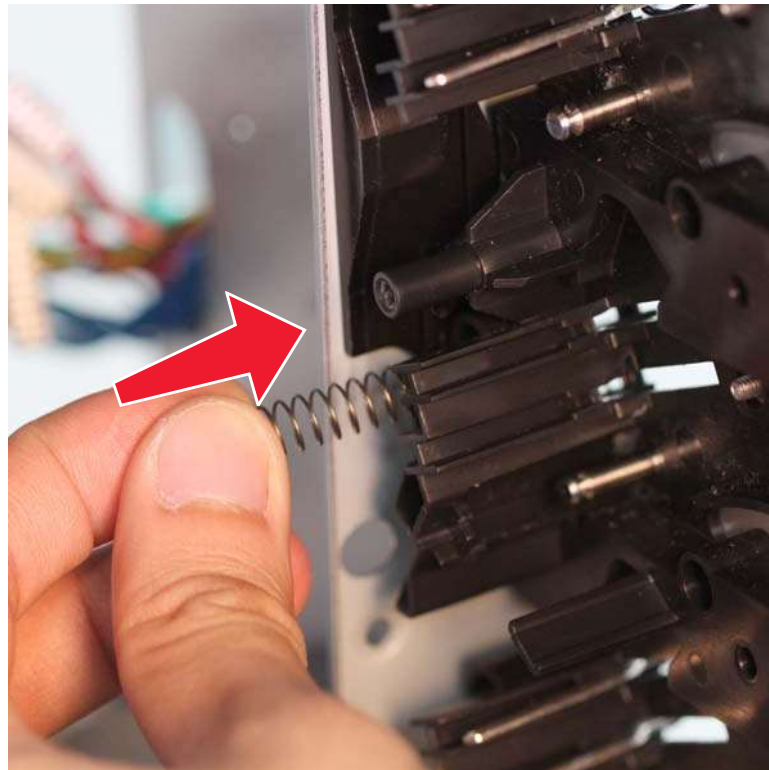
b. Position the spring compression tool (K) as shown below and align its opening to the rib on the cartridge guide, then push and hold the spring compression tool into the cartridge contact spring.
Note: Make sure to properly align the opening on the spring compression tool to the rib on the cartridge guide.

K

c. Insert the cartridge contact on the right side of the machine.
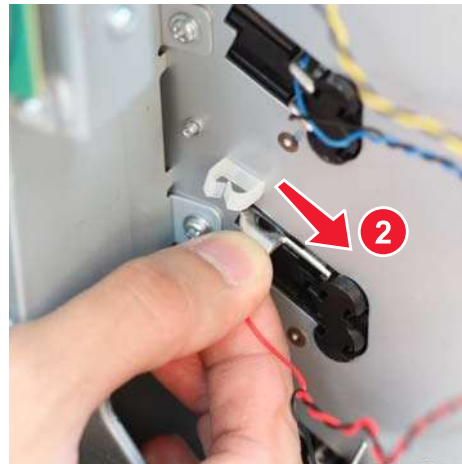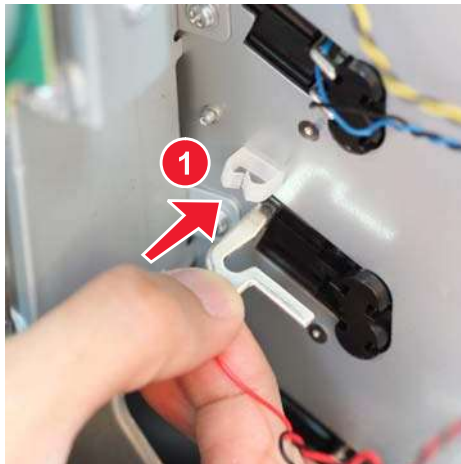
11. Perform steps 9 and 10 to remove all the cartridge contacts.

Charge roll contact spring removal

1. Remove the HVPS. See **"High-voltage power supply (HVPS) removal" on page 4-110**.
2. Remove the charge roll contact springs (A). Be sure to push the springs under the retainers that hold them in place.

   Installation note: Make sure the springs are behind the retainers when installing the new springs.

Retainer

A
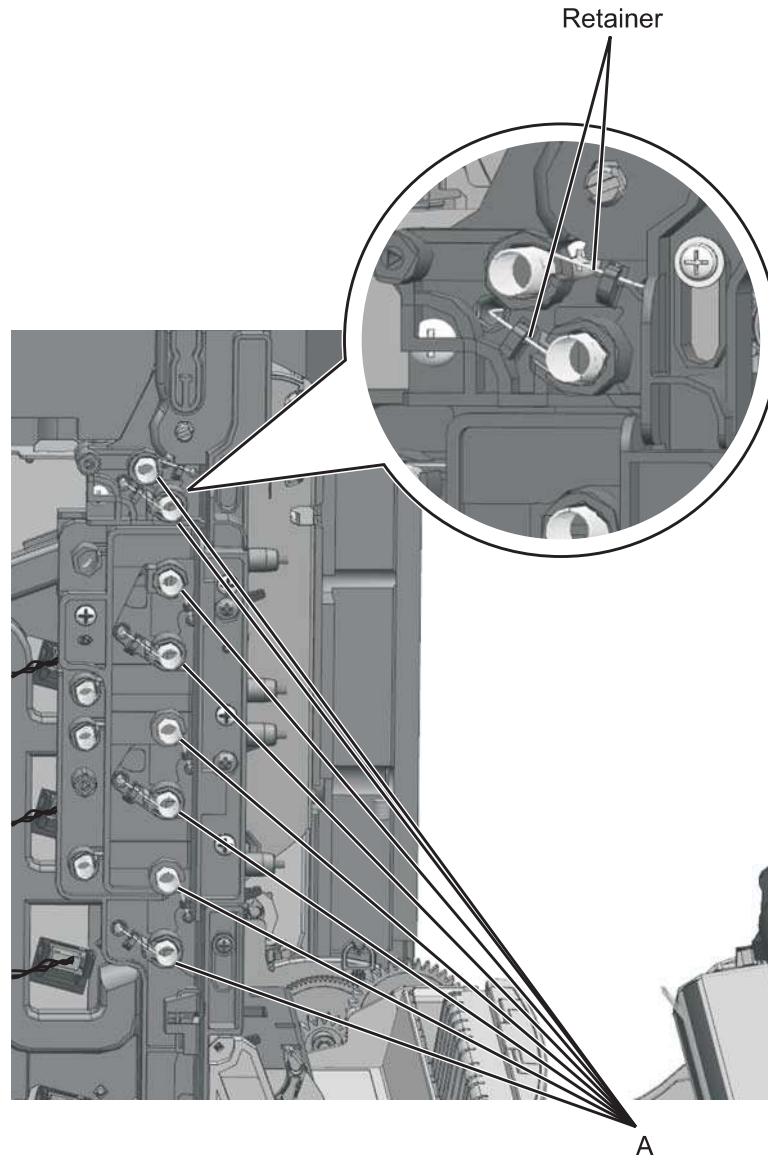
HVPS contact springs removal

1. Remove the HVPS. See **"High-voltage power supply (HVPS) removal" on page 4-110**.
2. Pull out the spring that will be replaced:
   - HVPS DB contact spring (A)
   - HVPS DR contact spring (B)
   - HVPS TAR contact spring (C)
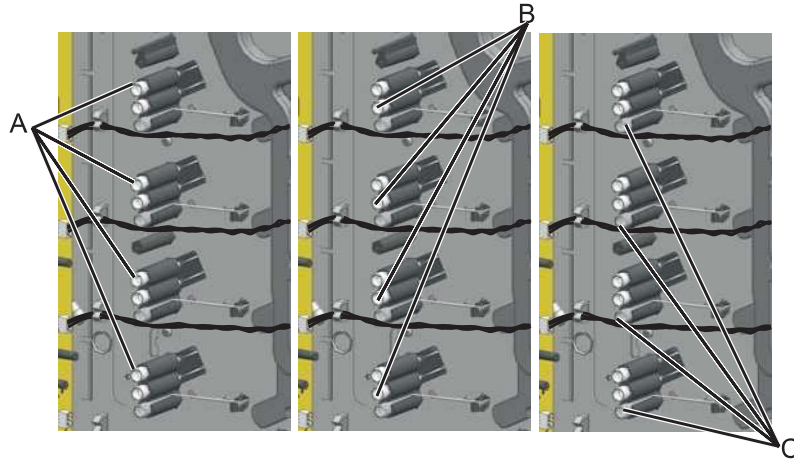
Installation note: Refer below for the location of the HVPS DR Contact spring and HVPS DB contact spring.
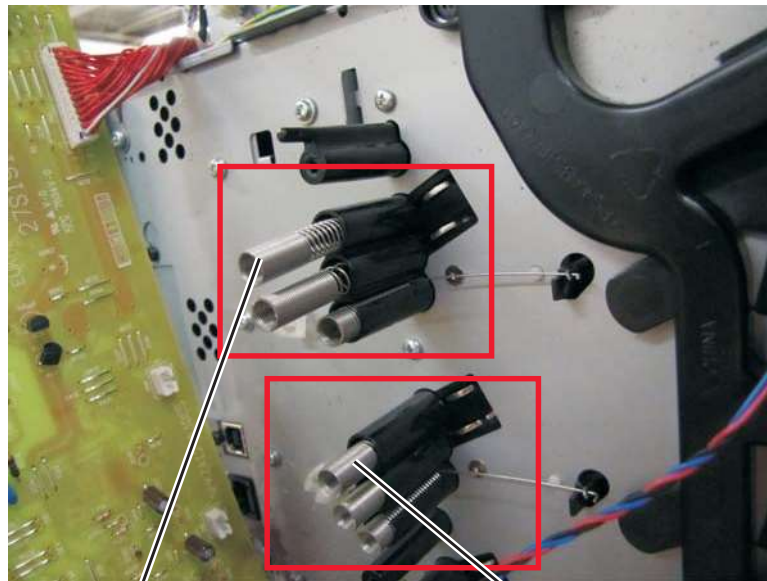
27S1997 HVPS DR Contact   27S1998 HVPS DB Contact

Torsion spring removal

1. Remove all the toner cartridges.
2. Remove the screw (A) and the spring cap (B) of the appropriate contact spring.

A   B
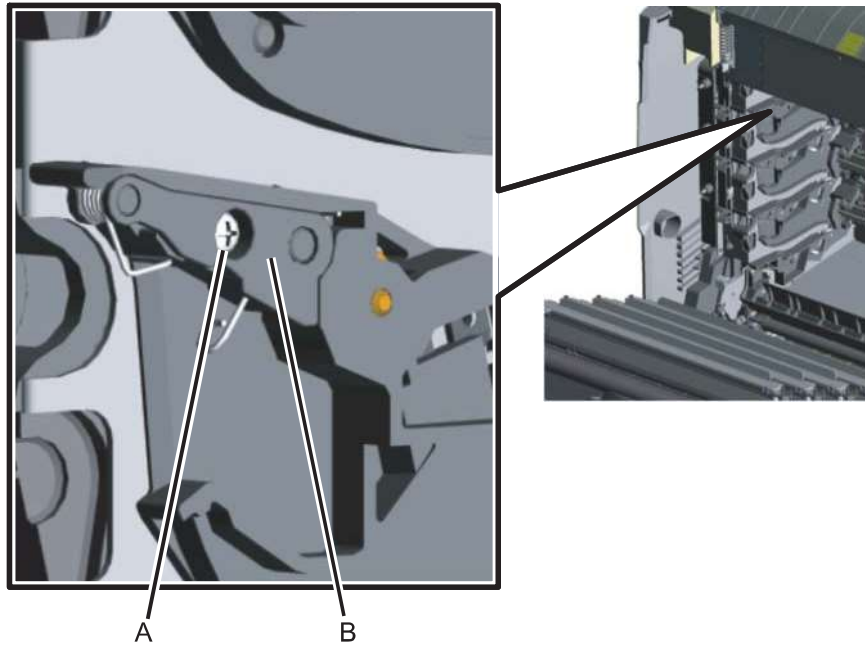
3. Press the lower half (C, D) of the springs, and remove the springs.

C   D
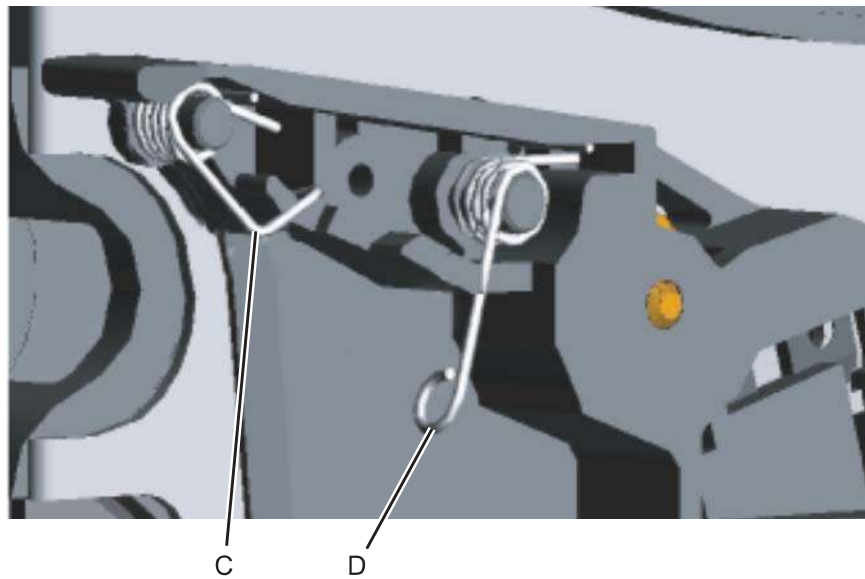
Installation notes:

- When installing, make sure the top half (E) of the spring is under the straight spring (F). This is typical for both types of springs. Also make sure the bottom half (D,G) of both springs are compressed and locked by the appropriate locking tabs (H, I).
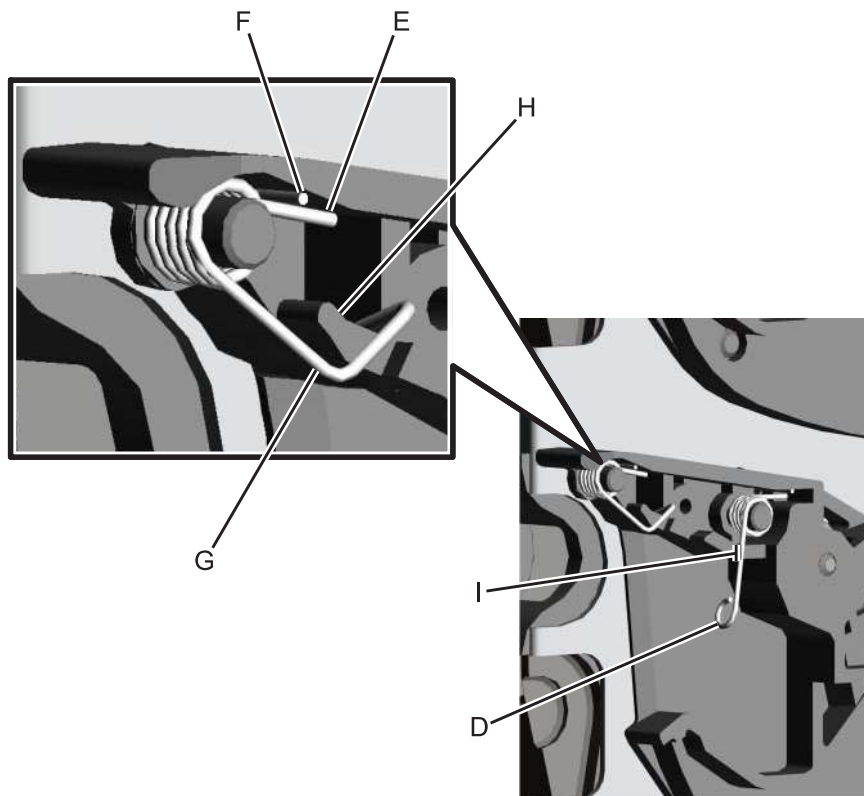
Cooling fan removal

1. Remove the rear frame cover. See **"Rear frame cover removal" on page 4-37**.
2. Remove the rear cover. See **"Rear cover removal" on page 4-36**.
3. Disconnect the cable at the connector JFAN1 (A) on the system board.

A

4. Remove the two screws (B).

B

5. Remove the cooling fan.

Cooling fan filter removal

2. Turn the cover over.
3. Squeeze the right side of the filter, and remove it from the tabs (A).

A
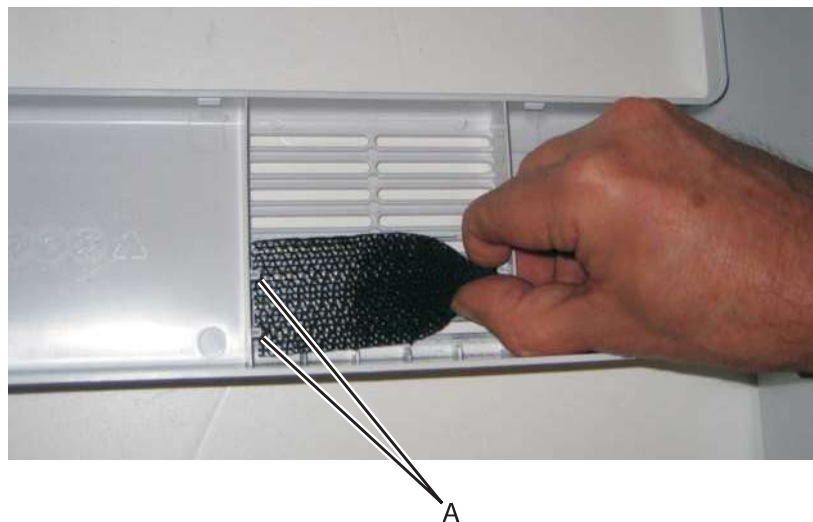
Duplex reference edge guide assembly removal

1. Remove the paper tray.
2. Disconnect the transfer module cable (A).
3. Press the two tabs (B) to release the front access door cover assembly.
4. Press the two tabs (C) on either side of the transfer module, and lift out the transfer module.

   Note: Leave the photoconductor units on the transport belt when removing.

   Warning: To avoid damaging the photoconductor drum, hold the photoconductor units by their handle and place the photoconductor units on a clean surface. Never expose the photoconductor units to light for a prolonged period of time. See **"Handing the photoconductor unit" on page 4-3** for additional information.

A

B   C

5. Looking down at the keyed end of the restraint (D), twist the end clockwise, slide the restraint upward through the slit (E), and slip the end of the restraint through the keyed hole (F). Repeat for the other side.

D   F   E

6. Close the front access door assembly.

7. Remove the two screws (G) on the duplex aligner, and then remove the screw (H) securing the duplex reference edge guide assembly.

H   G
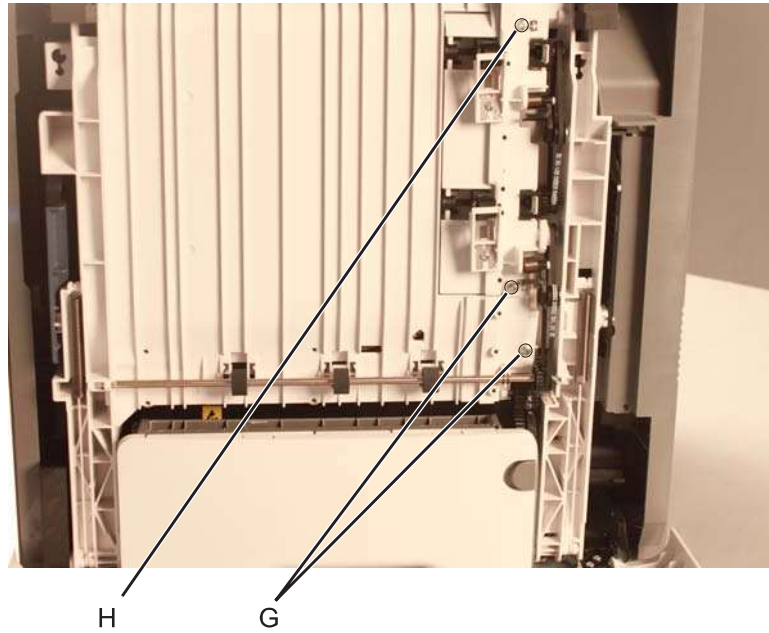
8. Remove the duplex reference edge guide assembly.

Electrophotographic (EP) drive assembly removal

1. Remove the paper tray.
2. Disconnect the transfer module cable (A).
3. Press the two tabs (B) to release the front access door cover assembly.
4. Press the two tabs (C) on either side of the transfer module, and lift out the transfer module.
   Note: Leave the photoconductor units on the transport belt when removing.

   Warning: To avoid damaging the photoconductor drum, hold the photoconductor units by their handle and place the photoconductor units on a clean surface. Never expose the photoconductor units to light for a prolonged period of time. See **"Handing the photoconductor unit" on page 4-3** for additional information.

5. Remove the cartridges.
6. Remove the low-voltage power supply (LVPS). See **"Low-voltage power supply (LVPS) removal" on page 4-115**.

7. Disconnect the cartridge 1/fuser motor cable (two connectors) (D), and remove the cables from the cable retainers (E).

E D   E   D
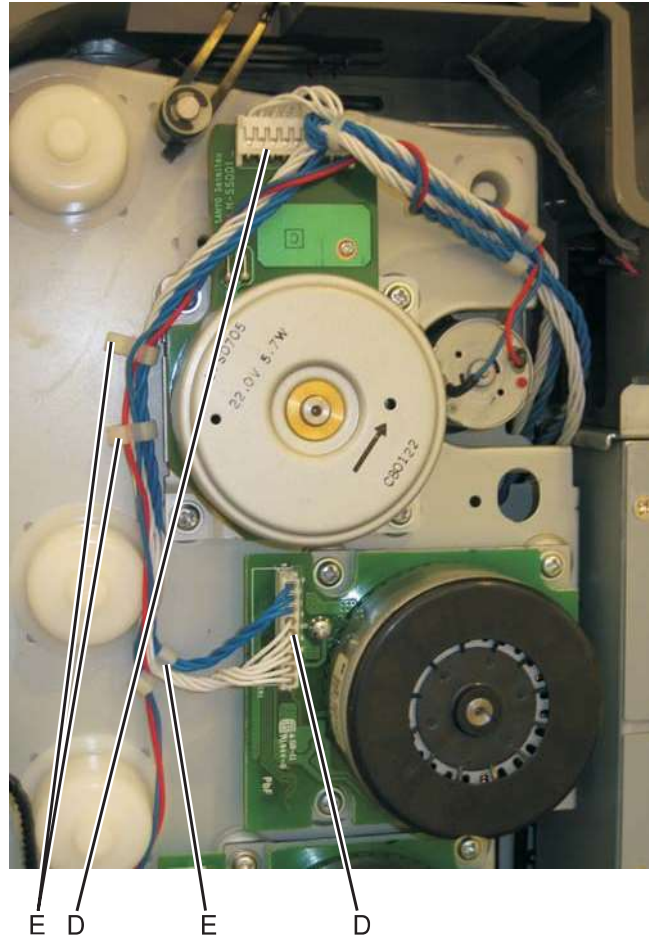
8. Disconnect the camshaft/transport cable connector (F), and remove the cable from the cable clamp (G).

F   G
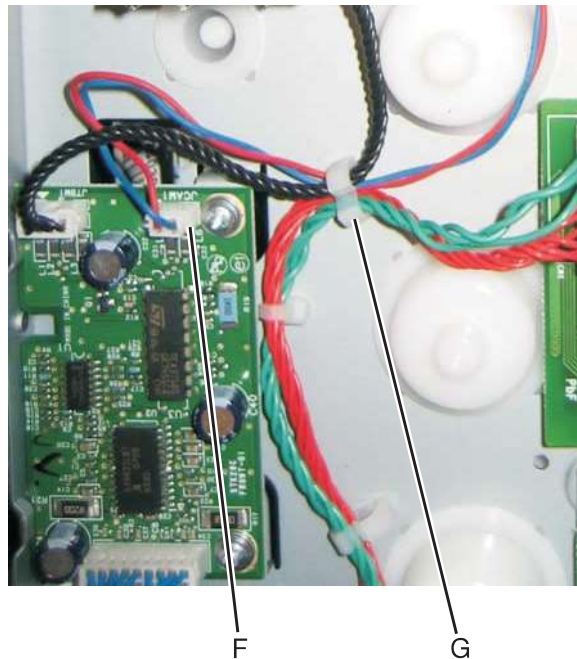
9. Unwind the camshaft/transport cable and the cartridge 1/fuser cables (H).

Note: Be sure to rewind the camshaft/transport cable around the other cables with about four twists to keep them from interfering with or being damaged by the motors.

H
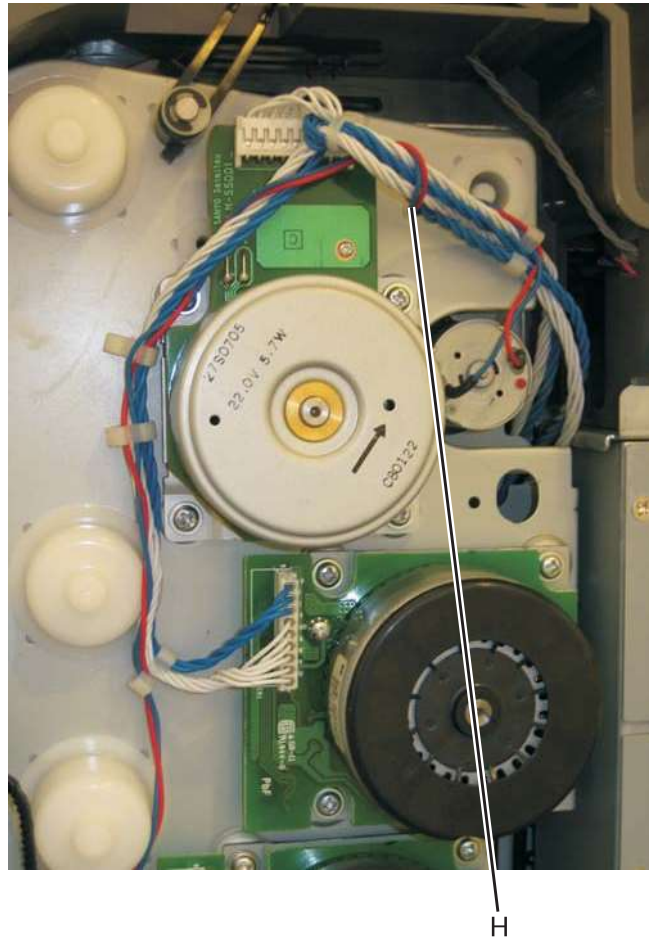
10. Disconnect the cartridge 2/cartridge 3 motor cable (two connectors) (J), and remove the cable from the cable clamps (K).

K   J   K
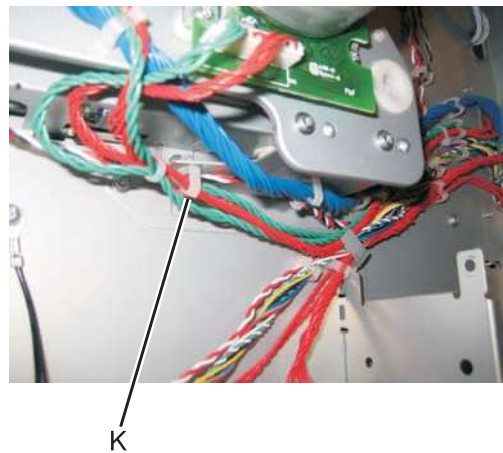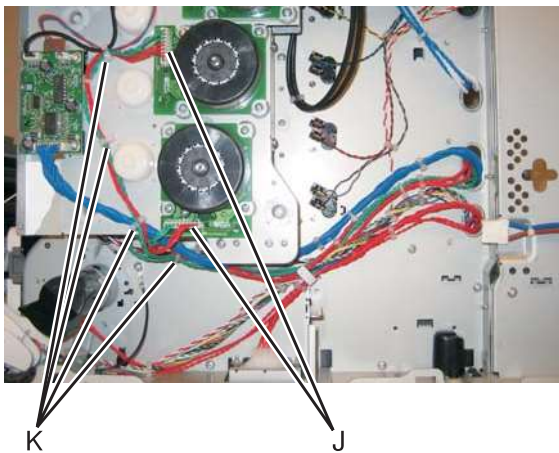
11. Disconnect the motor drive cable connector (L), and remove the cable from the cable clamps (M)

12. Remove the two screws (N) to remove the motor driver card assembly.

L   N

M

M
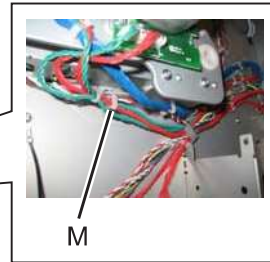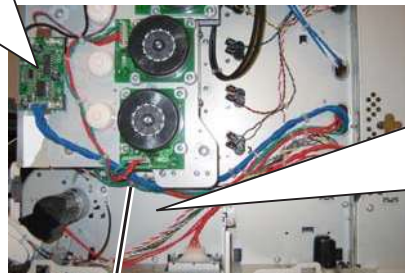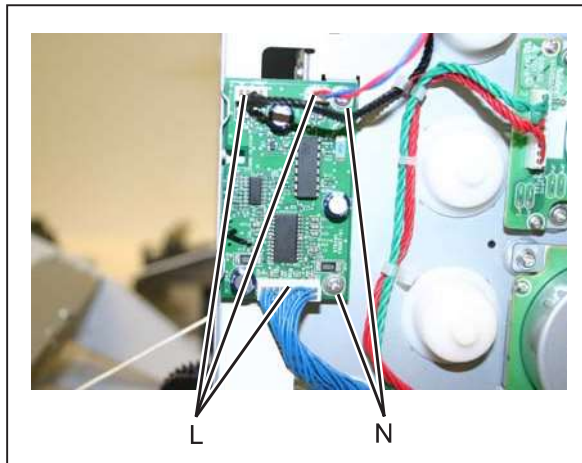
13. Remove the three screws (P) on the front.

14. Remove the two screws (O) on the inside.
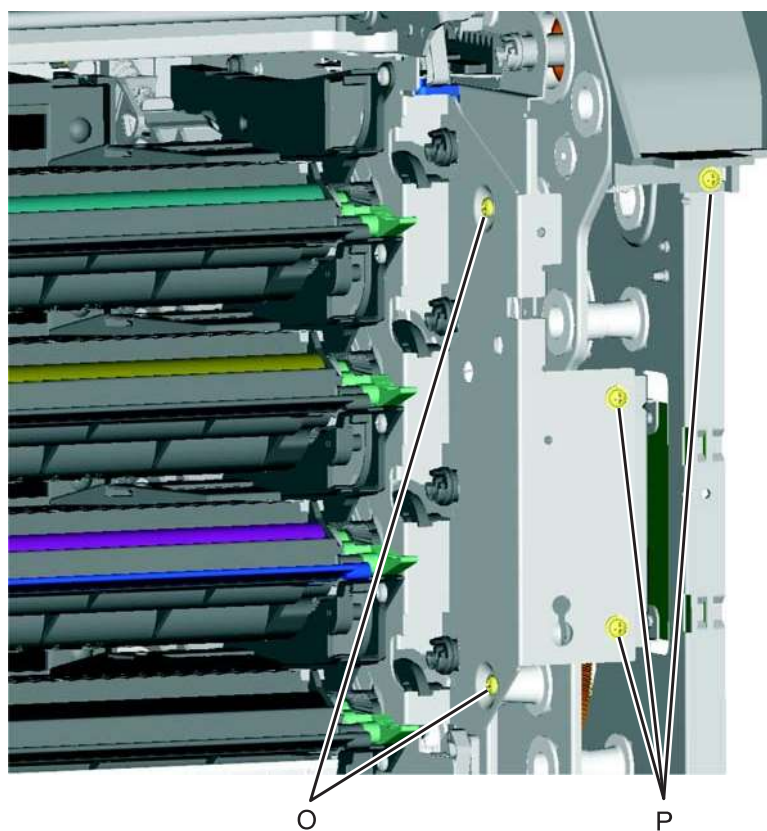
15. Remove the seven screws (R) securing the EP drive.

R

R (First)

R

R
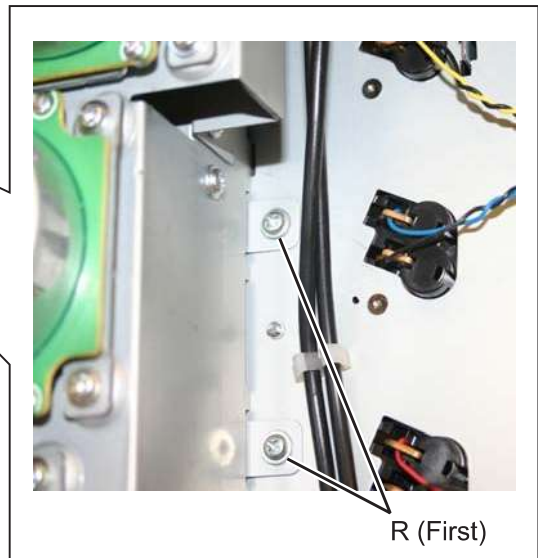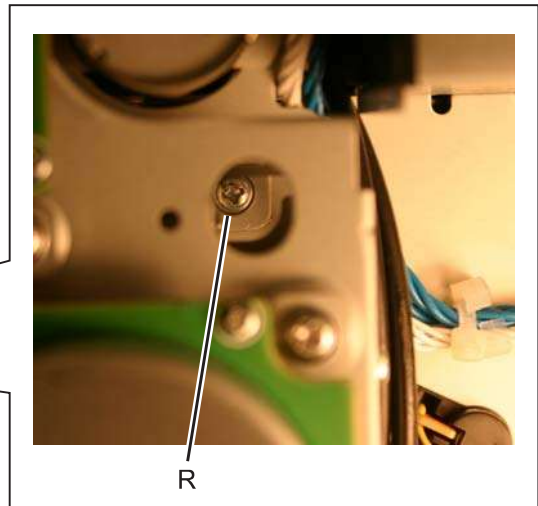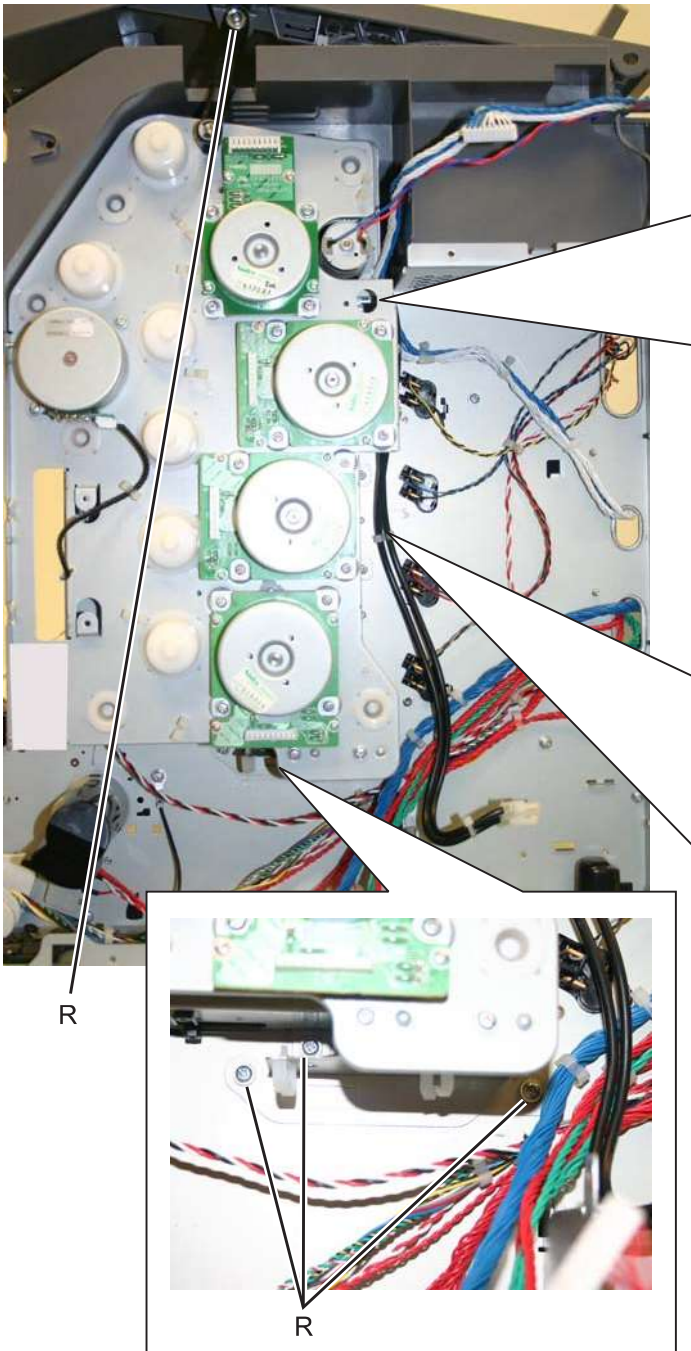
16. Remove the 5 V interlock switch cable from the restraint (S) on the backside of the EP drive.

S
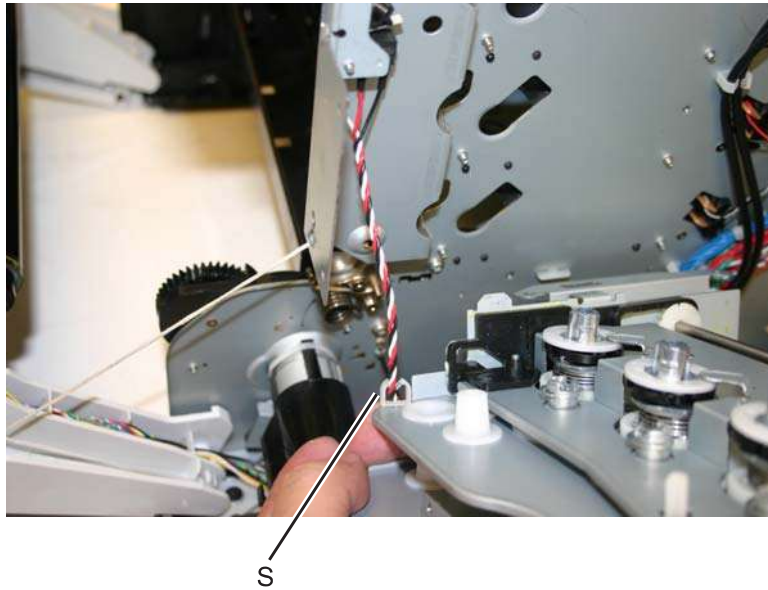
17. Remove the EP drive.

Installation notes:

The EP drive assembly for the single-function printers and the multiple-function printers (MFP) are the same, except for the fuser retract link. The package comes with the EP drive assembly with the single-function printer link installed. To set up the EP drive for the multiple-function printer (MFP), exchange the links.

To change the fuser retract link:

1. Remove the E-clip (A) and the follower cam.
2. Remove the fuser retract link (B), and discard.

B

A
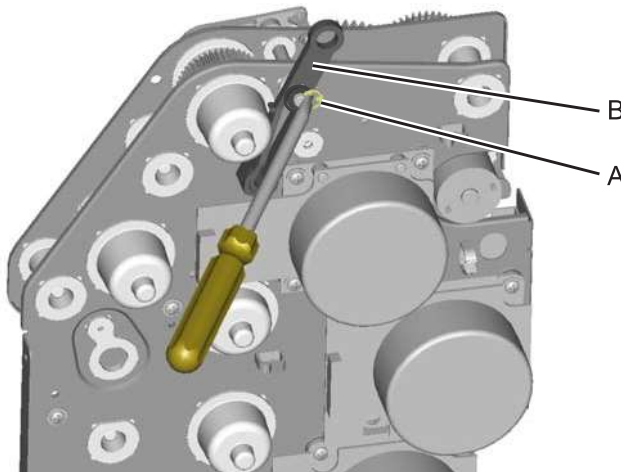
3. Install the new fuser retract link (C), the follower cam (D), and the E-clip (E).

 Note: Be sure to orient the follower cam so that the smaller diameter side is against the fuser retract link, and the larger diameter is next to the E-clip.

C   D   E
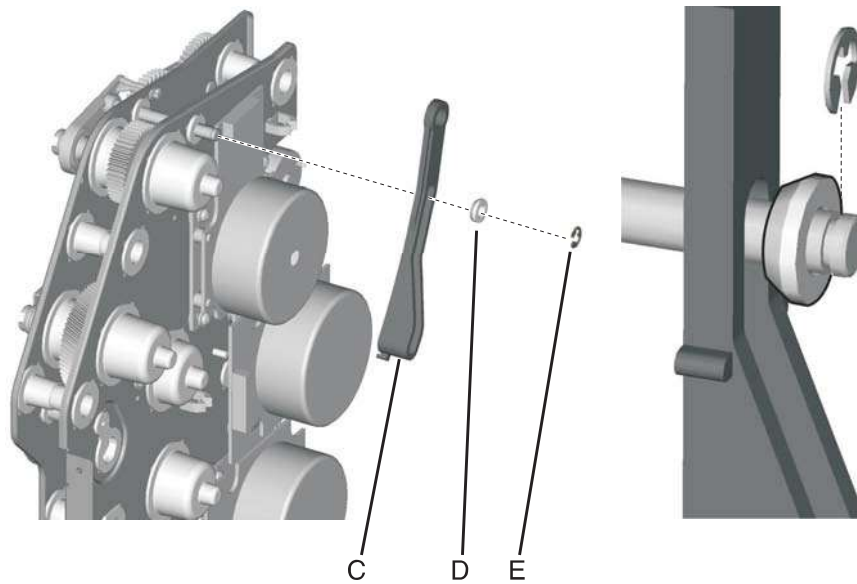
To install the EP drive:

1. Push the actuator rack all the way to the right (A).
2. Pull the link all the way up (B).
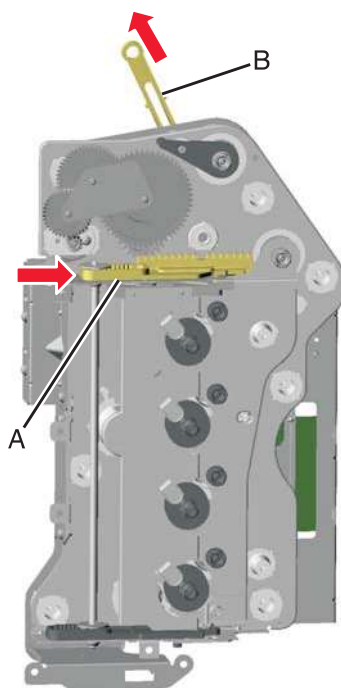
Note: After installing the EP drive assembly, be sure to test the link by moving it up and down. It should move freely and not rub against any motor cables.
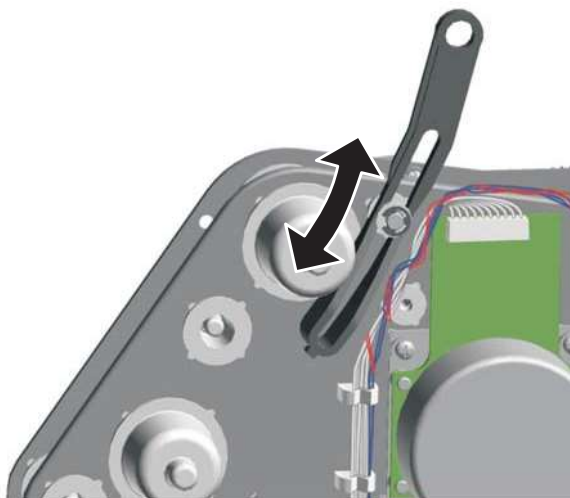
3. Fasten the 5 V interlock cable into the cable retainer (C) on the bottom of the EP drive.

C

4. Align the gear so the first gear tooth (D) of the top cover camshaft meshes with the first two gear teeth (E) after the flat area in the EP drive actuator rack, and then seat the right side of the top cover camshaft into the boss (F) on the EP drive.

F

D

Flat area
(gap)

E
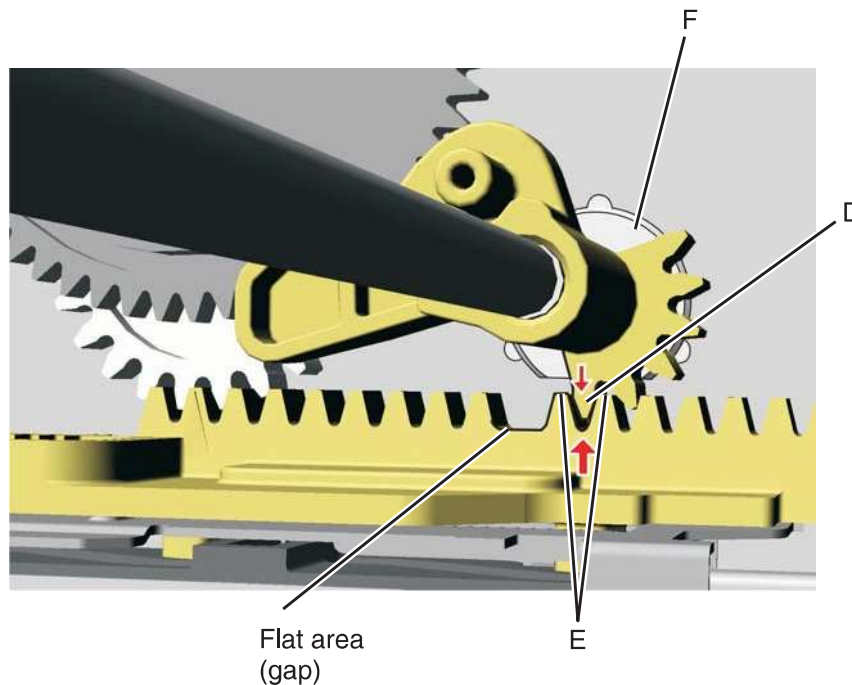
5. Hold the drive in place while replacing the first of the seven screws, then continue replacing the rest of the screws (G).

G

G

G (First)

G
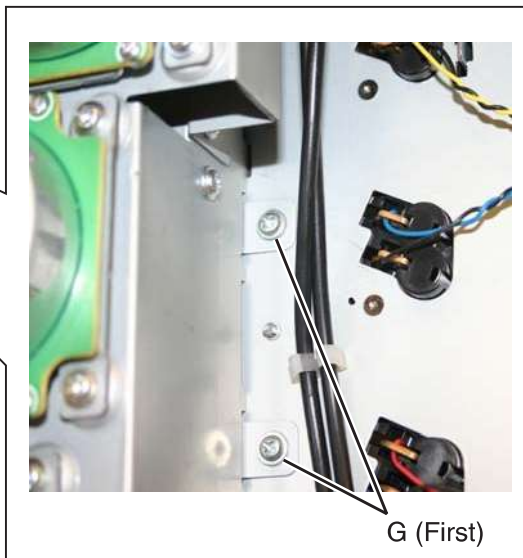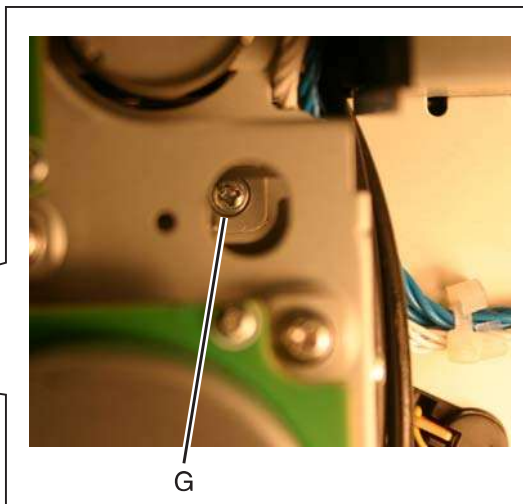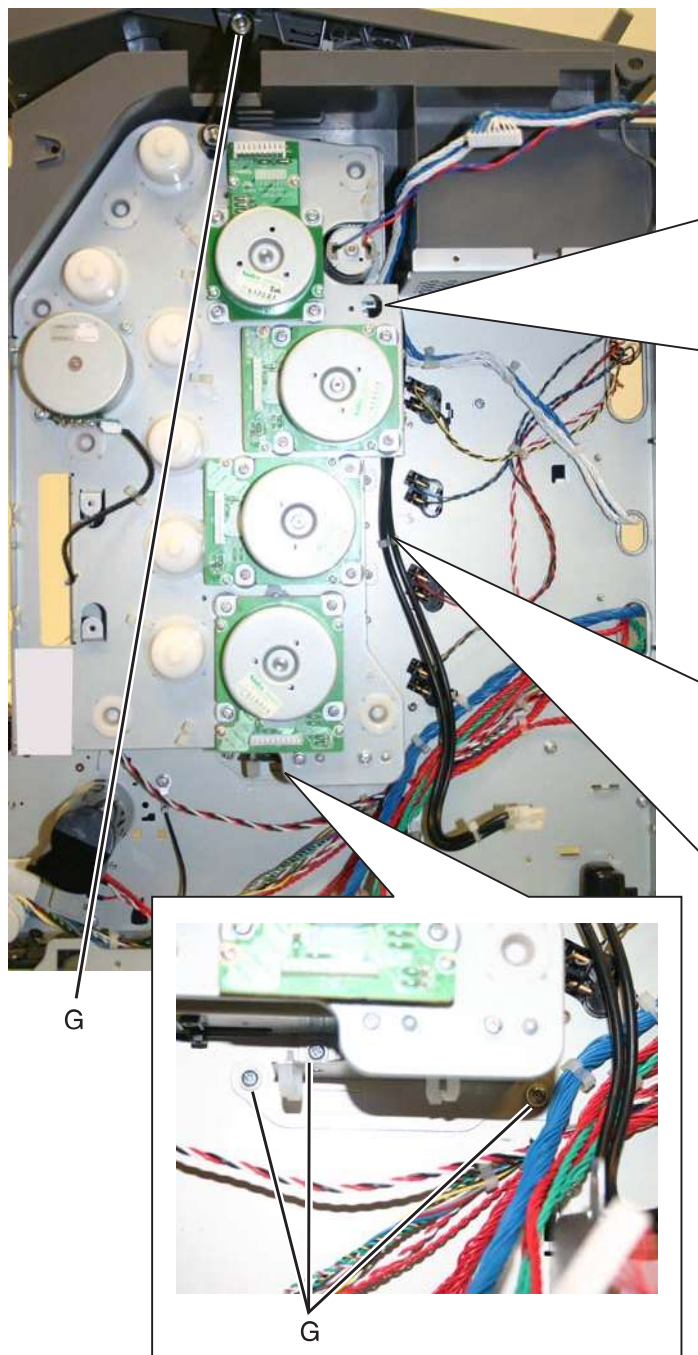
6. Replace the two screws (H) from the inside.

7. Replace the three screws (J) on front.

H   J
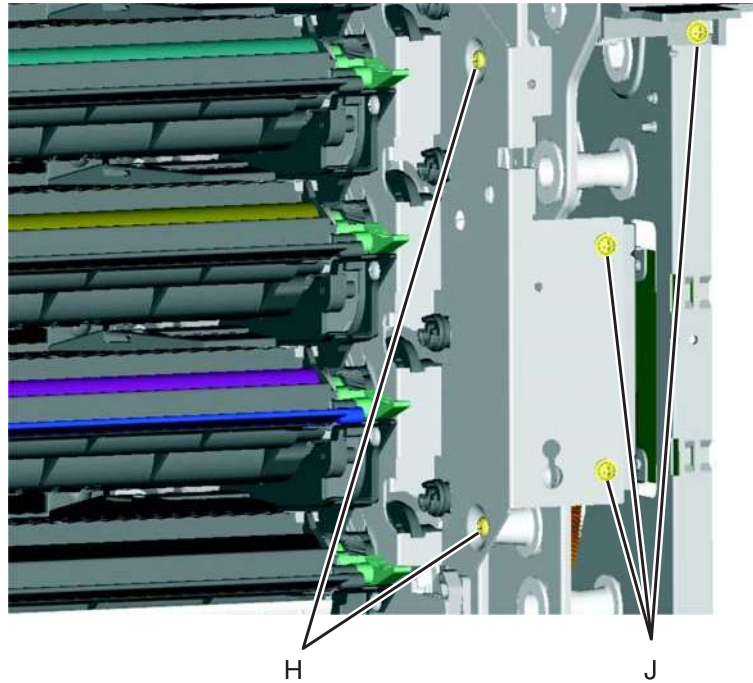
8. Wind the camshaft cable (K) around the cartridge 1/fuser cables about four times to make sure they do not interfere with or are damaged by the fuser motor.

9. Connect the cartridge 1/fuser motor cable (two connectors) (L), and place the cables in the cable retainers (M).
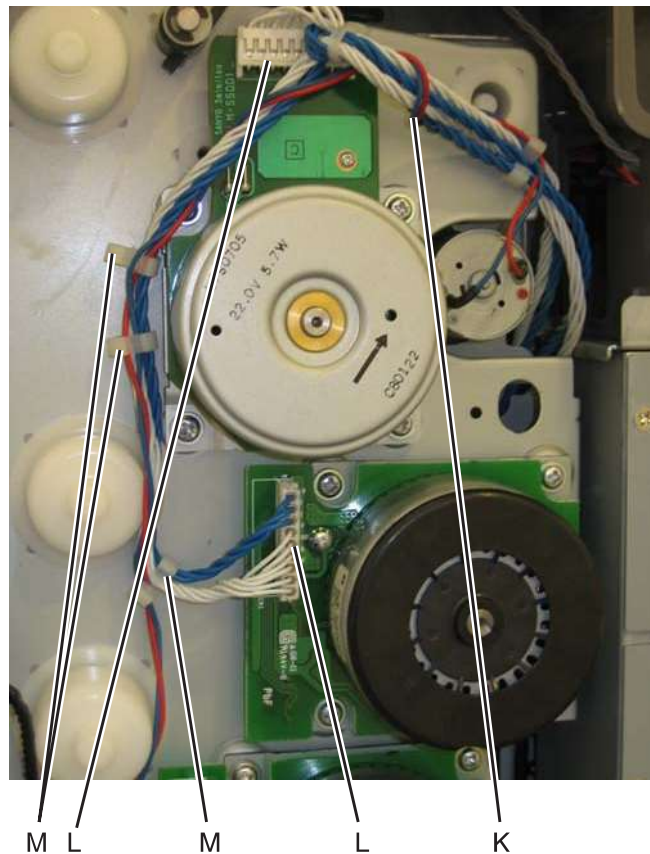
M L   M   L   K

10. Connect the cartridge 2/cartridge 3 motor cable (two connectors) (N), and make sure the cable is in the cable clamps (O).

O   N
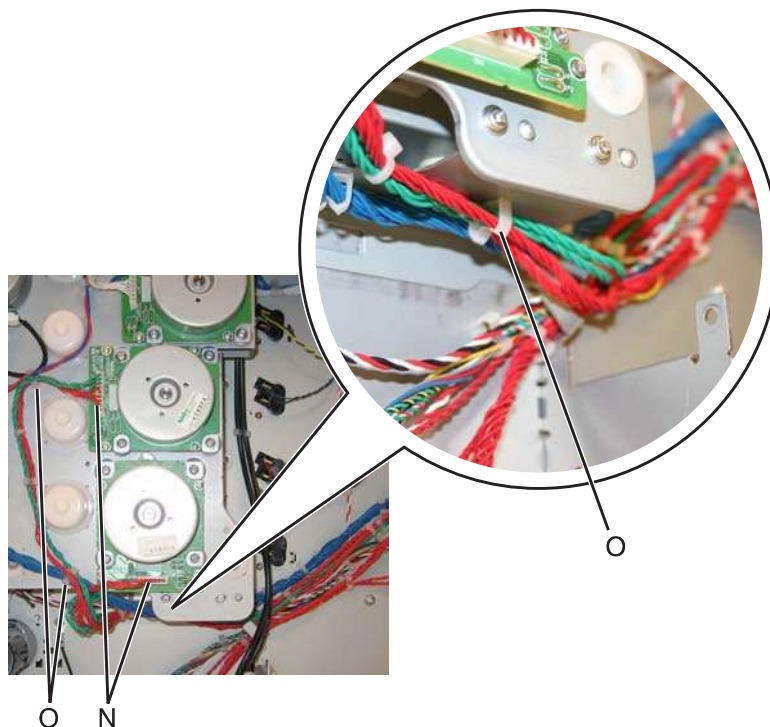
11. Hold the motor driver card in place and reinstall the two screws (P) to secure the motor driver card.
12. Connect the three connectors (Q), and secure the cables in the cable clamps (R).

Q

R

P   R
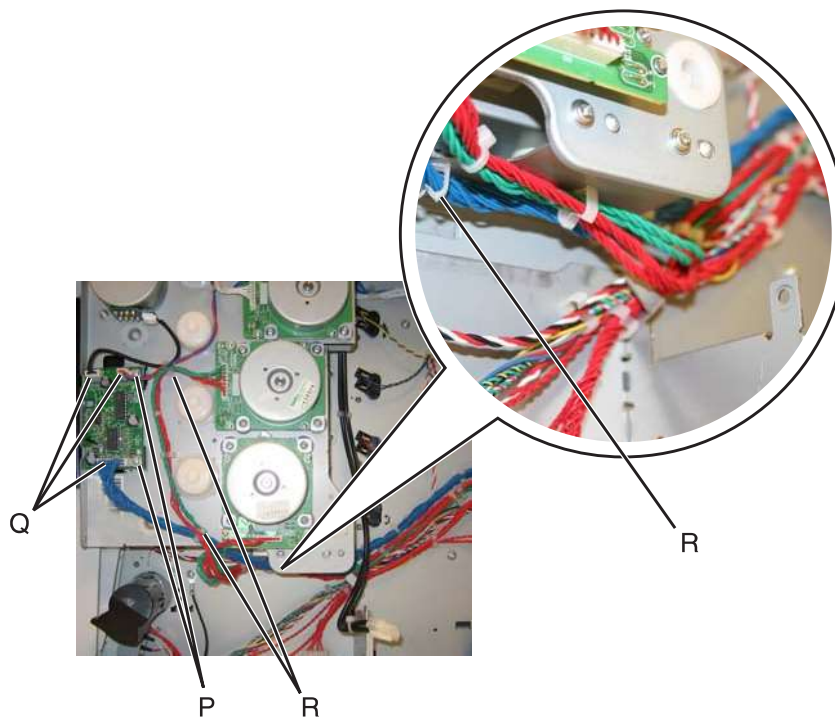
13. Reinstall the low-voltage power supply (LVPS).
14. Replace the right and rear covers.
15. Replace the transport belt module and developer units.
16. Replace the cartridges and the fuser.

17. Replace the paper tray.

Fax modem removal

Warning: This part might contain customer confidential information. See **"Data Security Notice" on page 4-1** for more details. After removing this part, return it to your next level of support so any data can be removed. If the customer requests to keep the part, they must sign a confirmation of memory device retention form.

1. Remove the rear frame cover. See **"Rear frame cover removal" on page 4-37**.

2. Open the left door cover.

3. Loosen the two screws (A) securing the fax modem, and then lift the card to remove it.

4. Disconnect the cable (B) from the connector on the system board. The connector is under the card.

A   B

5. Lift, and remove the fax modem.

Front door assembly removal

See the part number for the Front door assembly for the specific model you need on.

1. Remove the front access cover assembly. See **"Front access cover assembly removal" on page 4-21**.
2. Remove the LVPS. See **"Low-voltage power supply (LVPS) removal" on page 4-115**.
3. Disconnect the JTPS1 cable (A) from the system board.

A
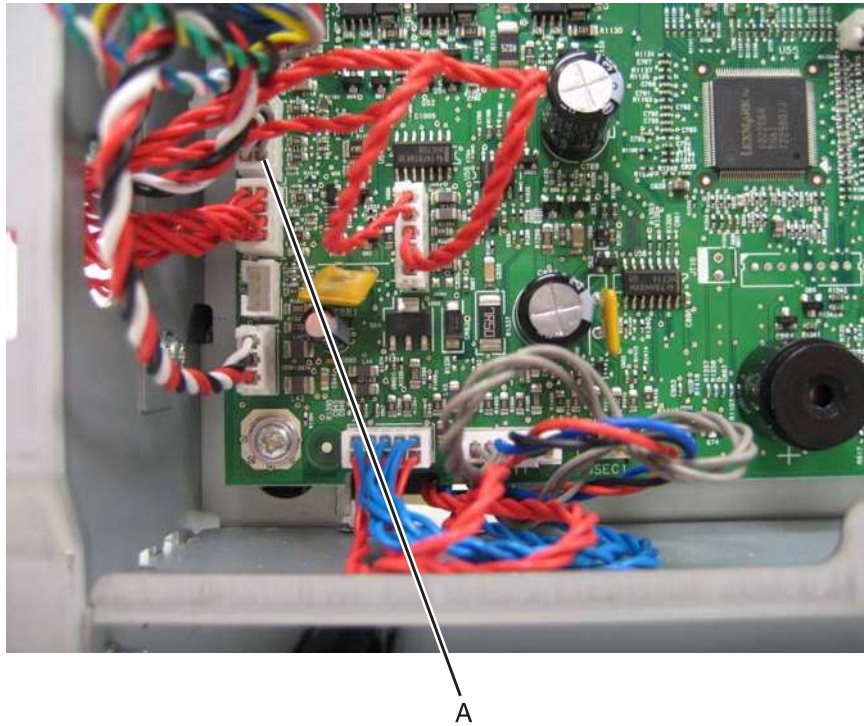
4. Release the left and right front door assembly cable.
5. Release the cable springs (B) from the front door assembly.

B   B
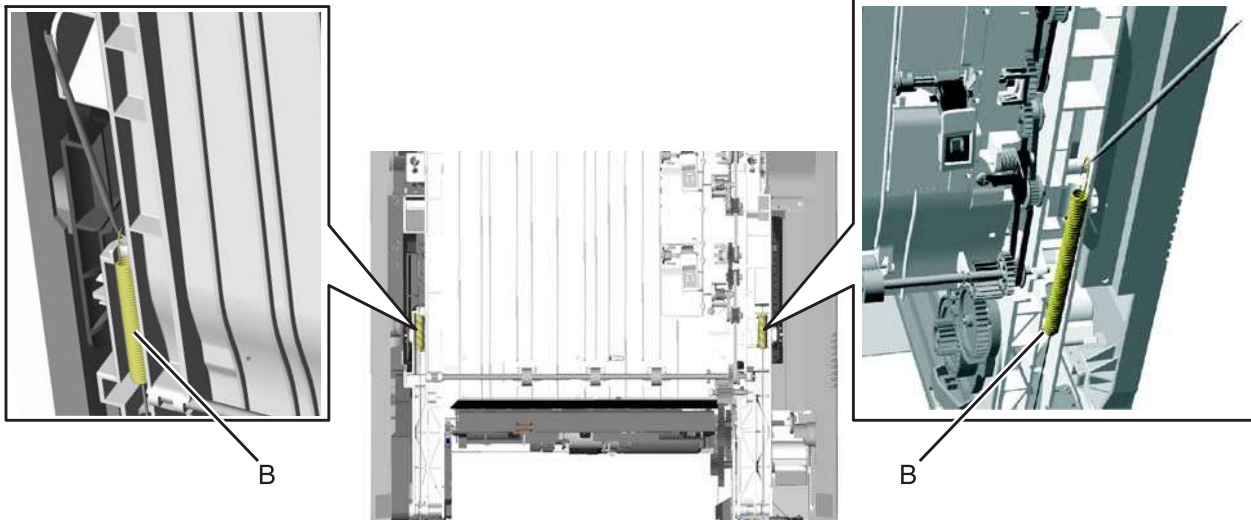
6. Open the front door assembly.

7. Unwrap and remove the cable from the left and right pulleys (C).

C
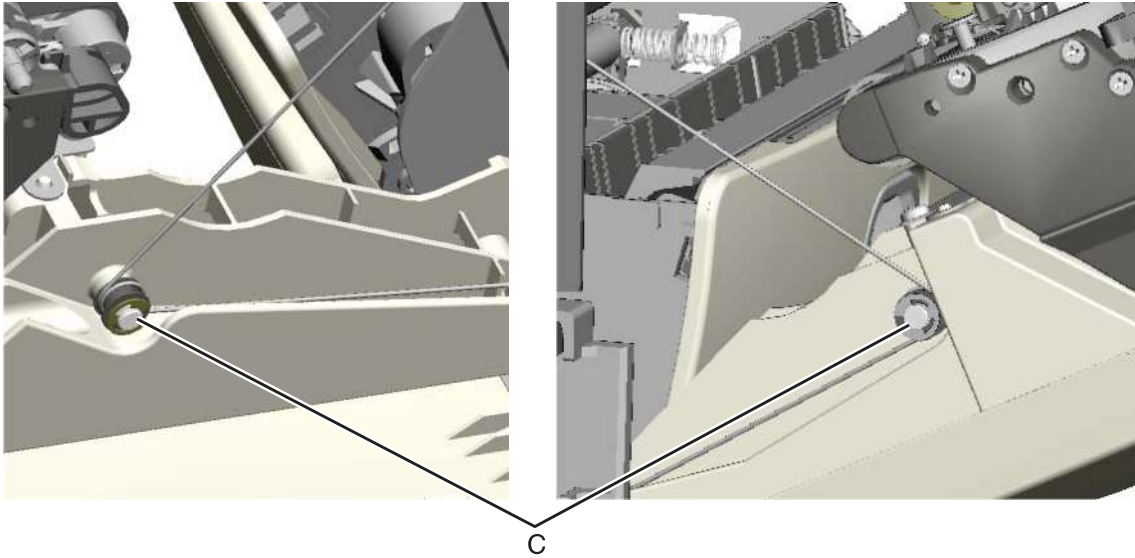
8. Close the front door assembly, and remove the mounting screw (D) and the cap (E).

D   E
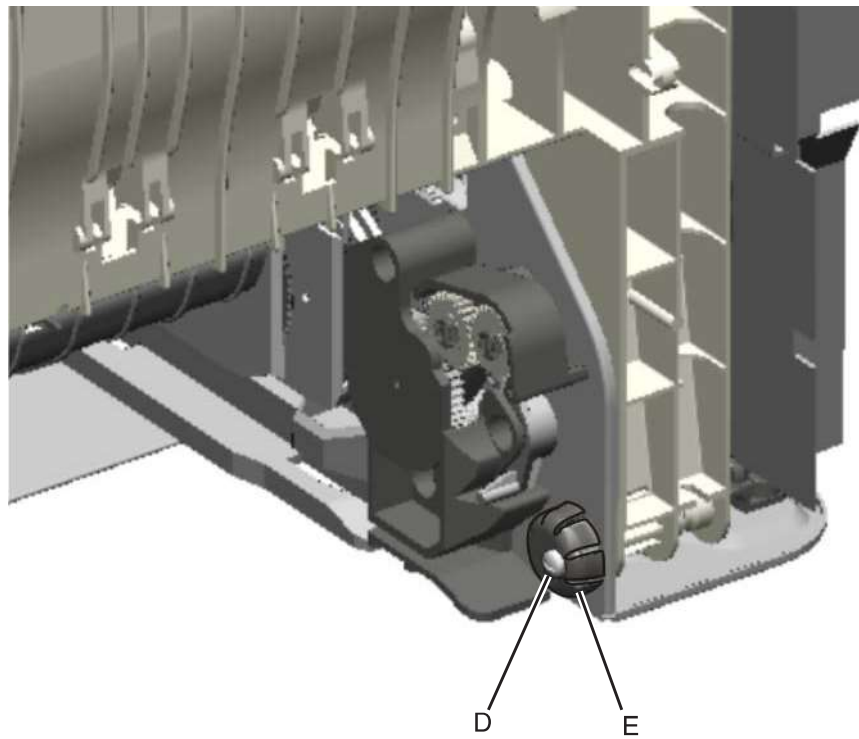
9. Open the front door assembly, slide it to the right, and remove. You need to press firmly to slide the front door assembly to the right.
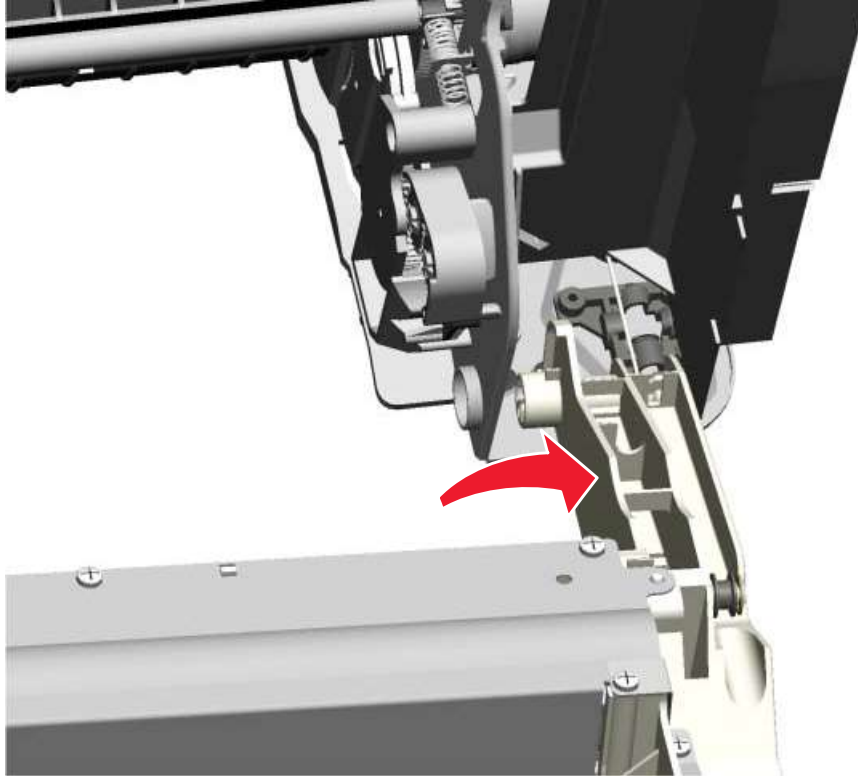
Installation note: See **"Front door assembly front cable (left) removal" on page 4-95** and **"Front door assembly front cable (right) removal" on page 4-100** for proper installation of the cable restraints.

Front door assembly front cable (left) removal

1. Remove the paper tray.
2. Disconnect the transfer module cable (A).
3. Press the two tabs (B) to release the front access door cover assembly.
4. Press the two tabs (C) on either side of the transfer module, and lift out the transfer module.
   Note: Leave the photoconductor units on the transport belt when removing.

Warning: To avoid damaging the photoconductor drum, hold the photoconductor units by their handle and place the photoconductor units on a clean surface. Never expose the photoconductor units to light for a prolonged period of time. See **"Handing the photoconductor unit" on page 4-3** for additional information.

A

B   C

5. Looking down at the keyed end of the restraint (D), twist the end clockwise, slide the restraint upward through the slit (E), and slip the end of the restraint through the keyed hole (F). Repeat for the other side.

D   F   E

6. Remove the fuser. See **"Fuser assembly removal" on page 4-104**.

7. Push down on both of the front door locking mechanism simultaneously to close the camshaft.
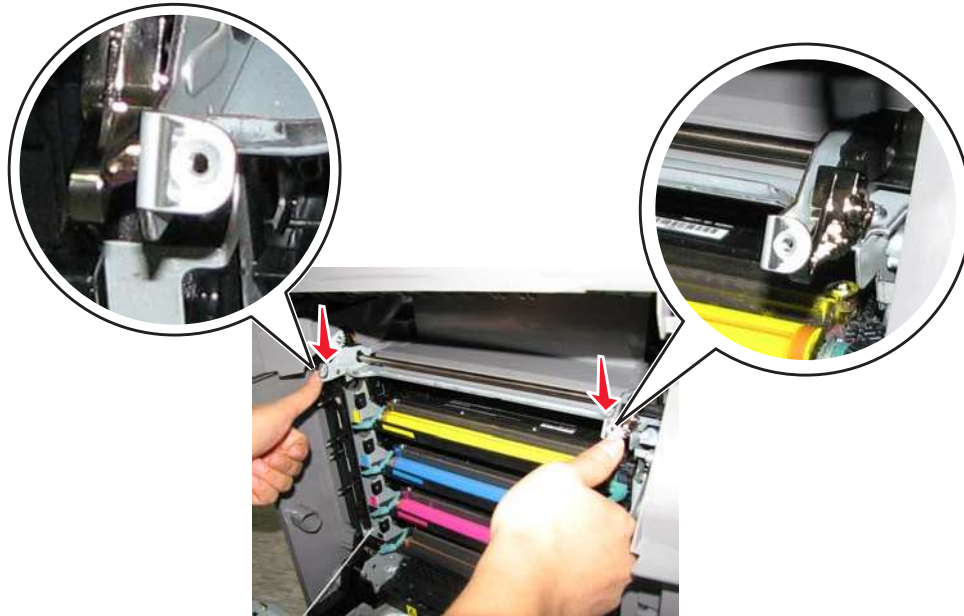
8. Close the front access door assembly.

9. Release the cable spring (G) from the front door assembly.

    Note: In order to access the springs, make sure the top access cover is closed.
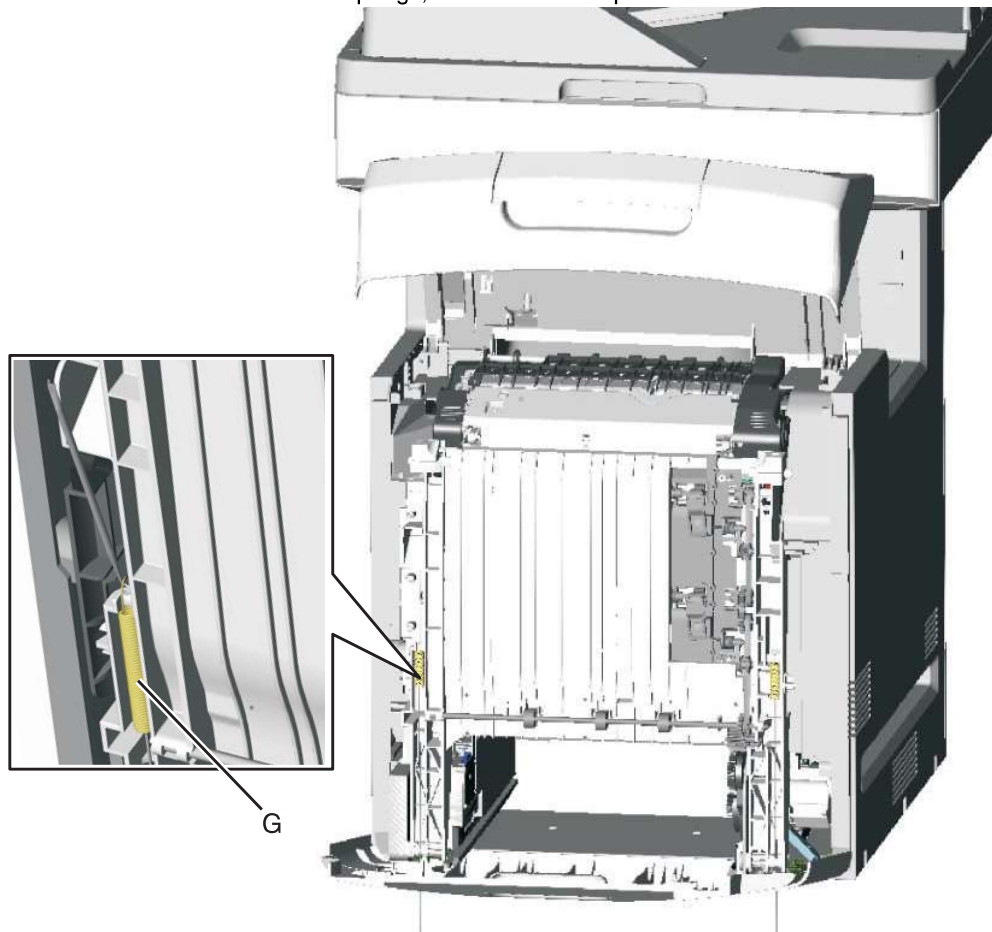
10. Remove the end of the cable (H) from the frame.
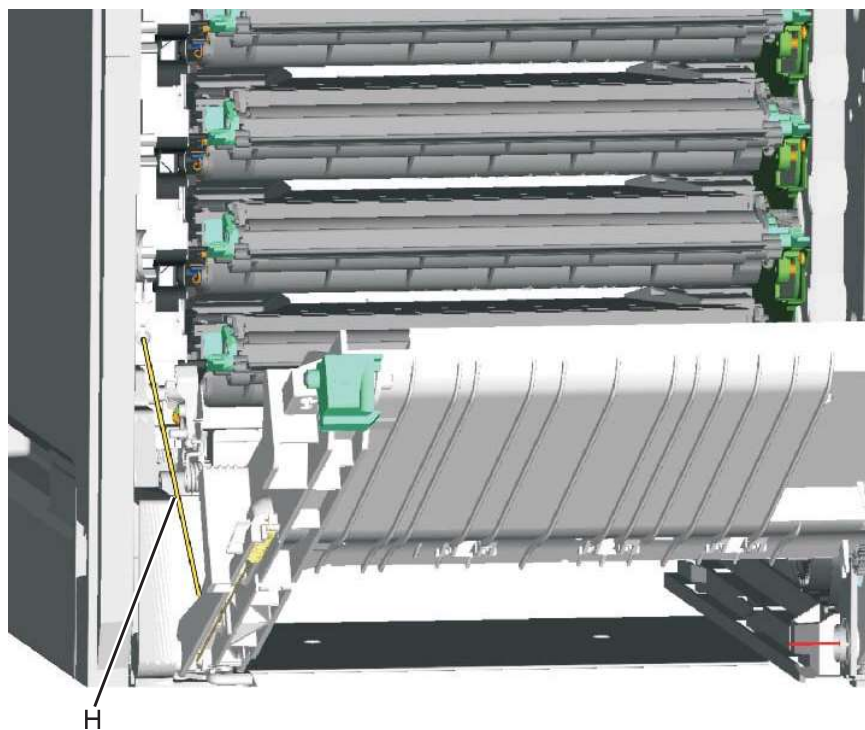
Installation notes:

- The longer cable installs on the left side of the printer.
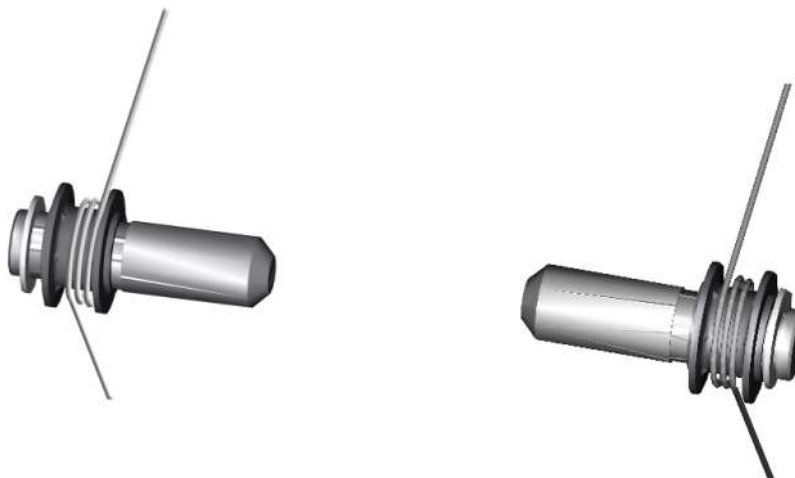
- Push down on the lever to raise front door locking mechanism and open the camshaft.
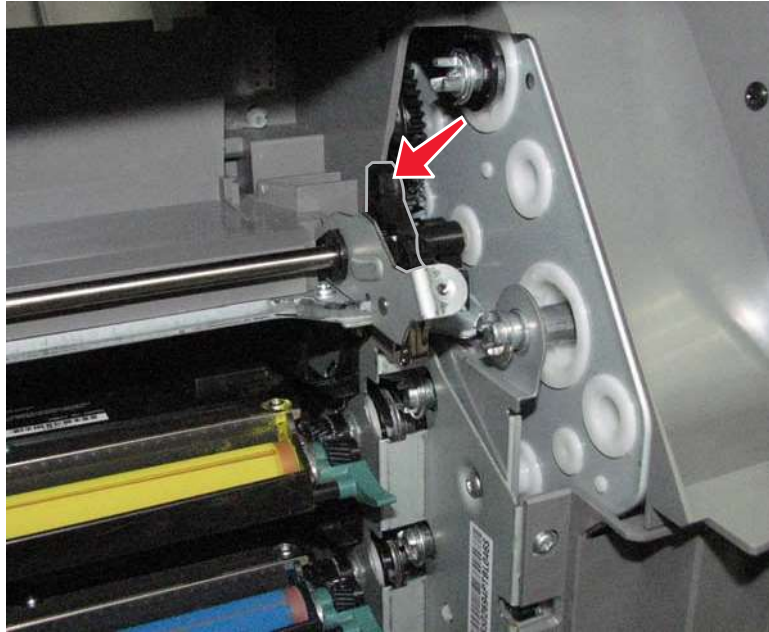
Front door assembly front cable (right) removal

1. Remove the paper tray.
2. Disconnect the transfer module cable (A).
3. Press the two tabs (B) to release the front access door cover assembly.
4. Press the two tabs (C) on either side of the transfer module, and lift out the transfer module.
   Note: Leave the photoconductor units on the transport belt when removing.

   Warning: To avoid damaging the photoconductor drum, hold the photoconductor units by their handle and place the photoconductor units on a clean surface. Never expose the photoconductor units to light for a prolonged period of time. See **"Handing the photoconductor unit" on page 4-3** for additional information.

5. Looking down at the keyed end of the restraint (D), twist the end clockwise, slide the restraint upward through the slit (E), and slip the end of the restraint through the keyed hole (F). Repeat for the other side.

D   F   E

6. Close the front access door assembly.
7. Release the spring (G) from the front door assembly.
 Note: In order to access the springs, make sure the top access cover is closed.

G
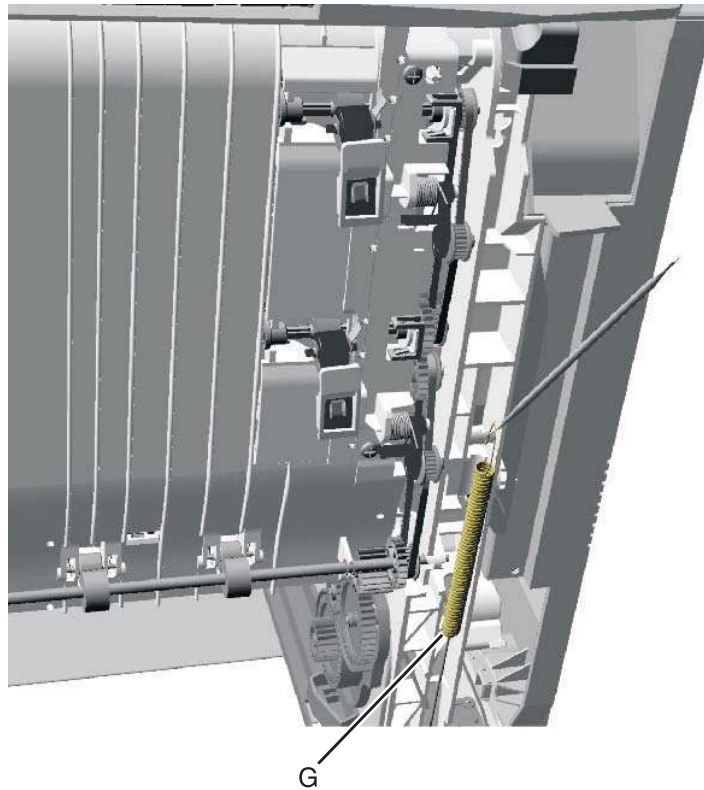
8. Remove the end of the cable (H) from the frame.

H
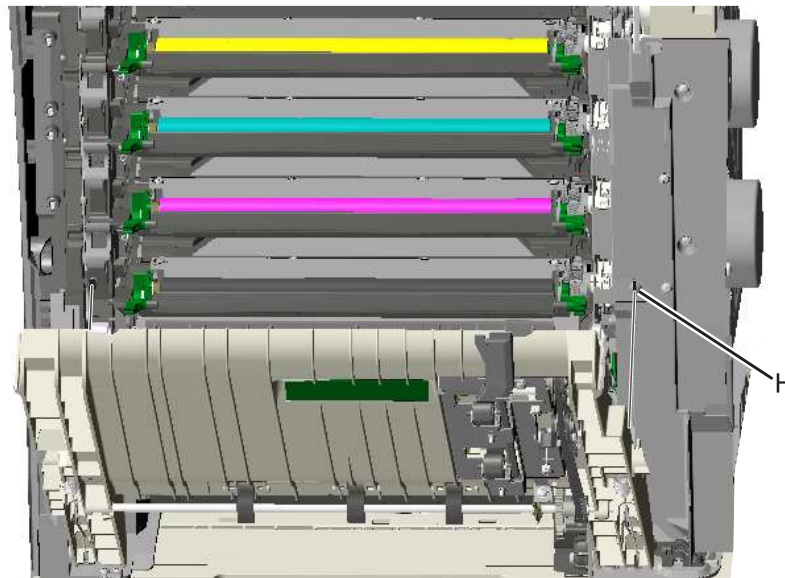
9. Remove the right restraint cable.

Installation notes:

The shorter restraint cable installs on the right side of the printer.

Fuser assembly removal

See **"Fuser assembly, 115 V"**, **"Fuser assembly, 230 V"**, or **"Fuser assembly, 100 V" on page 7-5** for the part number.

⚠️	**CAUTION—HOT SURFACE:** The inside of the printer might be hot. To reduce the risk of injury from a hot component, allow the surface to cool before touching.

1. Turn off the printer.
2. Open the top access door.
3. Open the front access door.
4. Rotate the fuser thumbscrews (A) counterclockwise until loosened.
5. Grasp the handles (B), slide the fuser out from the printer.
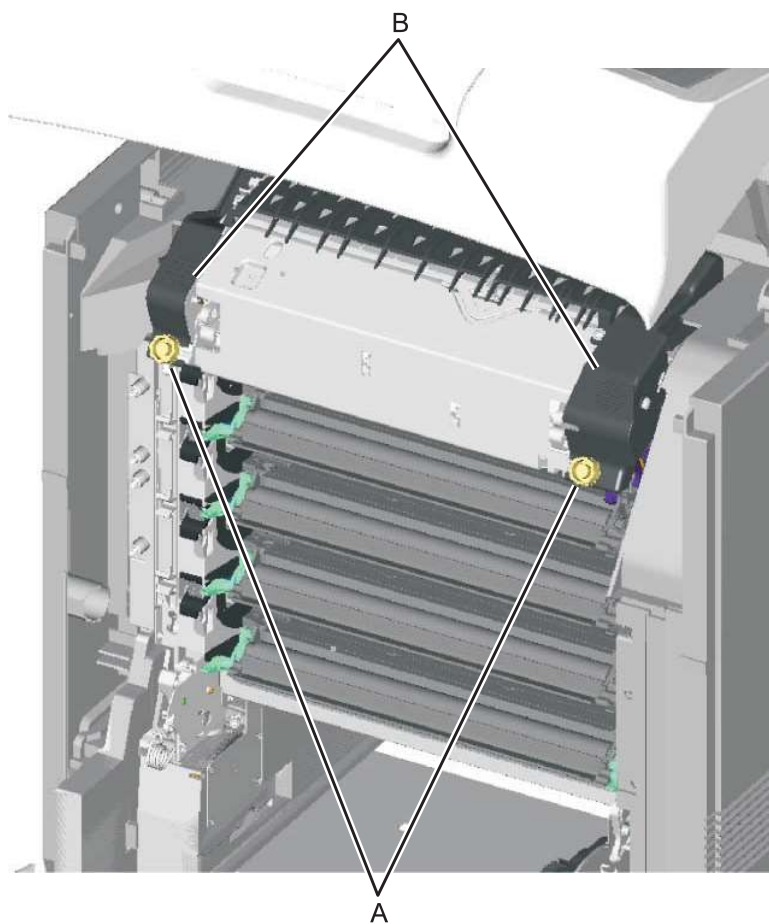
Installation note: If you install a new fuser, be sure to reset the fuser counter in the Configuration Menu. To reset the counter:

1. Turn off the multifunction printer, press and hold buttons **2** and **6**, turn on the MFP, and release the buttons when the progress bar displays.
2. Touch **Reset Fuser Cnt** from the Configuration Menu.
3. Touch **Yes** or **No**.
4. Select **Exit Config Menu**.

See **"Reset Fuser Count" on page 3-30**.

Fuser AC cable removal

Note: The LVPS to fuser AC cable is black.

1. Remove the top cover assembly. See **"Top cover assembly removal" on page 4-44**.
2. Turn the top cover assembly over.
3. Slide the connector down, and remove the connector from the keyed hole (A).
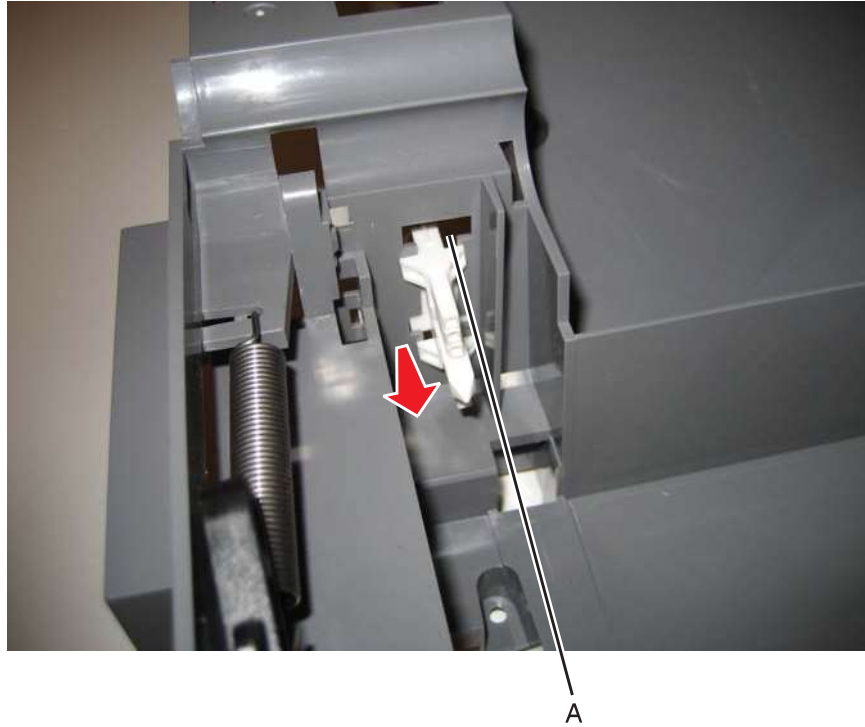
4. Remove the cable from the cable openings (B).

   Note: Observe the routing of the cable for reinstallation.

B
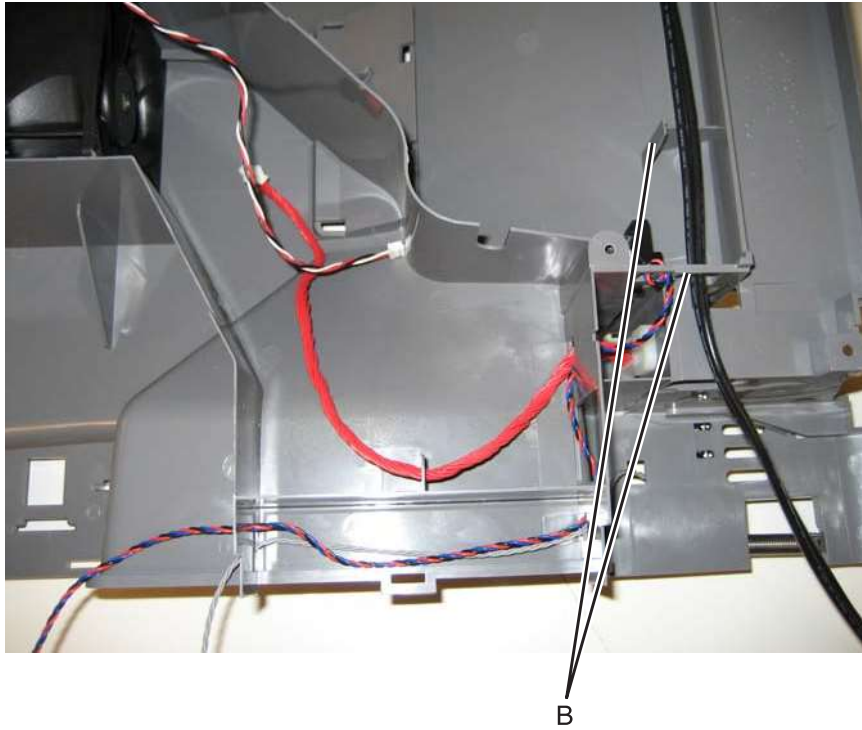
5. Remove the cable from the cable restraint (C) on the right side, and remove the cable.

C
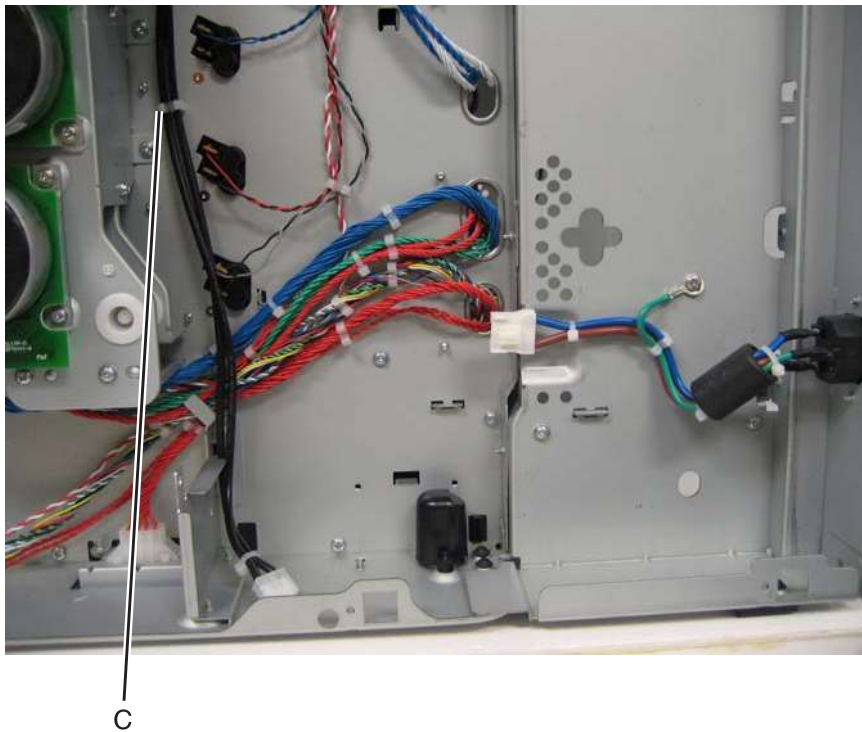
Fuser DC cable removal

Note: The fuser to system board autoconnect cable is red.

1. Remove the top cover assembly. See **"Top cover assembly removal" on page 4-44**.
2. Turn the top cover assembly over.
3. Remove the connector (A) from the top cover assembly.
   Warning: You will damage the old connector in the process. Be careful not to damage the top cover assembly.

4. Pull the cable through the openings (B) in the top cover assembly.

B   A
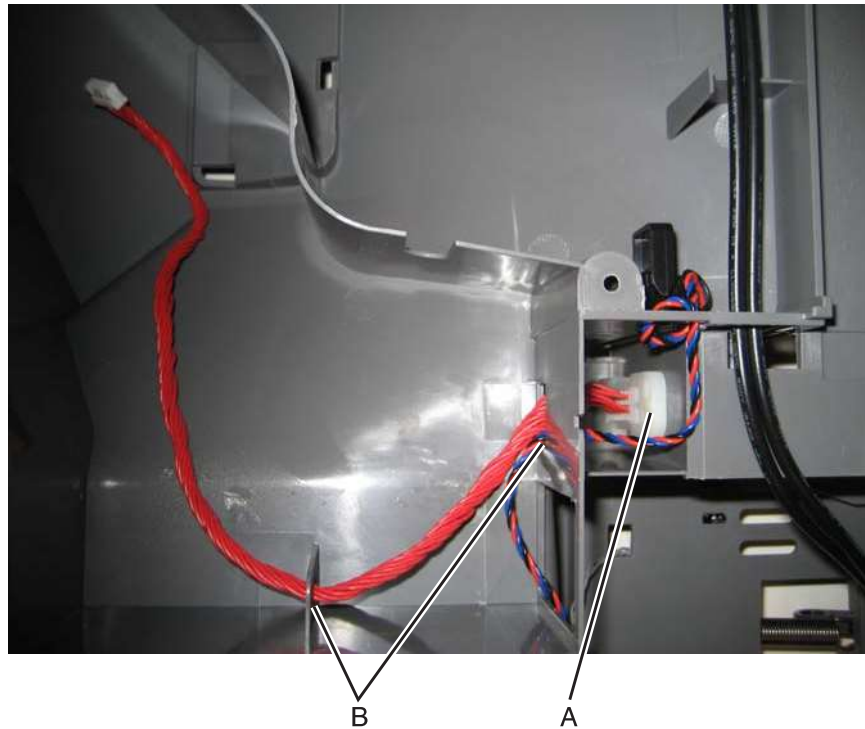
Hard drive assembly removal

Warning: This part might contain customer confidential information. See **"Data Security Notice" on page 4-1** for more details. After removing this part, return it to your next level of support so any data can be removed. If the customer requests to keep the part, they must sign a confirmation of memory device retention form.

1. Remove the rear frame cover. See **"Rear frame cover removal" on page 4-37**.

2. Press the locking tab (A) as you disconnect the hard disk cable from the system board.
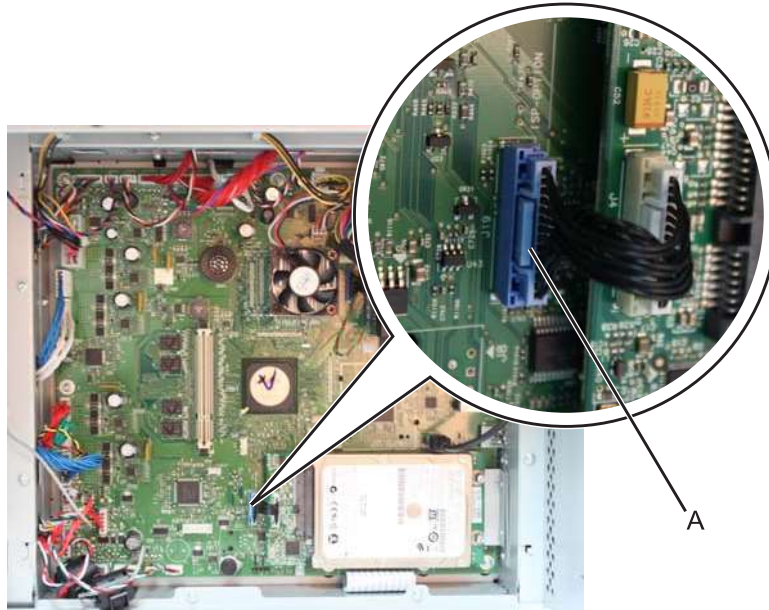
3. Open the left cover door, and remove the two screws (B).

B

4. Pull the hard disk straight out to *pop* the hard disk standoffs free of the system board.
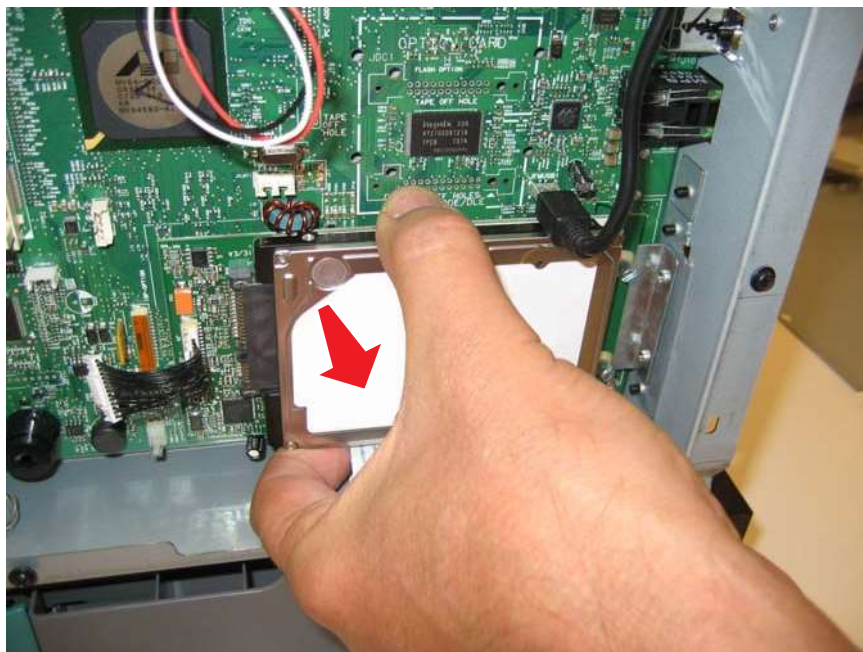
High-voltage power supply (HVPS) removal

See **"High-voltage power supply" on page 7-11** for the part number.

1. Remove the left cover. See **"Left cover removal" on page 4-24**.
2. Remove the six mounting screws (A).

A
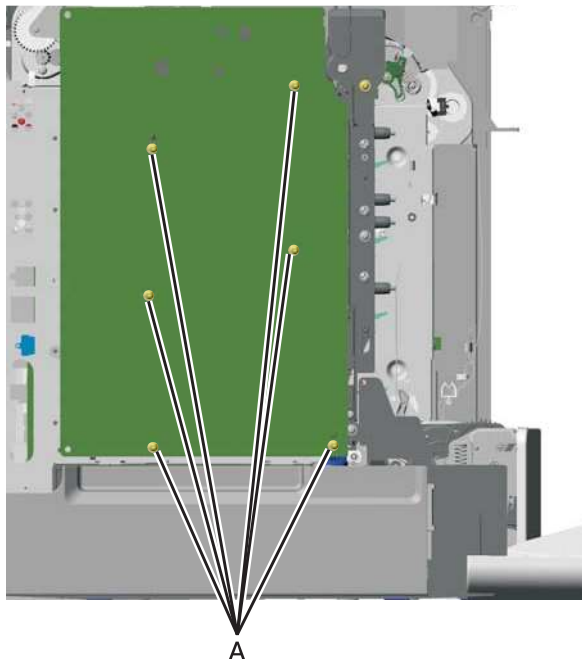
3. Release the locking tab (B) from the front, lower corner of the HVPS.

B
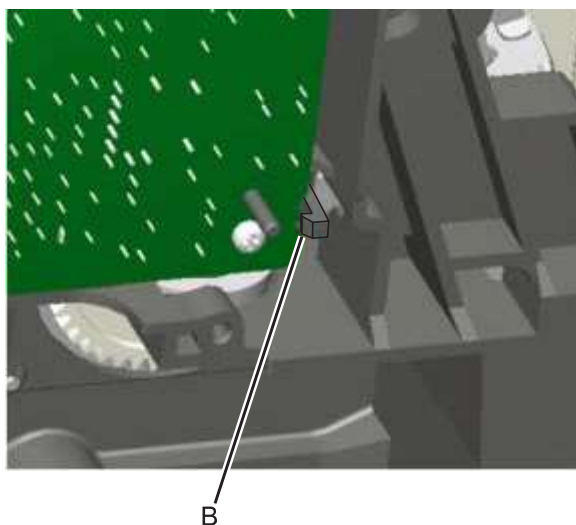
4. Disconnect the five connectors (C) from the HVPS.
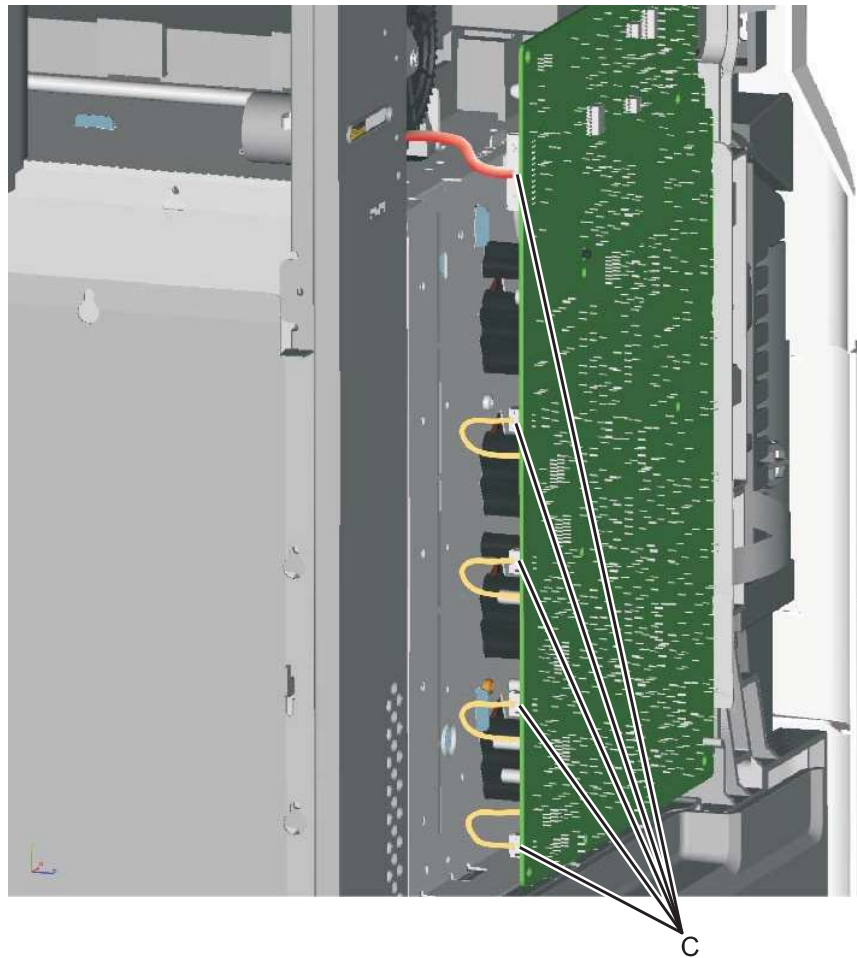
Installation notes:

- Make sure to replace the spring when replacing the HVPS.
- There are two types of spring forces on the cartridge contacts. Make sure to put the springs in their appropriate slots and in the proper orientation as shown below.

High-voltage power supply (HVPS) cable removal

1. Remove the top cover assembly. See **"Top cover assembly removal" on page 4-44**.
2. Disconnect the cable connector at JHVPS1 (A) on the system board, and extract the cable through the opening (B) in the frame.

A   B
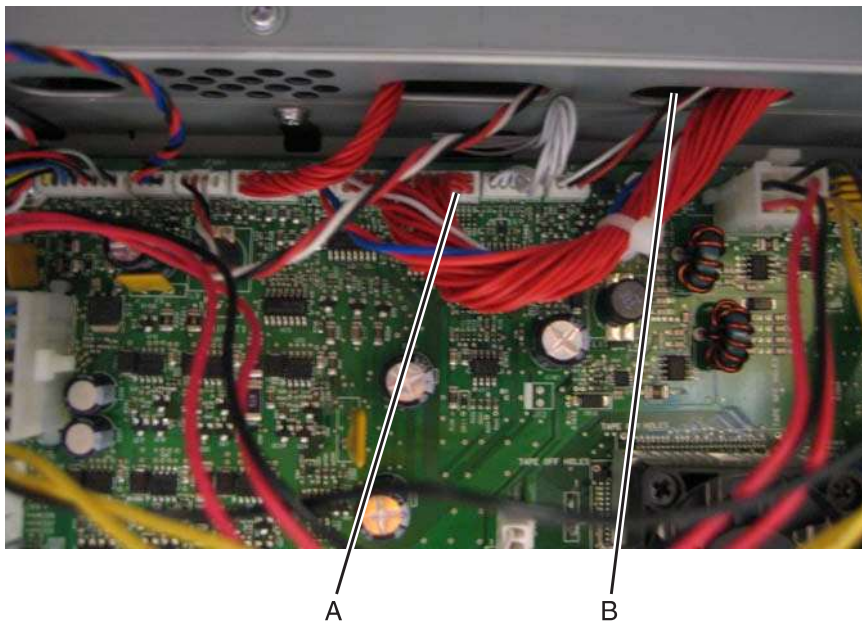
3. Disconnect the cable connector (C) from the back of the HVPS.

4. Remove the cable from the two cable restraints (D).
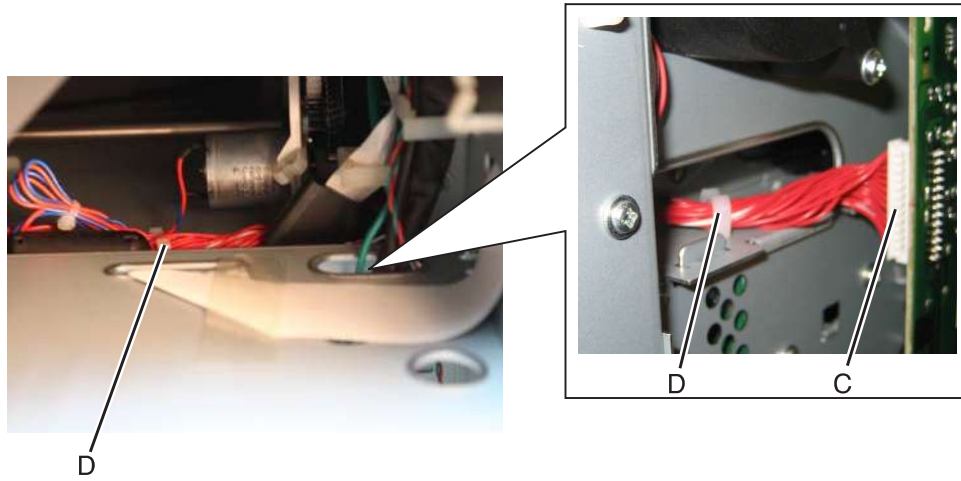
Left bellcrank assembly removal

1. Remove the left cover. See .
2. Remove the C-clip (A).

3. Remove the left bellcrank assembly.

Low-voltage power supply (LVPS) removal

See **"Low-voltage power supply" on page 7-7** for the part number.

⚡

1. Remove the right cover. See **"Right cover removal" on page 4-38**.
2. Remove the rear frame cover. See **"Rear frame cover removal" on page 4-37**.

3. Disconnect the connector at JLVPS1 connector (A) and at JLVPS2 (B) on the system board.
4. Remove the cable from the cable restraints (C).

A   C   B
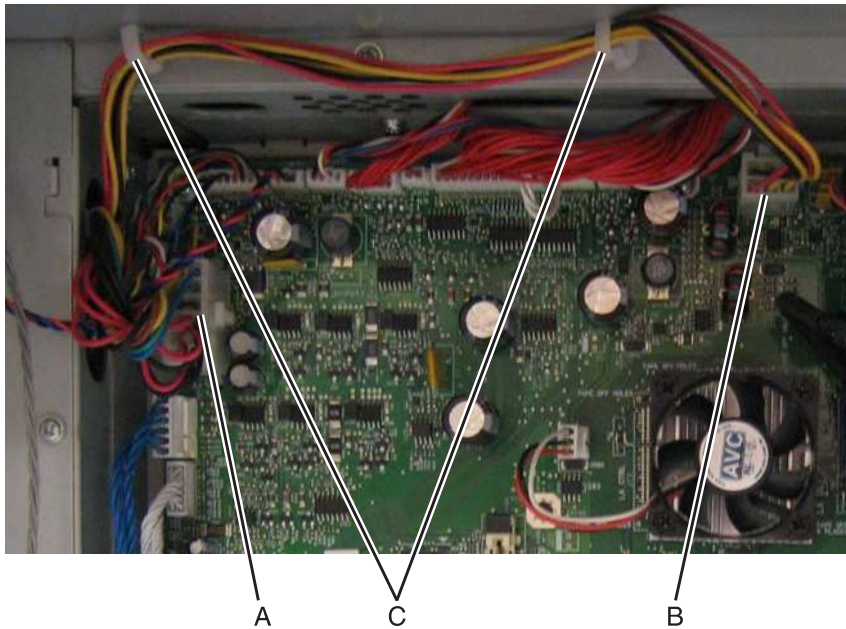
d. Remove the five LVPS mounting screws (D).
e. Press the latch and pull back to disconnect the fuser AC cable from the LVPS (E).
f. Press the latch and pull back to disconnect the power AC cable from the LVPS (F).

D

E   D   F

Repair information   **4-115**
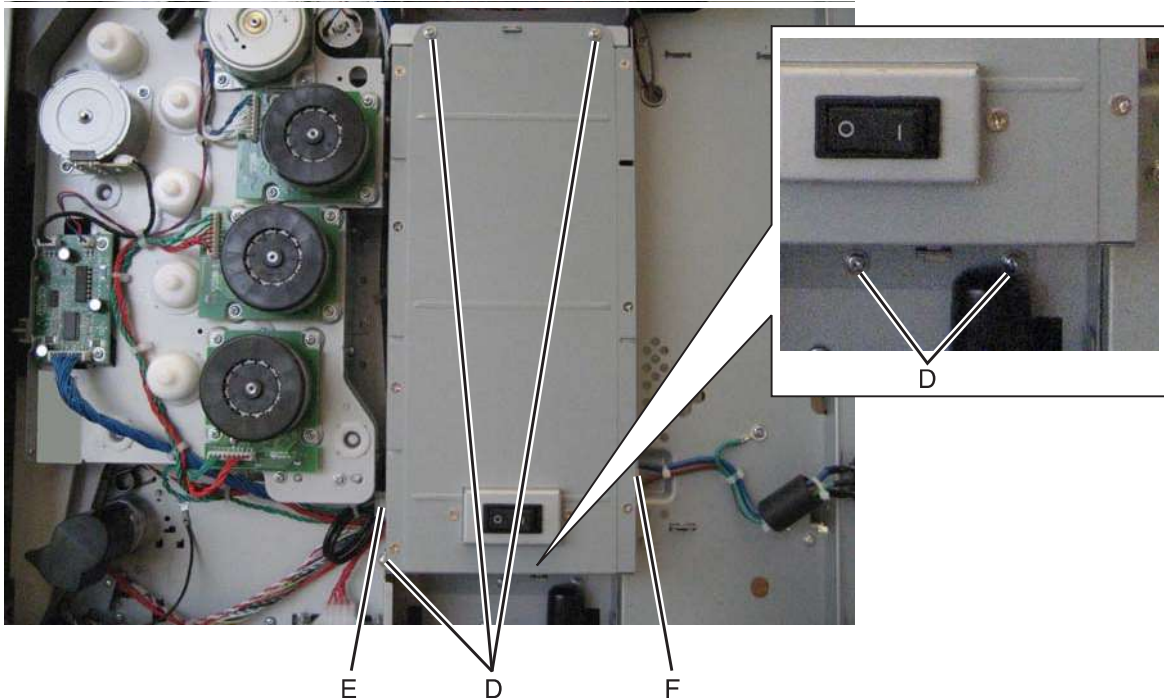
Installation notes:

- When installing the new LVPS, make sure the voltage switch (A) is set for the proper value (115 V or 230 V), depending on the country.

A

- Install the LVPS, and make sure the fuser AC cable is in the cable guides, and not behind the LVPS.
- Reconnect the fuser AC cable to the LVPS.
- Replace the five LVPS mounting screws.
- Reconnect the cable in connector JLVPS1 on the system board.

Motor driver cable removal

1. Remove the LVPS. See "Low-voltage power supply (LVPS) removal" on page 4-115.
2. Disconnect the connector in JDVR1 (A) on the system board.

A
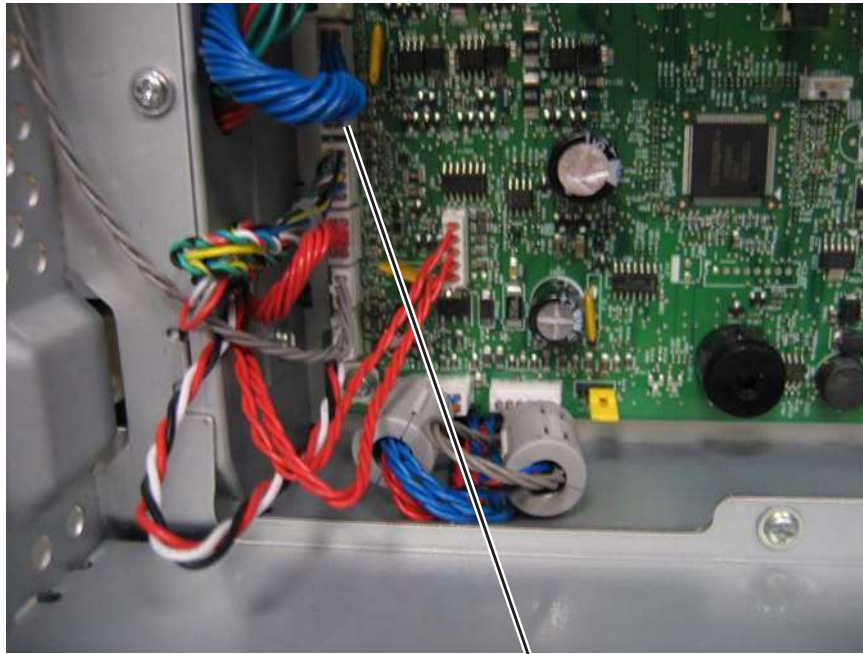
3. Disconnect the connector on the motor driver card (B).
4. Remove the cable from the cable from the four cable retainers (C).
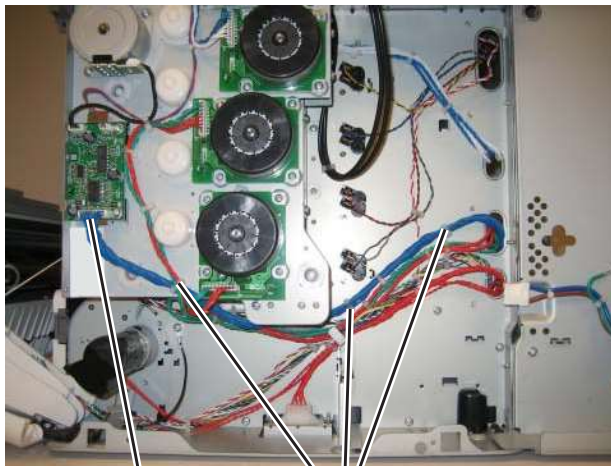
B   C   C
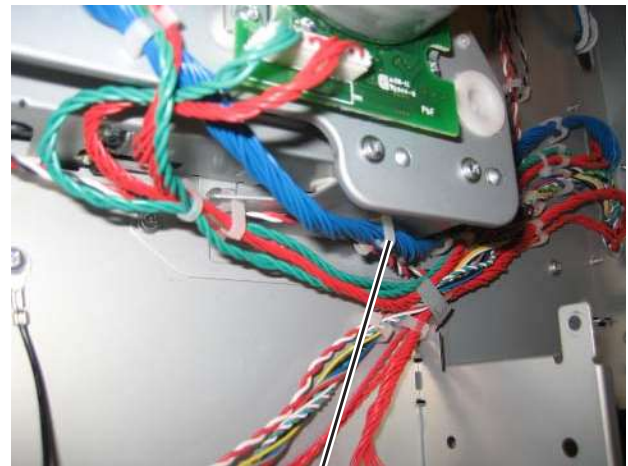
Installation note: Pay attention to the routing of the cable and the cable retainers.

Motor driver card removal

1. Remove the right cover. See **"Right cover removal" on page 4-38**.
2. Disconnect the three cables (A).
3. Remove the two screws (B), and remove the motor driver card.

A   B
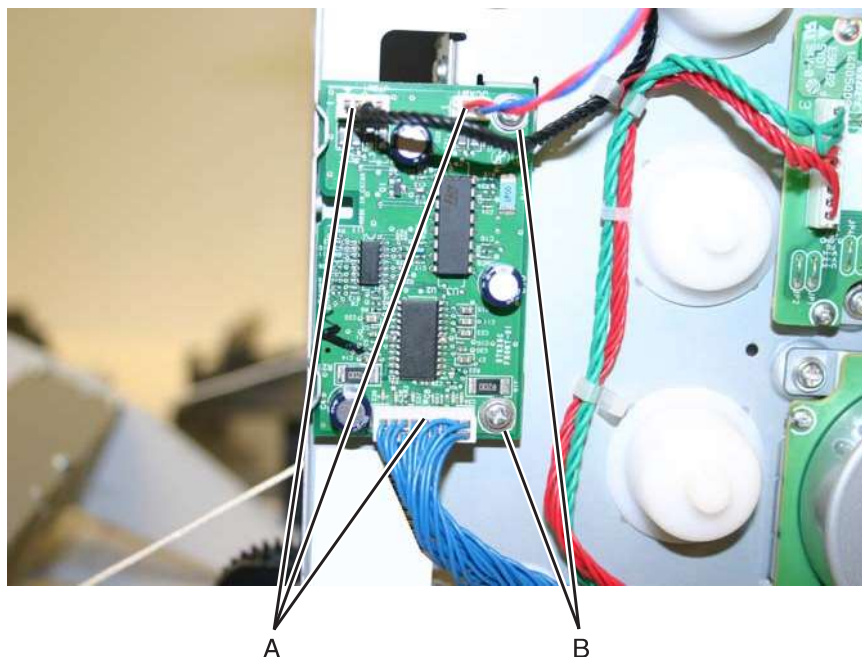
Multipurpose feeder (MPF)/duplex gear and housing removal

1. Remove the paper pick mechanism assembly. See **"Paper pick mechanism assembly removal" on page 4-130**.

2. Remove the two E-clips (A) from the gears.

A
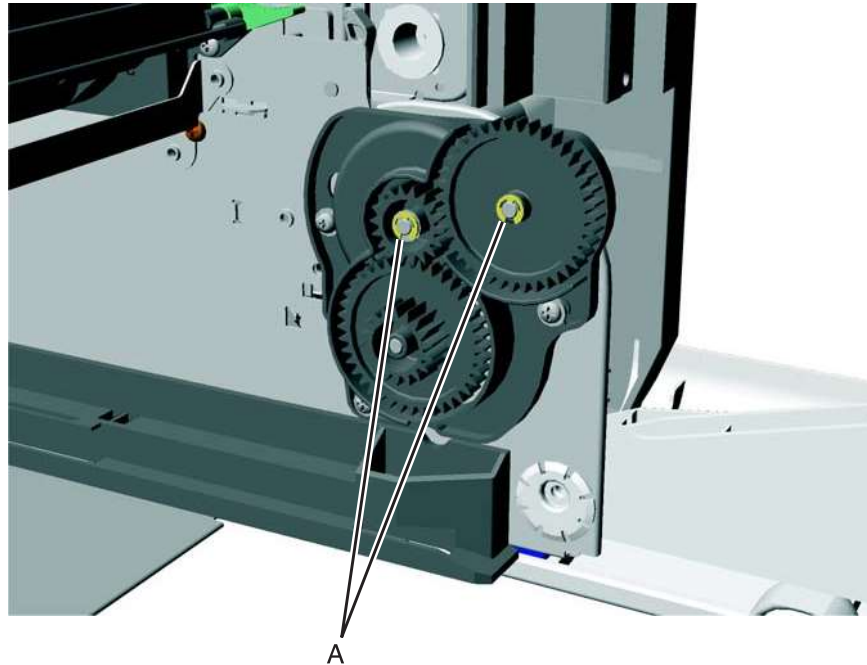
3. Remove the three screws (B).

4. Slide the front gear (C) off.

B   C
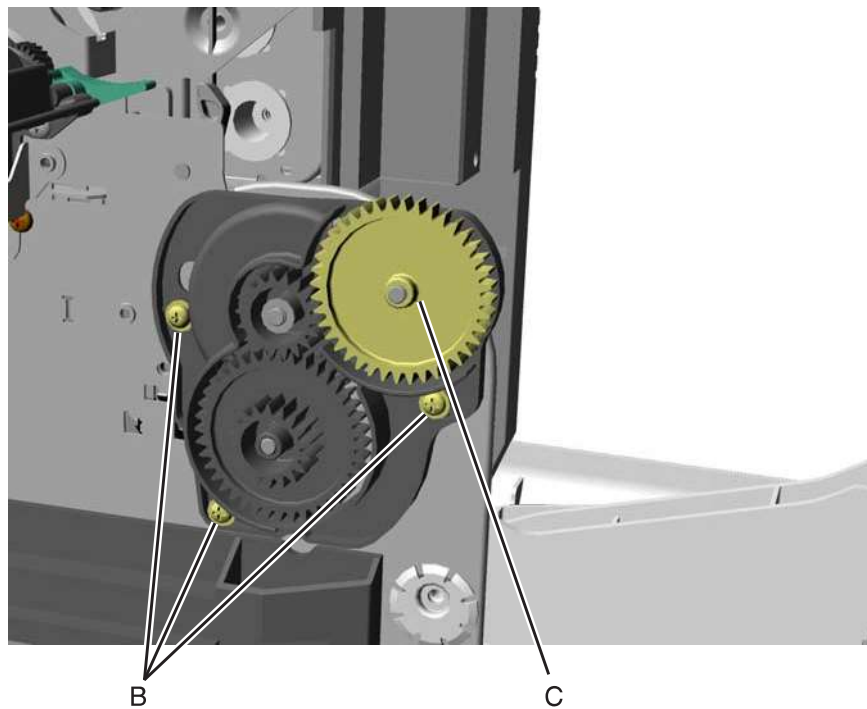
5. Slide a flathead screwdriver up and under the front cover.
6. Slide the remaining two gears and housings off.
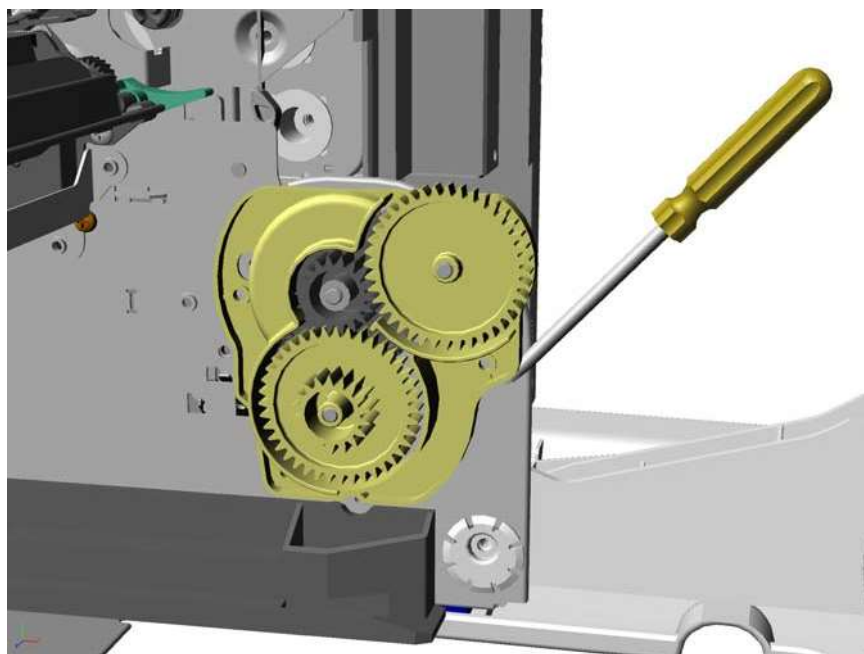
Multipurpose feeder (MPF)/duplex motor assembly removal

See **"MP feeder/duplex motor" on page 7-7** for the part number.

1. Remove the low-voltage power supply (LVPS). See **"Low-voltage power supply (LVPS) removal" on page 4-115**.
2. Remove the multipurpose feeder/duplex gear and housing. See **"Multipurpose feeder (MPF)/duplex gear and housing removal" on page 4-119**.
3. Remove the two multipurpose feeder/duplex motor mounting screws (A).

A
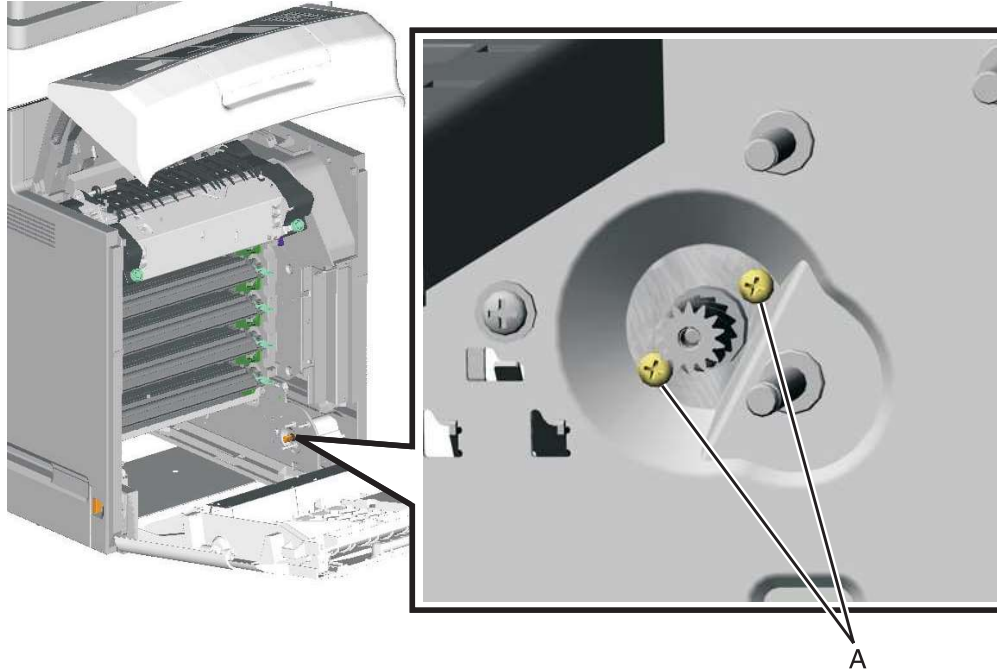
4. Remove the multipurpose/duplex motor from the printer.
5. Push in the prongs (B) of the housing to remove the cable tie (C).

B   C
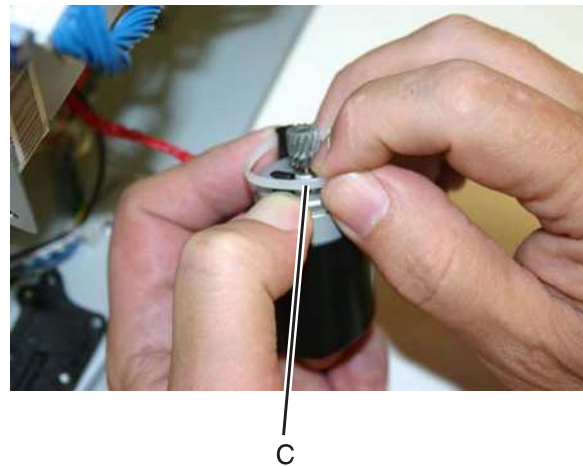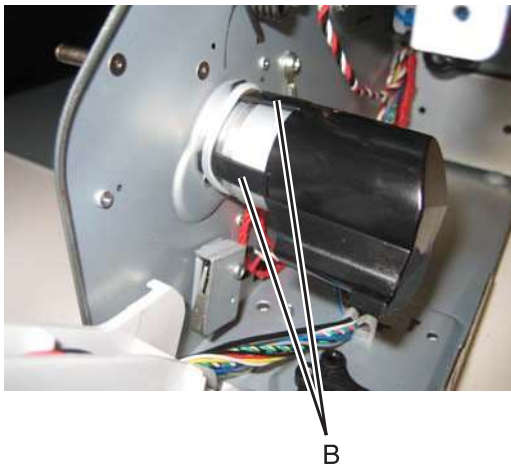
6. Slide the motor out of the housing.
7. Disconnect the connector (D) from the motor.

D
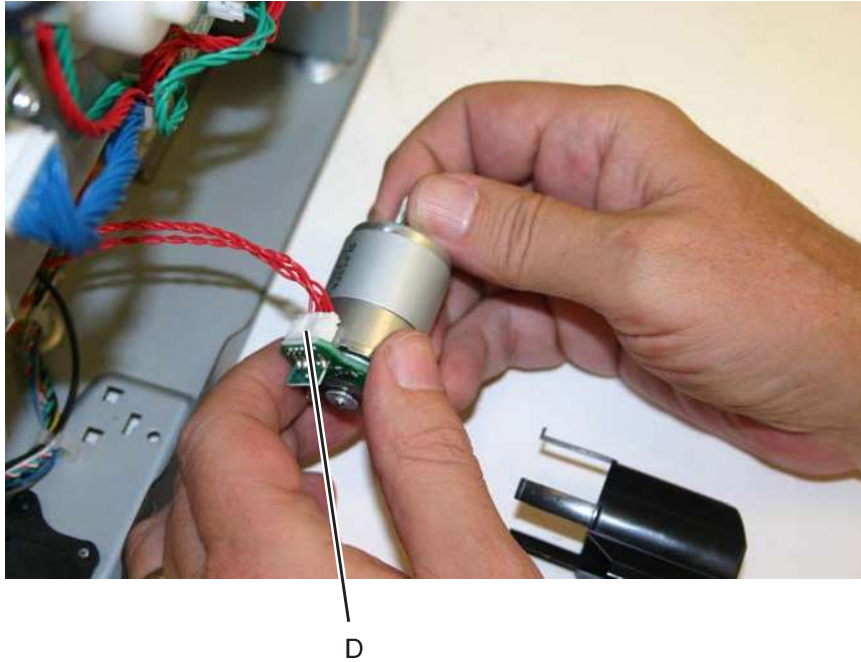
Installation notes:

1. Connect the cable (A) at the motor.
2. Slide the cable tie (B) onto the motor.

B   A
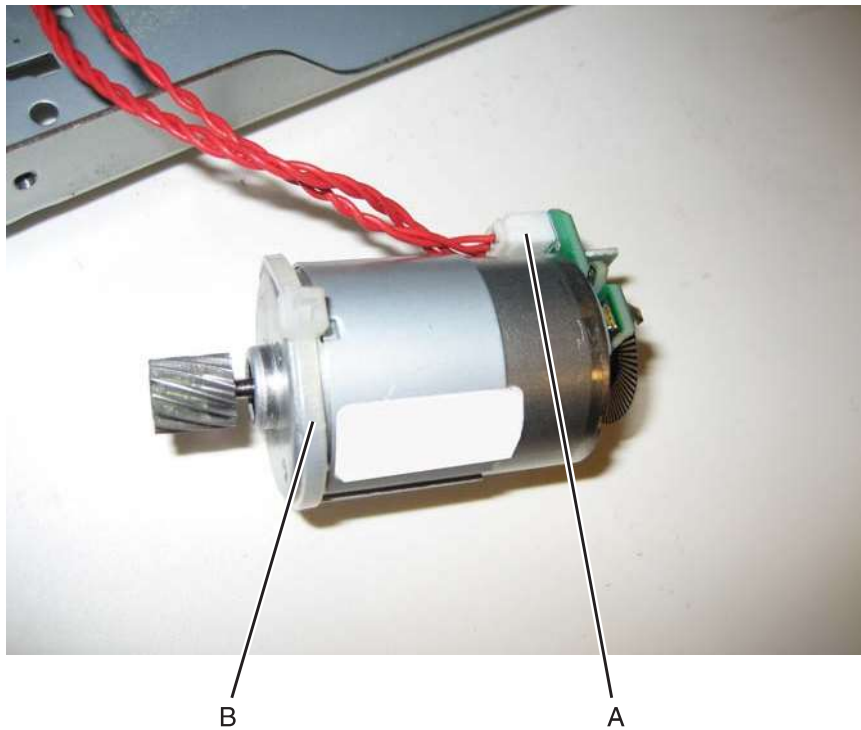
3. Insert the motor into the frame.
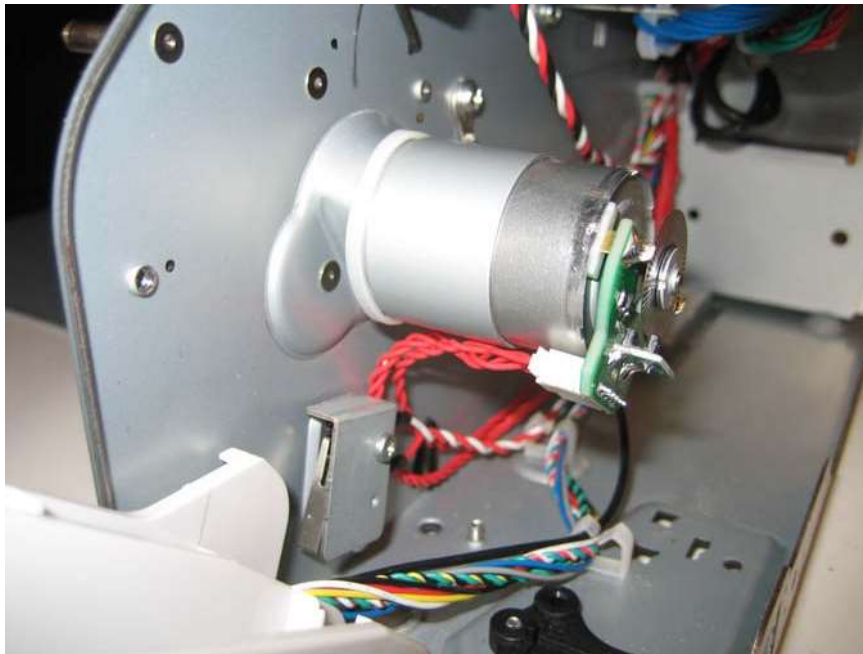
4. Replace the screws (C).

C
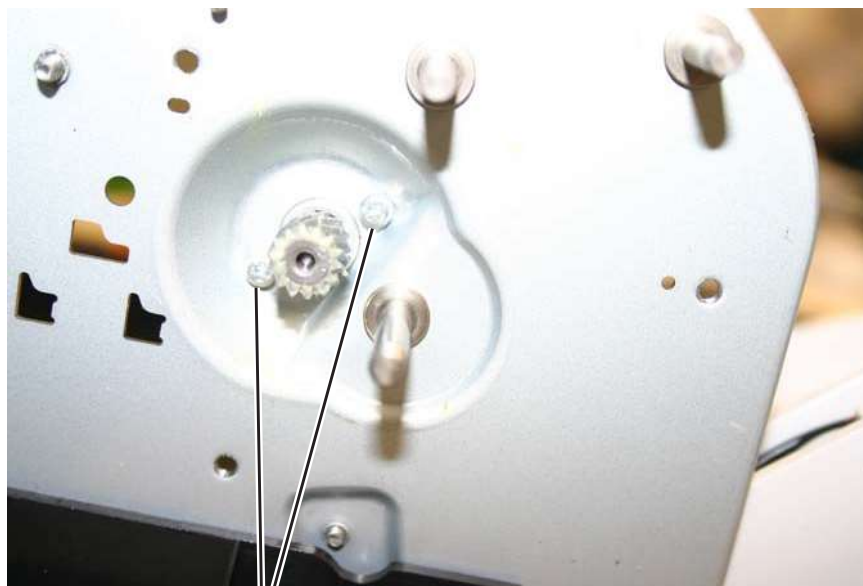
5. Slide the housing onto the motor, making sure the four tabs of the housing slide under the cable tie.
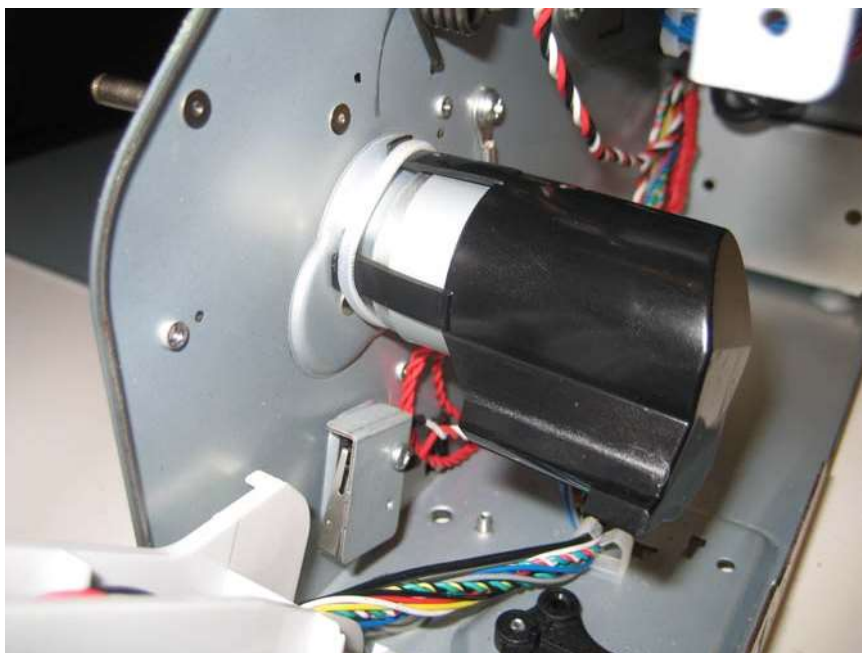
6. Replace the multipurpose feeder/duplex gear and housing assembly.

Multipurpose feeder (MPF)/duplex motor cable removal

1. Remove the multipurpose feeder/duplex motor. See **"Multipurpose feeder (MPF)/duplex motor cable removal" on page 4-125**.
2. Disconnect the connector from JDX1 (A) on the system board.

A
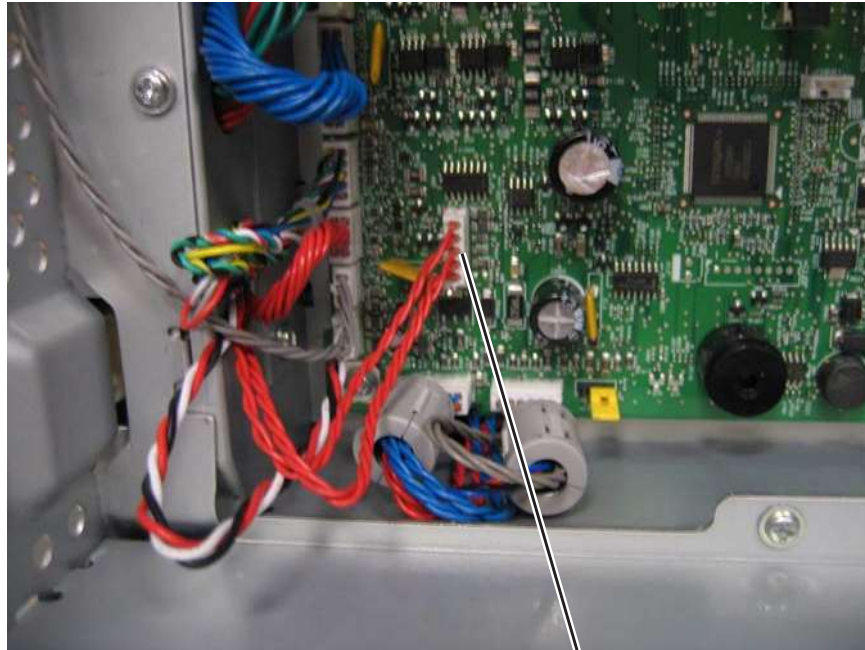
3. Remove the cable from the cable retainers (B).

B   B
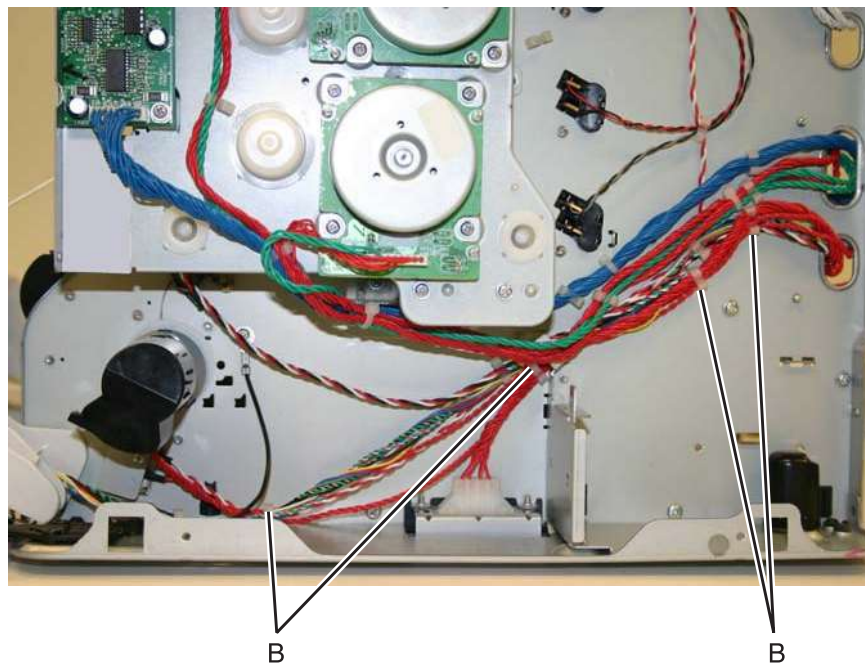
Multipurpose feeder (MPF) paper present sensor

1. Remove the right cover. See **"Right cover removal" on page 4-38**.
2. Remove the standard 550-sheet input tray.
3. Remove the rear frame cover. See **"Rear frame cover removal" on page 4-37**.
4. Remove the Low-voltage power supply (LVPS). See **"Low-voltage power supply (LVPS) removal" on page 4-115**.
5. Remove the three screws (A) securing the tray rail that contains the paper present sensor.

A
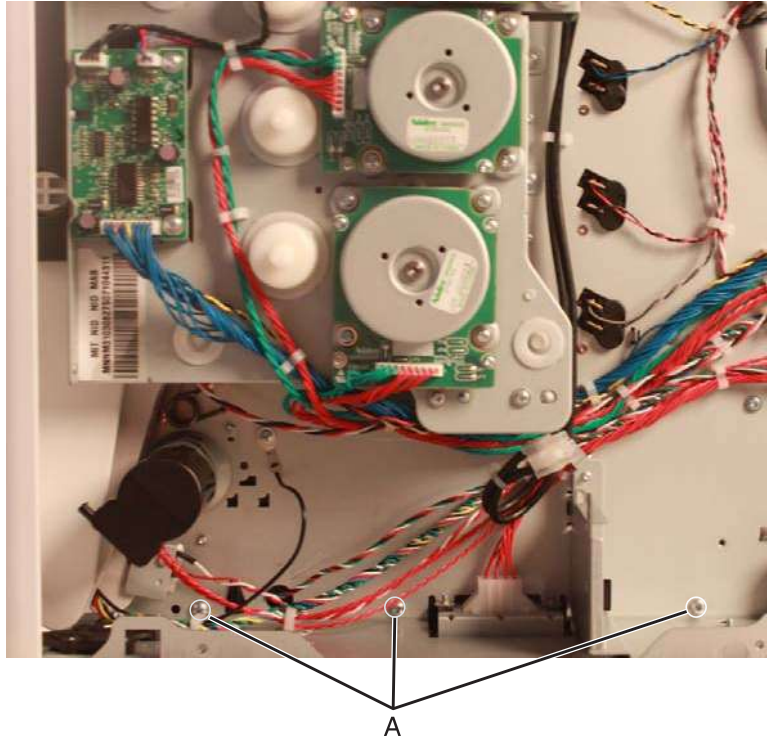
6. Remove the JMPFPP1 connector (B) from the system board, then remove the cable.

    Installation note: Pay attention to the routing of the cable.

B
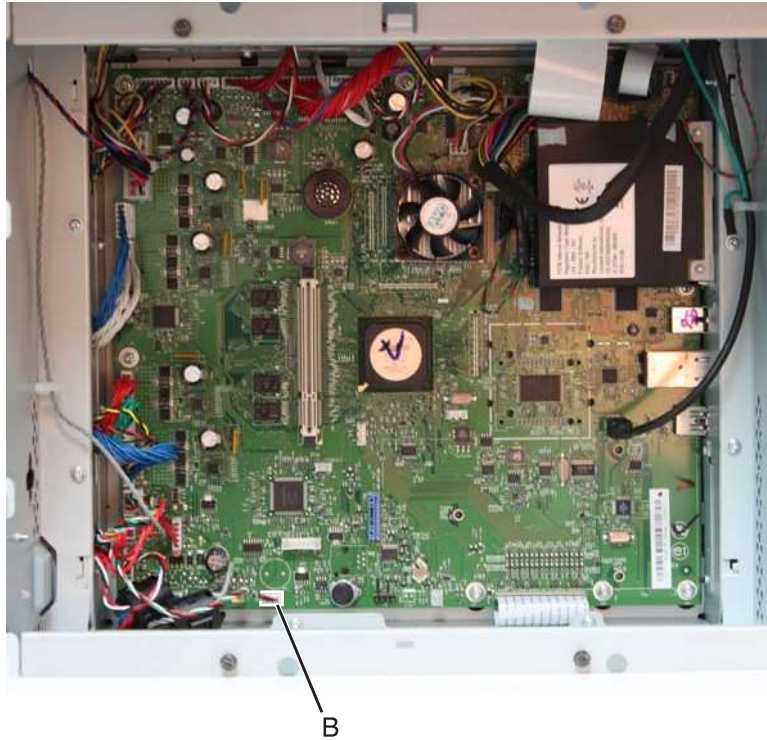
7. Remove the MPF paper sensor bracket from the machine.

8. Pry the sensor off the bracket, then disconnect the sensor (C) from the cable (D).

C   D
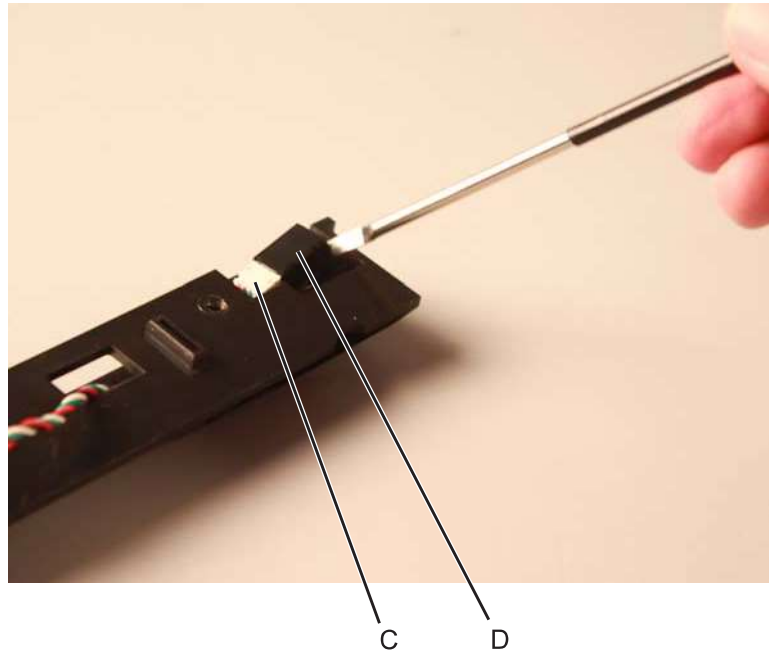
9. Remove the cable from the bracket.

Installation note: Pay attention to the routing of the cable.

Option cable removal

1. Remove the LVPS. See **"Low-voltage power supply (LVPS) removal" on page 4-115**.
2. Disconnect the cable connector at JOPT2 (A) on the system board.

A
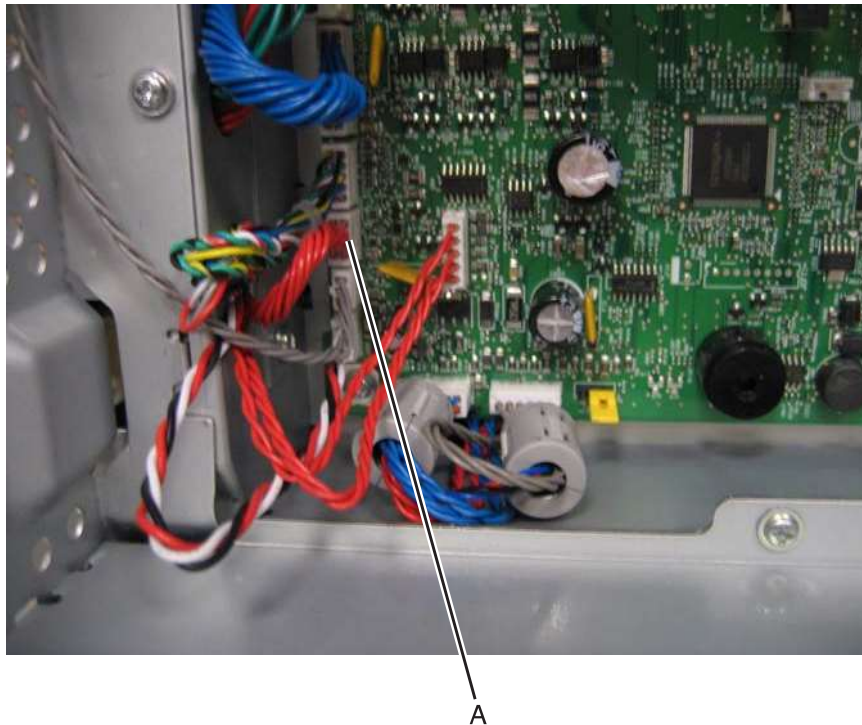
3. Replace the rear frame cover to protect the system board.

4. Position the printer on its back.

5. Remove the two screws (B).

C
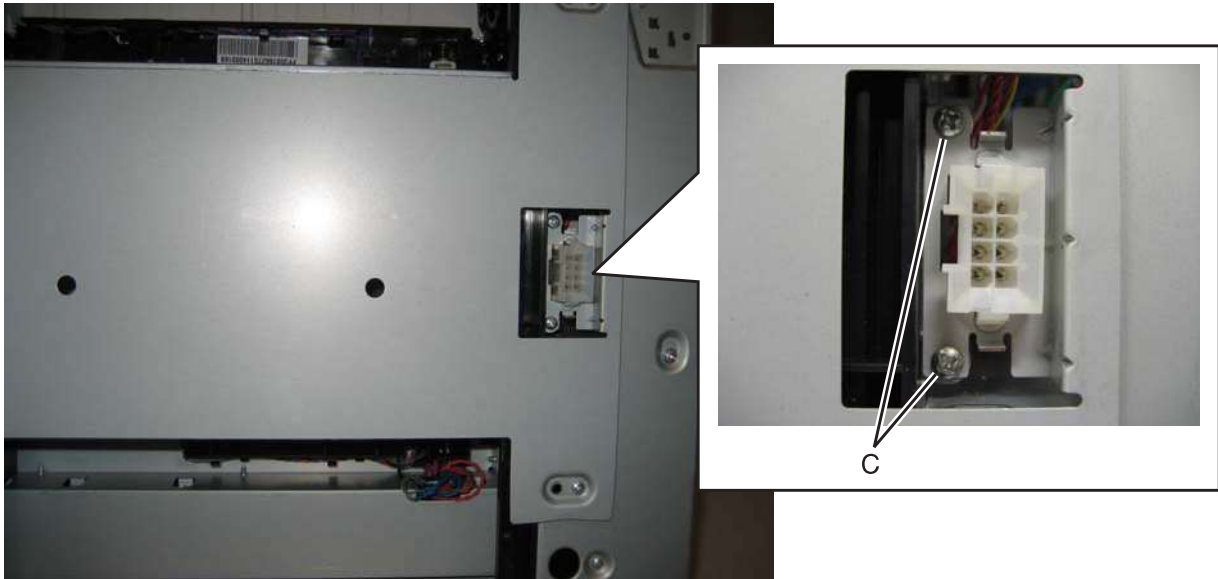
6. Press the tabs together to remove the option cable connector.

Note: Be sure to note the cable routing for reinstallation.
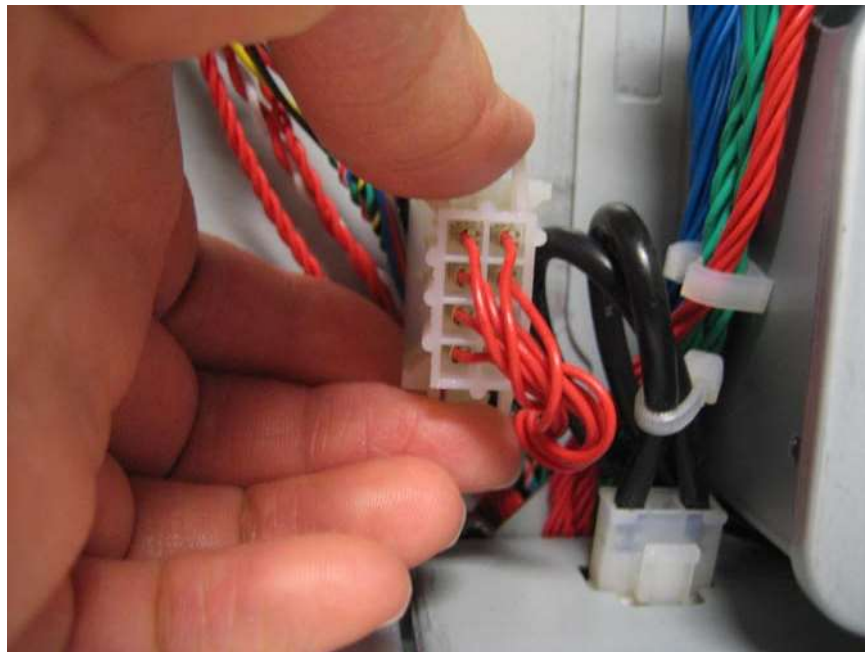
Paper pick mechanism assembly removal

See **"Paper pick assembly" on page 7-5** for the part number.

1. Remove the paper tray.

2. Remove the waste toner assembly. See **"Waste toner assembly removal"**.

3. Remove the rear frame cover. See **"Rear frame cover removal" on page 4-37**.

4. Disconnect the connector in JFDPCK1 (A) and JTRAY1 (B) on the system board.

5. Open the latch (C) to remove the toroids from the cables.

6. Push the cables through the hole in the frame below the two connectors.
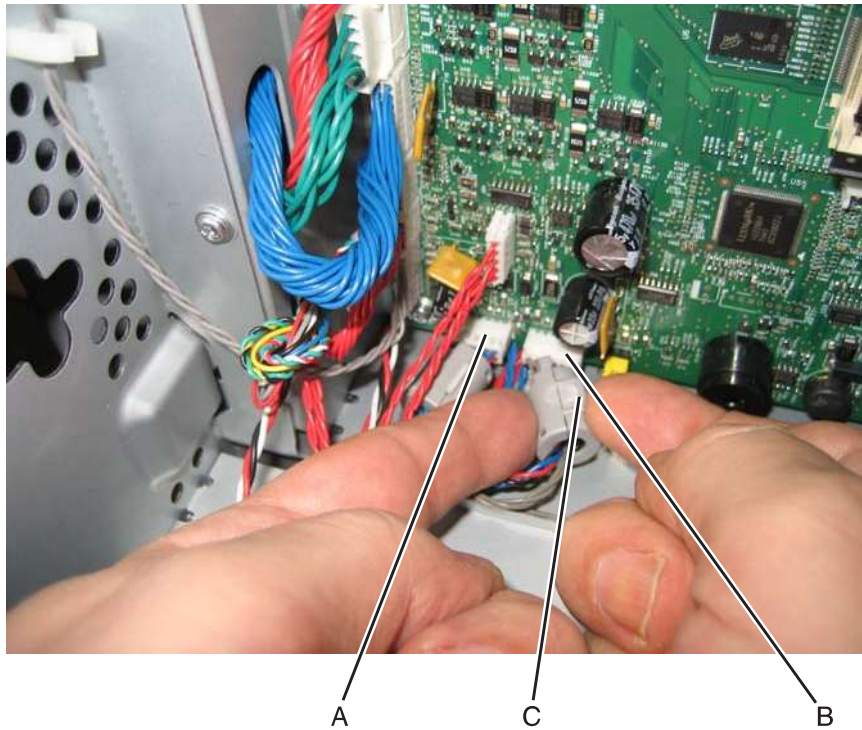
7. Open the front access cover.

8. Disconnect the transfer module cable (D).

9. Press the two tabs (E) to release the front access cover assembly.

10. Press the two tabs (F) on either side of the transfer module, and lift out the transfer module.

    Note: Leave the photoconductor units on the transport belt when removing.

    Warning: To avoid damaging the photoconductor drum, place the transfer module with the photoconductor units on a clean surface. Never expose the photoconductor units to light for a prolonged period of time. Place a clean, dry cloth over the transfer module and photoconductor units until they are required. Lower the front access door cover.

D

E   F
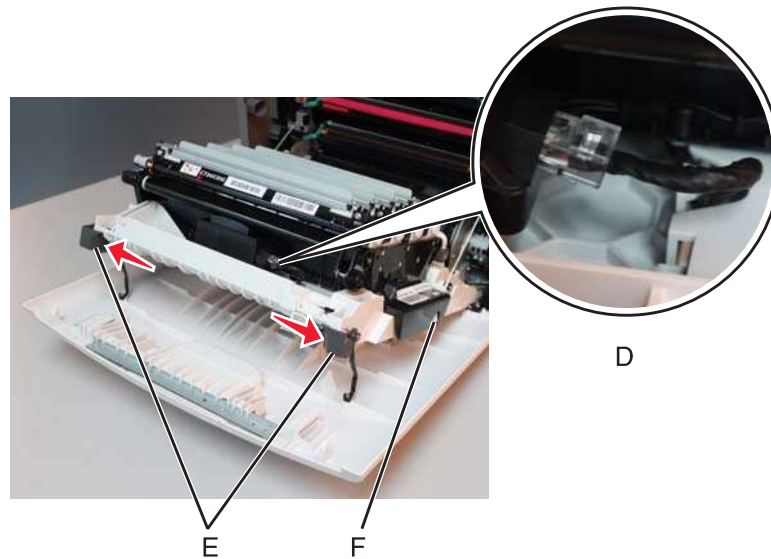
11. Remove the toner cartridges.

12. Remove the four screws (G) from the bottom pan.

G
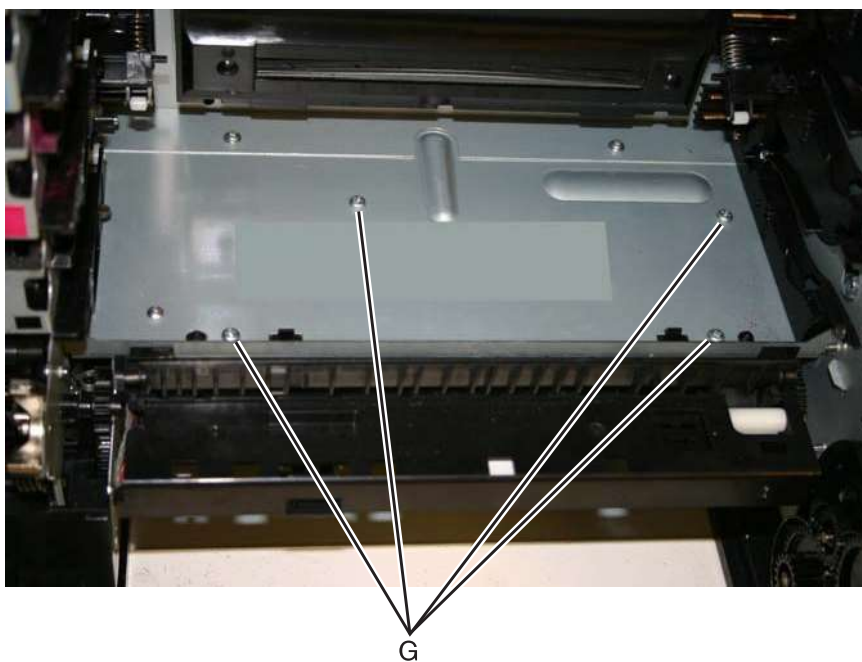
13. With one hand, disengage the gear (H), then grasp the paper pick assembly, and pull forward and downward to disengage the assembly until the front (J) and rear locking tabs release (not visible).

H

J
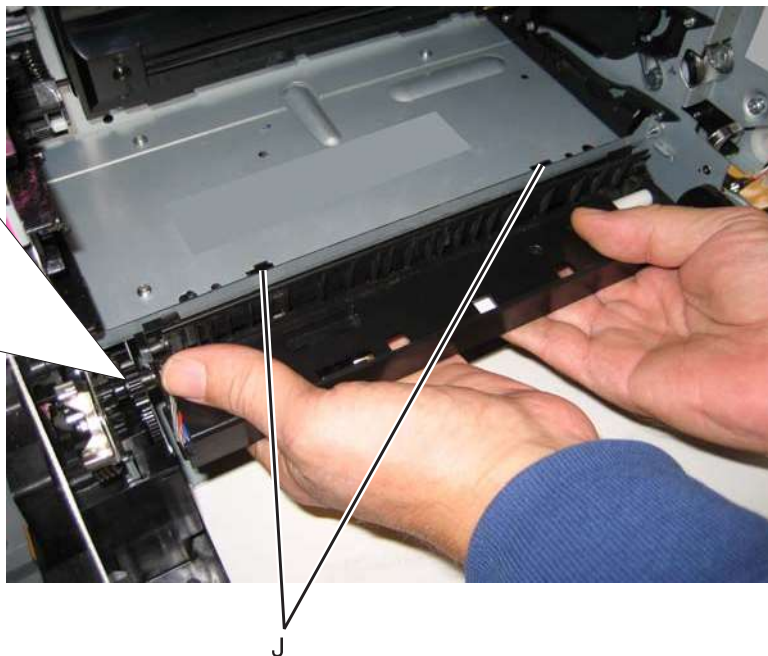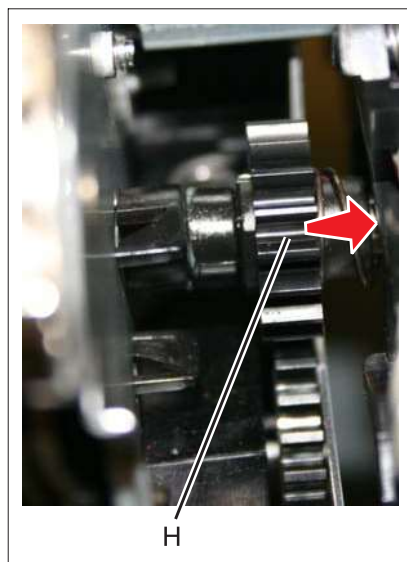
14. Lower the paper pick mechanism, and remove through the front of the printer.

Note: Make sure the JTRAY1 and JTRAY2 connectors do not bind when passing through the frame access hole.
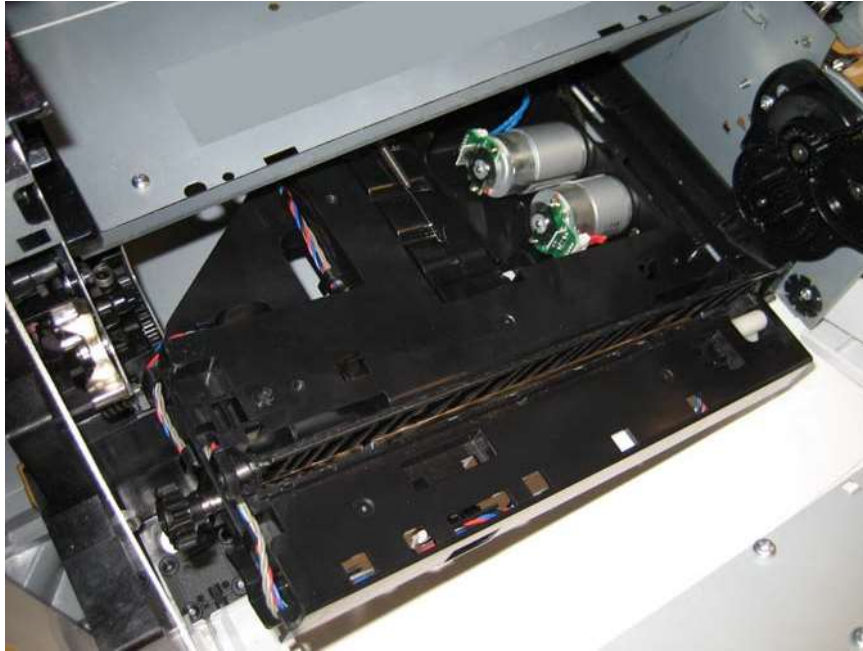
Installation notes:

1. Remove the waste toner assembly. See **"Waste toner assembly removal" on page 4-191**.

2. Replace the rear frame cover to protect the system board.

3. Slide the scanner lock to the forward position to lock the flatbed CCD carrier module in the home position.

4. Tape the ADF (scanner) cover to the flatbed scanner.

5. Turn the printer on its back.

6. Slide the paper pick assembly toward the back of the printer, and down to engage the tabs (A).

7. Slide the tabs (A), and engage the gear (B).
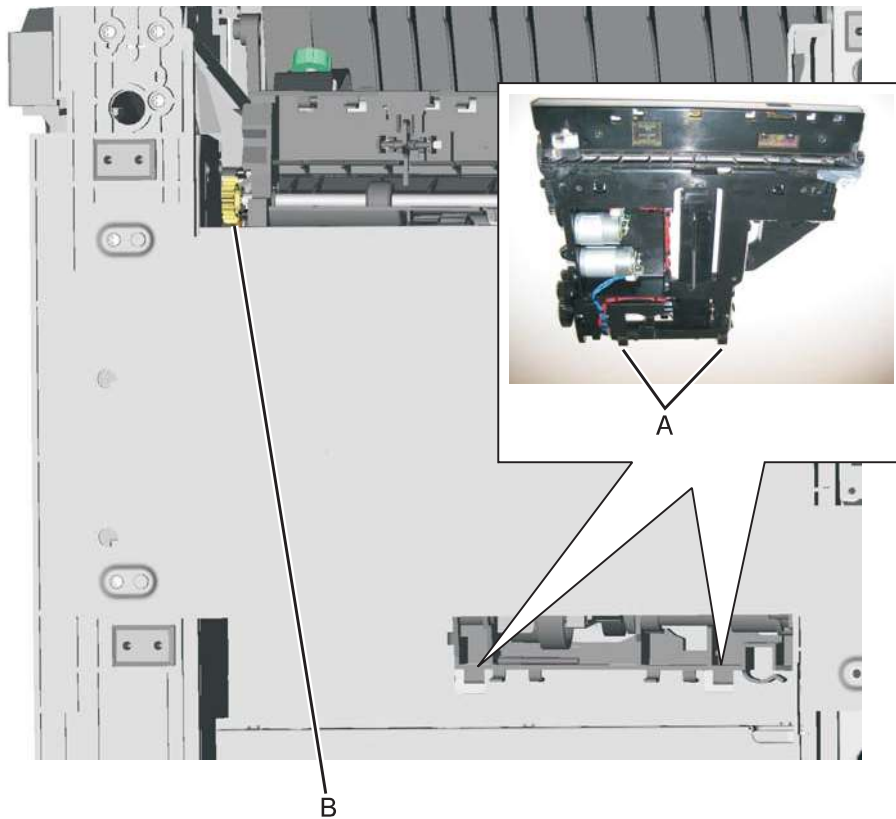
8. Reach into the printer, and replace the front right screw (C) to secure the paper pick assembly.

9. Set the printer upright.

10. Secure the remaining three screws (D).

D   C
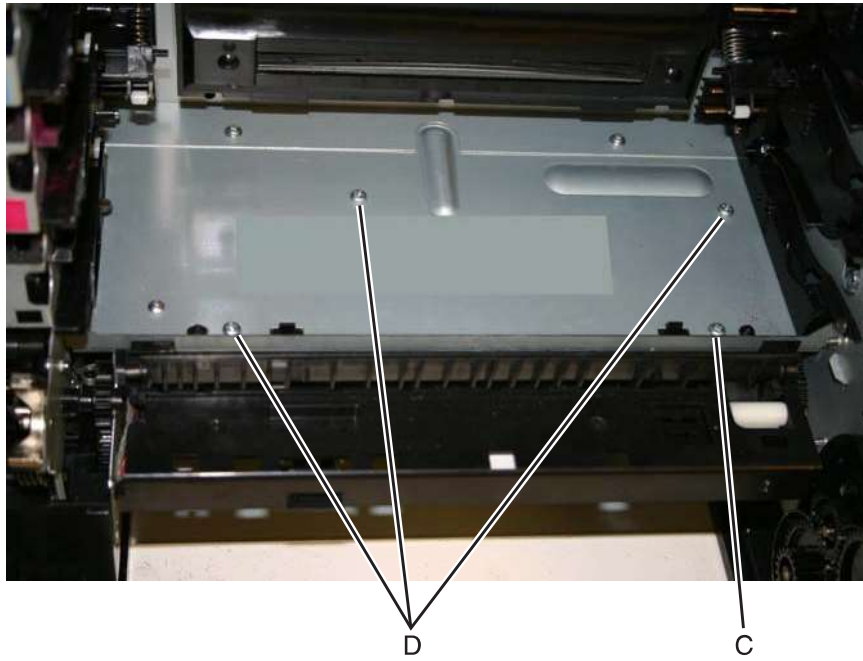
11. Remove the rear frame cover.
12. Route the cables through the hole in the frame, and connect them to JFDPCK1 (E) and JTRAY1 (F).

E   F
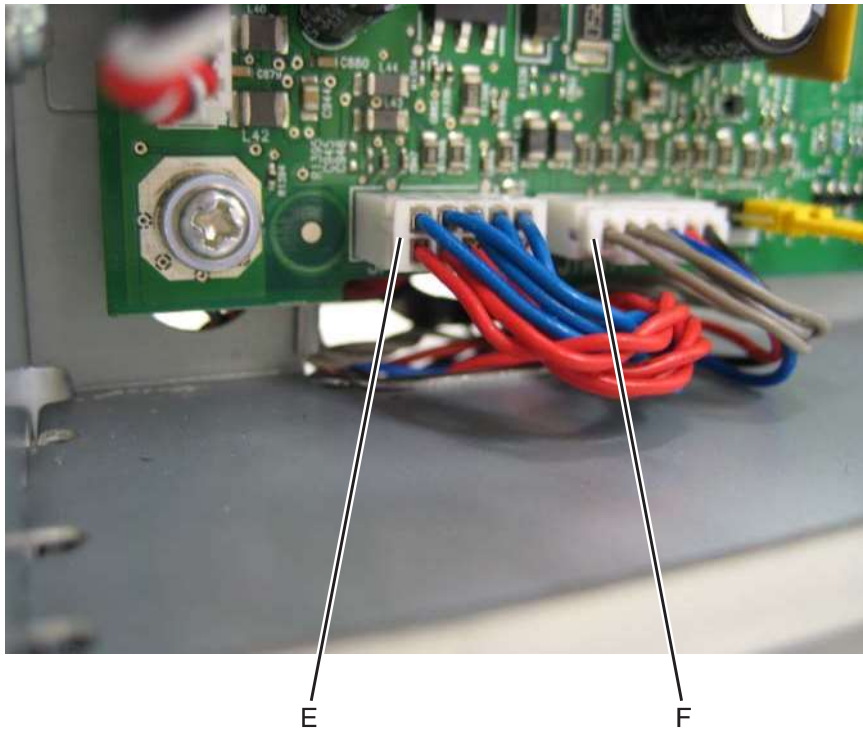
13. Reattach the toroids (G) to the cables.

G
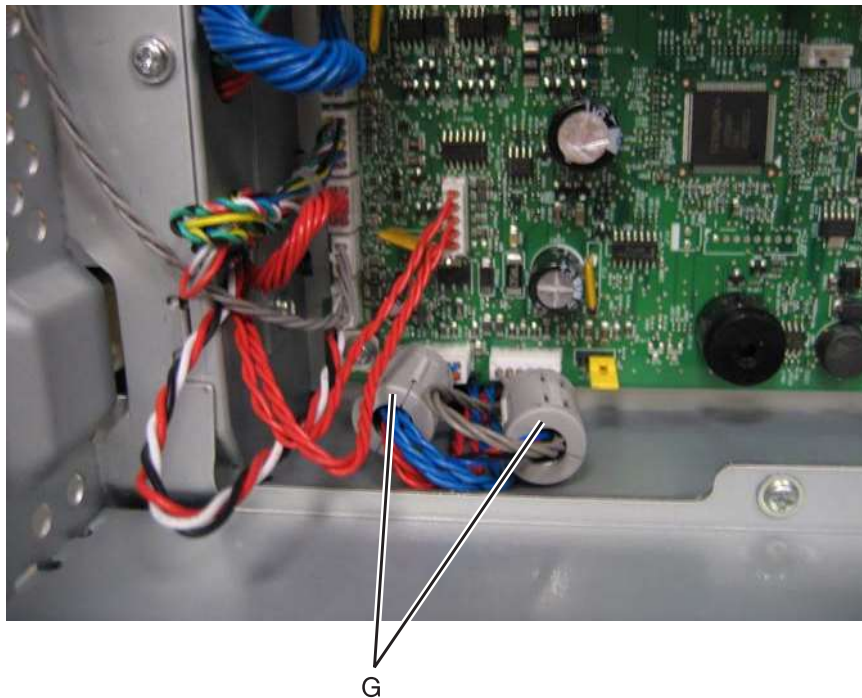
14. Replace the rear frame cover.
15. Replace the waste toner assembly.
16. Replace the toner cartridges.
17. Replace the transfer module with the photoconductor units.
18. Close the front access cover.
19. Replace the paper tray.
20. Open the ADF (scanner) cover and slide the scanner lock to the open position.

Photoconductor unit removal

Note: This is not a FRU.

Warning: To avoid damaging the photoconductor drum, hold the photoconductor units by their handle and place the photoconductor units on a clean surface. See **"Handing the photoconductor unit" on page 4-3** for additional information.

1. Open the front access door.
2. Lift the right end handle (A) of the photoconductor unit, releasing from the mount.
3. Lift the unit up and away from the left side of printer, ensuring the left end of the photoconductor is released from the holding pin (B).

B
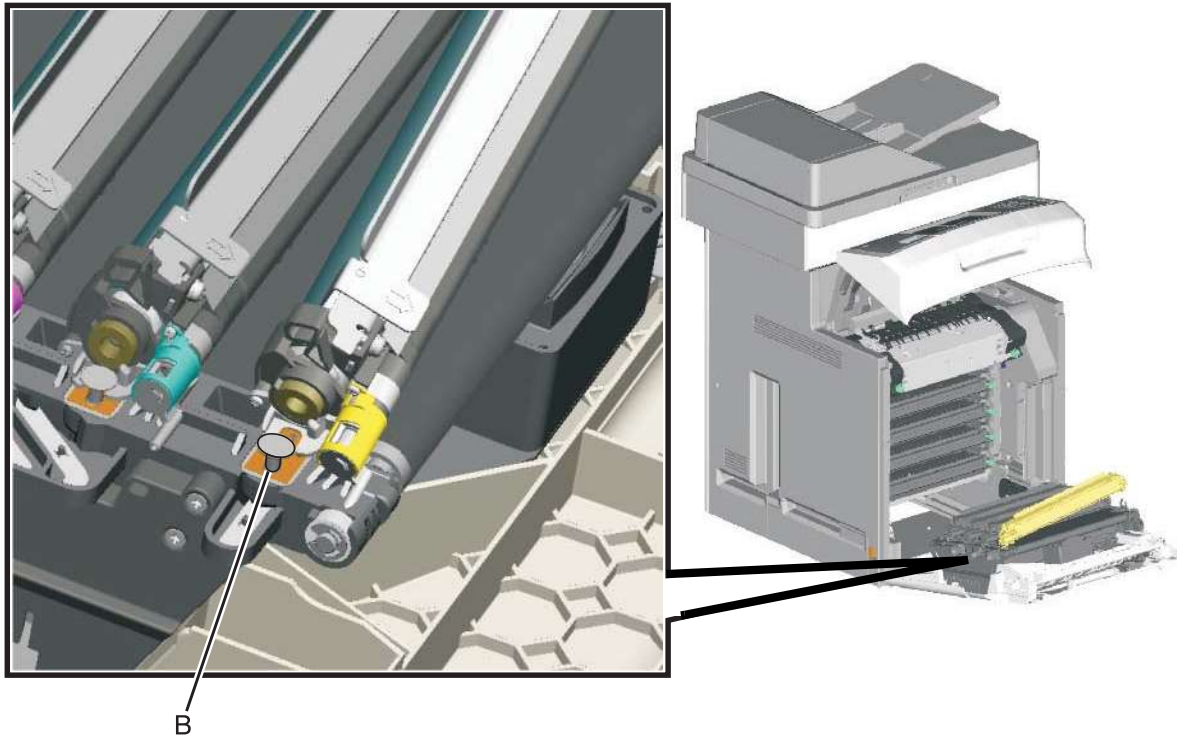
Installation note: If a new photoconductor unit is installed, reset the life count value in the printer memory.

- If a message appears on the operator panel:
  1. When 84 <*color*> PC Unit Life Warning or 84 Replace <*color*> PC Unit appears, touch **Supply Replaced**.
     Replace Supply displays.
  2. Touch **Cyan PC Unit**, **Magenta PC Unit**, **Yellow PC Unit**, or **Black PC Unit** based on the photoconductor unit that was just replaced.
     <*color*> PC Unit Replaced displays.
  3. Touch **Yes** to clear the message.
- If no message appears:
  1. Touch **Menus**.
  2. Touch **Supplies Menu**.
  3. Touch **Replace Supply**.
  4. Touch **Cyan PC Unit**, **Magenta PC Unit**, **Yellow PC Unit**, or **Black PC Unit** based on the photoconductor unit that was just replaced.
     <color> PC Unit Replaced displays.
     Touch **Yes**.

Pick tires removal and replacement

See for the part number.

The autocompensator pick roll tires are located in the base printer. There are also tires in all input options. If you have additional input options, and you are having problems with media picking, replace these tires also. Always replace the pick tires in pairs. The tires come in a package of two.

Warning: Remove only the rubber tires and not the pick tire assembly to avoid losing small parts.

1. Remove the paper tray.
2. Pull the paper pick arm (A) down.

A
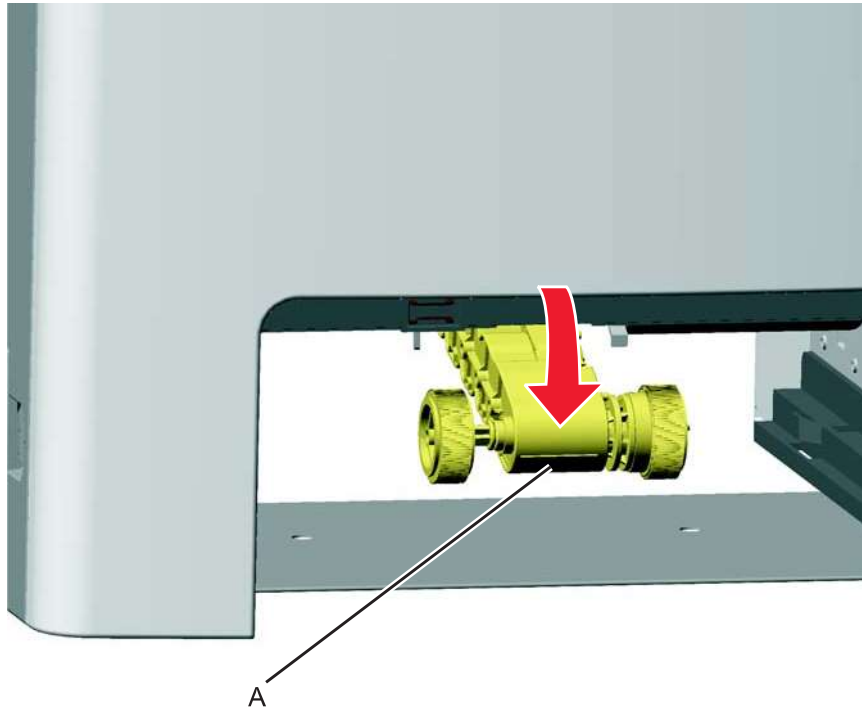
3. Remove the pick tire (B) from the pick tire assembly (C). Repeat for the other pick tire (D).

B   C   D
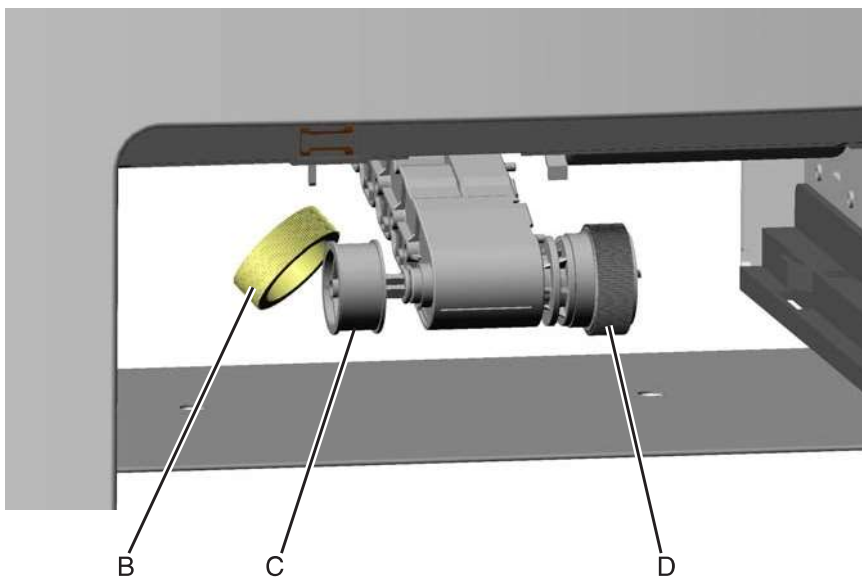
Installation notes: Install the new rubber tires with the surface texture turning in the direction as shown.

Note: Feel the rubber surface to verify it turns properly in the direction shown.
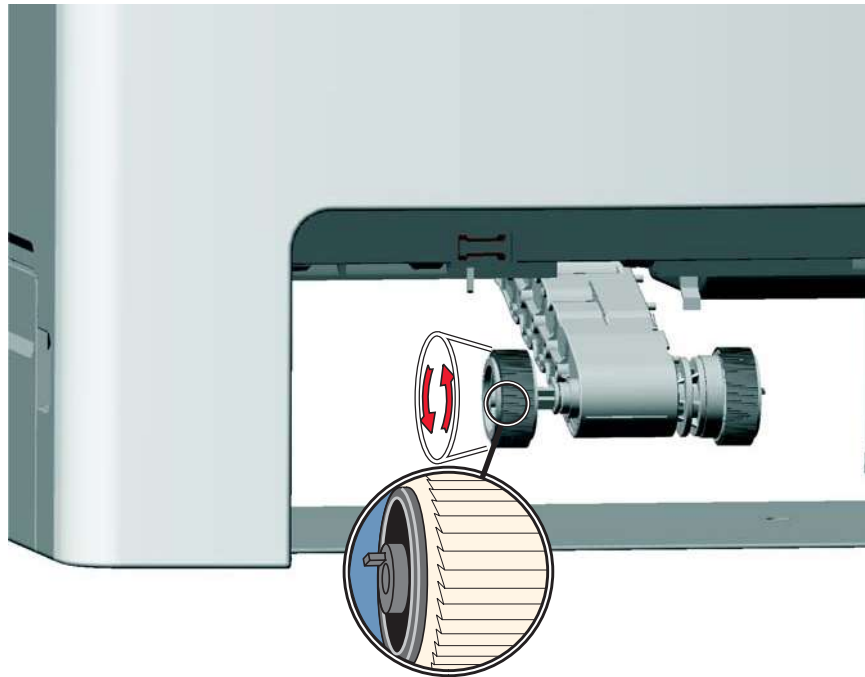
Printer pad removal

1. Slide the corner of the printer containing the damaged pad over the corner of the table.
2. Remove the side cover that corresponds to the damaged pad so you can see if the pad fully seats in the installation holes.
3. Pull the pad (A) from the bottom of the printer. There are two rubber connectors.

A
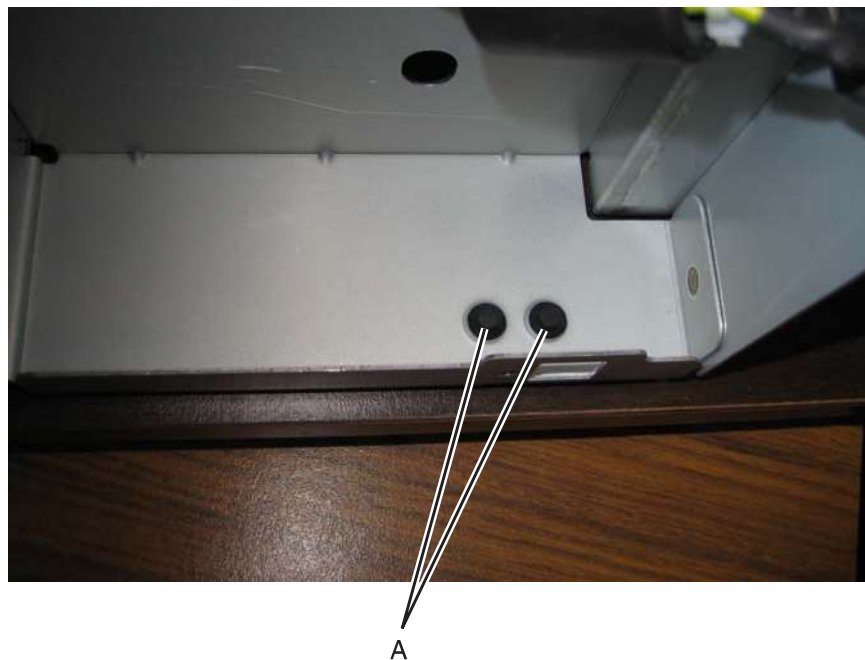
Installation note: Verify that the pad fully seats in the installation holes.

Printhead removal, installation, and adjustment

See **"Printhead assembly" on page 7-9** for the part number.

Service tip—Testing the new printhead

See **"Printhead verification" on page 3-52** for quick way to verify that the NVRAM on a printhead is good before you install the printhead.

Printhead removal

1. Turn the printer off.
2. Disconnect the power cord from the electrical outlet and from the printer.
3. Remove the paper tray.
4. Open the top access door.
5. Open the front access door.
6. Remove the fuser.
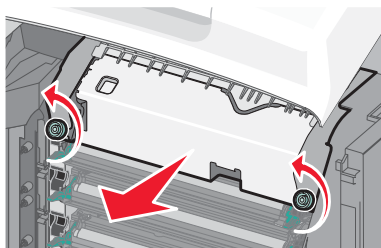
7. Remove the transfer module and photoconductor units.
   a. Disconnect the transfer module cable (A).
   b. Press the two tabs (B) to release the front access cover assembly.
   c. Press the two tabs (C) on either side of the transfer module, and lift out the transfer module.
   **Note:** Leave the photoconductor units on the transport belt when removing.

   Warning: To avoid damaging the photoconductor drum, place the transfer module with the photoconductor units on a clean surface. Never expose the photoconductor units to light for a prolonged period of time. You can place a clean, dry cloth over the transfer module and photoconductor units until they are required.
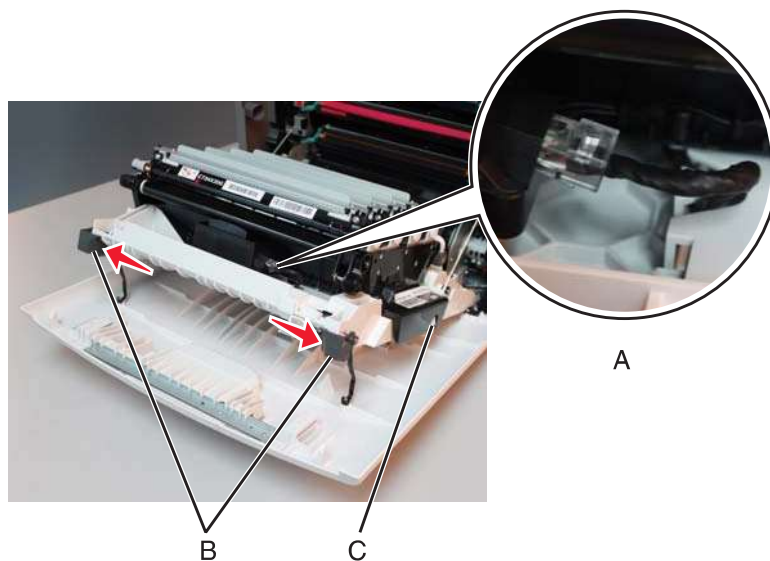
8. Remove all of the toner cartridges.
   **a.** Remove the four screws (D).

D
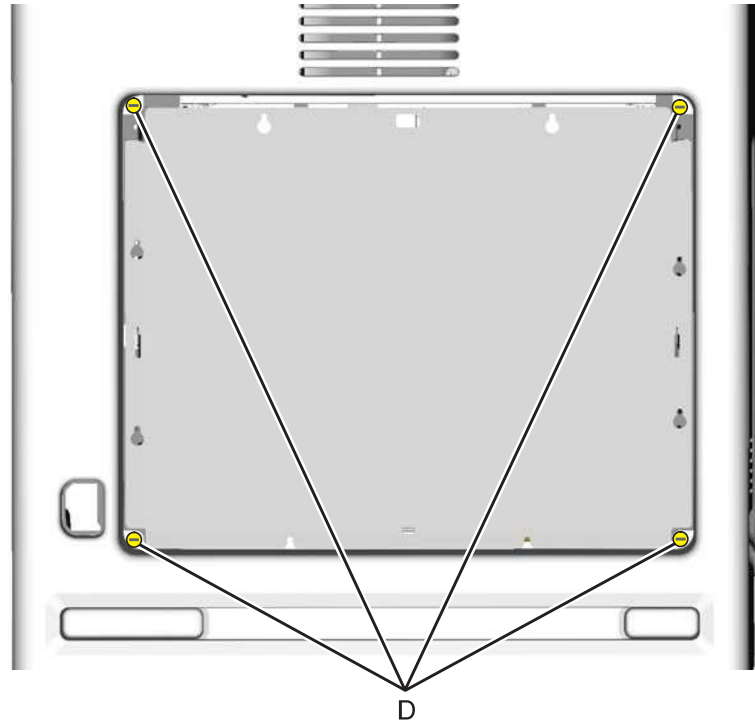
    b. Lift the rear cover and remove it.
9. Remove the rear frame cover.
    a. Loosen the eight screws (E).
    b. Lift the rear frame cover, and remove.

E
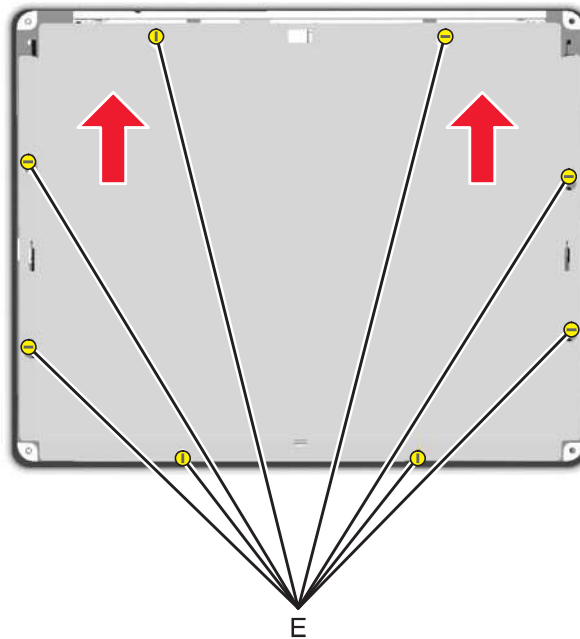
10. Remove the right cover. See **"Right cover removal" on page 4-38**.
11. Remove the left cover with the left door cover attached. See **"Left cover removal" on page 4-24**.
12. Remove the system board support shield. See **"System board support shield removal" on page 4-163**.

13. Remove the printhead.
   a. Remove the printhead mounting screws (F).

F
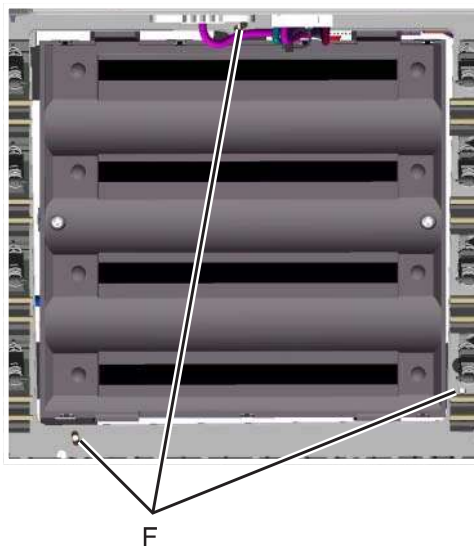
   b. While holding the printhead in place, loosen the printhead alignment screw (G) until the printhead comes out easily.

Warning: Secure the printhead when loosening the printhead alignment screw. Failure to do this allows the printhead to fall out of the printer, potentially damaging the printhead.

G
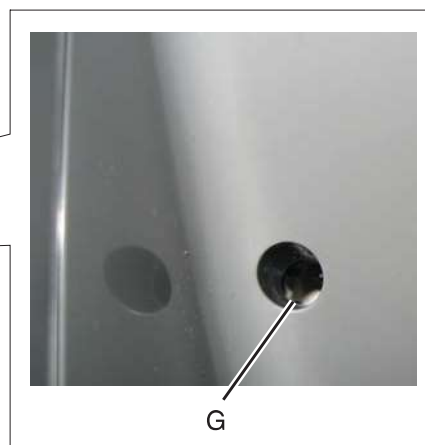
Install the printhead and replace parts

Warning:

- When reinstalling the printhead, it is important to keep in mind that the printhead mounting screws should be **initially tightened just enough to hold the printhead in the printer**. The printer parts are installed with the printhead mounting screws loose so you can print the pages that will be used to align the black plane to the printer frame. This also allows the black skew adjustment with the printhead alignment screw.
- Once the black skew is aligned, the mounting screws will be fully tightened, and the next steps of alignment can be completed.

1. When installing the printhead, visually center the printhead and center the hole in the frame (A).
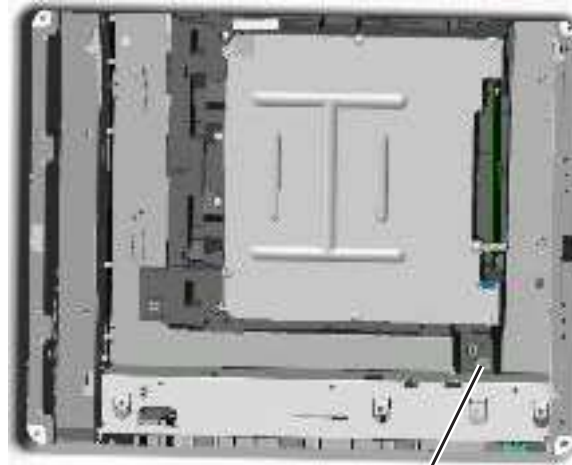
A

2. Loosely attach the printhead mounting screws (B).
   Warning: Do not fully tighten the printhead mounting screws until skew has been adjusted.

B

7526
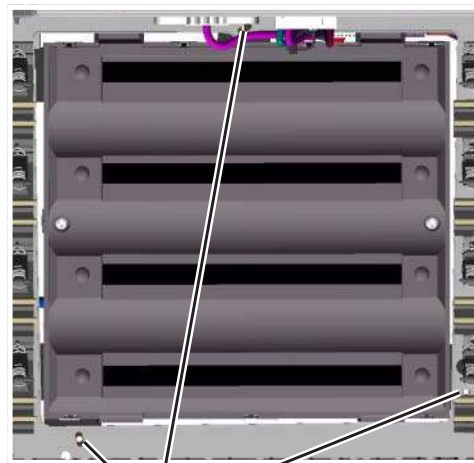
3. Lightly tighten the alignment screw (C).

C
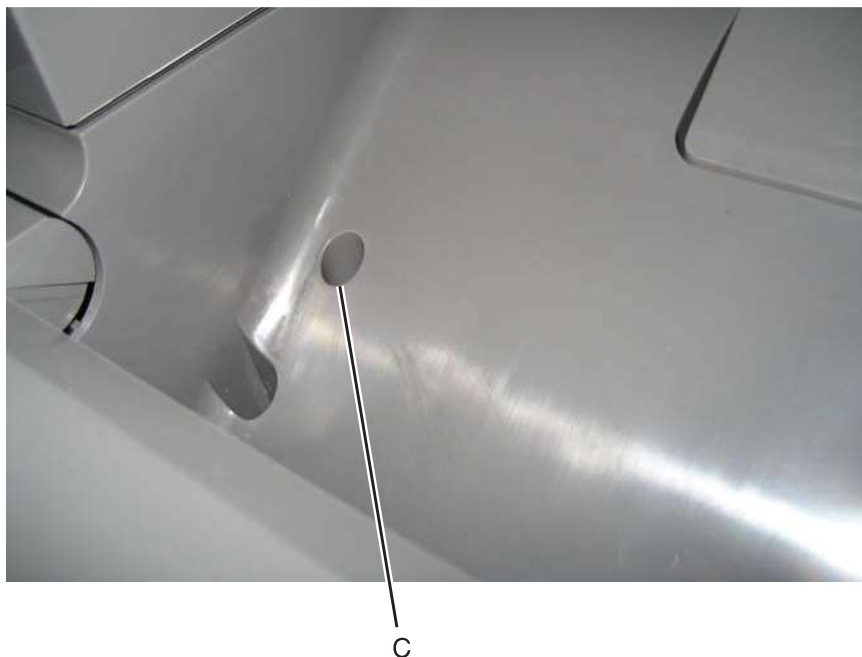
4. Feed the ground cable through the hole in bottom left side of the frame.

5. Replace the system board support shield.

   a. Loosely attache the two mounting screws (D2).

   b. Set the system board shield in place.

   Note: Check that the ribbon cables do not rub against the edges of the frame.

   c. Replace the remaining system board shield screws (D) in the following order:

   • Replace the five screws (D1) from the inner right side of the support shield.

   • Replace the two mounting screws (D2) to the top of the support shield.

   • Replace the three screws (D3) from the bottom of the support shield.

   • Replace the five mounting screws (D4) to the outer left side of the printer.

   Note: Be sure to connect the printhead ground cable (D5) to the fourth screw from the top.

D2

D1

D3   D4   D5
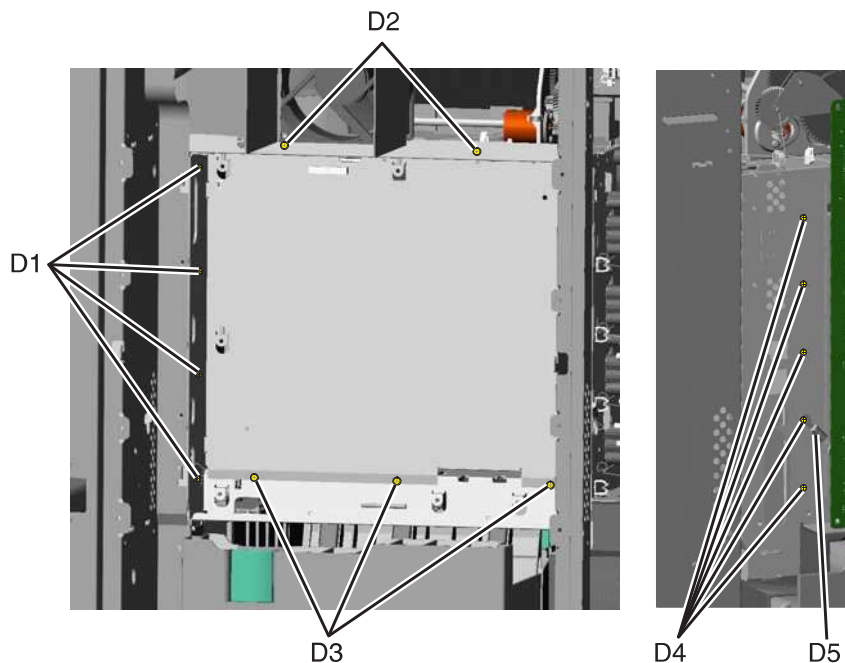
6. Replace the system board.

    a. Place the system board in position.

       Note: Check that the mirror motor cable, printhead, and UICC cables do not rub against the edges of the frame.

    b. Replace the nine screws (E) in the system board in the following order:

       • Loosely attach the four corners (E1) in a clockwise order, beginning with the left top center.

       • Replace the USB connector screw (E2).

       • Replace the top center, right center side, and left center side (E3)

       • Tighten the top left corner and the top right corner.

       • Replace the two screws on the center bottom (E4)

       • Tighten the bottom right and the bottom left corners (E1).
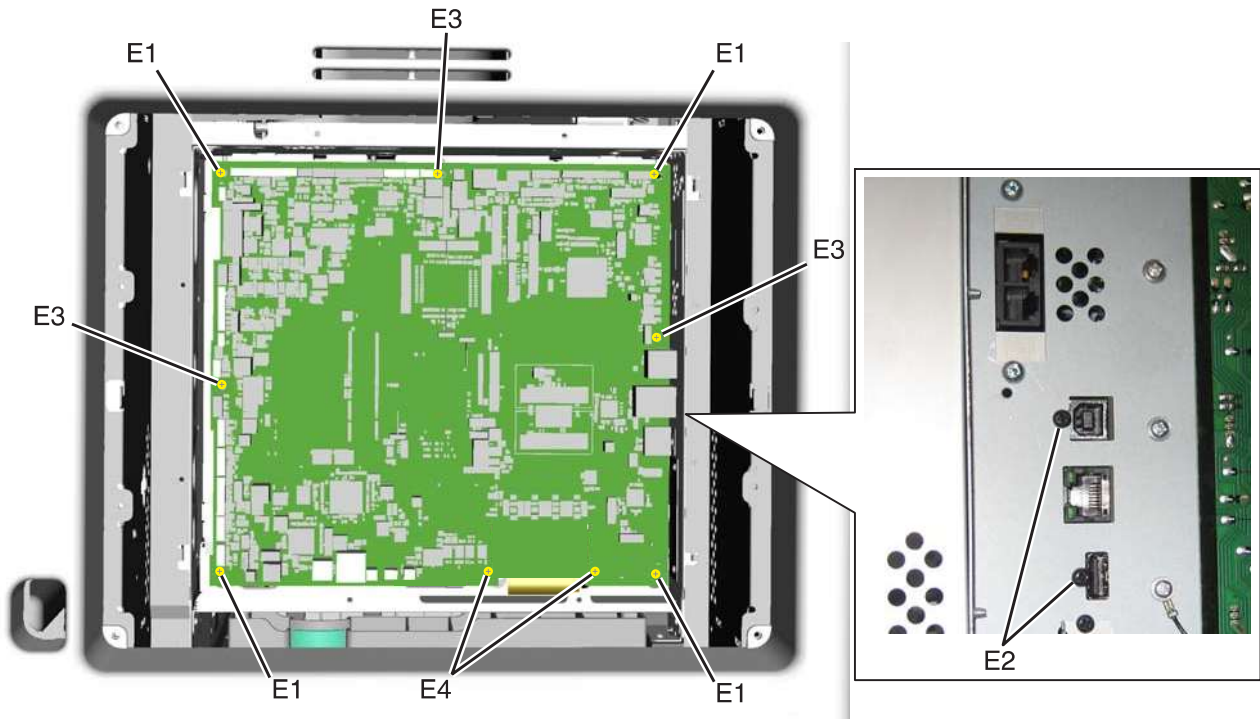
    c. Route the cables through the access holes on the right side of the printer.

d. Replace the ground strap (F) on the screw (G), and tighten the screw.

e. Replace the two screws (H) for the hard disk shield.
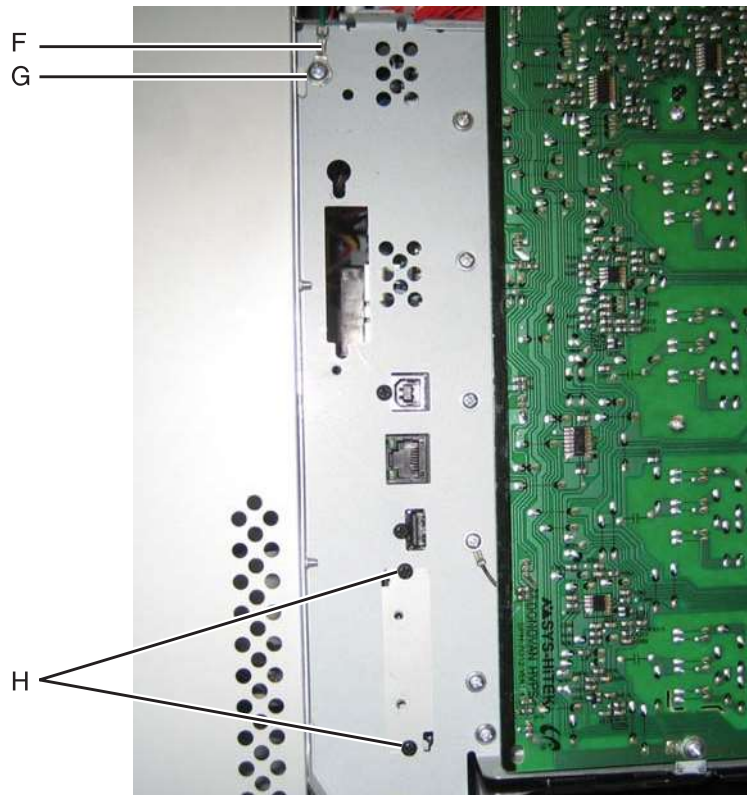
f. Reconnect all the connectors to the system board. Use the diagram below for a guideline.

Warning: Be careful reconnecting the printhead ribbon cable (J) and the UICC cable (K). Ribbon cables can be damaged easily and should be handled carefully.

    g. Replace the fax modem card and/or the hard disk, if appropriate.
7. Replace the LVPS.
    a. Install the LVPS.
    b. Replace the five LVPS mounting screws.
    c. Reconnect the AC LVPS cable to the LVPS.
    d. Reconnect the AC power cable to the LVPS.
    e. Reconnect the AC LVPS cable to the JLVPS1 connector on the system board.
8. Replace the right cover.
    a. Slide the right cover up until it locks into position.
    b. Replace the three screws.
9. Replace the left cover.
    a. Place the printer on the table with the left side edge hanging over slightly.
    b. Slide the cover up until it locks into position.
    c. Replace the three screws.
10. Replace the rear frame cover.
    a. Replace the rear frame cover.
    b. Tighten the eight screws.
11. Replace the rear cover.
    a. Place the two top tabs in the slots.
    b. Replace the four screws.
12. Reinstall the transfer module with the photoconductor units still attached.
13. Reconnect the transfer module cable.
14. Replace the toner cartridges.
15. Replace the fuser.
16. Close the front access door.
17. Close the top access door.
18. Replace the paper tray.

Printhead alignment

Note: The printhead mounting screws should be initially tightened **just enough to hold the printhead in the printer**.

There is one printhead that houses the four color planes. The black plane is aligned to the printer, and the color planes are internally aligned to black. Electrical alignment is done to fine tune the alignment of the color planes to the black plane after the printhead is installed and black skew is adjusted using the alignment screw.

Skew (black)

1. Connect the electrical cord into the printer.
2. Connect the electrical cord into the outlet.
3. Set the skew for black.
   a. Open the top access cover.
   b. Open the front access cover.
   c. Enter Diagnostic mode (turn off the printer, press and hold 3 and 6, turn on the printer, and release the buttons when the progress bar appears).
   d. Select **Registration**.
   e. Adjust the value beside Skew to zero with the left and right arrows, and touch **Submit**.
   f. Touch **Quick Test**. A page similar to this one prints:

Top left alignment marks

Top right alignment marks

Left margin alignment marks

Lexmark X54Xe
Quick Test

Printer Information

Page Count	xx
PSAC	xx
Installed Memory	xxx MB
Processor Speed	xxxMHz
Serial Number	xxxxxxx
CalStat	xxxx
CalSet	x.xx x.xx x.xx
	x.xx x.xx
Engine ID	xx
FSpeed	xxx
Printer Revision Levels	
Loader	xx.xx.xxxx-x
Kernel	xxx.xx.xxxx-x
Base	xx.xx.xxxx-x
Network	xxx.xx.xxxxx-x
Network Drvr	xx.xx.xxxx-x
Engine	xx.xx.xxxx-x
Font	x.xxxxx-xx.x

Margin Settings

Top Margin	= x
Bottom Margin	= x
Left Margin	= x
Right Margin	= x
Skew	= x
Cyan Top Margin	= x
Cyan Left Margin	= xx
Cyan Right Margin	= x
Cyan Skew	= x
Cyan Bow	= x
Yellow Top Margin	= x
Yellow Left Margin	= x
Yellow Right Margin	= x
Yellow Skew	= x
Yellow Bow	= x
Magenta Top Margin	= x
Magenta Left Margin	= x
Magenta Right Margin	= x
Magent Skew	= x
magenta Bow	= x
Dup Top Margin	= x
Paper Source	= Tray 1
Formatted Size	= xxxxxx

Right margin alignment marks

Bottom margin alignment marks

g. Adjust the printhead alignment screw (A) to adjust the skew and straighten the image on the printout.

F
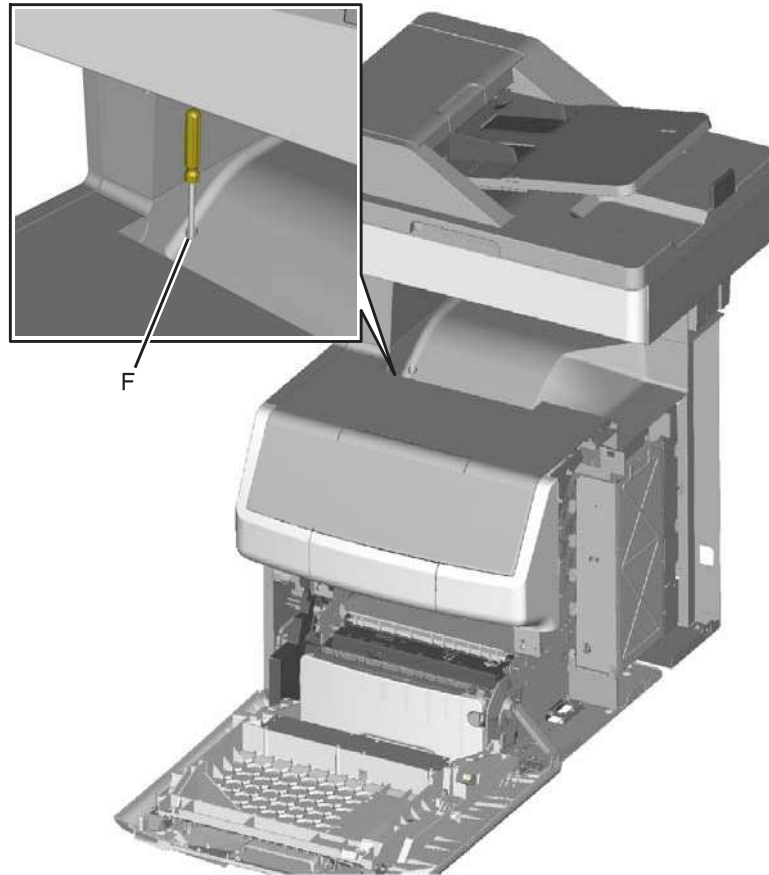
If the top right alignment marks are lower than the top left alignment marks, rotate the alignment screw counterclockwise a full revolution, and print the Quick Test page. Repeat adjusting the screw and printing the Quick Test page until the top alignment marks are the same distance from the top of the media.

Note: One rotation of the printhead alignment screw equals approximately 0.5 millimeter movement of the top edge print alignment marks.

h. When the top right and top left alignment marks are both showing and are even on the page, the skew is aligned.
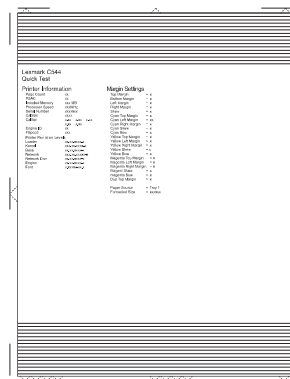
Straight   **Skewed**
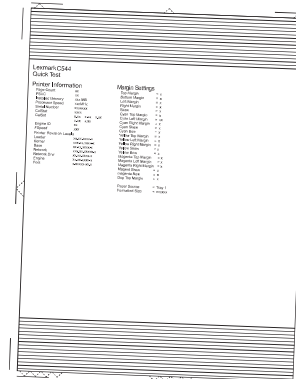
4. Tighten the printhead mounting screws.

  a. Turn off the printer.

  b. Disconnect the power cord from the electrical outlet.

c. Disconnect the transfer module cable.

d. Press the two tabs on either side of the transfer module, and lift out the transfer module with the photoconductor units in place.

e. Remove all of the toner cartridges.

f. Tighten the printhead mounting screws in the following order: G1, G2, and G3.
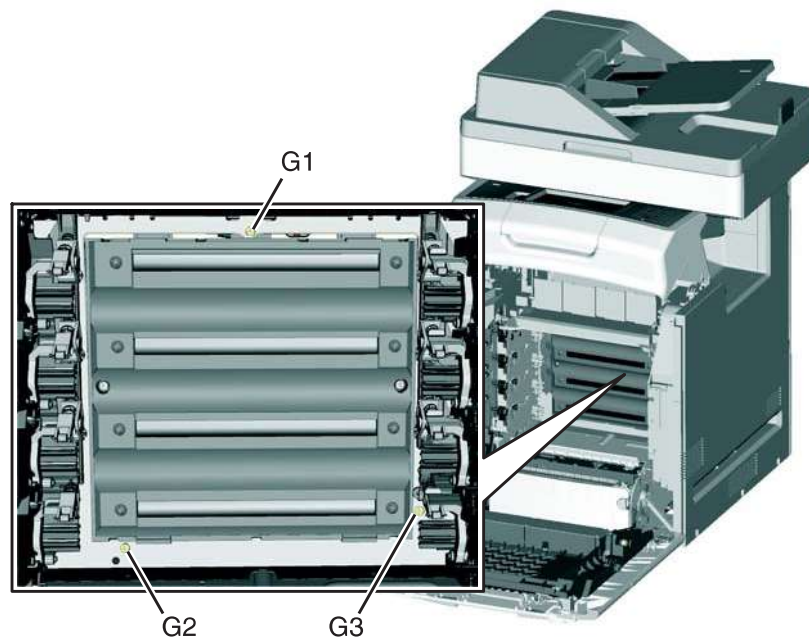
5. Replace the toner cartridges.

6. Reinstall the transfer module and the photoconductor units.

7. Connect the transfer module cable.

Registration (black)

Top Margin

1. Reconnect the power cord to the electrical outlet, but do not turn on the printer yet.
2. Enter Diagnostic mode (press and hold **3** and **6**, turn on the printer, and release the buttons when the progress bar appears).
3. Touch **Registration**.
4. Touch **Quick Test**.

Top left alignment marks   Top right alignment marks

Lexmark X54Xe
Quick Test
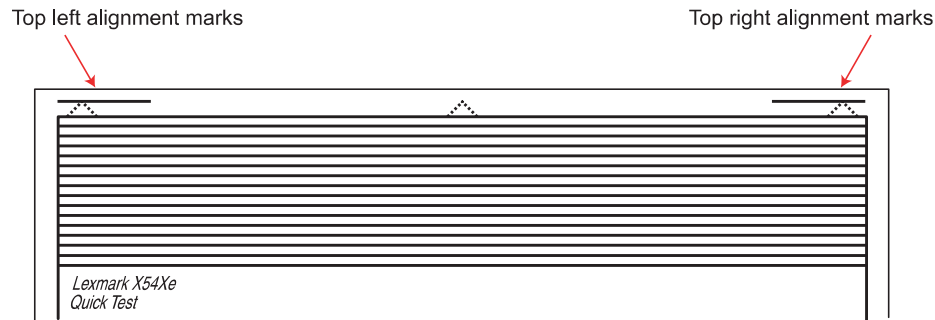
5. Beside **Top Margin**, use the arrows to change the values.
   a. Adjust the values until both top alignment marks are on the top edge of the print.
      - The right arrow increases the value and moves the top alignment marks down the page.
      - The left arrow decreases the value and moves the top alignment marks up the page.
   b. Touch **Submit** to save the changes in value, and then touch **Registration** to return to the Registration menu.
6. Print the Quick Test page, and check the top alignment marks. Repeat adjustment of the top margin and printing of the Quick Test page until top margin is set.

Bottom Margin

1. Adjust the bottom margin until the points of the bottom margin alignment marks are visible and touching the edge of the paper.

Bottom margin alignment marks
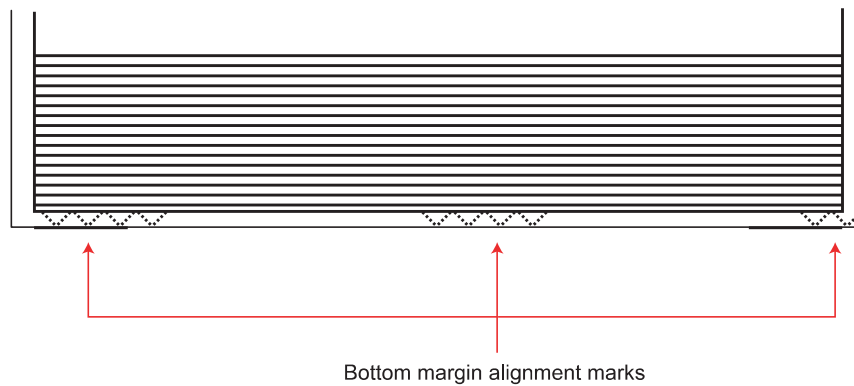
   - The right arrow increases the value and moves the bottom alignment marks up the page.
   - The left arrow decreases the value and moves the bottom alignment marks down the page.
2. Touch **Submit** to save the changes in values.
3. Print the Quick Test page, and repeat this process until the bottom margin is adjusted.

Left Margin

1. Adjust the left margin until the points of the left alignment marks touch the edge of the page.

```
Engine              xx.xx.xxxx-x        Magenta Left Margin    = x
Font                x.xxxxx-xx.x        Magenta Right Margin   = x
                                        Magent Skew            = x
                                        magenta Bow            = x
                                        Dup Top Margin         = x

                                        Paper Source           = Tray 1
                                        Formatted Size         = xxxxxx
```

- The right arrow increases the value and moves the left side alignment marks to the right.
- The left arrow decreases the value and moves the left side alignment marks to the left.

2. Press **Submit** to save the changes in values.
3. Print the Quick Test page, and check the left alignment marks each time until you are satisfied.

Right Margin

1. Adjust the right margin until the points of the left alignment marks touch the edge of the page.

```
Engine              xx.xx.xxxx-x        Magenta Left Margin    = x
Font                x.xxxxx-xx.x        Magenta Right Margin   = x
                                        Magent Skew            = x
                                        magenta Bow            = x
                                        Dup Top Margin         = x

                                        Paper Source           = Tray 1
                                        Formatted Size         = xxxxxx
```
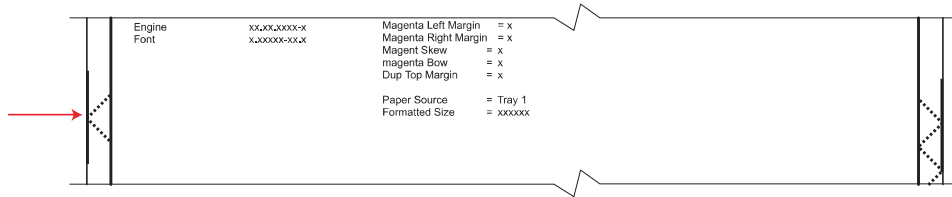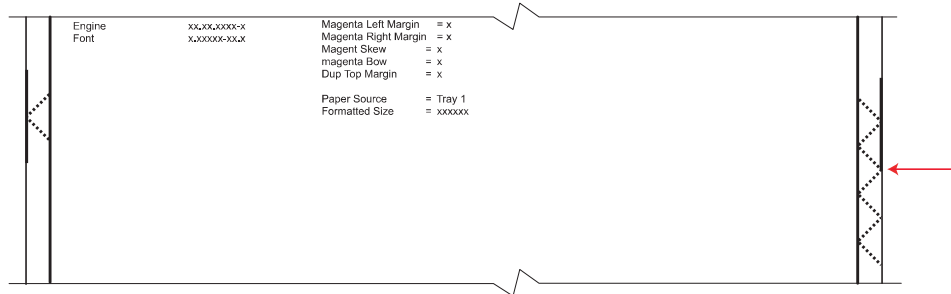
- The right arrow increases the value and moves the right side alignment marks to the left.
- The left arrow decreases the value and moves the right side alignment marks to the right.

2. Touch **Submit** to save the changes in values.
3. Print the Quick Test page, and check the results. Repeat if necessary.
4. When the registration is complete, proceed to the color alignments.

Alignment (cyan, yellow, and magenta)

1. Touch **Back** until you reach the top menu, and touch **Alignment Menu**.
2. Select **Cyan**.
3. Touch the left or right arrows to set **Top Margin** to zero.
4. Do the same for **Left Margin**, **Right Margin**, **Bottom Margin**, **Skew**, and **Bow**.
5. Touch **Submit** to enter all the values.
   It is important to set all the values to zero before starting.
6. Touch **Quick Test** in the Cyan menu.

Two pages print. You may have to print these pages several times until you get T (**Top Margin**) and Z (Skew) aligned. Do not go to step 2 until T and Z are aligned. The first page is similar to the following:
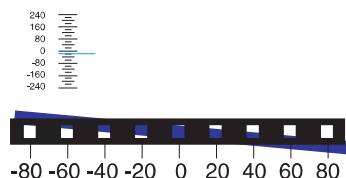
7. Determine the line under Fine Adjustment that is closest. If the value is beyond the Fine Adjustment scale, use either of the Coarse Adjustment scales.

Top (T) Coarse Adjustment

```
240
160
 80
  0
-80
-160
-240
```

-80 -60 -40 -20 0 20 40 60 80

If the alignment is not close enough to use the fine adjustment, get close to the ideal value by using the coarse adjustment marks. Select the block that is most filled by the color on the left, or approximate if none of the blocks are completely filled, and enter it for the new value. Reprint the quick test page, and then use the fine adjustment.

Top (T) Fine Adjustment

```
20
18
16
14
12
10
 8
 6
 4
 2
 0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
```
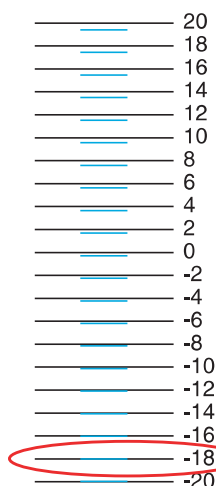
First, locate the line of the color that you are aligning that lines up best with the scale line. In this example, it is -18. If none of the colored lines match up, use the coarse adjustment to get close, reprint this page and then use the fine adjustment.

8. Enter the number determined from the Fine Adjustment scale or the Coarse Adjustment scales on the part of the page for the "T" value. The current value is automatically entered on the sheet. At this point, it should be zero.

```
 -4
 -6
 -8
-10
-12
-14
-16
-18
-20
```

T

T = 0 + __-18__ = __-18__

Current   New
Cyan   Cyan
T value   T value
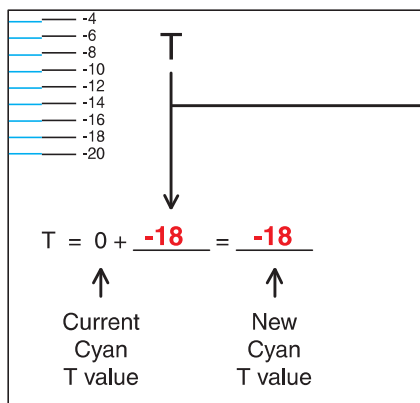
9. Enter the "New Cyan T value" on the operator panel using the left and right arrows, and press **Submit** to save the value.

10. Reprint the Quick Test, and evaluate whether you are at zero changes.

11. Repeat this process for skew (Z). Don't forget to subtract the T value and add the current cyan Z value to obtain the new skew (Z) value.
An example is shown below:

$$T = 0 + \underline{-18} = \underline{-18}$$

Current Cyan T value — New Cyan T value

$$Z = 0 - \underline{-18} + \underline{-14} = \underline{+4}$$
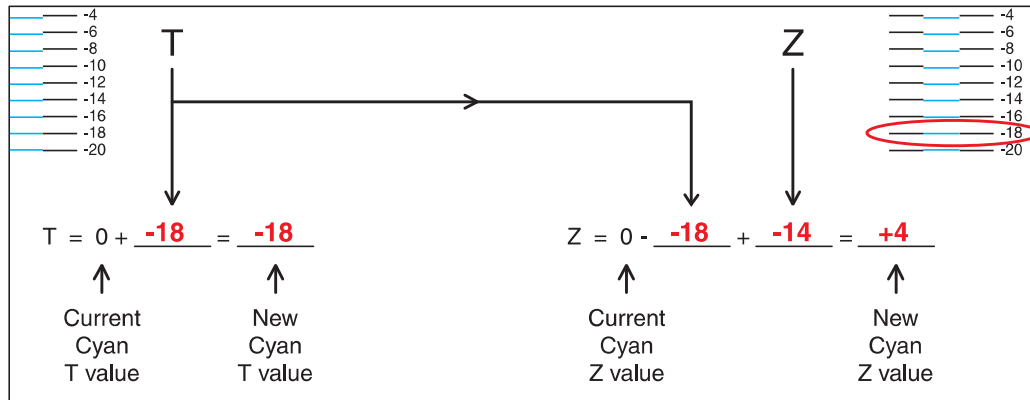
Current Cyan Z value — New Cyan Z value

12. Continue to follow the directions on the bottom of the first page to find the Cyan Top Margin (T), the Skew (Z), and on the second page of the Quick Test page, the Left Margin (L), Right Margin (R), and Bow (P).

Cyan Alignment
Step 2

Left (L) Fine Adjustment

Left (L) Coarse Adjustment

Bow (P) Coarse Adjustment

Right (R) Coarse Adjustment

Right (R) Fine Adjustment

Bow (P) Fine Adjustment

$$L = 0 + \underline{\quad} = \underline{\quad}$$

Current Cyan L value — New Cyan L value

$$R = 0 + \underline{\quad} = \underline{\quad}$$

Current Cyan R value — New Cyan R value

$$P = 0 + \underline{\quad} = \underline{\quad}$$

Current Cyan P value — New Cyan P value

13. Repeat steps 2 through 11 for yellow and magenta.
Note: Start each color group by setting the Top Margin, Left Margin, Right Margin, Bottom Margin, Skew, and Bow to zero.

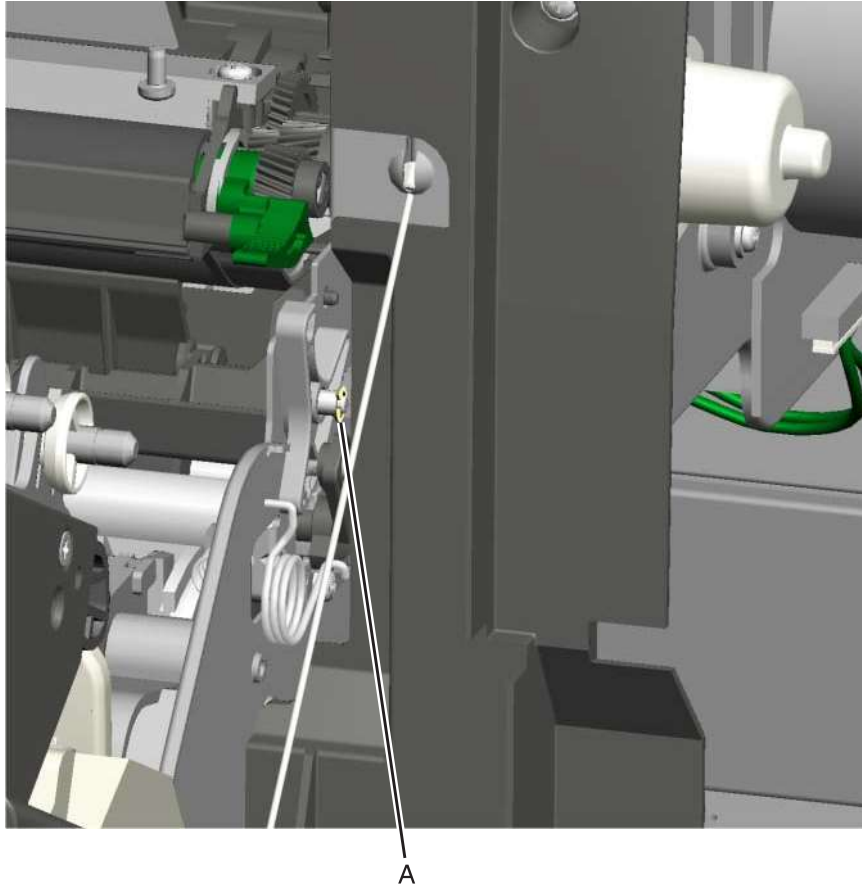## Right bellcrank assembly removal

1. Remove the right cover. See **"Right cover removal" on page 4-38**.
2. Remove the C-clip (A).

A

3. Remove the right bellcrank assembly.

System board removal

See the system board part number for the model you need on **page 7-9**.

> ⚠️ **CAUTION**
>
> This product contains a lithium battery. THERE IS A RISK OF EXPLOSION IF THE BATTERY IS REPLACED BY AN INCORRECT TYPE. Discard used batteries according to the battery manufacturer's instructions and local regulations.

Warning: This part might contain customer confidential information. See **"Data Security Notice" on page 4-1** for more details. After removing this part, return it to your next level of support so any data can be removed. If the customer requests to keep the part, they must sign a confirmation of memory device retention form.

Warning: When replacing any one of the following components:

- **Scanner MDC card**
- **System board**

Only replace one component at a time. Replace the required component, and perform a POR before replacing a second component listed above. If this procedure is not followed, the printer will be rendered inoperable.

Warning: Be careful not to damage the ribbon cables when removing the system board.

1. Remove the left cover. See **"Left cover removal" on page 4-24**.
2. Remove the rear frame cover. See **"Rear frame cover removal" on page 4-37**.
3. Remove the hard disk if one is installed. See **"Hard drive assembly removal" on page 4-108**.
4. Remove the wireless network card if one is installed. See **"Wireless network card removal" on page 4-206**.
5. Remove the fax modem if one is installed. See **"Fax modem removal" on page 4-91**.
6. Remove all the screws (A) from the left side of the printer so you can remove the system board, including:
   - USB port connector (1 screw)
   - Ethernet port connector (1 screws)
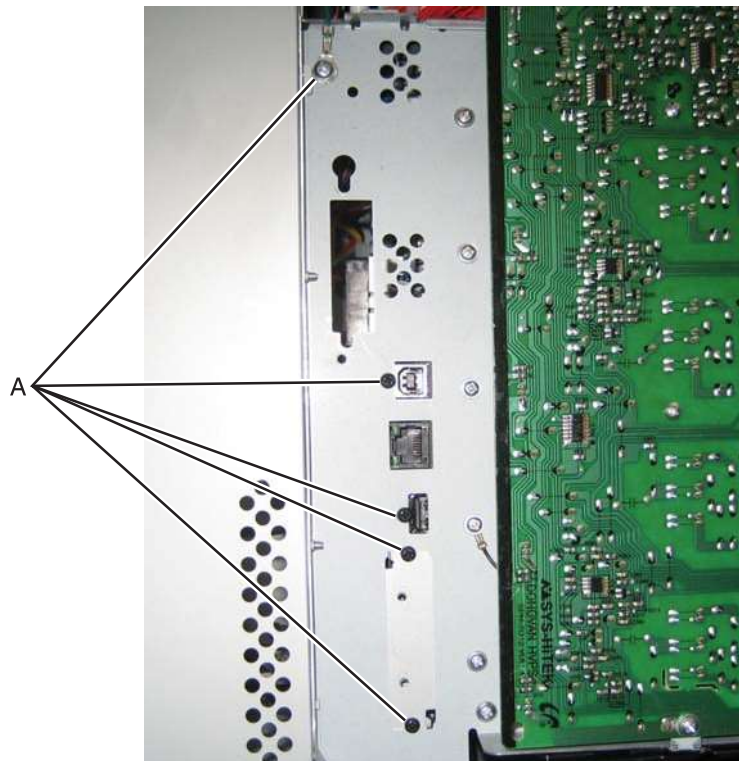   - Modem shield (1 screws)
   - Hard disk shield (2 screws)

- Ground screw (1 screw)
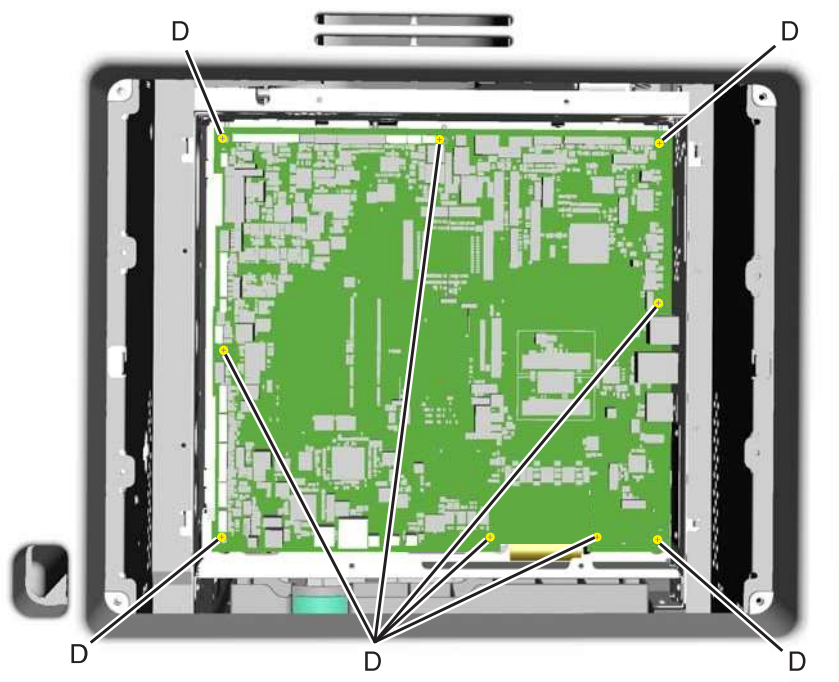

7. Disconnect all the cables from the system board.

Warning: Do not use tools to remove the UICC cable (B) or the printhead ribbon cable (C). Flat ribbon cables can be damaged and should be removed gently by hand. When installing, carefully line up the cable, and press straight into the connector.

**8.** Remove the nine screws (D) from the system board.

9. Remove the system board.

Installation notes:

1. Place the system board in position.
   Note: Check that the mirror motor cable and the printhead cable do not rub against the edges of the frame.

2. Replace the nine screws (A) in the system board in the following order:
   - Loosely attach the four corners (A1) in a clockwise order, beginning with the left top corner.
   - Replace the USB connector screw (A2).
   - Replace the top center, right center side, and left center side (A3).
   - Tighten the top left corner and top right corner.
   - Replace the two screws on the center bottom (A4).
   - Tighten the bottom right and bottom left corners (A1).
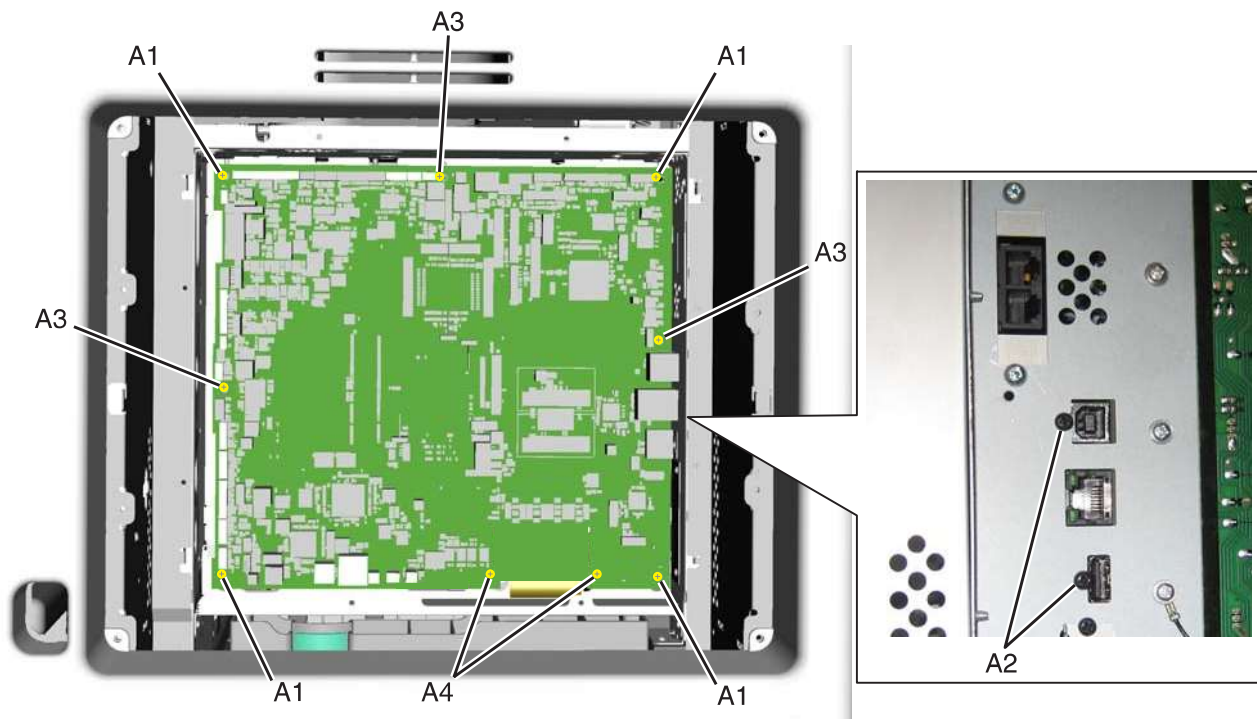
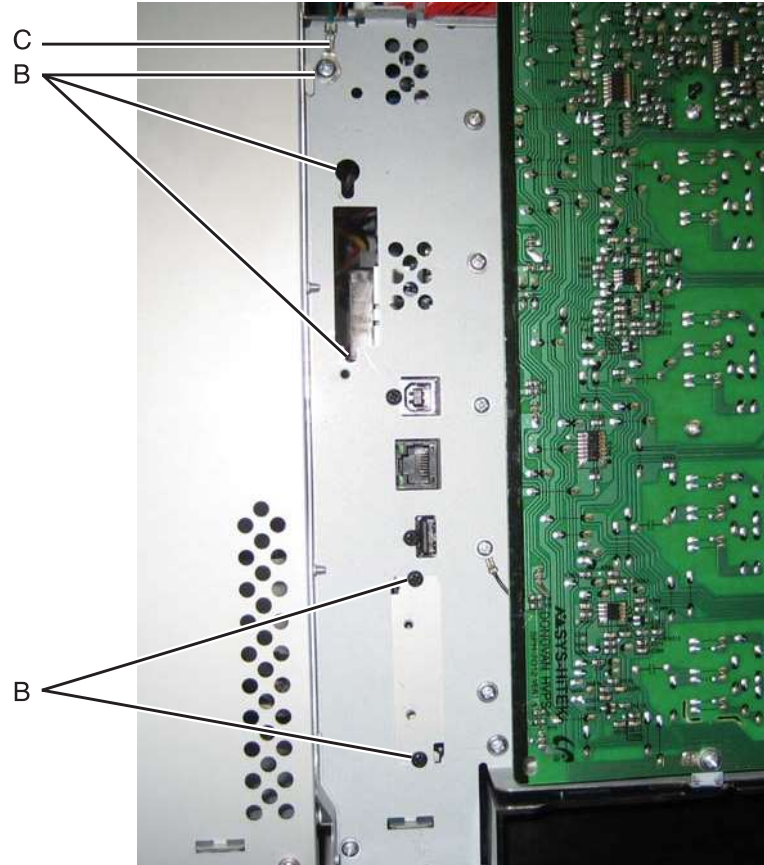3. Route the cables through the access holes on the right side of the printer.

4. Replace all the screws (B) from the left side of the printer, including:
- Ethernet port connector (1 screws)
- Modem shield (1 screws)
- Hard disk shield (2 screws)
- Ground screw (1 screw)

    Note: Be sure to attach the ground wire (C) to the ground screw.

5. Reconnect all the connectors to the system board. Use the diagram below for a guideline.
Warning: Be careful reconnecting the printhead ribbon cable (D) and the MDC cable (E). Ribbon cables can be damaged easily and should be handled carefully.

E   D

6. Install the toroids, hard disk, modem, and wireless network card, if appropriate.
**7.** Replace the rear cover, rear frame cover, and the left cover.

System board support shield removal

1. Remove the system board. See **"System board removal" on page 4-157**.
2. Remove the right cover. See **"Right cover removal" on page 4-38**.
3. Pull the cables through the access holes on the right side of the printer.
4. Remove the five mounting screws (A) from the outer left side of the printer.

   Note: Make a note of the attachment of the printhead ground cable (B) to the fourth screw from the top for later installation.

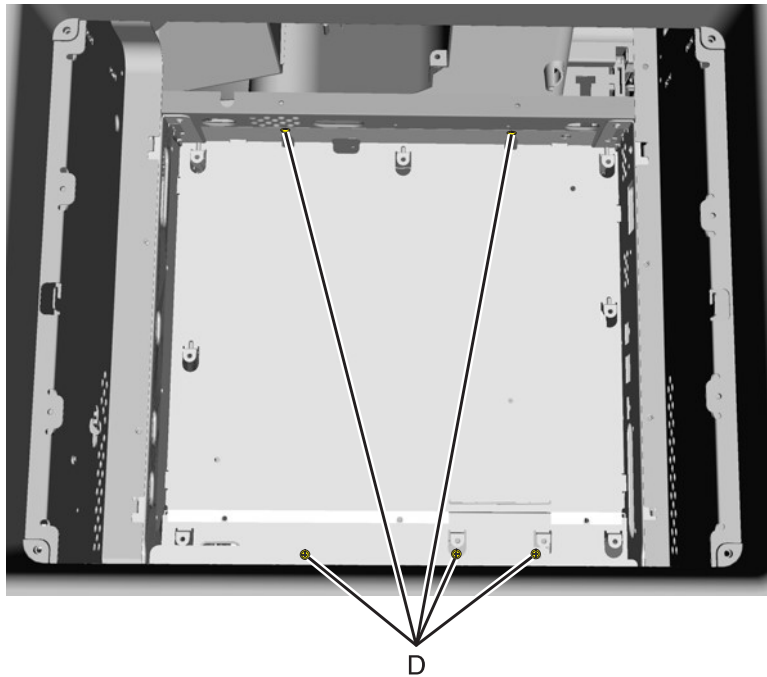5. Remove the four screws (C) from the inner right side of the support shield.
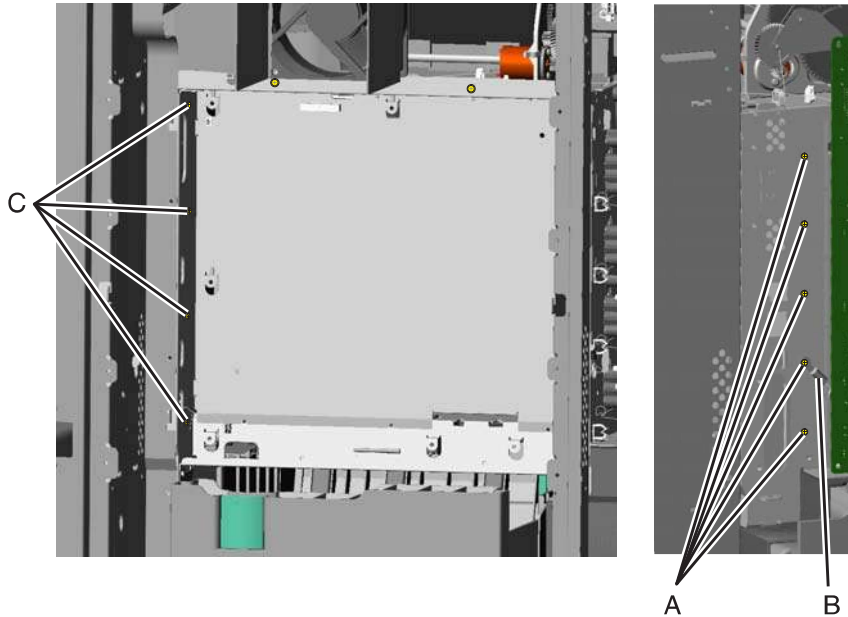
6. Remove the five mounting screws (D) from the top and bottom of the support shield.
Note: Only the ribbon and mirror motor cables come through the access holes in the system board support shield.

D

7. Lower and remove the support shield.
Note: Be careful not to damage the ribbon cables that route through the top and bottom frame of the printer.

**Installation notes:**

1. Loosely attach the two mounting screws (A).
2. Set the system board shield in place.
   Note: Check that the ribbon cables do not rub against the edges of the frame.

3. Replace the remaining system board shield screws in the following order:
   - Replace the five screws (B) from the inner right side of the support shield.
   - Tighten the two mounting screws (A) to the top of the support shield.
   - Replace the three screws (C) from the bottom of the support shield.
   - Replace the five mounting screws (D) to the outer left side of the printer.
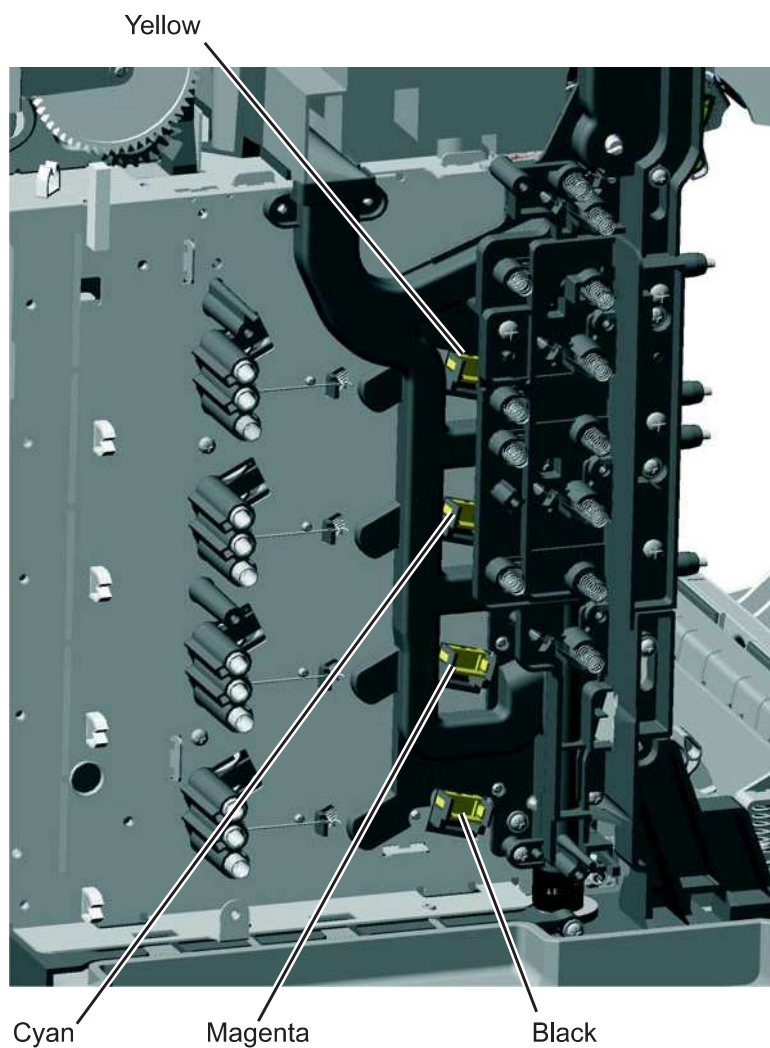   **Note:** Be sure to connect the printhead ground cable (E) to the fourth screw from the top.
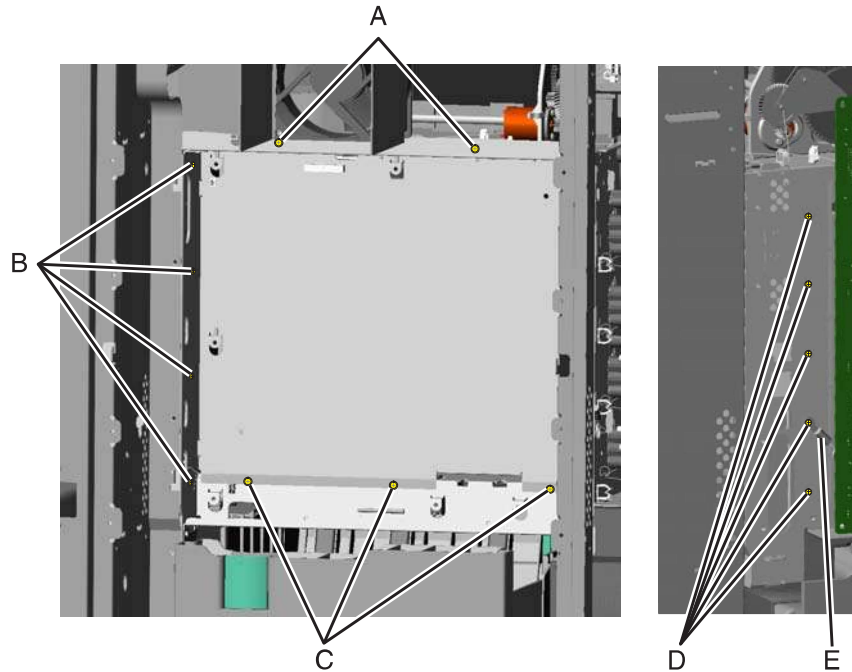
Toner level sensor removal

See **"Toner level sensor" on page 7-11** for the part number.

Note the locations of the toner sensors.


Yellow

Cyan   Magenta   Black

1. Remove the HVPS. See **"High-voltage power supply (HVPS) cable removal" on page 4-112**.
2. **For the upper two sensors:** These sensors are more difficult to reach because the toner is difficult to reach:

    It is difficult to press both locking tabs at the same time. Using a spring hook, press the locking tab (A), and disengage the sensor on that side. Press the other locking tab (B), and remove the sensor.

    Note: Use a slight pressure on the cable to keep the first locking tab from relatching, while you disconnect the second locking tab.
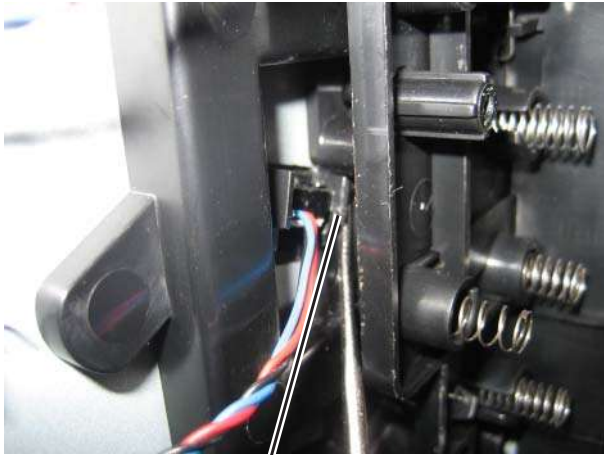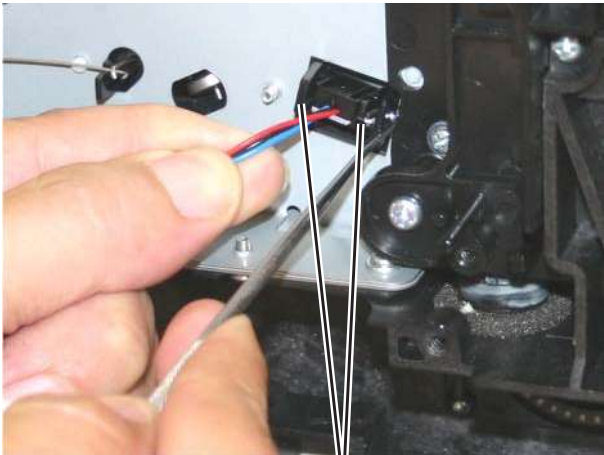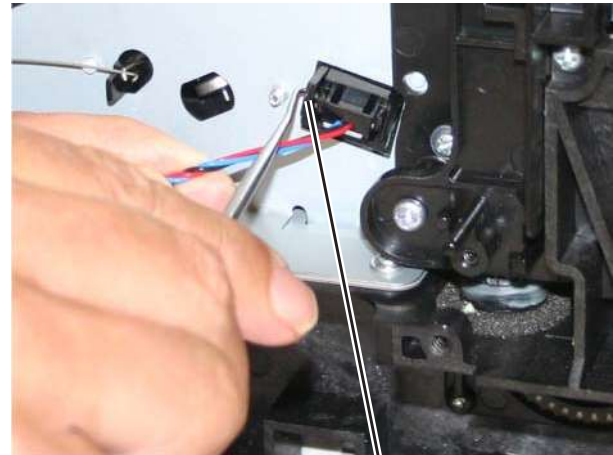

A
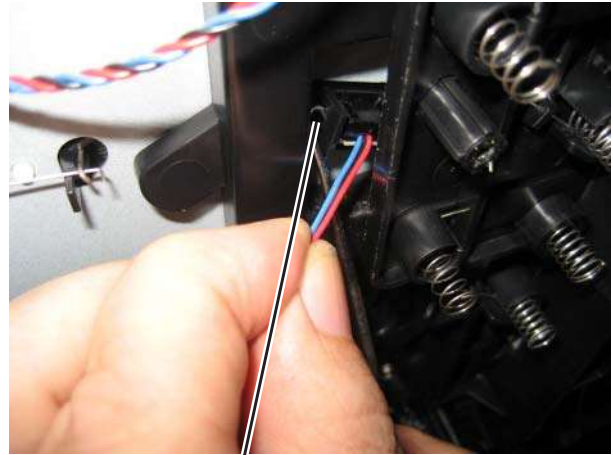
B

For the lower two sensors:

Using a spring hook, press the locking tab (C), and disengage the sensor on that side. Press the other locking tab (D), and remove the sensor.

C

D

Top access cover links removal

Links come two in a package and fit either the right or the left.

Lower links

1. Open the top access cover.
2. Remove the side cover that corresponds to the link you need to replace. For example, if you are replacing the right lower link, remove the right cover.
3. Disconnect the spring (A).
4. Remove the two screws (B).

5. Remove the link.

Upper links

1. Open the top access cover.
2. Remove the two screws (A) on the link that you need to replace.

3. Remove the link.
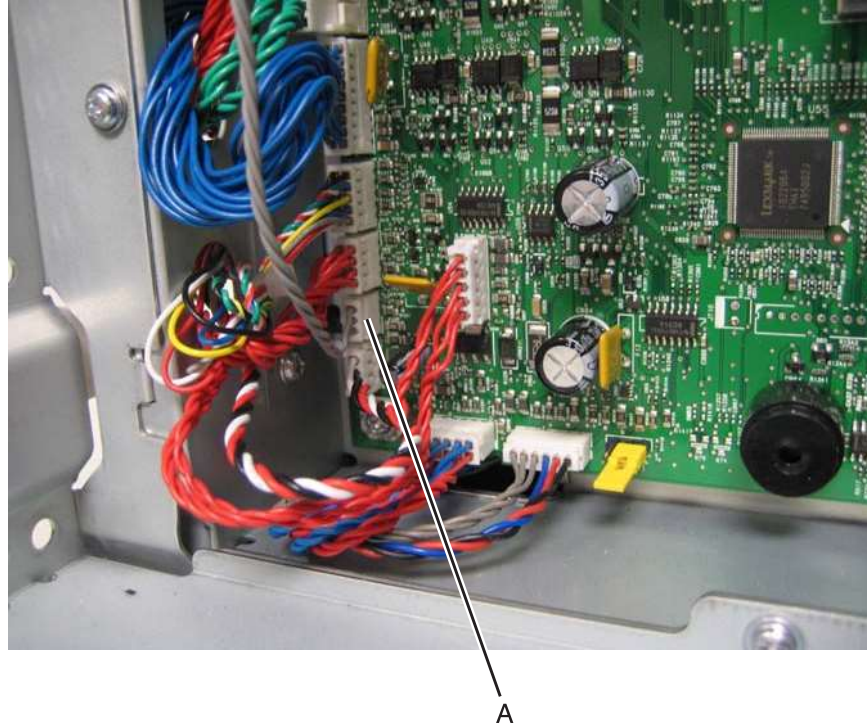
Top access cover sensor removal

This cable is gray.

1. Remove the rear frame cover. See "Rear frame cover removal" on page 4-37
2. Disconnect the cable in connector JFDS1, and remove the cable through the top left frame.

A

3. Remove the right cover. See "Right cover removal" on page 4-38.
4. Squeeze the latches (B) to disconnect the sensor from the top access cover.
5. Remove the sensor and cable through the opening (C).

B   B   C
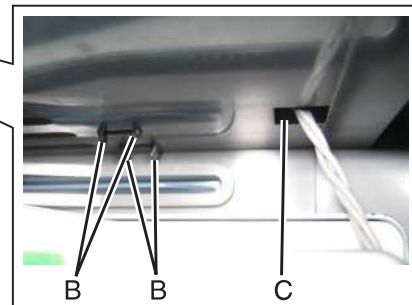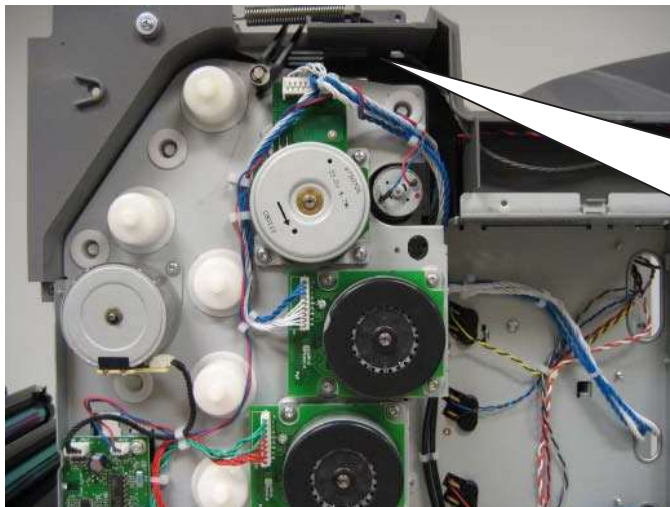
Installation notes:

1. Turn over the top access cover.
2. Snap the sensor into place.
   Note: Make sure the sensor is replaced with the slot (A) in the center aligned with the gap in the top cover frame. Also note the placement of the cable connector.

3. Route the cable through the opening (B), and through the openings in the other side of the top cover assembly.
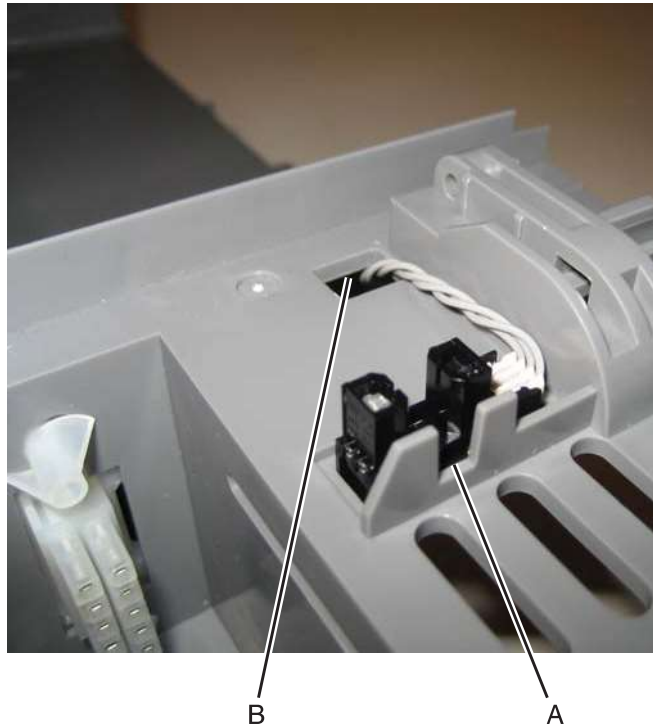
Top access cover springs removal

If the cover will not open

Lift the top access cover as far as you can, slip the spring hook into the opening between the top access cover and the side cover, hook the link, and pull on the link to open the top access cover.

Replacing the right spring

1. Open the top access cover.
   Note: If the top access cover will not open, see **"If the cover will not open" on page 4-171**.
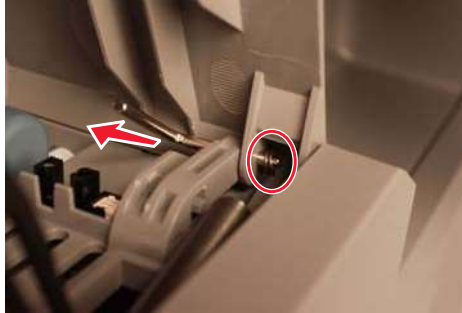
2. With a spring hook, remove the right spring from the link.
   Note: Depending on the orientation of the spring, the spring will attach from either the inside or the ouside.
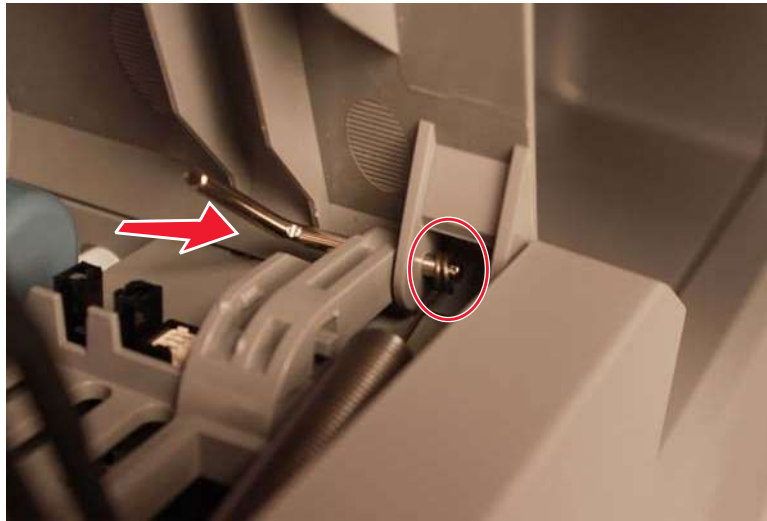
3. Pull the pivot upward to unlatch it from the frame then slide the pivot out of the frame and outer top access cover holes.
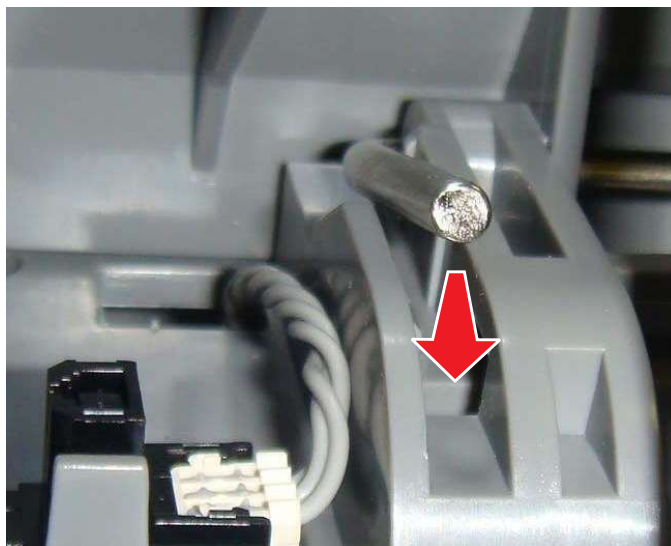
    Note: Do not remove the pivot from the inner hole.

4. Slide out and remove the spring out of the pivot.
5. Insert the new spring in place to hook onto the pivot, and push the pivot back into the outer top access cover holes to secure the spring.

6. Push the pivot down to lock it back into place.

7. Attach the other end of the spring onto the link.
   Note: Depending on the orientation of the spring, the spring will attach from either the inside or outside.


Replacing the left spring

1. Open the top access cover.
2. With a spring hook, detach the spring from the left link.

Note: Depending on the orientation of the spring, the spring will attach from the inside or the outside.

3. Pull the pivot upward to unlatch it from the frame then slide the pivot out of the frame and outer top access cover holes.

Note: Do not remove the pivot from the inner hole
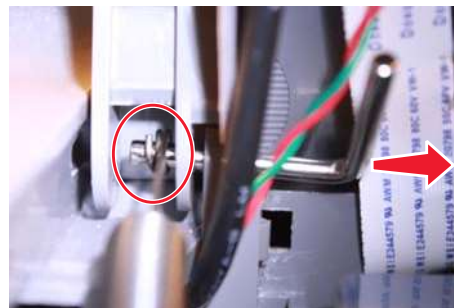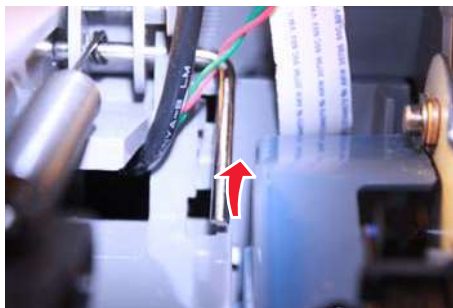
4. Slide out and remove the spring from the pivot.