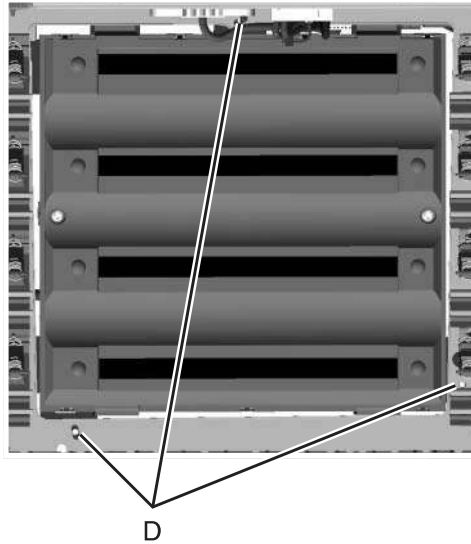**4.** Remove the toner cartridges.
5. Loosen the printhead mounting screws (D).

D

6. Reinstall the transfer module with the photoconductor units still attached.
7. Reconnect the transfer module cable.
8. Replace the toner cartridges.
9. Close the front access door.
10. Close the top access door.
11. Connect the electrical cord into the printer.
12. Connect the electrical cord into the outlet.
13. Align the printhead skew for black.
    a. 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).
    b. Select **Registration**.
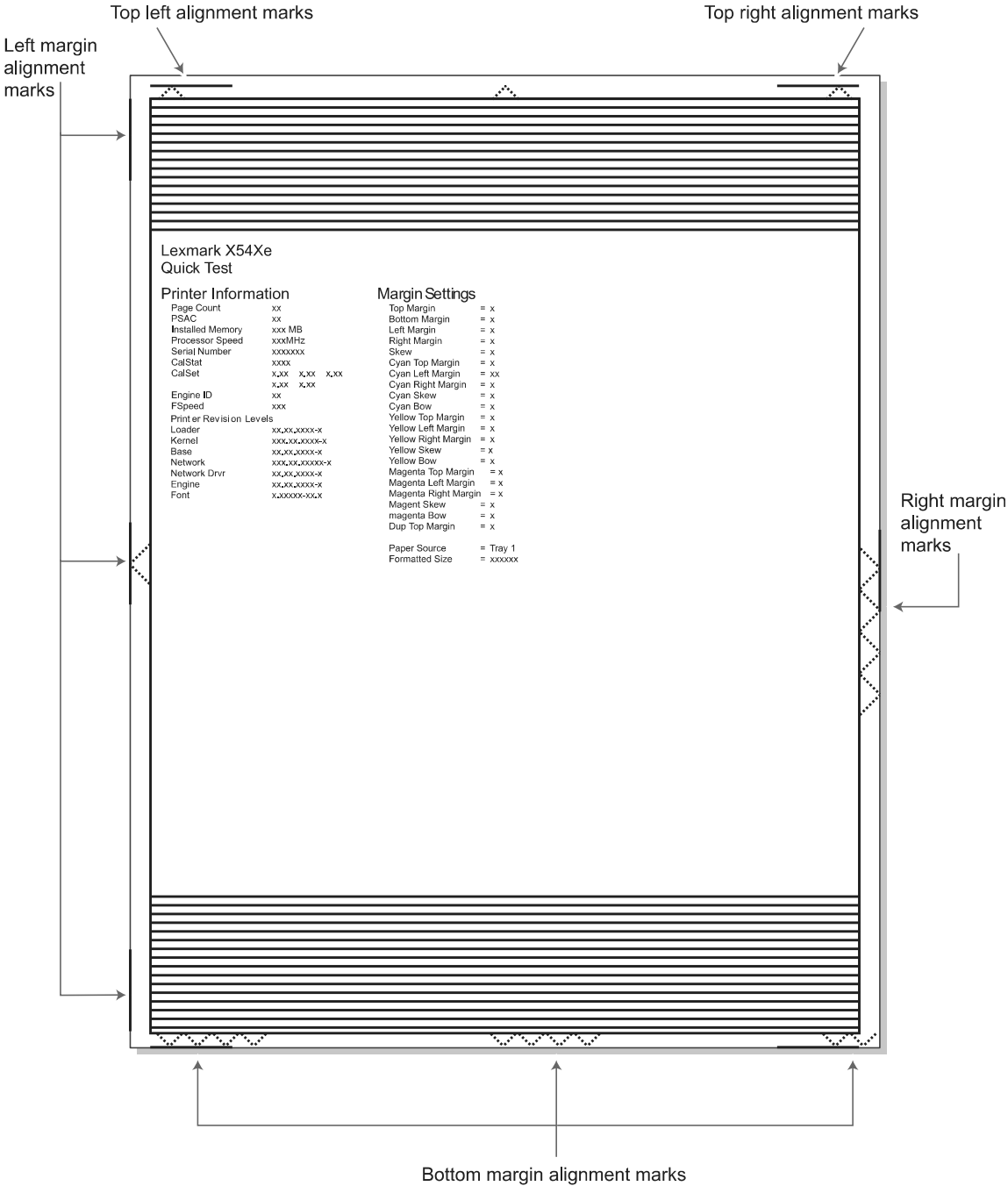   **c.** Adjust the value beside Skew to zero with the left and right arrows, and touch **Submit**.

**d.** Touch **Quick Test**. A page similar to this one prints:

Top left alignment marks

Top right alignment marks

Left margin alignment marks

Right margin alignment marks

Bottom 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
Print er 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

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

F
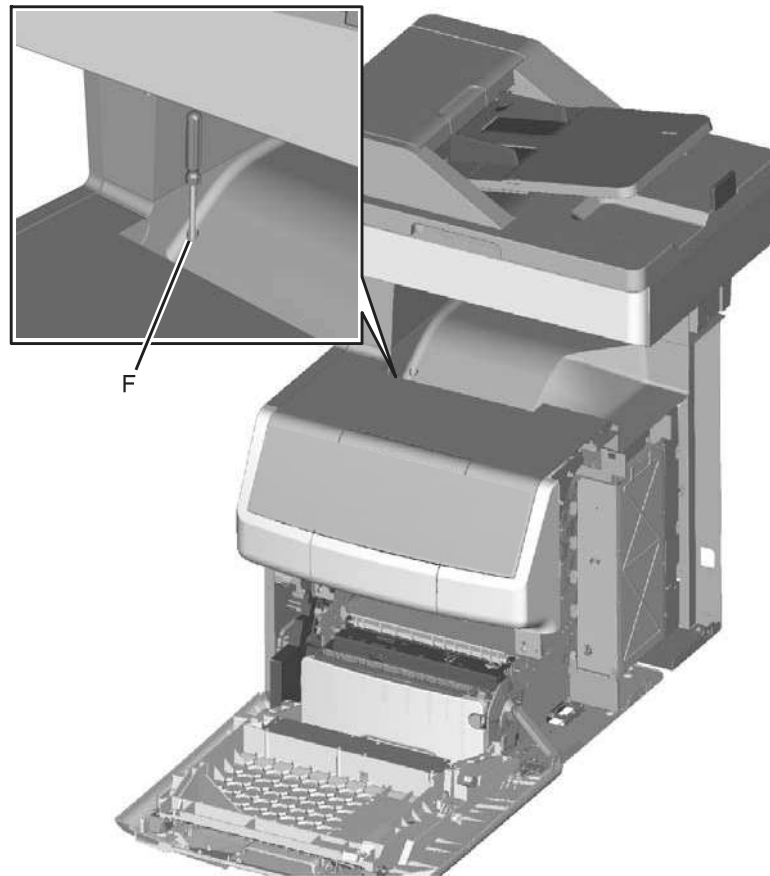
If the top right alignment marks are lower than the top left alignment marks, rotate the alignment screw counterclockwise a full revolution, and print the Quick Test page. Repeat adjusting the screw and printing the Quick Test page until the top alignment marks are the same distance from the top of the media.
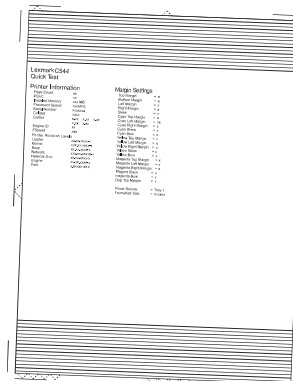
Note: One rotation of the printhead alignment screw equals approximately 0.5 millimeter movement of the top edge print alignment marks.

f. When the top right and top left alignment marks are both showing and are even on the page, the skew is aligned.
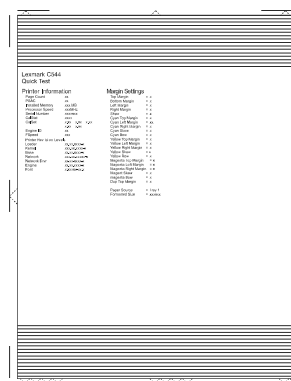
Straight   **Skewed**

14. 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.
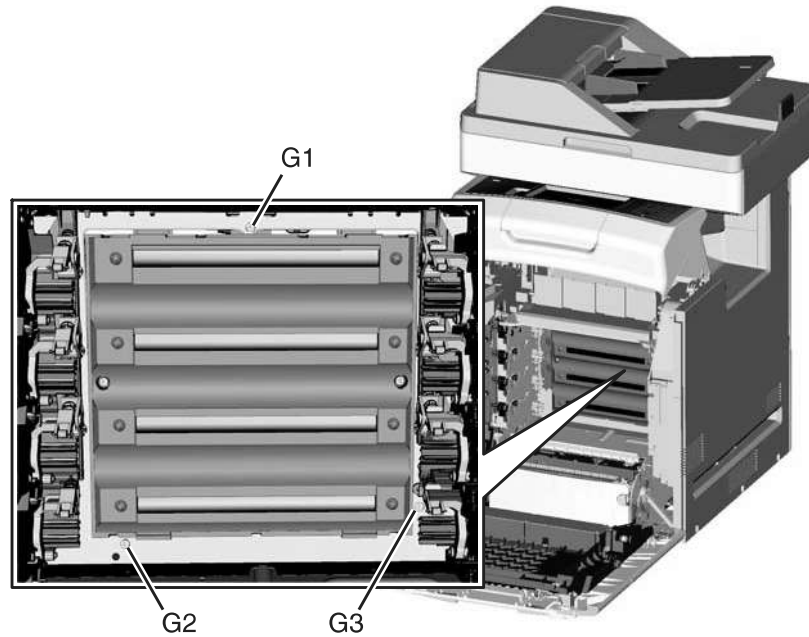
15. Replace the toner cartridges.

16. Reinstall the transfer module and the photoconductor units.

17. 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
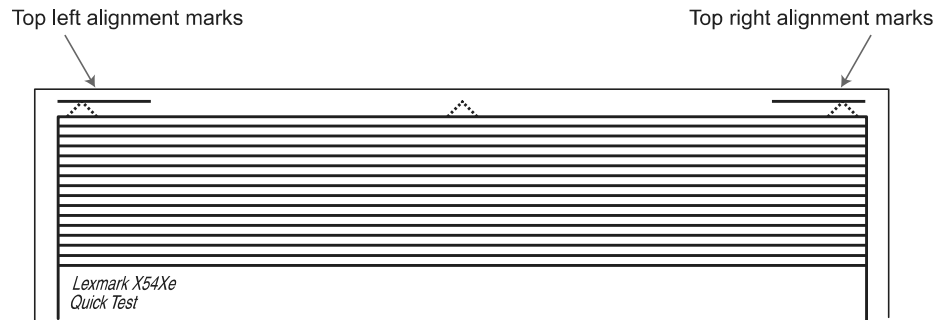
5. Beside **Top Margin**, use the arrows to change the values.
    a. Adjust the values until both top alignment marks are on the top edge of the print.
        • The right arrow increases the value and moves the top alignment marks down the page.
        • The left arrow decreases the value and moves the top alignment marks up the page.
    b. Touch **Submit** to save the 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
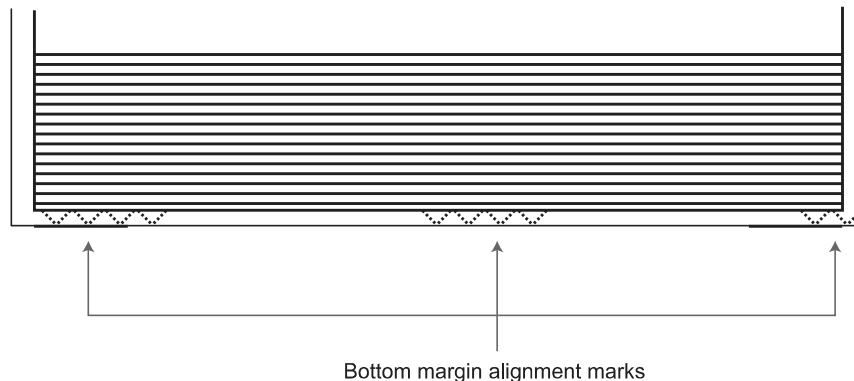
    • The right arrow increases the value and moves the bottom alignment marks up the page.
    • The left arrow decreases the value and moves the bottom alignment marks down the page.
2. Touch **Submit** to save the value.
3. Print the Quick Test page, and repeat this process until the bottom margin is 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
```
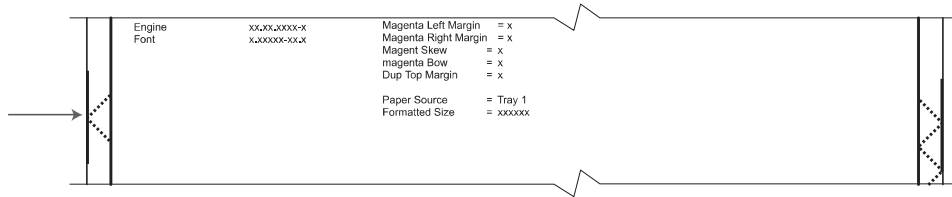
- The right arrow increases the value and moves the left side alignment marks to the right.
- The left arrow decreases the value and moves the left side alignment marks to the left.

2. Press **Submit** to save the value.
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
```
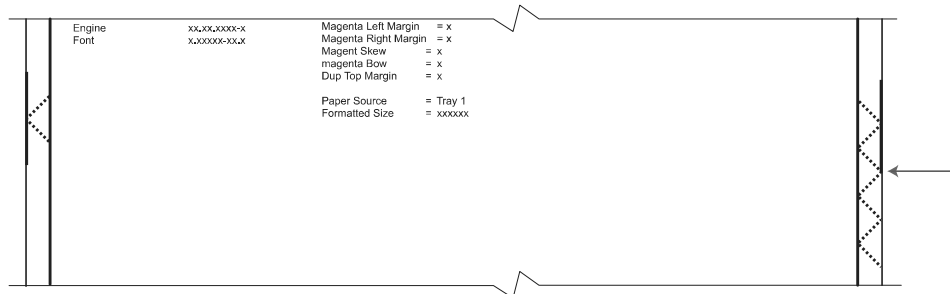
- The right arrow increases the value and moves the right side alignment marks to the left.
- The left arrow decreases the value and moves the right side alignment marks to the right.

2. Touch **Submit** to save the value.
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.
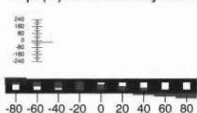
Two pages print. You may have to print these pages several times until you get T (**Top Margin**) and Z (Skew) aligned. Do not go to step 2 until T and Z are aligned. The first page is similar to the following:

Cyan Alignment
Step 1

Top (T) Coarse Adjustment

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

Skew (Z) Coarse Adjustment

-80 -60 -40 -20 0 20 40 60 80
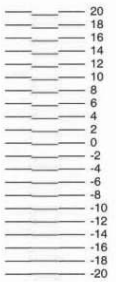
Top (T) Fine Adjustment

Skew (Z) Fine Adjustment

20
18
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20

T

Z

$T = 0 + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

Current Cyan T value

New Cyan T value

$Z = 0 - \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

Current Cyan Z value

New Cyan Z value

STEP 1: Adjust the Top (T) margin and Skew (Z) then confirm before going to Step 2.

Press the up or down buttons until a check appears at the setting in need of adjustment.

Press Select. Then use the < and > buttons to enter the new value. Press Select to save.

NOTE: If the alignment values cannot be determined by using the fine adjustment scales, then use the coarse adjustment scales at the top of the page.

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
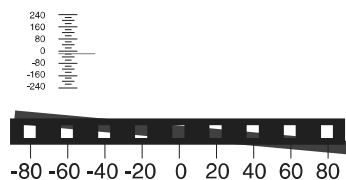
If the alignment is not close enough to use the fine adjustment, get close to the ideal value by using the coarse adjustment marks. Select the block that is most filled by the color on the left, or approximate if none of the blocks are completely filled, and enter it for the new value. Reprint the quick 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
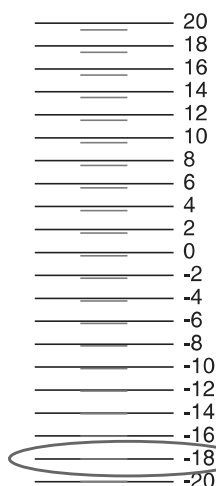
First, locate the line of the color that you are aligning that lines up best with the scale line. In this example, it is -18. If none of the colored lines match up, use the coarse adjustment to get close, reprint this page and then use the fine adjustment.

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

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

Current
Cyan
T value

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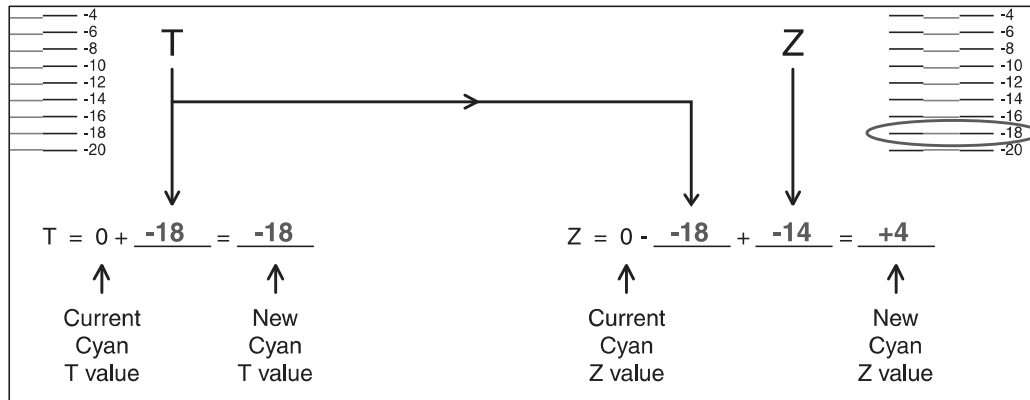
12. Continue to follow the directions on the bottom of the first page to find the Cyan Top Margin (T), the Skew (Z), and on the second page of the Quick Test page, the Left Margin (L), Right Margin (R), and Bow (P).

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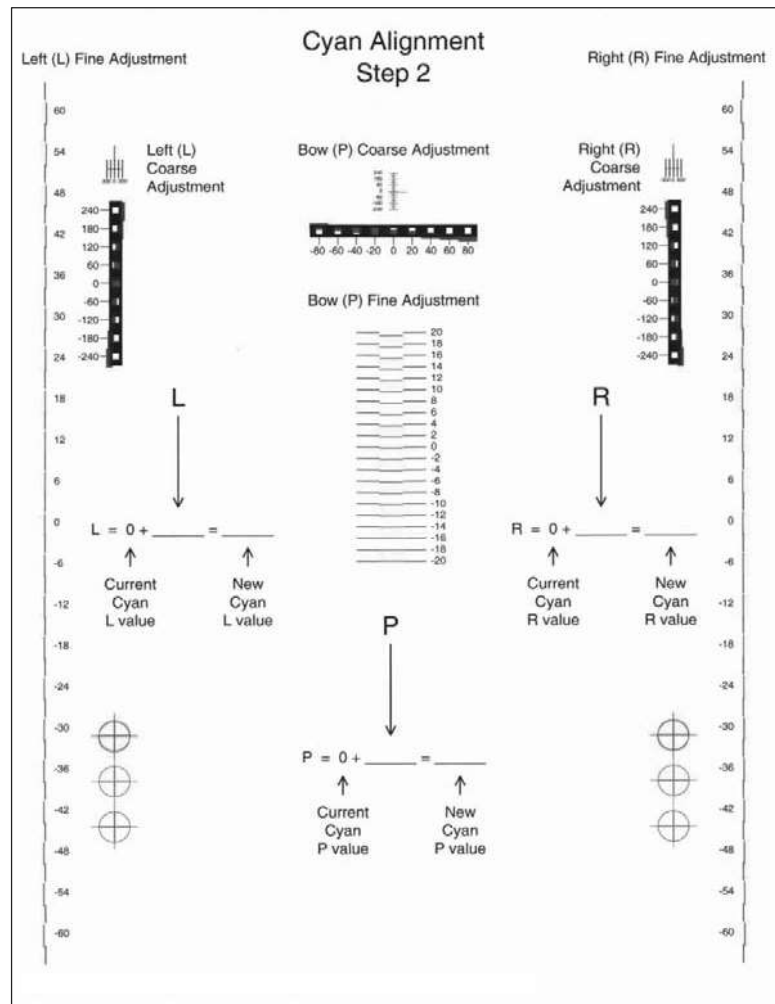
13. Repeat steps 2 through 11 for yellow and magenta.
Note: Start each color group by setting the Top Margin, Left Margin, Right Margin, Bottom Margin, Skew, and Bow to zero.

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
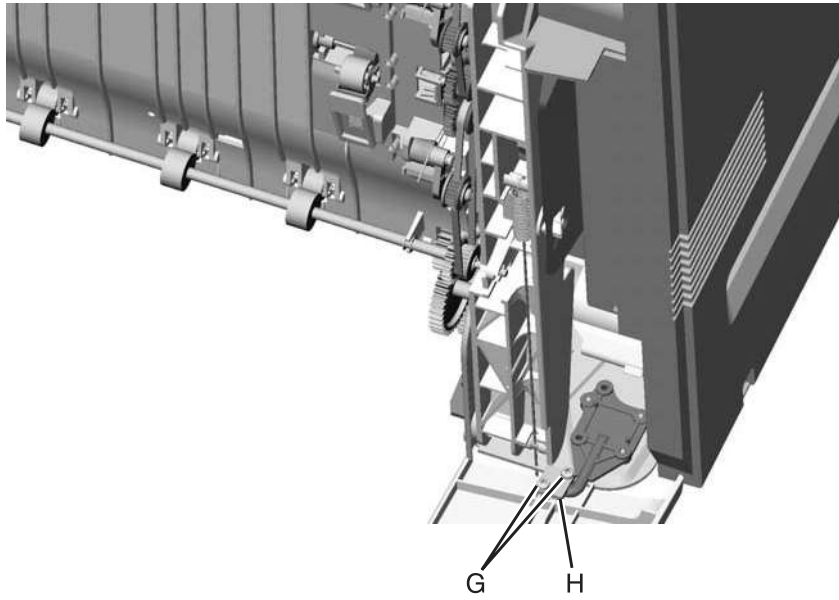
9. Remove the front access cover assembly.

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
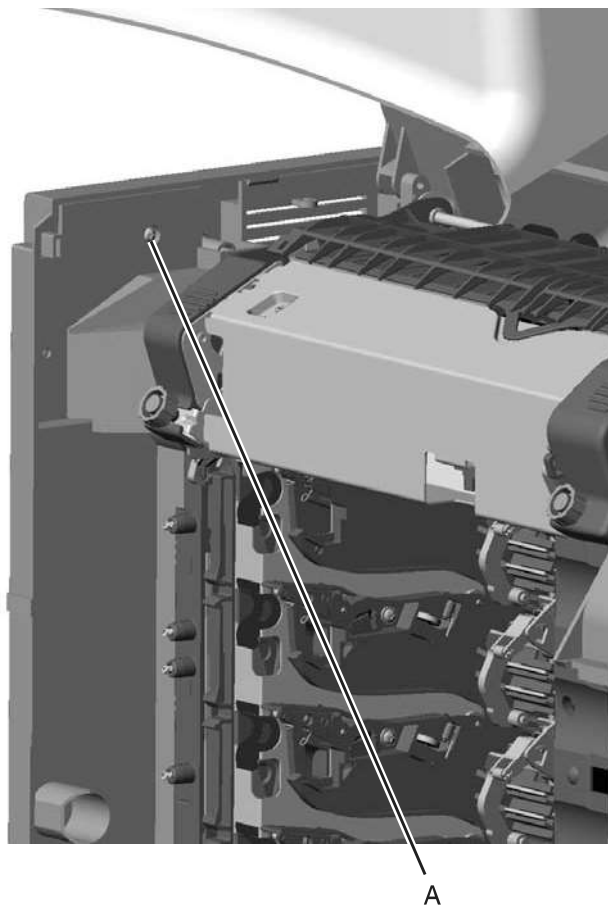
6. Remove the two screws (B).

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).

D   C

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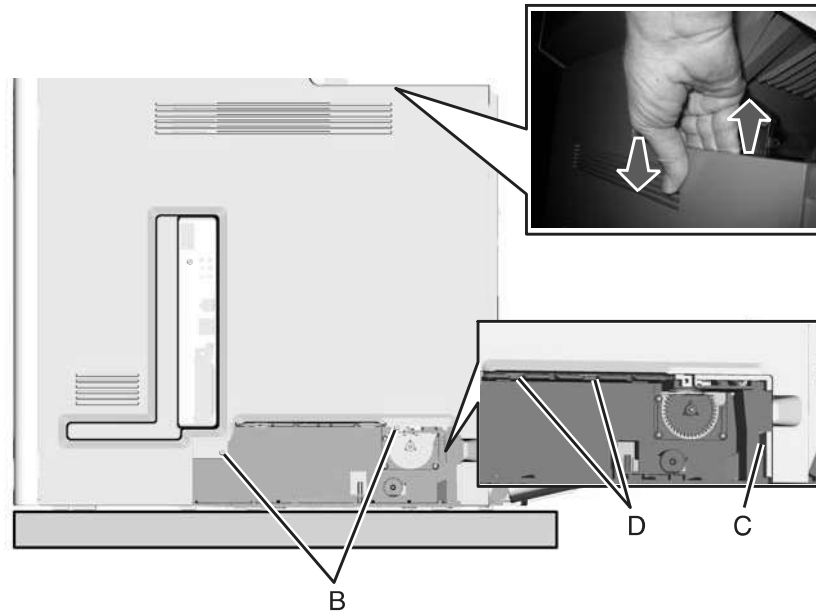
Note: If you are removing the left cover to access another part, leave the left cover and the left door cover attached, and you are done. If you need to replace the left cover FRU, continue with the next step to remove the separate left door cover FRU.

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.
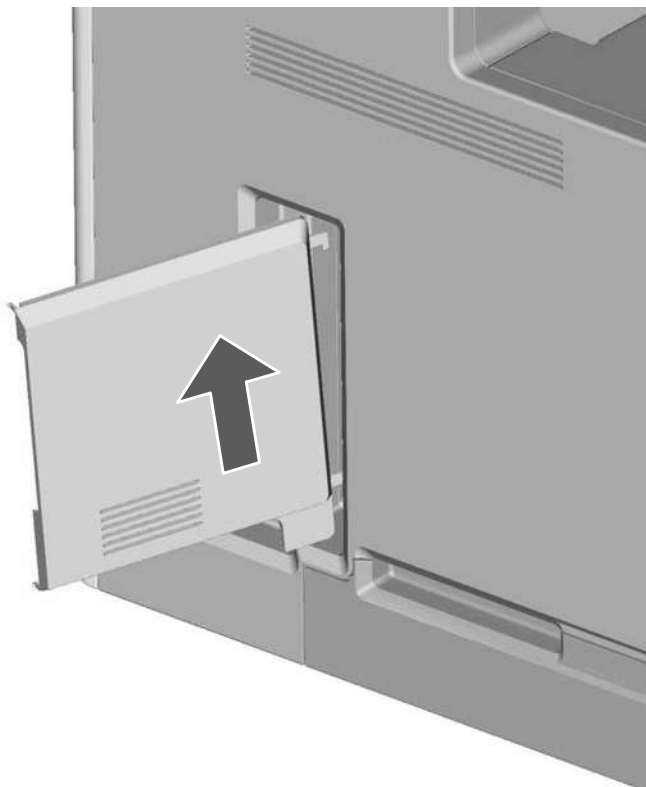
3. Remove the left door cover.

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.
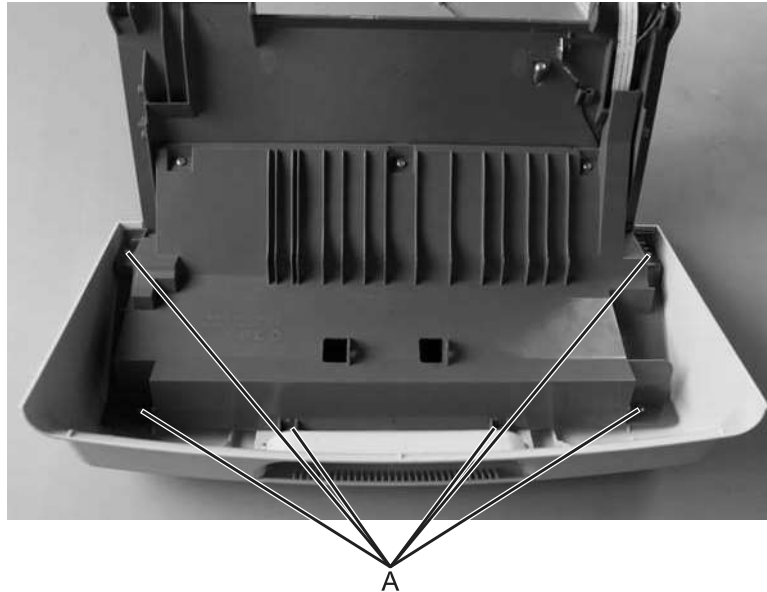
4. Remove the five larger screws (B) and the two smaller screws on the side (C), then remove the position guide cover to access the cables.
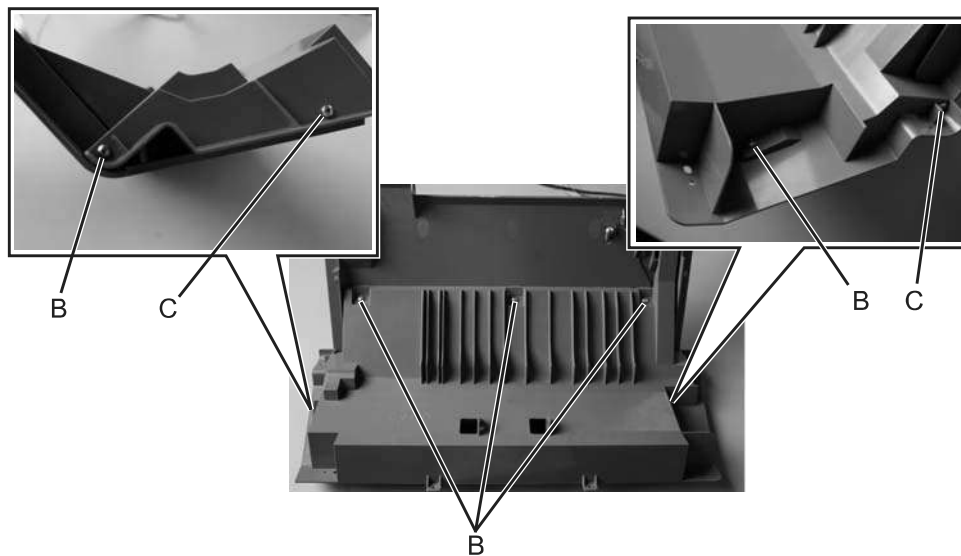
5. Flip open the lock of the LCD interface card cable connector on the UICC card then remove the cable from the connector.
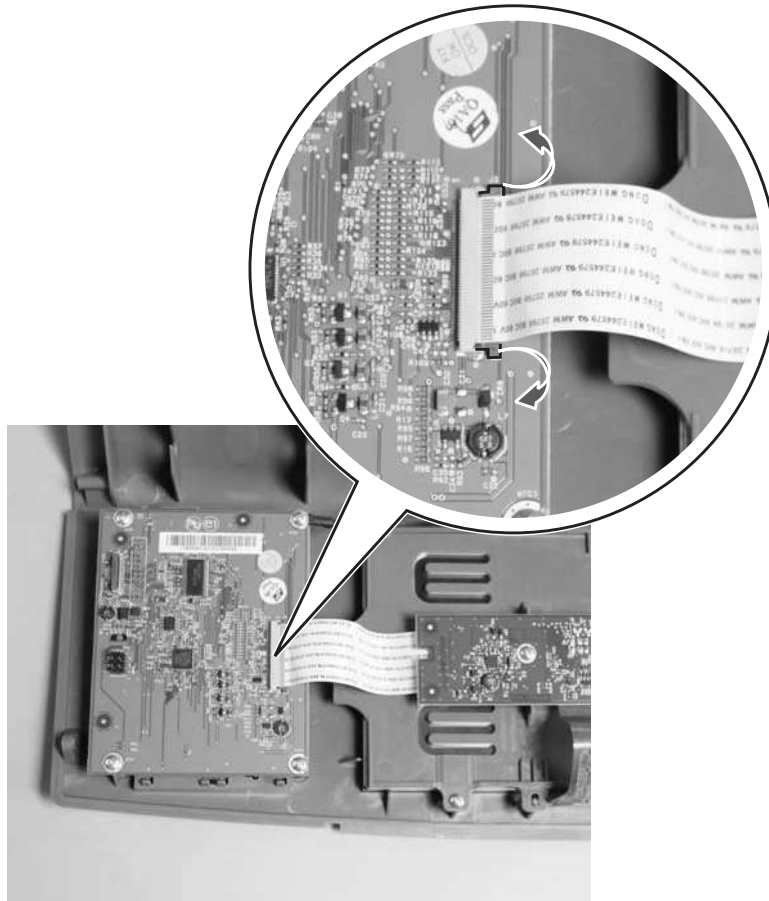
6. Disconnect the UICC cable from the UICC card. See **"UICC cable removal" on page 4-188**.

7. Remove the screw (D) securing the LCD interface card.

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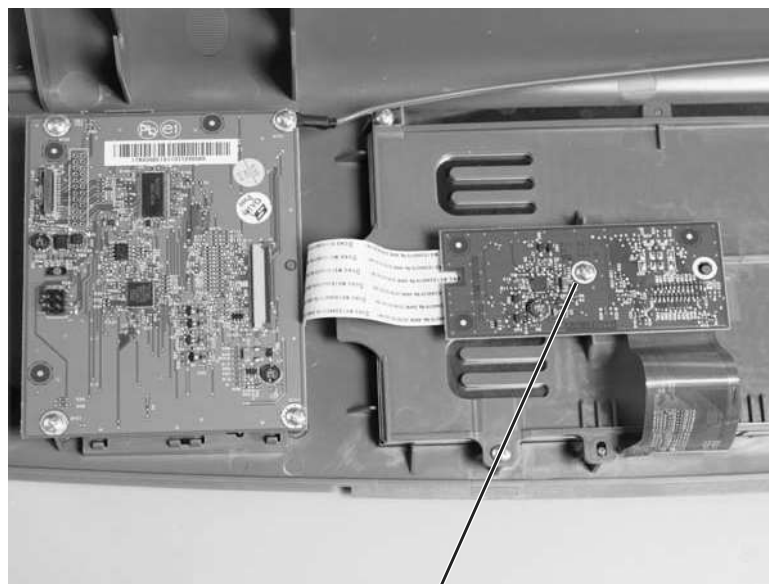
8. Turn the LCD interface card over then flip open the lock to disconnect the LCD ribbon cable from the LCD interface card.

Warning: Be careful not to bend the LCD ribbon cable to avoid damaging the resistors soldered on the cable.
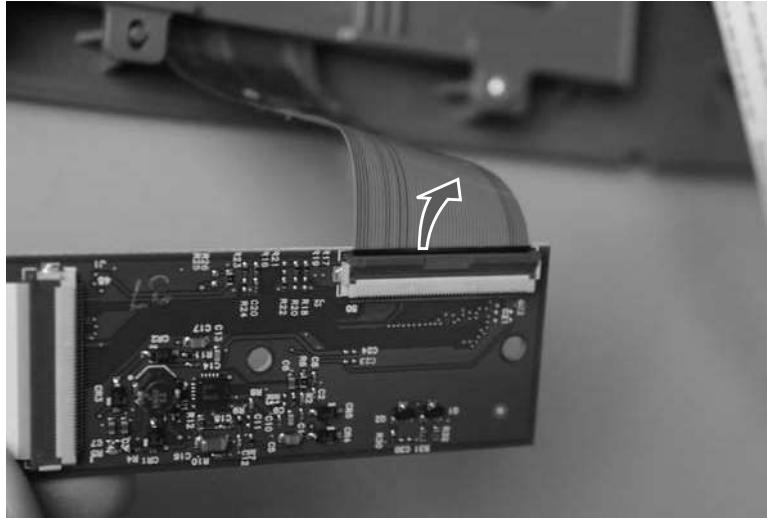
Installation note: Make sure to connect the LCD ribbon cable on the LCD interface card first before securing the LCD interface card onto the LCD back plate cover.

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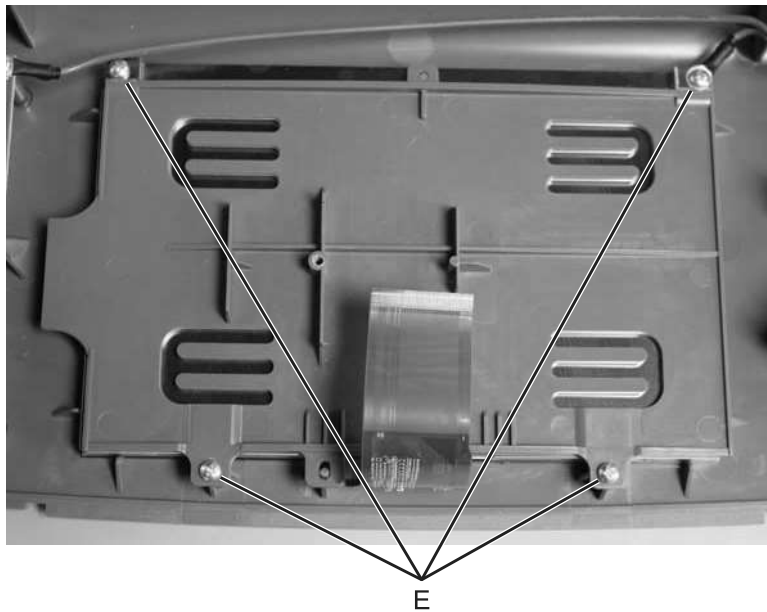
Installation note: When reinstalling the LCD back plate cover, make sure the screw holes on the metal plate sits on top of the screw holes of the plastic back plate.

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.
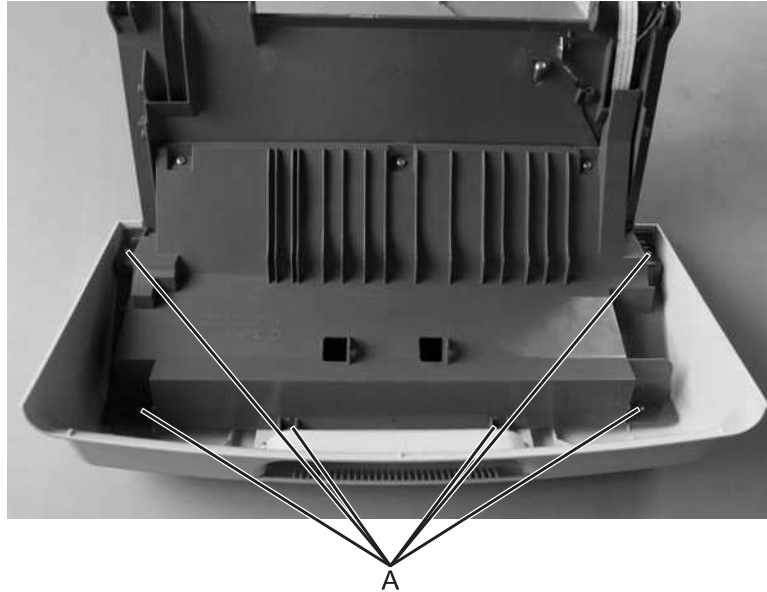
4. Remove the five larger screws (B) and the two smaller screws (C), then remove the position guide cover to access the cables.
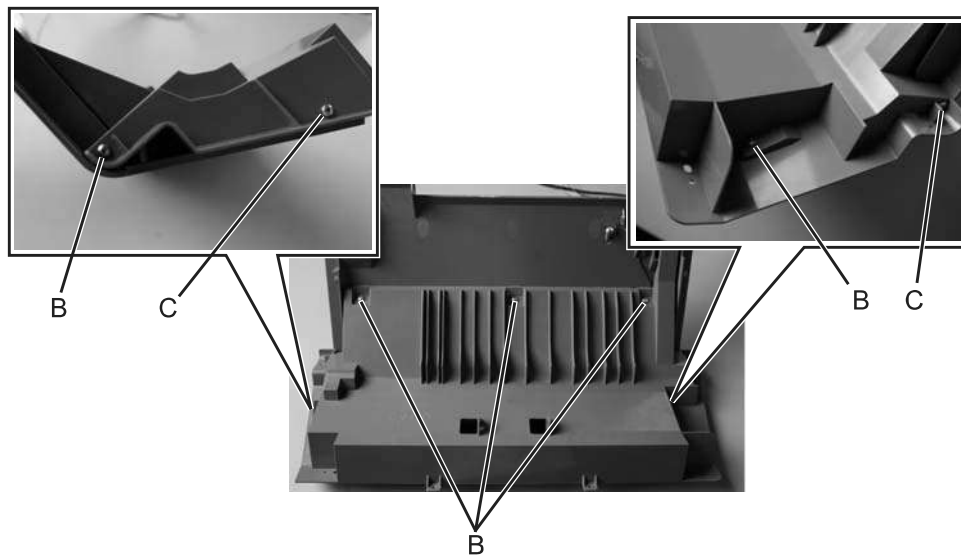
5. Flip open the locks on the UICC cable (D) and LCD interface card cable (E) connectors, then disconnect the cables from the connector.
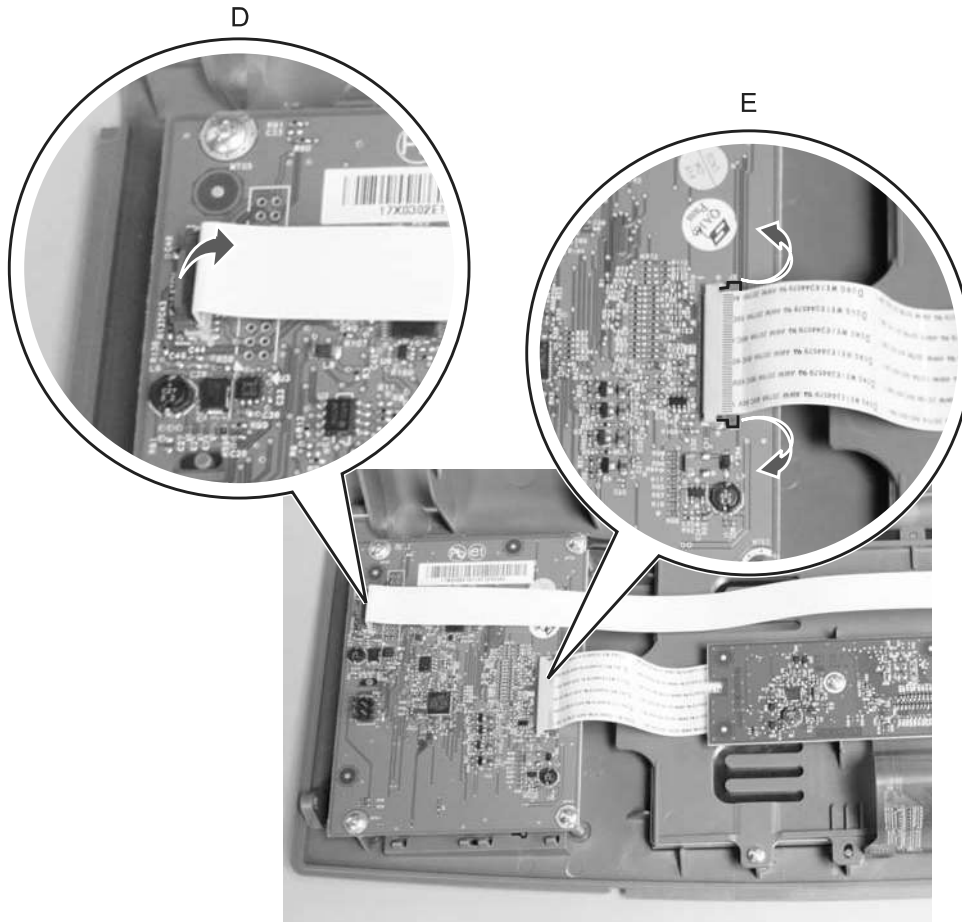
6. Remove the four screws (F) securing the UICC card, then remove the UICC card.

7. Gently pinch the small latches that secure the buttons and remove them.
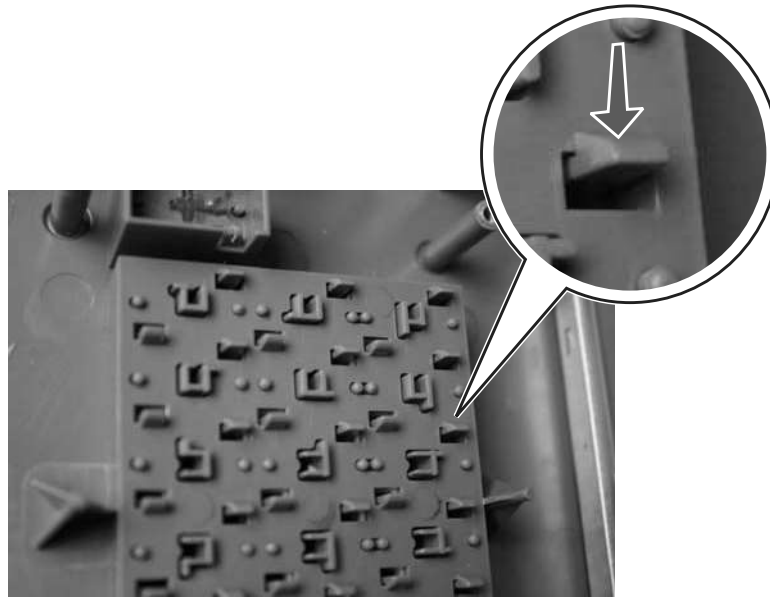
Operator panel speaker removal

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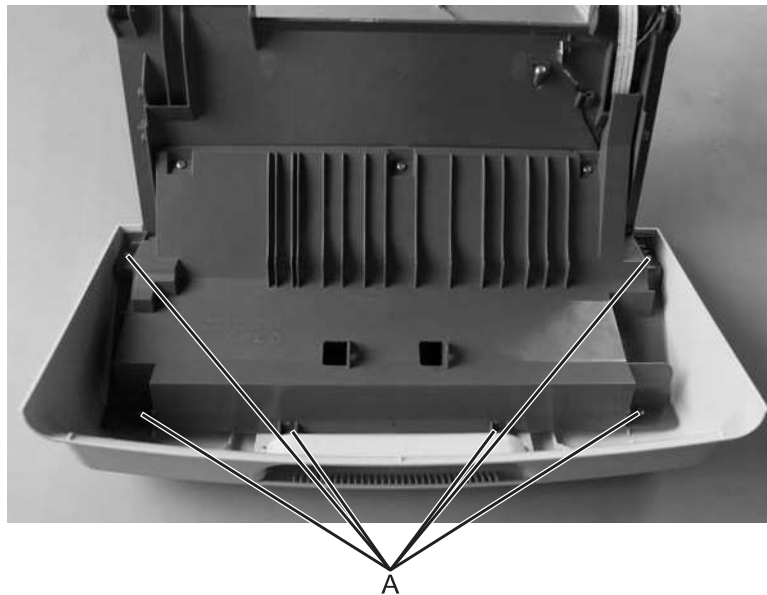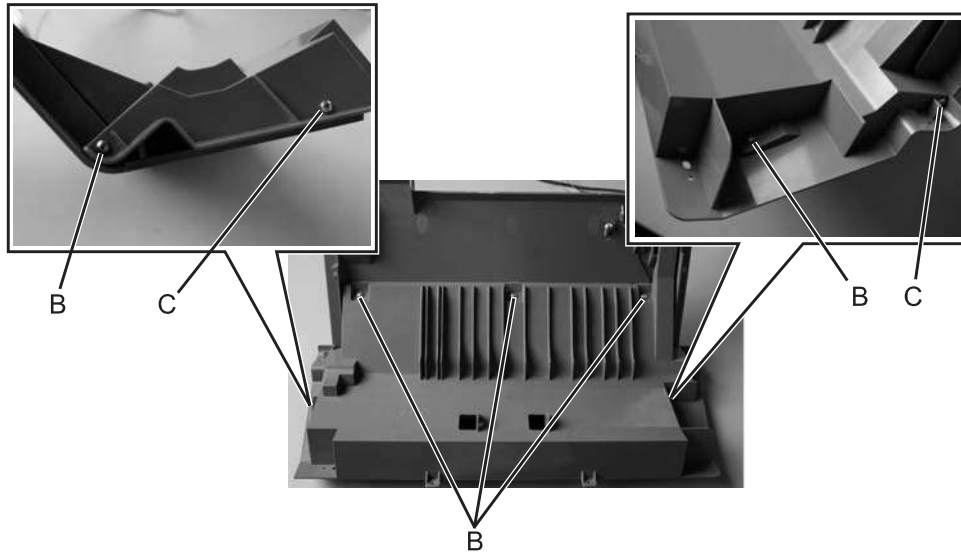
5. Disconnect the speaker connector (C), then remove the three screws (D) securing the speaker.

D   C

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

E
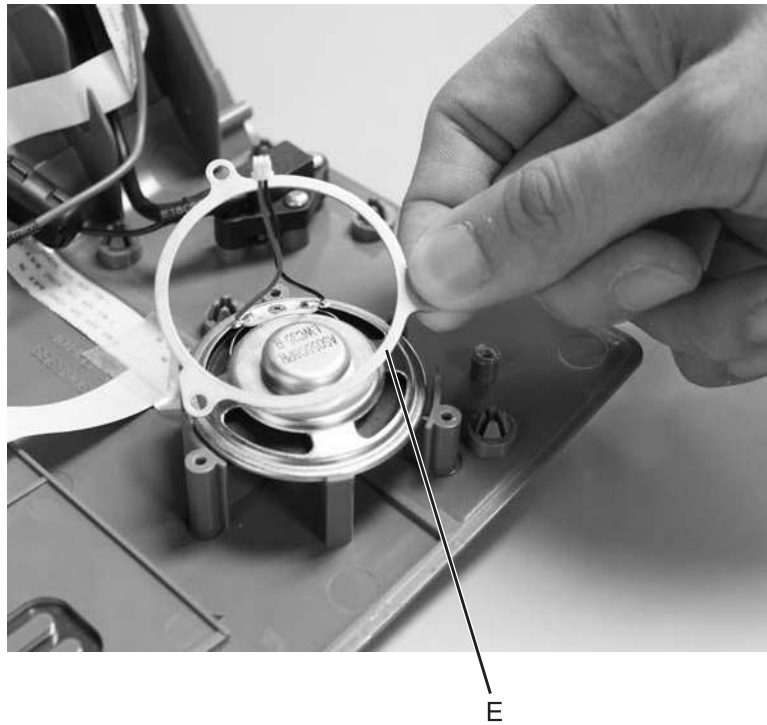
Output bin extension cover removal

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).

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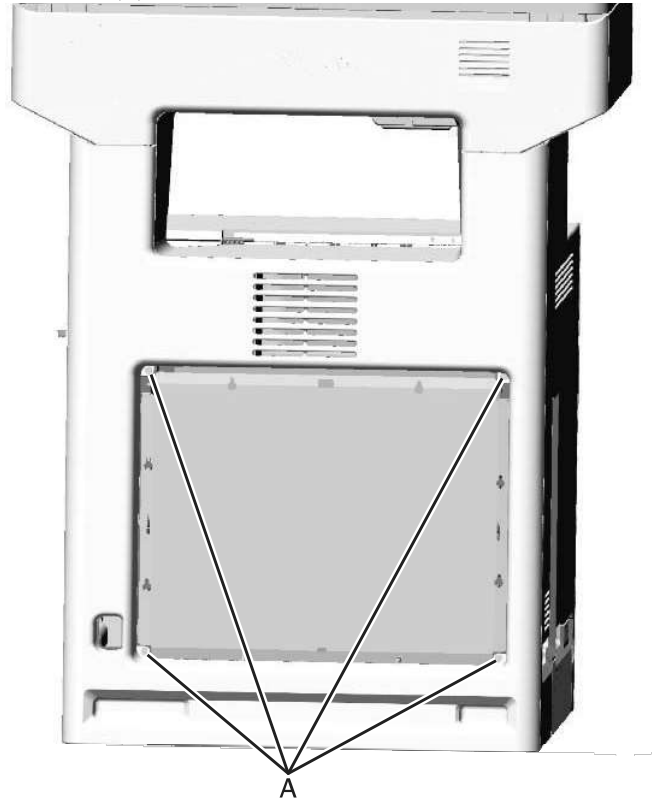
2. Lift up to disengage the two tabs (B).

B
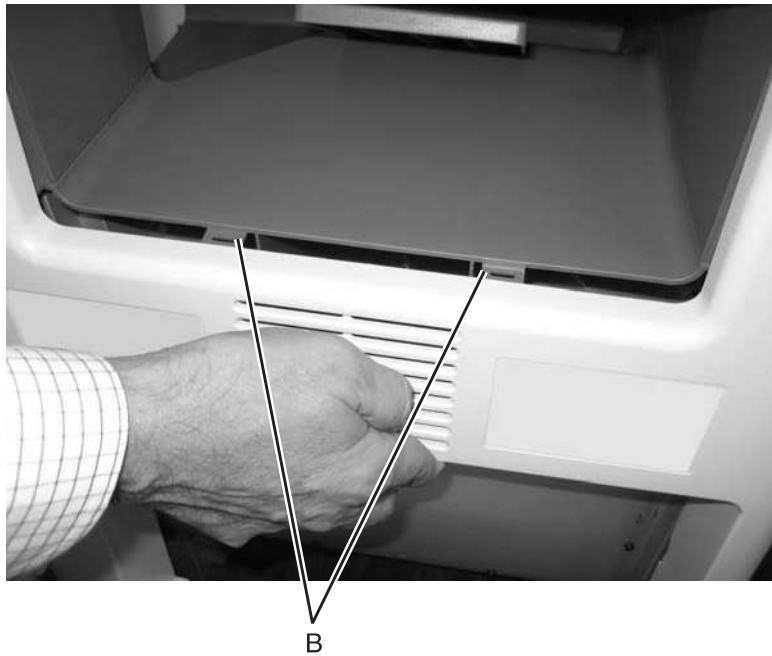
Note: If you are removing the rear cover to access another part, leave the cooling fan filter in place, and you are done. If you need to replace the rear cover, continue with the next step to remove the separate cooling fan filter.

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.
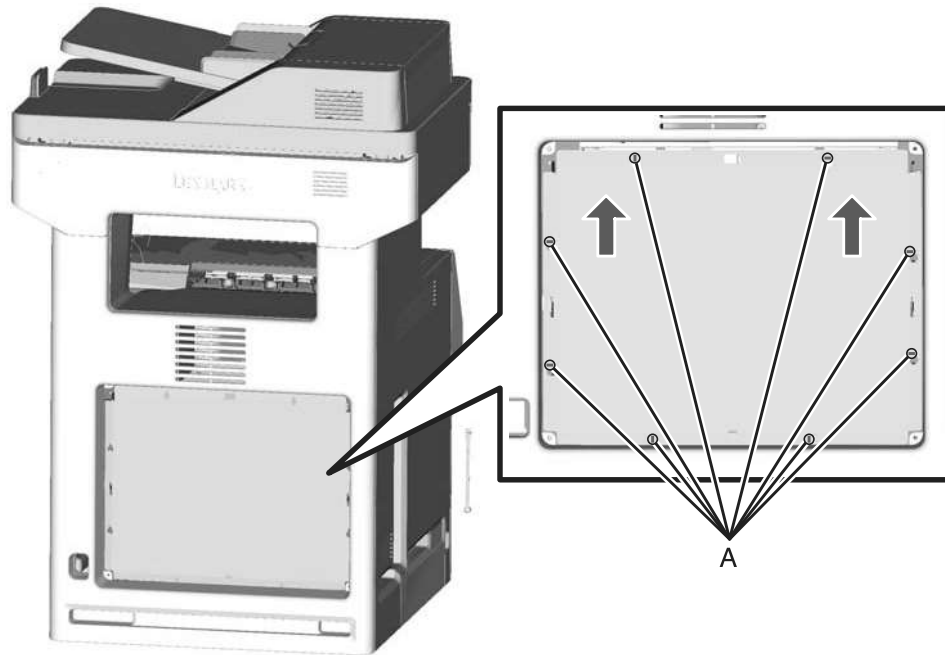
Right cover removal

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

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).

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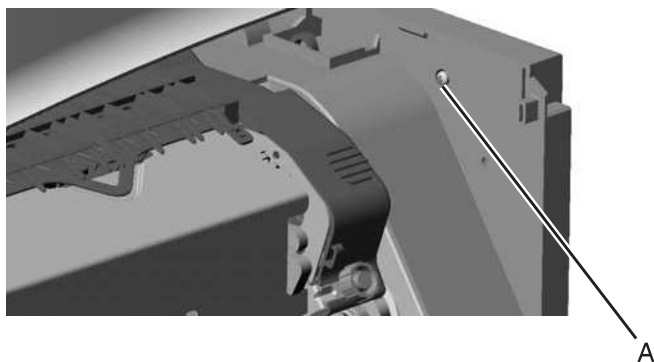
5. Remove the two black screws on the front (B).

B

6. Remove the three screws (C).

C
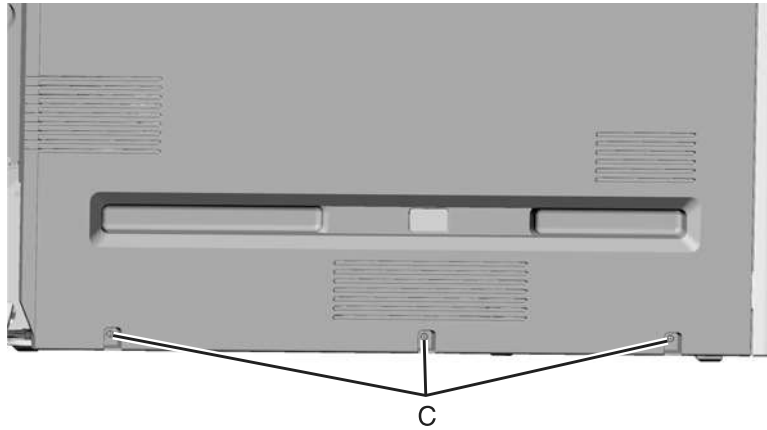
7. Pull up on the rear of the right cover, and then press down at the indicated location to disengage the tab.
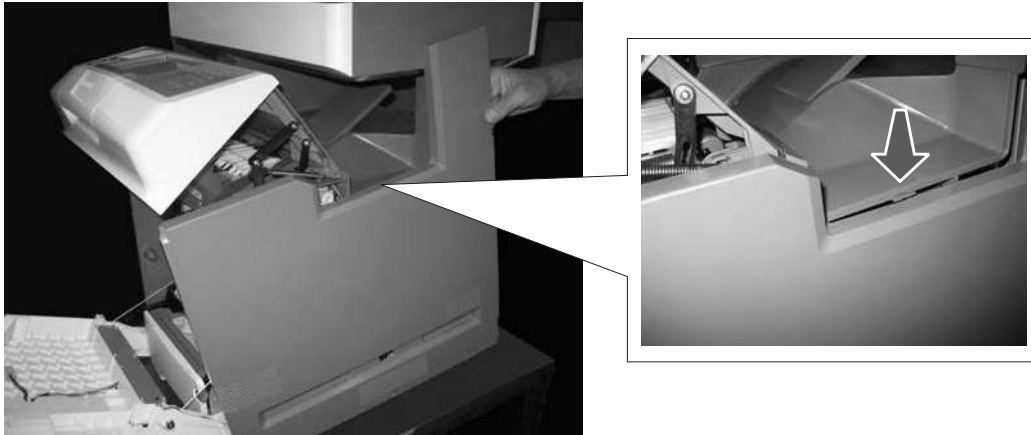
Top access cover assembly removal

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.
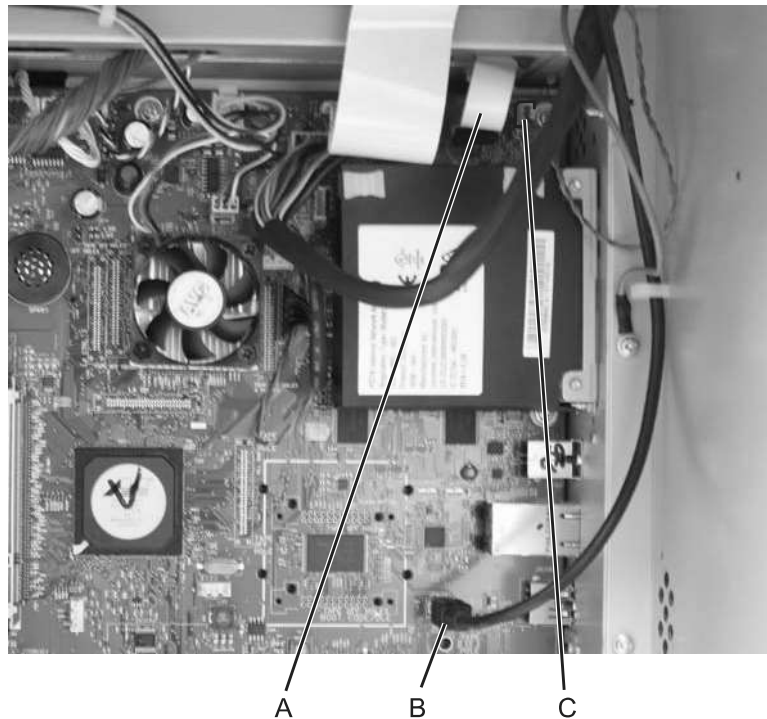
5. Remove the screw securing the ground cable (D) and remove the USB cable from the cable restraints (E).

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

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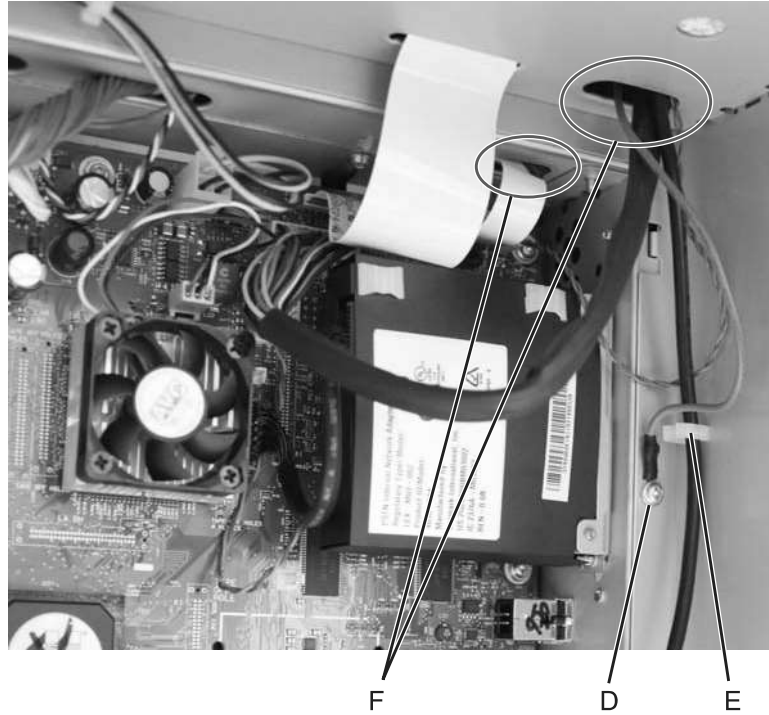
7. Remove the toroid (G) from the UICC cable, and then remove the UICC, USB, speaker, and ground cables from the cable clamps (H) above the system board frame.

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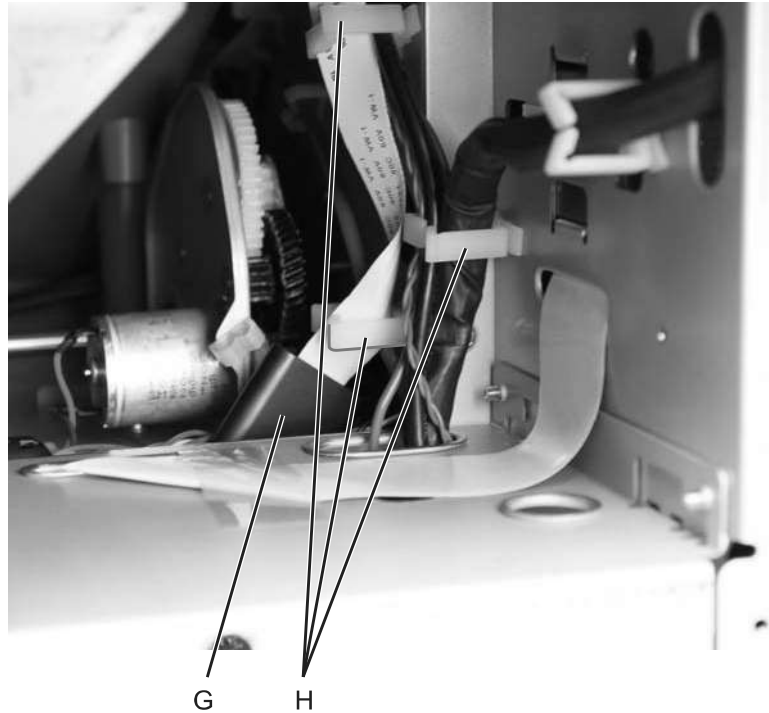
8. Remove the cables through the frame, over the cartridge fan, through the cable clamps (I), and through the frame holes (J) towards the front of the MFP.

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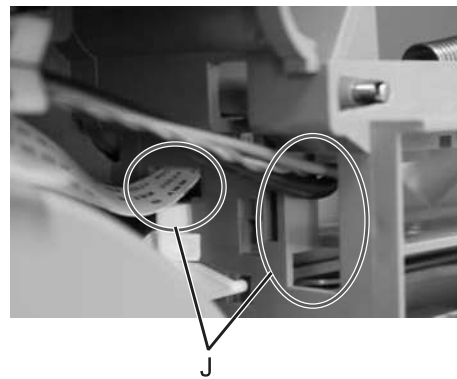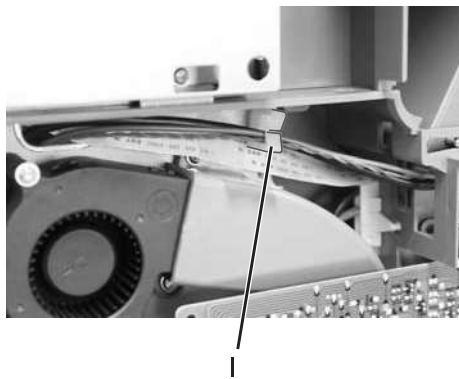
9. Remove the fuser. See **"Fuser assembly removal" on page 4-104**.

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

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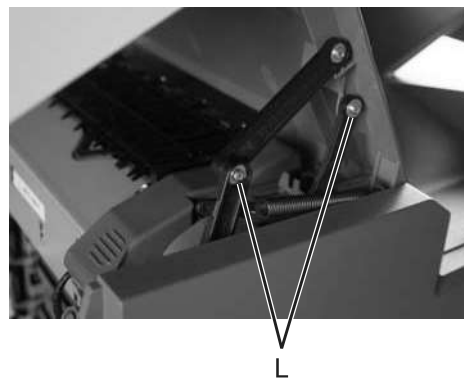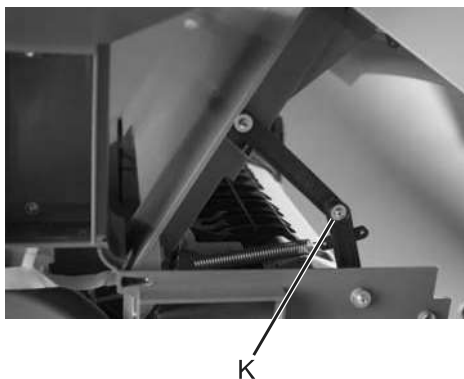
11. Unlatch and rotate the pivots on the left and right side (M) until they are upright, then remove them.

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
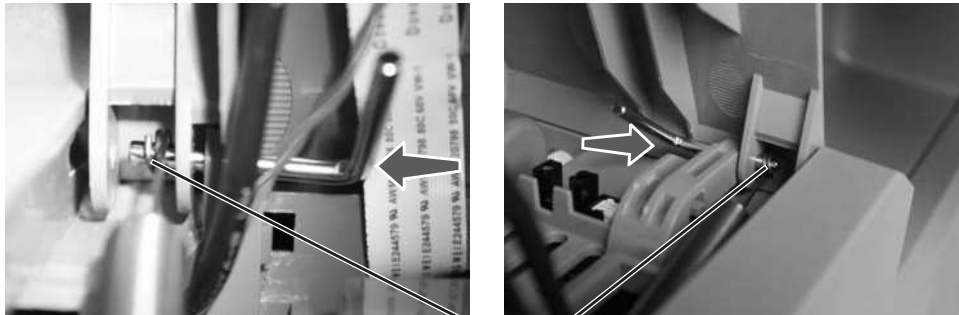
Top cover assembly removal

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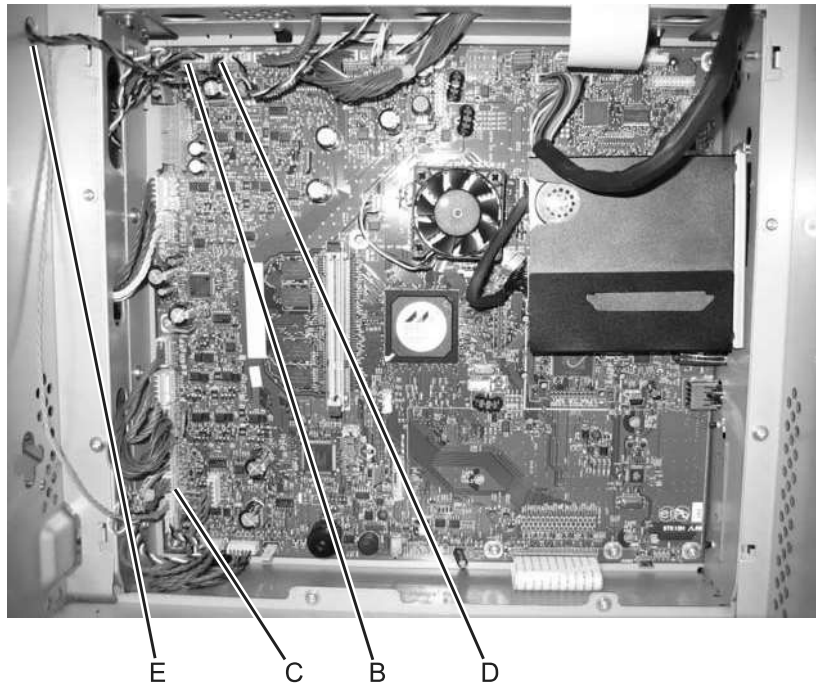
6. Remove the two screws (F), and disconnect the cooling fan.

Note: If you are removing the top cover to access another part, skip this step and leave the cooling fan in the top cover
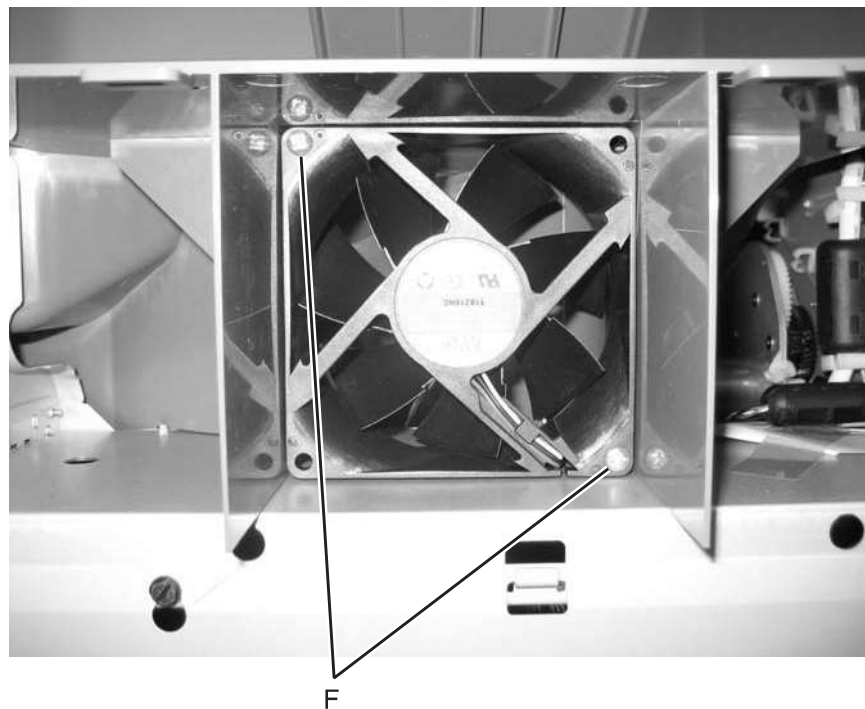
7. Remove the six screws (G).

G
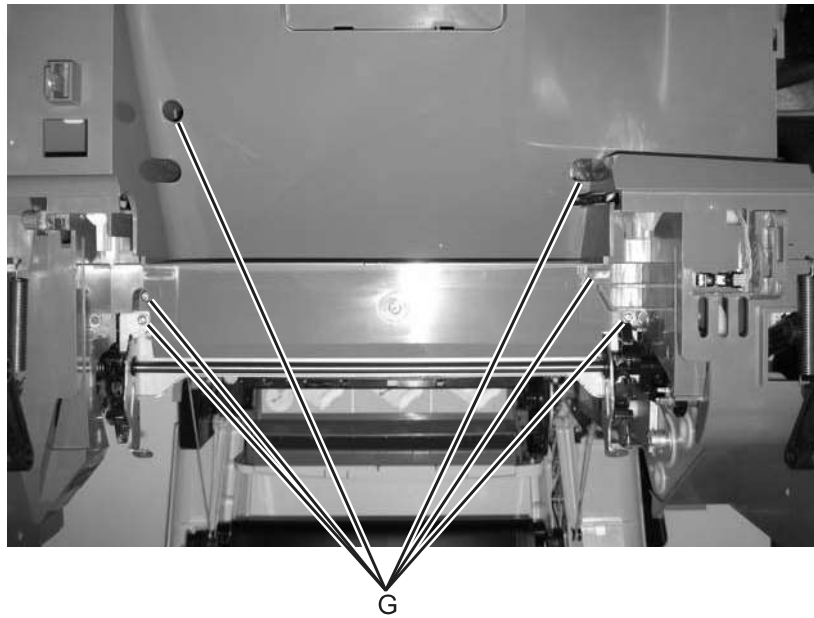
8. Remove the screw (H) in front.

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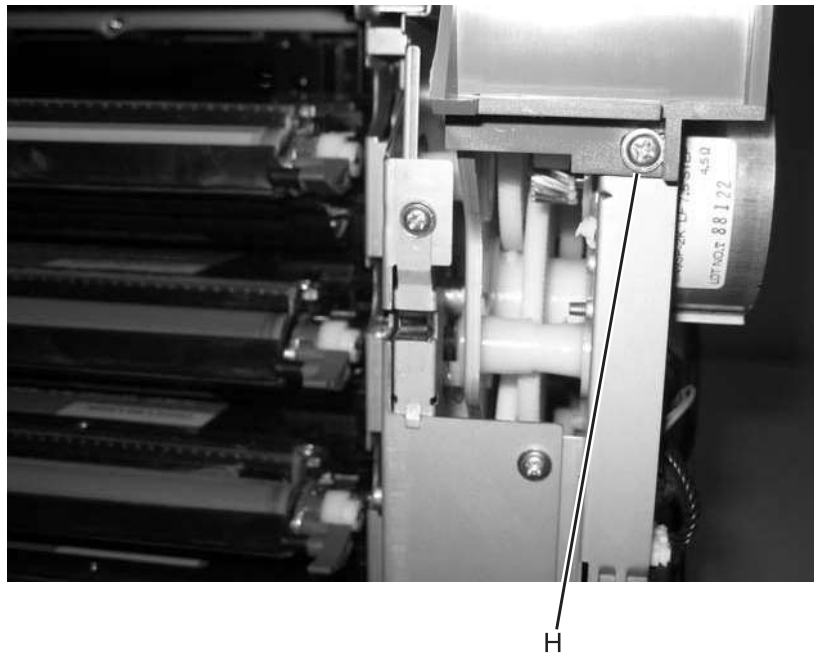
9. Remove the ground screw (J) on the right side, and remove the ground cable from the cable restraint (K).

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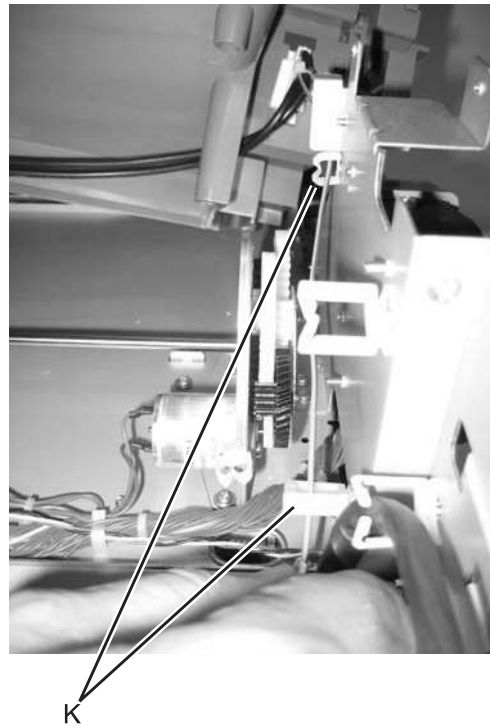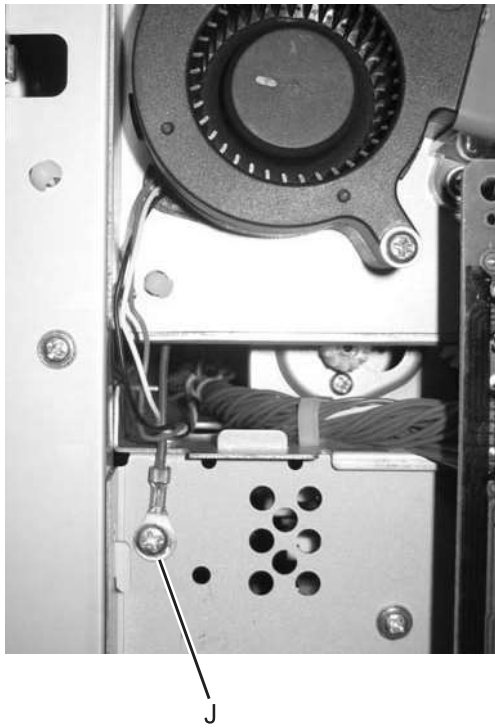
Note: If you need to replace the top cover FRU, continue with the next step to remove the separate output bin extension cover FRU.

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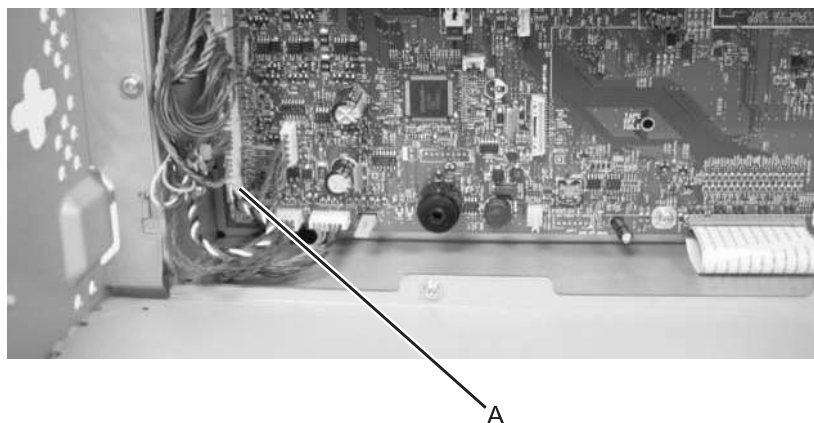
3. Open the front access door cover, and remove the screw (B).

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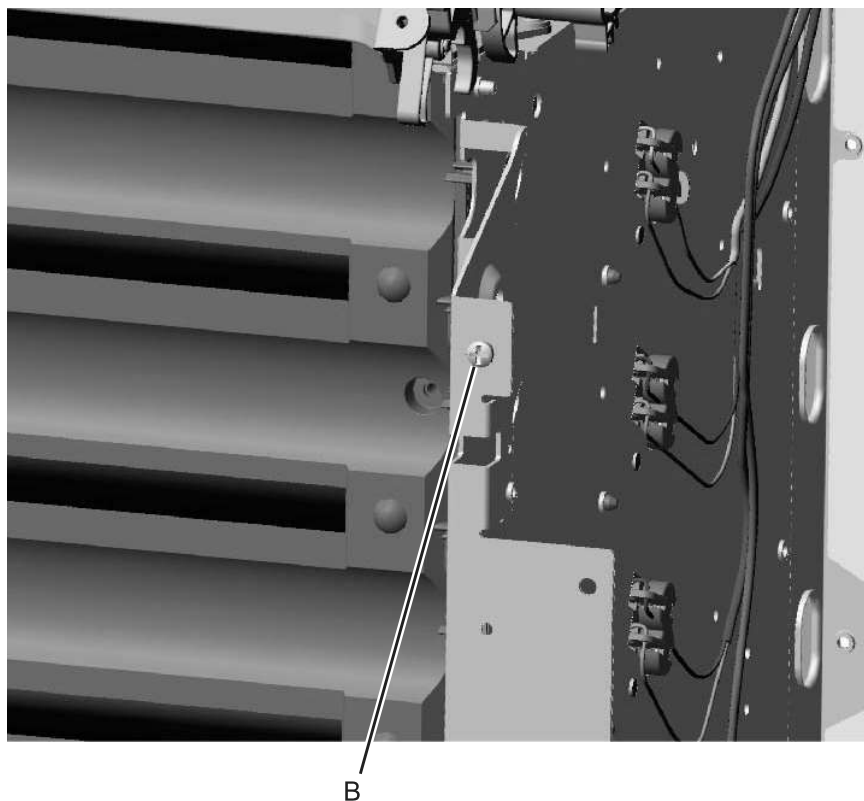
4. Remove the cable from the two cable retainers (C).

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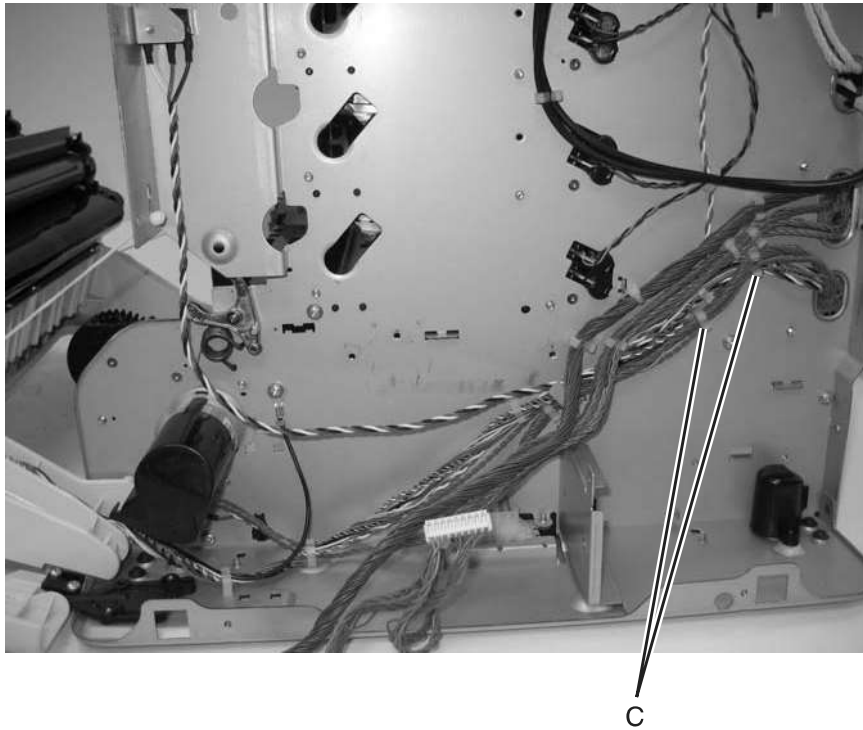
5. Remove the 5 V interlock switch and bracket from the printer.
6. Remove the screw (D), and remove the 5 V interlock switch cable from the bracket.

D
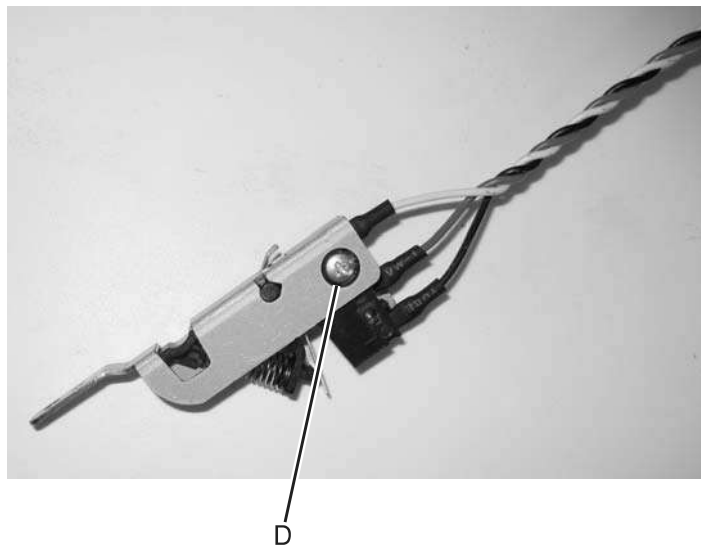
24 V interlock switch removal

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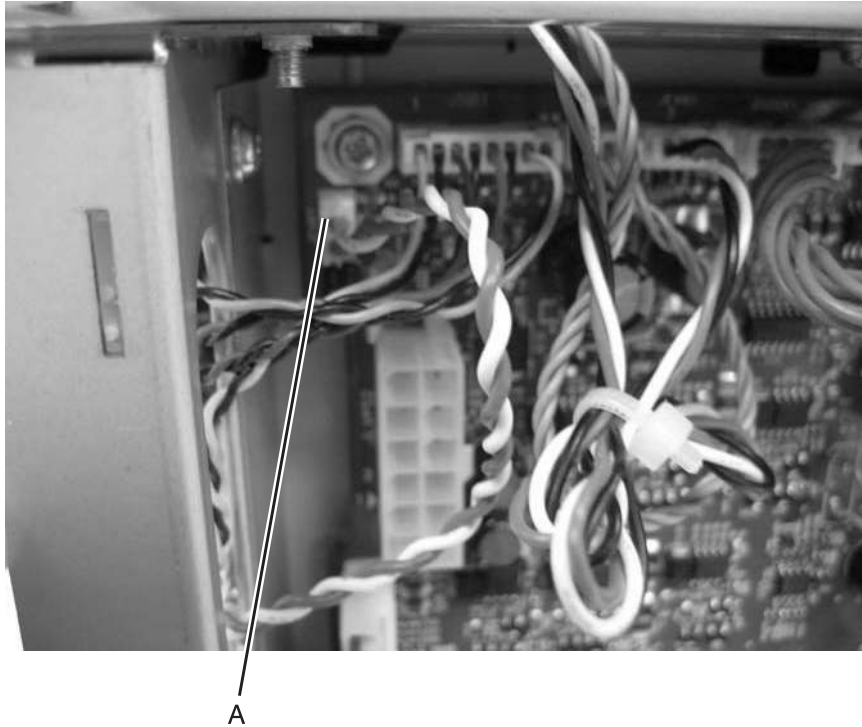
3. Remove the screw (B), and the bracket separates from the 24 V interlock switch.

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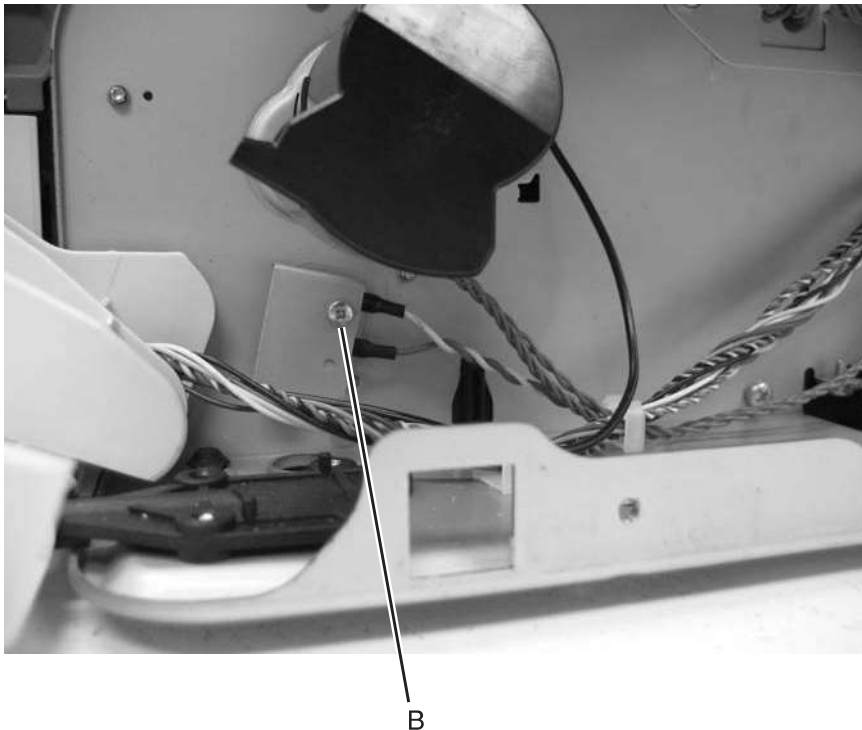
Installation note: Observe the routing of the 24 V interlock switch cable (A).

A   A   A
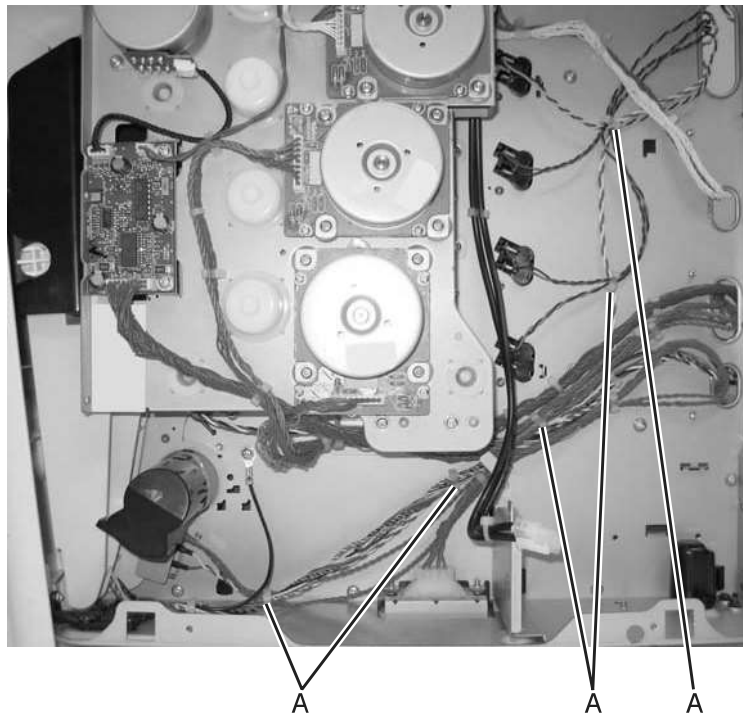
Bin full sensor assembly removal

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
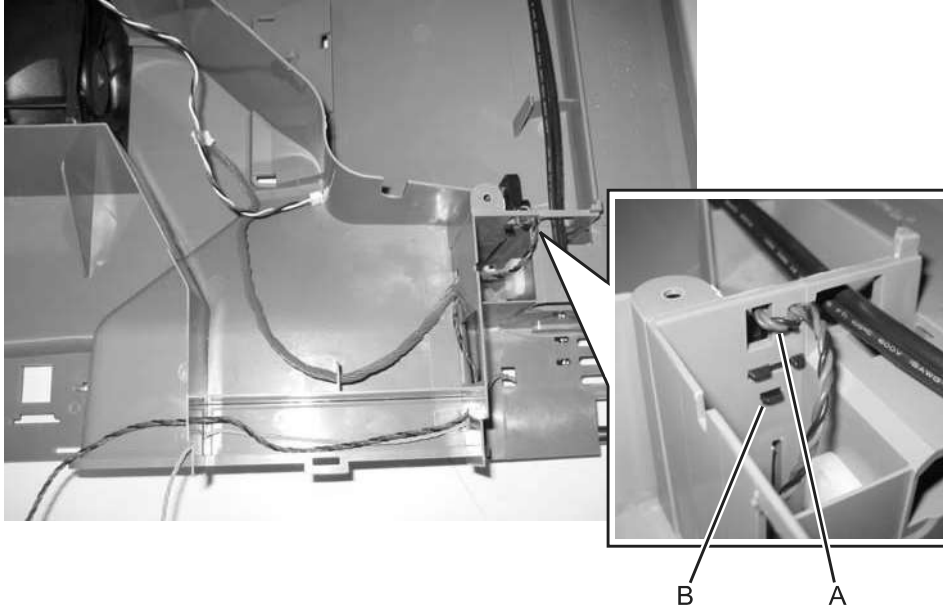
Installation notes:

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

A
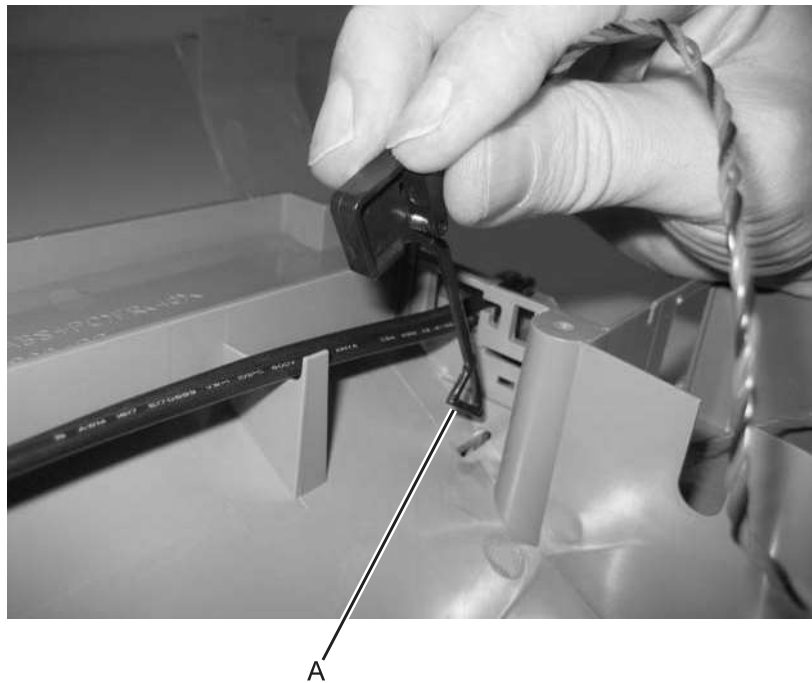
Cartridge cooling fan removal

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

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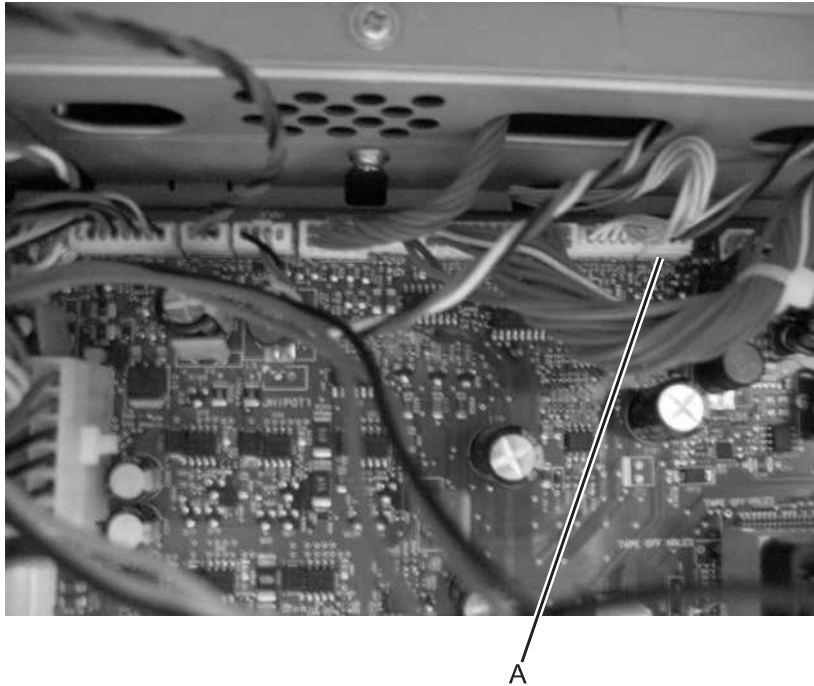
3. Remove the toroid on the cable located above the system board frame.
   Note: Retain the toroid to reinstall later.

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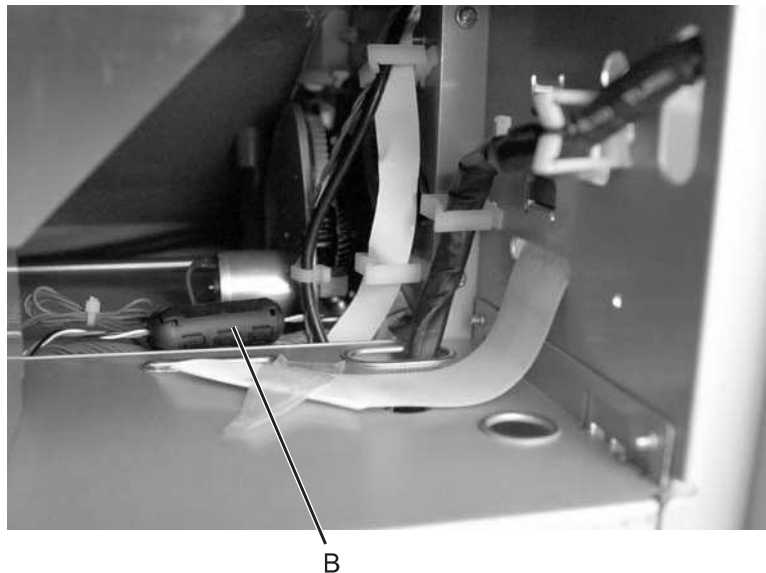
4. Remove the right cover. See **"Right cover removal"**.

5. Remove the two screws (C).

C
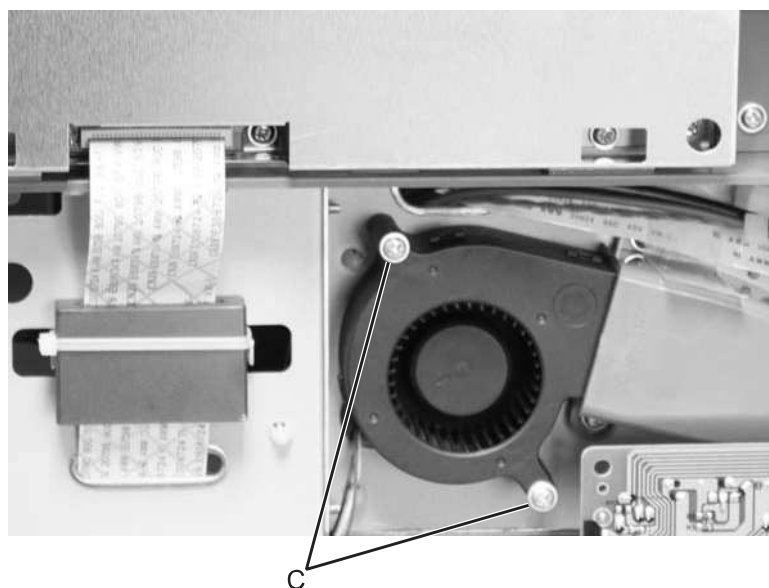
6. Remove the cartridge cooling fan.

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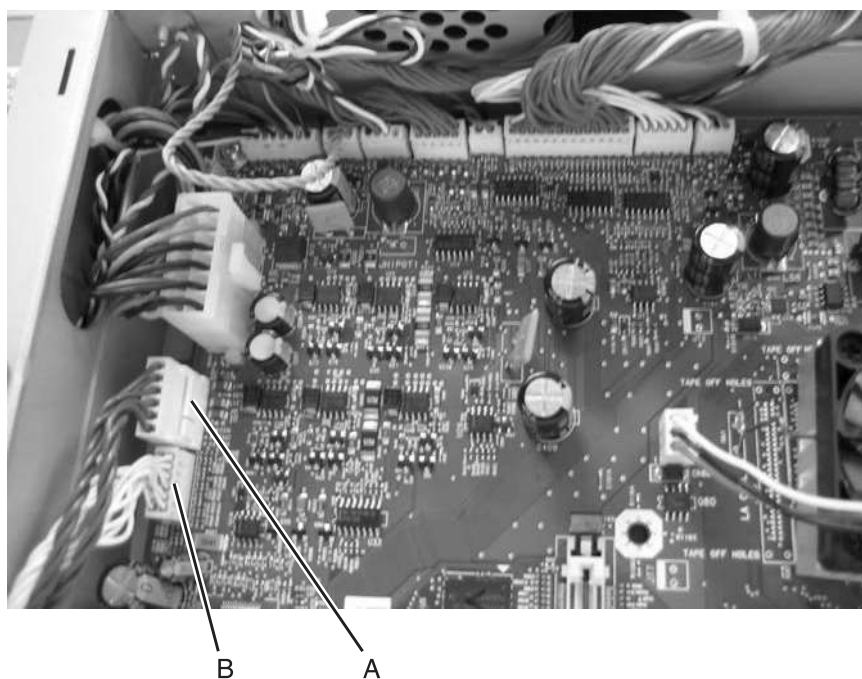
3. Disconnect the connectors from the cartridge motor 1 (C) and the fuser motor (D).
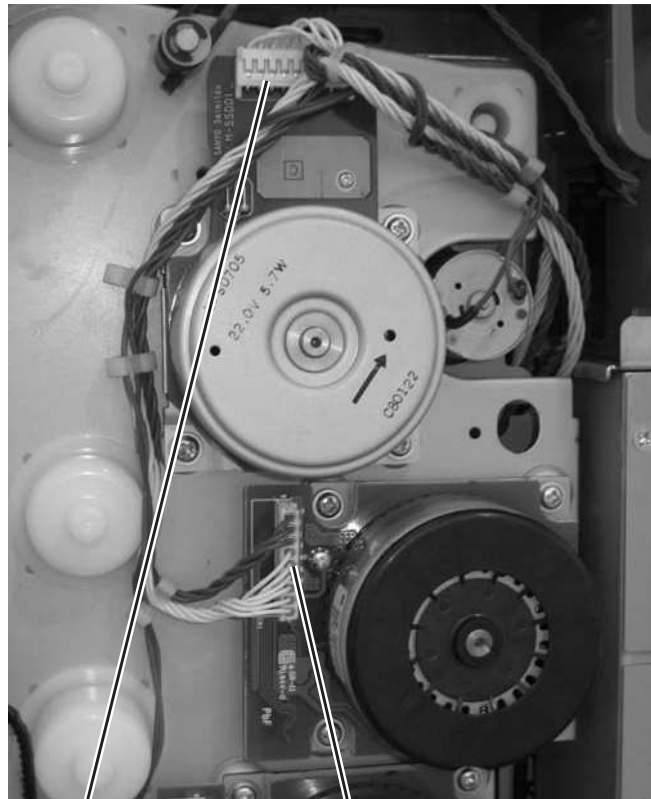
D   C

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

E
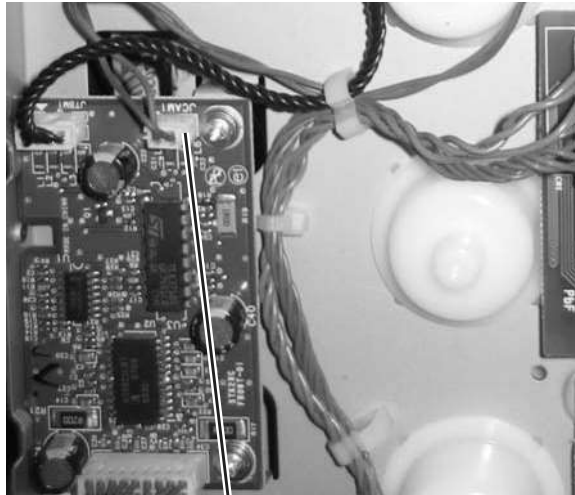
5. Remove the cable from the six retainers (F).
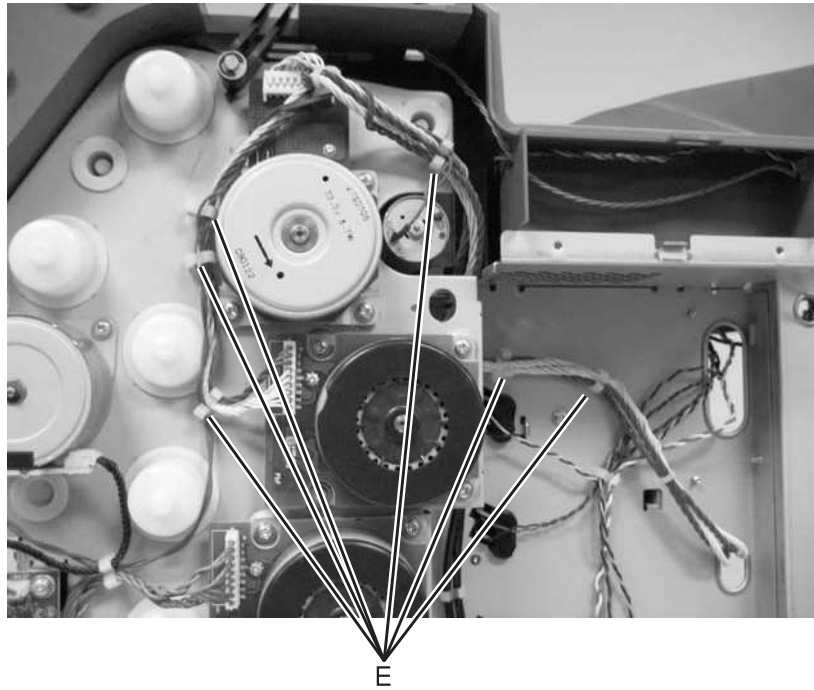
Installation notes:

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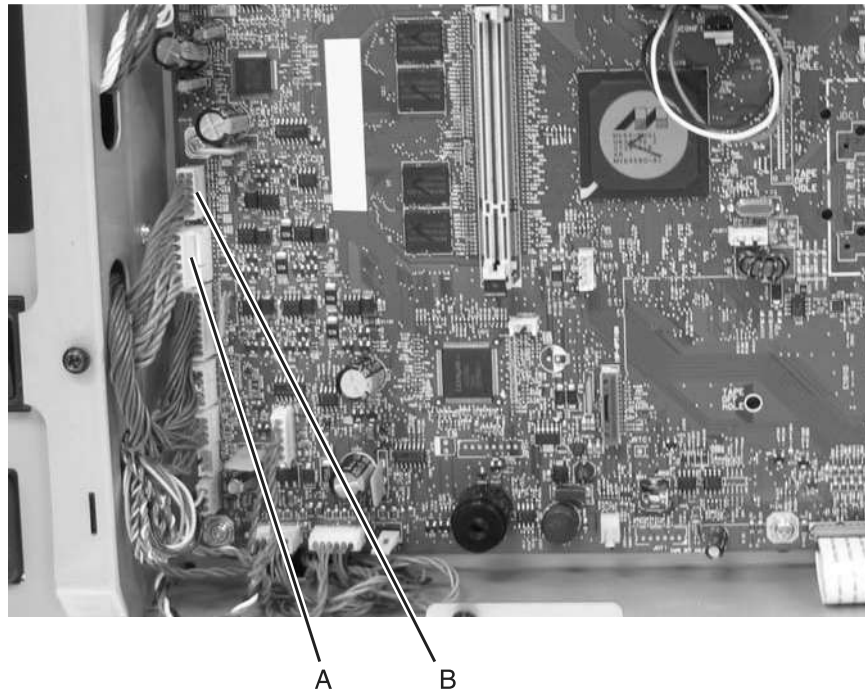
3. Disconnect the connectors from the cartridge motor 2 (C) and cartridge motor 3 (D).

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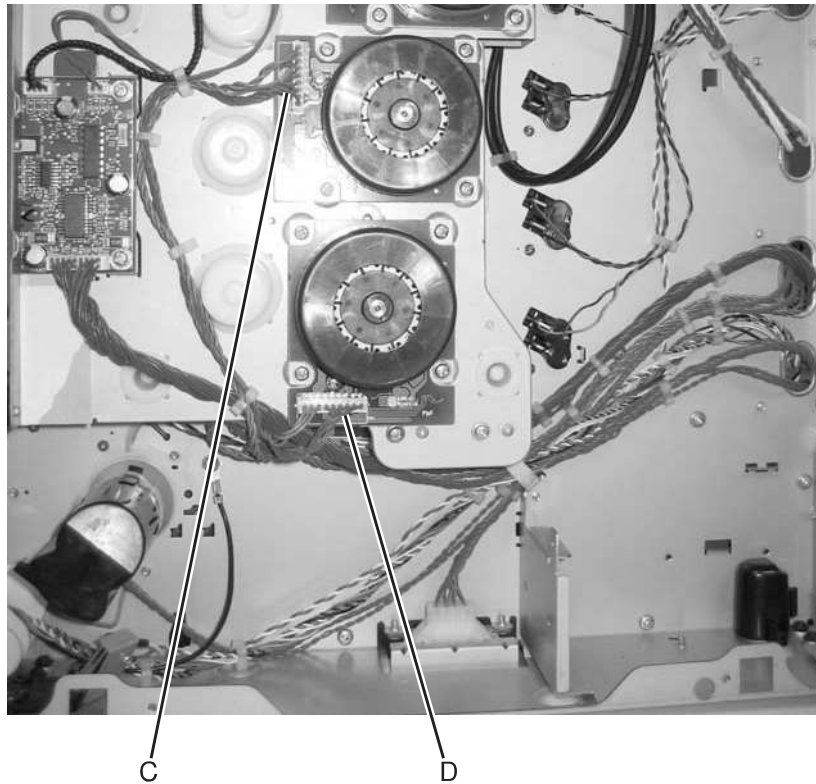
4. Remove the cable from the seven retainers (E).

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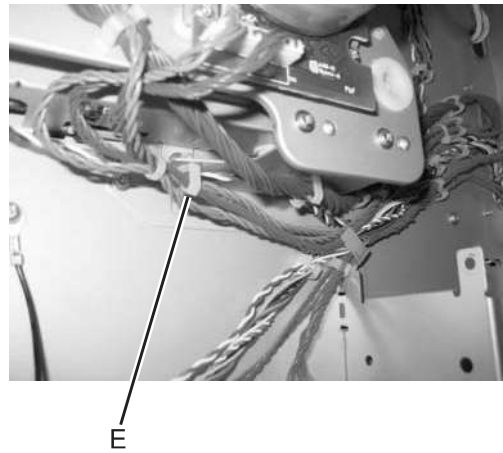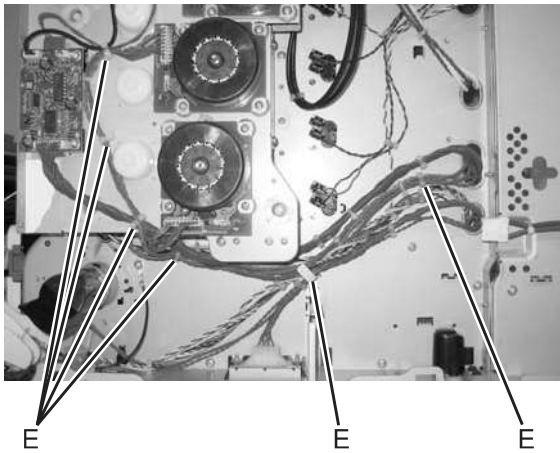
Installation note: Pay attention to the routing of the cables and the cable retainers.

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
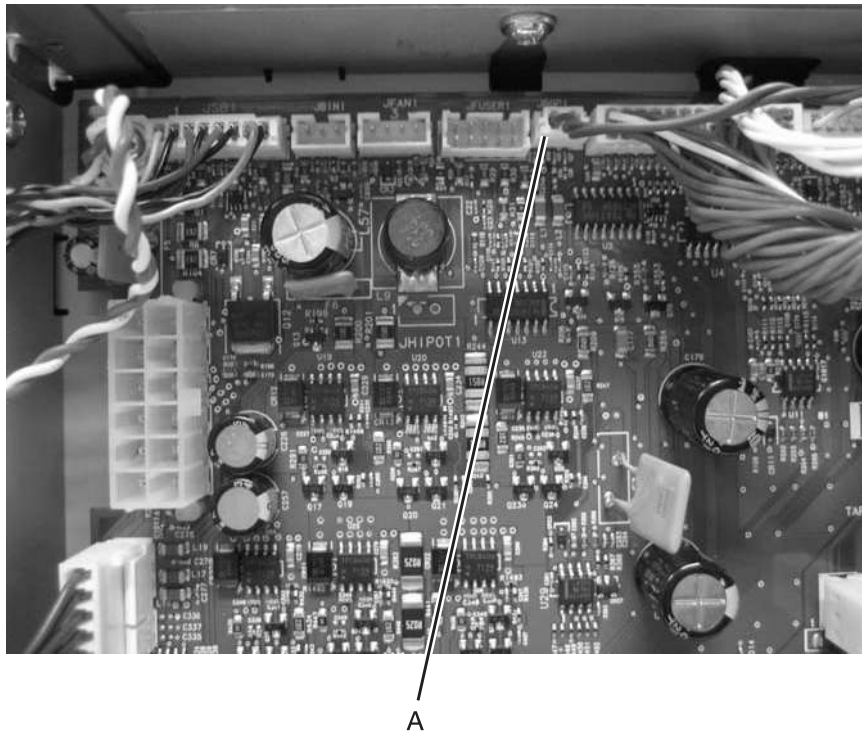
4. Remove the five screws (B).
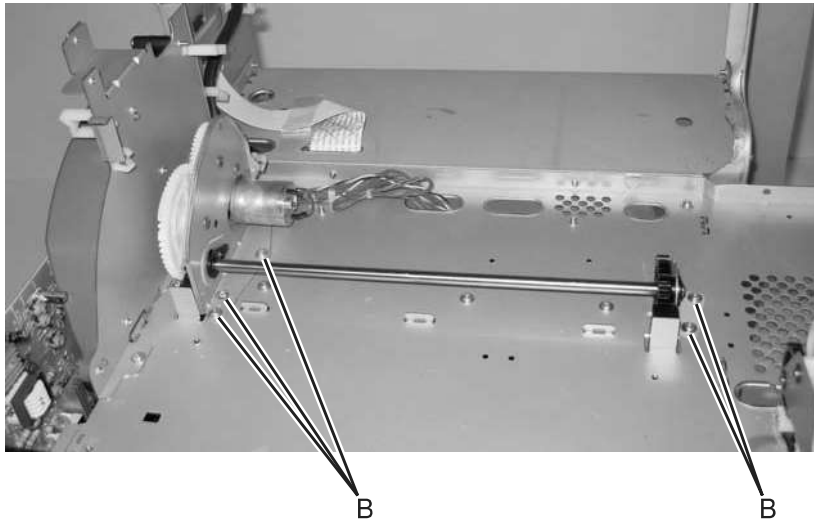
5. Remove the COD assembly.

Installation notes:

1. Push the actuators (A) all the way down.

A
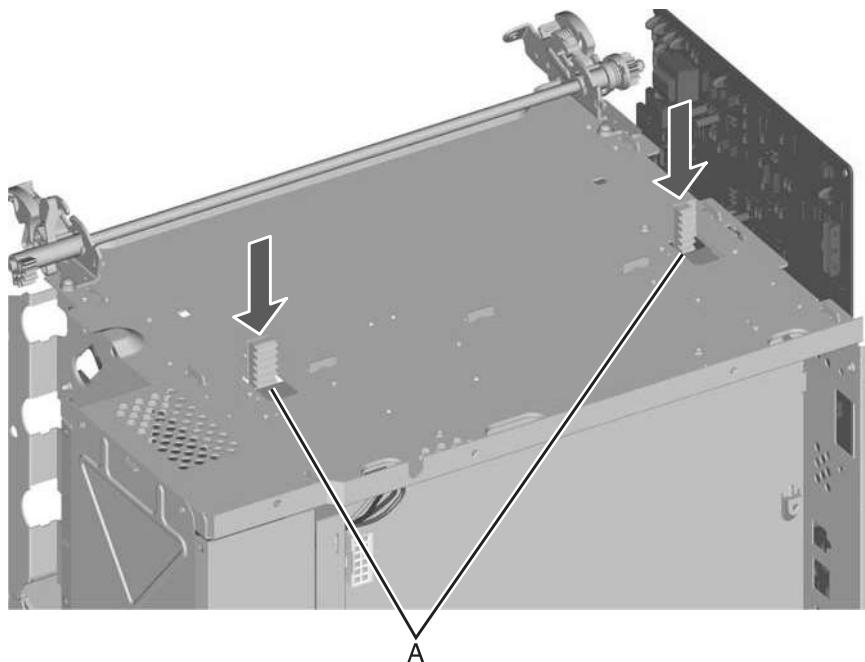
2. Turn the printer around, and verify the actuators are in the correct location by looking inside the front of the printer. The actuators (B) should be visible in the triangular holes in the frame, as shown.

B   B
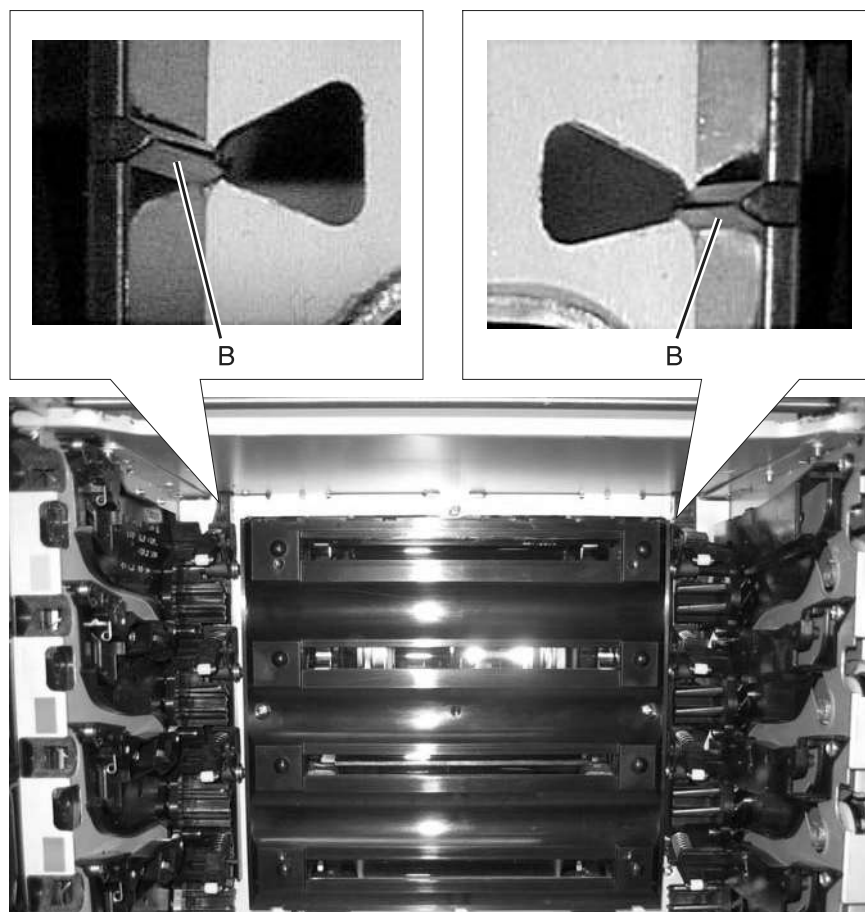
3. Rotate the large COD gear until the stop (C) on the gear is against the housing.

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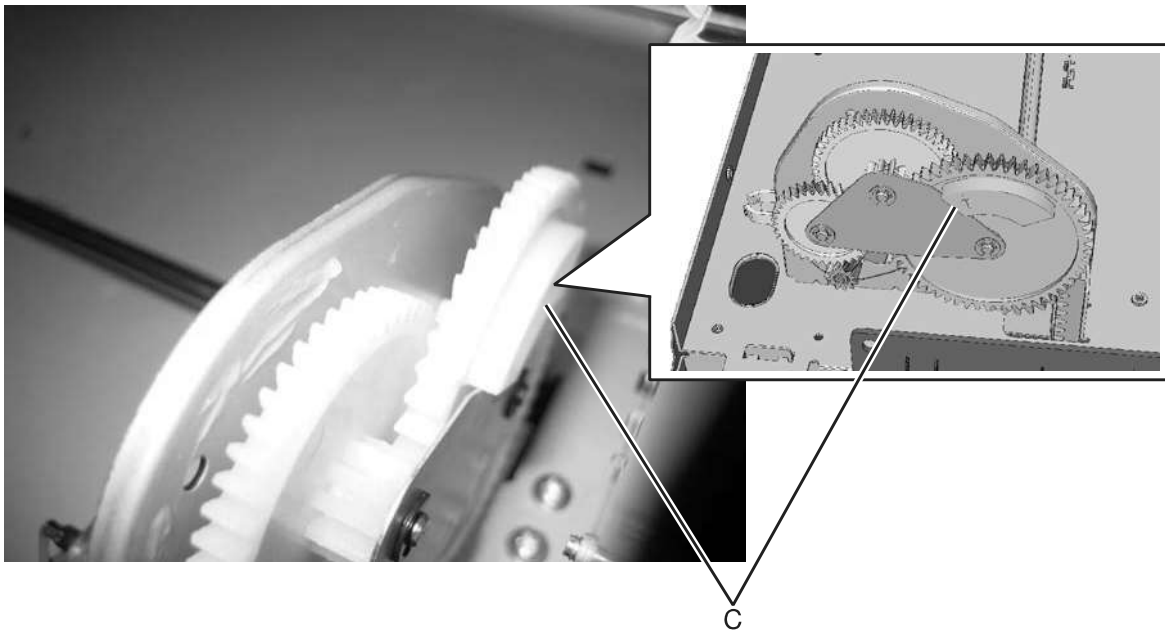
4. Engage the gears on the left side of the COD.
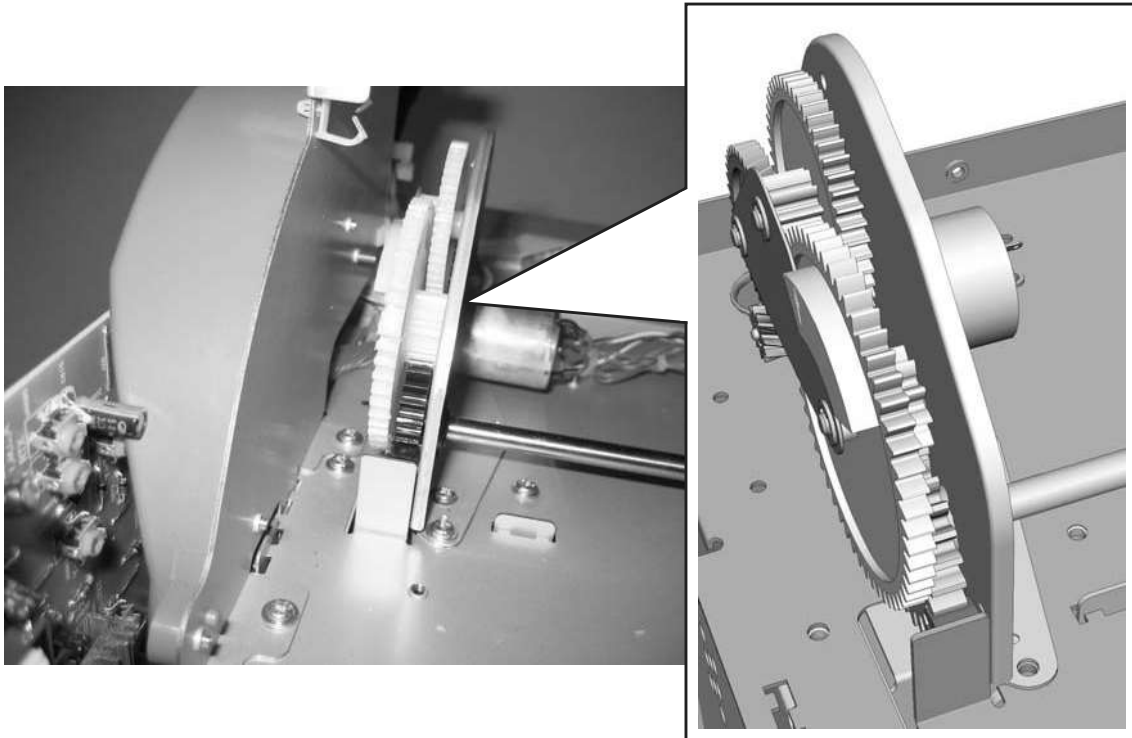
5. Engage the gears (D) on the right side of the COD.

6. Replace the five screws (E).

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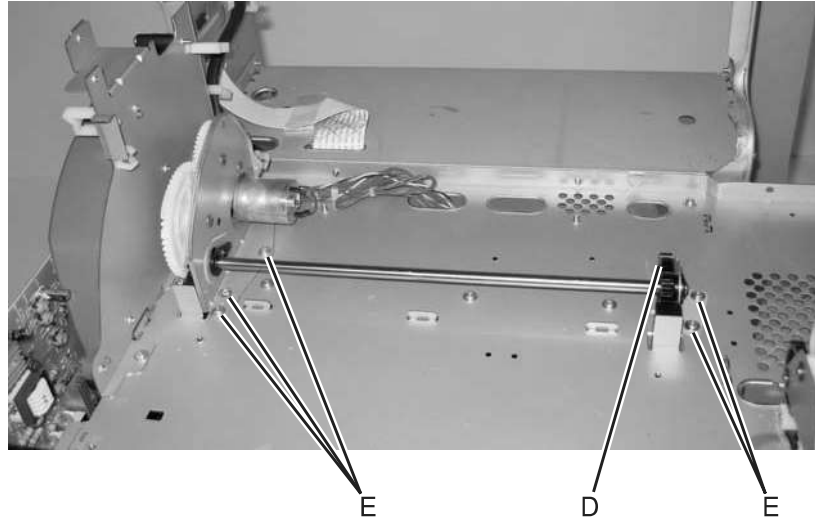
7. Verify the actuators can be seen by looking inside the printer at the triangular holes, as in step 2.

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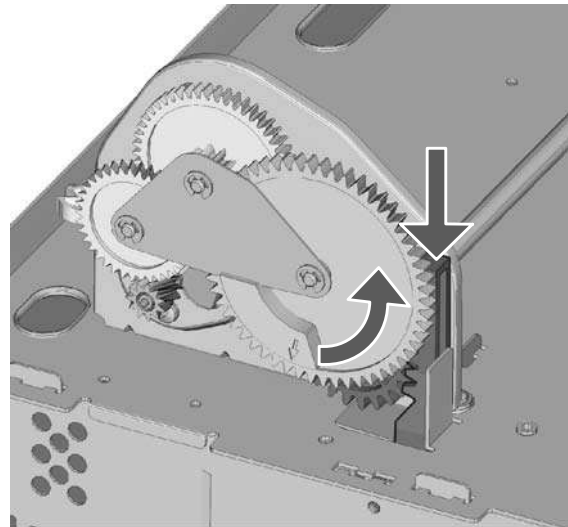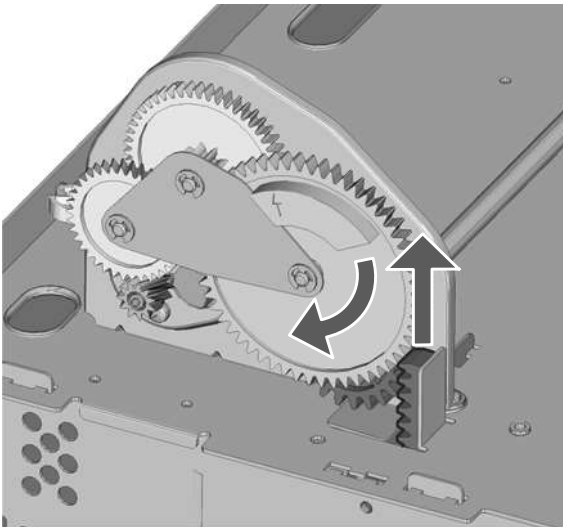
9. Reconnect the cable connector to JBOR1 connector on the system board.

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

Contact springs kit removal

See **"Contact springs kit" on page 7-11** for the part number.

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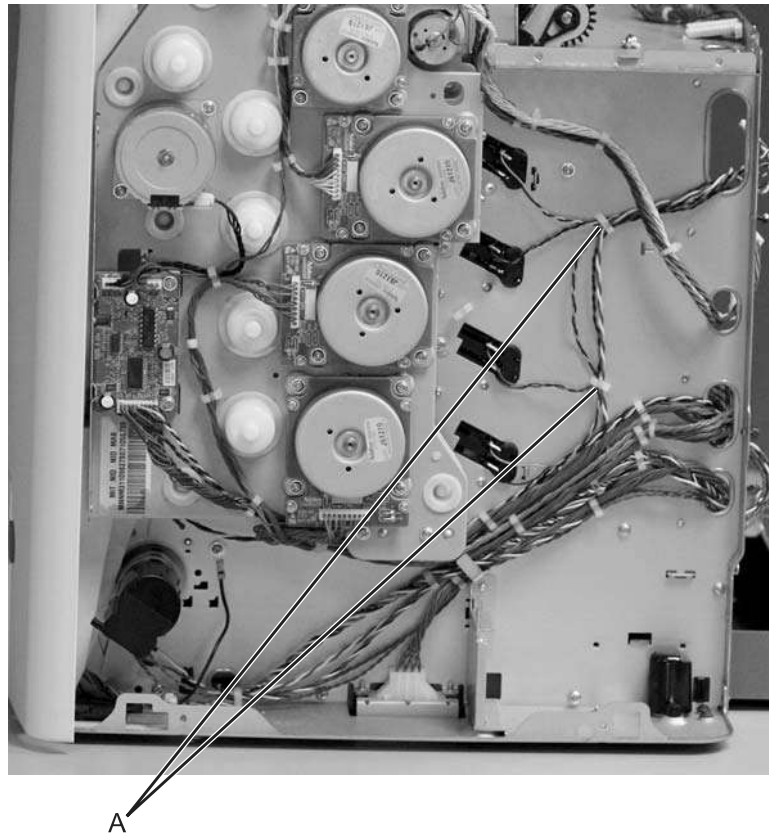
4. Remove the three screws (B) securing the top three bell crank links.

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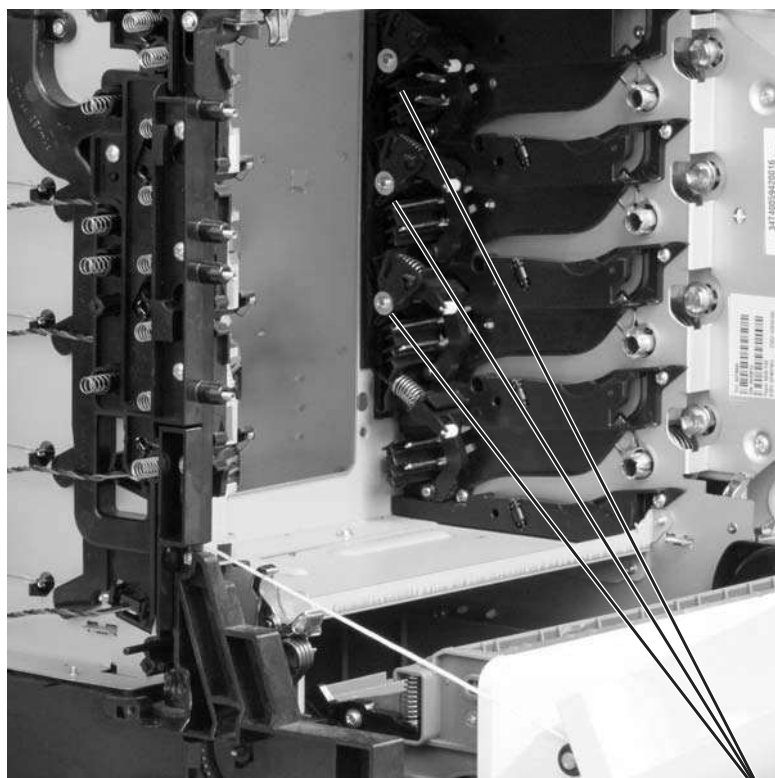
5. Remove the bell crank link (C) together with its bell crank spring (D).

C   D
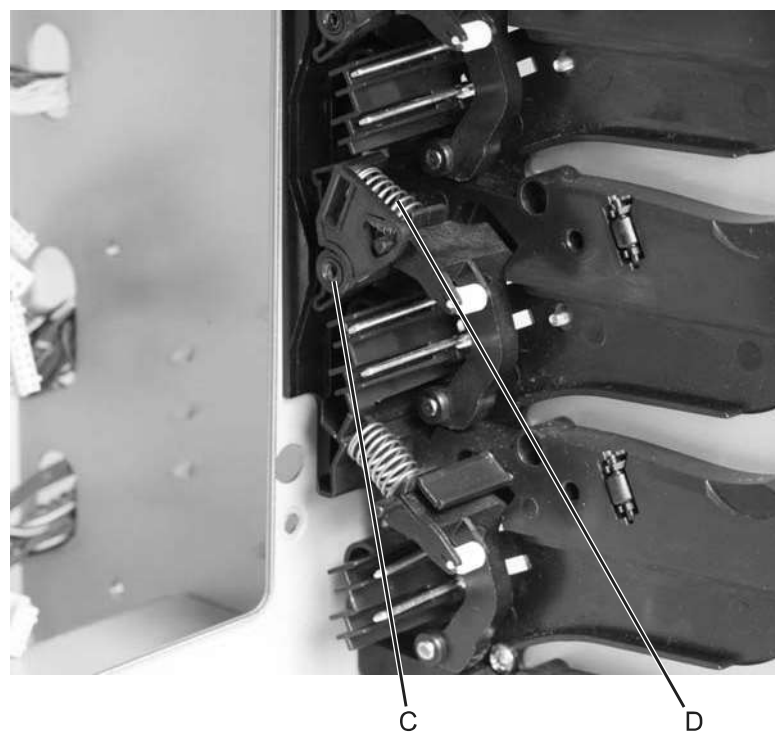
Installation notes:

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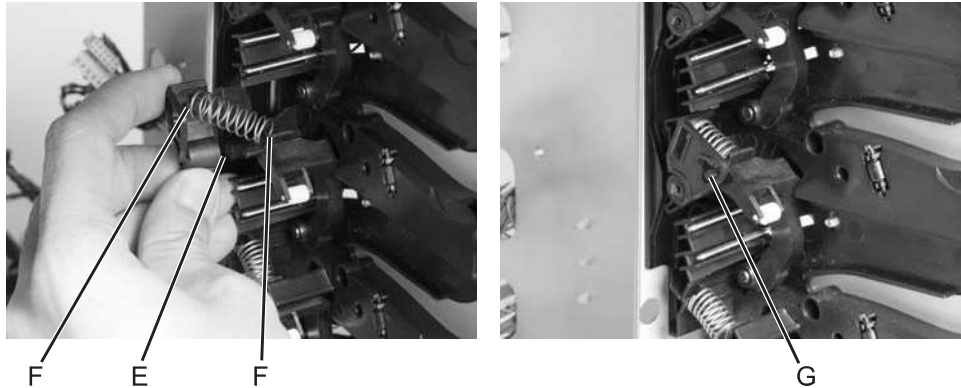
6. Use a prying tool to remove the bell crank.

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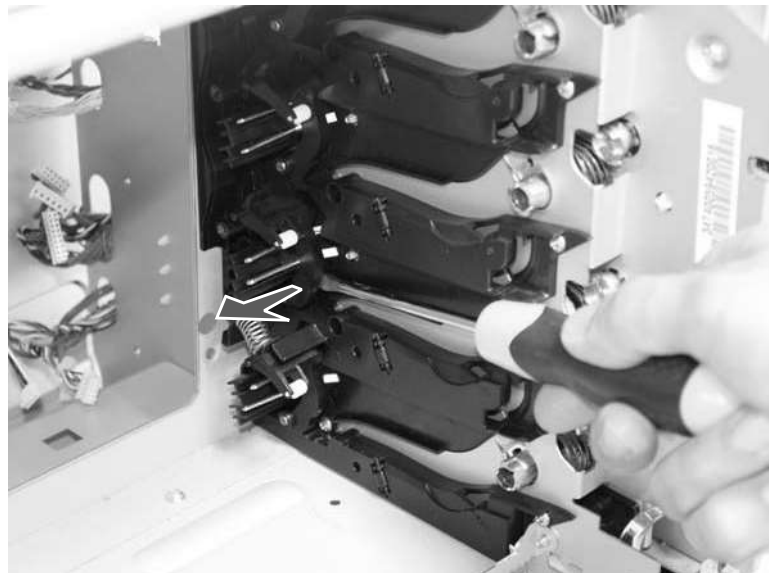
7. Perform steps 5 and 6 to the other bell crank links and bellcranks, except for the one found at the lower-most portion of the cartridge guide.

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

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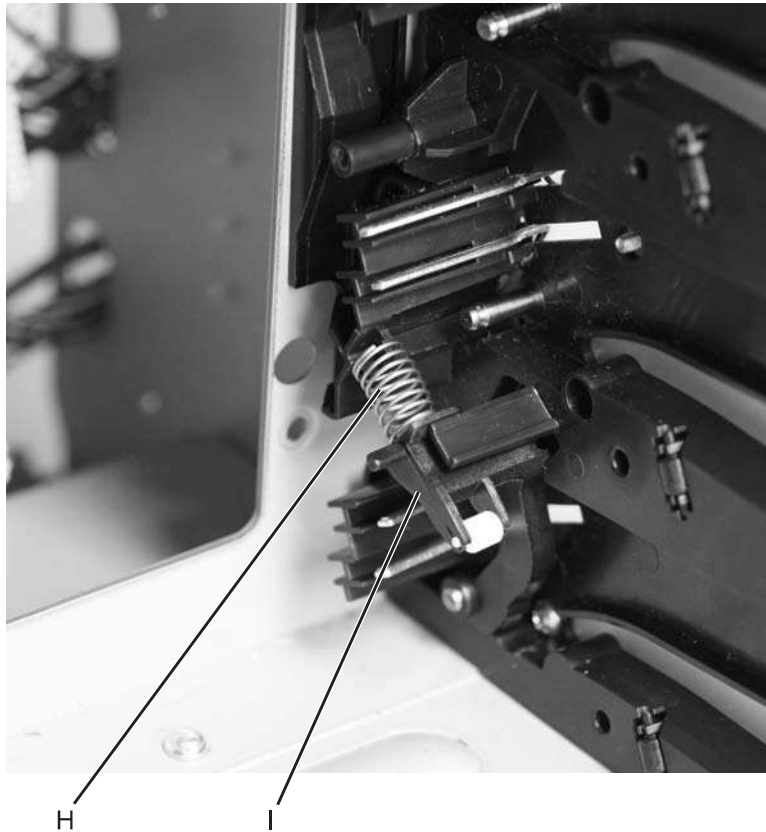
9. Using a spring compression tool (J), align its opening to the rib on the cartridge guide as shown, then push and hold the spring compression tool into the cartridge contact spring.

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

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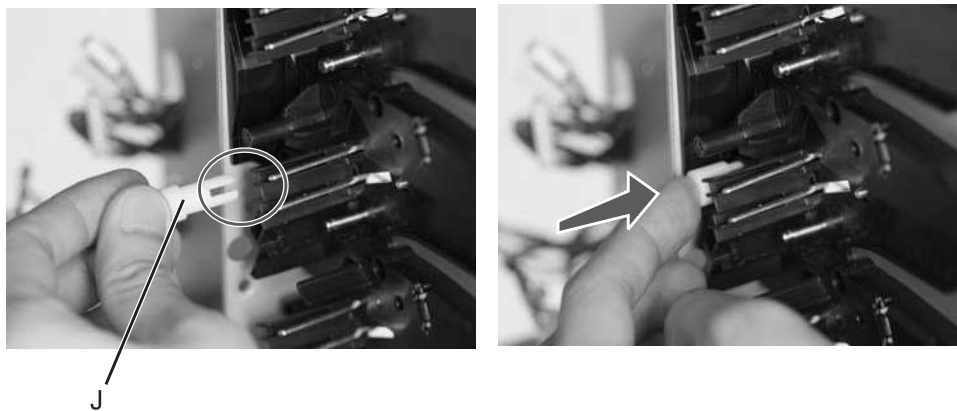
10. Remove the cartridge contacts from the right side of the machine, then release the spring compression tool.

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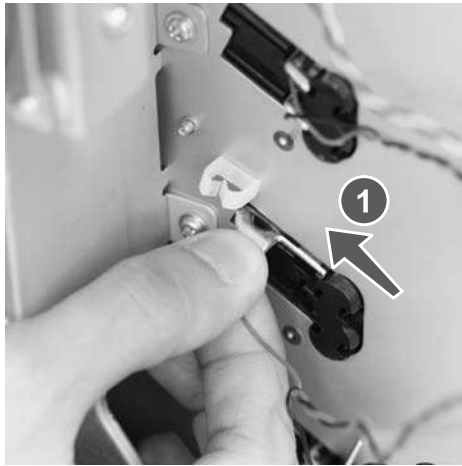
Installation notes:

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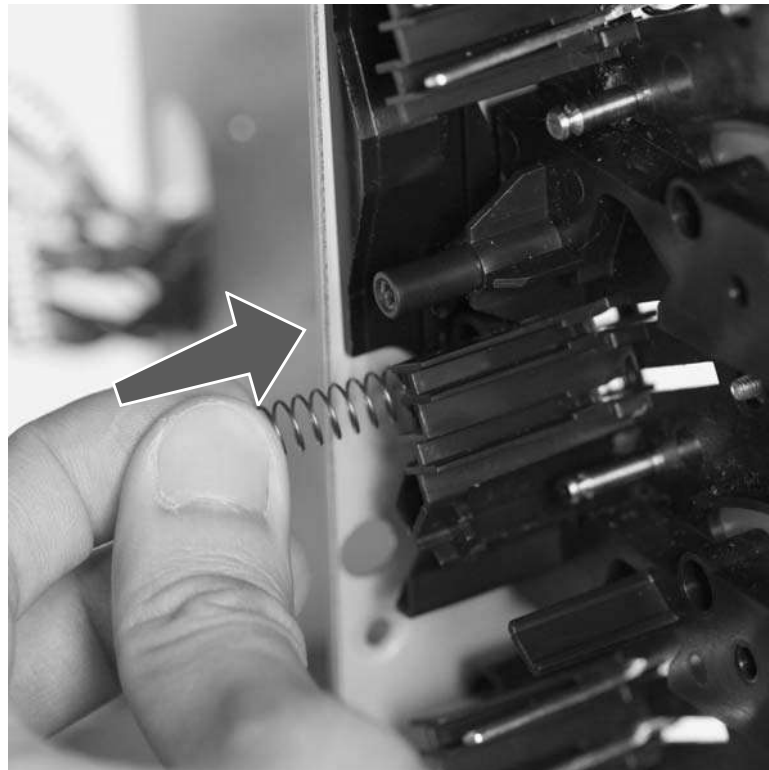
b. Position the spring compression tool (K) as shown below and align its opening to the rib on the cartridge guide, then push and hold the spring compression tool into the cartridge contact spring.

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

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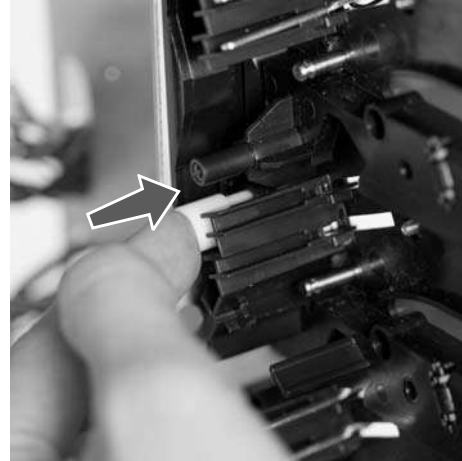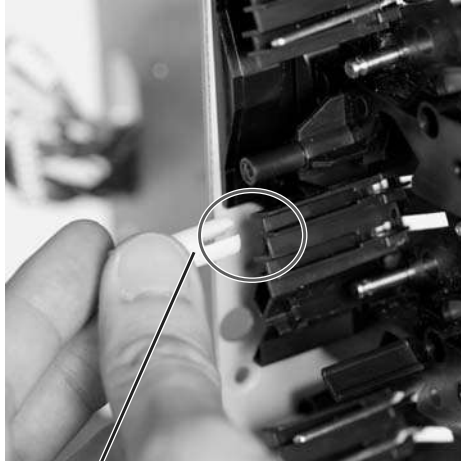
c. Insert the cartridge contact on the right side of the machine.
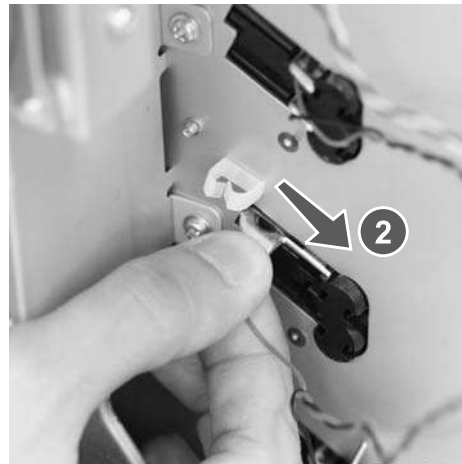
11. Perform steps 9 and 10 to remove all the cartridge contacts.

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
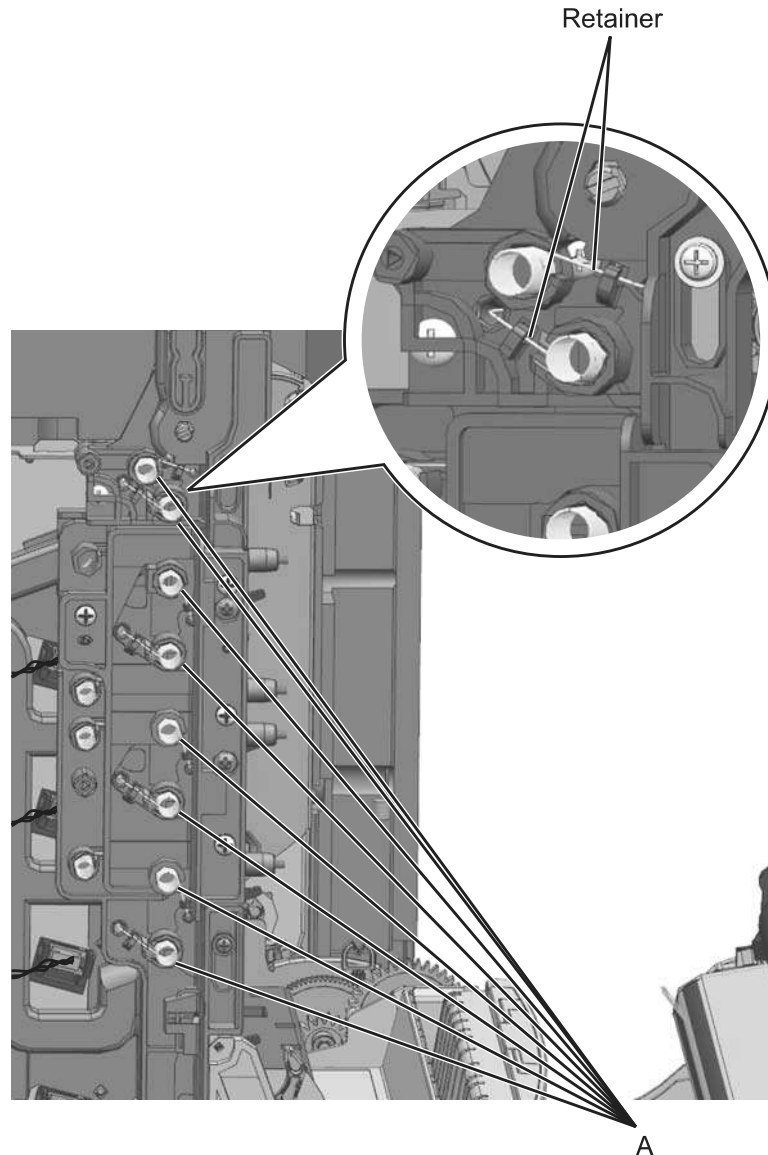
HVPS contact springs removal

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)
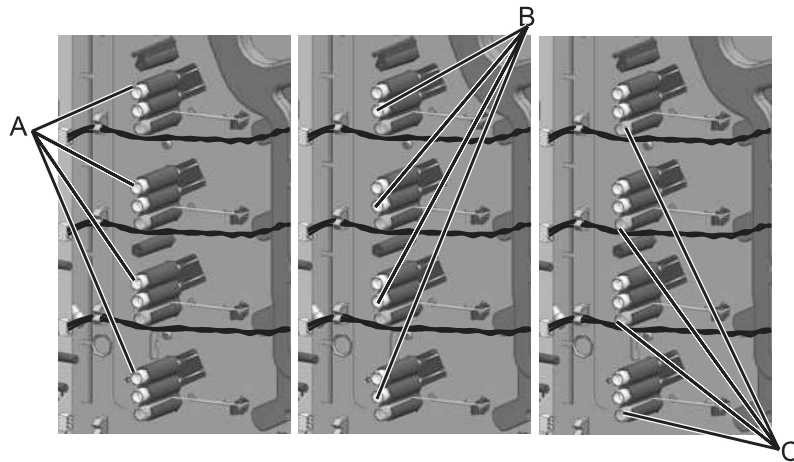
Installation note: Refer below for the location of the HVPS DR Contact spring and HVPS DB contact spring.
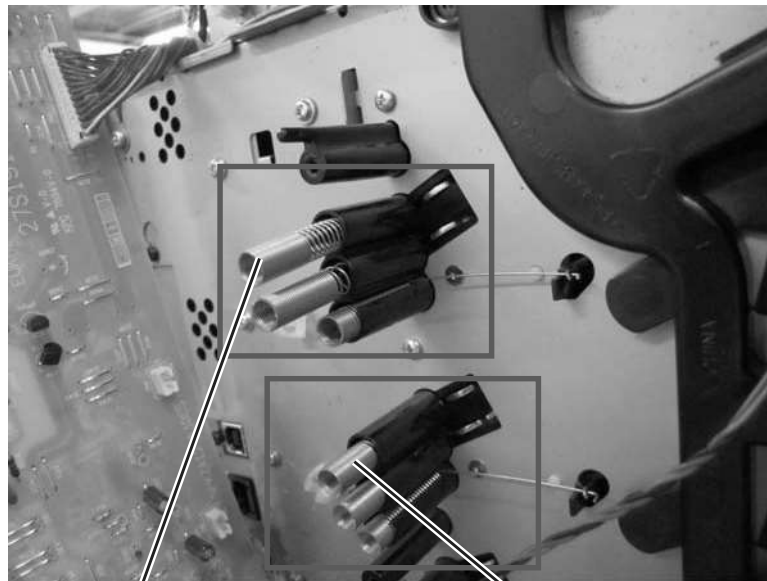
27S1997 HVPS DR Contact   27S1998 HVPS DB Contact

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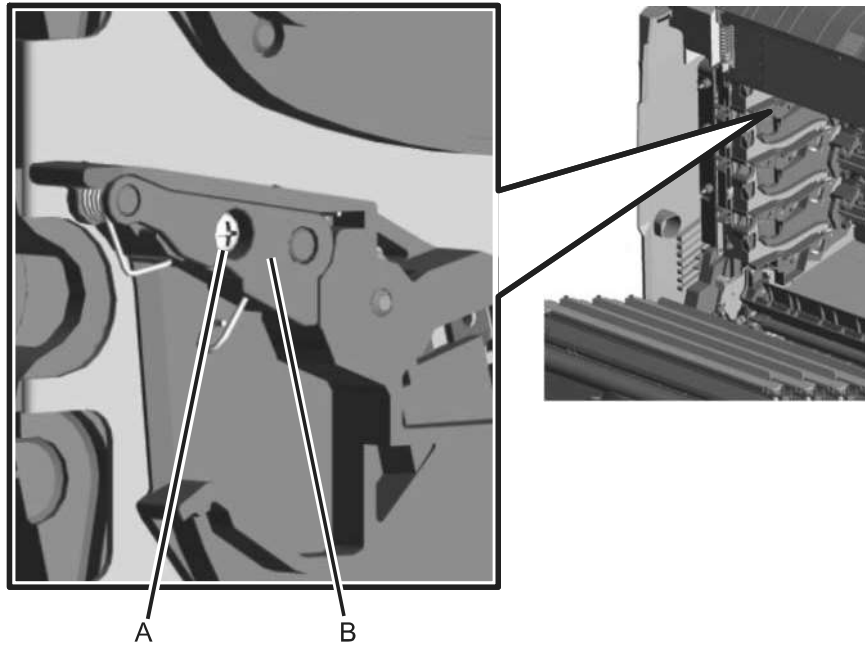
3. Press the lower half (C, D) of the springs, and remove the springs.

C   D
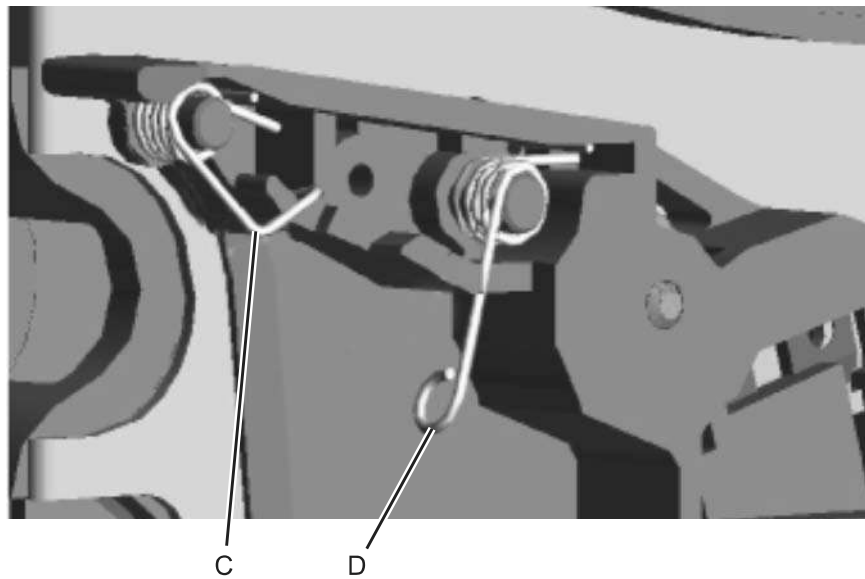
Installation notes:

- 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).
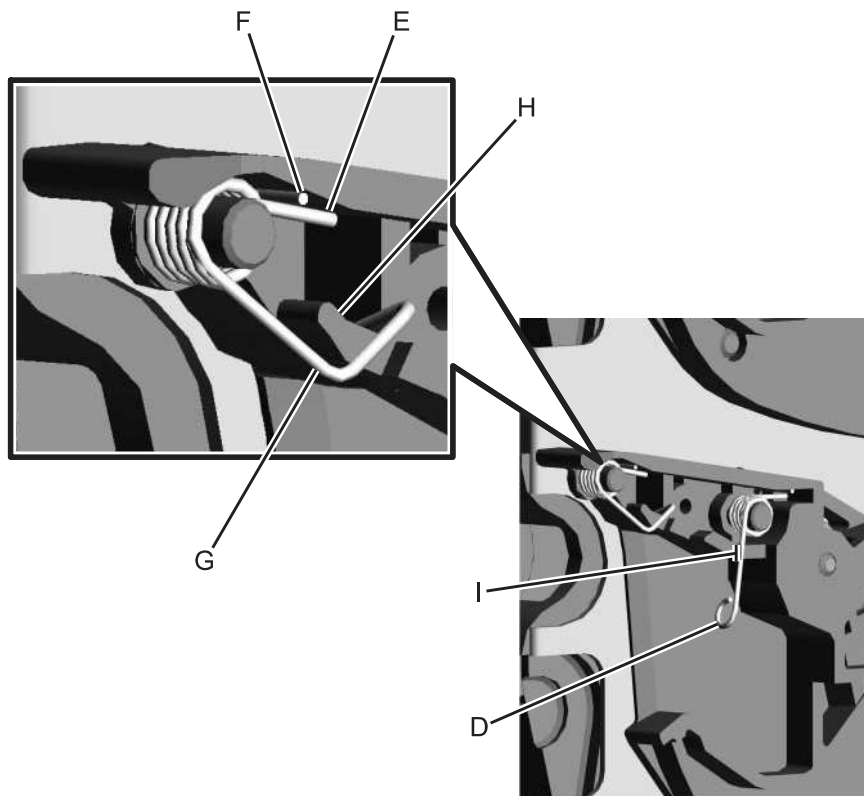
Cooling fan removal

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

1. Remove the rear cover. See **"Rear cover removal" on page 4-36**.
2. Turn the cover over.
3. Squeeze the right side of the filter, and remove it from the tabs (A).
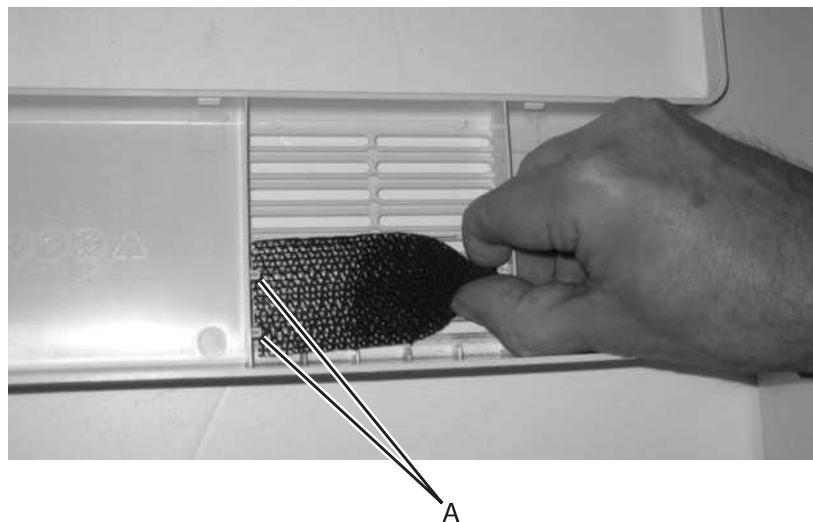
Duplex reference edge guide assembly removal

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.

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
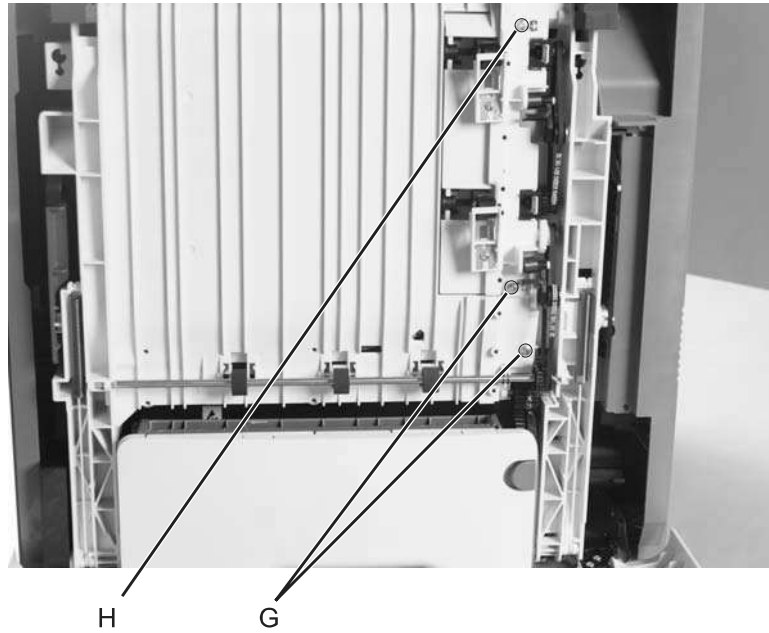
8. Remove the duplex reference edge guide assembly.

Electrophotographic (EP) drive assembly removal

See **"EP drive assembly" on page 7-7** for the part number.

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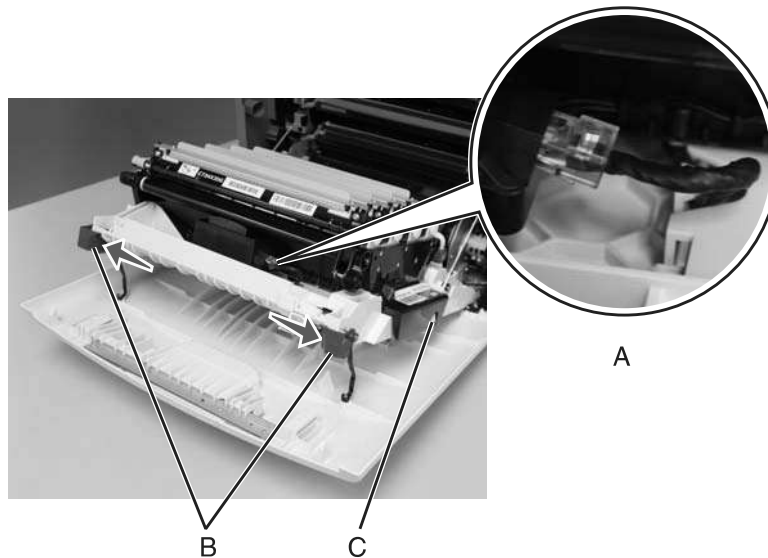
5. Remove the cartridges.
6. Remove the low-voltage power supply (LVPS). See **"Low-voltage power supply (LVPS) removal" on page 4-115**.

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

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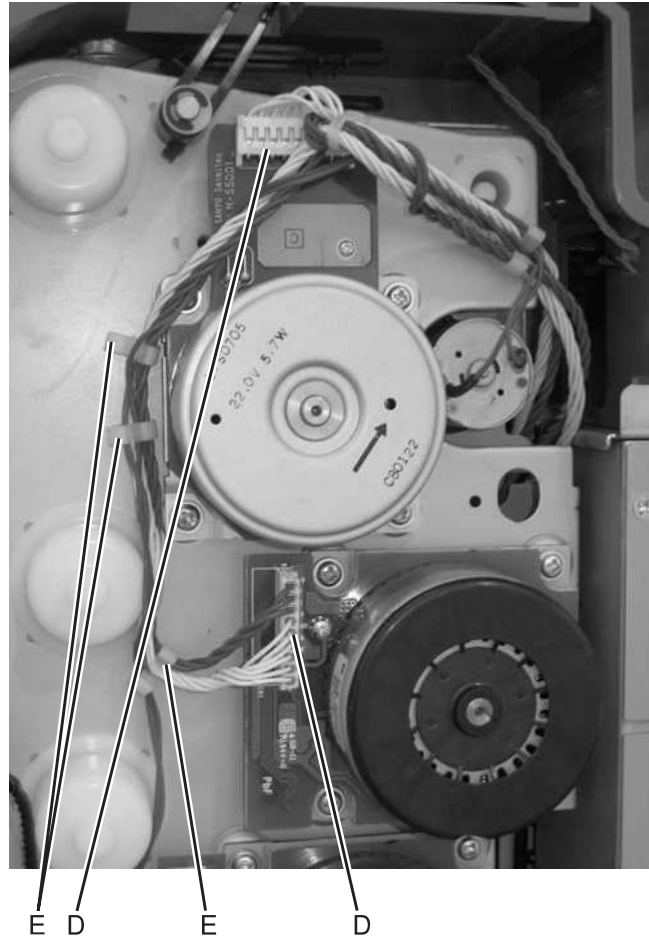
8. Disconnect the camshaft/transport cable connector (F), and remove the cable from the cable clamp (G).

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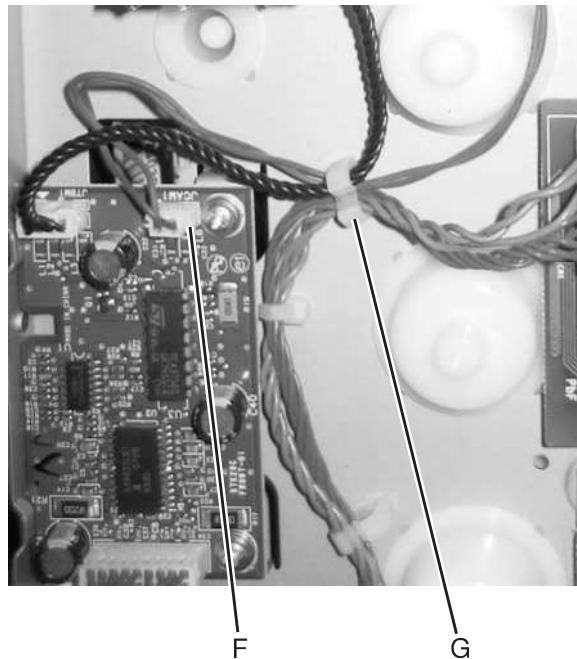
9. Unwind the camshaft/transport cable and the cartridge 1/fuser cables (H).

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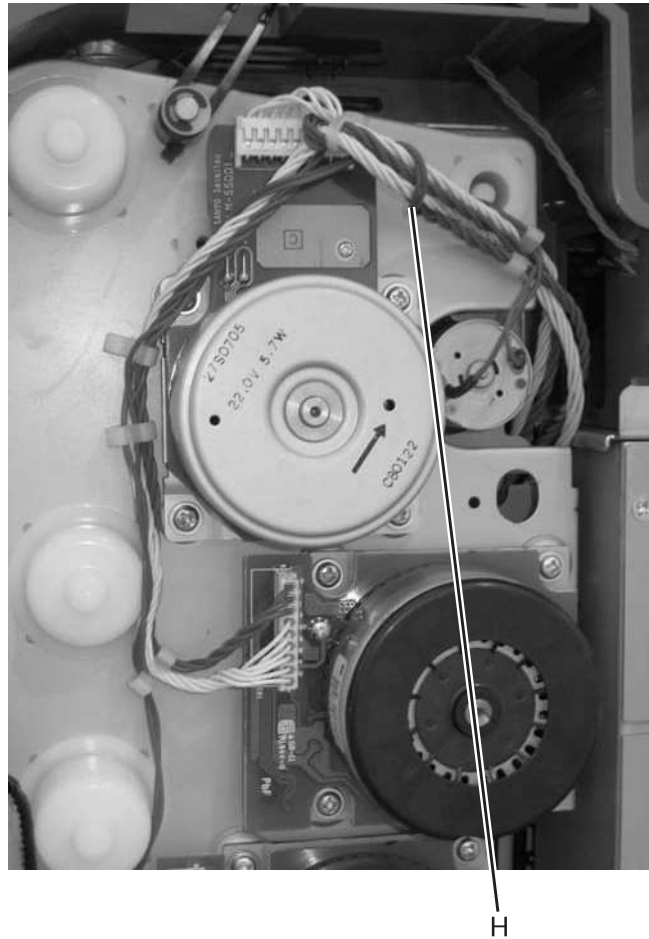
10. Disconnect the cartridge 2/cartridge 3 motor cable (two connectors) (J), and remove the cable from the cable clamps (K).

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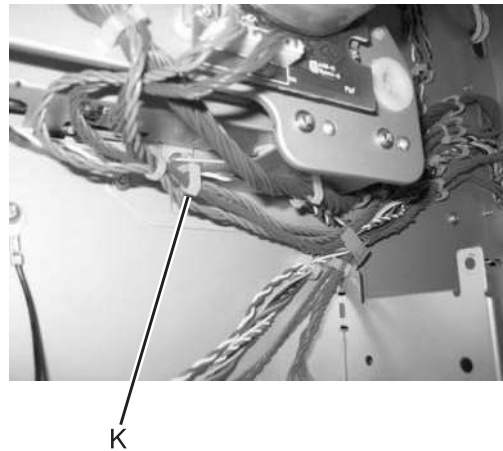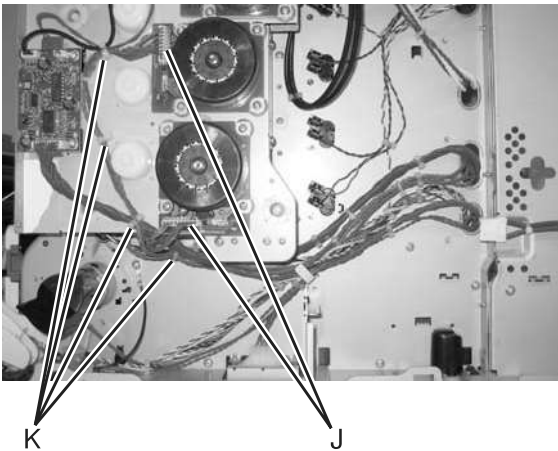
11. Disconnect the motor drive cable connector (L), and remove the cable from the cable clamps (M)

12. Remove the two screws (N) to remove the motor driver card assembly.
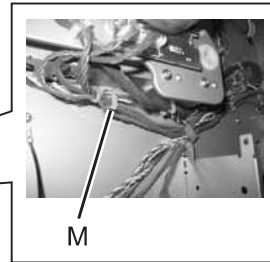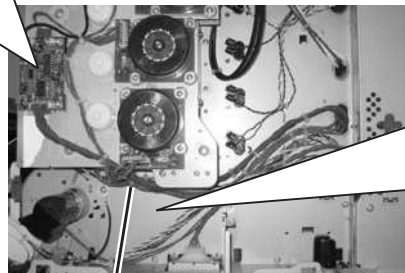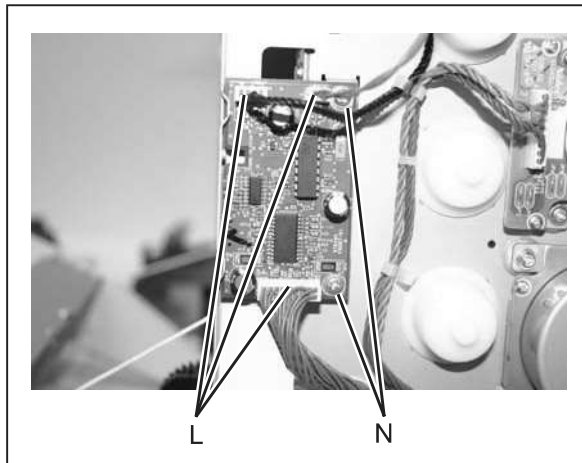
13. Remove the three screws (P) on the front.
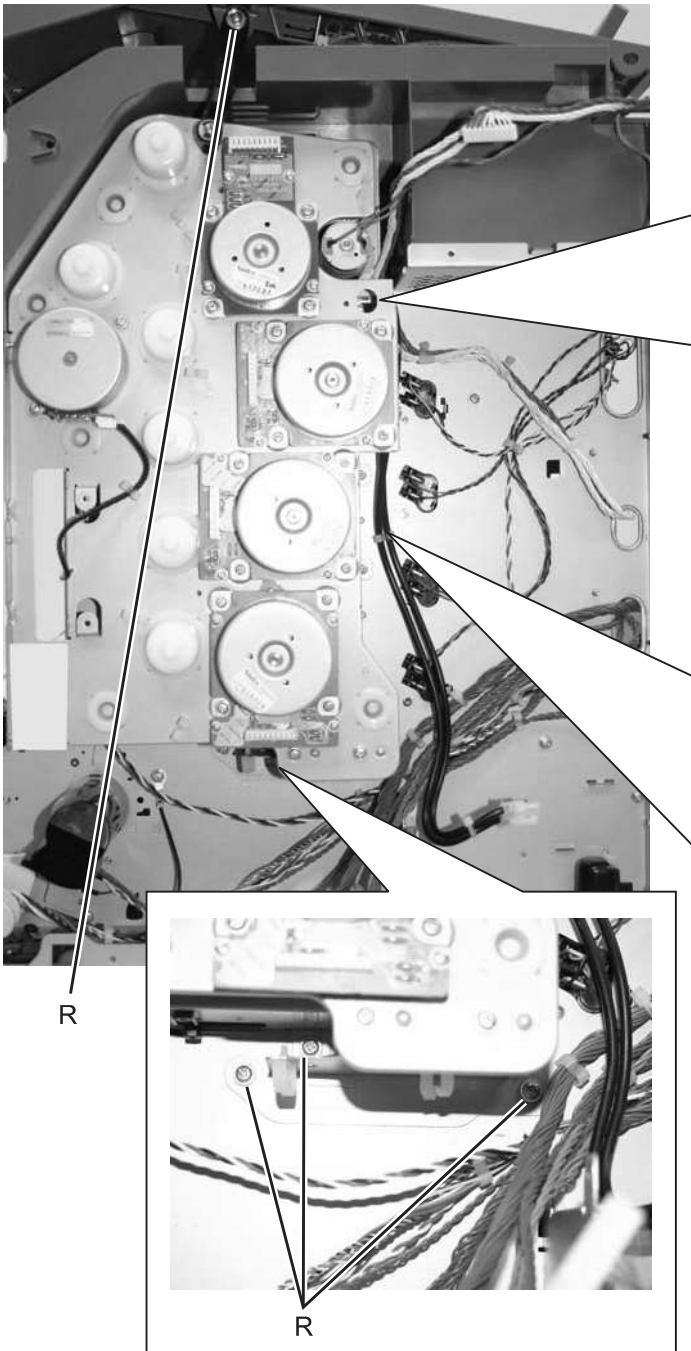
14. Remove the two screws (O) on the inside.

O   P
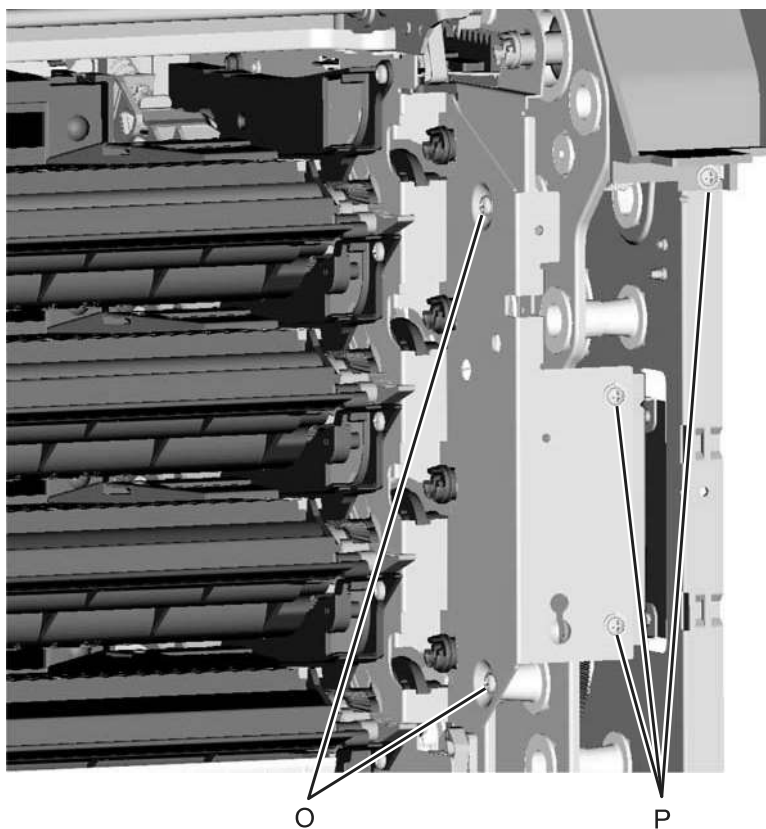
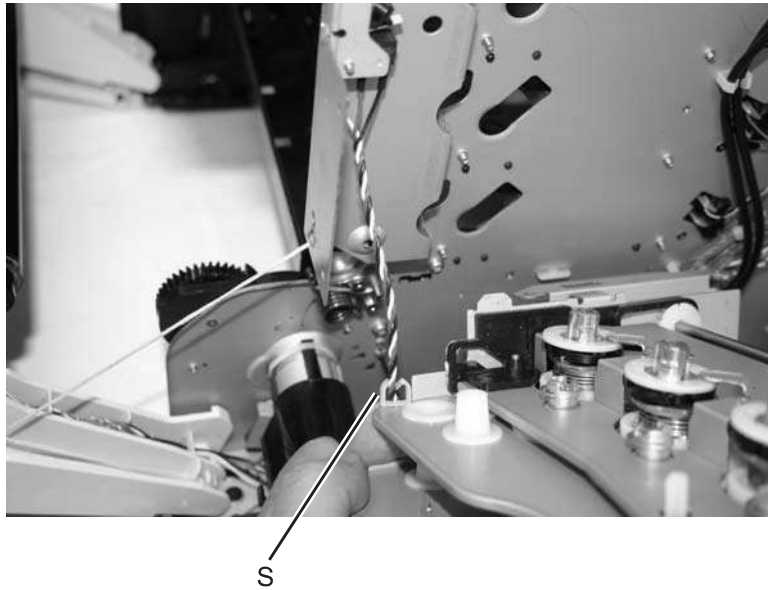**15.** Remove the seven screws (R) securing the EP drive.

R

R (First)

R

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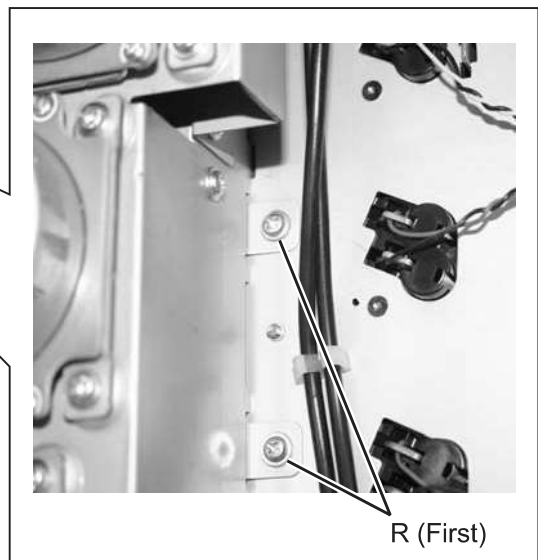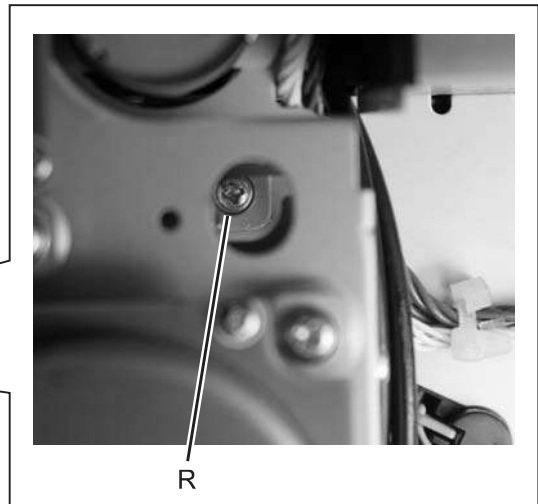
**16.** Remove the 5 V interlock switch cable from the restraint (S) on the backside of the EP drive.

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.
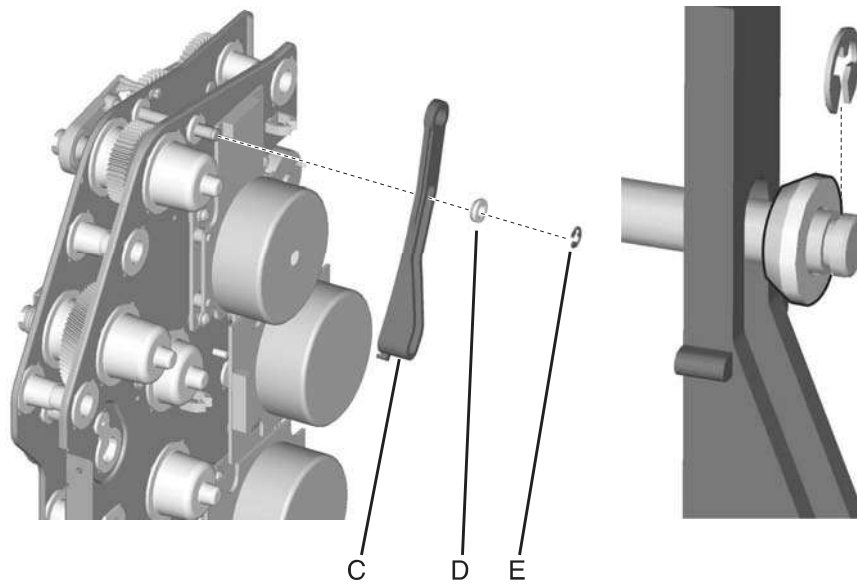**2.** Remove the fuser retract link (B), and discard.

B

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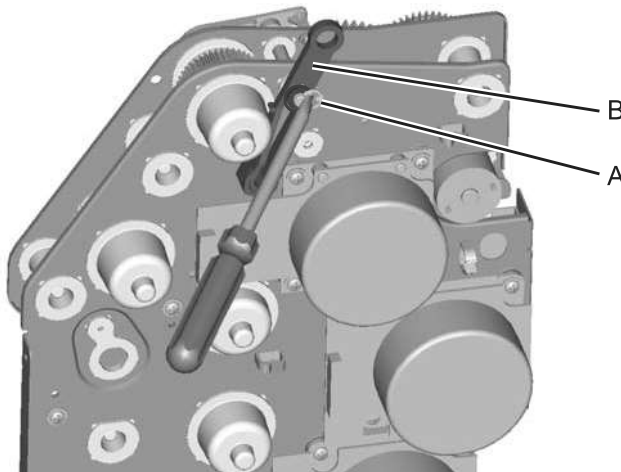
3. Install the new fuser retract link (C), the follower cam (D), and the E-clip (E).

   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.
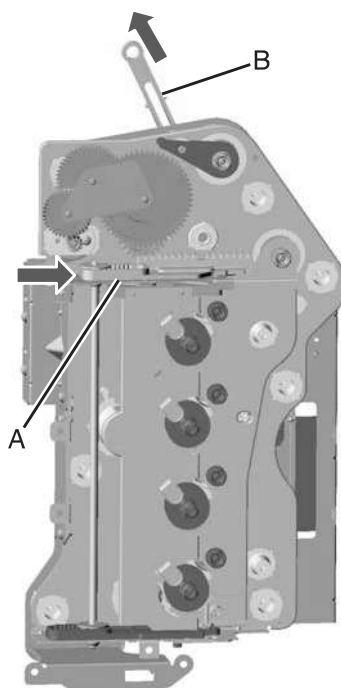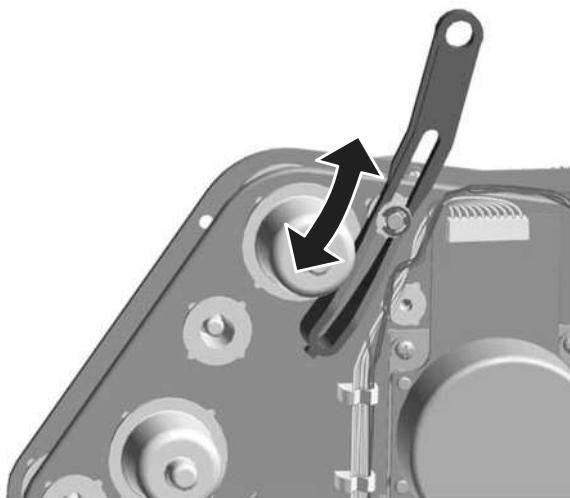
C   D   E

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.
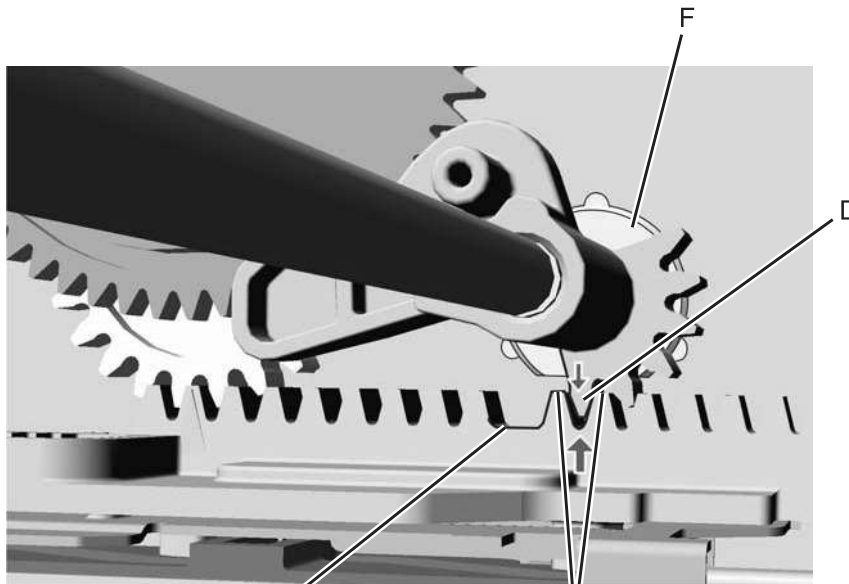
3. Fasten the 5 V interlock cable into the cable retainer (C) on the bottom of the EP drive.

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

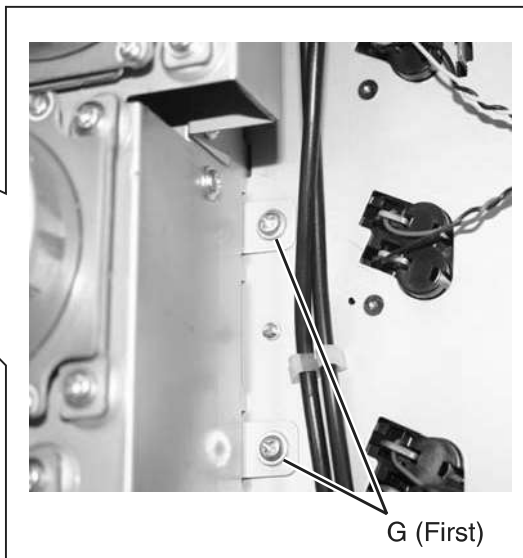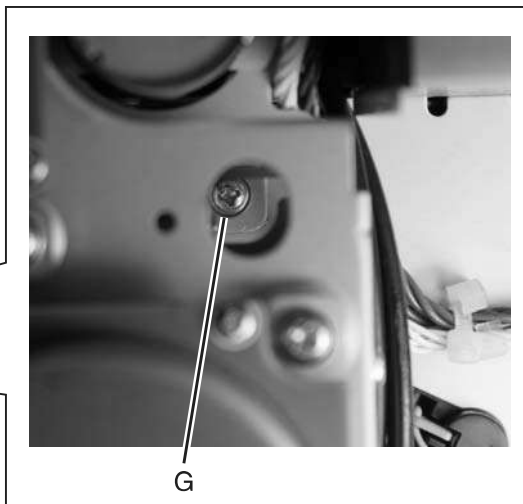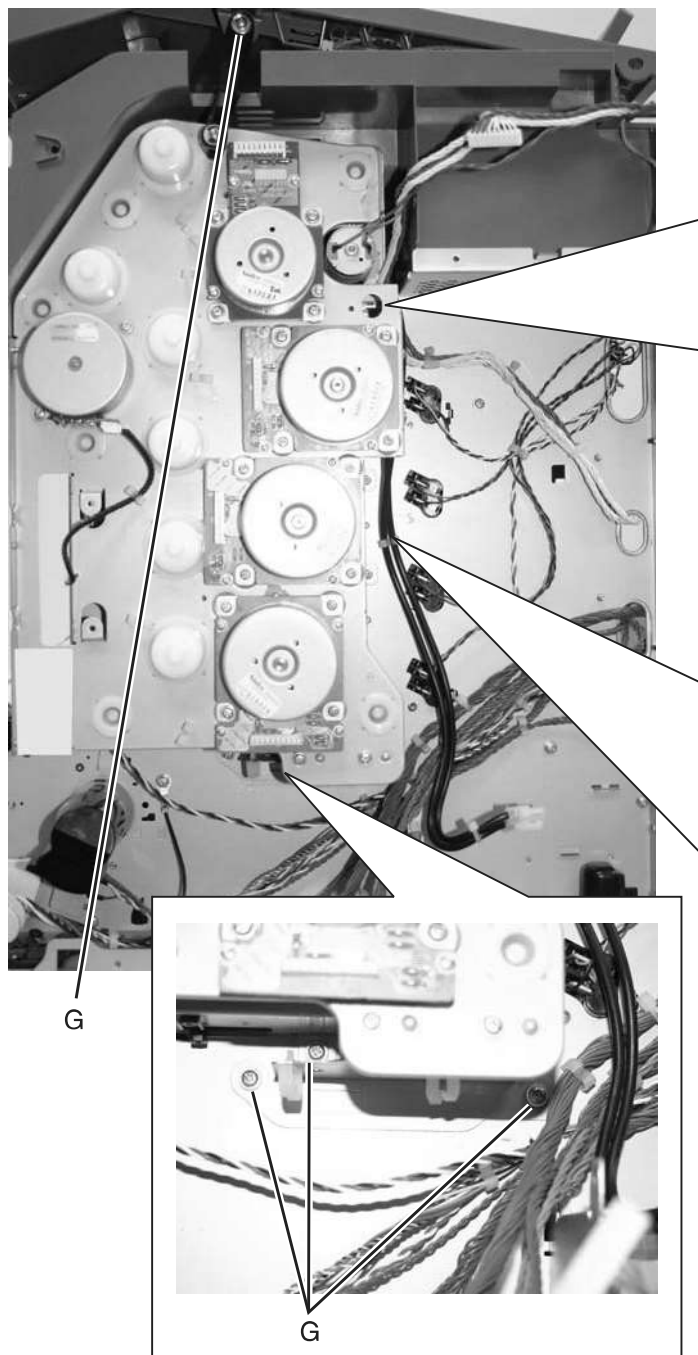**5.** Hold the drive in place while replacing the first of the seven screws, then continue replacing the rest of the screws (G).
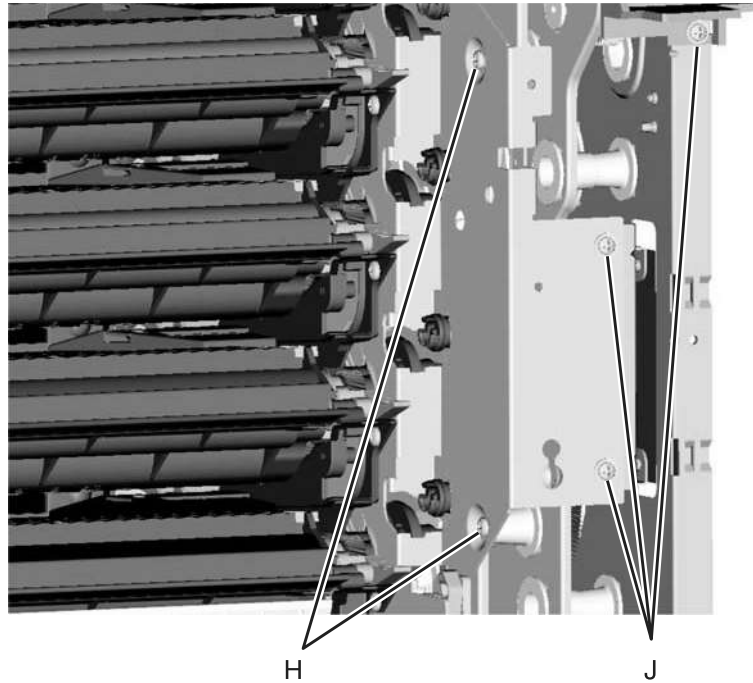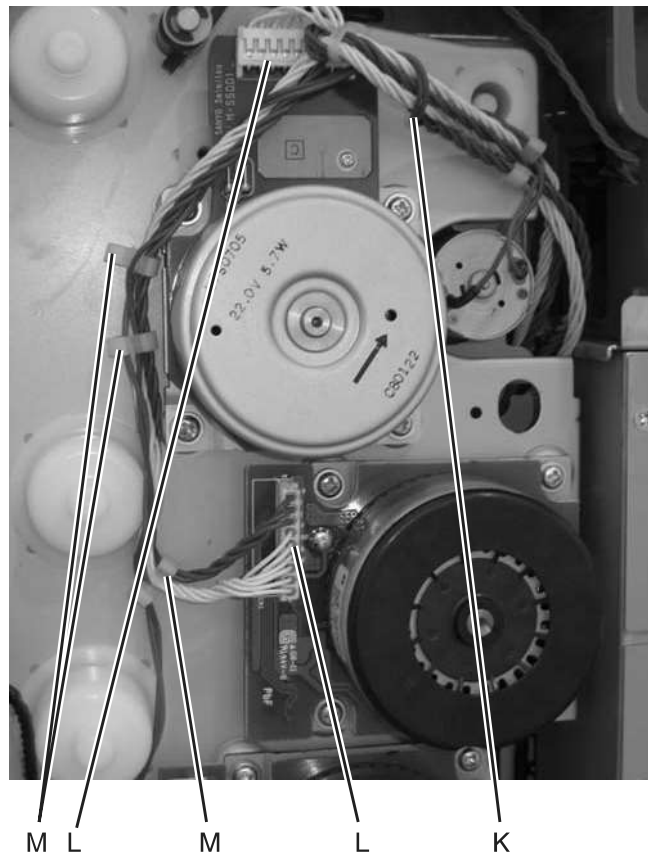

G

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).

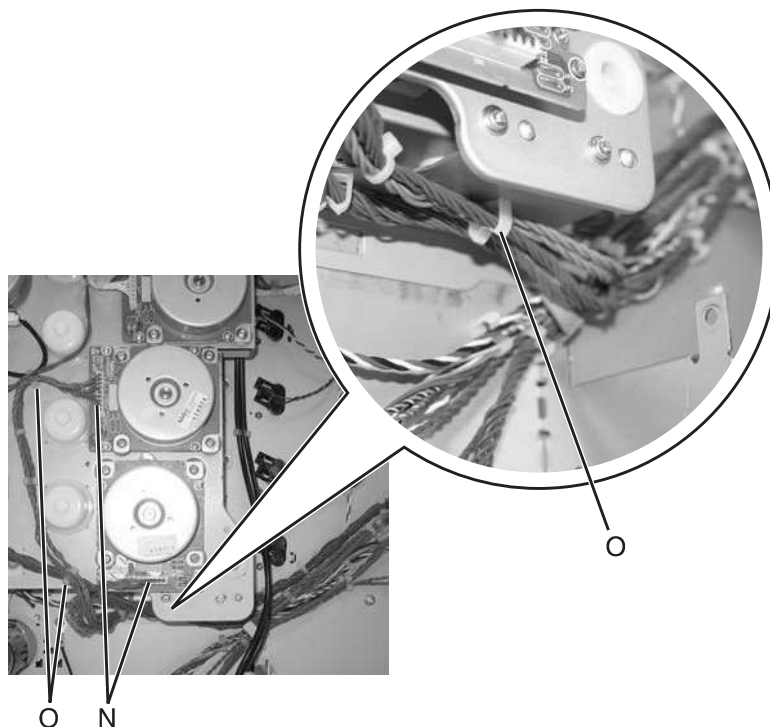   M L   M   L   K
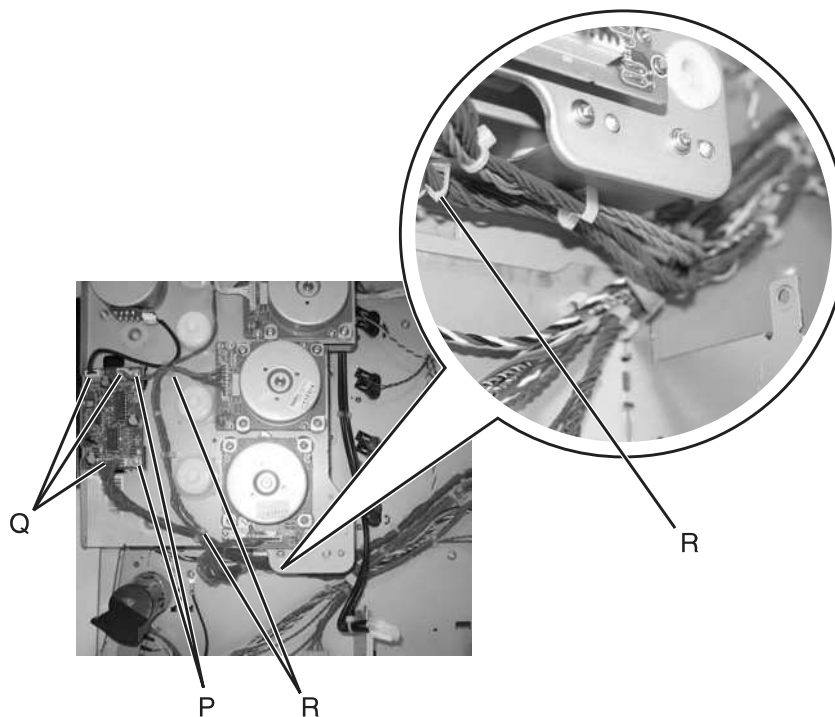
10. Connect the cartridge 2/cartridge 3 motor cable (two connectors) (N), and make sure the cable is in the cable clamps (O).

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).

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.
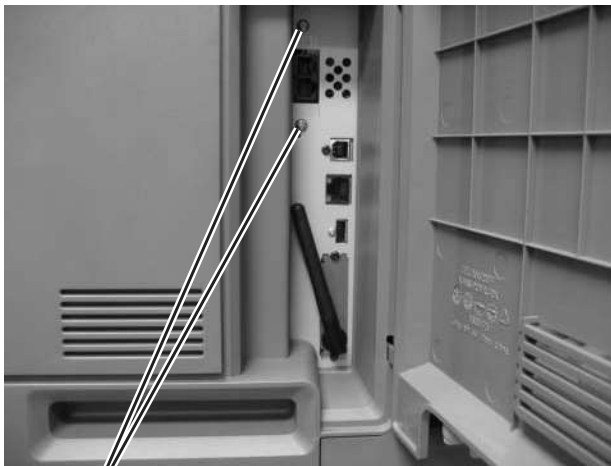
A   B
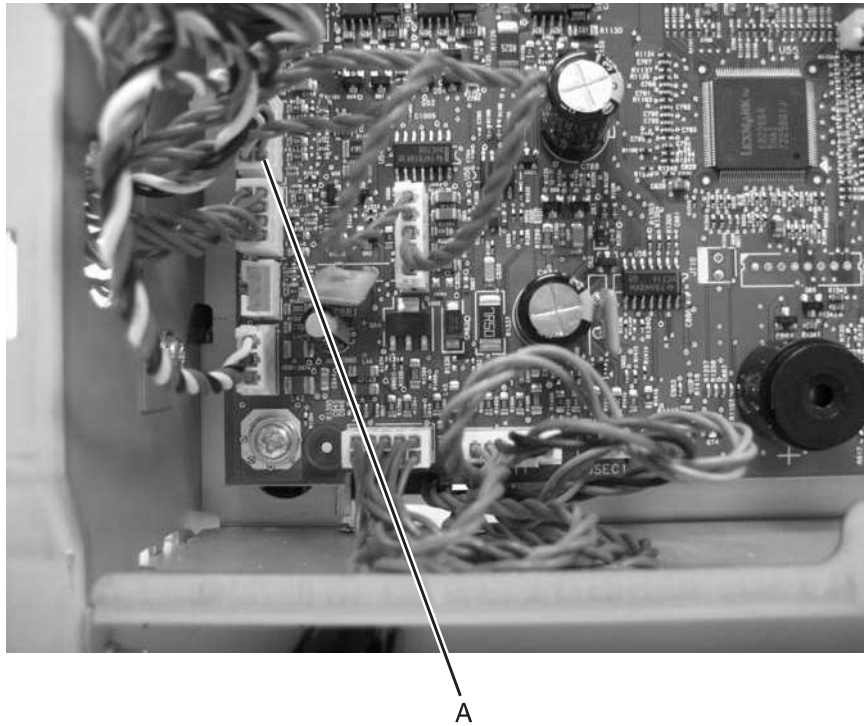
5. Lift, and remove the fax modem.

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.

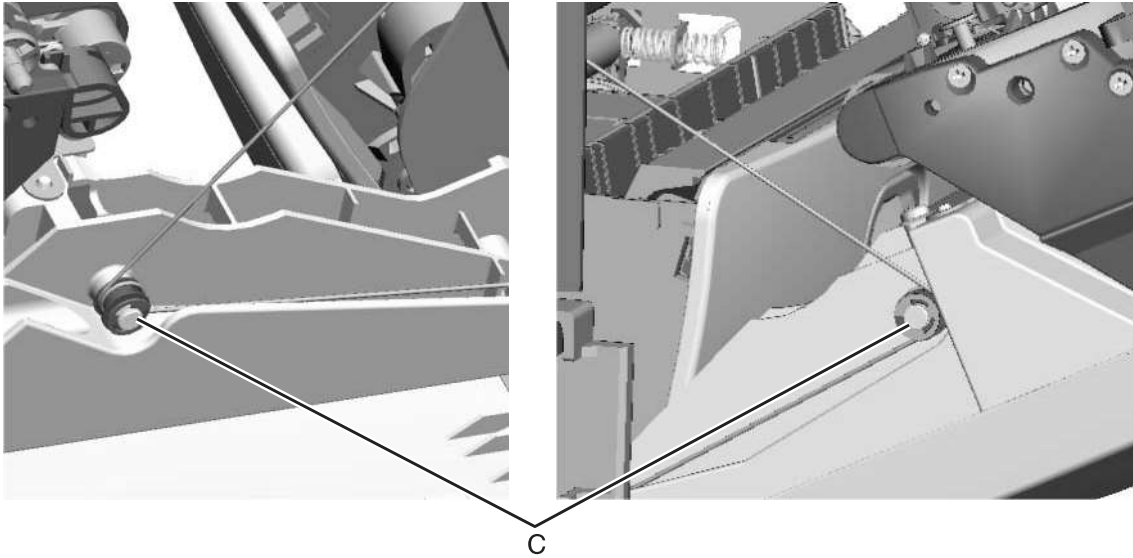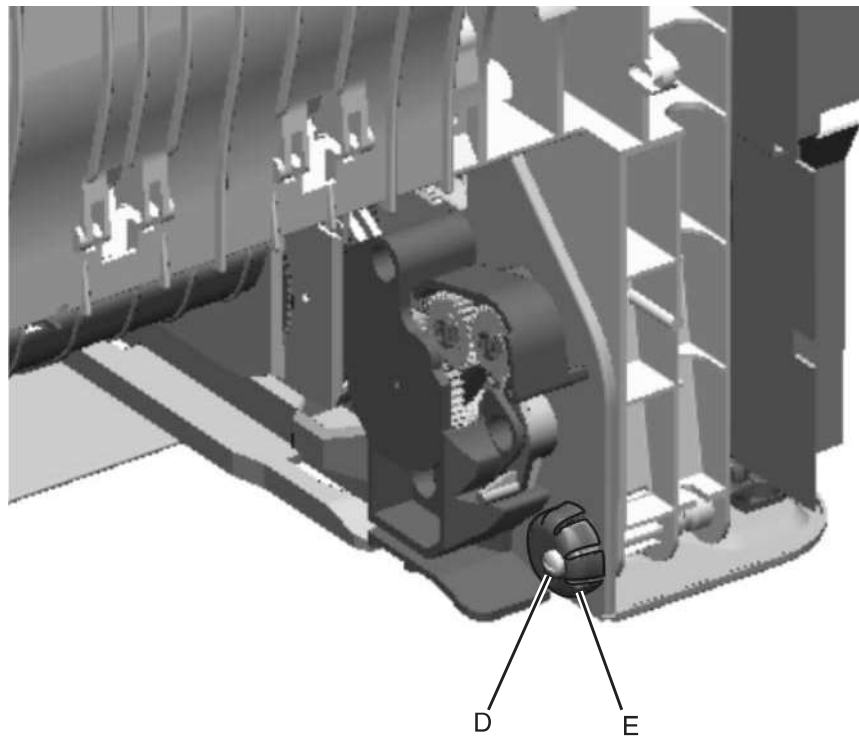B   B
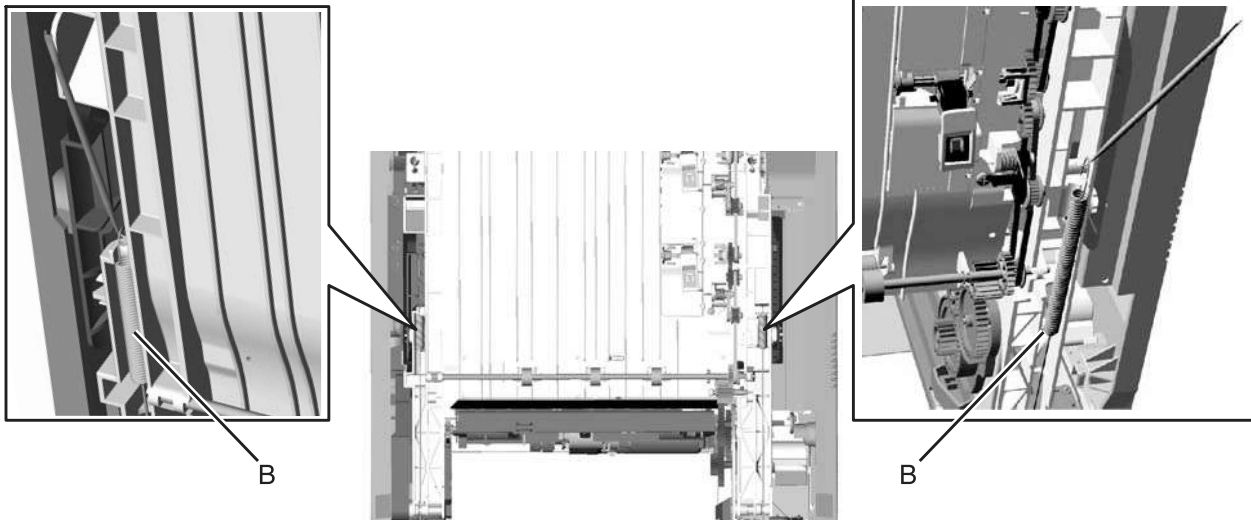
6. Open the front door assembly.

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

C

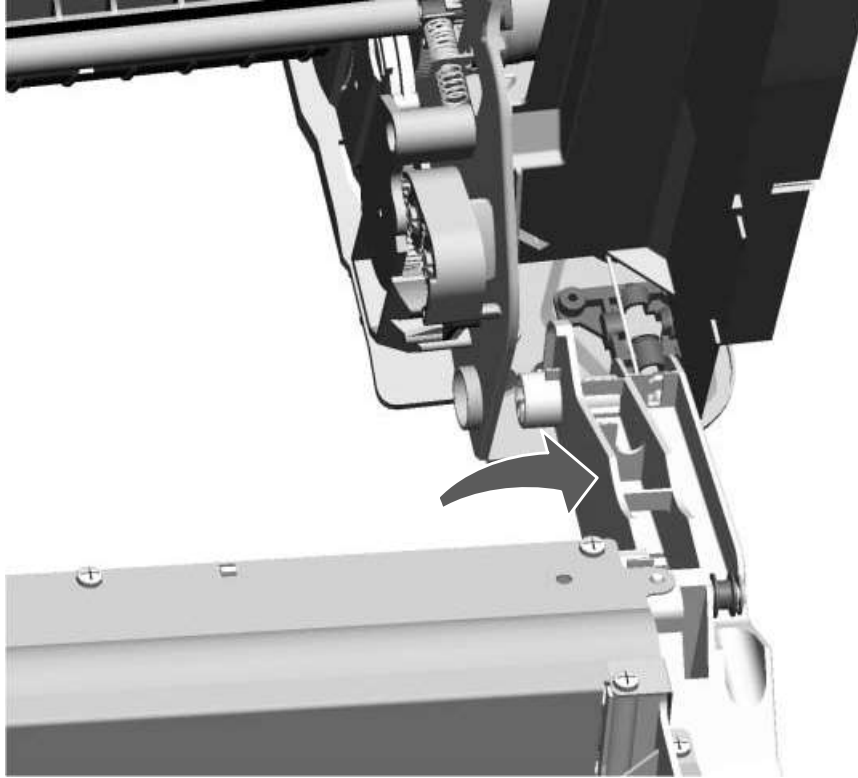**8.** Close the front door assembly, and remove the mounting screw (D) and the cap (E).

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.
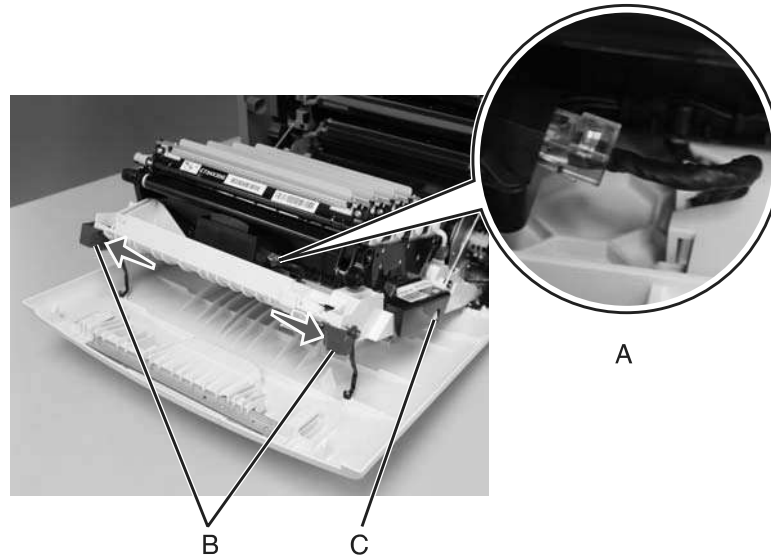
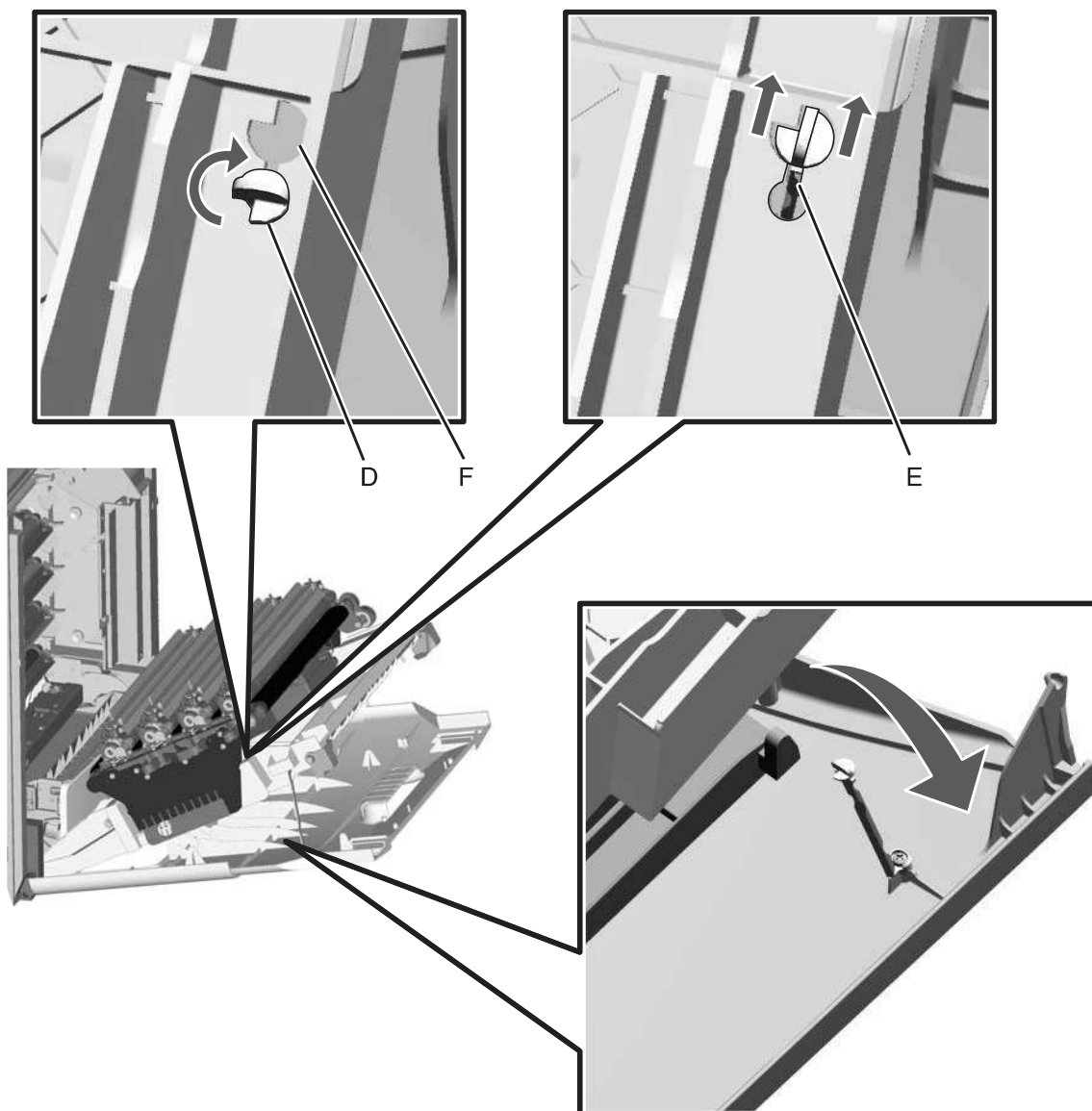## *Front door assembly front cable (left) removal*

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.
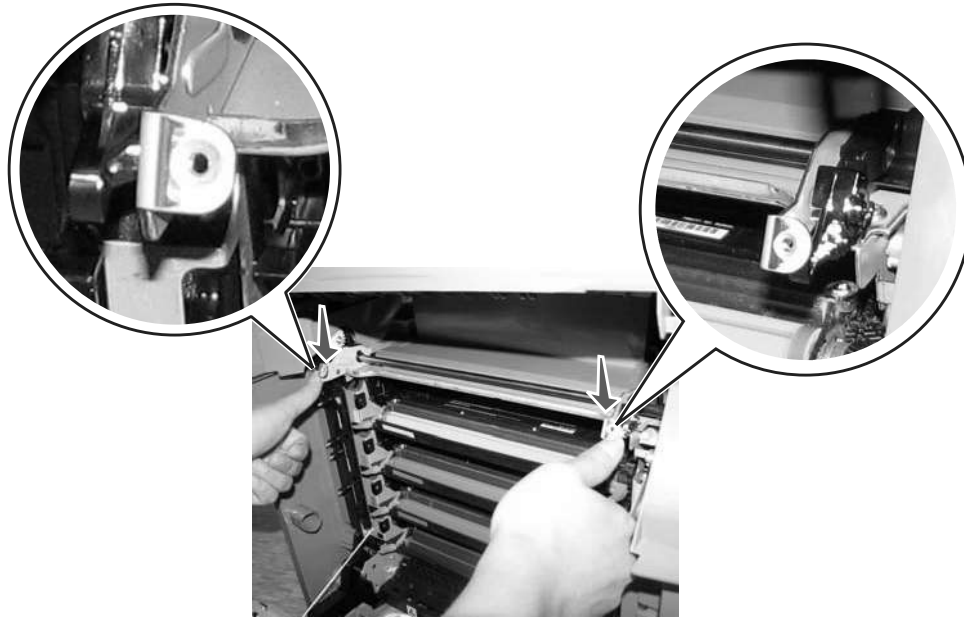
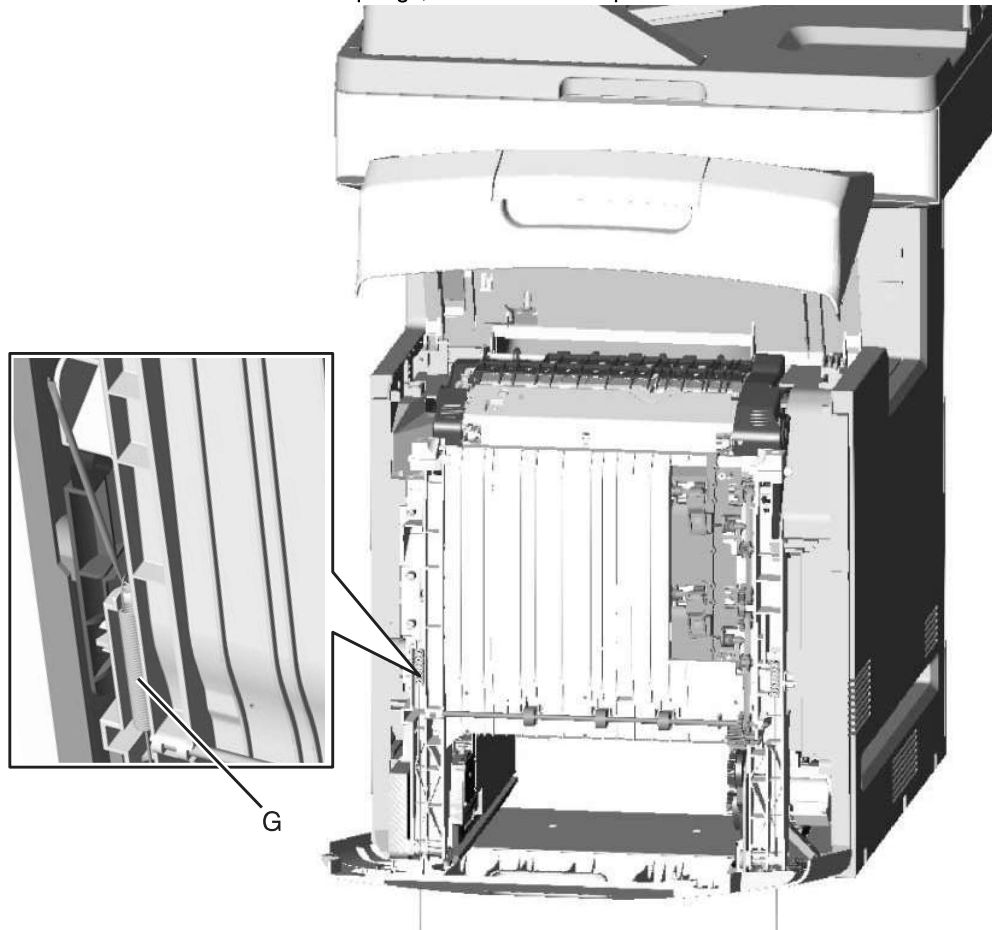D   F   E

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.

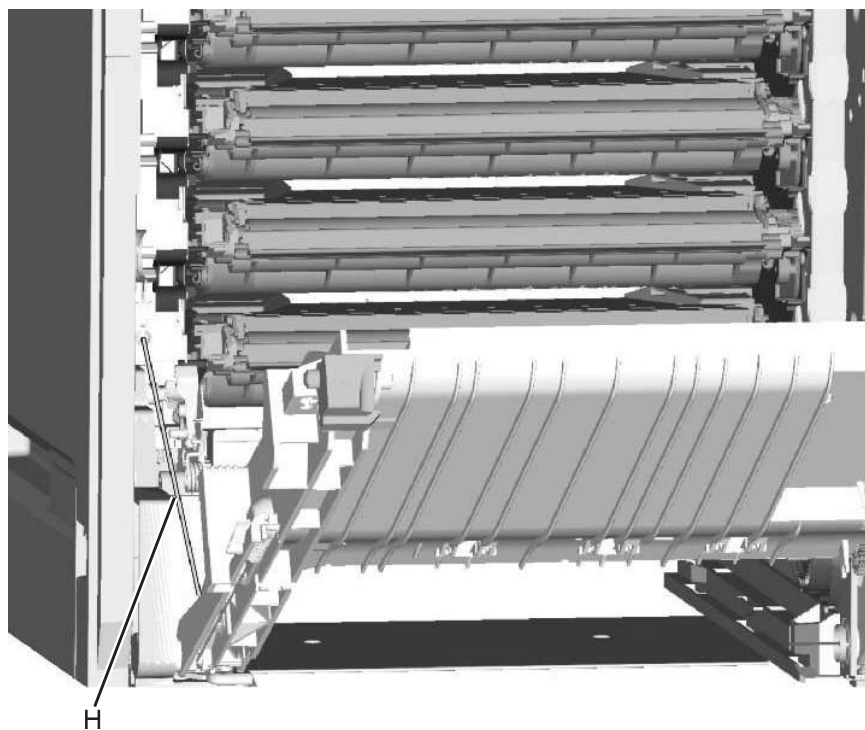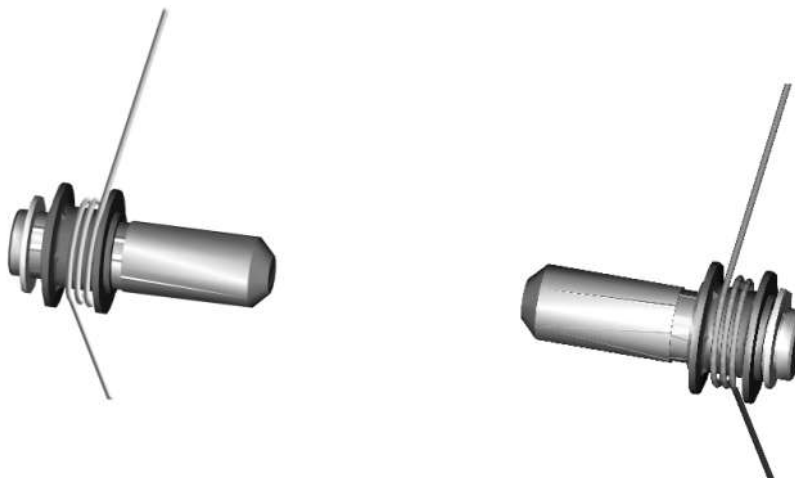**10.** Remove the end of the cable (H) from the frame.

H

Installation notes:

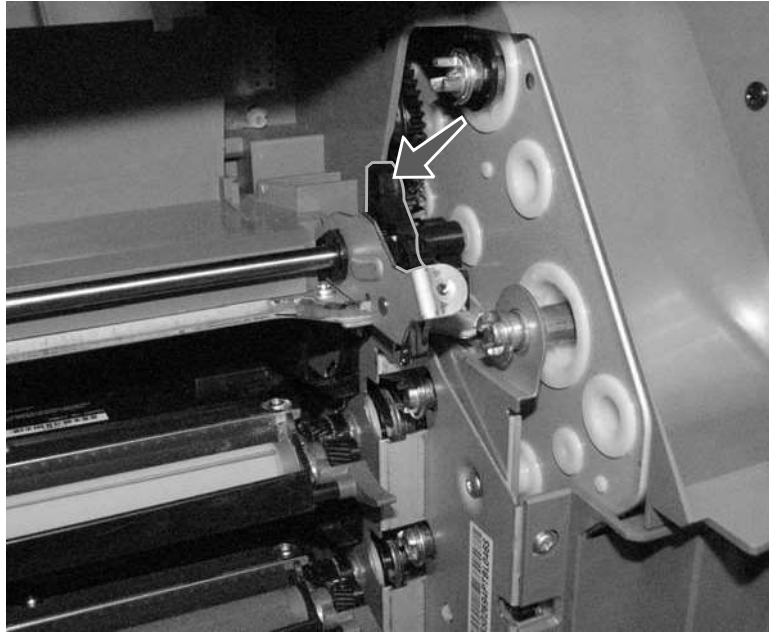• The longer cable installs on the left side of the printer.

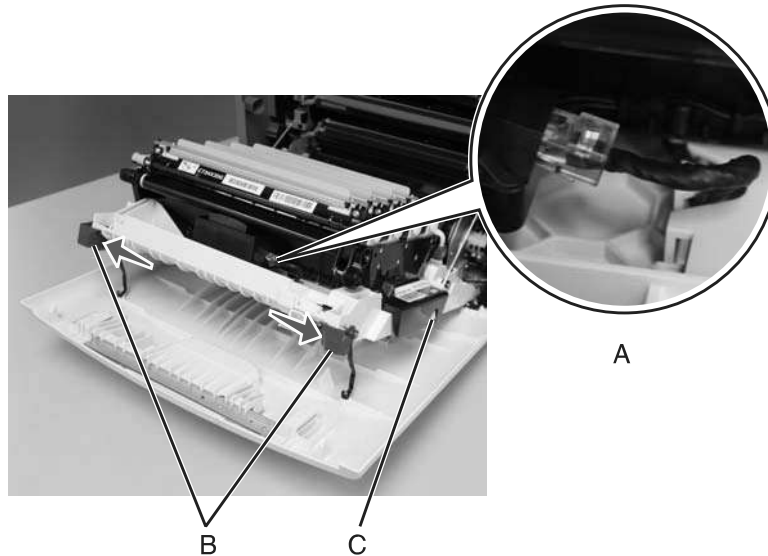• Push down on the lever to raise front door locking mechanism and open the camshaft.

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.

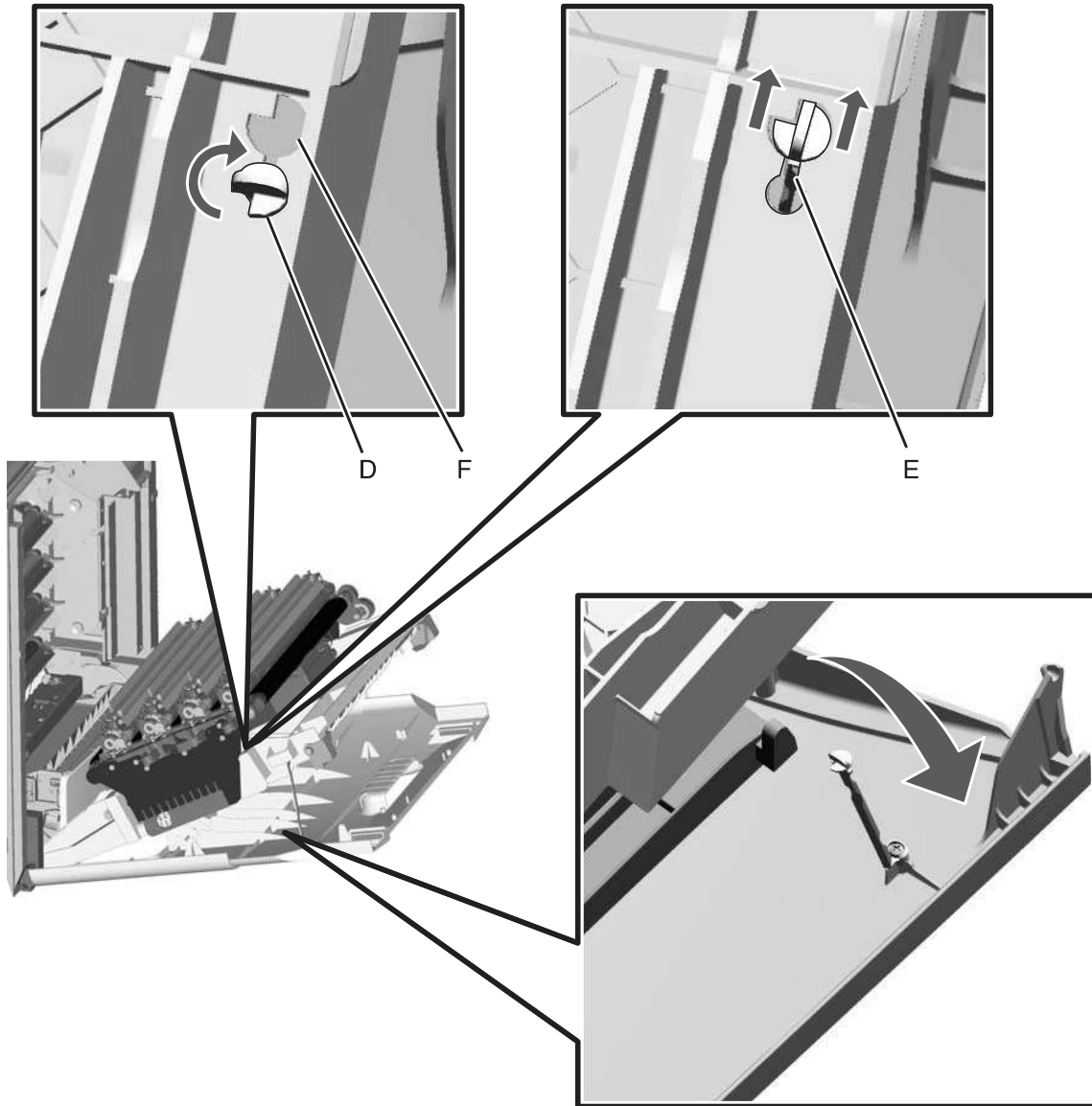**5.** Looking down at the keyed end of the restraint (D), twist the end clockwise, slide the restraint upward through the slit (E), and slip the end of the restraint through the keyed hole (F). Repeat for the other side.

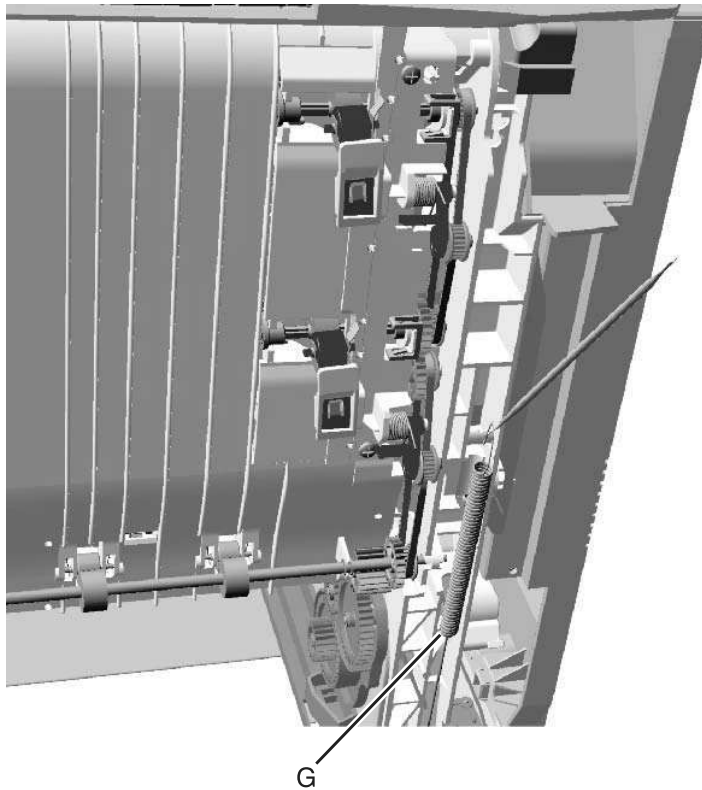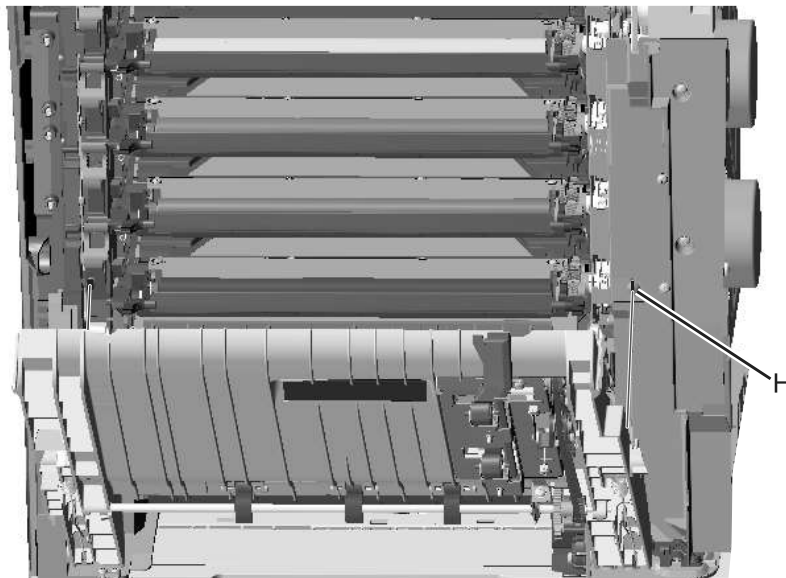D   F   E

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.
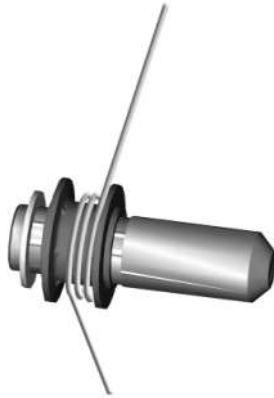

H

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.
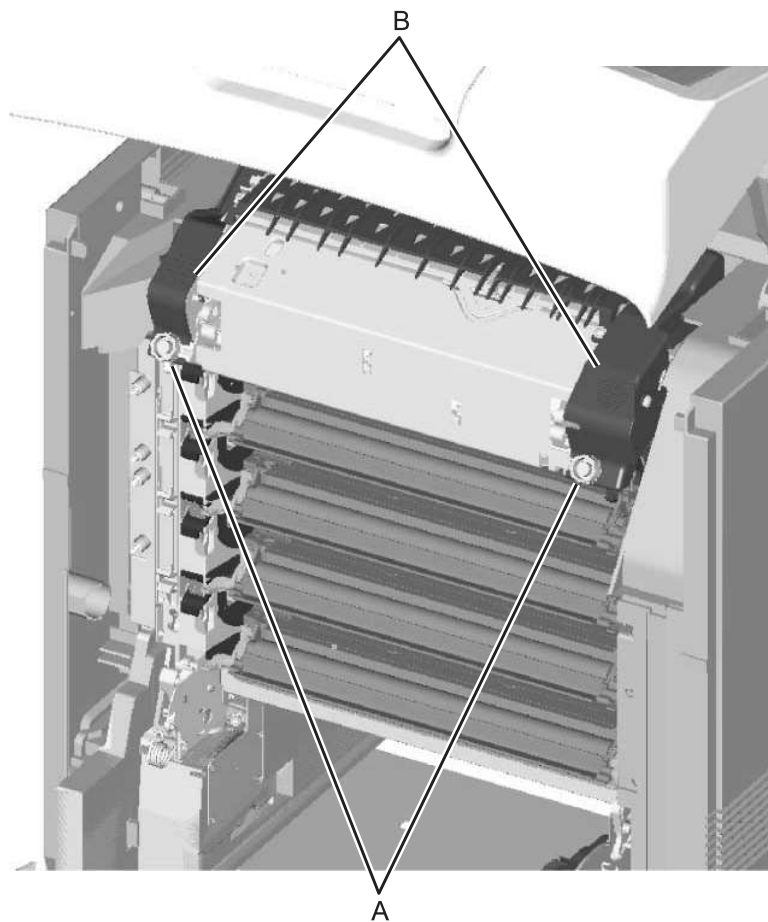
Installation note: If you install a new fuser, be sure to reset the fuser counter in the Configuration Menu. To reset the counter:

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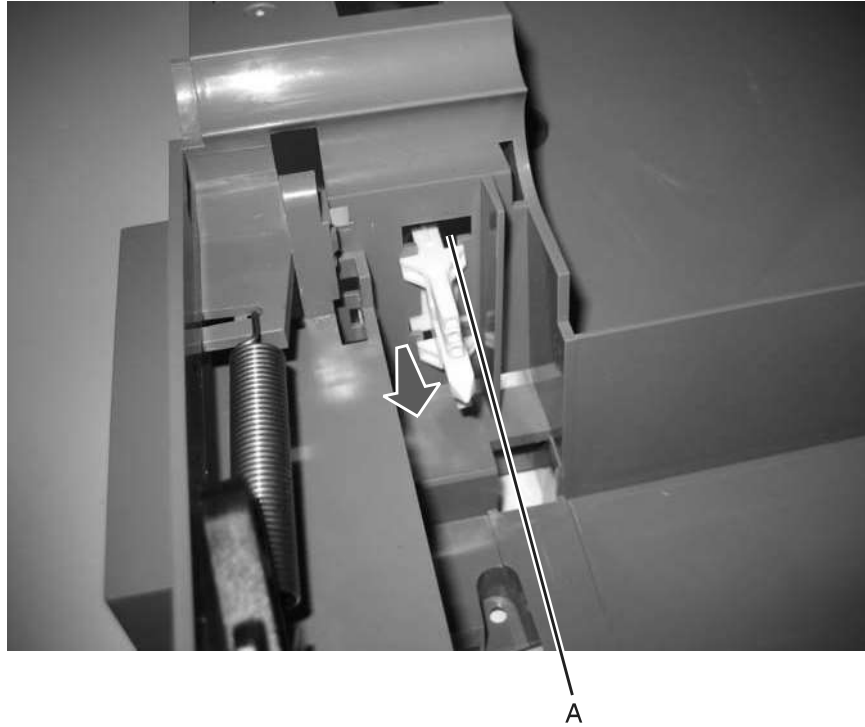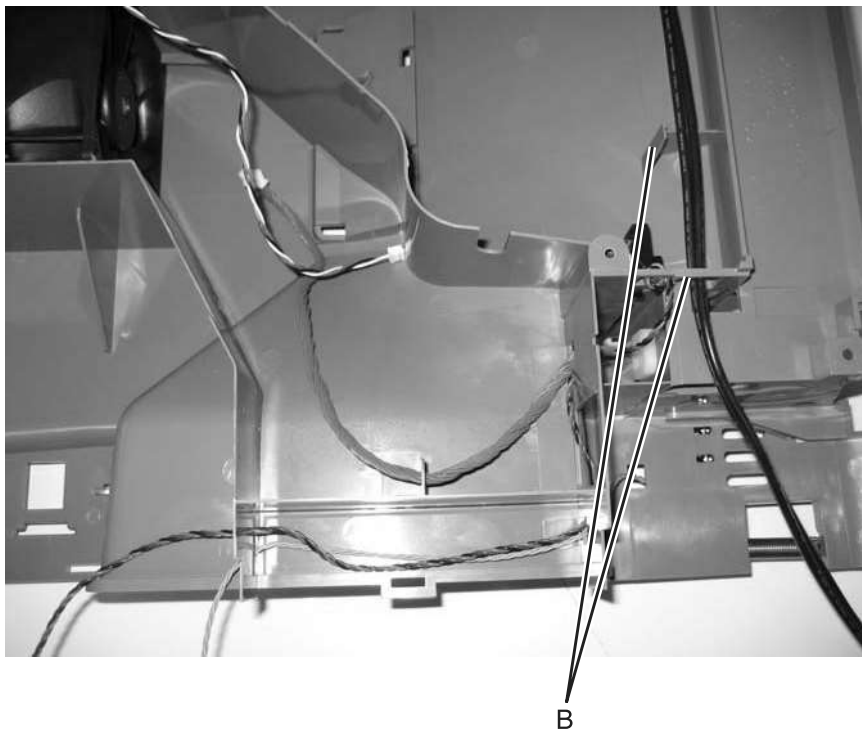
See **"Reset Fuser Count" on page 3-30**.

Fuser AC cable removal
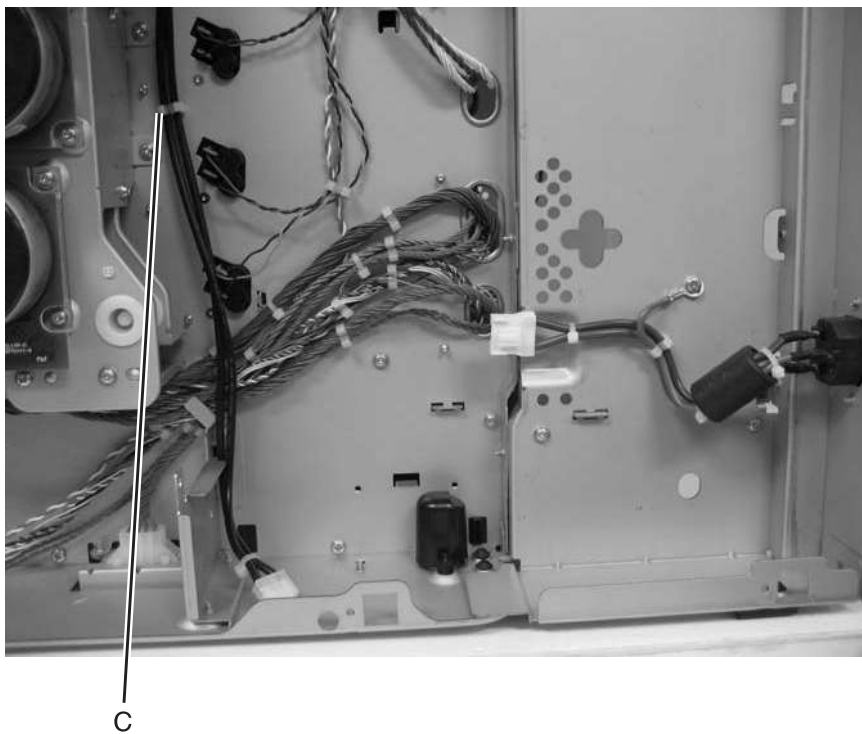
Note: The LVPS to fuser AC cable is black.

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).

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.
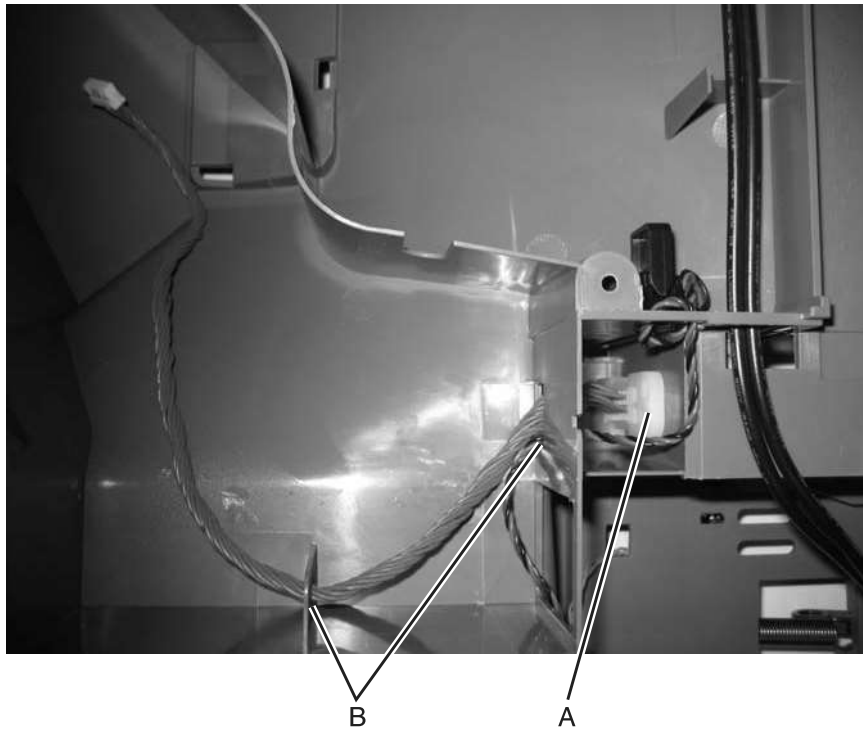
Hard drive assembly removal

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.
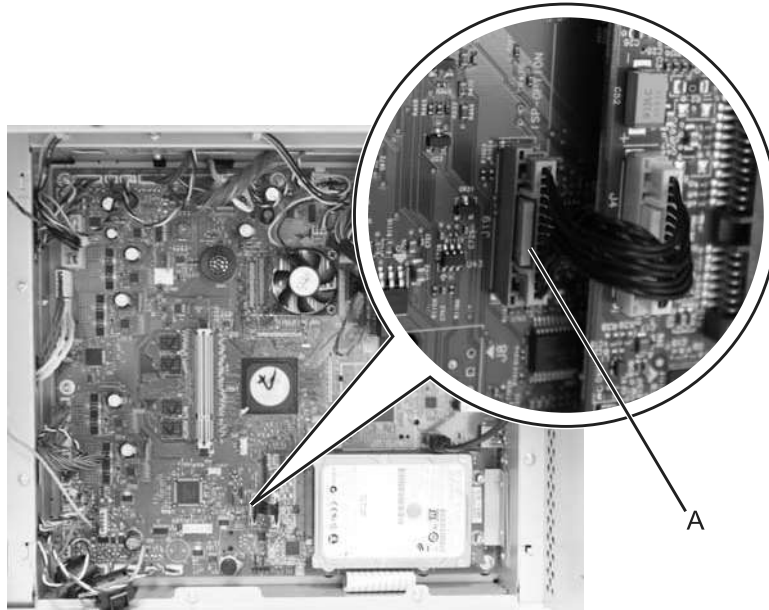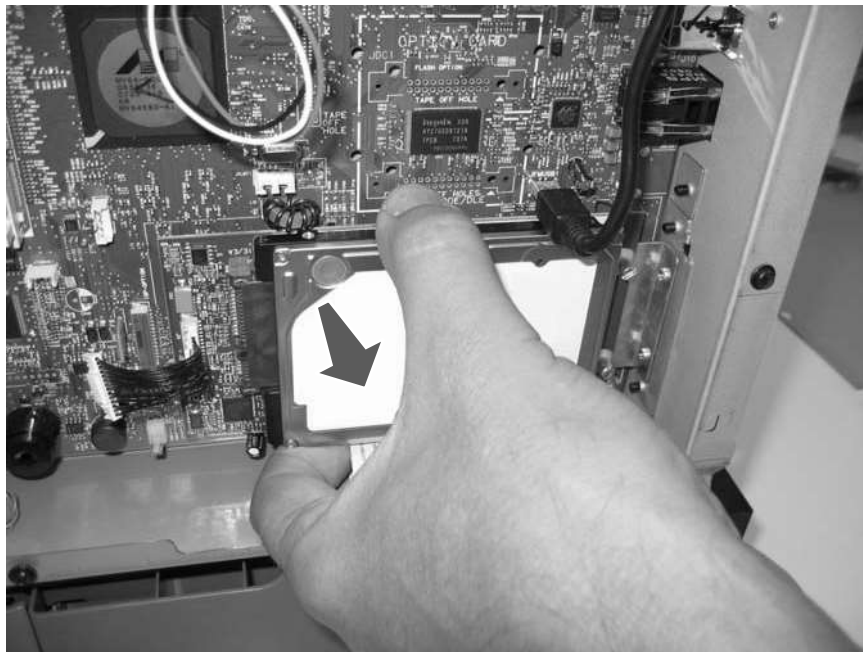
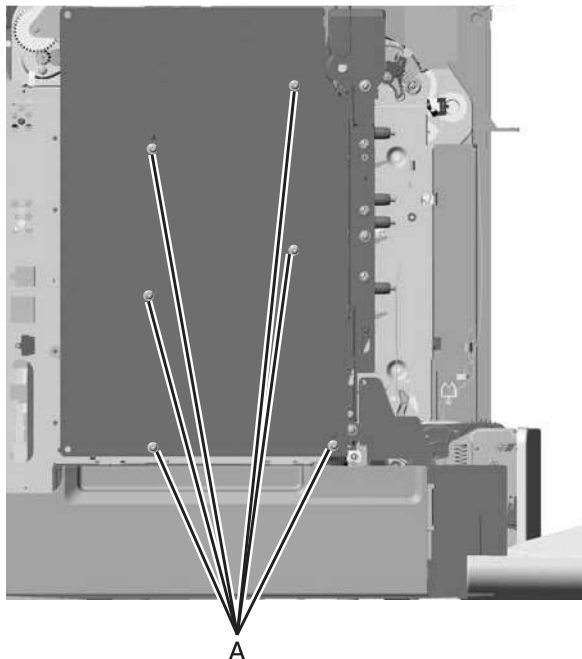**3.** Open the left cover door, and remove the two screws (B).

B

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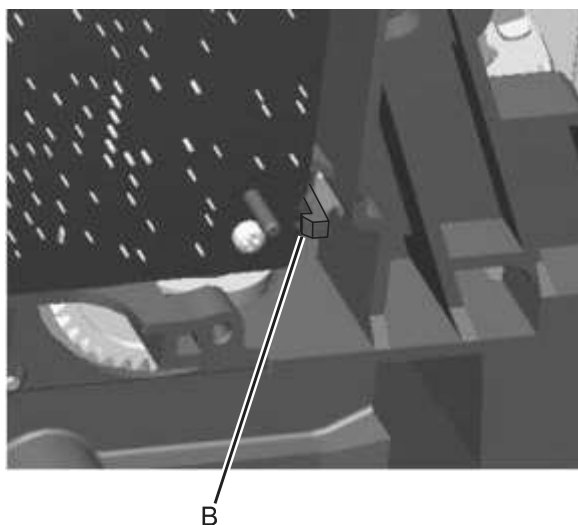
High-voltage power supply (HVPS) removal

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