Print Head Replacement and Adjustment Guide for the CD Printer

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Additional FCC Statement**

Any unauthorized modification to this equipment may result in the revocation by the FCC of the user's authority to operate this equipment.

**Product Safety Statement**

This product is in compliance with UL 1950 3rd Edition.

**Notice for Canada**

**Canadian Department of Communications (DOC) Statement**

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus specified in the Radio Interference Regulations of the Canadian Department of Communications.

**Product Safety Statement**

This product is in compliance with CSA C22.2 No.950.
Description
This guide consists of a set of procedures that describes how to replace and adjust the print head for the CD printers. You should use an anti-static bracelet or another means of grounding yourself when you are performing these procedures.

Caution:
Serious print head or media damage can result from improperly adjusting the print head.

Required Tools
The following procedure to replace and adjust the CD printer’s print head requires a CPR print head replacement kit (210538-001). This kit includes the necessary screwdrivers along with the print head.

Print Head Replacement
Removing the Print Head
1. Make sure the CD drawer is in the out position. If necessary, power up the printer and press the Unit Attention button to open the drawer. See Figure 1.

2. Power off the printer, then disconnect the power cord.
3. Remove the top printer cover by lifting the cover up.
4. If the ribbon is present, remove the Take-up roller by pulling back the Take-up shaft retainer, then lifting up on the Take-up roller. See Figure 2.

1. Place the Take-up roller with the attached ribbon on the table in front of the printer. See Figure 3.

Note: If no ribbon is present, place a piece of paper on the drawer under the print head to protect the print head.
6. Using a T10 Torx Screwdriver, remove the four screws located on the sides of the Print Head cover. See Figure 4.

![Print Head Cover Screws](image)

**Figure 4**

7. Slide the Print head cover towards the back of the printer, then lift up.

8. Disconnect two printer cables located on top of the print head by *carefully* pulling upward. See Figure 5.

![Printer Cables](image)

**Figure 5**
9. While supporting the print head with your hand, use a T10 Torx screwdriver to remove the screws inside the two access holes. These holes are located at the top of the print head pivot arm assembly (see Figure 6). The print head is released from the print head assembly.

![Figure 6](image)

**Figure 6**

10. Remove the print head by sliding it under the print head pivot-arm assembly toward the front of the printer. See Figure 7.

![Figure 7](image)

**Figure 7**

11. Go to “Installing the Print Head,” on page 7.
Installing the Print Head

This procedure should be done after removing the print head. If you have not removed the print head, go to Removing the Print Head on page 3.

1. Power down the printer.
2. With the cable connectors facing up and placed toward the back of the printer, slide the new print head under the print head pivot-arm assembly. See Figure 8.

![Figure 8](image)

3. Plug in one cable to the print head, then use the cable and your hand to hold it into position.
4. Remove the screws from the access holes, then align the Print head holes to the Print head pivot arm assembly.
5. Replace the two screws through the access holes. See Figure 9.

![Figure 9](image)

**Figure 9**

**Caution:**
Handle the print head with care to avoid damage to the printing elements. Do NOT use any objects to prop or position the print head in position.

6. Replace the other printer cable on the print head. See Figure 10.

![Figure 10](image)

**Figure 10**
7. Clean the print head using a cleaning pad with isopropyl. See “Cleaning the Print Head” in the *CD Printer User Guide* for more information.

8. If a piece of paper was placed on the drawer, remove it.

9. Carefully replace the print head cover by replacing the four screws on the side of the cover. See Figure 11.

10. Replace the Take-up roller making sure the ribbon is properly tensioned and no creases exist. See “Installing Ribbons” in the *CD Printer User Guide*.

11. Replace the top cover.

12. Go to the “Print Head Test and Adjustment,” page 10.
Print Head Test & Adjustment

Once a new print head is installed or if an old one is not printing correctly, you need to test and adjust the unit.

Note: This test works best with lacquered discs and ribbon with the part number 201737-006. The print head cover should be removed. If the cover is present, see steps 1-7 in the “Removing the Print Head” section in this guide for more information.

1. If the top cover is present, remove it.
2. Ensure the ribbon is properly tensioned and no creases exist.
3. Power on the printer in “Diagnostics Mode” (hold down the Unit Attention button for at least eight seconds while turning on the power—this will open the printer drawer). See Figure 12.
1. Make sure the Print head cam is positioned correctly with the roller bearing positioned in the valley as shown in the “good position” of Figure 13. If the cam is positioned properly, go to “Cross-hatch Pattern Test,” on page 14. If the cam is not positioned properly, go to step 5.

![Diagram showing cam positions](image)

*Figure 13*

2. If the cam position looks like one of the two positions “bad positions” in Figure 13, go to “Print Head Cam Adjustment,” on page 12. Once the cam is adjusted properly, go to “Cross-hatch Pattern Test,” on page 14.
Print Head Cam Adjustment

The drawer must be in the out position when making this adjustment. If the drawer is not open, run test one.

1. If the printer is not in “Diagnostic Mode,” power on the printer while holding down the Unit attention button for at least eight seconds.

2. Press the Unit attention button five times to run test five. When you press the button for the fifth time, hold the button down until the print head moves. See Figure 14.

![Figure 14](image)

Unit Attention Button

1. Press the Unit Attention button four times to run test four. This will raise the print head to make sure the cam is in the correct position as shown in Figure 13.

2. If the cam is in the correct position, go to “Cross Hatch Pattern Test” on page 14. If the cam is not in the correct position, go to step 5.
1. Loosen left T10 Torx opto plate screw located on the same side as print head cam. See Figure 15.

2. Adjust the plate as required using tests four and five to move the cam.
   If the cam position looks like #1 in Figure 13, you need move the cam upwards. This is done by adjusting the opto plate downward 1/32 of an inch. If the cam position looks like #2 in Figure 13, you need to move the cam downwards. This is done by adjusting the opto plate upward 1/32 of an inch.

3. Tighten the Torx screw when the roller bearing stops at the valley point. Go to the “Cross-hatch Pattern Test” on page 14.
Cross-hatch Pattern Test

1. Place a new disc on the drawer.

2. If the printer is not in “Diagnostic Mode,” power on the printer while holding down the Unit attention button for at least eight seconds.

3. Press the Unit attention button seven times to run test seven. This test will produce a cross-hatch pattern on the disc. (See “Diagnostics” in the CD Printer User Guide for more information on running tests.)

4. Test seven should produce a disc looking like Figure 16. The printer will produce a near-perfect grid. If the test produces a good disc, no adjustment is necessary. Go to Line Test on page 15.

![Figure 16](image)

1. If printed lines from test seven are missing (as shown in Figure 17), go to “Print Head Adjustment” procedure on page 17.

![Figure 17](image)

*Note: The cross-hatch pattern test must look like Figure 16 before going to the Line Test procedure.*
Line Test

1. Place a new disc on the drawer.
2. If the printer is not in “Diagnostic Mode,” power on the printer while holding down the Unit attention button for eight seconds. See Figure 18.

![Figure 18](image)

Unit Attention Button

Figure 18

1. Once you are in diagnostic mode, press the Unit Attention button eight times to run test eight. This test will produce lines on the disc as shown in Figure 19. Only check the first four lines from the top. The printer will print each line from the top progressively darker. The darkest line will be at the bottom.

Note: See the CD Printer User Guide for more information on running diagnostic tests.

![Figure 19](image)
4. If the test produces a good disc, no adjustment is necessary. Go to Step 8 of the “Installing the Print Head” procedure on page 7.

If the test produces a bad disc, go to step 5 in this procedure.

5. The first four lines should be solid lines. The rest of the lines can show melting. If the first four lines look like those shown in Figure 20 or there are dark lines inside the horizontal bars, follow the “Print Head Adjustment” procedure on page 10 until the printed disc looks like Figure 19.

![Figure 20](image-url)
Print Head Adjustment

**Caution:**
Serious print head or media damage can result from improperly adjusting the print head.

1. With the print drawer open, power off the printer.
2. If top cover is present, remove it.
3. If the print head cover is present, remove the four screws, then pull the cover towards the back of the printer then pull up to remove it. See Figure 21.

![Figure 21](image)

1. With the ribbon installed, power on the printer in Diagnostics Mode (hold down the Unit Attention button for at least 8 seconds while powering on the printer).
2. Place a CD on the drawer, then press the Unit Attention button two times to run test two. This test positions the drawer in the center of the print head.
3. Press the Unit Attention button five times to run test five. This test lowers the print head onto the CD.
4. With the print head down, pull back on the Take-up Shaft Retainer, then remove the Take-up roller. The Take-up roller should be placed on the table in front of the printer. See Figure 22.

![Figure 22](image)

1. With a 3/32 ball-end hex Allen wrench, loosen the brass set screw on the front of the print head 1/8 of a revolution counterclockwise (which will control the print head pitch). See Figure 23.

![Figure 23](image)
9. Tighten the brass set screw on the back of the print head pivot arm assembly 1/8 of a revolution counter-clockwise. This will raise the back of the print head.

10. Tighten the front set screw until it is snug making sure there is a slight space between the CD and the print head.

11. Make sure the new position of the dowel pin does not prevent the print head bracket from pivoting freely upward and downward. Then tighten the dowel pin screw.

12. Replace the Take-up roller back to its original location. See Figure 22.

13. Power on the printer in Diagnostics Mode (holding down the Unit Attention button for at least 8 seconds).

14. Press the Unit Attention button once to run test one. This test will lift the print head up and cause the drawer to move out.

15. Place a new disc on the drawer.

16. Run test seven or eight again (depending on what test you were doing). If the results do not appear as shown in Figure 16 or Figure 19, go to step 1 in the “Print Head Adjustment” procedure on page 17. Repeat the test until the disc looks like Figure 16 and Figure 19.

17. After adjusting the print head and running test seven or eight with the correct pattern on the disc, go to step 8 of “Installing a Print Head” procedure on page 7.