TECHNICAL DOCUMENT

Canon PC-1060, L-50 Toner Cartridges

DOC-0293

OVERVIEW

Released in December 2001, the Canon PC-1060 copiers are Canon's first digital copier series for personal use, and are the first models in their next generation of PC copiers. While Canon has not said so, it is very possible that they will replace the E-40 cartridge based machines. So far two models are available, the PC-1060 and the PC-1080f, which is also a fax machine. Neither machine has pc printing capability. These machines are based on the Canon LBP-32X (HP-2100) engine. The 96A cartridge and the L-50 cartridge look similar but are not interchangeable with out modification. I will discuss this later in the article. Both machines run at 13 copies per minute, and come standard with a 30 sheet Automatic Document Feeder (ADF). The paper trays in both machines are nice in that they hold a full ream (500 sheets) of paper. The only unique feature that both machines have is the ability to collate two different copies on to one page. This feature is easily accessible by pressing a single button on the keypad. As stated above, the one limiting factor is that neither copier has a printer interface. With all the other digital copiers in the market place now that do, this in my opinion is a huge mistake. Sharp is selling a lot of machines because they both print and copy.

If you haven't seen or opened one of these machines yet, they are a little different. On the top left side of the copier, there is a lever that allows the entire top to slide to the left. Once the top is over, on the right side the top cover folds out allowing access to the cartridge. See Figure #'s 1 & 2

FIGURE 1

FIGURE 2

In our testing so far, the supplies for the HP-2100 cartridge work fine in the L-50 cartridge. In fact, an HP-96A cartridge can be modified to work in these machines fairly easily. This should be helpful, as L-50 core supplies will probably be limited for a while. One note of caution though, you may have noticed that the newer 96A cartridges no longer come with a toner low sensing bar. (Metal bar located under the Magnetic Roller sometimes known as an antenna). If you need to modify a 96A cartridge to work as an L-50, this bar MUST be present. If not, the machine will not accept the cartridge, and will not print. See Figure's 3 & 4. The other difference between the two cartridges is the placement of the plastic fin on the top of the cartridge. On the L-50, the fin is on the right side, on the 96A, it is on the left. It is not hard to cut the fin off and glue it down on the right. See Figure #'s 5 & 6. Make sure you use ABS pipe glue (available from most plumbing supply stores) This is the only glue we have found to hold cartridge

plastic (ABS) properly. These fins engage a switch in the copier, that lets it know that the cartridge is present. We are currently designing a new replacement fin that can be used in both the 96A, and L-50 cartridges. See Figure #7

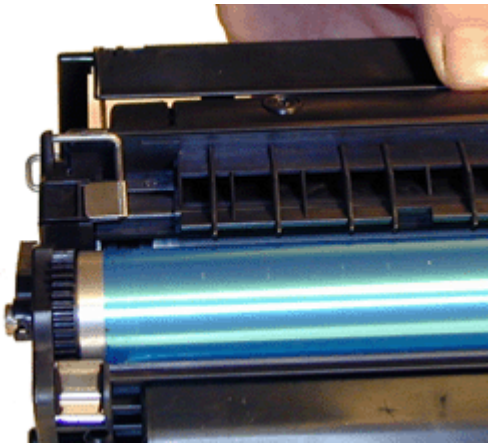

FIGURE 3

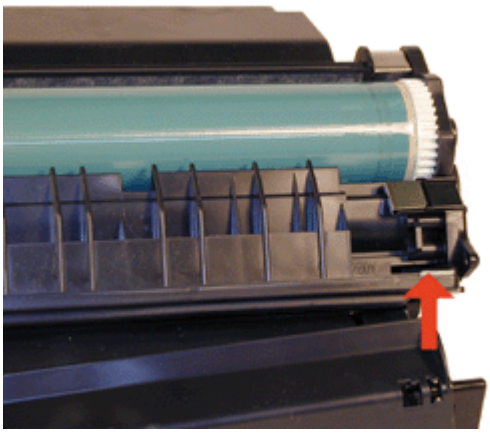

FIGURE 4

FIGURE 5

FIGURE 6

The L-50 cartridge is rated for 5,000 pages at 5% coverage, and sells for Approximately $150.00. The street price for the PC-1060 is $640.00. (Both prices as of January 2002).

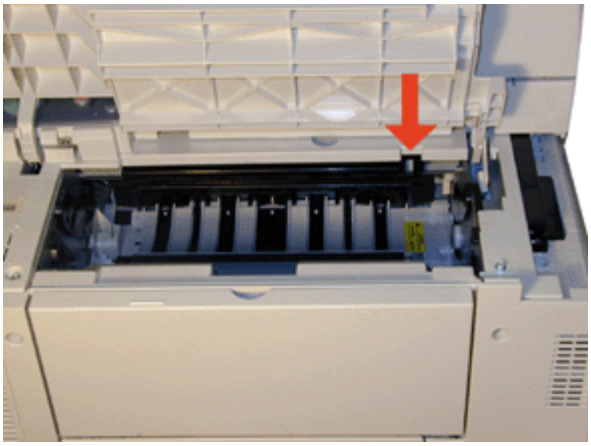

FIGURE 7

REQUIRED TOOLS

- Toner approved vacuum.
- A small Common screwdriver
- A Phillips head screwdriver
- Needle nose pliers

- Wire Cutters
- 1/16" or smaller punch

REQUIRED SUPPLIES

- Toner 225g HP-2100 type
- HP-2100 OPC Drum
- HP-2100 Wiper Blade
- HP-2100/4000 Magnetic Roller Sleeve [Optional]
- HP-2100/4000 Doctor Blade [Optional]
- HP-2100/4000 PCR [Optional]
- HP-2100/4000 seal and seal foam if you are splitting the hopper
- Replacement cartridge pins: "Easy out" type. Same as HP-2100
- 99% Isopropyl Alcohol
- Magnetic Roller Cleaner
- Kynar Padding Powder
- Nu-Finish car polish
- Conductive Grease
- ABS pipe glue (for modification of 96A cartridge only)

DISASSEMBLY

1. Place the cartridge with the drum side up. Note on each end of the cartridge, there are small silver pins. To separate the two halves these pins must be removed. Like all other cartridges with this type of pin, these pins cannot be pulled out, or pushed in from the outside of the cartridge. The only way to disassemble the cartridge without damaging it is to push the pins out from the inside. To do this, both the OPC Drum and PCR must first be removed. Replacement pins are available that can be removed from the outside.

2. With the pair of needle nose pliers, remove the Metal Axle pin located on the right side of the cartridge. Remove the two screws and the plastic drum end cap from the left side of the cartridge. See Figure's 8 & 9

3. Remove the Photoconductive Drum being extremely careful not to scratch it. If the drum is in good shape and you plan to re-use it, blow off any toner and debris from drum being careful not to let the air gun come in contact with the drum surface. Do not polish or wipe the drum with a dry cloth since this may scratch the drum. See Figure 10

4. Carefully remove the Primary Charge Roller (PCR), by gently prying it out of the clips on either end. Be careful as the PCR Holders come loose easily!! Place the PCR aside. See Figure 11

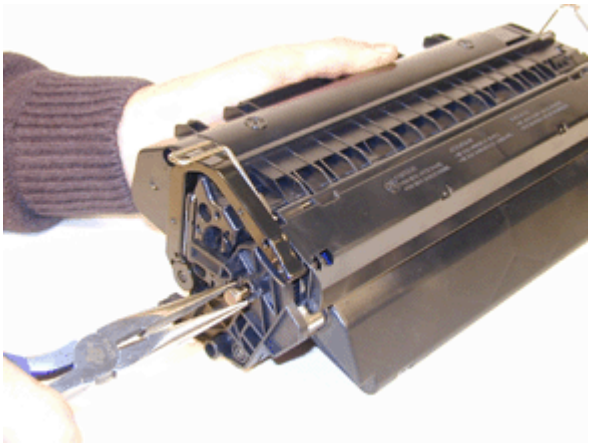

FIGURE 8

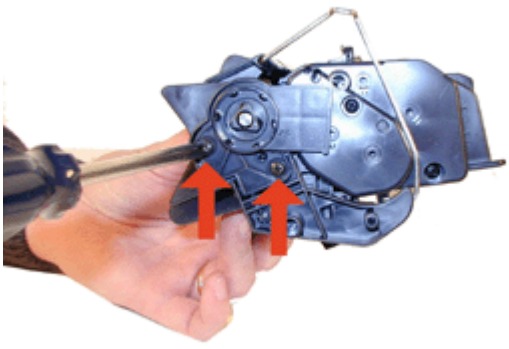

FIGURE 9

FIGURE 10

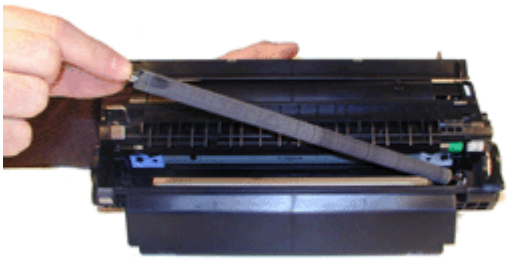

FIGURE 11

5. Take the small punch or a small screwdriver, and gently press both of the metal pins out from the inside of the cartridge. To make this process easier, push the pins out 1/2 way, and pull them out from the outside with needle nose pliers or wire cutters. See Figure 12 & 13

6. Separate the two halves.

7. Clean the PCR.

   WARNING: Do not clean the OEM PCR with alcohol, as this will remove the conductive coating on the roller. IF the PCR is an after market, follow the cleaning methods recommended by the manufacturer. If the PCR is an OEM, we recommended that it be cleaned with a PCR Cleaner. We have been using Nu-Finish car polish on our OEM PCR's for years with no problems. To clean the roller with the Nu-Finish car polish, apply a small amount and buff with a clean lint free cloth until the roller is clean and shines. If the roller is damaged, or worn out it should be replaced with a new roller (HP-4000 type).

8. Remove the two screws and the Wiper Blade. Clean the toner out of the waste chamber. See Figure 14

   NOTE: Be very careful not to damage or distort the thin Mylar Recovery Blade next to the wiper blade. If this blade is bent or damaged in any way, it should be replaced.

9. Due to the aggressive nature of the toner used in these cartridges, we recommend that the Wiper Blade be replaced each cycle. Lightly coat the new blade with Kynar drum padding powder. Replace the Wiper Blade into the cartridge. See Figure 15

   NOTE: We do not recommend using Zinc Sterate on this cartridge, as it will stick to the PCR and cause small white voids in the printed characters.

   Before any parts can be removed from the supply chamber, the Drum Cover must be taped fully open. Other wise the Drum Cover will have to be removed which is a fairly tedious process that is not really necessary if you are careful.

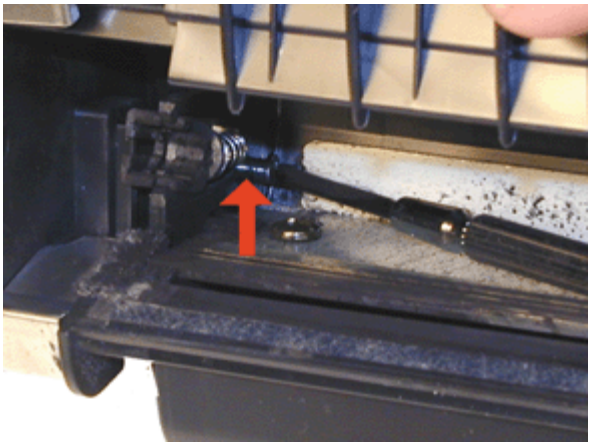

FIGURE 12

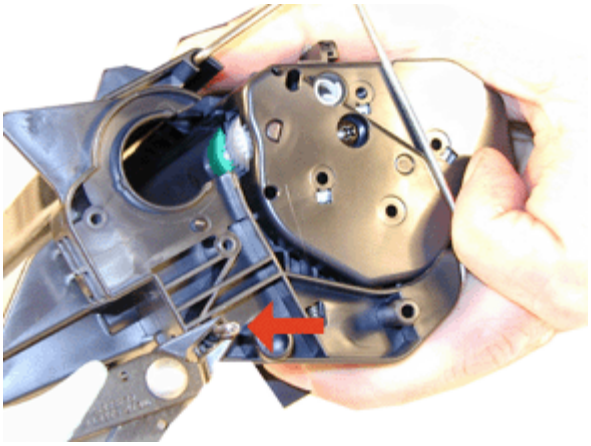

FIGURE 13

FIGURE 14

FIGURE 15

10. Tape the drum cover open. Remove the two screws that hold the gear housing cover on the right side of the cartridge. Be very careful not to damage any of the pins on this cover when it is being removed. See Figure's 16 & 17

11. To remove the magnetic roller, first remove the remaining end cap by removing the two screws, and pressing in on the tab. Carefully lift the roller out of the cartridge. Be very careful not to damage the wire contact at the opposite end of the roller. See Figure's 18 & 19.

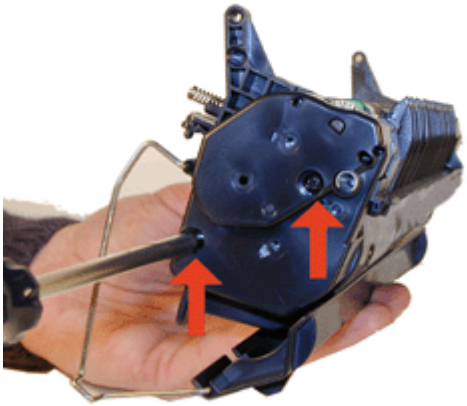

FIGURE 16

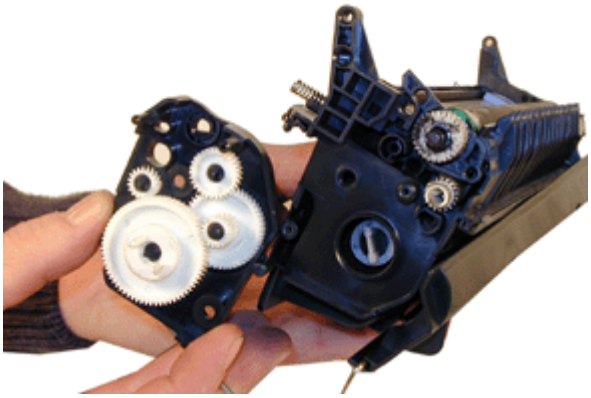

FIGURE 17

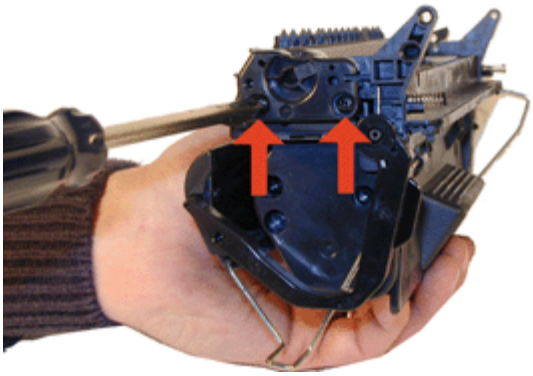

FIGURE 18

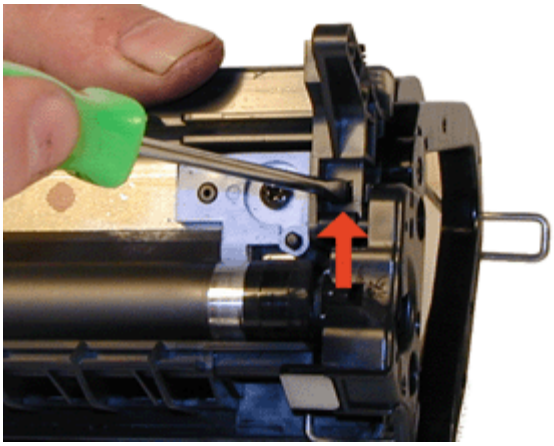

FIGURE 19

12. Remove the doctor blade by removing the two screws and lifting it out straight up. When removing this blade, be very careful not to break the alignment pins. These pins keep the doctor blade at the proper distance from the magnetic roller. Make sure that the spacers stay in place also! See Figure's 20 & 21

13. Vacuum the Toner Supply Chamber thoroughly.

    Note that these cartridges do not use Magnetic roller felts. As with all of the newer Canon cartridges, they have small curved magnets to contain any toner that may try to migrate past. See Figure 22.

14. If you are going to split the hopper do so now. Your Hp-2100 tooling and procedures will work. If not, fill the hopper with 230g of toner through the magnetic roller opening. See Figure 23

FIGURE 20

FIGURE 21

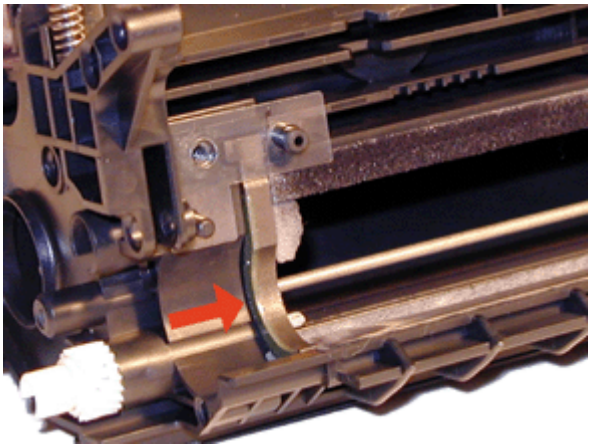

FIGURE 22

FIGURE 23

15. Inspect the End Caps on the Magnetic Roller Sleeve Make sure they are not cracked. If they are cracked, they will tear the coating off of the OPC drum. See Figure 24

16. To change the Magnetic Roller Sleeve, press the magnet from the gear side until the white bushing pops out from the other side. Slide the Stationary Magnet out from the old sleeve and into the new. Place the two end caps black on the contact side green on the gear side, bushing, and gear on the new sleeve**.** Clean the contact spring of the magnetic roller, and the contact-side end cap with the alcohol. Coat the contact side end cap with a small amount of conductive grease. See Figure's 25, 26, & 27.

FIGURE 24

FIGURE 25

FIGURE 26

FIGURE 27

17. Install the new Doctor Blade, If the clear spacers are lost, make sure that the new Blade came with them attached. Conversely, if the new Dr. Blade has spacers, make sure that you remove the OEM spacers. Only have one set of spacers should be installed! See Figure 28

18. Install the small end cap and two screws, making sure the metal contacts are clean first. Place a small amount of conductive grease on the contact surface. See Figure # 29

19. Install the Magnetic Roller Assembly, Hub, gear, and large end cap. Spin the roller a few times in the proper direction to make sure all is aligned properly. (Make sure the Spring Contact is clean and not bent) See Figure # 30

20. Install the large end cap and two screws. Make sure the gears are clean. See Figure # 31.

FIGURE 28

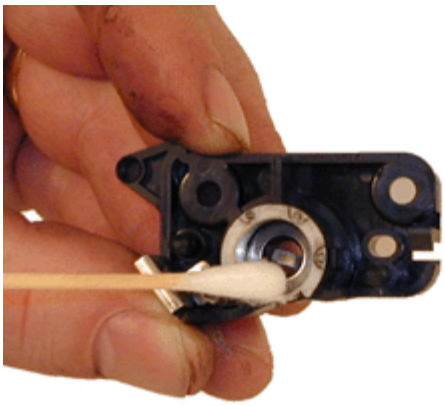

FIGURE 29

FIGURE 30

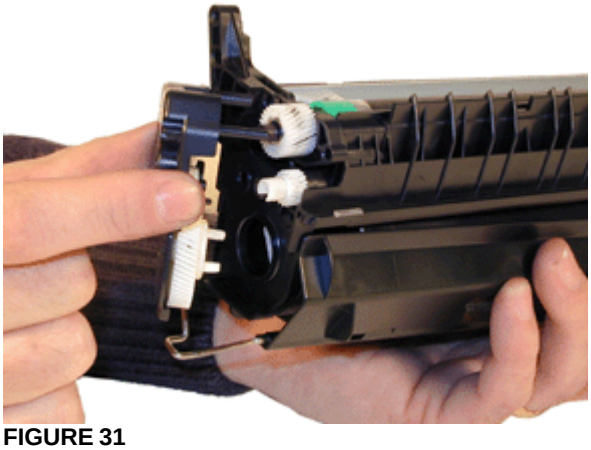

FIGURE 31

21. Clean the PCR silver contact ends along with the U-shaped contacts with the Isopropyl Alcohol. These are electrical contacts and must be clean in order for the cartridge to print correctly. Be very careful not to get the alcohol on the rubber part of the PCR as this will remove the conductive coating, ruining the PCR. See Figure 32

22. Replace the cleaned Primary charge roller. See Figure 33

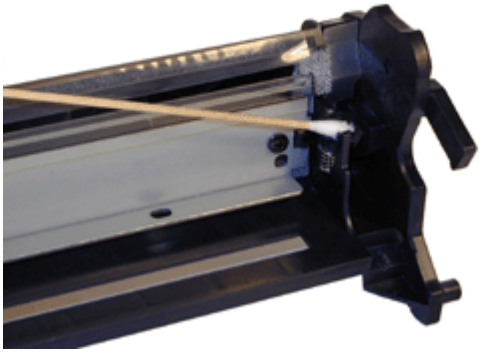

FIGURE 32

FIGURE 33

NOTE: IF the PCR is an OEM, proper care of this roller entails cleaning with a PCR cleaner. As stated before, we use NU-Finish on OEM PCR's, if the PCR is an after market, you should follow the cleaning procedures of the manufacturer.

Coat the OPC Drum with the Kynar, and replace the OPC Drum, metal axle, and plastic Axle Pin. Do not install the screws yet. See Figure's 34, 35, and 36

It is highly recommended that the OEM Drum be replaced with a new long life drum. Testing has shown that the OEM normally will not last a full second cycle.

23. Manually spin the OPC drum in the proper direction (towards the edge of the wiper blade), to make sure everything is properly lubricated. If the drum binds, remove it and coat the wiper blade and drum with Kynar again. Once the drums spins properly, install the last two screws in the end cap.

24. Place the two halves together, and insert the two silver pins. New replacement pins are available that can be removed from the outside. See Figure 37

FIGURE 34

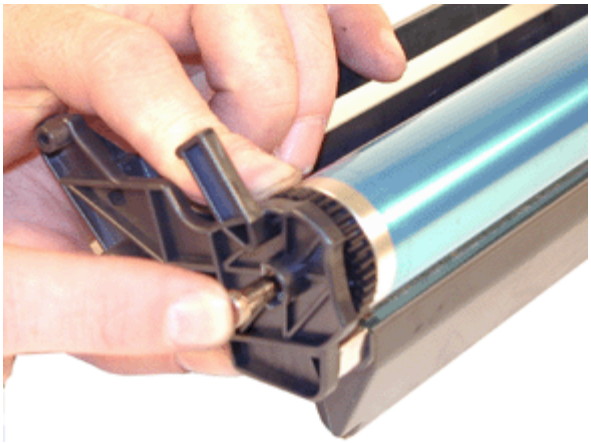

FIGURE 35

FIGURE 36

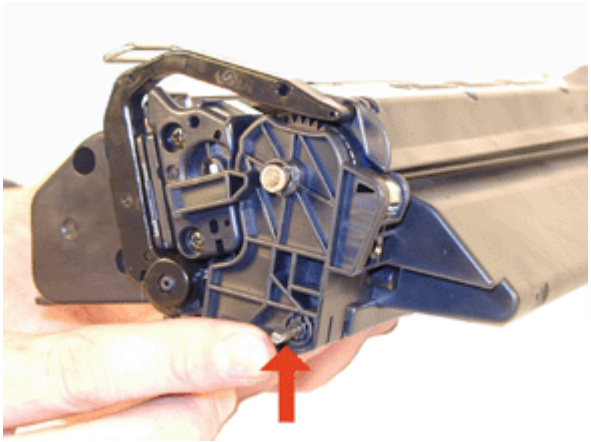

FIGURE 37

COPIER MAINTENANCE

Transfer Charge Roller: In the base of the copier, is the Transfer Charge Roller. This is a foam roller that must be kept clean. Be very careful not to touch this roller with any part of your skin. The oils naturally present in your skin, paper dust, or toner dust, can contaminate the roller, causing light print and/or small white voids in the text. The best way to clean these rollers is with a toner-approved vacuum.

Anti-Static Teeth: Located just behind the transfer charge roller assembly is the Anti-Static Teeth Blade. This blade dissipates the static charge applied by the Transfer charge roller from the paper. This helps prevent the paper from sticking to any of the rollers and causing a paper jam.

Dirty ADF Roller: If copies come out dirty only when using the ADF (Automatic Document Feed), the Platen Roller in the ADF is dirty. For the ADF roller, follow the second procedure as listed below.

CLEANING THE MACHINE

There are two built-in cleaning functions on these printers; the first is for cleaning the rollers inside the copier. (Fuser, registration, Transfer etc.)

NOTE: The LCD display on these machines can be very hard to see depending on the light in the room. We found it best to view the display at an angle.

To do this press the Additional Functions button

Use the left or right arrow to select ADJUST/CLEAN

Press SET

Use the Left or Right Arrows to select ROLLER CLEANING.

Make sure there is letter size paper in the MANUAL FEED TRAY

Press SET

The machine will run the cleaning process

The second cleaning process is for the ADF roller. NOTE: this function will not work if paper is jamming in the ADF.

To clean the ADF roller, press the Additional Functions button

Use the left or right arrow to select ADJUST/CLEAN

Press SET

Use the Left or Right Arrows to select CLEAN ADF ROLLER.

Open the ADF

Press SET

Each time you press SET, the Platen roller rotates 1/3 of the roller. Clean any debris off the Platen Roller with a clean dry cloth.

Continue pressing SET and cleaning the roller until it is completely clean.

Press STOP/RESET to finish the cleaning process

The interior of the machine is tight to get into, but should be cleaned and maintained the same as you would an HP-2100. At this time we do not know if any printer parts are interchangeable with the HP-2100.

CHANGING THE COPIER'S DENSITY

These copiers come with the exposure setting defaulted to Automatic. To change the setting to manual, press the Exposure button, the PLUS or MINUS button, and SET to complete.

There is also an Image Quality setting that can be set to Text, Text/Photo or Photo by pressing the Image Quality button.

CARTRIDGE TROUBLE SHOOTING

Broken top Fin: If the Plastic fin on the top right side of the cartridge is broken, the display will read INSTALL CARTRIDGE. See the text and pictures at the beginning of this article for more information.

Bent or missing Toner low sensing antenna: If an L-50 cartridge is installed, the bar may not be making contact with the copier. Bend the bar back into position. If you have modified a new style HP-2100 cartridge, the bar may be missing. See the text and pictures at the beginning of this article for more information.

A dirty or Bad Primary Charge Roller (PCR): located Inside the cartridge, this will show on the test print as vertical gray streaks down the page, as a gray background throughout the page, or as ghosting where part of a previously printed area is repeated.

Dirty PCR Connection: This will show as horizontal dark black bars across the page, or as shading throughout the page.

Scratched Drum: This is shown by a very thin, perfectly straight line that runs from the top to the bottom of the test page.

Chipped Drum: This will show as a dot or series of dots that repeat 3 times per page. Any drum defects will repeat 3 times per page based on the drum circumference of 3.66".

Light Damaged Drum: This will show up as a shaded area on the test print that should be white. Again this will repeat 3 times per page.

Worn-Out Drum: This will usually show up as shading on the right side of the page. It will usually start right from the edge of the page, and work in towards the center. The pattern will normally look like tire tracks.

Bad Wiper Blade: This will show as either a gray line approximately 1/8" thick, or as shading across the entire page. In either case there will be a film of toner on the drum surface that matches the defect.

RECOMMENDED SUPPLIES

Microsoft OLE DB Provider for ODBC Drivers error '80004005'

[Microsoft][ODBC Microsoft Access Driver]General error Unable to open registry key 'Temporary (volatile) Jet DSN for process 0x3464 Thread 0x231c DBC 0x8437024 Jet'.

/script/catSearch.asp, line 58