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## Samsung ML-1210 / Lexmark E-210 Toner Cartridges

DOC-0288

### OVERVIEW



First released in July 2001, the Lexmark E210, Samsung ML-1010, 1210, 4500, and 4600 printers are all based on the Samsung ML-1210 12 ppm, 1200 dpi engine.

The various models listed all use the same supplies to recycle, however we cannot confirm that they are all interchangeable. The Samsung versions have proved very difficult to find. See Figure 1 for the Lexmark Version. The cartridge is an All in one type cartridge, (it houses the toner supply, OPC drum, and waste chamber). The standard cartridge comes new with 65g toner, and is rated for 2,500 pages at 5% coverage.

The Samsung part # is ML-1210D3/XAR (ML-4500D3 for the ML-4500/4600)

The Lexmark part # is 10S0150

These cartridges are unique in a number of different ways, the first is that they do not have a drum cover, and come new with a piece of heavy paper taped around the cartridge. (See Figure 2) Second is that they do not use a seal. (All new cartridges opened so far have shown some toner leakage that would have shown on any prints). Lastly there is a screw on the top center that is a "One Way" Security type screw. This screw calls for a special driver to remove it, unfortunately these screws seem to be a specialty item made for Lexmark. It can also be done with wire cutters, not as neatly, but not that hard to do either. This will be gone over later in the procedure.



FIGURE 1



FIGURE 2

The Starter cartridge that comes with the Printer has two major differences from the replacement cartridge. 1) These cartridges do not use a "One Way" security screw, and 2) they have a fill plug. The replacement cartridge has a plastic wall in place of the fill plug that is held in place by another "One way" screw. Clearly the replacement cartridges were designed to annoy Re-manufacturers. See Figures 3, 4, and 5.



FIGURE 3

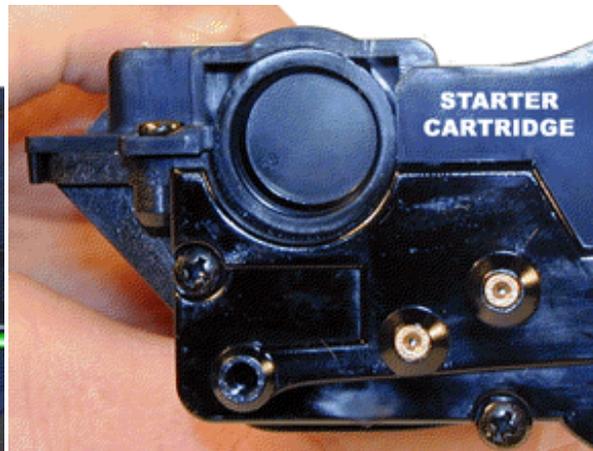


FIGURE 4

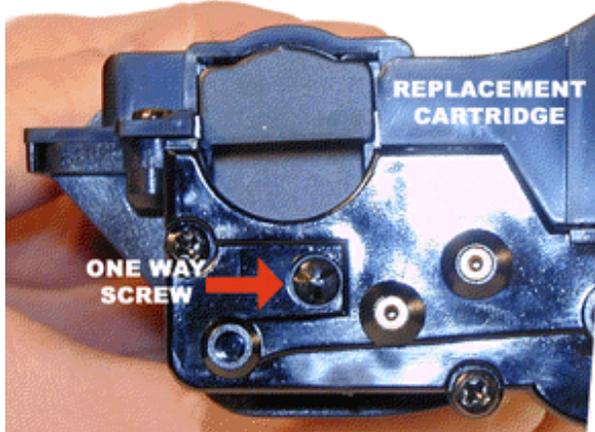


FIGURE 5

The entire waste system in this cartridge is similar to the P8e. The waste chamber is very small and the wiper blade is very flimsy. Unlike the P8e, the wiper blade also has a foam PCR cleaner attached to it. This cartridge is listed as having a 100% transfer efficiency. Since there is a waste chamber and wiper blade present, that is clearly not the case, but from what we have seen, it is very close. These cartridges also have the same PCR problems as the P8e, so it would be wise to have a few spare new PCR's in stock.

The printers themselves can be easily modified to allow testing of all the different versions of these cartridges. See the printer modification section at the end of this article.

## REQUIRED TOOLS

- Toner approved vacuum.
- A small Common screw driver
- A Phillips head screwdriver
- Needle nose pliers
- Security screwdriver (If available), or flush cutting wire cutters

## REQUIRED SUPPLIES

- 65g TonerNew PCR (Optional)
- New Mag Roller sleeve (Optional)
- New Drum (Recommended)
- New Wiper Blade (In development)

**NOTE:** The OEM wiper blade will usually last one cycle with no problems. As stated above, the biggest problem with these cartridges is the OEM PCR.

## DISASSEMBLY

1. Place the cartridge with the handle facing up. Remove the 4 top corner screws. See Figure 6
2. Also on top of the cartridge in the center, is the security screw. We are continuing to try and source the driver bit for these screws. We have contacted numerous companies that specialize in security screws; no one has ever seen a screw like this! At this time it is safe to say that a driver for these screws is not available. Lexmark Strikes again! The best way to remove the screw at this time is to take the pair of flush cutting wire cutters, and cut the plastic ring around the screw away. Grab the screw with the cutters, twist and remove. Not a pretty solution, but effective. We are continuing to look for a driver and will send out a news release when we find them. See Figure's 7 & 8

The screw looks like it takes a "Tri-Wing", or "Tri-Groove" tool, it doesn't. It is actually almost a REVERSE combination of the two. Instead of being recessed, it is raised, with small recesses on top.

3. Underneath the handle of the cartridge, there are 2 plastic tabs GENTLY press them in, and pry the cover off. See Figure 9

**CAUTION:** The upper half of the toner hopper is being removed. If there is a lot of toner left in the hopper, it can dump out all over! Vacuum the hopper clean.



FIGURE 6



FIGURE 7

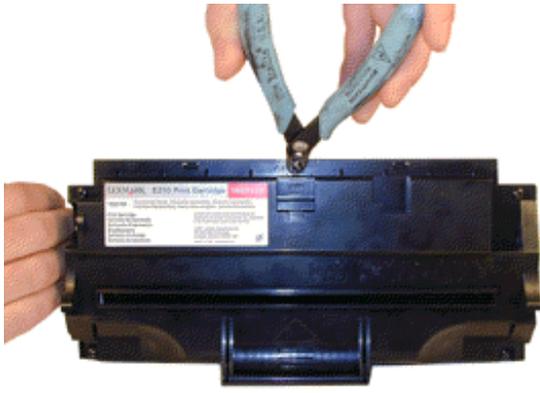


FIGURE 8

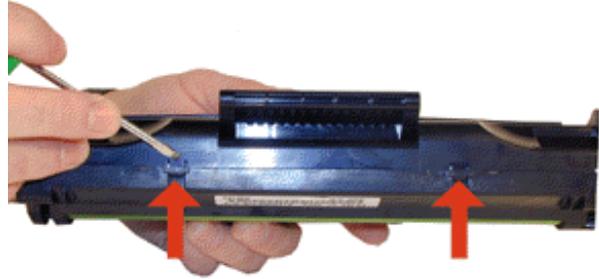


FIGURE 9

4. Remove the two screws on the metal brace, and the brace. See Figure 10
5. With the toner hopper facing away from you, remove the three screws on the right side end cap. Remove the end cap. See Figure 11 & 12
6. Also on the right side there is a series of gears under the end cap. Make a note of the location of each gear. If you are careful, it is not necessary to remove them. See Figure 13

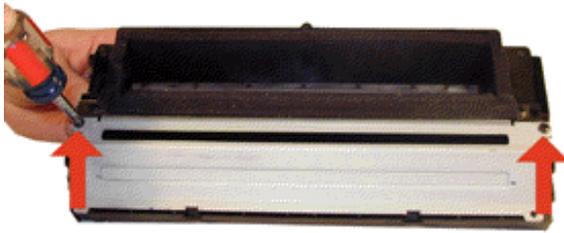


FIGURE 10

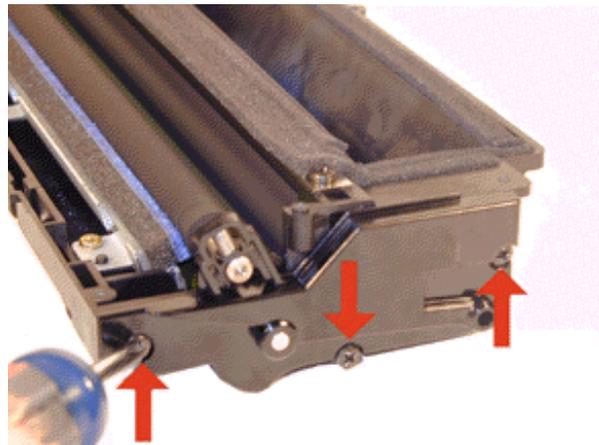


FIGURE 11



FIGURE 12

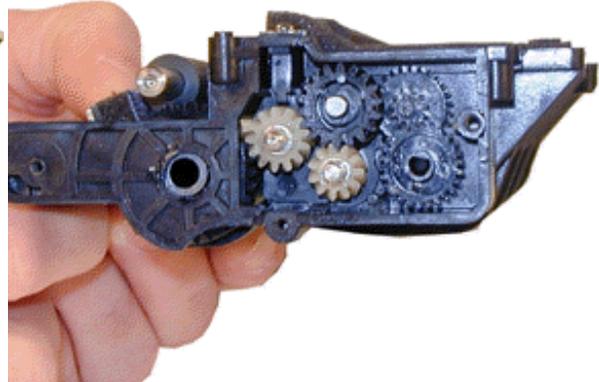


FIGURE 13

7. Remove the PCR. Figure 14
8. Clean the PCR with your normal PCR cleaner.

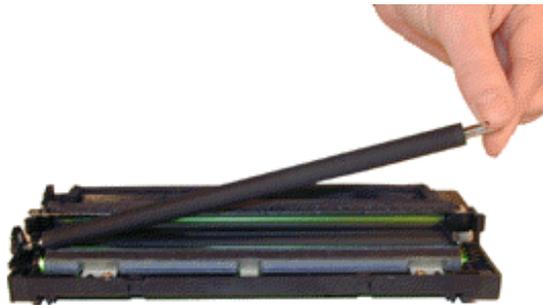
**WARNING:** Do not clean the OEM PCR with alcohol, as this will remove the conductive coating on the roller. IF the PCR is an after market, follow the cleaning methods recommended by the manufacturer. If the PCR is an OEM, we recommended it be cleaned with your standard PCR cleaner

9. With the toner hopper away from you, remove the three screws on the left side end cap. Remove the end cap. See Figure 15
10. There are 2 screws on the Wiper Blade/PCR cleaner Assy. Remove them and gently pry the blade up. Be very careful not to break off the alignment tabs. We have found it best to lift up from both sides when removing this blade. See Figures 16 & 17

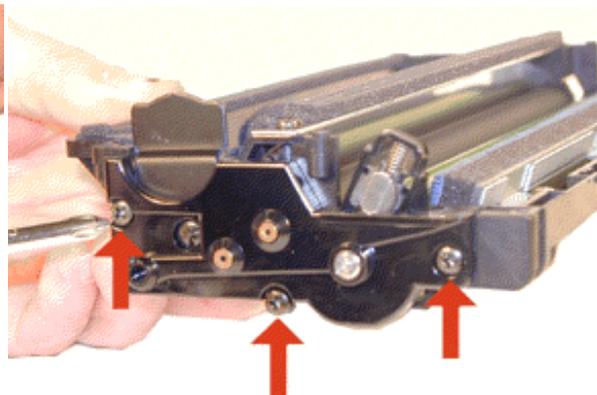
**NOTE:** As stated in the beginning of this document, the Wiper Blade in this cartridge is very flimsy. It actually looks more like a doctor blade than a wiper blade! Since the transfer efficiency of this cartridge is very high. The wiper blade does not work as hard as in a normal cartridge. Since it is so delicate, we recommend that it be changed each cycle.

It is also very important that the PCR cleaner be cleaned. Vacuum or blow off any residual toner from the foam.

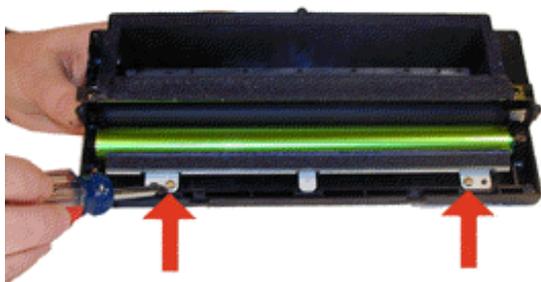
**NOTE:** Be very careful not to damage or distort the thin Mylar Recovery Blade next to the wiper blade. If this blade is bent or damaged in any way, it should be replaced.



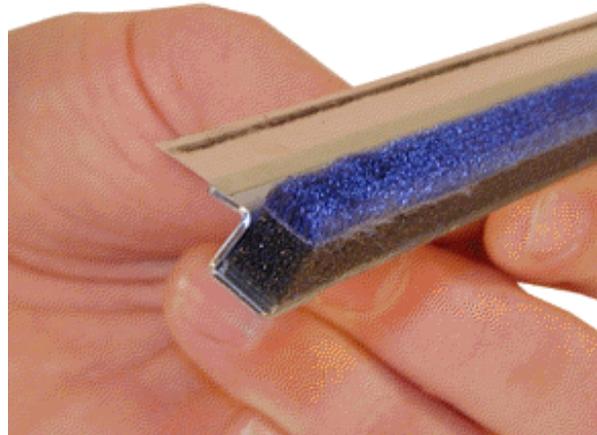
**FIGURE 14**



**FIGURE 15**



**FIGURE 16**



**FIGURE 17**

11. With the Wiper Blade removed the drum can easily be removed by lifting it out. See Figure 18
12. Clean out any remaining toner from the cartridge.
13. Remove all the Gears from the right side. See Figure 19
14. Press in on the top tab of the roller plate to release it. See Figure 20
15. Press in on the bottom tab of the roller plate to release it. See Figure 21



FIGURE 18

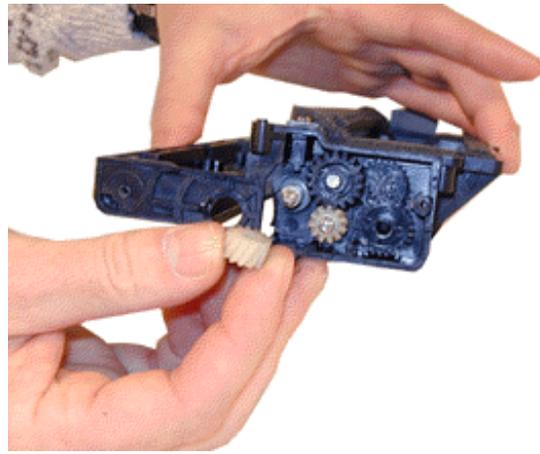


FIGURE 19

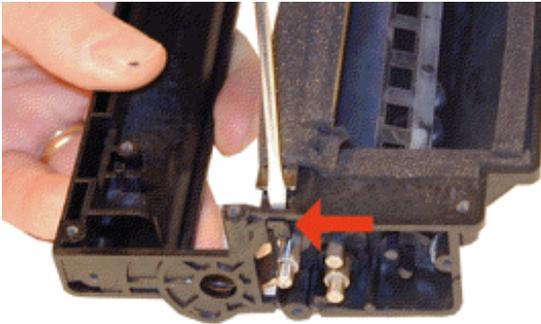


FIGURE 20

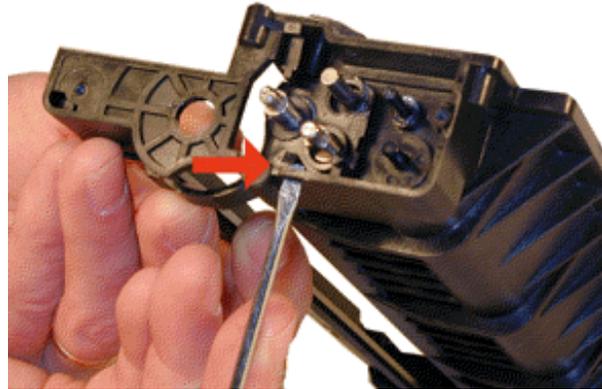


FIGURE 21

16. Gently pry out the roller plate from the cartridge. See Figure 22
17. Remove the Developer Roller. Be careful not to lose the spring on the opposite side of the roller.
18. It is highly recommended that the Doctor Blade be cleaned. Failure to do so will cause streaking. The Doctor Blade can be cleaned with out removing it. Dampen a cotton swab with alcohol, and clean the blade. Be careful not to press too hard and damage the blade. If the blade has a heavy buildup of toner on it, clean it with Acetone, and then alcohol. Removing the blade is difficult because of the foam seals attached. If the seals are torn, the cartridge will leak. That is why we do not recommend it. Once replacement Dr. Blades are available, they will have to come with replacement foam. See Figure 23
19. Replace the Developer roller, roller plate and gears. If no grease is left or it is contaminated with toner, clean it all off, and replace it with white lithium grease. Be sure to clean and grease the gear shafts, and inside the gear.
20. Replace the spring on the opposite side of the cartridge. See Figure 24
21. Install the cleaned wiper Blade/PCR cleaner Assy. and two brass colored screws. See Figure 25

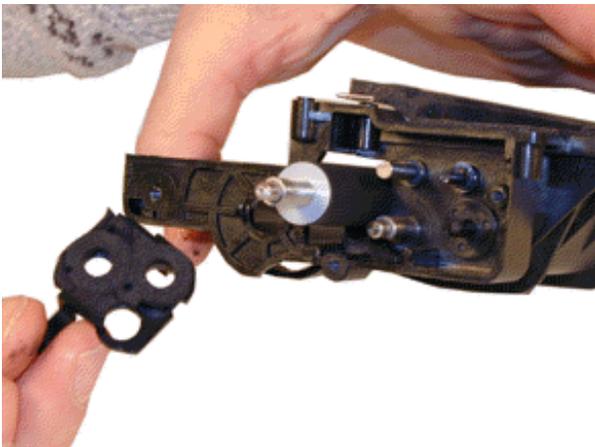


FIGURE 22



FIGURE 23



FIGURE 24



FIGURE 25

22. Install the drum back in place. See Figure 26
23. Replace the left side end cap and three screws. See Figure 27
24. Install the PCR. See Figure 28
25. Install the right side end cap and screws. Make sure the PCR fits correctly in its holder. See Figure 29



FIGURE 26

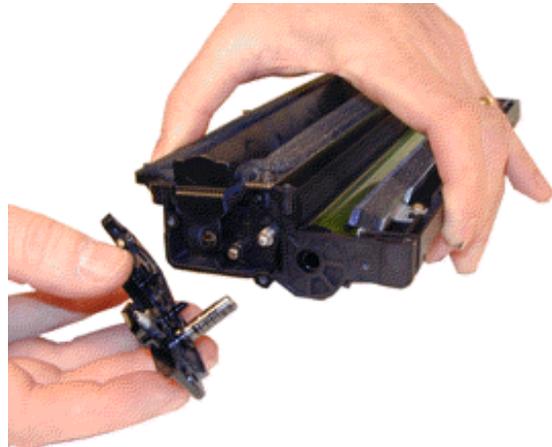


FIGURE 27



FIGURE 28

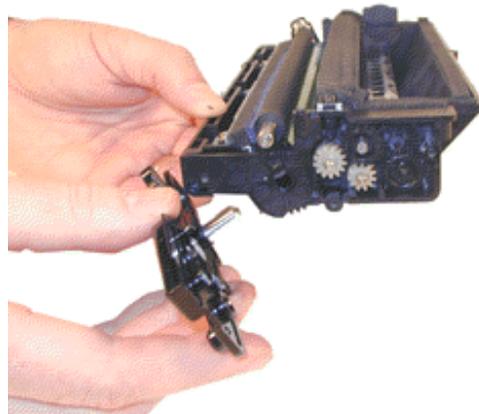


FIGURE 29

26. Replace the metal brace and two screws. See Figure 30

27. Fill the hopper with 65g of the 210 toner. See Figure 31
28. Carefully snap the cover on making sure all the tabs lock in place. See Figure 32
29. Install the five screws in the top cover. It is not recommended that the security screw be reused, unless you have the driver. Normal Canon screws work fine.



FIGURE 30



FIGURE 31

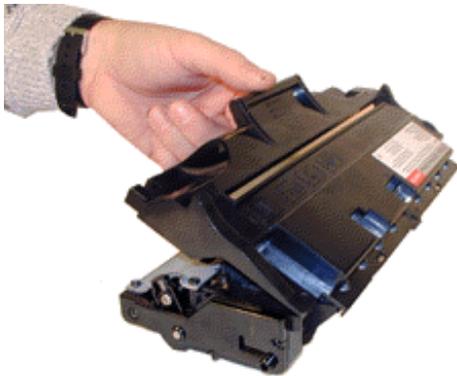


FIGURE 32

## PRINTING A TEST PAGE



Once the machine has warmed up and is ready, press and hold the right button down until all the lights flash. A demo page will print out that also has the printer configuration,(Page count, Memory etc).

## COMMON CARTRIDGE PROBLEMS



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, as ghosting where part of a previously printed area is repeated, or as a mark that repeats every 37mm.

**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 every 75mm.

**Light Damaged Drum**; This will show up as a shaded area on the test print that should be white. Again this will repeat every 75mm.

**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.

**Bad Developer Roller;** This will show up as light print or as a mark that repeats every 32mm

## COMMON PRINTER PROBLEMS



**Bad Upper Fuser Roller;** Marks repeat every 58mm

**Bad Lower Fuser Roller;** Marks repeat every 60mm

**Bad Transfer Roller;** Marks repeat every 47mm

The front panel lights designate all printer errors. Most codes are very similar to each other; it is the timing of the lights that makes the difference. It is recommended that the service manual be purchased if you are going to repair these machines.

## PRINTER MODIFICATION



It is very simple to modify these printers so that they accept all versions of these cartridges for testing. That being said, please be aware that this will almost certainly void the warranty of the machine. Perform the following modification at your own risk.

1. Remove the two top silver screws. The top cover will come loose. Lift up and remove the top cover. See Figure 33
2. Remove the three black screws from the laser unit. Carefully flip up the laser unit so that the metal tab is exposed. See Figure 34

You can see that with a total of eight slots, and the possibility of using more than one tab at a time, Samsung has quite a few options for cartridge variations!

3. Remove the tab screw and tab. See Figures 35 and 36.

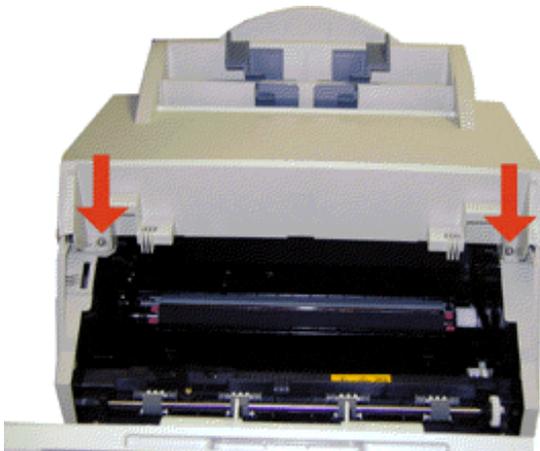


FIGURE 33

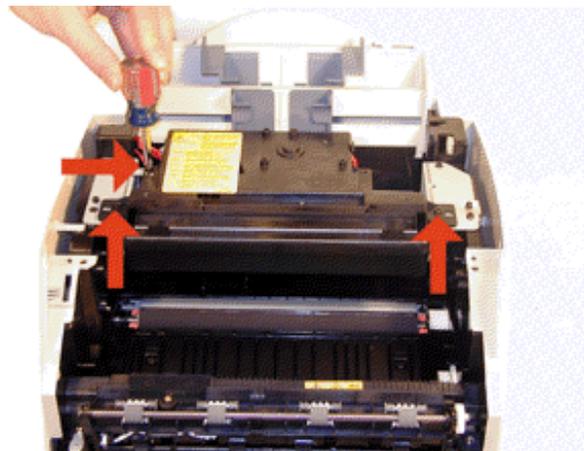


FIGURE 34

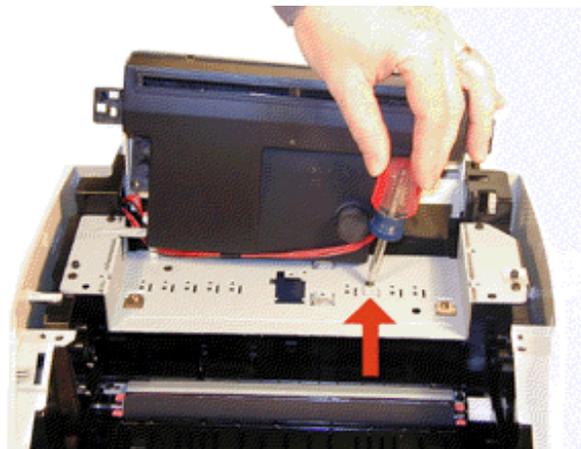


FIGURE 35

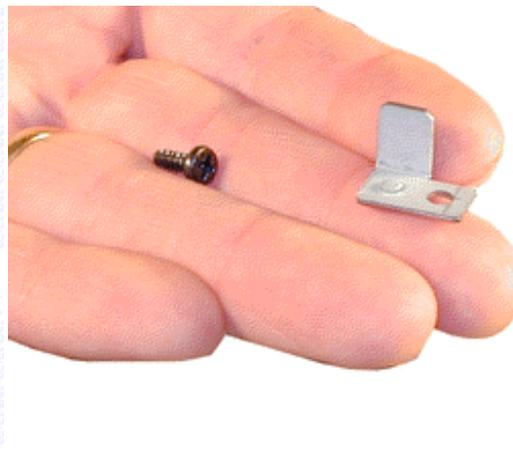


FIGURE 36

4. Replace the laser unit. Make sure that the alignment tabs are in their proper location, and that the cables are snug. Install the three screws.
5. Install the top cover. Make sure that the back section of the cover is locked in place. Install the two silver screws. The machine is modified! Run a few test pages to ensure all is aligned properly.

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## 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 0xc5c Thread 0x268c DBC 0x86205a4 Jet'.

/script/catSearch.asp, line 58