TECHNICAL DOCUMENT

Samsung SF-5100 Toner Cartridges

DOC-0307

OVERVIEW

First released in July 2001, Samsung SF-5100 fax machines are all based on the Samsung SF-5100 engine, which is a modified version of the Samsung ML-1210. The SF-5100 runs at 6-8 ppm with a maximum resolution of 600 dpi.

The SF-5100 cartridge looks similar to the ML-1210 (Lexmark E210), but is different enough to warrant it's own separate instruction. One very interesting thing is that although the cartridges are physically different, if a Samsung ML-1210 (Lexmark E210) machine is modified as shown in the ML-1210 instructions, the SF-5100 cartridge can be tested in it. For some of the physical differences between the cartridges, see Figure's 1 & 2. We will repeat the Lexmark E210 machine modification instructions at the end of this article.

FIGURE 1

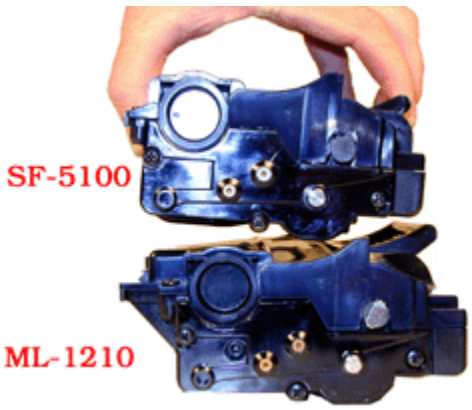

FIGURE 2

As with the ML-1210 cartridges, these cartridges are unique in a number of different ways, the first is that the SF-5100 cartridge does not have a wiper blade. The ML-1210 has a combination PCR cleaner and very flimsy wiper blade. The SF-5100 has the same PCR cleaner but no blade. As these cartridges are designed to have a 100% transfer rate, this is not a problem. The used cartridges I have seen have all had very clean PCR cleaners with no toner at all in the waste section. These cartridges do not have a drum cover, and come new with a piece of heavy paper taped around the cartridge. (See Figure 3) The SF-5100 also does not use a seal. (All new cartridges opened so far have shown some toner leakage that would have shown on any prints. Unlike the ML-1210, the SF-5100 cartridges do NOT have the "ONE WAY" security screws on the top cover.

FIGURE 3

The standard cartridge (Samsung part# SF-5100D1/TDR-510) comes new with 90g toner, and is rated for 3,000 pages at 4% coverage. Both are valid Samsung part numbers, the SF-5100D1 is the most current.

The machines that are based on this engine are the following:

- Olivetti PGL-8L
- Samsung CF-5100
- Samsung MSYS-5100
- Samsung QL-5100
- Samsung SF-5100
- Samsung SF-5100P
- Samsung CF-515
- Samsung CF-530
- Samsung CF-531
- Samsung CF-531P
- Tally T9308

REQUIRED TOOLS

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

REQUIRED SUPPLIES

- 90g Toner
- New Drum (Recommended) (ML-1210)
- New PCR (Optional)(ML-4500)
- New Developer Roller sleeve (Optional) (ML-4500)

DISASSEMBLY

1. Place the cartridge with the handle facing up. Remove the 4 top corner screws. See Figure 4

2. Underneath the handle of the cartridge to the right and left, there are 2 plastic tabs GENTLY press them in, and lift the cover off. See Figure 5

   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 4

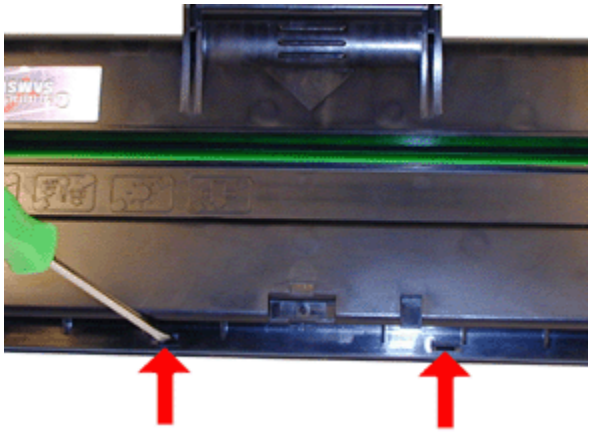

FIGURE 5

3. With the toner hopper facing away from you, remove the three screws on the right side end cap. Remove the end cap. See Figure's 6 & 7

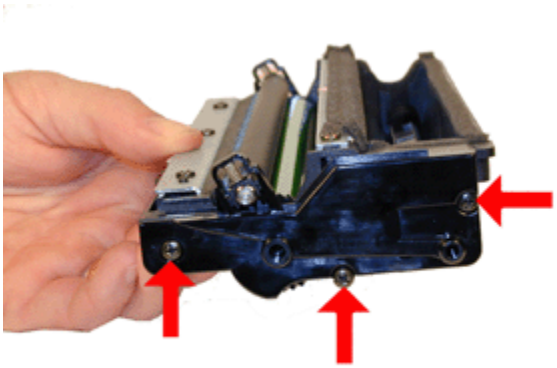

FIGURE 6

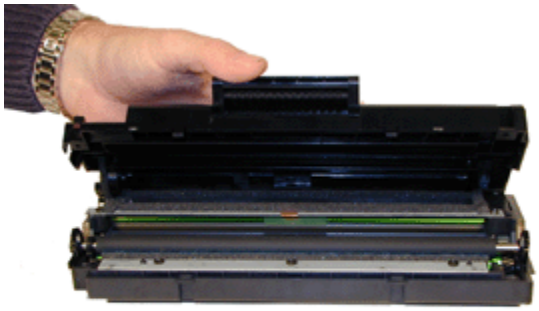

FIGURE 7

4. Also on the right side there is a series of gears under the end cap. Make a note of the location of each gear. One of the double gears will stay on the end cap. If you are careful, it is not necessary to remove them. See Figure's 8 & 9

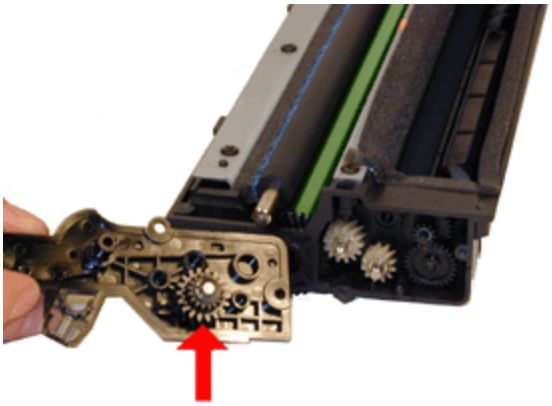

FIGURE 8

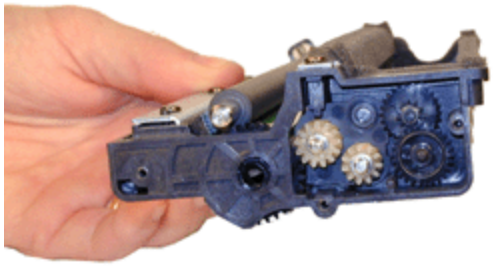

FIGURE 9

5. Remove the PCR. Figure 10

6. 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

7. With the toner hopper away from you, remove the three screws on the left side end cap. Remove the end cap. See Figure 11

FIGURE 10

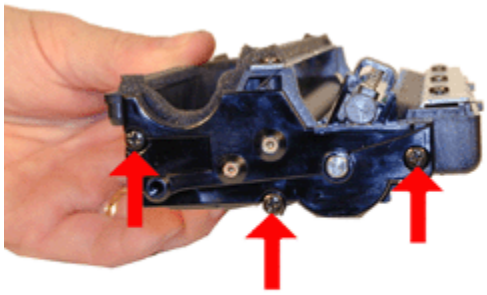

FIGURE 11

8. There are 3 screws on the 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 12 & 13

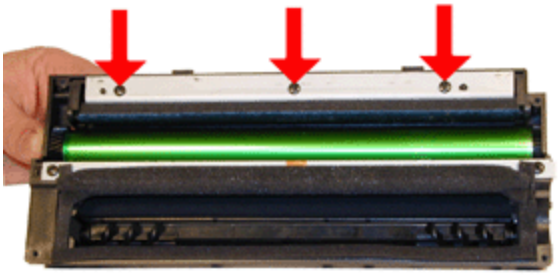

FIGURE 12

FIGURE 13

9. It is very important that the PCR cleaner be cleaned. Vacuum or blow off any residual toner from the foam/felt.
10. With the PCR Cleaner Assy. removed the drum can easily be removed by lifting it out. See Figure 14
11. Clean out any remaining toner from the cartridge.
12. Remove all the Gears from the right side. See Figure 15

FIGURE 14

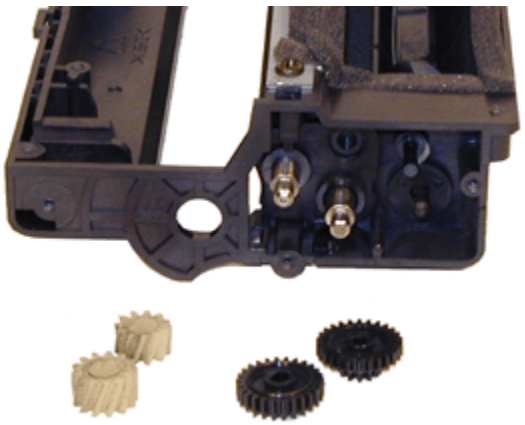

FIGURE 15

13. Press in on the top tab of the roller plate to release it. See Figure 16
14. Press in on the bottom tab of the roller plate to release it. See Figure 17

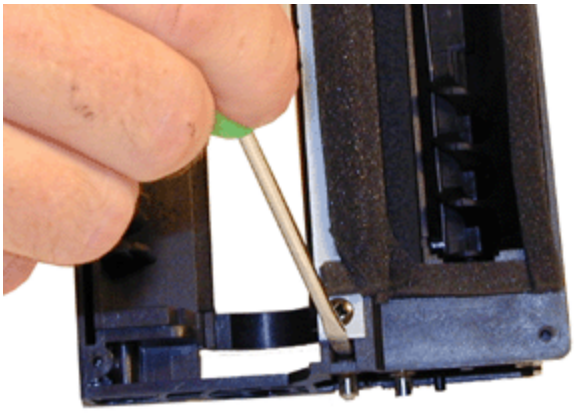

FIGURE 16

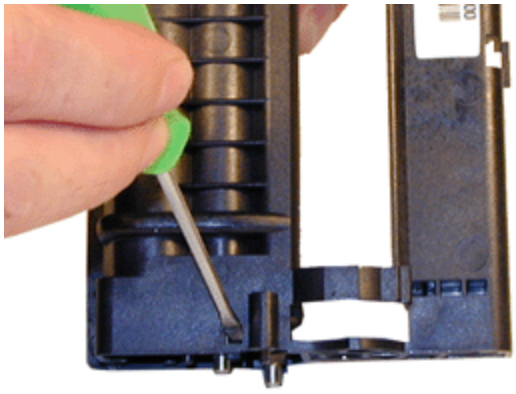

FIGURE 17

15. Gently pry out the roller plate from the cartridge. The foam seal, and plastic flat washer will come out with it. Be careful not to damage the foam seal, or loose the flat washer. See Figure 18

16. Remove the Developer Roller.

17. 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 19

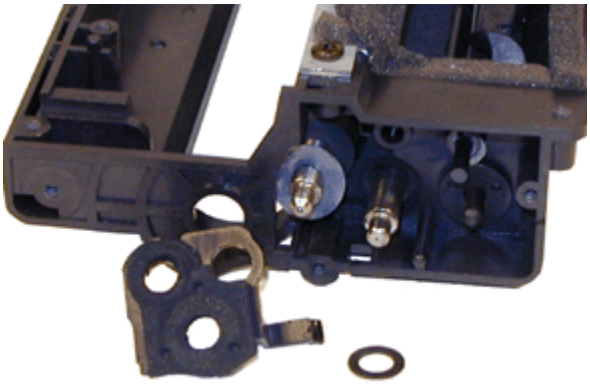

FIGURE 18

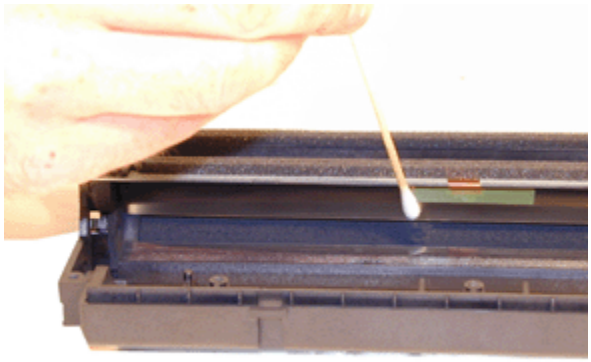

FIGURE 19

18. 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.

19. Install the new drum in place. See Figure 20

20. Install the PCR cleaner Assy. and three screws. See Figure 21

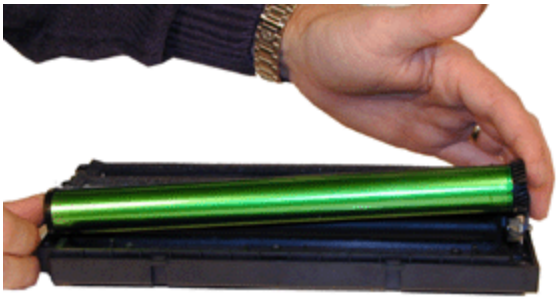

FIGURE 20

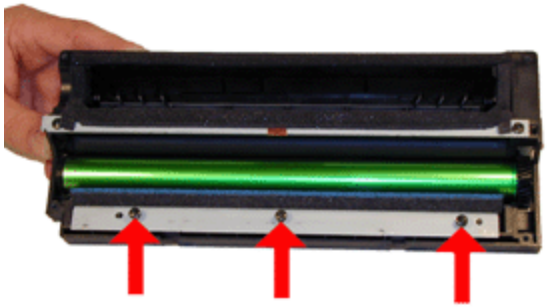

FIGURE 21

21. Clean the conductive grease off the left side (Non Gear) end cap and replace with fresh grease. Replace the end cap and three screws. See Figure 22

22. Install the PCR. See Figure 23

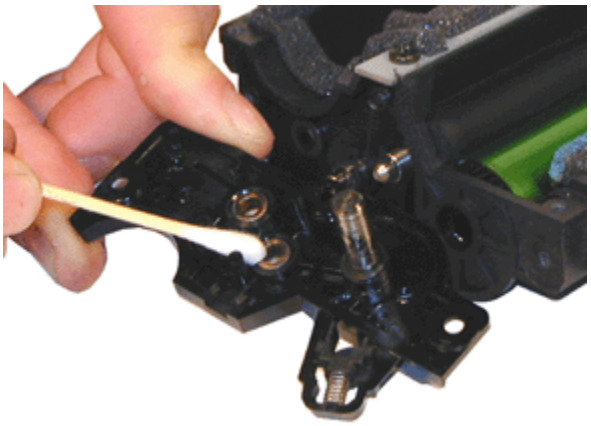

FIGURE 22

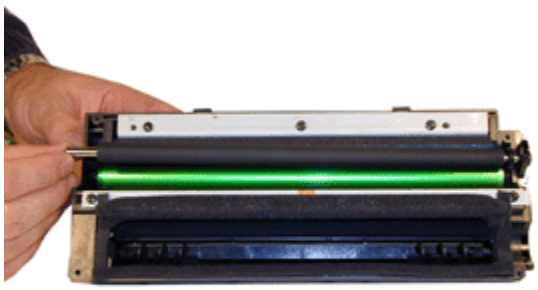

FIGURE 23

23. Install the right side end cap and screws. Make sure the PCR fits correctly in its holder, and all the gears are aligned. The double gear that stayed with the end cap can be installed while on the end cap. See Figure 24

24. Fill the hopper with 90g of the 5100 toner. See Figure 25

    This can also be done through the fill plug, but the fill plug tends to leak and will probably have to be sealed with silicon. See Figure 28

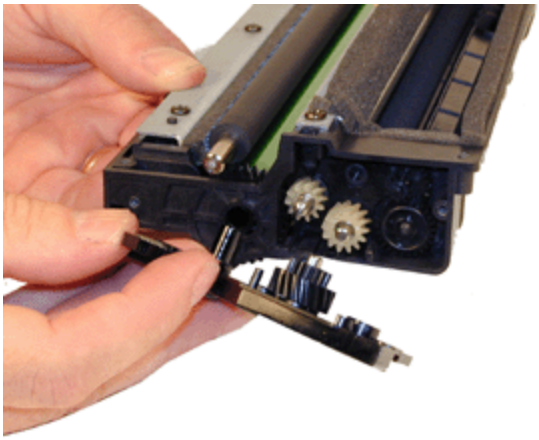

FIGURE 24

FIGURE 25

25. Carefully snap the cover on making sure all the tabs lock in place. See Figure 26

26. Install the four screws in the top cover. See Figure 27
27. Install a new fuse in the center slot. Hold the fuse in place with a small piece of black tape. See Figure 29

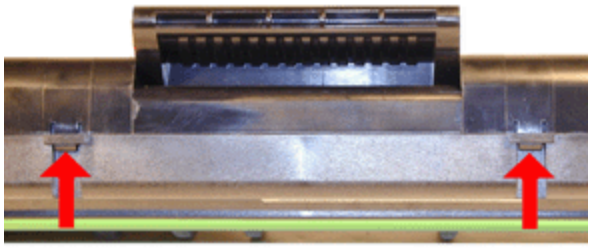

FIGURE 26

FIGURE 27

FIGURE 28

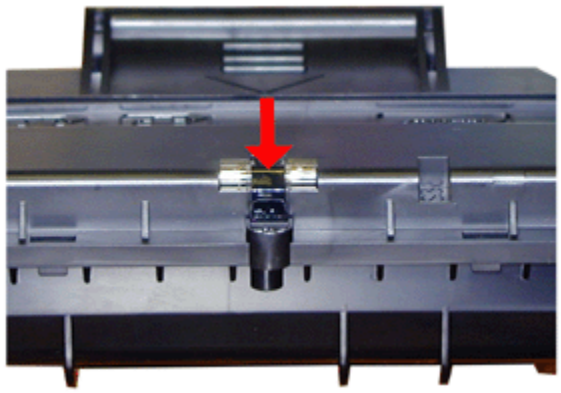

FIGURE 29

RUNNING CLEANING PAGE

The SF-530 version of these machines has the ability to run it's own cleaning page. This may also work in the SF-5100 machines, but we were not able to confirm this.

1. Press the SETUP key on the front panel.
2. Press the Right or Left ARROWS until "MAINTENANCE" appears.
3. Press the START/ENTER key.
4. The display will show "DRUM CLEAN?"
5. Press the START/ENTER key.
6. A Cleaning page will then print.
7. These machines can also be adjusted for a dirty scanner. Personally I would just clean it, but there may be a time where this procedure becomes useful (When the scanner starts to fail) so I am including it here.
8. Load a sheet of CLEAN bright white paper into the scanner
9. Press the SETUP key on the front panel.
10. Press the Right or Left ARROWS until "MAINTENANCE" appears.
11. Press the START/ENTER key.
12. The display will show "DRUM CLEAN?"
13. Press the Right or Left ARROWS until "ADJUST SHADING" appears.
14. Press the START/ENTER key.
15. The white paper will feed and reset the scanner so it knows what a clean page looks like.

TEST PRINTING

The best way to run test pages is simply to make a copy. Take a printed page with both text and graphics, and run a few copies.

CLEANING THE MACHINE

Other than the cartridge bay, the document feed rollers and scanner must also be cleaned. Although the adjustment listed above will take care of dirty copies, this is by far a better way to go.

Lift up the top cover. There is a white roller attached to the lid. Rotate the right side of the roller until the bushing allows the roller to be removed. Clean the roller with a soft lint free cloth and water. DO NOT use any chemicals on this roller! Re-install the roller, lock the bushing in place.

In the center of the lid is the ADF separation pad. Clean the rubber with a good rubber cleaner.

The scanner glass is located at the base of the lid on the body of the machine. Clean it with a soft lint free cloth. If stubborn dirt will not come off, dampen the cloth with water, and dry the glass. It is not recommended that anything harsher than water be used on the glass. Be careful not to scratch the glass!

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

MACHINE ERROR CODES

As with most of the newer Samsung models, the error codes are all in English and are self-explanatory. The biggest problems you will run into are paper jams, and a dirty scanner. Keeping the machine clean with periodic maintenance will take care of most of them.

PRINTER MODIFICATION

This modification is for the modification of the Samsung ML-1210 engine specifically the Lexmark E210. This modification will allow not only all of the ML-1210 cartridges to be tested, but the SF-5100 cartridges as well!

It is very simple to modify these printers so that they accept all versions of these cartridges for testing (Including the SF-5100). 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.
2. Remove the three black screws from the laser unit. Carefully flip up the laser unit so that the metal tab is exposed.

   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.
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.

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 0xf44 DBC 0x8635004 Jet'.

/script/catSearch.asp, line 58