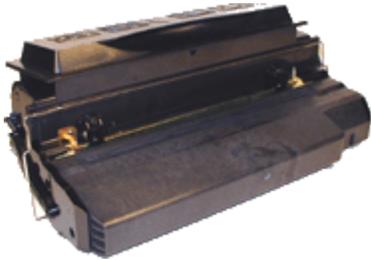



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Samsung ML-7000 Toner Cartridges

DOC-0301

OVERVIEW



The Samsung ML-7000 printers are based on a Samsung 17 ppm, 600 dpi engine. Duplexing is a standard feature that is built into all models. One interesting feature on the machines is that they use an optical sensor in the output tray to tell if more than 250 pages are in the tray. Once it sees too much paper, printing will halt until the tray is cleared. Watermarks and overlays can be setup through the Samsung printer driver.

From the outside the cartridge seems to be a beefed up version of the P8e or the ML-6060. From the inside however, this cartridge is completely different. The developer section of the toner hopper looks like an IBM/Lexmark style, but it isn't. Lexmark toner will not work in these machines. Just the design is similar. One of the bigger differences is in the toner low detection. It uses a very simple optical sensing system that consists of a clear LED that fits into a clear slot on the side of the toner hopper. An optical sensor is fitted about ½" away from the LED on the back of the hopper. As long as toner is in the hopper, the sensor doesn't see the light and the "Toner Low" signal stays off. As soon as the sensor sees the predetermined amount of light, the toner low signal will be sent to the printer. (Since the amount of light will vary, the sensor will ignore small readings up to a set point.)

The ML+7000D8 cartridge is rated for 8,000 pages at 5% coverage.

Currently the machines that use this cartridge are the:

- Samsung ML-7000
- Samsung ML-7000N
- Samsung ML-7000P
- Samsung ML-7050
- Samsung ML-7070AG

REQUIRED TOOLS



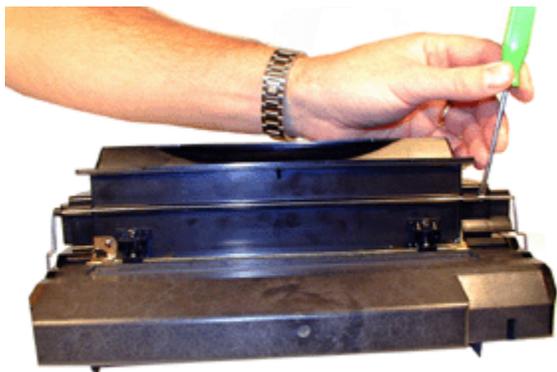
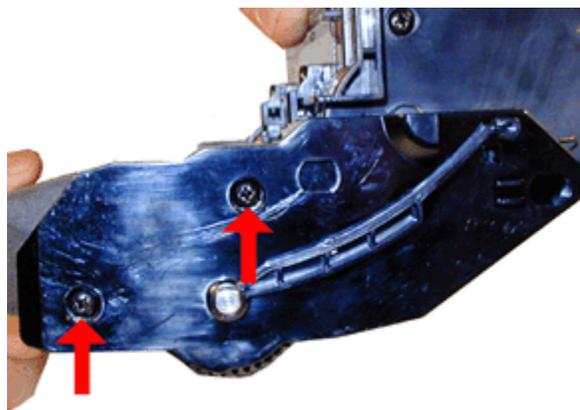
- Toner approved vacuum/compressed air cleaning system.
- A small Common screwdriver
- #1 Phillips head screwdriver
- Needle nose pliers
- Spring Hook
- Fixed blade razor knife

REQUIRED SUPPLIES

- Samsung 7000 toner, 190g
- Wiper Blade (Check for availability)
- OPC Drum
- Kynar padding powder
- PCR Cleaner
- Conductive grease
- Silicon

DISASSEMBLY

1. Clean the exterior of the cartridge.
2. Place the cartridge with the toner hopper away from you. Remove the Drum cover by unsnapping the bar from both the right and left sides of the cartridge. Note the cover spring orientation for when it is re-installed. See Figure's 1 & 2. (The spring has been colorized to better show its position).
3. Un-hook the small springs from both sides of the toner hopper. See Figure 3
4. On the right side, remove the two screws from the end cap. Remove the end cap. See Figure 4

**FIGURE 1****FIGURE 2****FIGURE 3****FIGURE 4**

5. Remove the entire waste section by working the left end cap free from the hopper. It is just held on by pressure. See Figure 5
6. Remove the two screws on the remaining end cap. See Figure 6
7. Remove the plastic drum axle pin. See Figure 7
8. Remove the drum. OEM drums will sometimes run another cycle, but more often than not, they are worn out after the OEM cycle. We highly recommend that they be replaced each cycle. See Figure 8

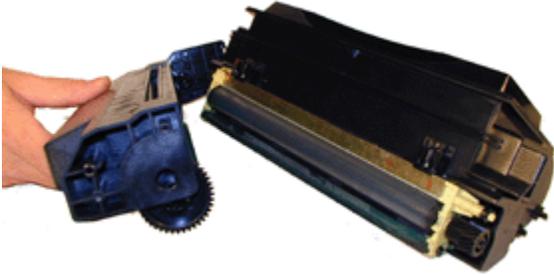


FIGURE 5



FIGURE 6



FIGURE 7



FIGURE 8

9. Lift up the PCR from both sides. The PCR holders will come loose. Remove the PCR and holders. See Figure's 9 & 10
10. 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 it be cleaned with your standard PCR cleaner

11. Remove the PCR contact pin from the right side of the cartridge. Be very careful not to loose this pin! See Figure 11
12. Remove the two screws on the wiper blade and the wiper blade. See Figure 12



FIGURE 9



FIGURE 10

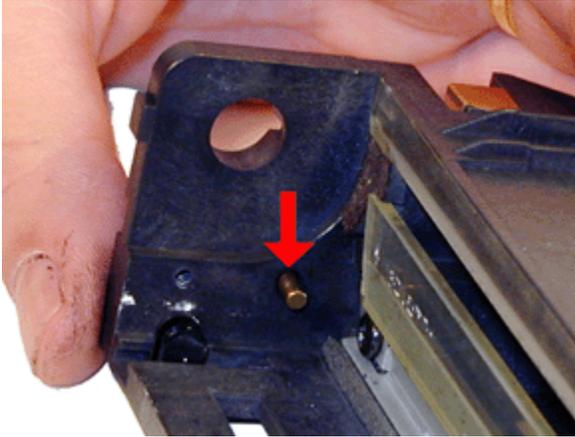


FIGURE 11



FIGURE 12

13. Clean out all the toner from the waste section.
14. Coat the wiper blade with either Kynar or your normal WB lubricant that works with PCR type cartridges. Install the wiper blade and two screws. Make sure that the blade "snaps" in place. It is a very tight fit. See Figure 13.
15. Insert the small PCR contact pin. Take a small screwdriver and place it under the flat metal contact bar on the outside of the cartridge so that it holds the bar away from the pin. This will allow the PCR to be installed without the contact pin getting in the way. See Figure's 14 & 15
16. Place the PCR holders on the PCR. There are two different holders, make sure that the open holder faces the contact pin. See Figure 16.

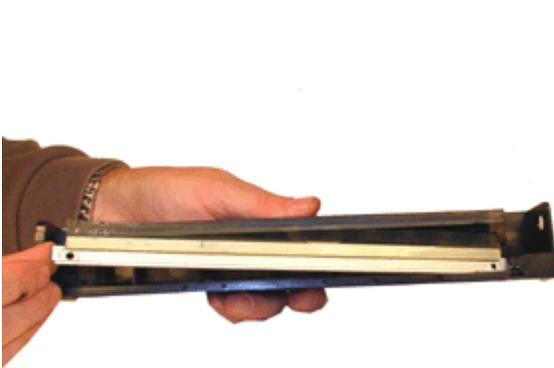


FIGURE 13

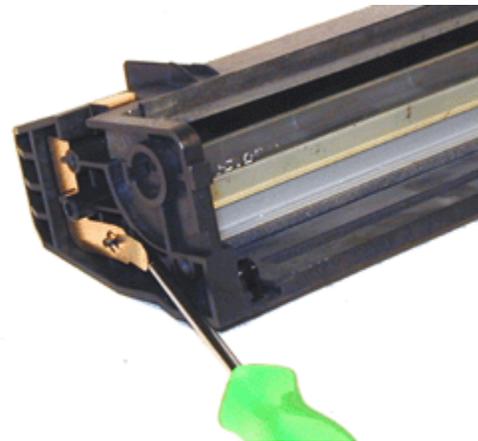


FIGURE 14

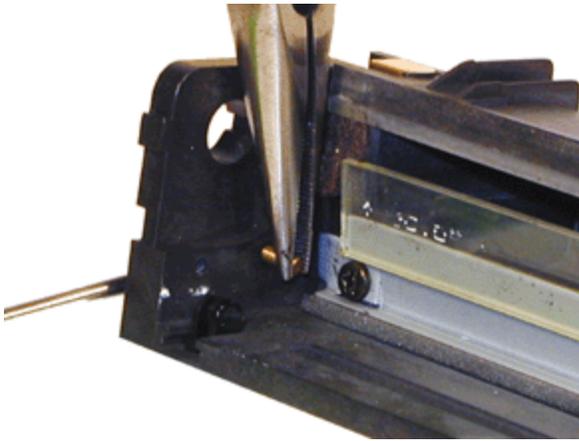


FIGURE 15

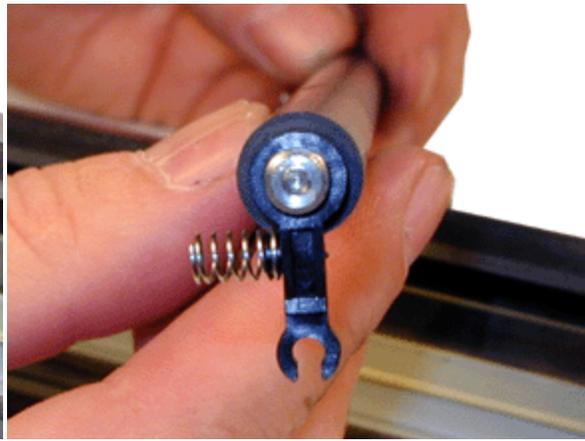


FIGURE 16

17. With the PCR contact pin pushed in, install the PCR and holders. See Figure 17.
18. Install the new drum, and install the plastic drum axle to hold everything in place. Remove the screwdriver from the outside of the cartridge. Place this half of the cartridge in a light protected place. See Figure 18
19. On the toner hopper, remove the two screws on the right side end cap. See Figure 19.
20. Remove the small plastic bushing from the post coming through the end cap. Remove the end cap. See Figure 20.



FIGURE 17

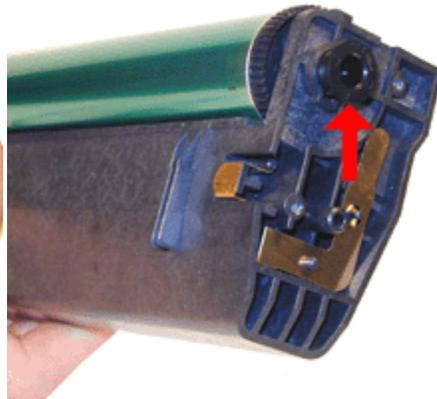


FIGURE 18

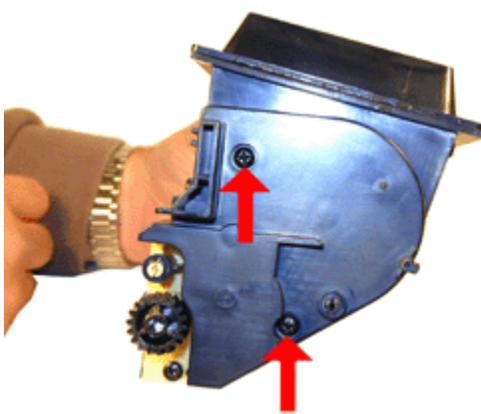


FIGURE 19

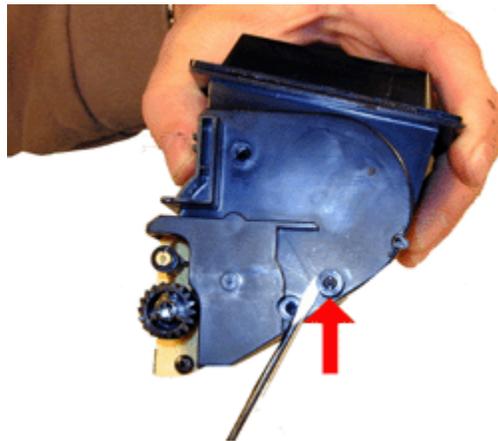


FIGURE 20

21. Remove the developer roller drive gear. See Figure 21
22. Remove both of the doctor blade tensioners. See Figure 22

23. Remove the developer roller axle bushing. See Figure 23
24. Remove the developer roller. See Figure 24

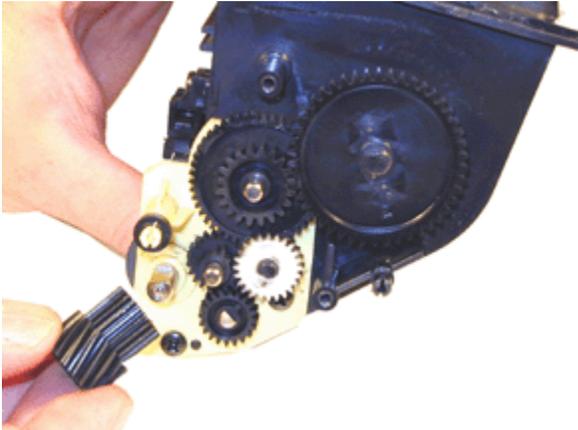


FIGURE 21



FIGURE 22



FIGURE 23



FIGURE 24

25. Remove the two screws and plastic bushing from the right side end cap. See Figure 25
26. Remove the optical sensor, un-hook the wires, and remove the end cap. See Figure's 26 & 27.

This cartridge uses a unique but very simple toner sensing system. The clear LED sends a light through the clear plastic slot it fits into. The optical sensor doesn't see the light as long as toner is in between them. As soon as the toner gets low, the sensor picks up the light and signals "Toner Low". I couldn't verify it, but it looks like the sensor can tell the amount of light it picks up and thus tells how much toner is left.

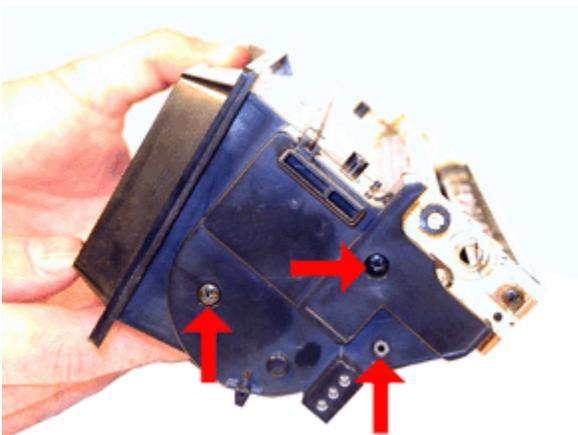


FIGURE 25

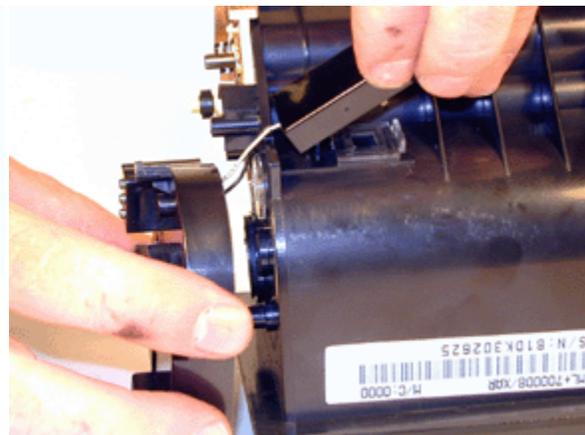


FIGURE 26

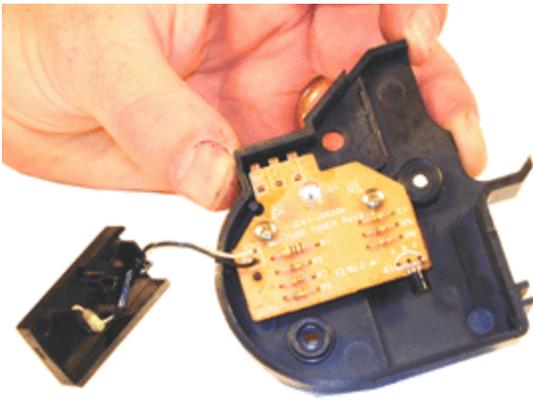


FIGURE 27

27. Remove the fill plug from the hopper. This plug is very easy to damage as it is made of hard plastic. We have found the best way is to use a fixed razor knife to get under the lip, and work it loose. If the lip gets damaged, put a small amount of silicon around it when you replace the plug. See Figure's 28 & 29
28. Clean out all the remaining toner from the hopper. Make sure that the feed roller and the seals on either end of the hopper are cleaned. See Figure's 30 & 31

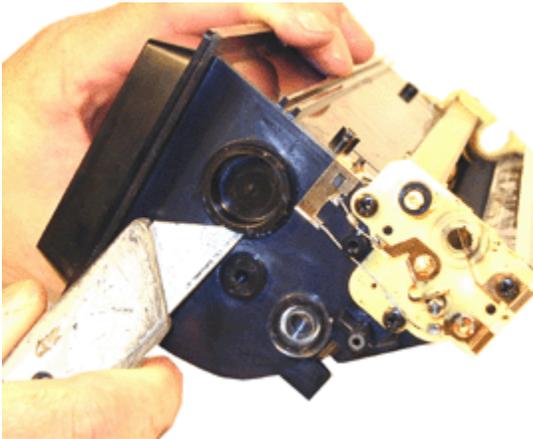


FIGURE 28



FIGURE 29

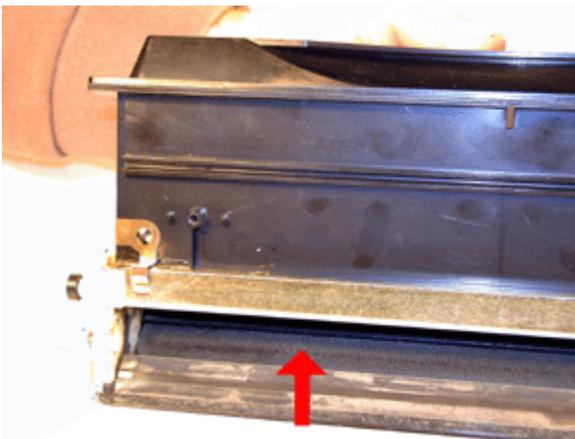


FIGURE 30

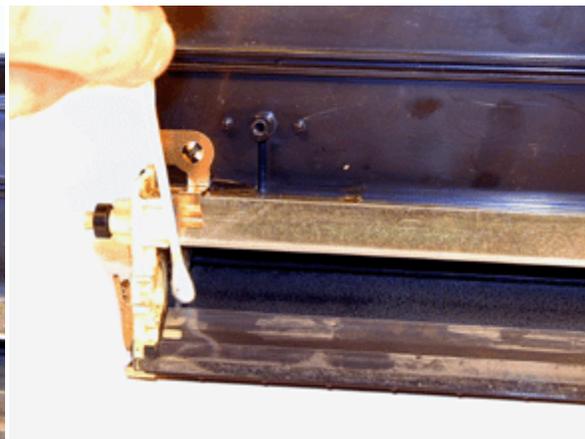


FIGURE 31

29. Install the developer roller. If the shims have become damaged, the white Lexmark type shims will work. See Figure 32
30. Install the developer roller bushing See Figure 33
31. Install both of the dr. blade tensioners and screws. See Figure 34

32. Install the developer roller drive gear. See Figure 35

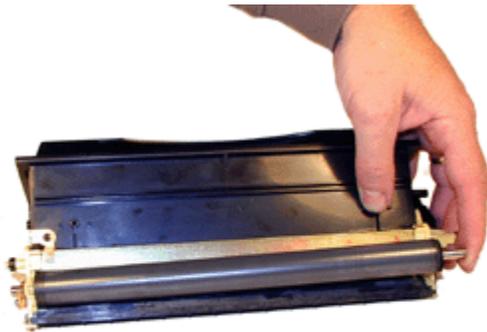


FIGURE 32

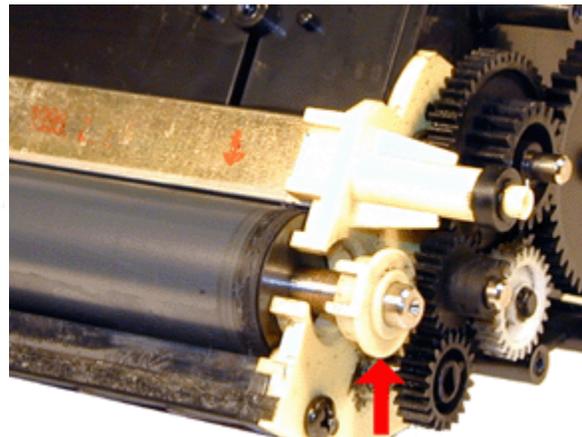


FIGURE 33

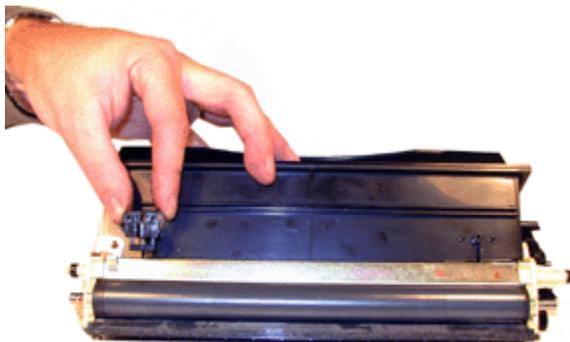


FIGURE 34

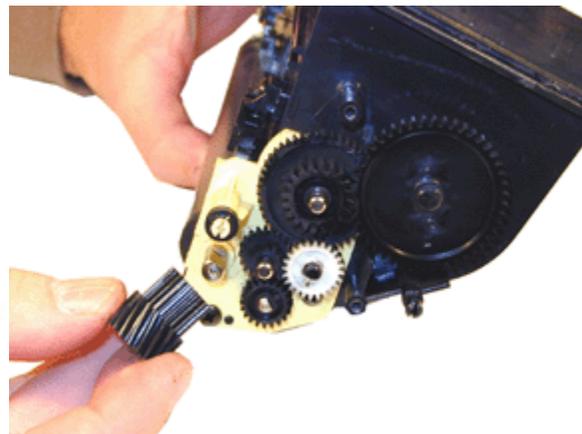


FIGURE 35

33. Install the right side end cap, two screws and bushing. See Figure 36

34. Fill with 210g ML-7000 toner. See Figure 37

35. Install the fill plug. If the plug lip is damaged, place a small amount of silicon around the lip before installing to prevent leaks. See Figure 38

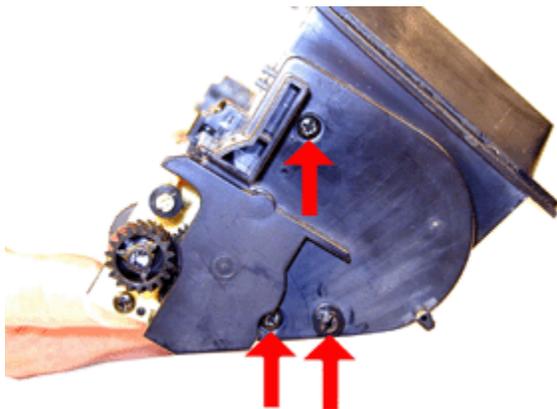


FIGURE 36



FIGURE 37

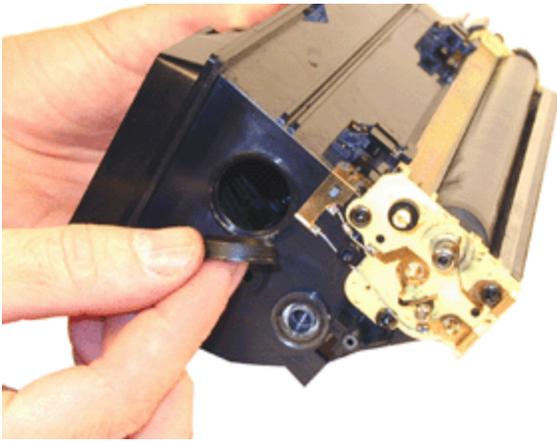


FIGURE 38

36. Install the right side toner hopper end cap and sensor. Route the wires first, snap in the optical sensor, and then install the end cap. Install the two screws and bushing. See Figure's 39, & 40.
37. Install the spring on the main end cap, install the end cap onto the waste chamber. See Figure 41

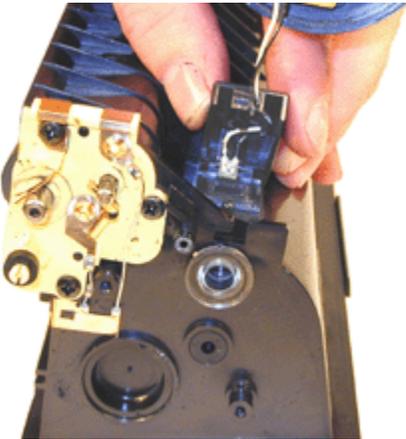


FIGURE 39

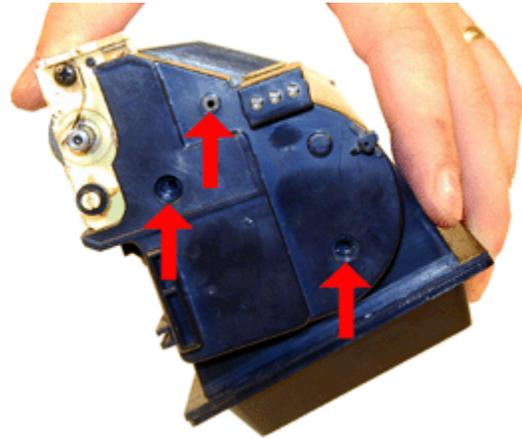


FIGURE 40

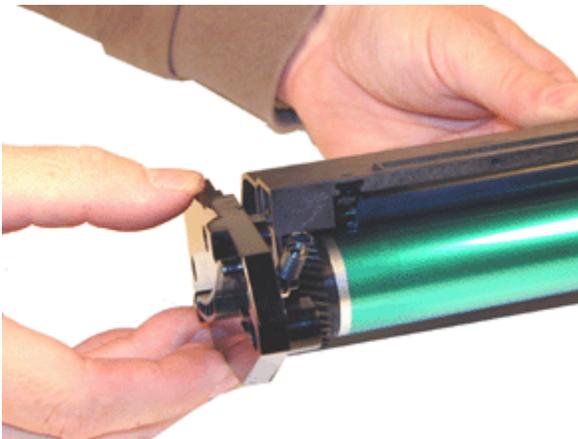


FIGURE 41

38. Install the end cap and waste chamber onto the toner hopper. Make sure that the metal post from the end cap is aligned with the gear, and that the hole in the end cap fits over the bushing. See Figure's 42 & 43
39. Attach the spring from the end cap to the toner hopper post. See Figure 44
40. Install the left side main end cap, and two screws. See Figure 45

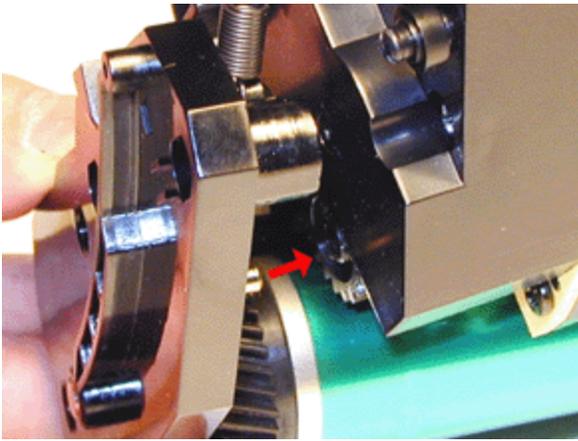


FIGURE 42

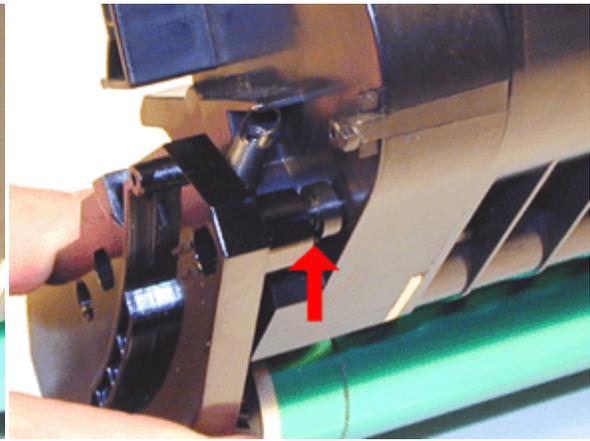


FIGURE 43

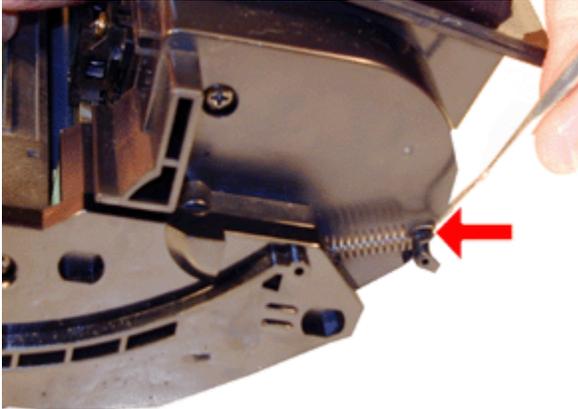


FIGURE 44

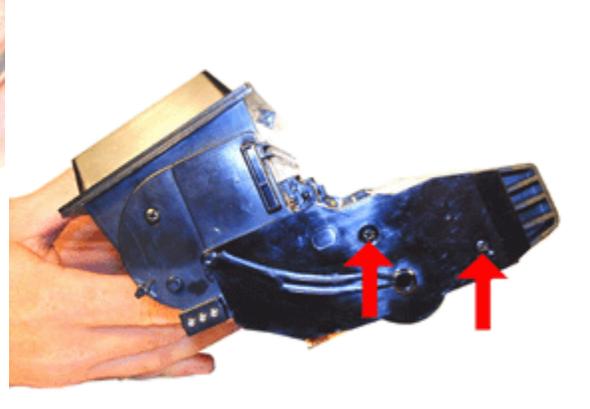


FIGURE 45

41. Install the spring from the end cap to the toner hopper post. See Figure 46
42. Snap the drum cover in place. Set the drum cover spring so that the cover operates properly. See Figure's 47 & 48 (The spring has been colorized to better show its position).

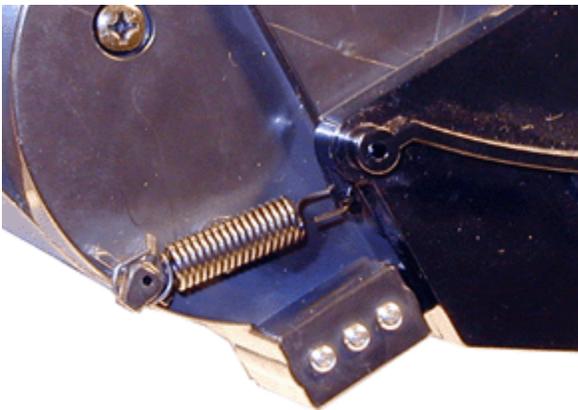


FIGURE 46

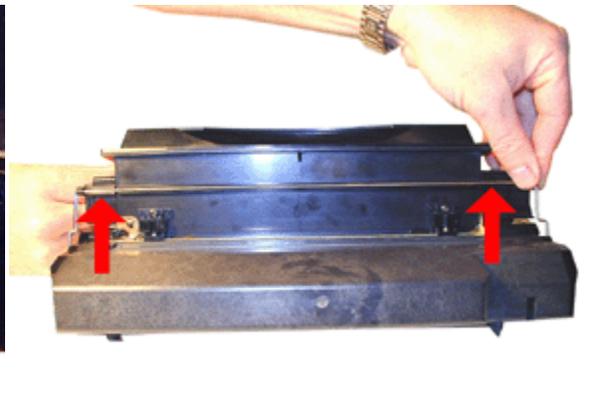


FIGURE 47



FIGURE 48

COMMON CARTRIDGE PROBLEMS



Some of the more common toner cartridge problems are:

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. Make sure that the small metal pin is in the correct position.

Black Pages; If the PCR contact page is missing, or not making contact. Black pages will occur

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.

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.

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.

Light print overall: Doctor Blade tensioners installed incorrectly.

PRINTING TEST PAGES



1. Press the ON LINE key so that "OFF LINE" appears on the display
2. Press the MENU keys until "TEST MENU" appears on the display
3. Press the ITEM key until "SELF TEST" or "DEMO PAGE" appears on the display.
4. Press ENTER. The selected page will print.

CHANGING THE DENSITY



1. Press the ON LINE key so that "OFF LINE" appears on the display
2. Press the MENU keys until "JOB MENU" appears on the display
3. Press the ITEM key until "DENSITY" appears on the display.

4. Press the VALUE key until the desired setting appears on the display. (Light Medium, Dark)
5. Press ENTER

CLEANING THE PRINTER



Remove all paper from the MP tray, remove the toner cartridge.

Vacuum and wipe the inside of the printer until clean. Do not touch the transfer roller with your hands or the yellow toner cloths as oils present on both will ruin the roller.

The laser scanner lens can be cleaned with the supplied cleaning tool. The tool is located just under the lid on the left side. Place the cleaning tool into the track and slide the tool back and forth to clean. (The track is on the laser unit located just above where the cartridge sits.)

COMMON ERROR CODES



The error codes listed in the user manual are all in English and are all self-explanatory. We were not able to locate a Samsung service manual for this machine for the more in-depth error messages.

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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 0x56c DBC 0x86140ec Jet'.

/script/catSearch.asp, line 58