

# SAMSUNG® ML-1660 • 1665

## TONER CARTRIDGE REMANUFACTURING INSTRUCTIONS



SAMSUNG® MLT-D104S TONER CARTRIDGE

# REMANUFACTURING THE SAMSUNG ML-1660/1665 TONER CARTRIDGE

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**Samsung Series ML-1660 printer**



**Samsung Series ML-1660 control panel**

First introduced in 2010, the Samsung ML-1660/1665 series printers gained fast acceptance due to their low cost and good specifications for low cost machines.

As of March 2011 four models are known to be sold in the market, the ML-1660, ML-1665, ML-1667, and the SCX-3200 with minor variations in specifications of some of the functions. All models print at 16ppm with A4 and with resolution of 1200x600dpi. The printers use an all-in-one toner style cartridge with chips that need to be replaced with every cycle. New models are supplied with starter toner cartridge good for 700 pages at 5% coverage. Replacement cartridges have a yield of 1,500 pages.

The machine is small with a footprint of only 224 mm deep by 341 mm wide and 184 mm high and a weight of 4.04Kg. They are sold with a power supply that can take both 120VAC and 220 VAC with a power consumption of less than 270 watts while printing and 40 watts on standby.

The first print is made in about eight seconds. The machine we tested has a “one-touch” button that allows any file appearing in the PC screen to be printed immediately (see above image).

When inspecting the cartridge supplied with the machine labeled MLT-D104S we noticed some characteristics common to other Samsung products, however the substitution of screws with plastic rivets is something unexpected and that requires a careful drilling and fitting to access the inside of the cartridge.

While comparing the starter cartridge with the replacement MLT-D104/XAA, we observe no physical difference between them, which means that with proper toner load and chip replacement, the starter can be converted into a 1,500-page yield cartridge. The toner load of the starter cartridge is less than 20 grams (or 700 pages at 5%) which means that there will be a rapid need for replacement from the users.

In the following photos we can see the more relevant details of design...



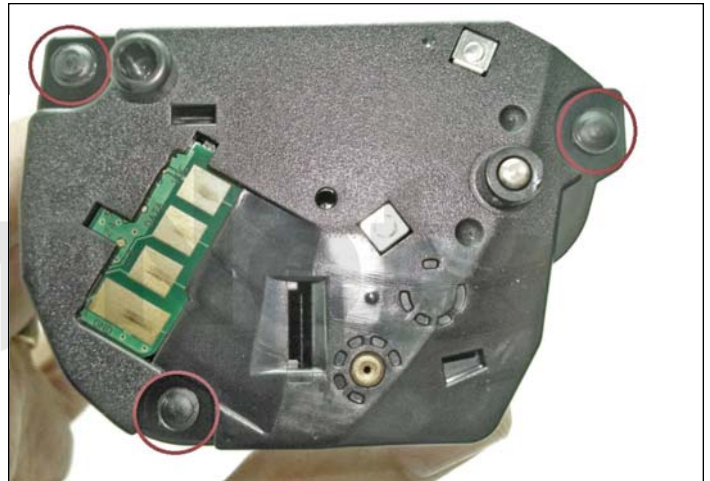
**Samsung MLT-D104S (chips side)**



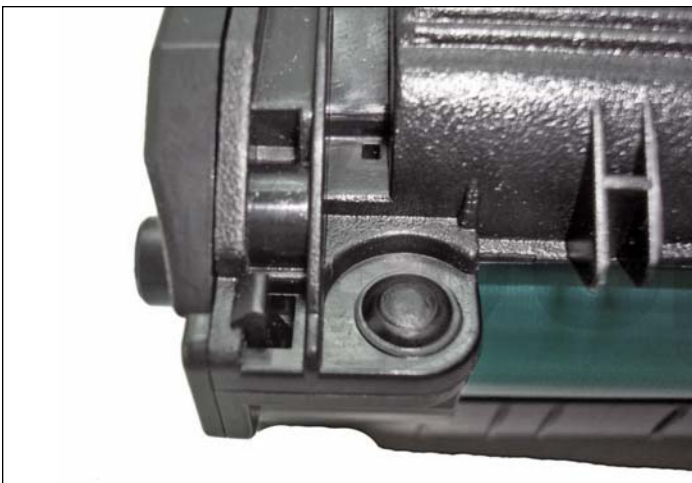
**Samsung MLT-D104S (gears side)**



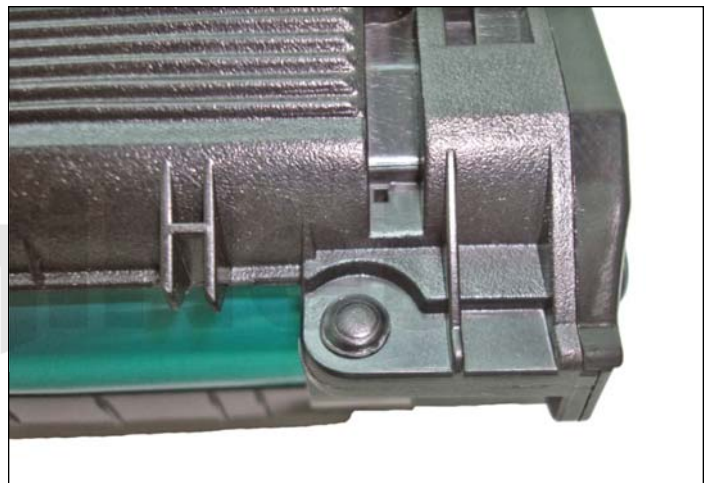
**Side cover showing plastic rivets**



**Side cover showing plastic rivets**



**Side cover showing plastic rivet**



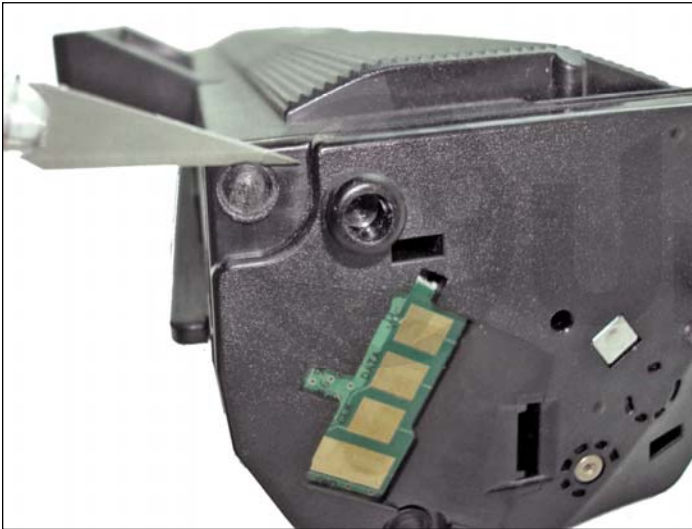
**Side cover showing plastic rivet**

**TOOLS NEEDED**

1. Approved toner vacuum
2. Small common screwdriver
3. Phillips screwdriver, medium #3
4. Needle nose pliers
5. Electric drill with 3/32" bit
6. X-acto type knife to cut the rivets

**SUPPLIES NEEDED**

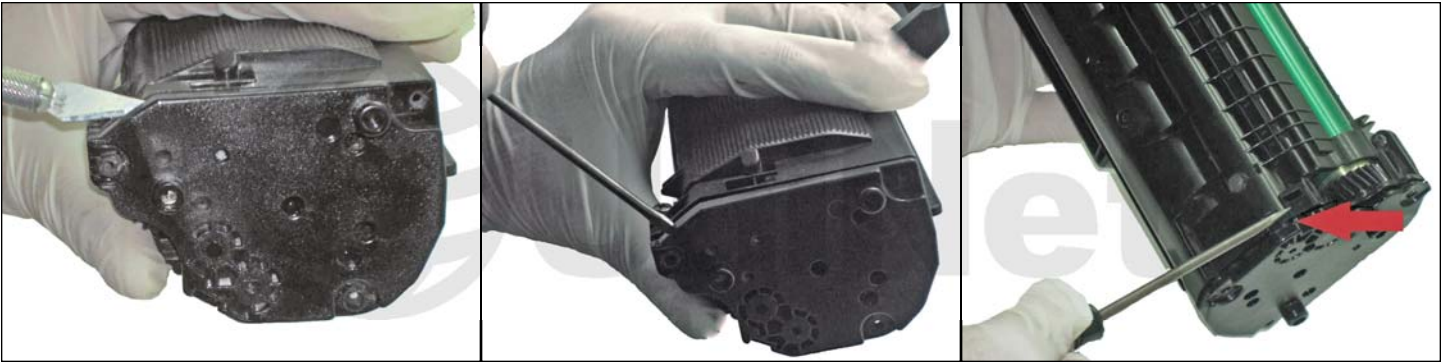
1. Dedicated toner for use in Samsung ML-1660 (45 grams for 1,500 pages)
2. New chip for use in Samsung ML-1660 (1,500 pages)
3. OPC drum (optional)
4. Wiper blade (optional)
5. Doctor blade (optional)
6. Conductive grease
7. Lubricating powder for wiper blade
8. Self-tapping screws 1/8" x 1/4" (8 pieces)



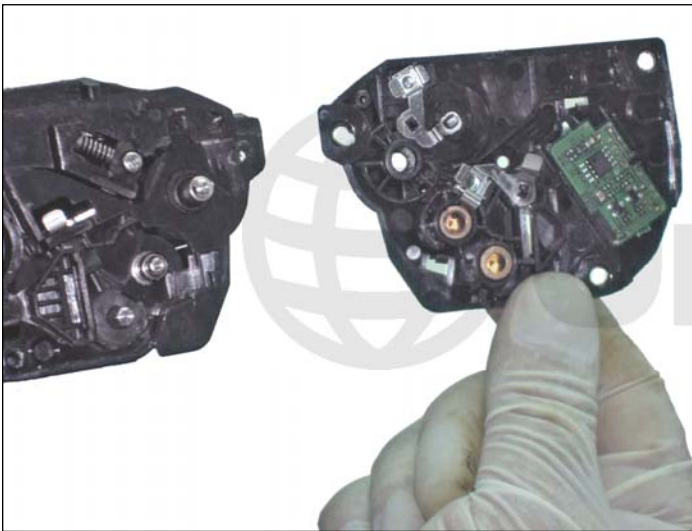
1. Place the cartridge in horizontal position with the side cover holding the chips facing you. Take the blade and cut the head of the plastic rivet. Be careful with the movement, keeping the blade from slipping and cutting yourself. Place the cartridge in a vertical position, punch a center mark on the plastic rivet shaft, and drill it out with the 3/32" bit, to a depth no more than 1/4".



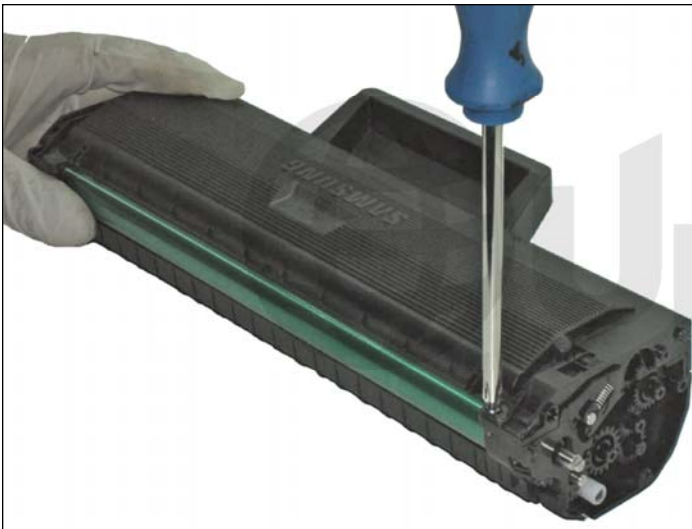
2. Slowly thread a 1/8" black screw into the hole. Screw all the way down. Perform the same procedure on every other rivet including the cartridge top cover (a total of 8 pieces) but DO NOT disassemble the cartridge yet. The idea is to have all the riveted points replaced with the proper screws perfectly threaded before proceeding to disassemble the side covers and the top. Once all the screws are installed, proceed to remove them and disassemble the cartridge in the following fashion...



3. Take all three screws from the gear side cover. Using the knife blade, slightly separate the cover just enough for the small edge of the screwdriver to enter and pry it open. Note that on the bottom section of the side cover is a clip that must be released. Undo the tab at the bottom to release it. **NOTE:** It is not necessary to take all gears out however if there is a need to do so, take note first of the position of each.



4. Remove the opposite end cap (chip side) in the same manner.



5. Remove the top cover screw and top cover.



6. Take the waste section with the OPC drum and slide the drum axle out from left to right and turning it gradually while pulling.



7. Remove the OPC drum.



8. Remove the developer roller by first pulling out the left side, then the right side where the gear is, and with a slight inclination to clear the gear, lift the roller out. Clean the roller with a soft cloth.





9. Remove the fill plug and vacuum the toner hopper clean.



10. Unscrew and remove doctor blade.

Vacuum the surface and the feed roller thoroughly by turning it several times.





11. Install the doctor blade, making sure the lower seal on the cartridge fits against the blade.



12. Clean and inspect the condition of the end seals and install the cleaned developer roller by inserting first the right shaft with the gear, and then the left side. Once in position just press both ends until a click is heard.



13. Fill the toner hopper with the proper amount of toner for use in Samsung ML-1665, and tightly close with the plastic lid.



14. Clean and then install the OPC in position. Slide the OPC axle in with the keyed end first from the hub side (left) toward the gear side (right). Turn the axle slowly while pushing. Set unit aside.

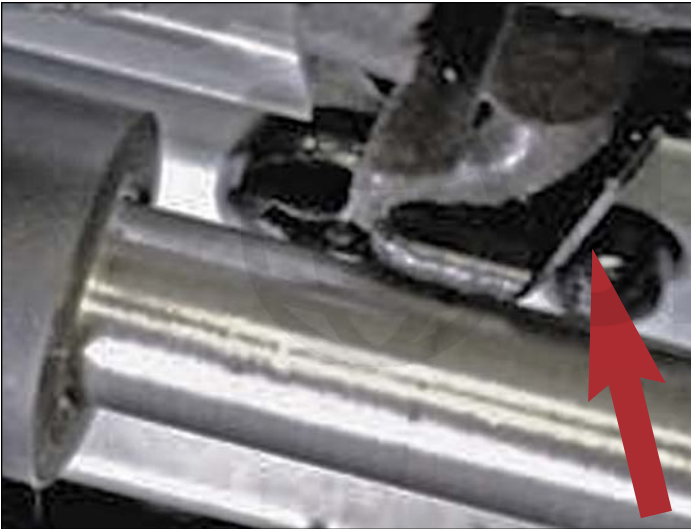


15. Take the other section and proceed to remove the PCR.

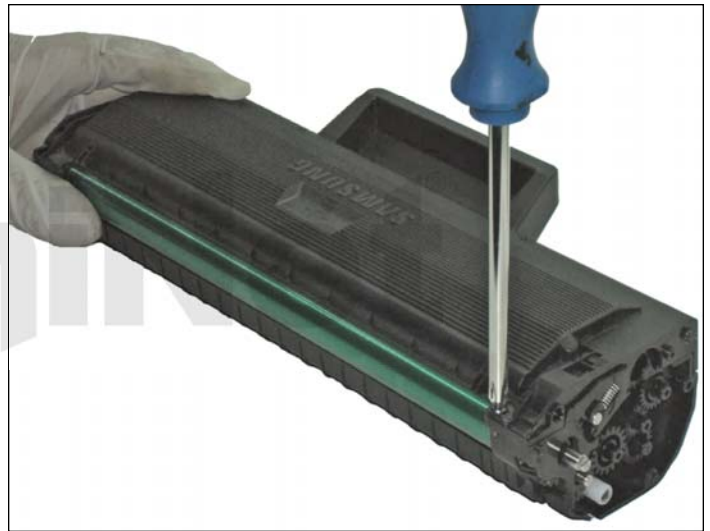
Clean with a soft cloth.



16. Unscrew and remove the wiper blade. Vacuum the waste bin thoroughly. Be very careful not to damage the recovery blade. Apply lubricating powder to the edge of the wiper blade. Then install it in place and secure with the two screws.



17. Clean the PCR holders with a synthetic cotton cloth and apply a tiny amount of conductive grease to the metal axles. Install the PCR to its proper position with the long shaft left side. There is a limiting piece in place to avoid misplacing the PCR (see image).



18. Join both sections and install the top lid in place, securing it with the two screws.



19. Install the left side end cap. Make sure the keyed end of the OPC axle fits into the keyed hole in the cover. Push the end cap in until it is flat against the cartridge. Install and tighten with all three screws.



#### REPLACING THE CHIP

20. Clean and lubricate left end cover contacts with conductive grease. Replace the chip with a new one and sliding it in place. Install the end cap and screws.

**NOTE:** Under normal working conditions the printer will eventually call for toner cartridge replacement. The printer will need to read a new chip to reset the counters and to print. For this reason, it is recommended that testing be done with a shop chip first and once print quality is assured, a new chip be installed in its place.

**PRINTING TEST PAGES**

Turn the printer on and press the one-touch button until the “Ready” light blinks fast three times, then twice slow, release.

**PRINTING SUPPLIES INFORMATION PAGE**

Turn the printer on and press the one-touch button until the “Ready” light blinks fast three times, then twice slow, and at the first fast blink that follows, release. This page is quite complete and provides the following information:

**Total page count****Capacity****Toner remaining****Supplier****Equivalent pages printed****Serial number****Average area coverage****Product date****Page count****Kind of cartridge****Dots count****Fuser life****Motor ON time****Transfer roller life****Clear toner****Pickup roller life****Replaced toner count****Cassette holder pad life****Supply ID****Error counts (open, low, high heat, paper jam 0, paper jam 1)****REPETITIVE DEFFECT CHART****OPC: 62.83 mm****Pressure roller: 64.0 mm****Fuser roller: 64.0 mm****Transference roller: 40.52 mm****PCR: 26.0 mm****Developer roller: 45.0 mm**