

TECHNICAL DOCUMENT



- [Overview](#)
- [Required Tools](#)
- [Required Supplies](#)
- [Prepare Work Area](#)
- [Disassembly](#)
- [Cleaning The Debris Cavity](#)
- [Cleaning The Toner Supply Housing](#)
- [Re-assemble Toner Supply Housing, OPC Drum and Debris Cavity](#)
- [Printer Maintenance and Trouble Shooting](#)
- [Cartridge Printing Theory](#)
- [Recommended Supplies](#)

Minolta SP-101 Toner Cartridges

DOC-0200

OVERVIEW



These instructions cover the disassembly of the Minolta SP-101 toner cartridges. The Minolta SP-101 engine is an 8 ppm printer that uses an "All in One" type cartridge. The purpose of this disassembly is to vacuum out toner that will have spilled inside the cartridge during shipping and/or rough handling, to clean the debris cavity and to fill the toner supply housing with new toner. The disassembly can also be used to examine the internal parts of the cartridge for possible damage should the printing of the cartridge be poor and not correctable by other means.

It is important to note that the Epson and NEC cartridges are NOT interchangeable. Each style of cartridge has small physical differences on the exterior of the shell. The internal components are the same.

REQUIRED TOOLS



The tools needed to successfully and safely recharge toner cartridges are as follows:

1. Toner approved vacuum. The Atrix HCTV canister style toner Vac, or our Atrix AAA/Omega Portable toner vacuum. Some type of approved toner vacuuming system is important because toner consists of very fine particles that will pass right through a normal vacuum filter, and blow out the exhaust.
2. A Phillips head screwdriver
3. Razor Blade Knife
4. A sharp "dry wall" screw
5. Curved needle nose pliers

REQUIRED SUPPLIES



1. Black Toner
2. Felt wand
3. Foil Bag
4. Long life OPC drum [Optional]
5. Wiper Blade [Optional] (WB-101)

6. Recovery Blade [Optional] (RB-101)
7. Cotton Swabs (CT-100)
8. Toner Magnet Cloths (TM-40)
9. Lint free cotton cloths (PW-96)
10. Isopropyl Alcohol (FR-8)
11. Drum Padding Powder (DPP)

PREPARE WORK AREA



This procedure should be read in its entirety before proceeding with the actual recycling process.

1. Before proceeding with the following procedure you should have a work area available with approximately 4' x 3' clear space. It should be covered with some disposable paper since toner will spill on this area. It is recommended that brown craft paper be used and taped to the work area. This will hold the paper in place when trying to vacuum toner from the paper.
2. An empty garbage can with a strong plastic liner should be adjacent to the work area to empty used toner. It should be at least 2' deep to prevent toner from clouding up and over the top of the bag during disposal.
3. Have a few rags available and some disposable paper towels. Toner Magnet cloths are perfect for this.
4. The work area should be capable of being ventilated, if by accident toner becomes dispersed into the air. An exhaust fan in one window is recommended for ventilation.

If the Circulation of air in the work area room is combined with other rooms in the building, toner dust may be carried into the other rooms. A separate and isolated HVAC system is recommended for the work area room.

DISASSEMBLY



1. Vacuum the exterior of the cartridge.
Important: Before proceeding with the next section it is recommended that you draw a picture indicating the placement of various parts you will disassemble, or have another cartridge available for reference during re-assembly.
2. Carefully turn the cartridge over, so that the instruction label is facing you.
3. **NOTE:** There are 2 styles of 101 cartridges presently available. On the OLD style, the End Cap can be removed BEFORE the two halves are separated. On the NEW style, you must wait until AFTER the two halves are separated. If you have the OLD style cartridge, be careful not to lose the small black triangular piece of plastic that fits on the Magnetic Roller Shaft.

On the right hand side of the cartridge, there is a small piece of plastic that is held on by a Phillips head screw on the side, and the label on the top. With the razor, cut along the edge of the label, remove the screw and remove the plastic end cap.
4. Feel along the top of the main label for two screw holes. Neatly punch through the label and remove the two screws. Once the two screws are removed, you will feel the toner hopper release from the rest of the cartridge except for the part that is bound by the label. Carefully cut the label with a razor blade to complete the top half of the separation. The two halves will still be held in place by the Drum Axle Pins.
5. On each side of the cartridge there is a drum axle pin, and Phillips head screw. Remove both screws completely, and pull the Axle Pins 1/2 way out. Separate the two halves.
6. Place the Toner Supply Chamber aside and carefully turn the debris cavity and shell over. Pull the Drum Axle Pins completely out.
7. Hold the OPC Drum dust cover back and remove the Photoconductive Drum, being extremely careful not to scratch it. Vacuum any toner and debris from drum, being very careful not to come into contact with the drum surface. Do not polish or wipe the drum with a dry cloth, since this may scratch the drum. Blow off any remaining dust from the Drum using a can of compressed clean air. Never use un-filtered compressed air for this, as un-filtered air will have small dirt

particles which blown at high speeds will damage the drum.

CAUTION: Be very careful not to tilt or shake the can while spraying, as the propellant may spray out of the can and possibly ruin the drum.

8. Place the Photoconductive Drum in a soft lint free cloth and then into a dark colored bag or cover from bright light by some other suitable means. Again, do not rub or wipe the Photoconductive Drum with a dry cloth as this may scratch its surface. Always handle the Photoconductive Drum with the utmost caution, since if damaged it is costly to replace.

CLEANING THE DEBRIS CAVITY



1. Take the punch and tap out the drum axle from the big gear end about 1".
2. Put aside the small white spacer.
3. Pull the axle rod out completely
4. Remove the Photoconductive Drum being extremely careful not to scratch it. Vacuum any toner and debris from drum being careful not to let the vacuum hose come in contact with the drum surface. Do not polish or wipe the drum with a dry cloth since this may scratch the drum.

Blow off any remaining dust from the Drum using compressed clean air. If there is any matter on the drum that must be cleaned off, use 99% pure Isopropyl alcohol (FR-8 Film Remover) and a soft lint free cotton pad (PW-96) to lightly wipe the drum surface, then blow off the Drum using compressed clean air.

CAUTION: Be very careful not to tilt or shake the can while spraying, as the propellant may spray out and possibly ruin the drum.

Always handle the Photoconductive Drum with the utmost caution, since if damaged it is costly to replace.

5. Place the Photoconductive Drum in a soft lint free cloth and then into a dark colored bag or cover from bright light by some other suitable means. Again, do not rub or wipe the Photoconductive Drum with a dry cloth as this may scratch its surface.

CLEANING THE TONER SUPPLY HOUSING



Before cleaning the toner supply, first rotate the static roller by hand and observe the layer of toner applied to the static roller. The toner should form an even consistent layer of toner with no clumps or lumps showing. Should the layer of toner be thicker in some areas the static roller should be cleaned using our dedicated Static Roller Cleaner MRC-16, or 99% pure Isopropyl alcohol. Always remove the roller for cleaning and make sure it is completely dry before re-installing it. An easy way to clean the roller is to place it carefully over a round 1" Dowel, or broom handle. (Make sure that there are no dents in the wood.) This way you can use a little force when cleaning the roller without worrying about denting it.

NOTE: Be very careful when handling the magnetic roller, the roller in this cartridge is NOT a solid roller as in other cartridges, but rather a thin film attached to a rubber roller. Extreme caution must be used when handling this roller. If the roller is damaged, replace it with SRS-101 L or S (Original roller must be measured to determine proper replacement 101L=245mm, 101S=240mm).

1. Remove the Phillips head screw and large gear that block access to the fill hole plug. Remove the fill hole plug and dump the toner out of this housing. Vacuum the outside of the housing and the static roller. Turn the metal roller a few times to vacuum all sides of the roller. Inserting the vacuum end up to the fill hole while turning the static roller aids in complete toner removal.

NOTE: At this time there are no sealing strips available for this cartridge.

2. Pour the new toner into the fill hole, and replace the fill hole cap, Large gear and screw. Make sure that the cap is fully seated, and that there are no leaks.

RE-ASSEMBLE TONER SUPPLY HOUSING, OPC DRUM AND DEBRIS CAVITY



1. Coat the OPC Drum lightly with the DPP Drum Padding Powder. If you are replacing the OEM Drum, with a long life drum, coat this drum with DPP also.
2. Replace the Debris Cavity into the housing shell right side first. Make sure that the pins on the right fit into the slots. Insert the four small plastic pins, the OPC Drum, and the drum axle pins 1/2 way in.

3. Replace the Toner supply Cavity, fully insert the two drum axle pins and the two screws.
4. Carefully turn the cartridge over and replace the two top screws. Then replace the plastic end cap and its screw. To refelt the Felt wand, use the felt for the PC-Mini cartridges. Our part # Felt-101, or replace it with part # Wick-101. When transporting the cartridge, it is best to keep the toner supply area facing down and the debris cavity facing up. This is the normal position the cartridge is in when placed in its original box with the lettering in its normal vertical position. Even though there are no seals currently available for this cartridge, if packaged carefully it can be shipped without leakage.

PRINTER MAINTENANCE AND TROUBLE SHOOTING



Before taking any test prints, there are a few items in the printer that should be maintained to ensure optimum print quality. If these items are not maintained, they could cause print defects that may be incorrectly blamed on the cartridge.

Transfer Corona Wire: In the base of the printer, there is the Transfer Corona Wire. This wire should be cleaned with a cotton swab, slightly dampened with alcohol. If this wire is dirty, the print outs will either be light, or have blank horizontal stripes.

Anti-Static Teeth: Located next to the transfer corona wire are the anti static teeth. These teeth dissipate the static charge applied by the transfer corona wire to the paper. This helps prevent the paper from sticking to the OPC drum and causing a paper jam. If these teeth are dirty, they should be vacuumed clean, or carefully blown off with a can of clean compressed air.

Fuser Assembly: Towards the back of the printer is the Fuser Assembly. This assembly has a felt wand that is used to keep the upper fuser roller clean. this wand should be replaced (or re-felted) every time the toner cartridge is replaced Ozone Filter; Located in the top lid of the printer is the Ozone filter. This filter should be changed every 30,000 pages or once per year. Which ever comes first. If this filter becomes clogged, it will interfere with the air flow in the printer and can cause the printer to overheat, or print defects to occur.

Laser Glass: In the top lid of the printer, behind the hinged protective cover is the protective laser glass. This glass should be periodically cleaned with a clean soft lint free cloth. If this glass becomes dirty, all of the pages printed will be light in the areas of the dirt.

All of these items just covered, as well as the condition of the toner cartridge effect the print quality and should be checked before taking test prints.

Since the most important part of the toner cartridge is the OPC drum, special attention should be taken with this part. To help determine the condition of the OPC Drum, the printer's intensity should be set to the darkest setting while taking a test print. Having the intensity set to the darkest setting will help to show up any OPC Drum flaws that may not show up with the intensity set to the normal mid setting.

To set the intensity, turn the small green intensity knob all the way toward the front of the printer. This is the darkest setting. To run a test print, turn the printer OFF-LINE. Momentarily press the FEED/TEST key. One page of both text and graphics will print. This is on an NEC SilentWriter Model 95.

Once you have the print out's, they need to be examined to determine possible cartridge defects. In general, any marks on the paper that shouldn't be there indicate a problem. We also examine print areas for problems such as light print, and poor black fills.

Some of the more common toner cartridge problems are:

Dirty Primary Corona Wire: Located inside the toner cartridge, this will show on the test page as Dark Black vertical streaks down 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 3.68"

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.

Now that the cartridge has been tested, and you are familiar with the printer, lets move on to the cartridge printing process.

CARTRIDGE PRINTING THEORY



The toner cartridge printing process is best explained as a series of steps or stages.

The first stage in the printing process is the conditioning stage. This is where the Primary Corona Wire places a uniform negative DC voltage on the OPC drum surface. The amount of the negative DC voltage placed on the drum is controlled by the printers intensity setting.

In the second stage (also called the imaging section), the laser beam is fired onto the OPC drum surface. The laser beam dissipates the OPC drum charge to ground wherever it strikes the drum, leaving a latent electrostatic image. The OPC drums circumference is 3.68" and therefore makes approximately three revolutions for each printed page.

The third or developing stage is where the toner is developed on the drum by the developing section (or supply chamber), which contains the toner particles. Lets take a closer look at this section. The Static Roller in this cartridge is different from most in that it is a foil type sleeve loosely fit around a rubber core. The toner is held to the static roller by a DC voltage supplied by the high voltage power supply. This voltage is controlled by the printers intensity setting, and causes either more or less toner to be attracted by the static roller. This in turn will either increase or decrease the print density. The toner is first fed to the static roller by the feed roller. The amount of toner on the static roller is controlled by the metal doctor blade which is gapped to keep the amount of toner on the static roller constant.

As the laser exposed areas of the OPC Drum approach the static roller, the toner particles are attracted to the drum's surface due to the opposite voltage potentials of the toner, and laser exposed areas of the OPC drum. This image is then transferred to the paper as it passes below the drum by the transfer corona wire, which places a positive charge on the back of the paper. This positive charge causes the negatively charged toner on the drum's surface to be attracted to the page. The small diameter of the drum, combined with the stiffness of the paper causes the paper to peel away from the drum. The static charge eliminator weakens the attractive forces between the negatively charged drum surface, and the positively charged paper. Without this help, thin paper may wrap itself around the drum.

The image is then fused on to the paper by the fuser assembly, which is comprised of the upper and lower fuser rollers. The lower rubber roller presses the page up into the upper roller which then melts the toner into the paper. The upper roller is a hard Teflon coated, heated roller, which is kept clean by a felt wand.

The fourth stage is where the OPC drum is cleaned. On average, approximately 90% of the toner is transferred to the paper during the print cycle. The remaining 10% remains on the OPC drum and is cleaned off the Drum by the wiper blade, guided into the waste chamber by the recovery blade, and stored in the waste chamber. The OPC Drum now ready to be Conditioned by the Primary Corona wire, and start the print cycle again.

© 2003 Summit Laser Products, Inc. Any attempt to reproduce any part of these instructions without the written consent of Summit Laser Products, Inc is prohibited. All registered trademarks are the property of their respective owners.

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 0x3c30 Thread 0x285c DBC 0x8430024 Jet'.

/script/catSearch.asp, line 58