Technical Document

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*Lexmark T620/622 Toner Cartridges
DOC-0304

OVERVIEW

Remanufacturing the Lexmark T620(4069-5XX,7XX) Series Toner cartridge

First introduced in June 2001, the Lexmark T620 series is based on the Lexmark 4069-5XX,7XX 1200 dpi engine. Depending on the model, the print speed is from 30-40 pages per minute. Although these machines are based on the older Optra T 610 engine, (4069) these machines are faster. Due to the speed and fuser characteristics, the toner is completely different. This toner is also different from the T520 series.

Lexmark breaks down the engines as follows:

T620	4069-520
T620n	4069-52N
T622	4069-722
T622n	4069-72N

All take the same cartridges, but the printer parts can vary from machine to machine.

Apparently to cut their costs, Lexmark is no longer using a drum cover on their cartridges (See Diagram #1). Replacement drum covers should be available soon.

These cartridges have ARD (Anti-Recycling devices) installed in the Prebate cartridges that will not allow the cartridge to be used again until the chip board is replaced. As with other Lexmark cartridges, the Non-prebate cartridges will work with out replacing the chips. At the time of this writing, replacement chips are available that are either single use, or multiple use. If you are not going to get the cartridge back, use the cheaper, single use chip. If you are, use the multiple use chip. The only thing to be aware of is that if (or when) Lexmark changes the firmware in the machines, the multiple use chips will no longer work. Lexmark has even set up flash updates on their web site for existing customers to "upgrade" their machines, making even the remanufactured cartridge that is in the machine un-useable!

The Encoder wheel in these cartridges does not control the toner yield as in past cartridges, that is done by the chip. The encoder wheel only indicates if the cartridge is a Prebate or not. See diagram # 2 for the two versions. The Non-prebate wheel in our cartridges is made of white plastic, where the non-prebate is black.
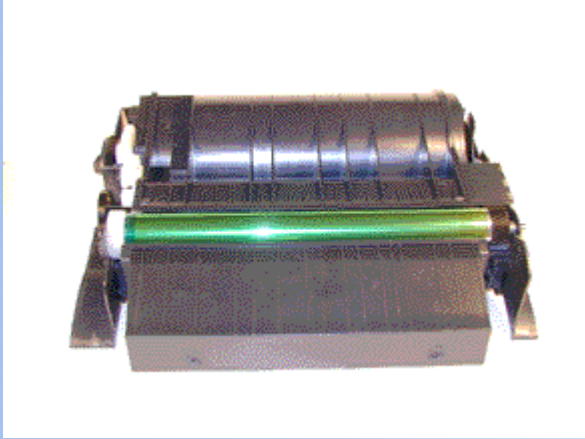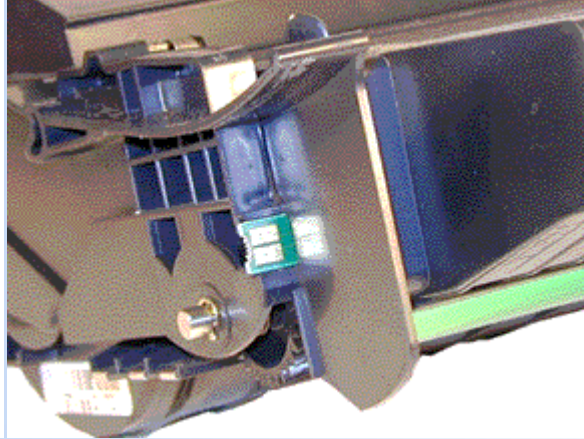
FIGURE 1

FIGURE 2

For cartridges used in MICR only machines, make sure that the chip you are using will work. This is also strictly a chip function. If the cartridge is to be used in other than a Lexmark machine the chip is different again. So far IBM and Toshiba are using this engine. Again, check with your chip supplier to make sure that their chip will work with your machine.

All that being said, these cartridges have a huge profit potential (See below). Even with the extra cost of the chip, and having to be careful what machine it goes into, they are more than worthwhile to do. The cartridge design is based on the older Optra S. Out of all the Lexmark designed cartridges this is by far my favorite. It's easy to do with very few headaches.

The Lexmark Part #'s for these cartridges are as follows:

- Prebate 10K* cartridge: 12A6860 list $192.00**
- Prebate 30K* cartridge: 12A6865, List $471.00**
- Regular 30K* cartridge: 12A6765, List $521.00**
  - *Yield based on 5% coverage*
  - ** *List prices current as of September 1st 2002*

As with the Optra S machines, the PCR is not in the cartridge, it's in the printer, and is rated for 300,000 pages. The Wiper Blade inside the cartridge has an external felt brush that keeps the PCR clean. It should also be noted that because of the play between the toner hopper and the OPC drum, a shipping lock should be installed in every cartridge. This holds true even if you are going to hand deliver thecartridge. Cartridge / machine troubleshooting as well as how to take test prints will be covered at the end of this article.

REQUIRED TOOLS

- Toner approved vacuum.

- A small screwdriver (Common Style)

- A Phillips head screwdriver (#1)

- Needle-nose pliers

- Spring Hook

MATERIALS NEEDED

- 1 Bottle T620 870g toner for 20k cartridge, use 435g for 10K cartridge

- Drum padding powder (Kynar) Do NOT use Zinc Sterate on these cartridges!

- Cotton Swabs

- Isopropyl Alcohol

- Cotton Pads

- Long life OPC Drum (Optional)(4059 Style)

- Wiper Blade (4059 Style)

- Shipping Lock

- Aftermarket drum cover
- Felt Wand (4059 Style)
- Recovery Blade (4059 Style)
- Conductive Grease

DISASSEMBLY

1. Vacuum the exterior of the toner cartridge.

2. Place the cartridge on the bench drum side up (Label face down), and the toner supply towards you.

3. With the needle nose pliers or a spring hook, remove the two springs from each end of the cartridge. See Diagram #4

4. Note that there are two posts from the hopper that fit into the cartridge shell. Pull the shell out to release the posts, and lift up the hopper so that the posts are free. See Diagram #5

FIGURE 4
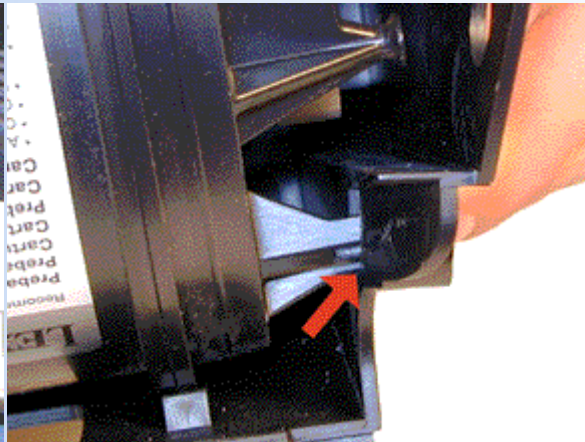
FIGURE 5

5. Slide the hopper to the right, and remove from the cartridge. Pull it out so that the large white bearing comes free. Place the hopper aside. See Diagram #6

6. Remove E-Ring from the small helical gear end of the drum axle. There is no need to remove the other E-ring. See Diagram #7
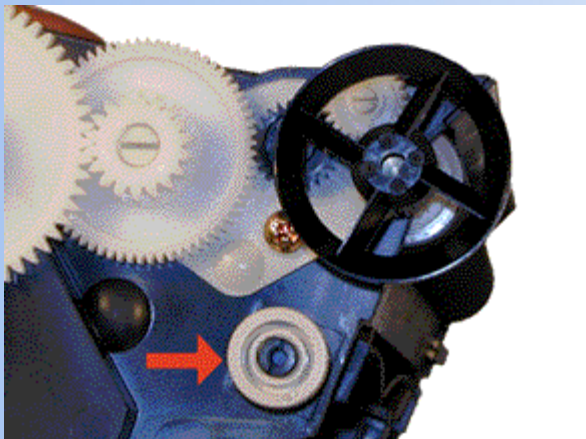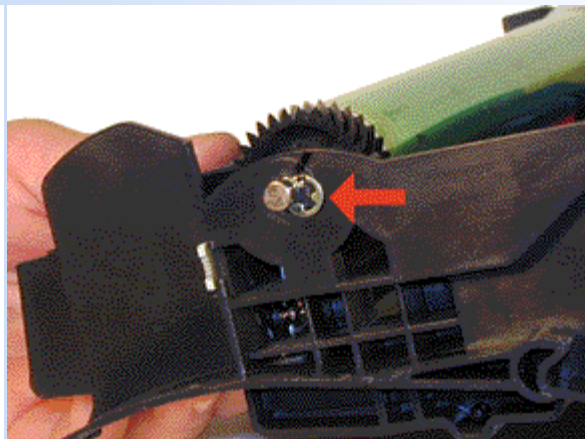

FIGURE 6

FIGURE 7

7. Slide the Drum Axle out of the cartridge. Hold the small helical gear while pulling it out so that the drum is not damaged in the process. Note the location of the spring. See Diagram #'s 8 & 9
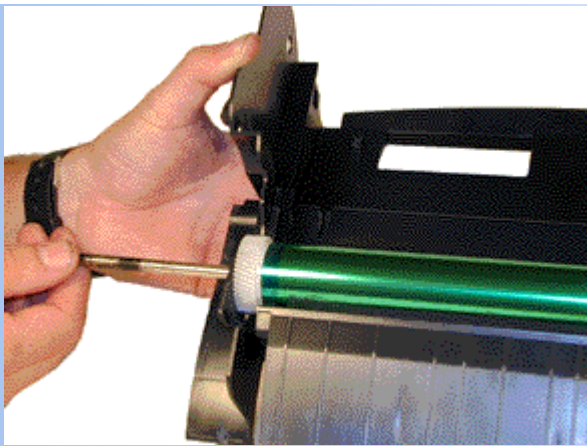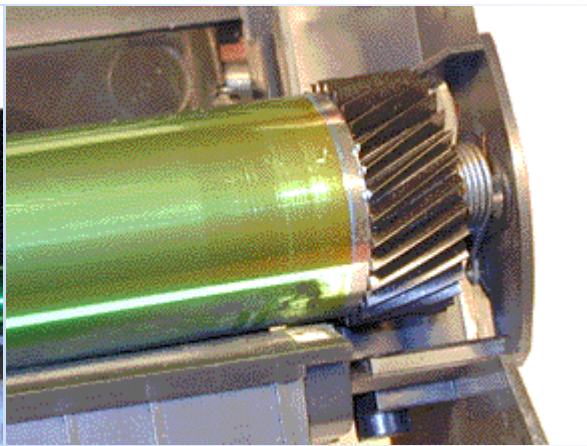
FIGURE 8

FIGURE 9

8. Gently lift the Drum and Drum washer up and out of the cartridge, and place in a light protected area. Be careful not to lose the spring, it's purpose is to keep the drum from rotating backwards. See Diagram #10

9. Remove the Wiper Blade by removing the two screws from the Wiper Blade. See Diagram #11
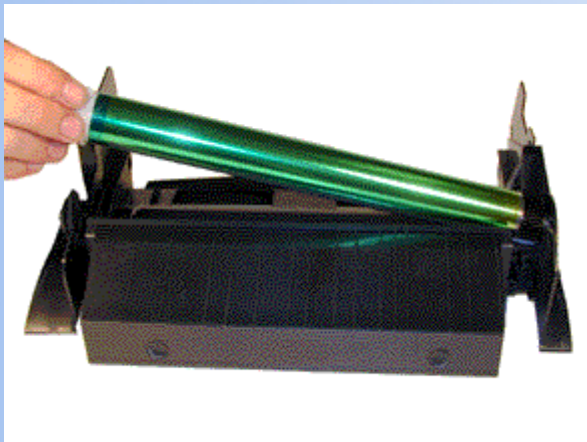

FIGURE 10

FIGURE 11

10. Turn the cartridge so that the waste bin is face-up. Take a razor blade and cut the foam seal that runs the back edge of the blade so that it is separated from the cartridge. Make sure to cut along the plastic, and not the blade. See Diagram # 12

11. Hold the cartridge so that it is up right (Standing up with the waste bin on the table). With one hand, hold the laser shutter open, and with the other hand, remove the Wiper Blade. See Diagram #13

    NOTE1: The OEM Wiper Blade has the PCR cleaning assembly attached to it. It cannot be removed from the Blade without damaging it. Our new replacement Wiper Blades come complete with this assembly attached.

    NOTE2: The "Starter cartridges" that came with a new printer do not have the PCR Cleaning Assembly on the Wiper Blade.
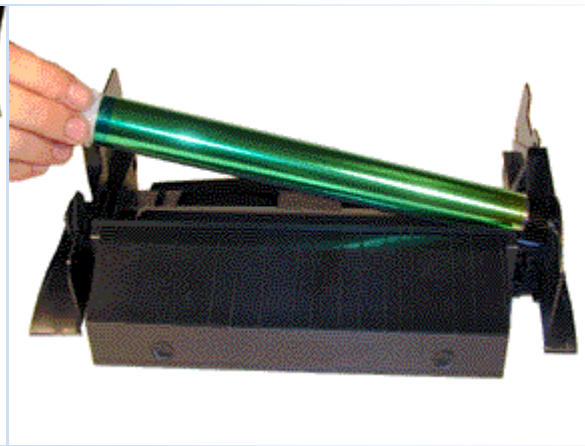
FIGURE 12

FIGURE 13

12. Make sure that the two end foams are clean and in their proper place See Diagram #14

13. Pad the new Wiper Blade with Kynar padding powder, replace the blade and two screws into the cartridge. See Diagram #15
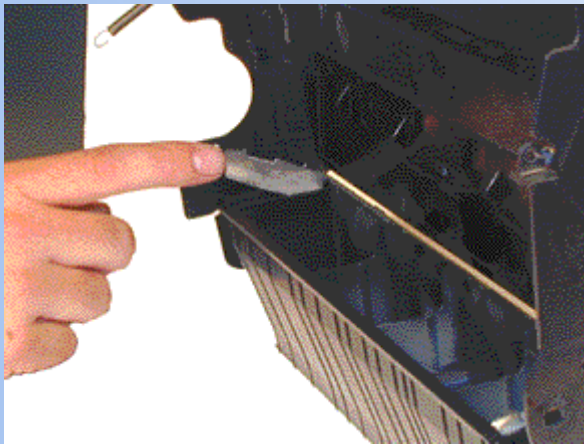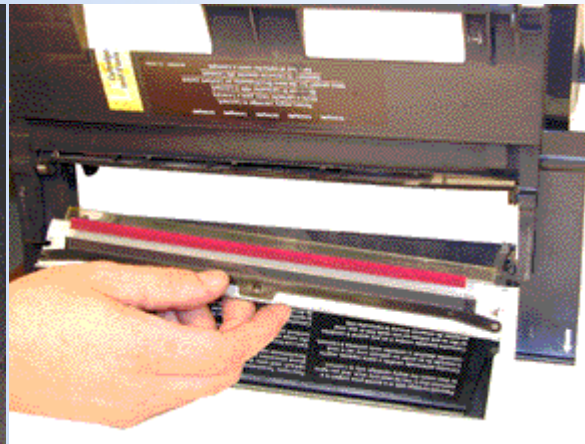

FIGURE 14

FIGURE 15

14. Place a piece of tape along the edge of the Wiper Blade. If the tape does not stick well, the area should be cleaned with alcohol. It is very important to get a good seal with the tape, otherwise the cartridge will leak. Trim away any excess tape. See Diagram #16

   NOTE: Be careful not to allow any tape into the laser port opening!

15. Remove the Recovery Blade entirely, and shake the toner out of the debris cavity into the garbage can and vacuum clean. Removing the Recovery Blade allows greater access to the waste toner. See Diagram #17
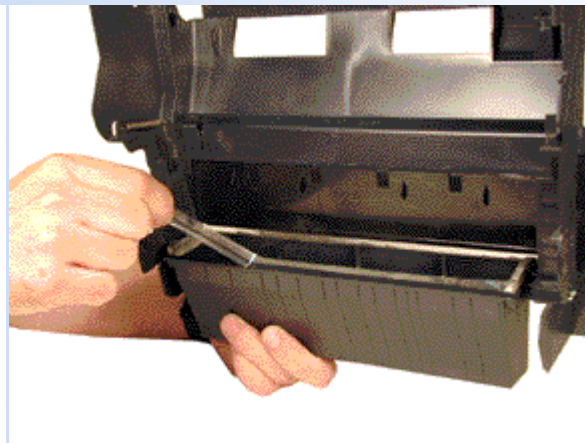

FIGURE 16

FIGURE 17

16. Install a new recovery blade with a recovery blade insertion tool. Use of this tool will keep the blade from becoming damaged. See Diagram #18

17. With a small common screwdriver, gently pry off the Encoder Wheel.

   Pry it off from the center shaft so that the wheel does not become damaged. Place the wheel in a safe place. Remember, this wheel tells the cartridge what type of cartridge it is, Prebate or Non-Prebate. The chip tells the machine what type of yield the cartridge has. If this wheel becomes damaged, it must be replaced with a wheel from another cartridge. See Diagram #19
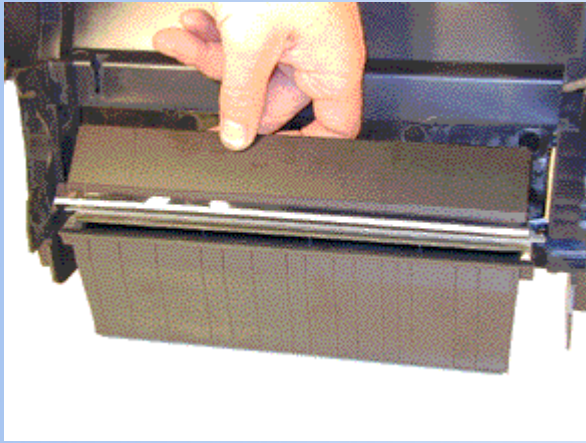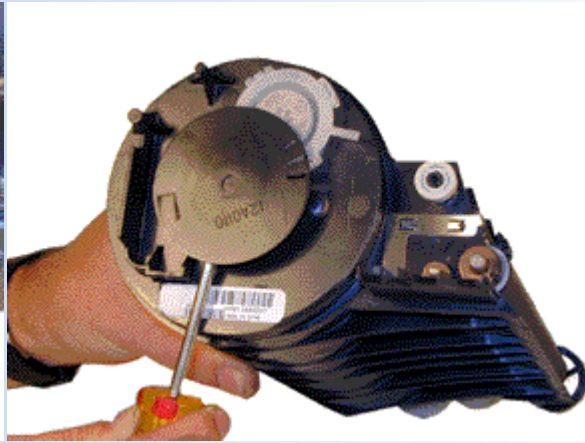

FIGURE 18   **FIGURE 19**

18. Remove the Doctor Blade Spring by pressing down on the center of the spring. See Diagram #20

19. On the left (fill Plug) side of the Static Roller there is a small metal bushing, take a small screwdriver, and turn the bushing up so that the tab on the bushing is facing up. This will release the bushing, and Static Roller. See Diagram #21
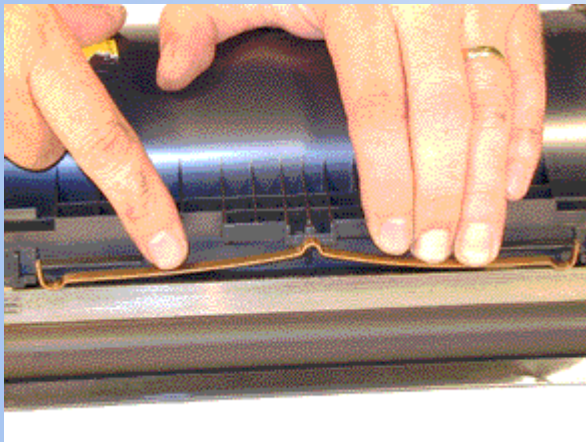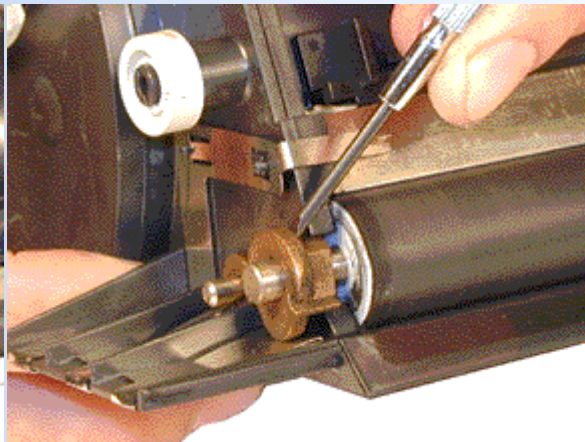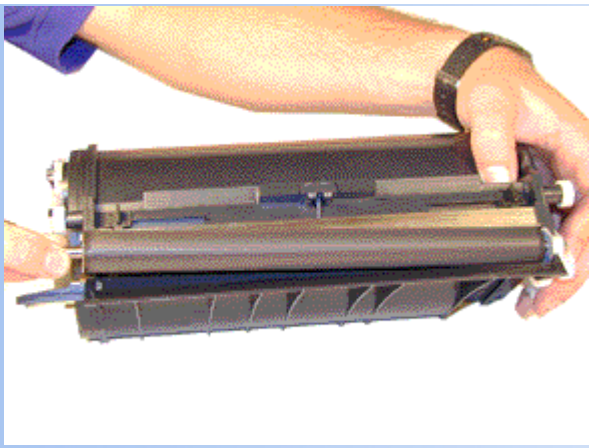

FIGURE 20   **FIGURE 21**

20. Remove the Static Roller, and bushing. See Diagram #22

   NOTE: Always remove the Doctor Blade Spring before removing the Static Roller, failure to do this will allow the Doctor Blade to slide down from its original position.

21. Remove the fill plug from the hopper. Pry the plug out from the base next to the hopper. The fill plug is also a breather cap. It is best to remove both sections at once and to clean them from the outside. These plugs tend to leak if they have been separated. See Diagram #23
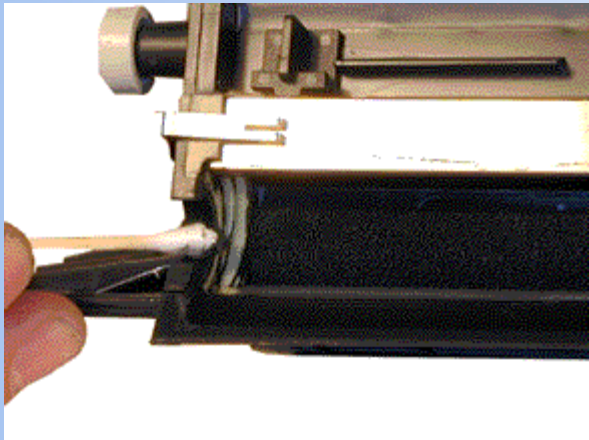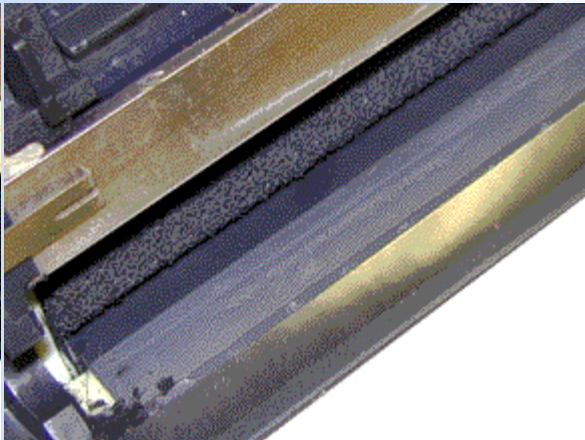
FIGURE 22

FIGURE 23

22. Vacuum the Toner Hopper clean.

23. With a cotton swab dipped in alcohol, clean the Static Roller seals located on either end of the static roller section. These seals are made of a white plastic. Also clean the electrical contact that touches the Static Roller shaft. See Diagram #24

24. Carefully vacuum or blow off the Static Roller, Be careful not to touch the roller with your hands, or to damage this roller in any way.

25. Inspect the inner and outer retaining blades (Black Mylar). If they are bent in any way, they must be replaced as they will leak. See Diagram #25
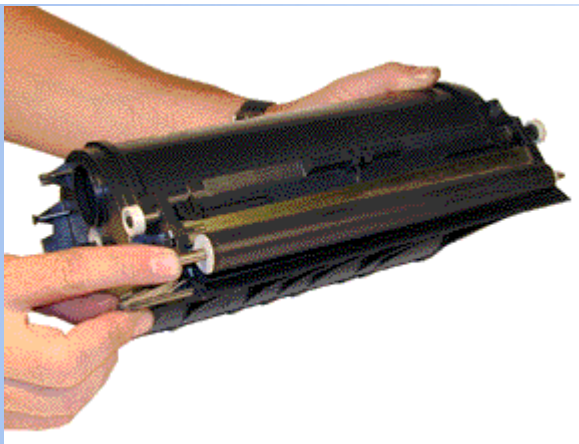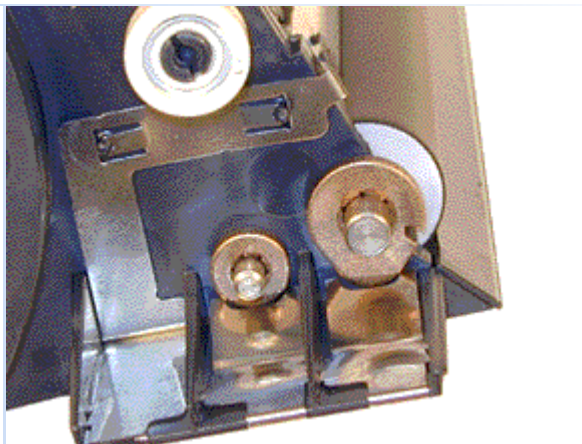

FIGURE 24

FIGURE 25

26. Install the white washers on the static roller, and on the NON-Keyed end of the Static Roller, install the bushing. See Diagram #26

27. Place the keyed end of the Static Roller into the cartridge, and install the roller. Turn the bushing so that the tab is facing down. This will lock the roller in place. See Diagram #27
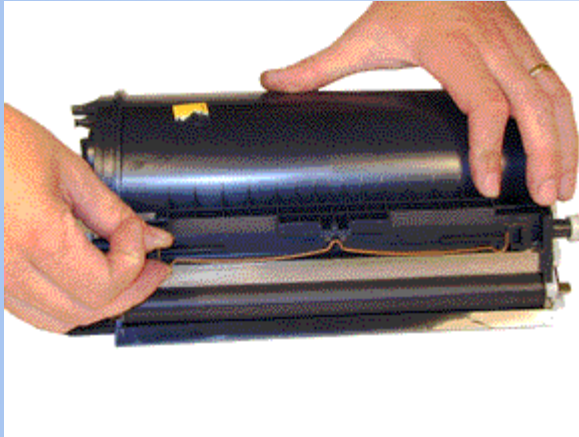
FIGURE 26

FIGURE 27

28. Install the Doctor Blade Spring. See Diagram #28

29. Fill the hopper with the appropriate amount of toner. Remember, the amount of toner that can be placed in the cartridge is controlled by the chip. Use 600G for the 20k cartridge, and 250g for the 7.5k cartridge. Install the Fill Plug. See Diagram #29

FIGURE 28

FIGURE 29

30. Install the Encoder Wheel

31. Remove the drum from the light protected area, and blow off any remaining toner with the canned compressed air, and lightly coat with the Drum Padding Powder,(Kynar). Do NOT use DPP (Zinc Sterate), this powder will ruin the wiper blade.

32. Place the OPC Drum into the cartridge with the small helical gear on the NON-Contact side of the cartridge. Make sure that the spring is in the proper position! See Diagram #30

33. Install the Drum Axle pin into the small white gear side of the drum.

    The Axle must be installed this way to prevent the axle from bending and damaging the drum ground contact located inside the drum. See Diagram #31
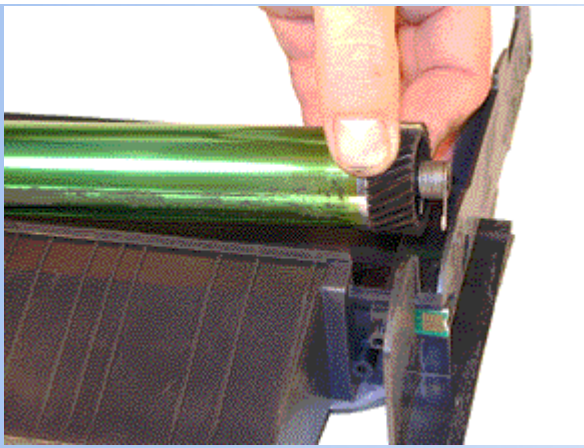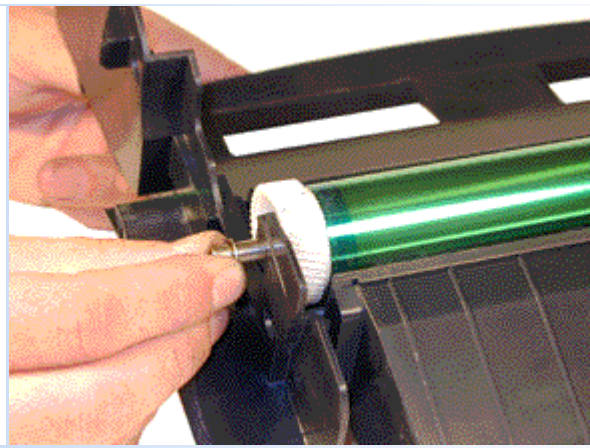
FIGURE 30

FIGURE 31

34. Install the E-Ring on the end of the axle. See Diagram #32

35. remove the old chip with a pair of pliers, and install the new chip.

36. Take the Toner Hopper and install it left side first. Make sure the left side post, and the white bearing are in their proper slot. See Diagram #33
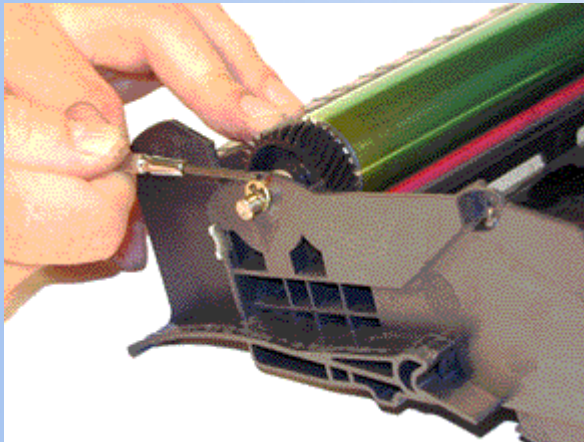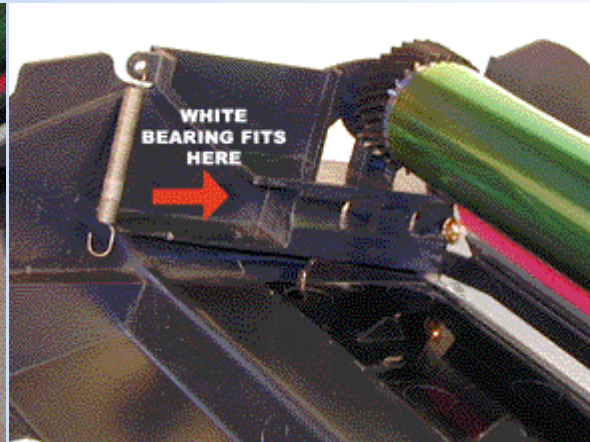

FIGURE 32

WHITE
BEARING FITS
HERE

FIGURE 33

37. On the right side of the cartridge, pull the cartridge shell out so that the right side post falls into its slot. See Diagram #34

38. With the spring hook, replace both springs on to the Toner Supply Chamber. See Diagram #35
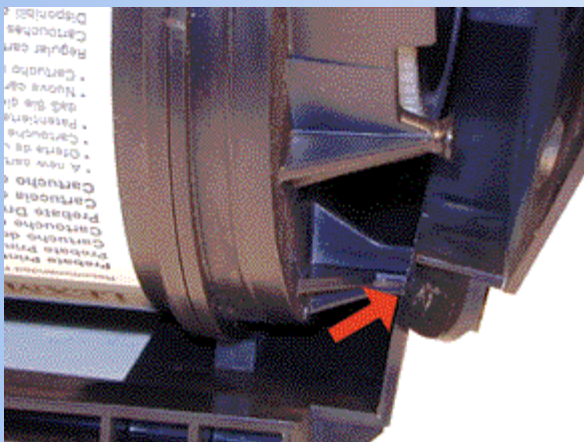

FIGURE 34

FIGURE 35

39. Re-install the Static Roller drive gear. See Diagram #36

40. A shipping lock must now be installed. This lock should be used even if you are going to hand deliver the cartridge. It will prevent the toner hopper from coming in contact with the OPC Drum, and causing damage to either the Drum or the Static Roller. Press the two red tabs into the sides of the cartridge as indicated in the picture supplied with the lock.

When packaging the cartridge, make sure you include a new Felt Wand. Replace the wand in the machine by lifting up the external plastic cover located over the fuser assembly. Unlike most other printers, this area cannot be reached from the inside of the machine!
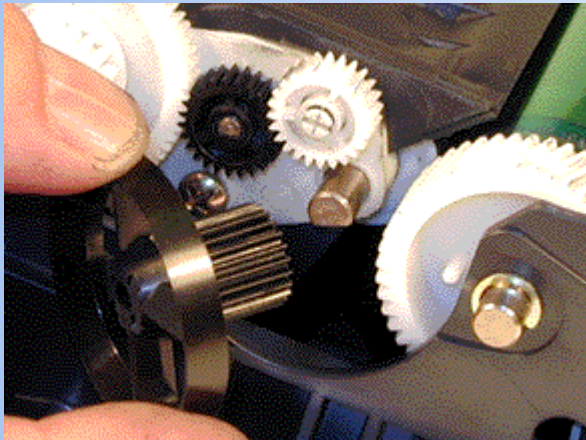

FIGURE 36

TROUBLE SHOOTING

Dirty Primary Charge roller Located inside the PRINTER, this will show on the test page as vertical gray streaks down the page, or as a gray background 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 2 times per page. Any drum defects will repeat 3 times per page based on the drum circumference of 5.2".

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.

Weak Dr. Blade Spring This will usually show as shaded areas on one or both sides of the page.

MACHINE ERROR CODES

31	Defective print cartridge We have no idea what they mean by this. It is possible that the cartridge has too much torque, and is loading down the gear train, but we just don't know.
32	Unsupported Print cartridge (Wrong chip, encoder wheel combination, or bad chip). If this happens immediately upon cartridge instillation, there is either a bad contact to the chip, or the chip is bad. If the machine cycles and then the message appears, the wrong encoder wheel is installed.
80	Scheduled maintenance (300,000 page)
88	Toner Low
200-206	Various Paper Jams
917	Bad transfer roller
920 921 922 923 924 925	Fuser errors

929	Toner sensor error This could be a bad developer drive assy., bad cartridge, bad chip reader in the printer. Or the gear opposite the encoder wheel shaft in the cartridge is out of place. Most commonly this gear is the problem
930 931-935	Print head (Laser unit) bad

TAKING TEST PRINTS

1. Press the "MENU"(2) key until "Tests Menu" is displayed

2. Press "SELECT"

3. Press "MENU"(2) for a demo page

4. Press "MENU"(2) to print the menus

5. Press "MENU"(2) To print the fonts

6. Press SELECT" again and the selected page will print

   The Menu page also contains the printer page count, toner level, cartridge serial number, cartridge size, if it is Prebate or not, and the cartridge type, (Normal, MICR, Label).

   There is also a series of test pages that can be run to help a technician diagnose problems. To run these pages, do the following:

   a. Turn the printer off.

   b. Press and hold "Select" and "Return"

   c. Turn on the printer

   d. Release the buttons once "Performing self test" displays.

   e. Select "Print Quality Test Pages" from the menu.

   f. The printer will then print three pages:

      Page 1 has the page count, printhead type (Laser unit), memory, processor speed, machine serial number, cartridge information such as Toner level, cart. Serial number, capacity, Prebate or Normal, margin settings, resolution, density, fuser temp, print contrast and much more. There is a lot of information on this page.

      The next two pages have graphics only.

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* **These chips are designed to work on Non-Prebate, (Non-return) cartridges only**