

HP® 1500 • 2500 • 2550

DRUM/TRANSFER UNIT REMANUFACTURING INSTRUCTIONS



HP 1500/2500/2550 DRUM/TRANSFER UNIT

REMANUFACTURING THE HP COLOR LASERJET 1500/2500/2550 DRUM/TRANSFER UNIT

By Mike Josiah and the Technical Staff at UniNet

The **HP 2500 series** of printers over time has proven to be very popular. The basic engine has been upgraded four times now, each time with better features, and for the most part, a lower cost. From our industry's point of view, the toner cartridges are fairly easy to remanufacture, and while the OPC cartridge is a bit more complicated, the potential profit makes it worth the effort (remanufacturing the toner cartridge for these machines has been covered in a previous article). The OPC cartridge is actually made up of two different units: the OPC and the transfer belt. Both of them must be taken apart and cleaned in order for the cartridge to function properly. It's a fairly complicated process, and you have to be very careful to keep your hands clean. The gears all have grease on them and it is very easy to get that grease on the belt. Great care must be taken to prevent this as the grease may ruin the belt. There are different part numbers for the different version drum units, but they all are remanufactured the same way.

As stated above, there have actually been four different releases to this series: the first, in October 2002, was the **HP 2500 series** based on a 17 ppm black, 600 DPI engine (2400 DPI with Resolution Enhancement Technology or RET). Those machines sold new for approximately \$1,000.00 USD.

Then in May 2003, the **1500 series** was released. The 1500 series is based on a 16 ppm, 600 DPI engine, but the new machine prices dropped to as low as \$550.00 USD for both these groups, the color speed stayed at 4 ppm, and the cartridges used are the same.

Then, in June 2004, the **2550 series** was released. The black print speed jumped to 20 ppm, but the color still stayed at four pages per minute. Resolution also stayed the same at 600 DPI (2400 DPI with RET). The list price on these machines dropped to \$499.00 USD. The 2550 machines also use a new set of cartridges.

Finally in April 2005, the **2800 series** was released. The 2820 and the 2840 are both "All-in-One" machines that print, copy, fax (for the 2840 only), and scan. The print speed for both machines is 20 ppm black and still 4 ppm for color. The 2820 lists for \$799.00 USD and the 2840 is \$999.00 USD. The cartridges used are the same as the 2550 series. The 2820 machines come new with a 5,000-page black cartridge and all 2,000-page color cartridges. The 2840 machines come new with a 5,000-page black cartridge and all 4,000-page color cartridges. Both groups of machines use a five cartridge system consisting of four color toners, and a separate drum cartridge. Cartridges used by these machine groups are as follows:

HP COLOR LASERJET 1500/2500 (CANON EP-87)

C9700A Black	5,000 pages at 5%	\$115.54 list*
C9701A Cyan	4,000 pages at 5%	\$139.18 list*
C9702A Yellow	4,000 pages at 5%	\$139.18 list*
C9703A Magenta	4,000 pages at 5%	\$139.18 list*
C9704A Drum	20,000 pages Black, 5,000 color**	\$241.68 list*

HP COLOR LASERJET 2550/2820/2840

Q3960A Black	5,000 pages at 5%	\$115.54 list*
Q3961A Cyan	4,000 pages at 5%	\$139.18 list*
Q3962A Yellow	4,000 pages at 5%	\$139.18 list*
Q3963A Magenta	4,000 pages at 5%	\$139.18 list*
Q3964A Drum	20,000 Pages Black, 5,000 color**	\$241.68 list*
Q3971A Cyan	2,000 pages at 5%	\$103.00 list*
Q3972A Yellow	2,000 pages at 5%	\$103.00 list*
Q3973A Magenta	2,000 pages at 5%	\$103.00 list*

There are also now special U.S. government cartridges. These cartridges have a "G" at the end of the part number. We are not sure at this point what the difference is, but they sell for the same price as the others.

***Pricing is in U.S. American Dollars on all cartridges, and is current for both series as of August 2006.**

****According to HP, the actual average life expectancy for the drum unit is between 6,000 to 8,000 pages.**

MACHINES THAT USE THESE CARTRIDGES

HP 1500/2500 Engine: Canon imageClass MF8170C

Canon LBP-2410

HP Color LaserJet 1500

HP Color LaserJet 1500 L

HP Color LaserJet 2500

HP Color LaserJet 2500 L

HP Color LaserJet 2500 n

HP Color LaserJet 2500 Tn

HP 2550 Engine:

Canon LBP-5200

HP Color LaserJet 2550 L

HP Color LaserJet 2550 Ln

HP Color LaserJet 2550 n

HP Color LaserJet 2820 AIO

HP Color LaserJet 2840 AIO

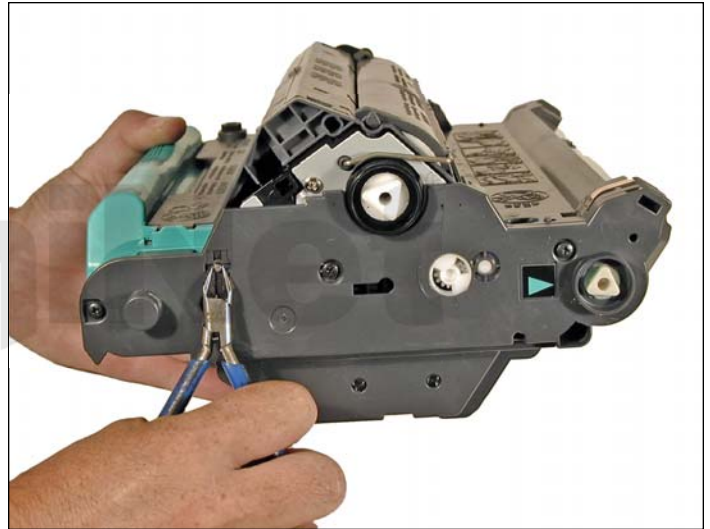
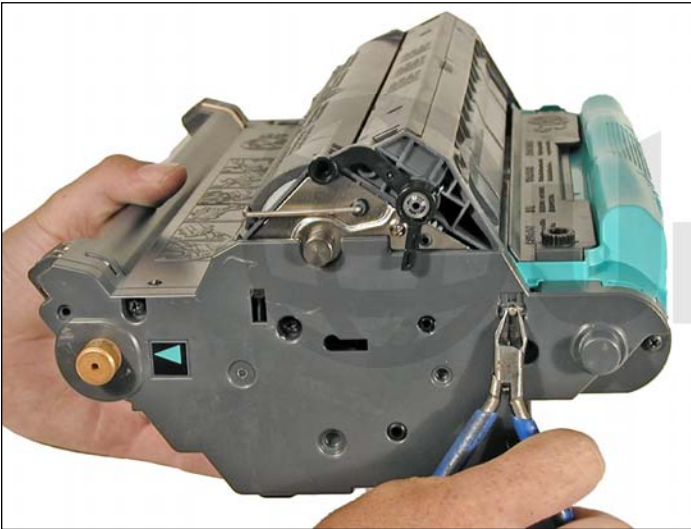
Taking test prints, cartridge troubleshooting, as well as minor printer troubleshooting, will be covered at the end of this article.

REQUIRED TOOLS

1. Toner approved vacuum or toner approved dust collector system
2. Phillips head screwdriver
3. Needle nose pliers
4. Jeweler's screwdriver set
5. Flush cutting wire cutters

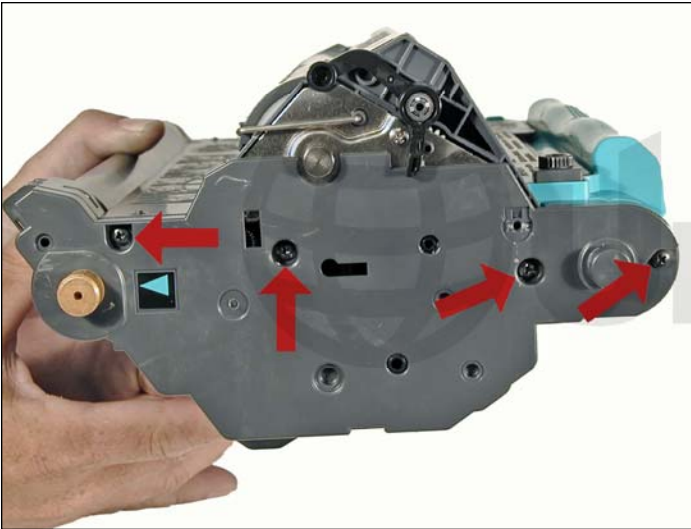
SUPPLIES REQUIRED

1. New replacement chip
2. New OPC drum
3. New wiper blade
4. Drum/wiper blade lubricant
5. Lint-free cloths
6. Conductive grease

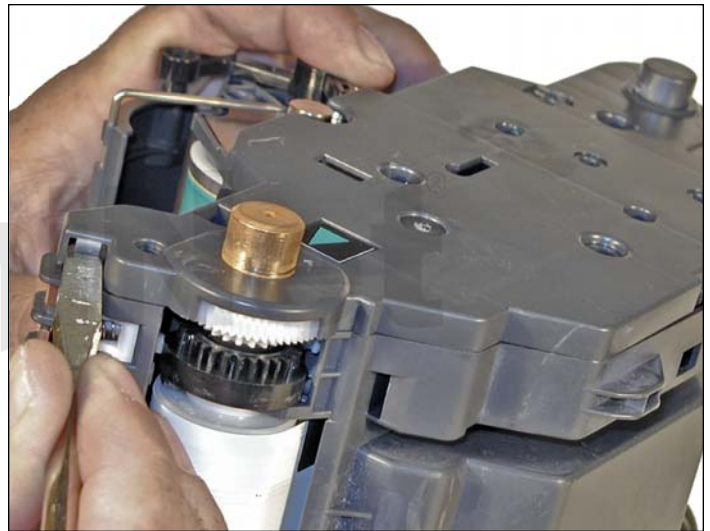
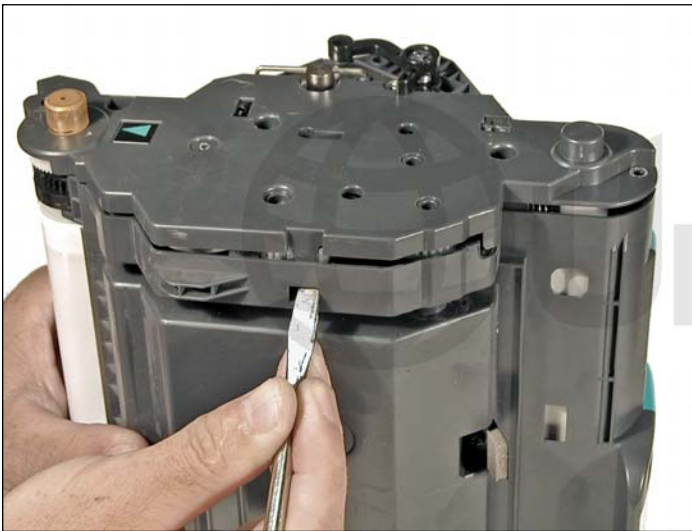


1. using the wire cutters, remove the two pins from each side of the cartridge.

If the pins are recessed, press in on the plastic with the cutters.



2. On the contact side of the cartridge, remove the four screws from the end cap.

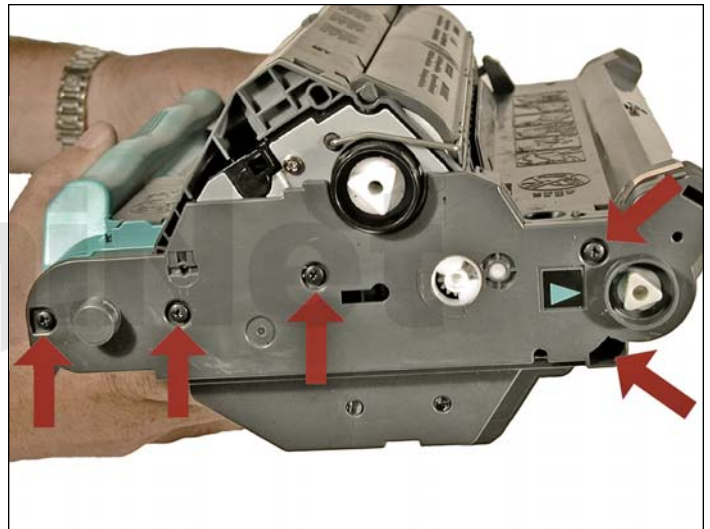


3. Press in on the bottom and top tabs to release.

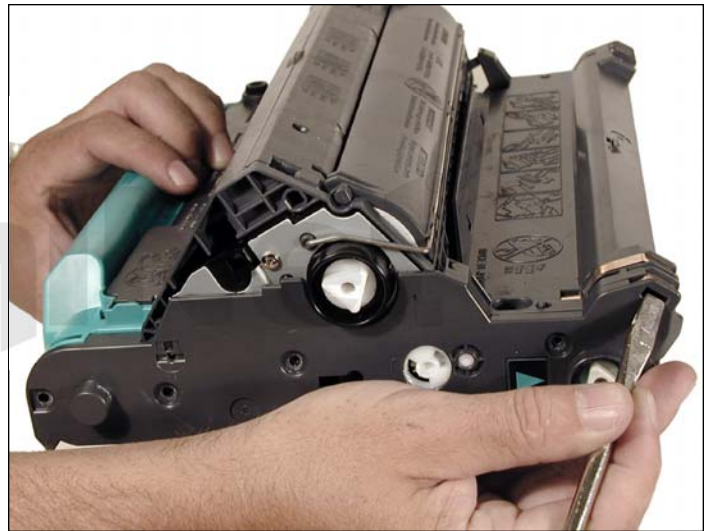


4. Remove the end cap.

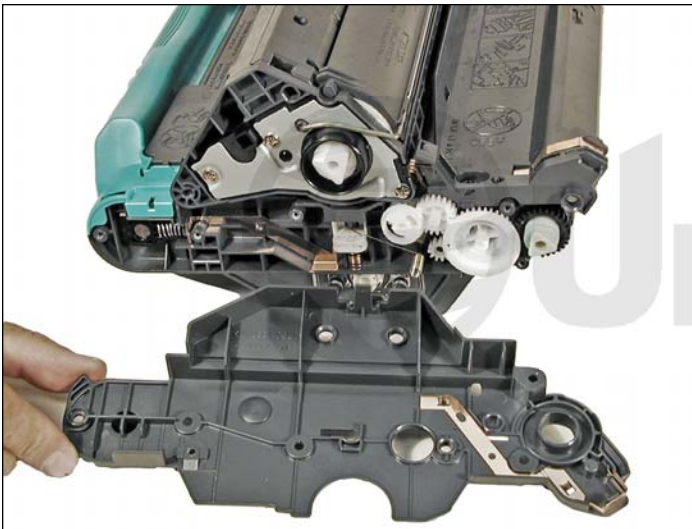
Watch the large copper contact hub, as it will come loose.



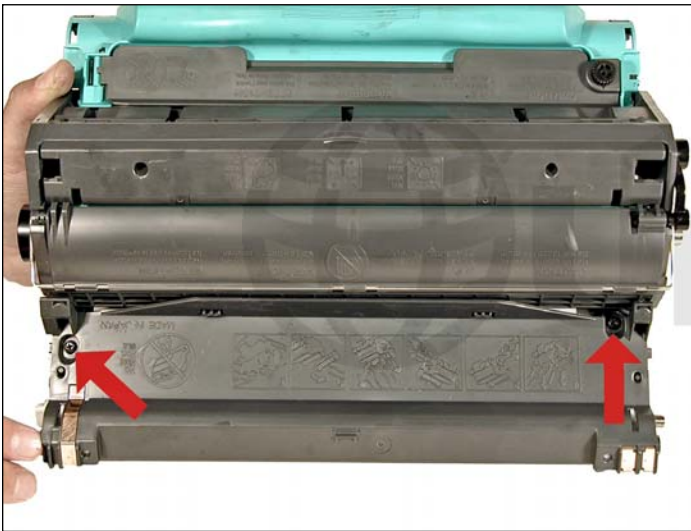
5. On the opposite side, remove the five screws from the end cap. A small white indicator gear may also come off. Place it aside.



6. Press in on the bottom and top tabs to release.



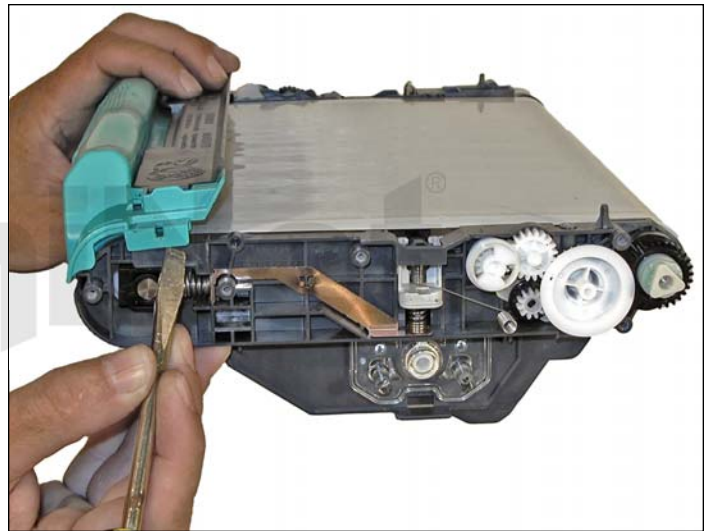
7. Remove the end cap.



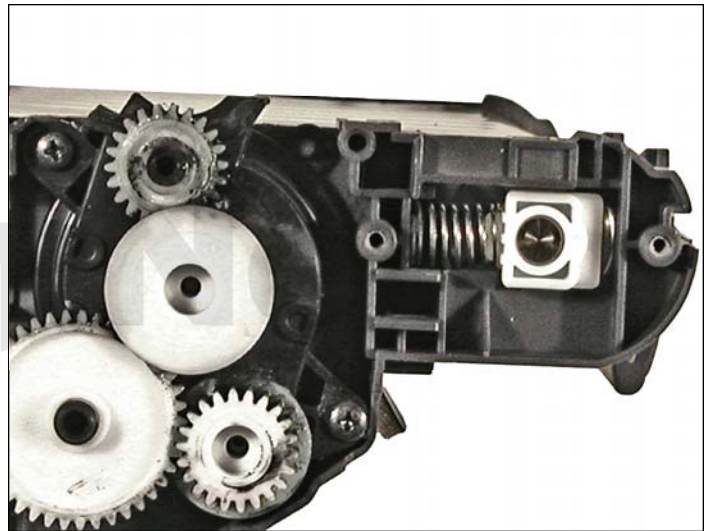
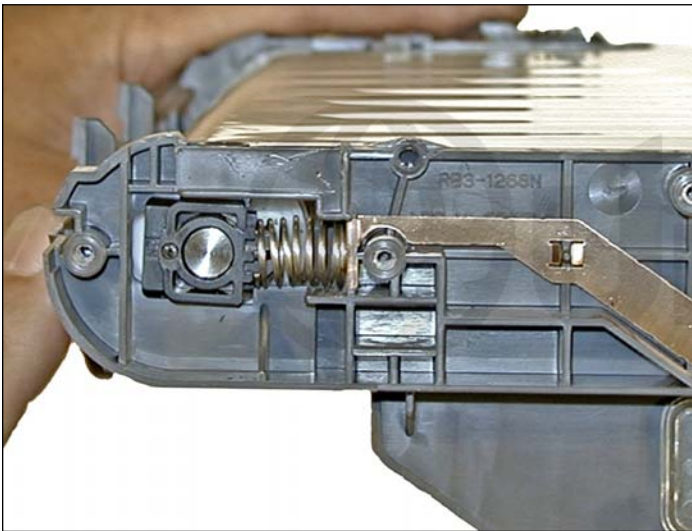
8. Remove the two screws from the large roller assembly, and remove the assembly.



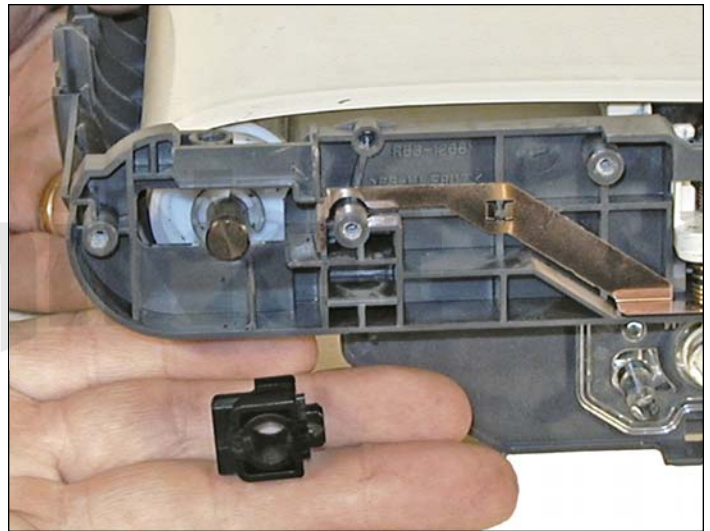
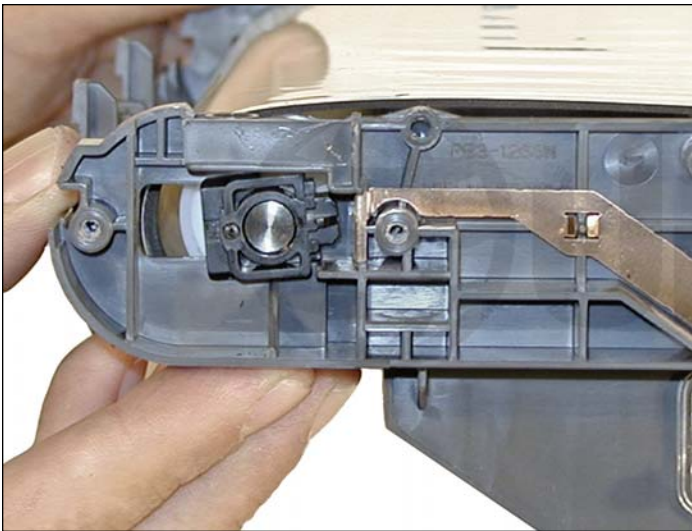
9. Lift the drum assembly off the cartridge and place aside.



10. Press up on the green side handle tabs, and remove the handle.



11. Remove the tension spring from both sides of the transfer belt.

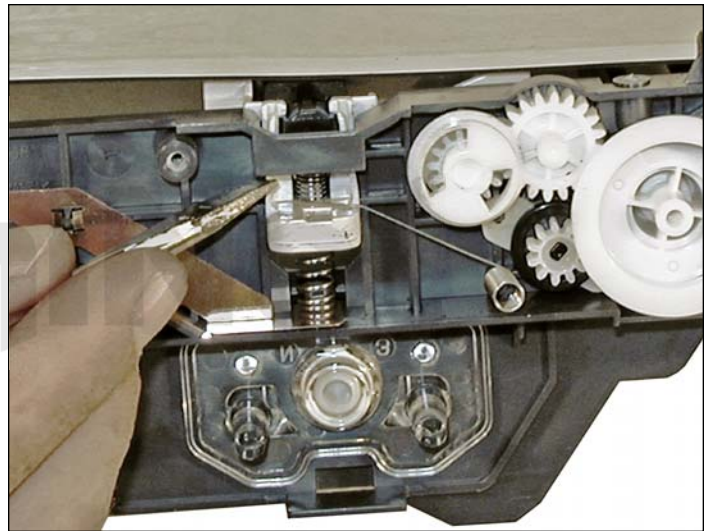
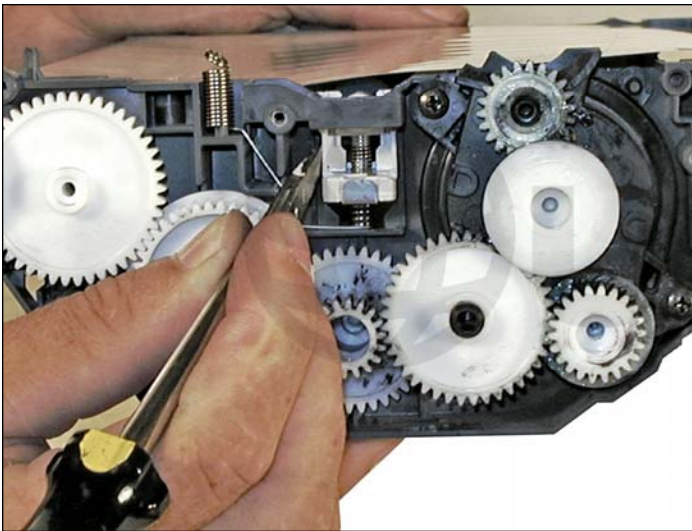


12. Slide the front roller back, so the black and white bushings can be removed.

Remove the bushings.

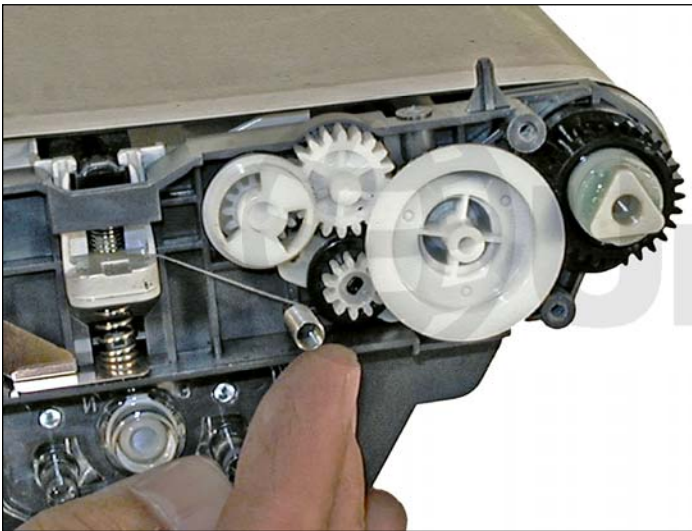


13. Remove the silver roller from inside the belt.



14. Press in on the tabs to release the transfer roller assembly.

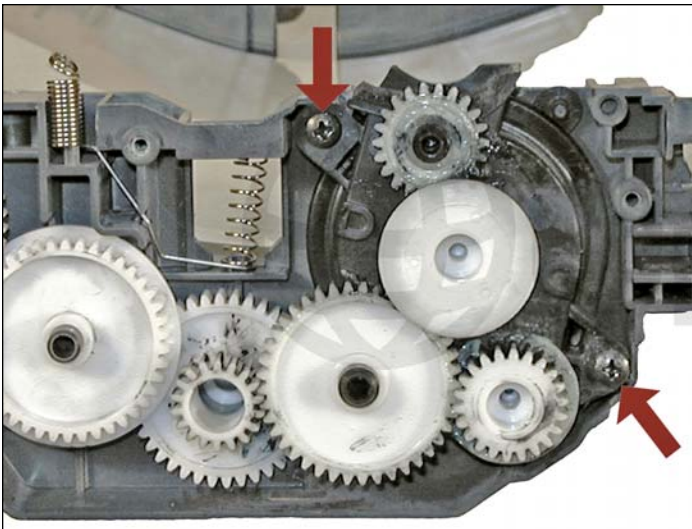
There are two tabs per side.



15. Remove the spring from the plastic shaft next to the transfer roller assembly.



16. Carefully remove the transfer roller assembly from inside the belt. Make sure the spring doesn't get caught on the belt.



17. On the large gear side, remove the two screws from the gear cover.



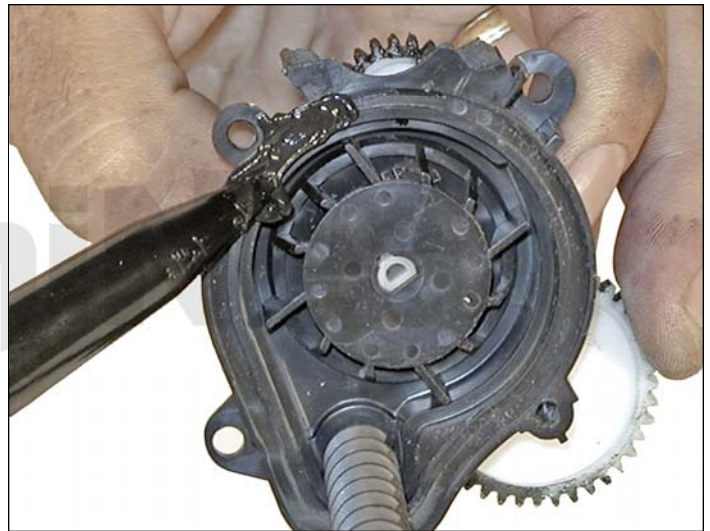
18. Pry off the black cover and gears. The cover is glued on. Take your time and work it off. Do not remove the gears from the cap!



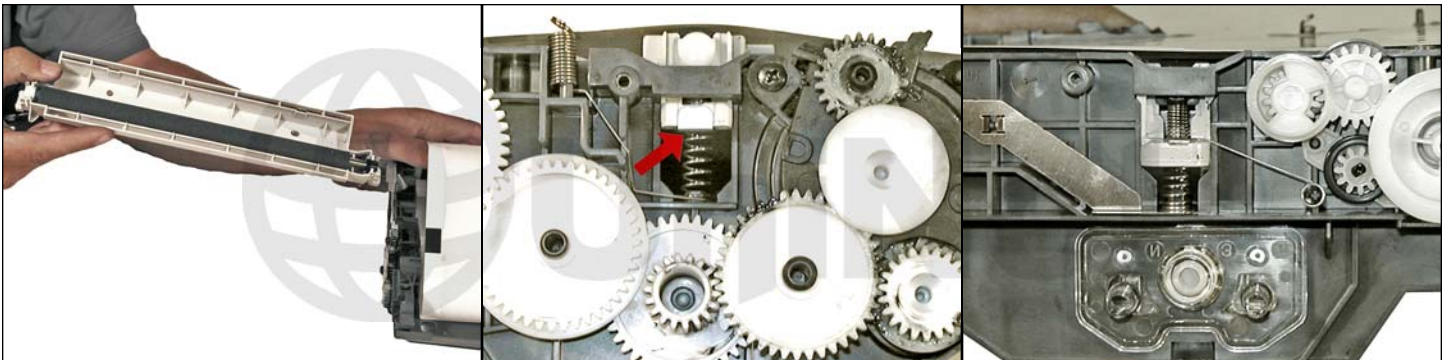
19. Vacuum the waste chamber clean.

Peel off the old rubber glue from the cover.

Vacuum the auger/cover clean.



20. Place a small bead of silicon in the groove of the cover. Install the black cover and two screws. Make sure the auger and gear align. Clean the belt inside and out with a clean lint-free cloth.



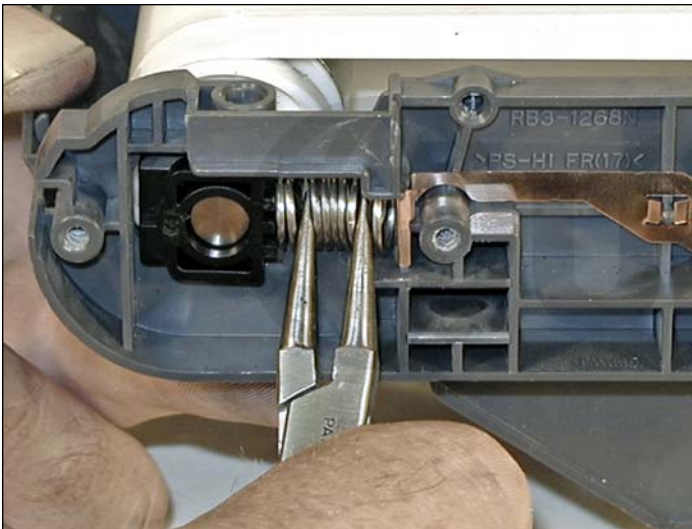
21. Vacuum the transfer roller assembly clean and re-install.

Insert the small spring side first (to the contact side).

Align the posts and spring. Press into place on both sides.



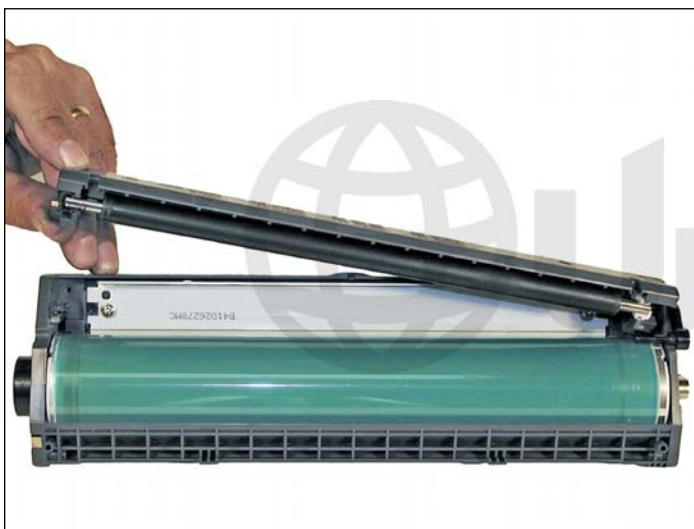
22. Install the silver roller back into the belt (white hub to contact side). Make sure the foam on the back side of the belt fits into the slot in the roller. Install the black and white bushings into the cartridge as shown. There is a small tab that fits into the bushing slot to help align them. The black bushing goes to the contact side.



23. Install the belt tension springs. Take a pair of needle nose pliers and compress the spring. Install on the post first, and slide the bottom of the spring in.



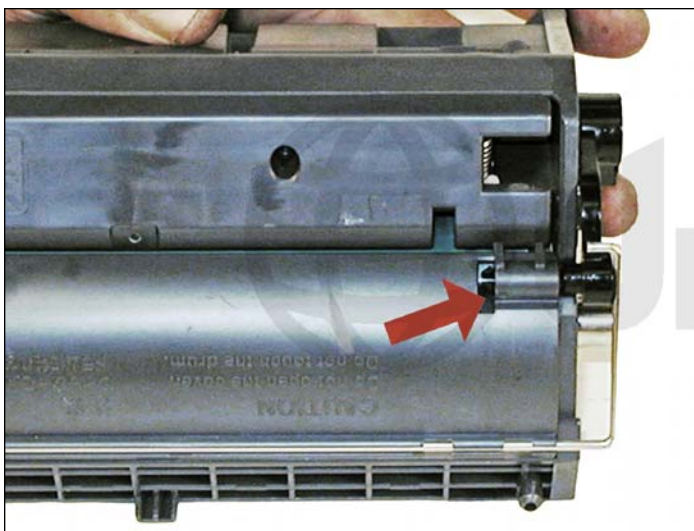
24. On the drum unit, remove the two screws from the top of the cartridge. They are recessed and located by the drum cover bar.



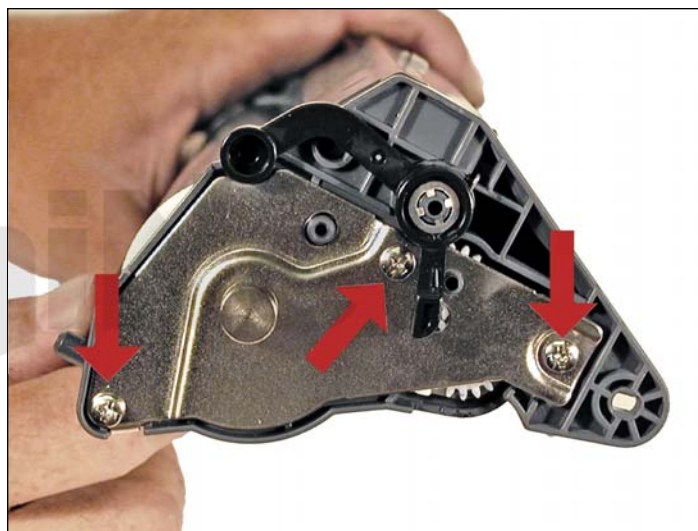
25. Remove the PCR roller assembly.



26. On the drum unit, remove the metal drum cover bars from the cartridge.



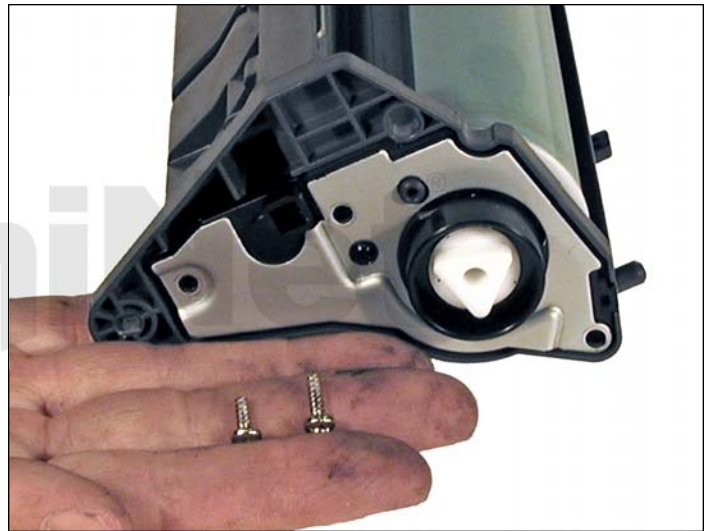
27. Press in on the drum cover spring arm tab to release the cover. Remove the cover.



28. Remove the three screws from the metal drum axle.



29. Rotate the drum cover arm out of the way, and remove the drum axle.

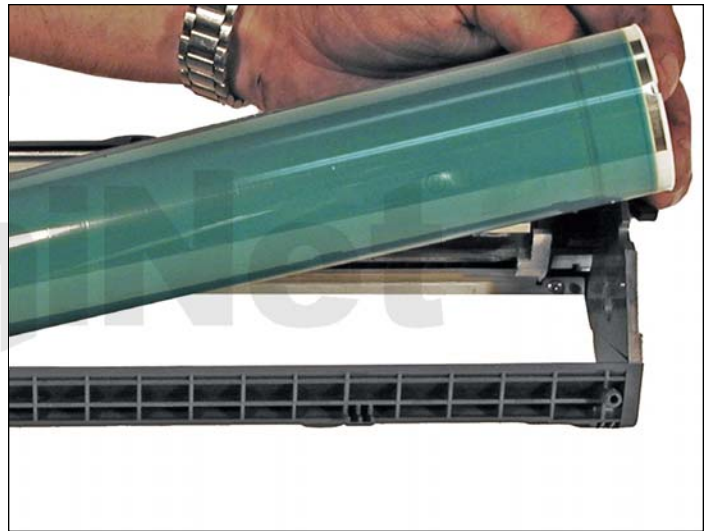


30. Remove the three screws on the opposite side plate.

Note that these screws are larger than the drum axle plate screws.



31. Press in on the copper contact, and remove the plate.



32. Remove the OPC drum.



33. Remove the two screws and wiper blade.



34. Remove the three screws from the waste chamber brace, remove the brace.

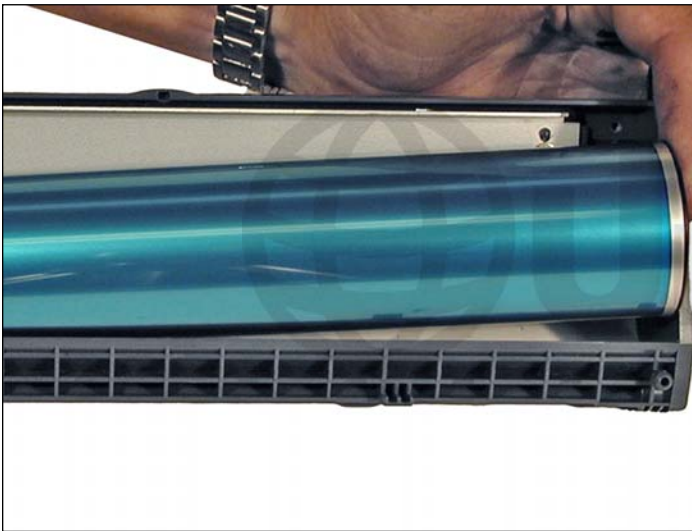
Clean out the waste toner.



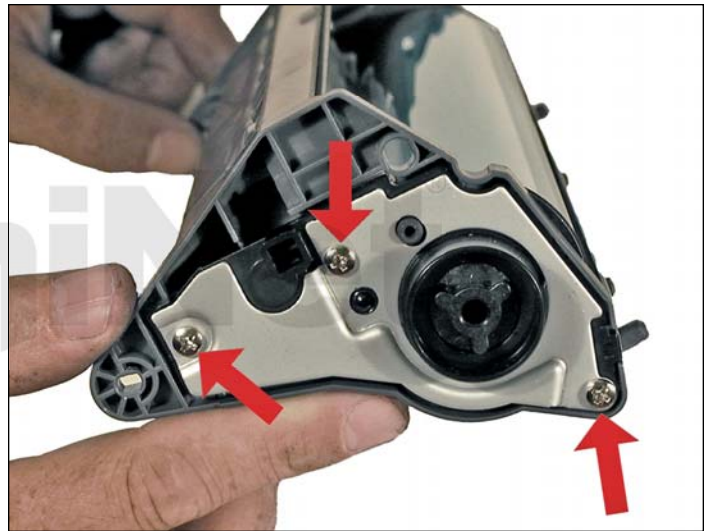
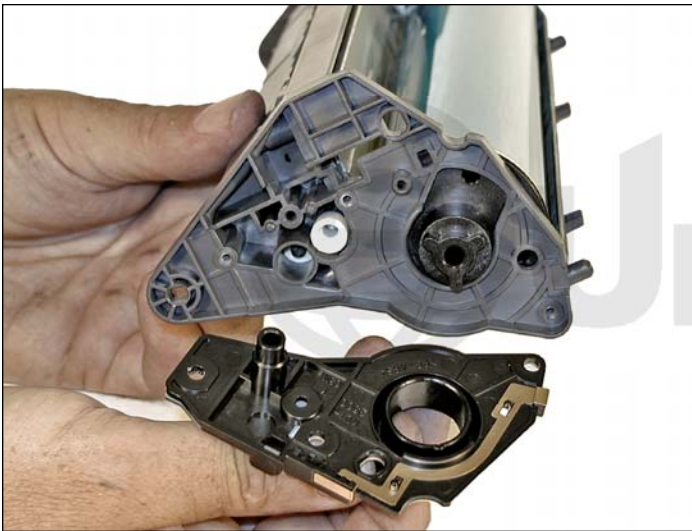
35. Reinstall the brace and three screws.



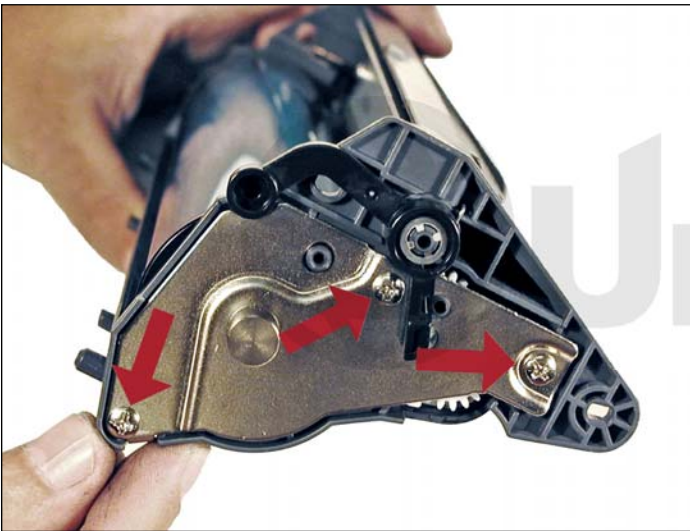
36. Coat the new wiper blade with your preferred lubricant and install.



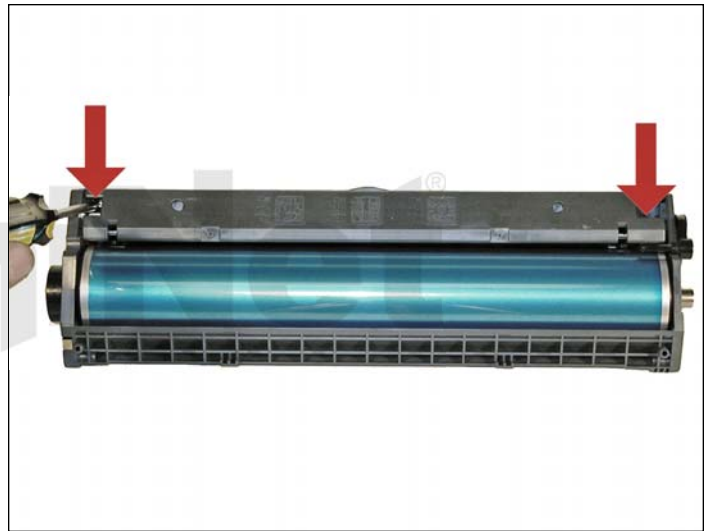
37. Install the new OPC drum.



38. Install the gear side contact plate and three screws (these are the longer silver screws).



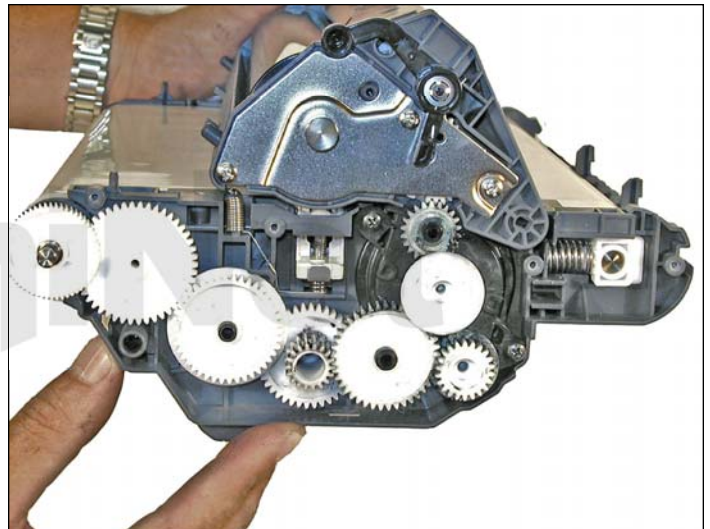
39. Install the drum axle plate and three screws (short silver). Make sure the contact grease on the end of the axle is clean, otherwise replace it. Clean the PCR with your preferred cleaner.

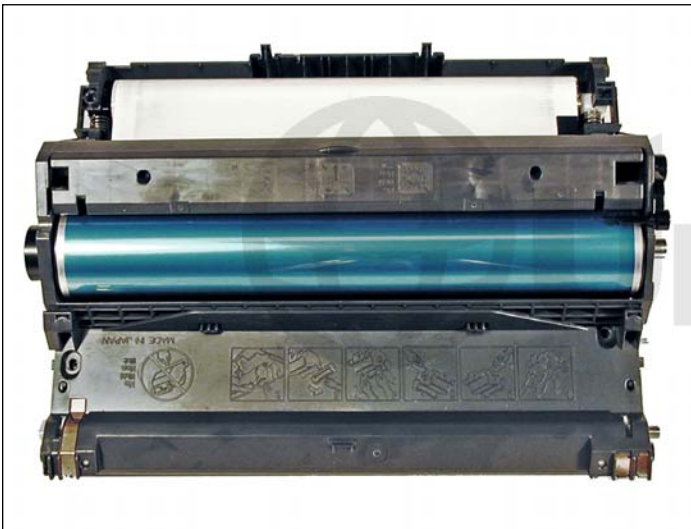


40. Install the PCR assembly and two screws (silver).



41. Set the drum unit on top of the transfer belt assembly so the waste auger aligns with the waste port.





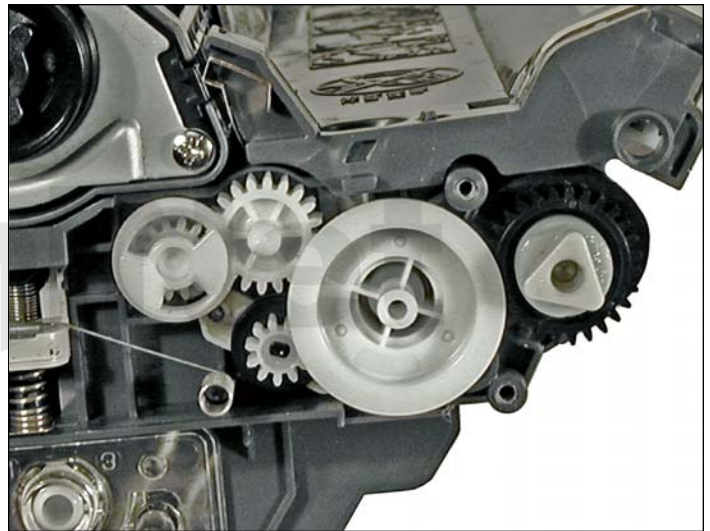
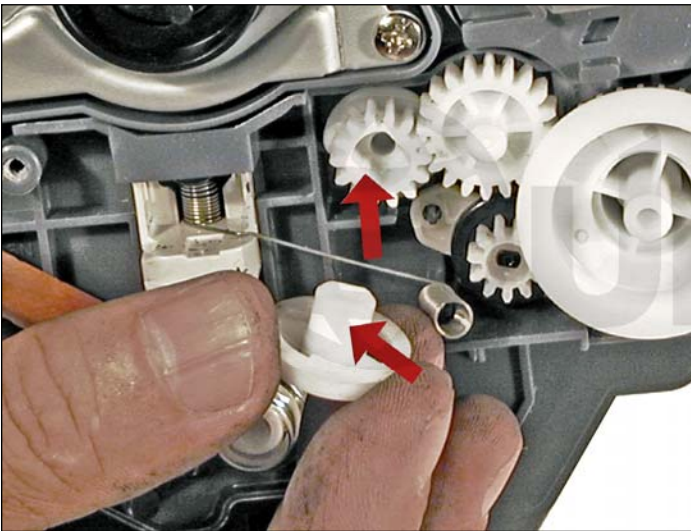
42. Clean the roller assembly and install in the drum/transfer assemblies.

Install the two screws.



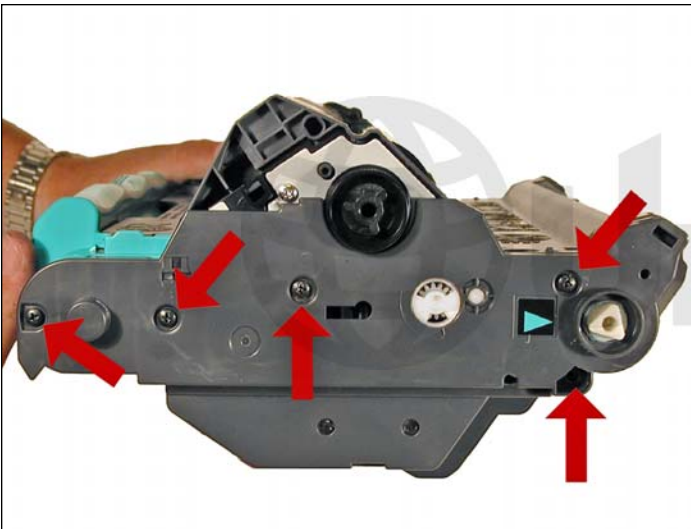
43. Snap the green handle in place.

Make sure all the tabs are locked.

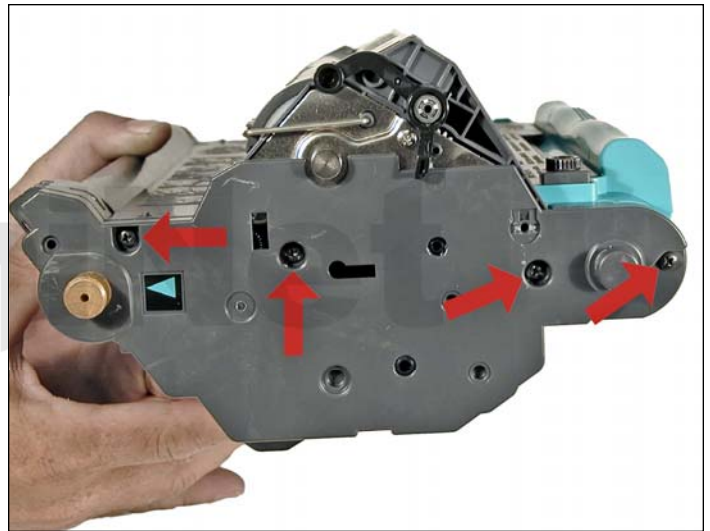
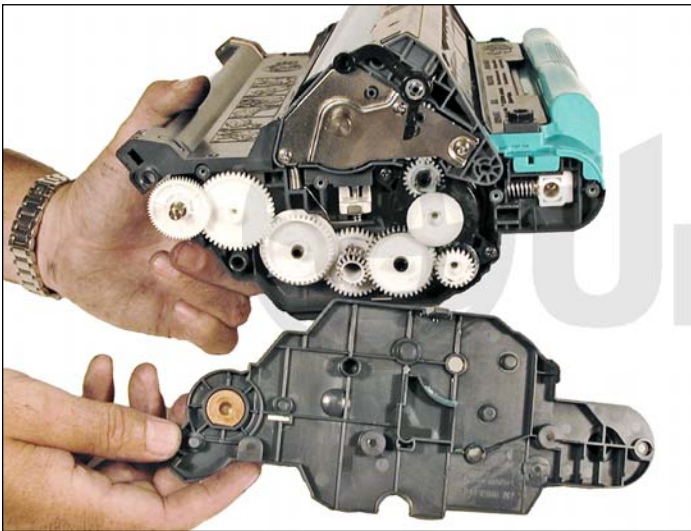


44. Install the small indicator gear in the gear train as shown.

The gear will only fit in one way.



45. Install the contact side end cap and five screws.

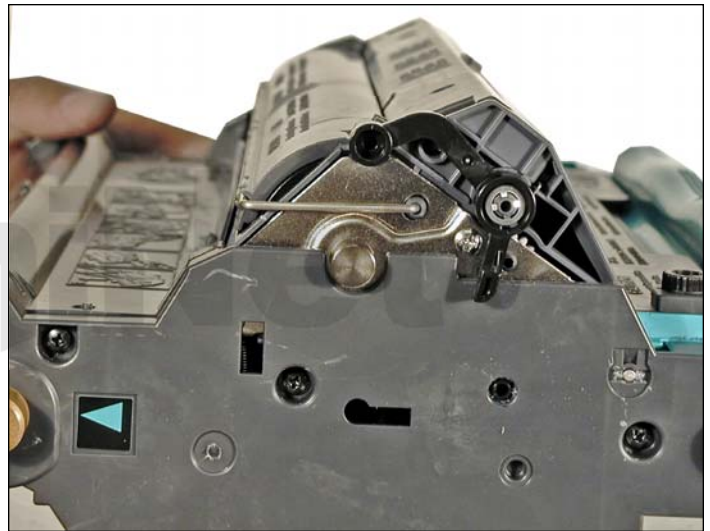


46. Install the gear side end cap and four screws.

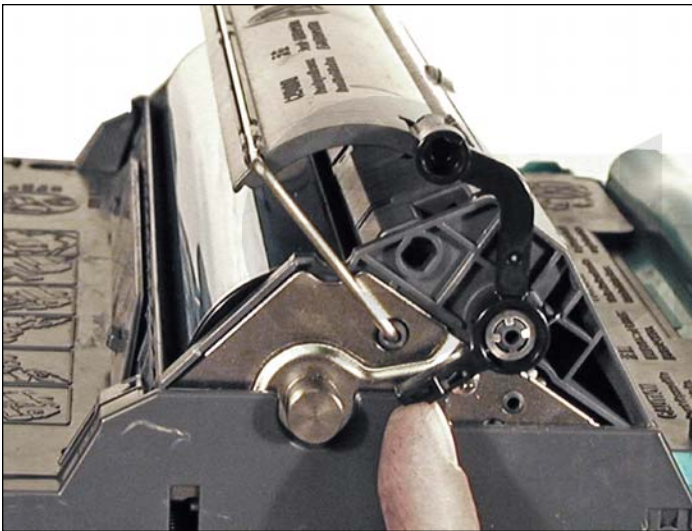
Make sure the copper contact hub is aligned properly.



47. Install the two hinge pins.



48. Install the drum cover into the spring arm, and install the metal bar ends into the correct holes.



49. Make sure the drum cover opens properly.



50. Replace the chip.

TAKING TEST PRINTS**Demo Page:**

1. With the printer ready, press the "GO" button once.
2. The Demo page will print out.

Configuration/Supplies Status Pages:

1. With the printer ready, press the "GO" and "CANCEL JOB" buttons simultaneously.
2. Both the Configuration and the Supplies Status pages will print out.

REPETITIVE DEFECT CHART

Pre ICL roller:	22.1 mm
Developer roller:	33.9 mm
ICL roller:	37.9 mm
Primary charge roller:	38.1 mm
RS roller:	41.9 mm
T1 transfer roller:	44.3 mm
T2 transfer roller:	56.9 mm
Fuser pressure roller:	66.6 mm
Fuser film	75.6 mm
Transfer belt drive roller	89.0 mm
Transfer belt tension roller	90.0 mm
OPC drum	148.3 mm

CARTRIDGE TROUBLESHOOTING

Dirty Primary Charge Roller (PCR): The primary charge roller, if dirty, will show on the test print as vertical streaks down the page, or as a background throughout the page. If there is any physical damage, it will repeat at intervals of 38.1 mm. If the backgrounding is not all the same color, it usually indicates that more than one cartridge has a problem. Use a color chart to determine what cartridges are bad (green = cyan and yellow, etc.).

Dirty PCR Connection: This will result in dark color horizontal bars across the page, or as shading throughout the page. Color will follow the color of the cartridge.

Scratched Drum: This will show up as a very thin, perfectly straight line that runs from the top to the bottom of the test page.

Chipped Drum: This will result in a dot or series of dots that repeat at 148.3 mm intervals.

Light Damaged Drum: This will show up as a shaded area on the test print that should be white. Again, this will repeat at intervals of 148.3 mm.

Damaged Developer Roller:

This will either leave a mark or a blank spot (depending on the type of damage) at intervals of 33.9 mm.

Bad Wiper Blade:

This will result in vertical shaded lines down the page, or as shading across the entire page. In either case, there will be a film of toner on the drum surface.

SOME OF THE MORE COMMON PRINTER ERROR MESSAGES

These machines do not have a text display. Everything is indicated by lights:

Color cartridge light is on steady:	Toner low.
Color cartridge light is blinking:	Toner out/cartridge missing.
Drum cartridge light is on steady:	Drum life low.
Drum cartridge light is blinking:	Drum life out/missing.
Cartridge light blinking/ Attention light on:	Non HP cartridge installed. Press "CANCEL" to continue.
Attention light blinking:	Top cover is open, paper is out, or there is a paper jam.
Attention/Ready/GO lights on:	Service error.*

***Press and hold "GO" and "CANCEL JOB" buttons to see secondary message:**

Attention/Ready/GO lights still on:	Beam detect error.
Ready light on:	Scanner error.
Ready/GO lights on:	Fuser error.
Attention light blinking:	Fan motor error.

CALIBRATE NOW

If you are experiencing problems with color in OEM cartridges, the "Calibrate Now" feature can be run. This forces a calibration cycle to run. This procedure does not always fix the issue, but it can. This must be done through the HP Color LaserJet 2500 series toolbar installed on your PC:

1. Open the Color LaserJet 2500 series toolbar.
2. On the Troubleshooting tab, and click "Diagnostic Tools."
3. Click "Calibrate Now."