

HP® LASERJET P2015

TONER CARTRIDGE REMANUFACTURING INSTRUCTIONS



HP LASERJET P2015 TONER CARTRIDGE

REMANUFACTURING THE HP LASERJET P2015 TONER CARTRIDGE

By Mike Josiah and the Technical Staff at UniNet

First released in December 2006, the HP LaserJet P2015 series of printers are based on a 1200 dpi, 27-ppm Canon engine. These cartridges use a chip to monitor “toner low” functions. They use the older larger format chip board as found on the 4200/4300 series, not the smaller version found on many other recent cartridges like the CLJ 2600. The P2015 cartridge looks somewhat like an updated version of the 1320 (Q5949X) cartridge but are not interchangeable with them. Testing has revealed that it is very possible that many of the current 1320 supplies will work in these cartridges. Check with your supplier as this should be settled by the time you are reading this. The cartridges for the P2015 are the Q7553A and Q7553X and are rated for 3,000 pages and 7,000 pages respectively.

The LaserJet P2015 series of printers use a 400 MHz processor and the most basic unit has 32MB of DDR2 memory expandable to 288 MB. They all show a first page out at less than 8.5 seconds. The entire series has a monthly duty cycle of 15,000 pages per month, but the recommended monthly page volume is only 3,000 pages. Obviously this is not designed as a workhorse machine. The cartridges are listed on HP’s web site with prices of \$80.99 USD* for the “A” cartridge, and \$147.99 USD* for the “X” cartridge.

*Pricing in U.S. American Dollars, as of December 2006.

MACHINES BASED ON THE P2015 ENGINE

LaserJet 2015

LaserJet P2015d

LaserJet P2015n

LaserJet P2015dn

LaserJet P2015x

Like some of the other recent HP cartridges, there are parts that use plastic rivets/plastic welding to hold them together. While there are still some normal screws used, the cartridge is not as straight forward or “recycling friendly” as one would like.

As with all other black HP cartridges, the chips on these cartridges do not shut down the entire cartridge, they disable the “toner low” features. The cartridge will run if the chip is removed, but the error message must be cleared first. As with past HP chips, the “toner low” function is disabled if a used chip is installed.

The theory for these cartridges is the same as most of the other HP/Canon monochrome cartridges, so we will not explain it here.

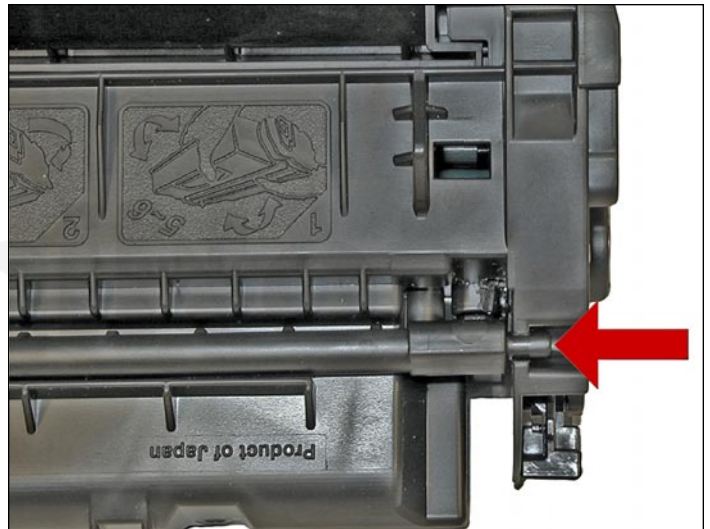
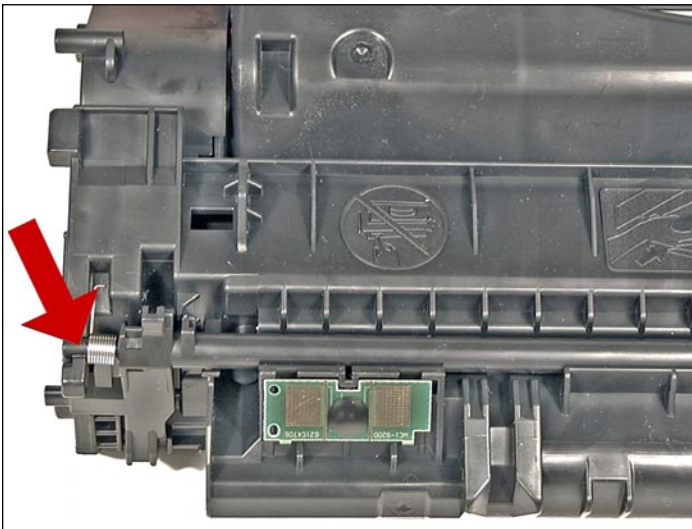
Printing test pages, cartridge troubleshooting as well as some simple machine troubleshooting is covered at the end of the article.

TOOLS REQUIRED

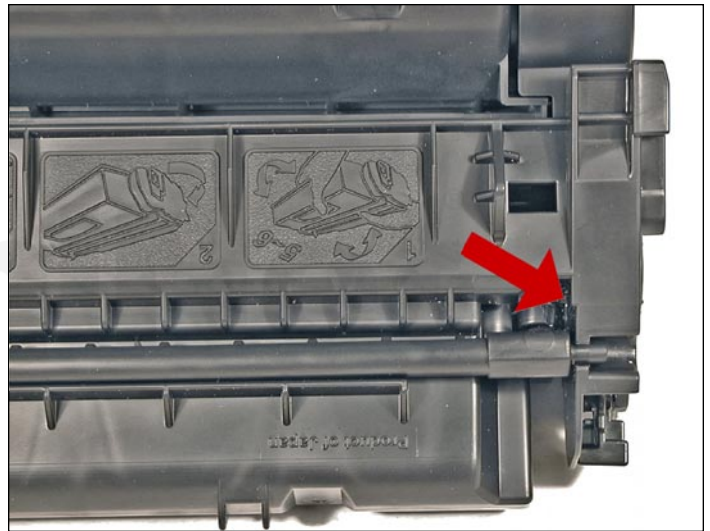
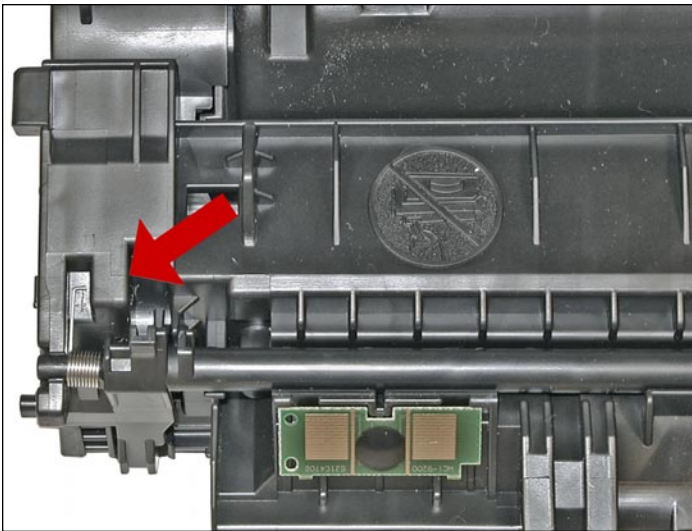
1. Toner approved vacuum
2. Phillips head screwdriver
3. Small common screwdriver
4. Needle nose pliers
5. Dremmel tool with side cutting bit (hobby rotary saw)

SUPPLIES REQUIRED

1. 140g or 320g replacement toner for use in HP P2015 (for low or high yield cartridges)
2. New OPC drum for HP 1320/1160/P2015
3. New wiper blade for use in HP 1320/1160/P2015
4. New PCR (optional) for use in HP 1320/1160/P2015
5. New magnetic roller (optional) for use in HP 1320/1160/P2015
6. New doctor blade (optional) for use in HP 1320/1160/P2015
7. New dedicated smartchip for use in HP P2015 (3,000 or 7,000 pages optional)
8. 99% isopropyl alcohol
9. Magnetic roller cleaner
10. Wiper blade lubricant
11. Conductive grease
12. White lithium grease



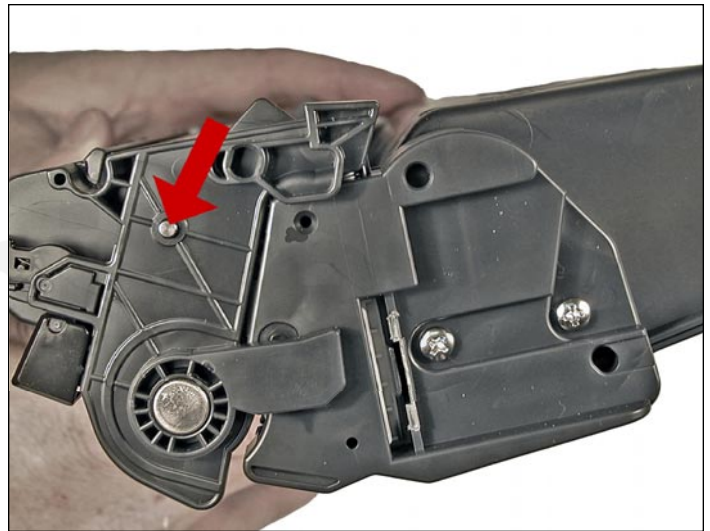
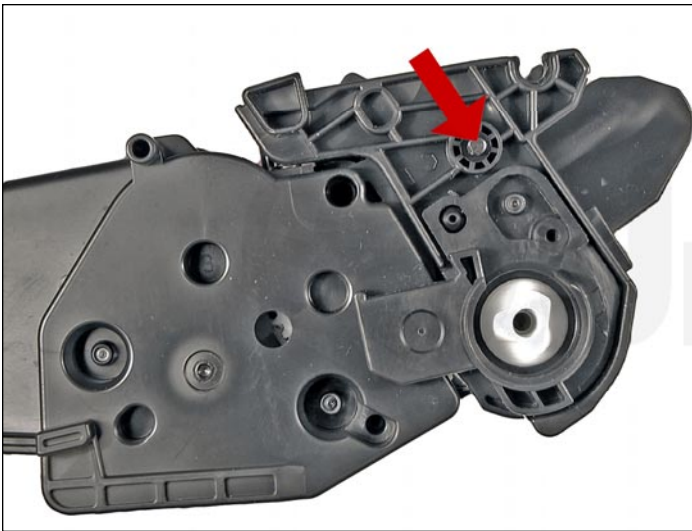
1. Remove the drum cover, by prying up the **main bar** on the top of the cartridge.



2. Note on each end of the cartridge there are small silver pins. To separate the two halves, these pins must be removed. Like the HP 1200 cartridges, these pins cannot be pulled out or pushed in from the outside of the cartridge. Small holes must be cut in the top of the cartridge to allow the pins to be pushed out. The above images show the areas **uncut**.



3. To remove the pins, cut the holes with the dremmel tool and a side cutting bit.



4. Push the pins out with a small jeweler's screwdriver and remove them with wire cutters or pliers.



5. Separate the two halves.



6. On the waste section, take a common jeweler's screwdriver and insert it between the drum and side wall of the cartridge. Gently pry the metal drum axle pin out from the cartridge. Remove the axle pin with the wire cutters. This must be done this way as the opposite side plastic drum axle is held in with plastic rivets. While they can be drilled out and screws used, there is then the possibility of miss-alignment and premature drum wear.



7. Remove the photoconductive drum.

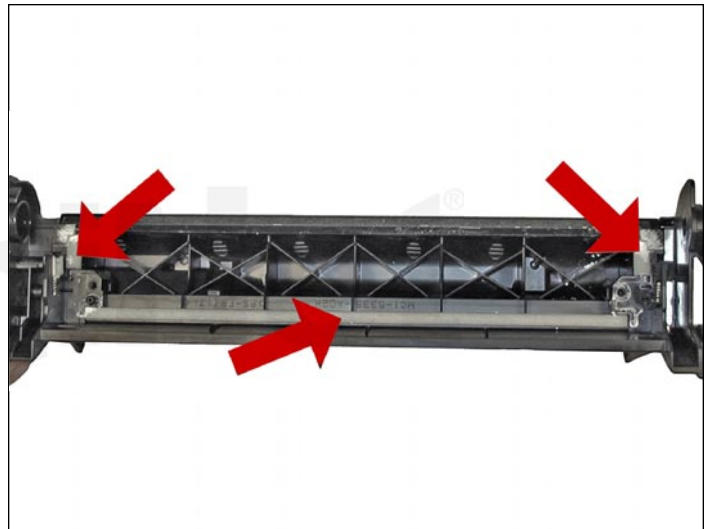


8. Remove the Primary Charge Roller (PCR), by prying it out of the clips on either end. Clean the PCR with your preferred cleaner and place the aside.



9. Remove the wiper blade and two screws.

NOTE: Be very careful not to damage or distort the thin mylar recovery blade next to the wiper blade. If this blade is bent or damaged in any way, it should be replaced.



10. Clean out any remaining waste toner. Make sure the foam seals under the wiper blade are clean and not damaged.



11. Lightly coat the new blade with your preferred lubricant.

Install the wiper blade and two screws into the cartridge.



12. Clean the two PCR holders and place a small amount of conductive grease on the black PCR holder. Install the PCR.

DRUM GEAR CHANGE

UPDATE: If you are replacing the drum, the gears will need to be changed over from the OEM to the new. There are two methods of removing the gears from OPC drums: The first and easiest method is to place the drum in a metal vice approximately 2" back from the gear, and slowly tighten the vice. The gear should pop out easily. This is the only method you can use on the OPC drums, which have a weighted slug in the center. If you use this method go on to step #3. The other method is as follows.

REQUIRED TOOLS & MATERIALS

1. A 1/4" x 15" metal rod
2. A 1" x 15" wooden dowel
3. A tube of super glue
4. A small piece of emery-cloth or sand paper

Step #1: Remove the drive gear:

The drive gear is the gear that has no metal electrical contacts in it. These gears are usually larger than the contact gear.

- A. Carefully insert the 1/4" metal rod into the center of the gear that has the contacts, or the contact gear.
- B. Angle the rod so that the rod presses against the edge of the opposite gear. The rod should be touching both the inside of the OPC drum and the edge of the gear.
- C. Tap the end of the rod with a hammer, working the rod around the entire edge of the gear, until the gear comes loose.

NOTE: Gently heating the ends of the drum with a hair dryer or heat gun on low may cause the glue to soften and ease in the removal process. Just be careful not to use too much heat and melt the gear!

Step #2: Remove the contact gear:

- A. Insert the 1" wooden dowel into the gearless end of the drum.
- B. Tap the dowel with a hammer until the gear comes loose.

Step #3: Remove any old adhesive from the gears; straighten out any damage done to the contact gears' metal contacts:

- A. Removing the adhesive can be done with a small sharp common screwdriver. The glue comes off easily.

Step #4: Install the gears on the new replacement drum:

- A. Inspect the metal contacts on the contact gear. Make sure that the contacts will make proper contact with the inside of the OPC drum.
- B. Locate the side of the drum on which you are going to place the contact gear. On some OPC drums, this is critical. See individual instructions for more information.
- C. Lightly sand the INSIDE of the OPC where the metal parts of the contact gear will meet. This will insure a good electrical contact.

D. Dry-fit the contact gear in the OPC drum and check for a good contact with an Ohmmeter. The reading should be a direct short, or no more than 1 or 2 Ohms.

NOTE: When checking the contact, place one lead on the drum axle contact and the other on the edge of the drum. This way, you will not have to pierce the coating that is on the OPC surface. A retail electronics store, such as Radio Shack, carries cheap Ohmmeters for less than \$10.00 USD, and a sales person would normally be glad to show you how to use it.

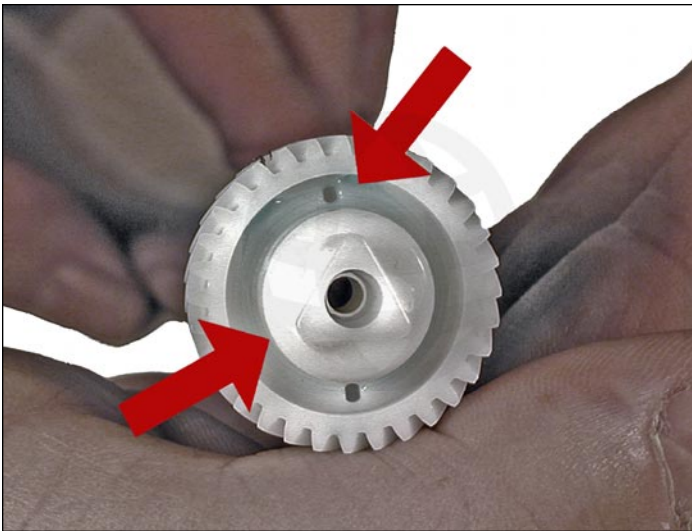
E. Using the super glue, place a few (3-4) small drops of glue strategically around the inside edge of the OPC drum. Make sure you leave a blank area for the metal contacts!

F. Insert the contact gear.

G. Check for continuity again with the Ohmmeter.

H. Repeat steps E and F for the drive gear.

NOTE: Be very careful not to place the metal contacts in direct contact with the glue, as this will interfere with the proper grounding of the drum, and the cartridge will not print properly, (solid black pages). It is also very important to NOT put any glue on the gear, as the chances of it dripping out onto the drum surface and ruining it are high. Placing the glue inside the drum tube works much better.

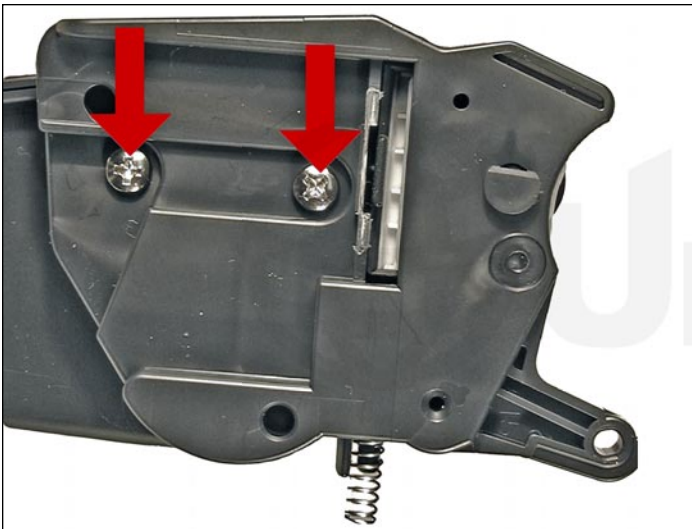


13. If you are re-using the drum, check to make sure the grease on the drum drive gear and hub is clean. If not, remove it and replace. White lithium grease can be used here. Install the drum.



14. Replace the conductive grease on the end of the metal drum axle tip and install on the cartridge.

Place the waste chamber aside.



15. On the supply section, remove the two screws from the left side (non-gear) end cap.



16. Gently pry off the end cap, a plastic rivet will snap off just below the doctor blade.

So far in our tests, this has not been a problem, but it is possible that this section may need to be secured.



17. Remove the magnetic roller assembly from the cartridge.



18. Remove the magnetic roller drive gear so it does not get lost.



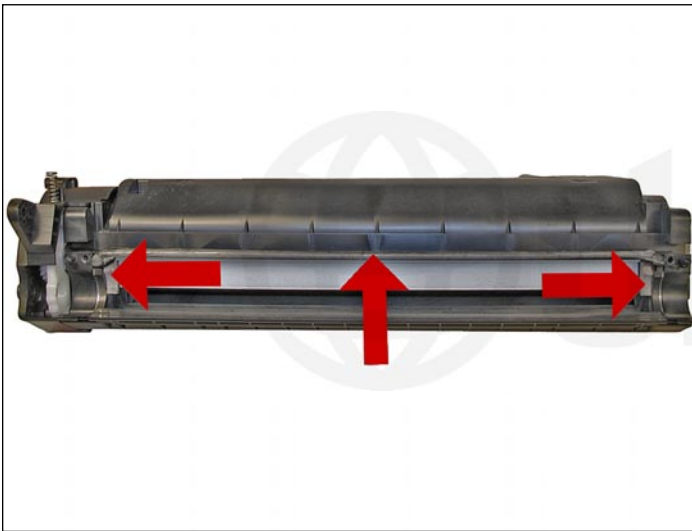
19. Remove the two screws and doctor blade.

Pry the bar up being very careful not to break the alignment pins.

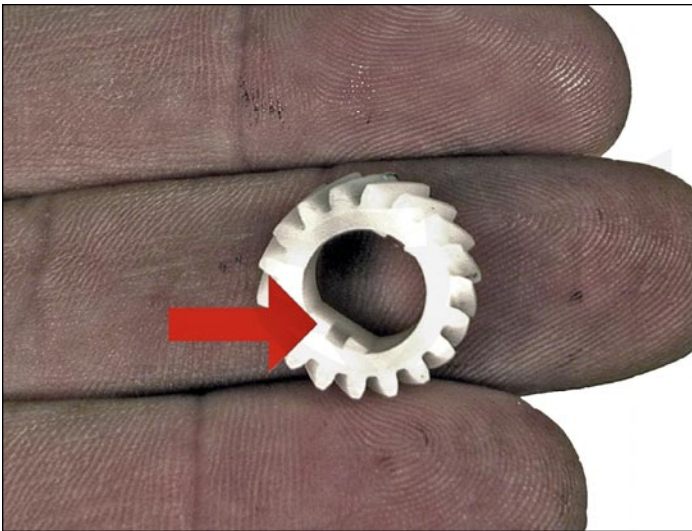
Clean out any remaining toner.



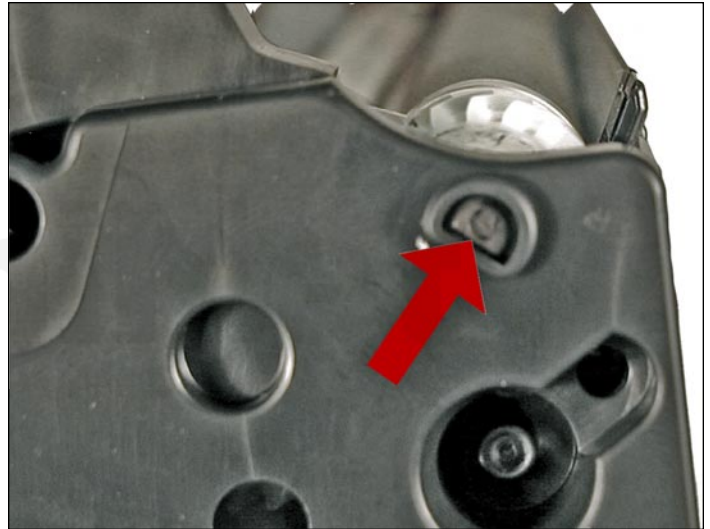
20. There is no fill hole in these cartridges, so it must be filled through the doctor blade slot. Fill the cartridge with 320g of toner for use in P2015. If a seal is available, install it now.



21. Make sure the doctor blade seals are clean. If they are coated with toner, clean them lightly with a cotton swab and alcohol until they are sticky again. Install the doctor blade and two screws. Clean the mag roller contact plate on the contact end cap. Replace the conductive grease.

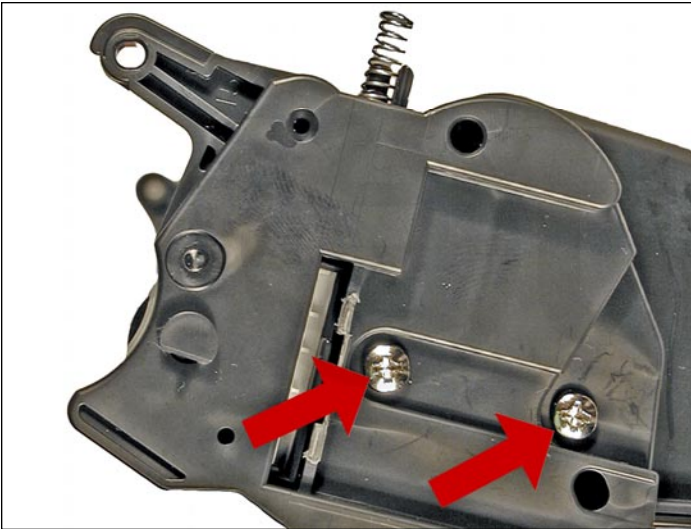


22. Install the magnetic drive gear. Make sure the locking part of the gear faces the roller. Clean the magnetic roller sleeve with a dedicated magnetic roller cleaner.



23. Install the magnetic roller.

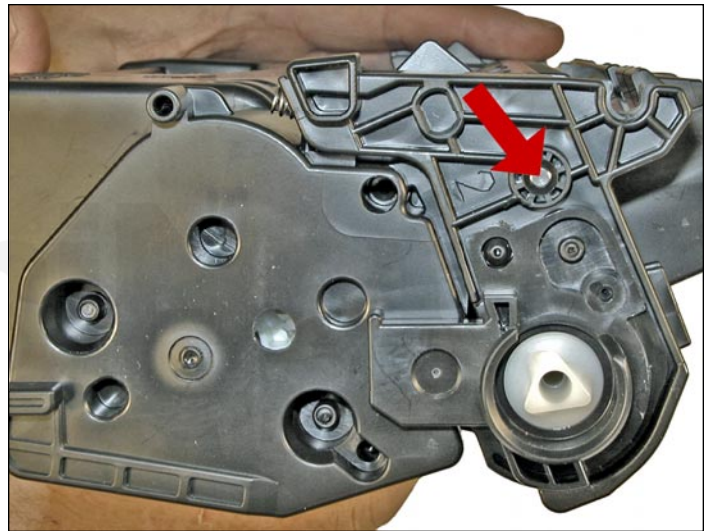
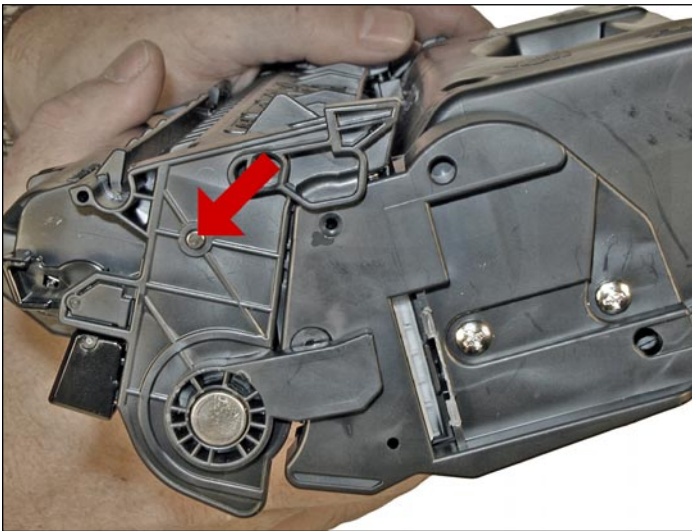
Turn the stationary magnet so that the keyed end will fit into the drive gear and the end cap.



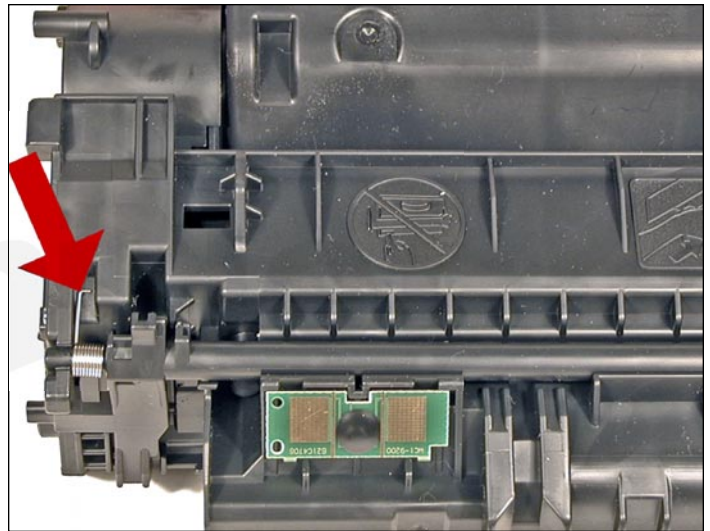
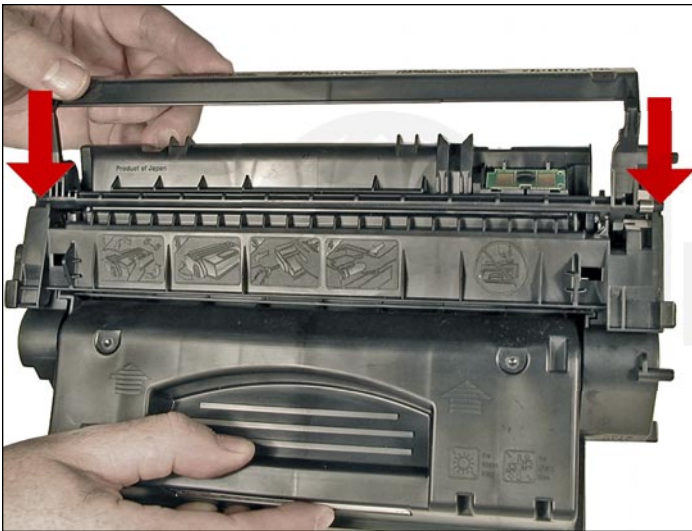
24. Install the contact end cap and two screws. If the end cap does not fit, the stationary magnet most likely is not set correctly.



25. Place the two halves together.



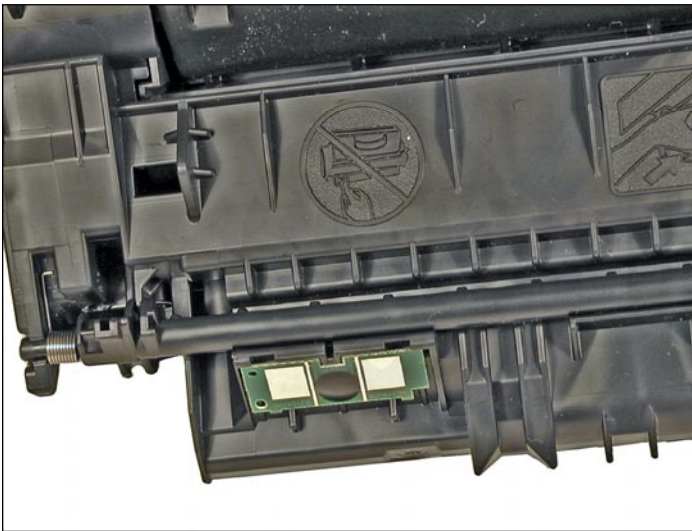
NOTE: Make sure the springs are set, and install the two pins.



26. Set the spring on the drum cover arm as shown.

Snap the arm and cover into place.

Make sure the spring loaded arm is set right.



27. Replace the chip.

RUNNING THE CLEANING PAGE

The cleaning page helps keep the fuser free of toner and dust particles. HP recommends that for best results a sheet of transparency be used. If this is not available, use copier grade 18-24lb smooth surface paper.

1. Make sure the printer is idle and the READY light is on.
2. Load the transparency in Tray 1.
3. On the printers control panel, press and hold the GO button until ATTENTION, READY and GO lights come on.
4. When all three lights are on, release the GO button.
5. Press GO again. The cleaning page will run. This process takes about two minutes to complete.

PRINTING TEST PRINTS

Demo Page:

1. Press the GO button when the READY light is on and the printer is idle.
2. The demo page will print.

Configuration Page:

1. Press the GO button until the READY and ERROR lights start blinking.
2. Release the GO button.
3. The Configuration page and Supplies Status page will run.

Supplies Status Page:

The Supplies Status page will automatically print when the Configuration page is run.

CARTRIDGE TROUBLESHOOTING

Repetitive Defect Chart:

Drum:	75.4 mm
Lower pressure roller:	69.0 mm
Upper fuser film:	56.5 mm
Transfer roller:	46.2 mm
Magnetic roller:	44.0 mm
Registration roller:	43.0 mm
PCR:	37.7 mm

Dirty or bad primary charge roller (PCR):

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.

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 every 75.4mm.

Light-damaged drum:

This will show up as a shaded area on the test print that should be white. Again, this will repeat every 75.4 mm.

Worn-out drum:

This will usually show up as shading on the right side of the page. It will usually start right from the edge of the page, and work in towards the center. The pattern will normally look like tire tracks.

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 that matches the defect.

Bad magnetic roller bushing:

When this round shaped bushing wears out, gray scale pages and pages with heavy graphics will exhibit light and dark lines across the page.

PRINTER TROUBLESHOOTING

These machines do not have a text display, just a series of lights. Some of the more common error light patterns are as follows.

Toner light on:

Toner low

Toner light blinking:

Toner missing

Attention light blinking:

Engine error

Attention/Ready/GO light all on:

Fatal error

If a fatal error is showing, press and hold the GO button and a secondary message will show. Some of these are as follows.

Ready light on:

Laser/Scanner error

Attention light on:

Engine error

Attention light blinking:

Fan error

Ready and Go lights blinking:

Fuser error