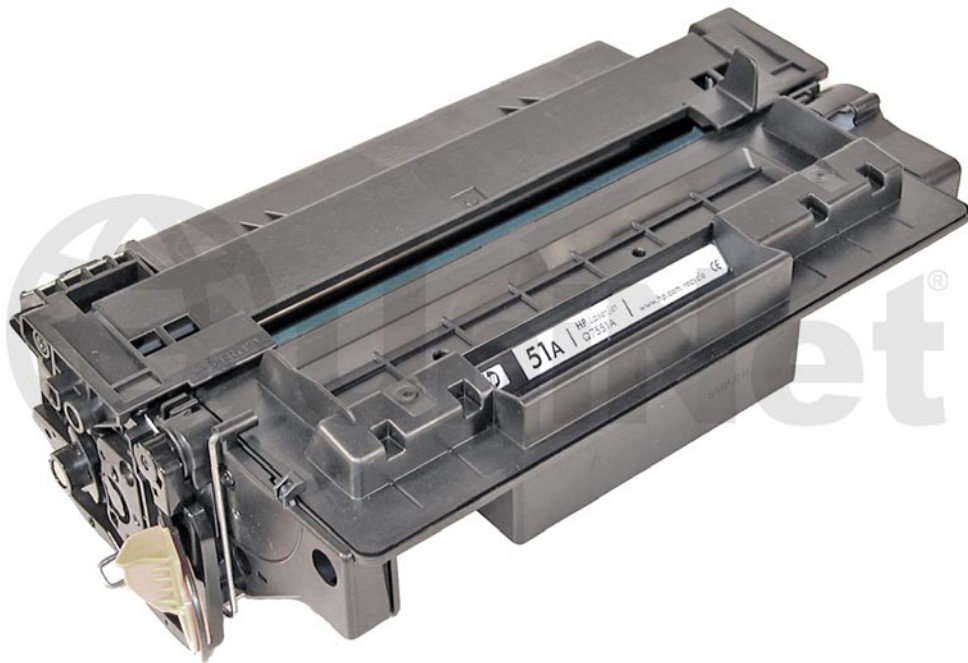


# HP® LASERJET P3005

## TONER CARTRIDGE REMANUFACTURING INSTRUCTIONS



HP® P3005 TONER CARTRIDGE

# REMANUFACTURING THE HP LASERJET P3005 TONER CARTRIDGE

By Mike Josiah and the Technical Staff at UniNet

First released in November 2006, the HP LaserJet P3005 series of printers are based on a 1200dpi, 35ppm Canon engine, (except for the M3027 which is rated for 27ppm). As with all the new HP cartridges, these cartridges use a chip to monitor toner-low functions. These cartridges use the older larger format chip board as found on the 4200/4300 series, not the smaller version found on many other newer cartridges like the CLJ 2600. The P3005 cartridge looks somewhat like an updated/smaller version of the 5200 (Q7516A) cartridge. The cartridges for the P3005 are the Q7551A and Q7551X and are rated for 6,500 pages and 13,000 pages respectively.

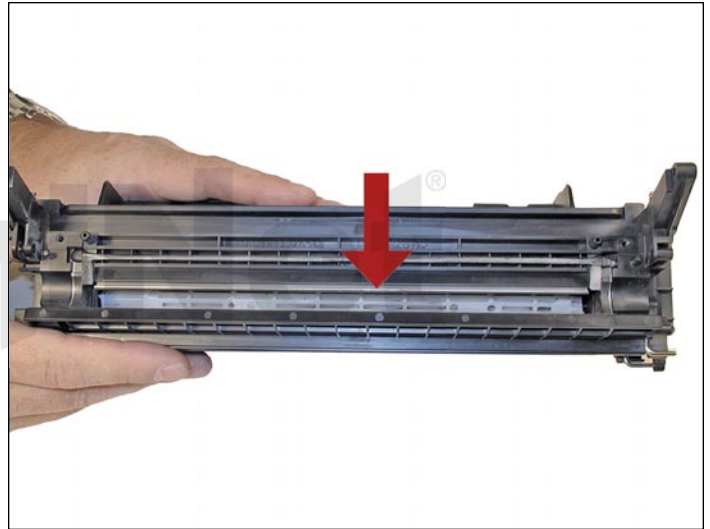
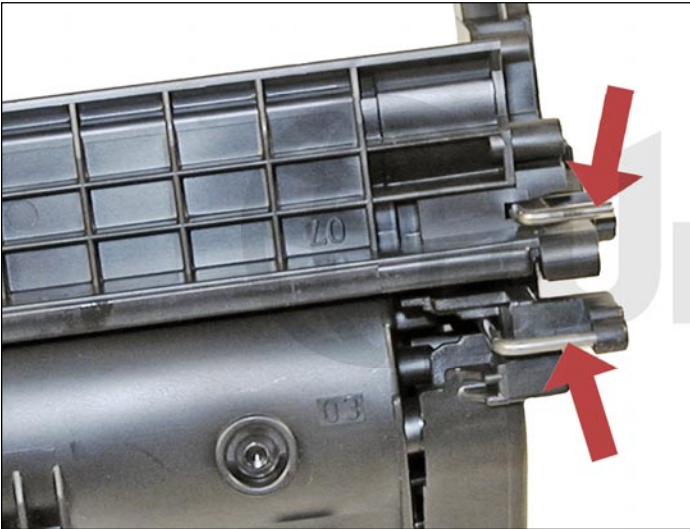
The LaserJet P3005 series of printers use a 400 MHz processor and the most basic unit has 48Mb of DDR2 memory, expandable to 320mb. They all show a first page out at less than nine seconds. The entire series has a monthly duty cycle of 100,000 pages/month. The cartridges have list prices of \$128.99 for the "A" and \$214.99 for the "X" cartridge (pricing in U.S. American dollars, as of November 2006).

## MACHINES BASED ON THE P3005 ENGINE

**LaserJet P3005**  
**LaserJet P3005d**  
**LaserJet P3005n**  
**LaserJet P3005dn**  
**LaserJet P3005x**  
**LaserJet M3027 MFP**  
**LaserJet M3035 MFP**  
**LaserJet M3035xs MFP**



Shown here is the pull tab for the seal. Similar to the 2420 and 5200, this tab prevents the cartridge from being installed, unless the seal has been pulled (and unless the tab has been separated from the seal of course). Unlike the other recent HP cartridges, only a few small parts use plastic rivets to hold them together. For the most part everything comes apart with screws. A welcome change for the better! 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 go into it here. There is a difference however that should be noted.

The physical parts used for toner-low monitoring are different for these cartridges. Instead of the normal single round toner low bar that runs through the center of the hopper, there are now two contacts and two bars (left photo).

The top bar is a piece of flat metal with a lip that sits just under the doctor blade (right photo). There is also a second bar that sits deeper into the hopper and is hidden from the top, but the outside contact is visible. These bars and the circuitry are not mentioned in the service manual, but my guess is that since these cartridges also work in multifunction machines where faxes are received, the second backup system is needed (just like the windows used in Canon FX\* cartridges). Again this is a guess, but it would seem that a good signal will be needed from both sensing bars before the machine will print. The dedicated printers may only use one bar, but the multifunction machines will most likely use both. We will be running tests on them to determine how they function.

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

### TOOLS REQUIRED

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

### SUPPLIES REQUIRED

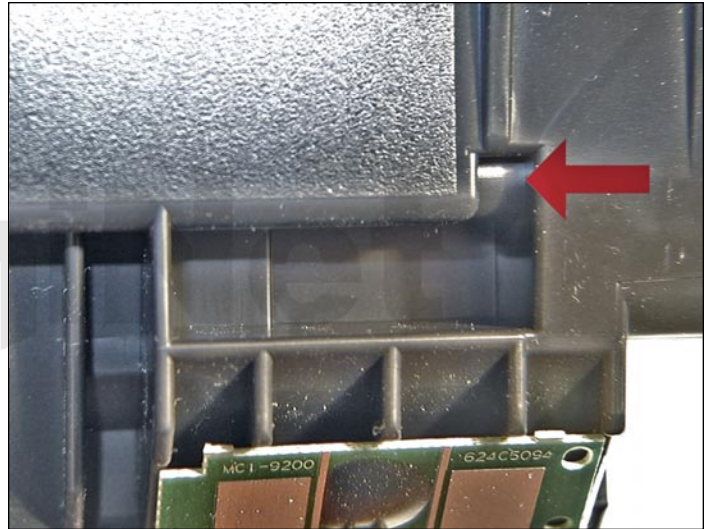
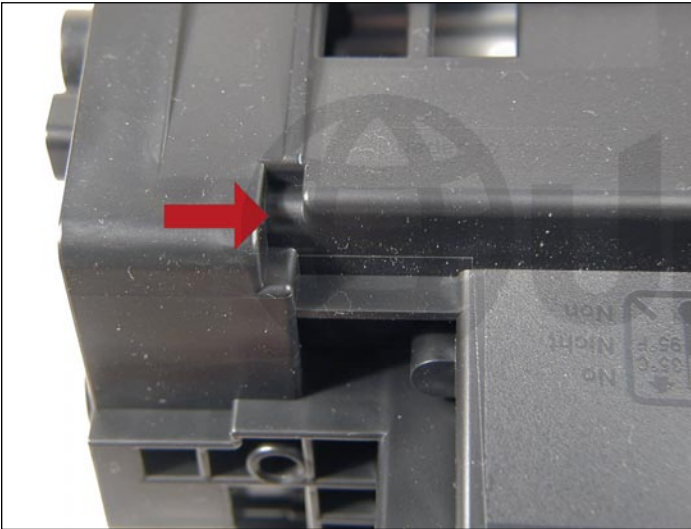
1. Toner 305g for use in HP P3005
2. New OPC drum (specific for P3005)
3. New wiper blade (specific for P3005)
4. New PCR (optional)
5. New Mag roller (optional)
6. New doctor blade (optional)
7. 99% isopropyl alcohol
8. Magnetic roller cleaner
9. Drum lubricant
10. Conductive grease
11. White lithium grease



1. Remove the drum cover by prying the spring loaded arm, and then carefully pry off the two metal bars out of their holders.

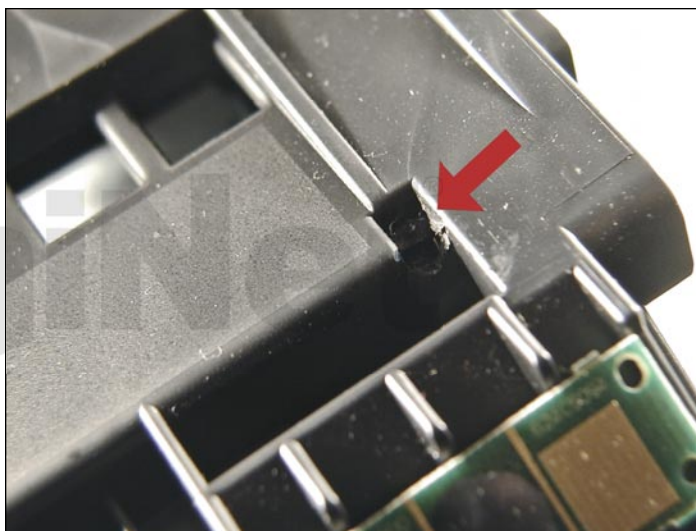
The cover must be in the closed position in order to pry off the spring loaded arm. Be careful not to lose the spring!

Both of the metal bars should be removed from the front not the end.

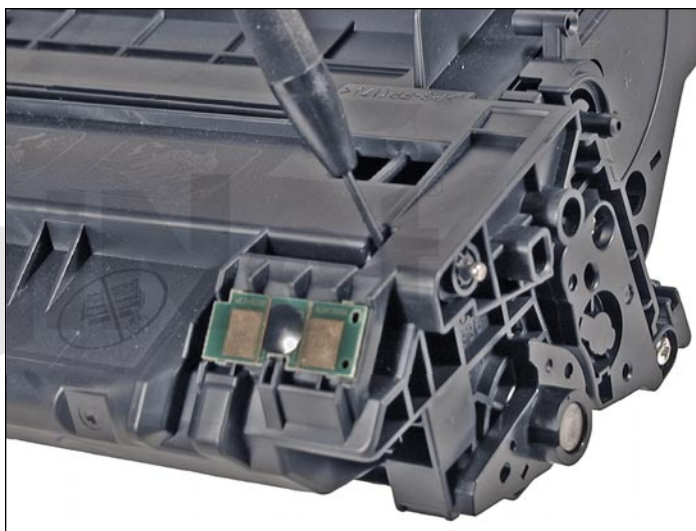
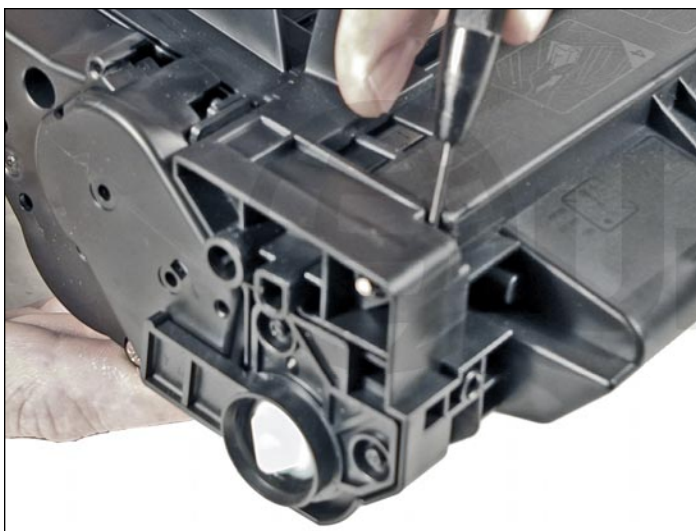


2. Note on each end of the cartridge that there are small silver pins. To separate the two halves, these pins must be removed. Like the HP1200 cartridges, these pins cannot be pulled out or pushed in from the outside of the cartridge. Small holes must be cut in the top of the cartridge (see arrows) to allow the pins to be pushed out.





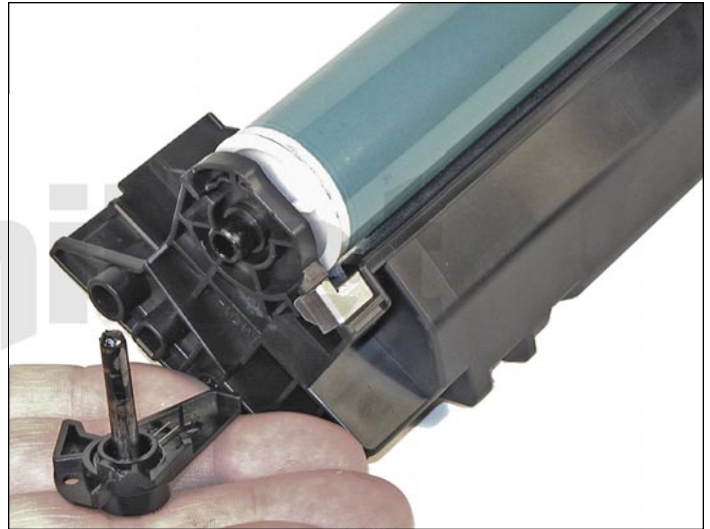
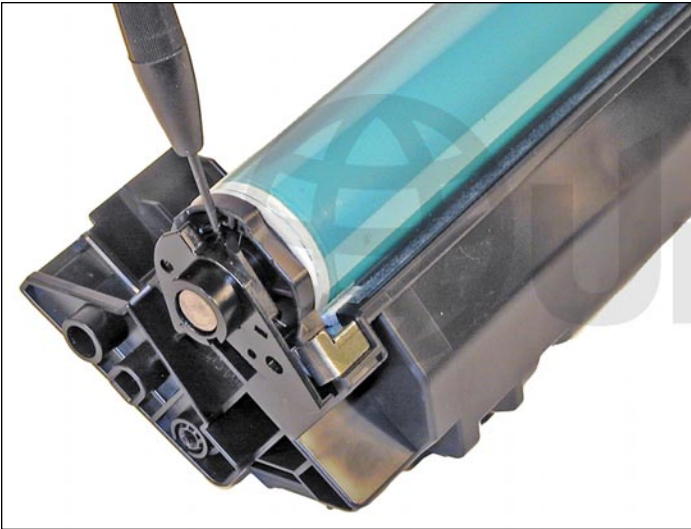
3. To remove the pins, cut the holes using the dremmel tool and a side-cutting bit.



4. Push the pins out with a small jeweler's screwdriver.



5. Separate the two halves.



6. On the waste section, take a common screwdriver and remove the metal axle pin/spring-loaded cover, located on the right side of the cartridge. This is the same type of drum axle pin that the 2400 series uses. It comes out easily enough, but be careful as it seems somewhat fragile.



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 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.

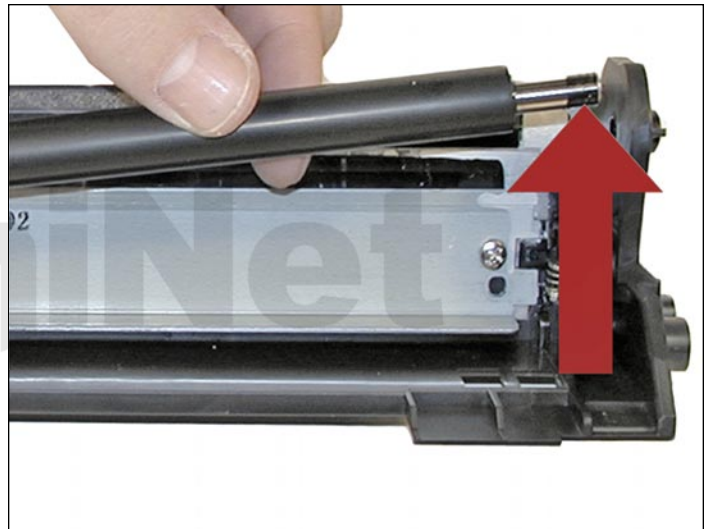


10. Clean out any remaining waste toner. Make sure the foam seals under the wiper blade are clean and not damaged.





11. Due to the aggressive nature of the toner used in these cartridges, we recommend that the wiper blade be replaced each cycle. This blade looks very similar to the HP4000 and 4100, but is different. A dedicated blade is needed here. Lightly coat the new blade with your preferred lubricant. Replace 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 AND 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: Removal of 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: Removal of 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.
- works much better.



**Step #3: Removal of any old adhesive from the gears, straightening 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.

Radio Shack carries cheap Ohmmeters for less than \$10.00 USD.

The sales people will 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.



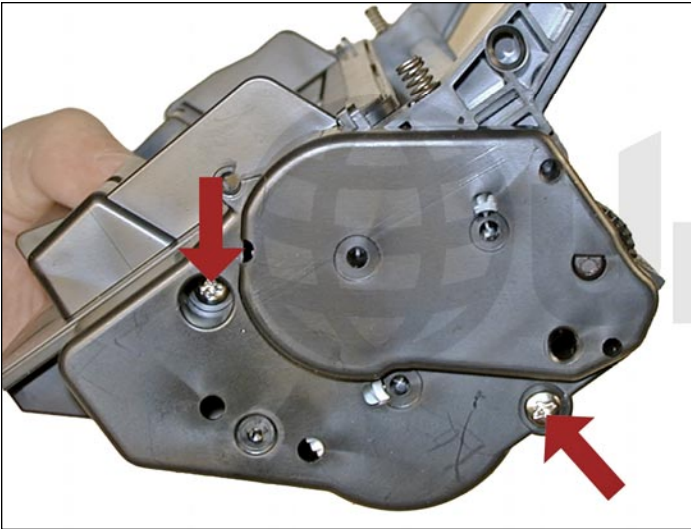
13. If you are re-using the drum, check to make sure the grease on the drum drive gear and hub is clean. If not, remove it and replace. White lithium grease can be used here. Install the drum.



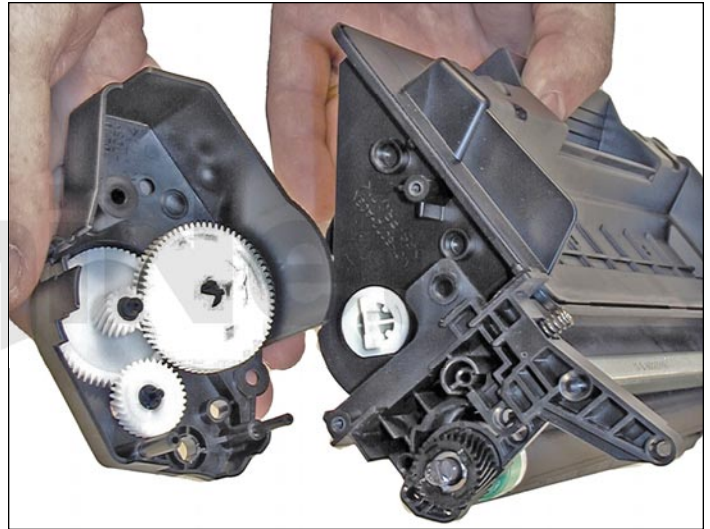
14. Install the spring in the holder as shown, install on the cartridge and set the tail of the spring so it drops into its slot.

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

Place the waste chamber aside.

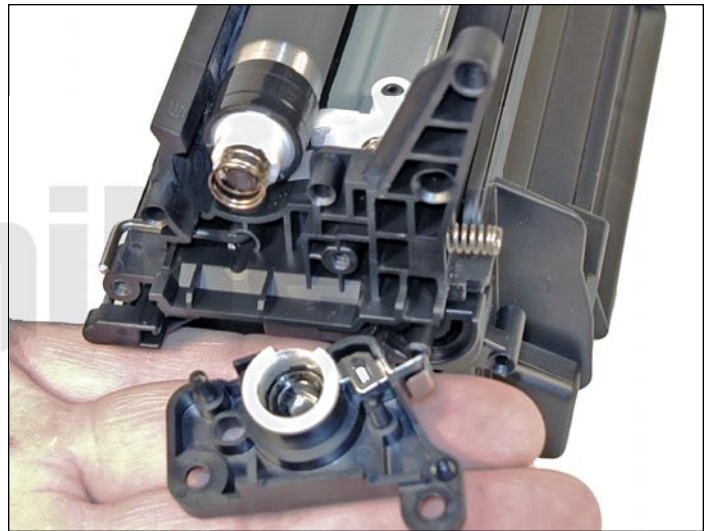
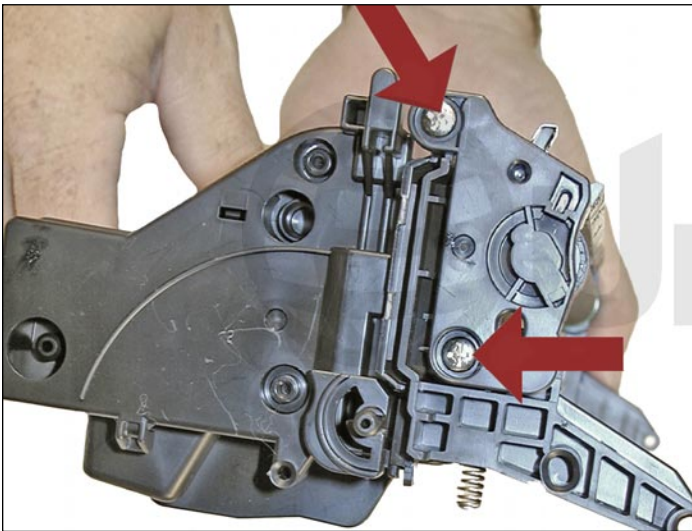


15. On the supply section, remove the two screws from the right side (gear side) end cap.



16. Remove the end cap.

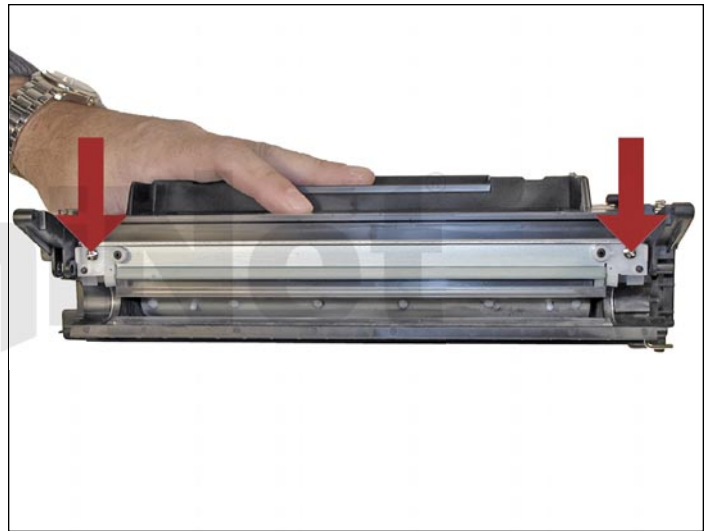
Note that the gears stay with it.



17. On the contact side, remove the two screws and end cap.



18. Remove the magnetic roller assembly from the cartridge.



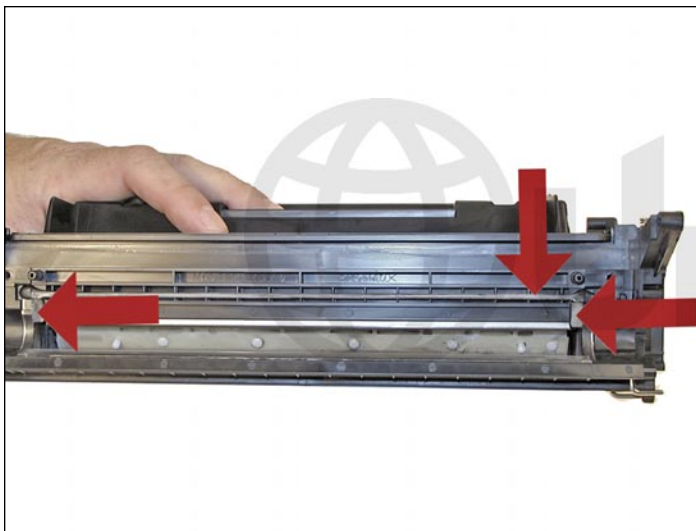
19. Remove the two screws and doctor blade.

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 305g of toner for use in HP P3005. 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.

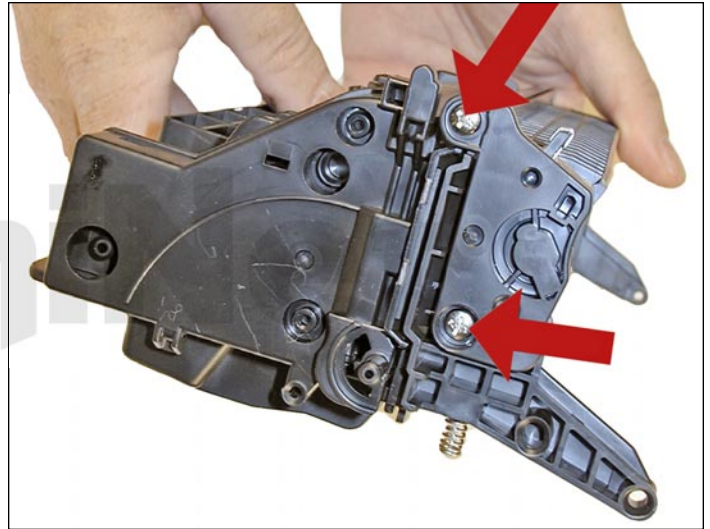
Install the doctor blade and two screws.





22. Clean the mag roller contact plate on the contact end cap.

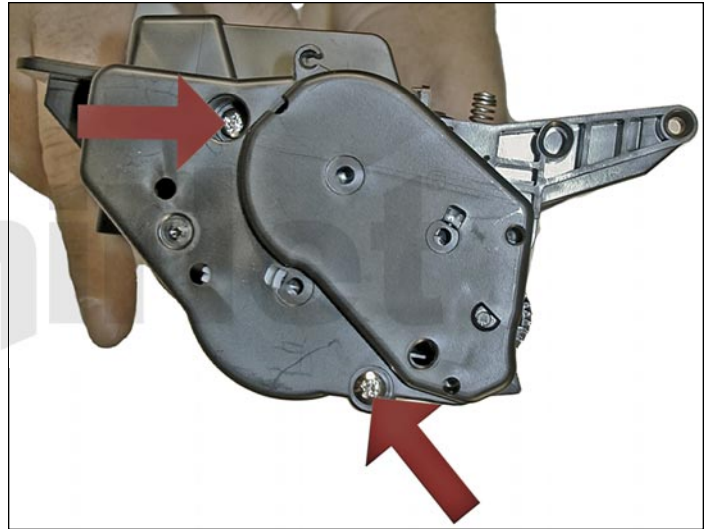
Replace the conductive grease.



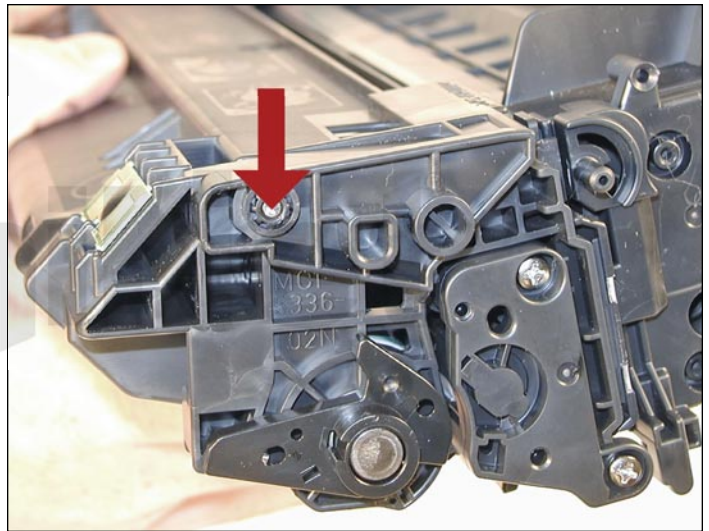
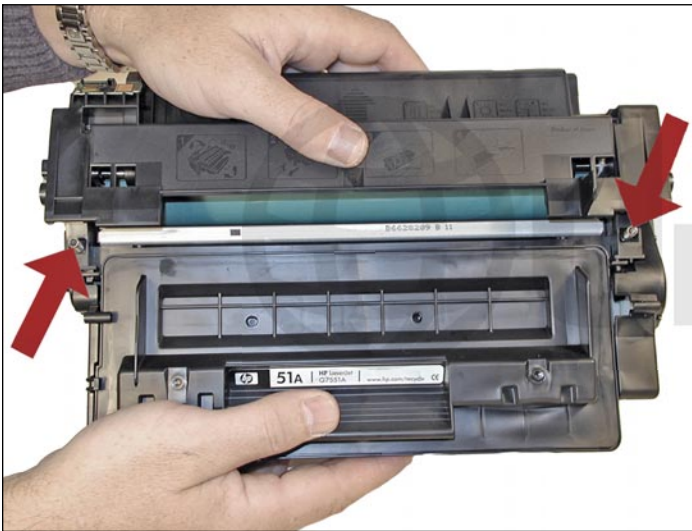
23. Install the end cap and two screws.



24. Clean the mag roller sleeve with a dedicated mag roller cleaner. Install the mag roller. Turn the stationary magnet so that the keyed end will fit into the end cap. You cannot see the keyed end so you have to set the magnet by feel as you turn it.

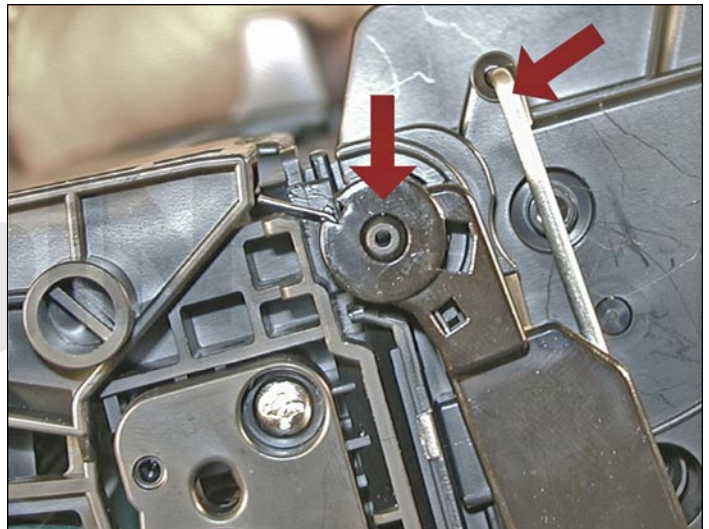


25. Install the gear end cap and two screws. If the end cap does not fit, the stationary magnet most likely is not set correctly.



26. Place the two halves together.

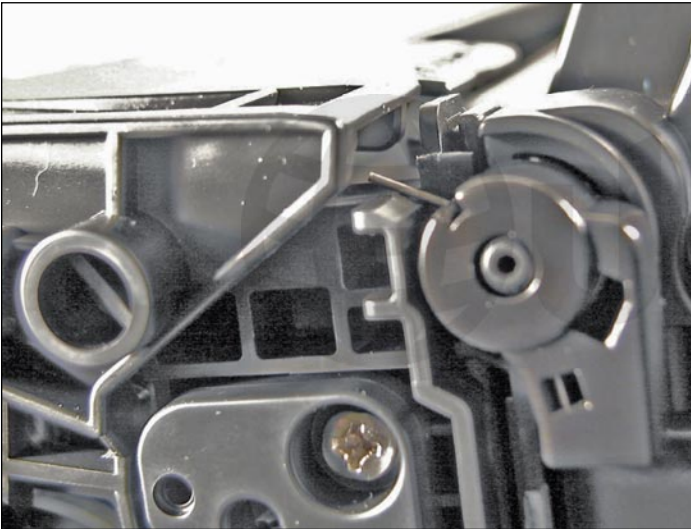
Make sure the springs are set and install the two pins.



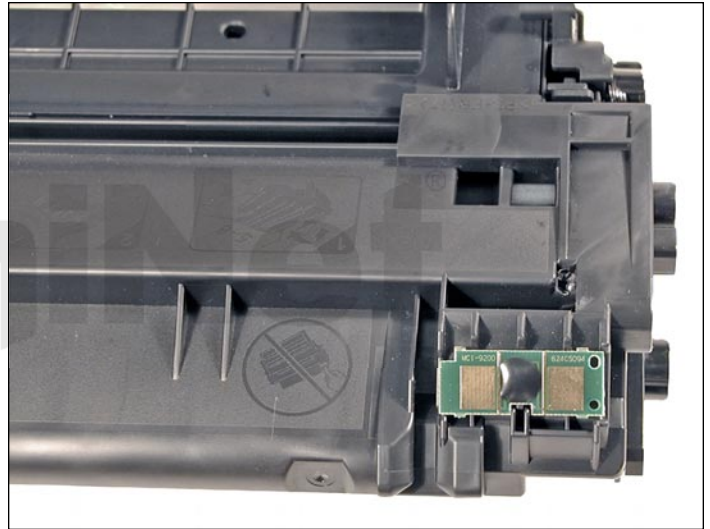
27. Install the spring in the drum cover arm as shown.

Install the metal bar into the hole and slot. Install the arm.





28. Release the tail of the spring so that the cover closes.



29. Replace the chip.

### **RUNNING THE CLEANING PAGE**

The cleaning page helps keep the fuser free of toner particles. HP recommends that it be run every time a new cartridge is installed:

1. Press the MENU button to open the menus.
2. Press the UP or DOWN arrows until CONFIGURE DEVICE appears on the display.
3. Press the SELECT button.
4. Press the UP or DOWN arrows until PRINT QUALITY appears on the display.
5. Press the SELECT button.
6. Press the UP or DOWN arrows until CREATE CLEANING PAGE appears on the display.
7. Press the SELECT button.
8. Load the cleaning page face down in Tray 1
9. Press the DOWN arrow until PROCESS CLEANING PAGE appears on the display.
10. Press the SELECT button.

### **CHANGING THE PRINTERS INTENSITY (DENSITY)**

1. Press the MENU button to open the menus.
2. Press the UP or DOWN arrows until CONFIG DEVICE appears on the display.
3. Press the SELECT button.
4. Press the UP or DOWN arrows until PRINT QUALITY appears on the display.
5. Press the SELECT button.
6. Press the UP or DOWN arrows until TONER DENSITY appears on the display.
7. Press the SELECT button.
8. Press the UP or DOWN arrows until the desired setting (1-5) appears on the display. "3" is the default setting.

**PRINTING TEST PRINTS**

There are a number of test pages that can be run from the menu:

**Menu map**                      **Configuration page**  
**Supplies status page**      **Usage page**  
**PCL font list**

The supplies status page or the configuration page are the best to use. They have:

**Solid black**  
**Grayscales**  
**Text**

1. Press the MENU button to open the menus.
2. Press the UP or DOWN arrows until INFORMATION appears on the display.
3. Press the SELECT button.
4. Press the UP or DOWN arrows until the page you wish to print appears on the display.
5. Press the SELECT button.

**CARTRIDGE TROUBLESHOOTING****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 96 mm.

**Light damaged drum:**

This will show up as a shaded area on the test print that should be white. Again, this will repeat every 96 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.



**REPETITIVE DEFECT CHART:**

<b>Drum</b>	<b>96 mm</b>
<b>Upper fuser roller</b>	<b>76 mm</b>
<b>Lower pressure roller</b>	<b>62 mm</b>
<b>Magnetic roller</b>	<b>47 mm</b>
<b>Transfer roller</b>	<b>43.6 mm</b>
<b>PCR</b>	<b>38 mm</b>

**PRINTER TROUBLESHOOTING:**

Most of the error messages show on the display in plain English so we will not go into them here.  
Some of the more common numeric messages are as follows:

<b>10.10.00</b>	<b>Error: bad or missing chip</b>
<b>10.32.YY</b>	<b>Unauthorized supply: a new non HP supply has been installed. Press the OK button to clear.</b>
<b>10.XX.YY</b>	<b>Supply memory error: bad or missing chip</b>
<b>13.XX.YY</b>	<b>Paper jams in printer</b>
<b>50.1</b>	<b>Fuser error: AC power to the fuser is bad</b>
<b>50.6</b>	<b>Fuser error: main or sub thermistor bad</b>
<b>52.00</b>	<b>Scanner error</b>
<b>57.XX</b>	<b>Fan error</b>
<b>59.50</b>	<b>Printer motor error</b>