

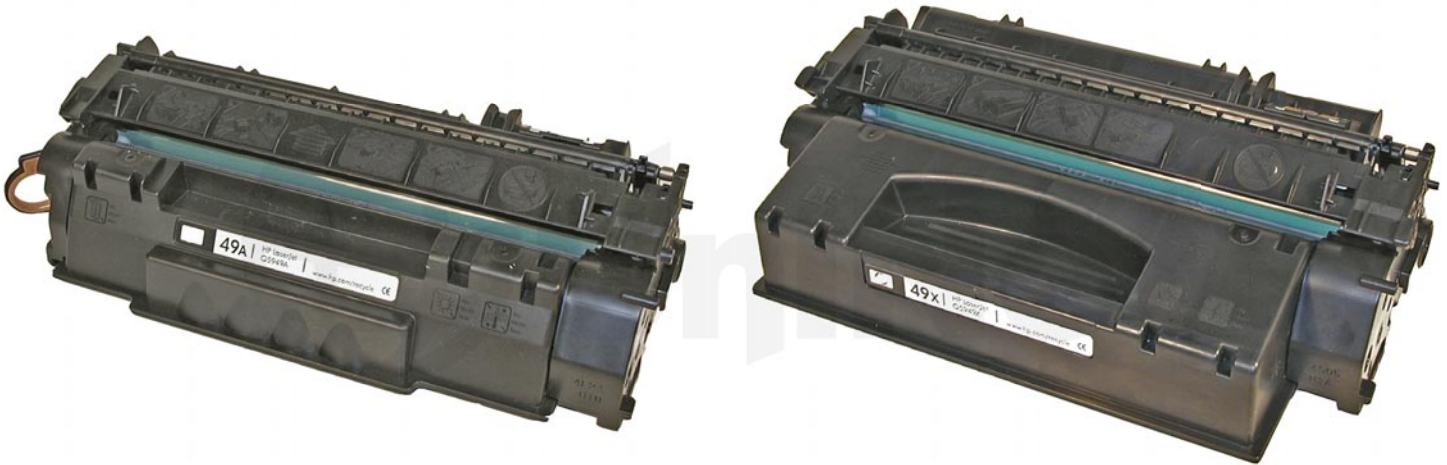
HP® LASERJET 1160 • 1320

TONER CARTRIDGE REMANUFACTURING INSTRUCTIONS



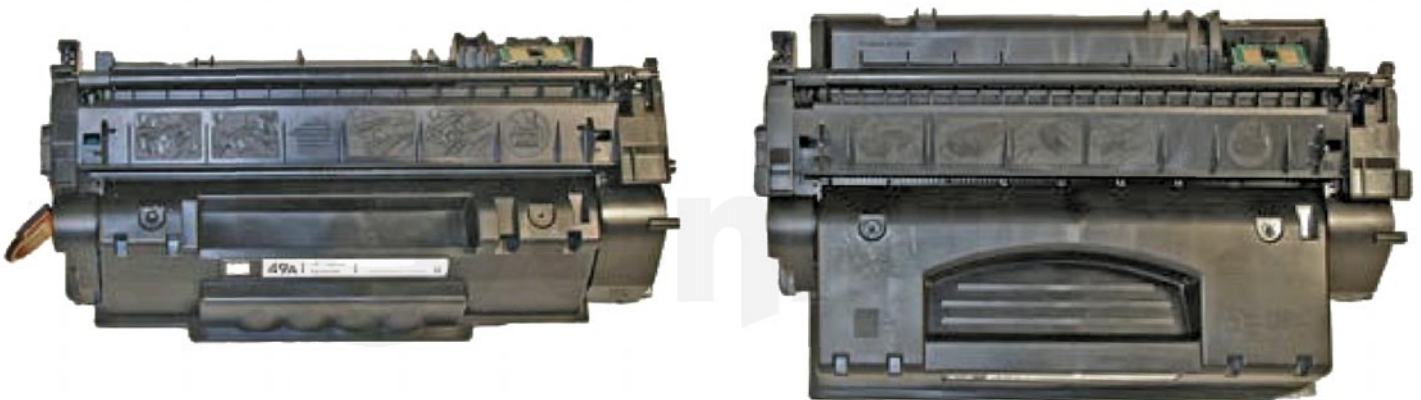
REMANUFACTURING THE HP LASERJET 1160/1320 TONER CARTRIDGE

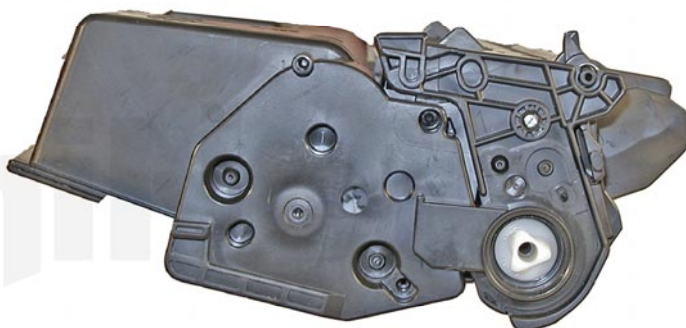
By Mike Josiah and the Technical Staff at UniNet



First introduced in September 2004, HP-1160/1320 series of laser printers is based on 20-22 ppm, 1200dpi Canon engine that comes standard with 16MB memory. The fuser is of the instant-on variety and along with a new processor it prints the first page out in less than 8.5 seconds (that is actually 0.5 seconds slower than the 1300). Two different cartridges are available for the 1320, the Q5949A rated at 2,500 pages, and the Q5949X rated for 6,000 pages. For the 1160, only the Q5949A cartridge will fit. Shown above are the different physical sizes of the two cartridges.

Spec wise, the old 1300 series is very similar to these new printers. The 1160 and 1320 actually have a 0.5 seconds slower first page out speed! The biggest difference in these machines is that these newer models have wireless modems built in, a nice touch. My main complaint with the 1200/1300 series was always the flimsy paper trays. These machines have an internal, more robust paper tray that should hold up much better than the old design. For that change alone, I like these machines. The cartridges are similar in design to the 1200/1300 cartridges, but are not interchangeable. Shown below and in the following page are the physical cosmetic cartridge differences:





The chips on these cartridges follow the normal HP pattern in that they disable the toner low features on the printer if re-used. The chips must be replaced if you want the toner low/toner out features to work. New replacement chips are available.

The pin system holding the two halves of the cartridge together is similar to the HP 1200/1300. You will need to cut two small holes cut in the top to get access to the pins. The hole location on these cartridges is almost identical, and the same methods you use for the 1200 should work here.

HP has been quoted as stating: "We consciously make sure that our cartridges are reusable and refillable." Well, in my opinion that is now changing. Although the chips do not shut the cartridge down, the design of the cartridges has changed to make opening and more importantly keeping the alignment correct during assembly much more difficult. Screws have been replaced by plastic rivets and ultrasonic welds, fill plugs have been eliminated. Some of those changes can be attributed to cutting manufacturing costs. On this series of cartridges however, there are also the alignment pins for the magnetic roller hubs. These pin used to be just round plastic pins that the hub fit over. But now they are welded, and must be broken to fill the cartridge. There seems to be a trend in the newer HP cartridges to make remanufacturing them more difficult.

Cartridge troubleshooting as well as running test pages, cleaning pages, and some simple printer troubleshooting will be covered at the end of this article.

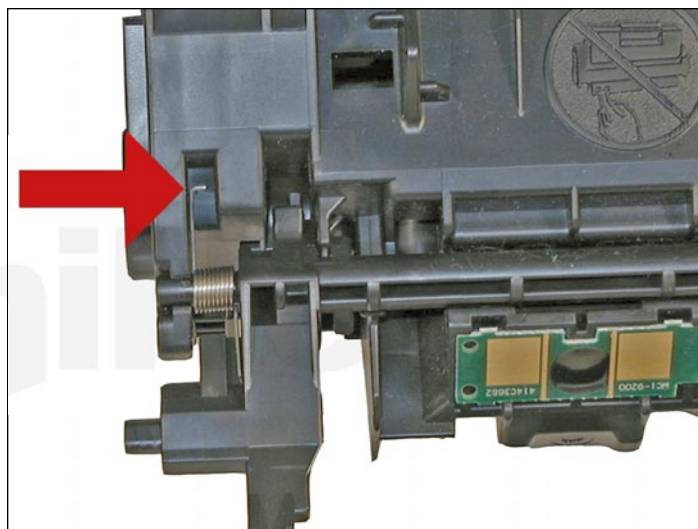
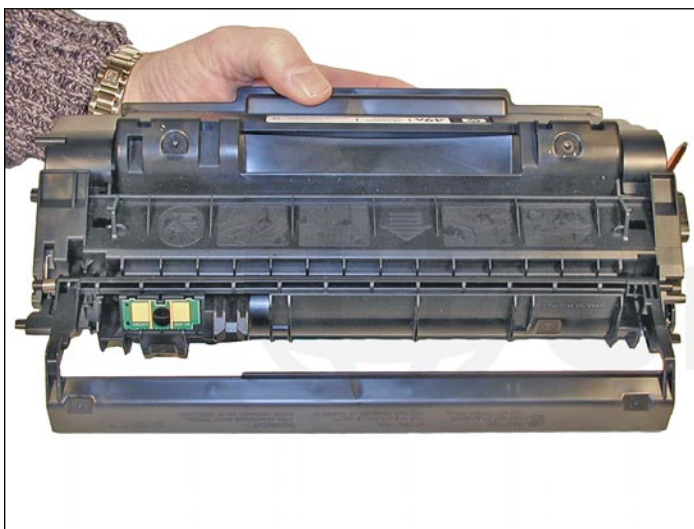
SUPPLIES REQUIRED

1. New replacement toner for use in HP 1200 Q5949A cartridge (2,500 pages)
2. New replacement toner for use in HP 1200 Q5949X cartridge (6,000 pages)
3. New drum for use in HP 1200
4. Wiper blade for use in HP 1200
5. Doctor blade
6. Magnetic roller
7. Sealing strip
8. Cotton swabs
9. Isopropyl alcohol
10. Drum padding powder

TOOLS REQUIRED

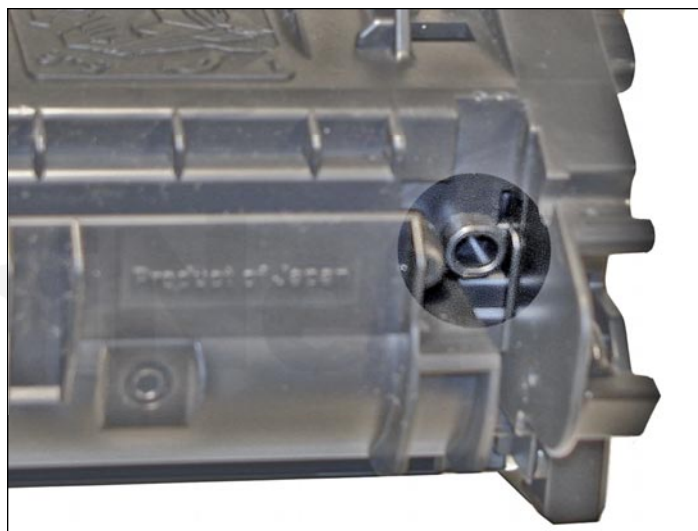
1. Allen wrench or modified spring hook to push pins out (see text)
2. Phillips head screwdriver
3. Small common screwdriver
4. Dremel type tool with side grinding bit

The pins in these cartridges are very similar to HP 1200/1300. The best way to remove them without damaging the cartridge is to cut two small holes. Other than the location, it is basically the same procedure as the 1200/1300.



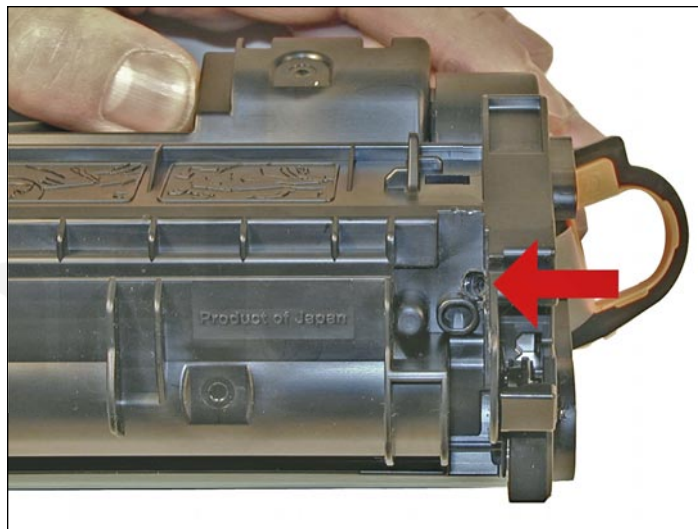
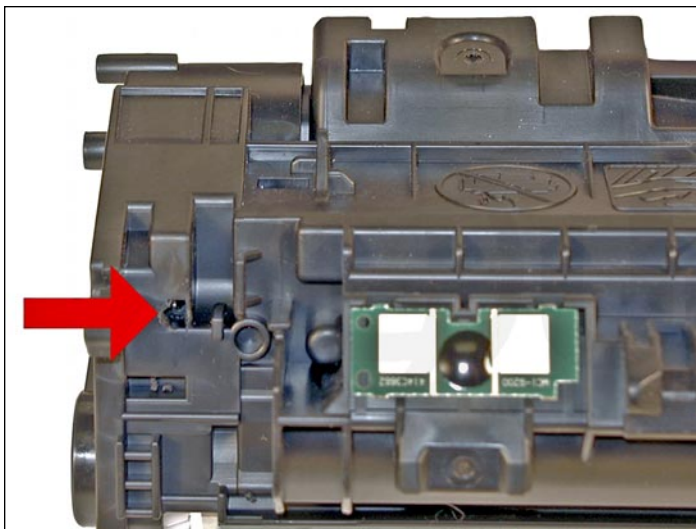
1. Remove the drum cover by prying up on each end.

Note the spring position so that it can be replaced later.

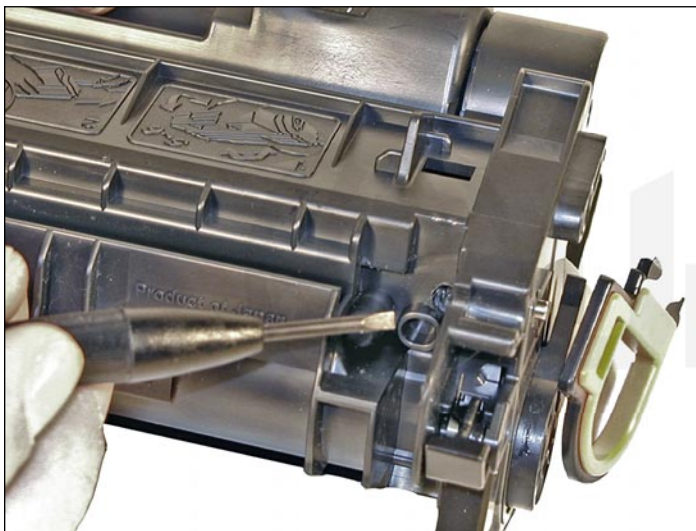


2. Drill a shallow hole on each side of the cartridge as indicated.

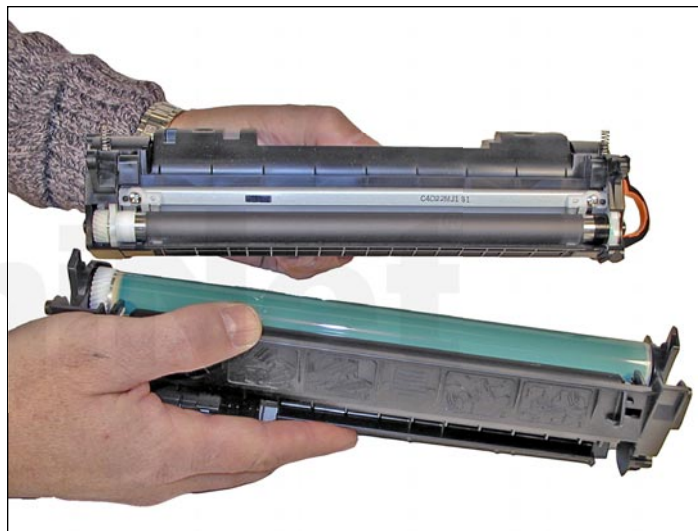
Holes uncut.



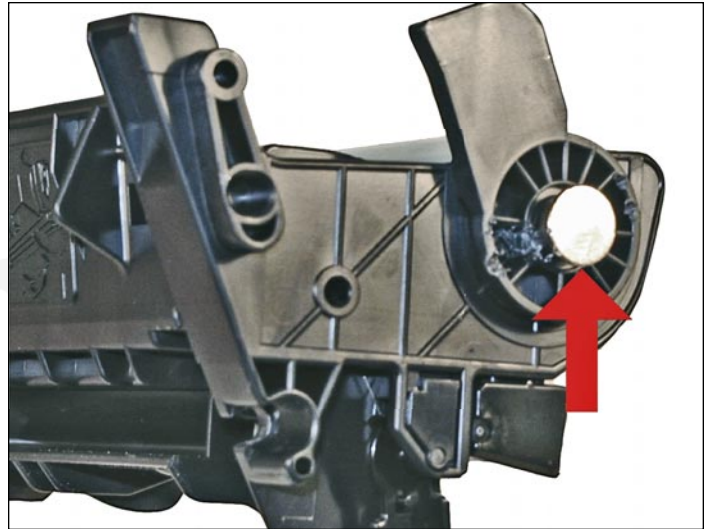
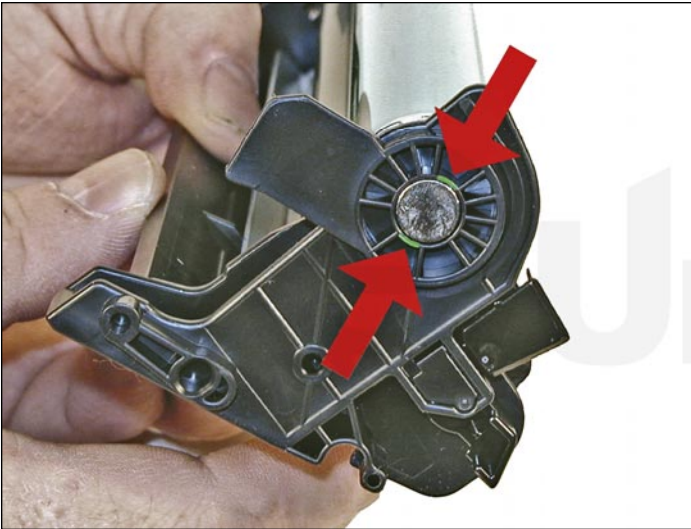
Holes cut.



3. Push the pins out with a jeweler's screwdriver. With the hole in this location by just pushing the screwdriver in, the pins will be pushed out. Remove the pins.



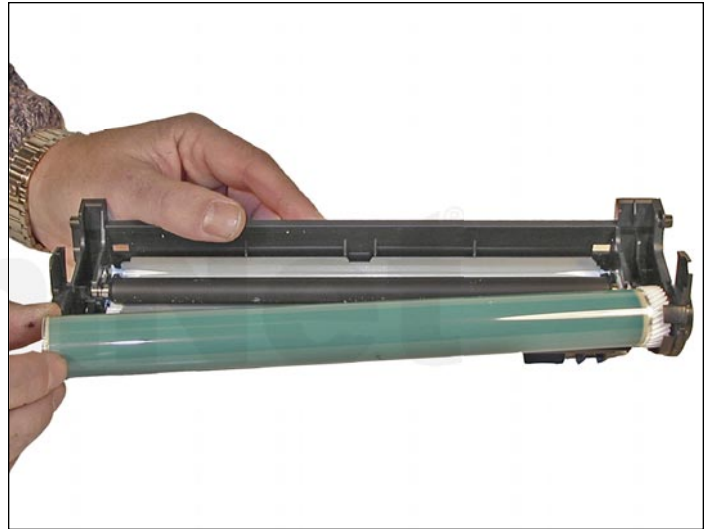
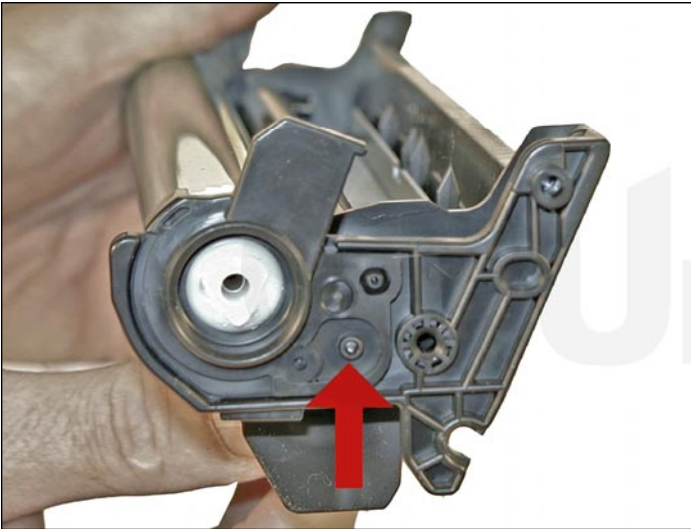
4. Separate the two halves.



5. Cut two small pieces of plastic out from the hub surrounding the metal axle pin.

Cut them on the opposite side of each other.

This way you can pry the pin out with a small jeweler's screwdriver, and flush cutting wire cutters.

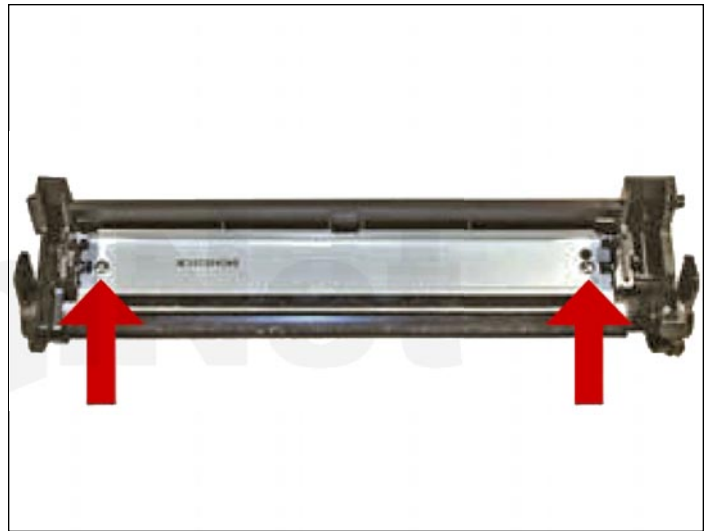


6. The drum hub that on earlier cartridges would have been removed is now welded. The weld can be broken or drilled out, but there is a good chance that the hub will either warp if pried off, or will be hard to align if drilled out.

7. Remove the drum.



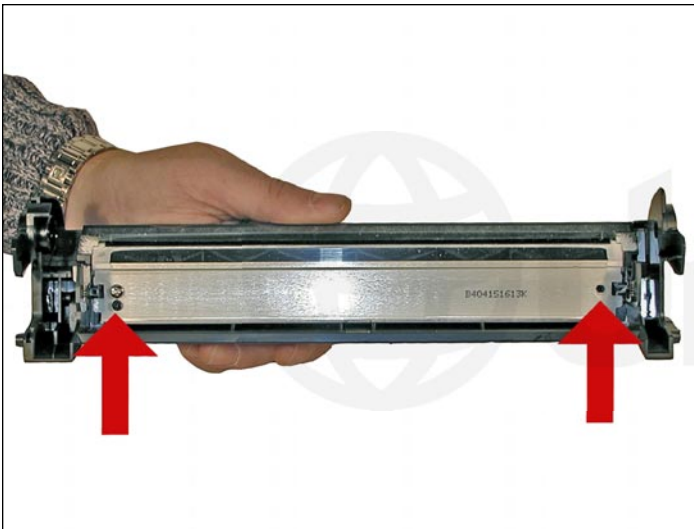
8. Remove the PCR and clean with your standard PCR cleaner. We have been using Nu-Finish for years with out any problems.



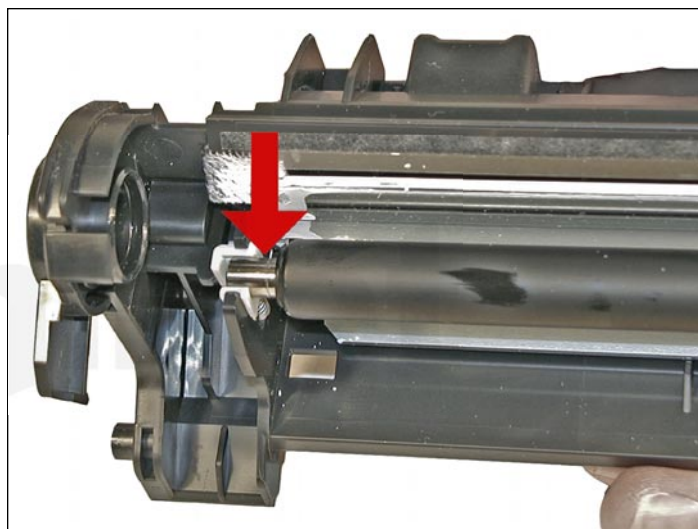
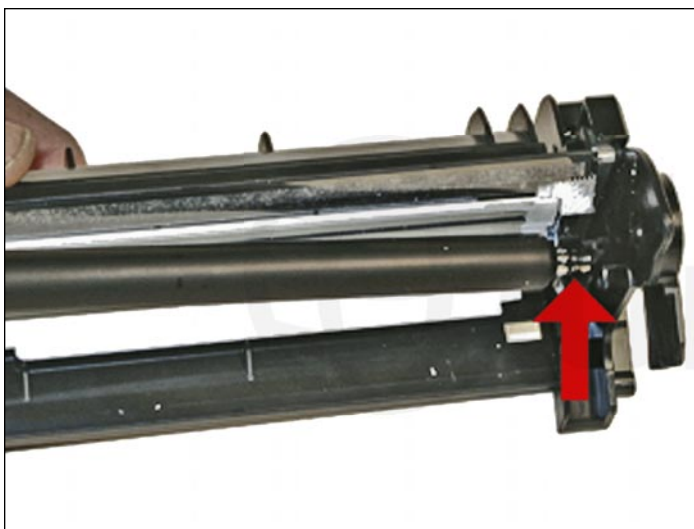
9. Remove the wiper blade.

The blade is the same as used in the HP 1200.

Clean out the waste toner.



10. Coat the wiper blade with your preferred lubricant and install.



11. Re-install the cleaned PCR. Note that a new OEM PCR has a small amount of conductive grease on the black (contact) side and what appears to be white lithium grease on the other.

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 two inches 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: Removing 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: Removing 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: Removing any 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, and 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.

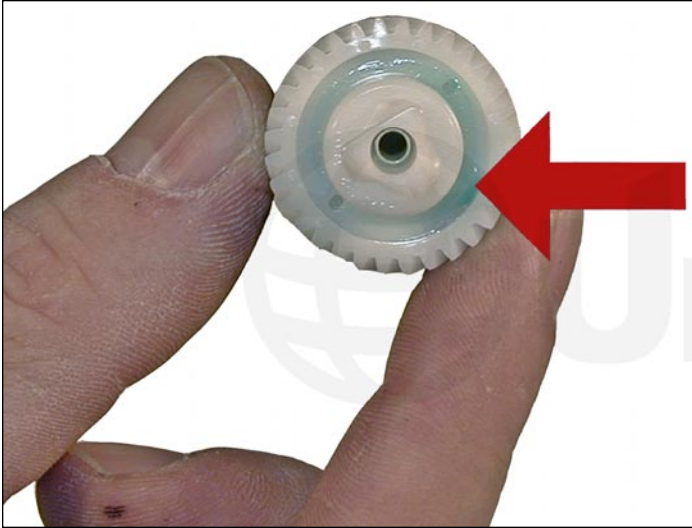
Make sure you leave a blank area for the metal contacts!

F. Insert the contact gear.

G. Check for continuity again with the Ohmmeter.

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

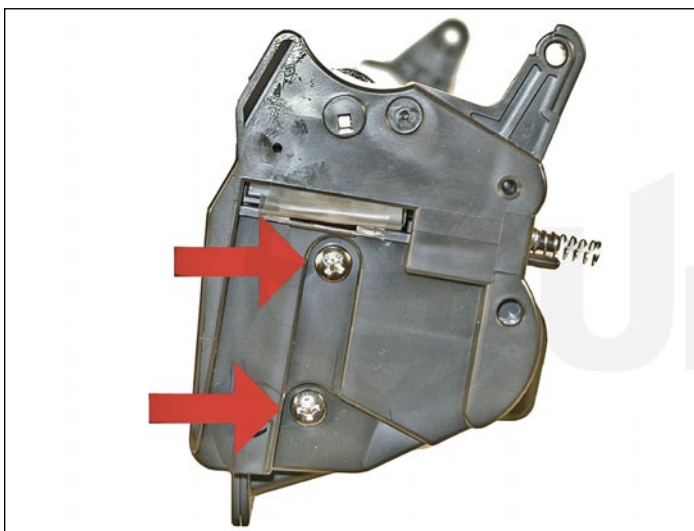
NOTE: Be very careful not to place the metal contacts in direct contact with the glue, as this will interfere with the proper grounding of the drum, and the cartridge will not print properly, (solid black pages). It is also very important to NOT put any glue on the gear, as the chances of it dripping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



12. Re-Install the OPC drum and metal axle pin. The metal axle pin should have a good amount of conductive grease on the tip. Remove the old grease and replace before inserting the pin. Place a small amount of grease on the inside of the drive gear as indicated.



Make sure the axle pin is fully inserted.



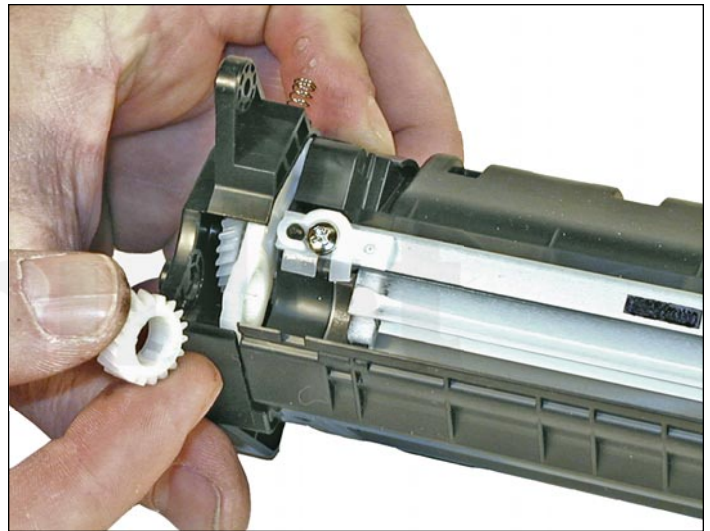
13. Remove the left side toner hopper end cap.

Remove the two screws and pry the end cap off.

The magnetic roller bushing alignment pin will break.



14. Remove the magnetic roller assembly.



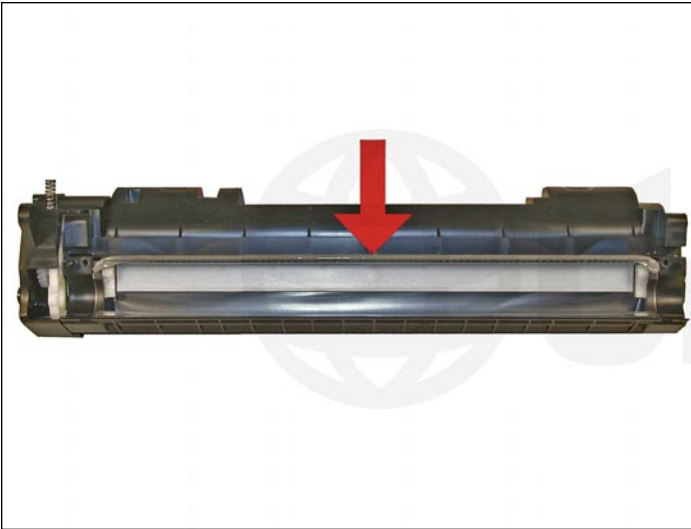
15. Remove the magnetic roller drive gear and bushing if it did not come off with the roller.



16. Replacing the magnetic roller sleeve is an easy task. Just press down on the stationary magnet and the plastic hub will pop out.



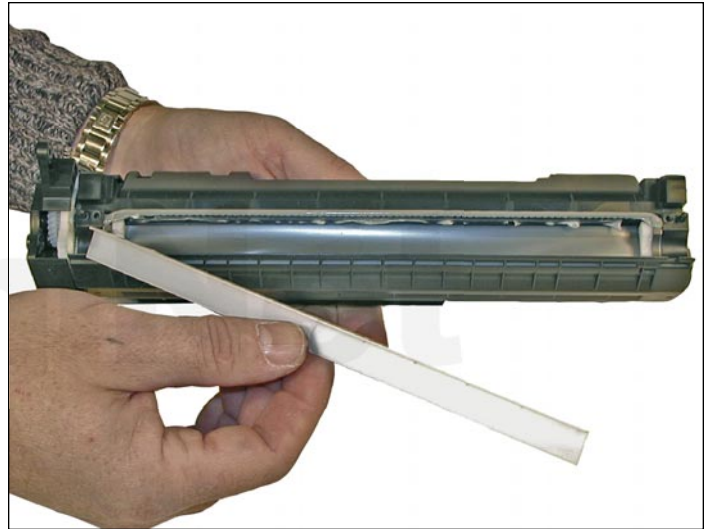
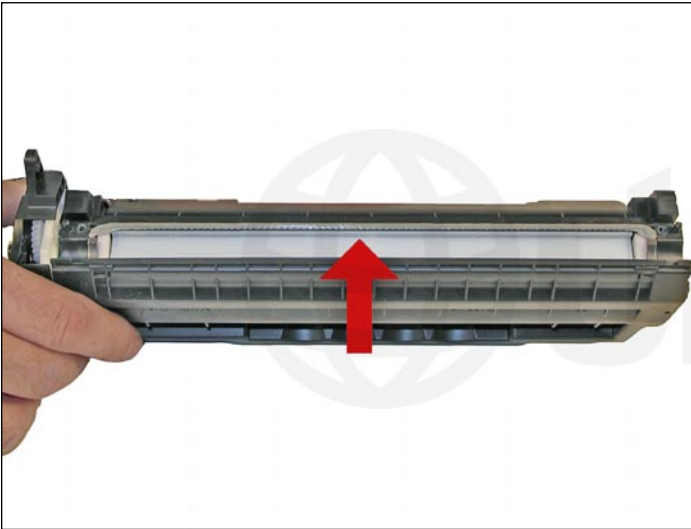
17. Remove the doctor blade and two screws.



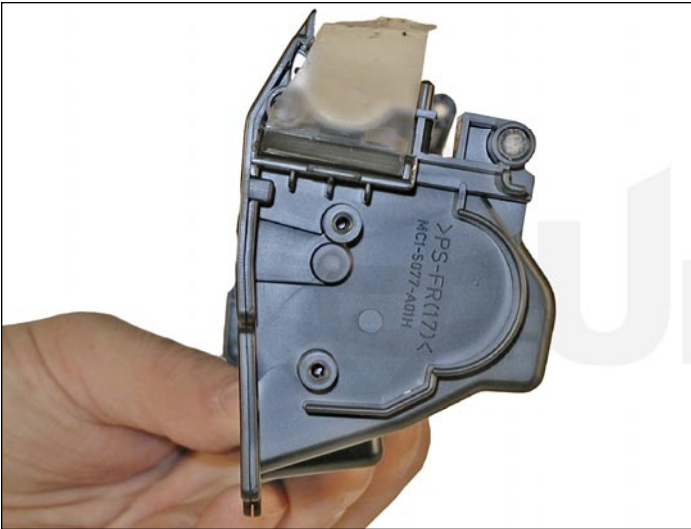
18. Clean out any remaining toner from the hopper. Note the doctor blade seal. It is a sticky substance that can be cleaned with alcohol if toner gets on it.



19. Fill through the magnetic roller opening with the appropriate amount of toner for the 1320 ("A" cartridge, and for the "X"). There is no fill plug in these cartridges.



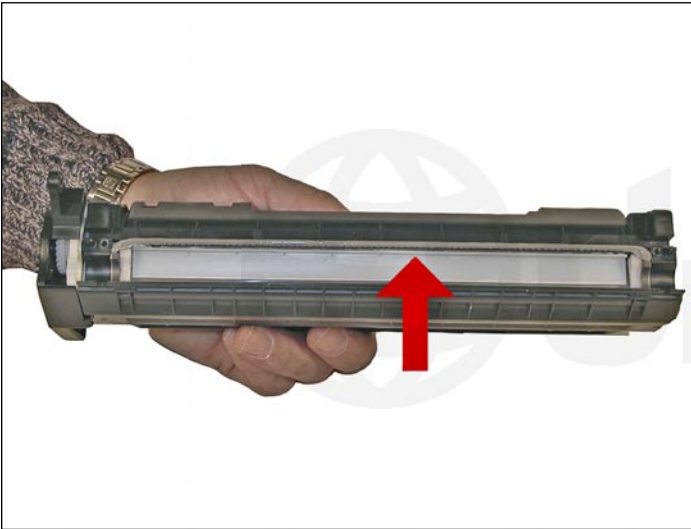
20. If you are going to seal the cartridge, there is a white plastic shelf that needs to be removed.



21. The shelf is held on with double sided tape. The seal tab fits through the right side of the cartridge (fill plug side). Shown is the seal exit slot.



22. Close up is the port seal. Note that it is a rubber gasket that seals off the opening. This port seal must be removed before inserting a seal. Make sure it is put back or the cartridge will leak after the seal has been removed.



23. Re-install the white plastic shelf. If the adhesive is not working, replace it with a good double sided tape. This shelf in our first tests seems to help the flow of toner in the hopper.



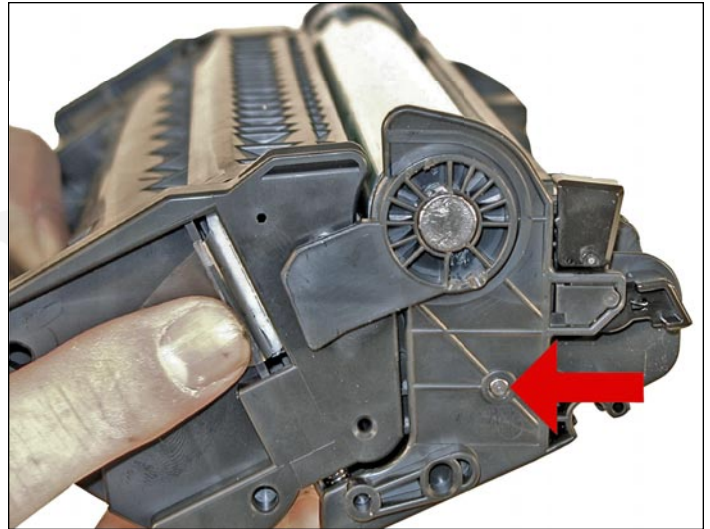
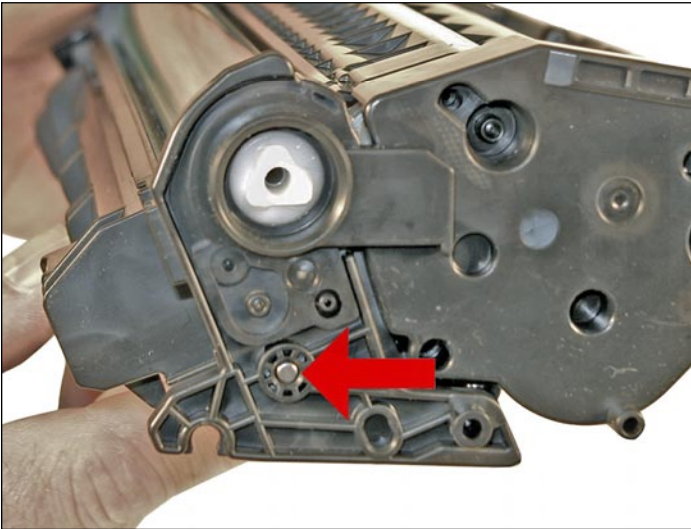
24. Re-install the doctor blade and two screws.



25. Clean the old grease off the contact plate and replace with new conductive grease.

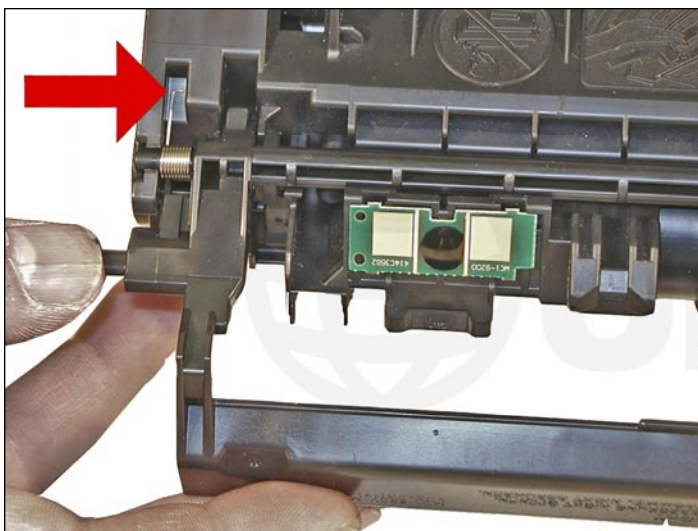


26. Re-assemble the toner hopper section. Place the magnetic roller drive gear in place and install the magnetic roller assembly. Turn the roller until the keyed end fits into the drive gear properly. Install the end cap. Align the keyed magnet into the keyed slot on the gear side first. This will help in aligning the opposite end cap. At this time no new alignment pins are available. We have run the cartridges "as is" with no problems so far, but this will be a necessary part.



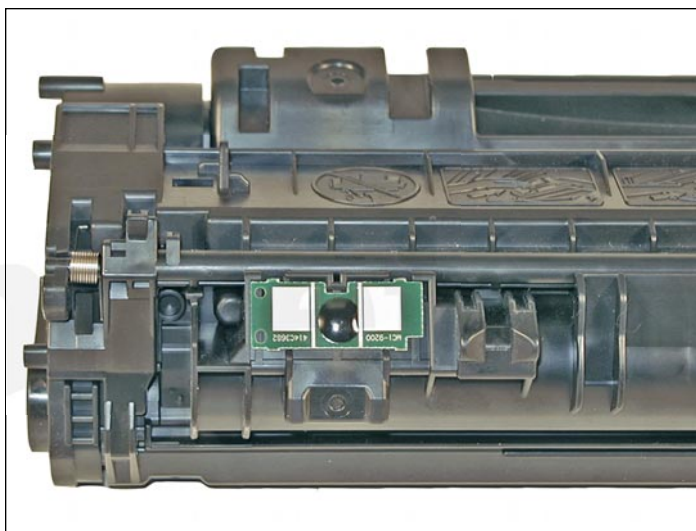
27. Place the two halves together. Make sure that the two springs are aligned and insert the two pins.

Make sure that the pins are slightly pushed in so that they do not interfere with installing the cartridge in the printer.



28. Install the drum cover.

Make sure the spring is situated correctly.



29. Replace the chip.

REPETITIVE DEFECT CHART

OPC drum:	76 mm
Magnetic roller:	46 mm
PCR:	39 mm

TROUBLESHOOTING

Backgrounding (gray streaks): This is usually caused by a dirty/worn out PCR, or a worn out wiper blade.

Light print: Can be caused by a dirty/worn magnetic roller or worn doctor blade.

Solid black pages: Bad drum ground contact, probably from the drum axle shaft to the contact gear inside the drum.

Perfectly straight thin black lines down page: Scratched drum.

Black dots that repeat every 76 mm: Bad drum, or something is stuck to the drum surface.

Dark black horizontal lines: Usually caused by either a bad PCR connection, a pin hole in the PCR, or a pin hole in the drum. These lines normally run about 1/8" thick and can show as few as 4X per page, and as many as 12X per page.

"Tire tracks" on the right edge of the page: Caused by a worn out drum. "Tire tracks" are what we call a vertical shaded area with lines in it that look like tire tread marks in the sand. This normally happens to OEM drums.

Half the page prints, the other half is blank: The cartridge pin on the blank side is most likely not installed correctly. Remove the pin and re-install making sure that the pin is inserted into both halves.

Light and dark print: Shows up mostly on full grey or solid black pages. Magnetic roller alignment pins not aligned correctly or magnetic roller bushings worn.

RUNNING TEST PAGES

Two pages are available from the front panel of the printer: the Demo Page and the Configuration Page.

Demo Page:

1. Make sure that the READY light is on and briefly press the GO button.
2. The Demo Page will print out.

Configuration Page:

1. Make sure that the ready light is on and press the GO button for five seconds.
2. When the GO light turns on, release the button.
3. Two pages with complete printer info including the page count as well as a supplies status page will print out.

RUNNING THE CLEANING PAGE

1. Make sure that the READY light is on and press the GO button for 10 seconds.
2. When all three lights turn on, release the button.
3. The cleaning process takes about two minutes.
4. The cleaning page will stop periodically during the cleaning process.
Do not turn the printer off until the process has finished.
5. For these printers, HP recommends that transparencies be used instead of paper.
Paper can be used, but apparently transparencies work better.

PRINTER TROUBLESHOOTING

As with most of the new low cost HP machines, these printers do not have a display panel. All the error codes consist of different pattern of the five lights:

Top light on: Wireless connection established.

Top light blinking: Attempting to establish wireless connection.

Toner light blinking: No print cartridge installed.

Bottom three lights on: Fatal error; turn the printer off, and unplug it for five minutes. If the error still exists, the printer has a major problem. There is no information yet on what these problems may be (the service manual has not been released yet).

Bottom three lights blinking: Accessory error. Remove the DIMMs and replace as necessary.