

TECHNICAL DOCUMENT

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Canon LBP-EX (EP-E) Toner Cartridges

DOC-0220

OVERVIEW



The HP-4, 4M, (8ppm), 4Plus, and 4M plus (10 ppm), and 5, 5N, 5M (12ppm) printers are based on the Canon LBP-EX Engine, which is a 600 DPI engine, that uses the HP PCL-5 language (PCL6 for the newer 5 series). The cartridge is an "All in one" type cartridge, (it houses the toner supply, OPC drum, and waste chamber). The standard EX cartridge(92298A)comes new with 340gm. of microfine toner, and is rated for 6,000 pages at 5% coverage. There are also 2 new EX cartridges from HP. The C3973A comes with 300g of toner and is rated for 4,000 pages at 5% coverage, and the 92298X which comes with 440g of toner, and is rated for 8,800 pages. These instructions cover all 3 cartridges.

Due to recent changes made to the OEM cartridges in the seal technology being used, it is now recommended that if a seal is required, the Supply Hopper should be split. The cartridges now being manufactured use a "tear off" type gasket seal. This type of seal makes it virtually impossible to insert any type of seal without causing a leak. Inserting any type of card or tool in these cartridges, will catch on either the remainder of the OEM seal or the gray foam of the magnetic roller section. Once either of these is torn, toner will leak out of the cartridge. In addition to the new seal, there is also now a plastic tab that interferes with the inserting of any type of rigid material.

The following are a few of the advantages in splitting the hopper.

- You get a perfect seal every time.
- If the gray foam seal on the bottom of the magnetic roller section is torn from inserting card seals, you have access to replace it.
- The lower toner hopper section can be replaced with a new JUMBO HOPPER, capable of holding up to 600 grams of toner! This will allow you too not only compete with the 98X cartridge, but beat it with little to no extra labor!
- Once split, the hopper can be filled from the fill hole.
- On the second and subsequent recharges, the magnetic roller does not have to be removed when refilling the hopper, this will greatly improve the speed of your process.

These instructions are written to be as complete as possible to enable anyone from a novice to an expert to successfully recycle this cartridge.

REQUIRED TOOLS



The tools needed to successfully and safely recharge toner cartridges are as follows:

- Toner approved vacuum. We recommend the Atrix HCTV shop vac style toner vac, or the Atrix AAA/Omegas portable toner vacs. Some type of approved toner vacuuming system is important because toner consists of very fine particles that will pass right through a normal vacuum filter, and blow out the exhaust
- A small Common screw driver

- A Phillips head screwdriver
- Cartridge splitting machine OR
Sturdy knife if splitting by hand (a clam shucking knife works great!)

REQUIRED SUPPLIES



- Black Toner 500 Grams
- Sealing Strip
- Wiper Blade
- OPC Drum (Optional)
- Recovery Blade (Optional)
- Replacement Primary Corona wire
- Replacement Transfer Corona wire
- Felt Wand Rubber
- Cleaner or "Fantastic" Spray cleaner
- Cotton Swabs
- Lint Free Cotton Pads
- Toner Magnet
- 99% Isopropyl Alcohol
- Clean compressed air
- White Lithium or HP's Conductive grease
- Scotch Tape

WARNING: Always wear safety goggles and breathing mask when working with or around toner. Do not disperse the toner into the air. Use approved toner vacuums and filters at all times.

Approved Vacuum systems:

Toner approved vacuum. The Atrix HCTV canister type toner vac, OR the Atrix AAA portable style vacuum. Some type of approved toner vacuuming system is important because toner consists of very fine particles that will pass right through a normal vacuum filter, and blow out the exhaust.

PREPARE WORK AREA



1. Before proceeding with the following procedure you should have a work area available with approximately 4' x 3' clear space. It should be covered with some disposable paper since toner will spill on this area. It is recommended that brown craft paper be used and taped to the work area. This will hold the paper in place when trying to vacuum toner from the paper.
2. A garbage can with a strong plastic liner should be adjacent to the work area to empty used toner. It should be at least 2' deep to prevent toner from clouding up and over the top of the bag during disposal.
3. Have a few rags available and some disposable paper towels. TM-40 Toner magnet cloths are ideal for wiping up toner dust.
4. The work area should be capable of being ventilated, if by accident toner becomes dispersed into the air. An exhaust fan in one window is recommended for ventilation.

If the circulation of air in the work area is combined with other rooms in the building, toner dust may be carried into these rooms. A separate and isolated HVAC system is recommended for the work area room.

DISASSEMBLY



1. Vacuum the exterior of the cartridge.

2. Place the cartridge with the drum side down and the arrow pointing away from you. On the top of the cartridge next to the first and last picture are two spring loaded pins held in by Phillips head screws. Remove the two screws and pins, separate the two halves.

REMOVE THE OPC DRUM



1. Remove the Two Phillips Head screws, and the Metal Axle pin located on the right side of the cartridge.
2. Remove the Photoconductive Drum being extremely careful not to scratch it. If the drum is in good shape and you plan to re-use it, vacuum any toner and debris from drum being careful not to let the vacuum hose come in contact with the drum surface. Do not polish or wipe the drum with a dry cloth since this may scratch the drum.

Blow off any remaining dust from the Drum using compressed clean air. If there is any matter on the drum that must be cleaned off, use 99% pure Isopropyl alcohol and a soft lint free cotton pad to lightly wipe the drum surface, then blow off the Drum using compressed clean air.

CAUTION: Be very careful not to tilt or shake the can while spraying, as the propellant may spray out and possibly ruin the drum.

3. Place the Photoconductive Drum in a soft lint-free cloth and then into a dark colored bag or cover from bright light by some other suitable means. Again, do not rub or wipe the Photoconductive Drum with a dry cloth as this may scratch its surface.

CLEANING THE DEBRIS CAVITY



1. Carefully remove the Primary Charge Roller (PCR), located next to the Wiping blade, by gently prying it out of the clips on either end. This roller takes the place of the corona wire assembly used in the older style cartridges.

WARNING: If this is an OEM PCR, do not clean it with alcohol as this will remove the conductive coating on the roller. If the PCR is an after market, follow the cleaning methods recommended by the manufacturer. If the PCR is an OEM, we recommended that it be cleaned with a PCR Cleaner. We have been using Nu-Finish car polish on our OEM PCR's for years with no problems. To clean the roller with the Nu-Finish car polish, apply a small amount and buff with a clean lint free cloth until the roller is clean and shines. For best results, we recommend that the roller be allowed to dry overnight before using. There are three different color OEM PCRs in the field, Blue/Black, Gray, and White. All of them can normally be cleaned and re-used. If the roller is damaged, or worn out it should be replaced with a new roller. It is important to examine the ends of the PCR next to the metal shafts. If the roller is starting to "Mushroom Out" (getting thicker), discard the PCR and replace it with a new one. This "Mushrooming" effect is common with OEM PCRs and will help cause premature drum failure due to the excessive pressure the mushroomed or bulging PCR applies.

2. Remove the two screws and the Wiper Blade and gently shake the toner out of the debris cavity through the opening. When most of the used toner has been removed vacuum the rest out using either the 38 or 43mm funnel on the end of the vacuum hose to get into the tight spots.

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.

3. Clean or replace the rubber Wiper blade using a lint free cloth. This blade removes excess toner from the drum and must be free of any foreign matter. Be careful not to damage this blade. Lightly coat this blade with Kynar drum padding powder. Replace the Wiper Blade into the cartridge. If you are installing a new OPC Drum, always replace the wiper blade with a new one.

NOTE: We do not recommend using Zinc Sterate on this cartridge, as it will stick to the PCR and cause small white voids in the printed characters.

CLEANING THE TONER SUPPLY HOUSING



The toner supply housing consists of the toner supply, magnetic roller and doctor blade, which mounts directly next to the magnetic roller. The doctor blade consists of a metal bar that sits next to the Magnetic roller, with a rubber blade attached to it that rides under the roller. Simply put, it is the pressure of this rubber blade against the magnetic roller that controls the charge and amount of toner on the magnetic roller. Before cleaning the toner supply, first rotate the magnetic roller by hand and observe the layer of toner applied to the magnetic roller. The toner should form an even consistent layer of toner with no clumps or lumps showing. Should the layer of toner be thicker in some areas the magnetic roller should be cleaned using a dedicated magnetic roller cleaner. Always remove the roller for cleaning and make sure it is completely dry before re-installing it. If you can see the metal of the roller through the toner, and the black coating seems worn, the Magnetic Roller Sleeve and Doctor Blade should be replaced. (The Doctor Blade should be replaced every time the Magnetic Roller is replaced).

NOTE: The magnetic roller assembly **MUST BE REMOVED** when splitting the cartridge for the first time. This will prevent damage to the magnetic roller, and will help prevent the upper magnetic roller section from warping.

1. Remove the two screws that hold the gear housing cover on the right side of the cartridge. Be very careful not to damage any of the pins on this cover when it is being removed. All loose gears must be removed at this time.
2. To remove the magnetic roller, first remove the remaining end cap, and then carefully lift the roller out of the cartridge. Be very careful not to damage the roller or to damage the wire contact at the opposite end of the roller.
3. Remove the doctor blade by removing the two screws and lifting it out slotted end first. This will release the blade from the plastic alignment pin on the opposite side. When removing this blade, be very careful not to break the alignment pin. This pin keeps the doctor blade at the proper distance from the magnetic roller.
4. Vacuum the Toner Supply Chamber thoroughly.
5. If it is necessary to replace the Magnetic Roller Sleeve, carefully push the stationary magnet from the side opposite the white cap until the cap is free. The stationary magnet can now be installed in the new sleeve, and the end white cap replaced. It is very important that there be a good electrical contact between the wire in the white cap, and the inside of the magnetic roller sleeve.

SPLITTING, SEALING AND FILLING THE HOPPER



NOTE: If you are splitting the hopper, follow steps 7.1 through 7.11, if you are NOT going to split the hopper, skip to step 7.12. There are several options to splitting EX Supply Hoppers. If you are only doing a few cartridges, the hoppers can be split by hand. If you are doing these cartridges in any type of volume, it is recommended that you purchase a splitter. There are many types of splitters on the market. We have two of them here, the first is an EX only splitter, and the second will split other cartridges as well. All of the splitters we have tested work equally well. If you have a splitter, follow the instructions for splitting provided by the manufacturer.

1. To split an EX by hand, take either a sturdy knife, or screwdriver and insert it into the seam of the hopper. Gently pry up and move the knife along the length of the hopper. Do this to all sides until both halves are separated. Be very careful not to break the square alignment pin on the upper half.

NOTE: To help avoid injury when using a knife to spit the hopper, make sure you keep the blade facing away from you, and that you work away from yourself.

2. Inspect the end foams on the bottom of the upper magnetic roller section. If they appear worn or are damaged in any way, they should be replaced with a new foam gasket.
3. Clean the seal area with the Acetone or alcohol. Clean both the top of the supply, and the bottom of the magnetic roller section. (Do not clean the foam on the upper magnetic roller section)
4. If the OEM end foams are damaged, they should be replaced with a full 4 sided foam gasket. When using this gasket, the foam strips are not needed. Make sure you remove all of the old foam before installing the new gasket. If the OEM foam ends are in good shape, install two foam strips along the edges so that they fit between the OEM foams. This will prevent any leakage once the seal has been removed. **(Diagram #1)**

Foam Strips (SHS-Foam)

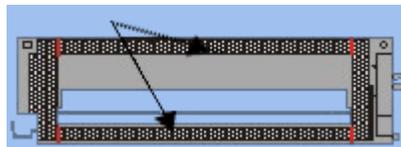


Diagram #1

NOTE: If you are upgrading the cartridge using a new Jumbo high capacity hopper, skip to section 7.6.

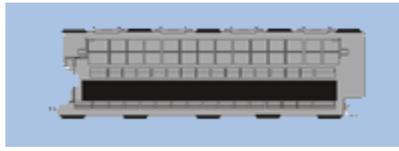
5. Remove the adhesive liner and place the seal on the top of the toner hopper. Make sure that the seal is perfectly flat, and that there are no gaps.
6. Fill the hopper with toner, replace the fill plug and check for any leaks. (Remember to save some for post testing. We normally fill the toner bottle cap 1/2 way and place it aside). If you are using a new jumbo hopper, these normally come pre-sealed. Fill the hopper with the desired amount of toner.

NOTE: Although most Jumbo hoppers will hold up to 600 grams of toner, we recommend that a maximum of 500 grams be used. This is because of concerns with OPC drum life, PCR life, and waste chamber capacity. For best results, we recommend you do your own testing.

It should also be noted that not all "Jumbo" hoppers will fit in both the HP 4, and 5 series printers. Check with your supplier to make sure it does. The HP5 series printers have an added section of plastic hanging down from the top lid of the printer. This can prevent the lid from closing when using certain jumbo hoppers.

7. Align the top to the bottom by lining up the plastic pins with the alignment holes

8. Take 10 of the 4mm metal clips, Press five on each side, one on each end and three in the middle. (Diagram #2)



9. Replace the End Caps on the Magnetic Roller Sleeve with new ones. The OEM caps will crack and tear the coating off of the OPC drum.
10. Clean the contact spring of the magnetic roller, and the contact-side end cap with the alcohol. Re-install the Doctor Blade, Magnetic Roller Assembly, Assembly end caps, and gears. Spin the roller a few times to make sure all is aligned properly. Take the cap full of toner and sprinkle a 1/4 bead along the back edge of the roller. Spin the roller until the entire roller is covered evenly with toner. This coating is just enough to run 4-5 test pages with little or no toner in the Waste Chamber.
11. If you are using a Seal Tab, attach it to the end of the seal.

During the next recharge on this cartridge, remove the 6 clips, peel off the old seal, and replace it. There is no need to replace the FOAM ends or strips.
Skip to section 8.1

If your hopper has not been split, follow steps 7.12-7.15
12. Fill the toner supply through the top of the magnetic roller section. NOTE: In this cartridge, the seal is inserted AFTER the Toner Supply has been filled.
13. Insert the seal into the Toner supply Chamber. Make sure that it seats properly in the opposite end of the cartridge. Some of the newer cartridges have plastic tabs that block the seal entrance. These tabs should be cut off with a flat piece of metal. The newest cartridges have a very narrow seal entrance. SX sealing strips work fine in these cartridges. In cartridges where the seal does not slide in easily, we recommend that you do NOT use any seal at all. Forcing a seal in will tear the foam seals, or remainder of the OEM seal, and the cartridge will leak
14. Clean the Magnetic roller with MRC-16 a dedicated magnetic roller cleaner.
15. Replace the magnetic roller, doctor blade, magnetic roller end caps, and gears by reversing steps 6.1 to 6.3, being very careful not to damage the roller or any of the blades.

CLEAN AND REFILL THE TONER SUPPLY



1. Vacuum the Toner Supply Chamber thoroughly and refill with CP (9750, or 9050I) EX Toner (340gm.). Vacuum up any toner that may have spilled into the rectangular grids on the hopper.

NOTE: In this cartridge, the seal is inserted AFTER the Toner Supply has been filled.

2. Insert the seal into the Toner supply Chamber. Make sure that it seats properly in the opposite end of the cartridge.
3. Clean the Magnetic roller with MRC-16 a dedicated magnetic roller cleaner.
4. Replace the magnetic roller and gears by reversing steps 6.1 to 6.3, being very careful not to damage the roller or any of the blades.

RE-ASSEMBLE THE TONER SUPPLY OPC DRUM AND DEBRIS CAVITY



1. Coat the OPC Drum with the Kynar, and replace the OPC Drum, If the cartridge is an older style and does not have a white plastic spacer that the plastic drum axle fits into, insert a EX drum alignment pin from the outside of the cartridge. This will prevent the drum from wobbling and causing print defects. (On the older cartridges, the black plastic hole will wear, allowing the OPC drum to move while printing).
2. Manually spin the OPC drum in the proper direction (towards the edge of the wiper blade), to make sure everything is properly lubricated. If the drum binds, remove it and coat the wiper blade and drum with Kynar again.
3. Remove the OPC Drum, and place aside.

4. Clean the PCR silver contact ends along with the U-shaped contacts with the Isopropyl Alcohol. These are electrical contacts and must be clean in order for the cartridge to print correctly.
5. Replace the cleaned Primary charge roller.
NOTE: IF the PCR is an OEM, proper care of this roller entails cleaning with a PCR cleaner. As stated before, we use NU-Finish on OEM PCRs, if the PCR is an after market, you should follow the cleaning procedures of the manufacturer.
6. Re-install the OPC Drum, drum axle pin, and screws. This is done in this order to prevent the PCR from being contaminated with the Kynar padding powder.
7. Re-assemble the two halves of the cartridge using the two spring loaded clips.

NOTE: The Fuser Assembly in this printer is designed to be self-cleaning, and does not use a felt wand.

TEST PRINTS AND PRINTER MAINTENANCE



There are a few items in the printer that should be maintained to ensure optimum print quality. If these items are not maintained, they could cause print defects that may be incorrectly blamed on the toner cartridge. The following is a list of these items.

Transfer Charge Roller; In the base of the printer, there is the Transfer Charge Roller. This is a foam roller that must be kept clean. Be very careful not to touch this roller with any part of your skin. The oils naturally present in your skin, paper dust, or toner dust, can contaminate the roller, causing light print and/or small white voids in the text.

Anti-Static Teeth; On the top, right side of the printer, there is a small cleaning brush. This brush is used to clean the small saw tooth blade or Anti-Static Teeth just behind the transfer charge roller assembly. This blade dissipates the static charge applied by the Transfer charge roller from the paper. This helps prevent the paper from sticking to any of the rollers and causing a paper jam.

Because of the lower voltage required by the PCR, this printer does not generate ozone, so ozone filters are not required. The Fuser Assembly is designed to be self-cleaning and does not use a felt wand.

The fuser assembly, transfer charge roller, separation pad, and the paper feed rollers are designed to be replaced every 200,000 pages.

Taking test prints

All of these items just covered, as well as the condition of the toner Cartridge effect the print quality, and should be checked before taking test prints.

Since the most important part of the toner cartridge is the OPC drum, special attention should be taken with this part. To help determine the condition of the OPC Drum, a test print should be taken with the printer's intensity set to 5 which is the darkest setting. The intensity can be changed by using the printer's keypad. There is not a manual dial, or slide switch as in other laser printer models.

HP-4, 4M, 4+, 4M+ Series ONLY

To set the intensity, first turn the printer Offline. press the menu button four times until CONFIG MENU appears on the display. Press the Item button four times until DENSITY= appears on the display. Press the +/- key until the density = 5, press the enter key, and the on line key. Having the intensity set to the darkest setting will help to show up any OPC Drum flaws that may not show up with the intensity set to the normal setting of 3.

HP-5, 5N, 5M Series ONLY

To set the intensity, first press the GO button to turn the printer Offline. Press the menu button four times until CONFIG MENU appears on the display. Press the Item button four times until DENSITY= appears on the display. Press the +/- key until the density = 5, press the SELECT key, and the GO key. Having the intensity set to the darkest setting will help to show up any OPC Drum flaws that may not show up with the intensity set to the normal setting of 3

HP-4, 4M, 4+, 4M+ Series ONLY

To run a test print, verify that the printer is still off line, and press the MENU button seven times, until TEST MENU appears on the display. At this point you have a few options as to which test print to select. If you press the ITEM button one time, SELF TEST will appear on the display. This is a text printout that also gives you the page count of the printer. If you press the ITEM button 2 times CONT SELF TEST will appear. This is a continuous print out of the self test page, and is not recommended for a sample test print. If you press the ITEM button 3 times PCL TYPE LIST will appear on the display. This is a 4 page printout of the internal fonts. By pressing the ITEM button 4 times PCL DEMO PAGE will appear. This is a demo page that combines graphics and text. This is the test we recommend for testing the cartridge. Once you have decided which test print you want, press the enter button one time, and the printer will print the test page(s) you selected.

HP-5, 5N, 5M Series ONLY

To run a test print, verify that the printer is still off line, and press the MENU button Nine times, until TEST MENU appears on the display. At this point you have a few options as to which test print to select. If you press the ITEM button one time, SELF TEST will appear on the display. This is a text printout that also gives you the page count of the printer. If you press the ITEM button 2 times LJ 5 DEMO will appear. This is a demo page that combines graphics and text. This is the test we recommend for testing the cartridge. If you press the ITEM button 3 times LJ 5M DEMO will appear. This is also a demo page that combines graphics and text. By pressing the ITEM button 4 times CONT SELF TEST will appear. This is a continuous print out of the self test page, and is not recommended for a sample test print.

Once you have decided which test print you want, press the ENTER button one time, and the printer will print the test page(s) you selected.

Once you have the print out's, they need to be examined to determine possible cartridge defects. In general, any marks on the paper that shouldn't be there indicate a problem. You should also examine print areas for abnormalities such as light print, poor

black fills and print inconsistencies.

Some of the more common toner cartridge problems are:

A Dirty or Bad Primary Charge Roller (PCR); located Inside the cartridge, 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 3 times per page. Any drum defects will repeat 3 times per page based on the drum circumference of 3.66".

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.

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. Bad Magnetic roller end caps, and "Mushroomed PCR's can help cause this problem.

Worn Waste Chamber; This will show up on the right side as either 1/2 of the page faded or not printed, or as a shaded area. The chassis of the waste chamber can wear out where the OPC drum gear fits. This will allow the right side of the OPC drum to move back and forth during printing. This is easily fixed with EX drum alignment pins.

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.

CARTRIDGE PRINTING THEORY



The cartridge printing process is best explained as a series of steps or stages. (See the following diagram)

In the first stage, the Primary Charge roller (PCR) places a uniform negative DC Bias voltage on the OPC drum surface. The amount of the negative DC Bias placed on the drum is controlled by the printer's intensity setting. This process is called conditioning. In the second stage, (also called the imaging section), the laser beam will discharge this DC voltage to ground wherever it strikes the OPC's surface, leaving a latent electrostatic image on the drum. The OPC drum's circumference is 3.7" or approximately 1/3 of a page and therefore makes three revolutions for each 11" printed page.

The third stage is where the toner image is developed on the drum by the developing section, (or supply chamber), which contains the toner particles. The toner is held to the magnetic roller sleeve by the stationary magnet inside the sleeve, and a DC bias voltage supplied by the high voltage power supply. This DC bias voltage is controlled by the printer's intensity setting, and causes either more or less toner to be attracted to the drum. This in turn will either increase or decrease the print density. Both the Primary Charge Roller, and magnetic roller DC Bias voltages are controlled by the printers intensity setting. The amount of toner on the magnetic roller sleeve is controlled by the rubber Doctor blade, which uses pressure to keep the amount of toner on the magnetic roller sleeve constant. This blade also causes a static charge to build up on the toner, which helps keep the coating of toner even, and allows easy transfer to the OPC drum.

At the same time an AC signal is also placed on the magnetic roller sleeve. This signal decreases the attraction of the toner to the Magnetic Roller sleeve, and increases the repelling action of toner against the areas of the drum that was not exposed to the laser beam. This AC potential improves the density, and contrast of the toner on the printed page.

As the laser exposed areas of the OPC drum approach the magnetic roller, the toner particles are attracted to the drums surface due to the opposite voltage potentials of the toner, and laser exposed surface of the OPC drum.

This image is then transferred to the paper as it passes below the drum by the transfer charge roller, which places a positive charge on the back of the paper. This positive charge causes the negatively charged toner on the drum's surface to be attracted to the page. The small diameter of the drum, combined with the stiffness of the paper causes the paper to peel away from the drum. The static charge eliminator weakens the attractive forces between the negatively charged drum surface, and the positively charged paper. Without this help, thin paper may wrap itself around the drum.

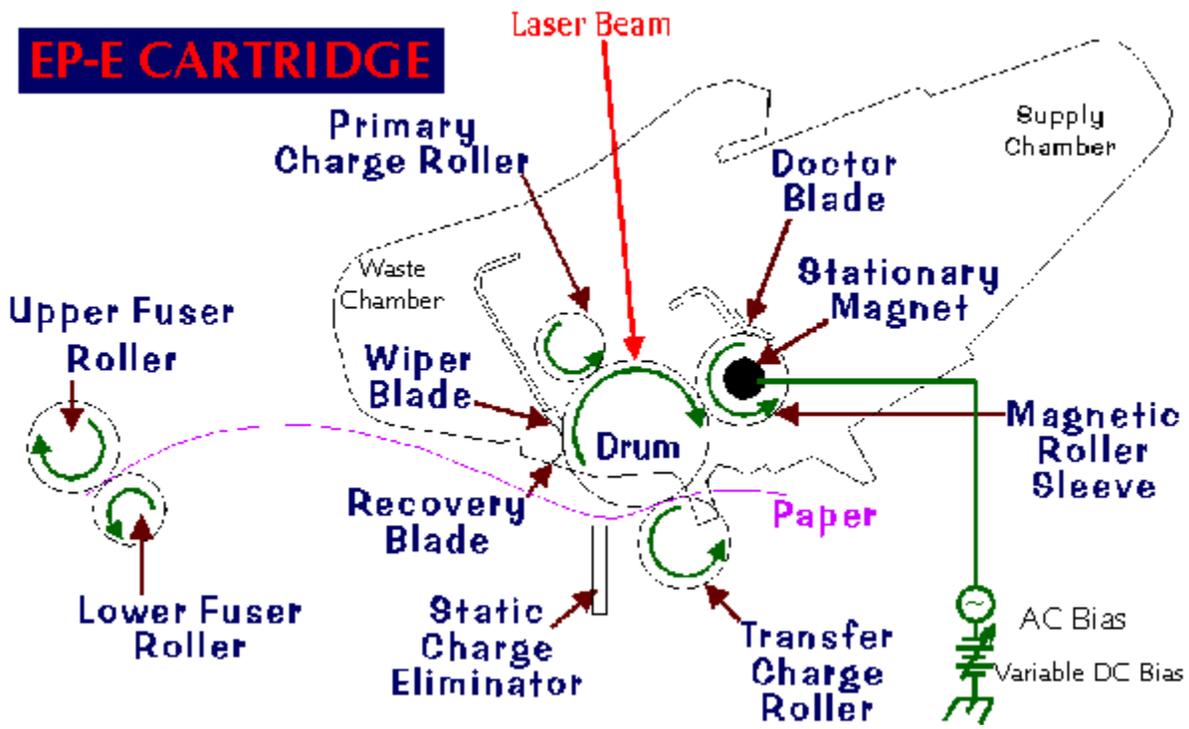
The image is then fused on to the paper by the fuser assembly, which is comprised of the upper and lower fuser rollers. The lower rubber roller presses the page up into the upper roller, which then melts the toner into the paper. The upper roller is a hard Teflon coated, heated roller.

The fourth stage is where the OPC drum is cleaned. On average, approximately 90% of the toner is transferred to the paper during the print cycle. The remaining 10% remains on the OPC drum and is cleaned off the Drum by the wiper blade, guided into the waste chamber by the recovery blade, and stored in the waste chamber.

Once the print cycle has been completed, the Primary Charge Roller will then place an AC voltage across the drum surface that erases any residual charges left on the drum surface. The OPC drum is now ready to be conditioned by the Primary Charge Roller using the negative DC bias voltage, and start the print cycle again.

The advantages of the Primary Charge Roller are that it operates at a lower voltage than the old style corona wire, does not generate ozone, and it replaces the erase lamps that were present in the older style laser printers. The draw back to this technology is that if this roller becomes dirty, or contaminated in any way, the printed pages will have the problems as previously shown on the test pages. Since the Primary Charge Roller is not accessible from the outside of the cartridge, it cannot be cleaned by the user as the Primary Corona Wires can in older style cartridges.

EP-E CARTRIDGE



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RECOMMENDED SUPPLIES



Microsoft OLE DB Provider for ODBC Drivers error '80004005'

[Microsoft][ODBC Microsoft Access Driver]General error Unable to open registry key 'Temporary (volatile) Jet DSN for process 0x3464 Thread 0x29b8 DBC 0x8437024 Jet'.

/script/catSearch.asp, line 58