

LICENSE AGREEMENT

Static Control Components, Inc. (Static Control) grants this limited license to the person, firm or corporation (hereinafter "User) downloading electronically or by printing this file to use Static Control's copyrighted documents in accordance with the terms of this agreement. If you agree with the terms of the license then you may download this information. If you do not agree with the terms of the license, then you are not authorized to use this information, and any use of it may be in violation of Static Control's copyrights or trademarks.

TRADEMARKS

The Static Control material herein may make reference to its own trademarks, or trademarks of others. Static Control grants a limited license to the User to use Static Control's trademarks in its internal documents and for its internal purposes on the following terms and conditions. Any use of Static Control's trademark must be used in a context which makes it clear that the product reference is a Static Control Components, Inc. product, and not a product from any source.

The materials provided to the User may include reference to trademarks of others. Any use of the User makes of these marks should reference the owner of those marks. Nothing in this agreement constitutes any authorization by Static Control to use any of these trademarks in any context.

COPYRIGHTS

Static Control grants a limited license to the User to use the attached copyrighted documents. The permitted use of these documents is limited to internal purposes and needs of the company. The company is prohibited from using these copyrighted documents, or any part of them, including graphic elements, in any materials that are used outside the physical business location of the User. The User is prohibited from using any materials in any documents whether printed or electronic, which are distributed to any third party. The use of these copyrighted documents, or parts of them, including graphic elements, from these documents in marketing material, either print, electronic or web is prohibited. The sale, transfer, copying of these documents or any parts of these documents to any other party is prohibited.

Static Control Components, Inc. retains all rights to its copyrighted documents, and any use of these documents by User should reference Static Control's copyrights, with the notice "copyright Static Control Components, Inc."

Static Control reserves the right to cancel this license on 30-days written notice. All of the User's material incorporating Static Control's copyrighted documents shall be destroyed upon receipt of its notice of termination.

The User may not distribute, share, and otherwise convey the copyrighted documents to any other persons, corporations or individuals.

The User, by use of these documents, acknowledges Static Control's copyright in these materials.

STATIC CONTROL DOES NOT GUARANTEE OR WARRANT DOWNLOADED INFORMATION

The information User is downloading is published by Static Control in "as is" condition "with all faults". Static Control makes no representations or warranties of any kind concerning the quality, safety, or suitability of the downloadable materials, either express or implied, including without limitation any implied warranties of merchantability, fitness for a particular purpose, or non-infringement. Further, Static Control makes no representations or warranties as to the truth, accuracy or completeness of any statements, information or materials concerning items available for download. In no event will Static Control be liable for any indirect, punitive, special, incidental, or consequential damages however they may arise even if Static Control has been previously advised of the possibility of such damages.



Canon® LBP-VX(5P/6P)

Remanufacturing Instructions



About the Cartridge

The design of the Hewlett Packard® LaserJet® 5P (HP or 5P respectively) cartridge may look very similar to the PX(4L) cartridge, but a few differences in outward appearance help to make the 5P more distinguishable from the 4L. First, the size of the 5P hopper is larger than that of the 4L, holding about 35% more toner. The OEM 5P is rated at 4,000 pages at 5% coverage, which is 1,000 pages more than the OEM 4L. Second, the color of the 5P is notably different. HP has strayed from the basic black color used for almost every cartridge, including the 4L, and made the 5P of a dark gray plastic.

Although the 5P looks like only a slightly redesigned 4L, a Product Manager for HP noted that the 5P printer required a new cartridge. The 4L cartridge could not produce adequate print quality at the higher speed of 6 ppm for the 5P printer. The 5P cartridge uses a new OPC drum, new gears and features tighter dimensional tolerances. Any other significant differences between the 4L and 5P cartridges are noted throughout these instructions.

Remanufacturing processes for the 5P are nearly identical to those of the 4L. The 5P cartridge sections are held together by 12 holding clips located around the perimeter of the cartridge. The cartridge is separated by carefully unlatching each clip with a flat-blade screw driver. Unlike the 4L, there is not even one screw to remove from the outside of the cartridge.

With this type of cartridge, disassembly can be very tedious and time-consuming if the holding clips are preserved for reassembly. The cartridge is much more susceptible to leakage if even one of the holding clips is broken. However, by installing Static Control's **VX Retrofit Hardware**, the clips are eliminated and replaced with removable screws. Remanufacturing time is reduced and the cartridge can be easily disassembled and reassembled for numerous cycles without leakage or print problems.

Once the cartridge is separated the components are readily accessible. The waste bin separates with the cartridge sections and the toner port open, so be prepared for toner to spill from both of these sections. Because of the way the cartridge sections are assembled, strips of foam are used to seal several areas inside the hopper, as well as around the perimeter of the waste bin. Take care not to puncture or remove the foam, otherwise the chance of leakage is greatly increased.

The waste bin section houses the drum, mag roller, doctor blade, wiper blade and recovery blade. The **drum** is geared on one end; the

continued on the next page

Table of Contents

About the Cartridge 1-2
Special Considerations 2
About the VX Retrofit Kit 3-4
Minimum Tool Requirement 4
Remanufacturing Instructions
Separating the Cartridge 5-8
Disassembling Waste Bin 9-11
Installing Retrofit Hardware
Waste Bin 12-13
Installing Retrofit Hardware
Toner Hopper 14-16
Installing a Seal and
Filling Hopper 17-19
Assembling the Hopper Sec.
(with Seal) 20-21
Filling/Assembling Hopper Sec.
(without Seal) 22-23
Assembling Waste Bin 24-31
Assembling Cartridge using
Retrofit Hardware 32-35

Remanufacturing Information

Estimated Remanufacturing Time	30 mins.
Estimated Remanufacturing Time w/Retrofit	5 mins.
Sug. Remanufactured Cartridge Price	\$49-\$75
Toner Weight	220 grams
Toner Class	Microfine
Recommended Test Printer	HP LaserJet® 5P or 6P

About the Cartridge continued

other end contains a contact insert that holds the contact axle of the drum. The Static Control's VX (5P) OPCs are sold with the helical gear and contact insert already installed.

An aftermarket **drum shutter felt** installed on the drum shutter is highly recommended to help protect the drum from nicks and scratches. The shutter is located on the toner hopper section of the cartridge.

The 5P uses a dedicated **wiper blade** which can be easily removed and cleaned. The **doctor blade**, however, is layered with sealing foam and is more difficult to remove. We only recommend removing the doctor blade if it requires replacement. The 5P uses the same replacement **recovery blades** used for the 4L cartridge. Both polyester-type and polyurethane blades are available.

You will also notice that the black **magnetic developer roller** is much smaller in diameter (12.04 mm or .473 in.) than most mag rollers seen in cartridges thus far. The mag roller is placed

in a particularly awkward position in the 5P cartridge, therefore we do not recommend removing the mag roller unless it requires replacement. Keeping the mag roller in place primarily helps to prevent scratching the sleeve.

The toner hopper holds 220 or 250 grams of toner and is sealed with a 4L/4P **perimeter adhesive seal or gasket-style seal**.

The **Primary Charge Roller (PCR)**, also located in the hopper section, uses a conductive saddle, and in some cartridges an additional wire extension that contacts the shaft of the PCR. Refer to SSS#60-F, *Changes to the VX Cartridge*, for more details. No lubrication of any kind is required for the saddle or the PCR shaft. In contrast to the 4L, the 5P cartridge uses either a black or deep blue-green PCR. The OEM 5P PCR is not recoatable. We recommend the usage of an LX/PX/PC 330 type roller, which is recoatable. See below for details on replacement PCRs.



Special Considerations

VX Remanufactured PCRs

The VX OEM primary charge roller (PCR) is similar to other Canon-based PCRs in that it shows significant wear after the initial OEM cycle. Unfortunately, the VX OEM primary charge roller can not be recoated through Static Control's PCR Recoating Program. This new-style VX roller is of a substantially different design from PCRs which are currently recoated through the program and is not compatible with recoating processes.

Static Control offers two replacement alternatives for the VX application, both of which are guaranteed for five remanufacturing cycles or in one-cycle systems when used with qualified system components.

- The **EX OEM black PCR** is remanufactured through Static Control's recoating program and modified in length to VX PCR specifications (9.54 inches) to achieve a dedicated VX PCR.

- **SCC Remanufactured LX/PX/PC330 PCRs** are fully compatible alternatives to dedicated VX PCRs. Although the length of the LX/PX/PC330 shaft is .075 inches shorter than that of the VX PCR, the PCR rides in the PCR saddles correctly and makes proper contact with the PCR electrical contact in the cartridge.

Remanufactured PCRs Used in VX Application

	EX OEM Black	LX/PX/PC330
Modification	SCC Recoated Modified Length	SCC Recoated
15-cycle Code	VXRMPCR (-2, -3)	LXRMPCR (-2, -3)
1-cycle Code	1CVXRMPCR	1CLXRMPCR

* The suffix (-2, -3) refers to the second and third times the PCR has been recoated

Contact your Static Control Sales Representative for program details.

Cartridge Compatibility

The 6P/6MP printer uses the C3903A cartridge which is the same cartridge used with the 5P/5MP printer.

About the VX Retrofit Kit

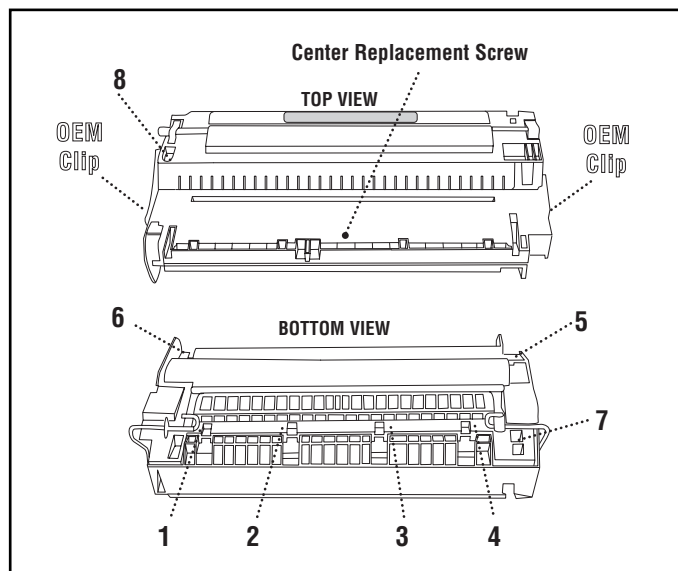
How the Retrofit Kit Works

The VX(5P) cartridge, like the PX(4L) cartridge, is a unique cartridge in that the hopper and waste bin sections are held together by holding clips instead of pins and screws. Having to pry the cartridge open over a number of cycles quickly diminishes the integrity of the cartridge, and trying to save the fragile clips slows the remanufacturing process. A single broken clip may increase the risk of leakage or print defects.

Static Control's solution to these problems is to retrofit the cartridge with screws in the place of holding clips. The OEM has left strategically-placed screw bosses that provide a perfect base for aftermarket screws. When the cartridge is separated, you will notice that a screw boss is located next to almost every holding clip. With only a few modifications to the cartridge and the addition of specially manufactured screws, the need for 10 of the 12 holding clips is eliminated.

The illustrations below show an example of how the PX cartridge is reassembled using retrofit hardware. The VX cartridge is retrofitted in the same fashion as that of the PX cartridge, with only a few differences in the installation processes.

Eight replacement screws are installed in OEM screw bosses. Two holes are drilled in the corners of the waste bin for access to screw bosses inside the waste bin (for screws 5 & 6 shown below). An alignment hole inside the waste bin is fitted with a coil insert, making it a suitable screw boss for a center replacement screw. A third hole is drilled for the center screw. As shown in the illustrations, only two of the original holding clips (OEM clips) are retained for reassembling the cartridge. The other 10 clips are removed to facilitate subsequent remanufacturing cycles.



The VX cartridge retrofit hardware screws are installed in the same locations as the screws installed in the PX(4L) cartridge shown above.

Replacement Screws Meet Strict Specifications for VX(5P) Application

The replacement screws for the retrofit kit are specially manufactured to meet the size specifications of the pre-existing (OEM) screw bosses, as well as to meet the specific application requirements of the VX(5P) cartridge.



- To prevent fractures and “break outs,” the size of the replacement screws fits precisely with the diameter of the OEM screw bosses. Using a larger diameter screw, such as a #4, can crack the screw bosses to a degree that they are no longer useable.
- The length of the screw is critical because of the location of four screw bosses along the toner hopper. Using a screw that is too long can puncture the toner hopper and cause leakage through the base of the cartridge.
- Strict thread specifications are used due to the repeated screw installation and removal required for the VX(5P) application. Designed for use with plastics, these screws can be used for multiple cycles without stripping the screw bosses.



Unique Center Screw Prevents Waste Bin Leakage

In the OEM cartridge, four internal clips along the front of the waste bin are used to secure the cartridge sections and maintain a consistent gap where the sections come together. Without these clips, the cover of the waste bin will bow causing toner leakage and misalignment of the drum and PCR.

The center screw is installed to prevent the waste bin cover from bowing and to maintain the gap within OEM specifications. A gap tool provided with the kit ensures the correct gap.

IMPORTANT The VX Retrofit hardware has been carefully designed and tested to work as a complete system in unmodified VX(5P) cartridges, or in cartridges that have broken holding clips. The retrofit hardware is not designed as a “fix” or a supplement for cartridges that have already been modified using other screw types.

About the VX Retrofit Kit

VX Retrofit Kit Contents

The retrofit kit contains enough supplies to retrofit five cartridges.

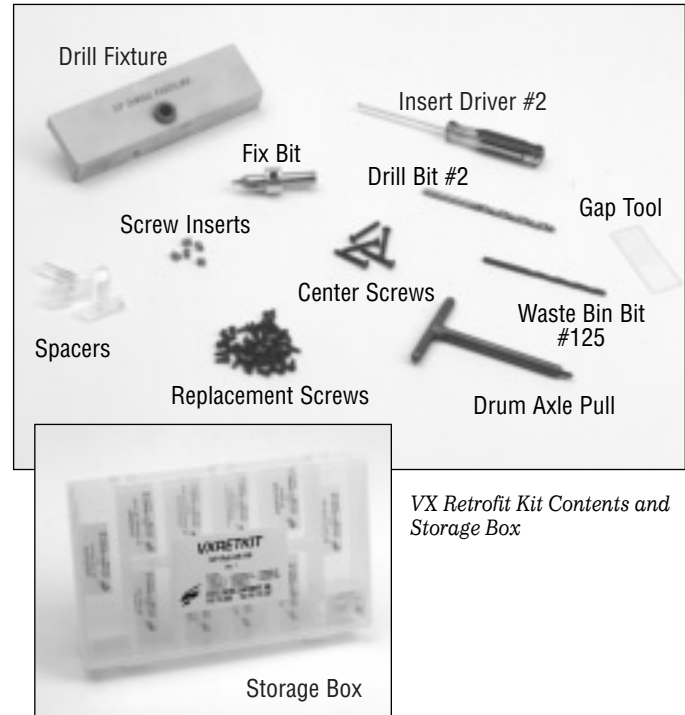
Description	Quantity	Code
VX(5P) Screw Insert	5	VXSCRINSERT
VX(5P) Center Screw	5	VXCENSCR
VX(5P) Drill Fixture	1	VXDRLFIX
VX(5P) Drill Bit #22	1	VXBIT-22
VX(5P) Waste Bin Bit #125	1	VXWBBIT
VX(5P) Insert Driver #2	1	VXIDRIVER
VX(5P) Fix Bit	1	VXFIXBIT
VX(5P) Gap Tool	1	VXGAP
VX(5P) Drum Axle Pull	1	VXDRAXPUL
VX(5P) Replacement Screw	40	VXSCREW
VX(5P) Spacer	5	VXSPACER
Storage Box	1	TOOLBOX

The VX retrofit kit uses many of the same items used with the PX retrofit kit. There are some items that may look similar, but they are DIFFERENT. Familiarize yourself with the VX retrofit kit, and make sure you are using only dedicated VX kit items for the following items:

- Insert (VX is slightly larger than PX)
- Center Screw (VX is slightly larger than PX)
- Drill Fixture (VX has notch on the side)
- Drill Fixture Bit (VX is slightly longer than PX)
- #22 Drill Bit (Used with VX ONLY; do not confuse this bit with the 1/8" bit)

Remanufacturing Retrofitted VX Cartridges

Once the cartridge is retrofitted, you will reuse all of the removable hardware, such as the spacer and the screws each time you remanufacture the cartridge. The cartridge is easily disassembled and reassembled through multiple cycles, without compromising remanufacturing speed or cartridge integrity.



VX Retrofit Kit Contents and Storage Box

Additional Tools and Supplies Needed

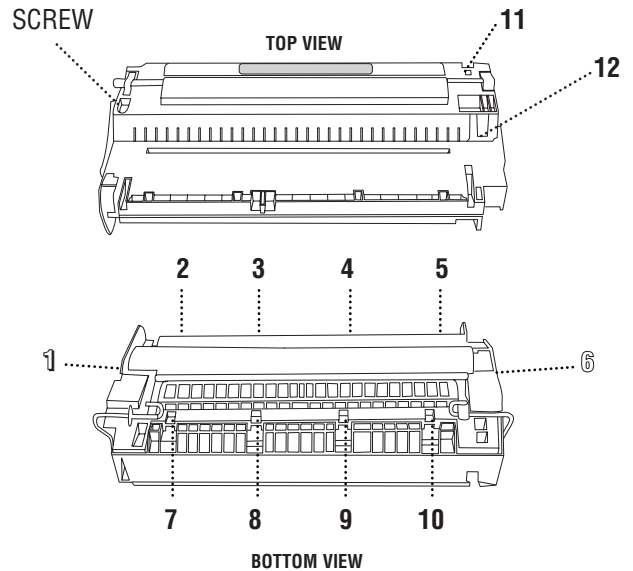
- Needlenose Pliers
- #1 Phillips Screwdriver
- Fine-Tipped Flat-Blade Screwdriver (3/16" blade)
- Angle Blade Knife Tool (Item Code: ABKTOOL)
- Variable-Speed Drill
- Safety Glasses (Item Code: CSS-42)
- Compressed Air (Refer to SSS#100 *Cleaning Tools* for important information regarding the use of compressed air)
- 91-99% Isopropyl Alcohol (Refer to SSS#100 *Cleaning Tools* for important information regarding the use of alcohol in cartridges)
- Soft, Lint-Free Cloth (Item Code: LFCLOTH)
- Conductive Cartridge Lubricant (Item Code: CONCLUBE)
- Cotton or Lint-Free Swab (Item Code: QTIP or LFSWAB)

Separating the Cartridge

This section is provided to show you how to separate the cartridge. The illustrations on the right show the location of the clips and the order in which they are released.

As you separate the cartridge, be careful not to damage the plastic cartridge shell or the sealing foam located in the seam along the front of the cartridge. Only the clips above the drum axles, Clips #1 and #6, are preserved for reassembling the cartridge. **DO NOT** Break these clips. The rest of the clips (clips 2-5, 7-12) are removed as part of the retrofit hardware installation procedure. Don't be concerned if the clips break while you are separating the cartridge.

IMPORTANT Disassemble the cartridge on a clean, soft surface. The OPC drum is exposed during most of the remanufacturing procedure.

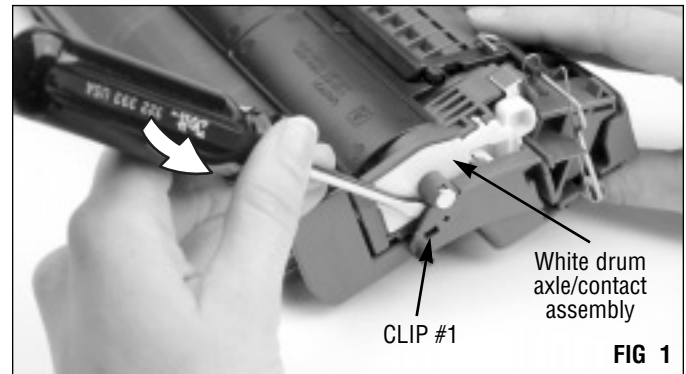


1. Release Clip #1.

Turn the cartridge over so that you have a view of the bottom of the cartridge. Then, rotate the cartridge so that the white drum axle/contact assembly is facing you.

Clip #1 is located just below the drum axle. Use the flat-blade screwdriver to gently pry the cartridge shell away from the clip to release it. (FIG 1) Take care not to break the cartridge shell.

IMPORTANT Do not break Clip #1.



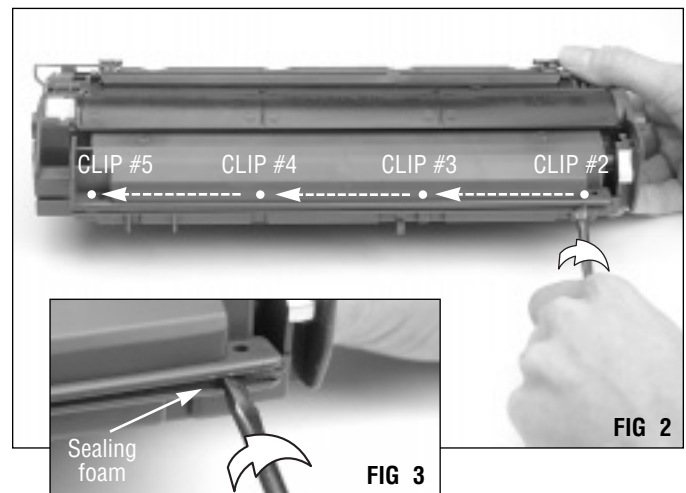
2. Release Clips #2, #3, #4 and #5.

Four internal clips are located along the front of the waste bin as shown in FIG 2.

IMPORTANT Be careful not to puncture the sealing foam along the seam or damage the plastic shell. Rips and tears in the foam can cause leakage from the waste bin.

Position the tip of the flat-blade screwdriver just inside the seam of the cartridge near the base of **Clip #2**. (FIG 2) Then, twist the screwdriver to release the clip. (FIG 3)

Follow the same procedure to release **Clips #3, #4 and #5**, in this order. Note that these clips may break when released.

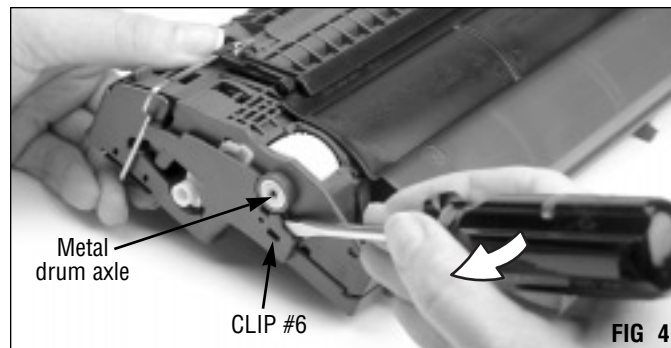


Separating the Cartridge

3. Release Clip #6

Rotate the cartridge so that the metal drum axle is facing you. Clip #6 is located below the axle. Use the flat-blade screwdriver to gently pry the cartridge shell away from the clip to release it. Take care not to break the cartridge shell. (FIG 4)

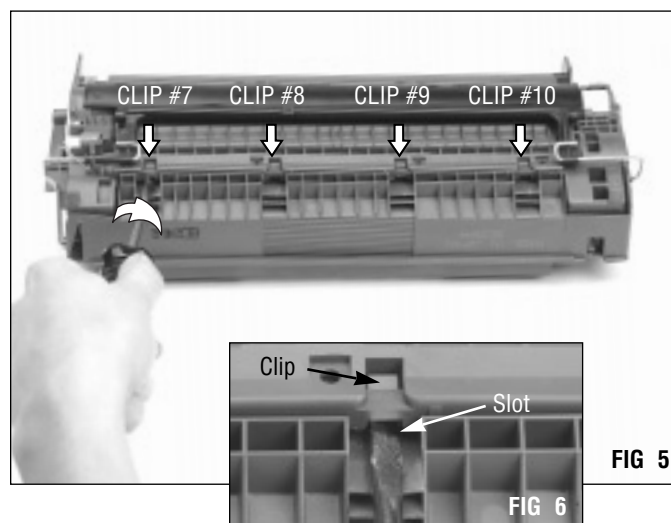
IMPORTANT Do not break Clip #6.



4. Release Clips #7, #8, #9 and #10.

Rotate the cartridge to the position shown in FIG 5. Locate Clips #7, #8, #9, and #10 on the underside of the cartridge.

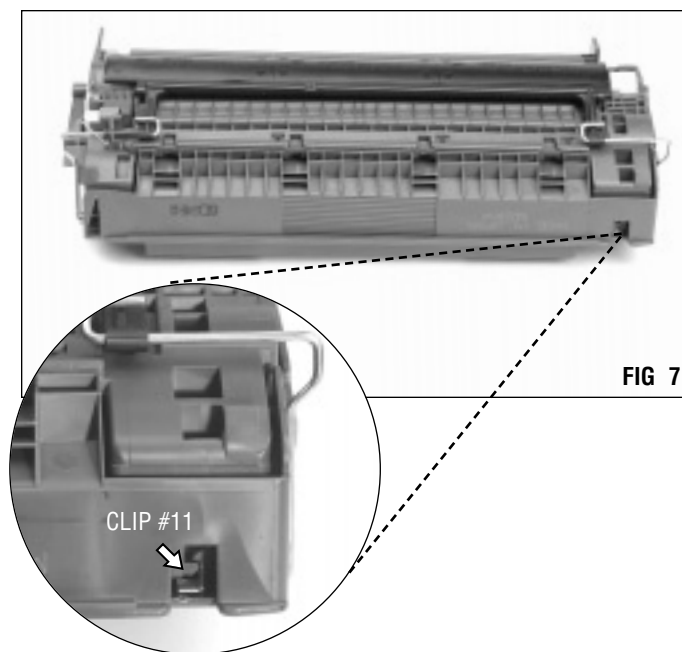
To release these clips, insert the flat-blade screwdriver into the slot just under the clip and twist the screwdriver. Note that these clips may break when released. (FIG 6)



5. Release Clip #11.

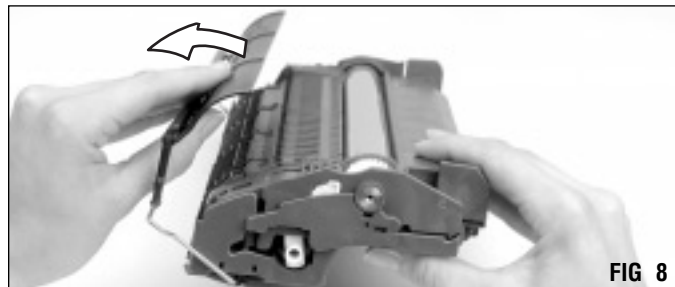
Clip #11 is located in a receptacle on the back of the cartridge as shown in FIG 7. Release this clip with the flat-blade screwdriver. Note that this clip may break when released.

Before you continue, make sure clips 1-11 have been released. Clip #12, located inside the cartridge, will release when the cartridge is separated.

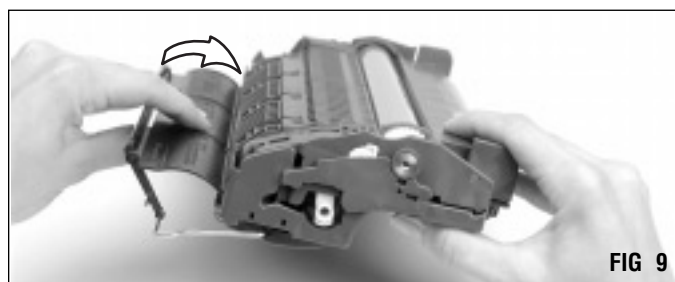


6. Position the drum shutter.

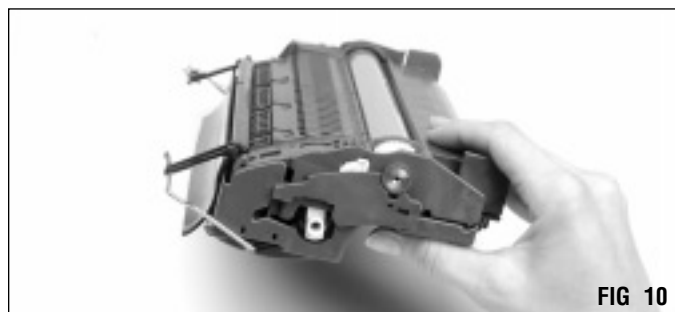
Slide the drum shutter back as shown in FIG 8. Note that the shutter may break if handled roughly.



Then, fold the shutter against the rear of the cartridge as shown in FIG 9.

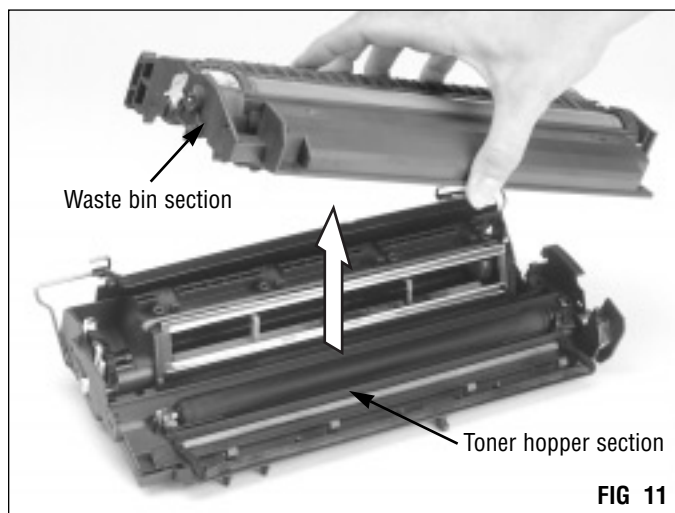


The shutter will retain the position shown in FIG 10.



7. Carefully separate the cartridge.

Be prepared for toner to spill from the hopper and waste bin. (FIG 11)



Separating the Cartridge

8. Remove the agitator drive gear.

The gear may be located in either section of the cartridge, or it may fall out when you separate the cartridge. (FIG 12)

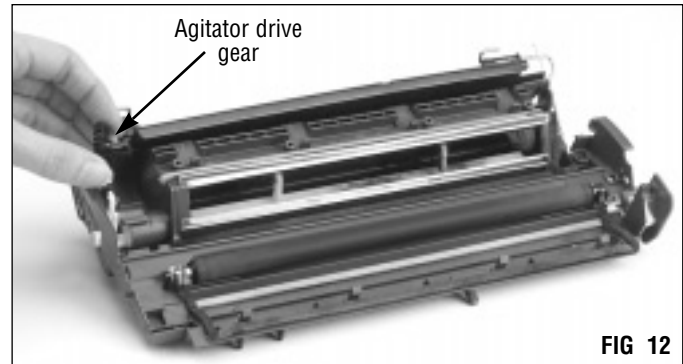


FIG 12

9. Remove the PCR from the toner hopper section.

Handle the PCR by the axle or use clean latex gloves. Lift the contact end of the PCR first to remove it. Store the PCR on a flat uniform surface. (FIG 13)

IMPORTANT Do not stack PCRs, lay anything on top of them or wrap them with rubber bands or touch the surface of the PCR with your bare hands.

The OEM VX (5P) PCRs cannot be recoated. For best performance results, use a SCC recoated EX OEM black PCR with modified length (Item Code: VXRMP-PCR) or SCC recoated LX/PX/PC330 PCR (Item Code: LXRMP-PCR). Both PCRs are available as 15-cycle or 1-cycle systems. See page 3 for more details.

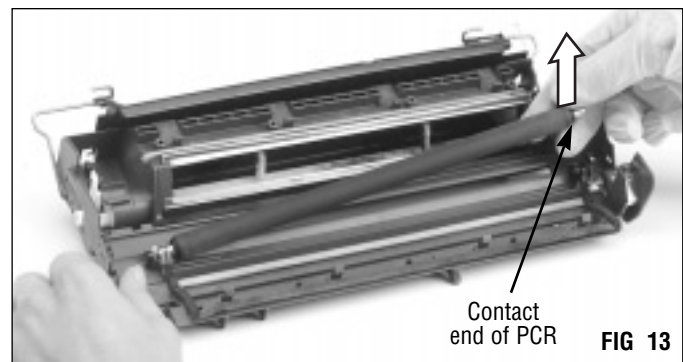


FIG 13

10. Clean the cartridge sections.

Empty the toner and clean both sections with dry, filtered compressed air or a toner vacuum. Be careful not to nick or damage the drum while cleaning the waste bin section. (FIG 14)

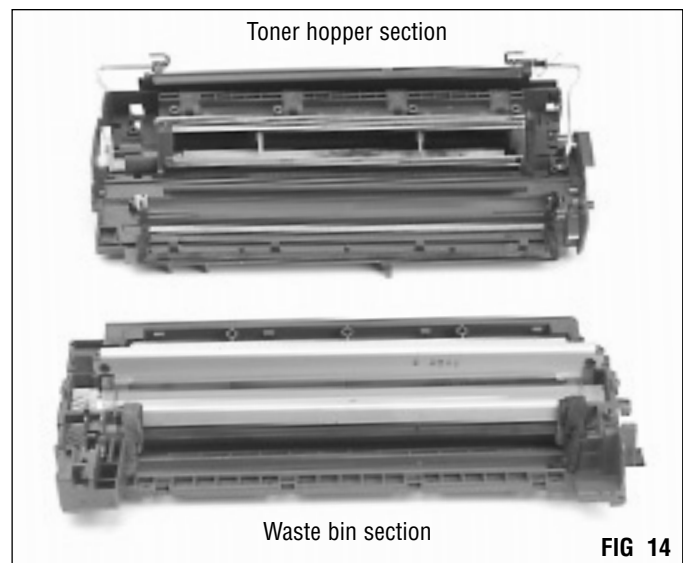


FIG 14



Disassembling the Waste Bin Section

Turn the waste bin section over and position it as shown in FIG 15.

1. Remove the metal drum axle.

Thread the drum axle pull tool into the middle of the axle until the tool bottoms out against the axle. Then, pull the tool to remove the axle. (FIG 15)

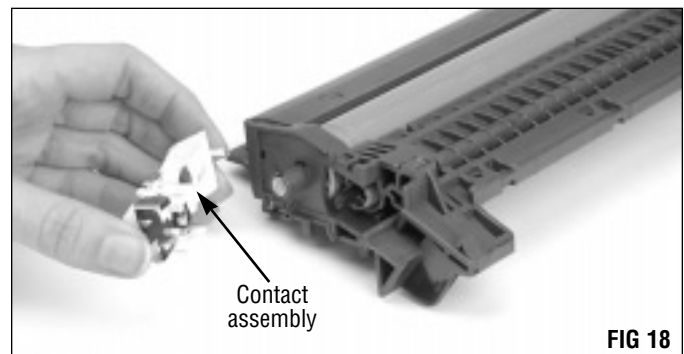
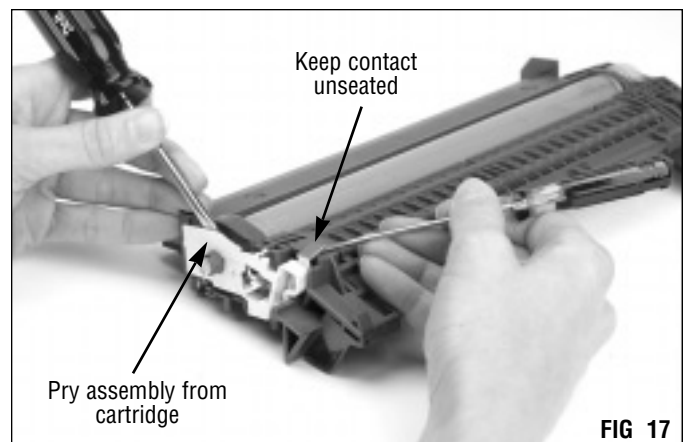
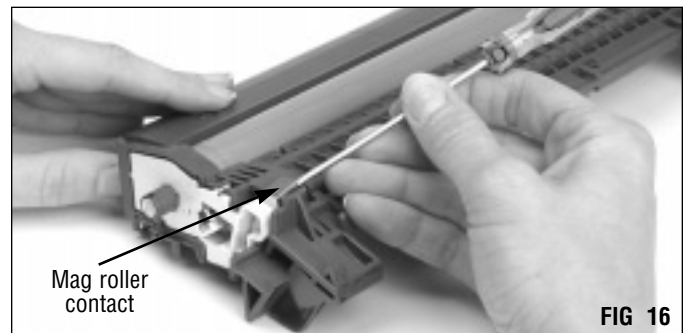
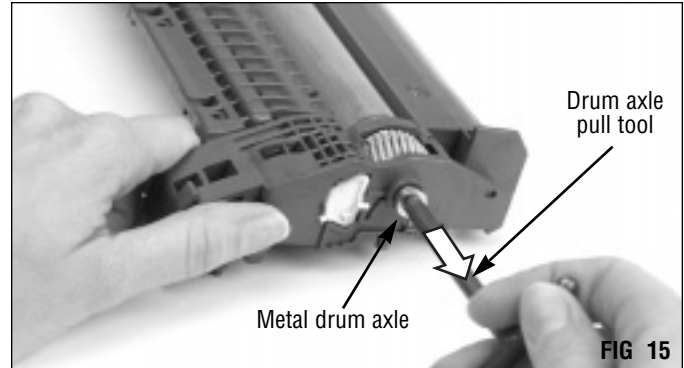
NOTE: As of early 1996, two type of drum axles are used in the VX cartridge. A tool for the new-style drum axles is under development. See SSS#60-F, *Changes to the VX Cartridge* for more details.

2. Remove the axle/contact assembly.

On the opposite end of the drum there is an axle/contact assembly for both the OPC drum and magnetic roller. Carefully lift the drum and magnetic roller contacts just enough to unseat them from the cartridge shell. (FIG 16)

While keeping the contacts disengaged from the cartridge, use a fine-tipped flat-blade screwdriver to gently pry the edges of the assembly from the cartridge shell as shown in FIG 17.

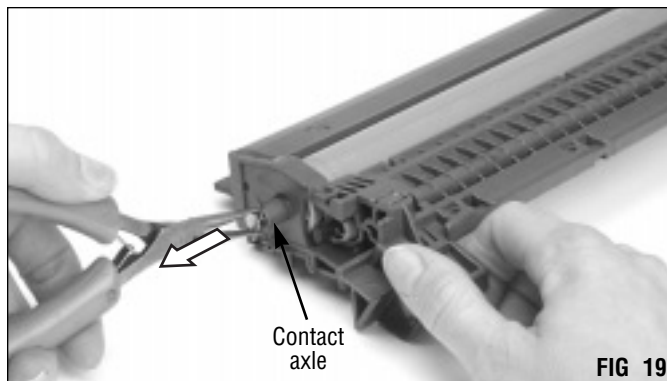
Remove the contact assembly. (FIG 18)



Disassembling the Waste Bin Section

3. Remove the contact axle.

Using a pair of needlenose pliers, remove the contact axle. Be careful not to damage the casing that houses the axle. (FIG 19)



4. Remove the drum.

Turn the waste bin section back over so that the waste bin is facing upward.

From the bottom of the cartridge, push the geared end of the drum up to remove it from the cartridge. (FIG 20)

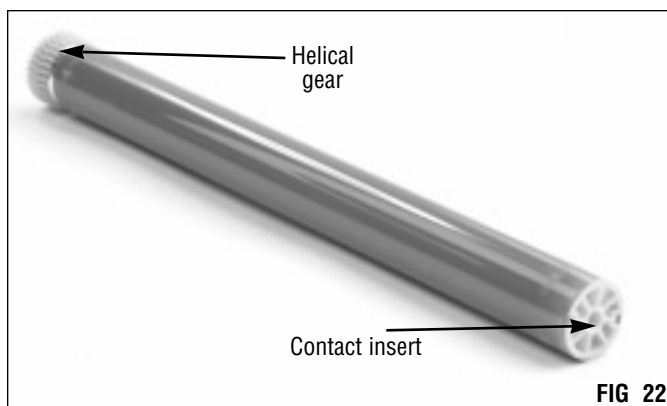


Grasp the drum by the gear and carefully lift the OPC drum out of the cartridge. (FIG 21)

IMPORTANT Handle the drum with care; it is very susceptible to nicks and scratches. Store the drum in a light-protected area.



Note that the 5P drum, shown in FIG 22, is different from that of the 4L. Whereas the 4L is gearless on the contact end of the drum, the 5P has a contact insert to accommodate the contact axle.



The mag roller's awkward position in the cartridge can make removing the roller both tedious and time-consuming, and can also increase the risk of scratching the sleeve. Therefore, we recommend removing the mag roller only if the sleeve, mag roller bushings or mag roller felts require replacement. The retrofit procedure does not require removing the mag roller.

If the mag roller requires removal follow step 5 below. Otherwise, proceed to the next section on the next page.

5. Remove the mag roller.

The geared end of the mag roller is held in place by a closed support bearing. In order to remove the mag roller from the cartridge, the entire bearing assembly is removed with the mag roller.

First, use a flat-blade screwdriver to gently pry the bearing out of its receptacle as shown in FIG 23. Be very careful not to damage or stretch the spring.

W DO NOT touch the coated area of the mag roller with your fingers. Be careful not to scratch the mag roller coating as you remove it from the cartridge.

Pull the other end of the mag roller from the mag roller saddle as shown in FIG 24.

Grasp the geared end of the mag roller and lift the mag roller from the cartridge, as shown in FIG 25. Be careful not to damage the spring on the bearing.

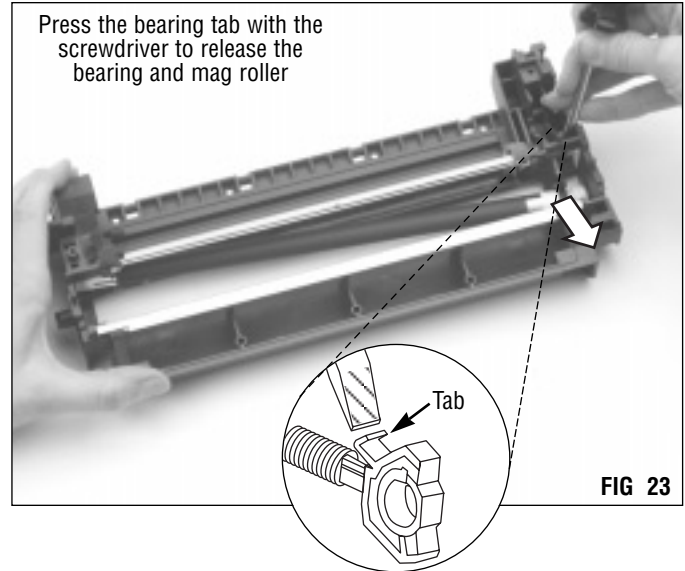


FIG 23

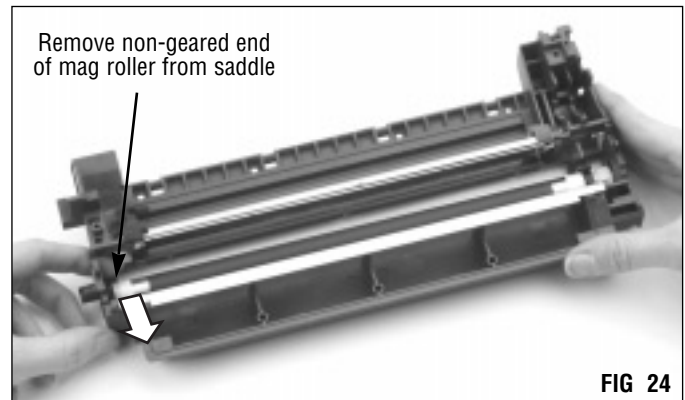


FIG 24

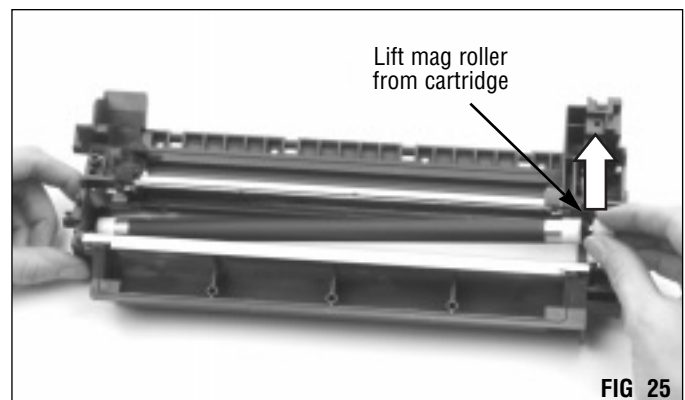
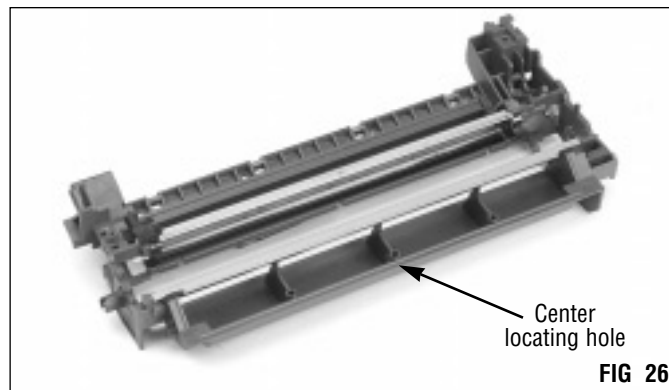


FIG 25

Installing Retrofit Hardware: Waste Bin Section

1. Find the center locating hole.

Position the cartridge on your work surface with the waste bin facing you and find the center locating hole that is indicated in FIG 26. In the next step, you will drill out the hole to accommodate the insert that mates with the center screw.

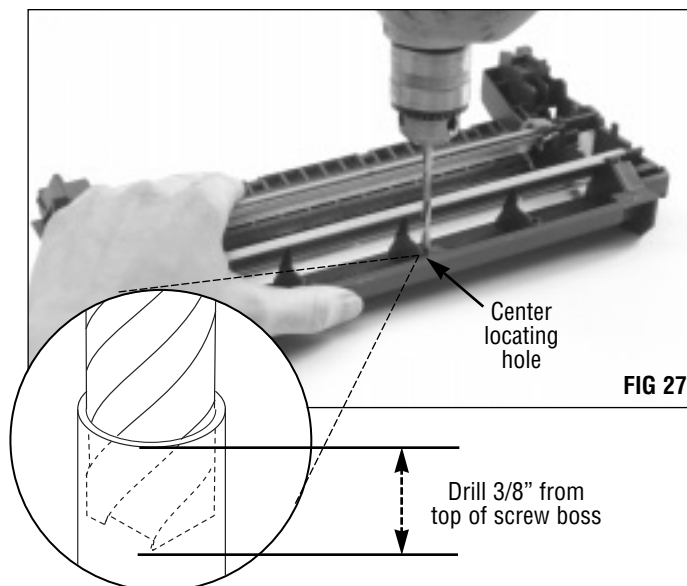


2. Drill the center locating hole.

Using the #22 drill bit in the VX kit, drill at low RPM 3/8" into the center locating hole as shown in FIG 27.

IMPORTANT Before you begin drilling note that you will drill into the locating hole only 3/8" from the hole. Do not apply excessive force to the drill, otherwise you will drill too far into the hole. Drilling completely through the locating hole will cause leakage from the waste bin. Be sure to use only the #22 drill bit for this procedure.

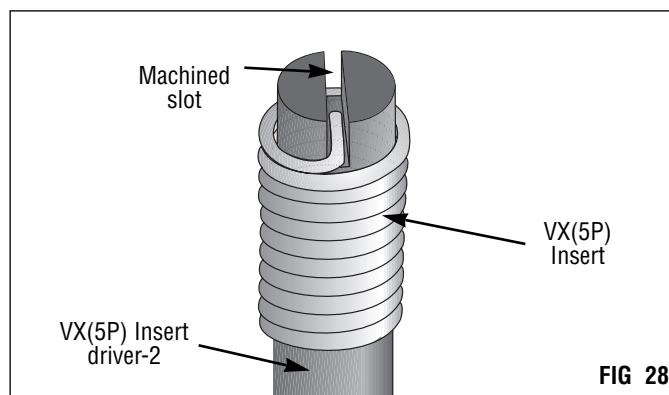
IMPORTANT Always wear ANSI-approved eye protection when operating the power drill. Follow the manufacturer's operating and safety instructions.



3. Thread the insert on the insert driver.

Place the VX(5P) insert on the tip of the insert driver as shown in FIG 28. The insert should fit in the groove machined in the tool.

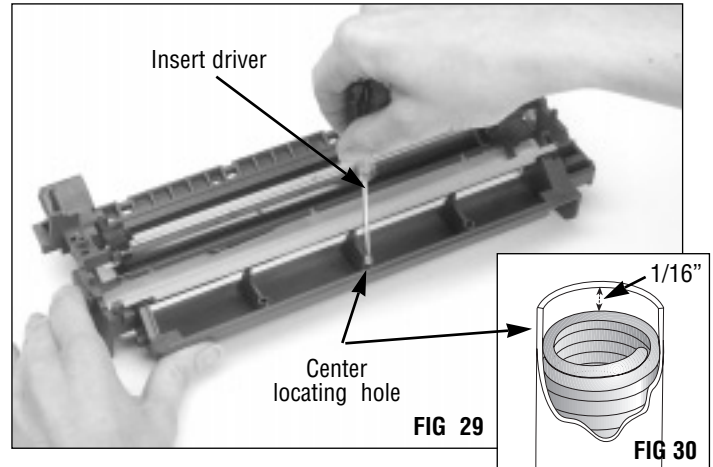
IMPORTANT The VX(5P) uses a dedicated insert which is slightly larger in diameter than that of the 4L. Do not interchange 4L and 5P inserts.



4. Install the insert.

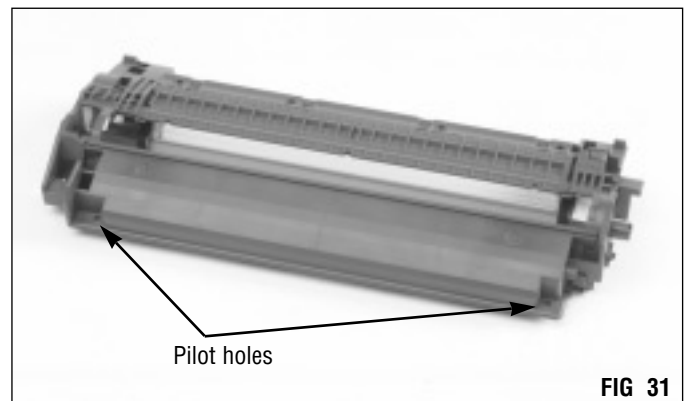
IMPORTANT As you thread the insert, maintain moderate downward pressure on the insert driver to prevent it from slipping out of the loop in the insert. Do not force the insert into the hole; allow it to thread itself.

Thread the insert **CLOCKWISE** into the center locating hole in the waste bin until the top of the insert is 1/16" below the rim of the hole. (FIGs 29 and 30)



5. Locate the two pilot holes in the waste bin.

Turn the waste bin over and orient it as shown in FIG 31. Locate the two shallow pilot holes at the corners of the waste bin.

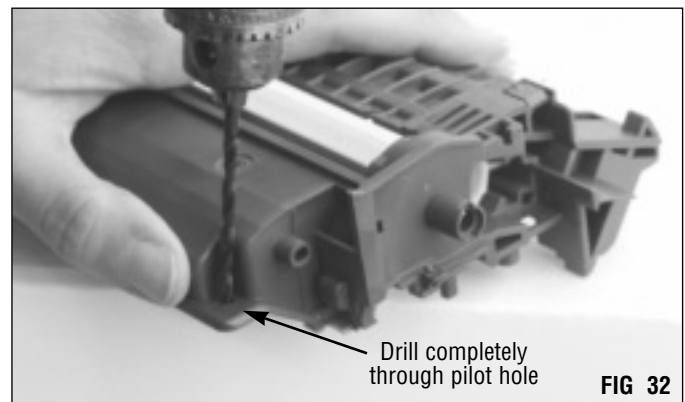


6. Drill through the pilot holes.

To avoid drilling a hole in your work surface, position the end of the cartridge over the edge of the work surface as shown in FIG 32

Using the 1/8" drill bit included in both of the VX retrofit kits, drill at very low RPM completely through each pilot hole.

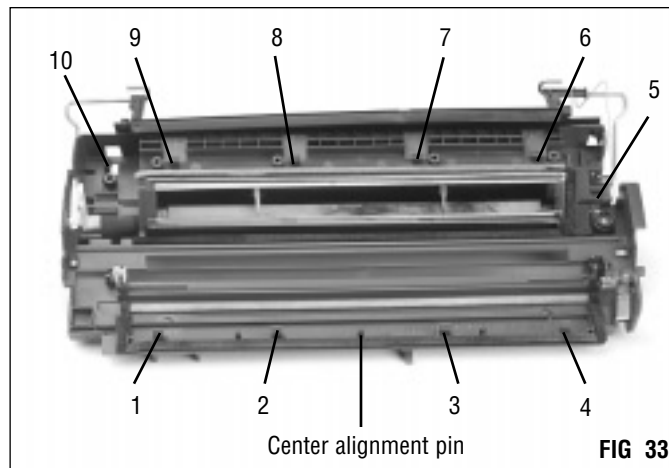
IMPORTANT Always wear ANSI-approved eye protection when operating the power drill. Follow the manufacturer's operating and safety instructions.





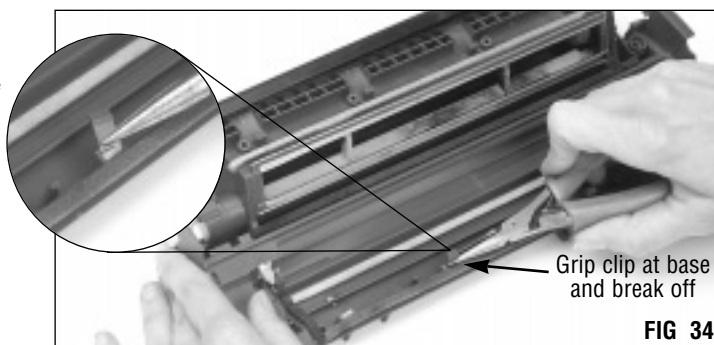
Installing Retrofit Hardware: Toner Hopper Section

1. Locate the clips as identified in FIG 33.



2. Remove interior holding clips.

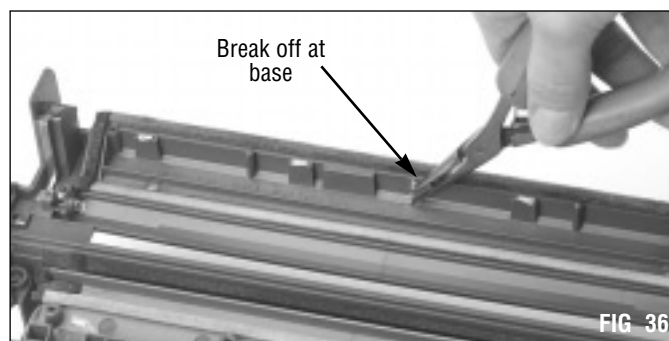
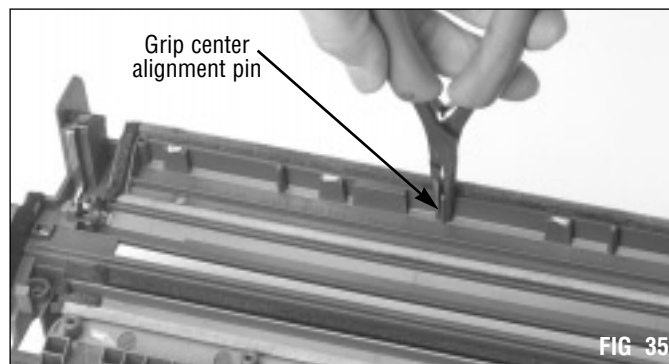
Using needlenose pliers, break off the 10 clips on the toner hopper section as identified in FIG 33. Break the clips at the base of the stem as shown in FIG 34.



3. Remove the center alignment pin.

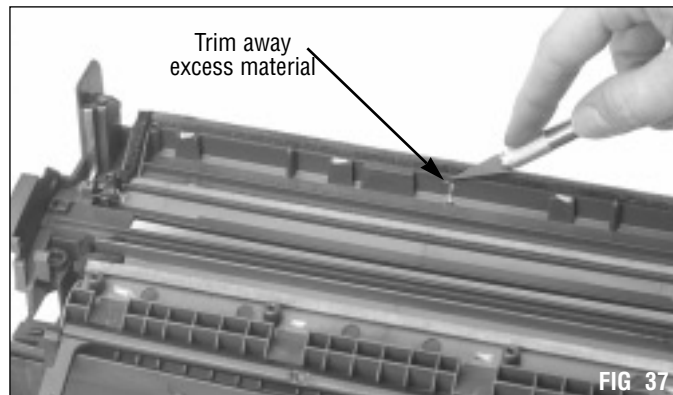
Grip the center alignment pin with needlenose pliers and break the pin off at the base. (FIGs 35 and 36)

Refer to step 1 on this page for the location of the center alignment pin.



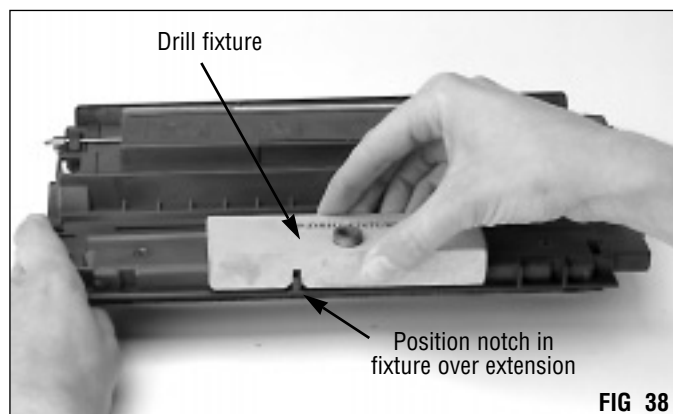
4. **Trim area around center locating pin.**

Trim any excess material with an angle blade knife (Item Code: ABKNIFE8). (FIG 37)



5. **Position the drill fixture on the toner hopper section.**

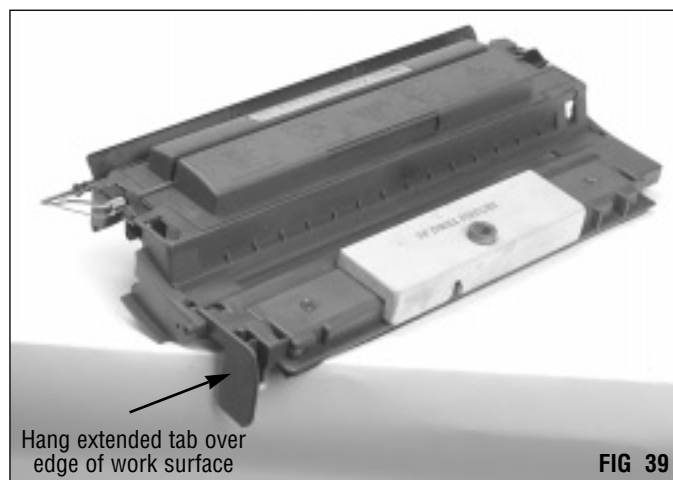
Turn the hopper section over and position it with the top of the waste bin facing you as shown in FIG 38. Place the drill fixture on the top of the waste bin with the notch in the fixture positioned over the extension in the toner hopper section.



IMPORTANT The drill fixture in the VX retrofit kit is for use with the VX(5P) cartridge only.

6. **Position the hopper section on your work surface.**

Position the left side of the cartridge over the edge of your work surface so that the cartridge will lie flat on the surface. (FIG 39)



Installing Retrofit Hardware: Toner Hopper Section

IMPORTANT If the drill fixture is not positioned correctly with the 5P DRILL FIXTURE label facing up, as shown in Figure 40, the hole will be drilled in the wrong location.

DO NOT apply excessive pressure to the cartridge shell with the drill. Otherwise there is risk of breaking or cracking the cartridge shell.

Always wear ANSI-approved eye protection when operating the power drill. Follow the manufacturer's operating and safety instructions.



FIG 40

7. **Drill the center screw hole.**
Install the 5/16" center drill bit into a power drill. Drill at very low rpm completely through the center hole in the fixture until the depth stop bottoms out against the fixture. (FIG 40)

Before You Continue...

If you plan to seal the hopper, proceed to page 17 for seal installation instructions. Detailed instructions are also included with the 4L/PC330 Perimeter Adhesive Seal kit (Item Code: 4LADHSEALKIT) or refer to System Support Series #6.

If you plan to fill the hopper, but not install a seal, proceed to page 22 for instructions on filling the hopper and assembling the hopper section of the cartridge.



Installing a Seal and Filling the Hopper

1. Clean the hopper.

Thoroughly clean the hopper section with dry, filtered compressed air or a toner vacuum. (FIG 41)

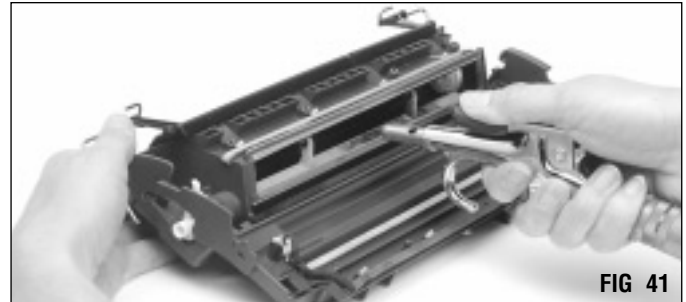
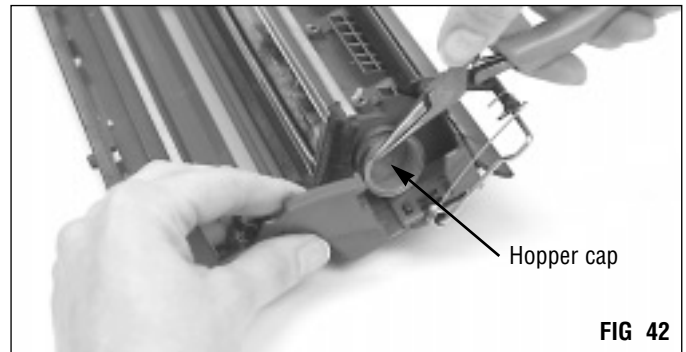


FIG 41

2. Remove the hopper cap.

Use a pair of needlenose pliers to remove the cap. (FIG 42)



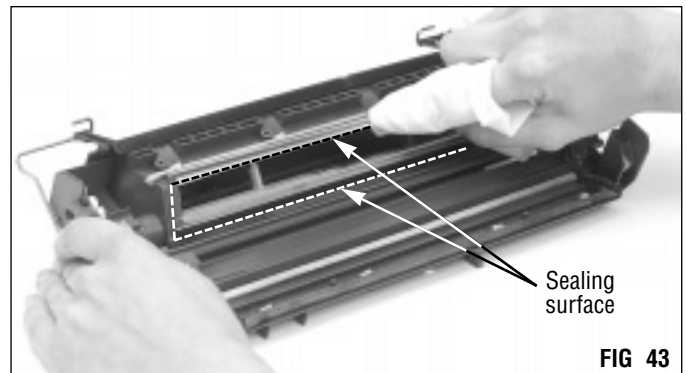
Hopper cap

FIG 42

3. Clean the sealing surface.

Wipe the perimeter of the sealing surface with a dry, lint-free cloth dampened with 91-99% isopropyl alcohol to remove any residual toner. A clean, smooth surface will ensure a secure seal. (FIG 43)

Make sure the sealing surface is completely dry before installing the seal.

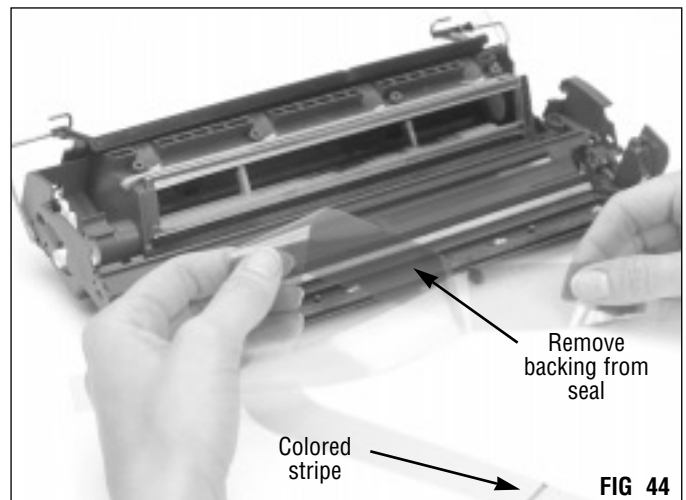


Sealing surface

FIG 43

4. Remove the adhesive backing from the adhesive section of the seal.

The backing is identified by a colored stripe. (FIG 44)



Remove backing from seal

Colored stripe

FIG 44

Installing a Seal and Filling the Hopper

5. **Align the seal over the sealing surface and attach the seal.**
With the exposed adhesive facing the sealing area and the seal pull strip positioned on the left, align the top edges of the seal and sealing surface as shown in FIG 45. The upper left-hand corner of the adhesive section must be square with the upper left-hand corner of the sealing surface.

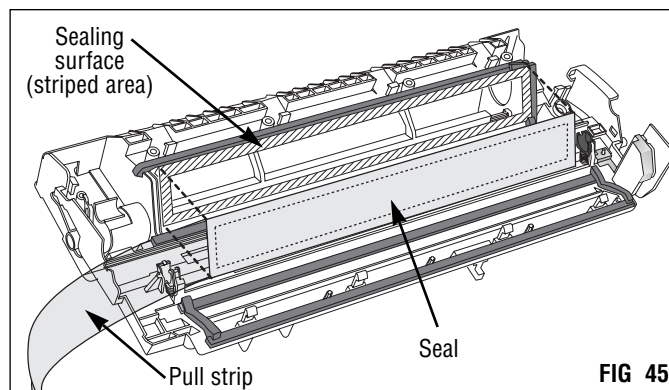


FIG 45

Attach the top edge of the adhesive section first; then attach the bottom edge. Make sure the seal is not adhered to the sealing foam at the right end of the hopper. (FIG 46)

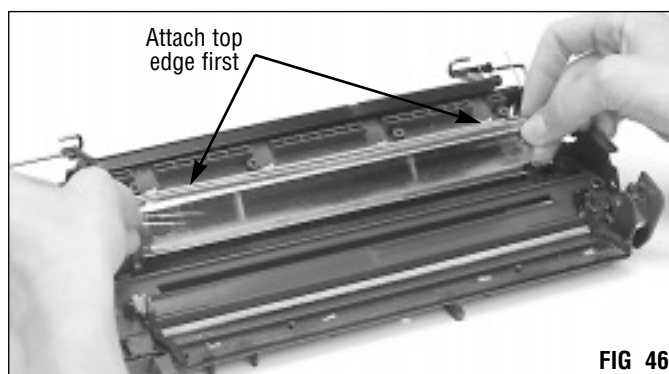


FIG 46

Secure the seal in position by pressing your finger around the perimeter of the sealing area on all four sides. (FIG 47)
Use a dry, lint-free cloth to protect the end of your finger.



FIG 47

IMPORTANT Pay particular attention to securing the adhesive section at the ends of the sealing area. Wrinkles in the seal can be a source of toner leakage.

6. **Fill the hopper. (FIG 48)**
Fill the hopper with 220 or 250 grams of toner.

DO NOT use 4L toner in VX(5P) cartridges.



FIG 48

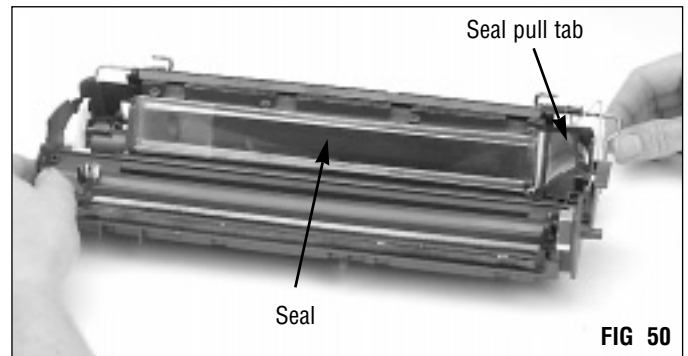
7. **Install the hopper cap. (FIG 49)**

The cap should fit snugly over the fill hole.



8. **Position the pull strip.**

Fold the seal pull strip back over the seal and thread the strip through the slot at the back of the cartridge. The end of the seal pull strip serves as the pull tab. (FIG 50)

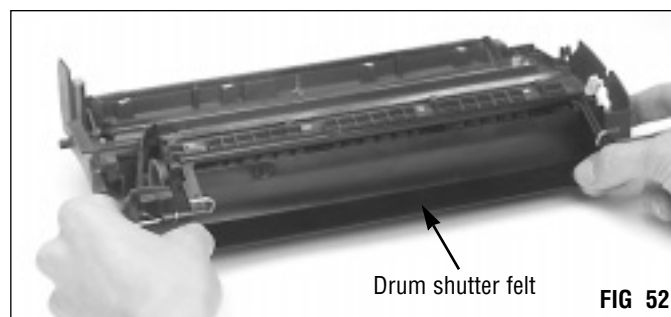
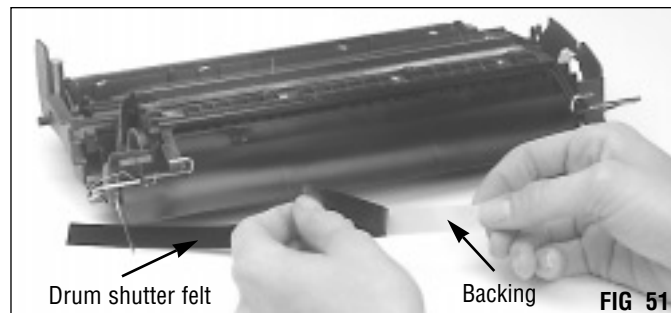


Assembling the Toner Hopper Section (w/Seal)

1. Install a drum shutter felt.

The drum shutter felt helps to protect the drum from nicks and scratches during shipping and handling of the cartridge. (FIGs 51 and 52) (Item Code: 4LDSFELT)

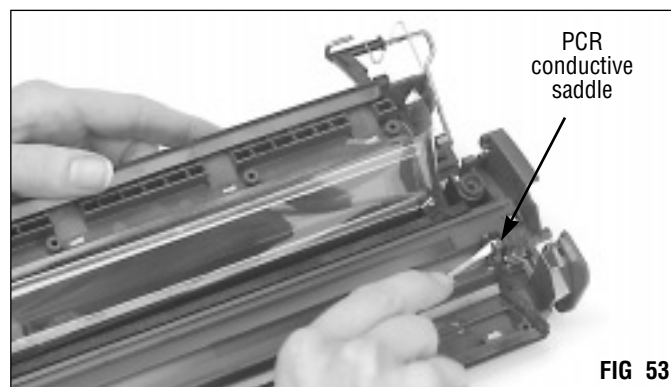
Complete instructions regarding drum shutter felt installation are included with the product, or refer to System Support Series #33.



2. Clean the PCR saddles.

Clean any toner residue from the saddles using a cotton swab dampened with 91-99% isopropyl alcohol. (FIG 53)

DO NOT use any type of lubricant on the PCR saddles. The conductive saddle does not require an application of conductive lubricant.



3. Clean and inspect the PCR.

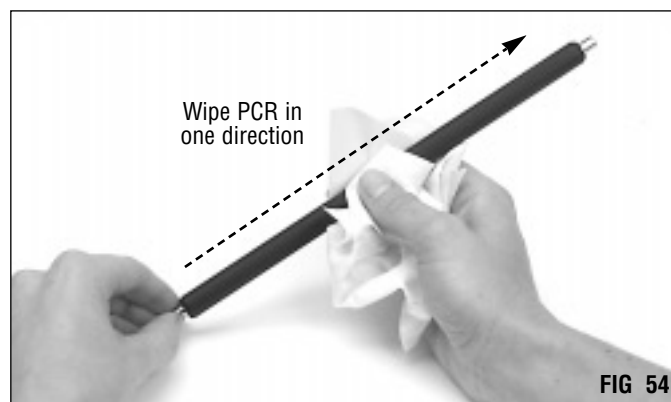
Gently wipe the PCR in one direction. (FIG 54) Be careful not to dent or pinch the surface of the PCR, as the material has very poor memory.

Clean the **OEM PCR** with a soft, lint-free cloth dampened with water **ONLY**.

Clean the **SCC 5/15 Remanufactured PCR** with a soft, lint-free cloth dampened with isopropyl alcohol.

Do not clean the **SCC 1-cycle PCR**. Recoat after each cycle.

IMPORTANT Do not stack PCRs, lay anything on top of them or wrap them with rubber bands or touch the surface of the PCR with your bare hands.



4. **Install the PCR. (FIG 55)**

OEM VX (5P) PCRs cannot be recoated. Use an SCC recoated EX OEM black PCR with modified length (Item Code: VXRMPCR) or SCC recoated LX/PX/PC330 PCR. (Item Code: LXRMPCR) Both PCRs are available in 15-cycle or 1-cycle systems. See page 2 for more details about remanufactured VX PCRs.

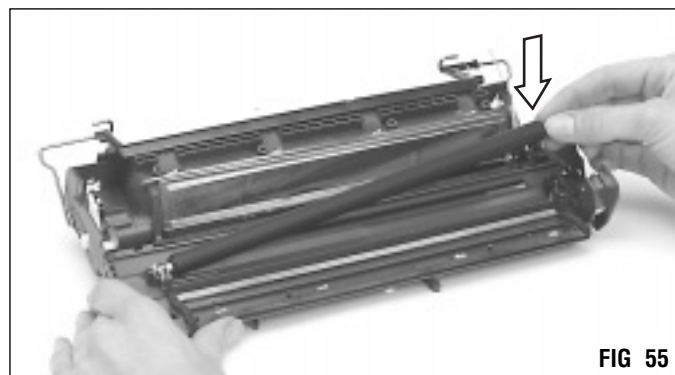


FIG 55

5. **Install the agitator drive gear.**

Align the lobe on the gear with the agitator lever as shown in FIG 56.

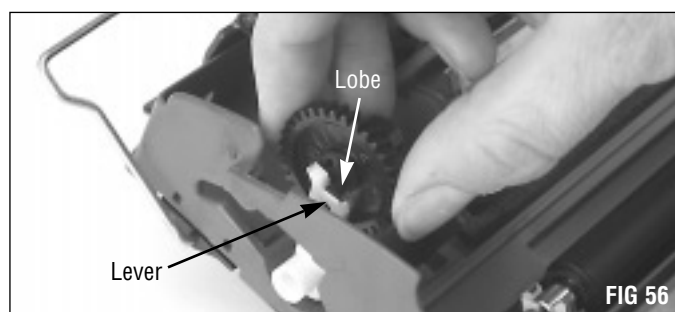


FIG 56

The gear should rest in its saddle as shown in FIG 57.

Proceed to page 24 to continue.

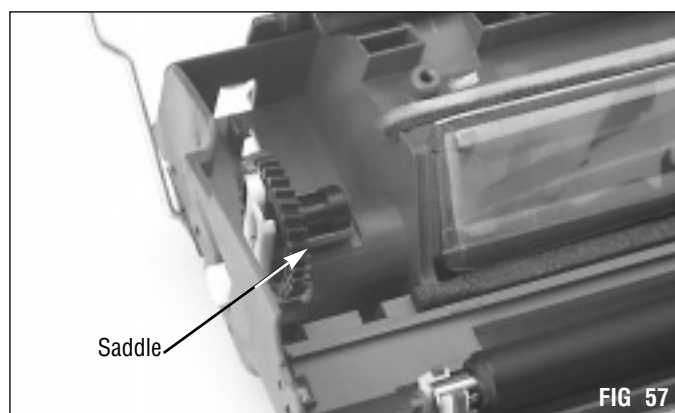


FIG 57

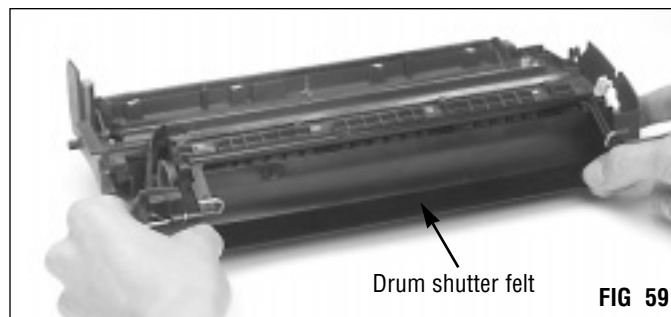
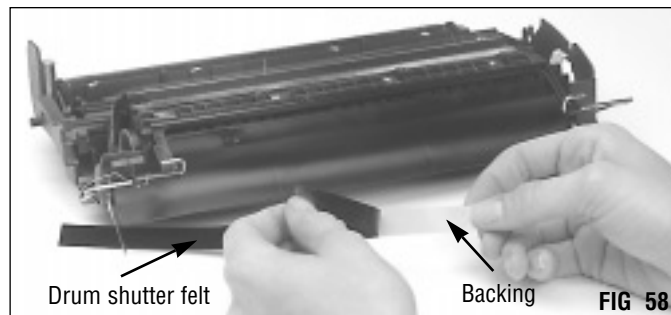
Filling/Assembling the Hopper Section (w/o Seal)

IMPORTANT This section covers filling and assembling the hopper when a seal is not installed. If you have installed a seal, filled the hopper and assembled the hopper section, skip this section and proceed to page 24. If you plan to seal the cartridge, follow the instructions on pages 17-19.

1. Install a drum shutter felt.

The drum shutter felt helps to protect the drum from nicks and scratches during shipping and handling of the cartridge. (FIGs 58 and 59) (Item Code: 4LDSFELT)

Complete instructions regarding drum shutter felt installation are included with the product, or refer to System Support Series #33.



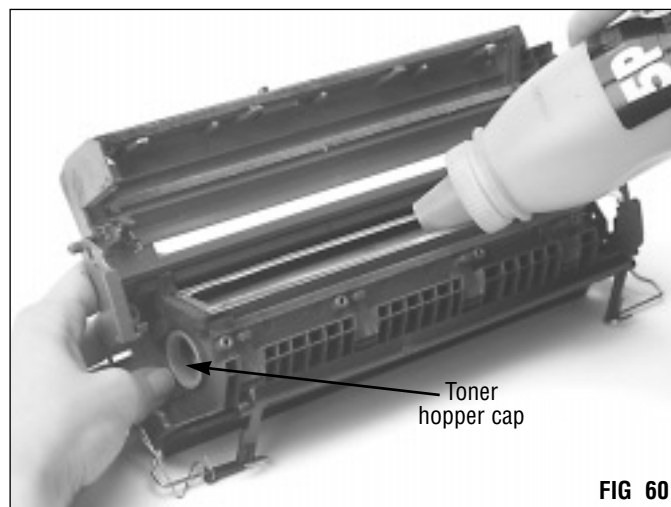
2. Make sure the toner hopper cap is installed. (FIG 60)

3. Fill the hopper with toner.

Position the hopper so that the toner port is parallel to your work surface as shown in FIG 60. This will help to keep the toner contained in the hopper.

Install a funnel adapter to the toner bottle and slowly pour the toner into the hopper.

Fill the hopper with 220 or 250 grams of toner.



DO NOT use 4L toner with the VX(5P) application.

4. Clean any spilled toner from the cartridge.

Use ONLY a lint-free cloth to clean toner spills.

Make sure the PCR saddles are free of toner and debris. Clean the saddles with a swab dampened with isopropyl alcohol.

5. **Clean and inspect the PCR. (FIG 61)**

Gently wipe the PCR in one direction. Be careful not to dent or pinch the surface of the PCR, as the material has very poor memory.

Clean the **OEM PCR** with a soft, lint-free cloth dampened with water **ONLY**.

Clean the **SCC 5/15 Remanufactured PCR** with a soft, lint-free cloth dampened with isopropyl alcohol.

Do not clean the **SCC 1-cycle PCR**. Recoat after each cycle.

IMPORTANT Do not stack PCRs, lay anything on top of them or wrap them with rubber bands or touch the surface of the PCR with your bare hands.

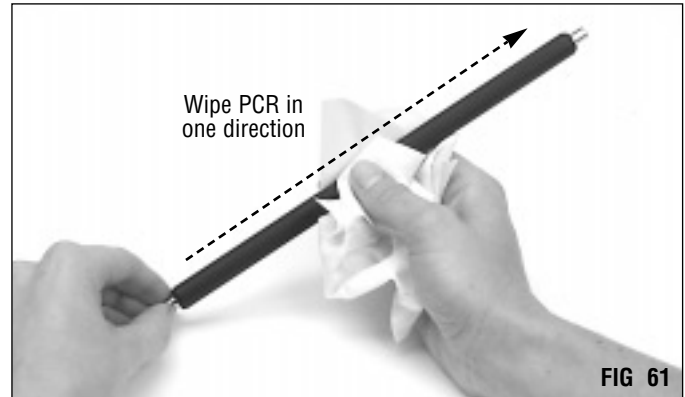


FIG 61

6. **Install the PCR. (FIG 62)**

OEM VX (5P) PCRs cannot be recoated. Use an SCC recoated EX OEM black PCR with modified length (Item Code: VXRMPCR) or SCC recoated LX/PX/PC330 PCR. (Item Code: LXRMPCR) Both PCRs are available in 15-cycle or one-cycle systems. See page 2 for more details about remanufactured VX PCRs.



FIG 62

7. **Install the agitator drive gear.**

Align the lobe on the gear with the agitator lever and position the gear in its saddle as shown in FIG 63.

Proceed to the next page to continue.

IMPORTANT When you are not working on the hopper section, prop it up at an angle to prevent toner from spilling from the hopper.

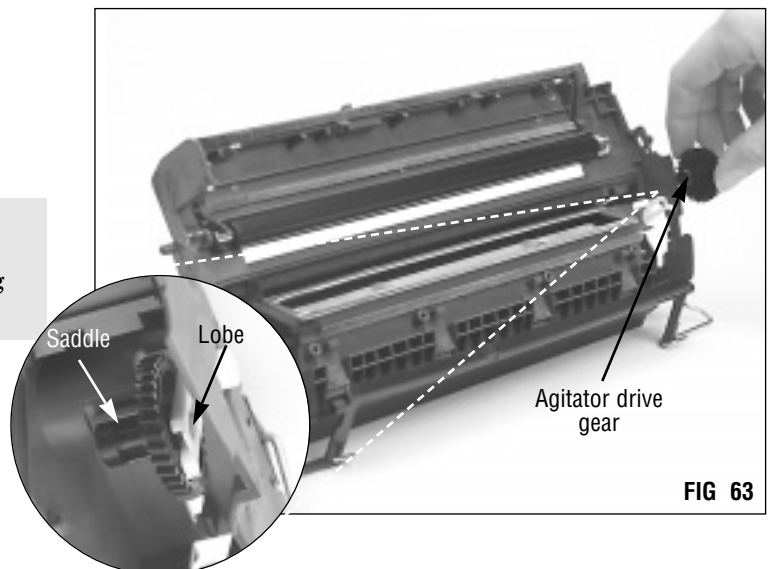


FIG 63

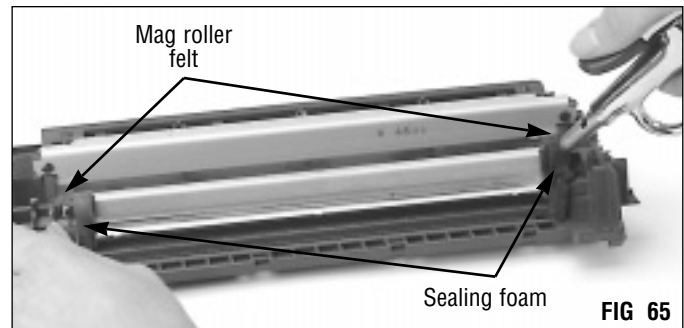
Assembling the Waste Bin Section

1. Clean the waste bin.

Thoroughly clean the waste bin section and all of the components with dry, filtered compressed air or a toner vacuum.. (FIG 64)

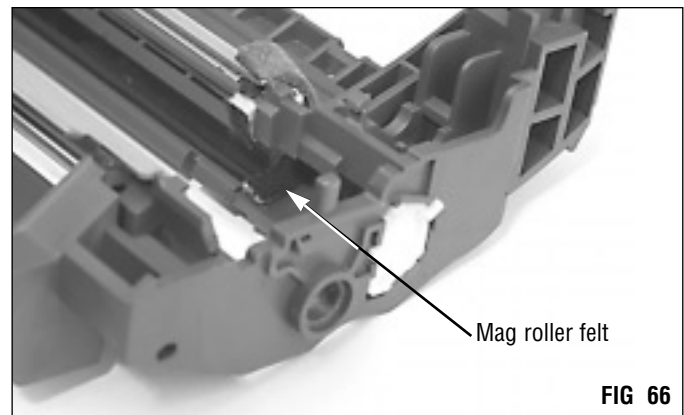


Direct compressed air close to the surface of the mag roller felts and sealing foam to remove as much toner and debris as possible. (FIG 65)



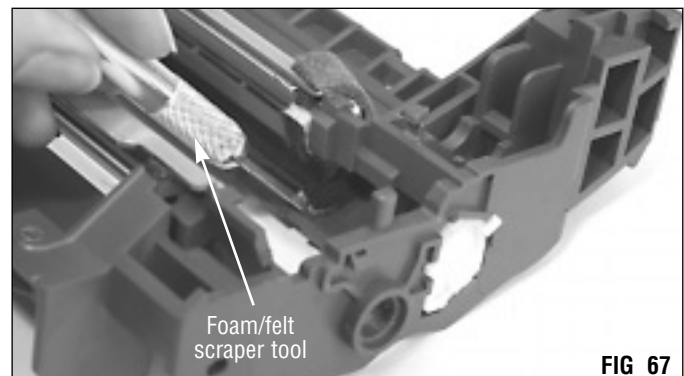
2. Inspect the mag roller felts. Replace as needed.

Mag roller felts should display a plush surface. (FIG 66)
Make sure both felts are secured to the mag roller saddles.
Replace the felts if the surface appears shiny and compacted with toner. (Item Code: 4LMRFELT)



A foam/felt scraper tool, shown in FIG 67, is available for removing the worn felt. (Item Code: FSTOOL)

Complete instructions regarding mag roller felt removal and installation are included with the product, or refer to System Support Series #34 for more details.



3. Inspect the recovery blade and replace as needed.

The recovery blade should display a flat, smooth surface without kinks or waviness along the edge. Replace the blade if damaged or dislodged. (FIG 68) Use a mylar blade (Item Code: LJ4RECBLADE) or PolyBlade™. (Item Code: PRECB-LJ4)

Complete instructions regarding recovery blade removal and installation are included with the Recovery Blade Installation Kit (Item Code: RBIKIT-mylar blades, RBIKIT-PBL-PolyBlade™).

4. Inspect the doctor blade and replace as required.

Removing the doctor blade also requires removing the sealing foam that is layered over the ends of the stamping. The location of the foam is shown in FIG 68.

The sealing foam is usually damaged during removal and should not be reused. Once a new doctor blade is installed, reseal the ends of the blade with replacement doctor blade repair foam (Item Code: VXDBRFOAM) to prevent leakage from the toner hopper. The repair foam was developed to facilitate the installation of new doctor blades.

5. To remove the doctor blade, first remove the layers of foam from both ends of the stamping.

The foam is removed using the felt/foam removal tool shown in FIGs 69 and 70 and an angle-blade knife (not shown).

Read the repair foam replacement instruction carefully before attempting removal or installation. Instructions are included with the product, or refer to System Support Series #91. A felt/foam scraper tool (Item Code: FSTOOL) and angle-blade knife tool (ABKTOOL) are required for proper installation.

Remove the two Phillips screws that hold the doctor blade in place and remove the doctor blade. (FIG 71)

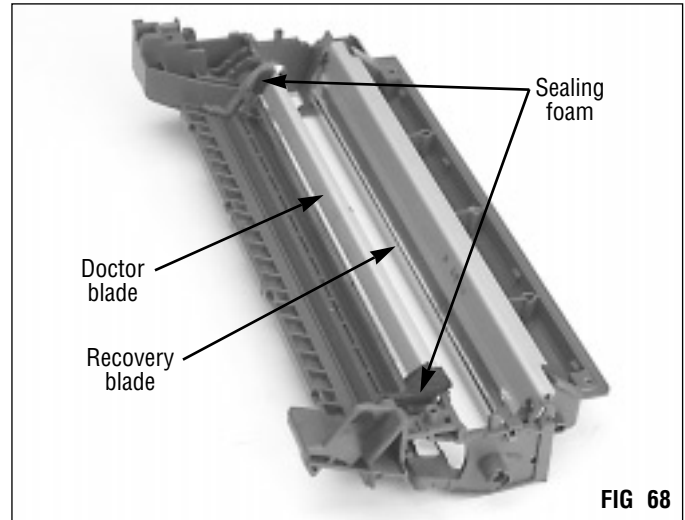


FIG 68



FIG 69



FIG 70

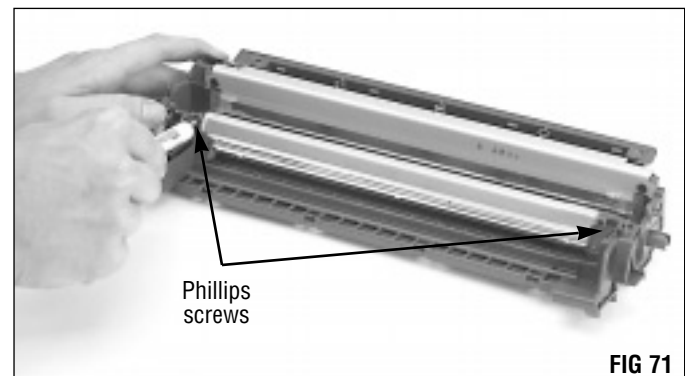
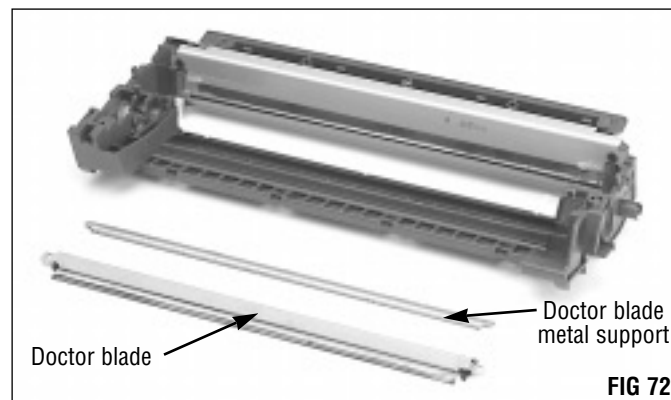


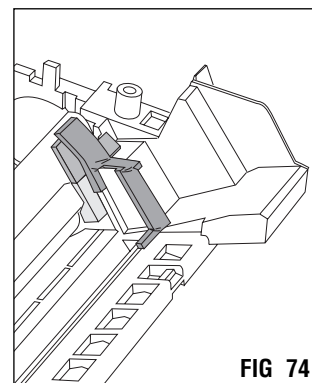
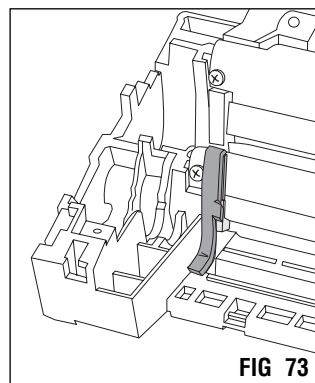
FIG 71

Assembling the Waste Bin Section

Note that the doctor blade uses an additional metal support, shown in FIG 72. Install a replacement blade along with the original metal support.

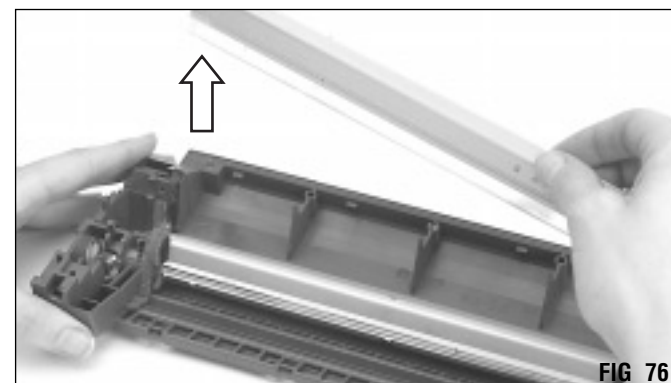
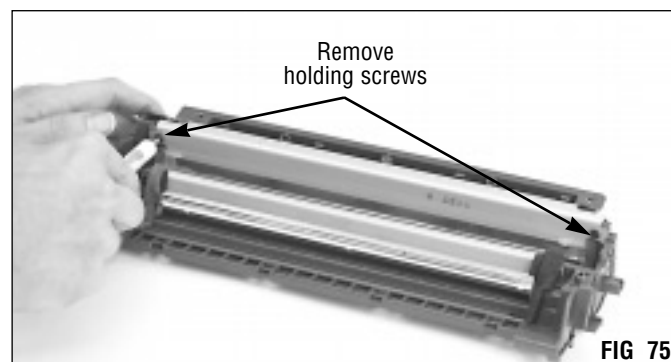


Once the doctor blade is secure, install new doctor blade repair foam. Note that the left and right repair foams are different and cannot be interchanged. FIGs 73 and 74 show the proper placement of the right and left foams in the waste bin section. Read the repair foam replacement instructions carefully before attempting installation.



6. Remove the wiper blade.

Remove two Phillips screws and lift the blade from the waste bin section. (FIGs 75 and 76)



7. Clean and inspect the wiper blade. Replace as needed.

To avoid damaging the working edge of the blade, we recommend cleaning the wiper blade with compressed air only. (FIG 77)

For best results, replace the blade each time you replace the drum. (Item Code: VXBLADE)



FIG 77

8. Dip the edge of the wiper blade in Kynar®. (FIG 78)

Examine the length of the blade to ensure even coverage. Repeat the dipping process one more time. (Item Code for Kynar® powder: KPOW)

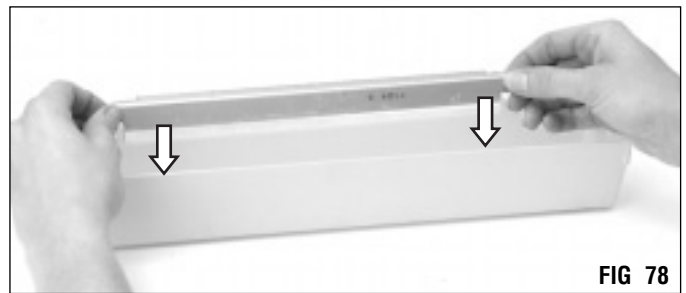


FIG 78

9. Install the wiper blade.

Position the ends of the stamping in the installation slots as shown in FIG 79 and secure the wiper blade with two Phillips screws.

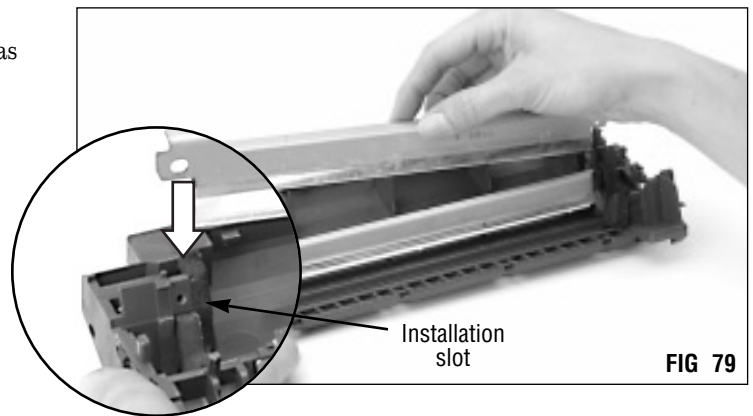


FIG 79

10. Remove the mag roller sleeve bushings, support bearing and mag roller drive gear. (FIG 80)

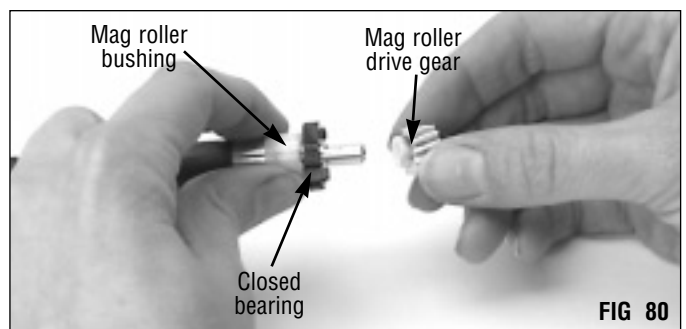


FIG 80

Assembling the Waste Bin Section

If you remove the mag roller, continue with the following instructions. Otherwise, proceed to step 16.

11. Clean the mag roller with dry, filtered compressed air. (FIG 81)

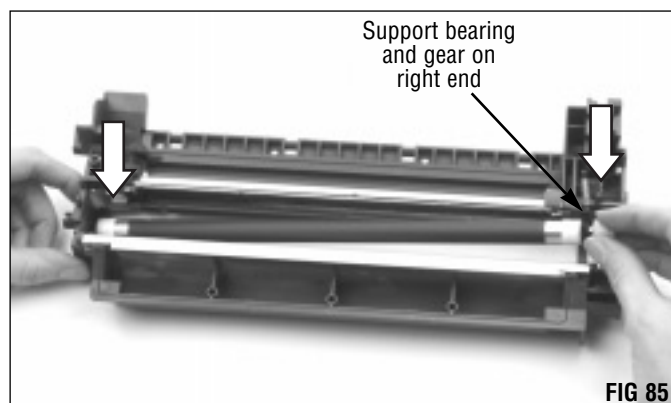
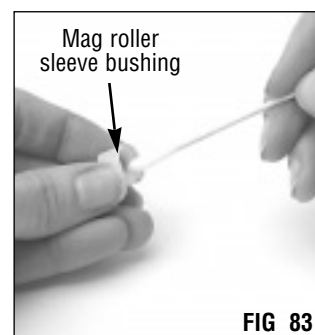
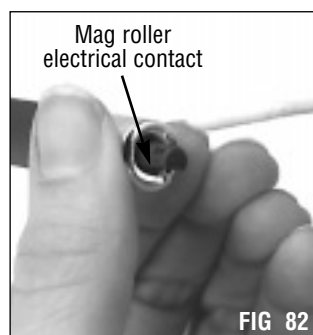
DO NOT scratch the coated area of the roller with the air nozzle or touch the coated area with your fingers. Oil from your fingers can cause repeating defects at the mag roller interval.

12. Clean the mag roller electrical contact.
Remove old conductive grease and debris from the contact by using a swab dampened with isopropyl alcohol. (FIG 82)
13. Clean the mag roller bushings.
Use a dry swab to clean the inside and outside of the bushings. (FIG 83)

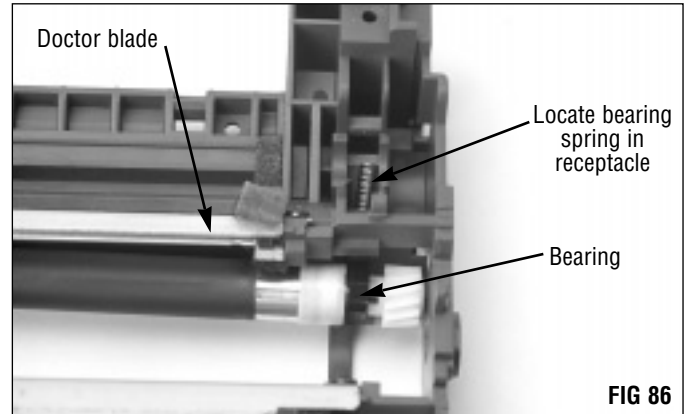
Replace bushings that are cracked or appear excessively worn.

14. Install the mag roller sleeve bushings, support bearing and gear.
Install a mag roller bushing on each end of the mag roller. Then, install the bearing and gear on the contact end of the mag roller. FIG 84 illustrates the correct orientation of these components. Note that the flat end of the gear should face inward, otherwise the bearing will get caught in the teeth of the gear during cartridge operation.

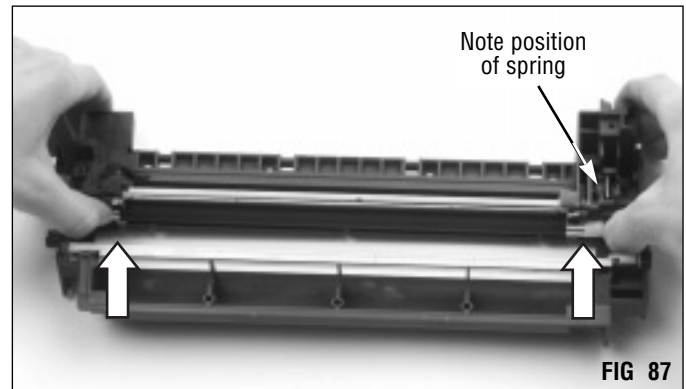
15. Install the mag roller.
Place the mag roller in the waste bin section as shown in FIG 85 with the support bearing and gear at the right end.



At the contact end of the waste bin, position the spring on the bearing in its installation receptacle as shown in FIG 86.



Seat the mag roller in the saddles. Make sure the bearing is snapped back into its original position. (FIG 87)

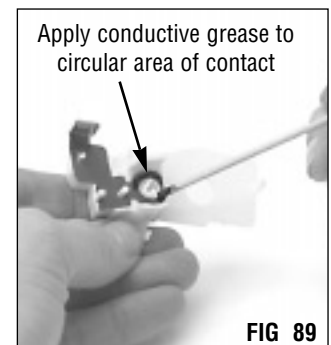
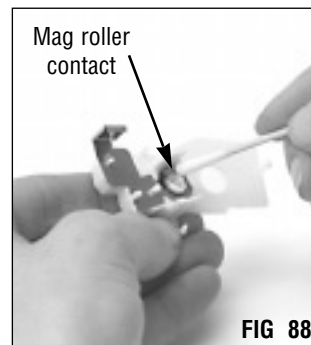


16. Clean the contact assembly.

Using a swab dampened with 91-99% isopropyl alcohol, clean grease and toner from the metal contact. (FIG 88)

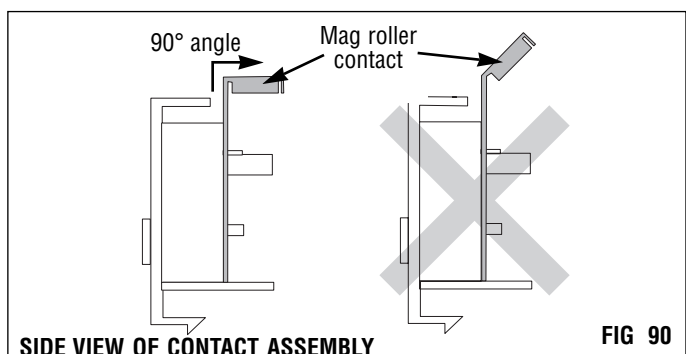
Apply a thin coating of conductive cartridge lubricant (Item Code: CONCLUBE) to the circular magnetic roller contact located on the axle/contact assembly. (FIG 89)

Refer to SSS#100, Cleaning Tools, for important notes regarding application of conductive cartridge lubricant.



17. Position the mag roller contact.

Bend the contact that seats on the outside of the cartridge to a 90° angle. This will ensure that it will seat flat against the cartridge when the contact assembly is reinstalled. (FIG 90)



Assembling the Waste Bin Section

18. Clean and inspect the drum.

If you plan to reuse the drum, clean it with dry, filtered compressed air. (FIG 91)

Inspect the drum for deep concentric wear lines or cracks in the coating. Replace as required.

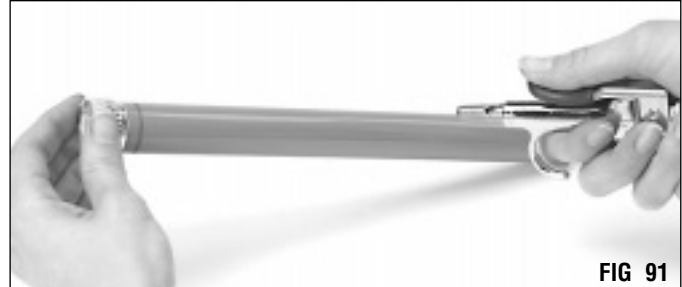


FIG 91

19. Pad drum.

Pad the coated area of the drum with Kynar® powder (Item Code: KPOW) and be careful to avoid Kynar® on the gears. (FIG 92)

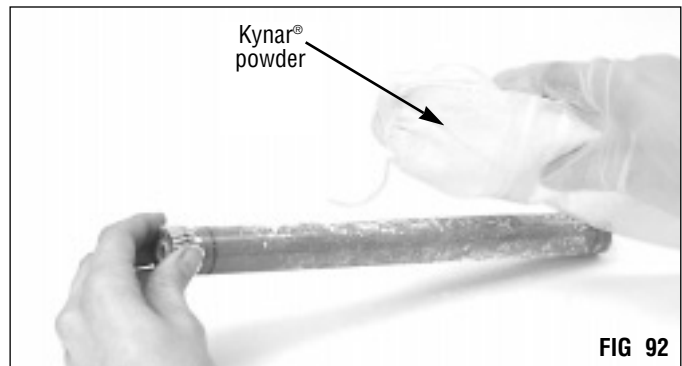


FIG 92

20. Install the drum.

Position the contact insert end of the drum in the contact end of the cartridge as shown in FIG 93.

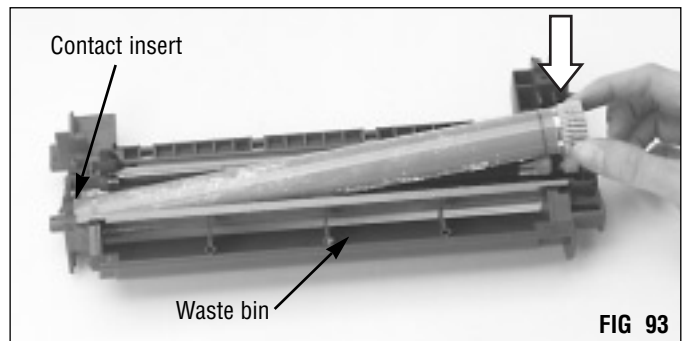


FIG 93

21. Install the contact assembly.

The contact end of the mag roller has a keyed axle that seats in a mag roller positioner bushing on the drum axle/contact assembly. To ensure that the axle will seat in the hub, rotate the mag roller magnet to the position shown in FIG 94.

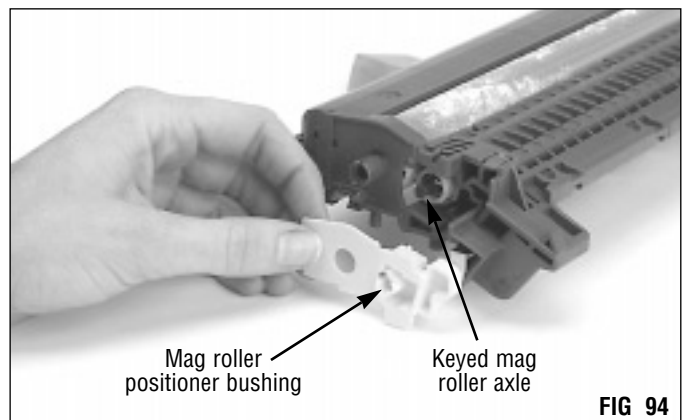
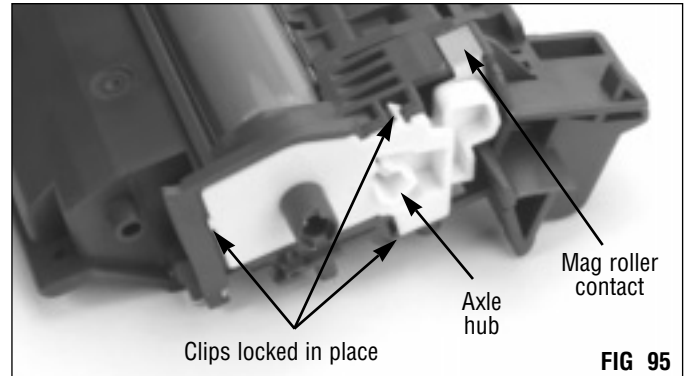


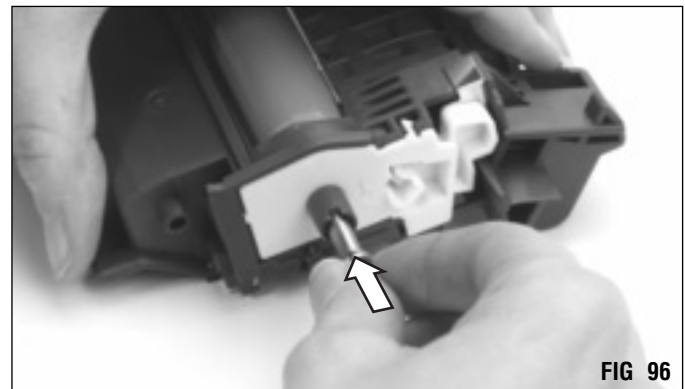
FIG 94

Install the contact assembly as shown in FIG 95. Make sure the three clips are locked in place and the mag roller contact is seated flat.



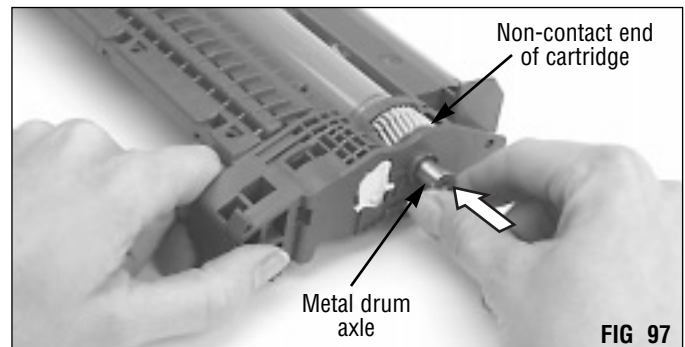
22. Install the drum contact axle. (FIG 96)

Make sure the top of the axle is flush with the top of the casing.



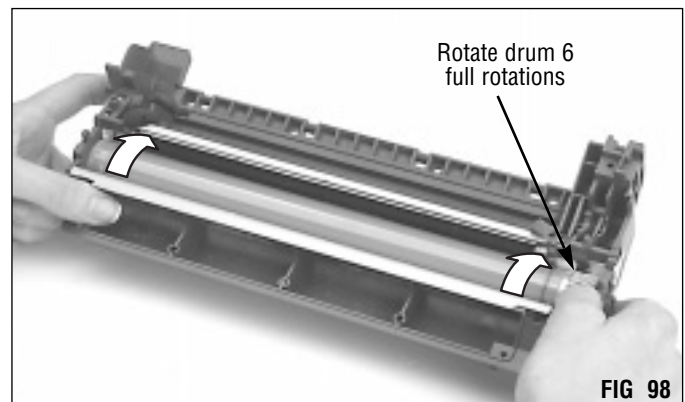
23. Install the metal drum axle. (FIG 97)

Rotate the cartridge 180° so that the non-contact end of the cartridge is facing you. Install the axle so that it is flush with the casing.



24. Rotate the drum to remove Kynar®.

Rotate the drum 6 rotations in the direction shown in FIG 98 to completely lubricate the wiper blade with Kynar®. The excess Kynar® will deposit in the waste bin. To avoid Kynar® on the PCR, make sure that Kynar® is not present on the drum when the cartridge is reassembled.



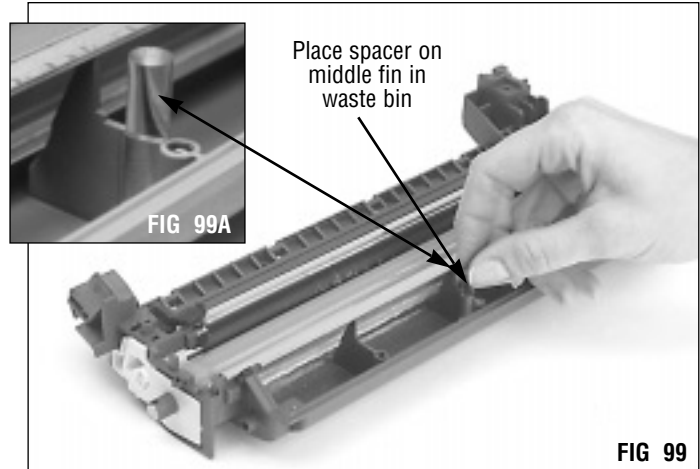


Assembling Cartridge Using Retrofit Hardware

1. Install a cartridge spacer (included in the kit) in the waste bin section.

The cartridge spacer is used to support the waste bin cover when the cartridge is reassembled.

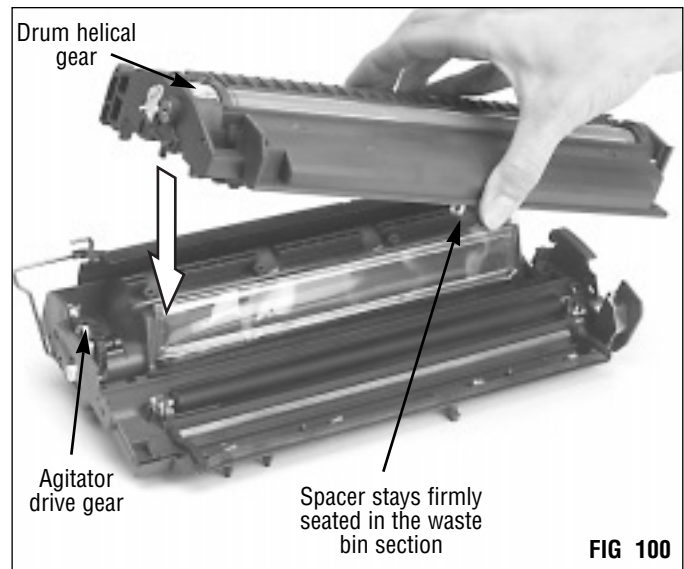
Place a cartridge spacer on the center fin inside the waste bin **firmly against the center alignment hole**. (FIG 99) If the spacer is not in the position shown in FIG 99A, the cartridge sections will not fit back together.



2. Assemble the cartridge. (Seal installed)

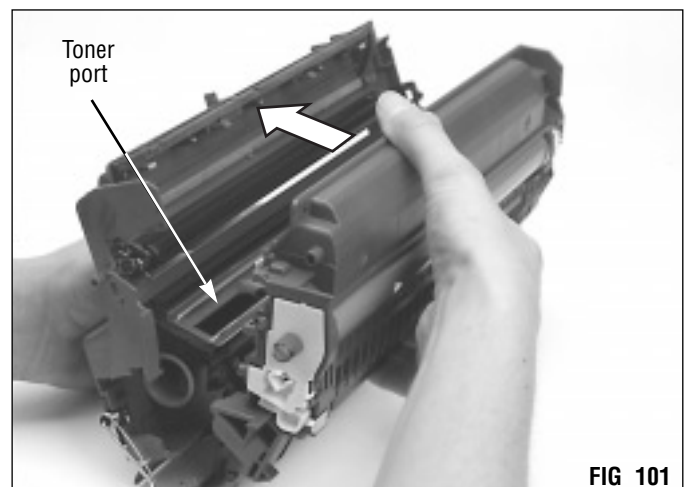
Make sure the agitator drive gear is installed in the toner hopper section.

As you bring the two cartridge sections together, note that the drum helical gear and the agitator drive gear are on the left as shown in FIG 100.



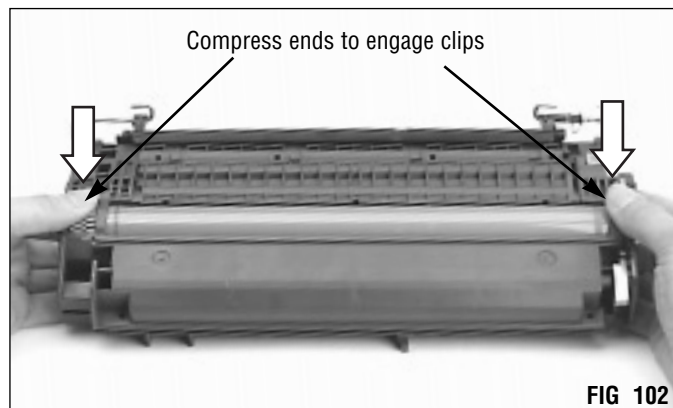
Assemble the cartridge. (Seal NOT installed)

Hold the hopper section vertically with the toner port facing upward as shown in FIG 101. Make sure the toner agitator bar does not fall out. Hold the waste bin section vertically with the waste bin facing upward. Then bring the two sections together.



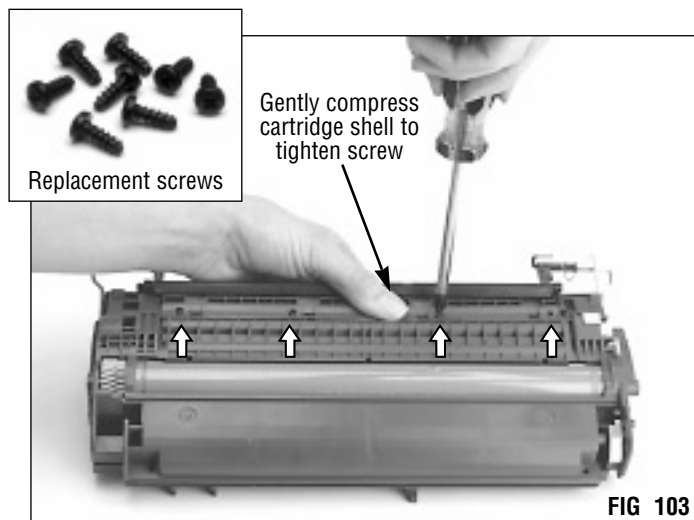
Compress the ends of the cartridge until the clips above the drum axles are engaged. (FIG 102)

IMPORTANT As you compress the ends of the cartridge, be careful not to touch the coated area of the drum.

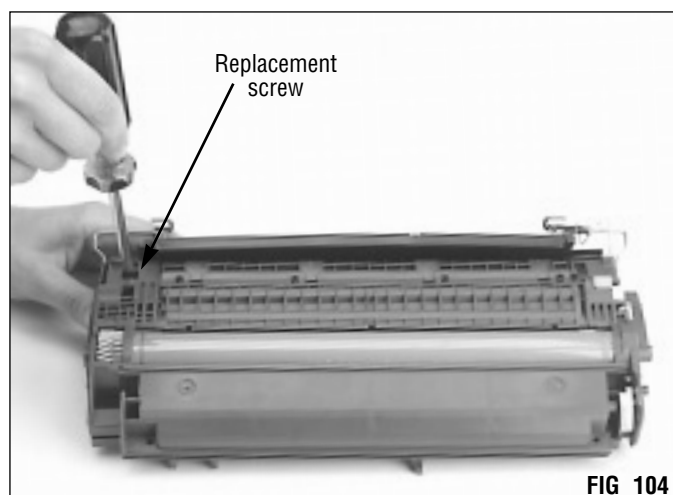


DO NOT use a power screwdriver to tighten the replacement screws or the OEM screw. Applying excessive torque to any of the screws may strip the screw bosses.

3. **Install four replacement screws (included in kit) on the bottom of the assembled cartridge.**
Install four replacement screws into the four screw holes along the bottom of the toner hopper as shown in FIG 103. As you install the screw, gently compress the cartridge shell to allow the screws to tighten.



4. **Install one replacement screw in the cavity as shown in FIG 104.**



Assembling Cartridge Using Retrofit Hardware

5. Carefully release the drum shutter.

Do not allow the shutter to nick the drum. (FIG 105)

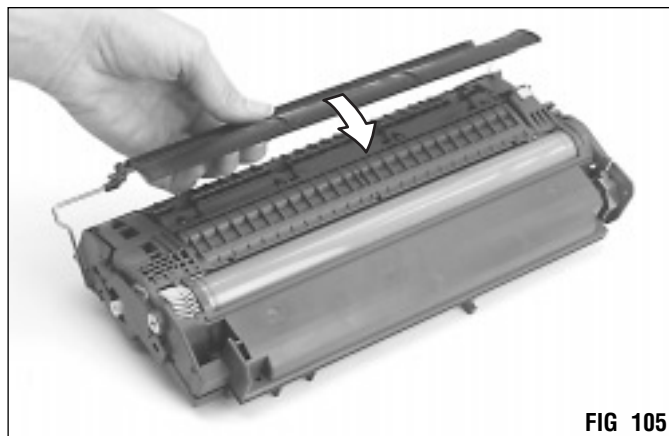


FIG 105

6. Install two replacement screws in the pilot holes at the corners of the waste bin.

The gap tool is used to set the correct gap along the seam on the front of the waste bin. Place the cartridge gap tool just inside the seam directly in front of the screw hole as shown in FIG 106. **Be careful not to puncture the sealing foam inside the cartridge.** Keep the gap tool in place as you tighten the screw.

Note that if the gap is not set correctly, the PCR may not make proper contact with the drum.

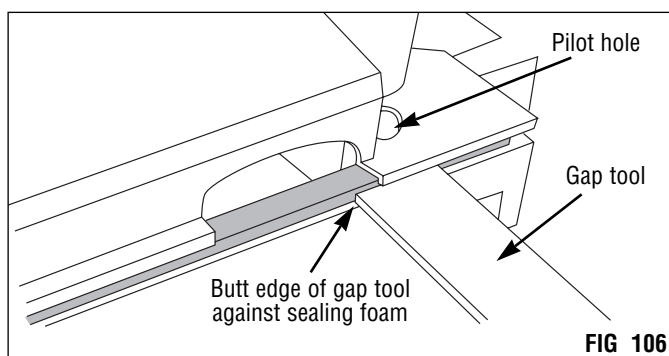


FIG 106

Install two replacement screws in the newly-drilled screw holes at the outside corners of the waste bin as shown in FIG 107. Use the gap tool to set the gap.

W DO NOT apply excessive torque when tightening replacement screws.

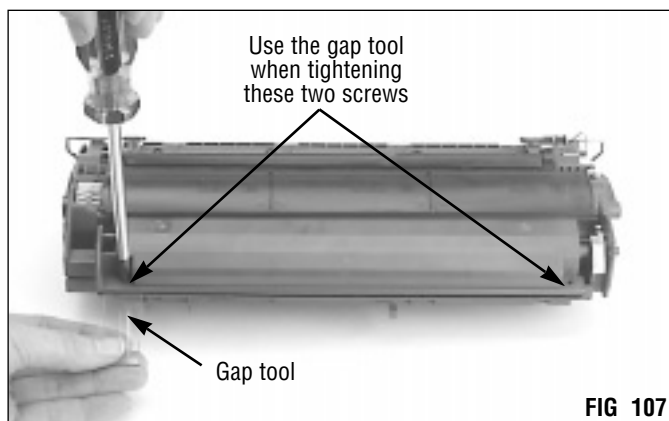


FIG 107

7. **Install the center screw.**

Turn the cartridge over. Insert the center screw into the center hole on the top of the waste bin as shown in FIG 108. Tilt the screw toward the front of the waste bin to position it in the screw boss inside the waste bin. Again, place the gap tool in the seam as you tighten the screw.

W **DO NOT** apply excessive torque when tightening replacement screws.

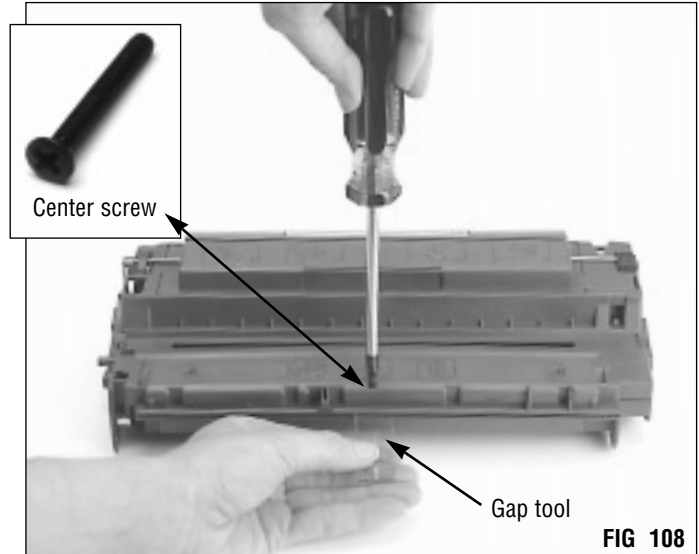


FIG 108

8. **Install a replacement screw in the receptacle on the top of the cartridge. (FIG 109)**

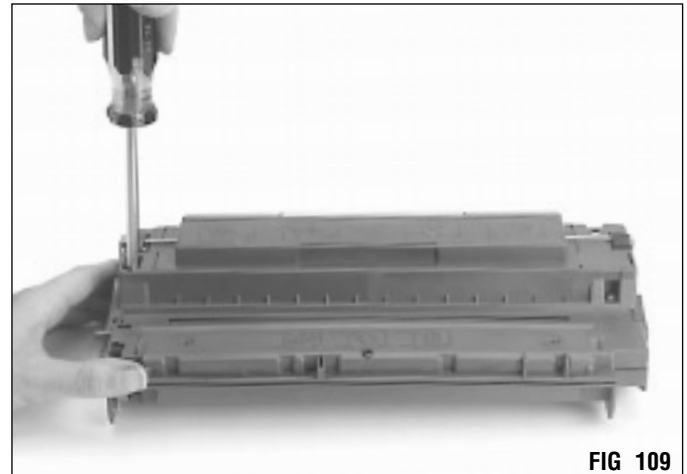


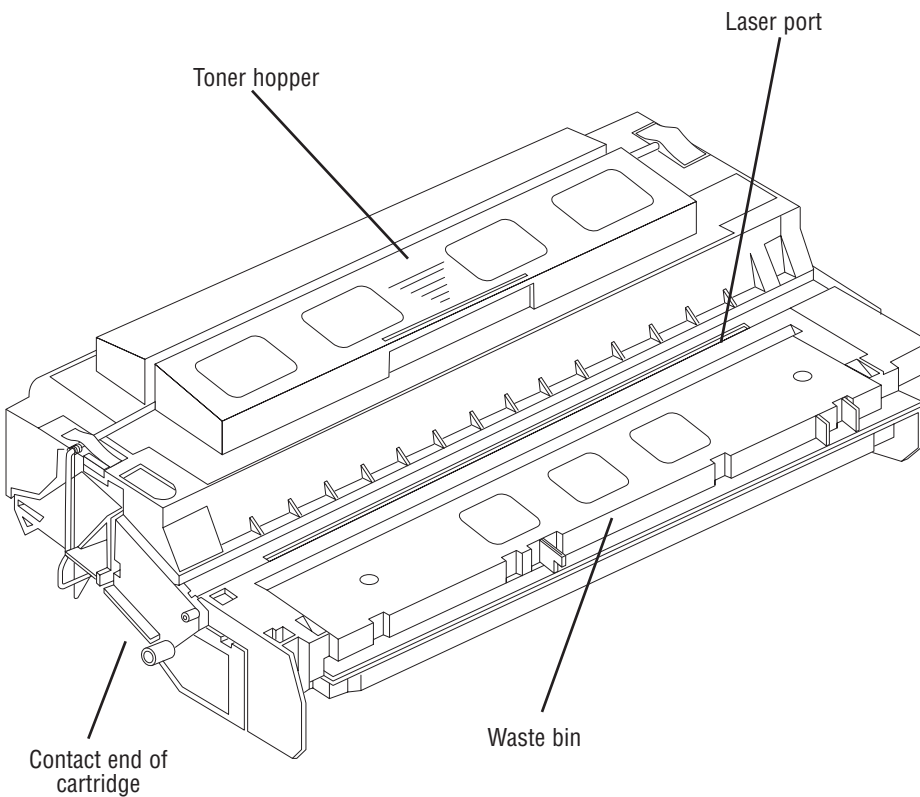
FIG 109



Canon® LBP-VX(5P/6P)

Cartridge Components

Top View of VX Cartridge

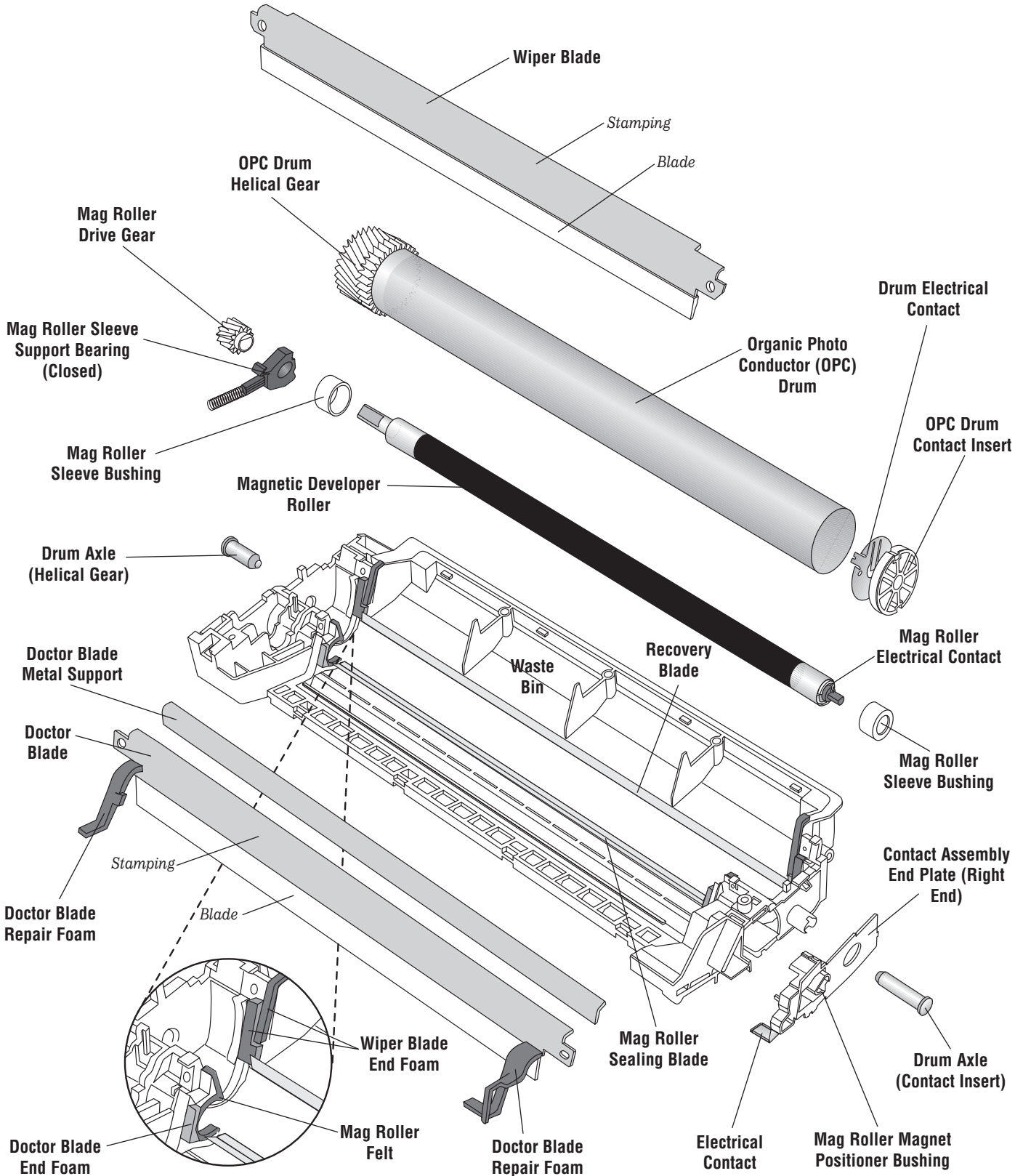


This fully illustrated Cartridge Components guide gives you a complete breakdown of all cartridge components, along with component terms and definitions. Use the illustrations for training or referencing replacement components.

Any trademarks, registered trademarks or brand names are the property of their respective companies or corporations. Canon Computer Systems, Inc., is not affiliated with Static Control Components, Inc., its products, or this document.



Waste Bin Section - Terms and Definitions



Development Station

Area of the cartridge where toner is transferred from the toner hopper to the latent image on the OPC drum using the mag roller and doctor blade. (Not shown in illustration on left)

Drum Axle (Helical Gear and Contact)

Two plated steel axles that hold the drum in position in the waste bin section. The helical gear axle has a threaded receptacle at one end and is installed at the helical gear end of the cartridge; the contact axle is installed on the contact insert end of the drum and provides contact between the printer and drum.

Drum Electrical Contact

A metal contact installed in the drum contact insert makes contact with the drum contact axle. Provides electrical contact between the drum and printer.

Doctor Blade

Uniformly meters the amount of toner on the mag roller. The doctor blade is constructed of a metal stamping (base) and a flexible blade. (Also called metering blade)

Doctor Blade End Foam

Layer of foam used to seal the ends of the doctor blade and prevent leakage from the toner hopper.

Doctor Blade Metal Support

An additional metal support installed with the doctor blade.

Doctor Blade Repair Foam

Strips of foam layered over the ends of the doctor blade to prevent leakage.

Contact Assembly End Plate (Right End)

A removable end plate that houses the mag roller electrical contact and the mag roller positioner bushing.

Electrical Contact

Metal contact, located in the contact assembly end plate, that provides electrical contact between the printer and mag roller.

Magnetic Developer Roller

A rotating coated aluminum *sleeve* around a stationary *magnet*. The mag roller attracts toner magnetically and applied AC/DC voltage charges the toner and transfers it to the OPC. A doctor blade meters the toner before it is delivered to the OPC. (Also called mag roller, developer roller)

Mag Roller Drive Gear

Rotates the mag roller sleeve around the permanent magnet.

Mag Roller Electrical Contact

Copper prongs attached to the mag roller sleeve used to provide electrical contact between the printer and mag roller sleeve.

Mag Roller Felt

Material that lines the saddles where the mag roller rests in the waste bin section of the cartridge; also provides a seal at the ends of the mag roller.

Mag Roller Magnet Positioner Bushing

Located in the contact assembly end plate; supports the magnet inside the mag roller sleeve and keeps the magnet stationary.

Mag Roller Sealing Blade

A thin blade, similar in appearance to the recovery blade, that seals the area between the mag roller and mag roller section; prevents leakage from the development station.

Mag Roller Sleeve Support Bearing (Open and Closed)

Placed on each end of the mag roller sleeve to support the mag roller in the waste bin section of the cartridge; establishes a consistent air gap between the mag roller and drum.

Mag Roller Sleeve Bushing

Prevents direct contact between the mag roller sleeve support bearing and the aluminum sleeve; protects bearing from abrasion caused by contact with the rotating aluminum sleeve.

Organic Photo Conductor (OPC) Drum

An aluminum cylinder coated with light-sensitive organic photoconductive material used to retain an image written to it by a laser beam. (Also called OPC, drum, photoreceptor)

OPC Drum Contact Insert

Installed on the the drum opposite the helical gear; houses the drum metal contact and drum contact axle.

OPC Drum Helical Gear

Installed at one end of the drum and used to rotate the drum. The helical gear is the only gear installed on the VX drum.

Recovery Blade

Acts as a dam at the base of the waste bin, keeping the toner from falling out of the waste bin onto the paper. (Also called catcher blade or scavenger blade)

Waste Bin

A receptacle that catches toner wiped from the drum. (Also called waste hopper or dust bin)

Wiper Blade

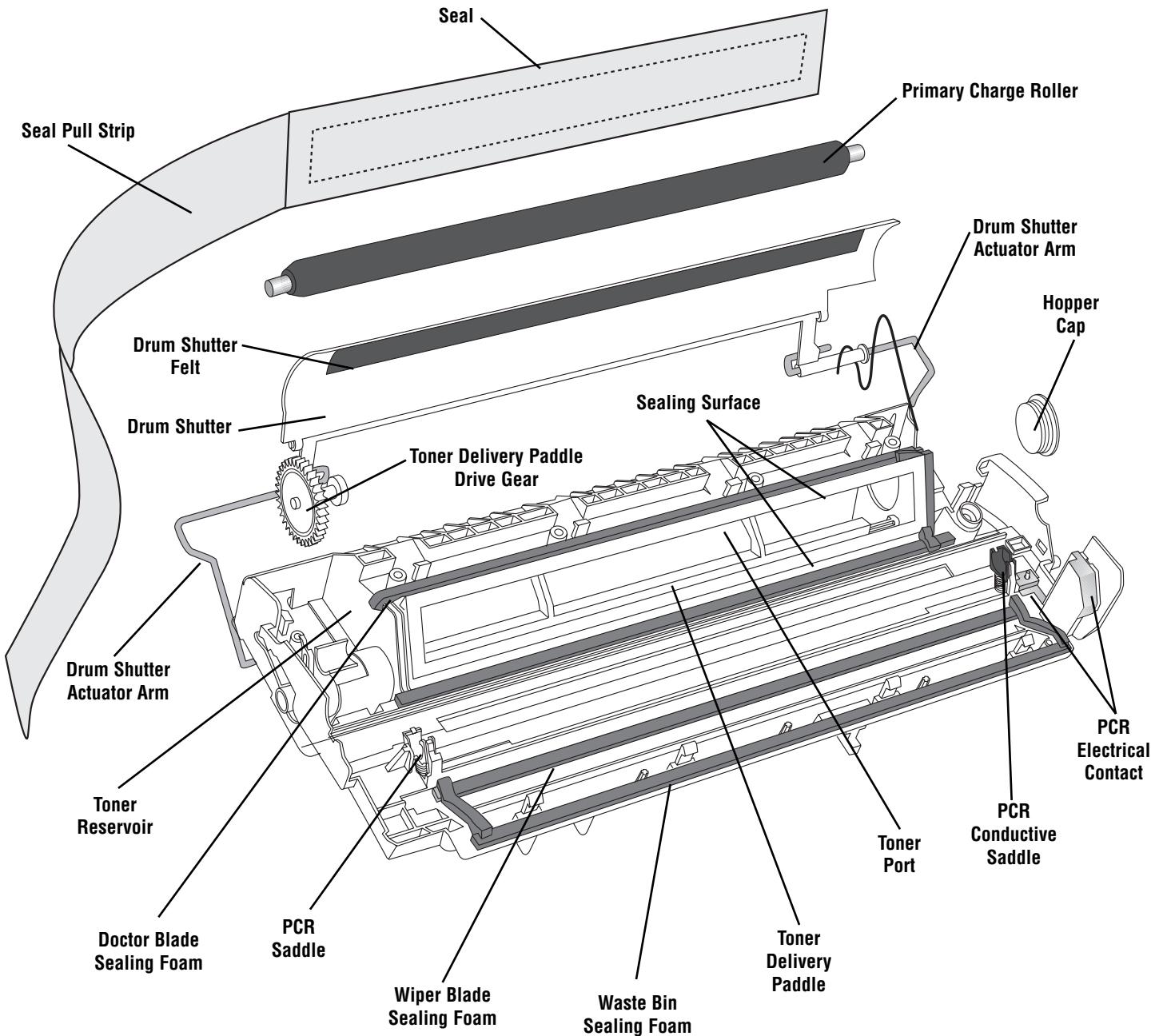
Cleans the drum by wiping away toner that was not transferred to the paper. Constructed of a metal stamping (base) and polyurethane blade. (Also called cleaning blade)

Wiper Blade End Foam

Layer of foam used to seal the area at the end of the polyurethane wiper blade; prevents leakage from the waste bin.



Toner Hopper Section - Terms and Definitions



Cartridge Sealing Foam

Installed around the perimeter of the waste bin to seal the area where the waste bin and hopper sections are brought together.

Doctor Blade Sealing Foam

A strip of foam that seals the area between doctor blade stamping and cartridge shell; prevents leakage from the toner hopper.

Drum Shutter

Protects the drum from light damage when the cartridge is out of the printer. When the cartridge is installed in the printer, the shutter opens so that the drum is exposed to the paper.

Drum Shutter Actuator Arm

Opens the drum shutter when the cartridge is installed in the printer.

Drum Shutter Felt

Shutter felt is an aftermarket component installed on the interior of the drum shutter. It protects the drum from potential damage caused by the opening and closing of the shutter.

Primary Charge Roller

Uniformly charges the OPC drum. (Also called PCR, charge roller, or roller)

PCR Electrical Contact

Metal strip installed underneath the conductive PCR saddle used to provide electrical contact between the printer and the PCR.

PCR Saddles

Two saddles support the PCR at each end of the shaft. One saddle, located at the contact (right) end of the cartridge, is made of conductive material. The other saddle is non-conductive. The springs at the base of the saddles maintain tension on the PCR so that it will make constant and uniform contact with the drum.

PCR Electrical Contact Wire

Attached to the spring base of the PCR contact saddle and used to aid conductivity between the PCR and printer.

Sealing Surface

Flat surface around the perimeter of the toner port to which an adhesive seal is attached to seal the toner hopper.

Seal

A rigid gasket base on which a seal is adhered. The gasket base is then attached to the toner hopper sealing surface. The PX/VX seal uses peel-to-expose adhesive on the side that secures to the sealing surface around the perimeter of the toner port.

Hopper Cap

Plugs the fill opening of the hopper.

Seal Pull Strip

Strip of seal material pulled by the end user to release toner into the development station.

Toner Delivery Paddle

Located in the toner hopper and used to push toner from the hopper through the toner port making toner accessible to the development station.

Toner Delivery Paddle Drive Gear

Moves the paddle horizontally from the back of the hopper to the toner port.

Toner Port

An opening, occupied by the seal, that runs along the length of the hopper. Once the seal is removed, toner travels through this opening to the development station.

Toner Reservoir

Holds the toner load needed for imaging.

Wiper Blade Sealing Foam

A strip of foam that seals the area between the wiper blade and cartridge body; prevents leakage from the waste bin.



Component Management Chart

COMPONENT	CODE	CLEAN	LUBRICATE
OPC Drum	VXDRUM-NGT VXDRGR	Dry, filtered compressed air	Pad coated area of drum with Kynar®; rotate drum against wiper blade - min. 6 rotations
Drum Shutter Felt	4LDSFELT Aftermarket Component	Dry, filtered compressed air	NA
OEM PCR	NA	Water and soft, lint-free cloth DO NOT clean OEM PCR with alcohol	NA
Static Control Remanufactured PCR 5/15-cycle	VXRMPCR or LXRMPCR	Lint-free cloth dampened with 91-99% isopropyl alcohol	NA
Static Control Remanufactured PCR 1-cycle	1CVXRMPCR or 1CLXRMPCR	No cleaning required; Recoat after each reman cycle Do not use alcohol to clean 1-cycle PCR	NA
PCR Contact Saddle	NA	Lint-free swab dampened with 91-99% isopropyl alcohol	DO NOT lubricate either PCR saddle; lubricant not present on out-of-box OEM cartridge
Wiper Blade	VXBLADE	Dry, filtered compressed air; DO NOT clean with alcohol	Dip edge of wiper blade in Kynar®; make sure blade edge is evenly covered
Recovery Blade	Mylar blade LJ4RECBLADE Poly blade PRECB-LJ4	Dry, filtered compressed air	NA
Magnetic Developer Roller	Reman. sleeve under development	Dry, filtered compressed air	NA
Mag Roller Electrical Contacts	NA	Clean metal contact (in white contact assembly) with lint-free swab dampened with 91-99% isopropyl alcohol	Apply a very small amount of conductive lubricant to the metal contact in the contact assembly
Mag Roller Felt	4LMRFELT	Dry, filtered compressed air	NA

EVALUATE	REPLACE
Test print to check print density; check for deep concentric wear lines	Replace OEM drum after OEM cycle with SCC system-qualified drum
Install on interior of drum shutter to help protect drum from damage caused by opening and closing of shutter; felt should appear clean and fully secured to the cartridge	Replace if felt starts to peel, becomes dislodged or is missing
VX OEM PCR is not recoatable	OEM PCR typically wears out after OEM cycle; Use OEM black EX PCR recoated/modified for VX application (VXRMP-PCR) or SCC Remanufactured LX/PX/PC330 PCRs (LXRMP-PCR)
SCC 5/15-cycle Remanufactured PCR guaranteed 5 remanufacturing cycles; Can be recoated two additional times provided the PCR is not damaged	Recoat 5/15-cycle PCR after the 5th and the 10th remanufacturing cycle; SCC 5/15 cycle remanufactured PCRs can be recoated an additional two times after the initial recoating process for a total of 15 reman cycles
SCC 1-cycle Remanufactured PCR guaranteed 1 remanufacturing cycle; Can be recoated after each remanufacturing cycle provided the PCR is not damaged	Recoat dedicated SCC 1-cycle remanufactured PCR after each remanufacturing cycle
NA	NA
Test print each cycle and check for vertical streaks	Replace if wiper blade-related print defects detected; install new wiper blade each time new drum is installed; test print each cycle and replace as required
Blade should display a smooth surface and be completely secured to mounting surface	Replace blade if bent, kinked, damaged or not fully secured to cartridge; Replace with polyurethane recovery blade; dedicated installation tool required (Item Code: RBIT00L-PBL);
Test print against baseline to check for light print defects; visually inspect for scratches, previously treated or sandblasted mag rollers	Replacement mag roller sleeve under development
For optimum continuity make sure metal contact is free of toner and debris	NA
Felt should appear clean, intact and secured to mag roller saddle	Replace if felt becomes excessively frayed, compacted with toner, shiny in appearance or dislodged; Use SCC's foam/felt scraper tool (FST00L) to remove worn felt

Component Management Chart continued

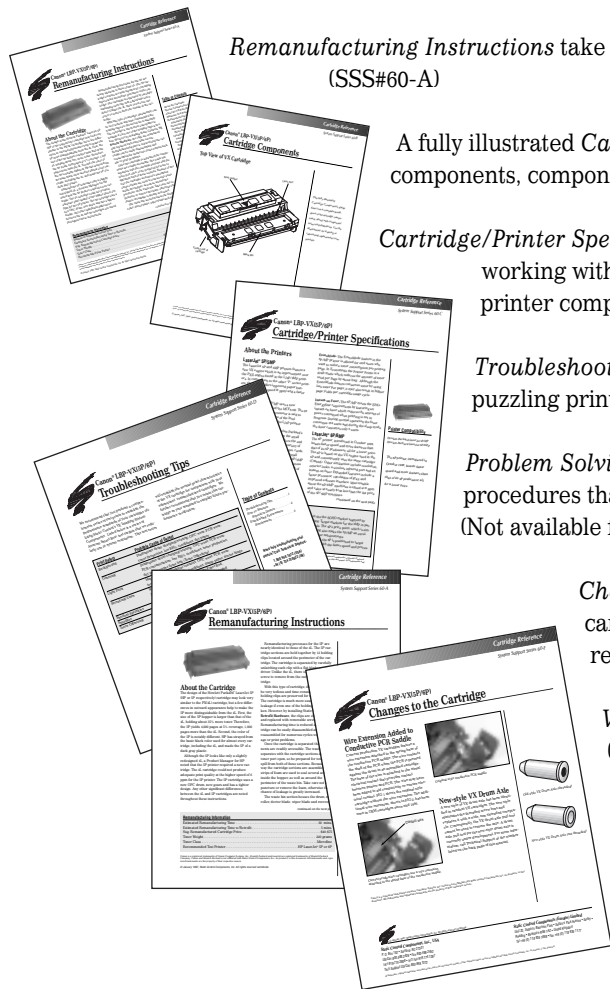
COMPONENT	CODE	CLEAN	LUBRICATE
Mag Roller Sealing Blade	NA	Dry, filtered compressed air	NA
Doctor Blade	VXDBLADE	We do not recommend removing the doctor blade unless it requires replacement; clean with dry, filtered compressed air; DO NOT clean with alcohol	NA
Doctor Blade Repair Foam	Under development	Dry, filtered compressed air; direct air close to surface of foam to remove toner and debris	NA
Toner	VX220B VX250B	Clean hopper with dry, filtered compressed air	NA
Seal	4LADHSEAL	Clean sealing surface with 91-99% isopropyl alcohol	NA
Pull Tab	NA	NA	NA

EVALUATE	REPLACE
Blade should display a smooth surface and be fully attached to the mounting surface	NA
Test print to check print quality, background, or side-to-side variations in print quality	Replace if doctor blade-related print defects detected; doctor blade replacement requires removal of sealing
Foam should display smooth surface and be secured to the ends of the doctor blade	Replace foam each time doctor blade is removed or replaced
NA	NA
Make sure no wrinkles are present in the seal; wrinkles provide an outlet for toner leakage	Install new seal each remanufacturing cycle
Cartridge does not require pull tab; not present on OEM cartridge.	NA

Need More Information?

The VX Cartridge Reference Series Tells You Everything You Need to Know

Remanufacturing Instructions is just one of the documents in a 6-part reference series on the VX cartridge. This series provides you with everything you need to know to successfully remanufacture the VX cartridge: from step-by-step instructions to troubleshooting and problem solving. For more information *Contact your Static Control Sales Representative at the numbers below.*



Remanufacturing Instructions take you step-by-step through the entire cartridge remanufacturing process. (SSS#60-A)

A fully illustrated *Cartridge Components* guide shows a complete breakdown of all cartridge components, component terms and definitions and a cartridge management chart. (SSS#60-B)

Cartridge/Printer Specifications provides important reference information you may need when working with your customers: OEM part numbers, cartridge and printer specifications, printer compatibility, and descriptions of popular printer models. (SSS#60-C)

Troubleshooting Tips gives you both general and engine-specific tips on troubleshooting puzzling print defects, plus a repetitive defect guide. (*Currently being revised.*) (SSS#60-D)

Problem Solving provides solutions to unique problems with a guide of products and procedures that will make remanufacturing easier, as well as prevent imaging problems. (Not available for the VX cartridge.)

Changes to the Cartridge documents any changes that have occurred in the cartridge since its introduction and how those changes may affect your remanufacturing procedures. (SSS#60-F)

VX Cartridge Reference Pack includes all the documents described above. (SSS#60)



Notes



Canon® LBP-VX(5P/6P)

Cartridge/Printer Specifications

About the Printers

LaserJet® 5P/5MP

The LaserJet 5P and 5MP printers feature a new VX engine which is an improvement over the PXII engine found in the LJ4P/4MP printers. In comparison to the other "P" series printers, the 5P/MP offers improved paper handling, faster print speed (6 ppm) and a faster controller.

New Processor: The 5P/MP uses a new Motorola processor called the MCF5102. The 20 MHz version of the new processor is said to offer triple the performance of the Intel 80960SA processor used in the LJ4P printer.

Improved Paper Handling: Hewlett Packard's 5P and 5MP are typically found in the small office and home office (SOHO), where the end user will use the printer for a wide variety of tasks: labels, flyers, graphics, text pages, cards, envelopes, and odd-sized media. The small business end user will typically use the 5P/5MP printer for virtually anything that the business requires. A multi-purpose tray on the front of the printer and fold-down rear door allow heavy card stock media to follow an almost straight paper path in order to avoid the turn to the top output tray. An improvement over the 4L/4P is a multipurpose tray that can handle a stack of media instead of single sheets.

EconoMode: The EconoMode feature in the 5P/MP printer is offered for end users who want to reduce toner consumption per printed page. In Economode the printer prints in a draft mode which reduces the amount of toner used per page by about half. Although the EconoMode feature conserves toner by using less toner per page, it may also result in higher page yields per cartridge usage cycle.

Instant-on Fuser: The 5P/MP meets the EPA's EnergyStar requirements by featuring an instant-on fuser which reduces the amount of power consumed when printing is not in progress. During normal operation the fuser consumes 164 watts and during the sleep mode the fuser consumes only 5 watts.

LaserJet® 6P/6MP

The 6P printer, introduced in October 1996, boasts faster speed and more features than that of its 5P predecessor, all for a lower price. The 6P is based on the VX engine used in the 5P and consequently uses the same cartridge (C3903A). Other similarities include resolution, exterior looks, a wireless infrared port and an instant-on fuser. Expanded features include a faster processor, 128 shades of gray, and improved software interface. Most notable about the 6P/6MP machines is speed at 8 ppm and value at nearly \$150 less than the list price of the 5P/5MP machines.

continued on the next page



Printer Compatibility

Hewlett-Packard LaserJet 5P/MP
Hewlett-Packard LaserJet 6P/6MP

The 6P printer, introduced in October 1996, boasts faster speed and more features than that of its 5P predecessor, all for a lower price.

Market Outlook

HP has placed the 5P/MP in a very competitive position in the SOHO market segment by offering increased print speed and improved paper handling. Target markets for the 5MP in particular include desktop publishers and graphics professionals. The 5P's price point, which is similar to the LX, print resolution, print speed and paper handling also make the 5P/MP an excellent choice for corporations with one printer/one person printer requirements.

Like the 5P, which is marketed toward small business groups, the 6P is positioned to target small business groups and desktop publishers (6MP). However, with the faster speed and processor, the 6P is also being positioned as a printer that can be shared.

About the Printers, continued

Processor: The 6P printer features an Intel processor rather than the Motorola processor used in the 5P. According to an HP product manager, the Intel processor “increases formatting performance by as much as 50 percent.”¹

Paper Handling: Paper handling features are virtually identical to those of the 5P. The multi-purpose tray can accommodate a wide range media, from 3x5 inches to legal size pages and the printer will accept labels, cards and other special media. The

6P/6MP also features document compatibility with existing HP LaserJet printers.

EconoMode and Instant-on Fuser are featured in the 6P/6MP printer. Both features are similar in functionality to those of 5P/5MP printer. However, during normal operation of the 6P/6MP printer, the fuser consumes 175 watts and only 8 watts during the “sleep” or idle mode.

Cartridge Information

	HP LaserJet® 5P/5MP	HP LaserJet® 6P/6MP
OEM Part Number	C3903A	C3903A
OEM Published Yield ¹	4,000 pages	4,000 pages
Price (Retail List)	\$108.50	\$108.50

¹Yield is based on 5% page coverage unless noted otherwise.

Printer Information

	HP LaserJet® 5P/5MP	HP LaserJet® 6P/6MP
Introduction List Price	\$1,109 (5P), \$1,299 (5MP)	\$959 (6P), \$1149 (6MP)
First Ship Date	April 1995	October 1996
Pages Per Minute (ppm)	6 ppm	8 ppm
Engine Duty Cycle	12,000 pages/month	12,000 pages/month (100,000 pages/life)
Processor	20 MHz Motorola MCF5102	24 MHz Intel 80960JF RISC
Resolution (dpi)	600 x 600 dpi (native) Resolution Enhancement (REt) 120 levels of gray at 106 lpi	600 x 600 dpi (native) Resolution Enhancement (REt) 128 shades of gray
Economode	yes	yes
Page Size	letter, A4, legal, Exec., Com-10, Monarch, DL, B5, C5,	letter, A4, legal, Exec., Com-10, Monarch, DL, B5, C5,
Target Market	Small offices (5P), desktop publishers, graphic professionals (5MP)	Small offices (5P), desktop publishers, graphic professionals (5MP)



© 1996, 1997, Static Control Components, Inc. All rights reserved worldwide.

Static Control Components, Inc., USA

3010 Lee Avenue • PO Box 152 • Sanford, NC 27331
 US/Can 800.488.2426 • US/Can Fax 800.488.2452
 Int'l 919.774.3808 • Int'l Fax 919.774.1287
 Tech Support US/Can 800.948.1072

Static Control Components (Europe) Limited

Unit 32, Sutton's Business Park • Sutton's Park Avenue • Earley
 Reading • Berkshire RG6 1AZ • United Kingdom
 Tel +44 (0) 118 935 1888 • Fax +44 (0) 118 935 1177



Canon® LBP-VX(5P/6P) Troubleshooting

Establishing Baseline Performance Benchmarks

We recommend that you perform a comprehensive series of test prints to establish the performance standards of your cartridges using Static Control's VX Imaging System Components. Listed below is a series of print targets that we developed for system evaluation. This test series will establish the normal print characteristics of the VX cartridge for comparison with your subsequent remanufactured cartridges. We further recommend that you retain the baseline cartridge as your standard to simplify future performance verification.

The test series also allows you to visually inspect a printed page and diagnose many

printer and cartridge problems. Listed in the chart below are some of the problems that may be diagnosed using each page in the test series.

The Series One Analyzer EPROM print series also includes four 5% coverage test targets scientifically developed and calibrated for major printer models. The 5% coverage pages along with a measuring procedure are used to determine toner usage per page and accurate page yield results. *(See next page.)*

The Series One Analyzer EPROM is used with the G80 SmartBox® and can be purchased as a kit from Static Control. Contact your Static Control Sales Executive for more details.

Table of Contents

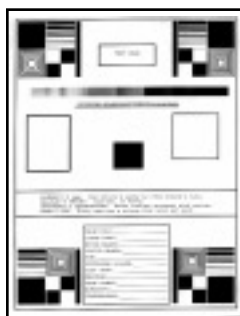
- Establishing Performance Benchmarks*1
- Measuring Toner Usage and Page Yield* 2
- How to Measure Repetitive Defects* 3
- Troubleshooting Tips* 4

SCC Series One Analyzer EPROM Print Targets

Test Print	Problems That May be Diagnosed Using the Test Print
Main Test Page	Drum Ghosting, Developer Roller Ghosting, Vertical Black Lines, Horizontal Black Lines, Toner Smear
Blank Page	Pin Hole Defects, Blasting
Black Page	Pin Hole Defects, Developer Roller Defect
BP80 Page	Improperly Formed Characters, Gear Defects, Fuser Offset, Bubble Print (or grapes)
Gray Page	Substrate Defects, Dropouts (faded areas)

Need help troubleshooting print defects? Call Technical Support.

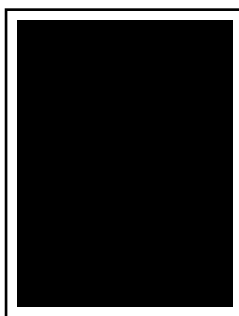
1.800.948.1072 (USA)
+44 (0) 118 935 1888 (UK)



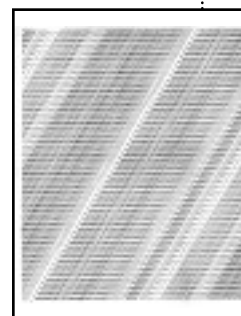
Main Test Page



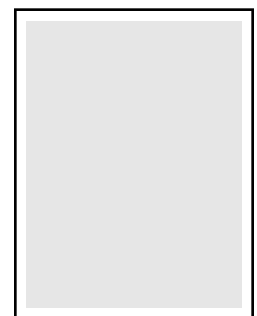
Blank Page



Black Page



BP80 Page



Gray Page

Measuring Toner Usage (Page Yield)

Toner usage (or page yield) information is often needed by a cartridge remanufacturer to determine cost per page in their remanufactured cartridges or to run their own page yield tests. An important aspect of determining toner usage is using the proper test target.

Our system development lab developed a set of standardized test prints using the letter E to determine toner usage for 12 of the most popular printer models. Different printers have different dot sizes determined by the manufacturer. You may have noticed that some printers appear to have darker text than others. For this reason, each printer system can require different number of E's to produce a 5% coverage page.

The necessity for engine-specific E-pages is best illustrated by comparing the difference between EX and SX E-pages as shown on the right. The EX machine requires a certain number of E's to reach 5% coverage. In comparison, the SX machine requires a different number of E's to reach 5% coverage.

Static Control's Series One Analyzer EPROM, used with the G80 Anacom SmartBox®, includes four E-pages and five print performance evaluation targets. For more information, contact your Static Control Sales Executive.

5% Coverage Test Targets available for:

- HP LaserJet® II, III, IIP, IIIP, IBM/Lexmark® 4019, 4029, 4039, Optra R, Optra L (Target #1)
- HP LaserJet 4/5, IIISi/4Si, 4L/4P, 5L, 5P/5MP (Target #2)
- HP LaserJet 5Si, 4V, IBM Network Printer 24 (Target #3)
- Lexmark Optra N (Target #4)

To learn more about about page yield and toner usage, refer to Technical Bulletin SSS#112, Page Yield for Printer Cartridges.

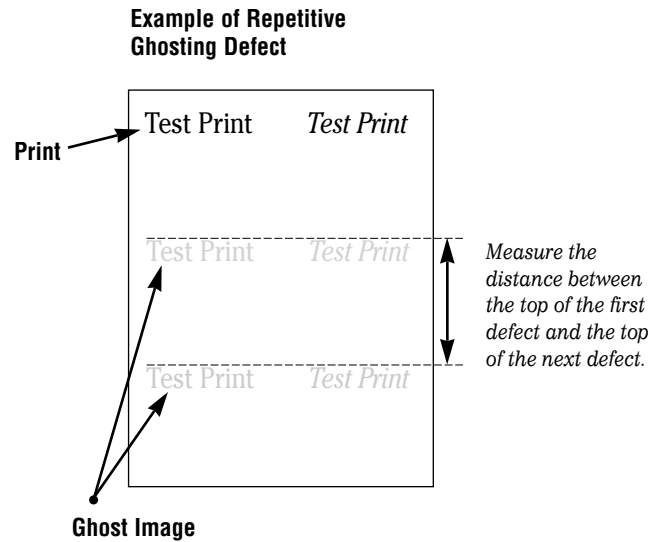


An example of how 5% coverage might look in a business letter format. The left page was printed on an EX printer and the right page printed on an SX printer



How to Measure Repetitive Defects

1. **Find the repeating defect.** Defects may appear as horizontal banding, dots, lines, or hazing. In VX(5P) cartridges, the repetitive defect will appear vertically on a page in the portrait orientation.
2. **Measure the distance between the defects.** Interval measurements are provided in both inches and millimeters. To get an accurate measurement, measure from the top or bottom of the first defect to the top or bottom of the next defect. Make sure you are measuring like defects. It is possible to have two sets of repetitive defects overlapping each other on the page.
3. **Find the interval number in the table below and the corresponding component.** Some probable causes of the defect are listed to help you with troubleshooting. This is not an exclusive list. Some repetitive defects may be the result of a combination of factors. If you have trouble locating a defect, call Technical Support at the telephone numbers listed on the back of this manual.



Repetitive Defect Troubleshooting Guide for VX Cartridges

Interval	Component	Probable Cause of Defect
@ 1.24" (31.6 mm) Intervals	Mag Roller	Mag roller wear, mag roller electrical contact, mag roller cleaning damage, mag roller bushing wear, doctor blade failure, toner properties, mag roller contamination
@ 2.97" (75.4 mm) Intervals	OPC Drum	OPC wear, OPC damage, OPC contact, elliptical drum rotation, OPC light exposure degradation, PCR defect
@ 1.48" (37.7 mm) Intervals	Primary Charge Roller	PCR wear, PCR contamination, toner properties, poor electrical contact, low RH% conditions, dry paper
@ 1.75" (44 mm) Intervals	Transfer Roller	Transfer Roller wear, Transfer Roller contamination
@ 2.98" (75.7 mm) Intervals	Upper Fuser Belt	Toner offsetting, fuser belt/pressure roller incompatibility, upper fuser roller/lower pressure roller wear/contamination
@ 1.85" (47 mm) Intervals	Lower Pressure Roller	Toner/pressure roller incompatibility, pressure roller wear/contamination (defect will appear on backside of page)



Print Defect Troubleshooting Tips

The following table is a list of common print defects you may encounter during print testing. Included in the table is a general listing of probable causes for each type of defect; this listing will help direct you to the source of the defect.

If you have questions or require further assistance, call our Technical Support Staff at the telephone numbers listed below.

Print Defect	Probable Cause of Defect
Background	Inadequate drum charging/erasing, OPC wear, PCR wear, toner properties, low RH% conditions, dry paper
Ghosting	Inadequate drum charging/erasing, OPC wear, PCR wear, PCR contamination, low RH% conditions, toner properties, dry paper, upper fuser belt (toner offsetting)
Light Print	Mag roller, electrical contacts, OPC wear, PCR wear, toner properties, high RH% conditions, damp paper, doctor blade
Streaking/Lines	Wiper blade (sharp-edged lines), upper fuser belt, PCR contamination (vertical line), missing/damaged doctor blade end foam or mag roller felts (page edge line)
Random Sprinkles	Recovery blade, mag roller felts, mag roller sealing blade
Smudges	OPC contamination, upper fuser belt, mag roller contamination
Toner Offsetting	Upper fuser belt, lower pressure roller, toner properties



STATIC CONTROL COMPONENTS, Inc.

SCC Imaging Division
3010 Lee Avenue • PO Box 152 • Sanford, NC 27331
US/Can 800-488-2426 • US/Can Fax 800-488-2452
Int'l 919-774-3808 • Int'l Fax 919-774-1287
Tech Support Line US/Can 800.948.1072

©1996, 1997, Static Control Components, Inc. All rights reserved worldwide.

Static Control Components (Europe) Limited
Unit 32, Sutton's Business Park • Sutton's Park Avenue • Earley
Reading • Berkshire RG6 1AZ • United Kingdom
Tel +44 (0) 118 935 1888 • Fax +44 (0) 118 935 1177

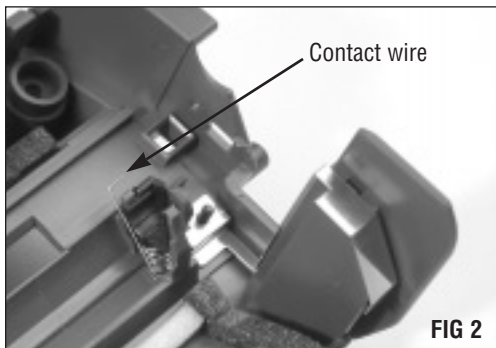


Canon® LBP-VX(5P/6P)

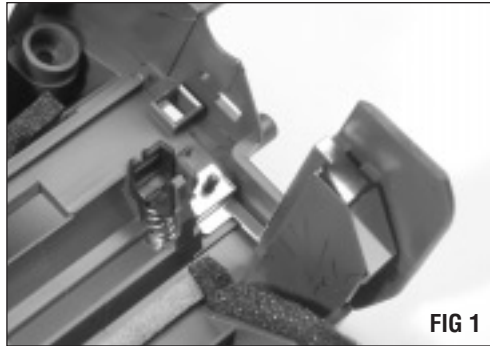
Changes to the Cartridge

Wire Extension Added to Conductive PCR Saddle

Current production VX cartridges feature a wire extension attached to the spring base of the conductive PCR saddle. The wire contacts the shaft of the PCR when the PCR is pressed against the drum in an assembled cartridge. The base of the wire is attached to the metal electrical contact that provides contact between printer and PCR. The wire may have been added to aid conductivity or ensure electrical contact. FIG 1 shows the original style cartridge without the wire extension. The additional wire extension, shown in FIG 2, has been seen in OEM cartridges since mid 1996.



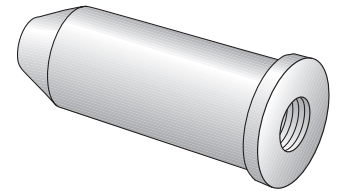
Current production cartridges use a wire extension attached to the spring base of the conductive saddle.



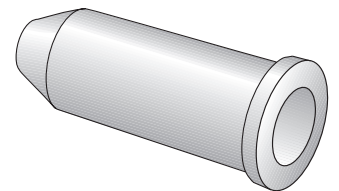
Original style conductive PCR saddle

New-style VX Drum Axle

A new style of VX drum axle has been identified in random VX cartridges. The new style eliminates the threaded screw boss and replaces it with a wide, non-threaded receptacle. Consequently, the VX drum axle pull tool cannot be used to remove the axle. A drum axle pull tool for the new-style drum axle is currently under development. For more information, call Technical Support at the number listed below.



Old-style VX Drum Axle (threaded)



New-style VX Drum Axle (not threaded)

Any trademarks, registered trademarks or brand names are the property of their respective companies or corporations. Canon Computer Systems, Inc., is not affiliated with Static Control Components, Inc., its products, or this document.



© 1996, 1997, Static Control Components, Inc. All rights reserved worldwide.

Static Control Components, Inc., USA
 3010 Lee Avenue • PO Box 152 • Sanford, NC 27331
 US/Can 800.488.2426 • US/Can Fax 800.488.2452
 Int'l 919.774.3808 • Int'l Fax 919.774.1287
 Tech Support US/Can 800.948.1072

Static Control Components (Europe) Limited
 Unit 32, Sutton's Business Park • Sutton's Park Avenue • Earley
 Reading • Berkshire RG6 1AZ • United Kingdom
 Tel +44 (0) 118 935 1888 • Fax +44 (0) 118 935 1177