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Hewlett Packard® LaserJet® 5000 (HP5000)
Remanufacturing Instructions

About the Cartridge

On March 16, 1998, Hewlett-Packard® launched the LaserJet® 5000 Series (HP5000), its newest line of network laser printers. The printers, rated at 16 pages per minute, offer 3 user-selectable resolution settings, including true 1200 dpi (rated at half engine speed). The HP5000 is designed for improved productivity in both small and large workgroups. The instant-on fuser outputs the first page in just 13 seconds; several paper sources offer printing flexibility for entire workgroups. Optional accessories include a duplex assembly, 250 or 500-sheet feeder universal tray and an Internet installer program which automatically downloads the most recent Laser-Jet 5000 software from their web site. In addition to the standard HP5000 model, HP also offers three versions of the printer that vary in networking capabilities, paper handling, and memory.

HP's UltraPrecise toner cartridge, used with the HP5000 printers, features an average size toner formulation of 6.2 to 6.5 microns, greater OPC sensitivity, new drum helical drive gear, end magnets (instead of mag roller felts), and a pull tab with the HP logo etched on the surface.

Remanufacturing the HP5000 is, in many respects, similar to remanufacturing the HP4000 cartridge. The cartridge consists of two distinct sections: waste bin section and toner hopper section. The drum shutter is located on the hopper section like the HP4000.

The two cartridge sections are held together by a cartridge pin installed at each end of the cartridge. The pin and casing design is such that the pins are able to be removed by tapping them through the casing into the interior of the cartridge.

SCC's replacement cartridge pins are designed to speed up subsequent remanufacturing process. Designed with a slim-line head, the pin installs flush against the exterior of the cartridge, but can be easily removed using a pair of side cutters.

The waste bin houses the drum, wiper blade, recovery blade and PCR. The OEM drum features a helical drive gear designed to eliminate gear chatter that contributes to noise and poor print quality.

For best results against field failures in the second cycle, SCC recommends replacing the OEM drum after the initial cycle and replacing the aftermarket drum every cartridge cycle.

Drum life can vary depending on your customer's cartridge usage. Shorter print runs of one or two pages cause more wear to the drum than long, continuous print runs. Understanding your customer's usage can better help you manage component replacement schedules in your business.

Sealing components in the waste bin include wiper blade sealing foam, wiper blade end foam and felts.

continued on page 2

HP5000 Quick Reference

Toner Weight	500 grams (10,000 page-C4129X)
Toner Class	Magnetic, Monocomponent
Seal Type	Split Hopper
Estimated Remanufacturing Time	15-30 minutes
Recommended Test Printer	HP LaserJet 5000

Table of Contents

World Wide Web

www.scc-inc.com

If you need additional information or technical assistance, please contact the Technical Support Group.

1.800.948.1072 (USA)
+44 (0) 118 935 1888 (UK)
email: techservices@scc-inc.com

second edition

About the Cartridge

The hopper section houses the drum shutter, mag roller, doctor blade, and a 500-gram load of toner.

The drum shutter must be removed from the hopper body to remove the gear housing end plate or to split the hopper. Be sure to follow the detailed instructions in this manual to remove the shutter correctly.

Sealing components in the hopper section include a mag roller sealing blade, doctor blade sealing and end foams, mag roller seal foams, and mag roller end magnets.

The HP5000 cartridge features end magnets in place of the traditional mag roller felts used in other cartridges. The end magnets are shaped to fit the mag roller saddle and use a magnetic field to contain toner in the hopper and prevent leakage.

The end magnets have worked quite well in testing and do not appear to have any wear issues regarding the magnet material or the journals of the mag roller.

The design of the hopper sections indicates that splitting and installing an adhesive-mounted seal will achieve the most effective seal against leakage. A step incorporated into the sealing channel makes using insertable seals virtually impossible.

For your best protection against leakage during shipping, SCC recommends installing a seal. If you plan to hand deliver cartridges, a seal is optional. However, when transporting unsealed, filled cartridges, take care not to drop or excessively jar the cartridges.

C4129A (10,000-Page Yield)

FIG A

Technical Notes

Page Yield

Data from multiple yield testing trials of new OEM cartridges averages 10,000 pages, agreeing with HP's rated page yield for the HP5000 cartridge.

Hopper Capacity

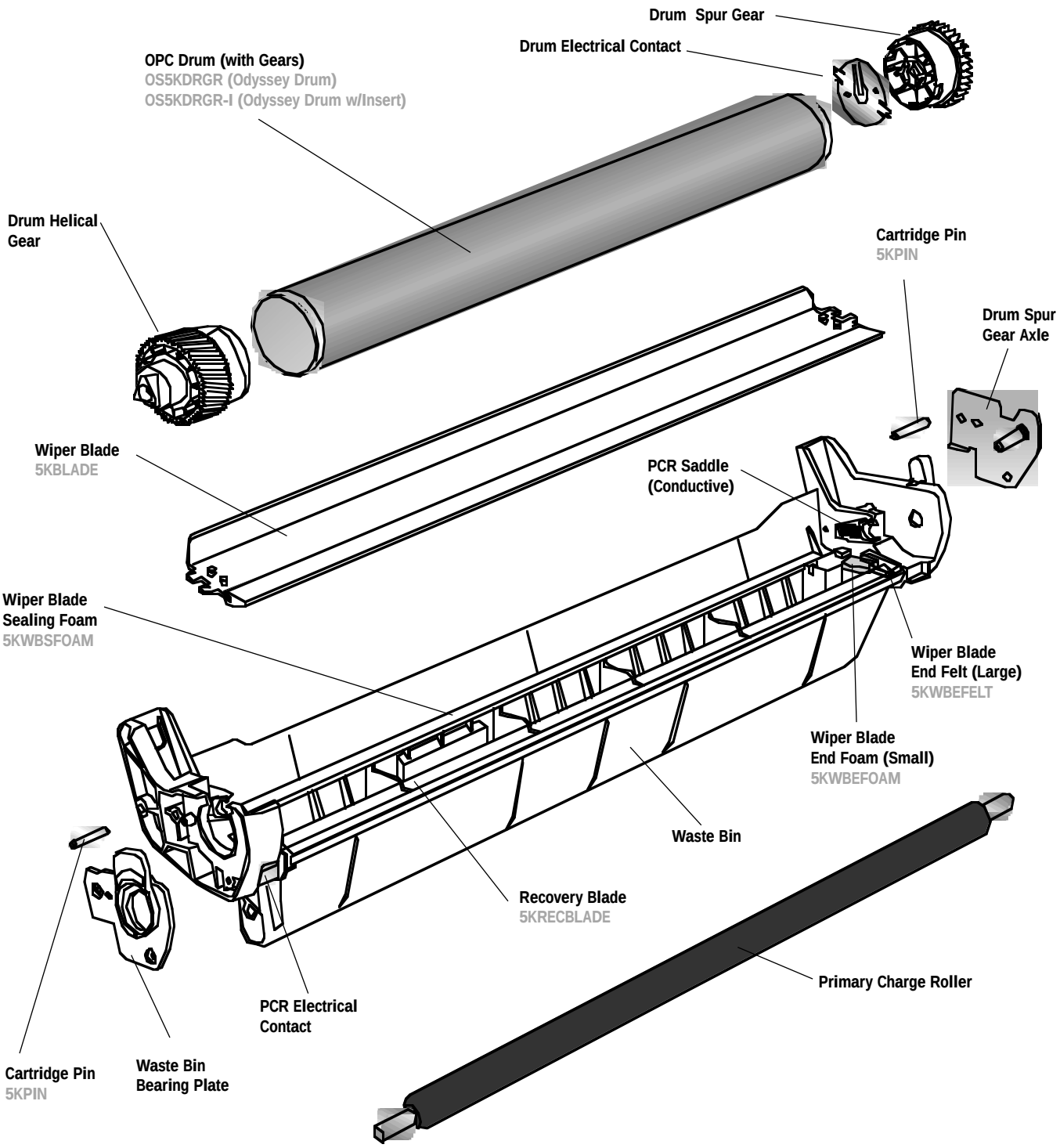
Standard toner load for the HP5000 cartridge is 500 grams.

System Support Series Available

SSS#	Title
207	HP5000 RapidSeal Sealing System
212	HP5000 RapidSplitter™
213	HP5000 Doctor Blade Sealing Foam
214	HP5000 Doctor Blade End Foam
217	HP5000 Wiper Blade Sealing Foam
218	HP5000 Wiper Blade End Felt & Foam
220	HP5000 Mag Roller Sealing Blade End Foam
240	HP5000 Drum Shutter Actuator Arm and Spring
241	HP5000 Cartridge End Plate
241A	HP5000 End cover removal tool
242	HP5000 Mag Roller Electrical Contact Spring
251	Center Support Clip and Short Rails
252	Pull tabs

Notes

Waste Bin Section–Terms and Definitions



All Products Listed Are Currently Under Development: *SCC PARTS INDICATED IN GRAY.*

Cartridge Pins (2)
Installed at each end of the cartridge to hold the waste bin and toner hopper sections together.

Drum Spur Gear Axle
Installed at the contact end of the waste bin section to provide support for the gear.

Drum Electrical Contact
Provides electrical contact between the drum and printer; makes contact with the drum spur gear axle when it is installed in the drum.

Drum Gears (Helical and Spur)
The spur gear, located at the contact end of the waste bin section, houses the drum electrical contact. The other gear is the helical gear.

Drum Silencer Insert
Installed in the drum to dampen drum vibrations that result in humming noises.

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)

Primary Charge Roller
Uniformly charges the OPC drum. (Also called PCR, charge roller)

PCR Electrical Contact
Provides 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 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.

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, scavenger blade)

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

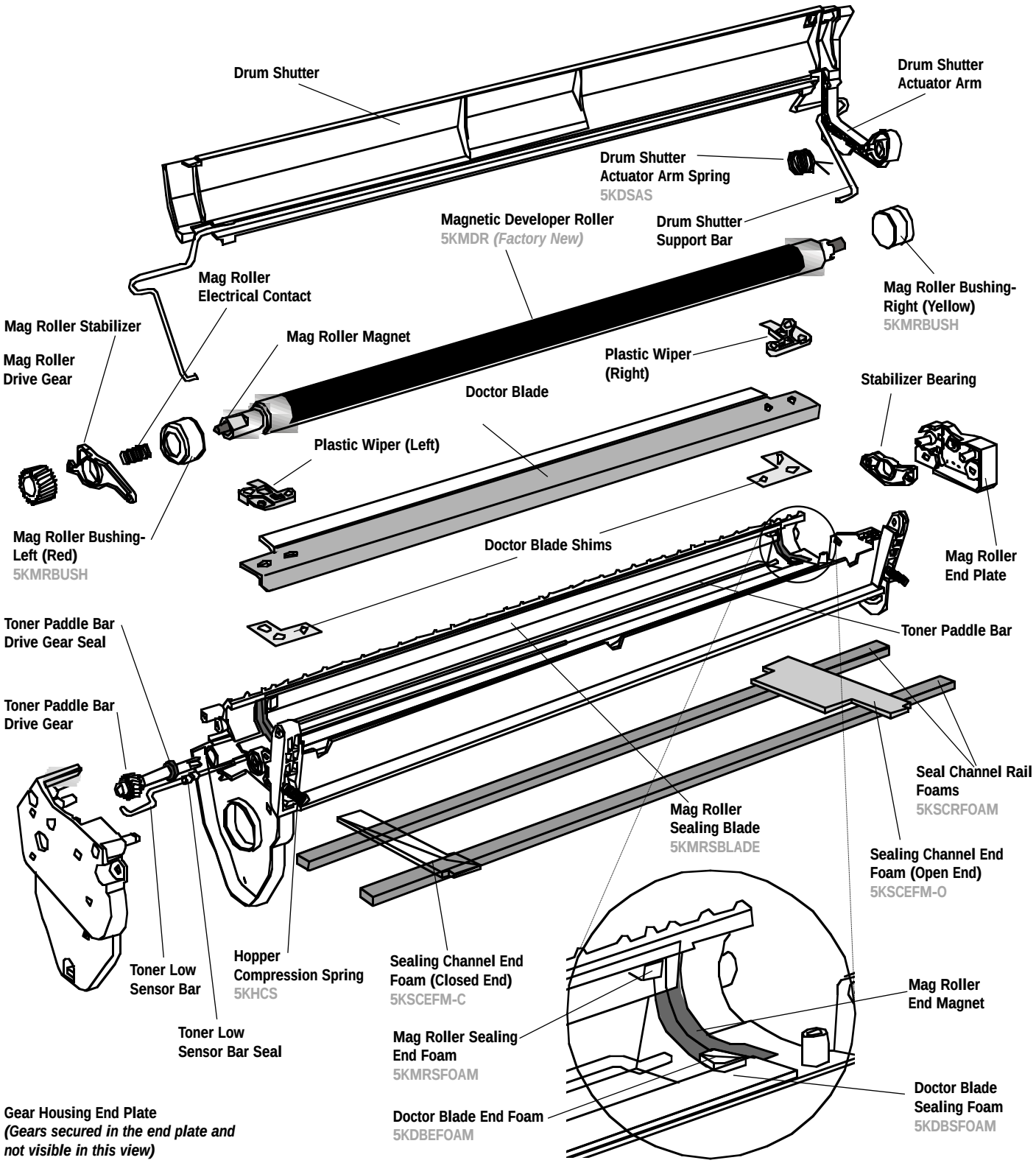
Waste Bin Bearing Plate
Serves as a bearing surface and supports the drum drive (helical) gear.

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 and Felt
Layers of foam and felt seal the area at the ends of the wiper blade; prevents leakage from the waste bin.

Wiper Blade Sealing Foam
A strip of foam that seals the area between the wiper blade and waste bin; prevents leakage from the waste bin.

Mag Roller Housing-Terms and Definitions



All Products Listed Are Currently Under Development: *SCC PARTS INDICATED IN GRAY.*

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
Small half moon-shaped pieces of foam that seal the ends of the doctor blade and prevent leakage from the toner hopper.

Doctor Blade Sealing Foam
A strip of foam that seals the area between doctor blade stamping and mag roller housing; prevents leakage from the toner hopper.

Doctor Blade Shims
A thin, L-shaped piece of plastic that goes between the doctor blade and the mag-roller housing.

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 Actuator Arm Spring
Installed in the actuator arm to provide tension to the drum shutter.

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.

Drum Shutter Support Bar
Supports the length of the drum shutter; the ends of the bar are installed at the ends of the cartridge.

Gear Housing End Plate
A removable end plate that covers the drive train on the mag roller section of the cartridge. The end plate also provides a positioner bushing that supports the magnet inside the mag roller sleeve and keeps the magnet stationary. The mag roller electrical contact is housed in this end plate.

Hopper Compression Spring
Two springs attached to the hopper section to apply pressure to the waste bin so that the drum is properly seated on the mag roller bushings, maintaining the proper air gap between the drum 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 Bushing (Left/Right)
Placed on each end of the mag roller sleeve to establish a consistent air gap between the mag roller and drum when the cartridge is assembled. The red bushing is installed on the contact end of the mag roller sleeve; the yellow bushing is installed on the non-contact end of the mag roller sleeve. For best results, do not interchange the bushings. *See SSSA 221 pg. 19.*

Mag Roller Drive Gear
Rotates the mag roller sleeve around the permanent magnet.

Mag Roller Electrical Contact Spring
Installed in the end of the mag roller sleeve; contacts the metal contact plate in the mag roller gear housing end plate and provides electrical contact between the mag roller and printer.

Mag Roller End Magnet
The end magnets use a magnetic field to contain toner in the hopper. Functions similar to the mag roller felts in providing protection against leakage from the hopper during cartridge operation.

Mag Roller End Plate
Installed on the right side of the assembled hopper section to cover the end of the mag roller.

Mag Roller End Plate Bearing
Serves as a bearing surface and supports the hub of the mag roller sleeve.

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.

continued on page 6

Mag Roller Section–Terms and Definitions

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
Small half moon-shaped pieces of foam that seal the ends of the doctor blade and prevent leakage from the toner hopper.

Doctor Blade Sealing Foam
A strip of foam that seals the area between doctor blade stamping and mag roller housing; prevents leakage from the toner hopper.

Doctor Blade Shims
A thin, L-shaped piece of plastic that goes between the doctor blade and the mag-roller housing.

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 Actuator Arm Spring
Installed in the actuator arm to provide tension to the drum shutter.

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.

Drum Shutter Support Bar
Supports the length of the drum shutter; the ends of the bar are installed at the ends of the cartridge.

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A removable end plate that covers the drive train on the mag roller section of the cartridge. The end plate also provides a positioner bushing that supports the magnet inside the mag roller sleeve and keeps the magnet stationary. The mag roller electrical contact is housed in this end plate.

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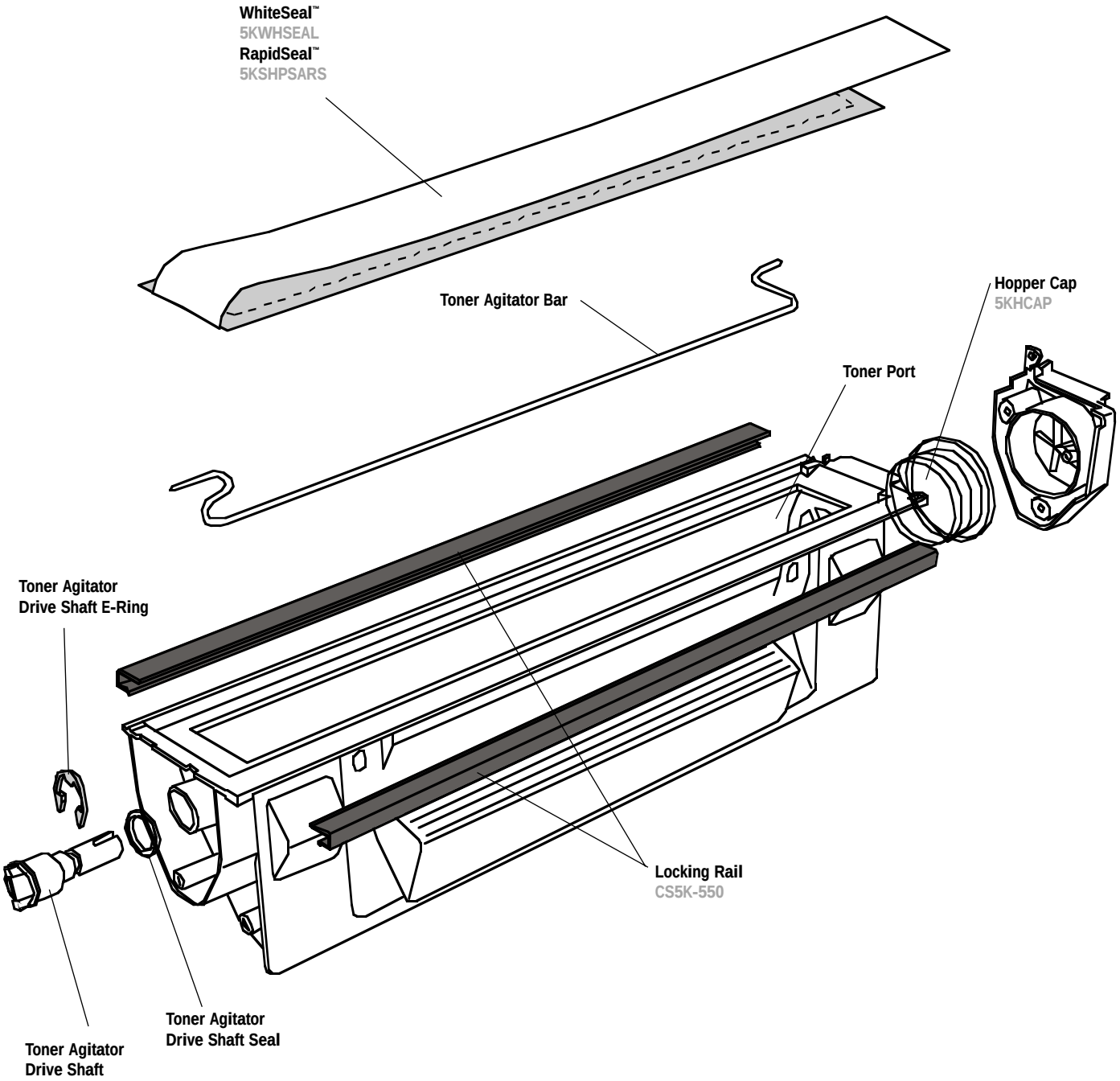
Magnetic Developer Roller
A rotating coated aluminum sleeve around a stationary magnet. The mag roller attracts toner magnetically and applied AC/DC voltage charges the toner and transfers it to the OPC. A doctor blade meters the toner before it is delivered to the OPC. (Also

Notes

Toner Reservoir-Term and Definitions



All Products Listed Are Currently Under Development: *SCC PARTS INDICATED IN GRAY.*

WhiteSeal™

SCC's HP4000 WhiteSeal™ is based on the OEM design; the seal uses peel-to-expose adhesive on the side that secures to the toner reservoir section.

Toner Agitator Bar

A metal paddle bar that rotates inside the toner hopper to move the toner toward the development station.

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.

Locking Rail

Aftermarket component used to reassemble and secure the mag roller and toner sections after splitting. Used in combination with seal channel rail foam.

Hopper Cap

Plugs the fill opening of the hopper. The hopper can only be filled through the fill opening if the hopper is split. Otherwise, the hopper is filled through the toner port.

Toner Agitator Drive Shaft E-Ring

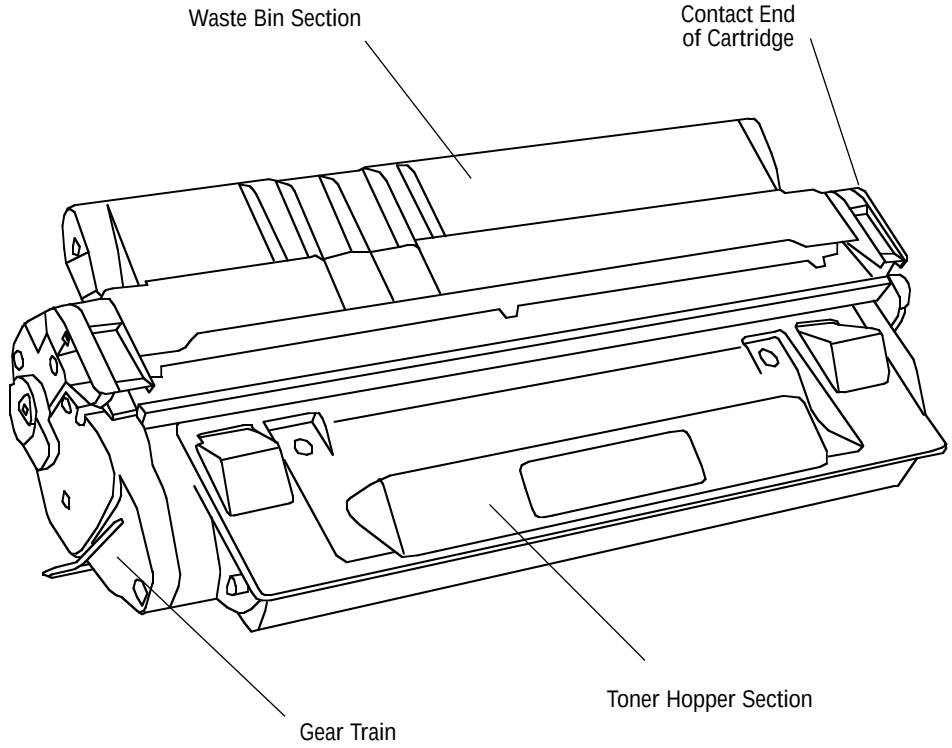
Secures the toner agitator drive shaft in the hopper section.

Toner Agitator Drive Shaft

Rotates the toner agitator bar in the hopper; located at the drive train end of the hopper section.

Toner Agitator Drive Shaft Seal

Seals the opening between the toner reservoir and the toner agitator drive shaft assembly.



Tools and Supplies You Will Need

Use of Compressed Air

As of April 28, 1971, the Occupational Safety & Health Administration (OSHA) Standard, 29 CFR 1910.242 paragraphs a & b for general industry requires effective chip guarding and personal protective equipment (PPE) when using compressed air. When cleaning residual toner particles from cartridges using a compressed air system, you must use air nozzles meeting OSHA requirements. Air nozzles that regulate air pressure to a maximum of 30 psi comply with this standard. Refer to the OSHA publication for any updates or changes that have occurred since the date noted above.

Use of Isopropyl Alcohol

For best results, we recommend using ONLY 91-99% for cleaning as directed in these instructions. 91% isopropyl alcohol is available at most major drug stores; 99% isopropyl alcohol is available through distributors of chemical products. Follow the alcohol manufacturer's safety instructions.

Tools and Supplies You Will Need

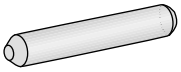
For Basic Remanufacturing:

- Phillips Screwdriver #1
- Phillips Screwdriver #2
- Standard Flat-Blade Screwdriver
- Needlenose Pliers
- Funnel for Toner Bottle
- Compressed Air for Cleaning ..... *(See left)*
- 91-99% Isopropyl Alcohol ..... *(See left)*
- Lint-Free Foam Tip Swab ..... LFSWAB
- Lint-Free Cleaning Cloth ..... LFCCLOTH
- Cotton Swab ..... QTIP
- Conductive Cartridge Lubricant ..... CONCLUBE
- Kynar® Lubricating Powder ..... KPOW
- Shallow Trough for Dipping the Wiper Blade
- Plexiglass Hopper Fixture 5KHJIG

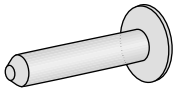
Separating the Cartridge

1. **Remove the cartridge pins.**
   The OEM cartridge pins are installed completely into the cartridge casing, preventing easy removal from the exterior of the cartridge. Use a 3/32" punch and a rubber or aluminum mallet and push the pin into the cartridge until it falls out (FIG 1). Do this on both sides of the cartridge.

   To facilitate cartridge disassembly during subsequent remanufacturing cycles use SCC HP5000 Cartridge Pins (CARTPIN-L) to rejoin the cartridge sections. SCC's cartridge pins install flush to the cartridge, but can be removed easily using a pair of side cutters.



OEM Cartridge Pin



SCC HP5000 Cartridge Pin

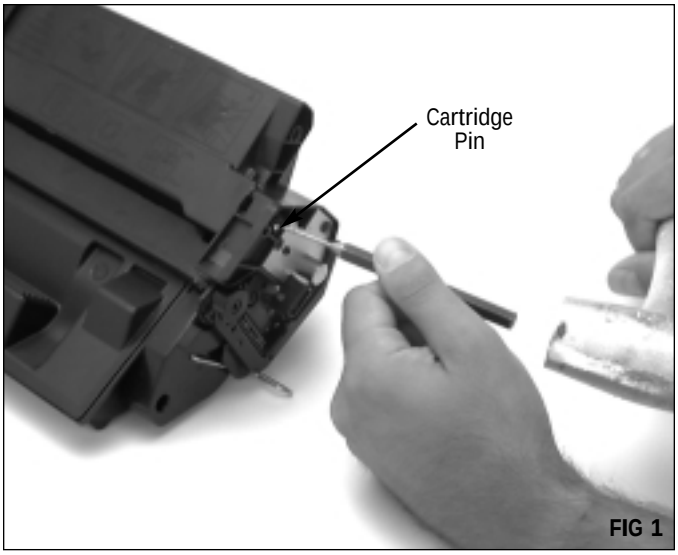


FIG 1

2. **Separate the cartridge.**
   Remove the waste bin from the hopper by simply lifting it up and away (FIG 2).

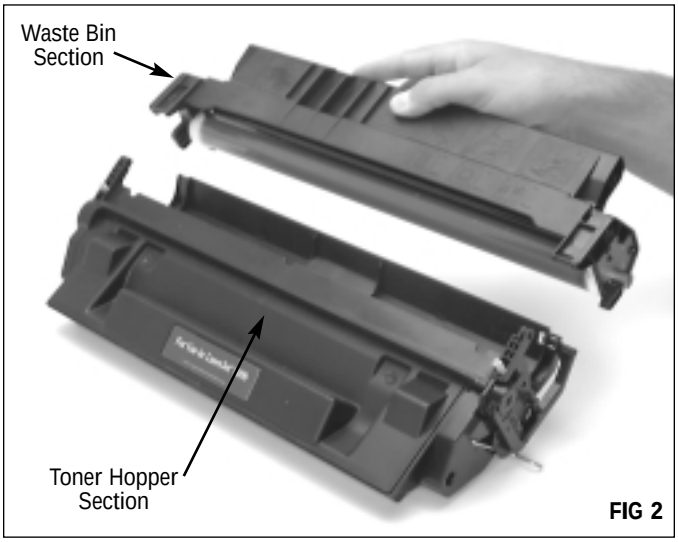


FIG 2

Disassembling the Waste Bin

1. **Remove the drum spur gear axle.**
   The drum spur gear axle is located adjacent to the drum spur gear. Remove the two screws that secure the axle, then remove the axle (FIGs 3 and 4).

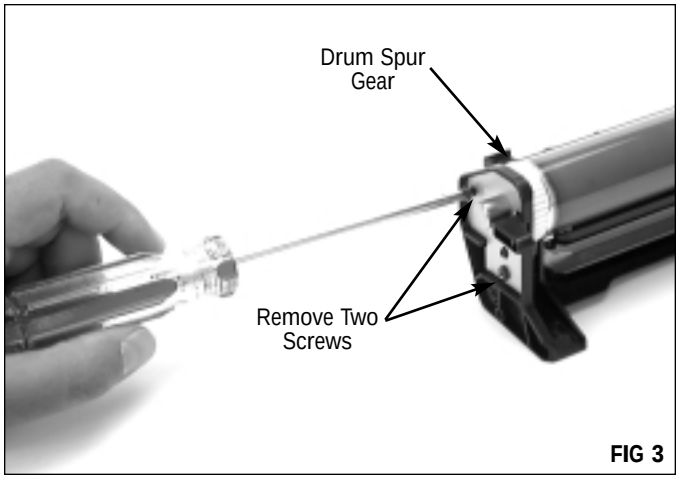


FIG 3

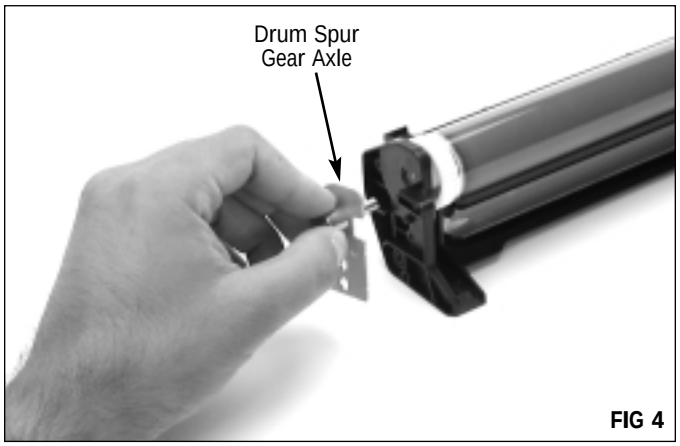


FIG 4

2. **Remove the waste bin bearing plate.**
   The bearing plate (black in color) is located adjacent to the drum helical gear. Remove the two screws that secure the bearing plate to the hopper (FIG 5).

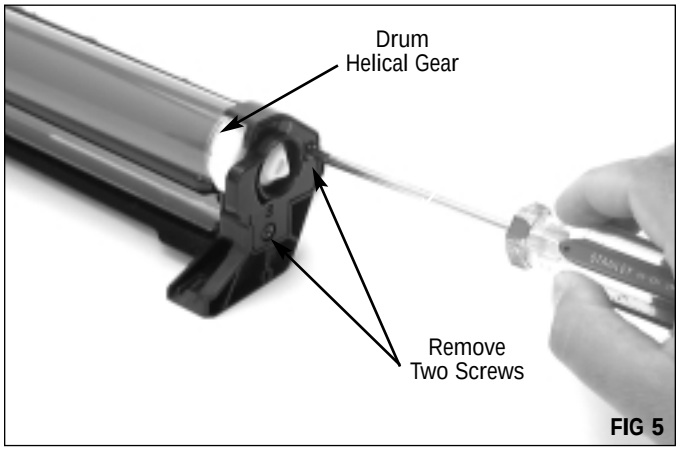


FIG 5

Remove the bearing plate (FIG 6).

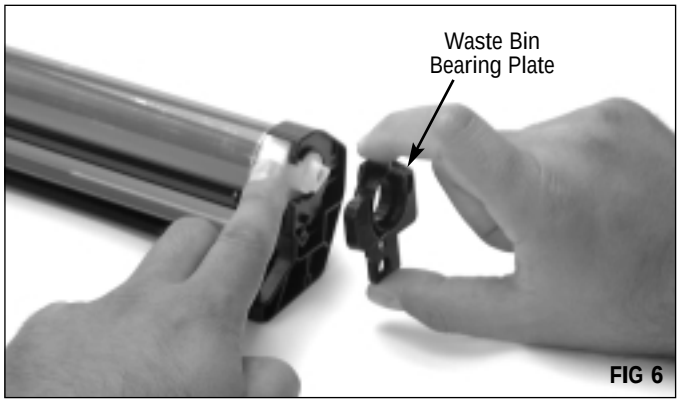


FIG 6

3. **Remove the drum.**
Grasp the drum by the gears and lift the drum from the cartridge (FIG 7). If you plan to reuse the drum, store it in an area where it is protected from light and impact damage.

To minimize the risk of second cycle field failures, SCC recommends using the OEM drum, as well as any SCC HP5000 system-qualified drum, only one cycle. Drum life can vary depending on your customer's usage.

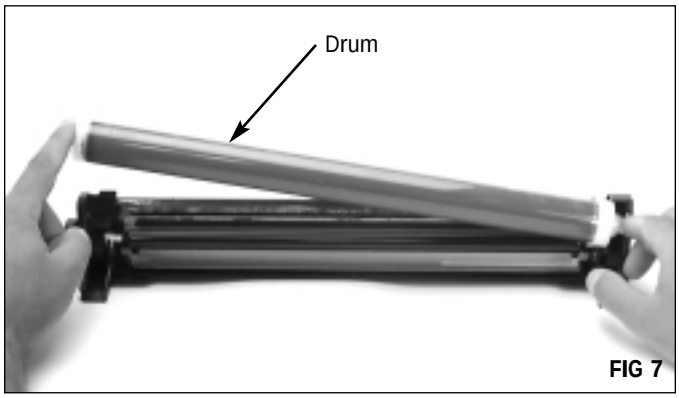


FIG 7

CAUTION Once the drum is removed from the cartridge, the surface of the mag roller is exposed. Take extreme caution not to touch or scratch the mag roller when removing the cartridge pins and separating the cartridge. For added protection against damage, place a clean, Lint-Free Cloth (LFCCLOTH) over the mag roller.

4. **Remove the Primary Charge Roller (PCR).**
Use a pair of needlenose pliers to grasp the PCR shaft and lift the PCR from the cartridge (FIG 8). Handle the PCR by the axle or use clean latex gloves. If you plan to reuse the PCR, store it on a flat uniform surface.

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

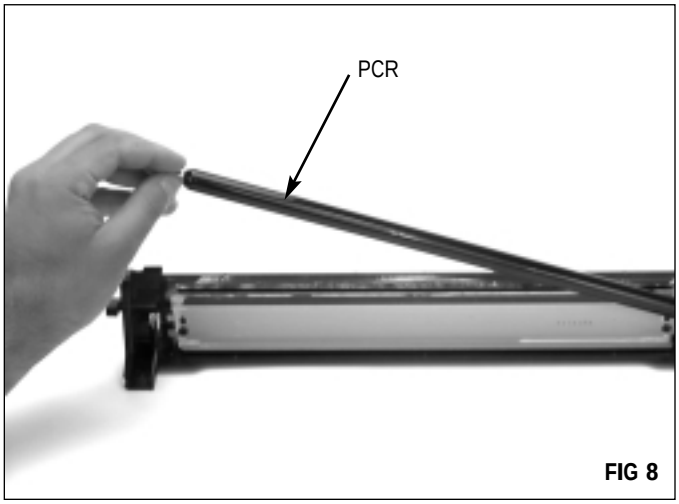


FIG 8

Disassembling the Toner Hopper Section

1. **Lower the Drum Shutter.**
   If you do not plan to split the cartridge, pull the drum shutter back to its "open" position. Secure the drum shutter actuator arm to the fixture by placing it under the small block on the fixture (FIG 9). This will keep the drum shutter out of your way while working with the cartridge.

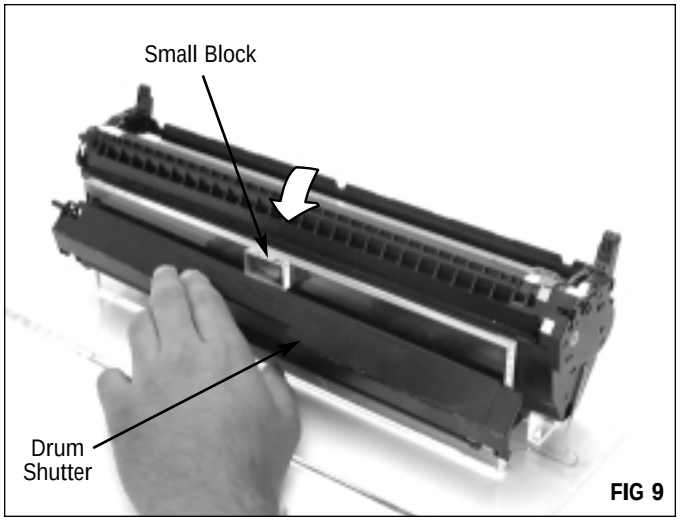


FIG 9

2. **Remove the drum shutter.**
   If you are splitting the cartridge you must remove the drum shutter and the gear housing end plate.

   Position the hopper section so that the mag roller end plate is facing you. Rotate the drum shutter actuator arm in the direction indicated by the arrow in FIG 11 to position the actuator arm tab to the left of the actuator spring (FIG 10).

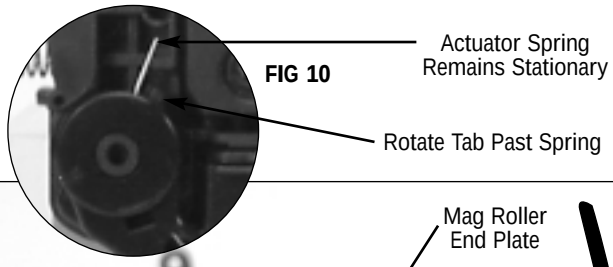


FIG 10

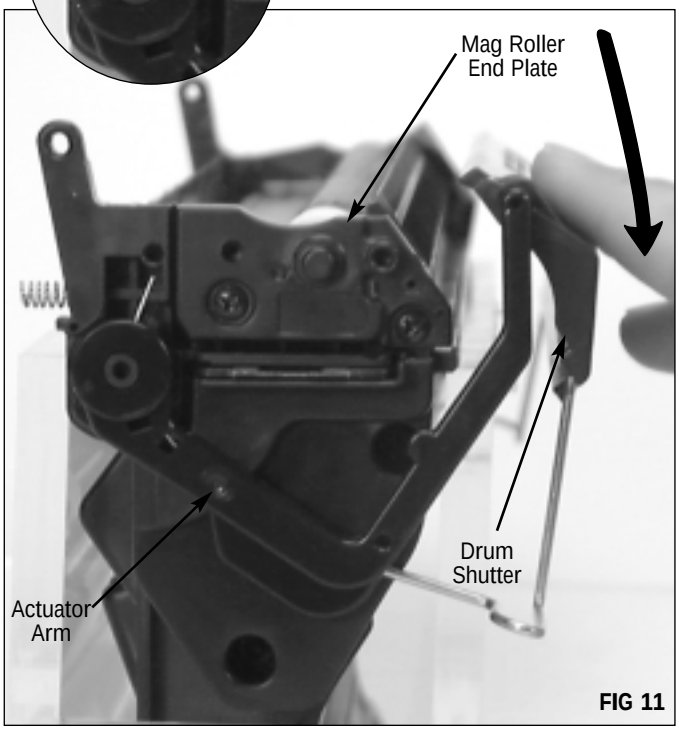


FIG 11

Using a pair of needlenose pliers, place the spring on actuator arm tab as shown in FIG 12. This keeps the spring installed on the actuator arm when the arm is removed from the hopper.

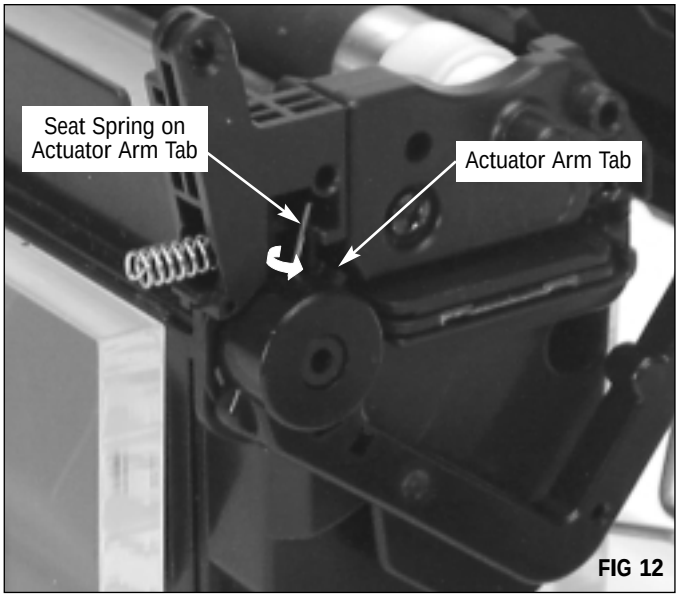


FIG 12

Use a flat head screwdriver to carefully pry the actuator arm from the hopper (FIG 13). Note that a small locking clip secures the actuator arm to the hopper body.

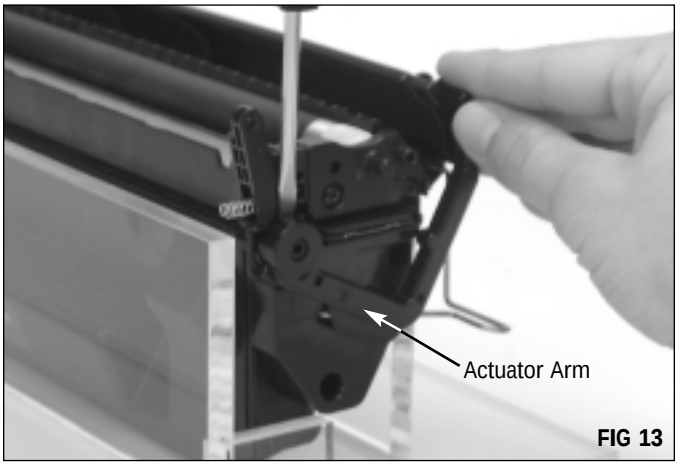


FIG 13

Remove the actuator arm from the hopper body (FIG 14).

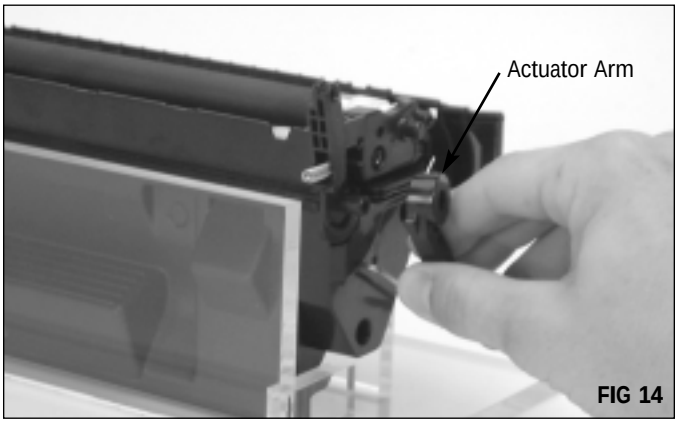


FIG 14

Disassembling the Hopper Section

Remove the actuator arm support bar from the hopper body (FIG 15).

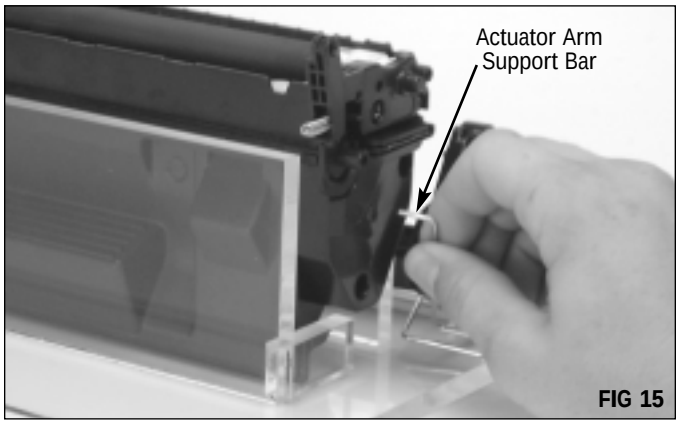


FIG 15

Turn the hopper so that the gear housing end plate is facing you. The support bar is installed in a keyed positioner bushing. Position the support bar as shown in FIG 16, then remove the bar from the gear housing end plate.

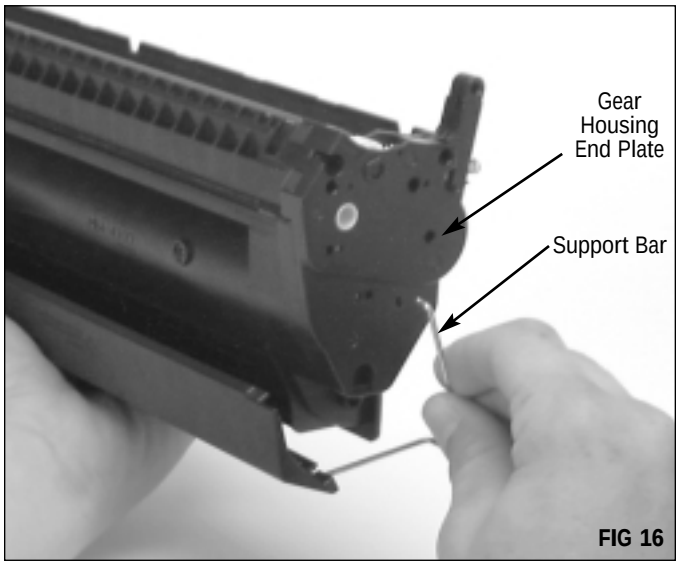


FIG 16

3. **Remove the mag roller end plate.**
Remove two screws that secure the end plate (FIG 17).

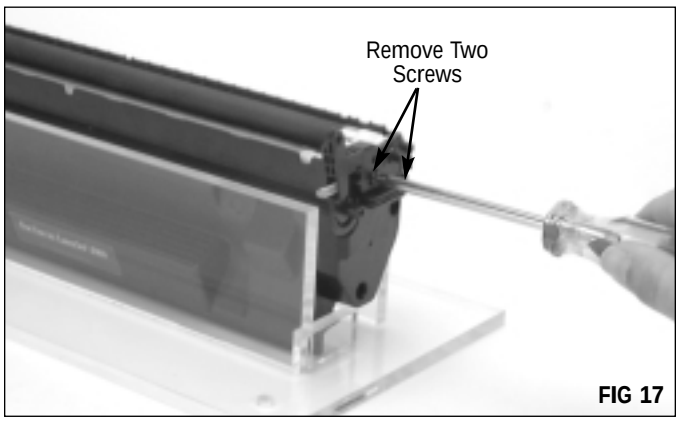


FIG 17

Remove the mag roller end plate from the hopper (FIG 18).

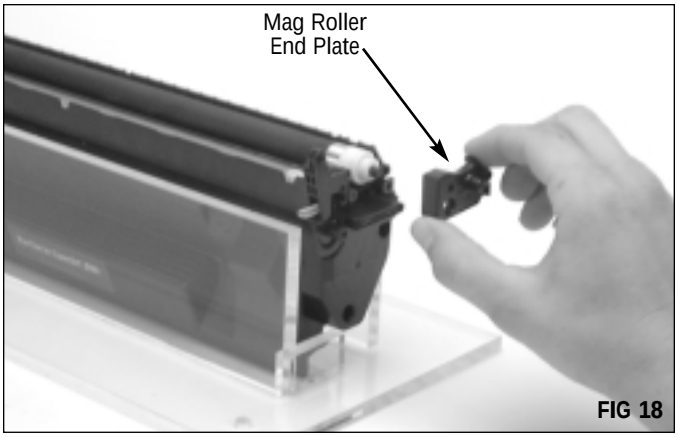


FIG 18

4. **Remove the gear housing end plate.**
Remove the three screws from the end plate (FIG 19).

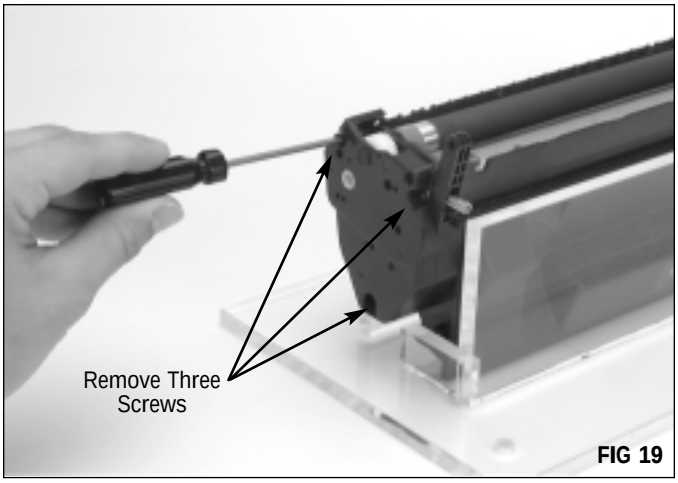


FIG 19

Remove the end plate from the hopper (FIG 20). Note that the gears in the hopper drive train stay attached to the end plate when it's removed.

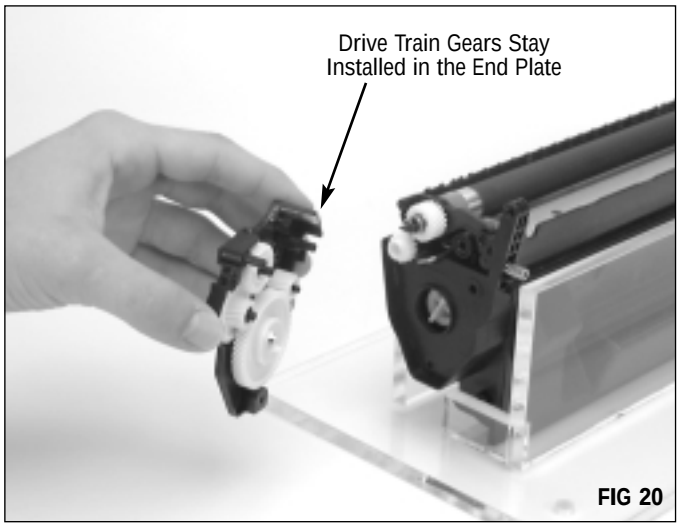


FIG 20

Disassembling the Toner Hopper Section

5. **Remove the mag roller drive gear (FIG 21).**

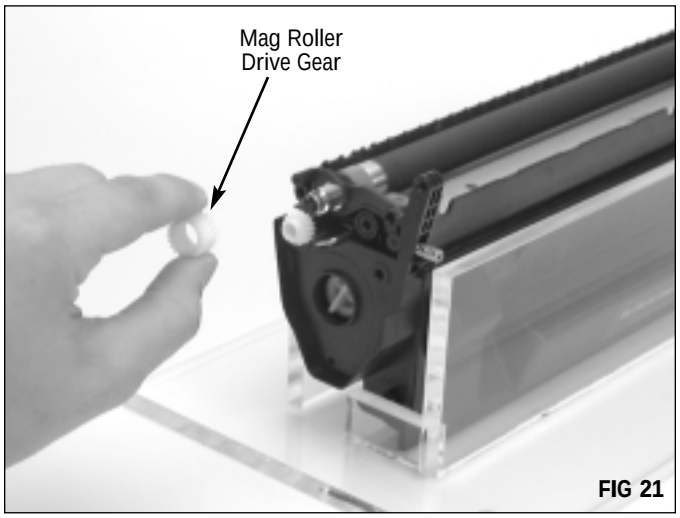


FIG 21

6. **Remove the mag roller.**
   Grasp each end of the mag roller as shown in FIG 22 and lift it from the hopper. If you plan to reuse the mag roller, store it on a soft surface.

DO NOT touch the surface of the mag roller with your fingers or scratch the surface. Store the mag roller on a soft surface, but DO NOT stack the rollers on top of each other.

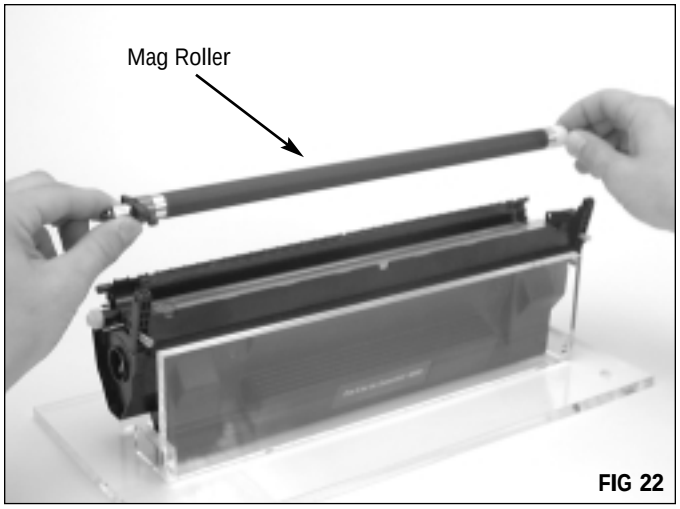


FIG 22

7. **Remove the mag roller bushings , stabilizer and electrical contact spring (FIG 23).**

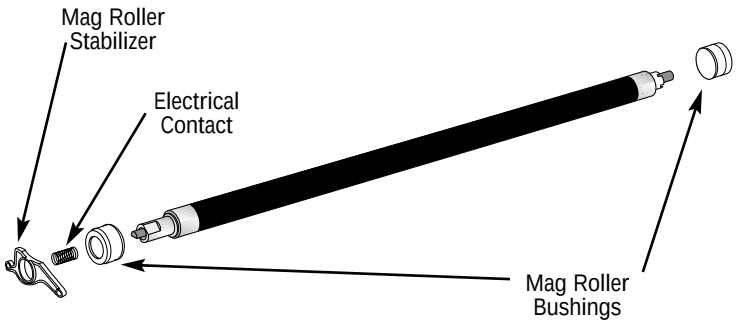


FIG 23

8. **Remove the doctor blade.**
Remove two screws from the doctor blade stamping (FIG 24).

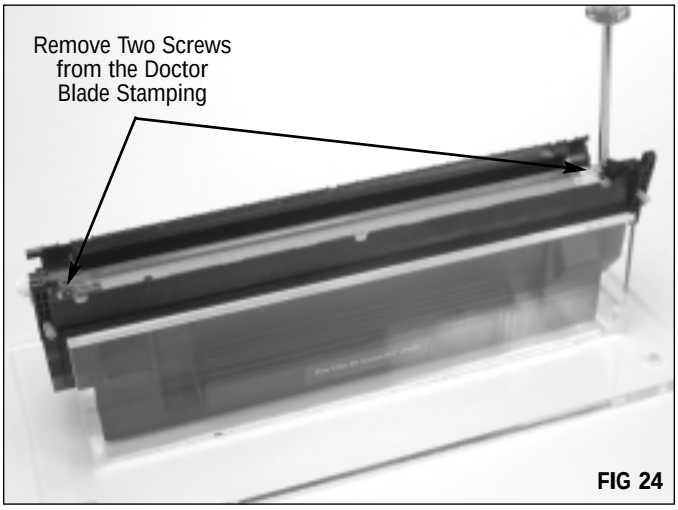


FIG 24

Remove the plastic wipers (FIG 25). Do not lose these as you will reuse them if you install a replacement blade.

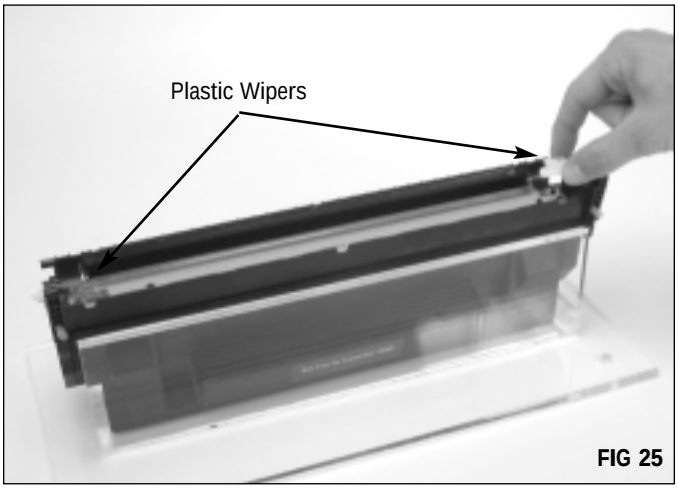


FIG 25

Use a flat blade screwdriver to carefully pry up the ends of the doctor blade and remove (FIG 26). Take care not to break the locator posts on the hopper body.

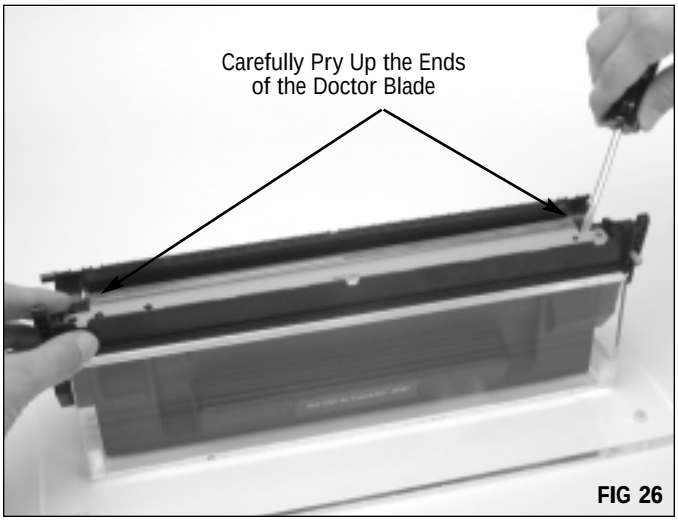


FIG 26

Disassembling the Toner Hopper Section

Then, lift the blade from the hopper as shown in FIG 27.

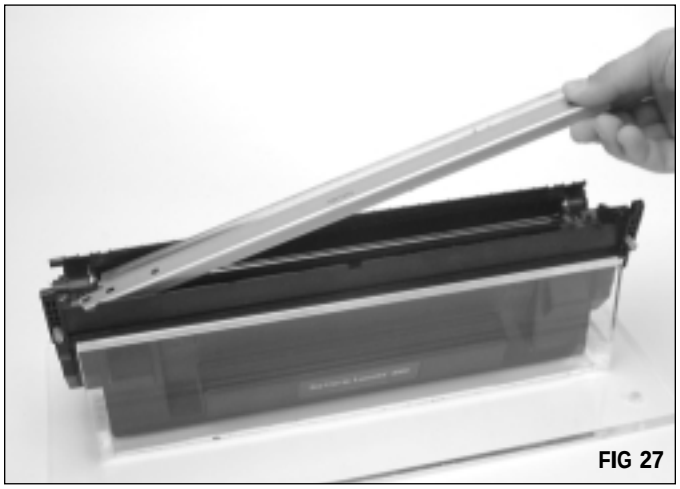


FIG 27

Remove the shims from the hopper (FIG 28).

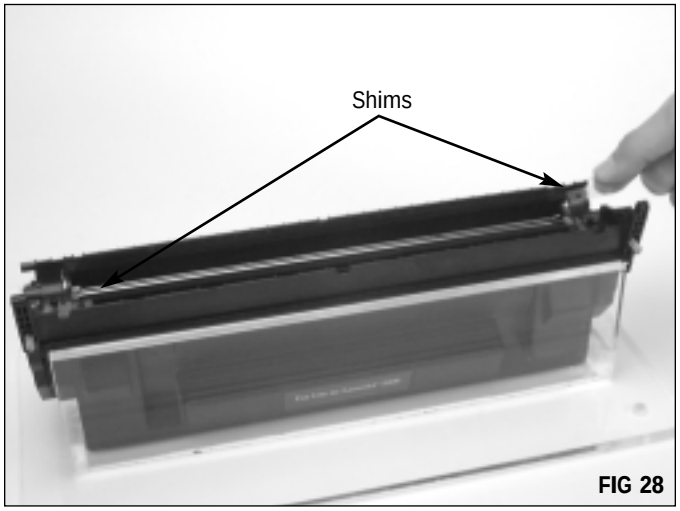


FIG 28

9. **Remove the toner paddle bar and gear.**
Remove the toner paddle bar drive gear (FIG 29).

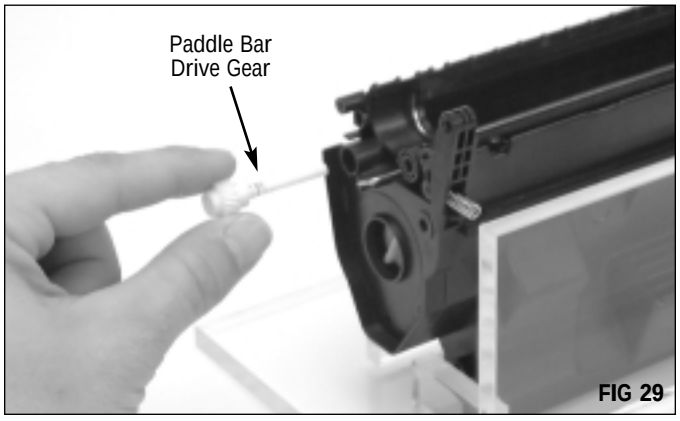


FIG 29

Use a pair of needlenose pliers and remove the toner paddle bar (FIG 30). Slide it to the left until the right side is free. Then, lift it out of the hopper.

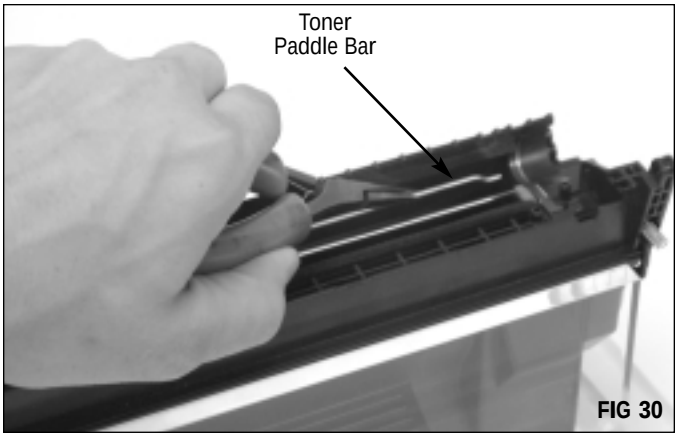


FIG 30

10. **Clean the hopper.**
Dump the toner from the hopper and clean thoroughly with dry, filtered compressed air (FIG 31). Clean toner and debris from the foam and felt sealing components.

CAUTION **Take care not to bend the toner low sensor bar.**

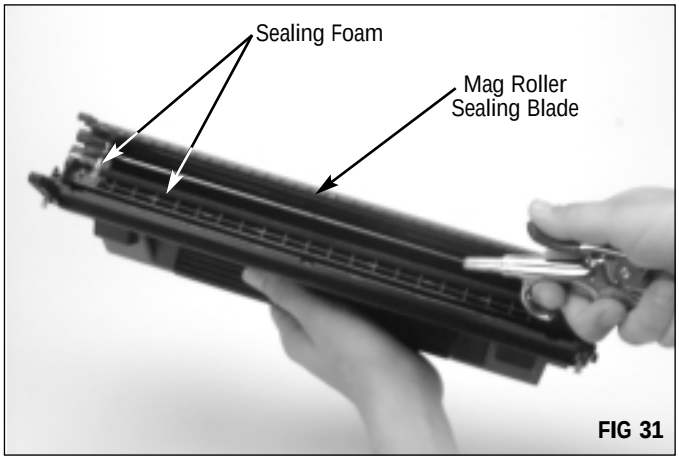


FIG 31

Disassembling the Toner Hopper Section

11. **Inspect the sealing components in the hopper section and replace as required (FIG 32).**
Foam components such as the doctor blade end foam and the doctor blade sealing foam should display a smooth, clean surface. Make sure the foam materials are secured in the correct position. Replace the foam components that are ripped, pitted or dislodged.

Mag roller sealing end foams should be replaced if torn, pitted or missing. Note that foam replacement requires removal of the mag roller sealing blade.

The mag roller sealing blade should exhibit a smooth, flat surface along the entire length of the blade. Make sure the blade is fully attached to the cartridge and that the ends of the blade overlap the mag roller end magnets. Otherwise leakage can occur.

The hopper compression springs should be secured to the mounting posts on the hopper. Stretched or missing compression springs can be the cause of light print problems. To maintain uniform compression on both sides of the hopper, we recommend replacing both springs even if only one spring appears to be damaged or is missing.

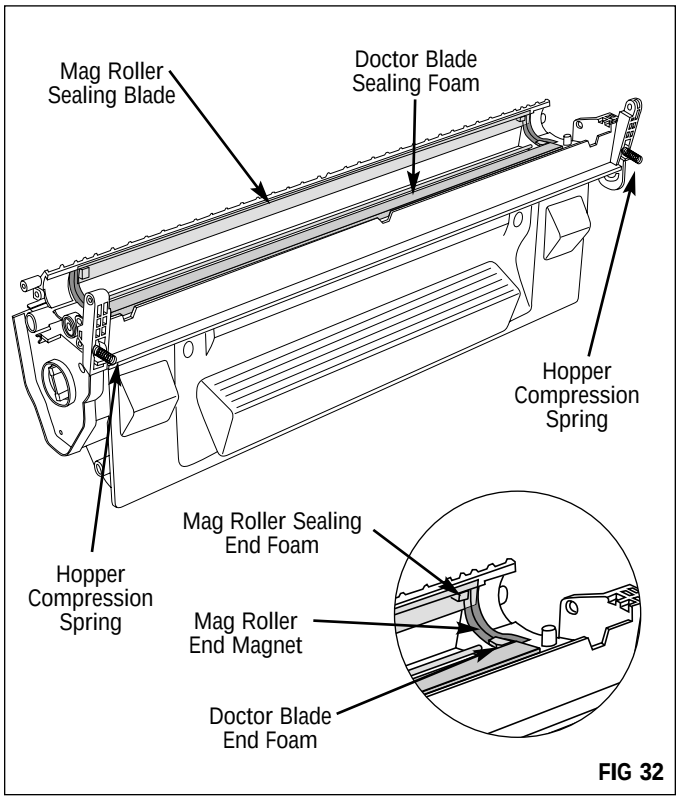


FIG 32

Install a Seal (Optional) and Fill the Hopper

If you plan to ship the cartridge, SCC recommends sealing the hopper as your best protection against toner leakage. The design of the hopper prohibits the use of insertable seals; therefore the hopper should be split and sealed to achieve the most effective seal. For splitting and sealing system information, contact your SCC Sales Team for availability and product information.

If you do not seal the cartridge, fill the hopper through the toner port with 500 grams of toner. Due to the potential for leakage, SCC does not recommend shipping unsealed cartridges. When filling the cartridge take care not to bend the toner low sensor bar or the agitator bar. After filling the cartridge, follow the hopper assembly instructions in the next section.

Assembling the Toner Hopper Section

1. **Replace the toner paddle bar and gear.**
   Use needlenose pliers and install the toner paddle bar. Insert the left side of the bar into the hole on the inside of the hopper then insert the right side as shown (FIG 33).


FIG 33

   Install the toner paddle bar drive gear into hole at the end of the cartridge as shown (FIG 34). The bent part of the bar will fit into the slot at the end of the gear axle.

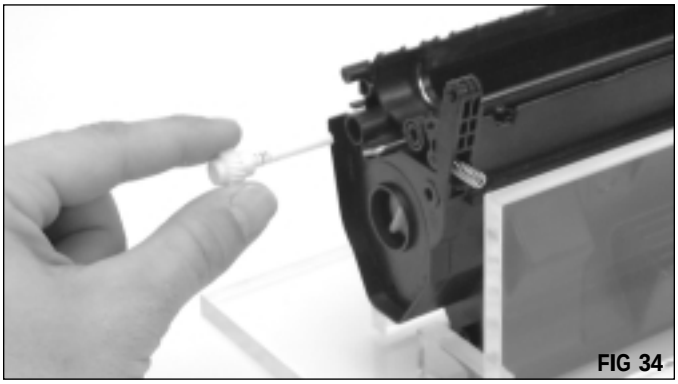


FIG 34

2. **Clean and inspect the doctor blade.**
   Replace the doctor blade if pre-test prints indicate doctor blade-related print defects. Otherwise, clean the blade with dry, filtered compressed air (FIG 35).

CAUTION Do not use alcohol or alcohol-based cleaners to clean the silicon blade.


FIG 35

3. **Install the doctor blade.**
   Position the doctor blade shims over the locating posts on the toner hopper section (FIG 36).

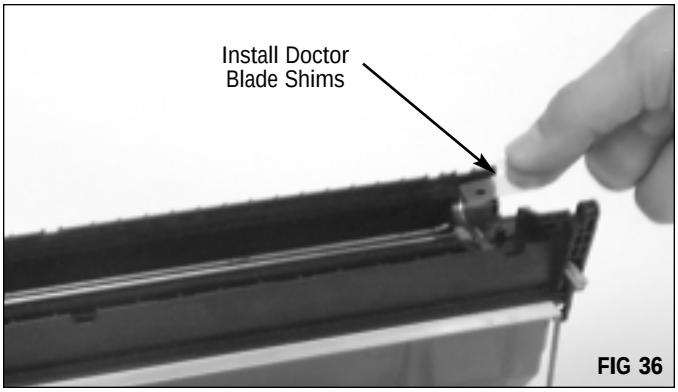


FIG 36

Assembling the Toner Hopper Section

Position the doctor blade stamping over the locating posts on the toner hopper section (FIG 37).

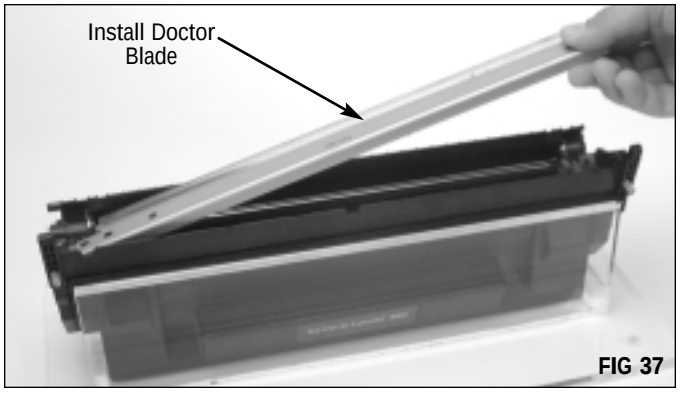


FIG 37

Position the plastic wipers onto the doctor blade and over the locating posts on the toner hopper section (FIG 38). Secure the tabs and the doctor blade with two Phillips screws.

Note that the plastic wipers are not interchangeable.

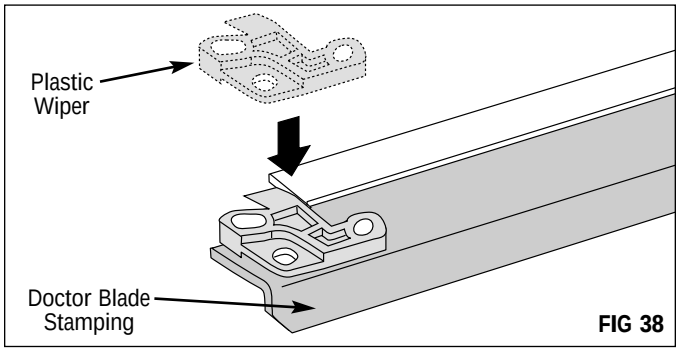


FIG 38

4. **Clean and inspect the mag roller.**
   If you plan to reuse the OEM mag roller, clean it with dry, filtered compressed air (FIG 39).

CAUTION Be careful not to scratch the coated surface of the mag roller or touch the surface with your bare fingers.

Replace the mag roller if it is damaged or causes light print problems.


FIG 39

5. **Clean the mag roller electrical contact.**
   Clean the spring contact on the mag roller with a cotton swab dampened with 91-99% isopropyl alcohol (FIG 40).

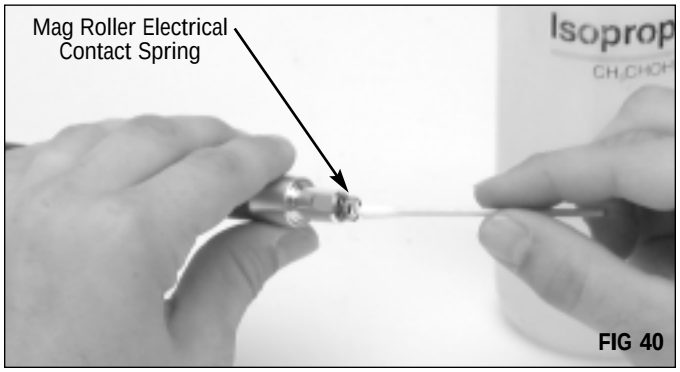


FIG 40

6. **Clean the mag roller bushings.**
Clean the bushings with a Lint-Free Swab (LFSWAB) or a Lint-Free Cleaning Cloth (LFCCLOTH) (FIG 41).

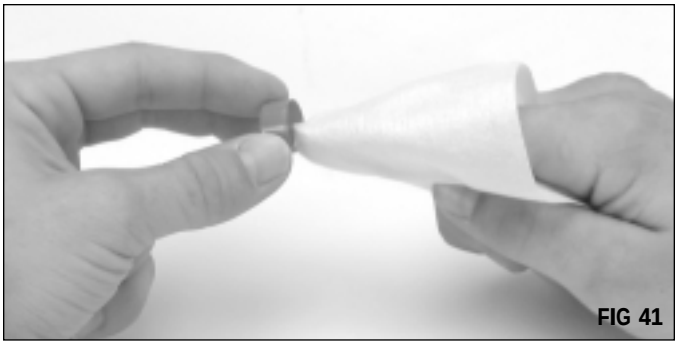


FIG 41

7. **Install the mag roller bushings, stabilizer bearing and stabilizer.**
Note that the red mag roller bushing is installed on the drive gear end of the mag roller; the yellow bushing is installed on the non-geared side of the mag roller (FIG 42).

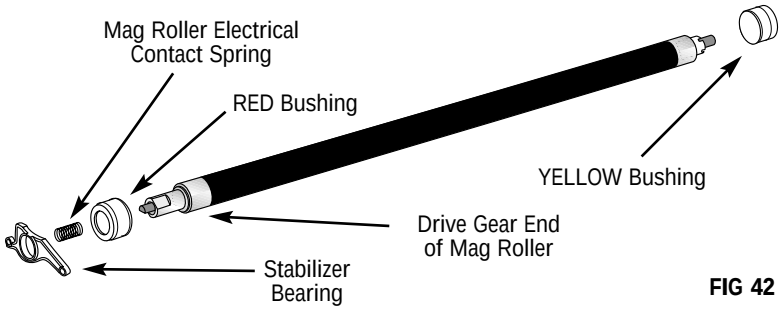


FIG 42

8. **Install the mag roller.**
The mag roller is installed with the stabilizer and the contact spring on the drive gear end of the cartridge (FIG 43).

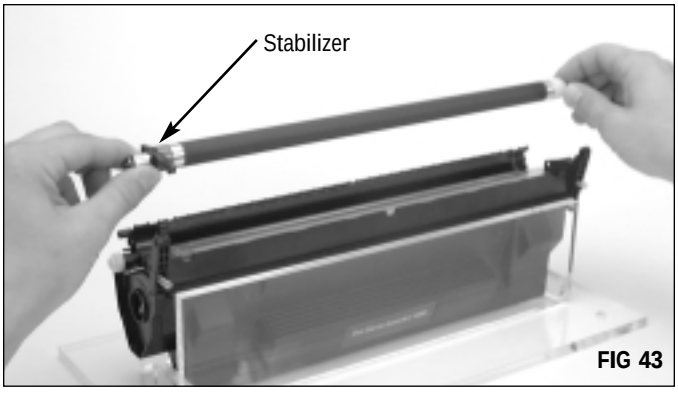


FIG 43

The mag roller stabilizer should seat in a slot in the hopper body as shown in FIG 44.

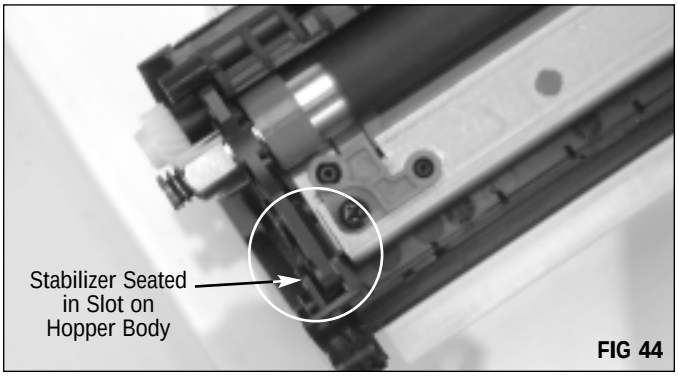


FIG 44

Assembling the Toner Hopper Section

9. Install the mag roller drive gear (FIG 45).
Note the proper orientation of the gear. It will fit on the mag roller in either direction. The end of the gear should be flush with the end of the mag roller axle.

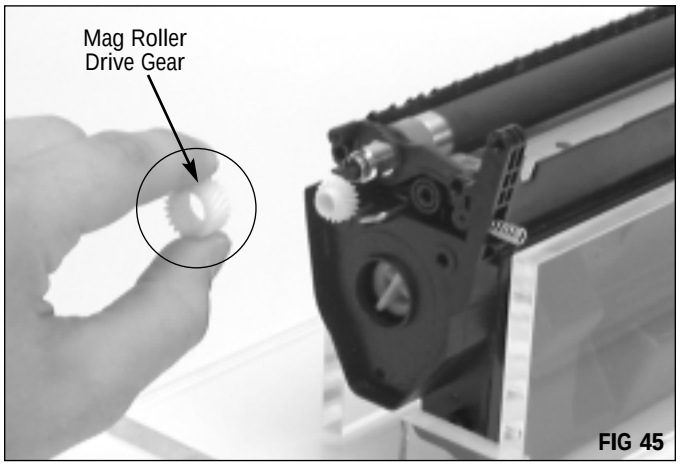


FIG 45

10. Clean the mag roller electrical contact.
The contact is located in the mag roller end plate. Clean the contact with a Lint-free Swab (LFSWAB) dampened with isopropyl alcohol (FIG 46).

Apply a thin layer of Conductive Cartridge Lubricant (CONCLUBE) to the electrical contact (FIG 47). Use the wooden end of a swab as an applicator. For additional information about the use and application of cartridge lubricant, refer to SSS 100, *Cleaning Tools, Tips and Techniques*.

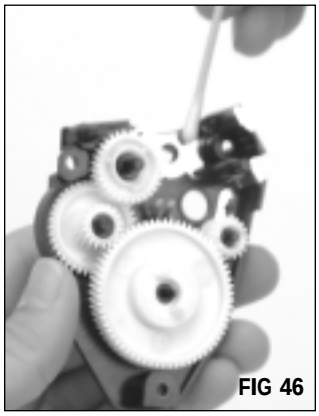


FIG 46


FIG 47

11. Install the gear housing end plate (FIG 48).
Note that the gears in the drive train should already be installed and secured in the end plate. The mag roller axle is keyed and fits into a keyed positioner bushing on the end plate. Make sure the mag roller axle is fully installed in the end plate.

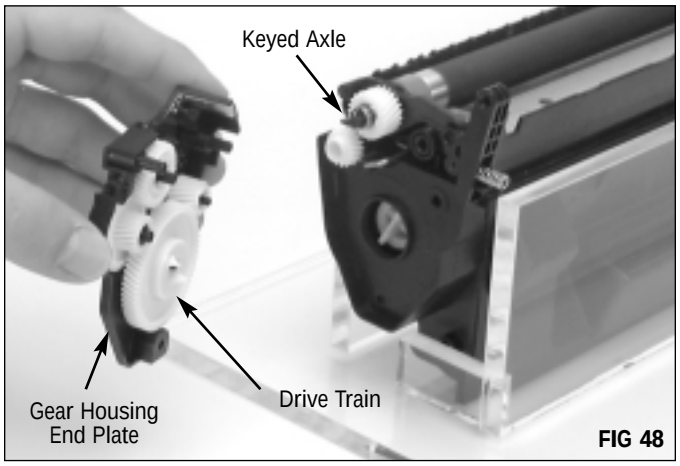


FIG 48

Secure the end plate with three Phillips screws (FIG 49).

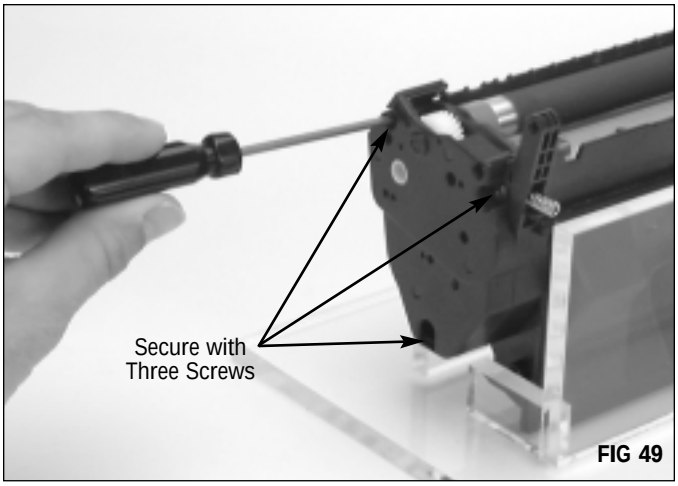


FIG 49

12. Install the mag roller end plate (FIG 50).

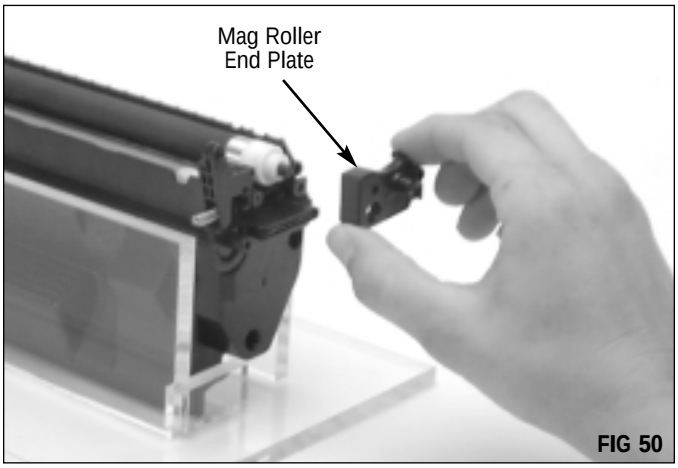


FIG 50

Secure the end plate with two screws (FIG 51).

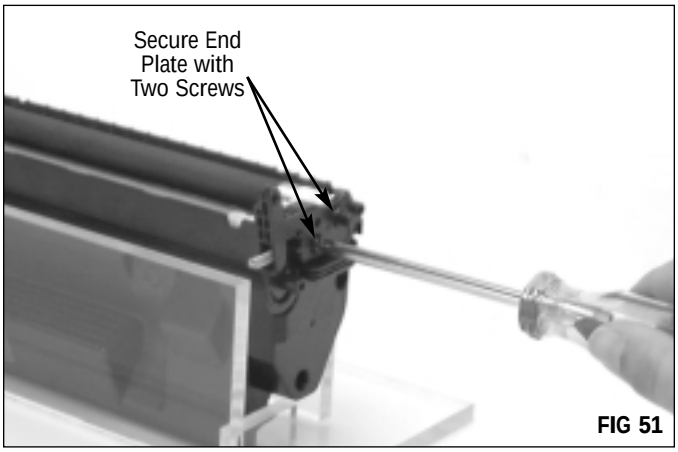


FIG 51

Assembling the Toner Hopper Section

13. Install the drum shutter.
First, make sure the actuator arm spring is properly positioned in the actuator arm as shown in FIG 52A.

Position the shutter underneath the hopper as shown in FIG 52. Install the drum shutter support arm in the keyed positioner bushing on the gear housing end plate.

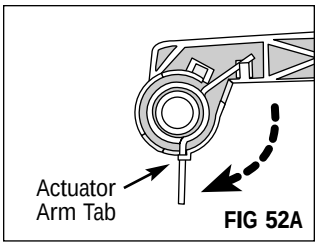


FIG 52A

Use a Pair of Needlenose Pliers to Rotate the Leg of the Spring and Set it Behind the Tab

With the Interior Surface of the Shutter Face Up, Position the Shutter at the Base of the Hopper

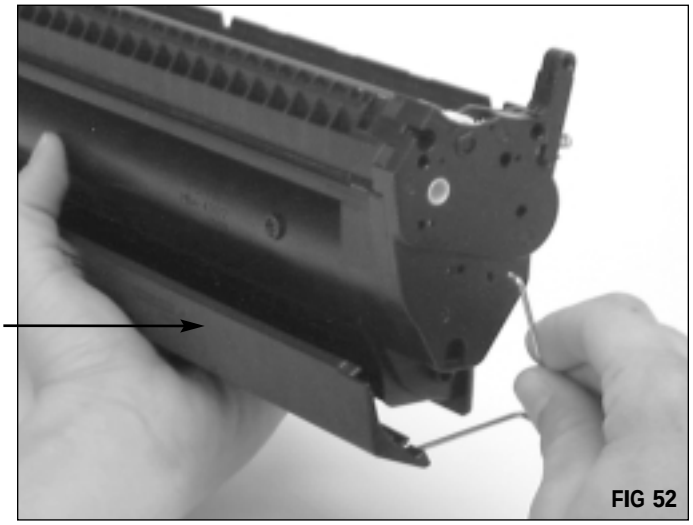


FIG 52

At the opposite end of the hopper, install the support arm in the corresponding receptacle on the hopper body (FIG 53).

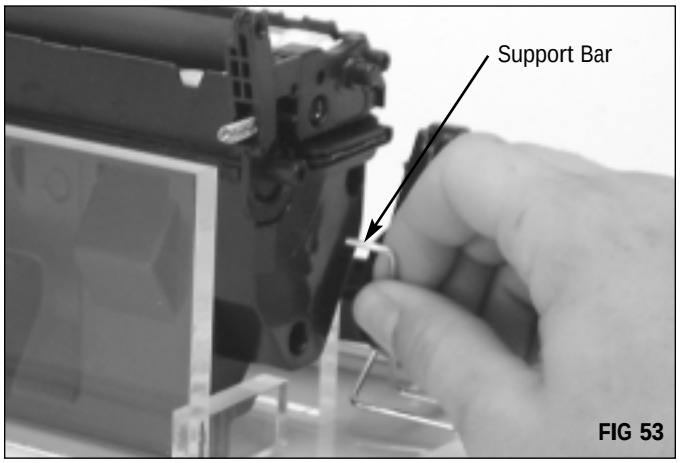


FIG 53

Install the actuator arm. A locking clip holds the arm in place on the hopper body; make sure the actuator arm snaps securely in place (FIG 54).

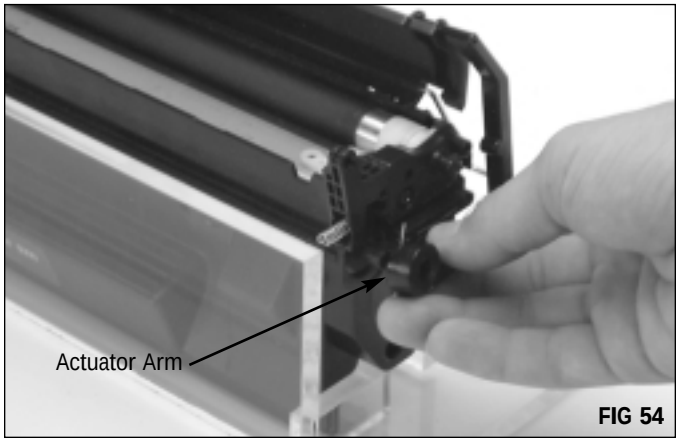


FIG 54

Rotate the actuator arm until the spring is positioned to the right of the support bar on the hopper body (FIG 55).

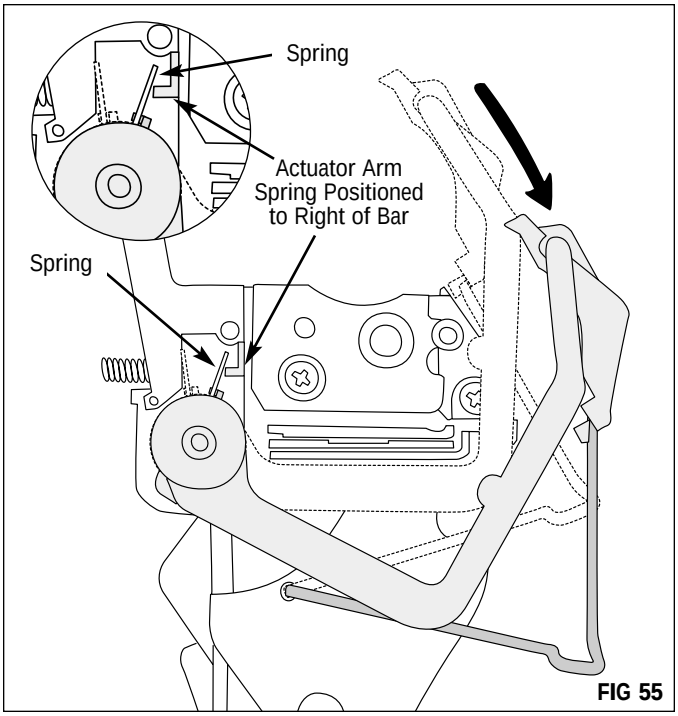


FIG 55

Using a pair of needlenose pliers, pull the end of the actuator arm spring over to the support bar (FIGs 56 and 57).

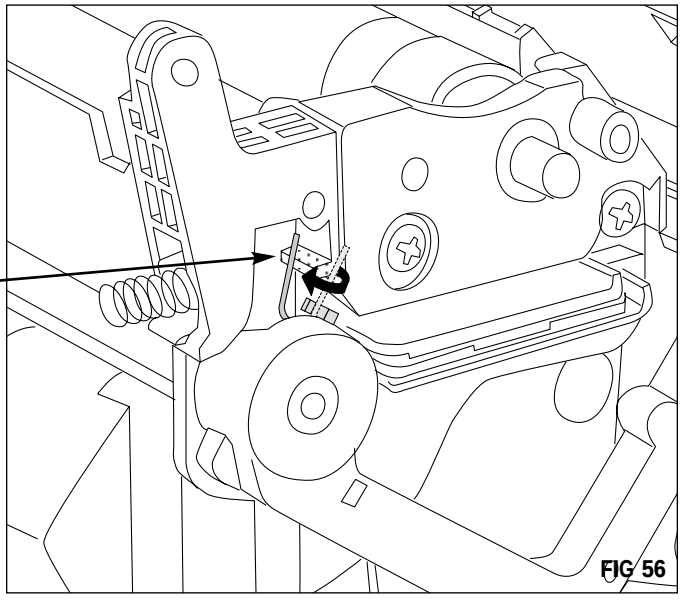


FIG 56

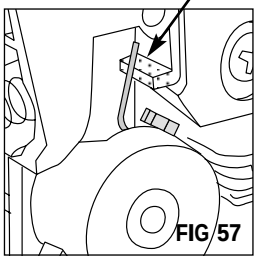


FIG 57

Assembling the Toner Hopper Section

With the end of the spring seated against the support bar, tension is applied to the actuator arm allowing the drum shutter to close automatically (FIG 58).

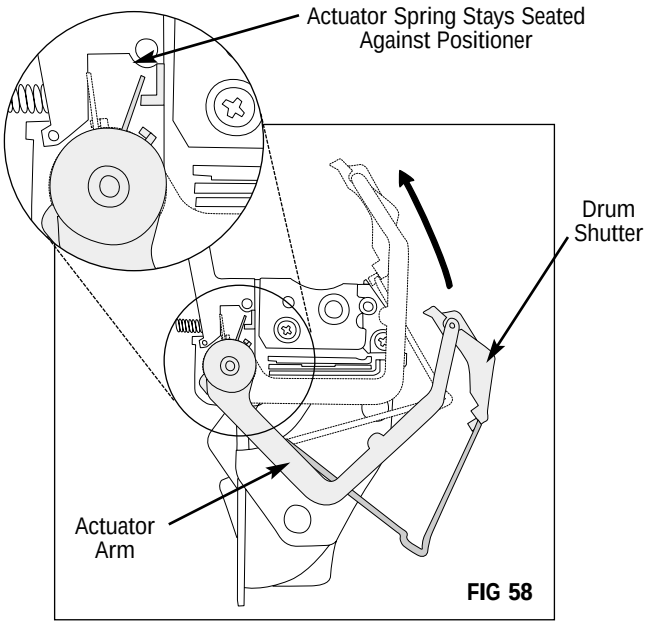


FIG 58

Disassembling/Assembling the Waste Bin Section

1. **Remove the wiper blade.**
   Remove the two screws that secure the wiper blade (FIG 59).

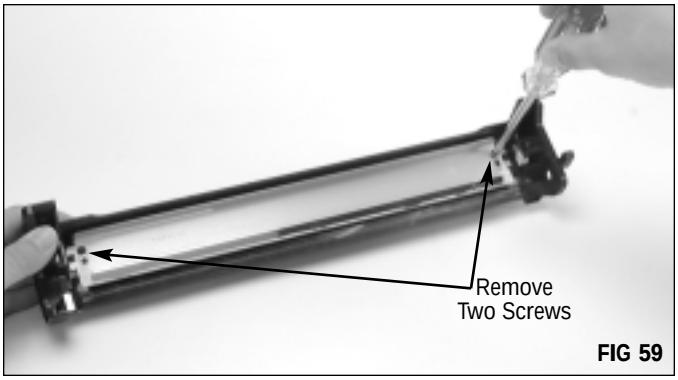


FIG 59

   Use a pair of needlenose pliers to grasp the stamping and remove the wiper blade from the waste bin (FIG 60).

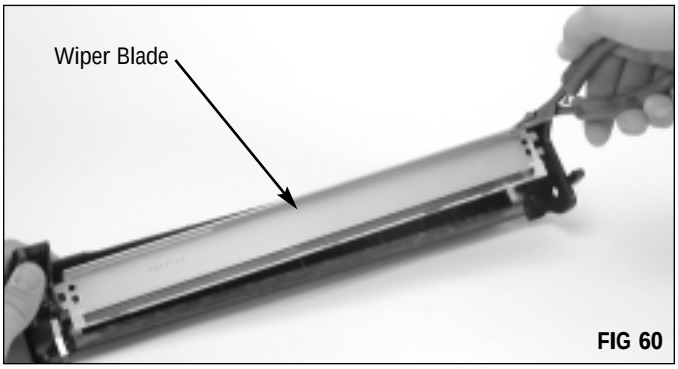


FIG 60

2. **Clean the waste bin with dry, filtered compressed air.**
   Direct compressed air on and around foam and felt sealing components to remove as much toner and debris as possible (FIG 61).

CAUTION **Take care not to bend or dislodge the recovery blade.**

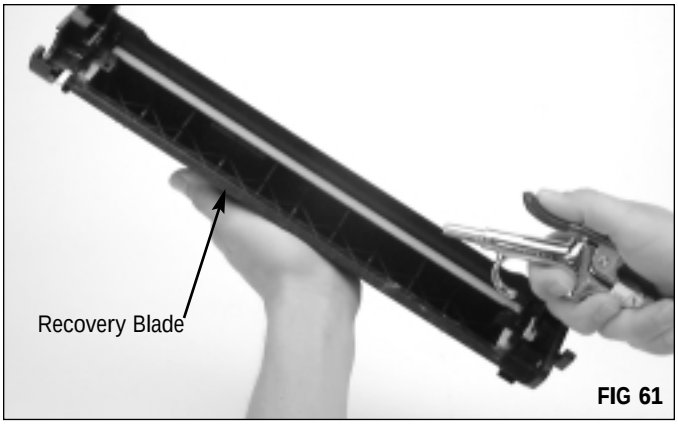


FIG 61

3. **Clean the PCR saddles.**
   Clean toner residue from the saddles with a Lint-Free Swab (LFSWAB) or Cotton Swab (QTIP) dampened with 91-99% isopropyl alcohol (FIG 62).

CAUTION **Do not apply conductive lubricant to the PCR saddles.**

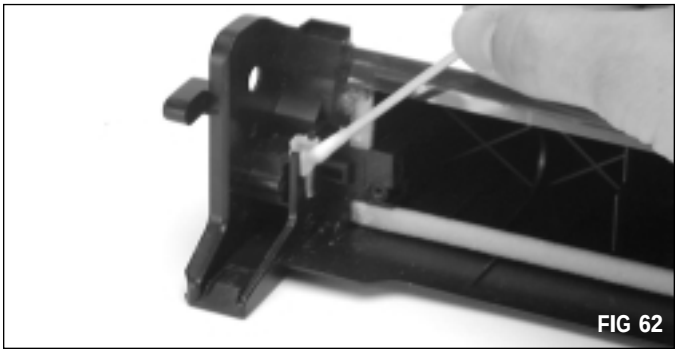


FIG 62

Disassembling/Assembling the Waste Bin Section

4. **Inspect the wiper blade sealing foam, recovery blade, wiper blade end foams and wiper blade end felts (FIG 63).**
Foam components, such as the wiper blade sealing foam and wiper blade end foam should display a smooth surface without pits or tears in the material. Replace the foam if damaged or missing. Tears in the material can allow toner leakage.

Felt components such as the wiper blade end felts should appear clean, intact and secured to the cartridge. Replace the felts that are compacted with toner or display a shiny surface. Make sure the felt is securely attached to the cartridge.
The recovery blade should display a smooth, flat surface without kinks or waviness along the edge. Replace the recovery blade if it is damaged, dislodged or missing.

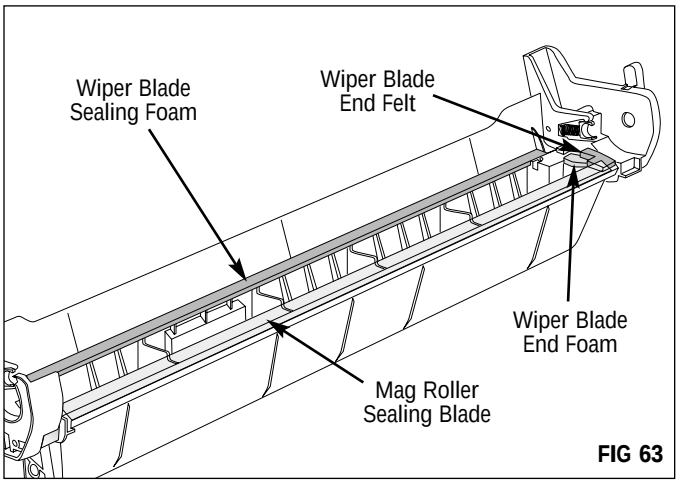


FIG 63

5. **Clean and inspect the wiper blade.**
To avoid damaging the working edge of the blade, SCC recommends cleaning the wiper blade only with dry, filtered compressed air (FIG 64). For best results, replace the wiper blade each time you replace the drum.

CAUTION For best results, we do not recommend using alcohol or any alcohol-based solvent to clean the polyurethane blade.


FIG 64

6. **Dip the edge of the wiper blade in Kynar®.**
Kynar Lubricating Powder (KPOW) applied to the working edge of the blade will help prevent blade "flip overs" during the first drum rotations of the remanufactured cartridge. Pad the wiper blade regardless of whether you are using a new replacement blade or reusing the old blade.

Dip the edge of the blade in a long, shallow container of Kynar lubricating powder as shown in FIG 65. Examine the blade to ensure even coverage. Repeat.

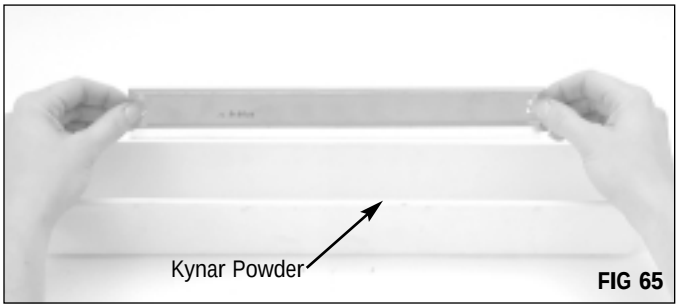


FIG 65

7. **Install the wiper blade.**
Position the wiper blade stamping over the locating posts in the waste bin (FIG 66).

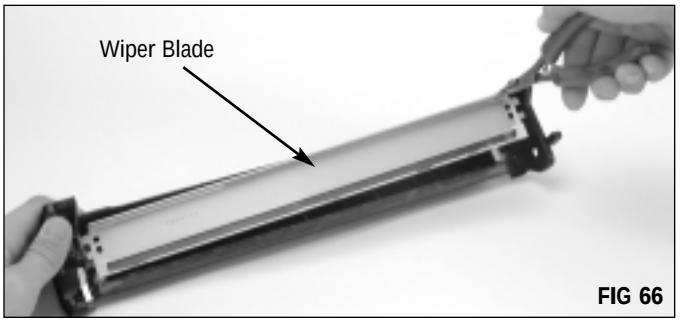


FIG 66

Secure the wiper blade with two screws (FIG 67).

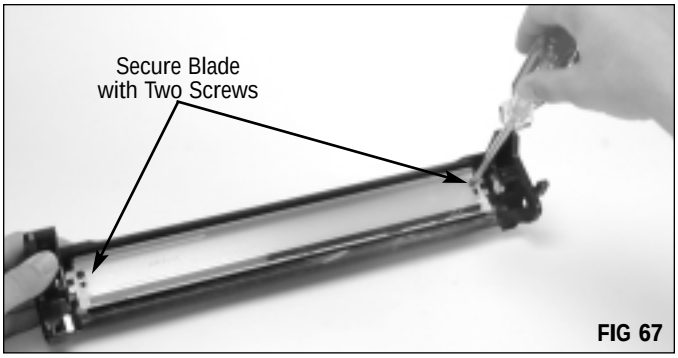


FIG 67

8. **Clean and inspect the PCR.**
If you are reusing the OEM PCR, clean the roller using a soft, lint-free cloth dampened with water.

Gently wipe the PCR in one direction. Be careful not to pinch or dent the surface of the PCR, as the material has poor memory (FIG 68).

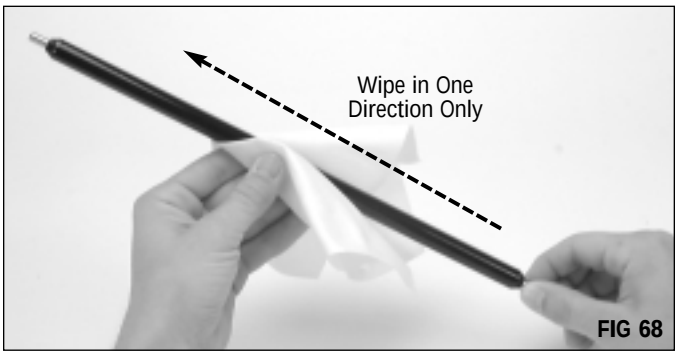


FIG 68

9. **Install the PCR (FIG 69).**
The PCR shafts should be firmly installed in the PCR saddles at each end of the waste bin.

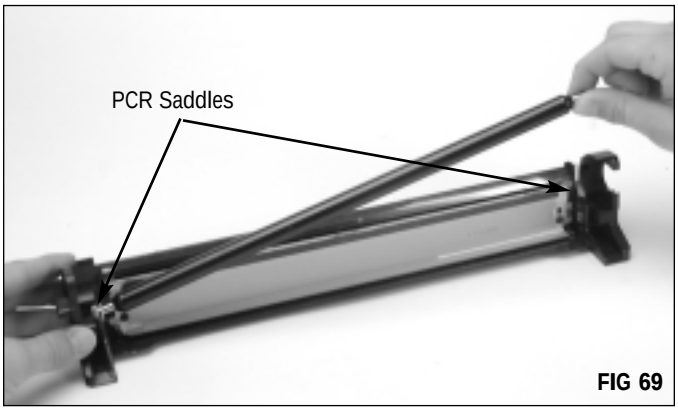


FIG 69

10. **Clean and evaluate the drum.**
If you plan to reuse the drum, clean it with compressed air or a soft, lint-free cloth (FIG 70).

IMPORTANT **For best results, do not use cleaning agents or coatings on the drum. Be careful not to nick the surface of the drum with the air nozzle.**


FIG 70

Disassembling/Assembling the Waste Bin Section

11. **Pad the coated area of the drum with Kynar Lubricating Powder (KPOW).**
Be careful to avoid powder on the gears (FIG 71).

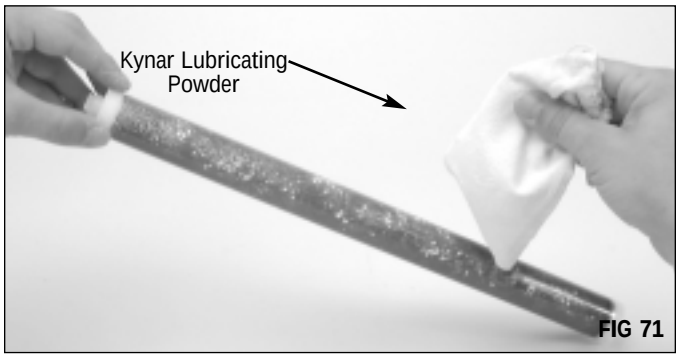


FIG 71

12. **Install the drum.**
Position the drum in the waste bin with the helical gear on the left as shown in FIG 72.

FIG 72

13. **Install the waste bin bearing plate.**
Note the orientation of the plate in FIG 73; secure the plate to the waste bin with two screws (FIG 74).

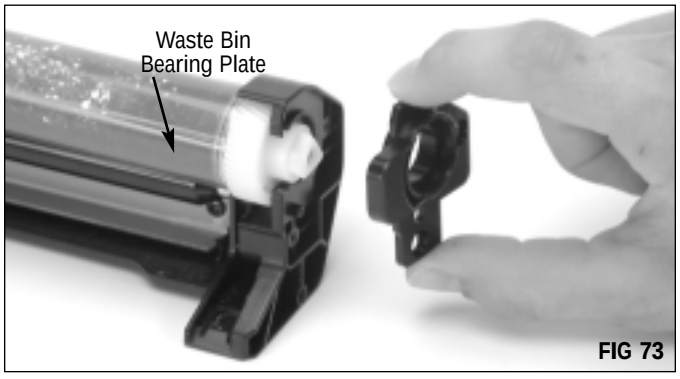


FIG 73

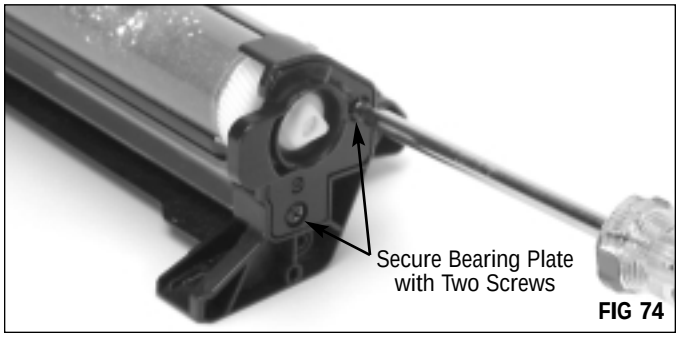


FIG 74

14. Install the drum spur gear axle.
Install the drum axle in the waste bin housing (FIG 75).

It is important to properly seat the drum spur axle against the waste bin housing before tightening the screws. The step on the inside of the axle should mate with the step on the waste bin housing as shown in FIG 75A. When the end plate is correctly installed, the positioning post on the waste bin housing will align in the center of the oblong slot in the end plate.

Drum Axle Seated Correctly

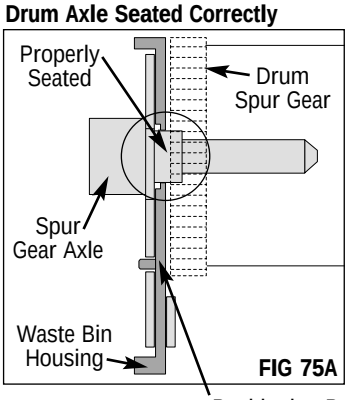


FIG 75A

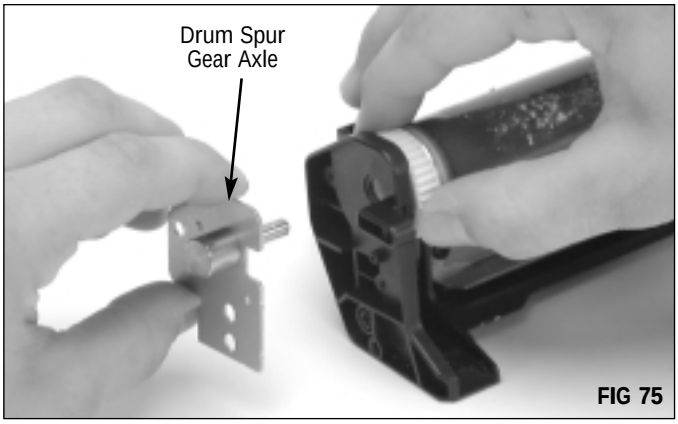


FIG 75

Secure the drum axle spur gear with two screws (FIG 76).

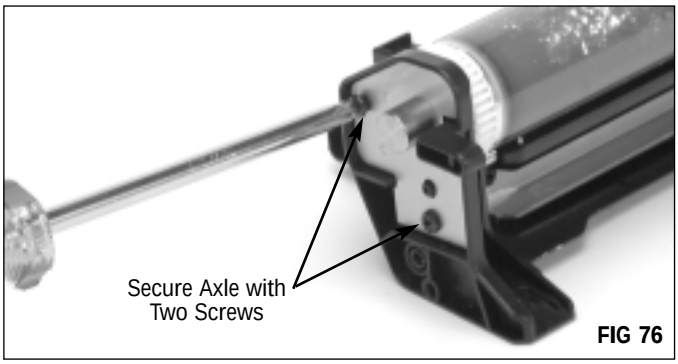


FIG 76

15. Rotate the drum.
Rotate the drum in its normal rotational direction, as indicated by the arrow in FIG 77, at least six full drum rotations. Rotating the drum will help lubricate the wiper blade and prevent the potential of blade "flip overs". The lubricating powder wiped from the drum by the wiper blade will deposit in the waste bin.

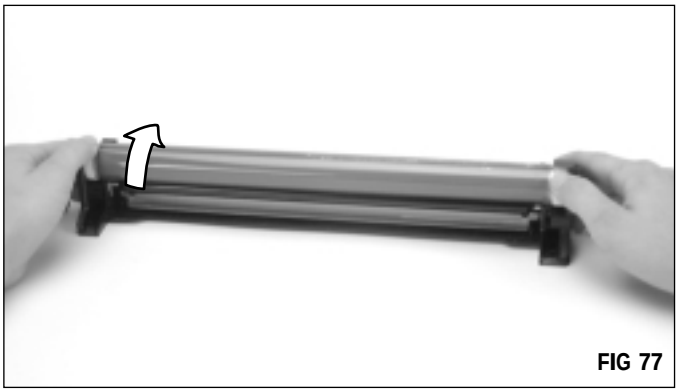


FIG 77

16. Wipe the lubricating powder from PCR.
After you have rotated the drum to remove the powder, rotate the drum again in small increments to clean the Kynar from the PCR. As you rotate the drum in its normal rotational direction, wipe the powder from the PCR with a Lint-Free Cleaning Cloth (LFCCLOTH) as shown in FIG 78.

You can also use dry, filtered compressed air instead of the lint-free cloth to remove the powder from the PCR.

IMPORTANT Make sure there is no lubricating powder present on the PCR, otherwise repeating voids in solid print areas at the PCR interval may result.

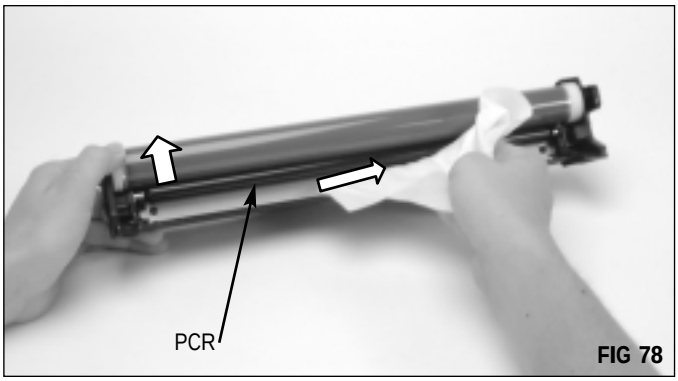


FIG 78

Assembling the Cartridge

1. **Bring the cartridge sections together.**
   Hold the drum shutter in the "open" position as shown in FIG 79. Bring the sections together.

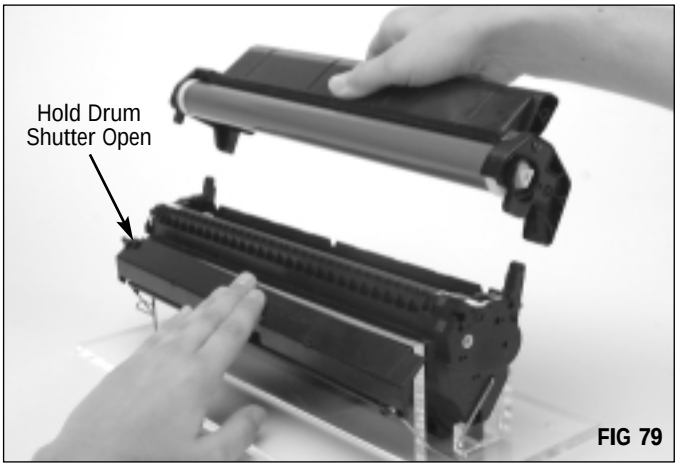


FIG 79

2. **Close the drum shutter (FIG 80).**

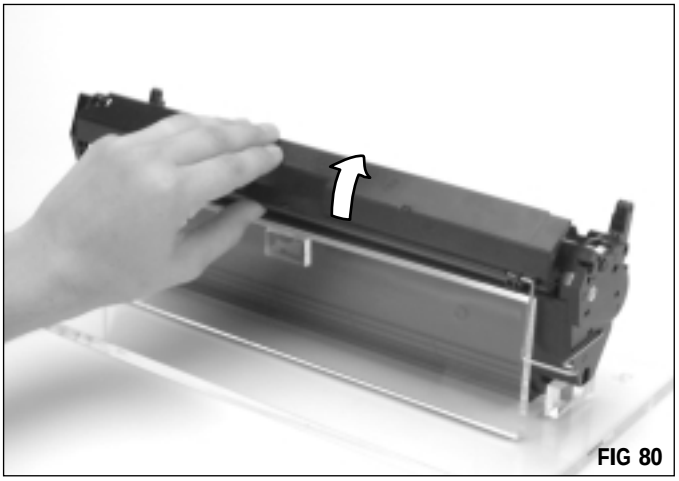


FIG 80

3. **Install the cartridge pins (FIGs 81 and 82).**
   To facilitate disassembly during subsequent remanufacturing cycles, use SCC Cartridge Pins (CARTPIN-L) to rejoin the cartridge sections. SCC's cartridge pins, designed for use in the HP5000 cartridge, can be removed easily using a pair of side cutters. After installing the cartridge pins, make sure the hopper compression springs are in their correct position

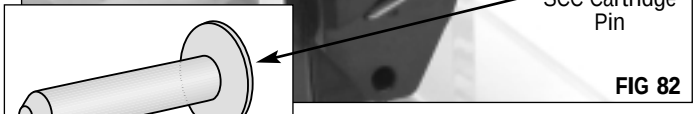


FIG 82

FIG 81

Notes

Critical Issues

About the Printer

Hewlett-Packard introduced the LaserJet 5000 (HP5000) in March 1998 only five months after the introduction of the 17-ppm LaserJet 4000. Like the LJ4000, the LJ5000 boasts 1200 dpi print quality in ProRes and FastRes modes, but offers a slightly slower print speed of 16 ppm and B-size printing capability. Target markets for these printers include any workgroup that requires B-size printing capability, specifically CAD, desktop publishers and graphics users. Purportedly, Asia is an important market for the 5000 since many of their print applications often require wider format printers.

The HP5000 replaces Hewlett-Packard's LaserJet 4V and 4MV (BXII), which were first introduced over three years ago. The 5000 series includes three printers: 5000, 5000G, and 5000GN. Consistent with HP's new naming structure, which started with the 4000, the G represents graphics capabilities and the N represents network ready. The 5000 in the name refers to the printer's positioning in regard to capabilities. In the case of the HP5000, the five tells customers that this is a mid-level printer.

About the Cartridge

The HP5000 printer uses a dedicated cartridge featuring UltraPrecise technology, HP's branded technology that focuses on special features of the cartridge designed to ensure output quality. Integral to the technology are microfine toner, all-new drum helical drive gear, and magnetic mag roller seals. UltraPrecise technology was first introduced with the HP4000 and is expected to be a strong, long-term cartridge brand for HP.

Technical Issues

The HP5000 cartridge is functionally and mechanically similar to the previous HP4000 cartridge, as well as other Canon-type cartridges. Like the HP4000, the HP5000 cartridge sections are held together by two pins installed at the ends of the cartridge. However, the HP5000 pins are easily removed by tapping them into the interior of the cartridge. The HP5000 also features magnetic mag roller seals (instead of mag roller felts) that seal the ends of the mag roller, and the cartridge features microfine toner (5 microns) that now appears to be standard in HP's newest cartridges.

Just as we found in researching the technical issues of the HP4000 system, there are similar technical issues associated with the HP5000 that can have an impact on remanufacturing processes and cartridge reliability. The following is a summary of the most relevant information that has surfaced in testing conducted by SCC Imaging Technology Labs since the introduction of the cartridge.

OEM Print Quality

Print density from the HP5000 is noticeably less when compared to previous printers such as the LJ4, 5Si and HP4000, leading to some speculation that the end user may be somewhat dissatisfied with lower print density of this newer machine. The HP5000 is sold in work environments in which the printer is expected to perform well in graphics applications, where darker print has in the past been considered preferable.

Our testing of OEM cartridges has indicated that the HP5000 produces less dense print, 1.32-1.35 density readings, compared to the HP4000 cartridges, which produced prints with density readings of around 1.40. In addition, our testing has shown a range of print density measurements from different OEM cartridges. As a comparison, OEM output for EX and WX approaches density of approximately1.50. The challenge for the aftermarket in formulating toner for this application is delivering optimum print quality while minimizing the potential for toner buildup on the fuser roller and fuser offsetting.

Mag Roller and PCR

Our testing regarding PCR and mag roller life and recoatability is still in progress to determine the durability of the OEM PCR and OEM mag roller. Because the HP5000 appears to share the same PCR and mag roller technology as that of the HP4000, the HP5000 may have many of the same issues associated with the HP4000. The PCR may not be as durable as previous generation PCRs, requiring recoating or replacement after the OEM cycle. The mag roller features a very smooth surface texture as does the HP4000. The HP5000 may require a new replacement if it proves to be unrecoatable, as is the case with the HP4000 OEM mag roller. SCC is currently testing recoating/remanufacturing alternatives for the PCR and mag roller. Our SCC Imaging Labs have beta-tested a hard aftermarket PCR with the HP5000 drum. They have verified that there is some drum noice, although it is not as severe as with the HP4000. We have yet to determine the need for drum inserts.

Leakage

The weight of the toner load of the HP5000 makes this cartridge even more susceptible to leakage when the hopper is shipped filled and without a seal. In tumble tests that simulate shipping conditions, we observed that an unsealed, filled HP5000 cartridge was prone to leakage from the mag roller sealing blade. In comparing similar tests conducted with an unsealed, filled HP4000 cartridge, the HP5000 showed much more toner leakage. If you plan to seal the hopper for performance issues (to prevent the potential for leakage) or for appearance issues, you should split the hopper and apply a new seal. Like the HP4000, the HP5000 is designed with blockages at the seal exit end of the
hopper, clearly preventing the use of insertion seals (see Fig. 1).

Splitting and Sealing

Splitting and Sealing

Due to the design of the hopper, the HP5000 requires a dedicated splitting procedure to preserve components at the ends of the hopper. The hopper can not be split along the flanges completely from end to end because the ends of the mag roller sections overlap the ends of the toner reservoir (See Figs. 1 and 2). Splitting from end to end will cut the support that locates the drum actuator arm and a support at the gear train end of the hopper. For performance issues the hopper should be split in such a way that other parts of the hopper or other components in the cartridge system are not affected. To meet the specific challenges of this system, SCC is developing a power splitting system with rotary cutting blades to cut only the flanges of the hopper without damaging the end sections of the hopper.

The unique design of the hopper flanges along the sides of the hopper assembly requires the use of a dedicated rail system. Our testing has indicated that existing locking rails for other cartridge systems will not function with the HP5000 system. The sealing blade side of the HP5000 mag roller section is thin-walled and flexible. When the hopper is split, it is not unusual for this flexible side of the mag roller section to bow inward toward the mag roller, narrowing the opening between the mag roller sealing blade and mag roller at the center. During cartridge operation, toner can build up in this narrow area and eventually sprinkle onto the center of the printed page.

SCC has developed a five-piece rail system that includes a support rail designed to pull the mag roller section back into position and correct bowing problems (See Fig. 3).

Toner Hopper–Drive Gear End

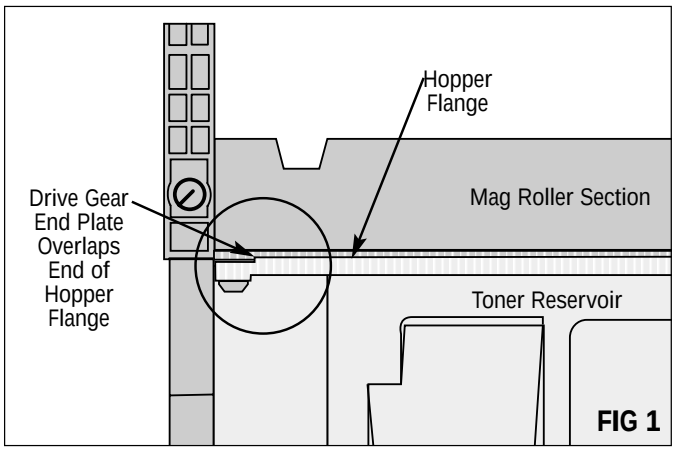


FIG 1

Toner Hopper–Contact End

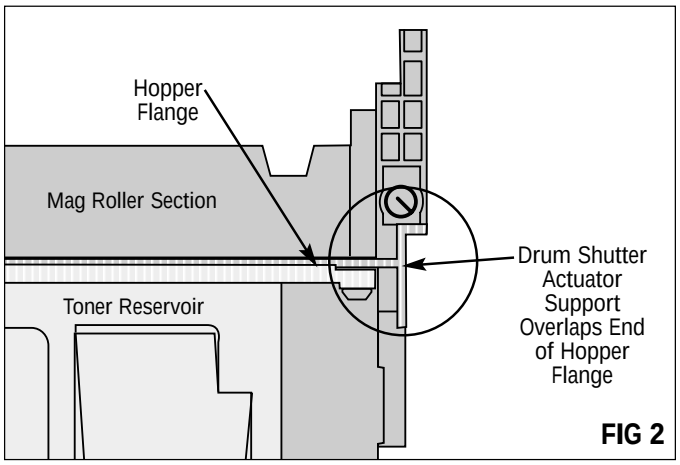


FIG 2

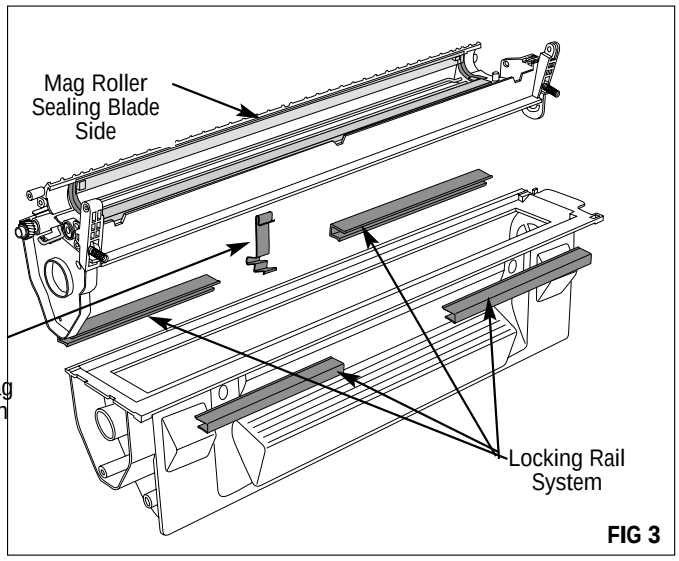


FIG 3

Hopper Cap Removal

Hopper Cap Removal

The hopper cap is enclosed in an end plate that is secured to the toner reservoir by two welds (See Fig. 4). In order to access the hopper cap, the welds must be cut from the end plate and the end plate removed. SCC is developing a cutting tool that can be inserted into the recesses of the end plate to remove the mushroom welds. Once the welds are removed, the end plate will be resecured with a strip of sealing tape. Access to the hopper cap is only an issue if you plan to seal the hopper and fill through the fill hole. Otherwise, the hopper can be filled through the toner port with the mag roller removed.

Conclusion

These technical issues are part of the initial findings in our research and testing of the HP5000 cartridge system. As our research continues, updates on technical issues will be provided through our website at www.scc-inc.com, through our Industry Alert fax advisory series, or you can contact the SCC Technical Support Group at 800-488-2426 or 919-774-3808 for the latest information. Complete remanufacturing instructions for the HP5000 cartridge are also available.

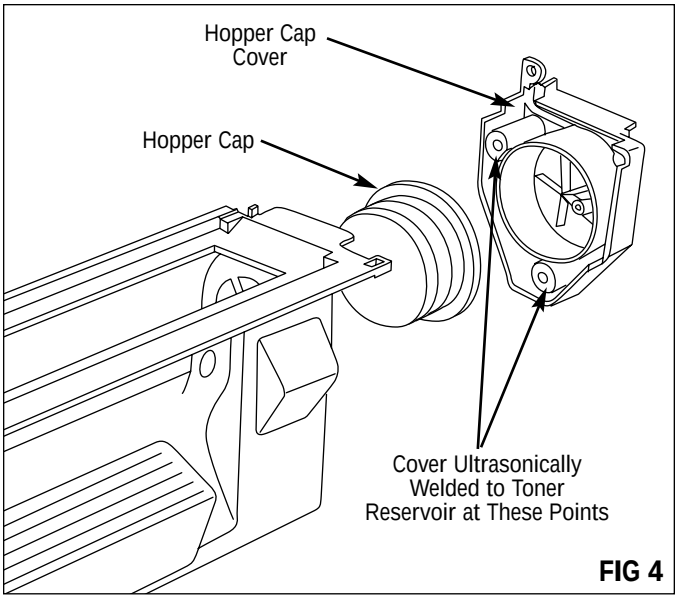


FIG 4

Imaging System Technology You Can Count On!

The development of cartridge imaging systems, such as the HP5000 System, is the primary mission of our technology laboratories. Through extensive testing and research, we develop the optimum combination of matched components for each cartridge system. Our engineering and manufacturing expertise provides us with total control in design, quality and development to produce products from the ground up. The result is a system of components that seamlessly work together in each cartridge application.

This dedication and commitment results in integrated cartridge systems that Static Control fully supports, allowing you to quickly attack new market opportunities with complete confidence in the reliability and performance of your cartridges.

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