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Hewlett-Packard® 4600/4650 Remanufacturing Instructions

Static Control's Imaging Labs are in the process of testing the HP4600/4650 cartridges and will provide the results as they become available. For more information, visit www.scc-inc.com/Engine.

Reference Info

The new HP color LaserJet® 4600/4650 series printers replace the two-year-old HP4550, 4550n, 4550dn and 4550hdn machines. With a first page out time of 18 seconds and print speeds of up to 17 ppm in both monochrome and color modes, and print resolutions of 600 dpi (HP ImageREt 2400), the 4600 offers high-performance and quality printing for under $2,000 (base model).

There are four models in the 4600 series; the base 4600, the 4600dn,4600dtn (duplex standard/network-ready), 4600hdn (duplex & hard drive standard/network-ready).

Faster, more efficient printing

The 4600/4650 series utilizes an instant-on fuser, providing faster first page out time, and HP's vertical in-line, direct-to-paper printing technology rather than four-pass printing. Toner is transferred directly from the four print cartridges to the paper, making printing more efficient and consistent. Though four-pass printing takes less space and is less expensive, the main benefit of in-line printing to high-volume customers is faster color speed.

New cartridges

All four models ship with an embedded web server for printer and supplies management, one 9,000-page black toner cartridge and three 8,000-page color cartridges.

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.

Table of Contents

WWW.SCC-INC.COM

Get the latest information on the web at Static Control's Hewlett-Packard® 4600/4650 Online Engine Center at
www.scc-inc.com

System Support Series™ Documents are available on our Web site in Adobe® Acrobat® format.

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)
e-mail: techservices@scc-inc.com

Version 4
January 2005

Printers:	HP4600	HP4600n	HP4600dn	HP4600dtn	HP4600hdn
Printer Introduction Price:	$1,999.99	$2,299.00	$2,499.99	$3,399.99	$3,899.99
Date of Printer Introduction:	June 4, 2002	June 4, 2002	June 4, 2002	June 4, 2002	June 4, 2002
First Page Out (from ready mode):	17.5 seconds	17.5 seconds	17.5 seconds	17.5 seconds	17.5 seconds
Processor:	400 MHz	400 MHz	400 MHz	400 MHz	400 MHz
Paper input tray:	1x100 / 1x500	1x100 / 1x500	1x100 / 1x500	1x100 / 2x500	1x100 / 2x500
Memory (std/max):	96 MB/416 MB	96 MB/416 MB	96 MB/416 MB	160 MB/416 MB	160 MB/416 MB
Duplex:	optional	optional	standard	standard	standard
Engine Information:					
Print Resolution (dpi):	600/2400 Ret	600/2400 Ret	600/2400 Ret	600/2400 Ret	600/2400 Ret
Print Speed (pages per minute, letter, color and mono):	17 ppm	17 (16A4) ppm	17ppm	17ppm	17ppm
Duty Cycle (pages per month):	85,000	85,000	85,000	85,000	85,000
Cartridge Information:	Black	Cyan	Magenta	Yellow	
Cartridge Part Number (OEM):	C9720A	C9721A	C9723A	C9722A	
OEM Rated Page Yield:	9,000	8,000	8,000	8,000	
OEM MSRP*	$156.00	$211.00	$211.00	$211.00	
Avg. Wholesale* (Supplies Network)	$126.00	$170.00	$170.00	$170.00	

**Prices as of August 2003*

Compatibility:
HP4600 (base)
HP4600n (network-ready)
HP4600dn (duplex std/network-ready)
HP4600dtn (duplex std/network-ready/extra input tray)
HP4600hdn (duplex std/network-ready/2 extra input trays/10 GB hard drive)

Tools and Supplies You Will Need

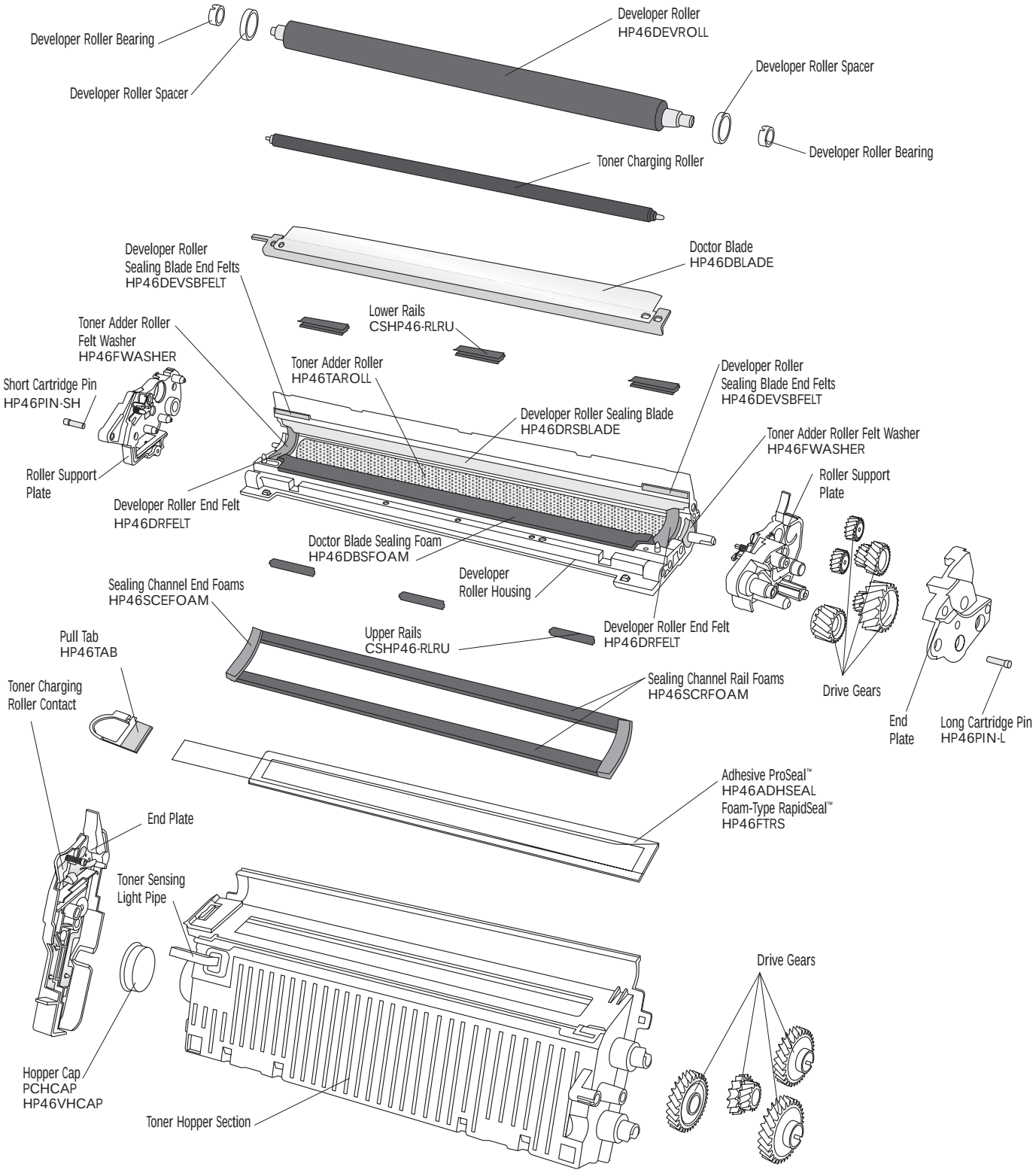
For Basic Remanufacturing:

- 91-99% Isopropyl Alcohol .....
- Compressed Air for Cleaning .....
- Phillips Screwdriver .....
- Side Cutters .....
- Drill .....
- HP4600 Pin Removal Fixture Kit .....(HP46PRTOOL)
- HP4600 Multifunction Hopper Jig .....(HP46HJIG)
- Hook Tool .....(HTOOL)
- Lint-Free Cleaning Cloth .....(LFCCLOTH)
- HP4600 Doctor Blade/Developer Roller Fixture .....(HP46DRCLEANJIG)

Note SCC has developed a Multifunction Hopper Jig which facilitates various tasks performed during the remanufacturing process of the HP4600 cartridge. For illustrative purposes it is not depicted in all instructional photos. See pages 24 through 26 for various examples of it's use.

HEWLETT-PACKARD® 4600

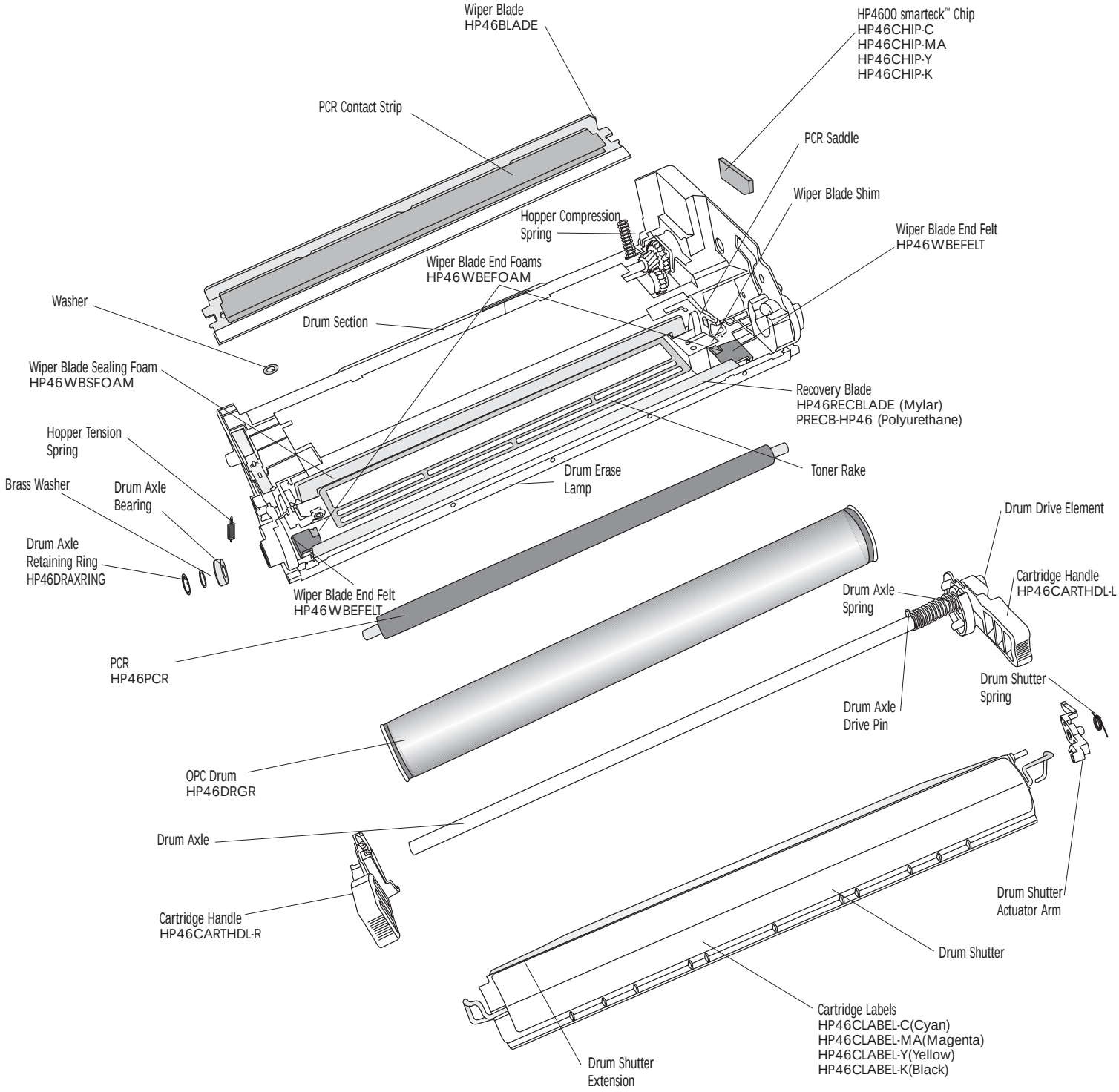
TONER HOPPER SECTION - BLACK AND COLOR



Note: When installng the Adhesive ProSeal you must purchase and install a vented Hopper Cap (HP46VHCAP).

HEWLETT-PACKARD® 4600

DRUM SECTION



Disassembly of the Cartridge

1. Rotate the Shutter to the position shown and pull the ends of the Shutter Support Bar free from the cartridge (FIG 1 & 2). Pull the Shutter free from the Shutter Arm (FIG 3).

FIG 1

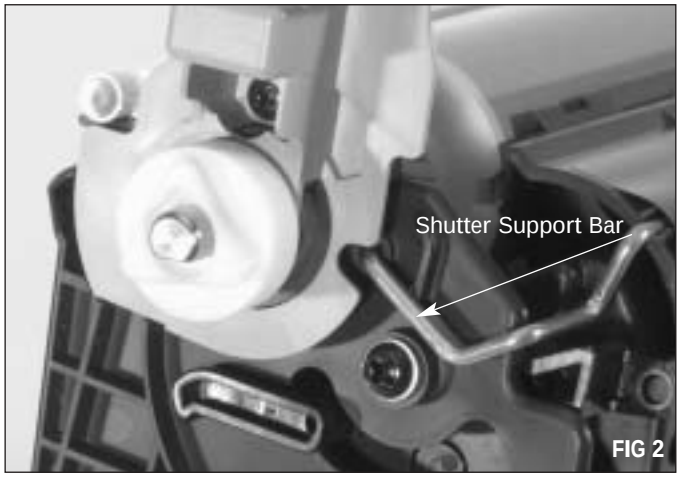


FIG 2

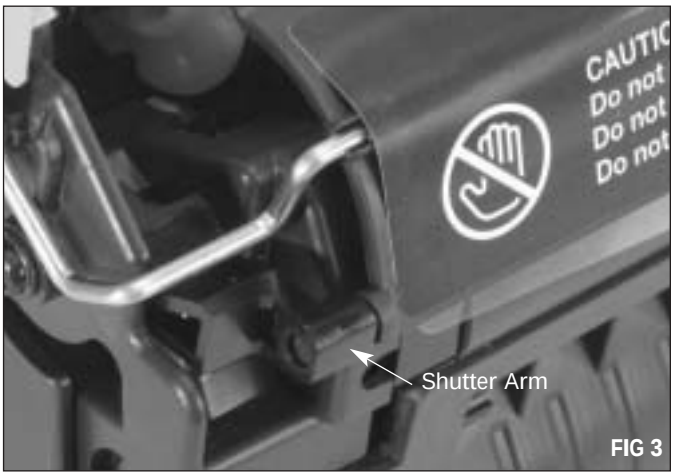


FIG 3

2. Place the Pin Removal Fixture (FIG 4) on the cartridge (contact side). The alignment pins should fit in the ribs (FIG 5) surrounding the pin with the fixture in a vertical position as shown (FIG 6).

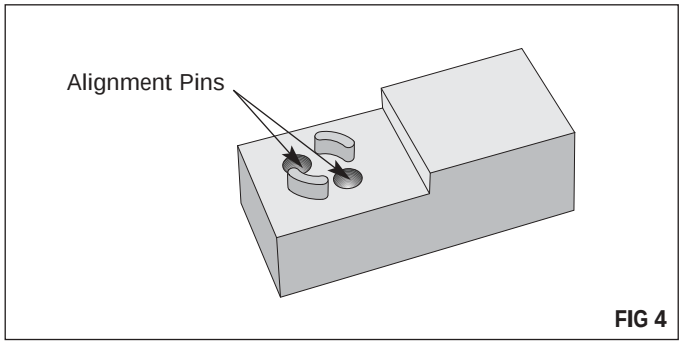


FIG 4

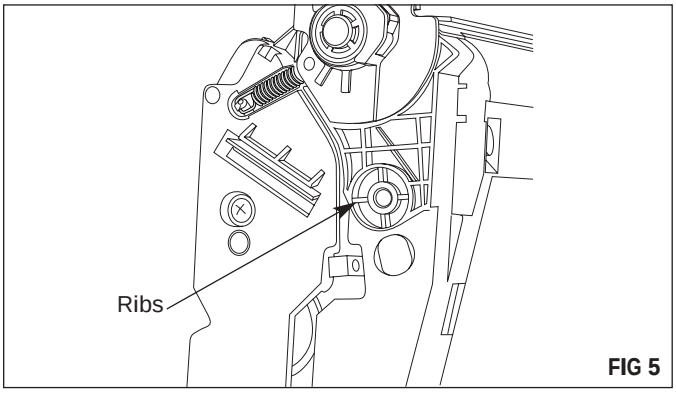


FIG 5

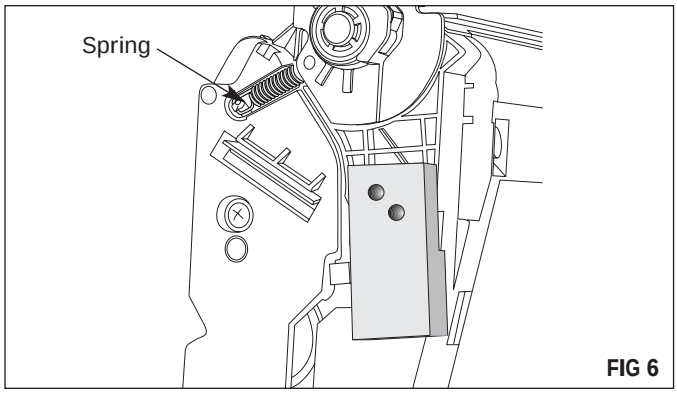


FIG 6

3. Drill through the two holes until the drill-stop reaches the fixture surface (FIG 7 & 8).

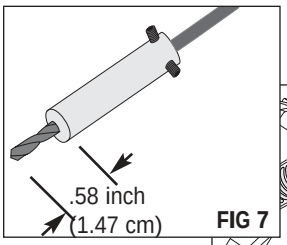


FIG 7

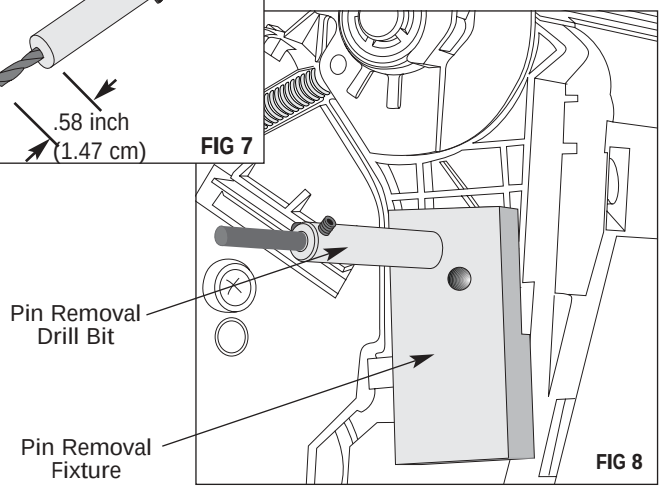


FIG 8

Note Use of a Drill Bit without the Drill Stop could damage the cartridge.

4. Place the Pin Removal Fixture on the gear side of the cartridge. The alignment pins should fit in the ribs surrounding the Pin (FIG 9). On this side the Pin Removal Fixture will be in a horizontal position (FIG 10).

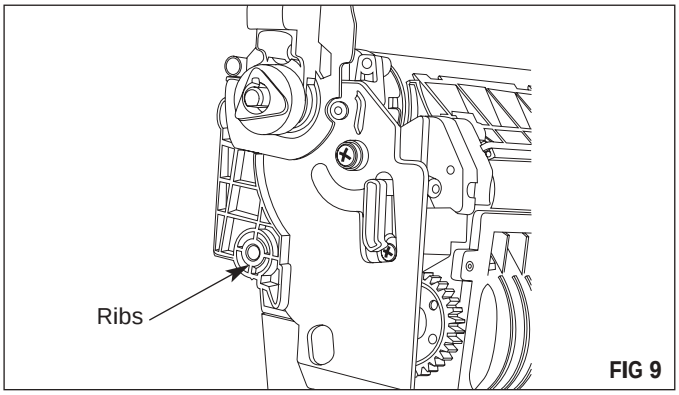


FIG 9

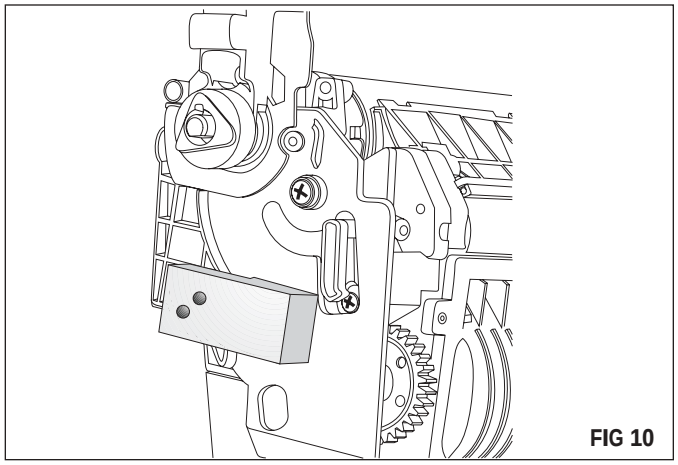


FIG 10

5. Using the pin removal drill bit, drill through the two holes until the drill-stop reaches the fixture surface (FIG 11).

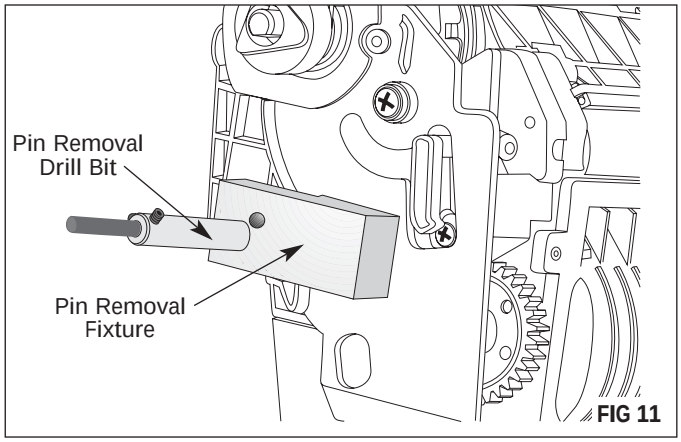


FIG 11

6. Remove the pins from the cartridge using side cutters (FIG 12).

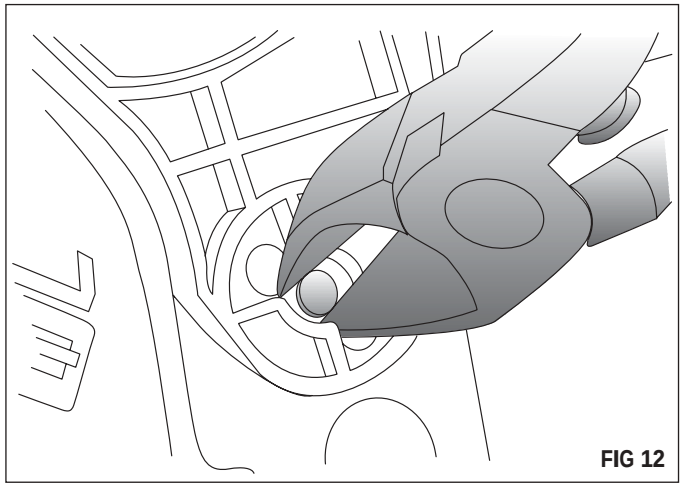


FIG 12

7. Use a Hook Tool (HTOOL) to release the Hopper Tension Spring before separating the sections (FIG 13).


FIG 13

8. Separate the sections (FIG 14).

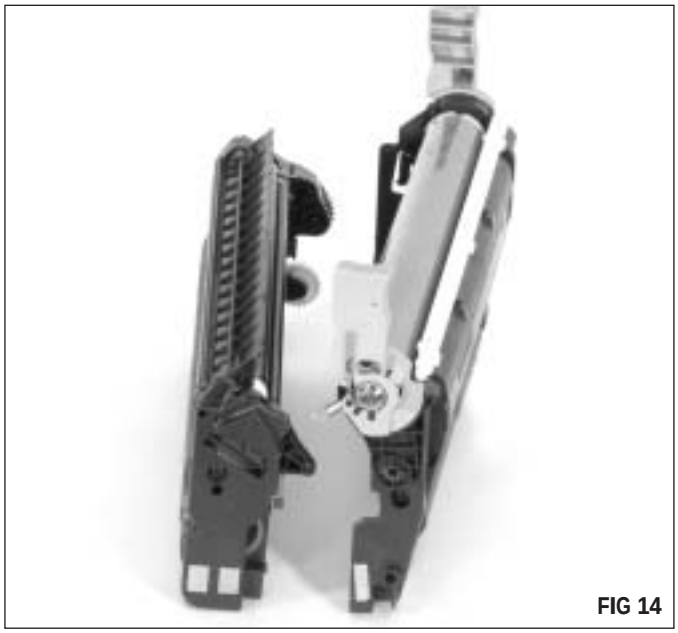


FIG 14

Disassembly of the Drum Section

1. Remove the Drum Axle Retaining Ring and Washer (FIG 15). The Bearing can be retained in the cartridge body.

Note Be careful not to damage the drum axle when removing the Drum Axle Retaining Ring.

FIG 15

Note If the Contact Side or Drive Side Cartridge Handles are damaged or broken see SSS™ #510 *"How to install the HP4600 Cartridge Handles"* for detailed instructions about removing and replacing the cartridge handles.

2. On the drive side remove the screw from the handle (FIG 16).

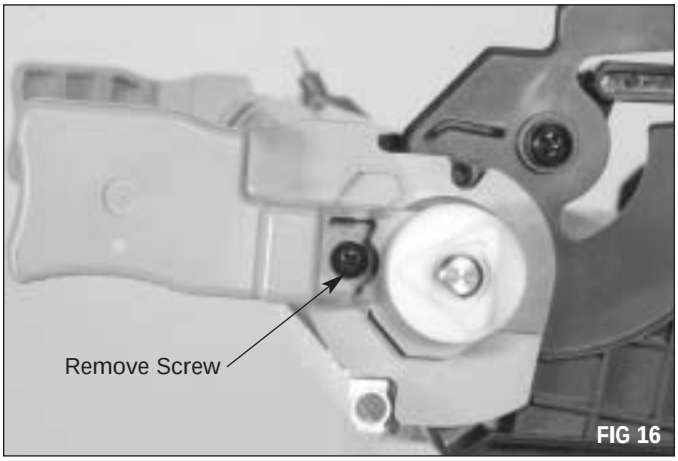


FIG 16

3. Slide the axle out of the OPC Drum as shown (FIG 17). Pull from the Drum Drive Element of the drum axle rather than the handle. You may need to lightly tap the end of the axle to get it started moving. If either handle is damaged replace with SCC's cartridge handles (HP46CARTHL-L and HPCARTHL-R).

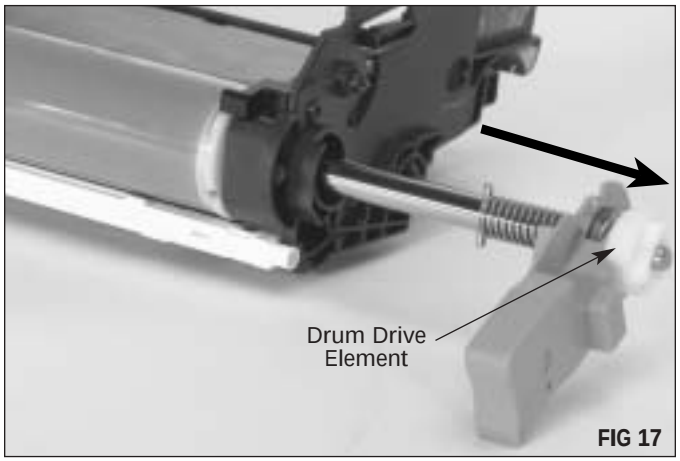


FIG 17

4. Remove the Organic Photoconductive (OPC) drum (FIG 18).

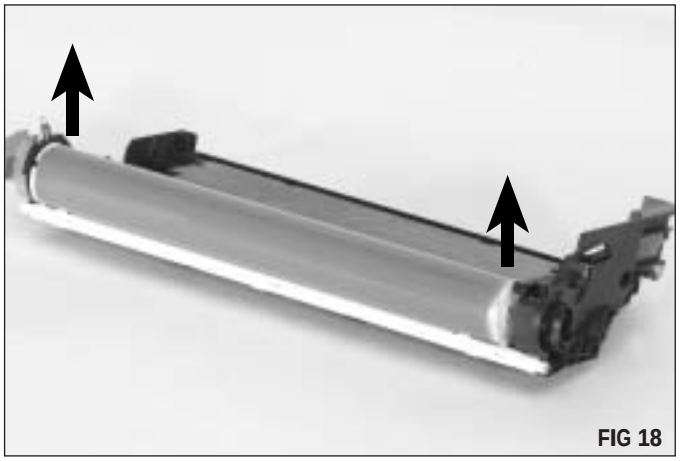


FIG 18

5. Grasping the axles at each end remove the Primary Charge Roller (PCR) (FIG 19). Clean PCR surface with a dry, lint-free cleaning cloth.

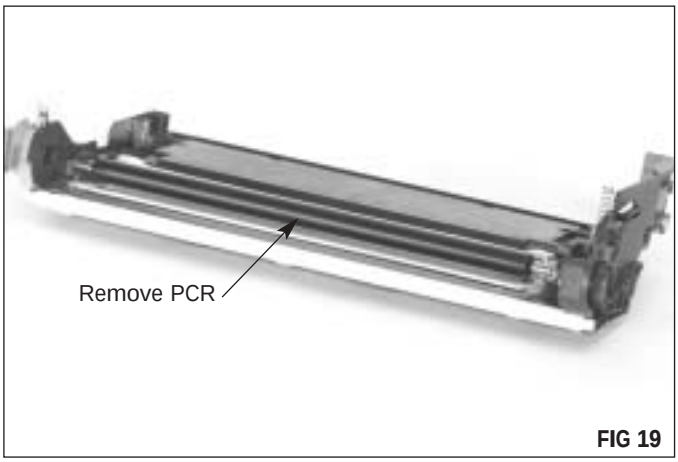


FIG 19

6. Lift the plastic film slightly and remove the 2 screws. Remove the Wiper Blade. Note the difference between the left and right screw (FIG 20, 21 & 22). On many of the newer OEM cartridges there is no difference between the 2 screws.

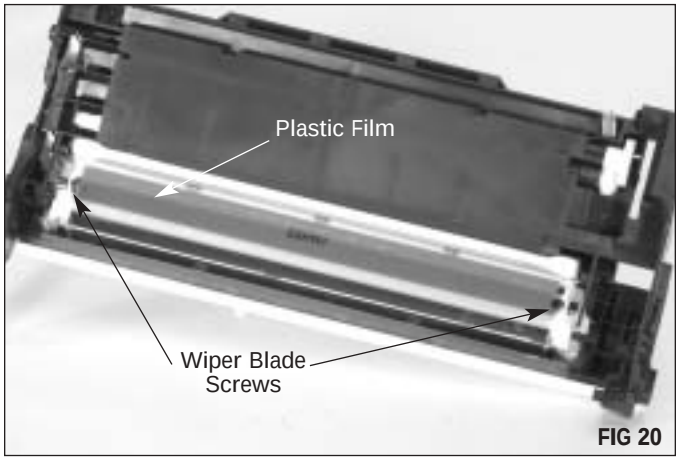


FIG 20

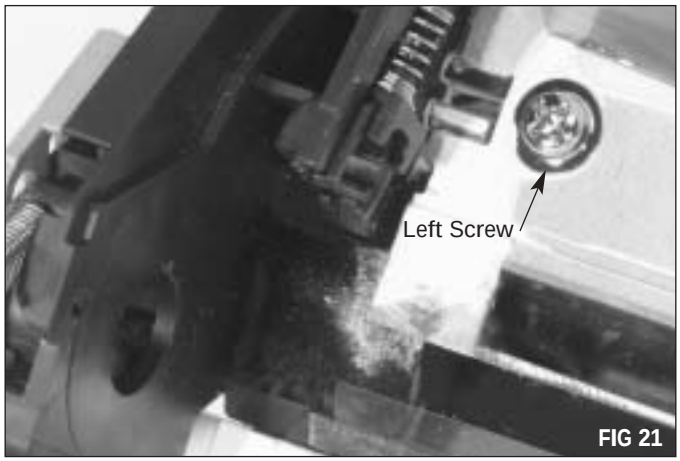


FIG 21

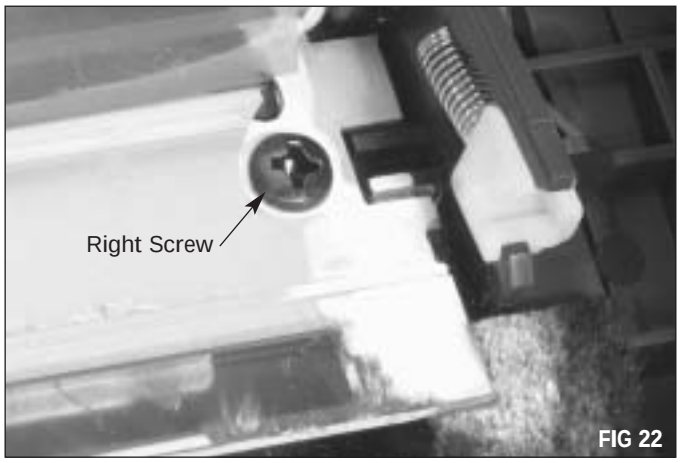


FIG 22

Hold the OEM material in place while removing the Wiper Blade (FIG 23).

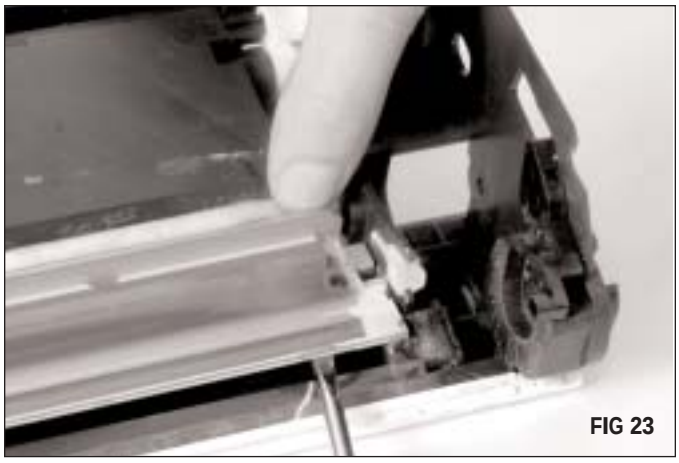


FIG 23

7. Remove the Plastic Shims (if any) under each end of the Wiper Blade (FIG 24). SCC has found that not all OEM cartridges have shims installed and some have different thicknesses, so note the locations for each.

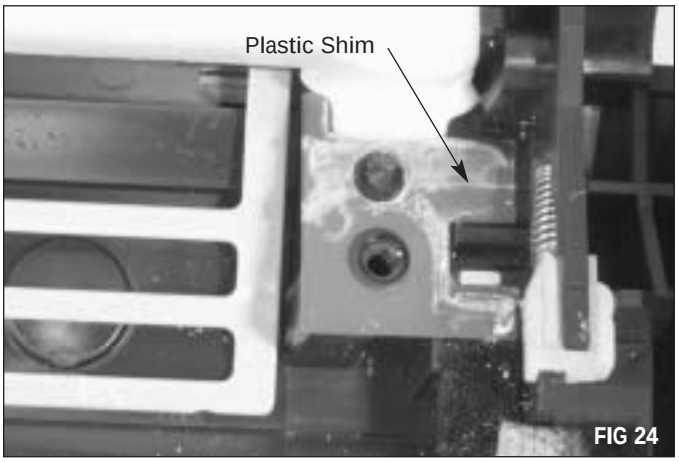


FIG 24

8. If necessary remove the Brass Washer (FIG 25). SCC has found that the Brass Washer is not present on newer cartridges.

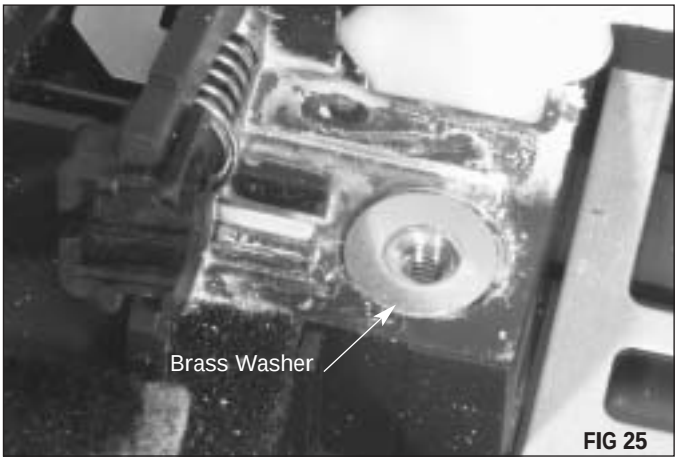


FIG 25

9. Remove the Wiper Blade Sealing Foam, leaving approximately 1/2" of the OEM material at each end, see FIG 26. For instructions on how to replace the Wiper Blade Sealing Foam see "*Assembly of the Drum Section*" step #1 on page 19.

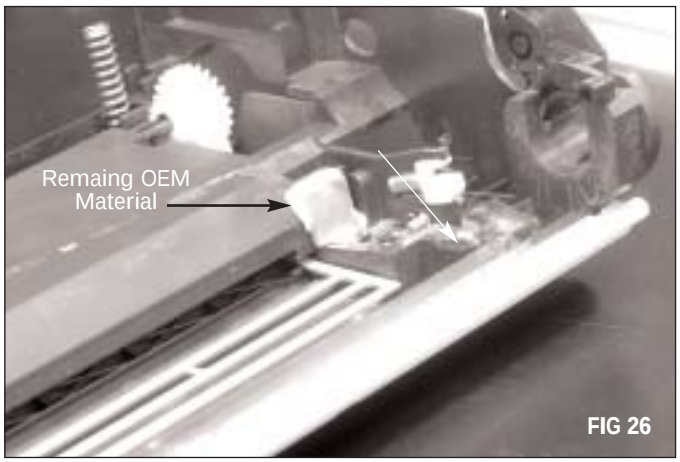


FIG 26

10. Dump waste toner from drum housing and using a dry, compressed air remove any remaining waste toner (FIG 27). Be careful not to damage the Drum Erase Lamp during waste toner removal.

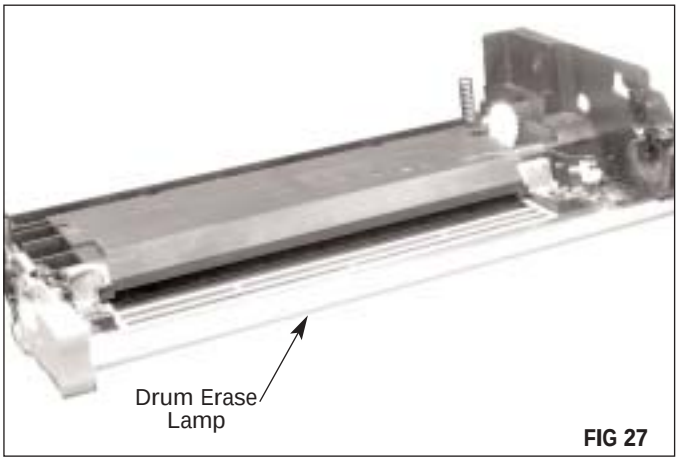


FIG 27

Disassembly of the Toner Hopper Section

1. Remove the screw that secures the contact side End Plate (FIG 28). Depress the Snap Catch and remove the End Plate (FIG 29).

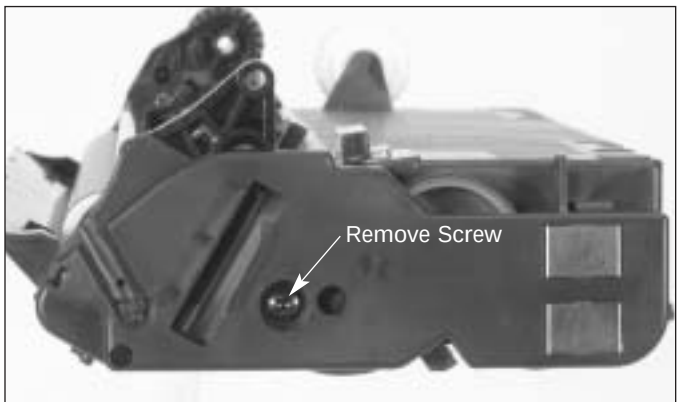


FIG 28

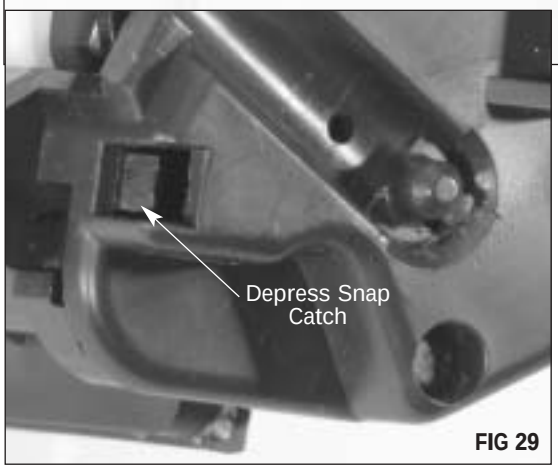


FIG 29

2. Remove the drive side End Plate by removing the 2 screws securing it to the cartridge (FIG 30).

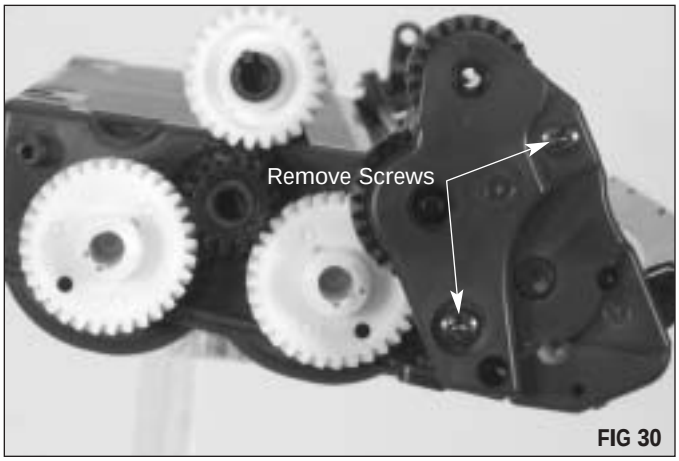


FIG 30

3. Remove the gears behind the End Plate and the Waste Bin Drive Gear. (FIG 31 & 32).

FIG 31

FIG 32

4. Remove the contact side Roller Support Plate by removing the 2 screws securing it to the cartridge (FIG 33).

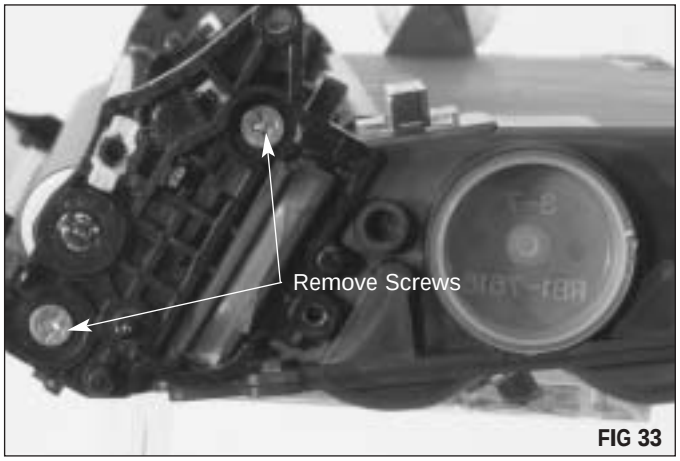


FIG 33

5. Remove the 2 screws that secure the Roller Support Plate (drive side) (FIG 34). Remove the Roller Support Plate.

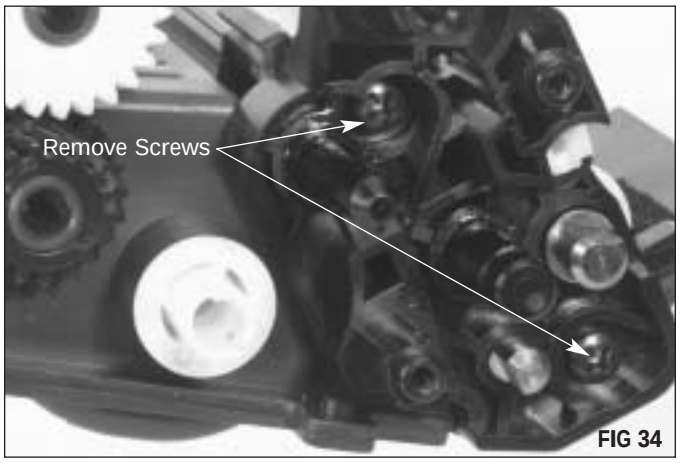


FIG 34

Note Newer cartridge models do not have a Toner Charging Roller.

6. Remove the Toner Charging Roller (FIG 35). Make a small mark with a permanent marker on the drive side shaft of the Roller.

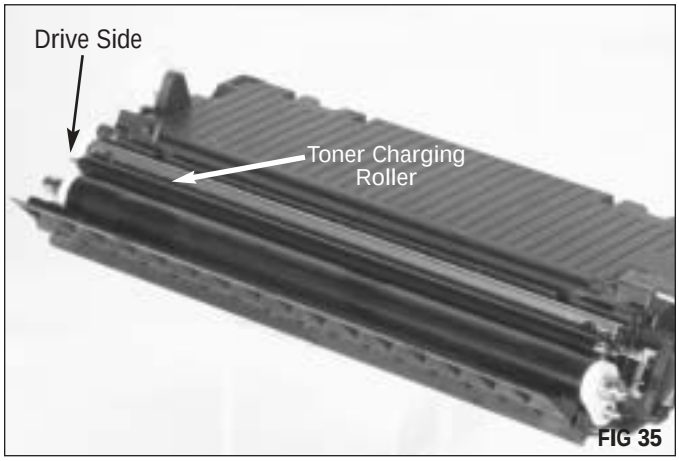


FIG 35

Note Clean the Toner Charger Roller with a dry, lint free cleaning cloth. Clean until toner has been removed as much as possible. May require additional time.

7. Remove the Developer Roller along with the Spacers on each end (FIG 36).

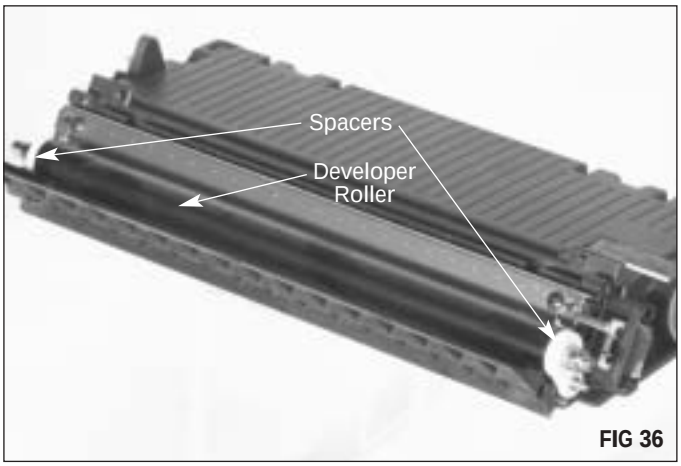


FIG 36

8. Remove the 2 screws that secure the Doctor Blade (FIG 37a); then, remove the Doctor Blade.

FIG 37a

Note On early OEM models, the Doctor Blade was attached with adhesive tape. If remanufacturing an earlier model, with an Angle Blade Knife cut the Developer Roller End Felt from the Doctor Blade as shown in FIG 37b. This will prevent damage to the Doctor Blade Sealing Foam.

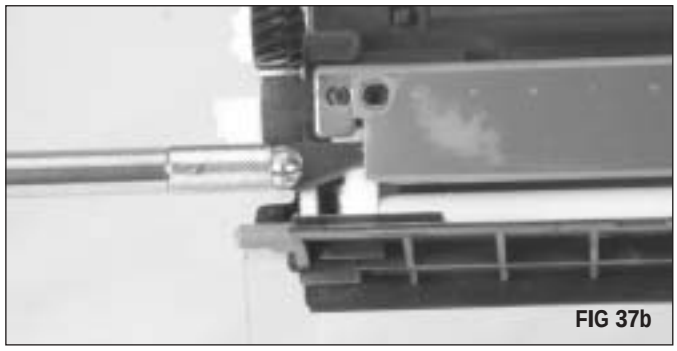


FIG 37b

Note For detailed instructions on how to clean the Doctor Blade and Developer Roller, see "*Cleaning Instructions*" on page 28 or SSS™#580.

9. Remove the Adder Roller Felt Washer (FIG 38).

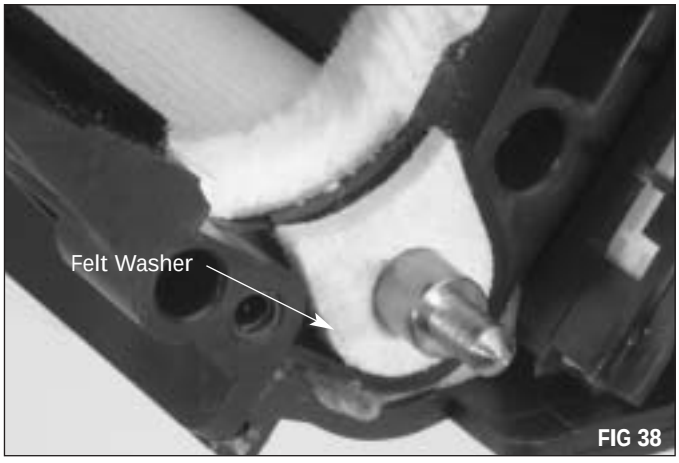


FIG 38

10. Remove the Developer Roller End Felt (FIG 39).

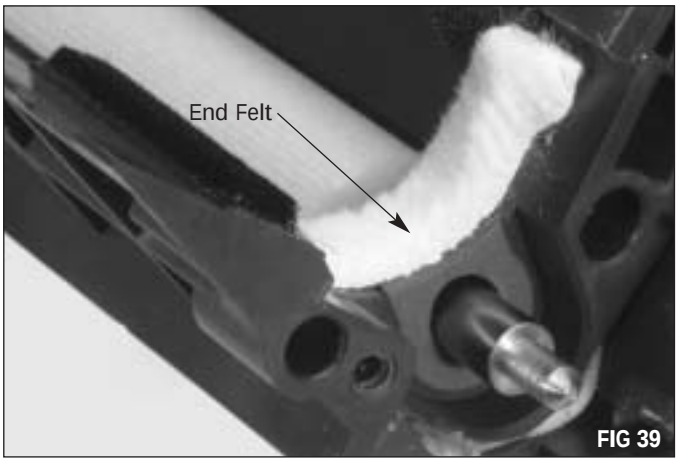


FIG 39

11. Remove the Adder Roller Rubber Bearing (FIG 40).

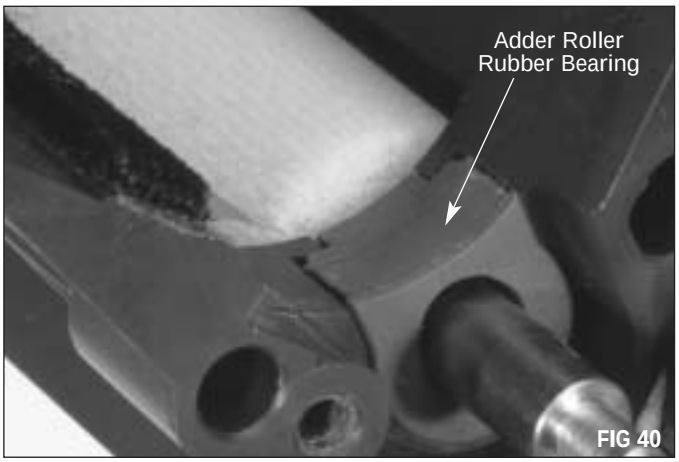


FIG 40

12. Replace the Toner Adder Roller (FIG 41).

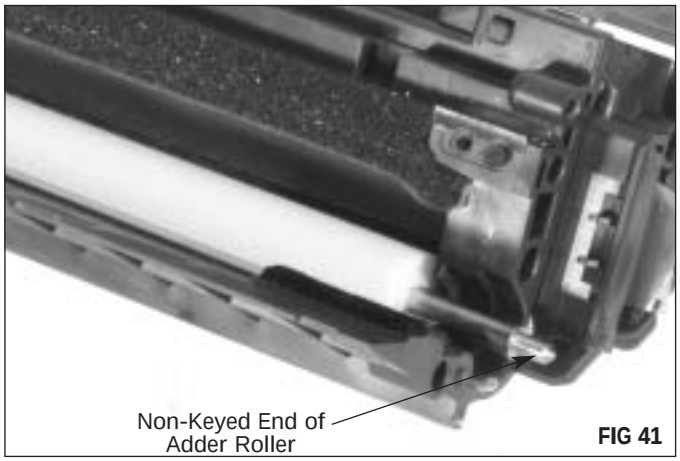


FIG 41

13. Remove the Hopper Cap (FIG 42).

FIG 42

14. Dump the remaining toner from the hopper and clean with dry, filtered, compressed air (FIG 43).

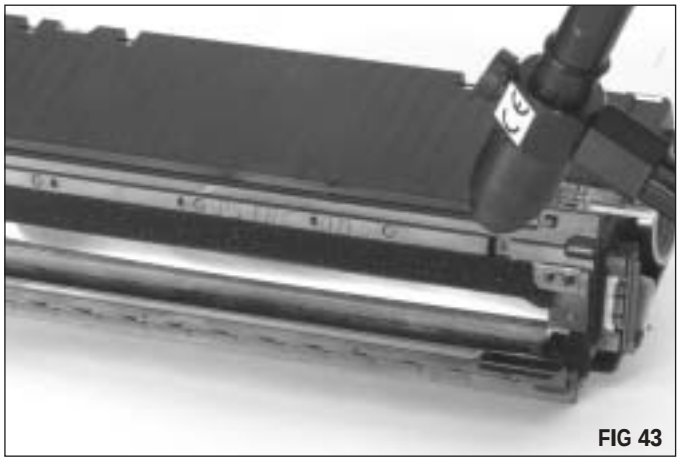


FIG 43

15. Inspect the sealing components and replace as required. Foams and Felts should display a smooth, clean surface. The sealing blade should exhibit a smooth, flat surface along the entire length of the blade.

Split and seal the cartridge to guard against toner leakage. For splitting instructions refer to SSS™ #516 "*HP4600 RapidSplitter™ Power Splitting System*" or SSS™ #561 "*HP4600 RapidSplitter™ Power Splitting System CE Version*". For sealing instructions refer to SSS™ #517 "*HP4600 Foam Type RapidSeal™ w/ Pull Tab Instructions*" or SSS™ #561 "*HP4600 ProSeal™ Insertion Tool and Adhesive ProSeal™ with Pull Tab Instructions.*

Assembly of the Toner Hopper

1. Fill the hopper with toner and replace the Hopper Cap (FIG 44). If you are not sealing the cartridge, wait until just before replacing the contact end plate to fill the hopper with toner.

FIG 44

2. Replace the Toner Adder Roller (FIG 45).

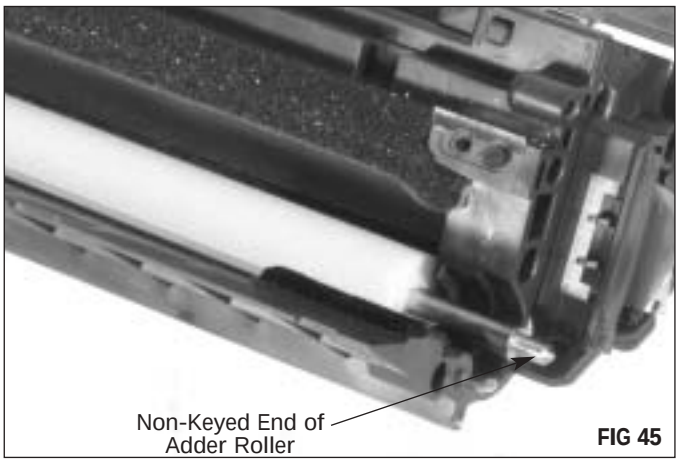


FIG 45

3. Replace the Adder Roller Rubber Bearing (FIG 46).

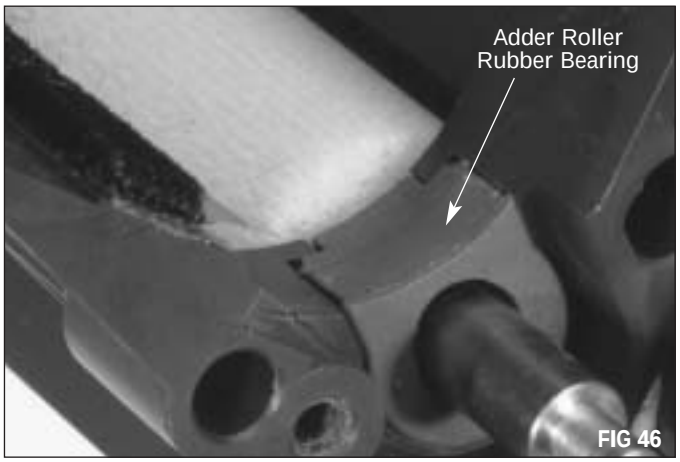


FIG 46

4. Replace the Developer Roller End Felt (FIG 47). SCC offers a replacement Developer Roller End Felt (HP46DRFELT) which is sold as a set (left and right). Felts that are compacted with toner, torn or that display a shiny surface should be replaced. For instructions on replacing the Developer Roller Sealing Blade and Sealing Blade End Felts see SSS™ #654 "*How to install the HP4600 Developer Roller Sealing Blade, Developer Roller End Felts and Sealing Blade End Felt*".

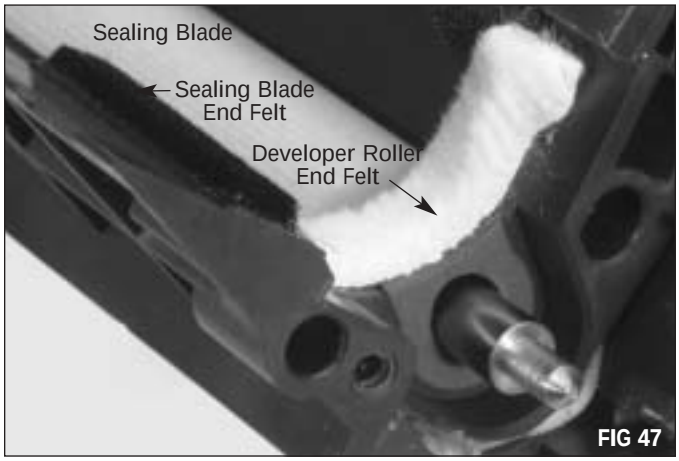


FIG 47

5. Install the Adder Roller Felt Washers, one on each end (FIG 48).

FIG 48

6. Install the Doctor Blade and secure with the 2 screws (FIG 49).

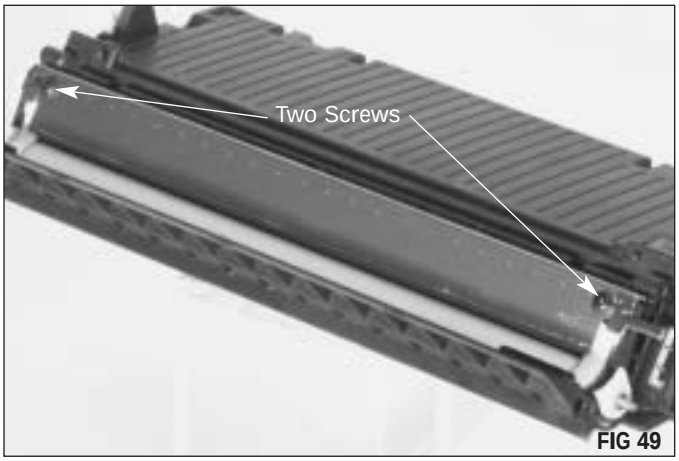


FIG 49

7. Install the Roller Support Plate (drive side) and secure with the 2 screws (FIG 50).

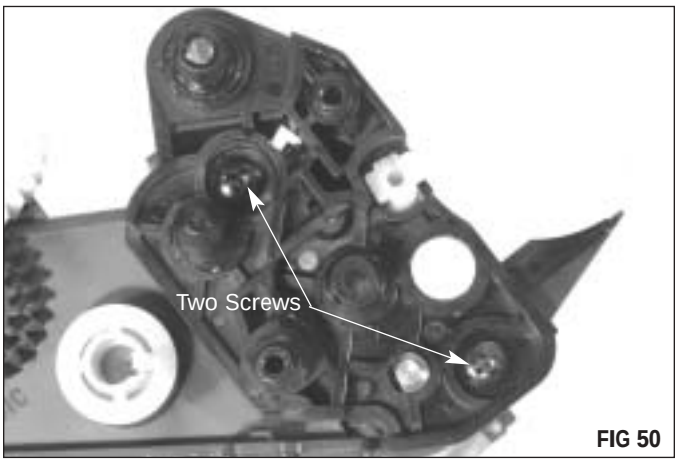


FIG 50

8. Install the Developer Roller along with the Spacers on each end (FIG 51).

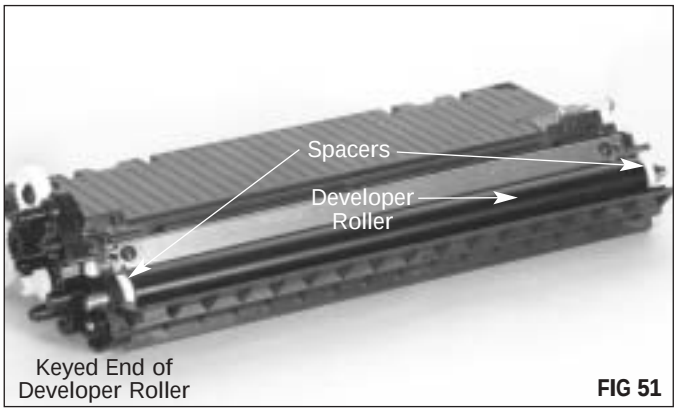


FIG 51

9. Install the Toner Charging Roller (FIG 52a), by sliding the axle of the roller into the Bearing on the Roller Support Plate (FIG 52b).

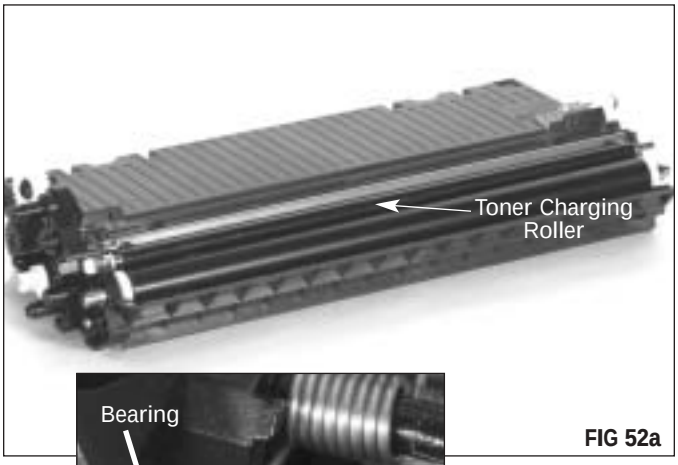


FIG 52a

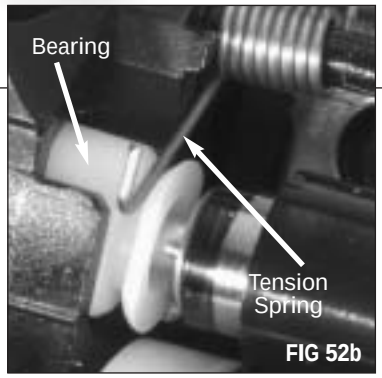


FIG 52b

NOTE Install Toner Charge Roller shaft with mark in to Bearing on drive side of Hopper.

NOTE Newer cartridge models do not have a Toner Charging Roller.

10. Replace the Roller Support Plate (contact end) and secure with the 2 flat head Phillips screws (FIG 53).

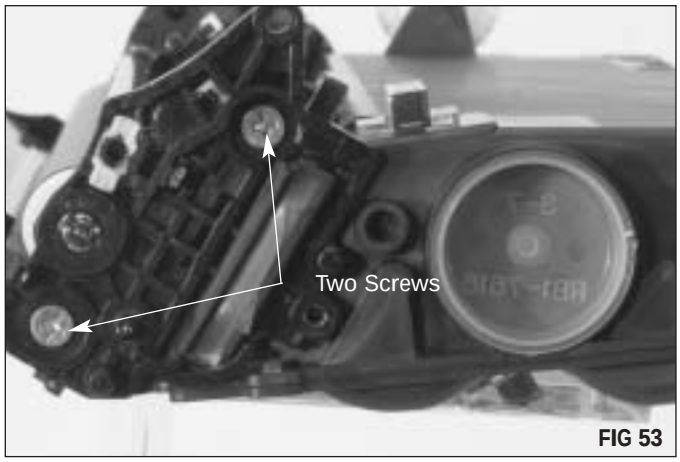


FIG 53

11. Make sure the Tension Spring is in the correct position (FIG 54).

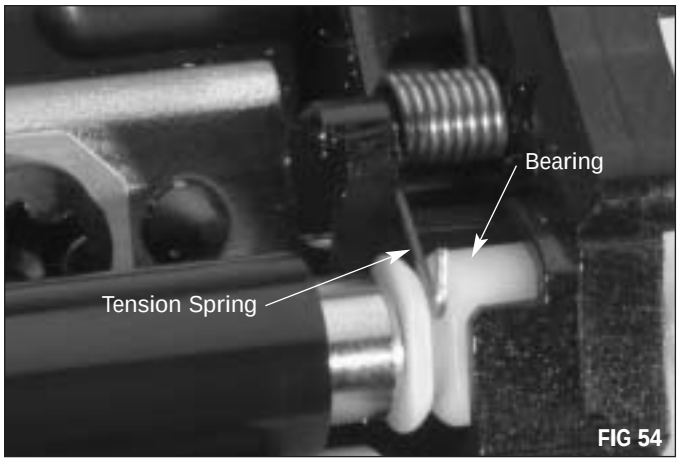


FIG 54

12. Install the drive gears (FIG 55).


FIG 55

13. Replace the End Plate and secure it with the 2 screws (FIG 56).

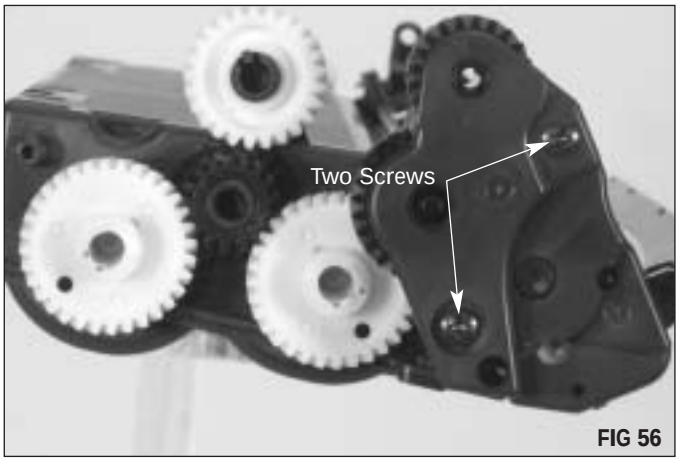


FIG 56

14. Lay the contact side End Plate on a flat surface and apply a thin layer of Conductive Cartridge Lubricant (CONLUBE) to the contacts as shown (FIG 57).

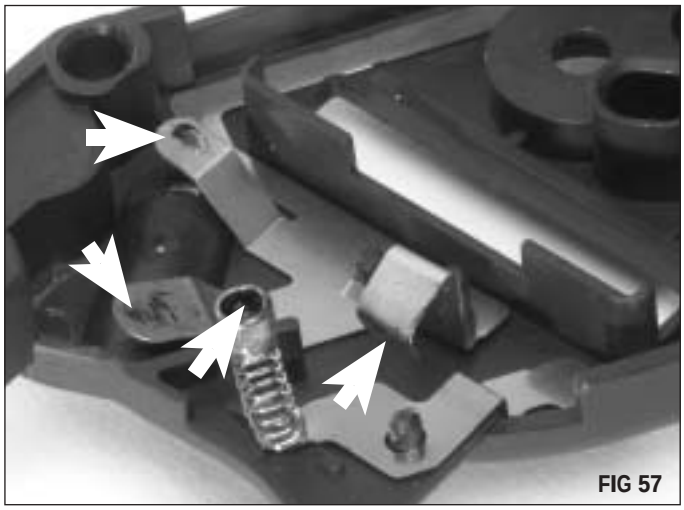


FIG 57

Note When replacing the contact side End Plate, make sure you line up the Contact Spring on the End Plate with the Bearing (FIG 58).

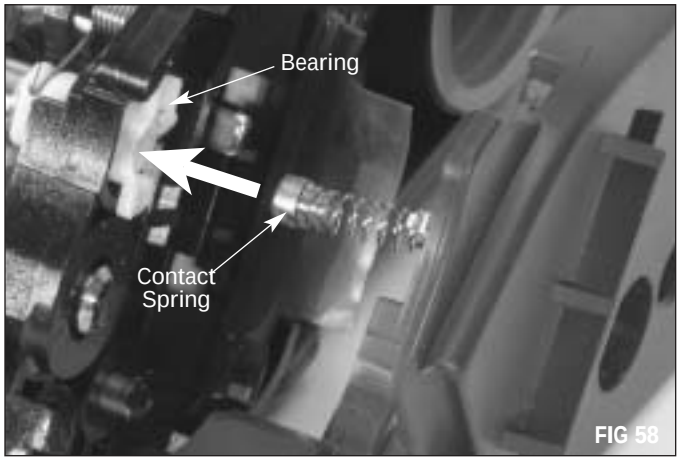


FIG 58

15. Secure the contact end plate with 1 screw (FIG 59).

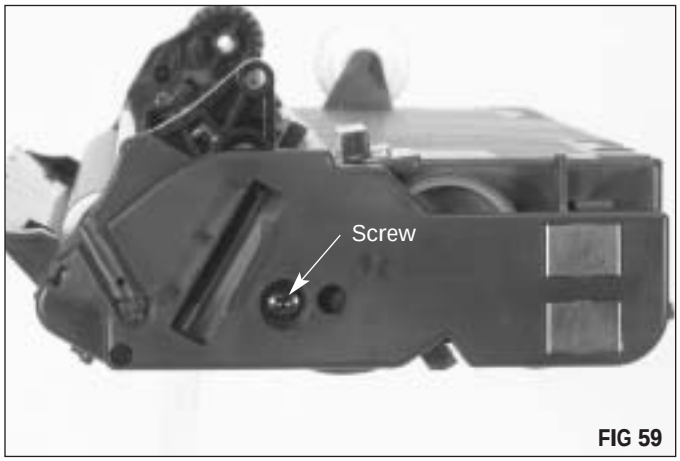


FIG 59

Assembly of the Drum Section

1. Place the Wiper Blade Sealing Foam (HP46WBSFOAM) on the cartridge as shown (FIG 60). Align the top edge of foam with the edge of the ledge. The ends of the foam should overlap existing OEM material left in step 9 on page 10, and the bottom of the foam on each side should be in contact with the wiper blade mounting surface (FIG 61).

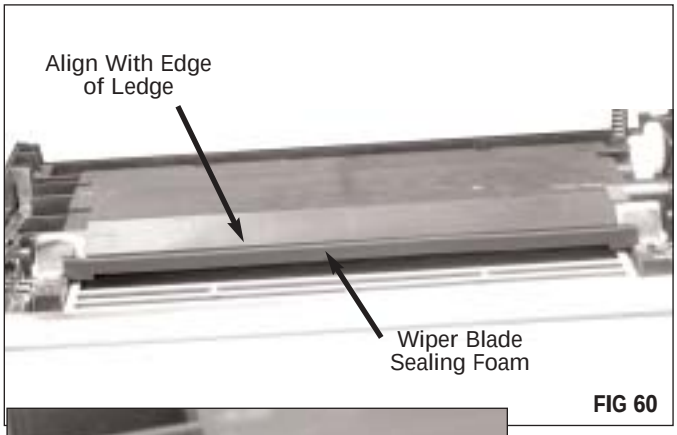


FIG 60

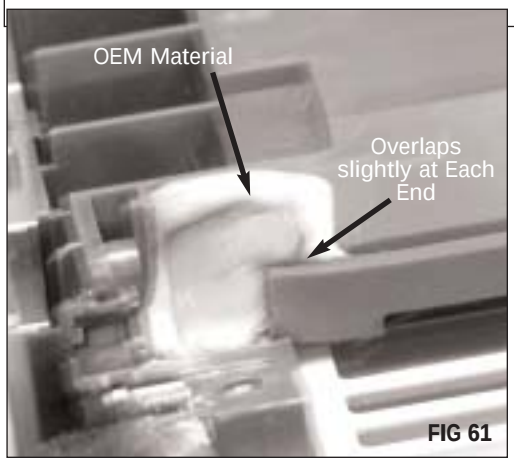


FIG 61

2. If necessary, replace the Brass Washer (FIG 62).

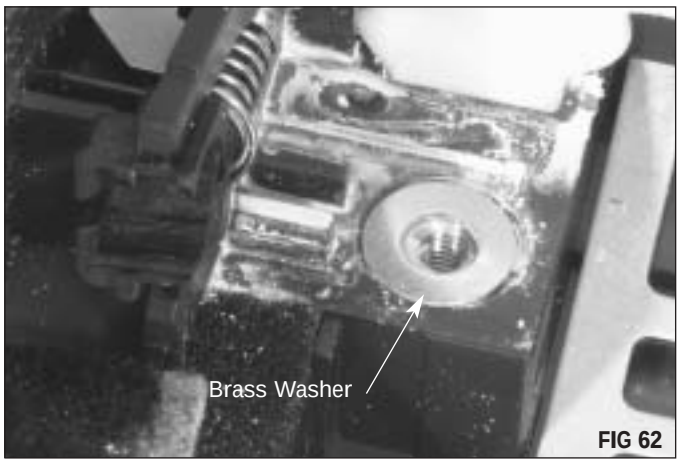


FIG 62

3. If necessary, replace the Plastic Shims that go under each end of the Wiper Blade (FIG 63).

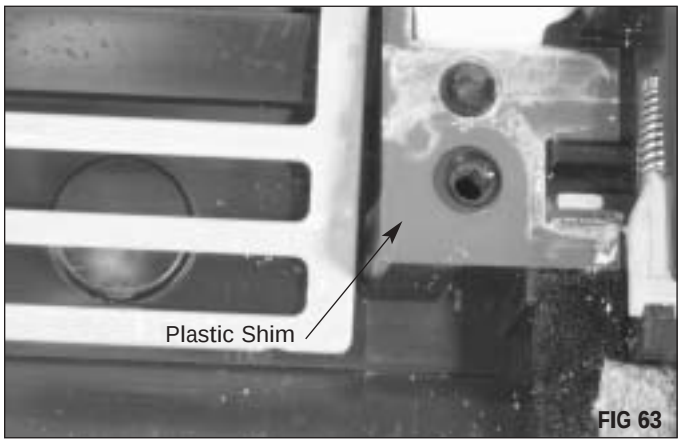


FIG 63

Note Yellow toner applied to the working edge of the Wiper Blade will help prevent "flip overs" during the first drum rotations of the remanufactured cartridge.

4. Place the Wiper Blade into position and secure with the 2 screws (FIG 64, 65 & 66). On newer cartridges the screws are identical. The corners of the Wiper Blade must be butted up to the edges of the Wiper Blade End Felts. There should be no overlapping of the End Felts over the Wiper Blade or the Wiper Blade over the End Felts or leakage could occur.

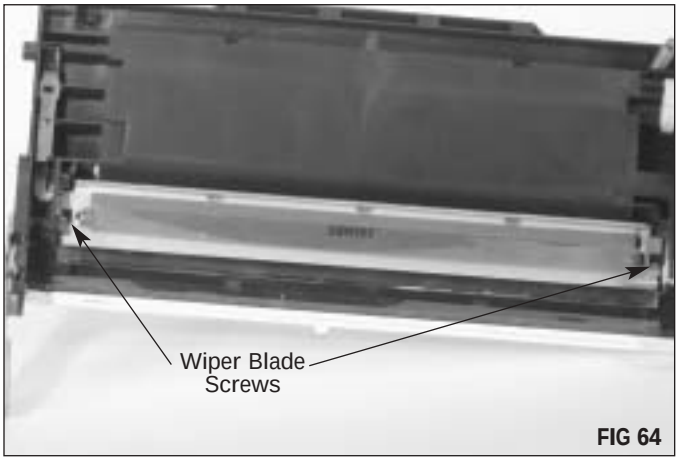


FIG 64

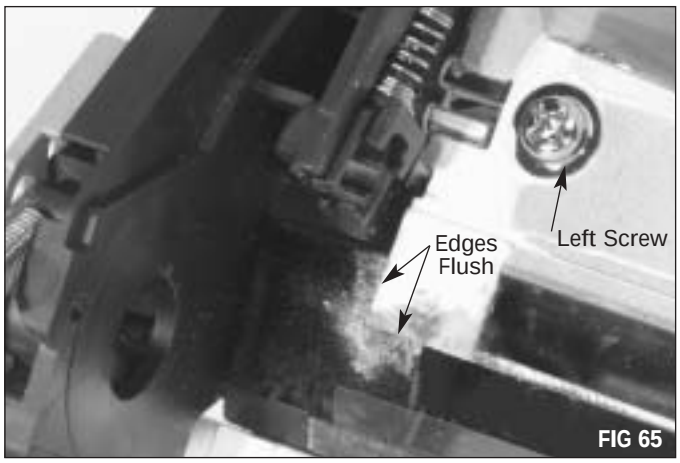


FIG 65

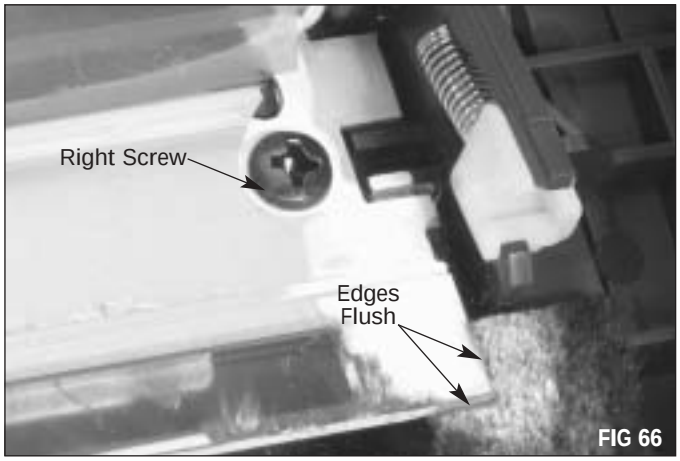


FIG 66

Note The OEM has a Type 1 & Type 2 Wiper Blade. See Figure 67a. The Type 1 the Polyurethane is slightly longer (0.035") and has a double stamping. See Figure 67b. When replacing the Wiper Blade, adjust the Wiper Blade End Felt around the Wiper Blade as shown in FIG 67c. Make sure there are no gaps between the Blade and End Felt as shown in FIG 67d. This will cause toner leakage. See SSS™#515 for further instructions on replacing the Wiper Blade End Felts.

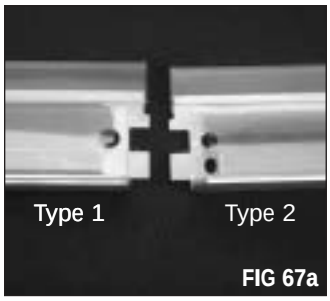


FIG 67a

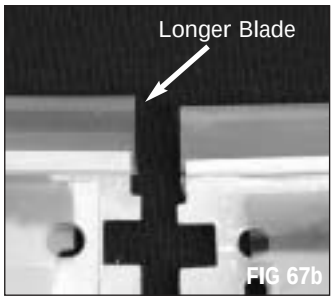


FIG 67b

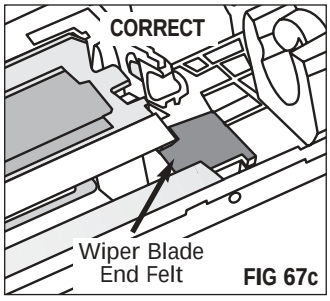


FIG 67c

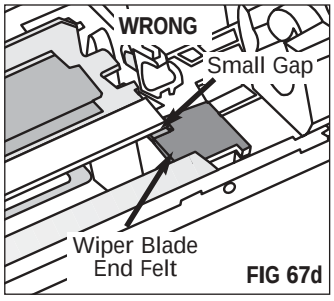


FIG 67d

5. Replace the Primary Charge Roller (PCR) (FIG 68).

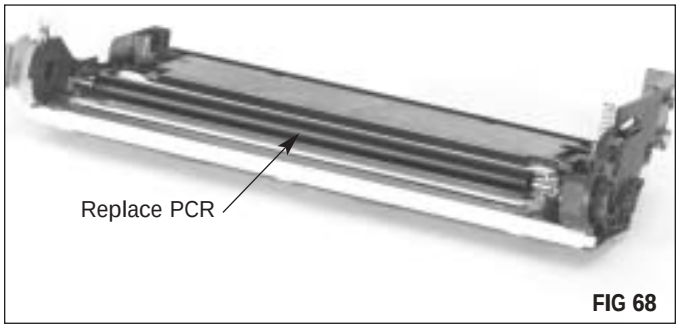


FIG 68

6. Replace the OPC Drum (FIG 69). Note the end of the drum shown in FIG 70 goes on the end of the cartridge with the Hopper Compression Spring shown in FIG 71.


FIG 69

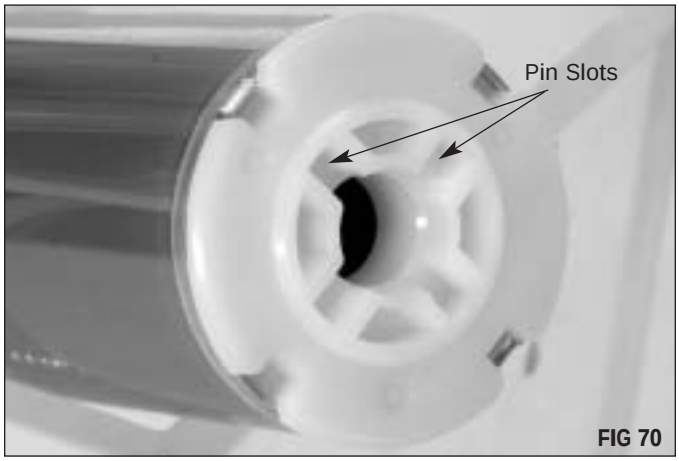


FIG 70

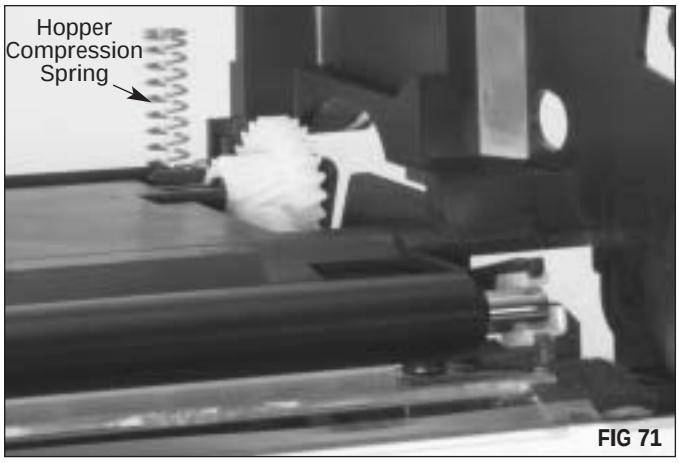


FIG 71

7. Slide the Drum Axle into the OPC drum as shown (FIG 72). Ensure that the Drum Axle Drive Pin engages with one of the pin slots in the end of the OPC Drum.

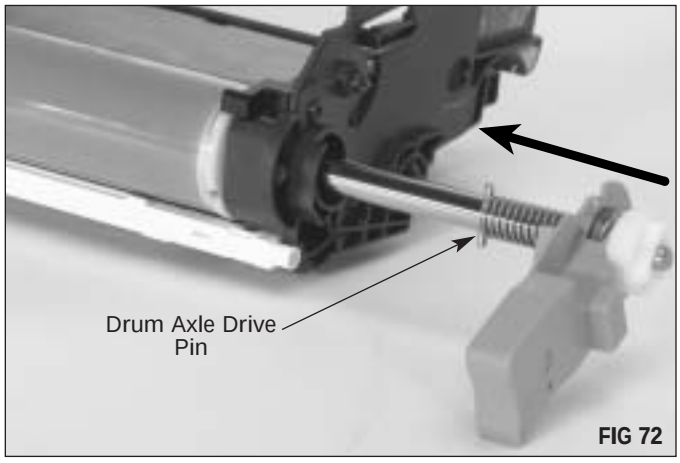


FIG 72

Note Use care not to damage the Drum Axle Contact while installing the axle. The Drum Axle Contact is located behind the Drum Axle Bearing.

8. Secure the handle with a screw (FIG 73).

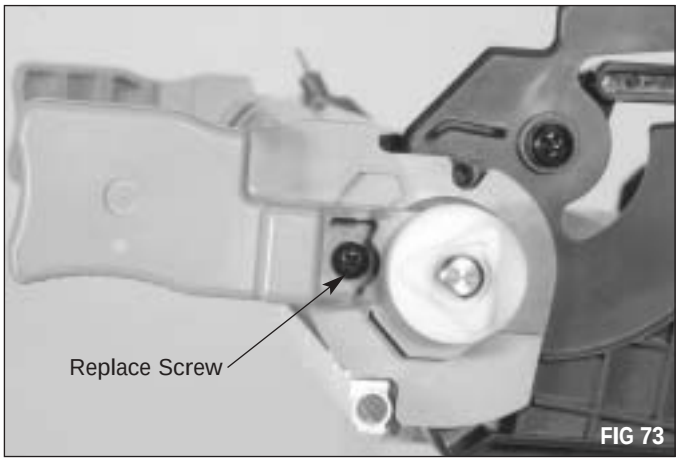


FIG 73

9. Replace the Drum Axle Washer and Retaining Ring (FIG 74). Make sure the Retaining Ring fits snugly.

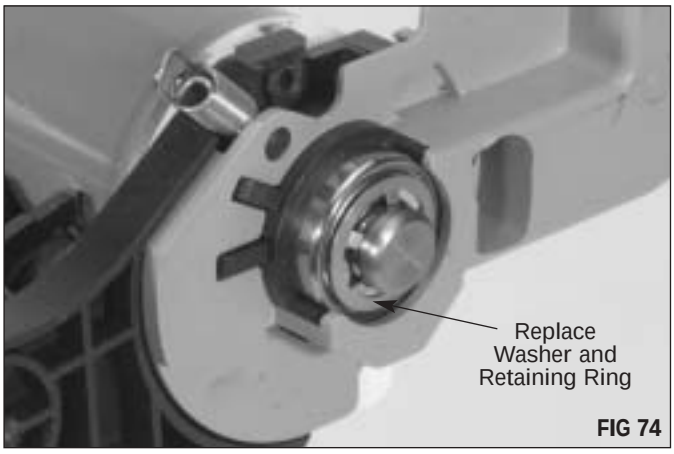


FIG 74

Cartridge Reassembly

1. Place the cartridge sections back together (FIG 75). Make sure the Compression Spring is properly seated in the square slot on the cartridge (FIG 76 & 77).

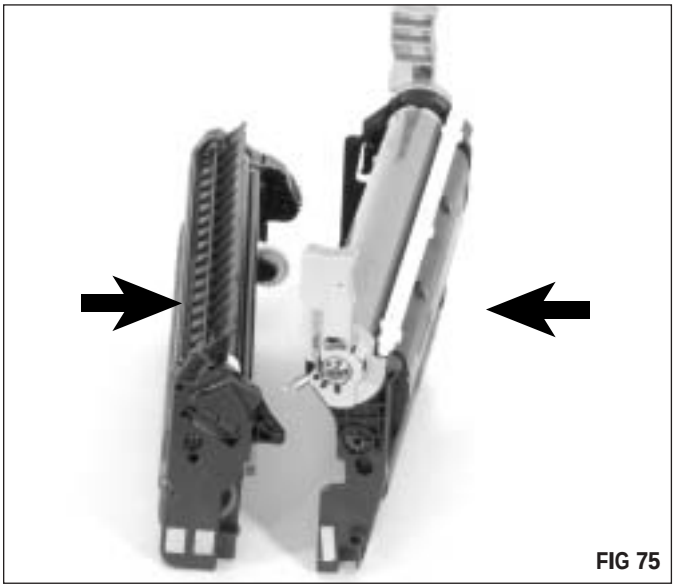


FIG 75

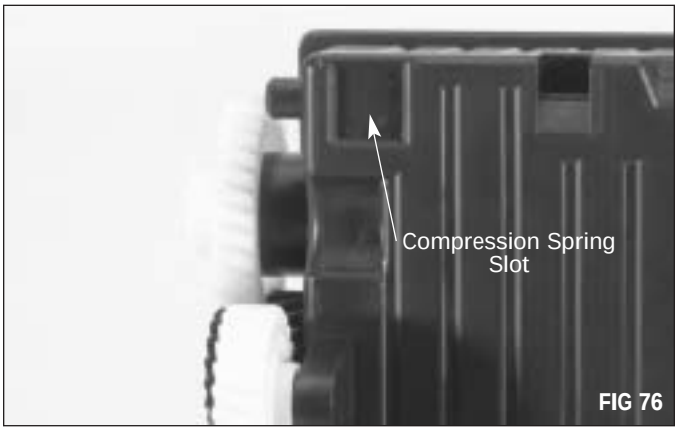


FIG 76

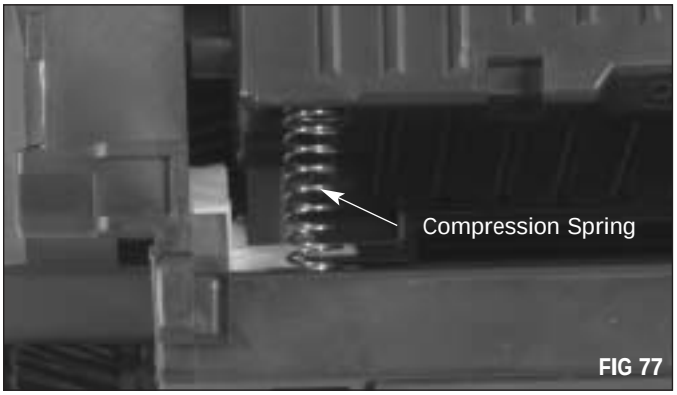


FIG 77

2. Replace the OEM Cartridge Pins with SCC's replacement Cartridge Pins (HP46PIN-L & (HP46PIN-SH) to facilitate disassembly during subsequent remanufacturing cycles (FIG 78). The long pin goes on the drive side (FIG 79) and the short pin goes on the contact side (FIG 80).

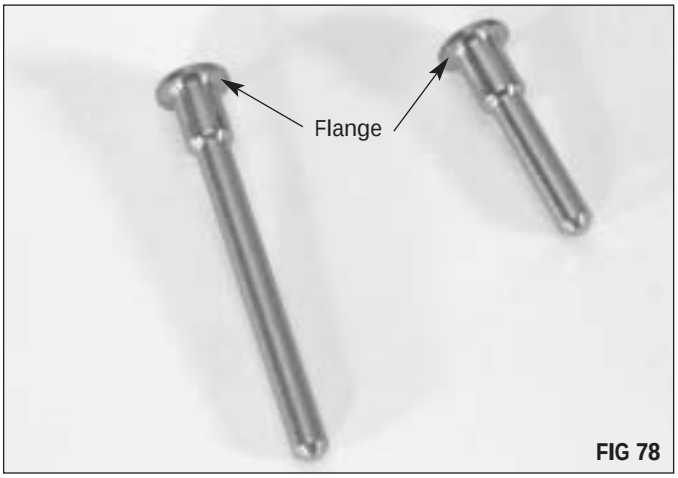


FIG 78

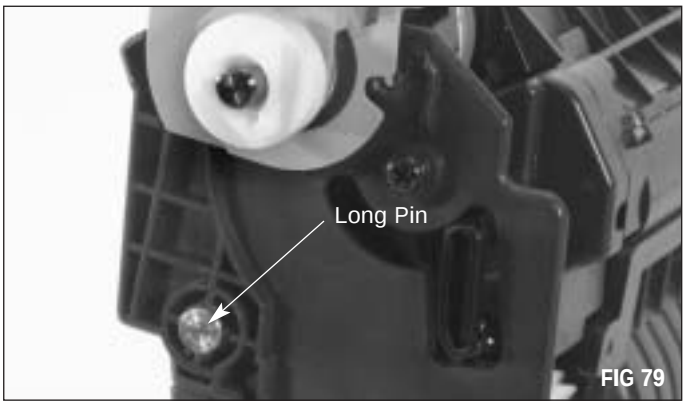


FIG 79

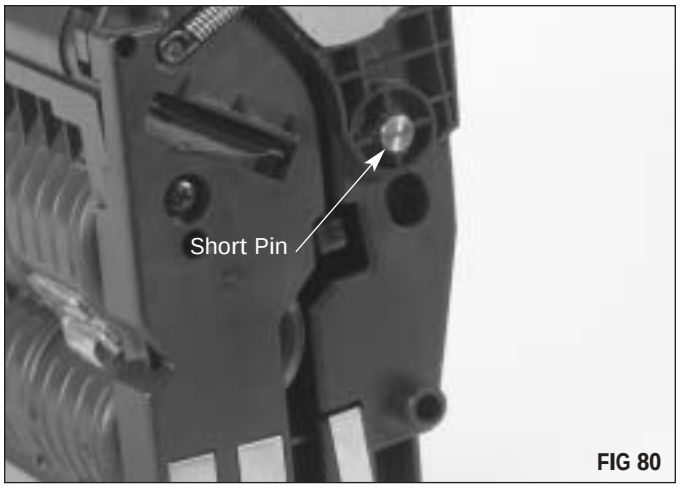


FIG 80

3 . Use a Hook Tool (HTOOL) to fasten the Hopper Tension Spring (FIG 81).


FIG 81

4. Replace the Shutter, first pressing the Shutter back into the Shutter Arm (FIG 82) then putting the ends of the Shutter Support Bar back into the holes on the cartridge (FIG 83 & 84). Test the Shutter for proper movement. Make sure the Mylar Strip on the bottom of the Shutter is on the outside and not under the edge of the hopper after reassembly.

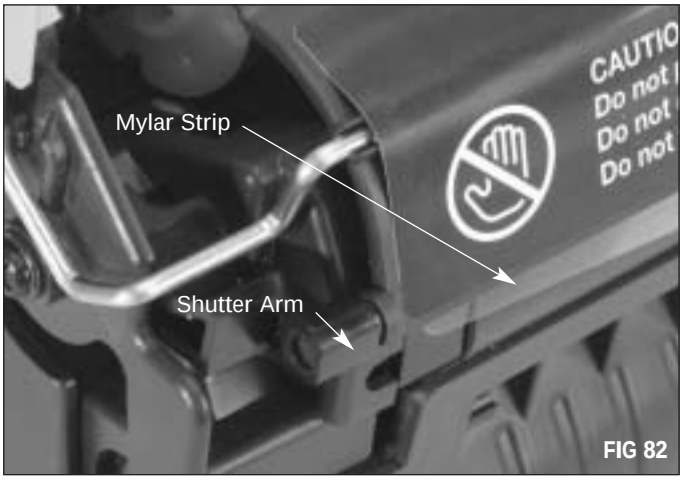


FIG 82

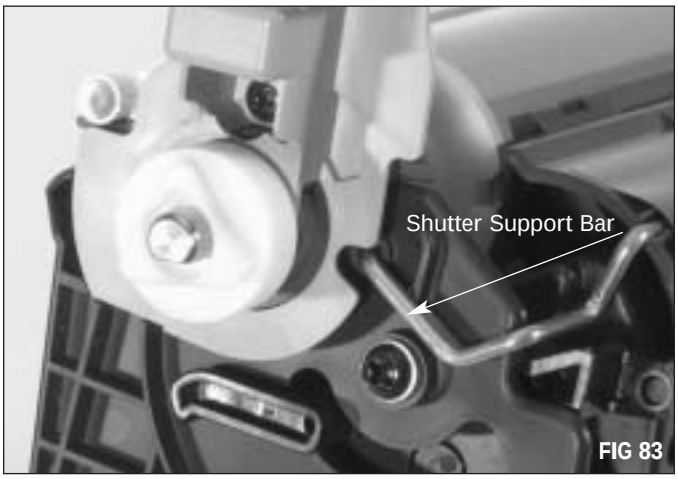


FIG 83

FIG 84

HP4600 Multifunction Hopper Jig

SCC has developed a Multifunction Hopper Jig (HP46HJIG) which facilitates various tasks performed during the remanufacturing process of the HP4600 cartridge (FIG 85). Following are various examples of its use.

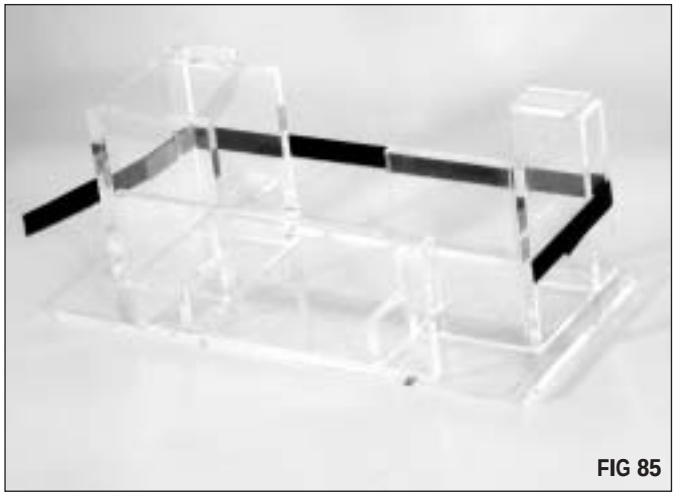


FIG 85

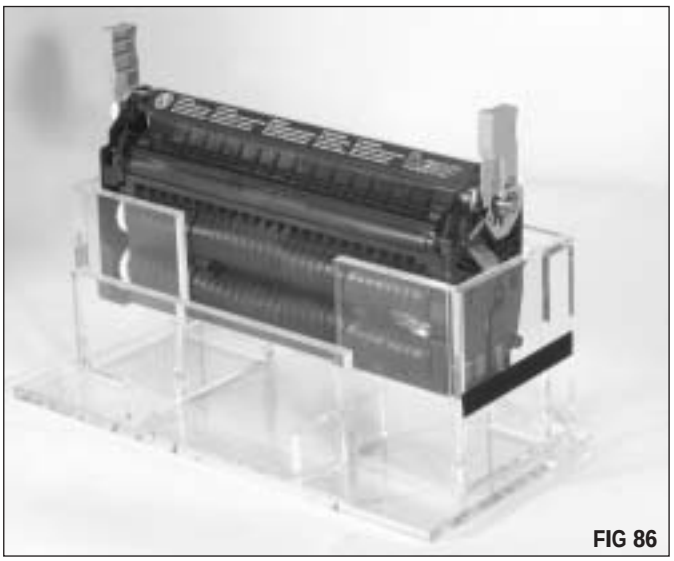


FIG 86

Shutter Removal

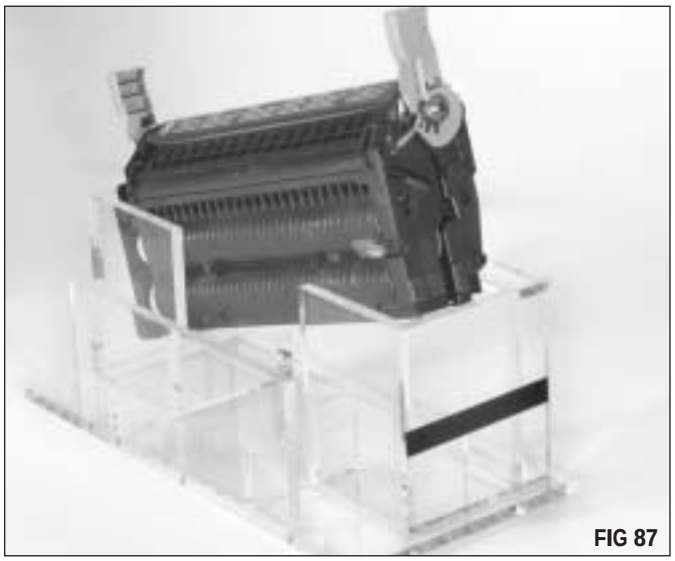


FIG 87

Pin Removal (contact side)

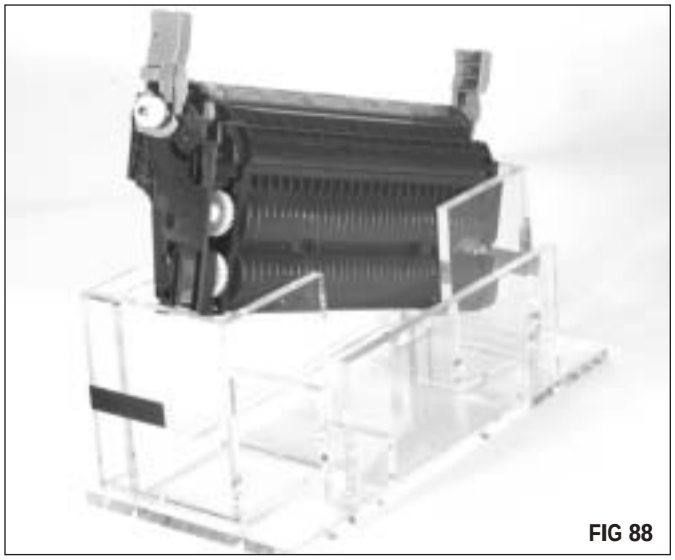


FIG 88

Pin Removal (Drive Side)

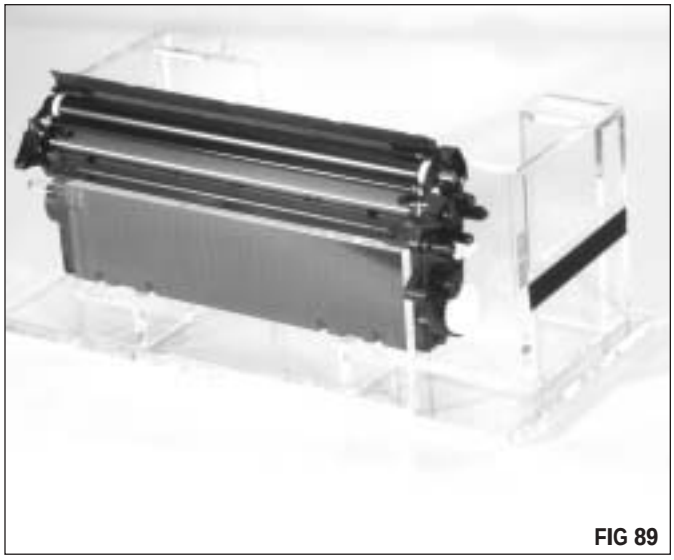


FIG 89

Toner Hopper Disassembly (Position 1)

FIG 91

Fill Hopper with toner

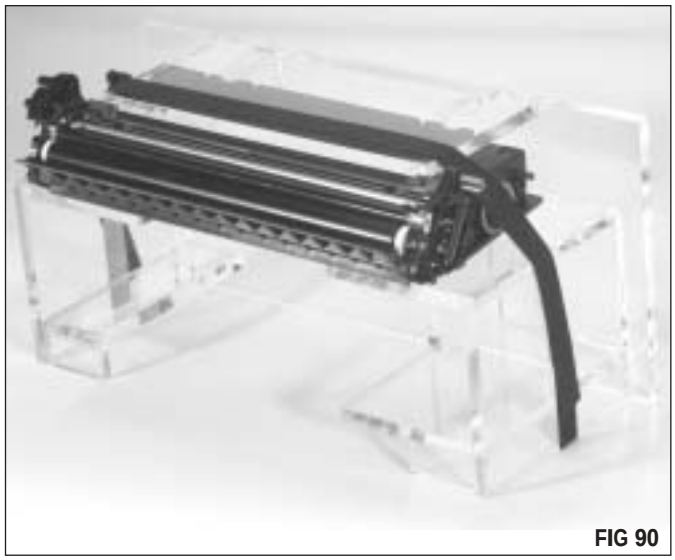


FIG 90

Toner Hopper Disassembly (Position 2)

FIG 92

Drum Unit Disassembly

Post Testing

The following procedure outlines the method of post testing the cartridge with the seal in place. The steps shown here is a guideline only to provide the remanufacturer an opportunity to check for gross errors prior to shipment. Leakage of unused post testing toner may occur during shipment if all toner is not completely depleted prior to packaging.

Printer Preparation

1. Using the printer's keypad, place the printer in the Disable Cartridge Check diagnostic mode*.

Cartridge Preparation

2. Chip: The cartridge can be post tested with no chip, a used chip, a spent chip, or a new chip (no information will be written to the chip).

3. Toner: Thoroughly shake toner in its container for improved flow and charging properties before measurement or filling the cartridge. Measure 2g of black toner (or 1g of colored toner) onto a small piece of paper approximately 4" x 4". Uniformly distribute the toner into the valley where the developer roller contacts the developer roller sealing blade, along the entire length of the roller. Toner should be applied evenly between centers of end felts. (See Figure 1a)

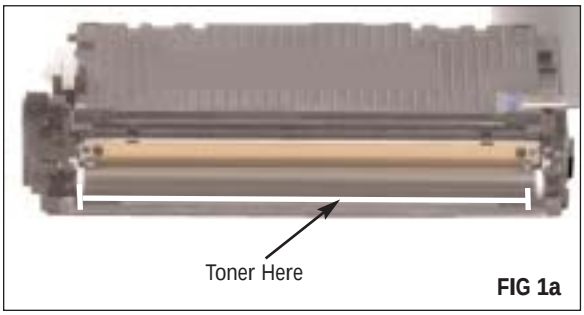


FIG 1a

4. Rotate the developer roller by rotating the uppermost gear in the gear train, moving the top of the gear towards the rear of the hopper. The rotation of the developer roller will draw the toner into the seal area and distribute it evenly across the surfaces of the developer roller and adder roller. Continue rotating the roller until all of the toner has been drawn into the seal area. (See Figure 1b)

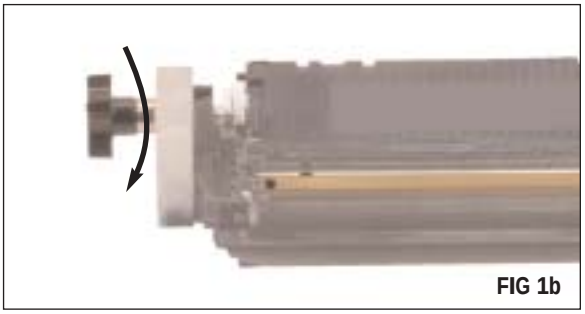


FIG 1b

5. Cartridge: Assemble the waste bin section to the hopper.

Printing

6. Instruct the printer to print two (2) 30% pages followed by 10 solid black pages. The print density of the 30% pages may not be a full 30% but should be sufficient to detect gross defects. The black pages are printed to remove excess toner from the cartridge to minimize leakage during shipment.

7. Remove cartridge from the printer and rotate forward such that the drum shutter of the waste bin section is closest to the table surface. (See Figure 1c) Gently tap the cartridge handles on the table several times to redistribute the remaining toner and reinsert cartridge into printer. Print a minimum of 10 more black pages until toner is depleted.

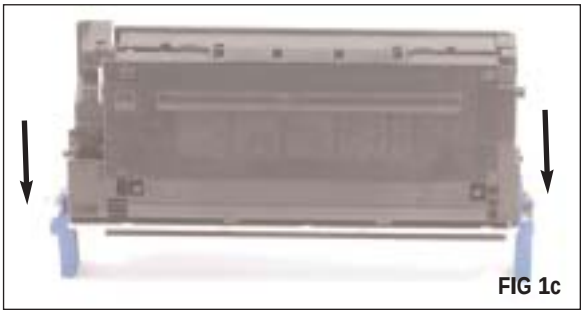


FIG 1c

8. Repackage for shipment

*To enter Disable Cartridge Check diagnostic mode:

1) Printer must be in 'Ready' state with all installed cartridges having a chip installed
2) Press '√' Select Button to access menus
3) Press 'v' Down Button 3 times to 'Diagnostics'
4) Press '√' Select Button to enter Diagnostics menu
5) Press 'v' Down Button 3 times to 'Disable Cartridge Check'
6) Press '√' Select Button to enter Disable Cartridge Check mode
7) Display will read 'Ready Diagnostic Mode'

Cleaning Instructions

Important: Do not use **91% isopropyl alcohol** to clean these component parts. Using 91% isopropyl alcohol will require excessive scrubbing, which will damage the Doctor Blade and Developer Roller.

Doctor Blade Cleaning

1. Using ionized dry, filtered, compressed air clean any loose toner from the Doctor Blade as shown in FIG 93.

FIG 93

2. Place the Doctor Blade on the fixture as shown in Fig 94. Use a dry lint free cloth to remove any remaining toner from the coated surface of the working edge (the surface which contacts the Developer Roller).

Note: The fixture is needed in order not to damage the Doctor Blade in the process of cleaning.

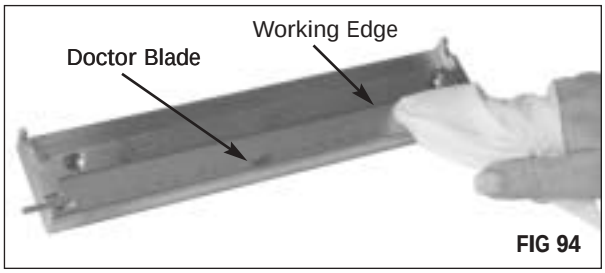


FIG 94

3. Then, use **99% isopropyl alcohol** and a cotton swap to remove any toner build up left on the surface of the Doctor Blade as shown in FIG 95.

Note: After removing the toner build-up, the working edge of the Doctor Blade will remain discolored from the toner. Do not attempt to remove this discoloration or you could damage the Doctor Blade.

FIG 95

4. If necessary repeat step 3 and reinspect the surface to ensure that it is completely clean and free of any toner build up. Do not apply isopropyl alcohol directly to the blade as damage to the blade's coating may occur if it is saturated and allowed to soak in isopropyl alcohol.

Note: If the toner build-up is not thoroughly cleaned you will see a print defect consisting of vertical streaks on solid color test pages.

5. Once you are sure that the Doctor Blade is clean, use a lint free cloth dampened with **deionized water** to wipe down the entire surface of the Doctor Blade as shown in FIG 96. The lint free cloth should only be damp, not completely wet. Using excessive amounts of **deionized water** will result in a longer drying time.

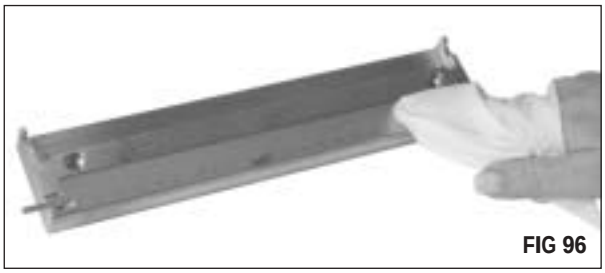


FIG 96

6. Let the Doctor Blade dry for approximately 5 minutes.

Note: Before installing the Doctor Blade in the cartridge, ensure that is completely dry. If it is not completely dry; then, use ionized dry, filtered, compressed air to complete the drying process.

Developer Roller Cleaning

1. Grasp the Developer Roller by the metal shaft at either end; then, using ionized dry, filtered, compressed air remove any loose toner as shown in FIG 97.

2. While holding the Developer Roller by the metal shaft, rotate and gently wipe the entire length of the Developer Roller from left to right with a dry lint free cloth.

3. Visually inspect the the Developer Roller for signs of damage, such as cuts, nicks, dents, or fraying of the coating on the ends of the roller.

Note: If there are signs of damage, then discard the Developer Roller and replace it with a new one. If there are no signs of damage then continue with this procedure.

4. Place the Developer Roller in the fixture as shown in Fig 98.

5. Dampen a lint free cloth with **99% isopropyl alcohol**.

6. Grasp the Developer Roller by the metal shaft at either end; then, starting from the center use the moistened lint free cloth, to gently wipe to and beyond the end of the Developer Roller.

7. Rotate the Developer Roller and repeat the wiping motion until the roller is clean of toner.

8. Grasp the opposite end of the Developer Roller and repeat step 4 and 7 in the opposite direction.

Note: While cleaning the Developer Roller you will notice a ring of toner at the ends of the Developer Roller. To remove this ring of toner, use shorter strokes. Do not use a scrubbing motion or heavy pressure to remove this ring as this could damage the Developer Roller . Wipe in the direction from center to the end of the roller so not to damage the coating on the ends of the roller.

9. Once all of the toner has been removed, and there is a uniform appearance to the surface of the Developer Roller. Use a lint free cloth dampened with **deionized water** to remove any cleaning residue as shown in FIG 99.

10. Let the roller dry for approximately 5 minutes.

Note: Before installing the Developer Roller in the cartridge, ensure that is completely dry. If it is not completely dry; then, use ionized dry, filtered, compressed air to complete the drying process.

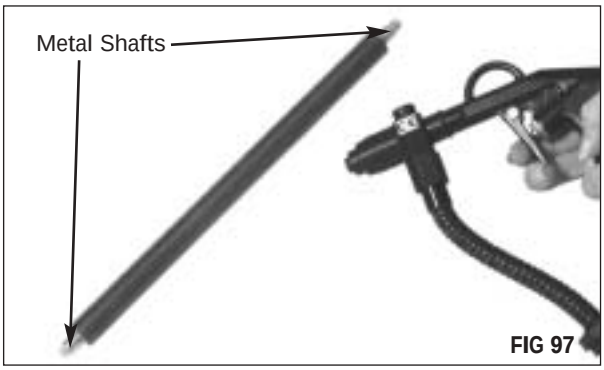


FIG 97

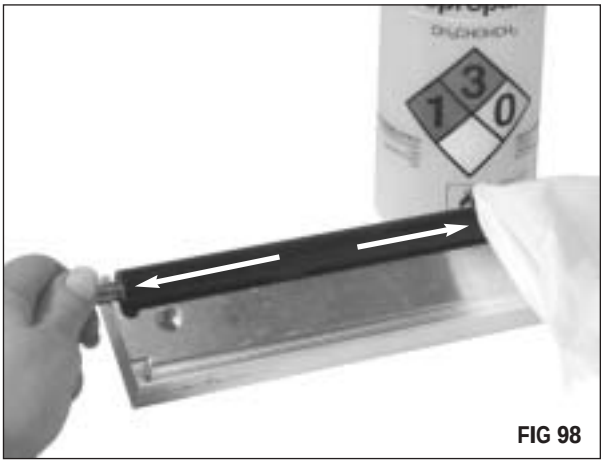


FIG 98


FIG 99

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