

THE HP CLJ 1500/2500/2550 DRUM/TRANSFER UNIT



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Remanufacturing the HP CLJ 1500/2500/2550 Drum/Transfer Unit



The HP CLJ
1500/2500/2550
Drum/Transfer Unit

The HP-2500 series of printers over time has proven to be very popular. The basic engine has been upgraded 4 times now, each time with better features, and for the most part, a lower cost. From our industries point of view, the toner cartridges are fairly easy to do, and while the OPC cartridge is a bit more complicated, the potential profit makes it worth the effort. (Remanufacturing the toner cartridge for these machines has been covered in a previous article.) The OPC cartridge is actually made up of two different units, the OPC, and the transfer belt. Both of them must be taken apart and cleaned in order for the cartridge to function properly. It's a fairly complicated process, and you have to be very careful to keep your hands clean. The gears all have grease on them and it is very easy to get that grease on the belt. Great care must be taken to prevent this as the grease may ruin the belt.

There are different part numbers for the different version drum units, but they all are remanufactured the same way.

As stated above, there have actually been four different releases to this series. The first in October 2002 was the HP-2500 series based on a 17 ppm (black) 600 Dpi engine, (2400 DPI with RET). Those machines went for approximately \$1000.00 when new. Then in May 2003,

the 1500 series were released. The 1500 series is based on a 16ppm, 600Dpi engine, but the new machine prices dropped to as low as \$550.00 for both these groups, the color speed stayed at 4ppm, and the cartridges used are the same.

Then in June 2004, the 2550 series was released. The Black print speed jumped to 20ppm but the color still stayed at 4ppm. Resolution also stayed the same at 600Dpi (2400 Dpi with RET). The list price on these machines dropped to \$499.00. The 2550 machines also use a new set of cartridges.

Finally in April 2005, the 2800 series was released. The 2820 and the 2840 are both "All-in-One" machines that print, copy, fax (2840 only) and scan. The print speed for both machines is 20ppm black and still 4ppm for color. The 2820 lists for \$799.00 and the 2840 is \$999.00. The cartridges used are the same as the 2550 series. The 2820 machines come new with a 5K black cartridge and all 2K color cartridges, the 2840 machines come new with a 5K black and all 4K color cartridges

Both groups of machines use a five cartridge system. Four color toners, and a separate drum cartridge. The cartridges used by these machine groups are as follows:

HP Color LaserJet 1500/2500 (Canon EP-87)

C9700A Black	5,000 pages at 5%	\$115.54 List*
C9701A Cyan	4,000 pages at 5%	\$139.18 List*
C9702A Yellow	4,000 pages at 5%	\$139.18 List*
C9703A Magenta	4,000 pages at 5%	\$139.18 List*
C9704A Drum	20,000 Pages Blk 5,000 color**	\$241.68 List*

HP Color LaserJet 2550/2820/2840

Q3960A Black	5,000 pages at 5%	\$115.54 List*
Q3961A Cyan	4,000 pages at 5%	\$139.18 List*
Q3962A Yellow	4,000 pages at 5%	\$139.18 List*
Q3963A Magenta	4,000 pages at 5%	\$139.18 List*
Q3964A Drum	20,000 Pages Blk 5,000 color**	\$241.68 List*
Q3971A Cyan	2,000 pages at 5%	\$103.00 List*
Q3972A Yellow	2,000 pages at 5%	\$103.00 List*
Q3973A Magenta	2,000 pages at 5%	\$103.00 List*

There are also now special US government cartridges. These cartridges have a "G" at the end of the part #. I'm not sure at this point what the difference is, but they sell for the same price as the others.

* The pricing on all cartridges is current as of August 2006. Prices at this time are the same for both series.

** According to HP, the actual average life expectancy for the drum unit is between 6000 to 8000 pages.

The machines that use these cartridges are as follows:

HP-1500/2500 Engine

Canon imageClass MF8170C
Canon LBP-2410
HP Color LaserJet 1500
HP Color LaserJet 1500 L
HP Color LaserJet 2500
HP Color LaserJet 2500 L
HP Color LaserJet 2500 n
HP Color LaserJet 2500 Tn

HP-2550 Engine

Canon LBP-5200
HP Color LaserJet 2550 L
HP Color LaserJet 2550 Ln
HP Color LaserJet 2550 n
HP Color LaserJet 2820 AIO
HP Color LaserJet 2840 AIO

Taking test prints, cartridge troubleshooting as well as minor printer troubleshooting will be covered at the end of this article.

Required Tools

Toner approved vacuum or toner approved dust collector system
Phillips head screwdriver
Needle Nose Pliers
Jeweler's screwdriver set
Flush cutting wire cutters

Supplies Required

New replacement chip
New OPC Drum
New Wiper Blade
Drum/Wiper Blade lubricant
Lint free Cloths
Conductive Grease

1) With the wire cutters, remove the two pins from each side of the cartridge. If the pins are recessed, press in on the plastic with the cutters. See **Figures 1 & 2**

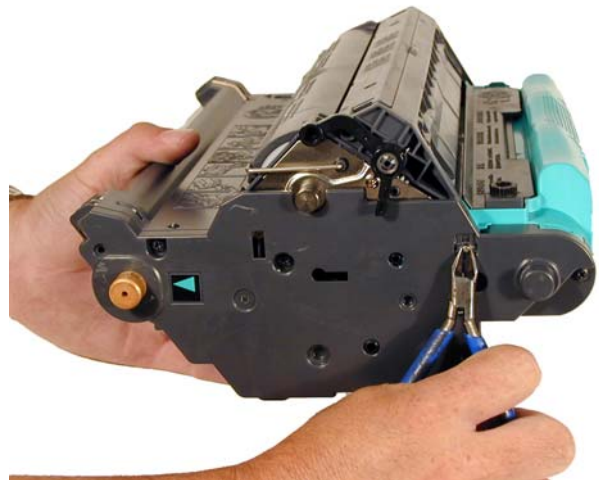


Figure 1

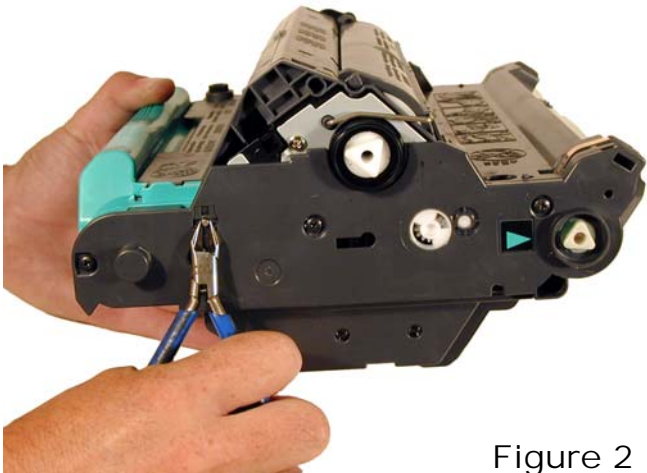


Figure 2

2) On the contact side of the cartridge, remove the 4 screws from the end cap. See **Figure 3**

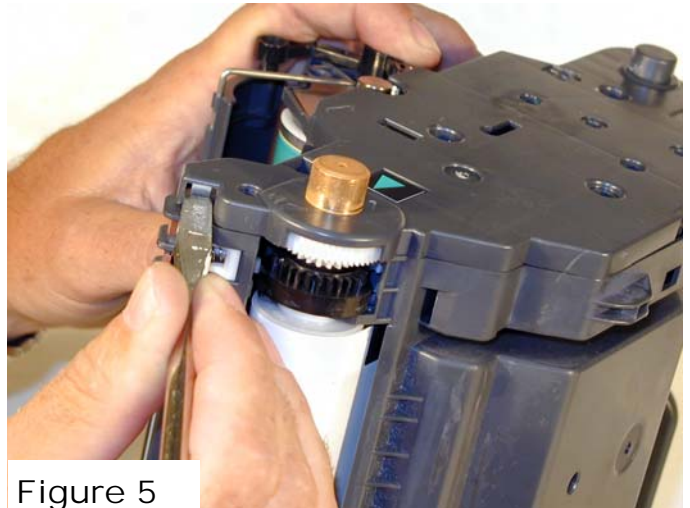


Figure 5

4) Remove the end cap. Watch the large copper contact hub. It will come loose also. See **Figure 6**

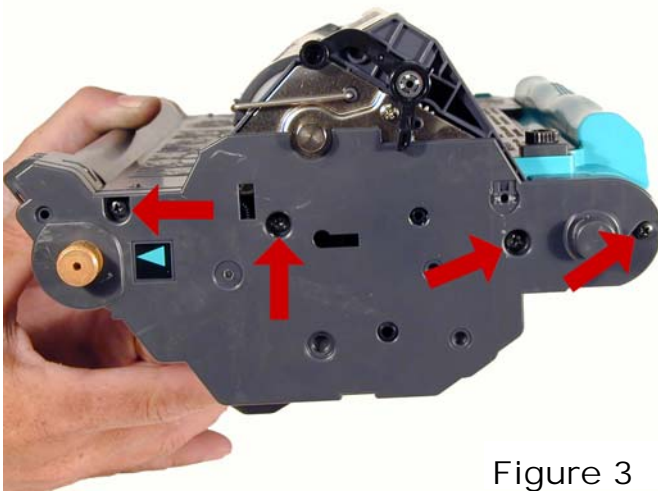


Figure 3

3) Press in on the bottom and top tabs to release. See **Figures 4 & 5**

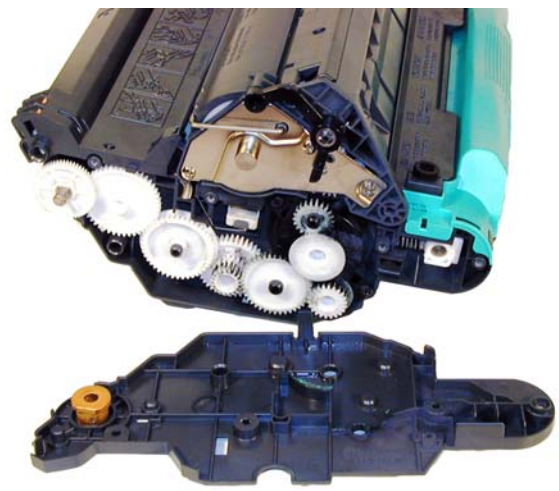


Figure 6

5) On the opposite side, remove the 5 screws from the end cap, a small white indicator gear may also come off, place it aside. See **Figure 7**

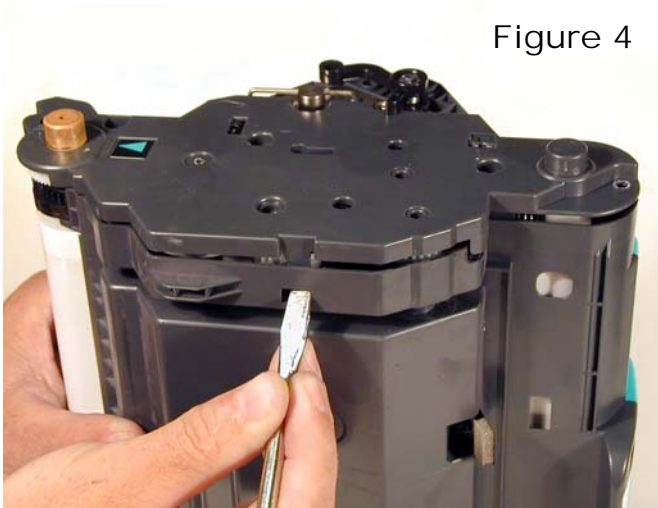


Figure 4

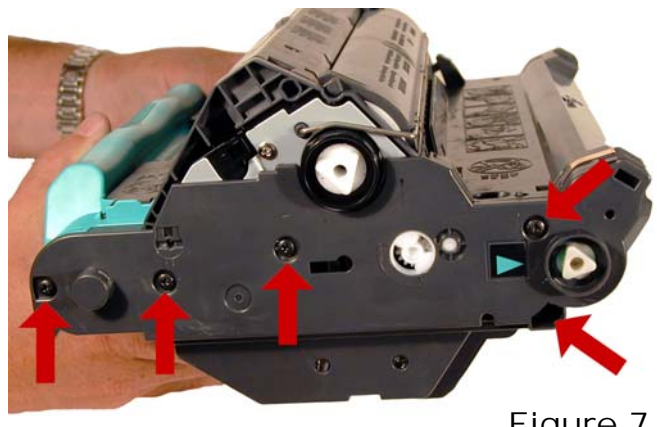


Figure 7

6) Press in on the bottom and top tabs to release. See **Figures 8 & 9**

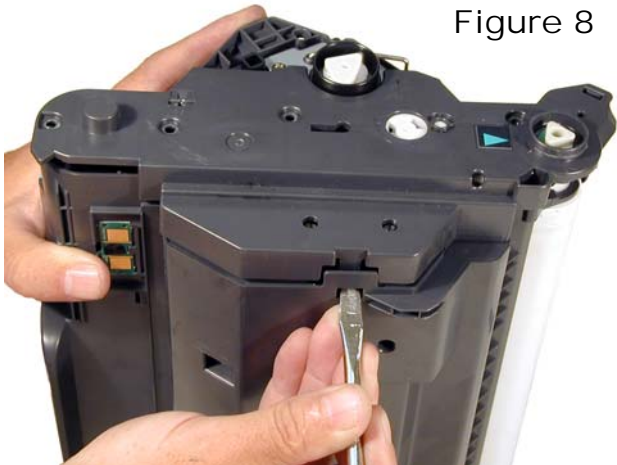


Figure 8

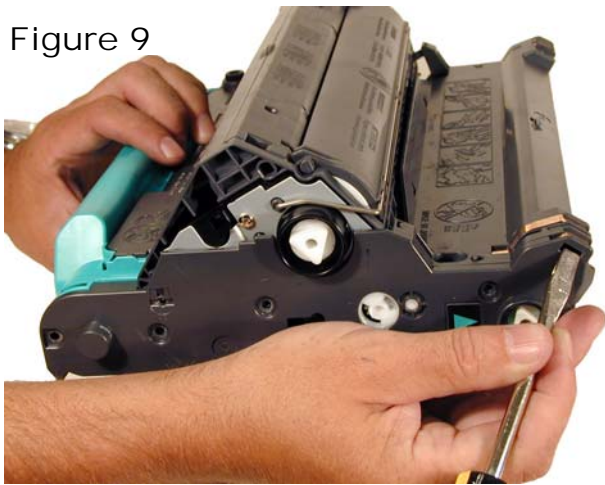


Figure 9

7) Remove the end cap. See **Figure 10**

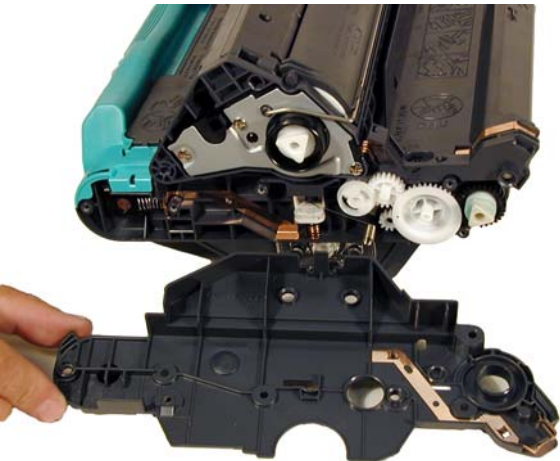


Figure 10

8) Remove the two screws from the large roller assembly, Remove the assembly. See **Figures 11 & 12**



Figure 11

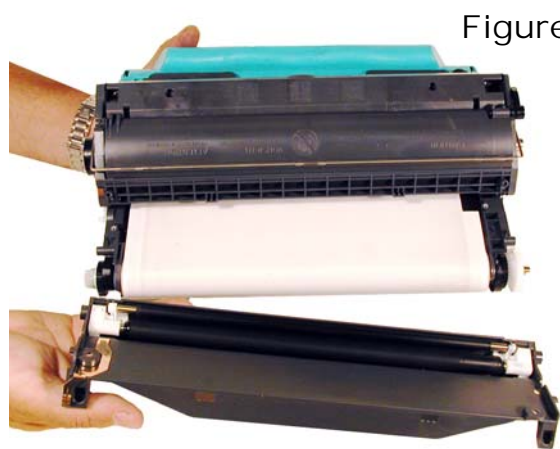


Figure 12

9) Lift the drum assembly off the cartridge and place aside. See **Figure 13**



Figure 13

10) Press up on the side green handle tabs, and remove the handle. See **Figure 14**

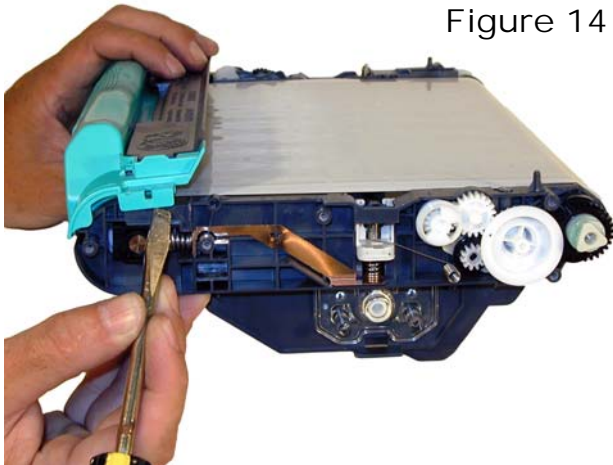


Figure 14

12) Slide the front roller back so the black and white bushings can be removed. Remove the bushings. See **Figures 17 & 18**

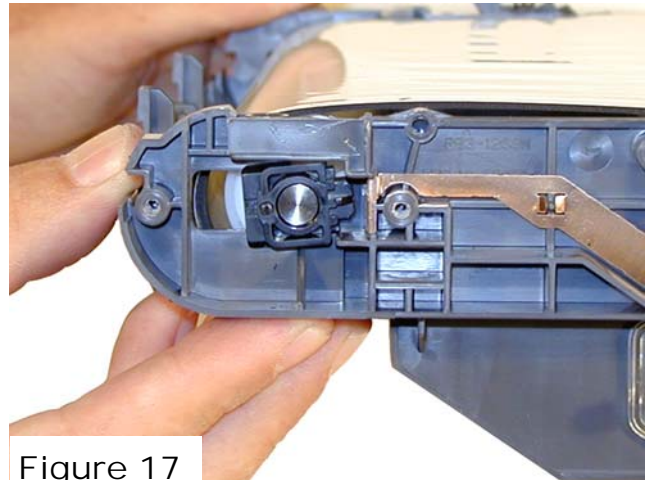


Figure 17

11) Remove the tension spring from both sides of the transfer belt. See **Figures 15 & 16**

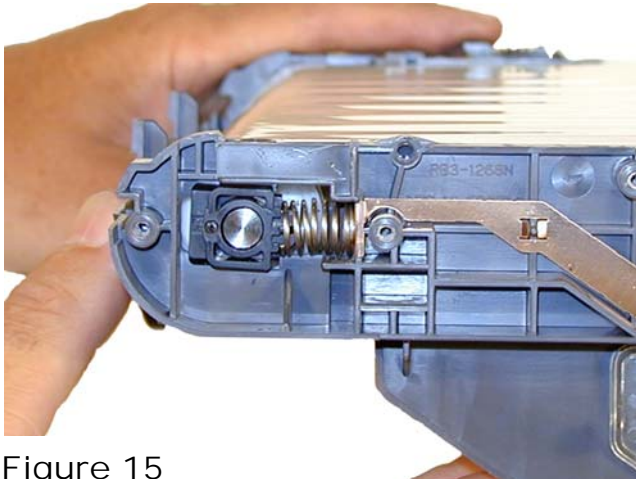


Figure 15

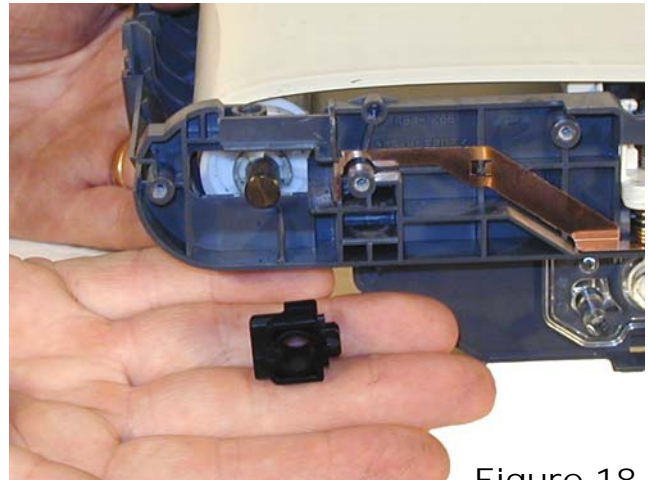


Figure 18

13) Remove the silver roller from the inside of the belt. See **Figure 19**

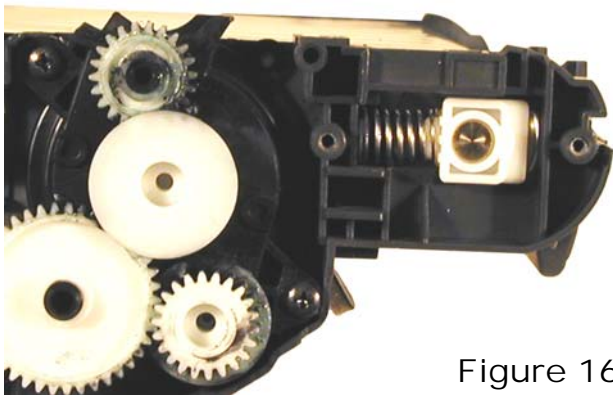


Figure 16

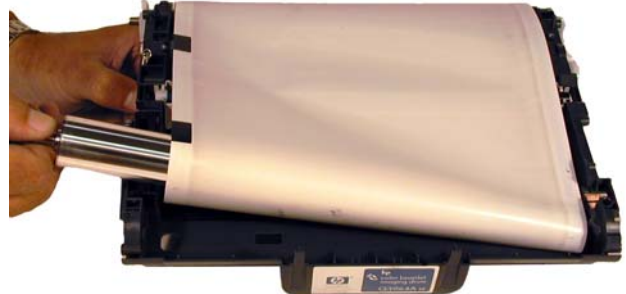


Figure 19

14) Press in on the tabs to release the transfer roller assembly. There are 2 tabs per side See Figures 20 & 21

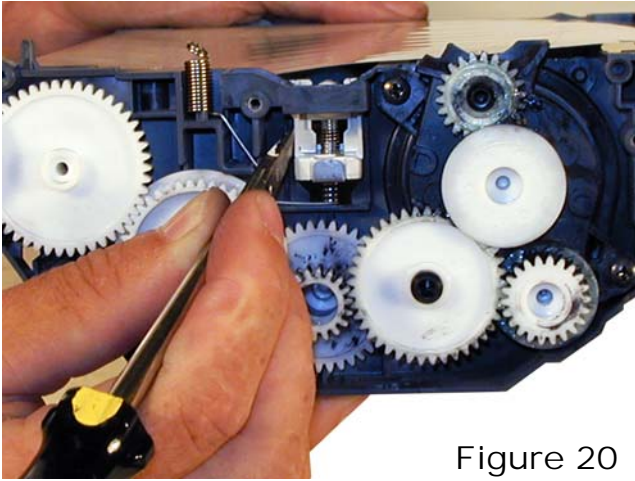


Figure 20

16) Carefully remove the transfer roller assembly from the inside of the belt. Make sure the spring doesn't get caught on the belt. See Figure 23



Figure 23

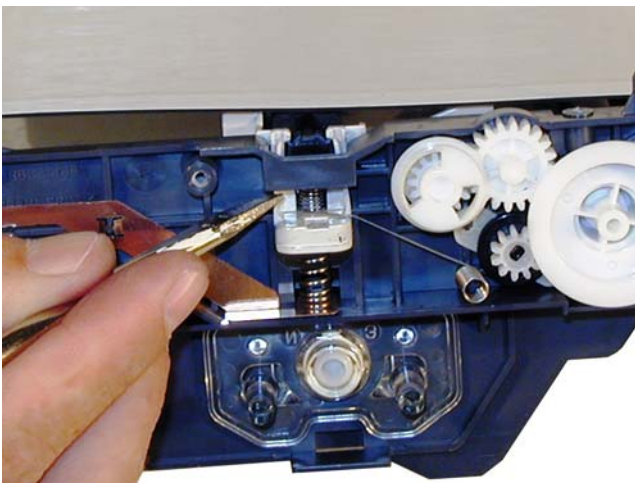


Figure 21

17) On the large gear side, remove the two screws from the gear cover. See Figure 24

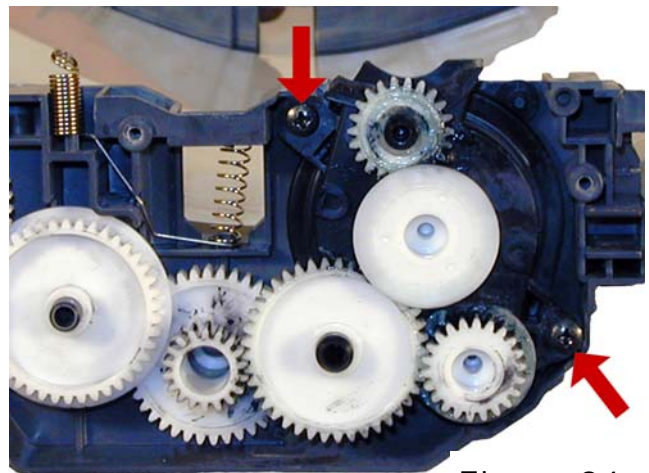


Figure 24

15) Remove the spring from the plastic shaft next to the transfer roller assembly. See Figure 22

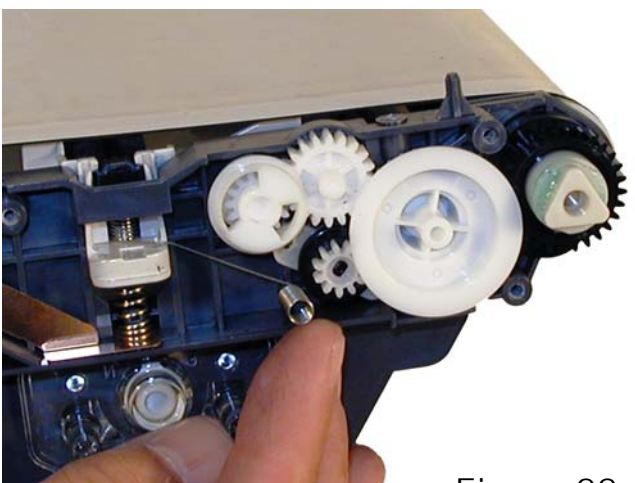


Figure 22

18) Pry off the black cover and gears. The cover is glued on. Take your time and work it off. Don't remove the gears from the cap! See Figure 25

Figure 25



19) Vacuum the waste chamber clean. See **Figure 26**



Figure 26

20) Peel off the old rubber glue from the cover.

21) Vacuum clean the auger/cover.

22) Put a small bead of silicon in the groove of the cover. Install the black cover and 2 screws. Make sure the auger and gear align. See **Figure 27**

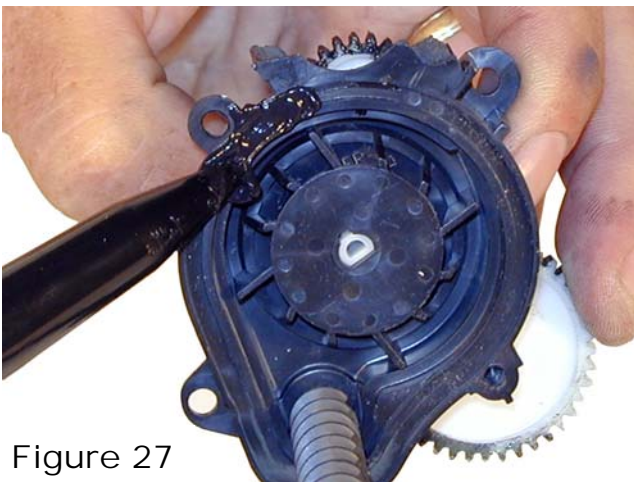


Figure 27

23) Clean the belt off inside and out with a clean lint free cloth.

24) Vacuum the transfer roller assembly clean, and re-install. Insert the small spring side first (to contact side) Align the posts and spring. Press into place on both sides. See **Figures 28, 29, & 30**



Figure 28

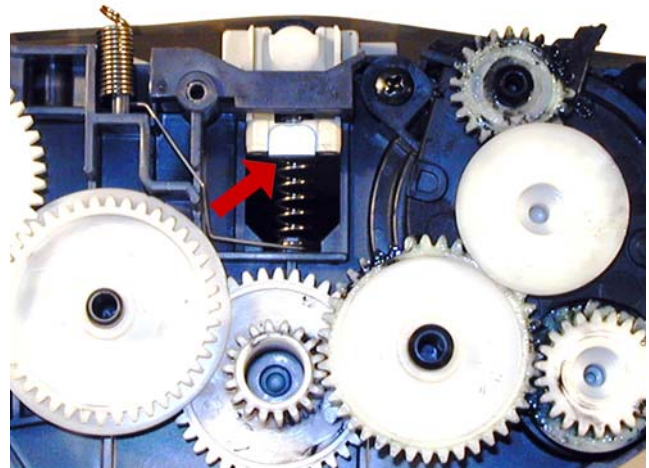


Figure 29

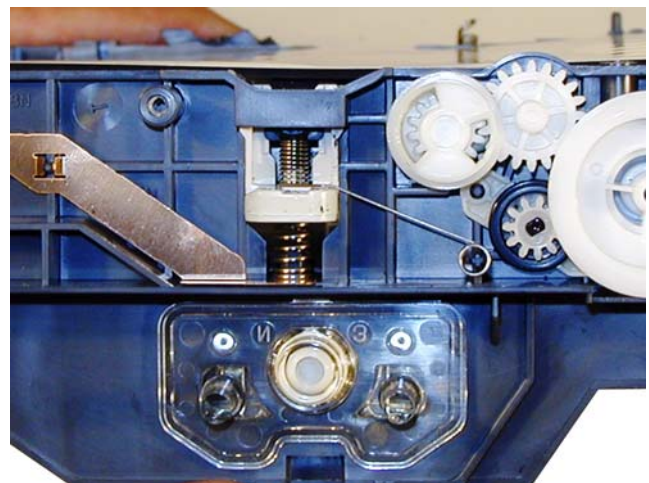


Figure 30

25) Install the silver roller back into the belt, white hub to contact side. Make sure the foam on the back side of the belt fits into the slot in the roller. Install the black and white bushings into the cartridge as shown. There is a small tab that fits into the bushing slot to help align them. The black bushing goes to the contact side. See **Figures 31, 32, & 33**

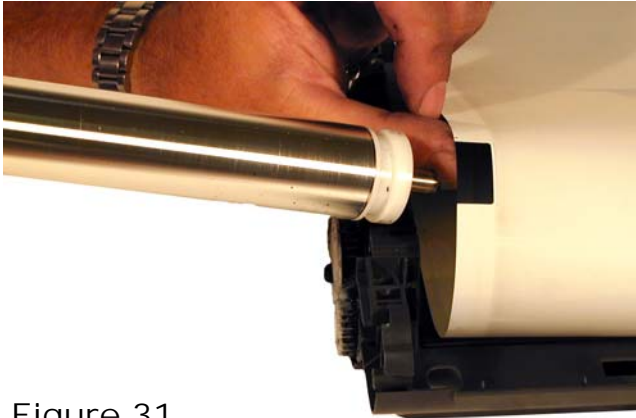


Figure 31



Figure 32

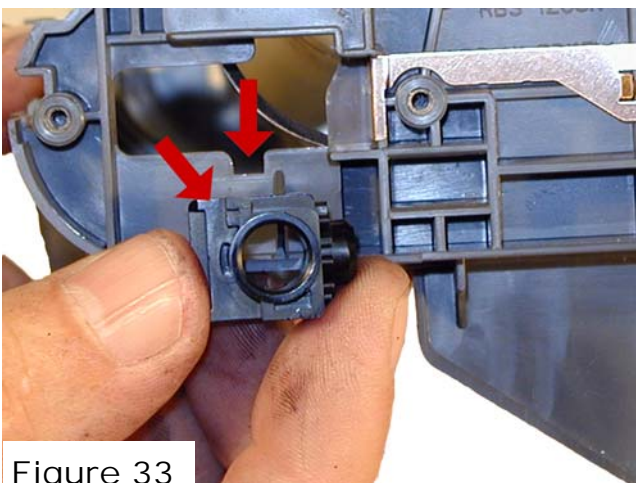


Figure 33

26) Install the belt tension springs. Take a pair of needle nose pliers and compress the spring. Install on the post first, and slide the bottom of the spring in. See **Fig. 34**

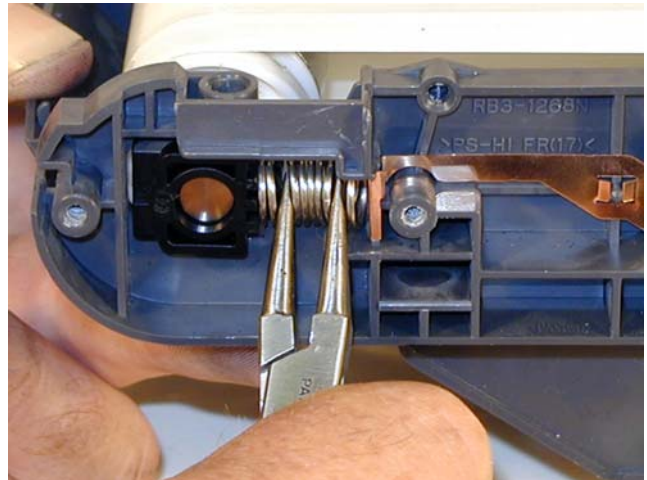


Figure 34

27) On the drum unit, remove the 2 screws from the top of the cartridge. They are recessed and located by the drum cover bar. See **Figure 35**



Figure 35

28) Remove the PCR roller assembly. See **Figure 36**



Figure 36

29) On the drum unit, remove the metal drum cover bars from the cartridge. See **Figure 37**



Figure 37

32) Rotate the drum cover arm out of the way, and remove the drum axle. See **Figure 40**



Figure 40

30) Press in on the drum cover spring arm tab to release the cover. Remove the cover. See **Figure 38**

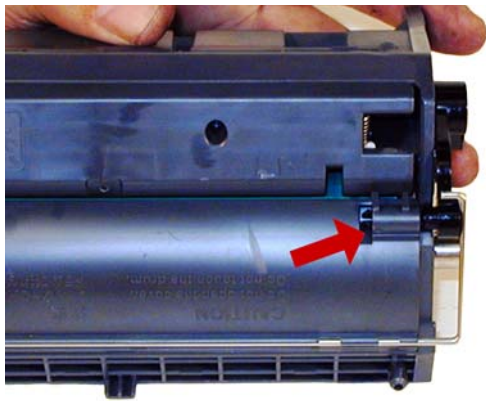


Figure 38

33) Remove the 3 screws on the opposite side plate. Note that these screws are larger than the drum axle plate screws. See **Figures 41 & 42**

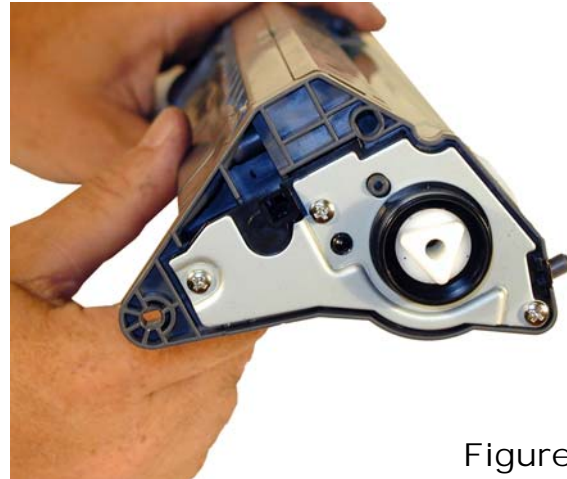


Figure 41

31) Remove the 3 screws from the metal drum axle. See **Figure 39**

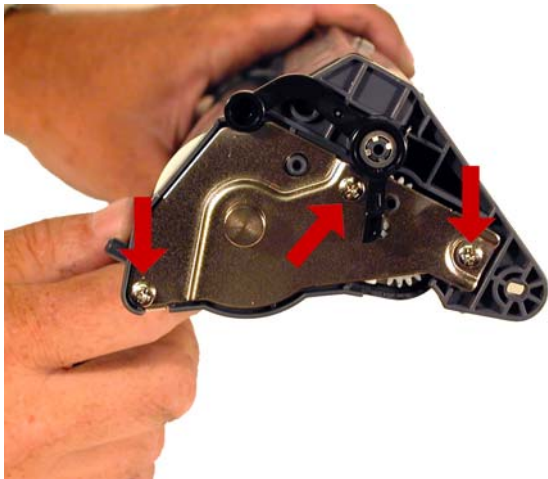


Figure 39

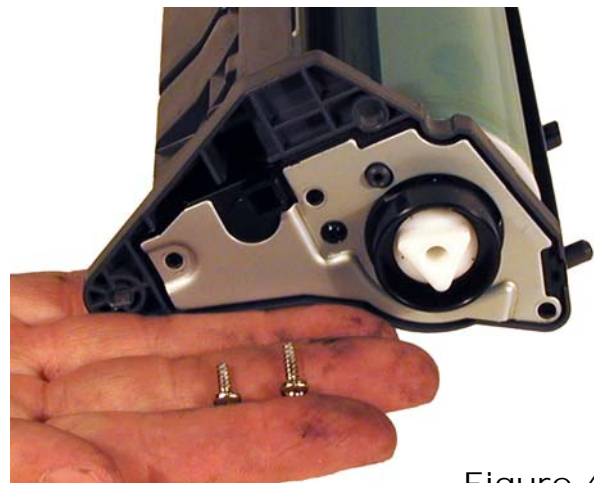


Figure 42

34) Pres in on the copper contact, and remove the plate.
See **Figure 43**



Figure 43

35) Remove the OPC Drum. See **Figure 44**



36) Remove the 2 screws and wiper blade. See **Fig. 45**



Figure 45

37) Remove the 3 screws from the waste chamber brace, remove the brace. See **Figures 46 & 47**

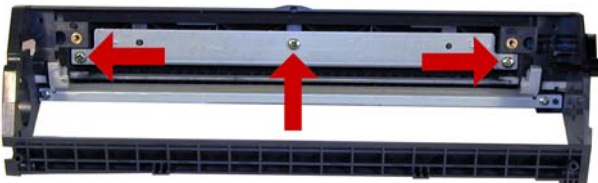


Figure 46



Figure 47

38) Clean out the waste toner.

39) Reinstall the brace and 3 screws. See **Figure 48**



Figure 48

40) Coat the new wiper blade with your preferred lubricant, and install See **Figure 49**



Figure 49

41) Install the new OPC drum. See **Figure 50**



Figure 50

42) Install the gear side contact plate and 3 screws.
(These are the longer silver screws)
See **Figures 51 & 52**

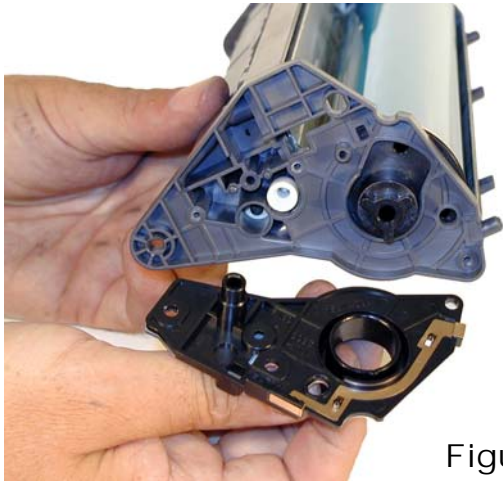


Figure 51

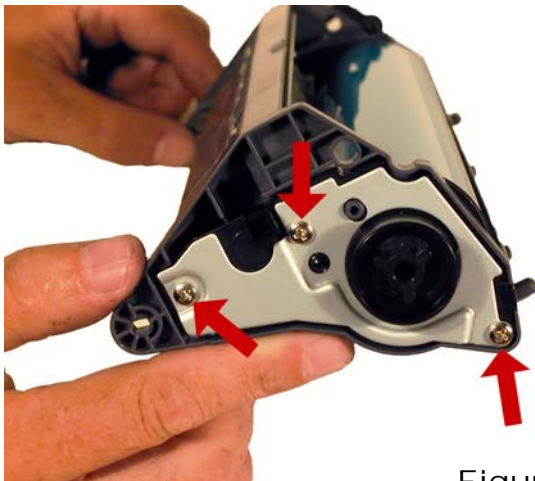


Figure 52

43) Install the drum axle plate and 3 screws (short silver). Make sure the contact grease on the end of the axle is clean, if not, replace it. See **Figure 53**

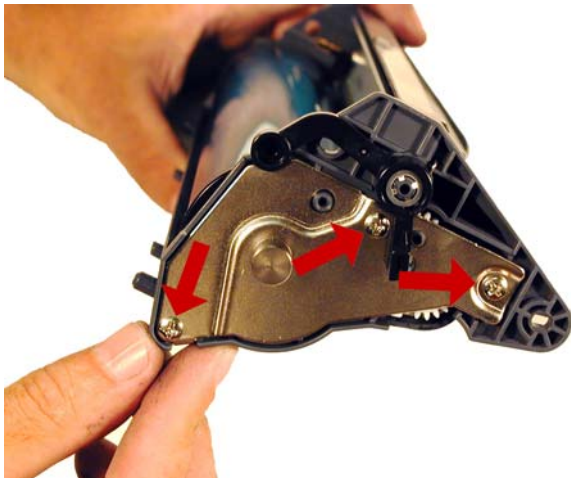


Figure 53

44) Clean the PCR with your preferred cleaner.

45) Install the PCR assembly and 2 screws (silver). See **Figure 54**



Figure 54

46) Set the drum unit on top of the transfer belt assembly so the waste auger aligns with the waste port. See **Figures 55 & 56**

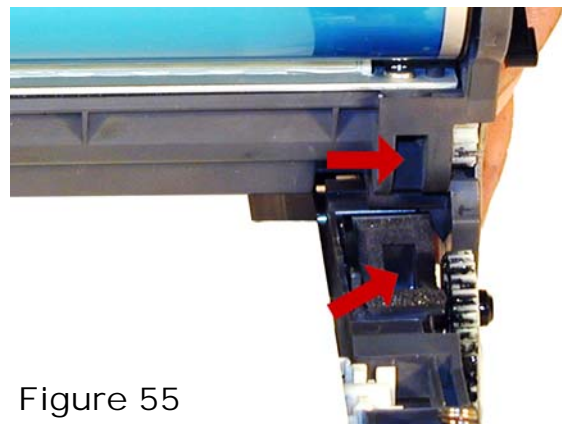


Figure 55

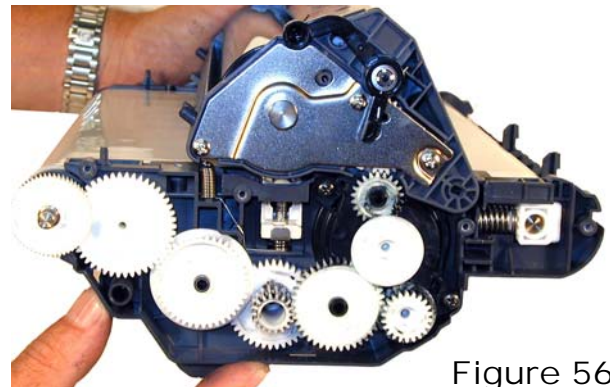


Figure 56

47) Clean the roller assembly and install in the drum/transfer assemblies. Install the 2 screws. See **Figures 57 & 58**

48) Snap the green handle in place. Make sure all the tabs are locked. See **Figure 59**

49) Install the small indicator gear in the gear train as shown. The gear will only fit in one way. **Figs. 60 & 61**

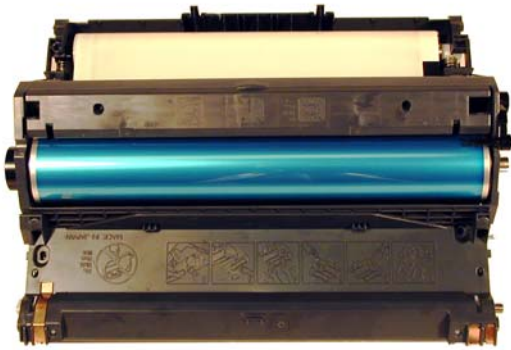


Figure 57



Figure 58



Figure 59

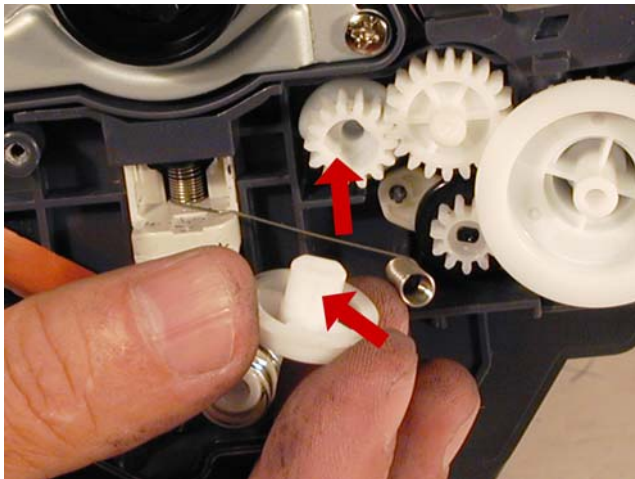


Figure 60

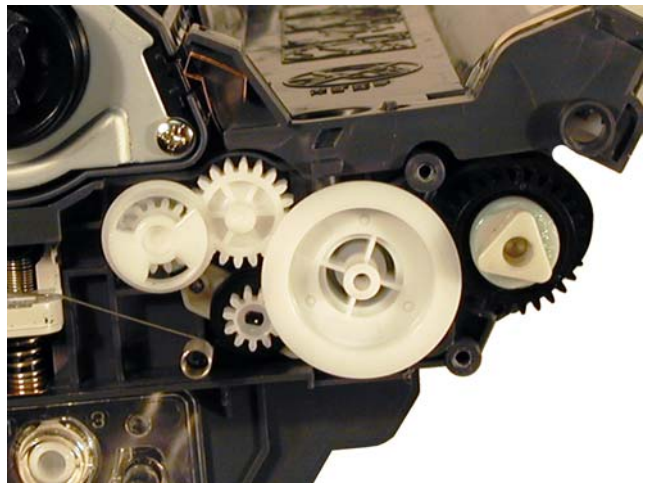


Figure 61



Figure 62

50) Install the contact side end cap and 5 screws. See **Figure 62**

51) Install the gear side end cap and 4 screws. Make sure the copper contact hub is aligned properly. See **Figures 63 & 64**

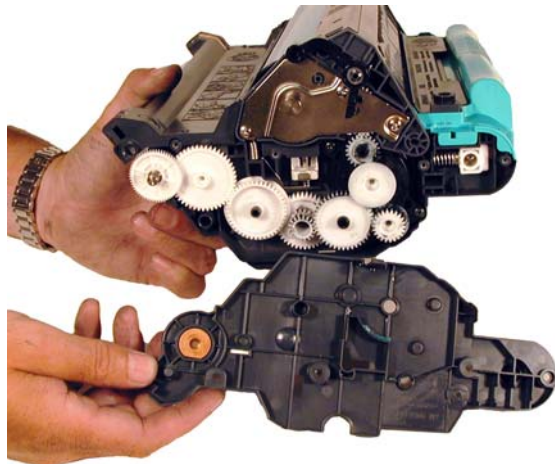


Figure 63

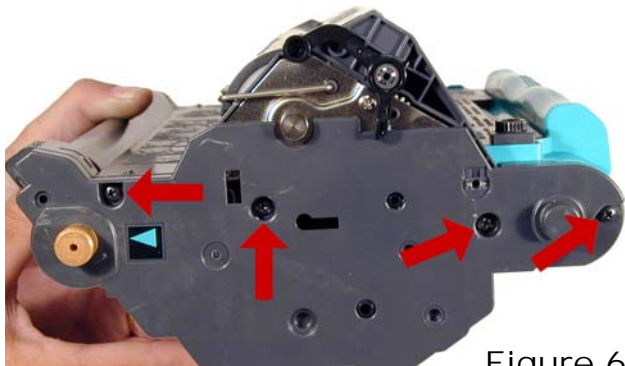


Figure 64

52) Install the 2 hinge pins. See **Figure 65**

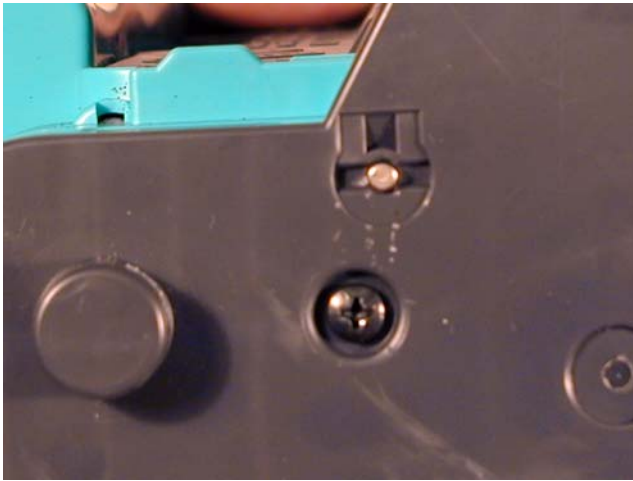


Figure 65

53) Install the drum cover into the spring arm, and install the metal bar ends into the correct holes. See **Figures 66 & 67**



Figure 66

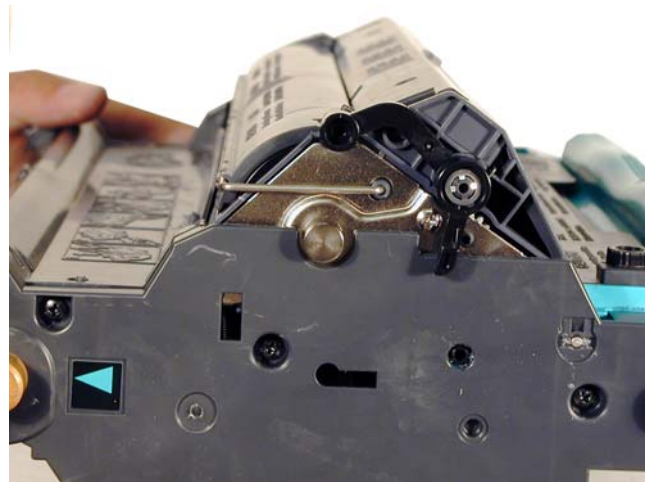


Figure 67

54) Make sure the drum cover opens properly. See **Figure 68**

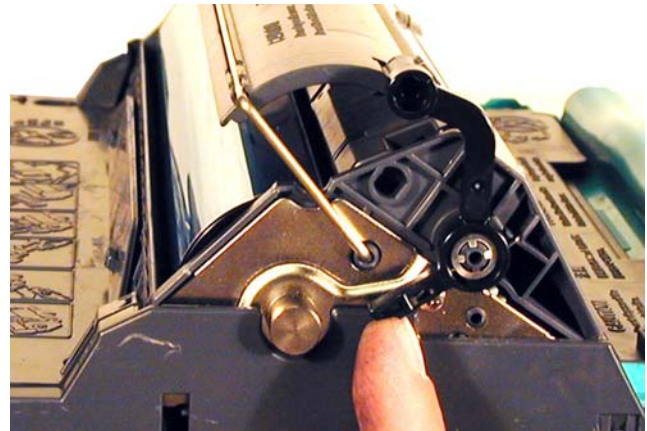


Figure 68

55) Replace the chip. See **Figure 69**

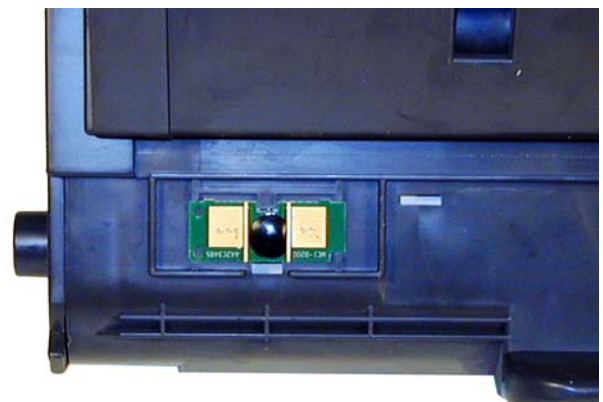


Figure 69

Taking Test Prints

Demo Page

With the printer ready, press the “GO” button once. The Demo page will print out

Configuration/Supplies Status pages

With the printer ready, press the “GO” and “CANCEL JOB” buttons simultaneously.

Both the Configuration, and the Supplies Status pages will print out

Repetitive Defect Chart:

Pre ICL Roller	22.1mm
Developer Roller	33.9mm
ICL Roller	37.9mm
Primary Charge Roller	38.1mm
RS Roller	41.9mm
T1 transfer Roller	44.3mm
T2 transfer Roller	56.9mm
Fuser Pressure Roller	66.6mm
Fuser film	75.6mm
Transfer belt drive roller	89.0mm
Transfer belt tension roller	90.0mm
OPC Drum	148.3mm

Cartridge Troubleshooting:

Primary Charge Roller (PCR); The primary charge roller if dirty will show on the test print as vertical streaks down the page, or as a background throughout the page. If there is any physical damage, it will repeat at intervals of 38.1mm. If the backgrounding is not all the same color that usually indicates that more than one cartridge has a problem. Use a color chart to determine what cartridges are bad. (Green = cyan and yellow) etc.

A Dirty PCR Connection will result in dark color horizontal bars across the page, or as shading throughout the page. Color will follow the color of the cartridge

A Scratched Drum will show up as a very thin, perfectly straight line that runs from the top to the bottom of the test page.

A Chipped Drum will result in a dot or series of dots that repeat at 148.3mm intervals

A Damaged Developer Roller will either leave a mark

or a blank spot (depending on the type of damage) at intervals of 33.9mm.

A Light Damaged Drum will show up as a shaded area on the test print that should be white. Again this will repeat at intervals of 148.3mm.

A Bad Wiper Blade will result in vertical shaded lines down the page, or as shading across the entire page. In either case there will be a film of toner on the drum surface.

Some of the more common Printer Error Messages:

These machines do not have a text display, everything is indicated by lights.

Toner low: A color cartridge light is on steady

Toner out/cartridge missing: A color cartridge light is blinking

Drum life low: Drum cartridge light is on steady

Drum life out/missing: Drum cartridge light is blinking

Non HP cartridge installed: cartridge light is blinking, and the Attention light is on. Press “Cancel” to continue.

Attention light blinking: Top cover is open, paper is out, paper jam.

If the printers has the Attention, Ready, and GO lights on, that indicates a service error. Press and hold the **GO** and **CANCEL JOB** buttons to see the secondary message

Secondary messages:

Attention, ready, Go lights still on: Beam detect error

Ready light on: Scanner error

Ready and Go lights on: Fuser error

Attention light blinking: Fan motor error

Calibrate Now

If you are experiencing problems with color in OEM cartridges, The “Calibrate Now” feature can be run. This forces a calibration cycle to run. This procedure does not always fix the issue, but it can.

This must be done through the HP Color LaserJet 2500 series toolbar installed on the PC.

Open the Color LaserJet 2500 series toolbar

On the Troubleshooting tab, click Diagnostic Tools
Click calibrate now.

