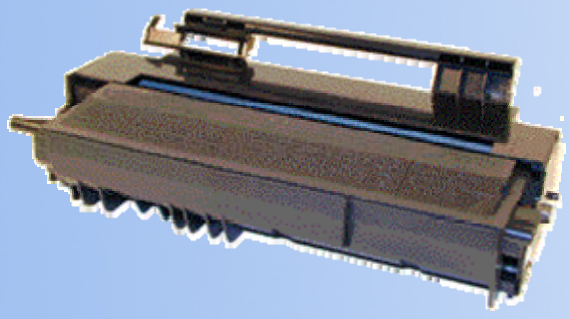
TECHNICAL DOCUMENT



Ricoh 2000L Type 1135/1435 Toner Cartridges

DOC-0297

OVERVIEW

First released in December 1998, the Ricoh 2000L 6ppm, 600 dpi engine has many variations and part numbers. Ricoh alone has (had) the Type 1130(Discontinued), Type 1131(Canada-Discontinued), Type 1135, Type 1136 (Canada) and Type 1435(sold overseas). The cartridges all use the same components, the difference lies in the tab attached to the handle. Different tabs have different lengths and locations. The Ricoh Type 1130, 1131, 1135, 1136, Savin Type 135, and Gestetner Type 135 use the same tabs, but the Ricoh Type 1435 is different. See Figure's 1 & 2.

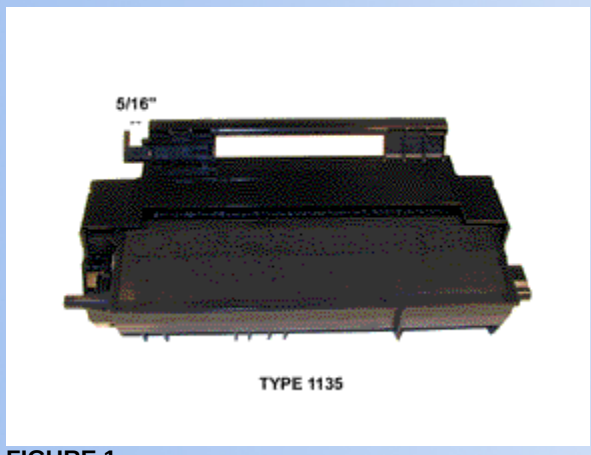


FIGURE 1

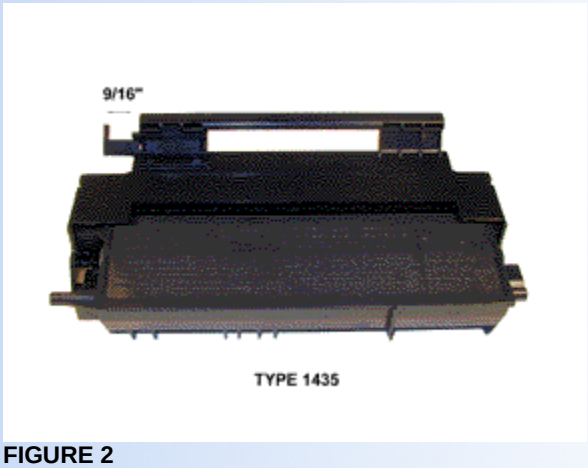


FIGURE 2

Since the identification tabs are easy to remove, you only need one machine to test all the variations. If you are producing more than one variation, I would recommend that you take the standard tab of whatever your machine calls for, and spay paint it a bright fluorescent color. Use this tab for your cartridge testing. This way it won't accidentally be left your customers cartridge. Just make sure the correct tab is installed again before shipping. See Figure 3, 4 & 5 for tab variations.

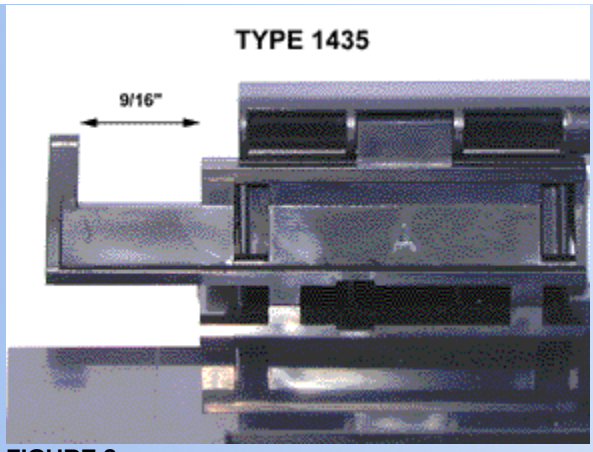


FIGURE 3

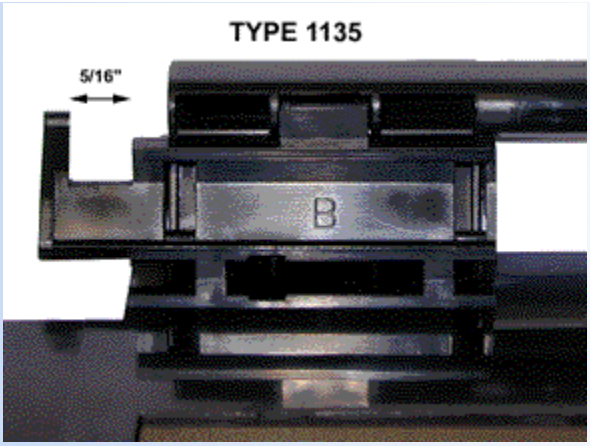


FIGURE 4

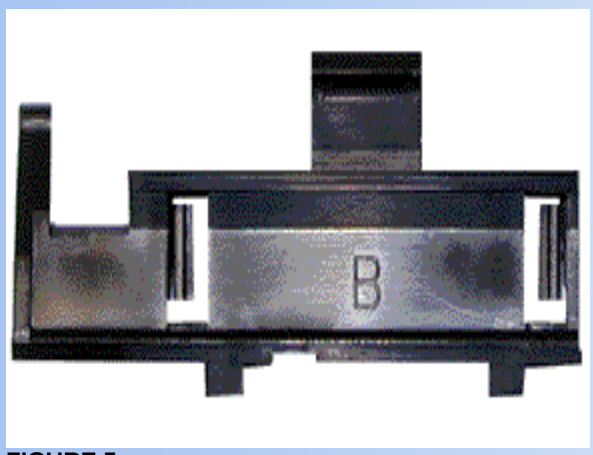


FIGURE 5

The standard cartridge comes new with 160g toner, and is rated for 4,500 pages at 5% coverage. The now discontinued Type 1130, 1131, and 130 were rated for 3,500 pages at 5% coverage. The older discontinued 3,500 page cartridges can be filled at the 4,500 page load (160g) with no problems.

The following is a list of the machines that use the Ricoh 2000L Engine. OEM Part numbers have been included when known.

- Gestetner 9870,9873,9877,9920,9940,9940NF Part# Type 135 (430228)
- Type 130 Discontinued
- Infotec 3683,3684,3684 ISDN Part# Unknown
- Nashuatec P 594 Part# Unknown
- Rex 6820 Part# Unknown
- Ricoh Fax1900L,2000L,2050L,2900L,2900LI,3900L,3900NF Part# Type 1135(US)(430222)
- Type 1136 (Canada)
- Type 1435 (Overseas)
- Type 1130 –(US) Discontinued
- Type 1131 –(Canada) Discontinued
- Savin Savinfax3651,3687,3705,3720,3740,3740nf Part# Type 135 (430223)
- Type 130 Discontinued

These cartridges are unique in that although they use a PCR, the PCR consists of a metal shaft with conductive felt wrapped around it. It is not a solid surface PCR as we have all become accustomed to. This new PCR type must be cleaned with out any chemicals. The best way to do it is to blow it off with clean compressed air. Vacuuming may cause static to build up on the roller, causing print defects. No chemicals should be used on these rollers as the felt has a conductive coating, which would be removed.

These machines also use felt wands to clean the fuser assy. These wands must be either replaced or re-felted each cycle.

All of these cartridges also do not use seals. There is no provision at all for them. From our experience, they do not leak at all. We had a new cartridge shipped from overseas. The box was destroyed, but the cartridge was fine!

Basic troubleshooting and machine use are covered at the end of this document.

Required Tools

1. Toner approved vacuum.
2. A small Common screw driver
3. A Phillips head screwdriver
4. Needle nose pliers
5. Size T-6 Torx driver

Required Supplies

- 160g Toner
- New Drum (In development)
- New Wiper Blade (In development)
- Ricoh 1135 felt to re-felt the wand or new wand when available.
- Conductive grease
- 99% pure isopropyl alcohol
- Cotton swabs
- Soft, lint free wipes

Disassembly

1. Place the cartridge with the handle away from you. Remove the 2 silver pins. See Figure 6
2. Remove the black and copper colored Torx screws from the right side of the cartridge. Not all cartridges have the black screw, but all have the copper colored screws. See Figure's 7 & 8

   The Torx screws used in these cartridges are size T-6. They are not the tamper proof variety as used in the old CX/PC cartridges. Just the normal T-6 bit.
3. Remove the two copper colored screws from the left side of the cartridge. See Figure 9

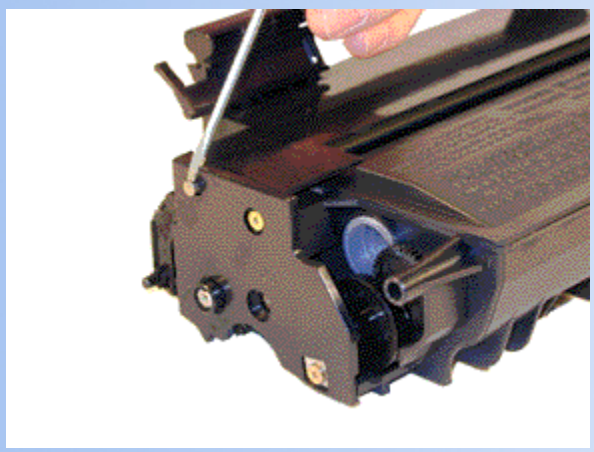


FIGURE 6

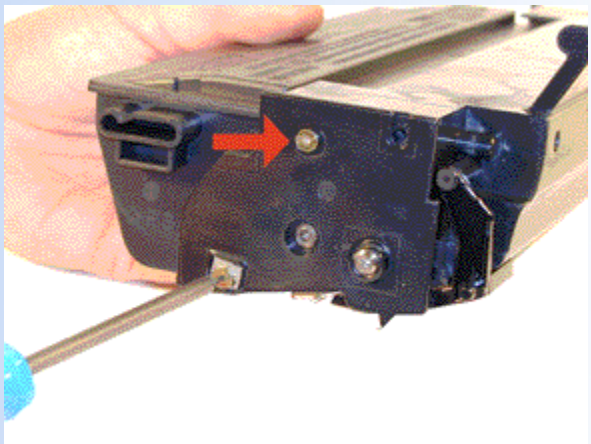


FIGURE 7

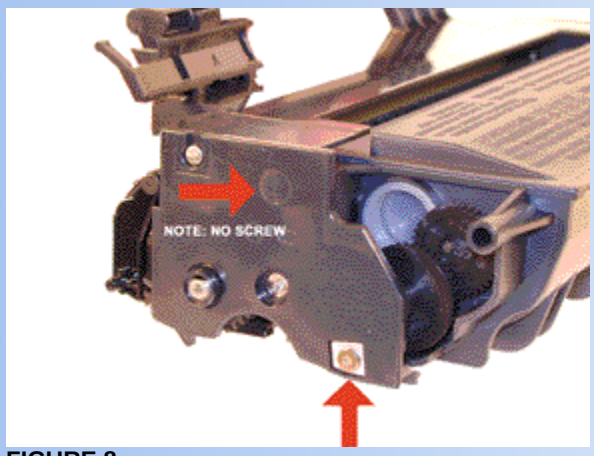


FIGURE 8

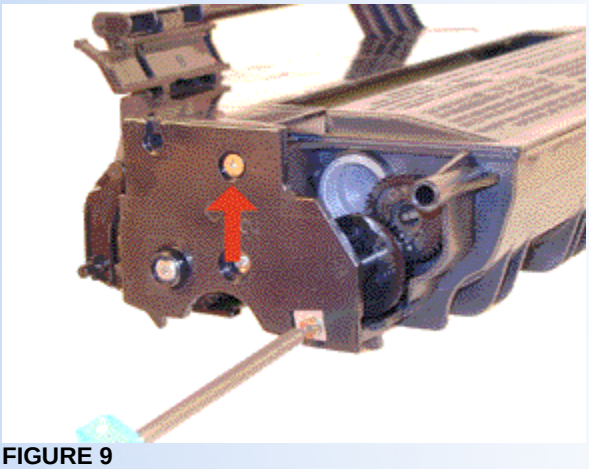


FIGURE 9

4. Pry one of the side panels, and separate the two halves. See Figure 10

5. From the right side of the drum half, take a small punch or screwdriver and drive the metal axle pin out. This axle comes out easily. Make sure you do it from the right side, (the keyed Side), If you try and drive the axle out from the opposite side, the axle will not move. Remove the drum. See Figure 11

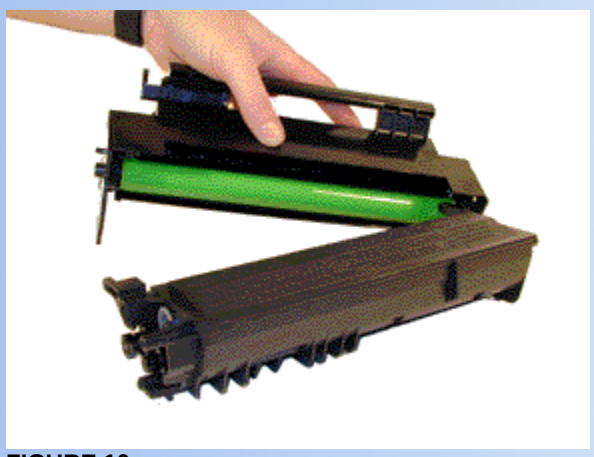


FIGURE 10

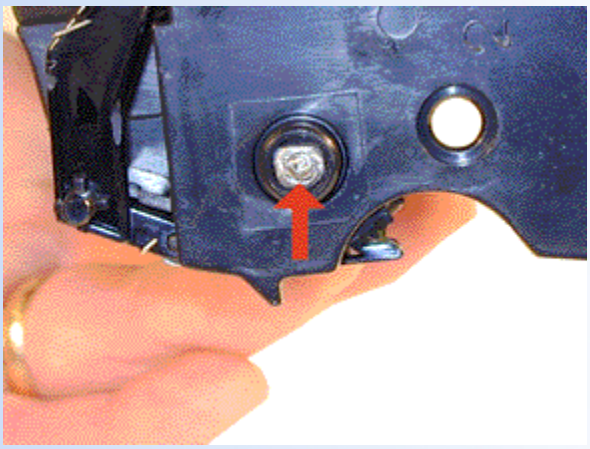


FIGURE 11

6. Carefully pry up the PCR, and remove. Note that as stated above, the PCR consists of conductive felt wrapped around a metal shaft. Once removed, blow the felt off with clean compressed air. Vacuuming these rollers may cause a static buildup, which will cause print defects. Do not clean these rollers with ANY type of chemicals as they will remove the conductive coating, rendering the roller useless. We have found it best not to touch the roller with any part of your skin, as the oils normally present in your skin can contaminate the roller felt. Handle the rollers by the metal ends only. See Figure 12

7. Remove the two screws on the wiper blade, and the blade. Clean out the waste chamber. See Figure's 13 & 14

   NOTE: Be very careful not to damage or distort the thin Mylar Recovery Blade next to the wiper blade. If this blade is bent or damaged in any way, it should be replaced.

8. Re-install the two screws and the wiper blade.

9. Clean off all the old conductive grease from the PCR contacts, and replace with new. Remember, whenever using conductive grease more is never better. Only use a small amount. See Figure 15

FIGURE 12

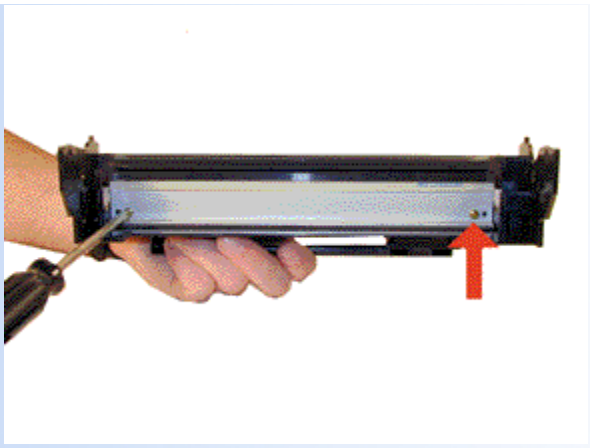


FIGURE 13

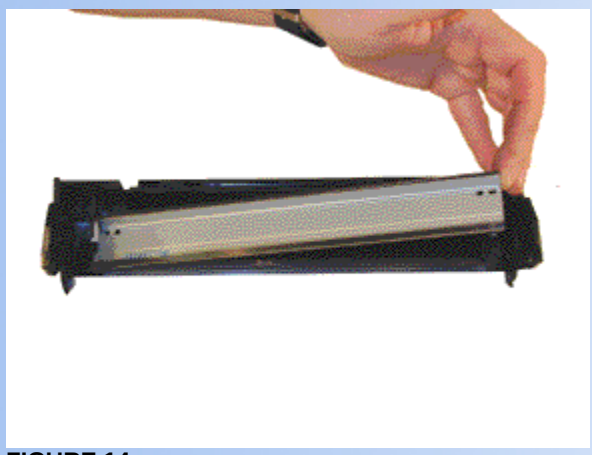


FIGURE 14

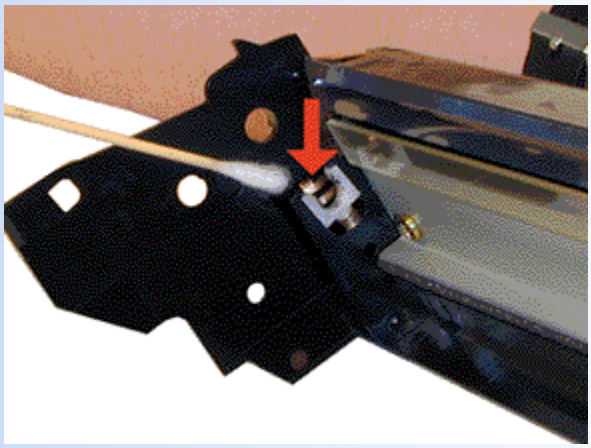


FIGURE 15

10. Install the clean PCR. Most solid surface PCR's use the friction between themselves and the drum to turn them. Since these PCR's can't do that, they have a gear on the end to keep them turning. See Figure 16

11. Install the drum into the cartridge. See Figure 17

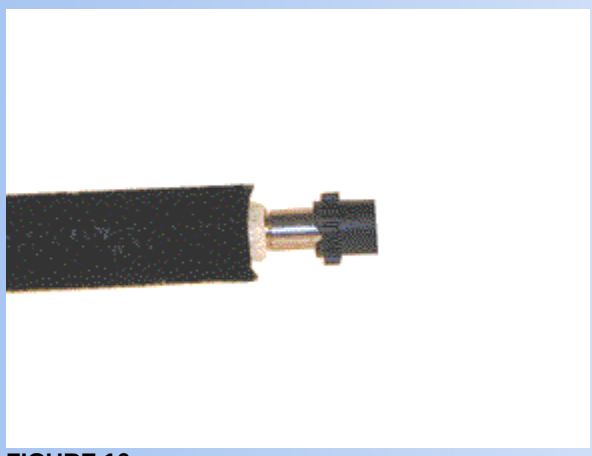


FIGURE 16

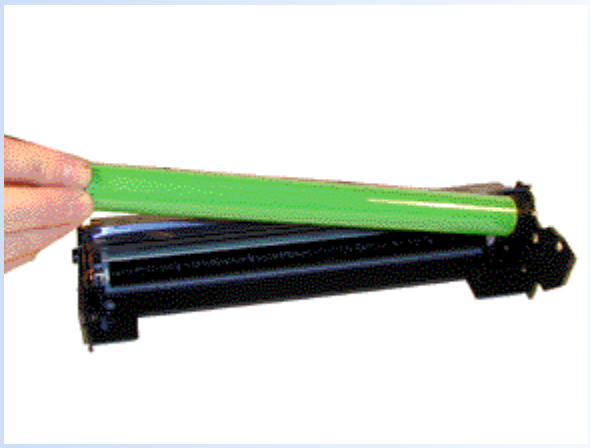


FIGURE 17

12. Install the drum axle from the right side, Side opposite the keyed end). Make sure the keyed end of the axle fits into the keyed end of the cartridge. See Figure 18

13. On the toner hopper, note the location of all the gears. See Figure 19

FIGURE 18

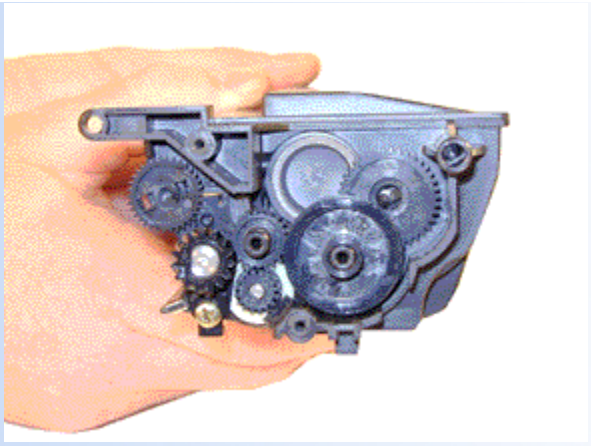


FIGURE 19

14. Remove the four loose gears from the hopper. See Figure 20
15. Remove the gear from the fill plug area by pressing in on the tab. See Figure 21

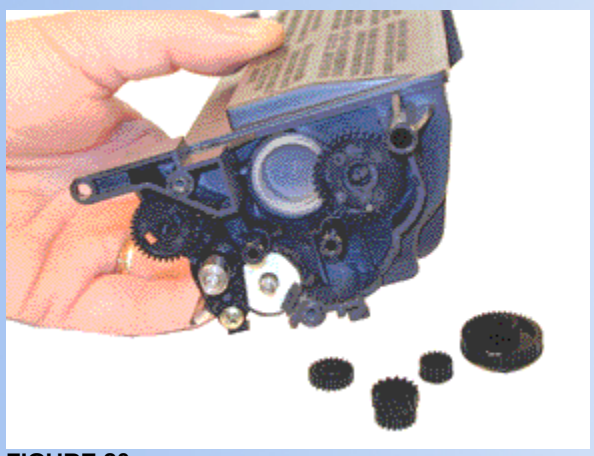


FIGURE 20

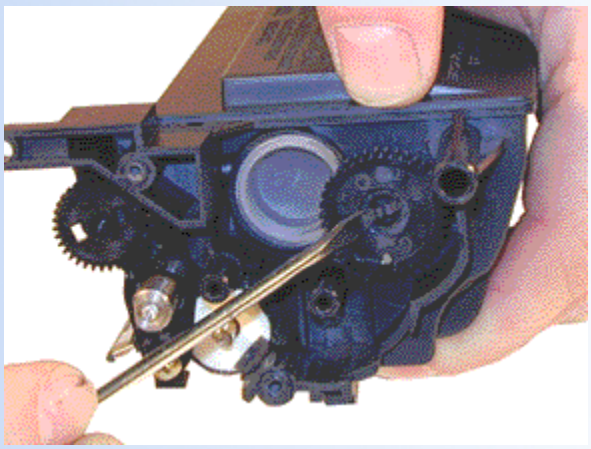


FIGURE 21

16. Remove the gear from the Developer roller area by pressing in on the tab. See Figure 22
17. Remove the screw and holder from the left side of the developer roller. See Figure 23

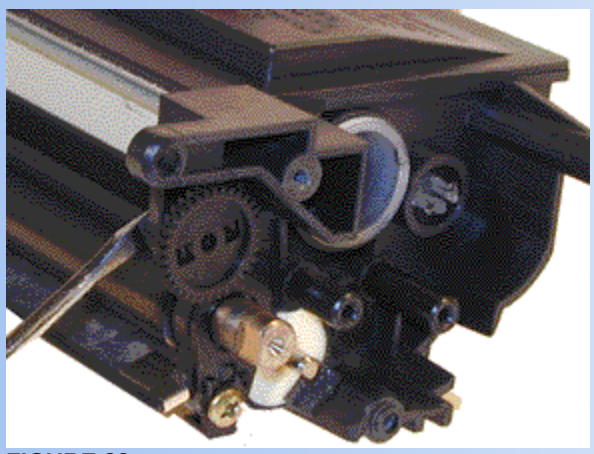


FIGURE 22

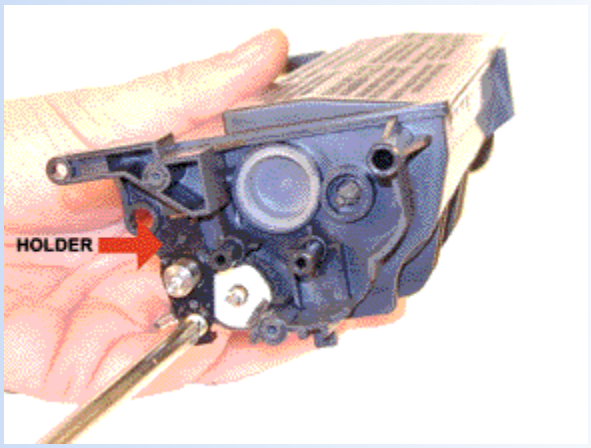


FIGURE 23

18. Remove the screw, holder and contact from the right side of the developer roller. Be careful not to loose the contacts! See Figure 24

19. Pry off the metal bushing from the developer roller shaft short side. See Figure 25

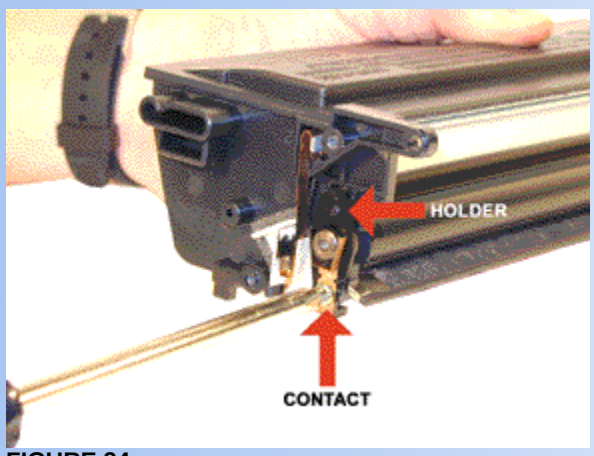


FIGURE 24

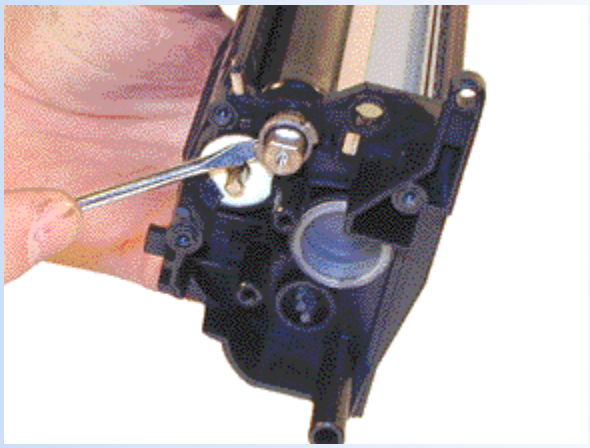


FIGURE 25

20. Remove the developer roller. See Figure 26

21. Remove the two screws from the doctor blade. See Figure 27

FIGURE 26

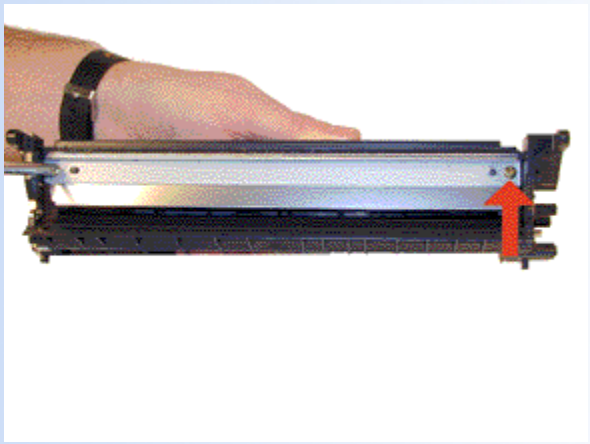


FIGURE 27

The doctor blade in these cartridges actually consists of two parts. A metal brace and the doctor blade itself, which is a very thin sheet of metal. Be very careful when handling the dr. blade as it is very easily bent.

22. Remove the metal brace, being careful not to damage the alignment pins. The pin on the left side is normally tight so more care should be taken there. See Figure's 28 & 29

FIGURE 28

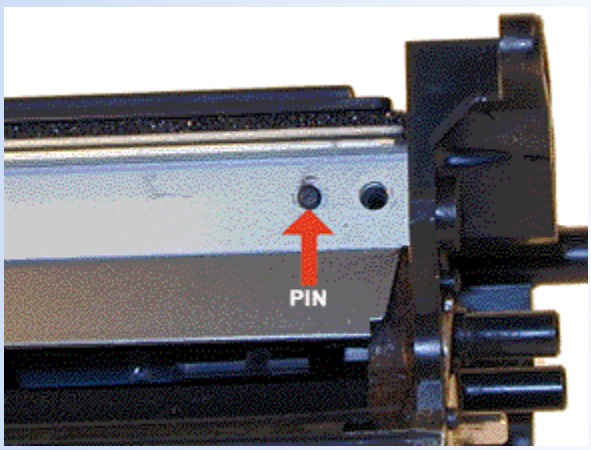


FIGURE 29

23. Remove the Dr. blade. Again, be very careful not to damage it. Clean the blade with a cotton swan and alcohol. See Figure 30

24. Clean out any remaining toner from the hopper. Make sure to get the feed roller clean also. It is not necessary to remove the roller, just make sure it is clean. See Figure 31

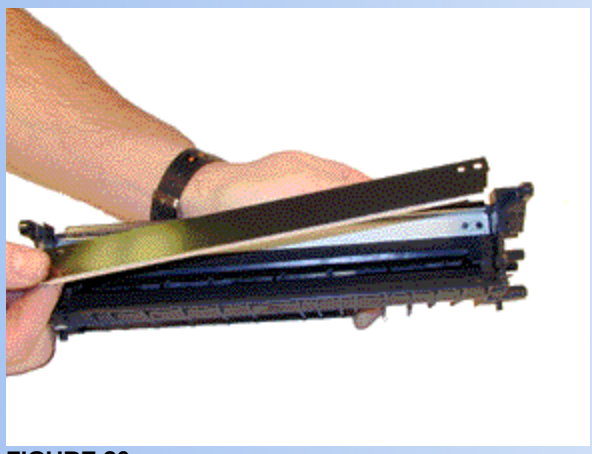


FIGURE 30

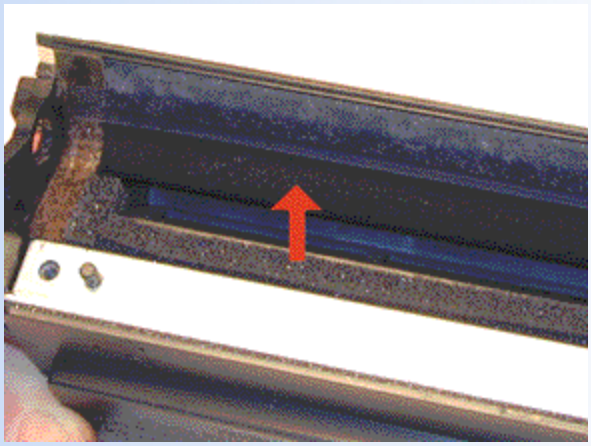


FIGURE 31

25. Remove the fill plug from the hopper. See Figure 32

26. Replace the cleaned Dr. Blade in the hopper. Make sure the lip is facing down, and the blade fits over the alignment pins correctly. See Figure's 33 & 34

27. Replace the metal brace and the two screws. See Figure 35

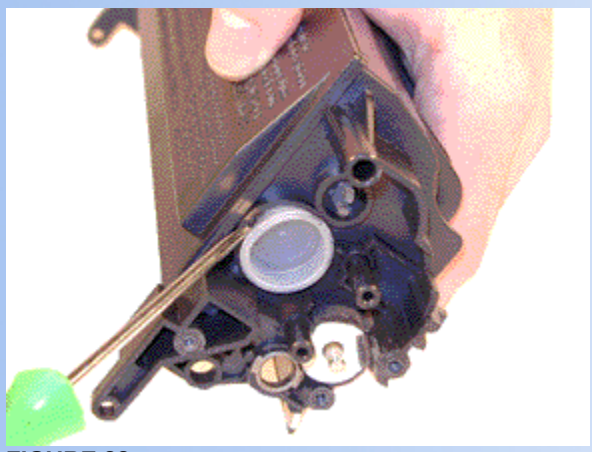


FIGURE 32

FIGURE 33

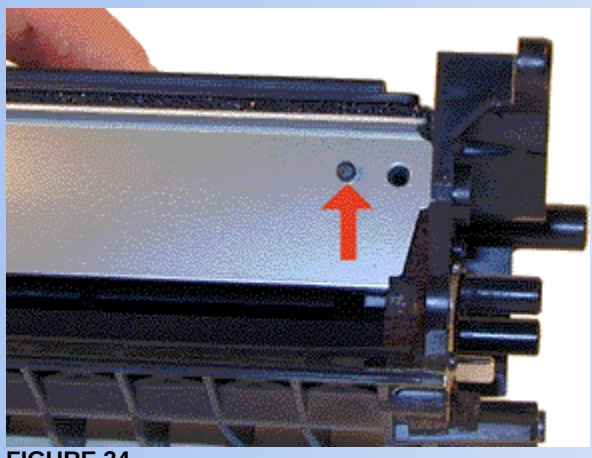


FIGURE 34

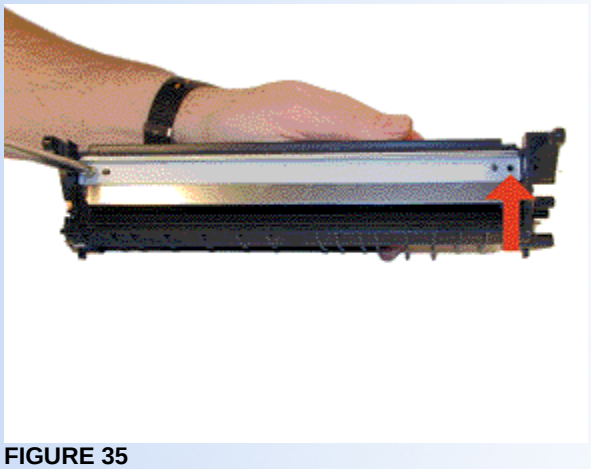


FIGURE 35

28. Clean the developer roller with a clean lint free dry cloth. We do not recommend any chemicals be used at this time. See Figure 36

29. Replace the developer roller into the cartridge. The long metal shaft side goes to the gear side of the hopper. See Figure 37

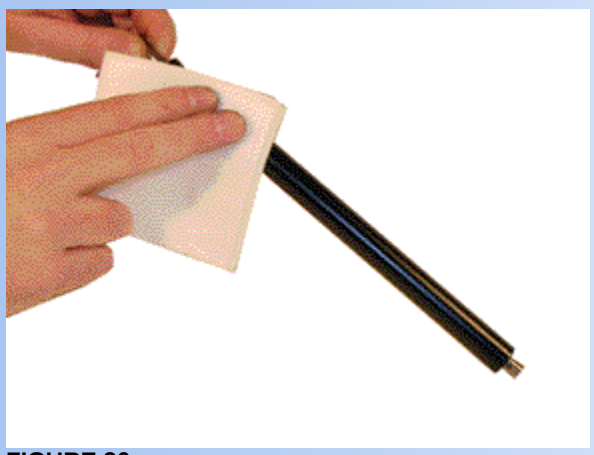


FIGURE 36

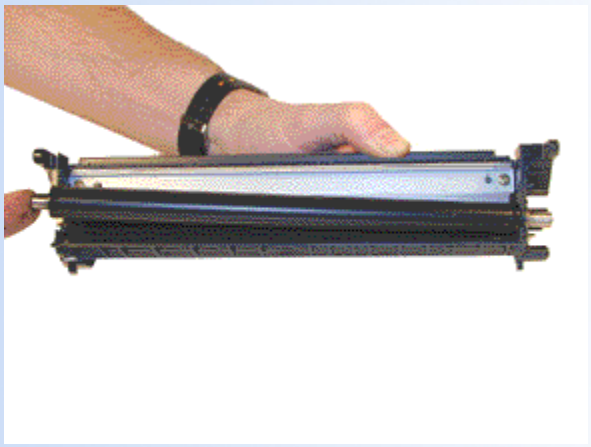


FIGURE 37

30. Replace the metal bushing on the developer roller shaft. See Figure 38

31. Replace the screw and holder on the right side of the developer roller shaft. See Figure 39

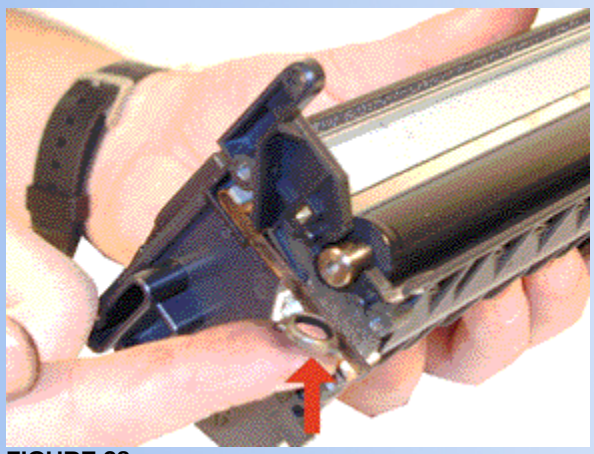


FIGURE 38

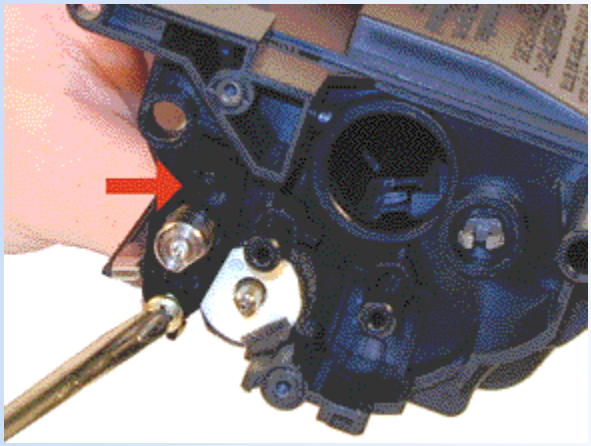


FIGURE 39

32. Replace the screw, holder, and contact on the left side of the developer roller shaft. See Figure 40

33. Clean and replace the conductive grease on the developer roller and the feed roller shafts. See Figure 41

    NOTE: The feed roller contacts also run to the Dr. Blade. This helps ensure that the toner is properly charged throughout the hopper.

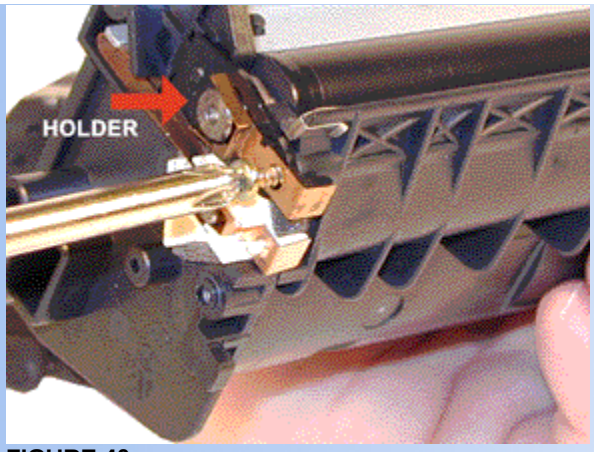


FIGURE 40

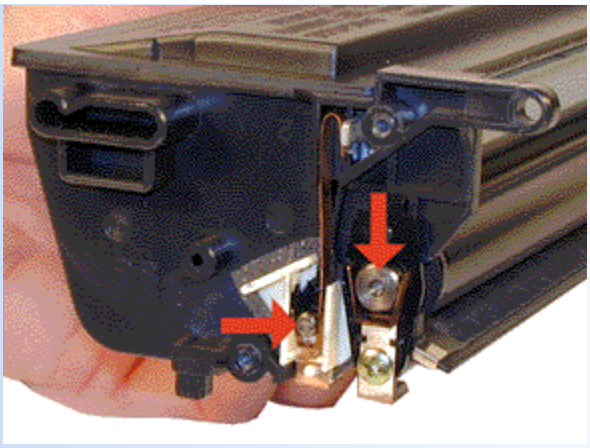


FIGURE 41

34. Fill the hopper with 160g 1135 toner. Replace the fill plug. See Figure 42

    No seals are used in these cartridges. The OEM does not use them, and there are no provisions for one.

35. Replace all the gears on the hopper. See Figure 43

FIGURE 42

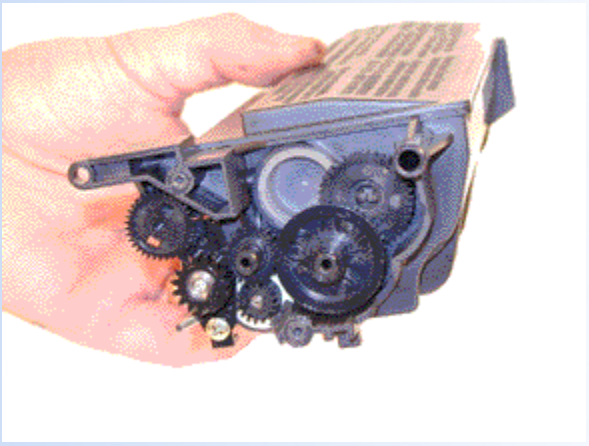


FIGURE 43

36. Place the two halves together. Install the metal plates, and screws. See Figure 44
37. Install the two metal pins. See Figure 45

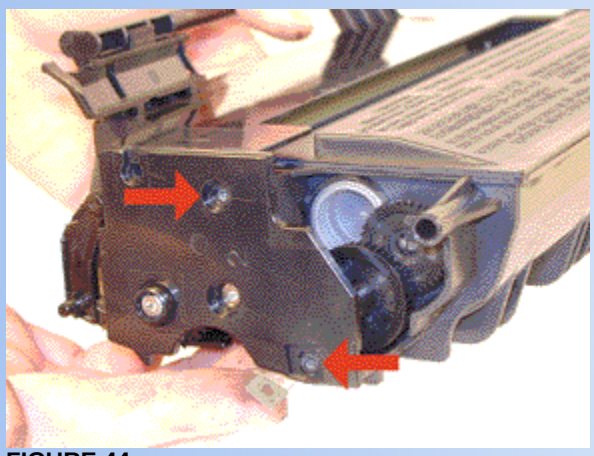


FIGURE 44

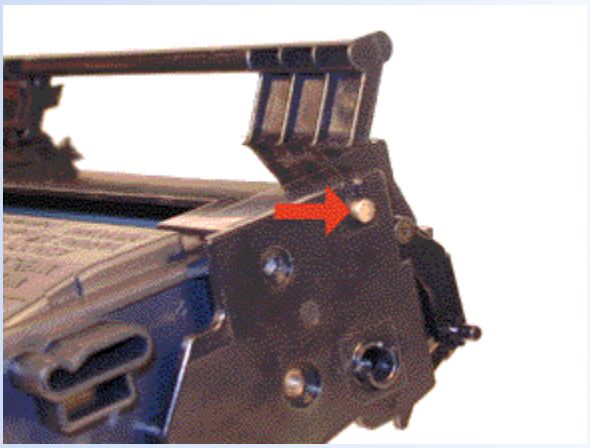


FIGURE 45

The cartridge is finished! If you are testing the cartridge, (Highly recommended) make sure you put the proper Identification tab back on the cartridge so it will work in your customer's machine. Also don't forget to replace the felt wand! The felt wand is installed in front of the cartridge bay, in the base of the machine.

Printing A Test Page

The simplest way to test a cartridge is to make a copy. To do this place the original face down in the feeder. Press the copy key, number of copies desired and the start key. If you are having print defects and want to eliminate the scanner as a problem there are a few reports than can be run.

To print out a journal press the "FUNCTION" key, "4", "1", YES, and START.

To print out a stored telephone # list press the "FUNCTION" key, "4", "3", YES, START, and "FUNCTION".

To print out a program listing, press the "FUNCTION" key, "4", "4", YES, and the START key.

Page Counts

Page counts for transmission, receive, scanning, and printing can be displayed by doing the following:

Press the "FUNCTION" key, "6", enter "2", "2", "2", "2". Then press the"9", "4" and "YES" keys the transmit and receive counts will be displayed. Press "YES" and the Scan and Print counts will display. Press "FUNCTION" to exit.

Cleaning The Scanner

If copied and transmitted pages come out with marks on the pages, but the reports are clean, the scanner is dirty. To clean the scanner, open the top cover. The top cover is the keypad and display panel. Pull it open by lifting up from behind the display. Do not pull the lever on the right side, that will open up the toner cartridge bay.

Wipe the scanner bar down with a damp lint free cloth. The scanner bar is located at the bottom of the bay. It is also a good idea to wipe down the long white roller, and rubber feed rollers while you are there.

Fax Error Messages

These messages are at best very vague. Most are of no help at all. These machines have what Ricoh calls RDS (Remote Diagnostic System). This is where a Ricoh Technician can call the machine and diagnose/repair it. The following list contains the most helpful of the lot.

Error Code	Description
Add Toner	Toner Cartridge is empty
00-1	No Paper, or Jammed at other end (Receiving machine)
1-00	Document Jam
2-XX	Machine Fault
6-XX	Almost always poor line condition
7	Paper jam at paper tray
8	Paper jam inside machine
9	Paper jam at output
10	Toner out

Common Cartridge Problems

A Dirty or Bad Primary Charge Roller (PCR); located Inside the cartridge, this will show on the test print as vertical gray streaks down the page, as a gray background throughout the page, as ghosting where part of a previously printed area is repeated. These PCR's are made of conductive felt, not hard rubber. Do not use any chemicals to clean them. Blow them off with clean compressed air only

Dirty PCR Connection; This will show as horizontal dark black bars across the page, or as shading throughout the page.

Scratched Drum; This is shown by a very thin, perfectly straight line that runs from the top to the bottom of the test page.

Chipped Drum; This will show as a dot or series of dots that repeat every 75mm.

Light Damaged Drum; This will show up as a shaded area on the test print that should be white. Again this will repeat every 75mm**.**

Bad Wiper Blade; This will show as either a gray line approximately 1/8" thick, or as shading across the entire page. In either case there will be a film of toner on the drum surface.

Bad Developer Roller; This will show up as light print or as a mark that repeats every 50mm

Recommended Supplies

Microsoft OLE DB Provider for ODBC Drivers error '80004005'

[Microsoft][ODBC Microsoft Access Driver]General error Unable to open registry key 'Temporary (volatile) Jet DSN for process 0x698 Thread 0xee0 DBC 0x97a403c Jet'.

/script/catSearch.asp, line 58