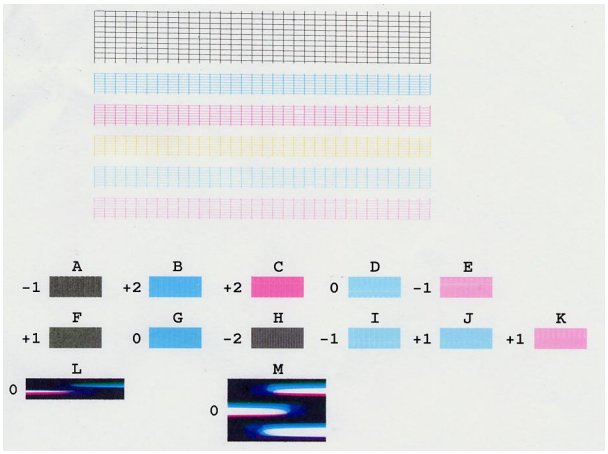
Canon MP730 Printer Waste Ink Tank Full Resolution
Canon MP730 Disassembly and Assembly

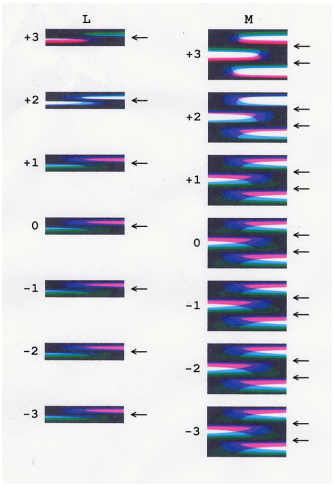
By G. Patton

History Summary

I purchased a Canon MP730 Multi Function Printer January 30th, 2004. I just love it. Since 2004 I have printed 11,700 pages, a lot of them were full page pictures. I have reset the ink counter 2 times without emptying the waste ink tank and have replaced the print head (QY6-0064) twice. I refill the ink cartridges myself. In July 2008 we went on vacation for two weeks and didn't use the printer and when we came back the printer started printing solid areas with white space smears (Figure 1) and then the color stopped entirely. This document explains what I believe the problem was and shows how to disassemble and reassemble the MP730 to assess and fix the problem. **NOTE: There are lots of things that cause poor printing. Before I took the printer apart I had tried 1) using the software to deep clean the print heads multiple times, 2) taken out and cleaned the print head manually, 3) changed the ink cartridges, 4) put in a whole new Canon print head (QY6-0064) with new Canon ink cartridges. When these efforts didn't work I took more drastic action. Thus before you start this project make sure you have done 1-4 above.**



Nozzle test smear



Head align smear

Figure 1

Details

It would seem like it would be simple to find the full waste ink tank, empty it and continue printing. However, there is no waste ink tank. Instead there are several ink blotters which are in the very bottom of the printer case. The only way to get at them is to take everything above them off. A repair site I talked to estimated the job would take about 1.5 hours and cost (including parts) almost as much as a new printer. Thus I tried to empty the waste ink tank myself. The first time I tried it in 2006, it took me 6 hours and I didn't get to the b;otters. Thus the ink was accumulating in the absorbing pads and the printer purge unit. The white smears are caused because the purge unit was so clogged with ink that it couldn't suction new ink into the print head. So this year I took it apart again and got down to the bottom of the case, taking pictures all the way, and it

took about 6 hours again. I then cleaned things up, put in a new purge unit (bought from Canon) and reassembled it. Using the hints in this article I'm hoping it will take others less time than it took me. .

Disclaimers, Safety and Warnings

If you try this yourself you understand that you do it at your own risk and that I am not responsible for any harm that comes to you or the printer. Also I can explain how my printer works, but your printer may differ. Before working on the printer it should be completely disconnected from any power, computer and telephone sources. Also note the electronics boards and their subsystems can be compromised by static charges so ground yourself when you are touching those boards and as you take them out protect them carefully. The printer also has an almost transparent wheel and ribbon with timing markings on them. Do not touch these, or get grease on them, or get ink on them, or bend them or stretch them. Basically make sure you don't touch them. Incidentally a bit of grease on the horizontal ribbon has been known to cause horizontal alignment problems. Let the computer cool for 10 minutes before starting since motors may be hot and burn you. Also if you use combustible cleaners like alcohol be careful.

Tools and Procedure

When disassembling the printer you will need a long shank, magnetized, Philips screw driver (a screw driver magnetizer can be bought at your local hardware store for $2-$5), needle nose pliers, a very small regular screw driver. Depending on your eyesight you may need a magnifying glass. You will need a good light source and a fairly large work space (about the size of the top of a kitchen table but don't use the kitchen table if you don't want ink on it). Tweezers are also helpful if you drop a screw someplace inside. You will need some old newspaper to put inky pieces of the printer on. I also suggest you have a supply of paper cups to put the screws in that you take out. As you take off each part put the screws in a cup and label it. Put the next screws in the next cup, label it and put it on top of the first cup. This helps in reassembly. Also when you thread wires through parts of the case as you disassemble remember how they are threaded and especially the order of the four ribbon cables. If there is a lot of ink around q-tips and some denatured alcohol will help mop it up.

Figure 2 - Tools

Step 1 - Take off the back

It may seem crazy to start with the back, but you need to do that to undo the wires that run to the ADF assembly (feeder of pages needing copying) and the flatbed assembly. So, as shown in Figure 2 take out the four screws in the back, then poke the small screwdriver through the second hole in the bottom center of the back of the case Figure 3 and slide off the back cover.

Figure 2 - Printer back

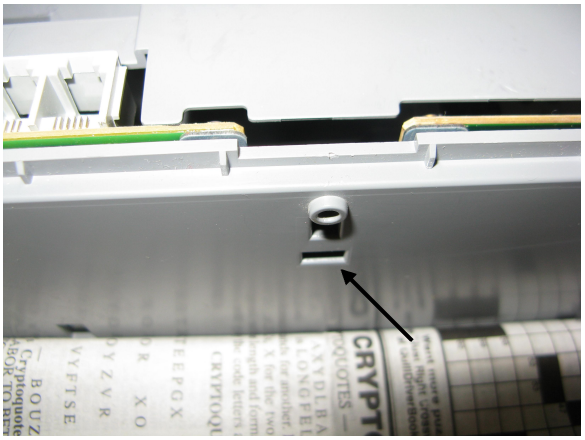


Figure 3 – Printer bottom back

Step 2 - Unscrew ground wire and disconnect the cable at JADF3 on the circuit board

Looking at the back of the MP730 on the right is a circuit board Figure 4. There is a short and a long connector. The long goes to the ADF assembly and is marked JADF3. Unplug it. Also unscrew the ground screw for the ADF assembly which should be the green wire. Loosen the cable guide (it is just hooked under the case) Figure 6. Tilt the ADF assembly way back and lift up and it should come out. Put it carefully aside.

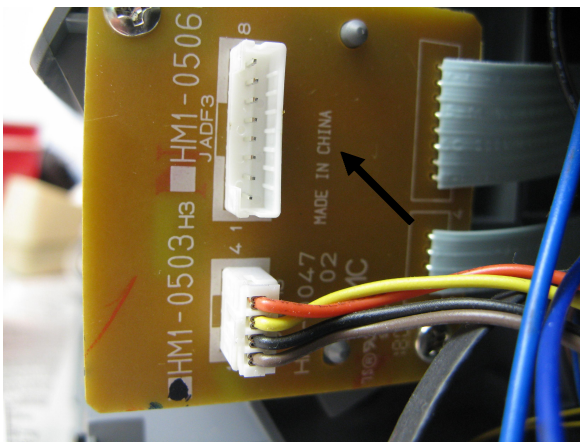


Figure 4 - Printer back cover off

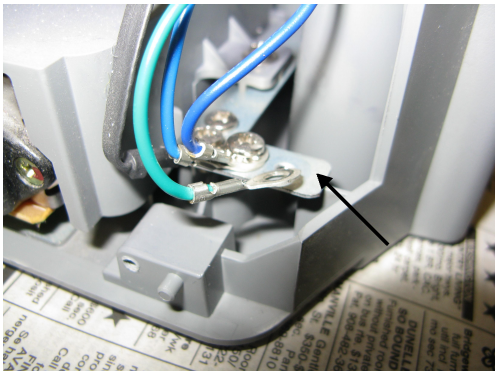


Figure 5 – Ground wire

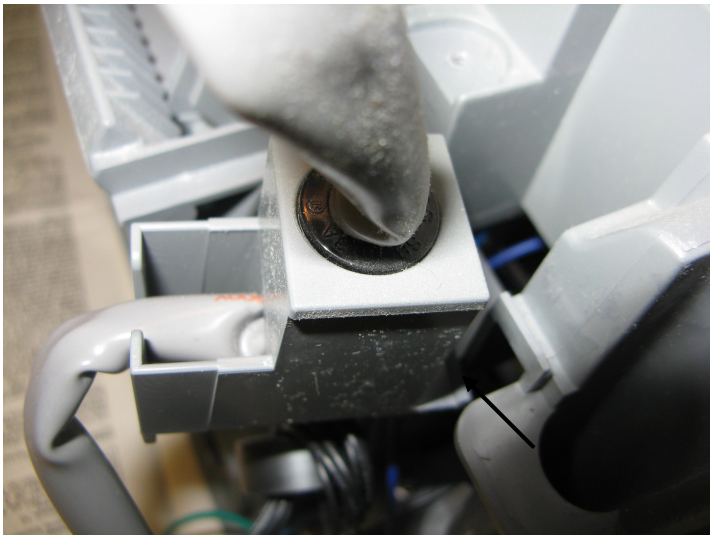


Figure 6 - Cable Guide

Step 3 - Take off the flatbed assembly

Unscrew the grounding screw for the blue wire on the right back (as you face back) grounding strip (it was next to the green wire see Figure 4.). Unplug the JFBM3 connector from the sensor board on the right (it is the smaller connector see Figure 4) These connectors pull out but do it carefully and help it along with the small screwdriver. Be gentle.

Push the button to pop up the flatbed assembly as if you were going to put in ink. Now you have to take a detour before you can take off the assembly.

Facing the printer from the front there is a covered area on the right containing some electronics called the SPCNT. You take off this cover by unscrewing the two screws found toward the end of the board nearest to the front of the printer, Figure 7.

Figure 7 - SPCNT cover

Once the screws are out, lift the cover slightly and then pull toward the front. The cover is slipped under the case on its back end. Then you can put the cover aside. Now, disconnect the JCS1 connector on the SPCNT circuit board. The ribbon cable actually pulls out of the connector. Don't try to pull the black connector off the board. Just pull the ribbon cable up very carefully holding both sides between your fingers. You don't want to break a wire. Also don't touch the connections on the cable end once it is out. You should have also grounded yourself in case you touch some of the electronic components on the board while pulling out the cable.

Now we are back to taking off the flatbed assembly. There is a white connector connecting the assembly to the middle frame (Figure 8).

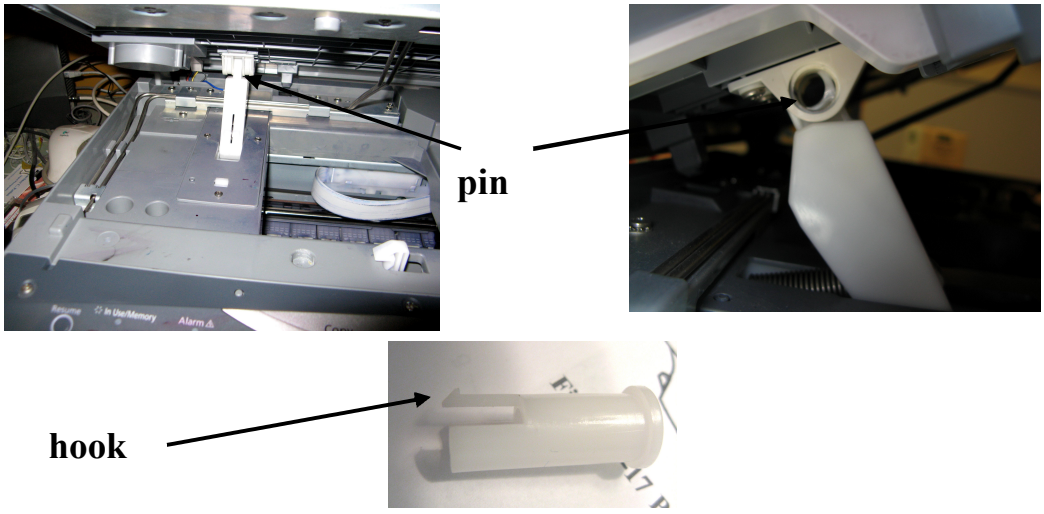


Figure 8 – Joint and pin location

At the joint there is a pin through the hole. The pin has a hook on one end that keeps it from coming out. Take the small screwdriver and push the hook in to unhook the pin and then push the pin out. You can now tip the assembly upright. Looking from the back the pivot point of the assembly on the left allows you to pull the assembly up a little and then slide the assembly left to unhook the right pivot point. You can then take the assembly off (carefully note where the wires are threaded) and put it aside.

Step 4 - Take out the electronics SPCNT board

First you must disconnect the eleven cables still connected to the SPCNT board. As before pull the ribbon cables out carefully. Unplug the other connectors carefully with the small screwdriver or the needle nose pliers, but be gentle. Figure 9. Remember ground yourself. You can tape the connectors to the case to keep them out of the way.

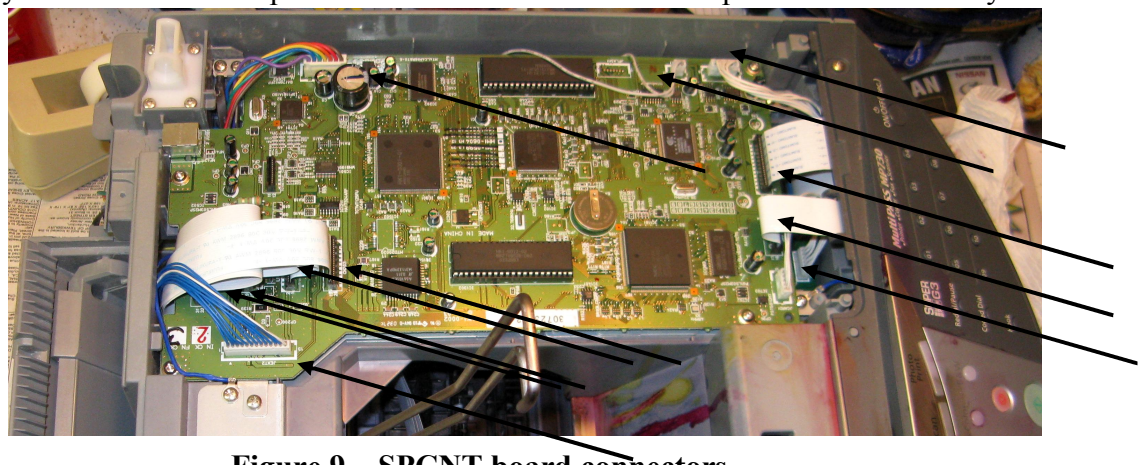


Figure 9 – SPCNT board connectors

Five screws hold in the SPCNT board Figure 10. Take them out and then take out the SPCNT board and put it in a static free safe place.

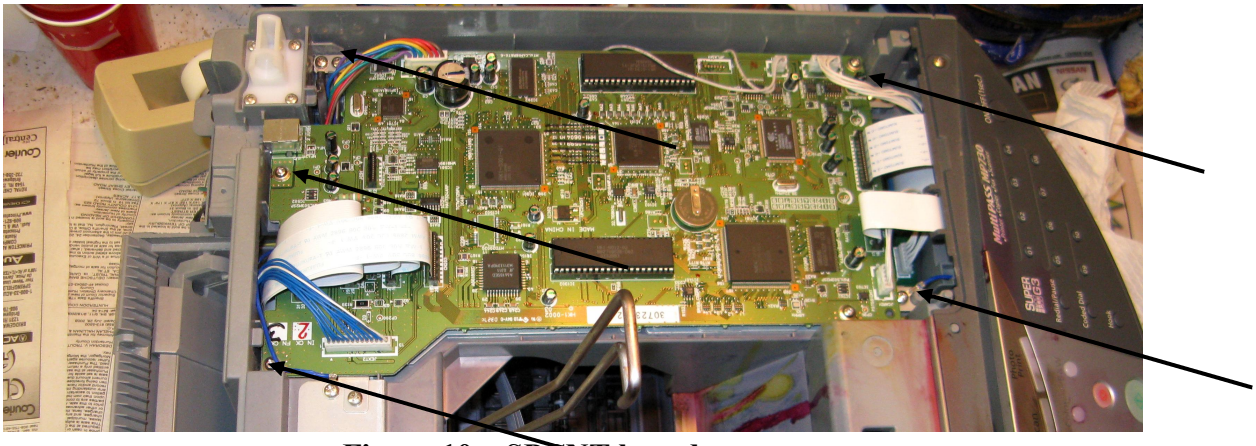


Figure 10 – SPCNT board screws

Step 5 - Take out the SPCNT shield

You are now looking at a piece of metal called the SPCNT shield. First take out the 2 grounding screws. Then take out the 3 screws Figure 11 and take off the plate and put it aside.

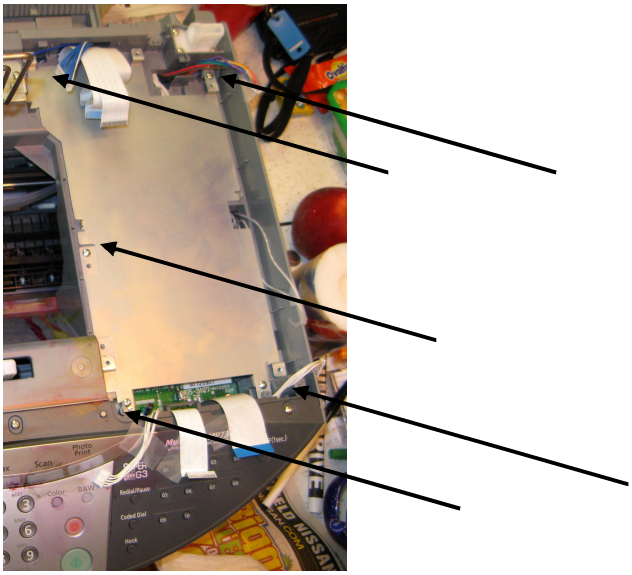


Figure 11 - SPCNT shield

Step 6 - Take off Middle frame unit

Working from the back unclip the white wires that run across the top of the middle frame unit and then go down through the back Figure 12.

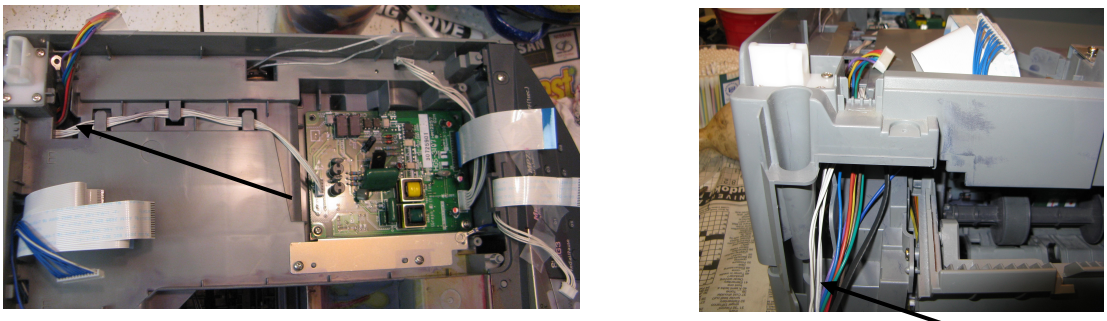


Figure 12 – showing white wires (connector just out of bottom of right picture

Remove 3 ground screws two on back middle of the middle frame unit and one on the left of the back. Note: the wire on the right may now not be connected at either end. Figure 13. The first two are blue wires and the 3rd is black. In Figure 13 the SCNT shield is still on. I didn't have a picture of this area after it was off but this shows the screw positions.

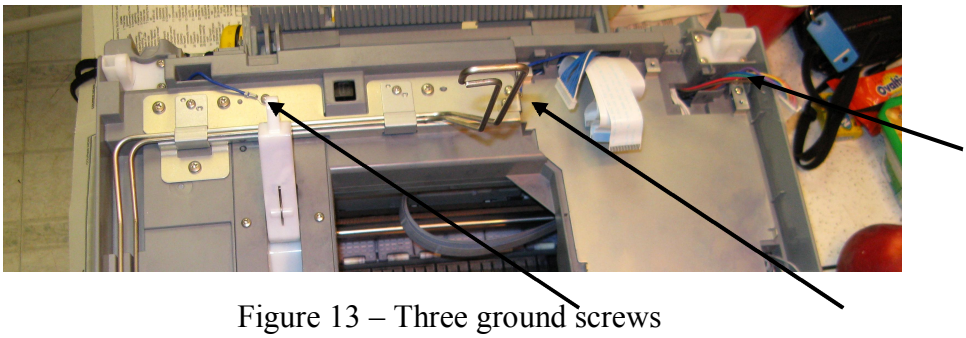


Figure 13 – Three ground screws

Undo the four screws down in the holes that hold the middle frame unit to the bottom Figure 14. Again I don't have the right picture but the locations are correct. The front right one is under the SPCNT shield which was taken off above.

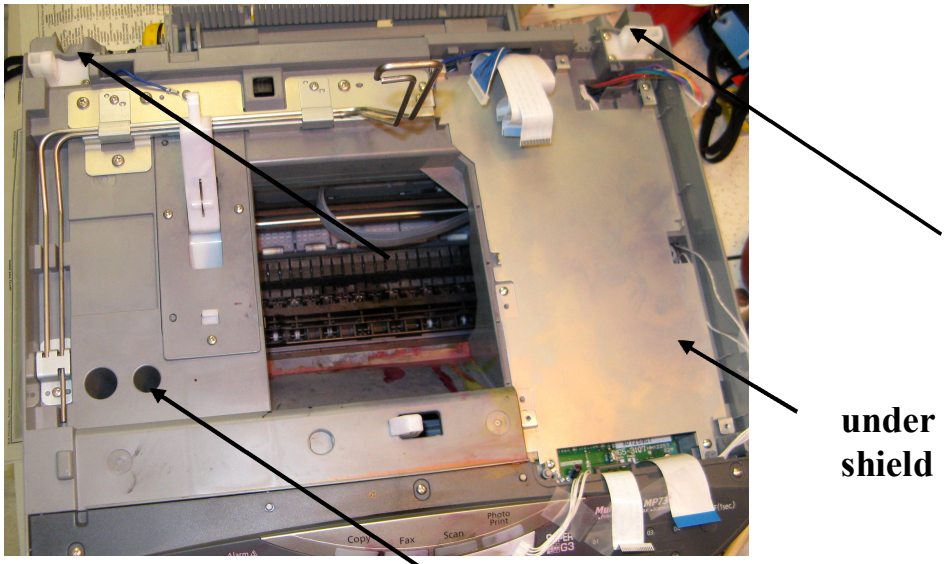


Figure 14 – Screws to take out middle frame unit

Lift off Middle frame unit (it goes sort of up in back and then slightly forward as the front end engages the front of the printer at an angle) and thread the 4 ribbon cables at the back and the other connector (blue wires) down the slot. Also the multicolored connector and the ground wire down its slot. Be gentle with the cables.

Step 7 - Remove the Print and ASF assembly

Now that the middle frame is off you have to not touch the timing wheel on the right as you face the back of the printer or the timing ribbon that is threaded through the print head assembly. First undo the ground screws in the back. Unfortunately I don't have a picture of this. There are two screws that hold the print assembly to the base. Unscrew these and then lift the print assembly off using the two points on the top right and left side of the center frame. They should be marked with an asterisk. This way you don't touch any sensitive parts. Figure 15.

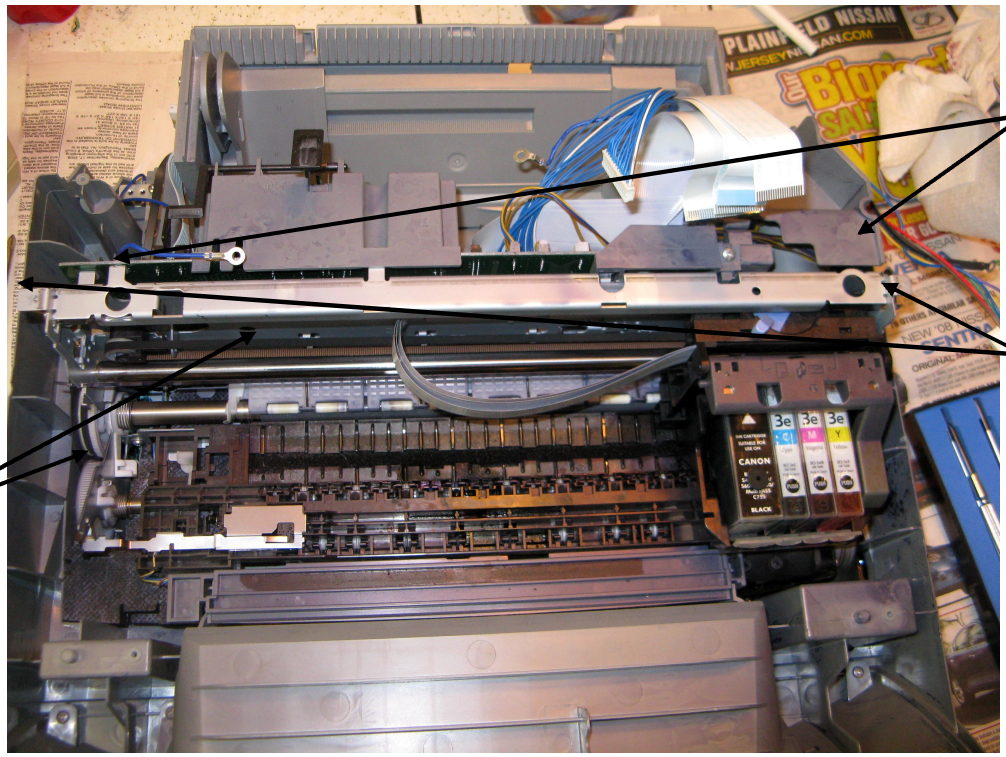


Figure 15 – Print and paper feed assembly

Note that there is a tang on the front right of the print assembly that slides under the plastic of the bottom case. On reassembly this needs to be tucked under or the print unit is not tilted correctly to put the middle frame back on. Very shrewd of the designers.

Step 8 - Review the situation

With the print and ASF assembly off you can see the ink pads in the bottom of the case and assess what needs to be done. In my case, by not emptying the waste ink tank (reservoir) for 11,700 prints, the ink was all over the bottom of the case. Figure 16. Not only that, it was all over the gears of the purge unit Figure 17. This is what caused my problem. Since if the printer can not properly purge, it can not suck ink into the print head when needed and you get initial ink flow which quickly fades as the head goes across the print causing the white smears I saw. In my case there was so much ink the gears couldn't turn correctly and proper suction could not be created. If only the reservoir area on the left is full it can be cleaned out and everything put back. I had to go further.

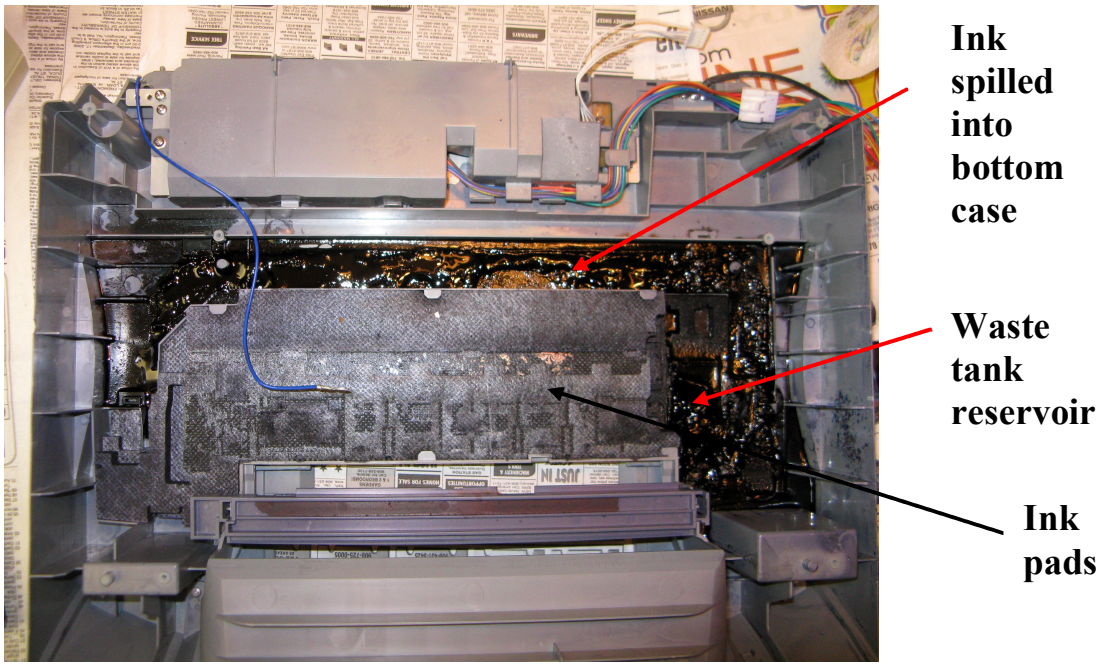


Figure 16 – Showing ink in bottom of printer

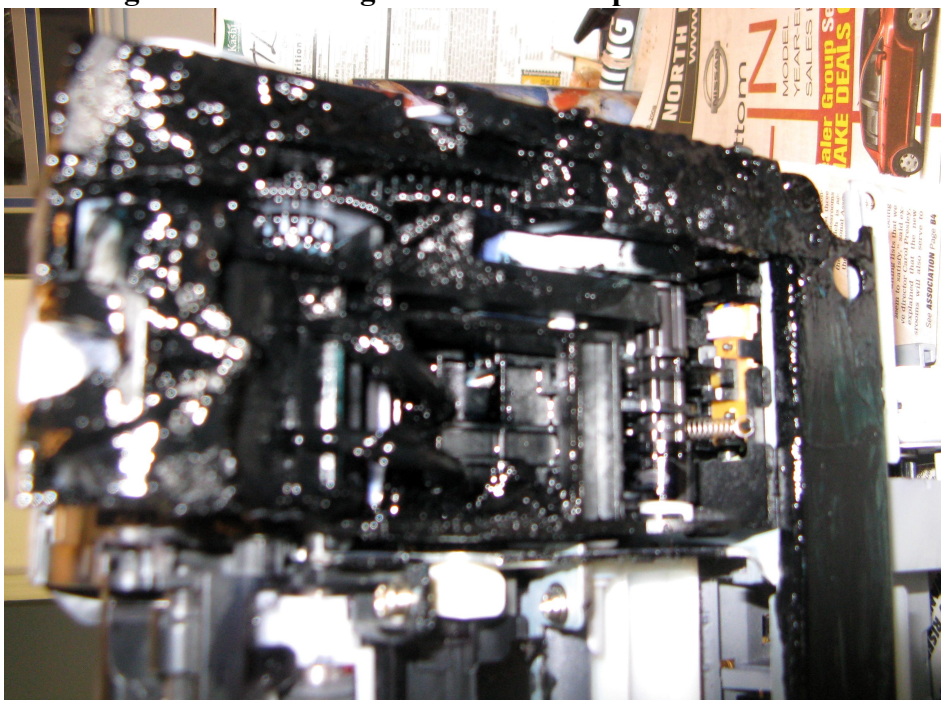


Figure 17 – Bottom of purge unit covered in ink

Step 9 - Take off the power unit and clean out bottom of the case

There are 2 screws that hold on the power unit to the bottom of the case, Figure 18. Take out these screws and lift off the power unit (that also has the phone connection). Set it aside.

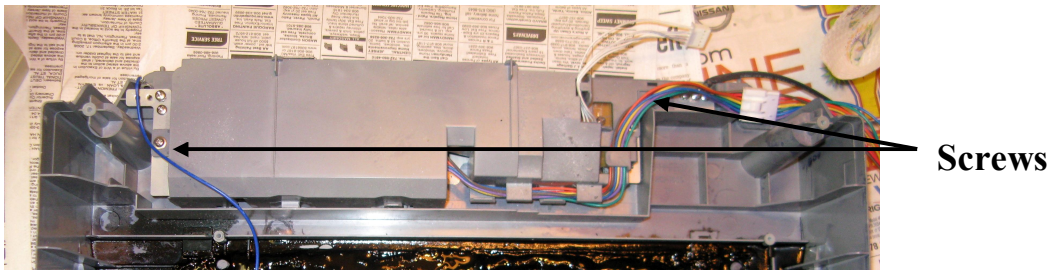


Figure 18 – Take off power unit

Now you can see that there are ink absorbing pads in the bottom of the case. These are full of ink and can be very messy. Get some newspaper about 8 pages thick and take the pads out with the small screw driver and put them on the paper, Figure 19. Take them to a utility sink and rinse each for about 10 minutes each until they run clear. Then you can wash out the bottom of the case. Let these dry at least overnight although it is hard to get the water out of the absorbing pads.

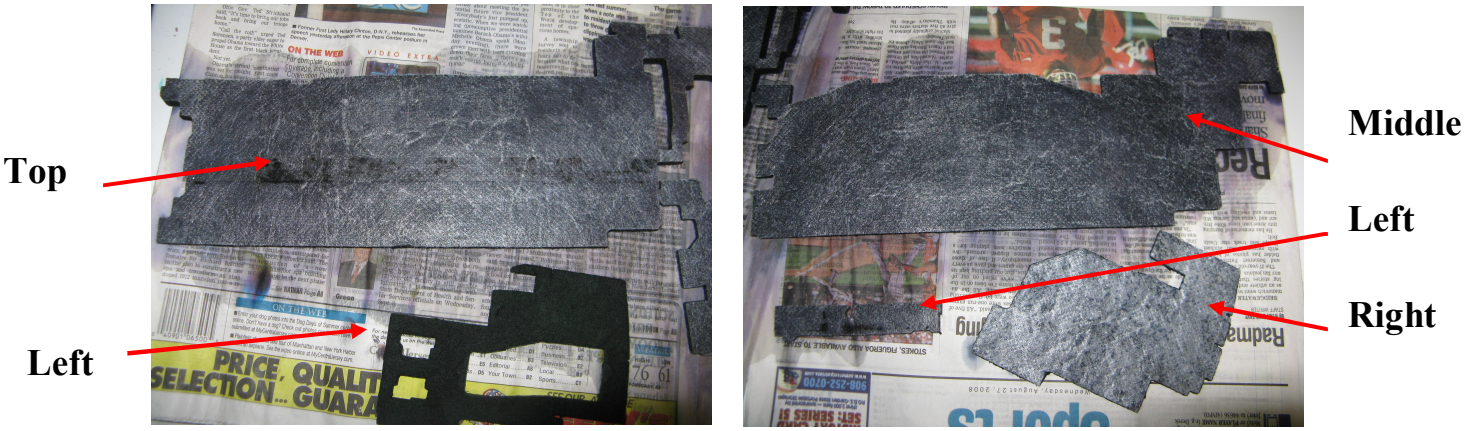


Figure 19 – 5 Ink absorbing pads on paper after being washed

To get a better look at the purge unit move the printer head assembly to the side. This is done by turning the gear of the purge unit clockwise (as you face from the right side of the printer) using the small screw driver pushing on the gear until the white lock bar lowers (and the suction unit). Then the printer head assembly can move left and let you look at the ceramic pads over the suction unit Figure 20. I cleaned the pads in water. I also took out the ink cartridges (put tape over the hole in the top and the outlet in the bottom so ink doesn't get around. If you have the original caps for the bottom hole use those. Then you can take out the print head by lifting up the lever on the right of the print head unit. The top of the print head comes forward and then it lifts out. I put a finger from each hand inside the print head and put pressure out towards the edges and then pull it forward and out. Once off the ceramic pads the print head starts to dry up. I let mine sit for 3 days and then I put mine in a bath of rubbing alcohol just over the top of the

heads but not up to the contacts on the back, for about 3 hours. When I was ready to put them back in I sprayed canned air at each color input from the top. That seemed to work.

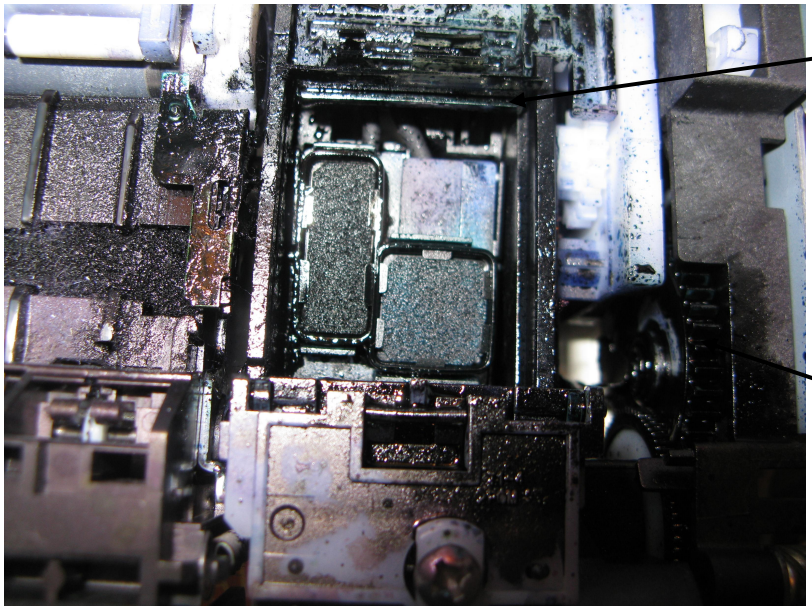


Figure 20 – Top of purge unit showing ceramic pads. Suction holes beneath. Wiper at top.

Step 10 - Take off the old purge unit

First you have to unplug the electronics. On the top of the middle of the back of the print assembly there is an electronics board with 6 connectors Figure 21. You need to undo the 2 with wires going to the purge unit. They are the JPGM1 (left side as face back) and JPGS1 (right side). JPGM1 has the brown wire on top and a catch on the left so push left side slightly left and carefully wiggle it out. JPGS1 has a small lip on the top and the small screwdriver can help get it out

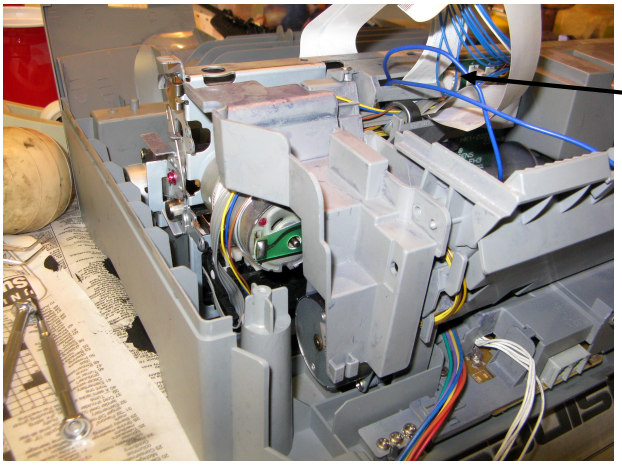


Figure 21 – Electronics board

There is a cover on the left of the print and ASF assembly which is held on with one screw and some plastic pins through holes in the cover. Take out the screw (Figure 22)

Now carefully note how these wires are routed through the other wires because you will have to put them back later and it's not straight forward. Free up these wires.

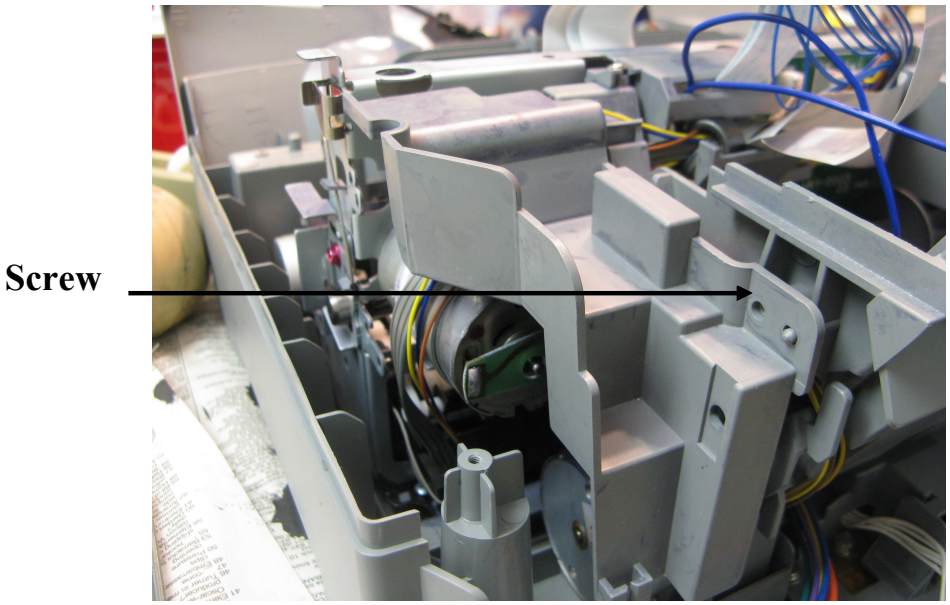


Figure 22 – Take off cover to get a purge unit wires

Now to get the purge unit off there are 2 screws in the back of the unit that hold it to the center frame. Figure 23. The left screw is easy. The right screw is buried behind the print feeder and so it must come off.

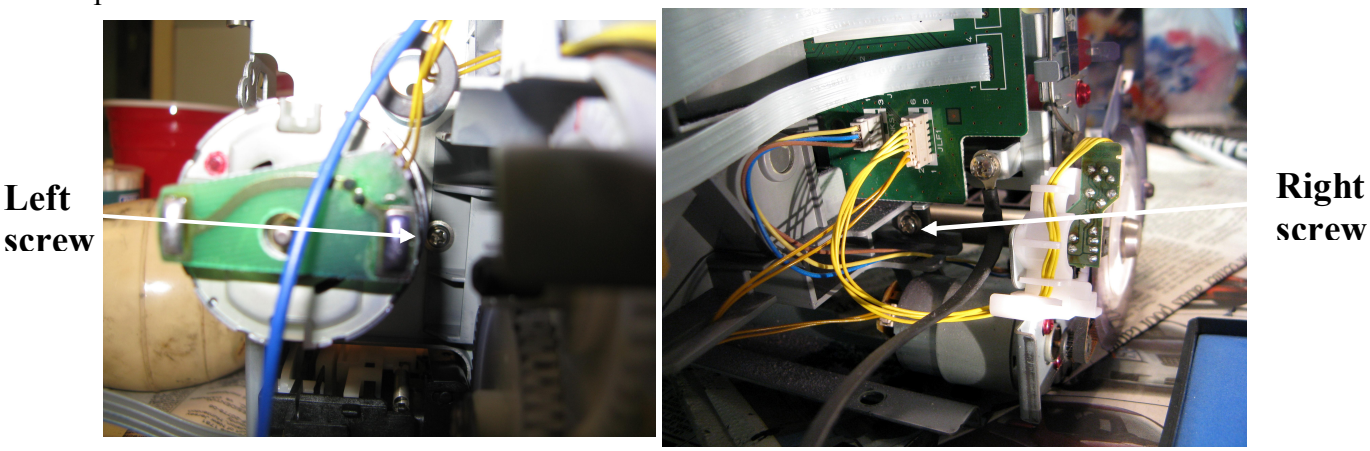


Figure 23 – Screws for taking off the page feeder

Step 11 - Move aside the paper feeder

The paper feeder can be loosened from the main frame of the print and ASF assembly by unscrewing 2 screws (it looks much worse) one on the left and one on the right. Figure 23. Undo these screws. Then lift the left side of the feeder to unhook a catch in the unit which fits through a hole in the frame and slides down to keep the top of the feeder and the frame together. After this is lifted up the feeder can be shifted to the right enough to get the screwdriver on the 2nd screw of the purge unit. For some reason I don't have a picture of this screw but it is at the lower right of the purge unit as you look from the back of the printer. You should be able to find it.

Assess the situation again

At this point you could take the purge unit apart and clean it. However, I have read a blog that says that when the purge unit is opened it sort of falls apart and that there is no good diagram on-line of how to put it together again. Since mine was so covered in ink I just ordered another unit from Canon (QG4-0279-000) and got overnight delivery. Someday I may take the old one apart for the fun of it.

Reassembly

1. Put the new purge unit in the printer assembly with the two screws. Then reconnect the paper feeder by first hooking the catch over the frame (OR YOU'LL REGRET IT LATER). Two screws. Route the purge unit wires as they were before (I hope you remembered the order. Hint the wide ribbon cable goes over the other 3) and plug them in.

2. Put the ink blotters back in the case as they were before Figure 24.

Figure 24 – Cleaned up ink blotters back in bottom of case

3. Put the printer assembly into place making sure the metal piece on the right (as you face the back) front (the printer front) hooks under the case (OR YOU'LL REGRET IT LATER WHEN THE MIDDLE FRAME DOESN'T FIT). Attach two grounding cables.

4. Put the cover back on the left side (looking from back) of the print assembly, one screw.

5. Put the print head back in and the ink cartridges. When putting the print head in don't bend the pins at the back of the holder since they must make contact with the back of the print head. If you were soaking the print head dry it carefully hopefully with something that is lint free and don't dry the nozzles where the ink comes out. Lower the arm to hold the print head in and make sure you take all the tape off the cartridges. The ink order should be on the print head carriage. From the left looking from the front, black, blue, red, yellow.

6. Now put on the middle frame. It first slides over the edges of the front. Then keep the back pried up a little and thread the 4 ribbon cables, the blue ground wire, the blue connector, up through the slot just left of center as you look from the back. Then thread the multicolored connector and the gray ground wire up through the slot on the left back. Then put the middle all the way down. It makes a tight connection. If it doesn't

something is not aligned and you have to figure out what. It's probably that tang on the right front of the print assembly not under the case.

7. Fasten 3 grounds, 2 blue and one black. Fasten 4 screws to hold down the middle frame. Reconnect the white cable connector.

8. Now put on the SPCNT shield plate. Still looking from the back, make sure the white wires on the left middle come through the slot on the plate. Remember the blue ground at the front of the computer.

9. Add the circuit board and screw it down with 5 screws. Now make the 11 connections to the board. Be very careful with the ribbon cables and align them carefully before seating them. Make sure they are well seated. On the plug connections don't force them and bend a pin. Make sure they are lined up correctly, the holes of the plug matching the side the pins are on in the connector. They only go in one way correctly.

10. Now put the flatbed assembly on carefully threading the wires on the right (as you face the back) through the slot they came out of and then put the right pivot point in its hole and the left pivot point in its slot. Resting the unit on the torsion bars connect the last white ribbon wire to the last spot on the SPCNT board.

11. Working from the front of the printer put the SPCNT cover on sliding the back end of the cover under the middle frame and screw down the front with two screws.

12. Now put the torsion bars into the slot in the flatbed assembly and lower the assembly until the white pivot mechanism aligns and you can push in the white pin. Be careful because if the torsion bars are not in correctly the assembly will jamb and not go down.

13. We're almost there. Fasten the wires from the flat bed assembly to the electronics card and attach the blue ground wire.

14. Put on the ADF assembly and tilt down. Slide the cable guide into its slot and hook under the case. Fasten the ADF assembly plug to the electronics card and screw down the green ground wire.

15. Now put on the Rear Cover, first sliding it on until the claw on the bottom clicks and then putting in the 4 screws.

16. Assess the situation. Do you have any left over parts? If so go back and insert them. Does everything look tight and like it originally did. Recheck everything to see it looks right.

17. If everything looks OK plug it in and start it up and see what happens.

Now most blogs say the repaired printer worked perfectly and all was well. Well the first print I made I hit the copy button and it came out blank. Then I fired up the computer

and did a cleaning and a test print. The colors were fine and there were a few bits dropped in the black. I did another clean of the black and no better. I did a deep cleaning of the black and now only one bad pixel. I'm sure that will clear up with more cleaning and use. It had not been used for several days while I repaired it.

However, there was one problem. The message "scanner error" kept flashing even when it was not scanning. I could do a copy and it will scan and reproduce the page but the darned error light wouldn't go out. So everything was not perfect. However, the next day the message stopped flashing all by itself. Patience.

Oh yes. Since I changed the purge unit, I should reset the waste ink counter so I get the message that it is full when it is the right time. The next time I think I'll just tear it down and clean it. It should be a 2 or 3 hour job the next time.

Instructions for resetting the MP730 ink tank full counter

1) Enter SERVICE MODE.---
By pressing Menu-Copy-#
2) Select TEST MODE. using the + key then the set
3) Select [8] PRINTER TEST in TEST MODE. by hitting the number 8
4) Select 3. [EEPROM CLEAR]. by hitting the number 3
5) Select 0. [INK COUNT]. by hitting the number 0
6) Let it default to the new value by waiting
7) Press the [Stop/Reset] key (returning to the state of 3)), this is the red stop key
8) Then press the [ON/OFF] key and the machine will reset and push through a page of paper

If you are not handy with taking apart small electronic items like computers and printers or if you don't want your hands discolored for a week from old ink, you may want to let the professionals do it but at least now you now have an idea of what it entails and why it costs so much..

Would I trade in my MP730 for another multi function machine? I doubt it. I love it and the Canon software EZ Browser and Easy Photo are so easy to use. I have had other brand printers but their software was slow and their cartridges weren't easy to refill and the Canon pictures look as good to me, they just may not be so waterproof.

Remember Safety first and I am not responsible for any damage caused by you or to you. I believe these instructions to be correct but am not responsible if they are not or if you interpret them incorrectly. You use them at your own risk.