

Installation Instructions: Epson Stylus Color 670 CFS



Preparation:

Get a place to work where you can spill a little ink and not ruin anything. Spread some newspapers down and have plenty of paper towels handy. Make sure you have good lighting.

Materials:

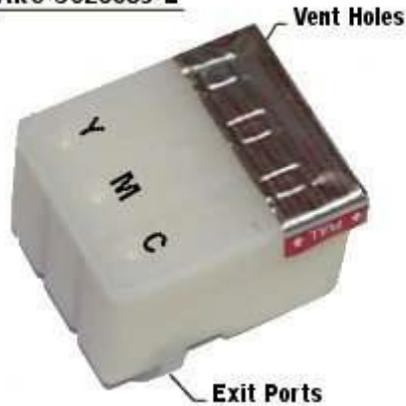
- Continuous Flow Cartridges, color and black with tubes attached
- 4 MIS-Syringe (10 cc)
- 4 Bottom Fill Adapters (MIS-BADPT)
- 4 Bottles of ink, one of each color (CMYK)
- 4 Rivets (MIS-Rivet)

Follow the table below for determining how much ink to inject into each chamber. The instructions for each color are identical, just the volume of ink injected is different.

Color	Volume (cc)
Black	16
Cyan	10
Magenta	10
Yellow	10

See the photo below to determine which color goes into which chamber. You must not make a mistake on this, it is vital to be correct. Use a felt tip pen and label each chamber with the correct letters.... **K, C, M, Y.**

ARC-S020089-E



ARC-SO20089-E = ARC-SO20191-E

ARC-S 020093-E



ARC-SO20093-E = ARC-SO20187-E

Follow these steps for each chamber, starting with Black.....

- A) Use the Bottom Fill Adapter and puncture the clear seal over the exit port for the color you are about to inject. Only puncture the one you are going to put ink into.
- B) Unwrap the syringe, remove the protective cap, and attach a green needle to the end of the syringe. Twist it on with your fingers, so it is tight.
- C) Make sure the syringe plunger is down all the way, then insert the tip of the needle into the ink and pull ink into the syringe. Pull in a 1/2 to 1 cc more than is shown in the table above.
(For the black you will have to do this in 2 steps, 11cc, and 11cc more.)
- D) Hold the syringe with the bottom fill adapter pointed up.
- E) While holding the syringe vertical, pointed up, wrap some paper towel around the tip of the Bottom Fill Adapter, and carefully push on the syringe to remove any air trapped in the top of the syringe. If you push too hard, ink will shoot up to the ceiling, be very gentle.
- F) Now that the air is gone, adjust the volume of ink in the syringe so that you have the amount shown in the above table. Hold the syringe tip over the open ink bottle and push the syringe plunger until you have the bottom of the rubber plunger at the right mark.
- G) Hold the cartridge being filled at eye level, keeping the cartridge orientated in its normal position. Insert the tip of the Bottom Fill Adapter into the exit port on the bottom of the cartridge. Don't turn the cartridge upside down. Push the tip firmly into the exit port and slowly inject the ink into the cartridge.



45°



Level

Keep the cartridge at a 45 degree angle, front down, for the **first half** of the ink injection. Then, for the **second half**, keep the cartridge level. Never turn cartridge upside down.

- H) Put the cartridge down on your work surface or bench, and insert a Rivet into the **exit port** you just filled. Don't turn the cartridge upside down. Make sure the Rivet is all the way in. Use a paper towel and wipe any excess ink off the bottom of the cartridge. The Rivet will prevent leakage and cross contamination from other inks.
- I) Now go to the next color and repeat this process until all 4 of the chambers are full. Take the filled cartridges and tubing to a place near your printer and set them on a flat surface. Put a match book or some sheets of paper under the end of the cartridge so that it is level. Make sure the end of the tubes are open and not kinked or twisted.

You are done for today. Let the freshly filled cartridges age overnight. You can continue in the morning or later in the day with the next step in the process. This is important, don't try to rush it. The ink needs about 8 hours to get fully absorbed by the sponge. Any bubbles or gases will come to the surface and disappear. Aging for days or weeks will not hurt anything.

2. Establish Working Condition of Printer- Make sure nozzle check is perfect

With an image on your screen and paper in the printer, click on **file | print**, then on printer **properties**. When you see the **Utility** tab on the printer properties dialog box, click on it, then on **Nozzle check**. This can also be done from the Control Panel | Printers section by right clicking on the correct printer and then clicking on properties.

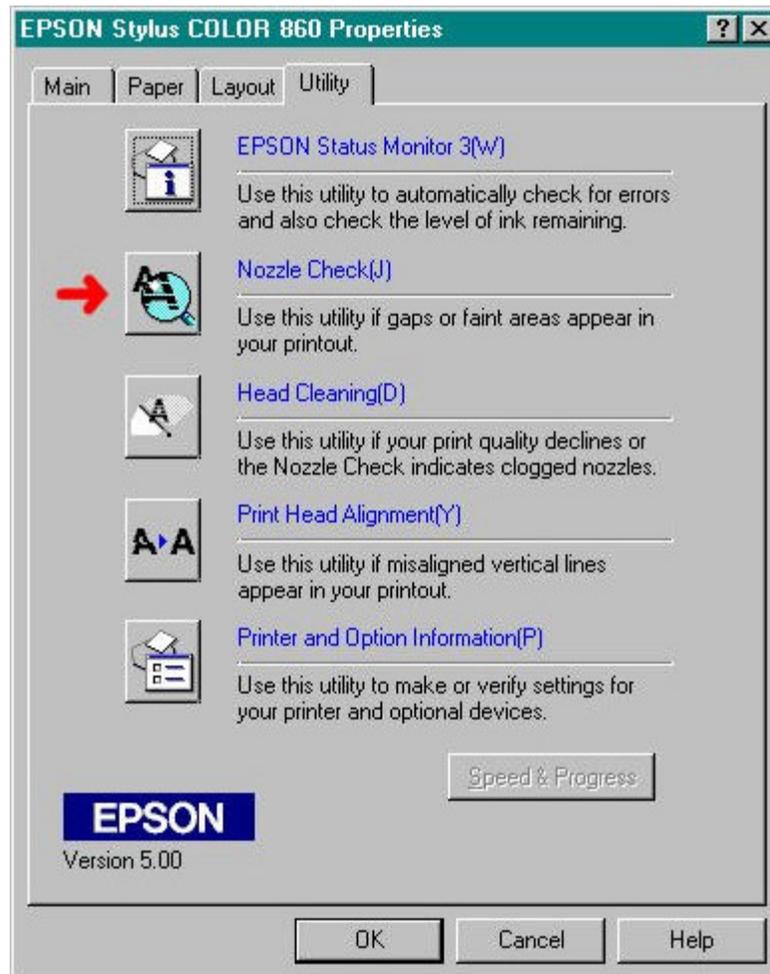
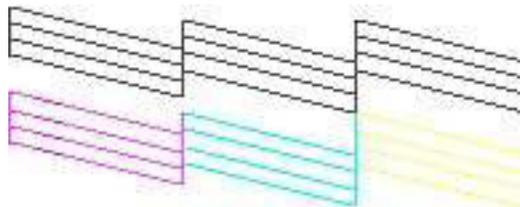


Figure 1

The nozzle check is very important. If your printer can not produce a **PERFECT** nozzle check, then there is something wrong with it and you should **not** proceed with the installation of the CFS. Here is what a perfect nozzle check should look like....



There are 32 segments in each section. Each one of these represents an inkjet nozzle on the print head. They must all be working properly before you proceed.

3. Remove the printer cover -

The printer cover un-snaps from the printer housing. There are no screws holding it. Just a little bit of force on the right side and it pops off. Keep it near by to use to cover the printer if you plan on leaving it unattended for a long period of time, like a vacation break.

4. Remove Cartridge Clamps - See photo



Push the paper feed button and hold it down for 3 seconds until the cartridge holder moves to the left. Pull the power plug out when the cartridge holder is in its remove position. This will keep it from returning to the right unexpectedly. **Don't plug the printer in again until later.**

Use a thin flat screw driver blade to remove the clamps. Be sure not to break them. You may need them some day. Remove the black clamp first. This will give you more room to remove the larger color clamp. Follow the instructions on the above photo. You may need a small flash light to help you see what is happening where the clamps attach. They will both come out clean with no damage to either the clamp or the printer, so don't be over aggressive. It is a bit of a puzzle but it can be done easily. Both the blue (or gray) piece and the black piece have to be removed.

5. Housing Modification

A small piece of the printer housing must be removed before the installation can continue. The tubing will hit the left edge of the housing and cause major interference with the print head motion. Here is a photo of what has to be removed.



Housing Modification for the 740, 750, and the 700 are the same

A piece 1 1/2" (left to right) by 1 3/4" (up and down) must be cut from the housing. The best way to do this is to remove the housing from the printer. There are 4 screws that must be removed to lift up the housing. Two in the back, and 2 in the front.

Do this carefully, and remember which screw goes back into which hole, they are not all the same size. With all of the screws removed, the housing can be separated from the printer. Go slow and don't force anything or break anything.

Once you have it removed you can use any tool or combination of tools needed to remove the section defined above. Keep it neat and file down any sharp edges you may have created so they will not damage the tubes, should they come in contact by accident. We used a hack saw blade and a file. Other customers have suggested a coping saw, a dremel tool or a hot wire knife. Use what ever you have, or take it to your handy neighbor with all the tools and skills. Remember, you will want to show off your installation after it is finished, so try to make it look good.

When you reinstall the housing, make sure it fits properly on the printer. It is a little tricky getting it to reseal itself before the screws can be put back in place. Patience is a virtue. Make sure the ribbon cable in the back right corner does not cover the screw hole. If you damage this ribbon cable, you will not be able to power up the printer.

The whole process took us about 30 minutes to accomplish.

6. Install Tubing Brackets - See photo



Use an alcohol swab to clean the plastic on the housing before attaching each bracket. Wipe the area dry with a paper towel after using alcohol swab. Once it goes down, it is there to stay, so don't put it in the wrong spot. This is important. If you have to remove it, use a wide blade screwdriver and twist it under the bracket. You can buy the white mounting tape at the hardware store if needed.

7. Prepare Cartridges for Installation

Do not remove foil pull tabs from top of cartridges. This is important.

Use a small flat blade screwdriver and remove the MIS Rivets from the bottom of the cartridge. Some ink may drip out onto the paper. This is ok. Don't let the paper wick the ink out. Soft paper towel or cloth in contact with the exit port should be avoided, other than blotting.

After all the Rivets are out, blot the bottom of the cartridge off with some paper towel. Insert the cartridges into the cartridge holder. The felt pads on the side of the cartridges will keep them in place. Make sure they are seated down into the cartridge holder all the way.

Do not lift the cartridges off the posts or out of the cartridge holder once they are down. This will introduce a large air pocket into the print heads and may prevent the printer from working properly. This is very important.

8. Attach Ribbon Tube to Bracket

From Step 4 above, the power should still be unplugged. You should be able to move the cartridges freely from right to left. Move the cartridges all the way to the left.

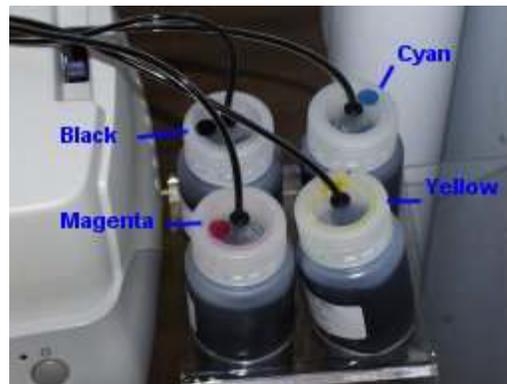
Insert tubing into the bracket so that the tube lays flat and is not twisted. Make sure the tubing is secure and all the way down into the bracket, use some hand lotion for lubricant. Pull the tubing through the bracket to take up the slack. You will have to make some adjustments so that the tube is not too tight when the carts are in the left most position. As the cartridges traverse from left to right, the tubing should not touch the bottom of the carriage.



Clean off the excess lubricant or hand lotion from the tubing. You don't want the tubing to slip in the bracket as the cartridges move back and forth.

9. Set up the ink bottles

Put the tops that have the holes in them on the 4 oz bottles of ink. Put the ink bottles in the acrylic tray as shown in the above photo. Position is not critical. Check to verify that there is a **vent hole** in each of the tops to let air into the bottles. If any of the vent holes are missing, you will have to make one using a drill.



10. Insert the tubes into the bottles

There should be a black mark on the ends of the tubes, 3.5 to 4.0 inches from the end of each tube. If these black marks are not present, use black magic marker and a ruler and make a mark or line on each tube, 3.5 inches from the end. This is important.

It is very important to get the right tube into the right color bottle or the cartridges will be ruined. Check the label on the cartridge and trace down the yellow tube from the cartridge to the end of the tube. The yellow chamber is the one you see as you look at the cartridges in the printer.

If you are installing MIS Original Quadtone inks, use the diagram below to translate from color to percent black.

Black = 100%

Cyan = 25%

Magenta = 75%

Yellow = 50%

Keep a cup of water near by. Wet the ends of the tube with water up to the black mark. Insert the end of the yellow tube through the grommet in the yellow ink bottle. Keep pushing it down into the bottle until the black mark has entered the grommet. Stop there, that puts 3.5 inches of tube inside the bottle, which is perfect.

Now do the rest of the tubes, being careful to get the right tube into the right colored bottle of ink. If you have trouble pushing the tube through the grommet, use more water.

You can rearrange the bottles if you find a neater sequence to keep the tubes from tangling. You can also separate the tubing from the ribbon by pulling them apart. Do what ever you have to do to get a neat arrangement.

The ink bottle tray must be on the same surface as the printer. Do not elevate the tray or set it below the printer surface. Put the tray in a position so that the ribbon tubing is not touching the paper in the feed tray.

If the bottles are too high, the ink will flood the print head and it will not work. If the bottles are too low, the print head will not have enough power to pull up the ink and it will not work. The best level for the bottles is the same level that the printer is sitting on.

11. Establish Working Condition of the Cartridges

At this point, the tubing is empty and the ends have been installed in the ink bottles.

Bring up the MIS purging image (purge4.tif) using Photoshop, Paintshop Pro, Corel or any graphics program. This image and some others, are on the diskette that came with the CFS. If you don't have this image, or you have a MAC, you can download it from the MIS website (www.inksupply.com), it is on the CFS page. You will need PKZip or WinZip to unzip the downloaded files if you don't have the diskette.

Assuming you have the file loaded, go to **file** and click on **print**, when the printer dialog box comes up, click on **properties**, then click on the **utilities** tab. See Figure 1 on the first Page.

Run a nozzle check. It most likely will not be acceptable.

Run the first cleaning cycle, then another nozzle check. You should see the ink begin to climb up the tubes.

Run second cleaning cycle, then another nozzle check. On the second cleaning cycle there is about 7 seconds worth of pumping and the ink should travel several inches up the tubes.

If the nozzle check is good, skip the third cleaning cycle.
If necessary, run a third cleaning cycle, then another Nozzle check.

If the nozzle check is **not** perfect, print three pages of the purging image (purge4.tif) then run a nozzle check. If it is not perfect run up to 3 more nozzle check-cleaning cycles until you get a good nozzle check. After 3 cleaning cycles, print a couple of pages of the purging image.

If after running a lot of cleaning cycles, and you still do not have a good nozzle check, the conclusion is that there is something wrong with the cartridges attached to the CFS. You will have to refill your cartridges using the MIS Residual Foam Method. This problem is caused by poorly filled cartridges that have foamy ink in them.

12. Fill Tubes with Ink by printing bar charts

Now that you have a good nozzle check, print 10 copies of the purging image, purge4.tif. After the 10 copies have finished, run a nozzle check and a cleaning cycle, then another nozzle check and cleaning cycle. After the 2nd cleaning cycle, run a nozzle check. If it is 11 good, then print 10 more copies of the purging image. Repeat this process until the ink has reached the cartridges.

If all went well, you are almost finished. You can print some images and use the printer like you normally would use it. If you see any banding, run a couple of nozzle check - cleaning cycles. It will clear up.

When the day is done, check your tubes. The ink should be right up to the cartridges. The next morning, the ink will have retracted a little bit, as much as 4 inches back from the cartridges. This is normal. When you start to print again the ink will be drawn into the cartridges and it will function normally.

In the morning, if you see the ink has retracted all the way back to the bottles, on any of the tubes, **this is a problem**. It means there is an air leak. There is no fix for this, other than a new Continuous Flow Cartridge. We will replace it at no cost if this occurs.

You should enjoy printing with a minimum of problems. Occasionally you will have to run a couple of cleaning cycles, just like you would have to without the CFS. The bottles hold approximately 12 cartridges full of ink, when they start to get low, remove the top and add more ink. There is no vacuum in the bottles, they are vented to atmosphere. The tops can be removed at any time.

14. Resetting the Out of Ink Switches -

On the Photo 670 printer there are two switches in the back of the cartridge holder. These switches get released and then pushed in each time you remove the cartridges and reinstall them. These switches control the lights on the front panel of the printer. When an out of ink condition occurs, the lights come on and the printer will not print again until the cartridges are replaced.

Removing or lifting the cartridges must be avoided. When the cartridges are lifted off of the printer posts, inside the cartridge holder, an air pocket forms in the prechamber of the cartridge. This air pocket then gets sucked in by the print head and requires cleaning cycles to clear it out. Sometimes it can not be cleared. It is about 50/50. The only solution is a new CFS cartridge.

You will need a thin ruler or machinist scale that is not thicker than about .040 inches. A 6" long one works the best, but longer or shorter ones will work also. Hold in the paper feed button until the cartridges go to their remove position. Rock the cartridges back and forth, front to back, so you can find the space between the back of the cartridges and the cartridge holder. The black switch is on the far left and the color switch is on the far right. Push the ruler or scale down in between the black cartridge and the cartridge holder, then twist the scale a little. This will activate the switch. Remove your scale, then do the color switch. When you are done, push the paper feed button and the cartridges should return to the right position and the printer will do a cleaning cycle. The Out of Ink light will stay on until the cleaning cycle is over. The printer now thinks you have installed new cartridges.

Let it finish the cleaning cycle, then run a nozzle check. If the nozzle check is good, you are all set to continue printing. If the nozzle check is not good, then you will have to run additional "nozzle check - cleaning cycles". Remember only do 3, then print something and do 3 more if you have to. Always stop when you get a good nozzle check. If for some reason, you can not get the printer to go into a cleaning cycle when it first returns to the right, you will have to lift the cartridges out of the cartridge holder and then put them back in place. This will reset the switches and when you push the paper feed button a cleaning cycle will run. For sure, you will have to run a series of nozzle checks and cleaning cycles to get back to normal. Some printers can be reset manually and others can not. It is the low cost construction of the small switches that causes this problem. You can try bending the metal tabs to make them work better.

WORDS OF WISDOM FOR USING YOUR NEW CONTINUOUS FLOW SYSTEM

Each morning before you print anything, run a NOZZLE CHECK.

Find this on Control Panel > Printers > Right Click on printer icon > click on PROPERTIES > click on UTILITY tab > click on NOZZLE CHECK.

If the Nozzle check is not perfect, every horizontal line segment must be there, then run up to 3 Head Cleaning Cycles. Check the Nozzles after each head cleaning. If it is OK, don't run extra cleaning cycles. After 3 cleaning cycles, print 2 copies of the bar chart... **purge4.tif**. If you need to, you can run 3 more cleaning cycles. Printing something in between prevents the print head from losing prime.

When the printer stops and one of the red lights is on, this indicates that the printer **thinks** one of the cartridges are empty. Follow the instructions on the previous page, "**Resetting the Out of Ink Switches -**"

If you have a dusty environment, reattach the printer cover. Leave it up when the printer is running. Put it down when you are not using the printer. This will help keep the dust from accumulating.

Don't let your printer set for long periods of time without printing something. The ink in the print heads can dry, especially if you are in a hot dry climate.

The ink in the tubes will retract after the printer is idle for an hour or so. This is normal. The inks may move back about 2 or 3 inches. Don't worry about it, they will be pulled up when you start printing. The weather will also cause the inks to change position. When a high pressure front is present, the inks will be closer to the cartridges. When a low pressure front is present, the inks will move back. The inks should **never** return all the way to the bottle leaving the tubes empty. This indicates that there is an air leak. Call us if this happens.

For printing images, always use a high quality inkjet paper, either matte finish or glossy. Adjust your print settings to 720 dpi or 1440 and select the proper paper type.

Don't let the ink bottles go empty. When they start to get low, like 1/4 or less, order replacement bottles from MIS. If you order 4 oz bottles of ink, you can just unscrew the empty ones and screw the full ones back on the cap. Having the tubes out of the ink does not hurt anything as long as the printer is not printing. For better economy order an extra set of 4 oz bottles and bulk ink, in pints or gallons.

For additional information on your CFS, check our CFS page on the website...
www.inksupply.com