Usage Guide for
Metalon® Inkjet Inks with
EPSON C88+ (D88) Printer

Printer Sheet Feed Modification

The sheet feeder must be modified to prevent smearing of the ink **only** when printing on non-porous substrates.

1. Remove housing around USB and printer cable connections, using a screwdriver to pry off housing as necessary
2. Remove left-side endplate
3. Remove the two screws which secure the print bar in place
4. Carefully remove the print bar
5. Locate and remove the spiked roller guides from the print bar
6. Replace the print bar and secure with the two screws

Initial Printer Setup

1. Follow manufacturer's instructions for installation of printer and original print cartridges (needed for initial setup)
2. Print test page
3. Establish a baseline alignment
4. Go to printers and faxes > Right click on your C88 > select "Printing Preferences" > Go to the "Maintenance" tab > Select the printer alignment function
5. Follow the onscreen directions for both color and black channels; several sheets of copy paper are needed to complete the alignment process
6. Once the printer is aligned proceed to purging

Cartridge Priming (Video included on USB)

1. Remove the ink fill plug
2. Using a 10 ml slip-tip syringe, break the tape seal over the ink valve on the bottom of the cartridge
3. Seat the nozzle in the valve
4. Draw out 1-2 mL with the syringe until ink appears by twisting the cartridge and pushing on the valve to encourage flow
5. Place a gloved finger over the ink valve
6. Replace the removed ink by placing the syringe in the ink fill hole, drawing out 1mL of air from the cartridge and pushing, with a peristaltic pumping action, the ink in the syringe into the cartridge. The center reservoir should now be full of ink.

Installation of Purge Cartridges

1. The Purge Cartridges - black (T0601), cyan (T0602), magenta (T0603), and yellow (T0604) - are filled with print vehicle - 85% wt deionized water, 9% wt glycerin, and 6% wt ethylene glycol - and will be used to purge Epson's inks from the printer
2. Open the printer cover and press the "Ink Cartridge Replacement" button (left side with droplet graphic) on the top of the printer which will make the print carriage accessible.
3. Remove the Epson print cartridges
4. Install the Purge cartridge set
5. Remove the plastic plugs from the vent hole in each cartridge (furthest from the retaining clip on the cartridge)
6. Press the "Ink Cartridge Replacement" button again which will reset the carriage to the "ready" position
7. Close cover
8. To purge the ink system, open and print the MIS purge document
9. Under "Printer Preferences" select Heavyweight Matte paper and select "Best Photo" for print quality

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10. Print the purge document on plain paper until pigment disappears (10-20 pages)

Installation of Replacement ink cartridge (Black (T0601) only)

1. For initial work with most applications, NovaCentrix recommends the use of only the black ink cartridge to help reduce ink waste during the daily maintenance cleanings
2. Follow steps 2-7 above by replacing only the black channel with ink and leaving the remaining three vehicle cartridges in place.
3. After the charging cycle is completed, print the MIS purge document on Heavyweight Matte, Best Photo, and turn on the "Black Ink Only" option; print until ink appears consistent (3-6 pages)
4. Align the black channel using the function described in 'Initial printer setup,' skipping the color setup in step 5.
5. Head alignment is required when materials contact the print head or appear misaligned

Routine Maintenance (daily)

Inks should not remain in the printer overnight and should be refrigerated when not in printer. Allowing ink to dry in the printer overnight will ruin the C88.

1. Press the ink fill button on the top of the printer to call the cartridge.
2. Remove the Metal ink in the black channel K.
3. Replace with the k channel cartridge loaded with ink vehicle.
4. Print 10-20 pages to purge the metal ink from the print head.
5. Press the ink fill button and move the carriage aside and clean the squeegee and inkpad in the C88 cleaning tray with a chemwipe and ink vehicle.
6. Press the ink fill button to return the carriage, the print can now be set aside until the next use.

Cartridge Refill

1. Open the printer cover and press the "Ink Cartridge Replacement" button.
2. Remove the plastic plug from the "fill hole" in the black cartridge (this is the plug closest to the retaining clip on the cartridge).
3. Fill the "Ink Refill Injector" with 10mL of Metalon ink.
4. Place the tip of the injector securely into the fill hole and slowly inject the ink.
5. Remove the injector and replace the plug.
6. Press the "Ink Cartridge Replacement" button to move the printhead to its ready position.

Print Settings

The following table provides printer settings for ink deposition from lightest coverage to heaviest coverage.

Paper Selection	Print type	Deposition
Plain	Draft	Very light
Envelope	Text	
Plain	Text	
Plain	Best Photo	
Envelope	Text & Image	
Envelope	Best Photo	
Plain	Photo	
Plain	Text & Image	
Envelope	Draft	
Envelope	Photo	
Matte	Best Photo	
Matte	Draft	
Matte	Text & Image	

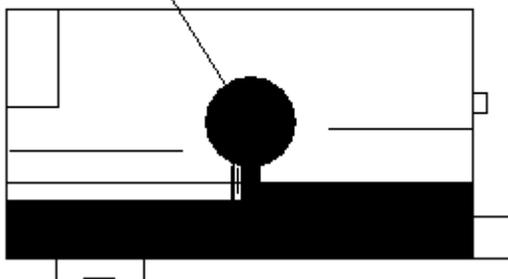| Matte	Photo	
Matte	Text	Heavy

Document Formats and Color Settings

- To achieve best resolution of the printed image use vector-based file formats. Microsoft Word's imbedded drawing capability, Adobe Illustrator's .ai format, the eps format, and any CAD design program format such as .dwg or .dxf are examples of vector-based files. We use Illustrator because of the versatility in controlling the file settings, and because of it's ability to import many file formats and convert them into a very nice controllable vector file. We typically use .pdf formats made through Illustrator because of the ease of working with that format.
- To maximize the conductivity of the printed patterns, it is important to apply as much ink as possible make sure that you are using 100% K channel color values this may not be visible on-screen. Check the color used with the color dropper tool.
- In order to print at full density from only one channel the program or driver must have a monochrome print setting, which is achieved by using the black ink only setting
- Rastered or pixilated file formats such as .jpg or .bmp should be avoided in order to maintain image resolution and color saturation information.
- After the print is completed, examine it under the microscope to ensure that you have produced a fully dense print without gaps.   If holes are found in the print, check the image color saturation settings to confirm they are all set to the 100% value.

Troubleshooting

- Prints appear too light in color
    - Check nozzle print pattern from printer preferences sheet. Select printhead cleaning if necessary. Do not use more than three head cleanings in a row without printing graphics page.
    - Check that the ink cartridge is not empty.
    - Check printer settings for proper paper and print settings.
    - Make sure that the center reservoir is full of ink
    - If Problems Persist
        - Press the ink button on the printer (droplet graphic)
        - Unplug the printer (now you can move the print head freely)
        - Fold over a Kim Wipe (lint free) so it fits in the channel under the head
        - Wet the wipe with print vehicle
        - Move the printer head over the wet Kim Wipe
        - Allow the printer to sit for 20 minutes
        - Remove the wipe, turn on the printer, and run a nozzle check

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- Printhead will not return to ready position after loading cartridges
    - Press down on each cartridge to ensure that the sensor chip on the front of the cartridge is in contact with the printhead.

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Example

Following is a typical configuration as used in the NovaCentrix Applications Lab.

Printer:	Epson C88 Photo Stylus
Print processing:	Adobe Illustrator CS3
Printing Preferences setup:	Basic Mode (not Advanced Mode)
Quality options:	Best Photo
Paper options type:	Matte Heavyweight
Print options:	None selected
Printer Preparation:	Cartridge air plugs were removed.
Final file format:	PDF
Color space:	100% K
Color controls:	Adobe Illustrator CS3
Color channels:	K
Post-print process tool:	PulseForge^{TM} 3100 in 12" (300mm) configuration
Processing speed:	30-40 feet per minute (10-13 meters/min)
Production (unoptimized)	210 feet per minute (75 meters/minute)
Environment:	Open atmosphere – no special preparation

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