COLORJET

India's largest manufacturer of digital inkjet printers

VERVE mini

USER MANUAL

EFFICIENT ENGINEERING

VERSION 1.2

User Manual of

Verve Mini

Foreword

This user manual briefly describes the operational aspects of the **Verve Mini** machine. In this document, the step-wise instructions for handling various aspects of the machine with visual screens are provided for easy and better understanding. It also describes the error messages encountered while working with the machine with appropriate remedial actions required to be taken by the user.

This manual serves as the reference tool that guides their customers on how to use or operate the **Verve Mini** machine without anyone else assistance. The information provided in this document ensures its uniqueness and language quality. For safe and proper use of the product, please read this manual carefully and follow all the instructions.

Disclaimer

The information and instructions provided in this user manual have been checked for accuracy, uniqueness, and reliability. ColorJet Group reserves all the rights to modify and revise this manual as per the company requirements without any prior notice.

The reference table is shown in the below table:

Doc Type	Doc Code	Version	Machine Name	Date of Issue
User Manual		1	**Verve Mini**	June 2019
User manual		1.1	**Verve Mini**	February 2024

TABLE OF CONTENTS

1. ABOUT DOCUMENT

PURPOSE

The purpose of this document is to guide and educate the targeted audience about the Printer and its Print Control Center software so that they can easily and effectively handle and use it as per their requirements. Additionally, this document also provides step-wise instructions for handling various aspects of the printer and its related software with the help of graphical screens for easy and better understanding. Moreover, the document also describes commonly encountered problems while working with the printer and Print Control Center software with appropriate remedial actions.

INTENDED AUDIENCE

This document is meant for all the users who want to use the Printer for their printing business. Sometimes, the targeted audience has little knowledge about the printer but in most cases, the targeted audience is familiar with the terminologies of printer and printing business. Thus, this document is designed to facilitate both types of users.

2. MACHINE OVERVIEW

Verve Mini is a true Flatbed UV printer that redefines the printing experience faster and more exhilarating with less investment and offers a big opportunity. It is a UV Flatbed Printer with an automatic head adjuster of up to 100 mm. Equipped with Ricoh heads, the configuration supports 6 Colours in both 6 Heads and 7 Heads options.

The **Machine View** is shown in the image below:

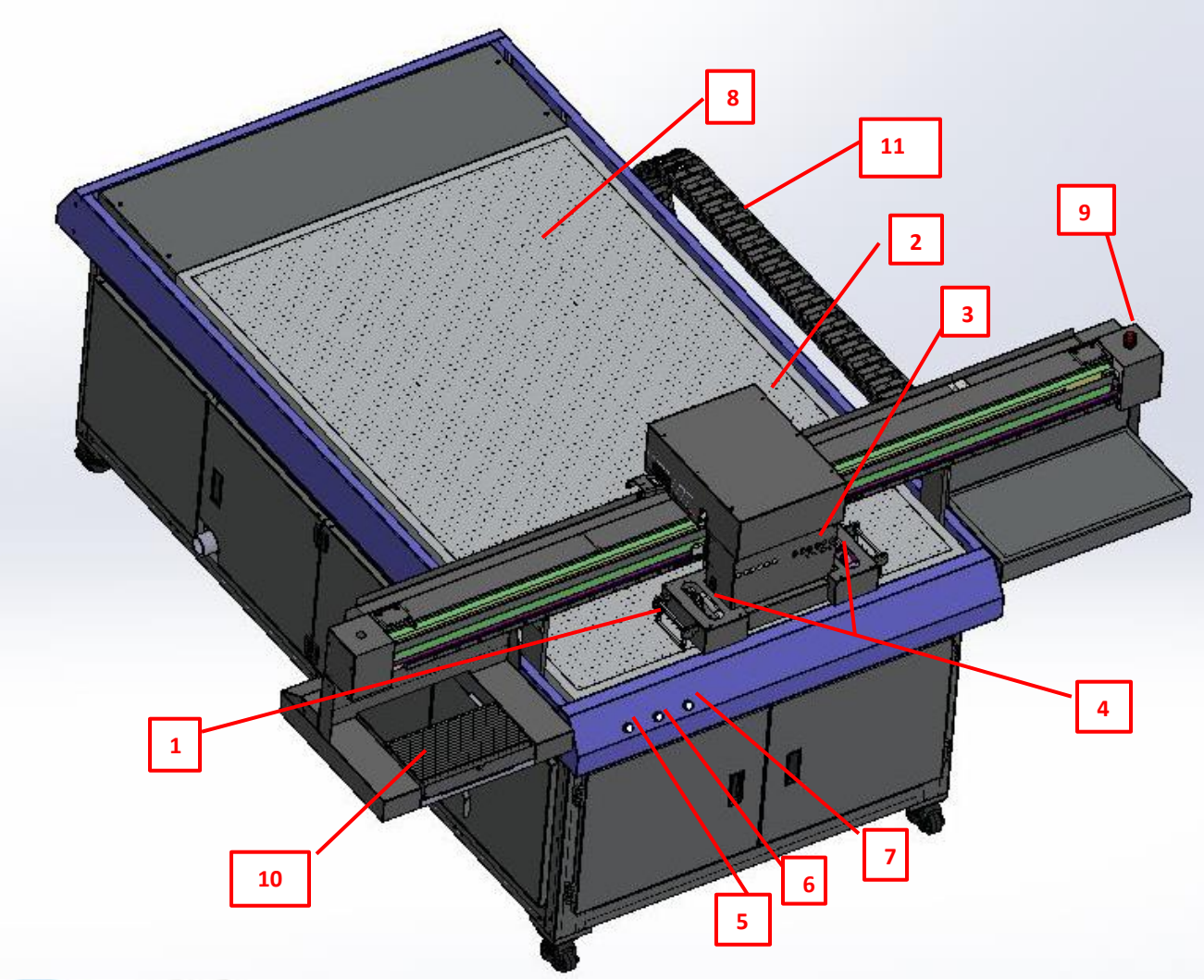


Figure 1: Machine View

Table 1: Different Parts of the Machine

1. Carriage Safety Switch	2. Carriage Unit
3. Ink Valves	4. UV Lamps
5. Power Indicator	6. Bed Vacuum Button

7. Purging Button	8. Printing Bed
9. Emergency Button	10. Waste Tray
11. Drag Chain	

The **Machine View (Right Side)** is shown in the image below:

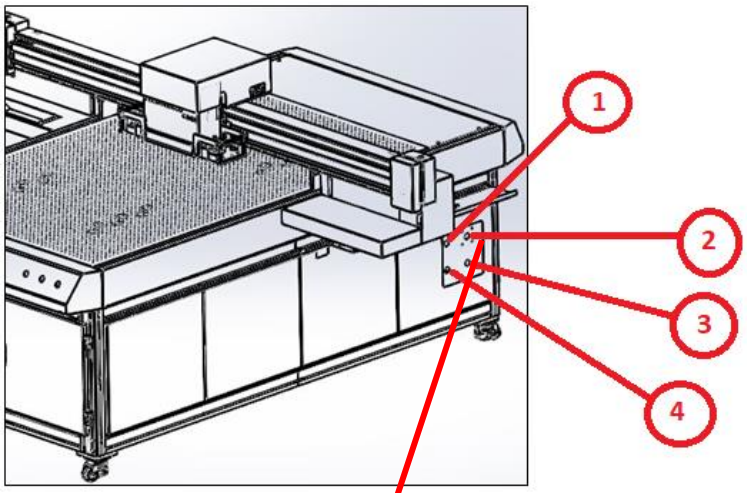


Figure 2: Machine View (Right Side)

Figure 3: Machine View (Right Side)

Table 2: Different Parts of Machine View

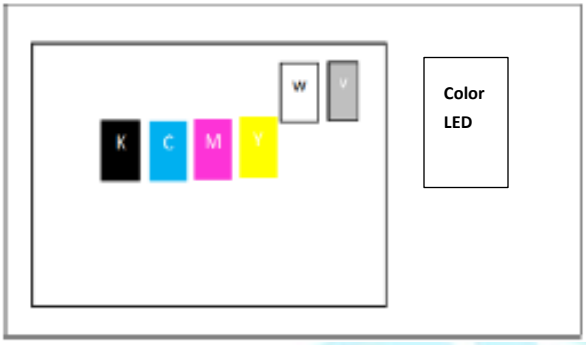
1. Overflow buzzer alarm	2. Machine Power Switch
3. Machine Power Cable	4. Vacuum Pump Power Cable

HEAD CONFIGURATION

Verve Mini head configurations are as follows:

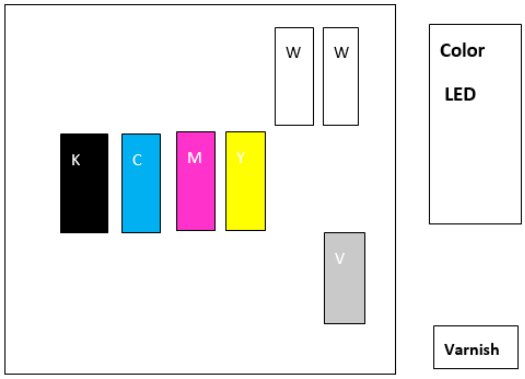
6 HEADS, 6 COLORS IN 2 LINES-

Color and Varnish printing is done in three different processes. Color Printing>Varnish Printing>Varnish Curing



Arrangement	6 heads, 6 Colors arranged in 2 lines
Colors	CMKY W V
Head Model	Ricoh Gh2220
Speed (6 pass)	60 Sqft/hr. (6 pass) (CMYKW) AND 20 Sqft/hr. with Varnish
Z height	100mm

7 HEADS, 6 COLORS IN 3 LINES- COLOR AND VARNISH CAN BE PRINTED SIMULTANEOUSLY



Arrangement	7 heads, 6 Colors arranged in 3 lines
Colors	CMKY WW V
Head Model	Ricoh Gh2220
Speed (6 pass)	60 Sqft/hr. (6 pass)
Z height	100 mm

3. GETTING FAMILIAR WITH THE PRINT CONTROL CENTER INTERFACE

The **Print Control Center** interface is shown in the image below:

***Note**: Print Control centre is required to install and execute, to initialize the printer*

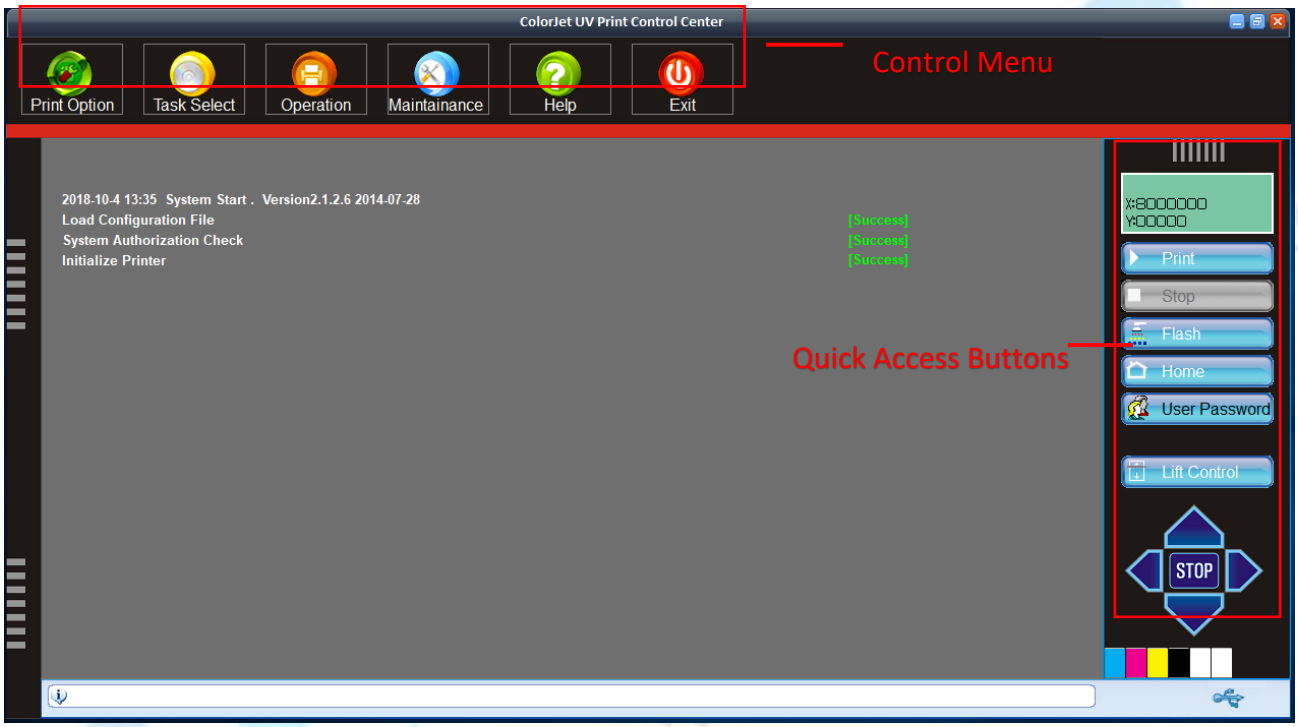


Figure 4: ColorJet UV Print Control Center

The description of the **Print Control Center** is given as below:

- **Control Menu:** Comprising various menu or sub-menu options such as Print Option, Task Select, Operation, Maintenance, and Help providing a variety of functions in a well-organized manner.
- **Quick Access Buttons:** Showcasing frequently executed actions such as Print, Stop, Flash, Home, User Password, Lift Control, and more.
- The *three green color success lines* show that the printer is initiated successfully. Otherwise, instead of success, failed will be displayed with red color.

SETTING CARRIAGE AND GANTRY POSITION

Carriage and Gantry can be moved using the Left, Right, FWD, and REV arrow keys. The Left and Right arrow keys facilitate adjustment of the carriage position. On the other hand, the FWD and REV arrow keys enable the gantry in the forward and reverse directions. The control arrow keys are shown in the image below:

Figure 5: Control Arrow Keys

Note: *The carriage position can also be set by pressing the CTRL + Arrow keys on the keyboard.*

LIFTING CARRIAGE

To elevate or lower the carriage, click on the **Lift Control** button, as shown below:

Figure 6: Lift Control Button

The **Lift Control** dialog box is shown below:

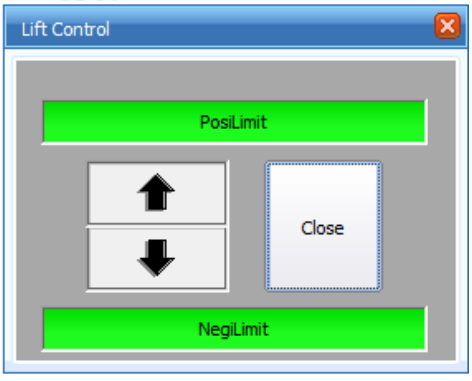


Figure 7: Lifting Carriage Up and Down

4. GETTING READY FOR PRINTING

SWITCH ON PROCEDURE

Follow these steps to switch ON the printer:

Step 1 *Ensure* that the room temperature is conducive for optimal printing performance.

Step 2 *Check* Ink Level.

Step 3 *Inspect* the Waste Ink Bottle. Empty it if not done.

Step 4 *Release* the **Emergency** button if pressed.

Step 5 *Turn **ON*** the Main Power switch located on the right side of the machine, as shown below:

Figure 8: Turning ON the Main Power Switch

Step 6 *Check* the water level in the Chiller Unit and fill it if required:

Figure 9: Filling RO Water

Step 7 *Switch ON* the Chiller unit, as shown below:

Figure 10: Switch ON UV Lamps

Step 8 *Place* the media on the Print Bed.

Step 9 *Switch ON* the Print Bed vacuum by pressing the **Bed Vacuum** button available on the front side of the machine, as shown below:

Figure 11: Turning On the Bed Vacuum Button

Note:

a. Carriage path must be obstacle-free.

b. Ensure that Z height must be enough to move smoothly over the print bed.

Step 10 This printer does not self-initialize on power. It gets initialized only on running/executing the Print Control Centre software.

Step 11 *Rotate* the ink valve of each color in an anti-clock direction using the key to open it, as shown below:

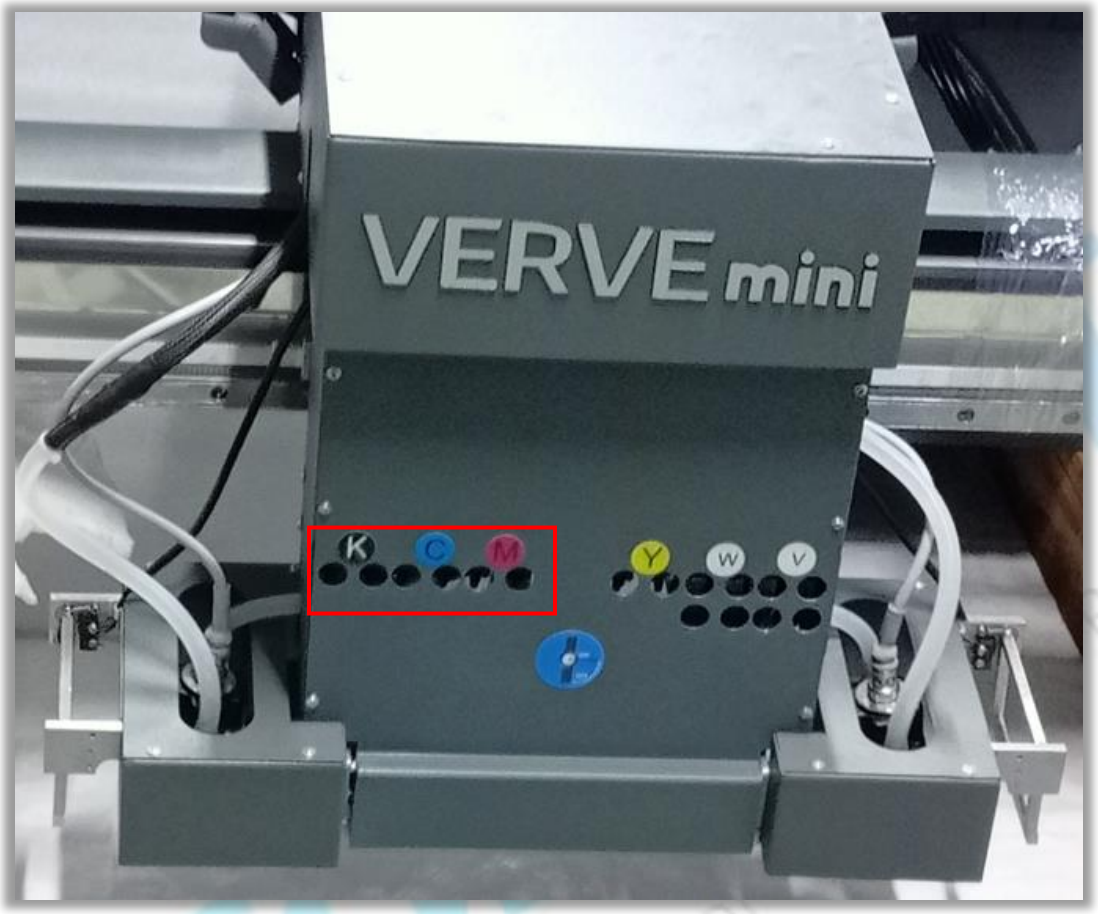


Figure 12: Displaying the Ink Valves

Step 12 *Switch ON* the Ink Valve by rotating the key, as shown in the image below:

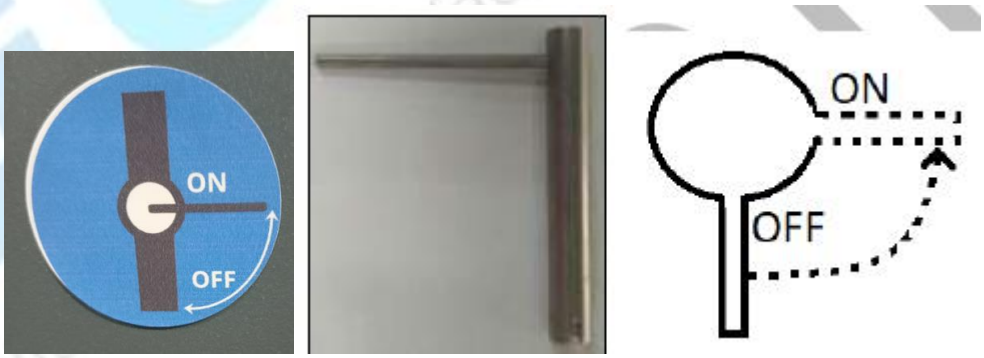


Figure 13: Opening Ink Valve Using the Key

Step 13 Ensure the waste bracket is pulled in front just below the carriage.

Step 14 *Press* the Purging Button (Figure 14) and wait for a few seconds.

Step 15 Now push back the tray with soft hands.

Step 16 *Clean* the print heads using the head cleaning wiper provided with the printer.

Step 17 Click the Flash Button to avoid mixing of colors.

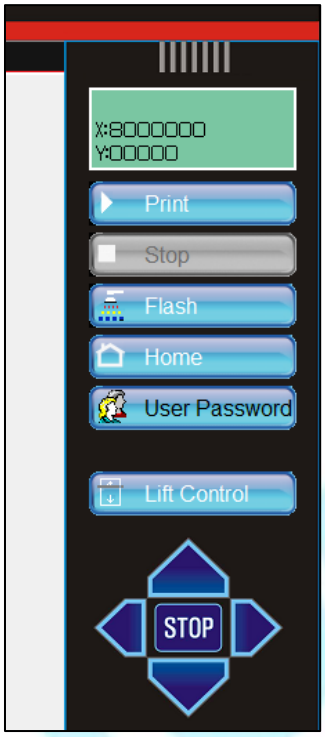


Figure 14: Flash Option

Step 18 *Conduct* the nozzle test.

Now the printer is ready for printing.

LOADING MEDIA

Follow the below-given steps to load media:

Set the head height using the **Carriage Lifter** tab, as shown below:

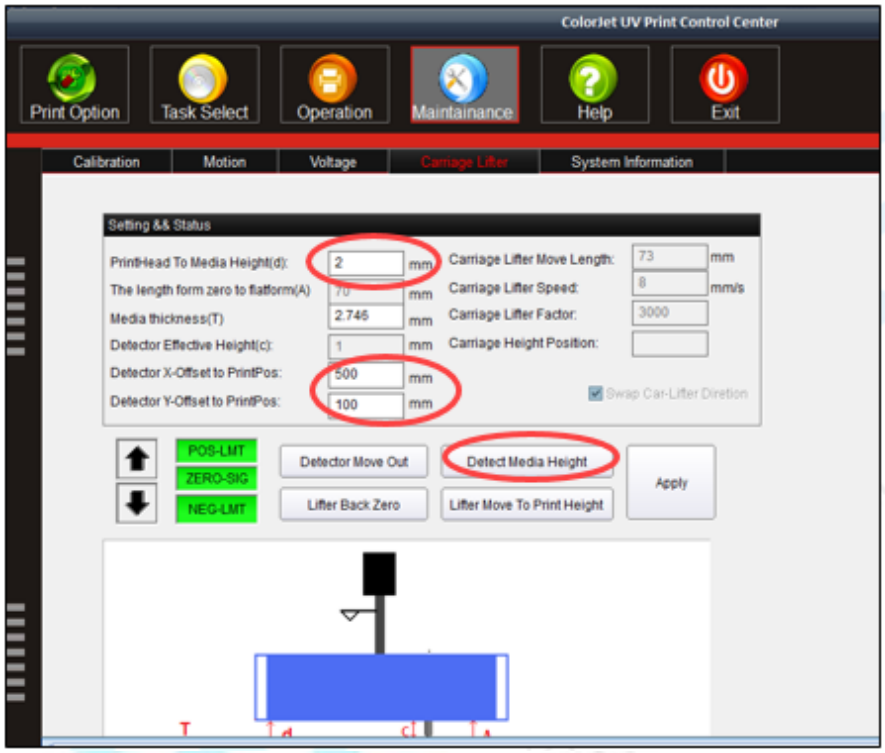


Figure 15: Detecting Head Height

To open the Carriage Lifter screen, click on the **Maintenance** menu and select the **Carriage Lifter** tab. Subsequently, follow these steps to adjust the head height:

a. *Place* the media on the print bed aligning with the scale margin engraved on the bed.

b. *Switch ON* the Print Bed vacuum by pressing the **Bed Vacuum** button available on the front side of the machine, as shown below.

Figure 16: Turning ON the Bed Vacuum Button

c. *Enter* the X Offset value in the **Detector X-Offset to PrintPos** field.

d. *Enter* the Y Offset value in the **Detector Y-Offset to PrintPos** field.

e. After providing offset details, *click* on the **Apply** button.

f. *Click* the **Detect Media Height** button to ascertain the head height.

g. *Click apply.*

A detailed description of the head height adjustment is given in the **Head Height Adjustment** section.

FILLING INK

To refill ink, remove the Main Ink Tank cap and refill ink as per the color sticker, as shown below:

Figure 17 Main Ink Tanks and their Connectors

The sequence of Ink Main Tanks is shown below:

Left to Right
K C M Y W V

LOW INK ALARM BOARD

Within the printer machine, a low ink alarm board is integrated. Upon depletion of any ink within the Main Ink Tank, the alarm is activated indicated by LED lights on the rear panel, prompting the user to refill the respective ink bottle.

Figure 18: Low Ink Alarm Lights

NEGATIVE PRESSURE

The negative pressure system is utilized to regulate the ink flow. The negative pressure setting is adjusted based on various environmental conditions, primarily room temperature, sea level, etc. The standard setting range is -2.3 to -2.8 KPa. If the negative pressure is too low, it may lead to ink droplets or failure of the print heads to eject ink. If the negative pressure is too high, it will result in ink starvation or backflow.

Following the latest upgrade, the Negative system has been enhanced with a bigger reservoir tank to accommodate more vacuum buffers.

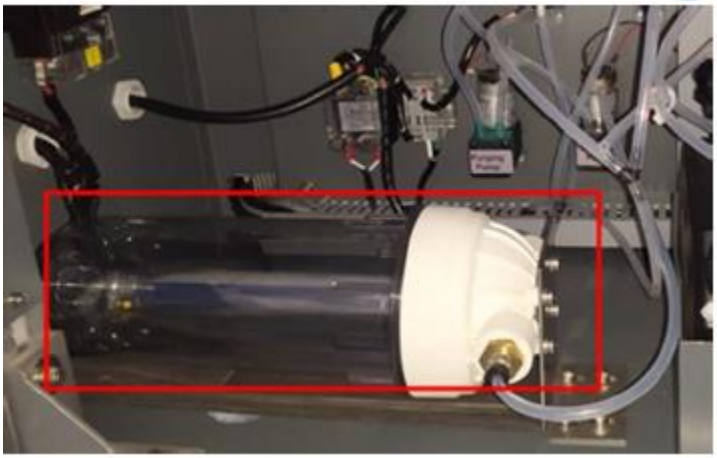
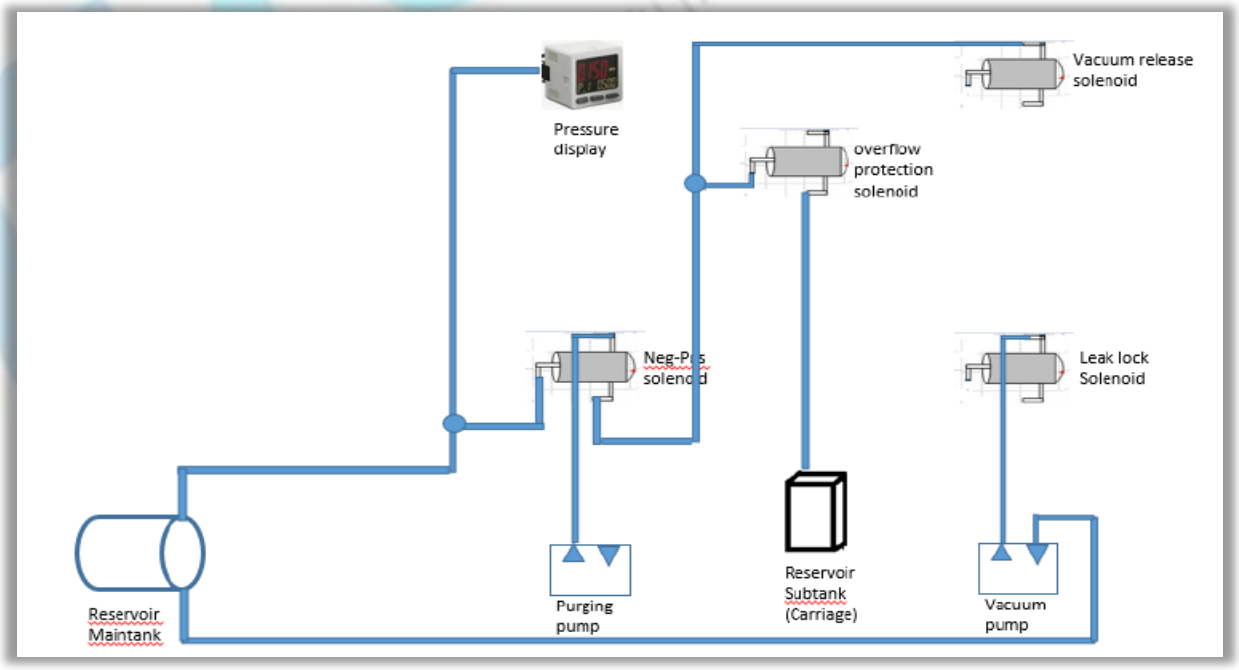
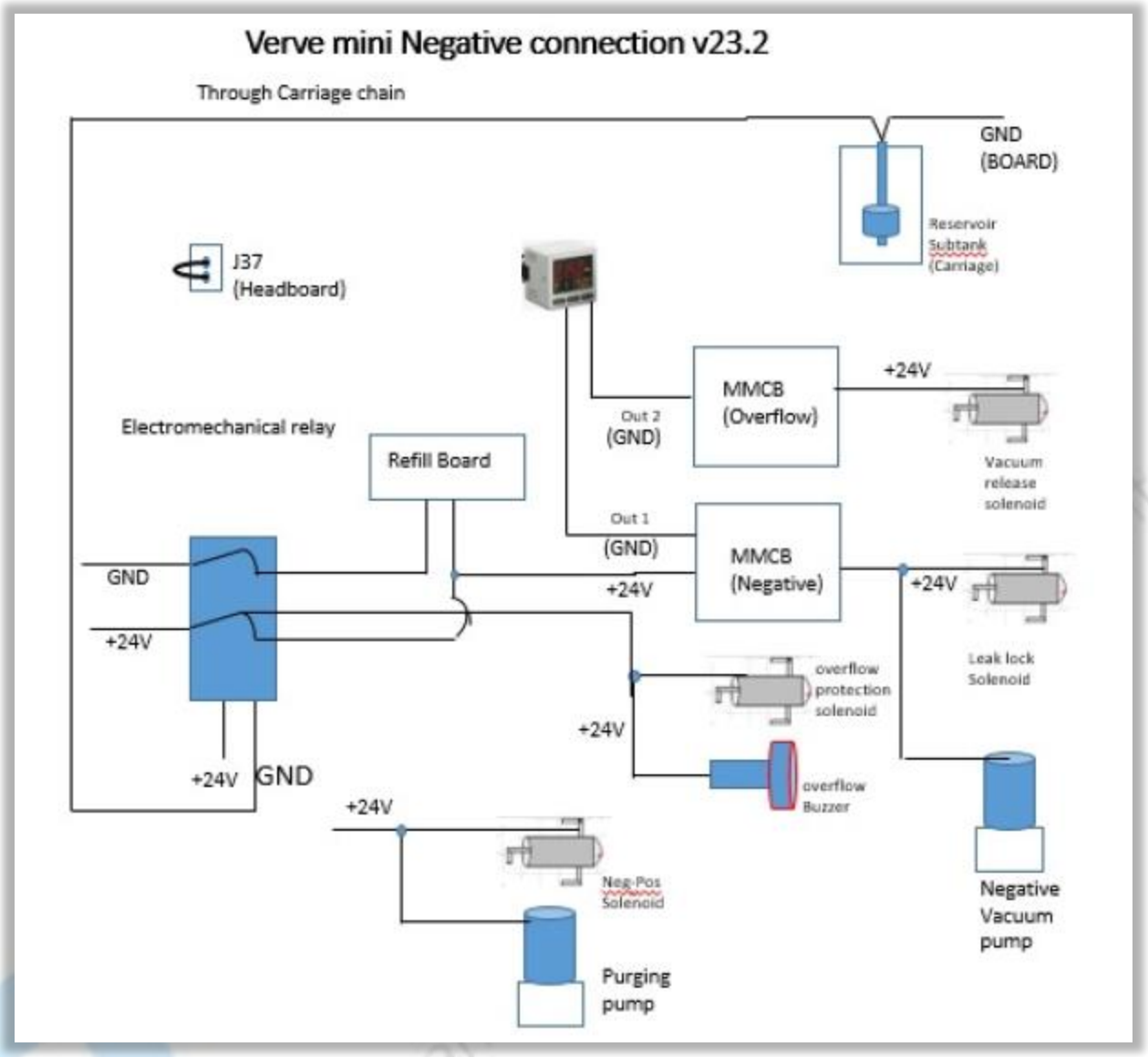


Figure 19: Air Reservoir Tank

Verve Mini Negative pipeline





Following are the few upgradations done in the Negative system from the previous version:

- Reservoir sub-tank connection modified with an overflow buzzer alarm, relays, and solenoid for overflow safety.
- Improved, overflow-proof, and stable negative system.

5. CHILLER OPERATING INSTRUCTIONS

Note: *Please read all the operating instructions carefully before using and following them.*

Figure 20: Chiller

IMPORTANT INSTRUCTIONS

- Before initiating the equipment, please verify that the input voltage is AC 220V and inspect for any coolant leakage from the joints of the water pipes.
- Before activating the UV LED lamp, ensure the cooling system is operational. Please shut down the main power from the electrical board and then shut down the cooling equipment after 3 minutes.
- Confirm that the ambient temperature surrounding the equipment does not exceed 35^0C.
- It is recommended to clean the dustproof net weekly.
- Better to use antifreeze coolant.

OPERATION RULES

- Connect the AC 220V 50Hz power cable, signal control cable, UV LED lamp power cable, and cooling circulation water pipes. If the cooling equipment and power board are separate, ensure their connection via signal cable.
- Fill the coolant to the designated level. Anti-freezing coolant must be used in the freezing region.
- Switch on the power supply to confirm the operation of the water pump, the water pipes are not bent, and no coolant leakage. After 3-5 minutes of operation, air will be out from the pipes because the length and reservoir volume of the water tank are enough. If not, replenish the coolant as needed.

- Connect the signal cable (ensure the input voltage is within 3-24V). When the signal passes, the UV LED lamp is ON, and when the signal stops the UV LED lamp is OFF.
- Adjust the potentiometer to control the power of the UV LED lamp.

ABOUT UV LED LAMP

- The UV LED lamp is suitable for many curing base materials, like soft, rigid, absorbent, and non-absorbent materials.

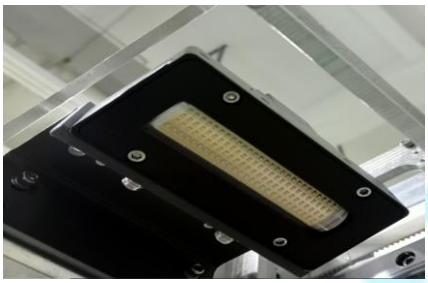


Figure 21: UV LED Lamps

- The UV LED light source is a narrow band, that only gives out useful light and no harmful UV light. As a cold light source, the components have very low thermal radiation that cuts much heat during the curing process.
- LED mounting bracket is tilted/angled so that the print head is protected from UV light. Angular UV LED Curing Process to ensure LED reflection does not damage the print head.

Figure 22: UV Mounting Bracket

- LED lamp cover is given to block direct flash from UV LED.

Figure 23: LED Lamp Cover

6. PRINT CONTROL CENTER OPERATIONS

PRINT OPTION MENU

On-clicking the Print Options button, the following image appears on the screen:

Figure 24: Print Option Screen

Description of the Print Options screen includes:

- **UV Platform Settings:** This section allows users to enable or disable UV lamps such as Lamp1 Left Work, Lamp1 Right Work, and the same for Lamp 2.
- **Colorbar Option:** Enable users to define the colorbar width, distance from the image, the distance between colors, and colorbar position.
- **Spot Proc (White and Varnish Settings):** The user can select the white and Varnish source (like Full, RIP Color, Valid Image, etc.). and set their required thickness(layers)
- **Pass Feather Settings:** Pass Feather settings option can be reached by clicking ***Main Screen icons> Print Option>Pass Feather Option***.

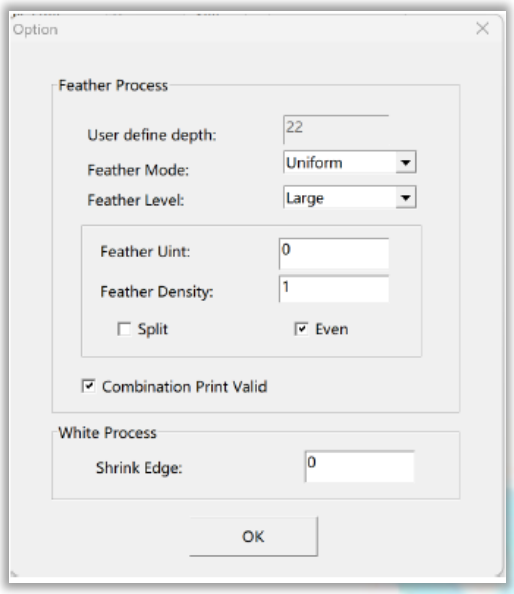


Figure 25: Pass Feather Option

- **User Define Depth**: This will take effect when the option for Customized feather has been selected in the feather mode and this value is related to the increase and decrease of the feather gradient size.
- **Feather Mode**: To select the mode of feather-like
  - No Feather
  - Uniform (uniform effect)
  - Gradient (gradient effect)
  - Customize (when selected, the user can define the feather percentage in User defined depth, preset feather level gets disabled)
- **Feather Unit**: Defines the feather pattern depending on the color combination. Value can be between 0-4 (in decimal also).
- **Feather Density**: Define the required density of feather dots. Value can be 0-1(in decimals)
- **Split**: Feather dots random placement depending upon the color and the image requirement.
- **Even**: Feather dots' even placement depends upon the color and image replacement.
- **Shrink edge**: The white printing thickness or the smudging effect of white w.r.t. colors can be reduced by increasing the shrink edge value (normally in the range 1-4). Thus, increasing the sharpness of thin letters/lines.

- **Function:** The user can also select functions like Skip White, and Colorbar height.

WHITE AND VARNISH SETTINGS

The **White Color** Settings are explained below:

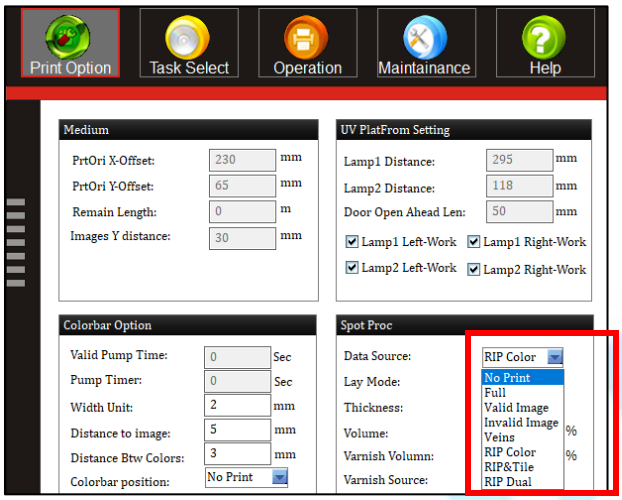


Figure 26: White Color Settings

Different options for **White Color** printing are as follows:

- **No Print:** No white color is printed.
- **Full:** White will be printed completely all over the image.
- **Valid Image:** White color is printed the same as the percentage of CMYK color in the selected image.
- **Invalid Image:** White color is printed where CMYK color is absent in the selected image.
- **RIP Color:** White color is printed based on the RIP file.

The **Varnish Color** settings are shown in the image below:

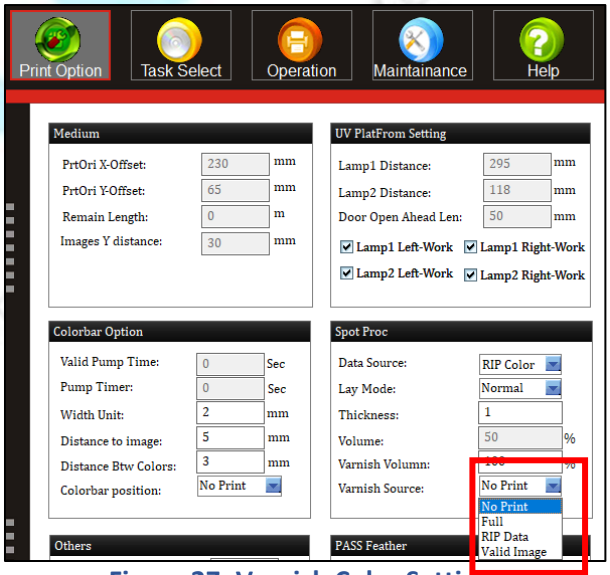


Figure 27: Varnish Color Settings

Description of different options for the **Varnish Color** printing:

- **No Print:** No varnish color is printed.

- **Full:** Varnish will be printed completely all over the image.
- **Valid Image:** Varnish color is printed the same as the percentage of CMYK color in the selected image.
- **RIP Data:** Varnish color is printed as per the RIP file.

For 6 heads

To enable varnish printing (over color) and curing, desired passes must be selected rather than **"with the color"** or **"with the varnish."** This process is completed in three steps:

1. Color (With UV)
2. Varnish (Without UV)
3. Curing (Only UV No print)

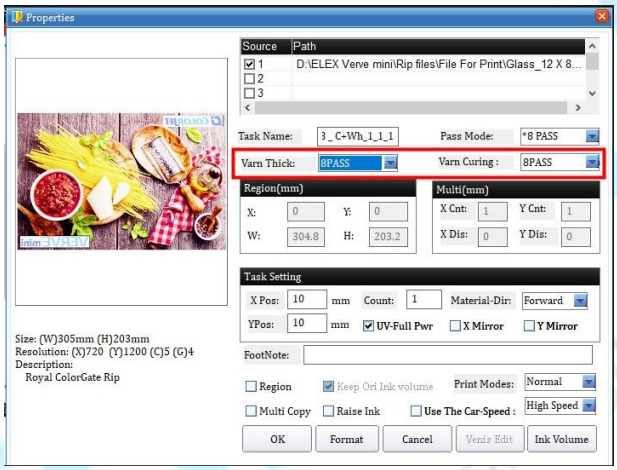


Figure 28: Varn Thick and Varn Curing with Pass

For 7 heads

With 7-head configurations, color, and varnish are printed with LED curing. To enable varnish printing (over color) and curing, desired passes must be selected with **"with the color"** or **"with the varnish."** There are additional steps required.

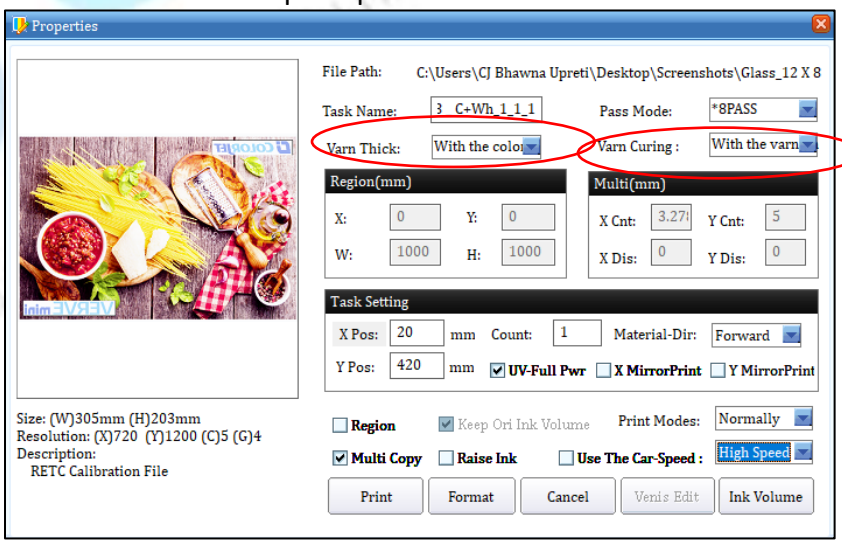


Figure 29: Varn Thick and Varn Curing

SAVING PRINTER SETTINGS

Users can import and export existing printer settings and save the settings on the main board.

IMPORTING FILE

The import option enables importing an existing printer setting (in the .cbk file format) and applying these settings to the current printing jobs.

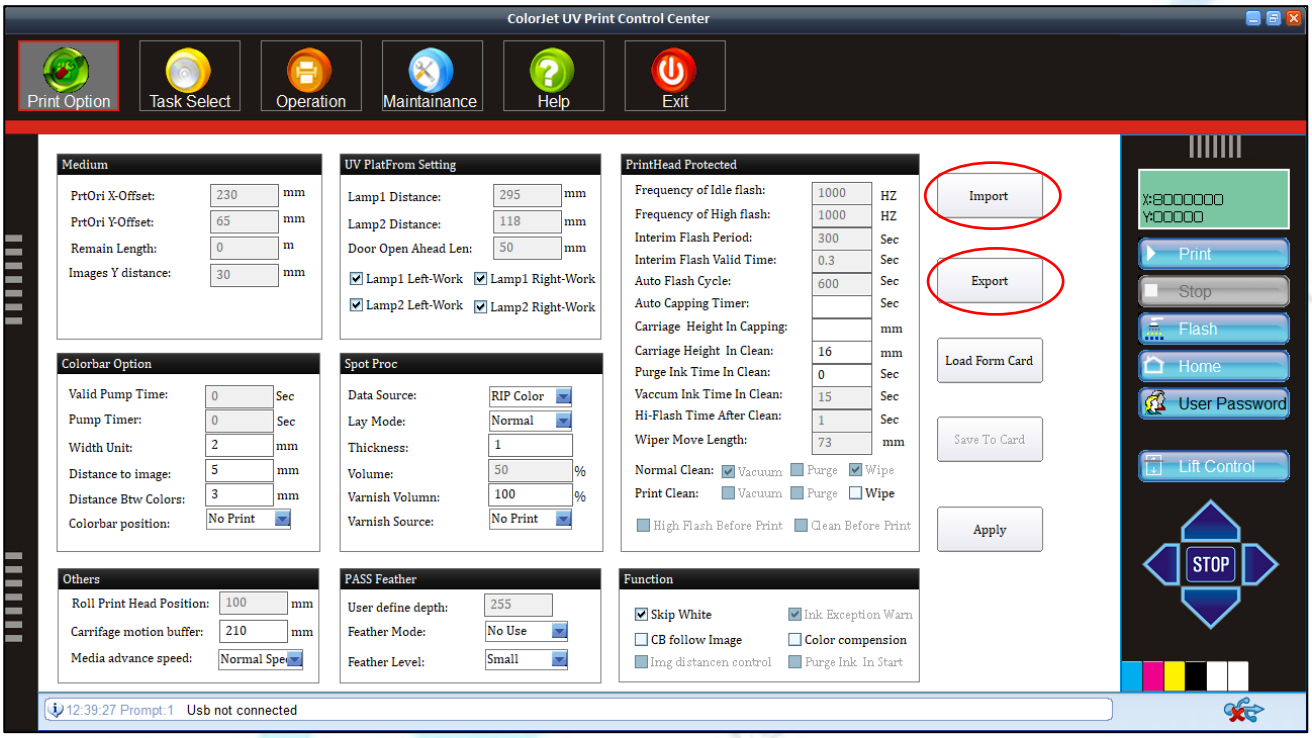


Figure 30: File Import and Export

Follow these steps to import the file:

Step 1 *Click* on the **Import** button to import a file (Refer to **Figure 24**). The **Open** dialog box appears on the screen, as shown below:

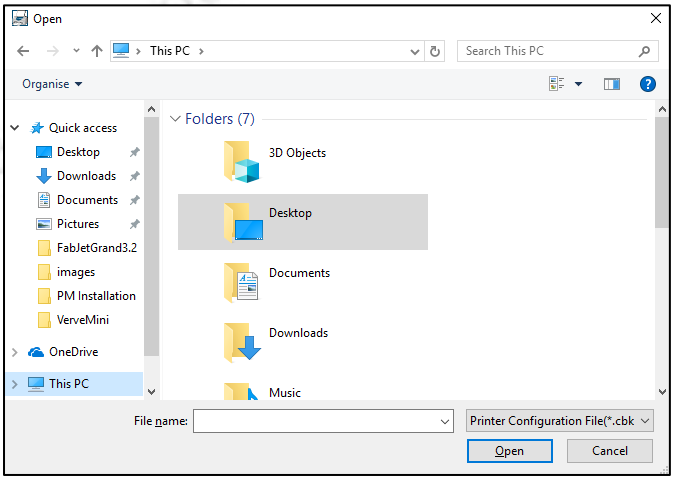


Figure 31: Open Dialog Box

Step 2 *Select* the file path that the user wants to import.

Step 3 After selecting the file path, *click* the **Open** button to import the selected file.

The process of importing print settings gets started. After importing settings, *click* on the **Apply** button.

EXPORTING FILE

This option enables saving the current printer settings (in the .cbk file format) which can be used in the future.

After clicking on the **Export** button, the following screen appears:

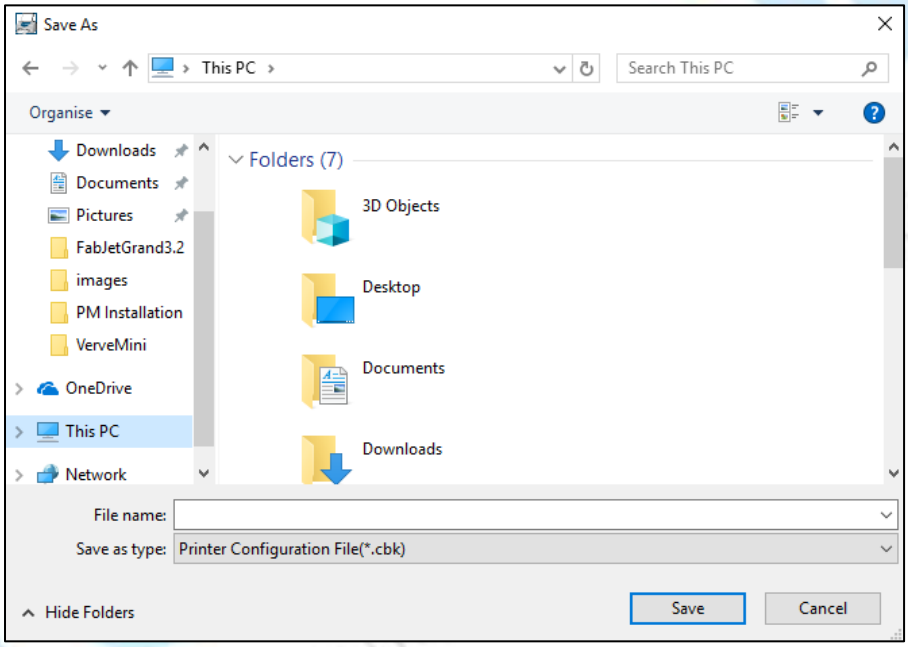


Figure 32: Exporting the Current Print Settings

After selecting the file path, *click* on the **Save** button to save the file.

TASK SELECT MENU

Task select is used to select the print file and print folder. All the files under the selected folder will be displayed on the screen. The **Task Select** button is shown in the image below:

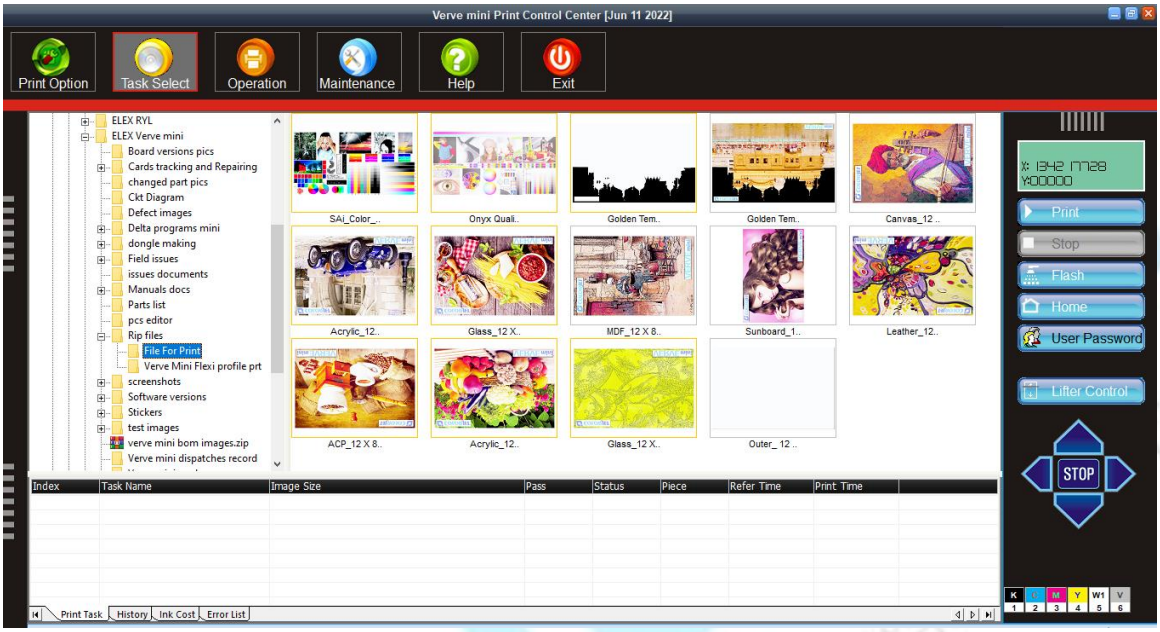


Figure 33: Task Select Screen

Follow these steps to open and print a file:

Step 1 After opening the **Task Select** screen, navigate to the location where the printable file is stored (Refer to **Figure 34**).

Step 2 Double-click on the image icon. The **Properties** dialog box appears, as shown below:

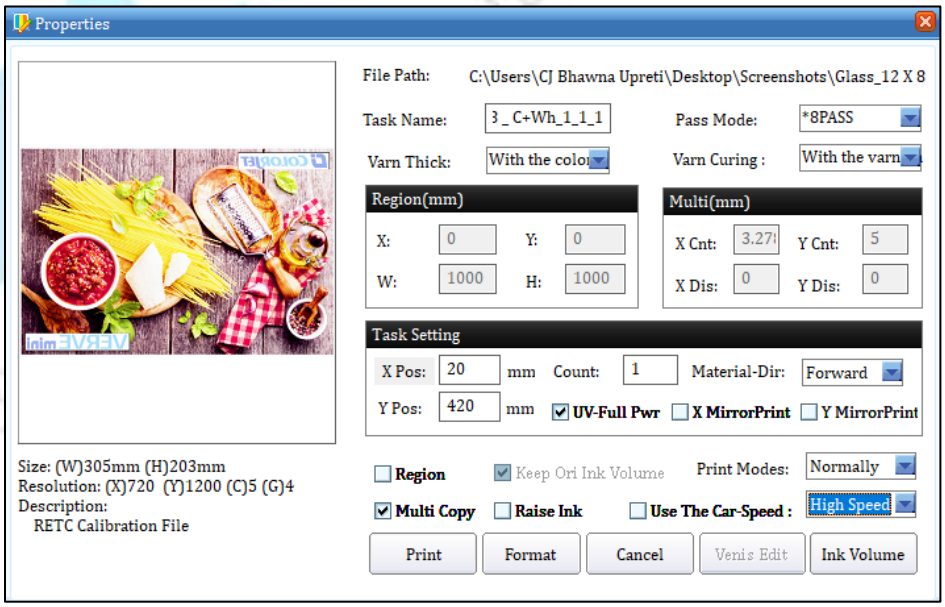


Figure 34: Properties Dialog Box

Description of different options in the Properties dialog box:

- **Varn Thick**: The color option is to be selected for 7 heads and 6 heads it determines the thickness of the varnish color concerning the number of Pass.
- **Varn Curing**: The varnish option is to be selected for 7 heads and for 6 heads it establishes the curing of varnish color relative to the number of Pass.
- **Region:** Allows printing of a selected area within the image. When the user selects the Region check box, the Region(mm) section gets highlighted requiring the user to specify the area's X-axis, Y-axis, height and width to be printed.
- **Multicopy**: Permits printing multiple copies of the same image. When the user selects the **Multi-Copy** check box, the Multi (mm) section gets activated where the user must specify the total count of images on the X-axis and Y-axis and the horizontal and vertical distance between images.
- **Raise Ink:** Enable it to raise the ink volume as per the multiplication factor of the passes wrt the Y resolution of the image, (Eg. A 600x900 file is normally printed in 6 passes, but if it is printed in 12 passes, printing color depth with be doubled.)
- **Material Direction:** Specify the printing direction either forward or reverse. By default, the carriage moves in the Forward direction but the user can change it in the Reverse for some applications where print requires white over color. For example, a Reverse case is used while printing on the glass.
- **UV Full Power:** Sets Full (High) power of the UV lamps.
- **X Mirror Print:** Enables or disables X mirror print, it is used for printing White over Color in glass application when printing at the back of the glass.
- **Y Mirror Print:** Enables or disables Y mirror print.
- **Ink volume:** Shows the contents of ink percentage in the image file**.**
- **Print mode:** In this user can select the print format like- only color, only varnish, only white, etc.
- **Speed selection:** Select speed like high, normal, or low.

Step 3 Click on the **Print** button to print the selected file. Additionally, users can also make changes as per the requirements.

DPI AND PASSES

Verve Mini DPI and passes are given as below:

Passes	DPI
6 and 12	720X900
8, 12 and 16	720X1200

CHECKING THE IMAGE INK COLOR VOLUME

Click on the **Ink Volume** button on the **Properties** dialog box (Refer to **Figure 34**) to check the requirement of each color ink to print the selected image. The **Image Color Ink Volume** screen appears as shown below:

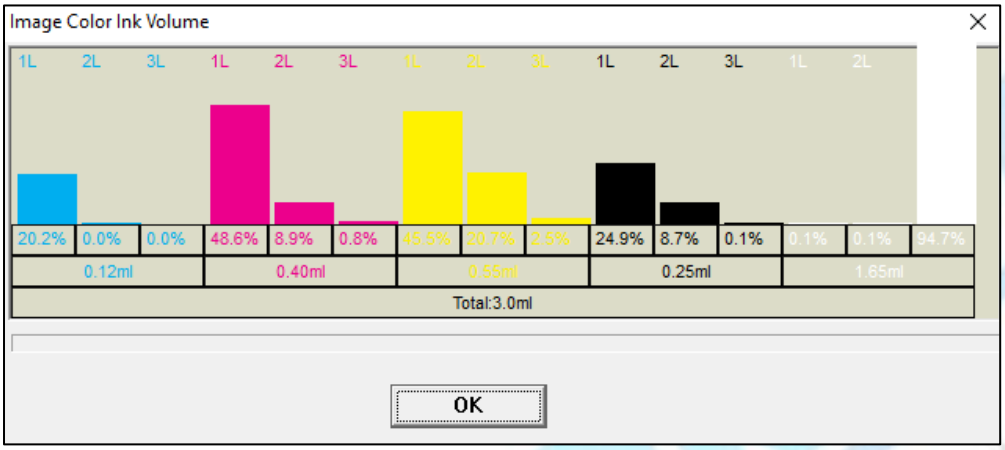


Figure 35: Image Color Ink Volume Screen

In the above image, the user can easily *estimate* the ink requirements for the selected image.

OPERATION MENU

In the operation menu, the user must click the open file to select the image file's path. The **Operation Menu** screen is shown in the image below:

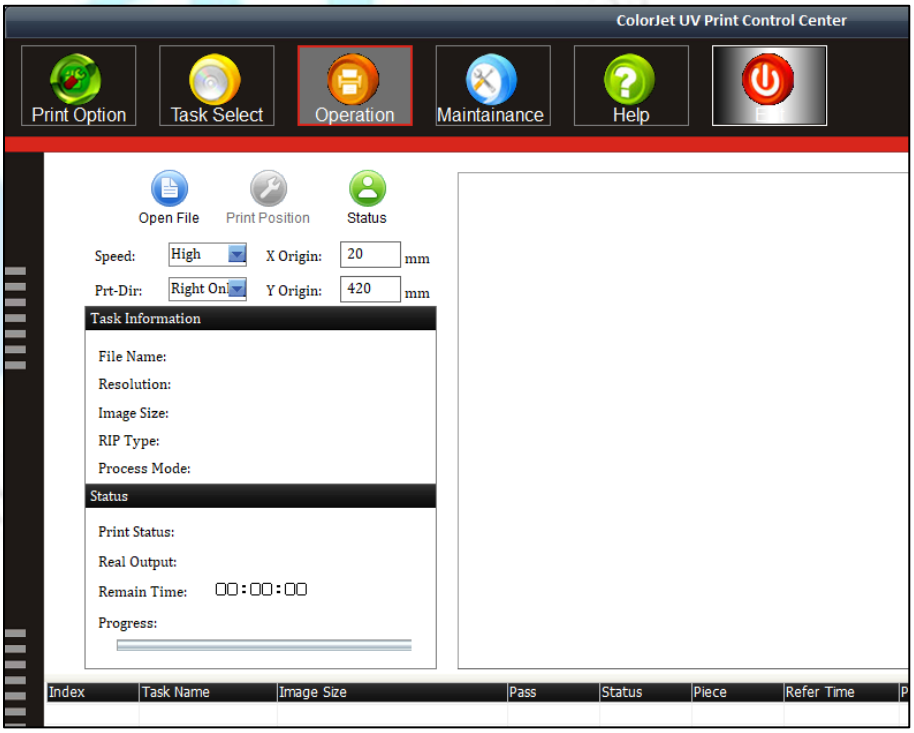


Figure 36: Operation Menu

List of options related to the **Operation** menu:

- **Open File:** Open image file for printing.
- **Print Position:** Set print settings like speed, print direction,(uni and bi dir) X origin, and Y origin.
- **Status:** Issue test print command.

Let us discuss each option one by one in the upcoming section.

OPENING AN IMAGE FILE

Follow these steps to open an image file:

Step 1 *Click* on the **Open File** icon on the **Operation** screen (Refer to **Figure 36**). The **Open** dialog box appears on the screen, as shown below:

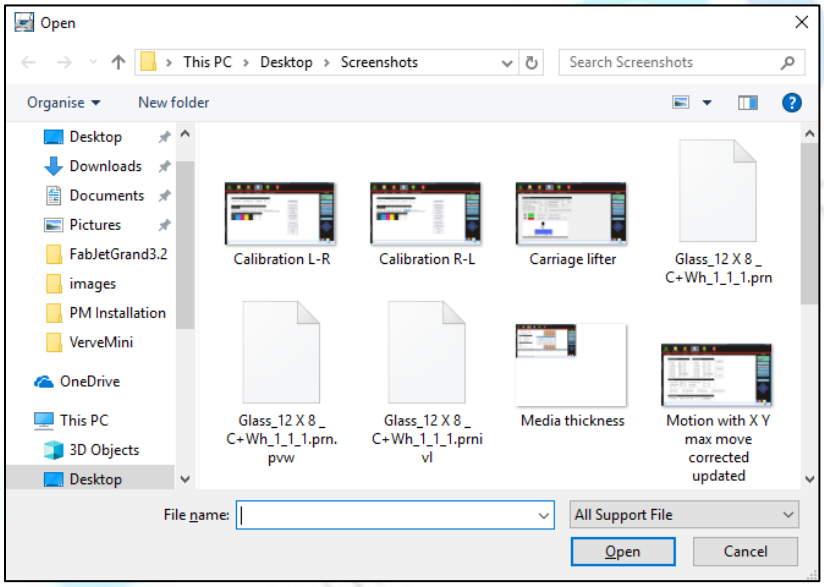


Figure 37: Open Dialog Box

Step 2 *Select* the file by navigating the file location.

Step 3 After selecting the file, *click* on the **Open** button (Refer to **Figure** 37). The **Properties** dialog box appears with printing options of the selected image file.

If the image file is opened using the **Operation** menu, the user gets the following benefits:

a) Create a printing job queue

b) Prepare the image file for ready to print.

PRINT POSITION

The print position option enables users to set the printing speed, print direction, X origin, and Y origin, as shown below:

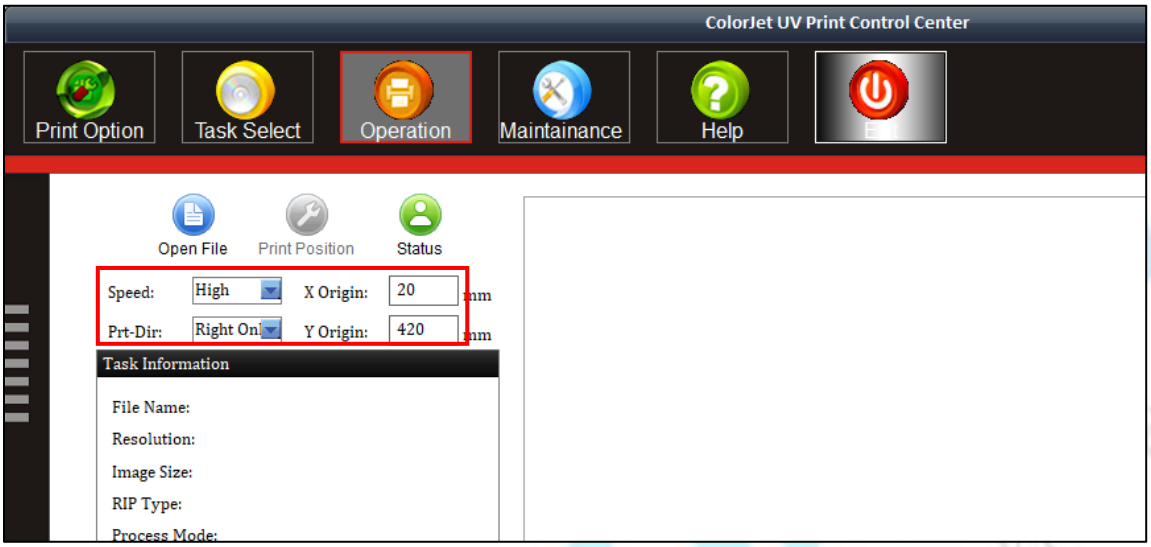


Figure 38: Setting the Print Position

Note: *This option lets the user define printing direction like right only, left only, and bi-direction.*

CHECKING PRINTING STATUS

Before performing the nozzle test, the user needs to input printing parameters like print origin (X and Y), printing direction, and speed. To evaluate the status of print head nozzles, navigate to the **Status** option under the **Operation** tab (Refer to **Figure 38**). Subsequently, the **Media Thickness** dialog box appears on the screen prompting the user to set the media thickness, print head to media height, and lifter height. After making the desirable changes, click on the **Start Print** button to give the test print, as shown below:

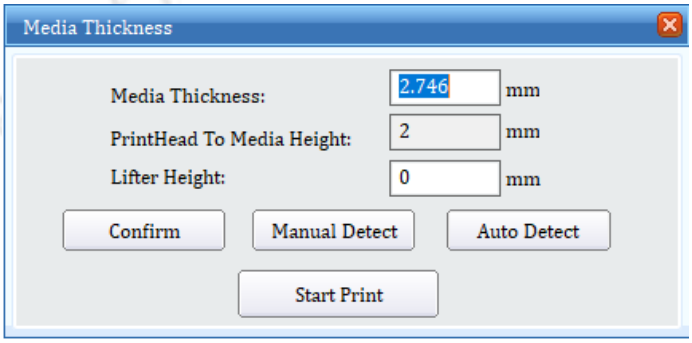


Figure 39: Media Thickness Dialog Box

The **Test Result** is shown in the image below:

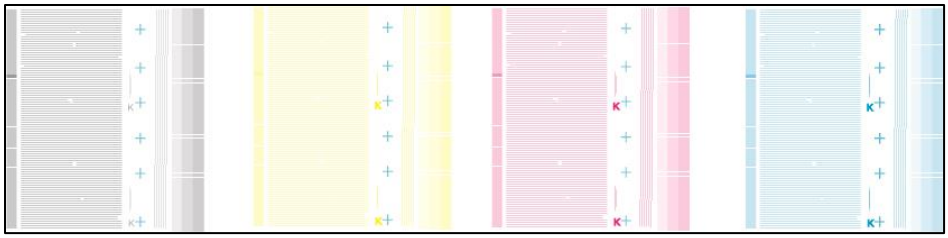


Figure 40: Test Result

> ***Note:*** *In the case of soft media, the user needs to manually feed the value of media thickness, print head to media height, and lifter height by verifying it.*

MAINTENANCE MENU

The **Maintenance** menu is shown below:

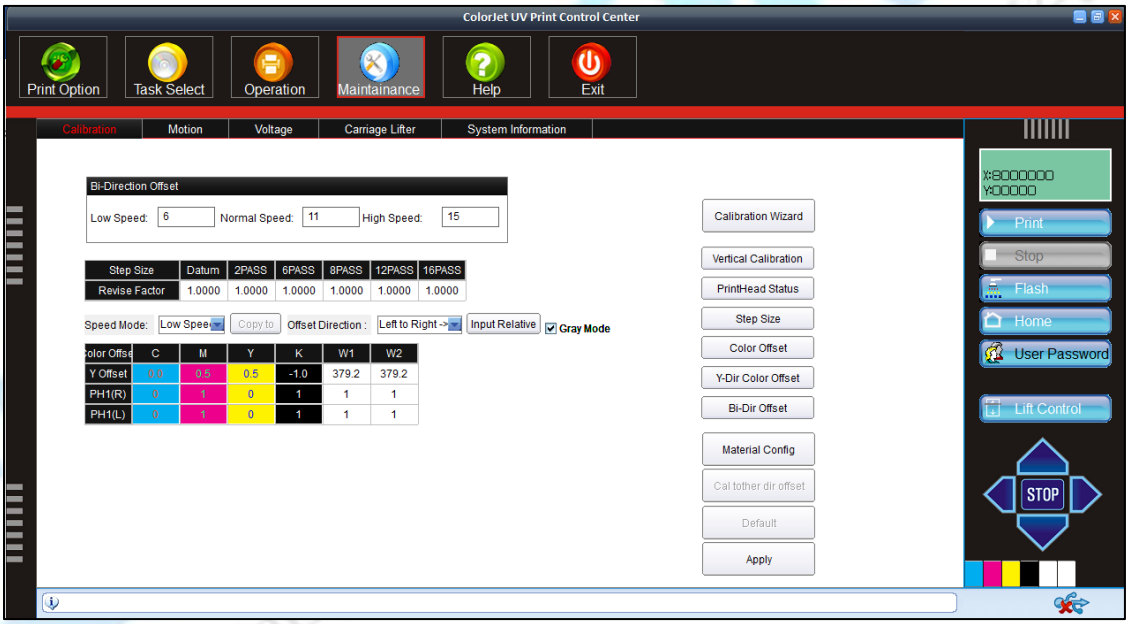


Figure 41: Maintenance Menu

The Maintenance menu consists of several tabs viz. Calibration, Motion, Voltage, Carriage Lifter, and System Information. Let us see all these menus one by one in the upcoming section.

The **Motion** tab is shown as below:

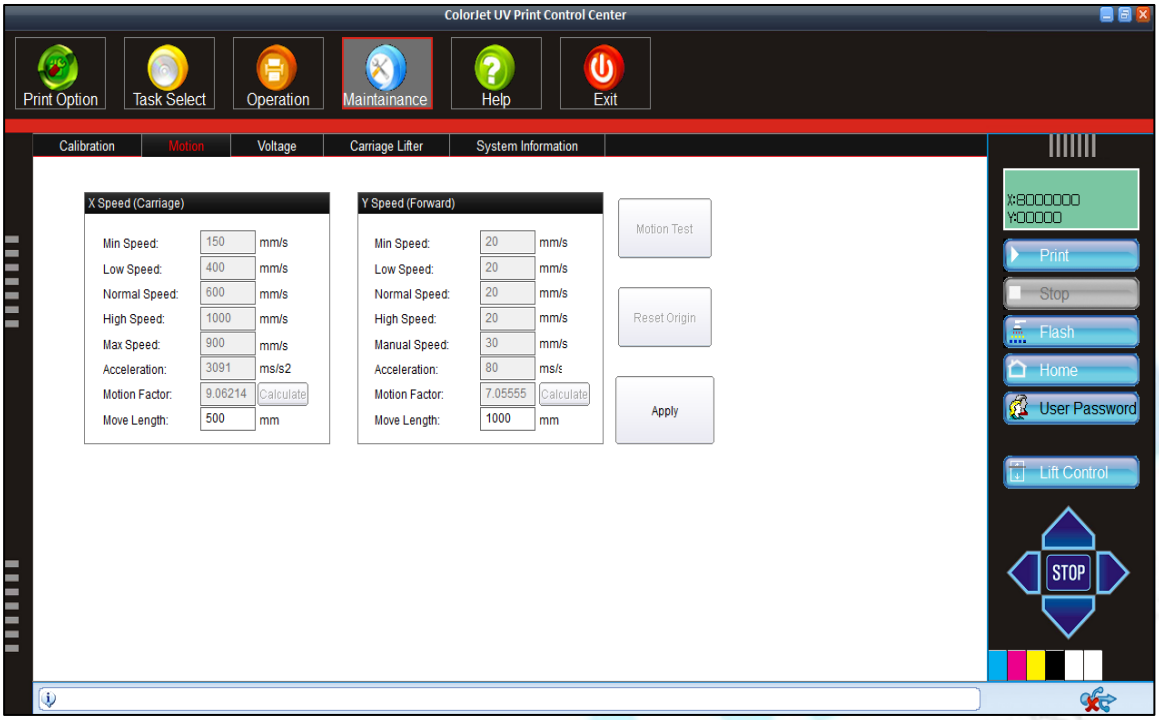


Figure 42: Motion Tab

In the above image, the user must provide the value of X and Y Move Length which defines the distance travelled while moving the carriage and gantry manually in a single click of an arrow key (Refer to the marked area). Other options are disabled as they can only be accessed by the service engineer.

The **Voltage** tab is shown as below:

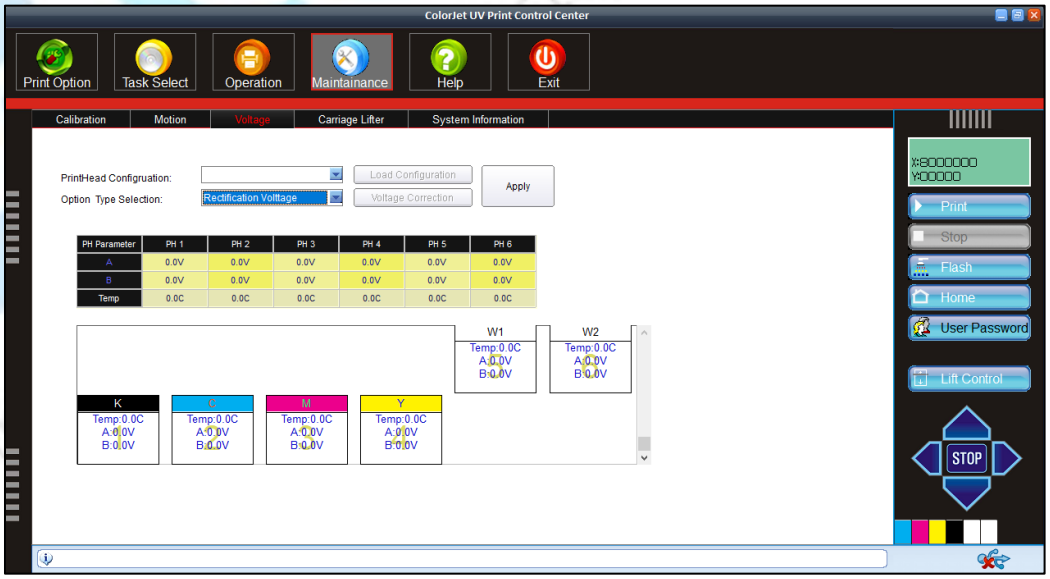


Figure 43: Voltage tab

This section is only used by the service engineer.

The **Carriage Lifter** tab is shown as below:

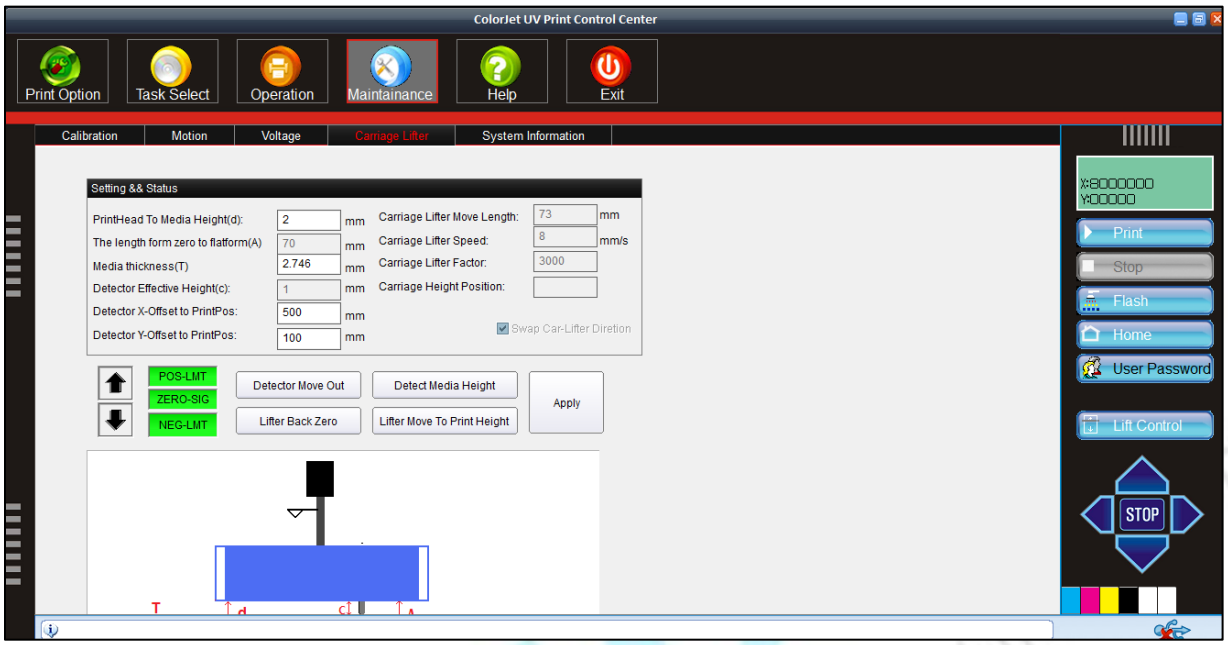


Figure 44: Carriage Lifter Option

The **Carriage Lifter** tab is used for lifting the carriage in the Up or Down position. Moreover, it facilitates the detection of media height. User can set

1. Print head to media height
2. Set media thickness manually(if required in specific cases)
3. X and Y offset for detection
4. Detect Media height
5. Lift and move to print height or back to zero.

Any change in value is to be followed by clicking the *Apply button*.

The **System Information** tab provides a complete set of information about the Print Control Center system installed on the user's computer. Additionally, users can input the password before its expiration, as shown below:

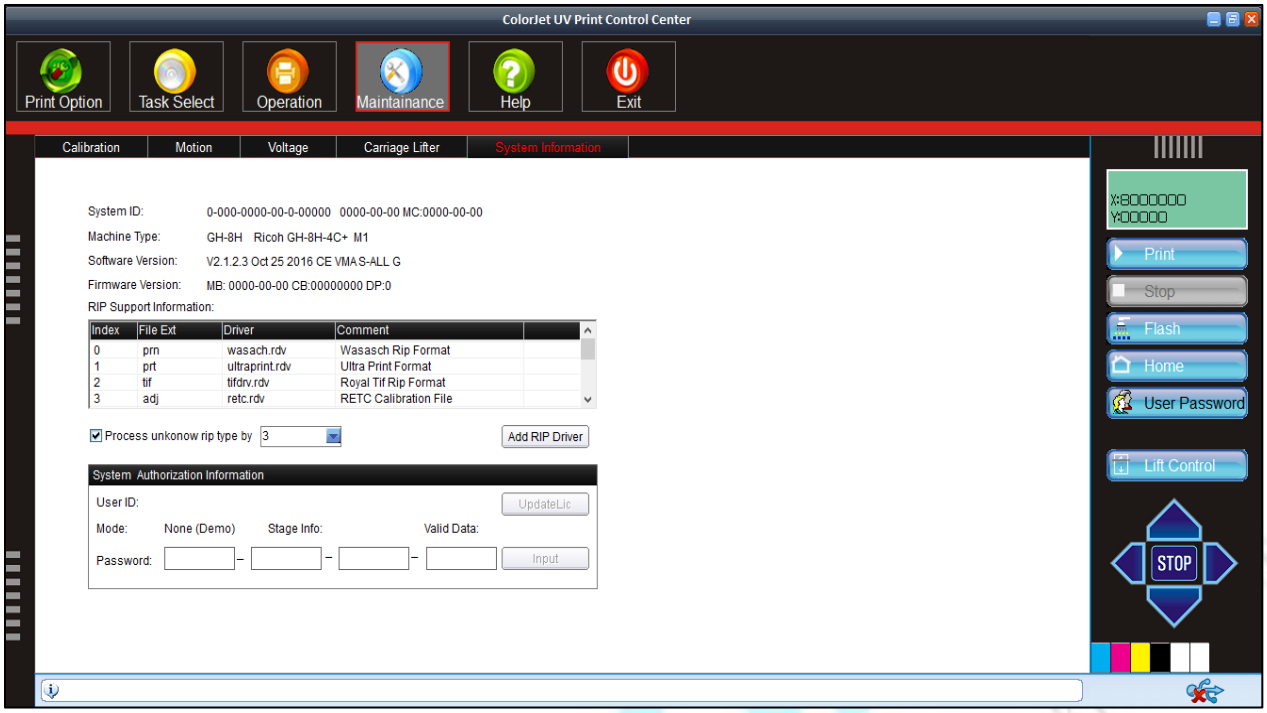


Figure 45: System Information Tab

FEEDING PASSWORD

In Verve Mini, the printer requires a new password to continue operating after the allotted time. For a new password, the user needs to share the above screen with service personnel to get the password and then enter the password in the given field as shown below:

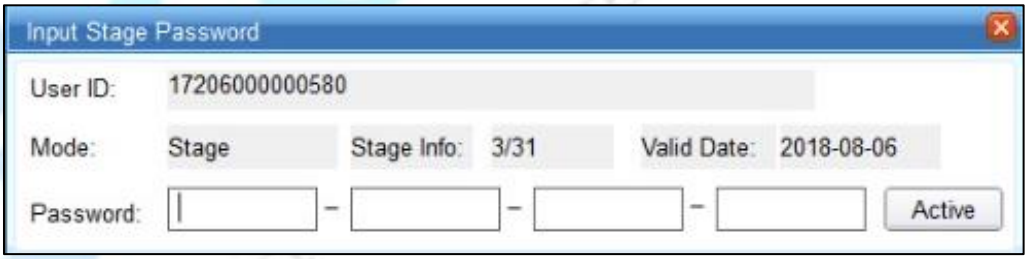


Figure 46: Enter System Password

7. CALIBRATION

Print Heads should be calibrated to ensure good printing quality. To perform calibration, *click* on the **Maintenance→Calibration** path and then, as shown below:

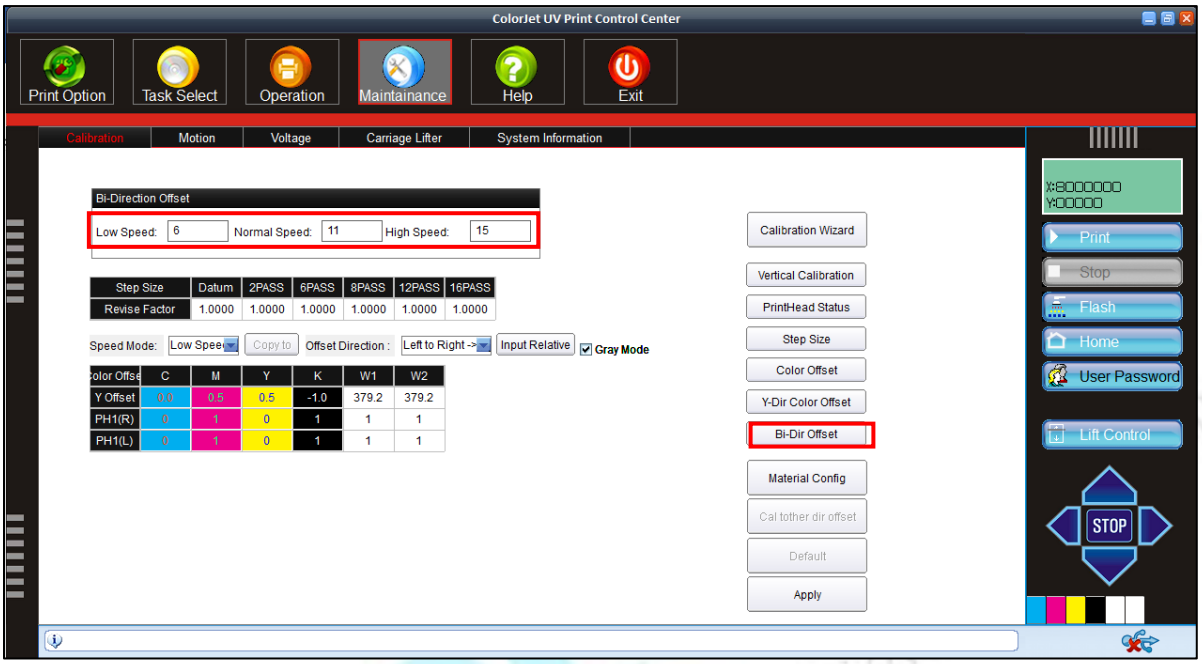


Figure 47: Opening the Calibration Wizard

In the above figure, step and bi-direction calibrations are performed simply by providing data in the given fields. If the print head height is altered then the user needs to perform bi-direction calibration. For bi-direction, click on the **Bi-Dir Offset** (Refer to **Figure 47**) and select the speed for which calibration is to be performed. The **Bi-direction Calibration** result is shown in the image below:

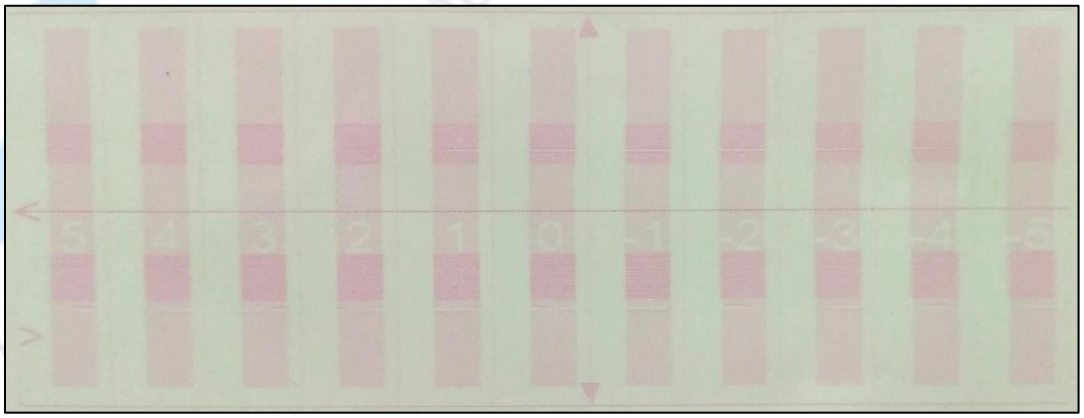


Figure 48: Bi-calibration Image

From the above image, the user needs to select the value of the best-aligned pattern and feed (by adding or subtracting the current value) in the marked field (Refer to **Figure 47)**.

8. HEAD CLEANING

The Print Head is a delicate component that requires cleaning according to recommended methods to prolong its lifespan and maintain consistent print quality. The following sections give recommended steps to clean the Print Heads.

HEAD BLOTTING AND PURGING

Head blotting refers to the process in which the head surface area is cleaned with the help of a head wiper. Blotting removes ink drops adhering to the Print Head nozzle surface. Gently clean the head with the head wiper keeping in mind that the heads do not get damaged.

The Head Blotting process is shown in the image below:

Figure 49: Cleaning the Print Head with a head wiper(reference image)

Perform these steps to clean the Print Head:

Step 1 Open the Ink Valve using the key provided with the printer.

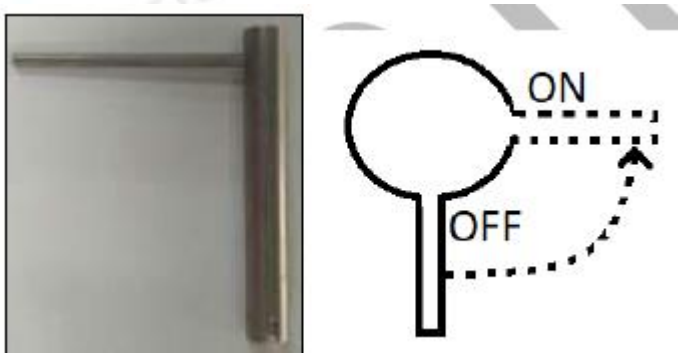


Figure 50: Ink Valve Key

Step 2 Ensure the waste bracket is pulled in front just below the carriage.

Step 3 *Press* the Purging Button and wait for a few seconds.

Figure 51: Purging Print Head

Step 4 Now push back the tray with soft hands.

Step 5 After waiting a few seconds, wipe off the residue inks using the head cleaning wiper provided with the machine.

Step 6 Find the head nozzles and gently glide the wiper through it, and twist it to pour the residue inks. Care about ink sprinkling while wiping.

***Note**: Please strictly follow the below-mentioned instructions:*

- *Leaving the head plate uncapped for a longer duration (3-4 days), while the printer is off, will block nozzles.*

HEAD SPRAYING

Head spraying should be performed to avoid mixing of colors and may open a few blocked nozzles. To perform head spraying, *click* on the **Flash** button available on the **Right Panel**, as shown below:

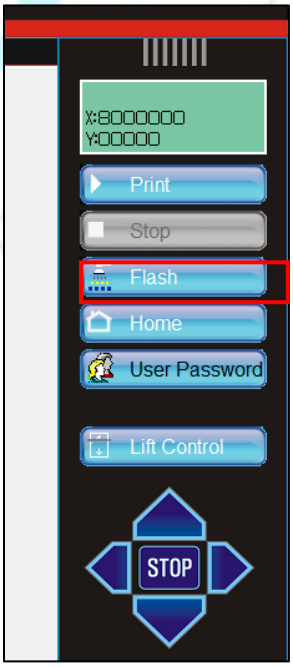


Figure 52: Flash Button

9. SHUTDOWN PROCEDURE

Follow these steps to shut down the machine:

Step 1 *Switch OFF* the bed vacuum by clicking on the **Bed Vacuum** button, as shown below:

Figure 53: Purging, Bed Vacuum, Power indicator Button

Step 2 *Switch off* the **Chiller Unit** by pressing the OFF button as shown in the below image:

Figure 54: Switch Off the Chiller Unit

Step 3 *Turn off* the ink valves.

Step 4 *Rotate* the Main Power switch in the anti-clock direction to switch off the printer, as shown below:

Figure 55: Turn Off the Main Power Button

Step 5 *Turn Off* the main switch from the switchboard.

After switching it OFF, properly cover the printer to protect it from the dust.

10. DO'S AND DON'T

DO'S

- Always care about the unevenness of media as it may damage the Print Heads if not properly placed.
- Keep the room dust-free and maintain the temperature.
- Perform a Nozzle test daily before using the machine.
- Use only recommended ink in the machine.
- Check and refill the ink main tank regularly to avoid air lock.
- To avoid air in head pipes, always maintain an ink level of more than 1 Litre in the main tank and wipe Print Heads immediately after purging.
- The chiller tank should be filled with coolant liquid.
- Keep the Gantry path free from any obstacle.

DON'TS

- Do not forget to detect media height before printing
- Avoid ink spilling on the Print Head and head cables
- Do not use expiry ink and store ink in a favorable environment
- Avoid head damage due to media and Print Head conflict

11. MAINTENANCE

PRINT HEAD MAINTENANCE

The print head is an important and delicate part of the printer. Thus, it must be handled with care to ensure the long life of the machine. Vigilance is required to address potential issues arising from the environment, heat and moisture, collision, cleaning, etc. For print head maintenance, the following instructions be taken care of:

- Conduct a nozzle test 2-3 times daily before printing to monitor the blockage in the head nozzles.
- Operate the print head within specified environmental conditions, maintaining a temperature range of 20-25 degrees Celsius with humidity of 55%, dust-free, and exhaust condition.
- Take precautions to prevent ink spillage on the print head and head cables. In case of ink contact, promptly wipe the affected area dry with a clean cloth and notify the engineer.
- Avoid head damage due to media and Print Head conflict.
- Refrain from using expiry ink and store the ink in a favorable environment.
- Prevent the object or human body from static contact with the print head.
- Print head nozzles must be clean, dust-free, and prevent oxidation.

MAINTENANCE OF MACHINE MOTION PARTS

- Clean and lubricate the guide rail at least once a month and lubricate if required.

EQUIPMENT CLEANING

- Turn OFF all power switches of the machine while cleaning the machine equipment.
- Avoid splashing liquid and dropping on/in the circuit board or the power line.
- Careful while cleaning sensitive devices, like sensors and rasters.
- Use a clean cloth to clean up the dust and residual oil on the tracks.
- Keep water, ink, and oil away from the Encoder scale.

POWER SYSTEM MAINTENANCE

- Always check the ground wire whether loose or disconnected.

CONTROL SYSTEM MAINTENANCE

Static discharge

- The operator must discharge his electrostatic charge before touching the electronic components and parts.
- Avoid touching pin connectors, welded joints on circuit boards, or integrated circuit boards.

INK SUPPLY SYSTEM MAINTENANCE

- Check for leakage between the joint & ink tank and joint & valve settings.
- Check for damages on ink tubes.
- Check Ink impurities in the ink tanks as this will affect the ink supply.

WATER CHILLER OPERATING INSTRUCTIONS

- Placing the water chiller in a temperature environment of 0°C or below is strictly prohibited, as it may lead to circulating water freezing, causing damage due to frost. If preservation of the water chiller in such conditions is unavoidable, the following measures must be taken:
  - Immediately drain the water from the chiller upon switching it off and refill it with water before the next operation;
  - Please add antifreeze appropriately in the circulating water to reduce the freezing point.

  Note: *Add antifreeze according to the requirements of the cooling equipment.)*
- Tilting, carrying, or placing the water chiller upside down is forbidden. It should not be restarted after normal handling until the machine has been stationary for at least 2 hours.
- Ensure that air is removed from the water pump before the water chiller is switched on. Strictly prohibit empty running of the water chiller!
- Avoid plugging or unplugging joints while the water chiller is running.
- The water chiller's normal operating temperature range is 10°C to 35°C. If the temperature exceeds this range, contact the manufacturer.
- Ensure that the water chiller is operated in a smoothly ventilated environment and is barrier-free at 0.5 meters on both sides of the air inlet and outlet.
- Before switching on the machine, ensure the water tank is filled. After one minute of operation, refill to prevent low water level alarms leading to abnormal operation.

- Distilled water is preferred as circulating water, followed by high-quality pure water. Do not use tap or other water that contains acid, alkali, corrosive, or mineral substances.
- Set the circulating water temperature to prevent dew formation on cooled parts. Dew formation may damage the equipment. Adjust the temperature based on environmental temperature and relative humidity.
- The water chiller must be placed in a horizontal plane and fixed before operation.
- The length of the pipe to connect the water chiller and cooled equipment cannot be longer than 8m (4m one path). Excessive length increases pipe resistance and reduce flow rate, leading to abnormal operation or damage to the water chiller and cooled equipment.
- Check the water level, pipe blockages, normal opening of pipeline valve before the machine is switched on.
- Clean the condenser fins and fan blades every 7 days (cleaning method: open the air inlet and then blow out the dust of the condenser with an air pressure gun).
- Replace the circulating water every 1 to 2 months and clean the water tank, water pipe, and joints.
- Fasten the electrical wiring inside the electrical control cabinet with a fixed screw every six months to prevent the screw from loosening, which results in poor contact.

12. TROUBLESHOOTING

PRINTER NOT INITIALIZING

- Emergency button is pressed
- Head Power is not ON
- Servo driver is not powered ON/faulty
- Main Board is faulty
- The encoder sensor is not connected to the HB
- Jumper is removed from MB
- Limit switch is disconnected

PRINT CONTROL CENTER SHOWING "ERROR 111"

- USB is disconnected from the computer or loosely connected
- Print engine is OFF
- Main board is faulty
- USB cable is faulty

PRINT NOT CURING/INK MARKS ON THE BACK OF THE FABRIC

- UV Lamps are not ON or working

INK NOT FILLING

- Main tank is empty
- The air reservoir float connector is disconnected
- Ink overflowed in the air reservoir.
- Ink pipe is having cut/bend
- Ink pump is not working/connector loose/open
- Sub tank float connector is loosely connected to the headboard
- Sub tank float is not working

PRINT STOPS IN BETWEEN PRINTING

- USB cable is loose/faulty
- Image files are heavy in size
- Ground wire is disconnected
- Encoder scale is having ink stains/scratches
- The pulley or belt is slipping
- Ripped file has an error

PRINT IS SHIFTING WRT FABRIC/JUNK PRINTING

- Encoder scale has ink stains (print shows vertical color bands)
- Encoder sensor is not clean
- Pulley or belt is loose or teeth wear out and slipping
- Fibre optic data cable is faulty

PRINT IS BLUR

- No proper calibration viz. bi-direction and step
- Head height is disturbed and not calibrated for the above
- Incorrect resolution is selected
- Media surface is uneven

LINES IN PRINTS

- Nozzle blocked in heads (check nozzle test)
- Incorrect feed step (calibration required)

13. ERROR CODE SPECIFICATIONS

MACHINE ERRORS

Error Code	Error Description	Remedial Action
111	The control device cannot be driven	• Reconnect USB control card • USB card is damaged
118	Fail to create fiber communication	Check if the fiber optic cable is cut/disconnected
122	System cannot detect the signal of the X position encoder in the reset action and fails to reset the action	• Check the emergency switch if pressed • Verify motion work is normal
125	Detected emergency signal	Close the emergency switch, then restart the software
127	Y position encoder no signal	• Check the emergency switch if pressed • Verify gantry motion work is normal
138	X-Axis reset fault	Check the emergency switch if pressed
151	No found security do	Check whether a security dog is inserted into the system
152	This security dog is invalid	The security dog does not match the control hardware
154	The security dog time is wrong!	Contact your equipment provider
155	The Security dog has expired.	Contact your equipment provider
156	The Security dog has expired	Contact your equipment provider
157	The Stage has expired	Contact your equipment provider to get a new stage password
159	The security dog time is wrong!	Contact your equipment provider

161	The authorization is inactive. must input an activated password and restart the software!	Contact your service provider to get an activated password
168	The stage password is wrong.	Contact your equipment provider to get a password!
169	The new stage is expired, continue to input a valid password.	Contact your equipment provider to get a password!
139	Y Axis Reset Fault	Verify encoder signals A and B
309	USB disconnect	Connect USB
319	Y margin is incorrect	Need to give some values instead of 0
1190	Failed to load waveform file." "confirm Ricoh printhead waveform file exists?	This can happen when new software is installed. copy wf in that folder and when an error comes during initialize, go to voltage setting and enable user pwd and select wf, load cong, and apply

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