

# VULCAN

## USER MANUAL



## Foreword

This user manual is briefly describing the operational aspects of the **VULCAN** 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 which guides their customers how to use or operate the **VULCAN** 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.

“No part of this document shall be reproduced or used by externals without prior permission of the ColorJet group”.

The reference table is shown in the below table:

Doc Type	Doc Code	Version	Machine Name	Date of Issue
User Manual		1	VULCAN	

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## 1. About Document

### Purpose

The purpose of this document is to guide and educate the targeted audience about the Printer and its Printer Manager software so that they can easily and effectively handle as well as 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 Printer Manager 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 of the cases, targeted audience is much familiar with the terminologies of printer and printing business. Thus, this document is designed to facilitate both types of users.

## 2. Printer Specifications

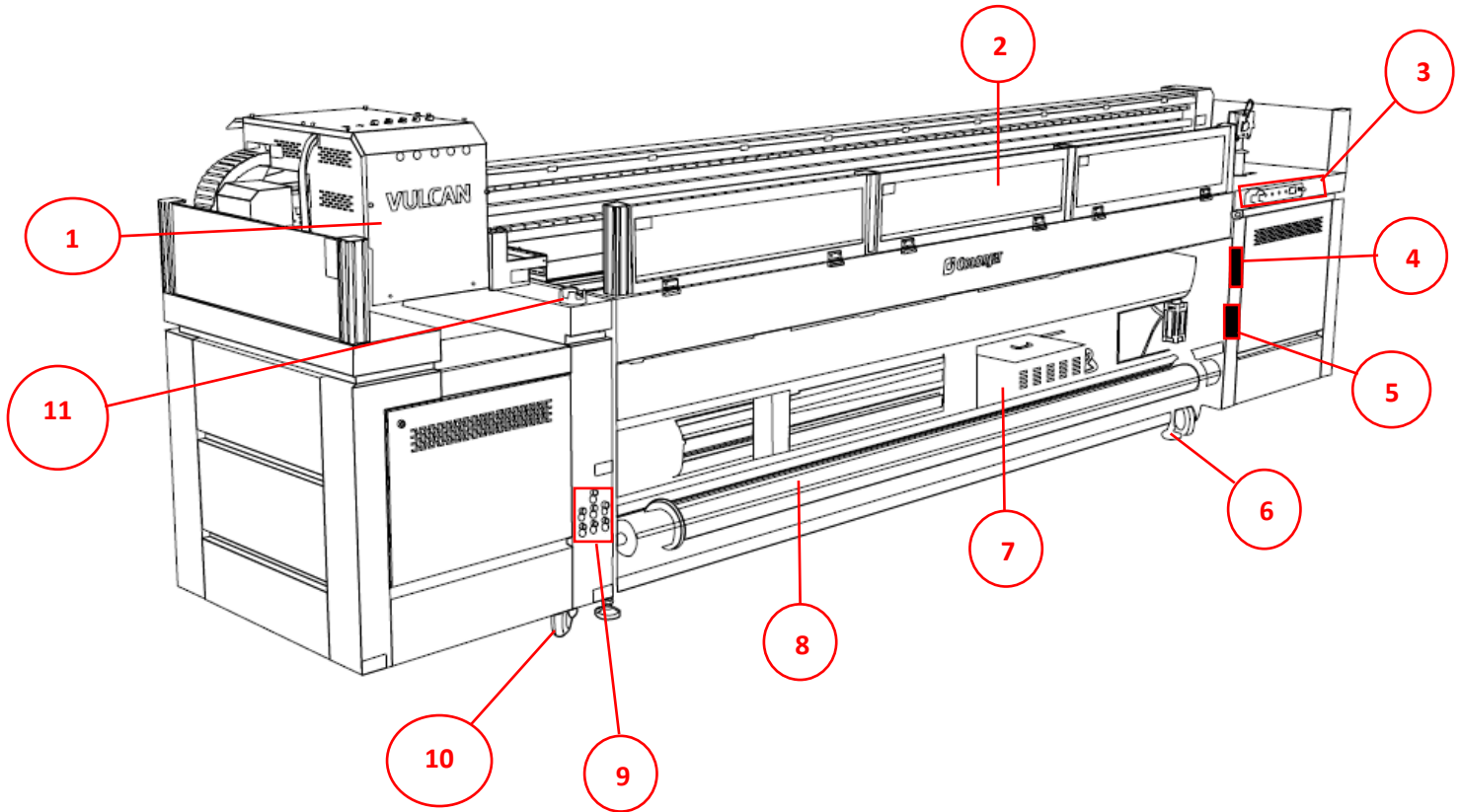
Table 1: The System Specifications of the VULCAN

VULCAN		
Printing Technology		Drop-on-demand, Piezo Electric Inkjet
Print Heads		Industrial Grade Jetting Assemblies
No of Print Heads		4 and 7
Media	Width	3300 mm
	Thickness	Maximum 10 mm with Liner
	Roll Outer Diameter	Maximum 300 mm
	Roll Weight	Maximum 150 kg
	Core Diameter	2" & 3"
	Type	Ceiling Film, Vinyl, Advertising Banner, PET, Wall Paper, Fabric
Printing Width		Maximum 3200 mm
Inks	Type	UV Curable Ink
	Colors	6 Colors (CMYK LC LM) + White
Printing Resolution (dots per inch)		Maximum up to 1800 dpi
Distance Accuracy		Error of less than $\pm 0.3$ % of distance traveled, or $\pm 0.3$ mm, whichever is greater
Connectivity		High Speed USB 3.0
RIP Software		Onyx (ColorJet Edition)
Computer Requirements		<b>Operating System</b> : Windows 10 Professional (64 bits) <b>Processor</b> : i7 Processor Quad Core <b>RAM</b> : 16 GB or greater <b>Hard Disk Drive</b> : HDD/SDD <b>Video Resolution</b> : 1024x768 16 Bit Color <b>USB Port</b> : USB 3.0/3.1
Power Requirements		AC 230 V $\pm 10\%$ , 32 A, 50/60 Hz
Dimension (Printer Only)		5300 x 1080 x 1680 mm (LxWxH)
Dimension (With Packing)		5880 x 1220 x 1940 mm (LxWxH)
Weight (approx. with stand)		2550 Kgs N.W., 2850 Kgs G.W.
Environmental	Power On	Temperature: 18°C to 28°C Humidity: 35 to 80%RH (Non-condensing)
	Power OFF	Temperature: 5°C to 40°C Humidity: 20 to 80%RH (Non-condensing)

### 3. Machine Overview

#### Front View

The **Front View** of the machine is shown as below:



*Fig 1: Displaying the Front View of the Machine*

*Table 2: Different Parts of the Machine*

1. Carriage	2. Front Glass Door
3. Control Panel	4. Vacuum Pump Regulator
5. Take Up Regulator	6. Levelers
7. Chiller Unit	8. Take Up
9. Main Tank Ink Controller	10. Wheelers
11. Emergency Button	

The **Control Panel** is shown in the image below:



*Fig 2: The Control Panel*

*Table 3: Different Parts and their Description*

<b>Power</b>	Show whether the machine is ON or OFF
<b>Front Roll</b>	Enable/Disable the second roller
<b>Pump</b>	Switch ON/OFF the vacuum pump to control print bed vacuum.
<b>Led Lighting Box</b>	Enable/Disable the backlit effect
<b>Potentiometer</b>	Control the torque value so that media doesn't slipped during printing



## Back View

The **Back View** of the machine is shown in the image below:

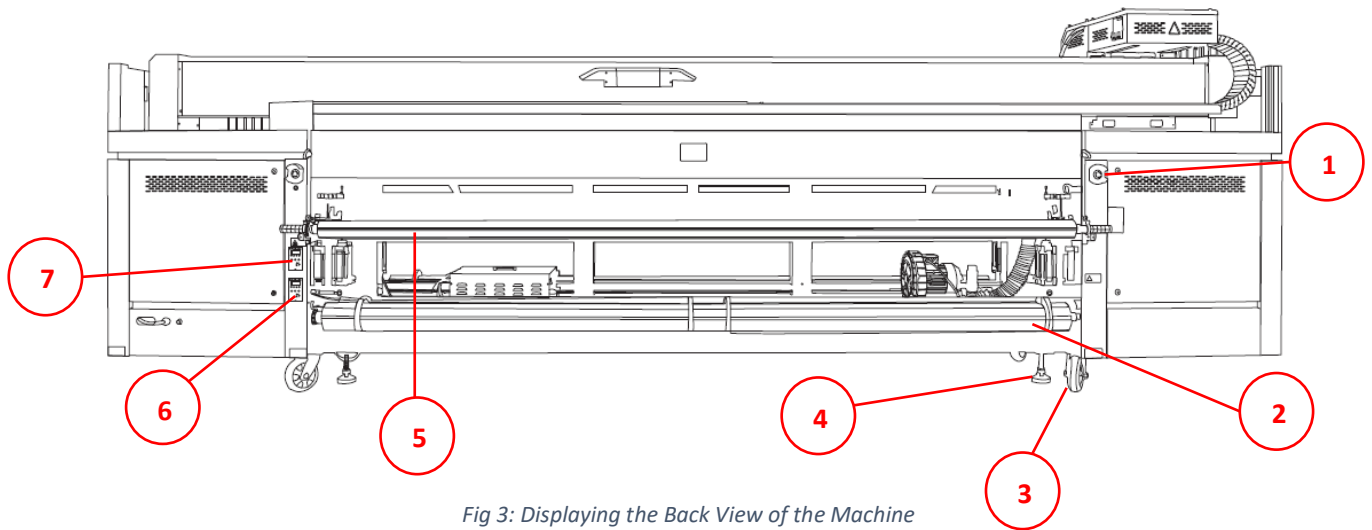


Fig 3: Displaying the Back View of the Machine

### Different Parts of the Machine

1. Emergency Button	2. Supply Roller
3. Wheel	4. Leveler
5.	6.
7.	

## 4. Getting Familiar with Printer Manager Interface

The User Interface of the Printer Manager software is shown as below:

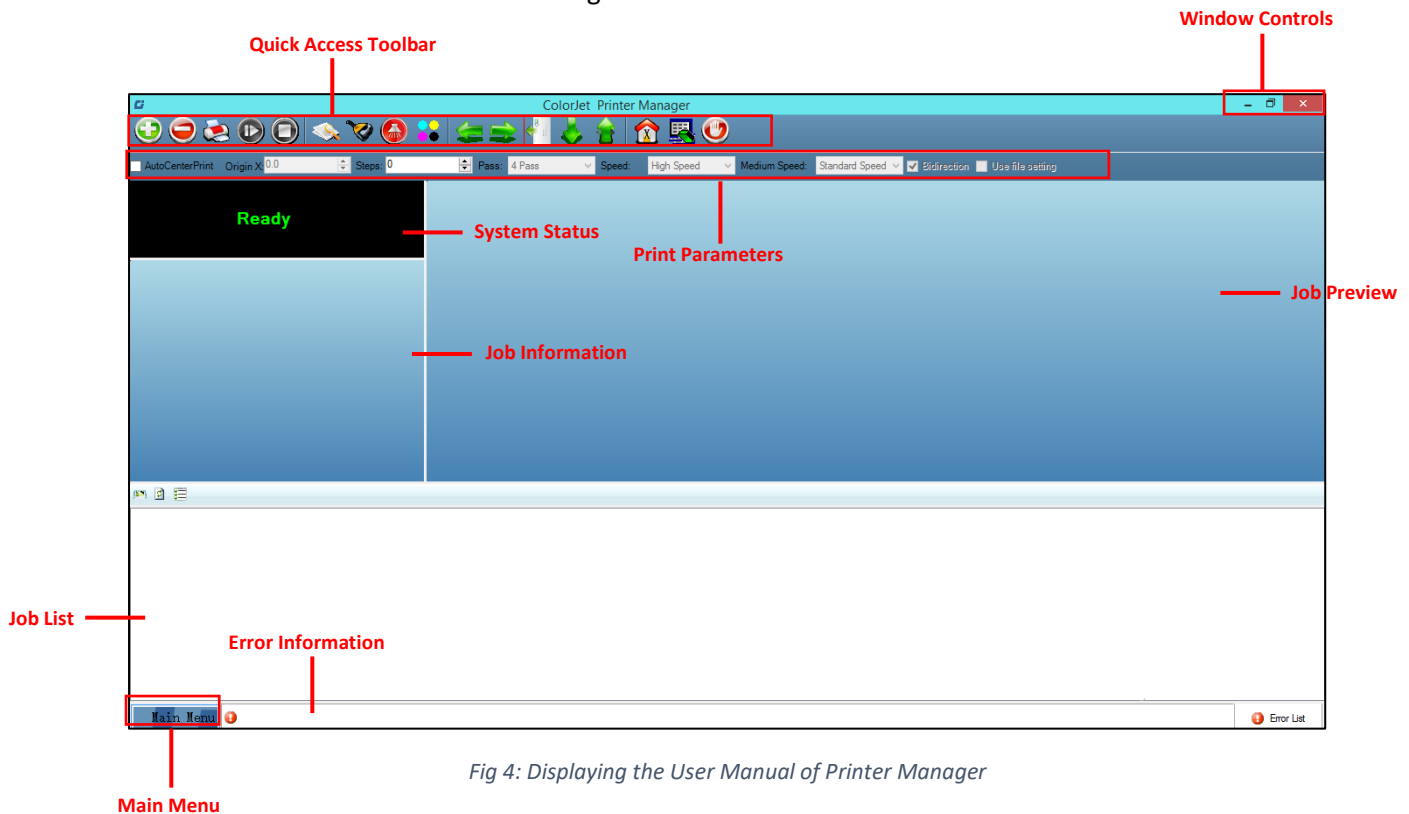


Fig 4: Displaying the User Manual of Printer Manager

The description of the Printer Manager window is given as below:

- **Window Control:** Use to minimize, resize or close the Printer Manager window.
- **Main Menu:** Consist of several sub menu options viz. Settings, Tools, and also provide variety of functions in well organize manner.
- **Quick Access Toolbar:** Display frequently performed actions like Add Job, Delete Job, Print Job, Pause or resume, Abort job, Check nozzle, Auto clean, Move left, Move right, Set print origin, Move forward, Move backward, Move carriage to origin, and Edit job are available as buttons on the Quick access toolbar.
- **Job Information:** Display the properties of the selected job like file name and path, Status, Print Size, Print Area, DPI, Pass, and more.
- **Job Preview:** Show the job preview as well as print progress in this area.
- **Job List:** Displays the thumbnail preview of added jobs.
- **Error message:** Displays the system generated error messages.

## 5. Main Menu Options

The **Main Menu** options are shown in the image below:

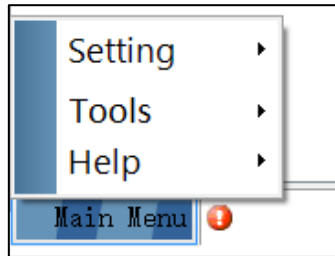


Fig 5: The Main Menu Options

### Setting Menu

The **Setting Menu** options are shown in the image below:

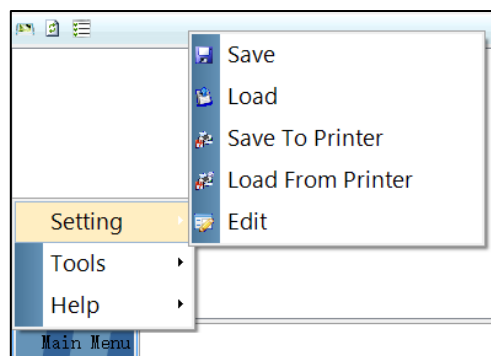


Fig 6: The Setting Menu Options

- **Save:** Using this option, you can save the default settings of the machine. When you save the settings, an .xml file will be created for further references.
- **Load:** Using this option, you can load the previous saved machine's settings.
- **Save To Printer:** When you clicked on this option, all the current settings get saved in the Main Board of the machine.
- **Load From Printer:** When you clicked on this option, the printer settings get saved from Main Board to Printer Manager software.
- **Edit:** Using this option, you can edit the previously made settings of Printer. On clicking the Edit option, the Setting window with Printer, Move, Preference, and Calibration tabs appears on the screen.

The **Setting** window with the **Printer** tab is shown in the below image:

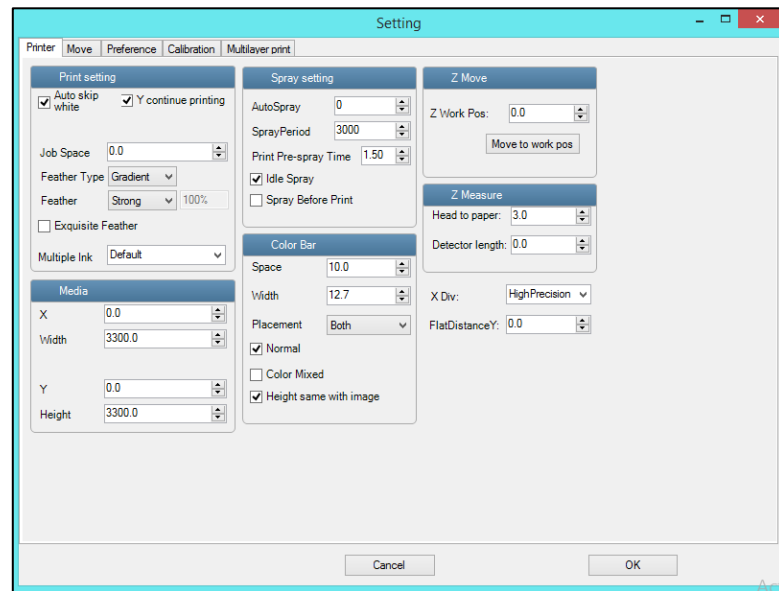


Fig 7: Displaying the Setting Window

The **Move** tab is shown in the image below:

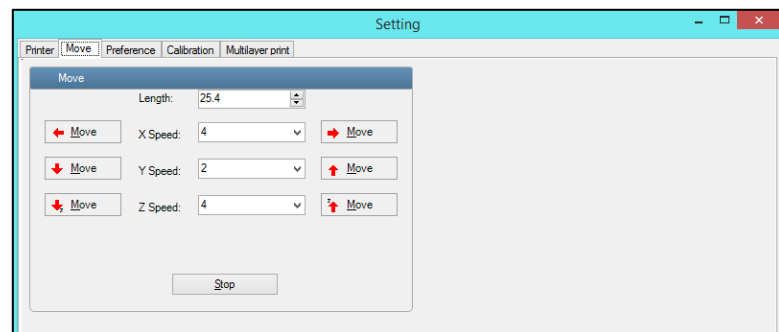


Fig 8: Displaying the Move Tab

The **Preference** Tab is shown in the image below:

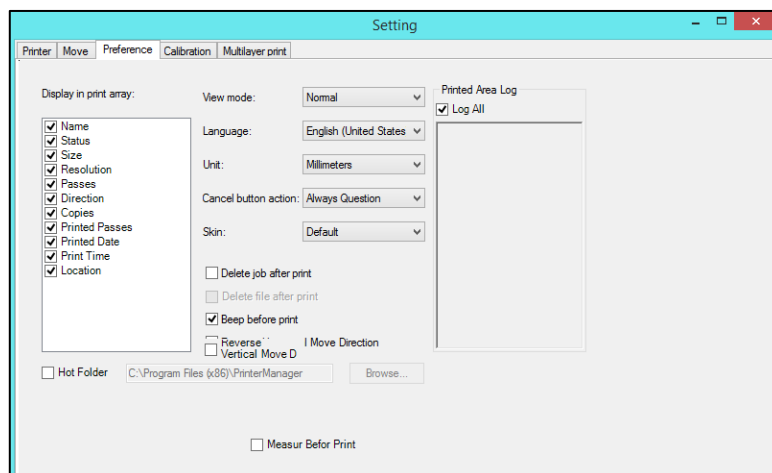


Fig 9: Displaying the Preference Tab

The **Calibration** tab is shown in the image below:

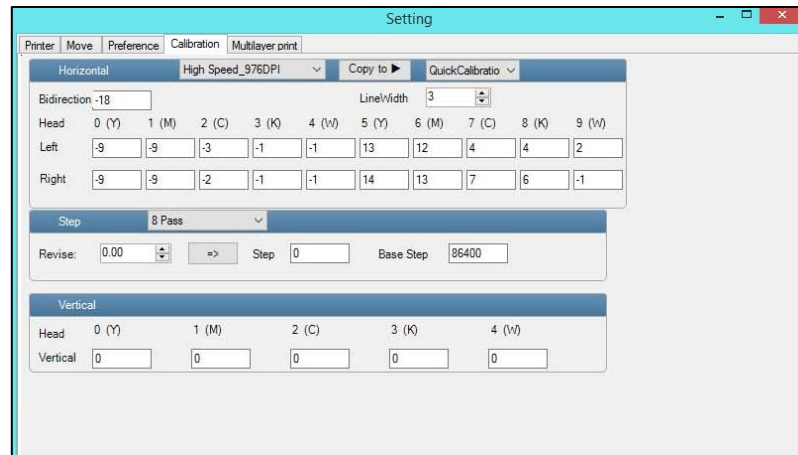


Fig 10: Displaying the Calibration Wizard

The **Multilayer print** tab is shown in the image below:

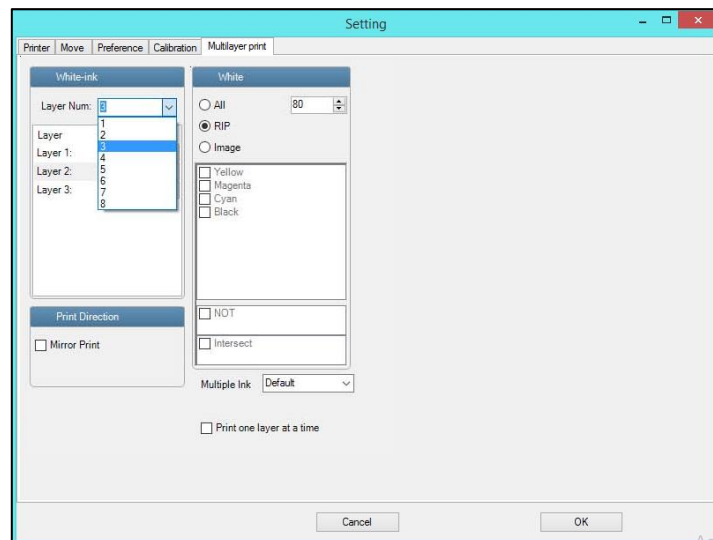


Fig 11: Displaying the Multilayer print

Using the Multilayer Print functionality, operator can print in multi-layer pattern viz. Color-White-Color, White-Color-White, and more. The Multilayer Print pattern is selected in the following way:

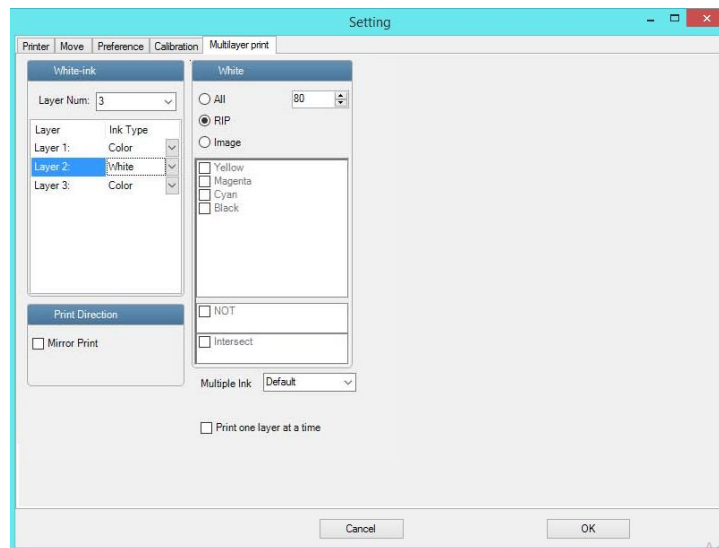


Fig 12: Selecting the Multi-Layer Print Pattern

## Tools Menu

The **Tools Menu** options are shown in the image below:

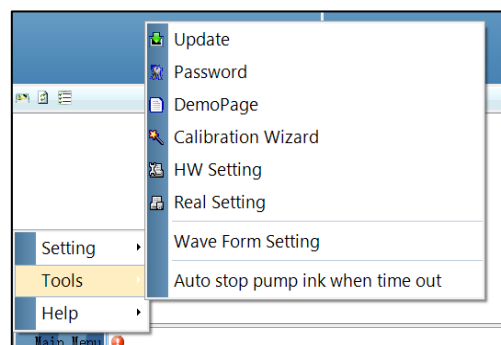


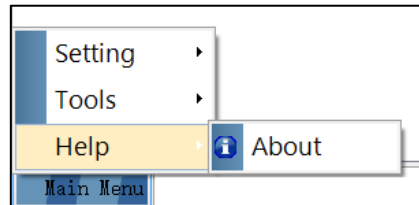
Fig 13: The Tools Menu Option

- **Update:** This option enables to apply latest changes and updates in the machine. This option supports .dat file format.
- **Password:** This option enables to feed the time and language passwords of the printer.
- **DemoPage:** This option displays the bi-direction check output to improve the bi-direction printing capability.
- **Calibration Wizard:** Using this option, you can perform different types of calibration viz. Angle Check, Vertical Check, Nozzle Check, and more. For more details, please read the “**Calibration Wizard**” section carefully.
- **HW Setting:** This option enables to select the encoder type of the printer as per the compatibility either linear or servo.
- **Real Setting:** This option enables to check and reset the temperature as well as voltage of each Print Head.

- **Wave Form Setting:** This option helps in controlling and setting the wave form of the printer with respect to ink, Print Head type, and speed.
- **Auto stop pump ink when time out:** Enable or disable the pump automatically when time out occurs.

## Help Menu

The **Help Menu** is shown in the image below:



*Fig 14: The Help Menu Option*

- **About:** Enable to view the details about Printer Manager software viz. software version and copyrights.

## 6. Getting Ready for Printing

### Switch ON Procedure

VULCAN machine must be ON. In any emergency situation, machine needs to shut down, then operator has to follow the below mentioned steps to switch ON it:

**Step 1:** Maintain the room temperature.

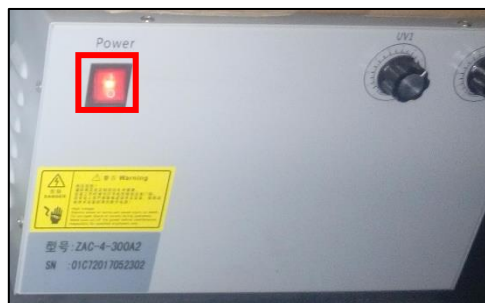
**Step 2:** Switch ON the printer from the main power or board.

**Step 3:** Turn ON the Negative Pressure knob of each color, as shown below:



*Fig 15: The Negative Pressure Knob*

**Step 4:** Turn ON the UV Section, as shown below:



*Fig 16: Switch ON the UV Section*

**Step 5:** Turn ON the Chiller unit, as shown below:



*Fig 17: Displaying the Chiller Unit*

**Step 6:** Load the media by following all the steps mentioned in the “**Loading Media**” section.

**Step 7:** Finally, perform purging and then, nozzle test.

Now, the printer is ready for printing.



## Loading Media

Follow these steps to load the media on the machine:

**Step 1:** Check the media tensioning from front and back sides using the paper sheets, as shown in the image below:



*Fig 18: Verifying the Media Tensioning*

**Step 2:** If media tensioning is not correct, then tight the tensioner skew, as shown below:



*Fig 19: Adjusting the Tensioning*

In case, operator needs to adjust the position of front or back roller, then press the Front Pressure Roller or Back Pressure Roller button accordingly.

The **Front Pressure Roller** button is shown in the image below:



Fig 20: Showing the Front Pressure Roller button

The **Back-Pressure Roller** button is shown in the image below:



Fig 21: Pressing the Back Pressure Roller Button

**Step 3:** Unwind the media roll and insert the media between the platform (rollers), as shown in the image below:

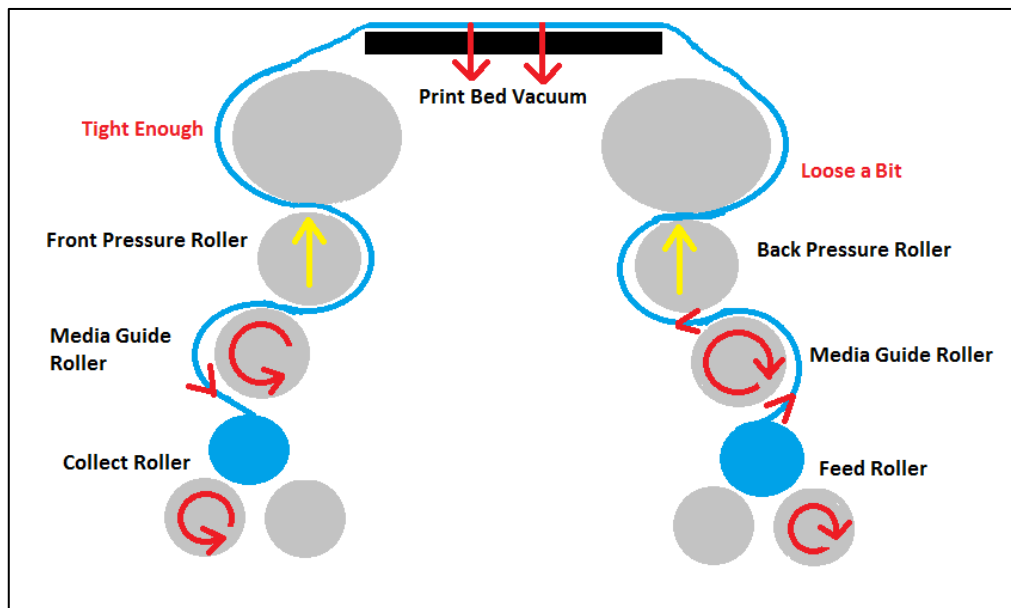


Fig 22: Showing the Media Path

**Step 4:** Pull the enough media so that it reaches to the Take Up Roller.

**Note:** While loading the media, make sure that media should be aligned or both sides need to be matched properly.

**Step 5:** Paste the front edge of the media on the Core to wind correctly on it.

Now, media gets loaded into the machine.

## Ink Supply System

The following are the features of VULCAN Ink System:

- Main ink tanks are equipped with ink level sensor which beeps once the ink level goes down.
- Sub ink tanks are equipped with heaters to maintain the temperature of inks.
- Float sensors are equipped in sub ink tanks to control the supply of inks in tanks.
- Overflow in sub ink tanks will pause the supply of inks and also software alerts the same.

The **VULCAN Ink Supply System** is explained through the below image:

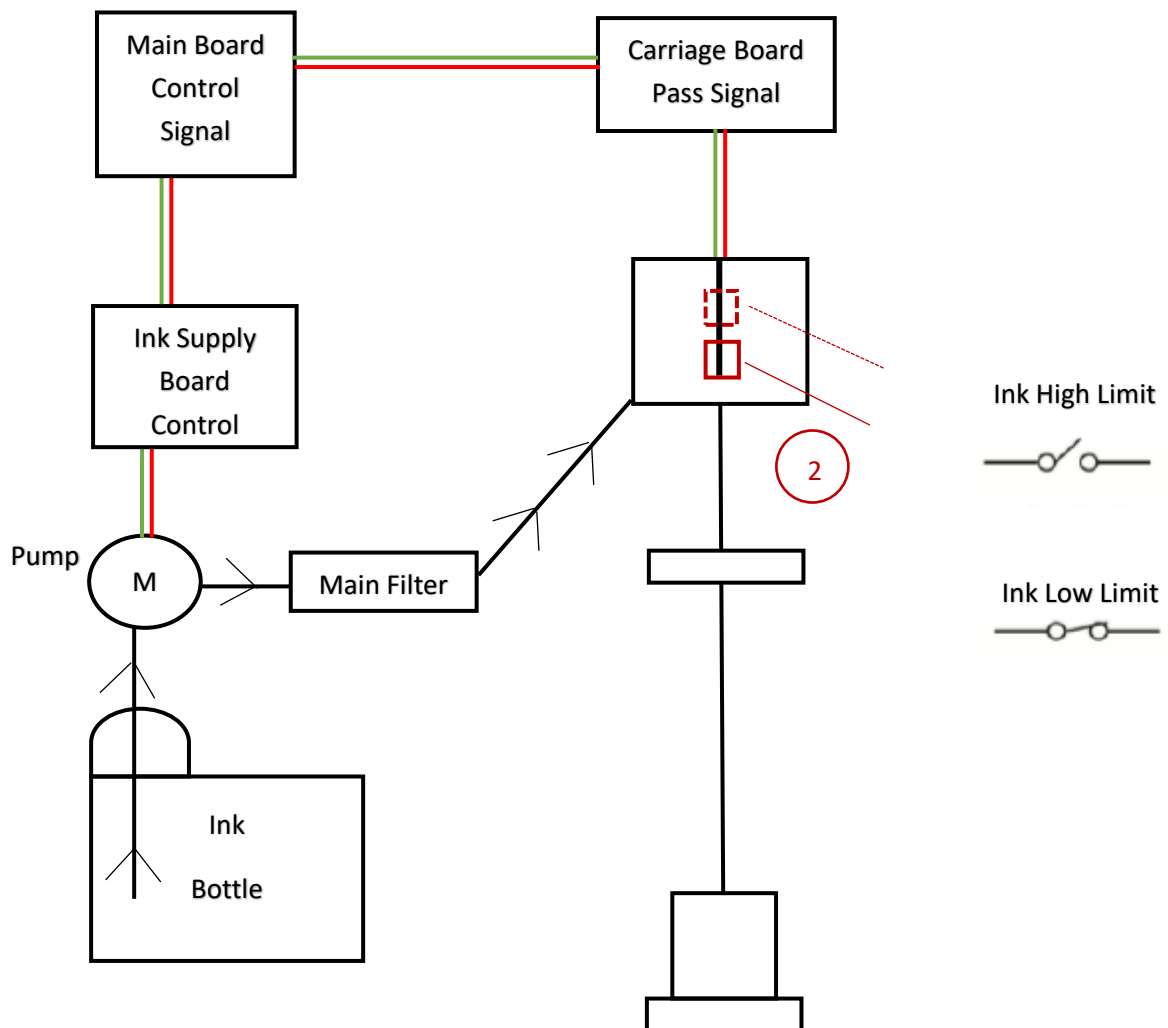


Fig 23: The Ink Supply System

## Ink Filling

Please use the recommended ink in the printer for high printing quality and long life of print and Print Head.

Follow these steps to fill ink in the printer:

**Step 1:** Switch on the printer.

**Step 2:** Fill recommended ink in each main ink tank as per the color stickers, as shown below:

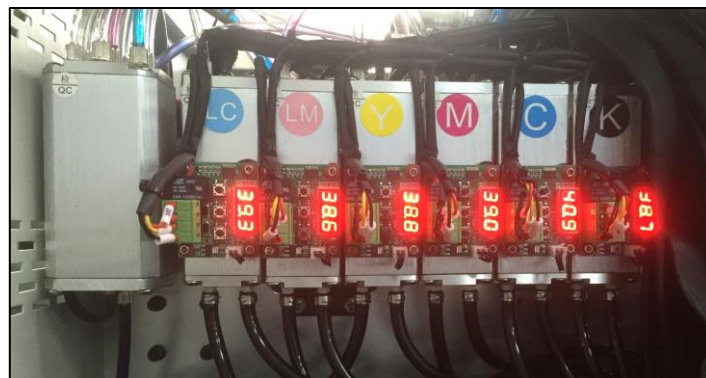


*Fig 24: The Main Ink Tanks*

**Note:** Main tanks are equipped with ink level sensor which beeps once the ink level goes down.

**Step 3:** Fix the sub ink tank connectors to the ink refilling pins in the Head Board.

Now, pumps start working and ink start moving in the ink pipes. The ink sub tanks are shown in the below image:



*Fig 25: The Sub Ink Tanks with Heaters*

The sub ink tanks are equipped with Heaters and float sensors to maintain the temperature of inks and indicate if ink level goes down.

## 7. Printing

### Nozzle Testing

Before starting with calibration tests, the Print Heads should be checked for blockage. Each Print Head has multiple tiny nozzles through which ink drops emerge and get deposited onto the print medium. Any nozzle blockage can compromise the print quality by forming discolored horizontal streaks or bands.

The good and bad nozzle test results are shown in the image below:



Fig 26: Displaying the Good and Bad Nozzle Test Result

To check the nozzle, click on the **Check Nozzle** icon available on the **Quick Access Toolbar**, as shown below:



Fig 27: Selecting the Check Nozzle Button

In case of blockages, refer to the Head Cleaning section to perform head cleaning before proceeding to other calibration steps.

## Print Head Calibration

The Print Head calibration is categorized into the following types:

- **Mechanical Check:** Includes Vertical Check and Angle Check
- **Software Calibration:** Includes Horizontal Calibration and Step Calibration

Let's discuss the above-mentioned checks and calibration one by one in details.

**Note:** Mechanical checks are performed by service engineer, thus these checks and their description are not included in user manual.

### Opening the Calibration Wizard

Print Heads should be calibrated to ensure good printing quality. To open the **Calibration Wizard**, click on the **Main Menu**→**Tools**→**Calibration Wizard** path, as shown below:

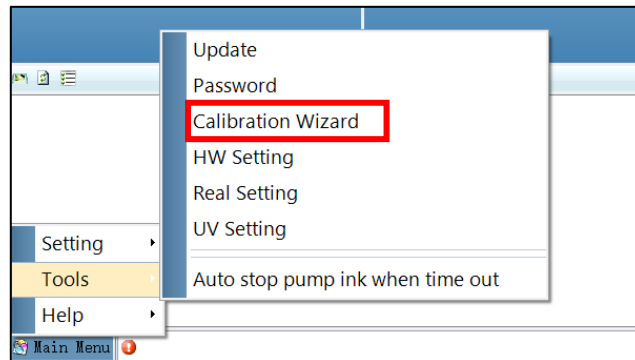


Fig 28: Selecting the Calibration Wizard Option

This should bring up the Calibration Wizard which is shown below:

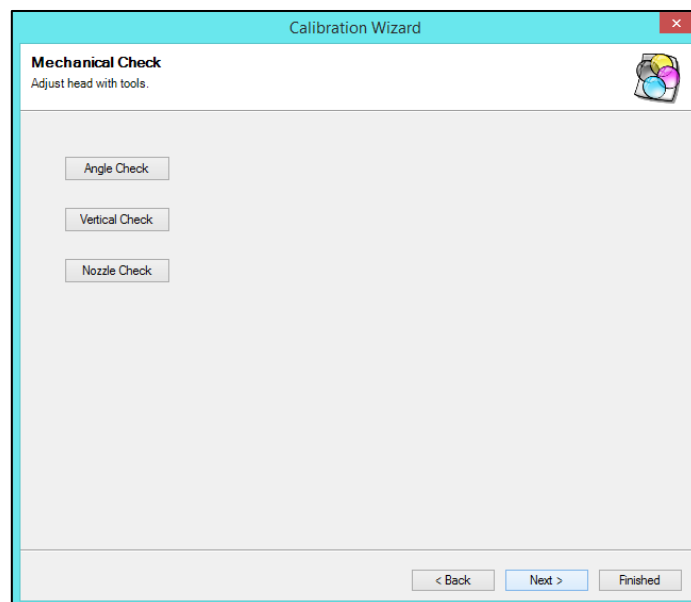


Fig 29: Displaying the Calibration Wizard

When you press the **Next** button, we redirect to the software calibration screen, as shown in the below images:

The screenshot shows the 'Setting' window with the 'Calibration' tab selected. The window is divided into several sections:

- Horizontal Section:**
  - Bidirection:** -18
  - LineWidth:** 3
  - Head:** 0 (Y), 1 (M), 2 (C), 3 (K), 4 (W), 5 (Y), 6 (M), 7 (C), 8 (K), 9 (W)
  - Left:** -9, -9, -3, -1, -1, 13, 12, 4, 4, 2
  - Right:** -9, -9, -2, -1, -1, 14, 13, 7, 6, -1
- Step Section:**
  - Step:** 8 Pass
  - Revise:** 0.00
  - Step:** 0
  - Base Step:** 86400
- Vertical Section:**
  - Head:** 0 (Y), 1 (M), 2 (C), 3 (K), 4 (W)
  - Vertical:** 0, 0, 0, 0, 0

*Fig 30: Displaying the Bidirectional Check in Calibration Wizard*

Let's discuss each test and their result one by one in upcoming section. Mechanical checks are performed by Service Engineer, thus these checks are not discussed in the user manual.

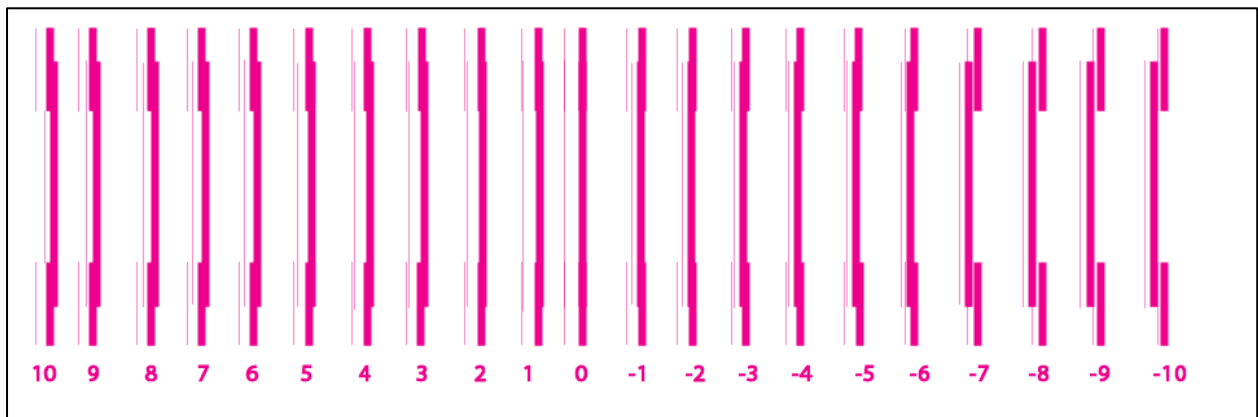
## Horizontal Calibration

Horizontal Calibration checks the bi-directional, left, and right alignment and corrects it by adding or subtracting the correction value from the default set value. It has to be performed for each print mode, whichever is required. Let's discuss each type of horizontal test one by one.

## Bi-direction Calibration

Bi-directional calibration is performed to achieve dot placement accuracy between the "Left to Right" and "Right to Left" print sweeps. If the bi-direction offset value is correct, the Left to Right test print would align accurately with the Right to Left test print at "0" position. In case of error in the Bi-Direction offset, the Left to Right and Right to Left print would align at some other point on the scale.

The Bi-direction Calibration result is shown in the image below:



*Fig 31: The Bi-Direction Calibration Output*

Based on the above figure, you can notice that the Bi-direction Calibration is good at "0" position. The correction value is "0" which means you need not to correct the bi-direction value. Sometimes, the correction value can either positive or negative. If the correction value is positive, then you need to add it in the current bi-direction adjust value or subtract the same, if negative.

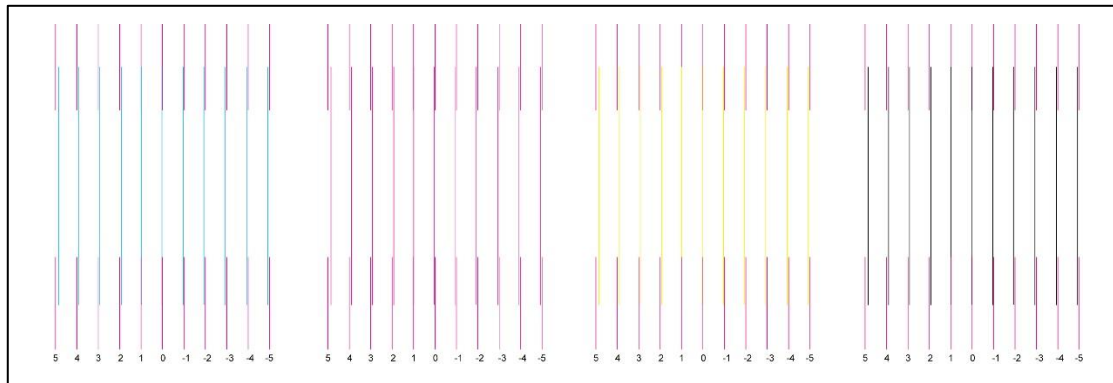


### **Left to Right and Right to Left Calibrations**

Left to Right Calibration is performed to achieve dot placement accuracy of all colors (Black, Cyan, and Yellow) with respect to Magenta during the carriage's left to right print sweep. Similarly, Right to Left calibration is used to achieve dot placement accuracy during the carriage's right to left sweep.

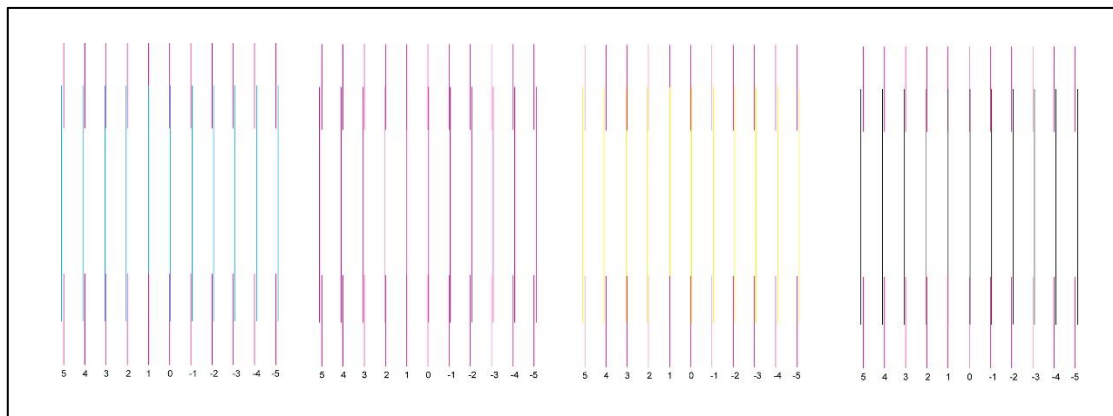
When the position of the test head is correct, then it would align perfectly with the reference color at "0" position, indicating that the error position is "0". If the test Print Head's position saved in the system is inaccurate then it would not align at "0" position, but at some other point on the calibration scale. The position at which the test head aligns perfectly with the reference head, indicates the error in position.

The **Left Calibration** Result is shown in the image below:



*Fig 32: The Horizontal Left Check*

The **Right Calibration** Result is shown in the image below:



*Fig 33: The Horizontal Right Check*

## Step Calibration

The printer step calibration is performed to verify and correct media feeding. The printer prints a complete image pass by pass. A pass is the horizontal carriage sweep perpendicular to the media movement. After each pass the printer moves the media forward for the next pass. This movement of media is called a step. The distance by which the media is moved is called the step size and it has to be accurate. Step size errors cause horizontal white or dark bands to appear in the print output. Step size needs to be adjusted for multiple factors like thickness and roughness of the print media etc. Step calibration should be used to fine adjust the step size and has to be done for each desired pass.

The **Step Calibration** result image is shown as below:

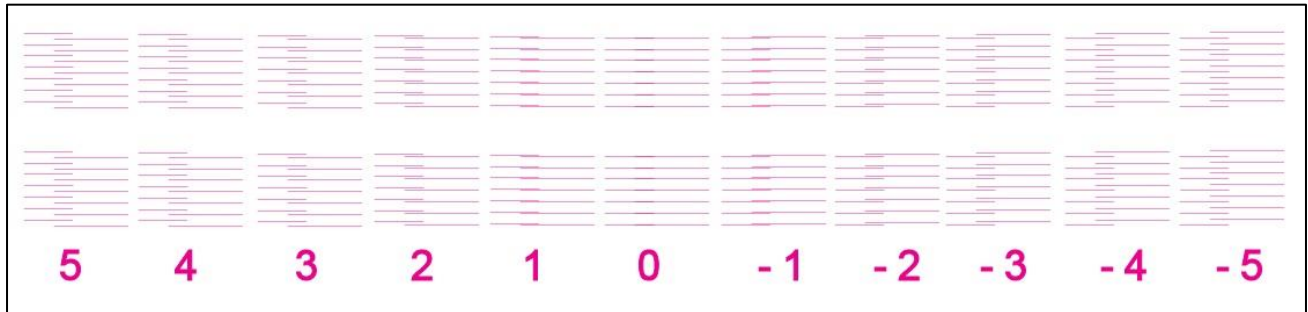


Fig 34: Displaying the Output of the Step Calibration

From the above figure, you get the accurate step adjust correction value. The correction value is either positive or negative. If the value is positive, then add it in the current step adjust value for the Print Head calibration. On the other hand, if the value is negative, then subtract the value from the current step adjust value. From the above, you can conclude that the pattern is corrected at “0” position.

The **Step Calibration** and it's parameters are shown in the image below:



Fig 35: The Step Calibration Parameters

Follow these steps to perform step calibration:

**Step 1:** Select the desired pass from the list and click on the **Print** button (Refer to Fig 35).

**Step 2:** Feed the correction value in the **Revise** field (the correction value up to two decimal places) (Refer to Fig 35).

**Step 3:** Click on the => icon (Refer to Fig 35) on the Step Calibration window. The correction value result will be reflected in the **Step** field (Refer to Fig 35). The same step value will also be displayed in the **Steps** field on the **Quick Access Toolbar**.

## Setting Print Origin

Print origin sets the print starting point with the left limit switch as the reference point. It can be set by two ways; moving and positioning the carriage and typing the offset value directly in the given field.

Follow these steps to change the print origin:

**Step 1:** Move the carriage at the position from where you want to start the printing by *clicking* on the left and right buttons on the **Quick Access Toolbar**, as shown below:



Fig 36: Adjusting the Carriage Position

**Step 2:** After positioning the carriage, *click* on the **Set print origin** icon on the **Quick Access Toolbar**, as shown below:



Fig 37: Selecting the Set Print Origin Option

On clicking the **Set print origin** icon, the current position of the carriage gets updated in the **Origin X** text box, as shown below:

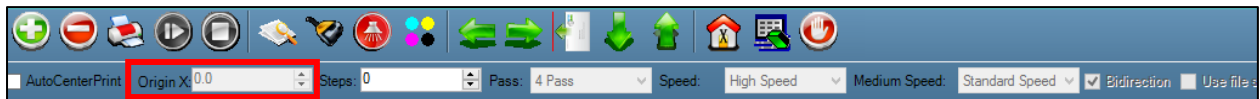


Fig 38: Displaying the Origin Value

Now, the printing origin gets set. Additionally, you can also enter the print origin value manually in the Origin X field under the Print Parameter section.

## Setting Print Parameters

Using the Printer Manager, you can manually change print preferences as per the printing requirements such as print origin, printing speed, no of steps, and more as shown below:

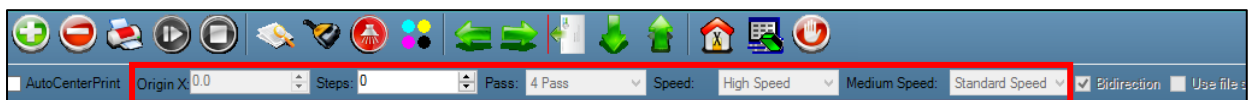


Fig 39: Setting Printing Parameters

The description of printing parameters is given as follows:

- **Origin X:** Directly enter the print origin value.
- **Steps:** Remove step size errors in the current print job by specifying number of steps.
- **Pass:** Choose the number of passes with which the print job should be printed. Increasing the number of passes improves the print quality but at the cost of printing time.
- **Speed:** Choose the printing speed like High Speed, Medium, and Low.
- **Medium Speed:** Set the Y printing speed viz. Standard Speed and Low.

## Adding Jobs

There are two ways to add jobs in the Job List area viz. the Add Job button and right click on the Job List area. Let's discuss both the ways one by one.

Follow these steps to add jobs in the Job List area:

**Step 1:** Click on the **Add Job** button on the **Quick Access Toolbar**, as shown below:

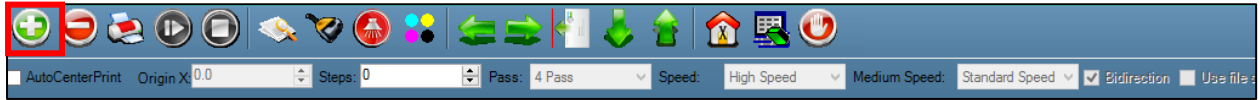


Fig 40: Clicking on the Add Job Button

The **Open** window appears on the screen.

**Step 2:** Navigate to the location where the image file with extension **“.prt”** and **“.prn”** is stored (Refer to Fig 41).

**Step 3:** Click on the **Open** button to add the file into the **Job List** area, as shown below:

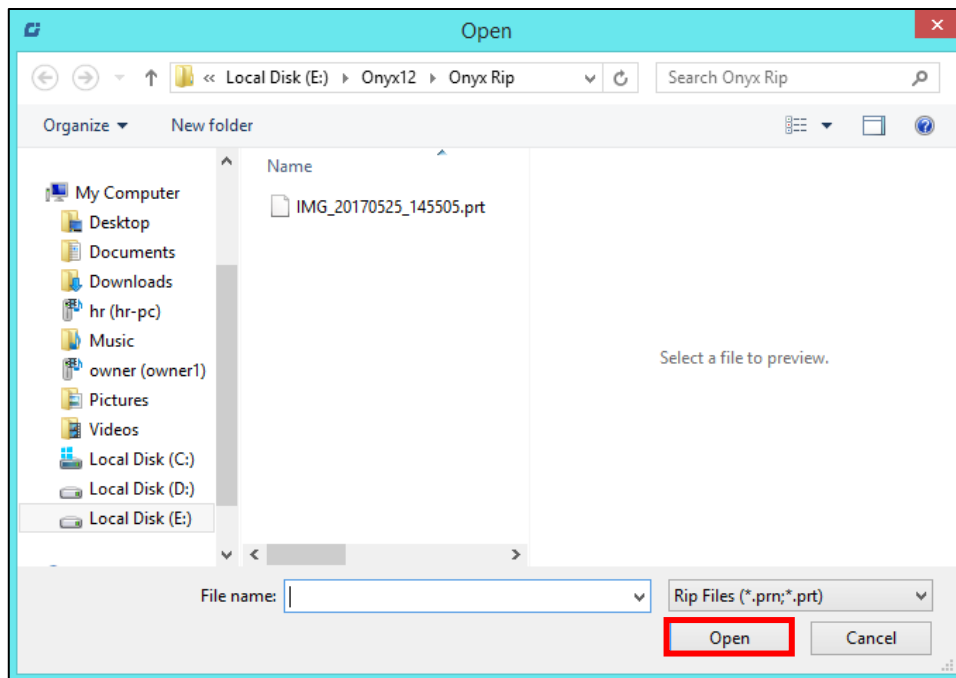


Fig 41: Adding the Job

Now, the selected image appears in the Job List area, as shown below:

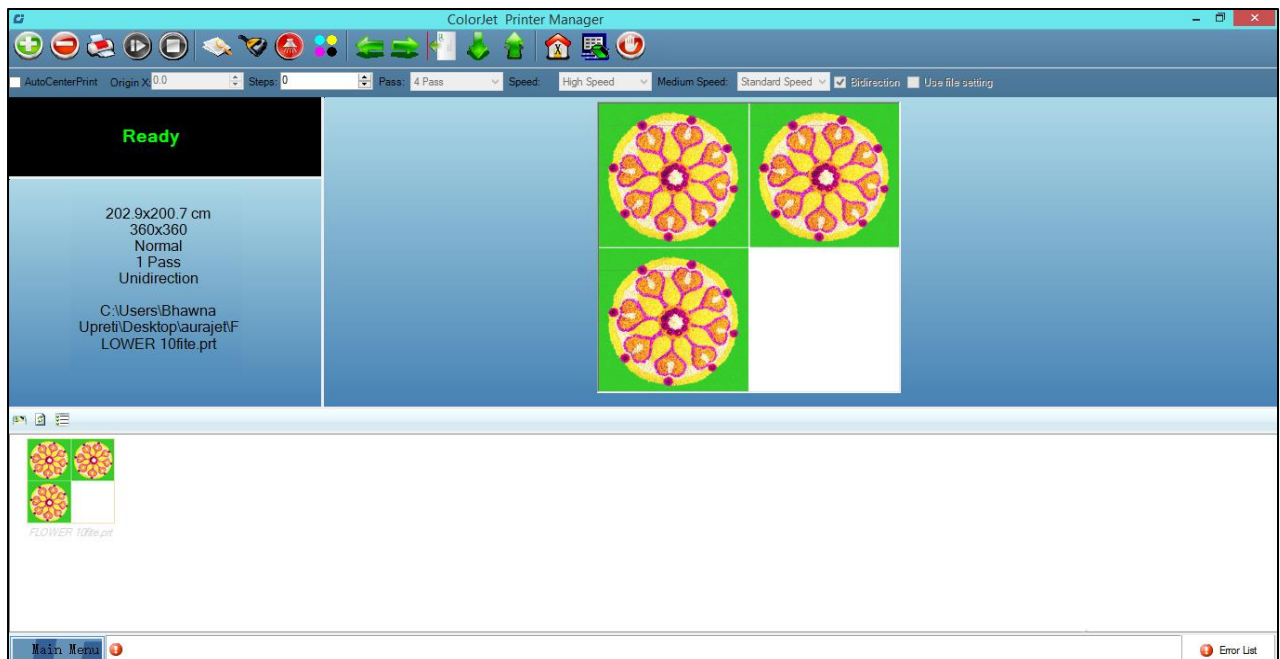


Fig 42: Displaying the Added Job and Their Details

Once a file has been added its information such as file path, size, resolution, and number of passes can be viewed in the Job Information area. User can also add a job simply by right clicking on the Job List area and selecting the **Add Job** option from the context menu, as shown below:

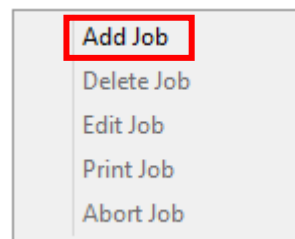


Fig 43: Displaying the Context Menu

On selecting the **Add Job** option, the **Open** window appears and follow the above-mentioned steps to add more jobs.

**Note:** To delete the selected job, click on the **Delete job** icon on the **Quick Access Toolbar**.

## Editing Job

Follow these steps to edit the selected job:

**Step 1:** Select the job for which details you want to edit from the **Job List** area.

**Step 2:** Right-click on the selected job. The context menu appears on the screen.

**Step 3:** Select on the **Edit** option from the context menu, as shown below:

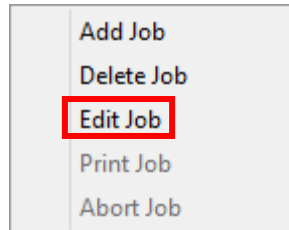


Fig 44: Selecting the Edit Job Option

The **Edit Job Form** appears with the list of options viz. Clip, Reverse Print, and Tile.

**Step 4:** Select the desired checkbox in front of the Clip, Reverse Print, and Tile options. On clicking to any option, its related parameters get appeared on the right pane and you can edit them as per the requirements. In our case, we have selected the **Clip** checkbox.

**Step 5:** After making the desired changes, click on the **OK** button to apply the settings, as shown below:

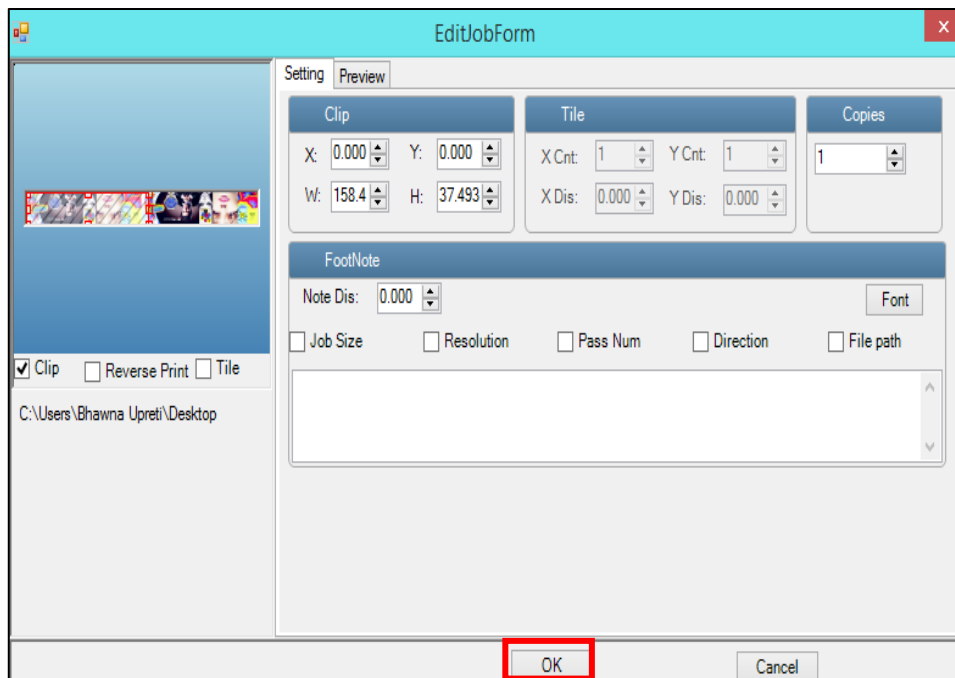


Fig 45: Displaying the Edit Job Form Window

Similarly, you can click on any other option and its related options get enabled in the right pane of the Edit Job form.

## Ripping and Printing

Ripping is an independent process which converts a raw image file into the machine readable format and get the file ready for printing. The Rip software supports the tiff, jpeg, eps, psd, bmp file formats. After ripping the image file, the output file will be in **".prt"** or **".prn"** file format. Thus, you should first rip the image file before printing and then issue the Print command. While ripping, the color profiles are used to automatically perform the color corrections in the image. Now, you can print an image on the selected media simply by clicking on the **Print Job** button available on the **Quick Access Toolbar**, as shown below:

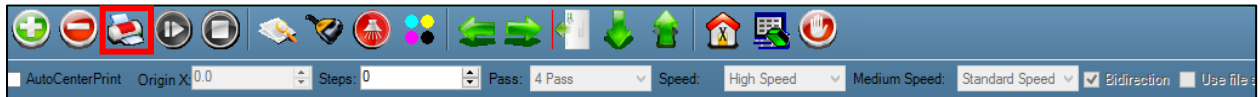


Fig 46: Issuing the Print Job Command

After issuing the Print command, the printing gets started and its progress details displays in the Job Information area, as shown below:

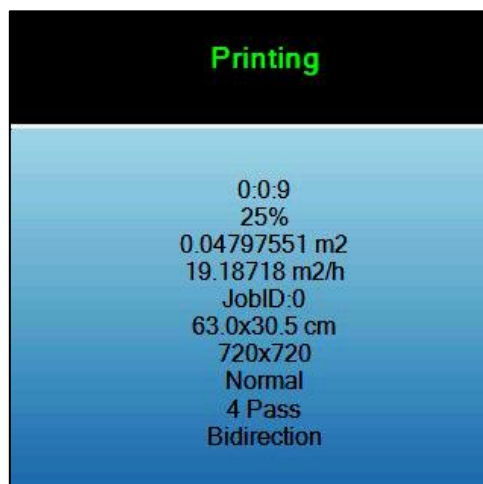


Fig 47: Displaying the Printing Details

## Pausing and Cancelling Printing

If you find any defect during the printing process, you can immediately pause or cancel the current printing job using the Pause or resume and Abort Job buttons available on the **Quick Access Toolbar** as shown below:

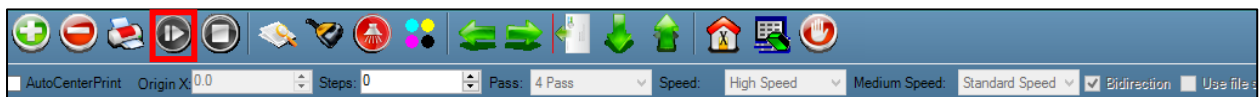


Fig 48: Issuing the Pause or resume Command

Similarly, you can abort the process by right clicking on the selected Job in the Job List area and select the **Abort Job** option from the context menu.

## UV Setting

The UV Setting option enables user to control and manage different parameters of both UV lamps viz. Left UV lamp and Right UV lamp. Using the UV window, user can set left and right light setting, enable or disable print to left and print to right options, and most importantly define the range first nozzle as well as initial lead of shutter. To open the UV Setting window, click on the **Main Menu→Tools→UV Setting** path. The **UV Setting** window appears as shown below:

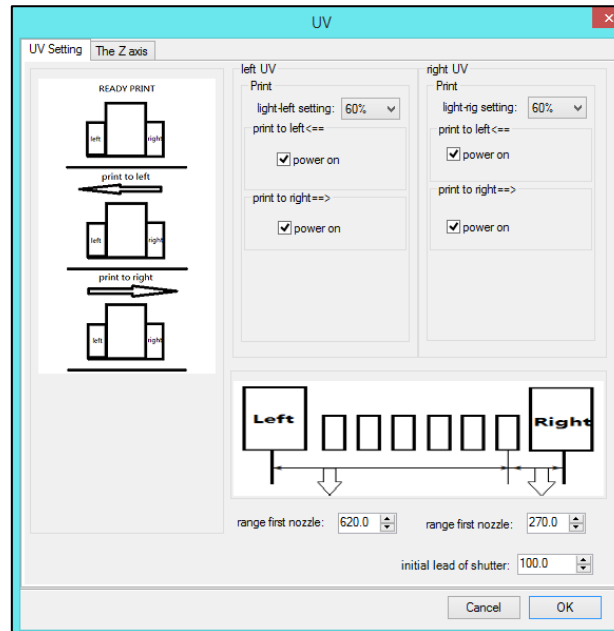


Fig 49: Displaying the UV Setting Window

## Feeding Time and Language Passwords

The Password option enables operator to feed time and language passwords of the printer. On clicking **Password** option under the **Tools** menu, the **Password** window appears with two options viz. Time Password and Language Password. The Time Password helps in setting the running time of the printer. On the other hand, the Language Password helps in changing the operational language of the printer.

Follow these steps to change the time and language password of the printer:

**Step 1:** Click on the **Main Menu→Tools→Password** path, as shown below:

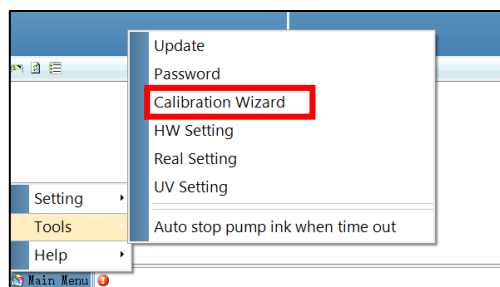
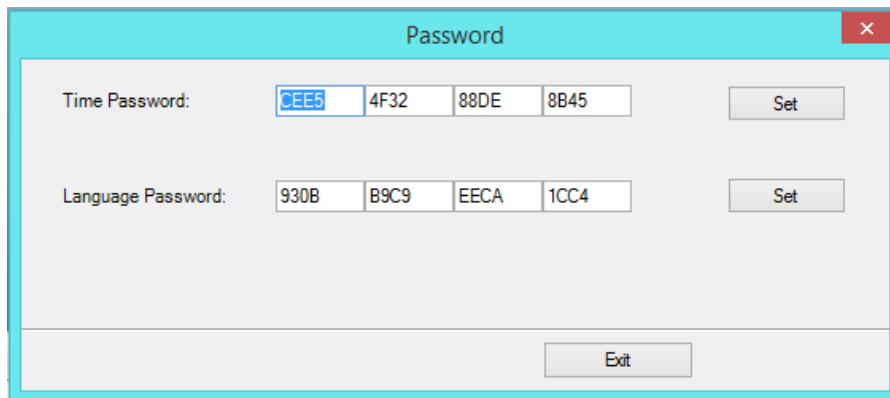


Fig 50: Selecting the Password Option



The **Password** window appears on the screen as shown below:



The screenshot shows a window titled "Password" with a red close button in the top right corner. Inside the window, there are two sections. The first section is labeled "Time Password:" and contains four input fields with the values "CEE5", "4F32", "88DE", and "8B45". To the right of these fields is a "Set" button. The second section is labeled "Language Password:" and contains four input fields with the values "930B", "B9C9", "EECA", and "1CC4". To the right of these fields is another "Set" button. At the bottom center of the window is an "Exit" button.

*Fig 51: The Password Window*

**Step 2:** Set values in the **Time Password** and **Language Password** fields as per the requirements (Refer to Fig 51).

**Step 3:** After feeding the passwords, *click* on the **Set** button in front of both the options (Refer to Fig 51).

**Step 4:** *Click* on the **Exit** button to close the **Password** window (Refer to Fig 51).

**Note:** The length of the password field must be of 16 digits.

## 8. Switch OFF Procedure

VULCAN machine must be ON. In any emergency situation, machine needs to shut down, then operator has to follow the below mentioned steps:

**Step 1:** Perform the Nozzle Test to check Print Head nozzles status.

**Step 2:** Clean the Print Heads, if required.

**Step 3:** Close the Printer Manager software.

**Step 4:** Turn OFF the UV Control System.

**Step 5:** Turn OFF the Chiller unit, as shown below:



*Fig 52: Displaying the Chiller Unit*

**Step 6:** Turn OFF the Negative Pressure knob.

**Step 7:** Switch OFF the printer from the main power.

**Step 8:** Cover the printer.

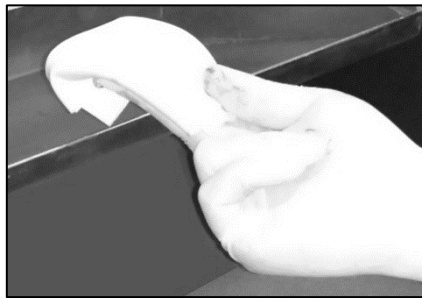
## 9. Head Cleaning

Print Head is a delicate part which needs to be cleaned as per the recommended methods to have long life and to ensure consistent print quality. Below sections give recommended steps to clean the Print Heads.

### Head Wiping

Head wiping refers to the process in which the head surface area is cleaned with the help of tissue paper or cloth. Wiping removes ink drops adhering to the Print Head nozzle surface. Gently touch or wipe with a clean recommended head cleaning tissue on the head's nozzle plate. One should make sure that the tissue is clean, soft, and also does not have any chemicals on it.

The Head Wiping process is shown in the image below:



*Fig 53: The Head Wiping*

Perform these steps to wipe the Print Head to clean:

**Step 1:** Multi-fold the tissue paper 3-4 times.

**Step 2:** Hold it from one end such that other end remains flexible and extra pressure is not getting applied on the heads.

**Step 3:** Wet the other end of the tissue paper with solvent.

**Step 4:** Wipe it softly once, to soak all residue inks on the nozzle plate.

Now, the Print Head gets wiped.

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

- Avoid using the same tissue paper to wipe the Print Head.
- Wiping with dry and inferior quality tissue paper will damage the nozzle film by making scars (see image in next page).
- Strictly use recommended tissue paper (Contact your dealer for tissue paper).
- Always use wet tissue paper to absorb the residue ink.
- Don't wipe hard, just absorb the residue inks on nozzle plate.
- Softly touch with a lint free bloating tissue paper (duly wet by cleaning solvent) by changing the tissue paper position with respect to nozzle plate.
- Do not apply force while absorbing residue inks with tissue paper after purging.
- Leaving head plate uncapped while printer off, will block nozzles permanently due to ink solidification.

- Color bar should always be enabled while printing and idle spray should always be enabled for long life of the Print Head.

### Head Purging

Head purging refers to the method in which heads are cleaned by forcing pressurized ink through the nozzles.

**Note:** VULCAN must be ON always.

Follow these steps to start the head purging process:

**Step 1:** Turn ON the Negative Pressure knob of the color on which user wants to perform the purging, as shown below:

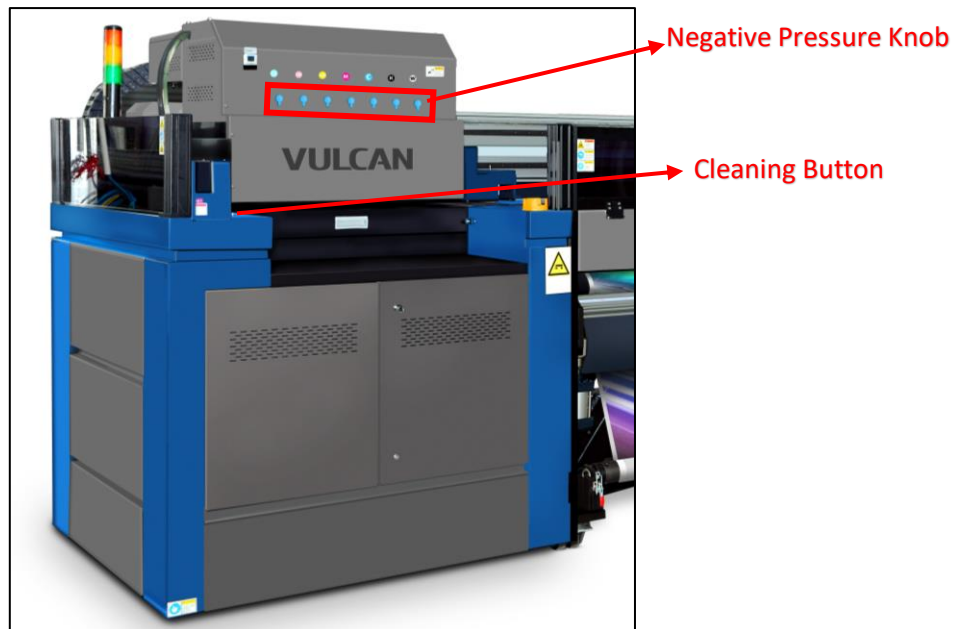


Fig 54: Performing Head Purging

Please make sure that all other colors Negative Pressure knob must be turned OFF.

**Step 2:** Press the **Cleaning** button to start the purging process (Refers to Fig 54).

Now, the Print Heads get cleaned.

### Head Spraying

Head spraying should be performed only when small percentage of nozzles are blocked. This method is used to avoid mixing of colors. When heads are sprayed all the nozzles are actuated at a high rate which helps in opening up dry nozzles of the printer. To perform head spraying, *click* on the **Spray** button available under the **Quick Access Toolbar**, as shown below:



Fig 55: Displaying the Spray Button

## 10. Maintenance

### Environmental Maintenance

- Room temperature should be maintained in 18-28 Degree Celsius range with humidity 35-80%RH
- Closed dirt-free room exclusive for Printer
- Proper cool with white lightings

### Roller Maintenance

- Clean dirt particles and ink stains, if any

### UV Controller System Maintenance

- Check coolant level
- Check the UV Lamp surface and clean it, if dirty

### Print Head Maintenance

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 Print Heads. For Print Head maintenance, the following instructions should be taken care:

- Perform the nozzle test daily 2-3 times before printing to monitor the blockage in the head nozzles
- Avoid head damage due to media and Print Head confliction
- Color Bar should be ON
- Avoid ink spilling on the Print Head and head cables
- Don't use expiry ink and store the ink at favourable environment
- Clean heads using head cleaning techniques viz. head wiping, purging, and spraying

### Head Plate Maintenance

- Check the Waste Tray regularly and it must be cleaned before start working on the machine

### Air Pressure Maintenance

- Check Compressor regularly
- Check and verify input inlet pressure
- Timely check and clean Air Filter for moisture

### Waste Bottle Maintenance

- Check the Waste Bottle regularly and empty it, if full

### Print Bed Maintenance

- Clean dust particles and ink stains, if any

### **Rubber Roller Maintenance**

- Timely clean the Rubber Roller using the flashing liquid

### **Ink Filter Maintenance**

- Replace the Ink Filter after six months

## 11. Troubleshooting Guide

### Printer Not Initializing

- Encoder scale is having ink stains (print shows vertical color bands)
- Encoder sensor is not cleaned

### Printer Manager Not Showing "READY"

- USB cable is not connected to the computer or loose
- USB cable is faulty
- Printer is OFF

### Print Stops in Between Printing

- USB cable is loose or faulty
- Open heavy file that can slow down the data transfer
- Ground wire is disconnected
- Encoder scale is having ink stains
- Pulley or belt is slipping
- Ripped file is having error
- Media is finished

### Print Margin is Shifting or Junk Printing

- Encoder scale is having ink stains
- Encoder sensor is not clean
- Pulley or belt is slipping
- Data cable is faulty

### Print is Blur (Not Sharp)

- Improper printer calibration - bidirectional and step
- Improper head mounting and calibration
- Selection of incorrect resolution
- Wrong speed selection instead of high precision

### Lines in Print

- Head nozzles are blocked
- Incorrect feed steps

### Print Not Dryer

- Check UV lamp settings
- Check intensity of UV lamps

### Heaters Not Working

- Check if inlet power cord and supply power are connected
- Check the set temperature in the controller

### Head Not Firing

- Perform nozzle test and clean heads, if required
- Check if any air lock or no ink in the head pipes
- Check the ink and air pipe for any cuts or loose connection

### A Color Ink Not Supply

- Damaged float sensitivity
- Power board fault
- Float power line failure
- Ink sheet failure
- Ink path have disclosure
- No ink in the main or sub ink tanks

### UV Lamp Not Working

- UV lamp is aged
- Check the power of the UV Controller System
- Check the power of the Chiller unit
- Check the coolant level
- Check the coolant pipe, if cut or bend

### UV Ink is not Fully Cured

- Lamp power density is small
- Photo initiator in UV ink is not enough
- Curing time is short or environmental temperature is low
- Distance between lamp and media is too far







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