



Daily-Jet Operation Manual

This manual is including machine introduction, operation, maintenance and reference to air pressure and electricity.

Menu

[Chapter 1 Safety!.....Page 2](#)

[Chapter 2 Company ProfilePage 7](#)

[Chapter 3 Product IntroductionPage 8](#)

[Chapter 4 Operation InstructionPage 12](#)

[Chapter 5 Electricity, Air Pressure and Ink
ChannelsPage35](#)

[Chapter 6 Service and
MaintenancePage 40](#)

[Chapter 7 Common Problems
and TreatmentPage 45](#)

Chapter 1 Safety!

Those signs are to make sure operators to use the machine safely, prevent injuries to human and damages to machine. There are 3 levels as 'Note, Warning, Danger' due to different damages or urgency. Safety is priority when operating this machine!



Note

Risk of injuries to someone and damages to parts if mis-operation.



Warning

Risk of huge injuries or death to someone if mis-operation



Danger

Risk of huge injuries or death to someone if no avoid of this urgent danger



Warning

1. The usage of this product is determined and responsible by the designer or constitutor, because of the diversification of working conditions, and the necessity of analyzing and testing the expected performance and safety of this system. If reconstruction, please refer to newest product information and specification, and consider of potential malfunction.
2. This product must be mechanically installed, operated, and serviced by personnel who has enough knowledge and experience.
3. Make sure to use and disassemble this product under mechanic/equipment safety.
 - Use or maintenance mechanic parts/equipment after confirming prevention of incontrollable falling parts and moving.
 - Disassemble mechanic parts/equipment after safety precautions above are confirmed, main power is cut off and specific attentional items are clear.
 - Reboot mechanic parts/equipment after confirming prevention of un-expectable movement and malfunction
4. Consult our company beforehand if use this product under conditions or environment below, meanwhile considering safety regulations.
 - Outdoor or direct sunlight or other conditions and environment not mentioned in this manual.
 - Near nuclear, railway, aircraft, spaceship, ship, vehicle, military, medical, drink/food equipment. Near burning unit, entertainment facilities, emergency cut-off circuit, Clutch for punching machine, brake circuit, safety equipment and etc.
 - In the condition of greatly effecting human body and property, especially safety caution needed.
 - When using interlock circuit, set double interlock and mechanically protect against malfunction. Also periodically check these protection system if working properly.

 **Warning**

This product is provided to manufacturing industry and peaceful places. For other purposes, please advise to our company and change specifications and agreement.

■ **Limited Warranty/Applicable Conditions**

This product is applied to “Limited Warranty” , “Applicable Conditions” below

Please use this product based on content below

『 Limited Warranty 』



1. Warranty is 1 year from start of using this product. (※1)
2. Replacement or Parts changing is under 1 year warranty only/if we are responsible to those errors and damages.
3. Please refer to other warranty specifications.

※1 Print-head is not applicable to this warranty statement

『 Applicable Conditions 』

Must comply with local currency and trading laws and regulations when exporting this product.

■ **Sign Description**

Sign	Meaning of signs
	Prohibited (Not allowed) Details will show in the signs or indicated by drawing or in literal
	Force to(Must do) Details will show in the signs or indicated by drawing or in literal

■ **About Operator**

1. This manual is for operator who has enough knowledge and experience, to operate, assemble and maintenance the equipment
2. Please read and understand this manual carefully, to assemble, operate and maintenance the equipment.

■ Safety Attentions

Warning	
 禁止分解	<ul style="list-style-type: none"> ■ Don't disassemble/rebuild/fix by oneself (including PCBs and Print-heads) Could cause human injuries or machine damage
 禁止	<ul style="list-style-type: none"> ■ Don't use this product out of specification range <ul style="list-style-type: none"> · Don't use flammable or human-harmful gas or airflow · Using this product out of the range could cause fire, malfunction, damage and etc. · Please use it base on specifications confirmed.
 禁止	<ul style="list-style-type: none"> ■ Don't use it in inflammable and explosive condition Could cause fire and explosion This product is not constructed with anti-explosion system
 禁止	<ul style="list-style-type: none"> ■ Don't use it in electrostatic field Could cause system errors
 指示	<ul style="list-style-type: none"> ■ In the case of using in interlock circuit <ul style="list-style-type: none"> · Please set multiple interlock circuit constituted by other systems(mechanically protection function) · Periodically check the protection system if working properly Could cause accident by malfunction
 指示	<ul style="list-style-type: none"> ■ In service or maintenance <ul style="list-style-type: none"> · Main power off · Air pressure released Could cause human injuries

Warning	
 禁止接触	<ul style="list-style-type: none"> ■ Don't touch wire connectors and terminals when power is on Could get a electrical shock, malfunction, switch damage and etc
 指示	<ul style="list-style-type: none"> ■ After service or maintenance, check appropriate function and leakage. When there is malfunction or leakage, stop running it When there is leakage or sensor damage, must turn off power and air pressure Don't supply air pressure when there is leakage Mis-operating without safety sense is not allowed

■ Operation Attentions

● Operation Matters

* Assembly and installation

- . Please follow rules to tighten screws
If over tight, could break the screws or tools. If not tight enough, screws and parts to be tight could loose and move
- . Do not touch surface of print-head by hand during installation, or it could reduce print quality
- . Leveling
If not leveled, will cause bad print and Print-head damage
- . Do not drop, hit, crash
It could damage the accuracy of assembly, and make parts malfunction.
- . Make sure tubes and fittings are firmly connected when installing tubes in the machine
If not, could cause air or ink leakage
- . Use an air-gun to blow out dust or dirt before assemble the tubes
Or it could cause parts damage or malfunction

* Operation Condition

- . Do not use it near water place.
Or it could cause error, malfunction. Please use isolation room or chamber.
- . Do not use it near corrosive gases or liquid.
It could cause parts/equipment damage, print-head damage, malfunction
- . Do not use it near electricity surge place.
It could cause damage circuit element or relative parts by electricity-surge equipment such as electromagnetic elevator, electromagnetic oven, motors etc. Please also separate the cables from electricity surge of power supply and do not use electricity-surge load.
- . There is no specific tolerance of thunder-strike in CE certification, please set up protection unit from lightening for the equipment. Excessive interference will change settings even if this is a CE certificated product.
- . Please install it in a non-quake, non-crash place.
Or it could cause errors and malfunction
- . Please avoid of any wiring debris falling into the equipment
Or it could cause errors and malfunction
- . Do not use it in widely-fluctuate temperature place.
Over the normal temperature, it could effect badly the ink and inner parts of the equipment.
- . Do not use it in direct sunlight
Shelter from direct sunlight, or could cause errors and malfunction

-
- . Make sure temperature of ink and working condition, and humidity is within the specific range when using the equipment

Temperature is at the range of 20~30 °C, humidity is at a range of 60%~70%RH

If the temperature is too low or too high, print-heads could be damaged because the ink characteristics change. If the humidity is too low, ink will dry up at the surface of nozzle of print-head.

- . Pleas do not use it in a place containing hot resource and radiation.
Or it could cause bad movement

Chapter 2 Company Profile

Bihong[®] Printing Machinery Co, Ltd (Pingyang Shunlong Packaging Machinery Co, Ltd)was founded in 2008, owns the brand machine, cutting machine, bag-making machine and other related equipment.

BIHONG[®] and Guangzhou Bihong Printing Equipment Co. Ltd was established in 2016. We have our own professional R&D team, specialized in researching, producing and selling high quality automatic screen printing machine, digital printing

For now, most enterprises face with the recruitment difficulty, especially the work of screen printing type is more difficult to recruit, the product profit shirking. Our company adheres to the "improve the production efficiency, reduce production costs, reduce the number of labor"as our own duty, and is committed to providing customers with high quality digital printing machine and automatic oval t-shirt printing machine. Our equipments are now widely used in printing material of t-shirt, PVC/PET/PC/PE, paper, cloth, leather, sticker, non-woven fabric, textile and so on.

We enjoy much reputation abroad due to our strong ability, professional staff and perfect after-sales service. Recently, with our continuous efforts, innovations and rigorously quality control, we have received increasing orders from all over the world.

We will continue to develop our skills and designs to meet the demands of our clients all over the world

Copy rights reserved by Bihong, any infringement will be investigated and affixed legal liability. There may be some errors in the manual, it is welcome to point out and correct them. To make better manual to make better service.

Chapter 3 Product Introduction

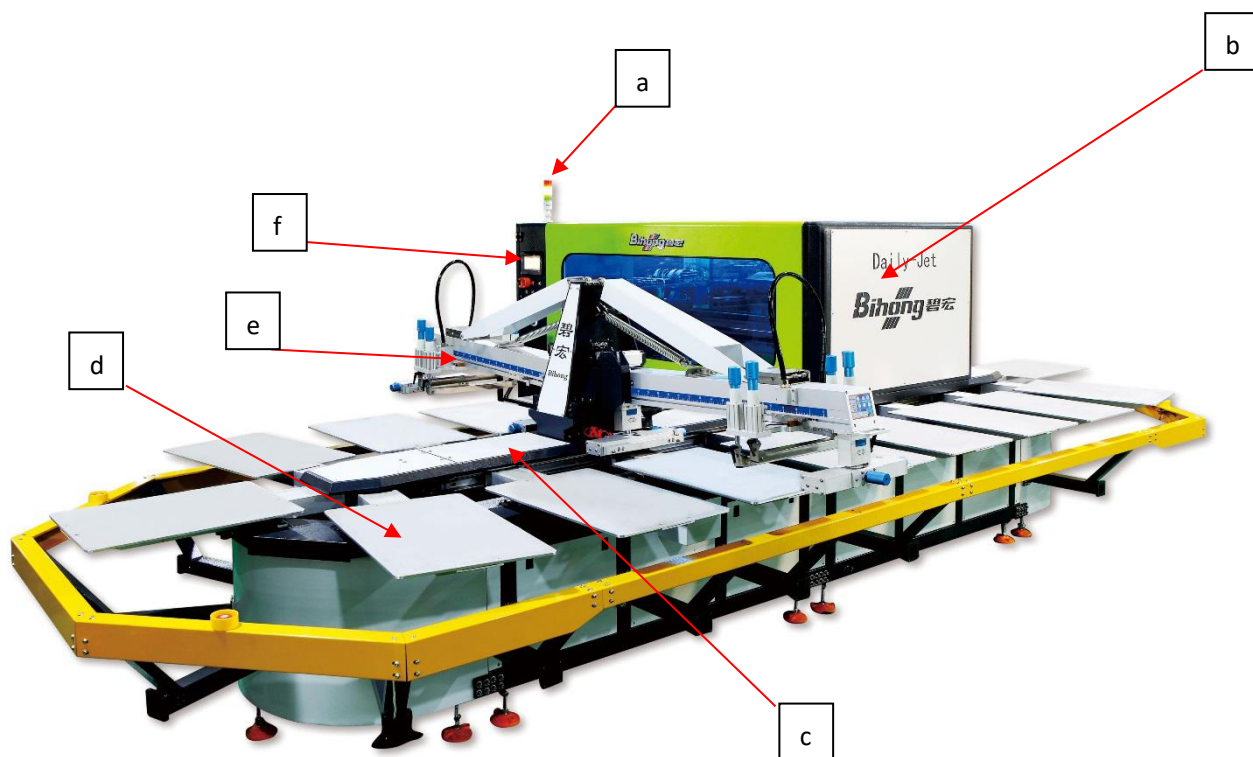
1. Overview

Daily-Jet (D-Jet) is a multi function digital printer, a combination of oval screen printing and Starfire printhead digital printing. It can achieve traditional screen printing process such as water slurry, paste, ink, flocking, foaming, flash powder, stereo, gel, crack and metal, while at the same time realize the advantage of high precision, no-plate making, and bright colors of digital printing, which can perfectly meets the command for garments and fabrics printing.

Daily-Jet use industrial Star-fire print-head or Epson High Precision print-head. It can print in four colors to meet the requirement of high resolution and fast production.

2. Structure

A. Overview Description



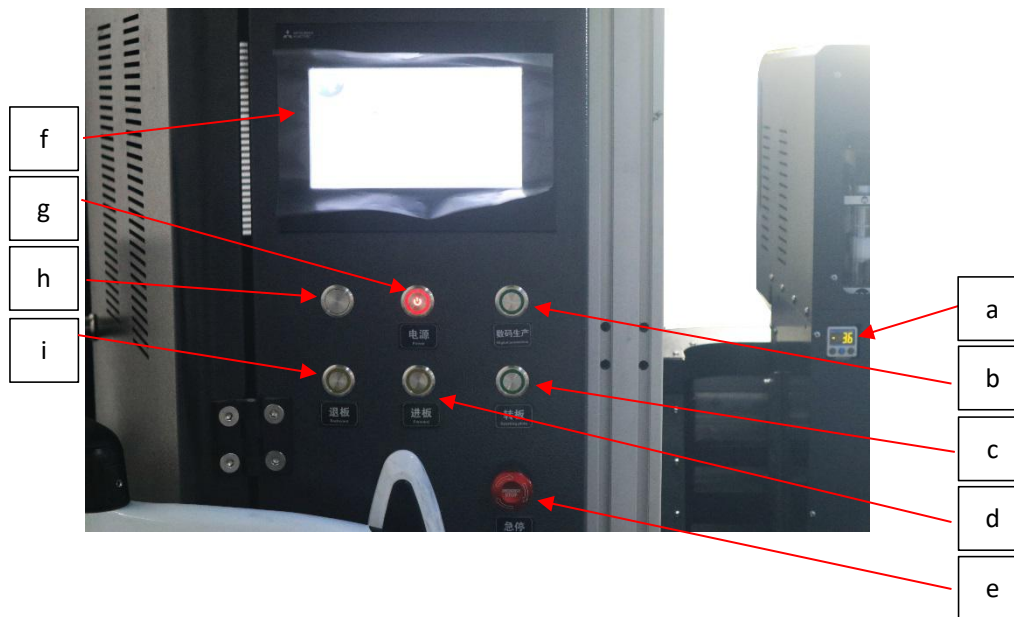
a. 3-Color ALARM, to give alarm when there is an attention or problem

Light color	status	Alarm for	Note
Green	On	Ready	
Yellow	Blinking	Printing	
Red	Blinking	Error Alarm	Need to check or inquire of supplier

b. Digital machine, main body of digital printing.

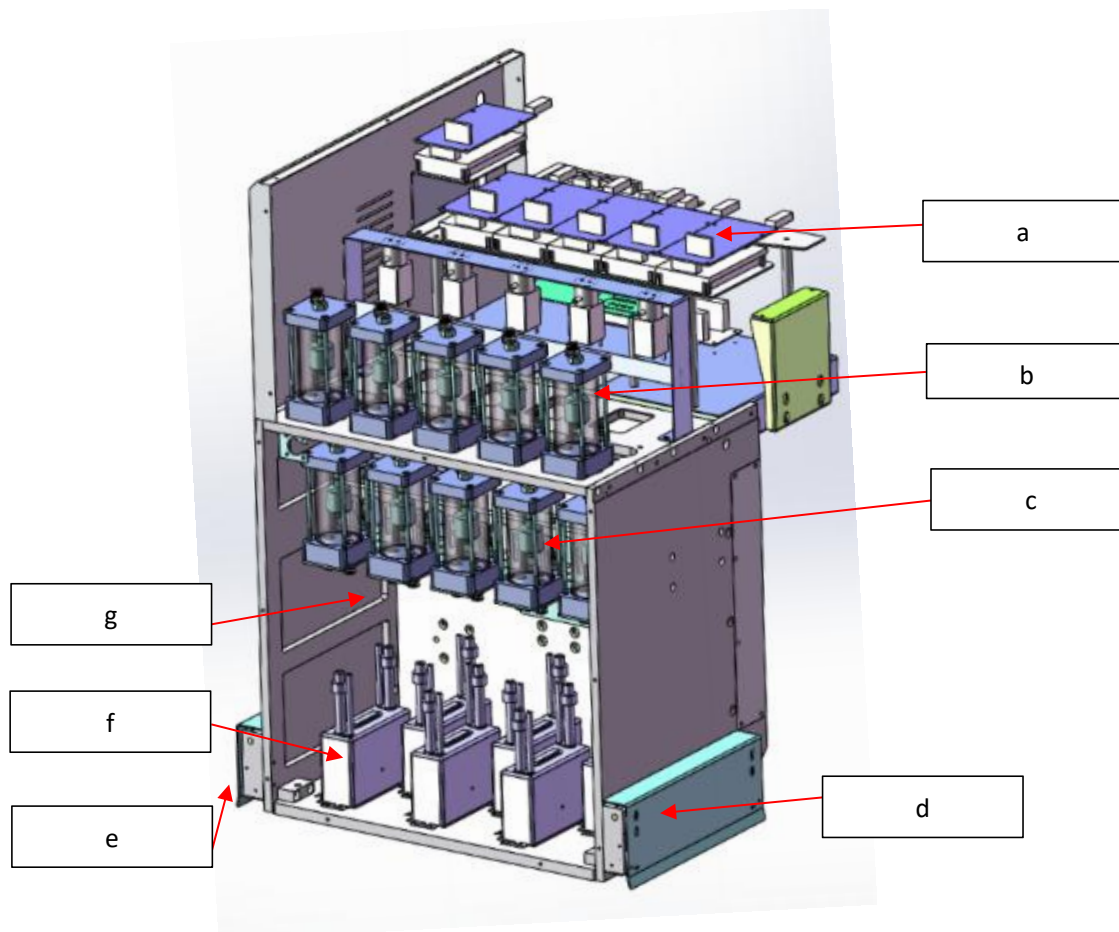
- c. Oval machine, for oval screen printing。
- d. Pallet, the main platform for printing for loading fabrics.
- e. Print station, a core component for screen printing.
- f. Operating Platform, operating and controlling the equipment.

B、Operating Platform



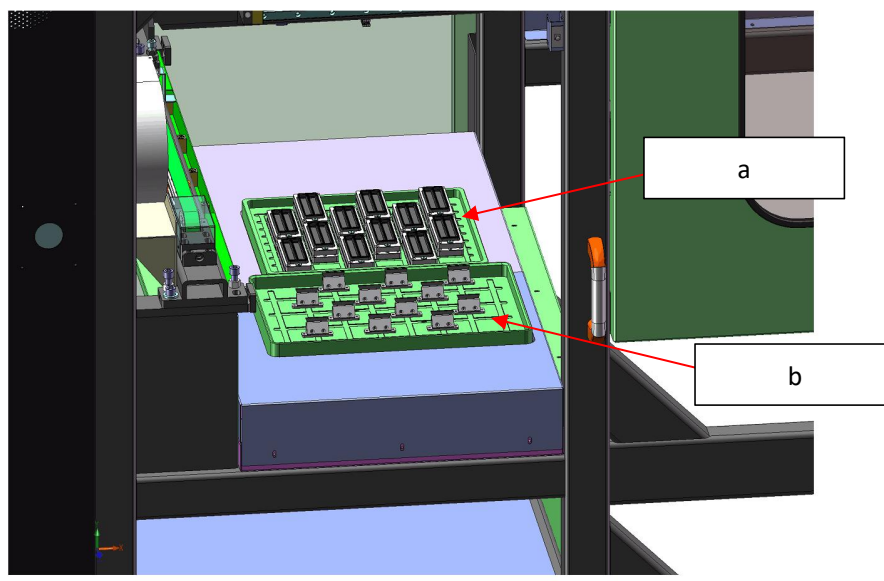
- a. N. pressure gauge, displays and controls Negative Pressure.
- b. Digital production, start oval digital production mode.
- c. Rotating plate, automatically rotate the pallet.
- d. Forward: rotate the pallet clockwise.
- e. Emergency Stop, stops danger movement but not powers off.
- f. Touch Screen, a control interface of the equipment.
- g. Power: startup switch for equipment.
- h. Switchlight, switch for lighting the digital chassis.
- i. Backward, rotate the pallet anticlockwise.

C、Head Carriage



- a. Head Board, Control and drive print-heads
- b. Ink Cartridges, Core Parts for Printing to supply ink
- c. Ink Recirculation Cartridges, same like ink cartridge but lower For ink recirculation
- d. Right Safety Bar, to avoid hitting the heads in case of getting obstacles inside
- e. Left Safety Bar, to avoid hitting the heads in case of getting obstacles inside。
- f. print-heads, Most Core Print Components
- g. N. pressure box, stabilize Negative Pressure and store waste ink if bubbles come in

D、Capping and Cleaning Component:

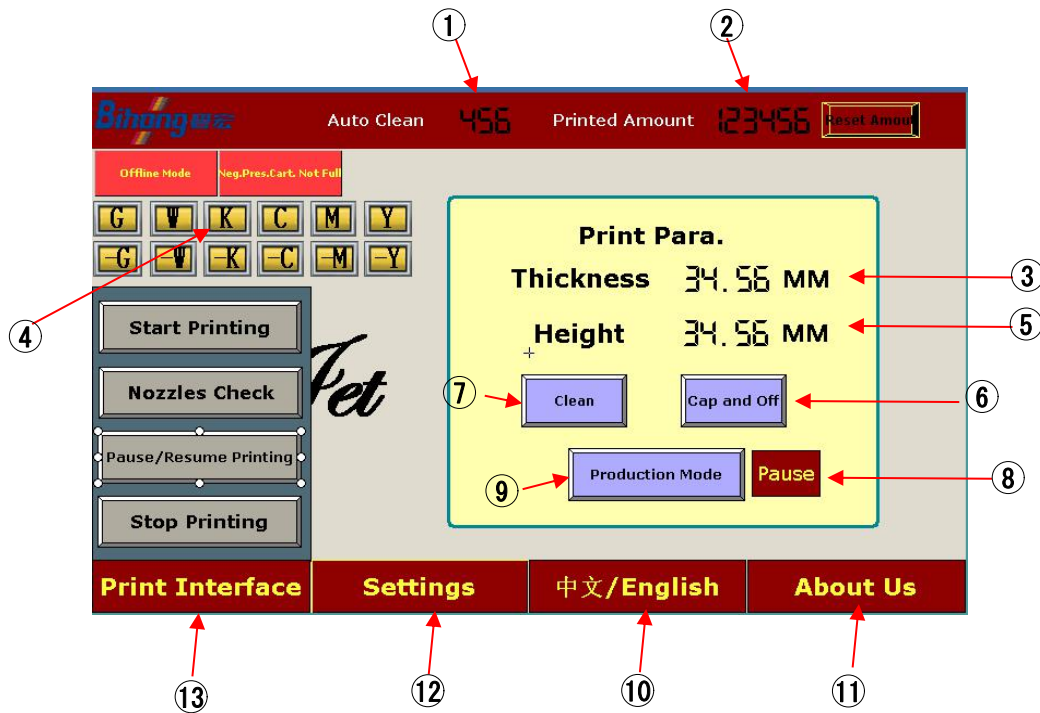


- a. Capping Station, Capping the nozzles when the machine is turned off, to avoid air comes in to dry up and make clogging. And please note, these caps need to be cleaned every day.
- b. Cleaning Station, when cleaning , the wipers will wipe off the ink drops on the nozzles. And please note, these wipers need to be cleaned every day.

Chapter 4 Operation Instruction

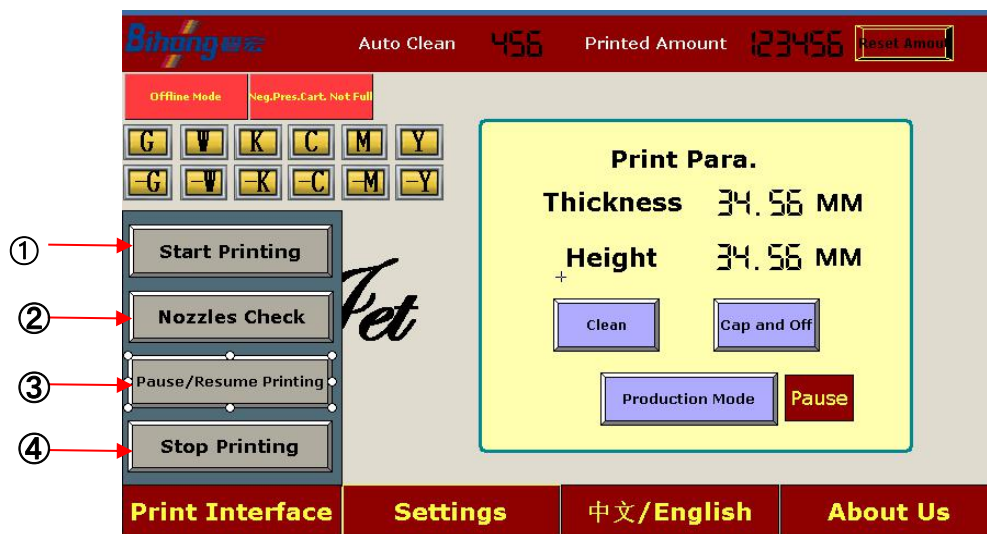
I . Touch Interface

1. Homepage (Main Interface)



- ① Set number of printed to clean heads automatically
- ② Production Count, reset to zero
- ③ Set correct fabric thickness to keep correct print height
- ④ Show current height
- ⑤ Clean and cap the nozzles before powers off automatically
- ⑥ Pause printing
- ⑦ Clean heads when there are clogging or white lines. Please refer to [Chp4-I-1.3 Settings] to set more
- ⑧ Production mode active/de-active with oval machine.
- ⑨ Provide information about our company
- ⑩ Press to change CHN/ENG language
- ⑪ Set parameters and adjustment for equipment in settings interface
- ⑫ Operation related to Printing
- ⑬ Show status including pumps, online/offline, n.pre. cartridge, more details in Para.4 this chapter

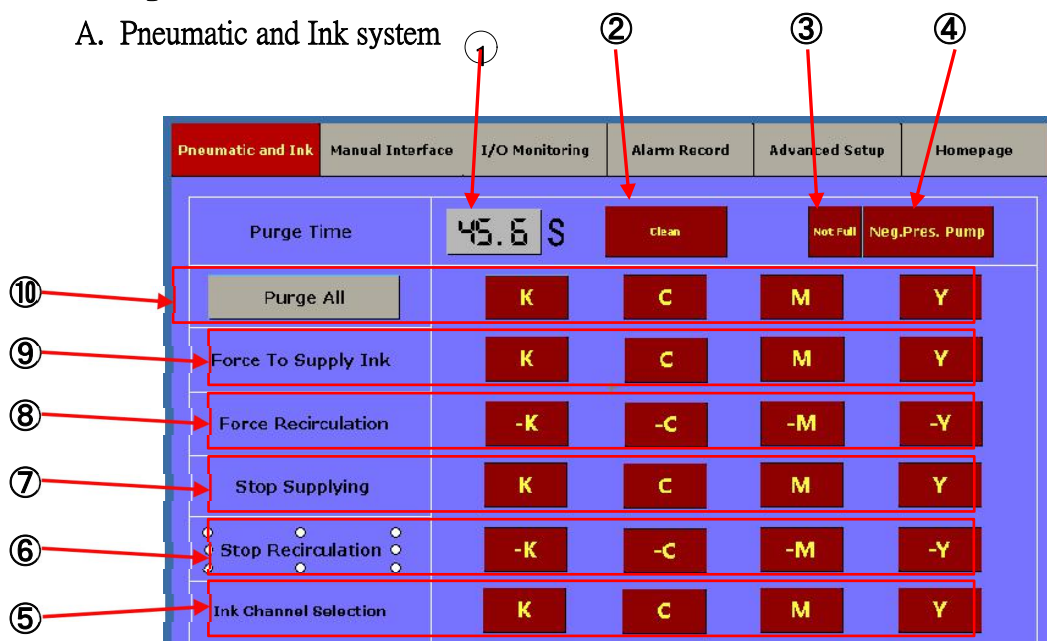
2. Printing Interface



- ① Press to print selected image in PrinterManager (computer interface)
- ② Print Nozzles Check pattern
- ③ Pause/Resume current print job
- ④ Abort current print job

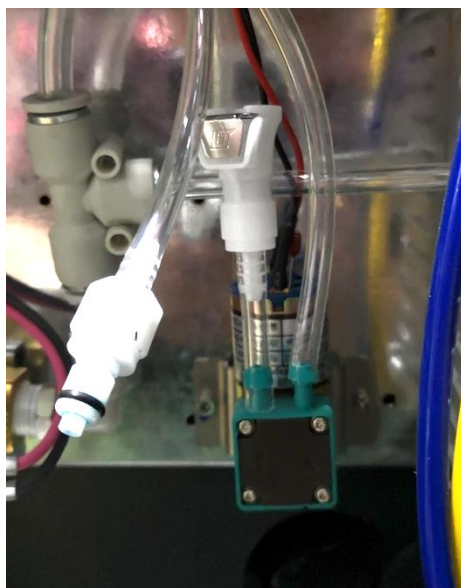
3. Settings

A. Pneumatic and Ink system



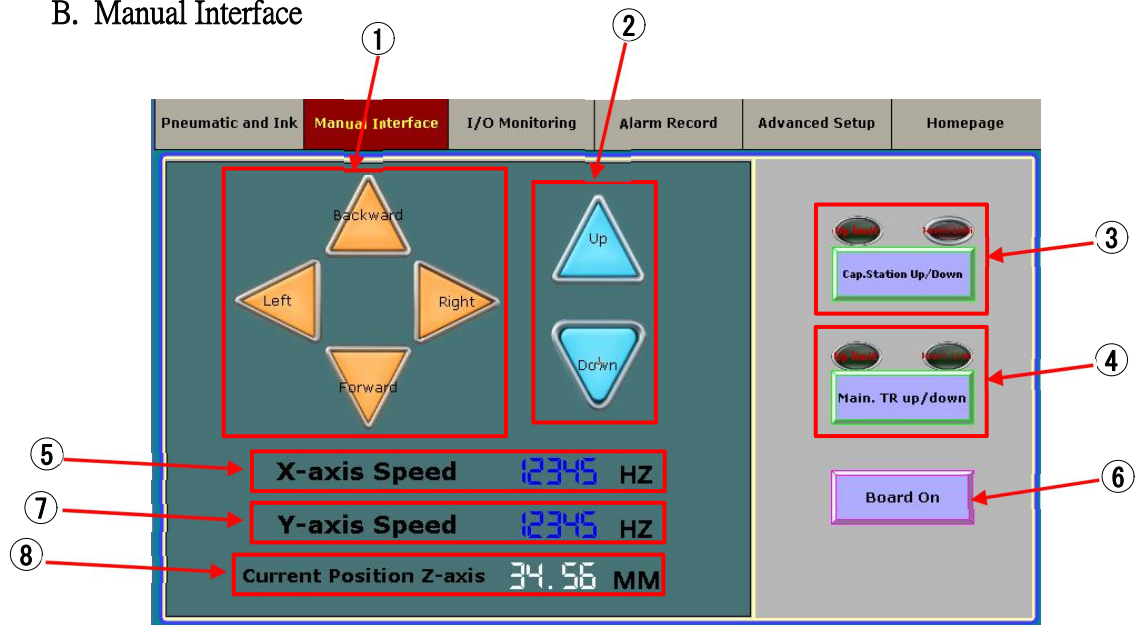
- ① Set purge time to clean heads
- ② Purge and wipe to clean heads

-
- ③ Not Full: Waste ink is not full in the N. pres. cartridge (normal)
Full: The N. Pres. Cartridge is full of waste ink, this is abnormal. Must use N. Pres. Pump to pump out the waste ink.
- ④ N. Pres. Pump: For pumping out the waste ink in the N. Pres. Cartridge (operate at a frequency of pressing 3 seconds and release 1 second)
- Note: In case of air leakage, the tube below is normally disconnected. Connect it by the quick couplers before pumping.**



- ⑤ Ink Channel Selection: Selection working ink channels, normally CMYK all selected.
- ⑥ Stop Recirculation: Stop recirculation pump separately in maintenance if needed
- ⑦ Stop Supplying: Stop supplying ink if needed
- ⑧ Force Recirculation: Keep recirculation pump running all the time
- ⑨ Force to supply ink: Force to keep supplying pump on all the time
- ⑩ Purge all: Purge all will purge all colors, purge single color if press K/C/M/Y separately

B. Manual Interface



- ① Off line mode, move head carriage/crossbar to 4 directions manually.
- ② Move head carriage (Z) up or down. Back to Homepage at normal height
- ③ Move Capping Station up or down, with lights on up/down limit
Not Available in the new models
- ④ Move Maintenance tray up or down, with lights on up/down limit
Not Available in the new models
- ⑤ Turn off power of the boards separately
Not Available in the new models
- ⑥ Adjust the speed of manual X (head carriage) movement
- ⑦ Adjust the speed of manual Y (crossbar) movement
- ⑧ Show current Z-position

C. I/O Monitoring

Check all current I/O status, to help solve problems.

D. Alarm Record

Pneumatic and Ink	Manual Interface	I/O Monitoring	Alarm Record	Advanced Setup	Homepage																																								
<table border="1"> <thead> <tr> <th>Error Time</th> <th>Error Details</th> </tr> </thead> <tbody> <tr><td>19/01/02 16:07</td><td>Return to Main Interface Not Finished!</td></tr> <tr><td>19/01/02 16:07</td><td>Ini. Not Finished!</td></tr> <tr><td>19/01/02 16:07</td><td>Cap and Off Not Finished!</td></tr> <tr><td>19/01/02 16:07</td><td>Cleaning Not Finished!</td></tr> <tr><td>19/01/02 16:07</td><td>Printing Not Finished!</td></tr> <tr><td>19/01/02 16:07</td><td>Timeout Table Zero Pos.!</td></tr> <tr><td>19/01/02 16:07</td><td>Timeout H.Carriage Zero Pos.!</td></tr> <tr><td>19/01/02 16:07</td><td>Timeout Cap.ST Down!</td></tr> <tr><td>19/01/02 16:07</td><td>Timeout Main.TR Front!</td></tr> <tr><td>19/01/02 16:07</td><td>Timeout Main.TR Back!</td></tr> <tr><td>19/01/02 16:07</td><td>Timeout Cap.ST Up!</td></tr> <tr><td>19/01/02 16:07</td><td>No Cleaning Feedback!</td></tr> <tr><td>19/01/02 16:07</td><td>No Step Movement</td></tr> <tr><td>19/01/02 16:07</td><td>In Pause Feedback by Controlboard!</td></tr> <tr><td>19/01/02 16:07</td><td>PM Not Open!</td></tr> <tr><td>19/01/02 16:07</td><td>Neg.Pres.Cart. Not Full!</td></tr> <tr><td>19/01/02 16:07</td><td>Neg.Pres.Cart. Is Full!</td></tr> <tr><td>19/01/02 16:07</td><td>Moving!</td></tr> <tr><td>19/01/02 16:07</td><td>H.Carriage Not In Print Pos.!</td></tr> </tbody> </table>						Error Time	Error Details	19/01/02 16:07	Return to Main Interface Not Finished!	19/01/02 16:07	Ini. Not Finished!	19/01/02 16:07	Cap and Off Not Finished!	19/01/02 16:07	Cleaning Not Finished!	19/01/02 16:07	Printing Not Finished!	19/01/02 16:07	Timeout Table Zero Pos.!	19/01/02 16:07	Timeout H.Carriage Zero Pos.!	19/01/02 16:07	Timeout Cap.ST Down!	19/01/02 16:07	Timeout Main.TR Front!	19/01/02 16:07	Timeout Main.TR Back!	19/01/02 16:07	Timeout Cap.ST Up!	19/01/02 16:07	No Cleaning Feedback!	19/01/02 16:07	No Step Movement	19/01/02 16:07	In Pause Feedback by Controlboard!	19/01/02 16:07	PM Not Open!	19/01/02 16:07	Neg.Pres.Cart. Not Full!	19/01/02 16:07	Neg.Pres.Cart. Is Full!	19/01/02 16:07	Moving!	19/01/02 16:07	H.Carriage Not In Print Pos.!
Error Time	Error Details																																												
19/01/02 16:07	Return to Main Interface Not Finished!																																												
19/01/02 16:07	Ini. Not Finished!																																												
19/01/02 16:07	Cap and Off Not Finished!																																												
19/01/02 16:07	Cleaning Not Finished!																																												
19/01/02 16:07	Printing Not Finished!																																												
19/01/02 16:07	Timeout Table Zero Pos.!																																												
19/01/02 16:07	Timeout H.Carriage Zero Pos.!																																												
19/01/02 16:07	Timeout Cap.ST Down!																																												
19/01/02 16:07	Timeout Main.TR Front!																																												
19/01/02 16:07	Timeout Main.TR Back!																																												
19/01/02 16:07	Timeout Cap.ST Up!																																												
19/01/02 16:07	No Cleaning Feedback!																																												
19/01/02 16:07	No Step Movement																																												
19/01/02 16:07	In Pause Feedback by Controlboard!																																												
19/01/02 16:07	PM Not Open!																																												
19/01/02 16:07	Neg.Pres.Cart. Not Full!																																												
19/01/02 16:07	Neg.Pres.Cart. Is Full!																																												
19/01/02 16:07	Moving!																																												
19/01/02 16:07	H.Carriage Not In Print Pos.!																																												

Recording Alarm information

E. Advanced Setup

For advanced engineer limited mode, please contact us for further information

F. Homepage

Back to homepage (main interface)

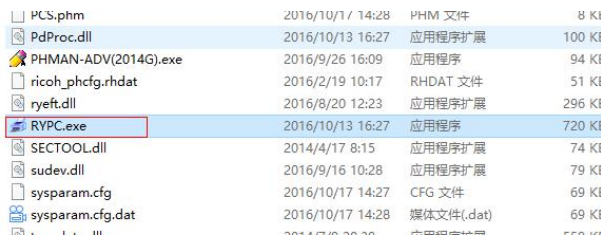
4. Status



- ① Show Offline mode status, can't print in this mode
- ② Show Full/Not Full in Negative Press Cartridge
- ③ Ink supply timeout, press indicated color if supplying needed
- ④ Recirculation timeout, press indicated color if recirculation needed.

II .Running Software

1. After setting the parameter, save and exit, then run the software:



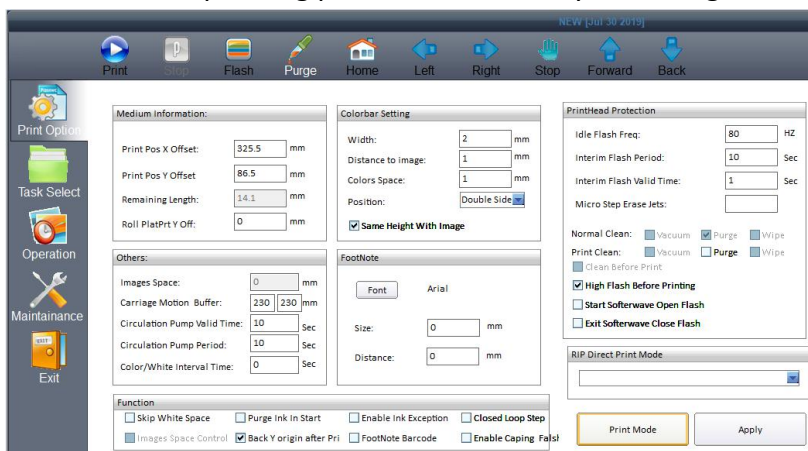
When running the software for the first time, please wait patiently until the system initialization succeeds.(if the error is reported, please return to check)As shown in the figure.

2019.8.23 10:50 System Start , Version2.1.2.6 2014.07.28
 Hardware Firmware Initializing
 Load Configuration File
 System Authorization Check
 Wait Online...

[Success
 [Success
 [Success
 [Success

2. Parameter input

Fill in the corresponding parameters correctly according to the machine characteristic:



Medium Information	Print Pos X Offset	Set the distance between X-Origin of the outermost print-head and the starting point of material
	Print Pos Y Offset	Set the distance between Y-Origin of the head carriage and the starting point of the platform
	Remaining Length	N/A
	Roll PlatPrt Y Off	Y offset of roll to roll printer system
Colorbar Setting	Distance to image	Set the distance between color bar and image
	Colors Space	Set the distance between color bars (when 0,

		color bars overlap)
	Position	The position of the color bar can be set on the left or right side of the image, or not print the color bar
	Same Height With Image	Set color bar the same height with image when checked

PrintHead Protection	Idle Flash Freq	Set the print-head flash frequency when the printer is at standby to prevent the nozzle from blocking due to long-term non-operation
	Interim Flash Period	Interim flash period at standby
	Interim Flash Valid Time	Duration of flash at standby
	Normal Clean	Check it on your own needs. if no such function, do not check
	Print Clean	Choose Purge
	High Flash Before Printing	Check it on your own needs. if no such function, do not check
	Start Software Open Flash	
	Exit Software Close Flash	
Others	Image space	No such function
	Carriage Motion Buffer	The distance from the starting point of the head carriage to the starting point of PASS printing
	Circulation Pump Valid Time	
	Circulation Pump Period	
	Color/White Interval Time	
FootNote	Font	Font settings with footnotes when printing
	Size	
	Distance	
Function	/	Check relevant options as needed

3. Motion setting

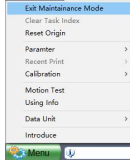
3.1.Run the software until it prompts successfully, as shown in the figure:

2019-8-23 10:50 System Start . Version2.1.2.6 2014-07-28
Hardware Firmware Initializing
Load Configuration File
System Authorization Check

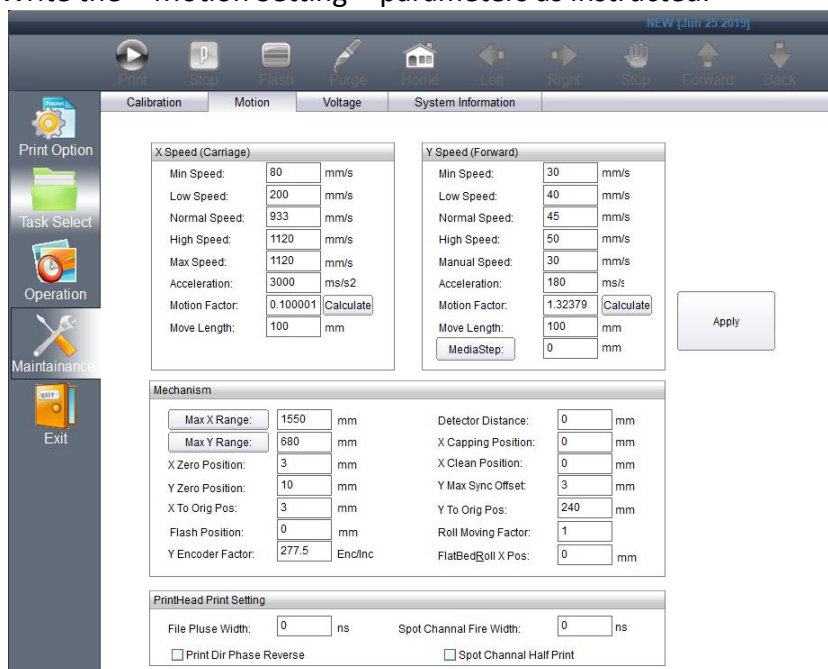
[Success
[Success
[Success
[Success

Wait Online...

3.2.Click on the software ‘Main Menu’ - ‘Enter Maintenance Password’ -enter the password ‘retc_000’ or ‘000000’



3.3. Write the “Motion Setting” parameters as instructed.



X Speed(Carriage)	Min Speed	Set the reset speed of head carriage (manual speed)
	Low Speed	Set the speed of carriage printing at low speed
	Normal Speed	Set the speed of carriage printing at normal speed
	High Speed	Set the speed of carriage printing at high speed
	Max Speed	Set the max moving speed of head carriage
	Acceleration	Set the acceleration of head carriage movement
	Motion Factor	The equivalent coefficient of X motor pulse and step value can be calculated automatically by clicking the test button.
	Move Length	Set the distance of each manual movement of the head carriage
Y Speed(Forward)	Min Speed	Set the speed of manual forward and back
	Low Speed	Set the low speed of forward
	Normal Speed	Set the normal speed of forward
	High Speed	Set the high speed of forward
	Max speed	Set the max speed of forward
	Acceleration	Set the acceleration of forward

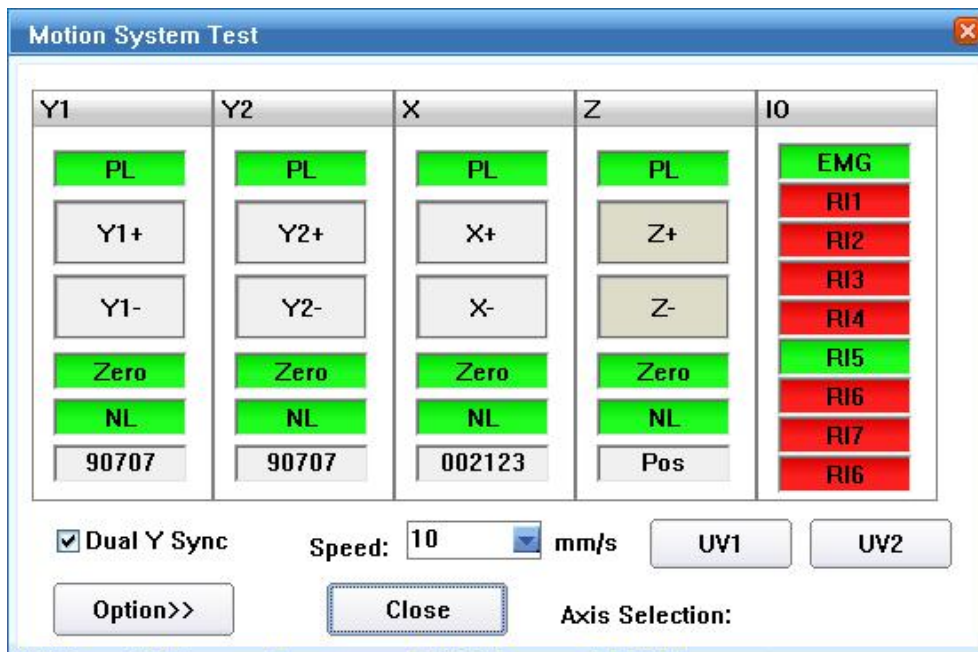
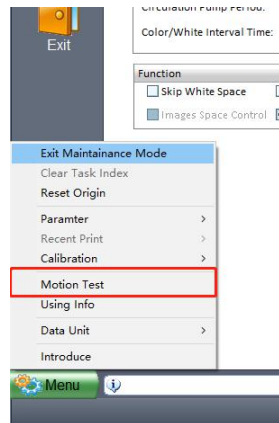
	Motion Factor	Equivalent coefficient for Y-axis motor pulse and step value if encoder installed
	Move Length	Set the distance of each manual forward
Mechanism (Display only in Maintenance Mode)	Max X Range	Set the maximum allowable range for the head carriage
	Max Y Range	Setting the maximum allowable range of the platform
	X Zero Position	The standby position of head carriage when the machine is working. The value is the referenced height to reset position.
	Y Encoder Factor	See below for details
	Detector Distance	Distance of a detector to print heads at Zero position if installed
	X Capping Position	Distance of capping position to X-zero
	X Clean Position	Distance of clean position to X-zero
	Y Max Sync Offset	Protective value of printer installed with dual Y-axis motor to prevent excessive error, and it is recommended to be set within 10mm.
	Roll Moving Factor	Y moving factor of roll to roll printer
PrintHead Print Setting	No settings required	/

Note: Acceleration formula:

$$a=V^2/2S$$

V: Top speed S:Head carriage motion buffer length (Under parameter setting page)

3.4.Click on **Menu-Motion Test**



3.4.1 Trigger the corresponding X, Y zero and limit switches on the machine, and observe whether the corresponding indication information turns red. Normally it is required to be green without triggering and red after triggering.

3.4.2. Click X + or X -, and observe the headway and the feedback counting of the lower side. If the head carriage moves away from zero, the reading increases, moves to zero, and the count decreases, then the direction of grating encoder is correct. Conversely, phase A and phase B of X grating encoder need to be changed.

Note: X + and X - can not represent the actual direction of the head carriage movement. The purpose of text is to make the actual direction of movement consistent with the increasing direction of feedback counting.

3.4.3. Similarly, click Y + or Y - to observe Y movement. If Y feeds back to the unassembled position, the encoder can neglect the feedback counting problem. Usually the roll printer has no counting, and the platform and the belt guide have counting)

Note: If a Dual Y-axis motor is installed on the pallet printer, if only one side of the Y-axis movement is found, check the wiring, etc. Ensure consistency of parameters of the two Y drivers.

3.4.4. After successful test, close the window of the Motion System Test

3.4.5. Hold down the keyboard ctrl+→ or ctrl+←



Observe the moving direction of the head carriage. If it is consistent with arrow direction, the moving direction is correct. (Head carriage X may move in only one direction, if a certain moving direction is consistent with the direction of the arrow, then the moving direction is correct.) Similarly, hold Ctrl+ ↑ and Ctrl+ ↓ , and observe the headway.

If the moving direction is opposite, it is necessary to enter the Motion System Test. Check the direction of X and Y movement as needed, and click the Apply button to save.

3.4.6. Fill in the corresponding parameters according to the mechanical design parameters (refer to the software manual). Click on the "X Speed (Carriage)" - "Motion Factor" - "Calculate" shown in the figure above. Then the head will move for a short distance and automatically calculate the value. Y motion factor is usually roll printer without Y counting feedback uninstalled. Manual calculation is required. The computational method is to fill in 1 in 'Motion Factor' and fill in 100 in 'Manual Speed'. After clicking 'Apply', make a mark on the print material and click the 'Forward' button in the software. At this point, the material will forward a distance of S1 (millimeter unit),

$$\mathbf{Y \text{ Motion Factor} = 100/S1。}$$

When the Y-axis is equipped with feedback counting, it is usually a pallet printer. The measurement coefficients of Y-encoder need to be calculated. The Y-axis feedback counts are divided into driver feedback counts and grating counts:

When the motor driver is connected to the feedback counting, the number of pulses of the motor turning one circle driver is n. The stroke of the motor turning one circle Y axis is S.

$$\mathbf{\text{Measurement Coefficient of Encoder} = n/s}$$

When Y-axis counts connected gratings, grating DPI is divided by 25.4. For example, when 1u grating is used.

$$\mathbf{\text{Measurement Coefficient of Encoder} = 25400/25.4 = 1000}$$

Fill in the correct values in the position of the figure below. After application, click "Y Speed" - "Motion Factor" - "Calculate". The parameters will be automatically calculated, and then click on "Apply" again. Set "Move Length" to 100mm or 500mm to observe whether the move length of Y matches.

Y Speed (Forward)

Min Speed: mm/s

Low Speed: mm/s

Normal Speed: mm/s

High Speed: mm/s

Manual Speed: mm/s

Acceleration: ms/s

Motion Factor:

Move Length: mm

mm

4. Calibration before printing

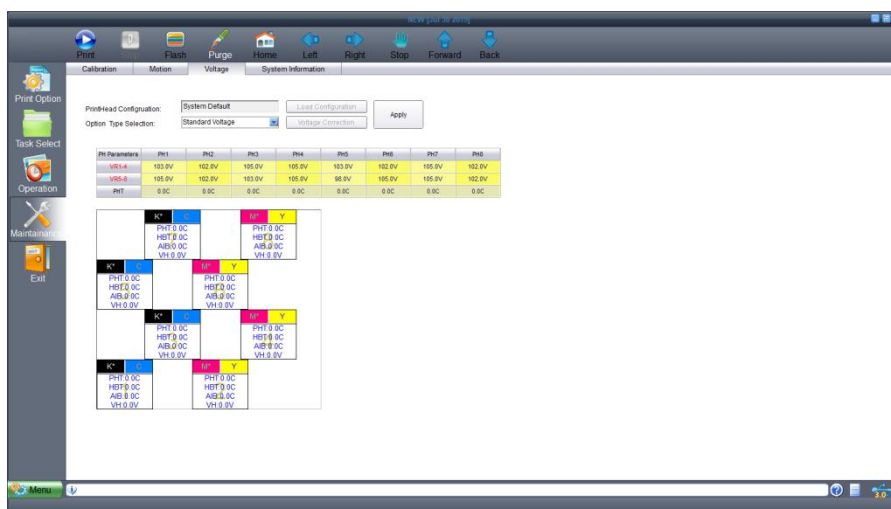
Note: Only connect to the print-head and enter the next text after all the Motion Test and circuit are normal. Generally, the actual print height is 3.5mm - 3.8mm. Please make sure that the print height is appropriate after print-head installation.

4.1. Print-head Voltage

4.1.1 Voltage and Temperature setting

It is recommended to first set the print-head temperature and Voltage Correction to 0

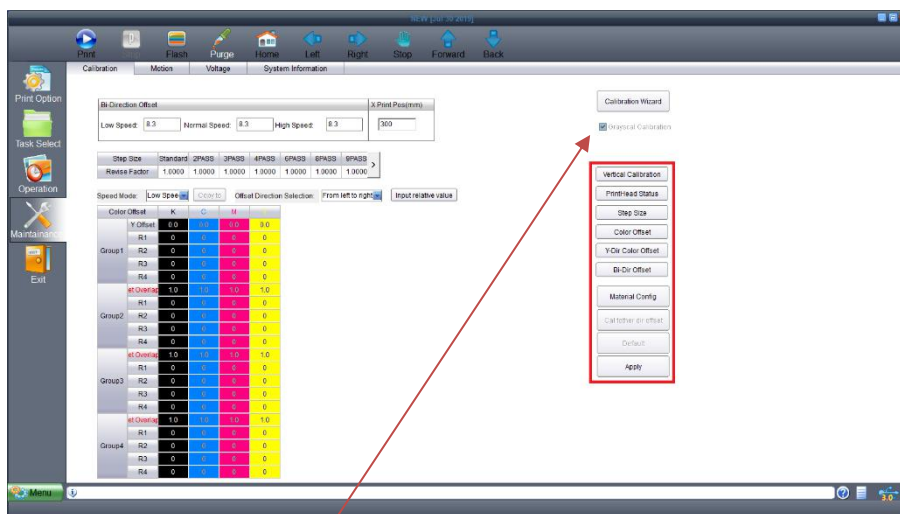
Check if the print-head voltage of each corresponding channel is correct. Generally, the Starfire print-head voltage is between 95V and 105V, and check if the temperature displayed is consistent with the same value.



4.1.2 Check the print-head status, which requires the correct color correspondence, all nozzles normal inking, sharp line edges, no flying ink, linear line and not dotted.

4.2. Calibration

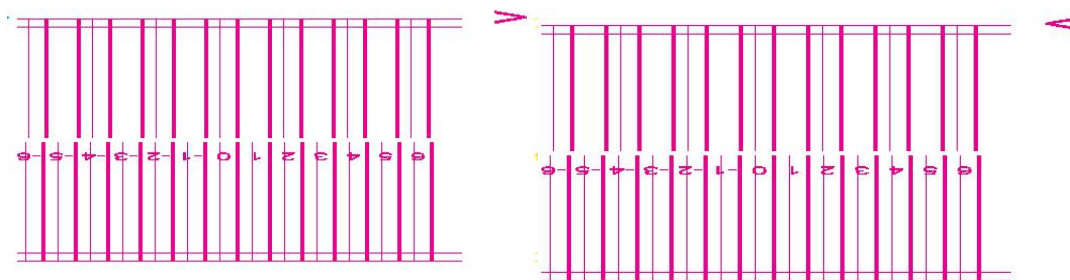
In order to print at high quality, you need to adjust the following:



Uncheck “Grayscale Calibration” and press “Apply” firstly, If print fixed dots.

Note: Calibration can be divided into gray level calibration and non-gray level calibration. The two modes can be calibrated separately.

4.2.1 Vertical Calibration



The system detects the vertical installation of the print-head by printing the above calibration chart. It will print the vertical calibration chart of two directions. (The upper right side of the figure is marked by direction). First detect the one-way right, whether the upper and lower lines of the zero mark coincide. If coincide then it indicates the accuracy of the vertical installation of the print-head, if not then adjust the installation angle of the print-head to correct the verticality by mechanical adjustment, and adjust it in the following two cases.

The upper and lower lines of negative numbers coincide

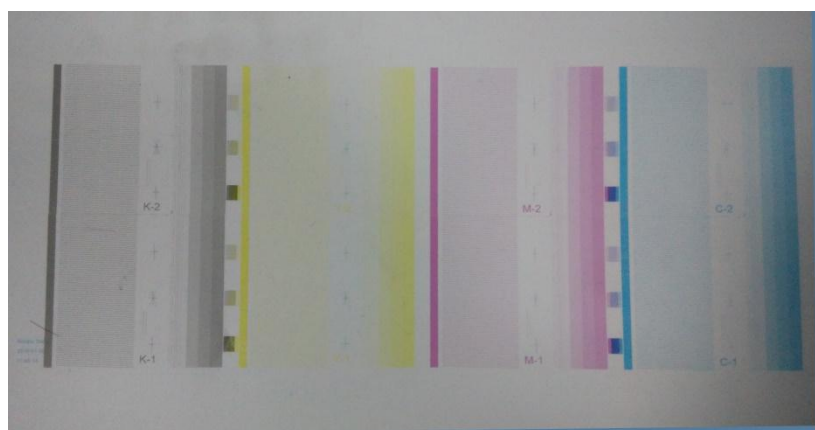
The upper and lower lines of positive numbers coincide



After adjusting to the right, the same method checks whether the calibration map to the left is consistent. If it is not consistent, it means that there is deviation in the horizontal direction of the base plate of head carriage . After adjusting, the two directions can be consistent.

4.2.2. Print-head status

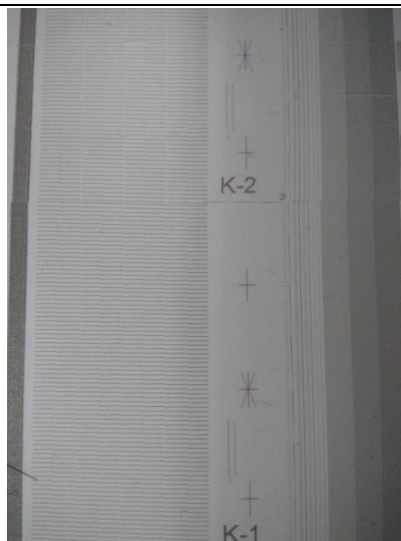
Click on the print-head status menu, and the machine prints out the following patterns (Example are the effect of 4-color /2 groups of print-head)



This chart can examine the working status and printing time of each print-head.

When using multi-row print-heads, the upper and lower nozzles need 1 to 3 overlapping nozzles.

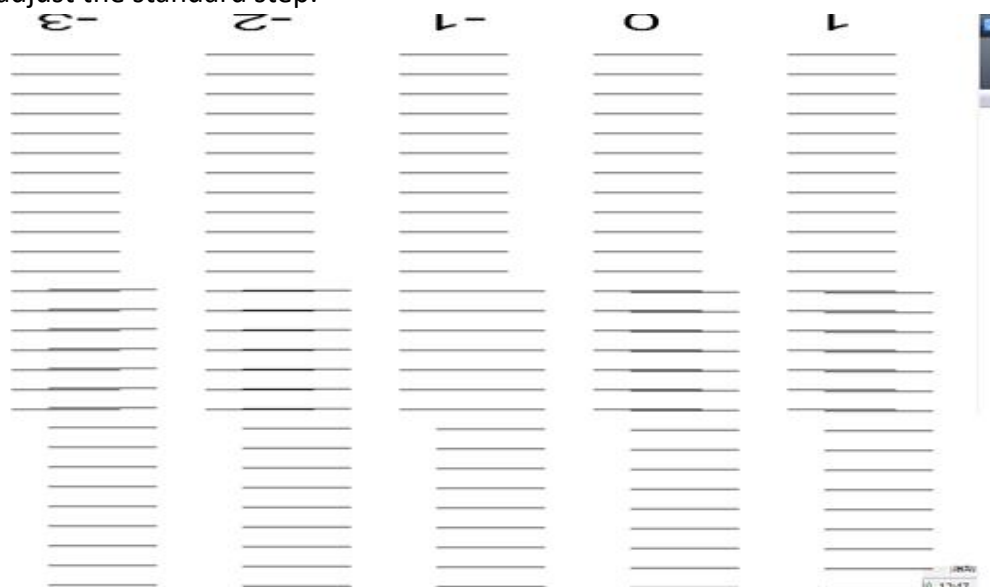
Color Offset		K	C	M	Y
Group1	Y Offset	0.0	0.0	0.0	0.0
	R1	0	0	0	0
	R2	0	0	0	0
	R3	0	0	0	0
	R4	0	0	0	0
Group2	let Overlap	1.0	1.0	1.0	1.0
	R1	0	0	0	0
	R2	0	0	0	0
	R3	0	0	0	0
	R4	0	0	0	0



When the number of overlapping nozzles is set to three, group 2 nozzles have a numeric 3 mark at the junction, and the bottom three nozzles of K2 will make three calibration lines, and the top three nozzles of K1 will also make three calibration lines. By fine adjusting the physical position of the print head, the upper and lower alignment lines are completely coincided, indicating that the calibration is completed. This step should correspond with the print head mechanical installation position before and after calibration. When adjusting, it should not affect the verticality, and when adjusting the verticality, it should not affect the number of overlapping nozzles either.

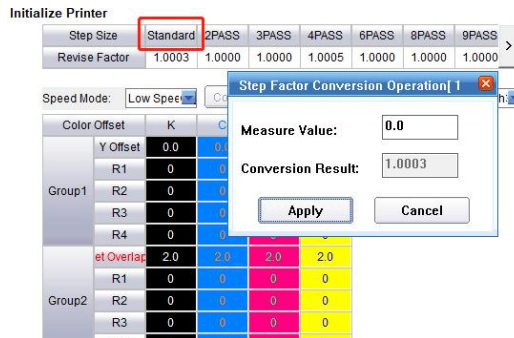
4.2.3. Step adjustment

The stepping difference relationship of different printing modes may be different, depending on the error between the Y-axis motion equivalent factor of the system and the absolute positive value of the system and the difference of machinery. Firstly, adjust the standard step:



Find out the corresponding values of the line groups that overlap completely from

the calibration chart. If there are no lines that overlap completely, you can also estimate the decimal number according to the relationship between the best-overlap line group and the side line group. Click on "Standard" and pop up the dialog box. Fill in the read data into the "Measure Value" and then "Apply".



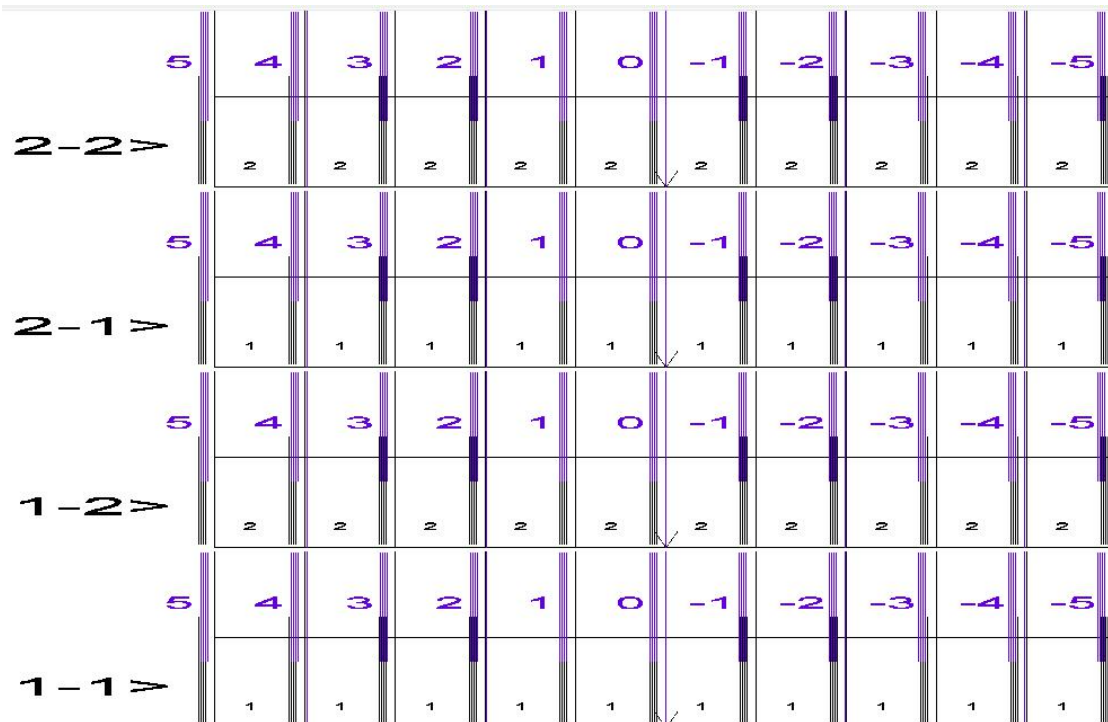
Print Stand Step Calibration Chart again and observe whether it is aligned at the zero-scale position. If aligned, it has been calibrated. After standard step is calibrated, check the accuracy of other Pass steps in turn. If not, each Pass needs to be calibrated independently with the above methods.

4.2.4.X-direction calibration of Print-head

In order to make the printing contents of each print-head cover together, it is necessary to adjust the color offset value of each print-head. The offset value is often different in different printing directions and different head carriage moving speeds. Calibrate low, normal and high speeds separately, and the two directions need to be calibrated separately.



Read out the corresponding direction offset value of the print-head from the correction unit in the printout. The method of reading is to find out the value of the line or color that best coincides reference color with the horizontal direction of the calibrated color.



Click "input relative value" and fill in the "input X calibration value" for each color read out. Repeat printing the chromatogram until it is aligned at the 0-scale position, indicating that the calibration is completed.

Speed Mode: Offset Direction Selection:

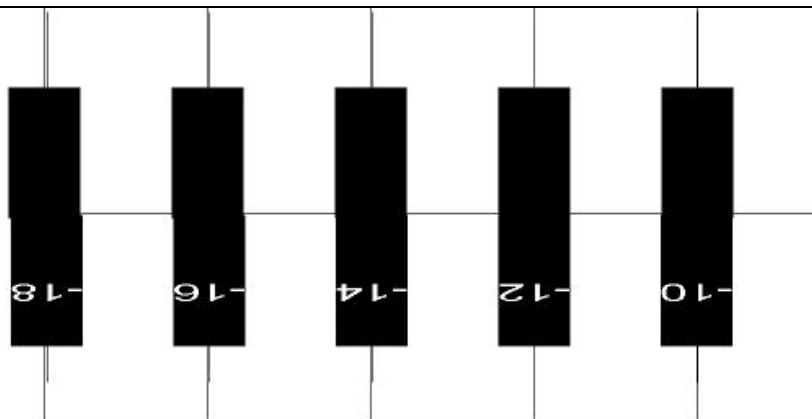
Color Offset		K	C	M	Y
Group1	Y Offset	0.0	0.0	0.0	0.0
	R1	0	0	0	0
	R2	0	0	0	0
	R3	0	0	0	0
	R4	0	0	0	0
Group2	et Overlap	2.0	2.0	2.0	2.0
	R1	0	0	0	0
	R2	0	0	0	0
	R3	0	0	0	0
	R4	0	0	0	0

4.2.5. Y-direction offset of print-head

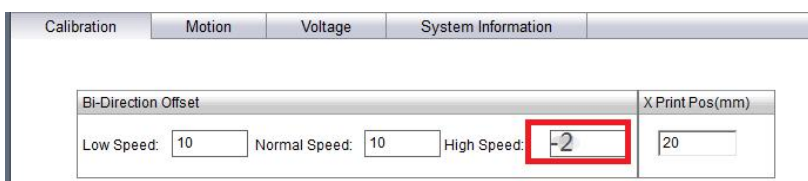
Find out the line with the best overlap between the calibration color and the reference color, and add the corresponding value with the original value of Y-direction offset to get a new value of Y-direction offset.

4.2.6. Bi-Direction offset calibration

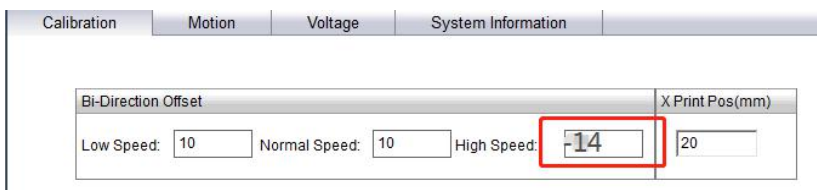
In Bi-Direction printing, because of different printing speed, there is a positioning gap between the Bi-Direction prints. Therefore, it is necessary to correct the Bi-Direction Offset at different speeds. From the print test menu, select Bi-Direction Offset calibration at the corresponding speeds, and print out the correction pictures as follow.



For example, the figure above is aligned at - 12 position and printed at high speed. The original Bi-Direction Offset is as follow:

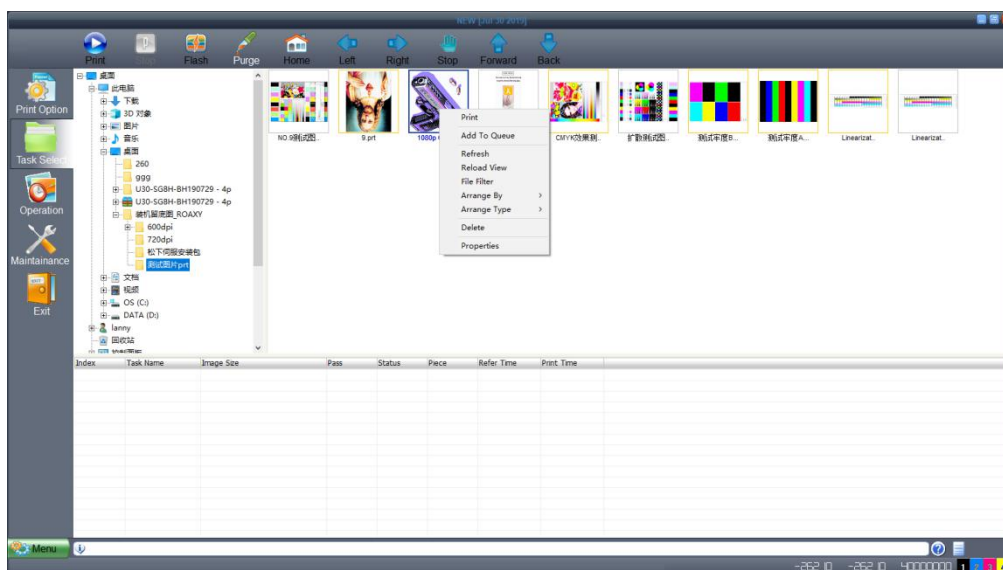


Then fill in the value of $-2 + (-12) = -14$, and apply.



Print Bi-Direction Offset again, and eventually keep the 0-scale position aligned, indicating that the calibration is completed.

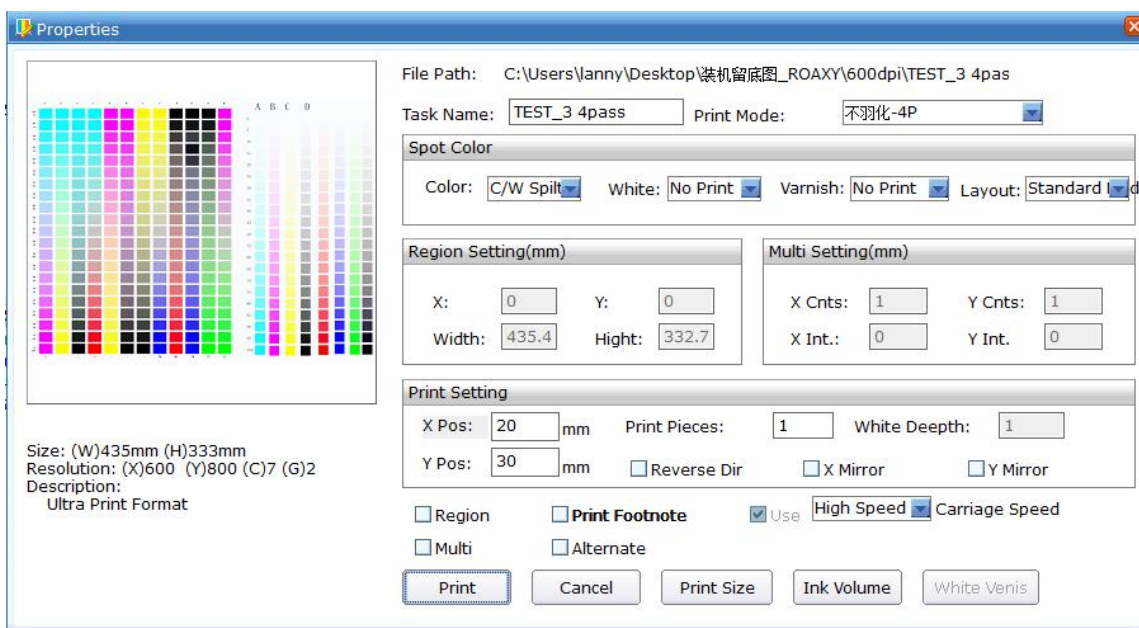
5. Start printing



Click 'Task Selection' of the Wizard button to open the action page. This page is composed of directory browsing, RIP file preview browsing and print list.

5.1.1. Select the folder where the RIP file is stored from the directory browsing. In the RIP file preview browsing, all the RIP files that can be identified under this folder will be displayed. In the RIP file preview area, double-click the RIP file to be printed with the mouse, and pop up the confirmation box of the print settings. After dot printing, it can be added to the print queue and started printing.

When a print task is added, the system will pop up the print task property setting confirmation box. Allow users to reset the number of printing PASS, set region printing and multiple printing, and add footnote printing content.



Size	Picture size, mm unit
Resolution	X, Y resolution (C) color numbers (G) 4L :4-leveled grey 2L:2 means fixed dot
Description	RIP software
File Path	Path location of this file
Task Name	Task name
Print Mode	Software generally defaults to the number of Pass printed for this task, and can also print other supported PASS modes as needed.
Region Setting	Set the starting point and size of X and Y for region printing
Multi Setting	The Amplitude and Spacing of X and Y in Multi-format Printing for the Same Task
Print Setting	X pos, Y pos; Print Pieces; Reverse Direction (only supporting platform machine) ;Forward and reverse alternation (platform machine) ; Turn off color (for general

	debugging) ;
Region	Choose whether to do region printing
Multi	Choose whether to do multiple printing
Mirror	Choose whether to do mirror printing
Use	Choose printing speed
Ink Volume	Accurately counting the amount of ink used in current tasks

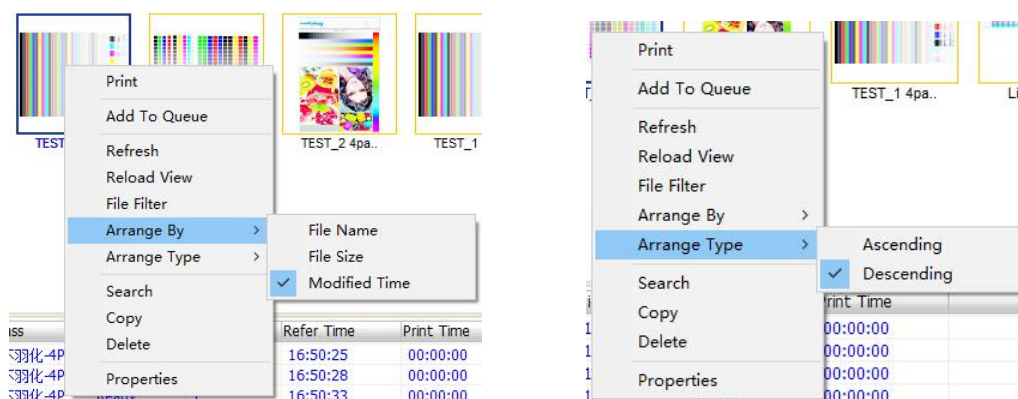
5.1.2.RIP file preview operation

Quick look file

Click on the preview area of the file, If you know the RIP file name, you can enter the first few letters, and the system can quickly select the file.

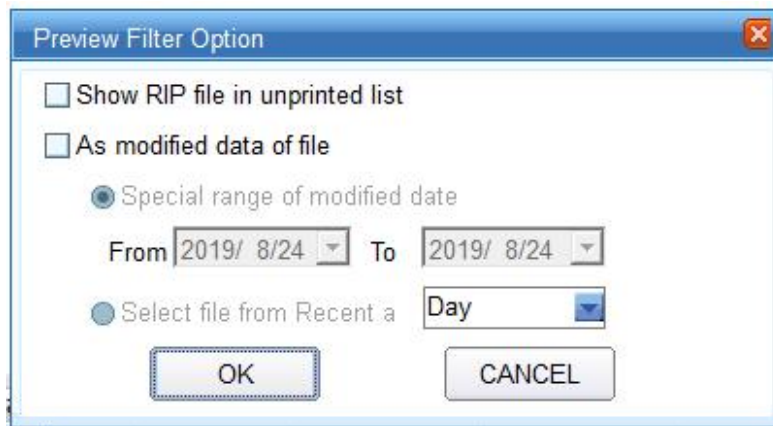
Preview files are displayed in order of rules

Preview can be sorted and displayed by RIP file name,size, and modification date, and can be set in ascending or descending order. Right-click the mouse to pop up the function menu.Select the appropriate sorting method and sorting rule menu.



c.Preview Filter Option

Preview filter option can be expected to display only the qualified files according to certain filtering rules. Filter settings are operated by clicking on “File Filter” in the Functional Menu. After clicking, a following operation interface will pop up.



Filter option can be set to display only unprinted RIP files, or to filter according to the modification date of the files. Filter option will be saved. The next time you open the software, RIP files will be displayed according to the previous filter setting.

d. File refresh

If the files in the previewed file directory have been added or changed, you need to refresh the view by clicking Refresh in the function menu. The shortcut key is F5.

e. File deletion

The selected file can be deleted directly in the preview area. Please be careful when operating, the operation file will be permanently deleted from the disk.

6.1.3.Print queue function operation

Index	Task Name	Image Size	Pass	Status	Piece	Refer Time	Print Time
323	TEST_2_4pass	W:210.0mm H:297.0mm (0.06s...	不羽化-4P	Ready	1	16:50:25	00:00:00
324	TEST_1_4pass	W:360.4mm H:280.0mm (0.10s...	不羽化-4P	Ready			00:00:00
325	Linearization_600	W:264.7mm H:69.1mm (0.02sq...	不羽化-4P	Ready			00:00:00
326	TEST_6pass	W:435.4mm H:332.7mm (0.14s...	不羽化-6P	Ready			00:00:00

Printing tasks submitted by users are first placed in the print queue. Printing jobs are done by the printer in the order of the print queue. Users can adjust the priority of tasks in the queue, print settings, delete tasks and other operations at any time according to their needs.

Print queue display description:

Index	Identification number assigned by the system for each printing task
Task Name	Task name set by the user when submitting the task. If then the

	user do not the task name, the default name is the RIP file name.
Image size	Display the size of the actual print image, which is not the same as the size of the RIP original image, but related to the setting of region printing and multiple printing
Pass	PASS number for task printing
Status	Refers to task status. A total of Ready, Print, Pause, Abort four status,only one task may be in Print or Pause status at any time
Refer time	The time to summit task to print queue
Print time	Time spent when the task is in print

Operating instruction:

Start Print:Click 'Print' button or select the 'Start Printing' from the right-click menu to start print queue

Stop Print Queue:Click the "Stop" button or select the "Stop Printing Queue" from the right-click menu to stop printing queue

Priority: Select the task to be operated on and select the adjustment mode from the right-click menu. The priority of the task will be adjusted according to the setting

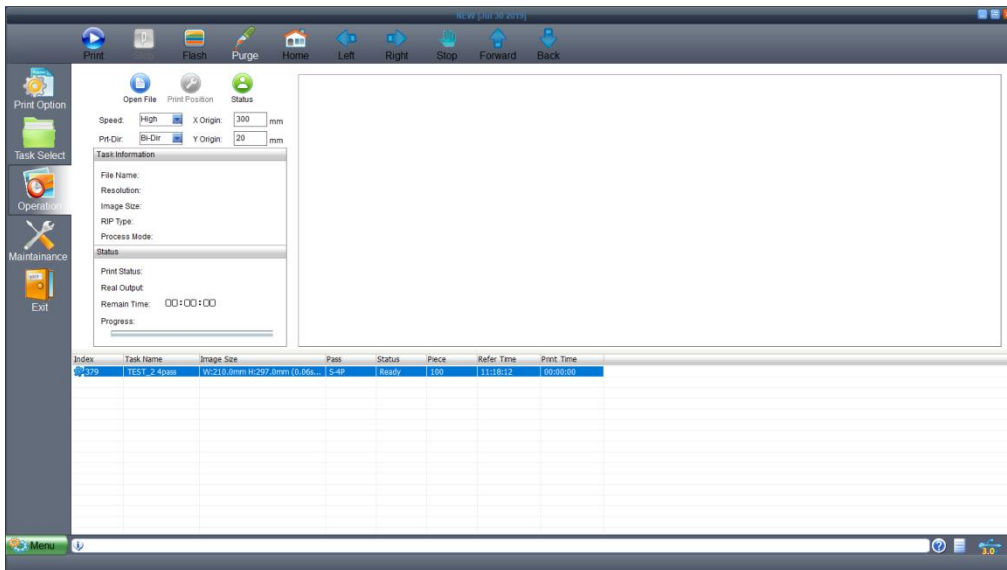
Delete Task: Select the tasks in the list, you can select multiple options. Delete task by the Delete key of the keypad, or from the right-click menu

Properties: Double-click on the task item or select 'Properties' from the right-click menu to pop up the task settings interface, at which time you can change the settings of the tasks in the ready state.

Restart: For aborted tasks or task stops caused by unexpected halt, the previous printing can be continued by restarting printing

Stop Current Task: Stop current print task, but does not stop print queue, and executes the next task after the current task ends

6.Print control



Click 'Print Control' of the Wizard button to open the operation page. This page is used for printing control, displaying task information, progress status, and printing preview.

Print control consist of the following functions

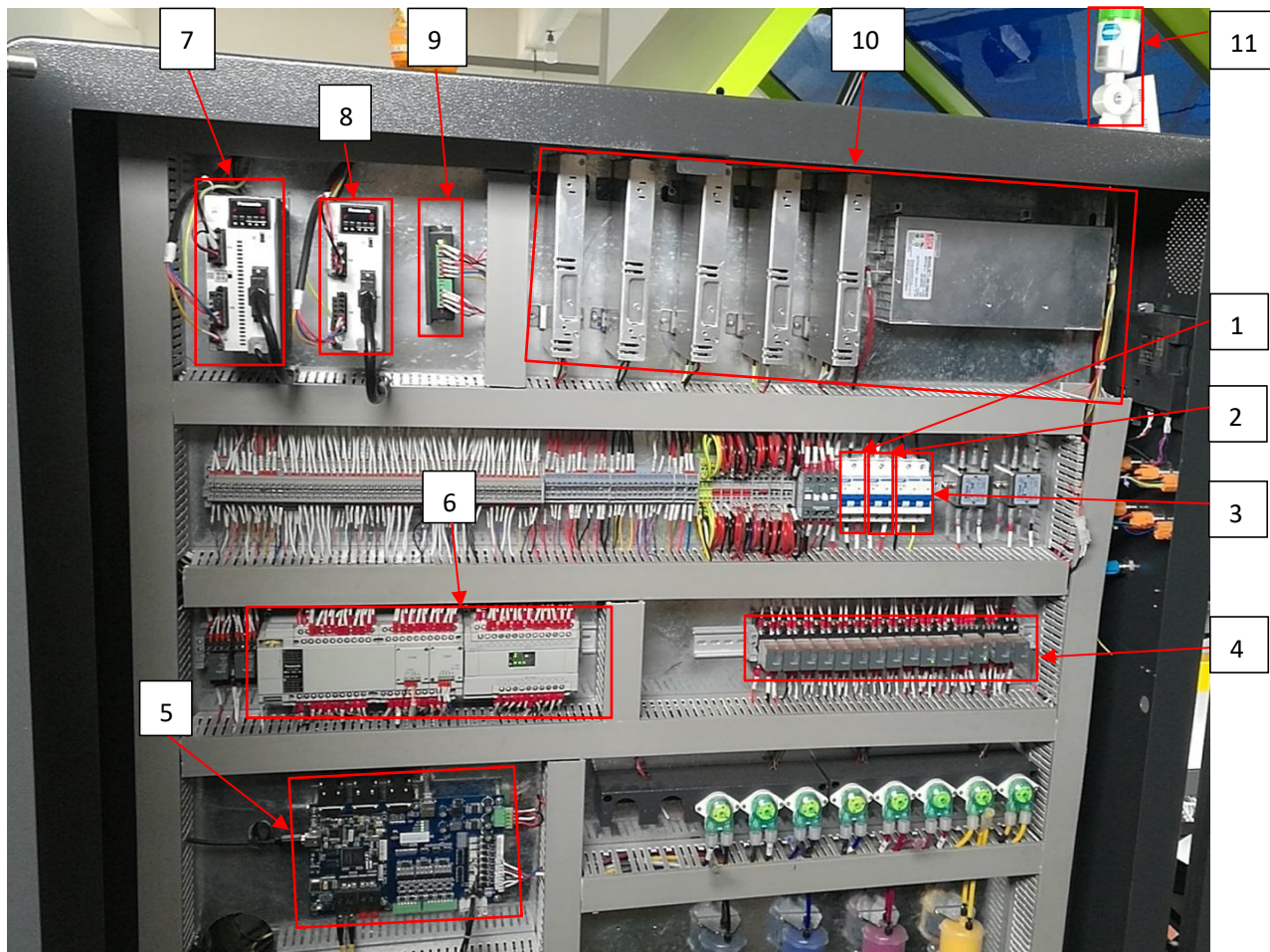
Open File	Open the file to be printed and add it to the print list
Print Position	Set the current position on the right side of the head carriage as the starting point of printing. Head carriage can be removed by pressing CTRL+keyboard direction key
Status	Print the nozzle status chart to observe the working status of print-head
X Origin	Set the starting point of head carriage for printing
Y Origin	Set the starting point of the material for printing
Speed	Moving speed of head carriage can be dynamically adjusted when printing
Prt-Dir	Current effective printing direction can be dynamically adjusted, and set to one-way or two-way when printing

Printing status information

Task Information	Display size, resolution and other information of the printout
Real Output	Display current printing output in square per hour
Remain Time	Estimating the remaining time required for the current printing task
Progress	The number of PASS completed shows the progress of printing, and the corresponding position of printing is indicated in the preview

Chapter 5 Electricity, Air pressure and Ink Channels

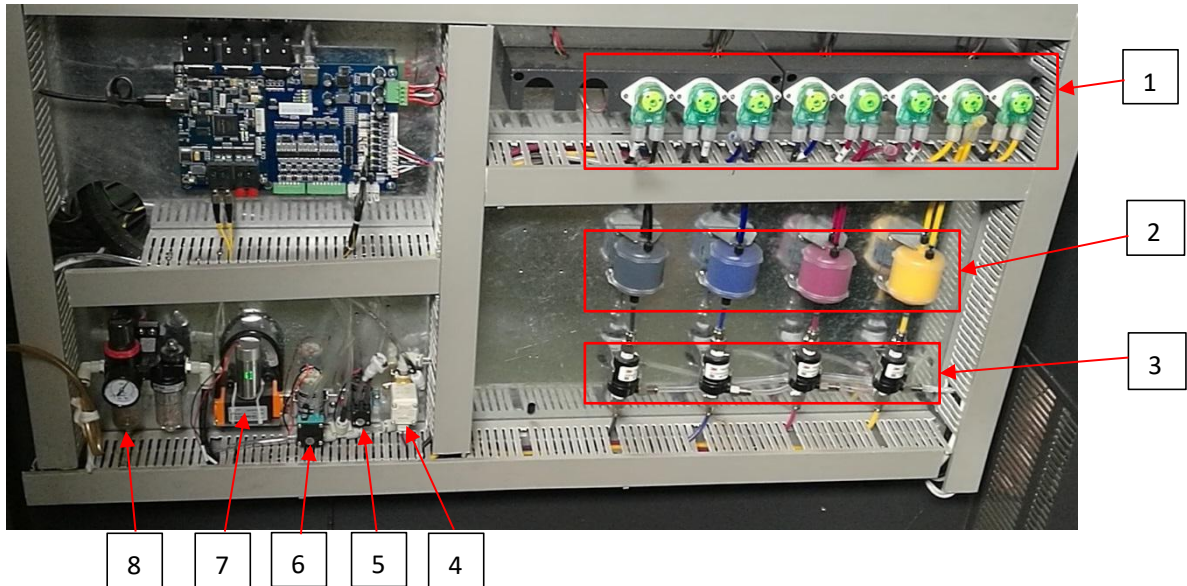
I. electricity panel



- ① Power switch of digital machine---switch the power of the digital machine
- ② Power switch of oval printing machine---switch the power of the oval printing machine
- ③ Power switch---turn on and off the power supply of the whole machine, including computer power, so make sure that the main computer has been turned off before switching off this switch
- ④ Intermediate relay---PLC control signal on-off and so on
- ⑤ Main board---control the printing and movement of digital machine
- ⑥ PLC---control and process digital signals。
- ⑦ Y-axis driver---control Y-axis movement
- ⑧ X-axis driver---control X-axis movement
- ⑨ Z-axis driver---control Z-axis movement
- ⑩ Switching power supply--- supply low-voltage direct current to the machine
- ⑪ Alarm---3-color light and buzzer alarm

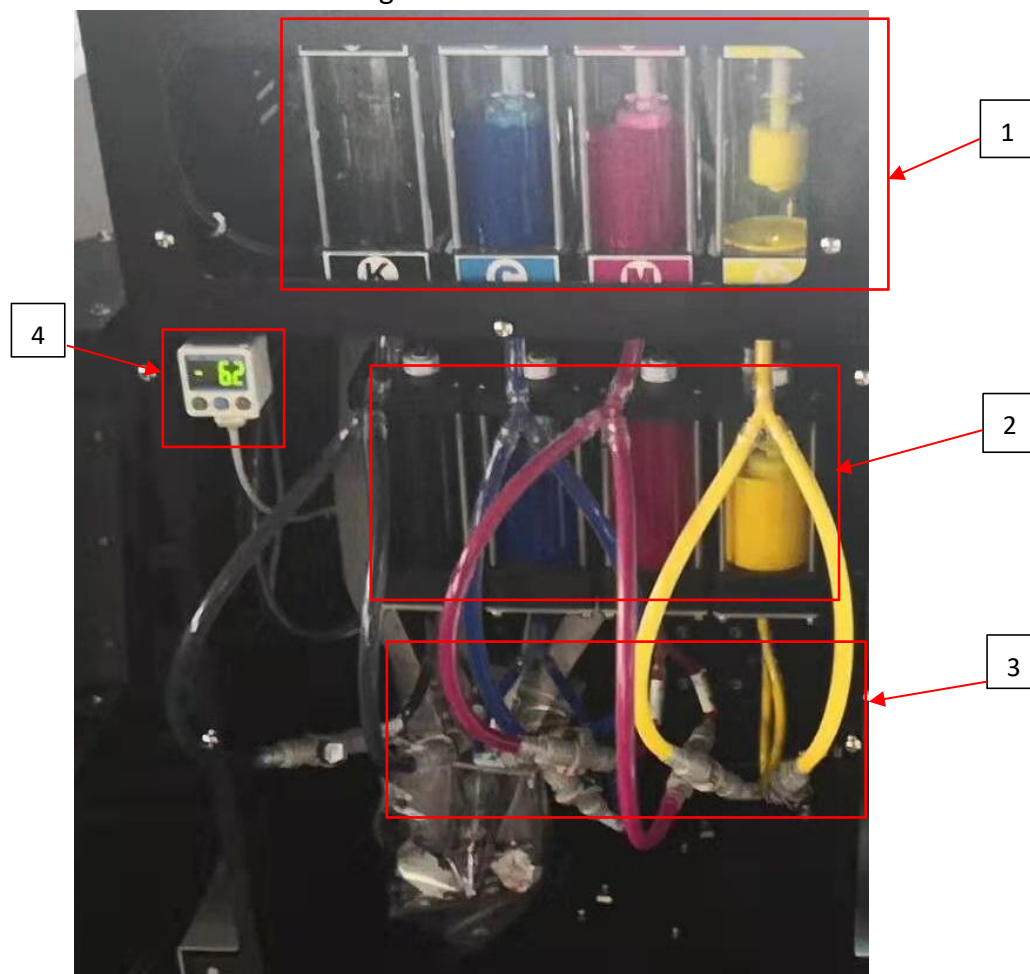
II. Ink channel system

A. Main ink channel



- ① Ink supply/recycling pump---the main component of active ink supply and recycling. The ink pipe of this pump is consumable material. If it is damaged, please contact our engineer.
- ② Filter---filter out the impurities or dust in ink, it is recommended to replace the consumables once every three months
- ③ Degasser--- eliminate the air in ink. If ink leakage is found, please contact our engineer.

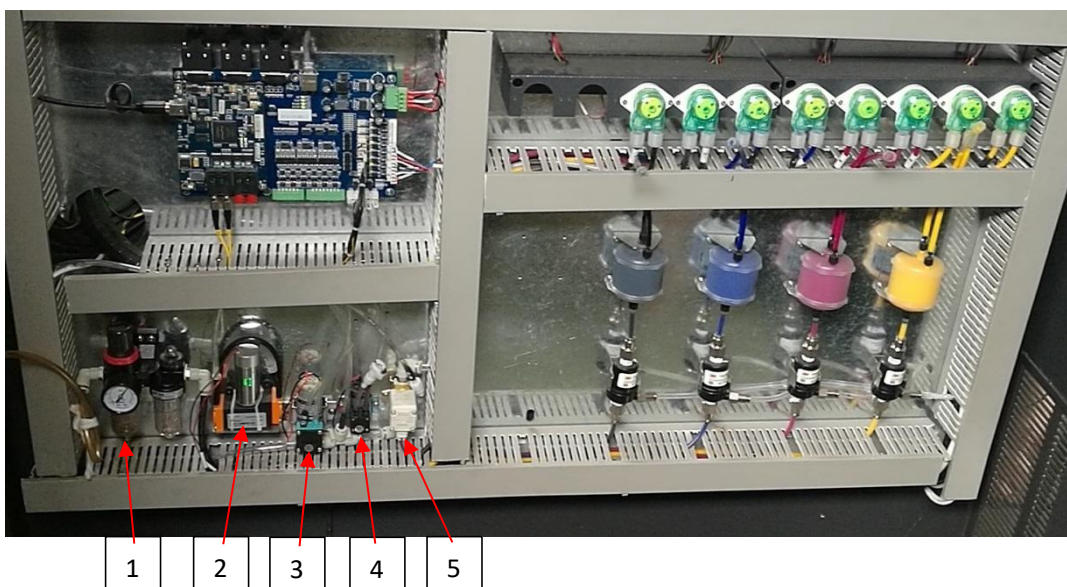
C. Ink channel of head carriage



- ① Secondary ink cartridge---provide the ink needed for printing, control and maintain the liquid level. If the liquid level is abnormal and unable to balance, please contact our engineer.
- ② Ink recirculation cartridge---provide inner circulation function of the print-head. The system will automatically maintain the liquid level. If the liquid level is abnormal and unable to balance itself, please contact our engineer.
Note: it is a normal phenomenon that it will take a relatively long time to balance when turn on the machine because of the liquid level balance of shut down.
- ③ Ink supply tube and recirculation tube---use quick coupling fittings to connect the heads for ink supply. If there are bubbles in these tubes, please contact our engineer immediately.
- ④ Negative pressure gauge---control and display negative pressure of the negative pressure tank

III. Pressure setting and adjustment

a. Air pressure channel control overview:




1. Primary pressure adjustment: air pressure oil-water separation group and pressure adjustment valve
2. Degasser air pump: provide working vacuum conditions for degasser
3. Cleaning pump: pump air pressure to press ink for cleaning
4. N. Pres. Pump: for pumping out the waste ink in the N. Pres. Cartridge
5. N. Pres. air lock valve: a protective device to ensure that the negative pressure does not leak when shutting down

b. Adjust the main air pressure to 0.5mpa

c. Press the N. Pres. Pump button to pump out the waste ink:

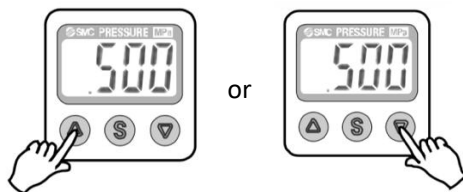
As described in Chapter 1 ,3-④, there is no further elaboration here

d. **Negative pressure adjustment(See ink channel chart of head carriage):** please adjust it on the pressure switch of N. Pres. Display on the operating platform, and set the value as -5.5~-5.8KPa。 The adjustment steps are as follows:

1. Press  to display [P_1]



2. Press ▲ or ▼ to change setting to -5.5

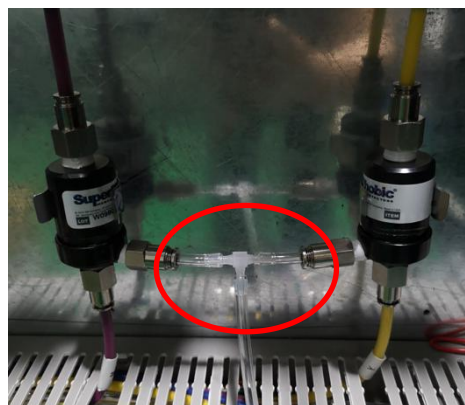


3. Press Ⓢ again to display [n_1]

4. press ▲ or ▼ to change setting to -5.8

5. press Ⓢ again, target negative pressure will be between -5.6 to -5.7

- e. **Degasser N. Pres.:** Maintain the vacuum condition for normal operation of degasser, and if ink leakage occurs in the red circle of the figure below when in normal working status, please contact our engineer immediately.



Chapter 6 Service and Maintenance

I .Maintenance of print component system

A. print-head maintenance: select the 「 print-head maintenance 」 button on the touch screen to automatically clean and scrape the print-head.

B. Replace of the print-head:

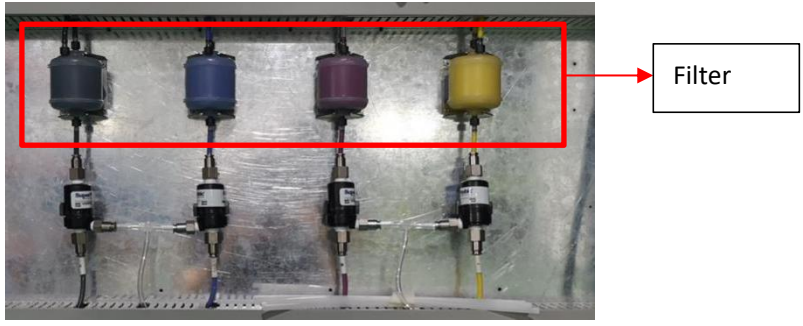
1. Turn off the power supply of the machine.
2. Pull out the print-head data line.
3. Loosen the fixed screw.
4. Remove the ink supply tube and recirculation tube from the print-head.
5. Safeguard the old print-head.
6. Install new print-head.
7. Replace the fixed screw of the print-head.
8. Connect the ink supply tube and recirculation tube.
9. Install print-head, and tighten the fixing screw.
10. Connect the data lines and pay attention to the direction of the connector.
11. When connecting the data lines, make sure the position of the print-head and headboard and corresponding.
12. Clean the print-head to ensure that every nozzle works.
13. Turn on the power supply.
14. Click the 「 print-head maintenance 」 button on the touch screen to clean.

C. Maintenance of ink supply system and negative pressures system

1. Check the whole ink channel, especially the joint parts, to ensure that there's no sign of aging or damage.
2. Check the negative pressure box for reflux ink. One found, turn off the power supply, then drain the reflux ink.

D. Replace the filter:

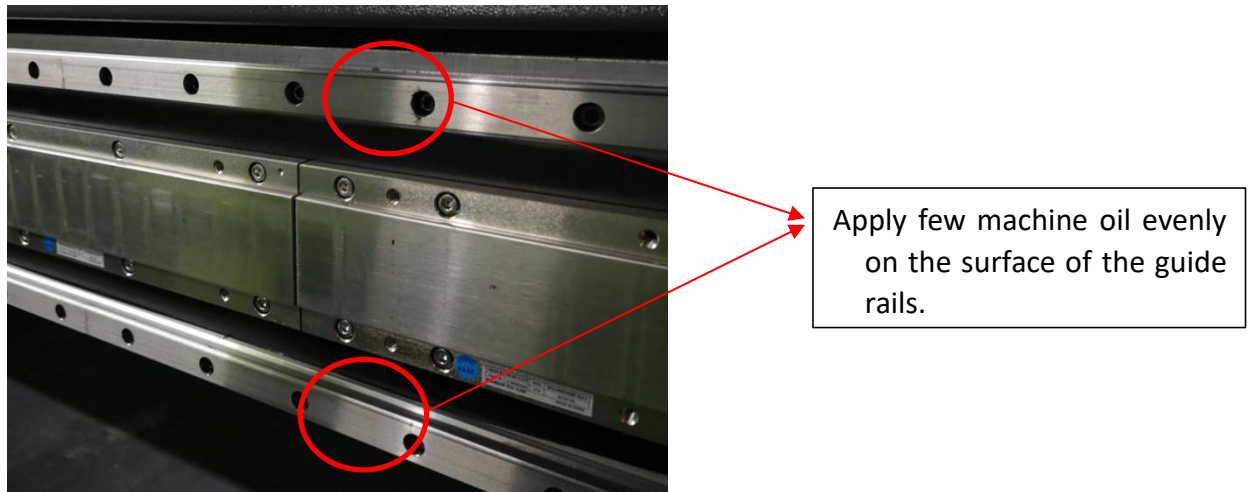
It is recommended to replace the filter every three months or after 800 hours of continuous work to ensure smooth ink supply.



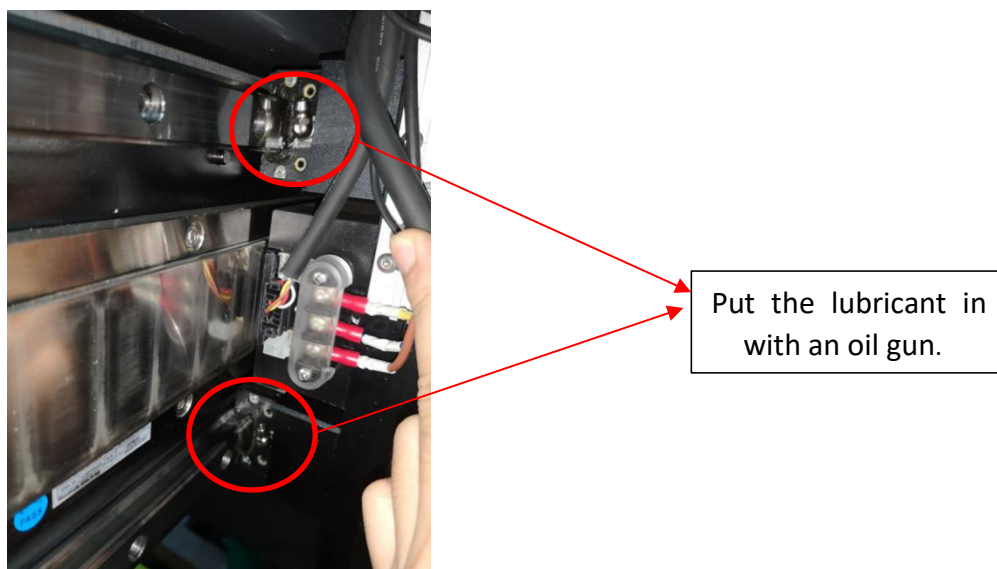
II .Maintenance of moving parts of the machine

A. Maintenance of guide rails and slider

1. Clean and grease the guide rails at least once every three months. Apply enough low-fat lubricant to the joints of the moving parts.



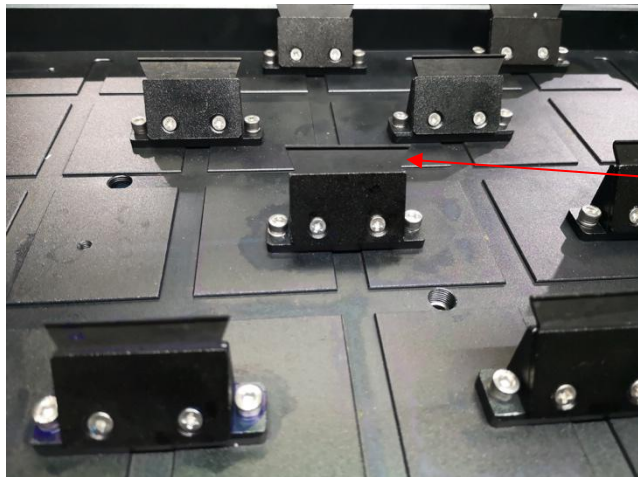
2. Clean and grease the transmission parts such as slider and bearing of the head carriage at least once every three months.



Recommended use of maintenance oil: THK-AFC

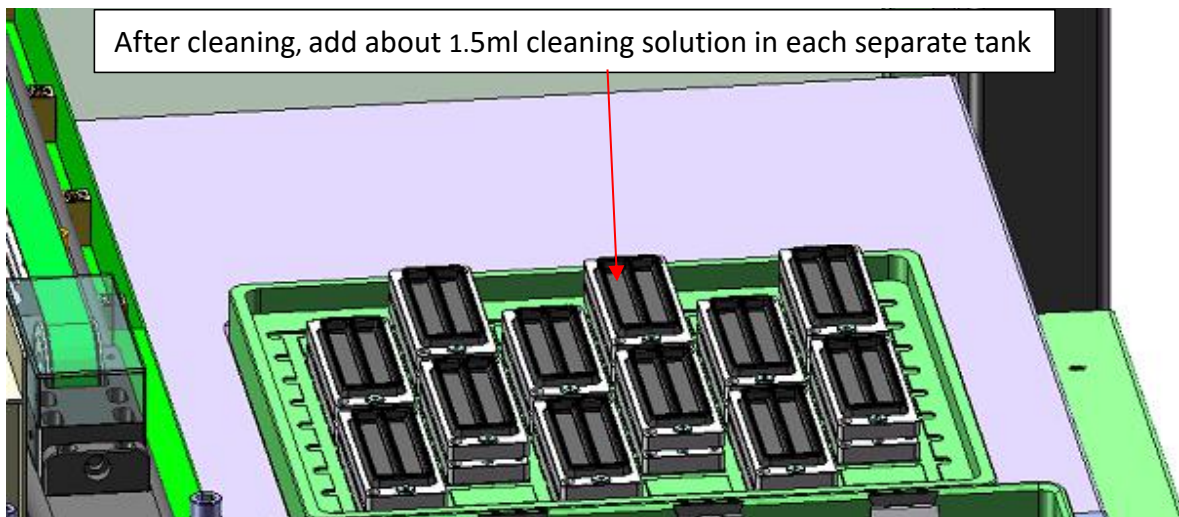
B. Moisturizing ink scraper component:

1. Ink scraper should be kept clean, and it is recommended to clean with a dust-free cloth once a day after work.



The upper end of the scraper, especially the ditch should be kept clean.

2. Print-head moisturizing cap: when shut down, cover the print-head tightly to avoid surface ink being solidified by the contact of the print-head with air. Therefore, it is necessary to keep it clean, and add a little (about 1.5ml) cleaning solution.:



III. Electronic component maintenance

All equipment enclosure and components cleaning, replacement of spare parts must be done when the equipment is shut down, and carried out by trained and qualified staff. Make sure that these work must not be carried out in the boot state.

A. Enclosure cleaning : Every day before starting work, wipe all the enclosure of the equipment, including the glass door with a rag dipped with alcohol or foam cleaner, and do not use ink cleaning solution or other strong corrosive solution.

B. Electrical components: clean up all electrical components of the equipment with dust-free cloth dipped with alcohol once a month to ensure that there is no excessive dust and dirt on the surface of the components.

C. Computer: Make a comprehensive anti-virus work on the computer once a week ,and ensure that the anti-virus software is the latest version. Anything downloaded or copied into the computer must be anti-virus processed first.Clean up the software in the computer every half month to ensure that no unnecessary software is installed.

(Apart from driving software, RIP software, and printing required pictures, it is not allowed to install any other software in principle.It is also recommended that equipment computer do not connect to the Internet. If necessary, it can be directly connect to the intranet.Be careful to plug in external tools such as USB disk. Excessive software will affect the use of the driver software and RIP software) .Make sure to clean up computer garbage; do not use any other software during the machine operation.

D. Ink bucket: Clean the ink bucket thoroughly every two months with cleaning solution. When cleaning, turn off the power supply, unscrew the lid of the ink bucket and ink pipe on the bucket(the ink pipe should be clamped by the hemostat first), remove the bucket, wash it with pure water till no ink mark left, then wash it with cleaning solution.

E. Print-head moisturizing maintenance:

Within 4 days of shutdown(including 4 days), add 3ml of cleaning solution or pure water into cap(1.5ml in each grip, about level with the steps of the cap), then moisturize, and observe to confirm whether the print-head and cap are sealed properly after moisturizing the head carriage.

With 5 to 30 days of shutdown(including 30 days), separate the quick connector of the upper end of the print-head(ink supply tube and recirculation tube end),clean and dry the cap, then add 3ml(1.5ml in each grid) of the protection solution or

cleaning solution , and finally moisturize the print-head.

With more than 30 days of shutdown, after cleaning the print-head with cleaning solution, remove it for moisturizing. The standard of protection is to ensure that the print-head is filled with protection solution, two ink supply tube nozzles are blocked tightly, the surface of the print-head is sealed with plastic wrap, the whole print-head is sealed and encapsulated in an electrostatic bag.

(Note: In the above moisturizing steps, before adding print-head protection solution, cap should be kept dry and no water residues, including tap water, distilled water, pure water, etc.)

No.	Problems	Analysis and solutions
1	Fabric deviation in printing process, white and digital printing color pattern are not covered accurate	Y Direction: Pallet positioning seat Loose
		X Direction: Problem of X5 Line of X Axis Driver
2	White stripes or blurred patterns suddenly appear when printing	The pallet glue is not sticky and needs to be re-glued. Softeners are used on fabrics, please remove the softener during pretreatment.
3	Fabrics can't stick to the pallet	Over-stretching of fabrics when adding treatment liquid; when the temperature is low, the pallets are not sticky, please keep the room temperature at about 23 degrees or heat the pallets.
4	Loaded fabric is wrinkling	The different tension between the left and right of the fabric may also lead to loaded fabric wrinkling. Please adjust the tension to keep the balance between the left and right of the fabric.
5	A white or black line or a virtual edge appears in the Y direction when printing.	Stepping is not accurate, please refer to the step setting to adjust.
6	White and black stripes appear when printing, and width between left and right is unequal.	Check whether the belt on the left and right sides of the machine are of different tightness, and adjust the step settings.
7	The pattern was stained after printing.	Check if there is any foreign body near the print-head under the baseboard
8	Sawtooth appears when printing a straight line pattern	X Direction: : incorrect color registration on "Colour calibration"
9	Printing speed is slow or does not print	USB interface does not insert or too many desktop files, please properly

			back up the files and remove them from the computer hard disk.		
10	Patterns of knitted fabrics deformed after printing		After finishing the pretreatment, select a knitted fabric to detect shrinkage (the shrinkage of general knitted fabric is different in warp and weft directions). Deform the pattern according to the shrinkage and then print.		
11	Graphs with more than one step in pass overlap mode have iradjustable white lines or overlaps between steps		Uncheck "Pass Overlap Mode"and use scanning step		
12	Slight blockage of nozzle or oblique printing leads to white line		Turn on feathering and adjust the value to weaken white line defects		
			Increase Pass to print		
13	Unclear dots or double lines on the print		Adjust Bi-Direction offset calibration		
14	White lines between two heads on vertical direction		Vertical calibration is out. Need to be re-calibrated		
15	Errors show on the touchscreen	Equitment Resetting	It is normal.When starting or resetting the machine		
		Left(right)Safetybar Hit!	Left(right) Safetybar hits something, must Emergency Stop immediately, and get rid of obstacles, in case of damaging heads!		
		N.Pre.Cartridge Full!	Refer to Chapter 4-I-3A-4		
		X Servo Error	Check error code on the servo	16.0	Over load, head carriage hit the limit. Must pull the carriage to the middle of the crossbar and restarthe machine.
	55.0		Reading differ from		

					pulse. Check X6(X5) cable or servo. Maybe need to replace