

# LIYU FS\_Konica\_1024i Digital Coiled Material Inkjet Printer User Manual



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## **Introduction**

Thank you very much for purchasing our LIYU FS Series Coiled Material Inkjet Printer (hereinafter referred to as Coiled Material Inkjet Printer). Please carefully read the manual before using the Coiled Material Inkjet Printer and put the manual at the place within easy reach at any time. The Coiled Material Inkjet Printer is one that uses environmental-UV ink with maximum width of 3.3m. The operational manual describes the features of the printer, parts name, information that should be known before using the equipment and the basic operation, for instance, how to switch on and off and how to set various parameters of the printer. Please carefully read the following contents before reading Chapter One: Safety Precautions and Operation Cautions.

## Technical specifications

FS\_Konica\_1024i Digital Coiled Material Inkjet Printer adopts the print heads of Konica\_1024i 6pl and 14pl. The print head configuration type can be selected from the table below:

### ● *Machine Model List*

Number of print heads	Configuration type of print head
4	4-color 4-print head
5	4-color 4-print head with 1-white one
6	6-color 6-print head 4-color 4-print head with 2-white one
7	6-color 6-print head with 1-white one
8	4-color 8-print head
10	4-color 8-print head with 2-white one (arranged within the same column)
12	6-color 6-print head 4-color 12-print head
14	6-color 12-print head with 2-white one (arranged within the same column)

● *List of Main Technical Specifications*

■ **Machine Parameters**

Machine Model	FS32-UV-LED
Print Technology	Piezo continuous drop-on demand(DOD)
Type of Print Head	Konica 1024i 6pl / 14pl
Print Head Control	Use software to adjust the temperature and voltage of the print head.
Print head Configuration	See the layout diagram and code of the print head
Maximum Printing Size	3.3m
Maximum Resolution	720*2880 dpi
Fastest Print Mode and Efficiency	360*1080 3pass 90 m <sup>2</sup>
Ink Type	UV Ink
Color Profile	K C M Y Lc Lm W V (optional)
Ink Supply System	Automatic continuous ink supply with vacuum negative pressure
Media Absorption	Table vacuum absorption, segmented control
Table Pressure	25kg/m <sup>2</sup>
Drying Device	LED_UV lamp solidification
Package Size	6378x1628x2089 mm
Machine Size	6180x1400x1795 mm
Machine Weight	3.2 tons
Printing Interface	PCIE X1
Power interface	Mainframe 220V±10% 50HZ 5A Fan 220V±10% 50HZ 16A UV lamp 220V±10% 50HZ 16A
Environmental Requirements	Temperature 23 ~ 26 Relative humidity 40% ~ 80%
RIP Software	Photo print/Caldera
Machine Characteristics	A high-precision and high-speed print heads supporting the grayscale printing and three rows of print heads; Water-cooled adjustable honeycomb aluminum plate platform; Adjustable holder for the print heads; Four-rubber roll drive system; Destaticizing system; Constant temperature system for the auxiliary ink box; Ink empty alarm for the main ink box; Intelligent anti-pinch screen system; Anti-collision system for carriage; Separated intelligent negative-pressure ink-supply system, THK mute guide, integrated computer console and double -roll take-up

and feeding system.

### ■ Printing Efficiency List

The printing speed of FS series coiled material inkjet printer is mainly decided by numbers of print heads in rows and printing modes. This table shows the printing efficiency by taking 12 1024i print heads and 4 colors as a sample.

FS_Konica_1024i Series	
Printing Mode	Working Efficiency
<b>Draft Mode</b> <b>360*1080 3pass</b>	<b>90 m<sup>2</sup></b>
<b>Working Mode</b> <b>360*1440 8pass</b>	<b>45 m<sup>2</sup></b>
<b>High Precision Model</b> <b>480*2880 8pass</b>	<b>24 m<sup>2</sup></b>

The above is the maximum feather test efficiency, the efficiency can be improved by reduce the feather properly according to the actual printing needs.

## Important particulars

The negligence of precautions mentioned below may seriously affect the working conditions of the equipment, equipment service life or the service life of relevant parts, or even cause the permanent damages of relevant parts, and may endanger staff's physical and mental health in some cases. Please operate in strict accordance with instructions.

1. Please carefully read the requirements for working space and working environment of the machine in this manual and strictly abide by the requirements. Otherwise, it will affect the working state of the machine, machine service life or service life of parts, or even endanger staff's physical health;
2. Please use the ink designated by the manufacturer, otherwise, it may affect the printing effects or even cause the permanent damage of print head;
3. During the operation and maintenance process of the machine, please be sure to avoid the contact of ink and non-cleaning fluid, so as to prevent the ink from any chemical reaction which may cause machine damage;
4. Since the waste fluid generated from the machine will pollute the environment, please properly dispose of the waste fluid in accordance with the requirements of local environmental protection department;
5. The auxiliary ink box, filter, ink pump, air pump, liquid pump, refill tube and print heads of the machine all belong to wearing parts and shall be replaced periodically as per the service condition.

## Safety precautions

To ensure that operators will properly use the equipment and prevent equipment damages and unnecessary casualties, please carefully read the following safety precautions:

- Please use the voltage as specified on the nameplate and never plug several devices into one power outlet at the same time to avoid fire disaster.
- Please check and ensure the equipment has been grounded reliably. Otherwise, disturbance may be caused and lead to abnormal image printing of the machine.
- Never dismantle or transform the equipment by yourself, otherwise, such accidents as fire disaster, electric shock and other accidents may be caused.
- Keep the circuit control section of the equipment away from metal objects or liquid, otherwise, it will cause circuit board damage, fire disaster or other accidents.
- Never connect the power line of the equipment with wet hands, otherwise electric shock may occur.
- In the event of the following situations, please switch off the equipment and contact the local dealer if necessary:
  1. The switch is insensitive or doesn't work.
  2. When the inkjet printer makes abnormal sound or produces smoke.
  3. When any metal object or liquid splashes into the electric control part of the equipment.
  4. When problems that operators fail to settle arise.

## Operation precautions

### Power Supply

1. Inkjet printer shall be installed near the power source convenient to use and the connecting outlet must be solid and reliable.
2. Relatively stable power supply in accordance with technical specification of inkjet printer shall be used, and it should be mandatory to install the voltage stabilizer, and the USP (uninterruptible power supply) is the recommended one.
3. Connect the power line to a separate outlet and never share the same power outlet with other equipment.
4. Pay attention to the order of power on and off so as to avoid damages to print head.
5. In case of unstable local voltage, please use voltage stabilizer to guarantee the stable voltage and choose the famous brand products, because inferior products may cause equipment fault or damage electrical component of the equipment (including print head).

### Inkjet Printer

1. Don't place any undesired objects on the platform of the inkjet printer so as to avoid damages to print head.
2. In case of any maintenance for the machine as regards electrical control, please be sure to disconnect the power of inkjet printer.
3. Never touch the surface of print head with hands or hard objects.

### Regular Inspection and Maintenance

- ✧ Fill lithium base grease in mechanical parts with grease gun on a regular basis, and fill in the ink carriage linear guide once for every week under normal printing.
- ✧ See contents in Chapter Maintenance and Service for maintenance method of ink and print head.



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**Reference 1 “LyPrint Operation Manual”**

**Refer to document 2 “Setting Method of Panasonic DP-101 Digital Vacuum Pressure Sensor”**

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## Chapter 1 Introduction to Basic Knowledge

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This chapter dwells on the necessary information for inkjet printer operation. Please understand the necessary information before reading other chapters. Contents of this chapter:

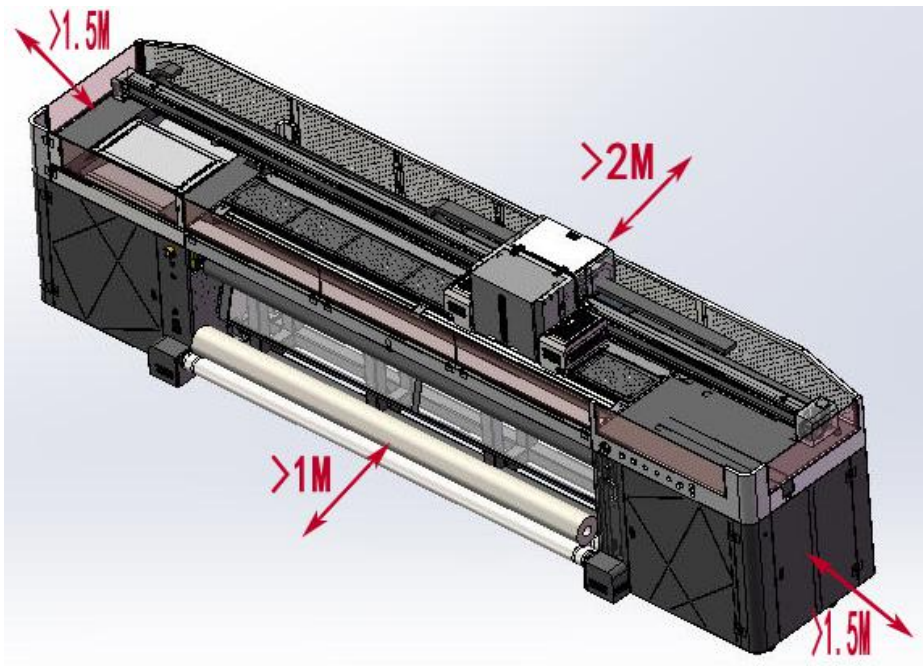
- Working conditions
- Working space
- Environmental requirements
- Computer configuration requirements
- Appearance, name and functions of parts
- FS\_Front view
- FS\_Back view
- Carriage view
- Machine unpacking and floor installation
- Consumables
- Printing media
- Ink and cleaning fluid
- Maintenance tools

## ● Working conditions

### ■ Working space

There must be enough space surrounding the coiled material inkjet printer so as to facilitate replacement of some commonly used spare parts and print media, drawings output and ventilation. In addition, make room for maintenance (as shown below) with the aim of printer repair or spare parts replacement.

**Installation and maintenance space is shown in the following figure:**



### ■ Environmental Requirements

The optimal working temperature and humidity of the equipment: temperature 23 - 26 , humidity 40% RH ~80% RH.

Please try to keep the equipment working under the optimal working temperature and humidity; otherwise, the printing quality may drop and the service life of the machine may reduce.

Don't install the machine at the following locations:

- ◇ In direct sunlight
- ◇ Location with vibration
- ◇ Dusty places

- ✧ **Location with drastic temperature variation**
- ✧ **Location with great air mobility**
- ✧ **Near the air-conditioning or heater**
- ✧ **Place likely to be wetted**
- ✧ **Place likely to produce other polluting gas**
- ✧ **Unstable location**

■ **Computer configuration requirements**

**The minimum configuration requirements for the software operation of the product are as follows:**

**CPU: INTEL i5 or above.**

**Display card: Graphic display card with video memory above 1G.**

**Memory: Memory above 8G. Other: CD—ROM drive.**

**Hard disk: Over 50 G room is left, please use NTFS format as the hard disk format.**

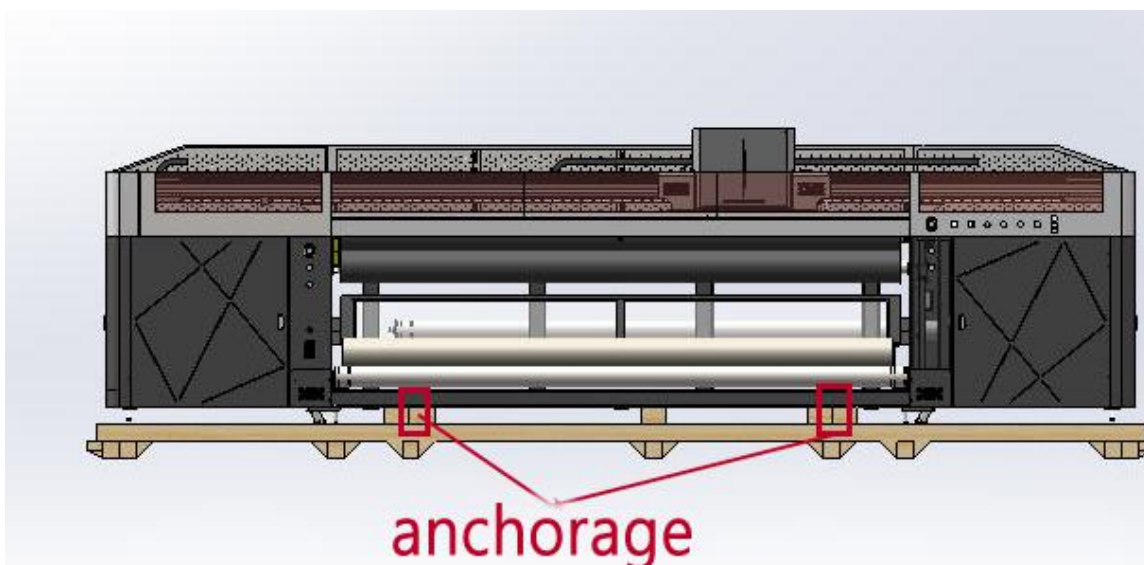
**Operating system: WIN7 64-bit Professional or Ultimate**

- ***Machine unpacking and floor installation***

1. Fastening steel strips and fixed bolts are attached on the packing box, please cut off the steel strips before unpacking. Remove the fixed bolts of the packing box in turn, 5 sides in total, take down the side plate and top cap of the packing box; Some of the machines will be sent out according to the order requirements, only having the packing chassis fixed machine, with rain cloth and tin foil attached on it, the positions of the steel strip bolts are as shown in the red logo below:



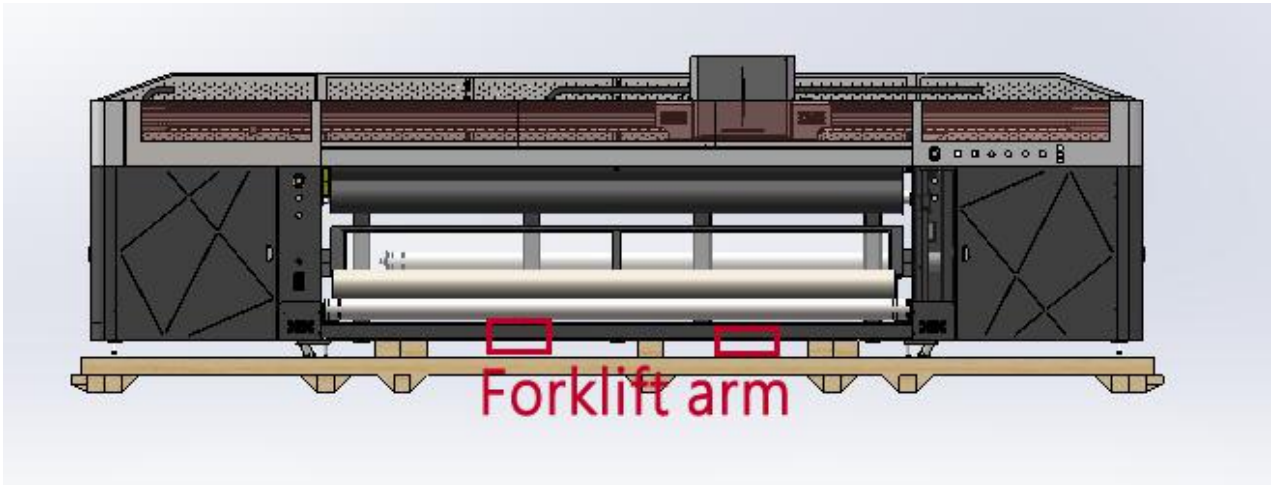
2. Please remove the fixed support and the fixed bearing.



3. Please refer to the diagram effect by using the forklift to unload the machine. The operation shall be

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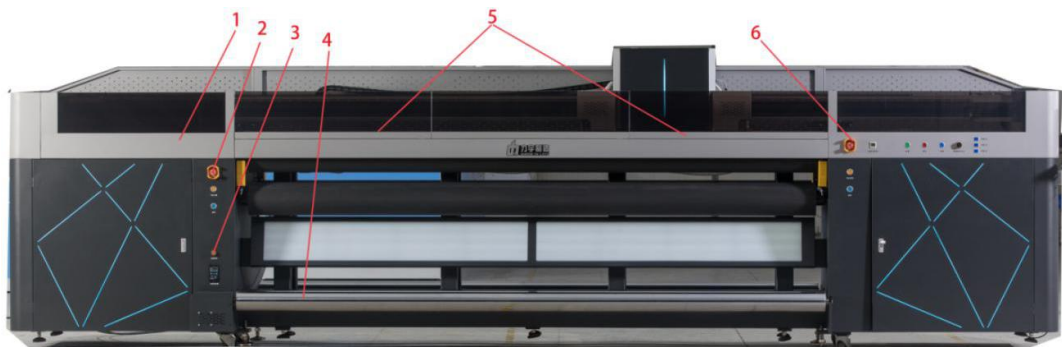
based on the actual conditions under the premise of ensuring stable unloading.



4. Hoisting FS Printer: If the printer is to be installed upstairs, in order to prevent injury to the printer or personnel during hoisting, please follow the following instructions:  
(Please skip this Instructions if hoisting is not required)

■ **Preparations:**

- 1) Parts that may be damaged during hoisting shall be removed first, then the printer shall be installed after positioning. See the following figure for the parts to be removed:



**Front Diagram**

S/N	Name of parts
1	Left front top door
2	Emergency stop switch
3	Switch of media take-up motor
4	Double take-up rollers
5	Middle left/right top door
6	Emergency stop switch

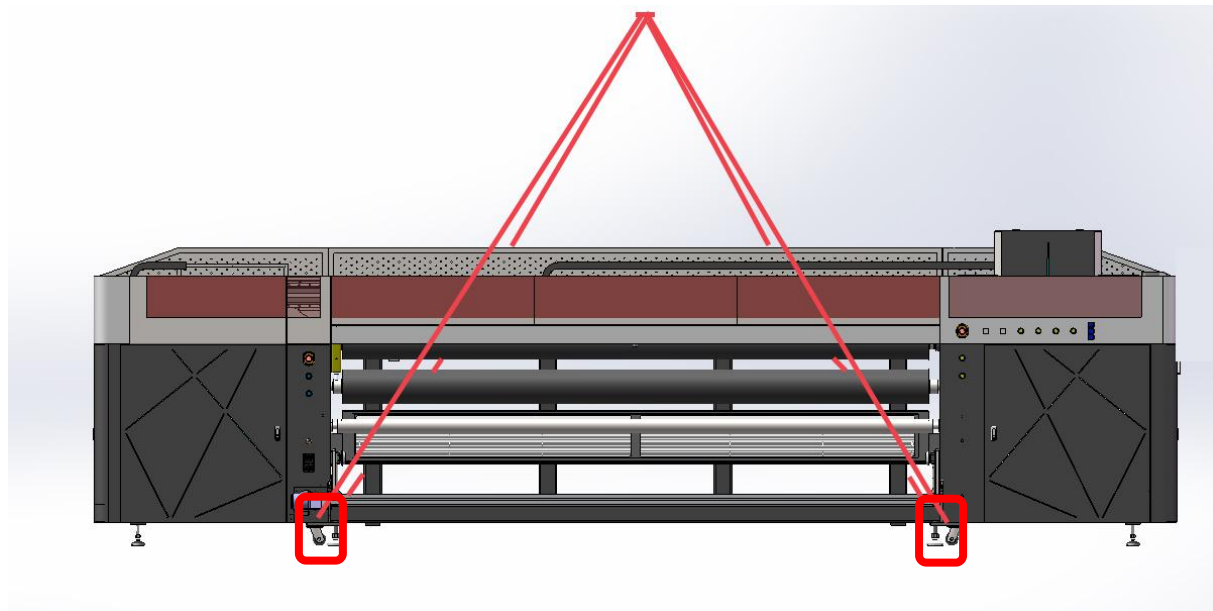


**Back Diagram**

S/N	Name of parts
1	Emergency stop switch
2	Alarm light of main ink tank
3	Double feeding rollers
4	Emergency stop switch
5	Switch of media feeding motor

- 2) The printer must be comprehensively checked before hoisting, including checking the installation firmness of all parts and the key fasteners are not loose.
- 3) Please see the List of Main Technical Specifications for the printer’s weight.

■ **Hoisting Diagram:**



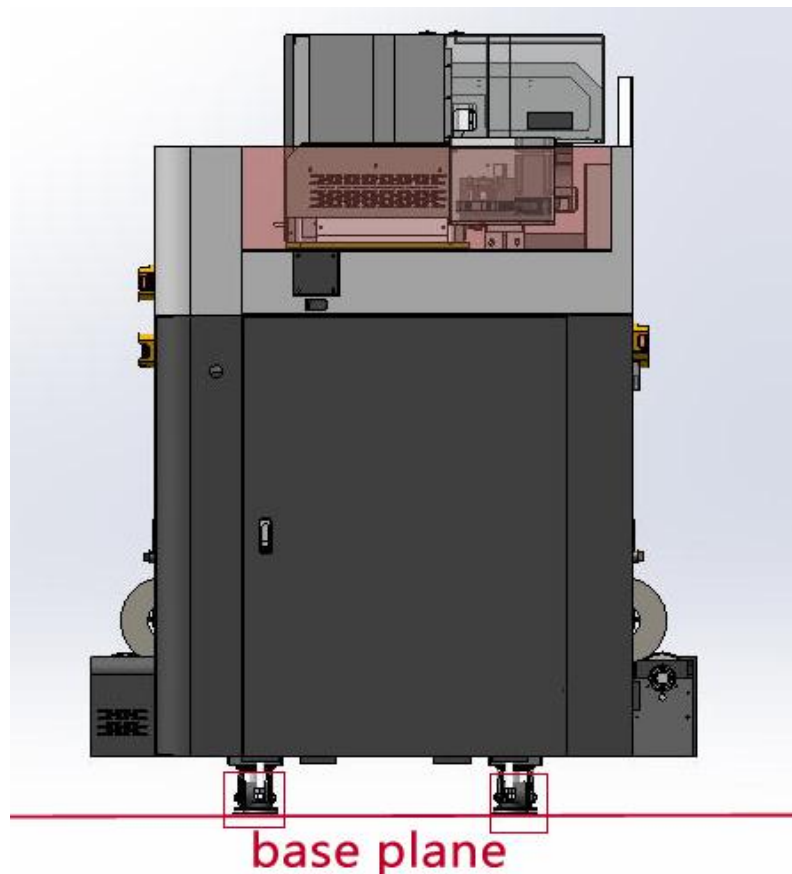
- 1) The left and right fixed supports of the front and rear feeding axes of the printer shall be selected as the hoisting position. As shown in the figure above, the two slings shall be used to pass through the left and right fixed supports of the printer. The two slings shall be relatively straightened to form a hoisting point.



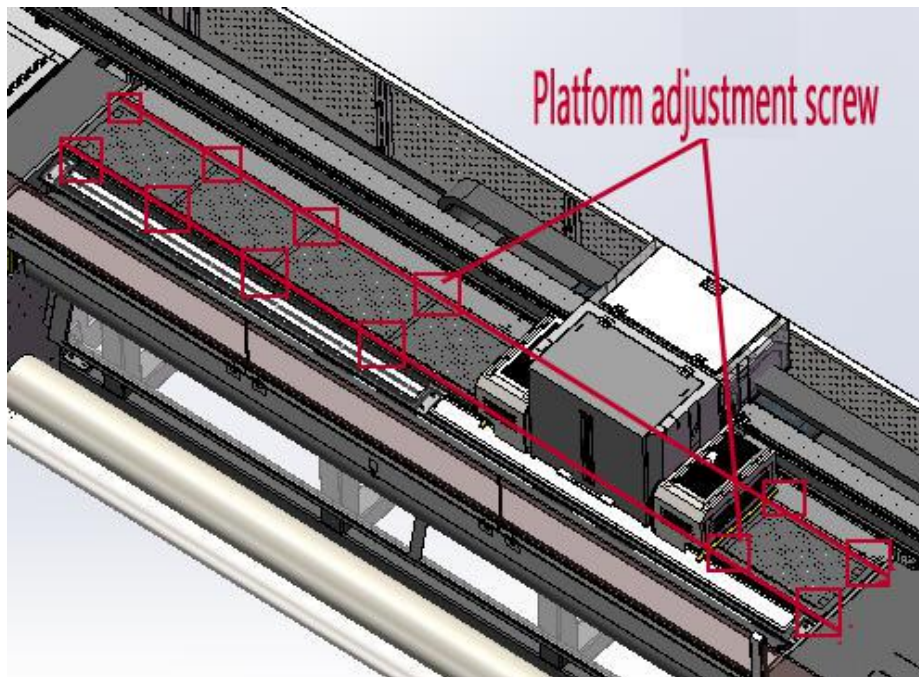
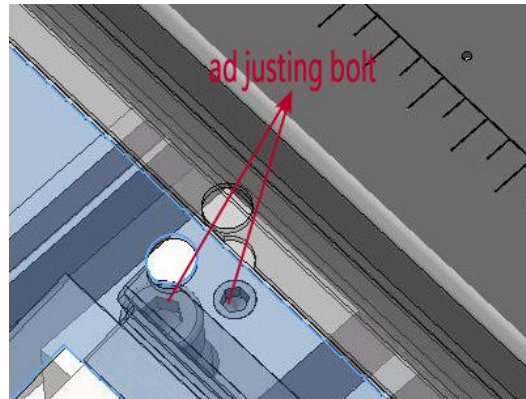
- 2) Please note that protections shall be applied to the contact surface of the sling and the printer, so as to avoid damage to the parts during hoisting.
- 3) Trial hoisting shall be carried out first by hoisting the printer 20 mm from the ground, to check whether the hanger and sling are normal.
- 4) Stop hoisting immediately in case of any abnormality, and carry out corresponding inspection.

**The final hoisting plan will be prepared on site by relevant professionals of the hoisting company. This Instructions is for reference only!**

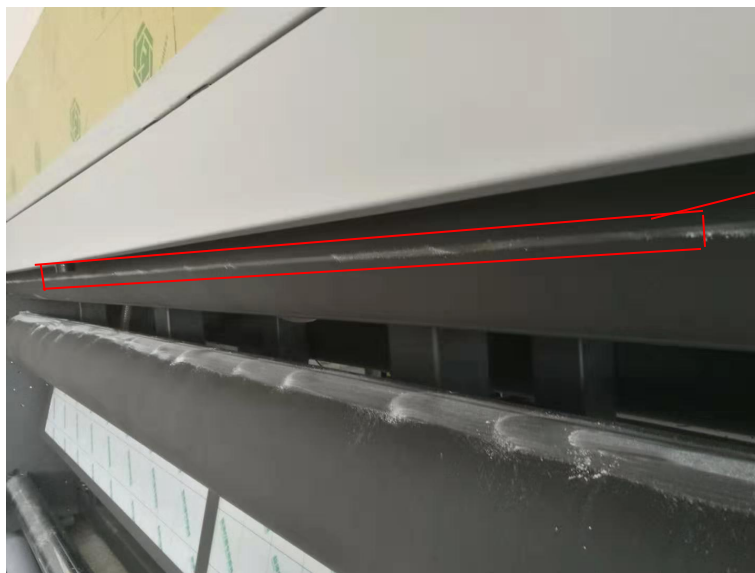
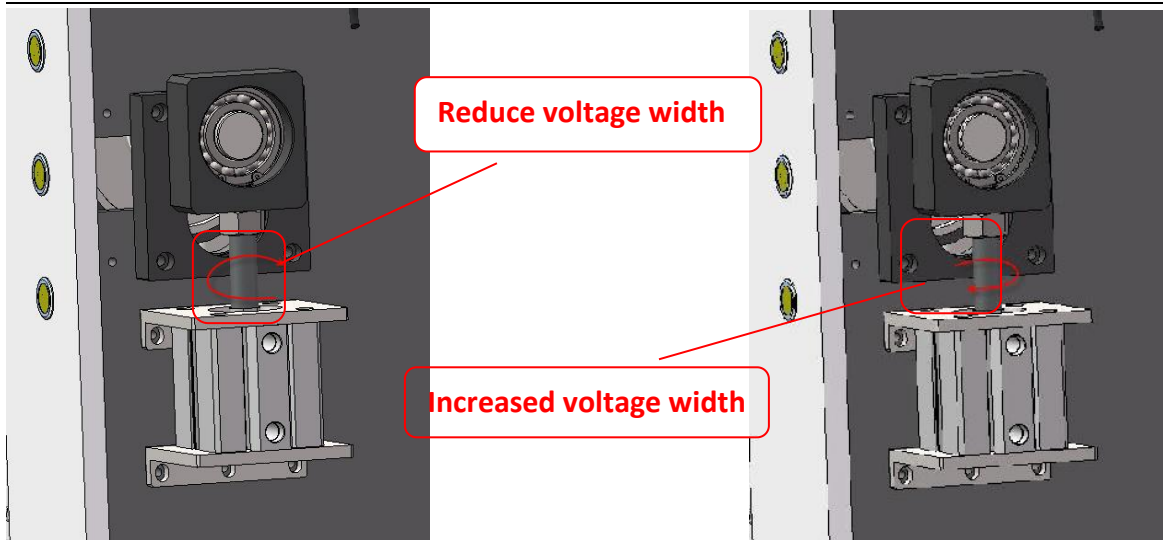
5. Machine leveling. Place the machine in the working area, raise the leg. The universal wheel shall be suspended. Select the level with sensitivity higher than 0.05mm/m to adjust the legs at the corner of the frame 4, which can make the level precision of the red area shown in the small figure can reach within 0.1mm/m.



6. Adjustment of the platform. Check and adjust the platform flatness of each newly installed FS machine. The legs and the platform adjusting bolts shall be adjusted with the bolts are located inside the machine on both sides of the platform. The error of each adjustment point of each platform shall not exceed  $\pm 0.15\text{mm}$ .



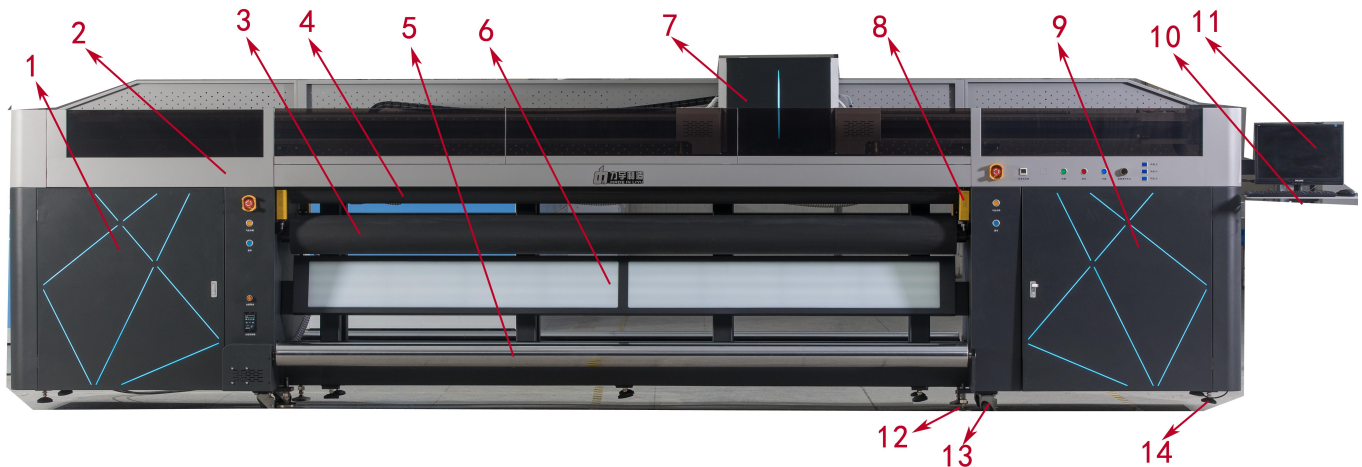
7. Adjustment rubber roller pressing width Check each newly installed FS machine and adjust the width of the upper and lower rubber rollers when pressing, and adjust the length of the cylinder screw rod to control the stroke of the rubber roller when the cylinders on both ends are raised. Please make sure that the whole length of the two rubber rollers is consistency when pressed, and the width is between 3mm-5mm. (Prickly heat powder and other powder measuring tools can be selected as auxiliary measuring tool)



8. Checking of key points. Please check it.

● *Appearance, name and functions of parts*

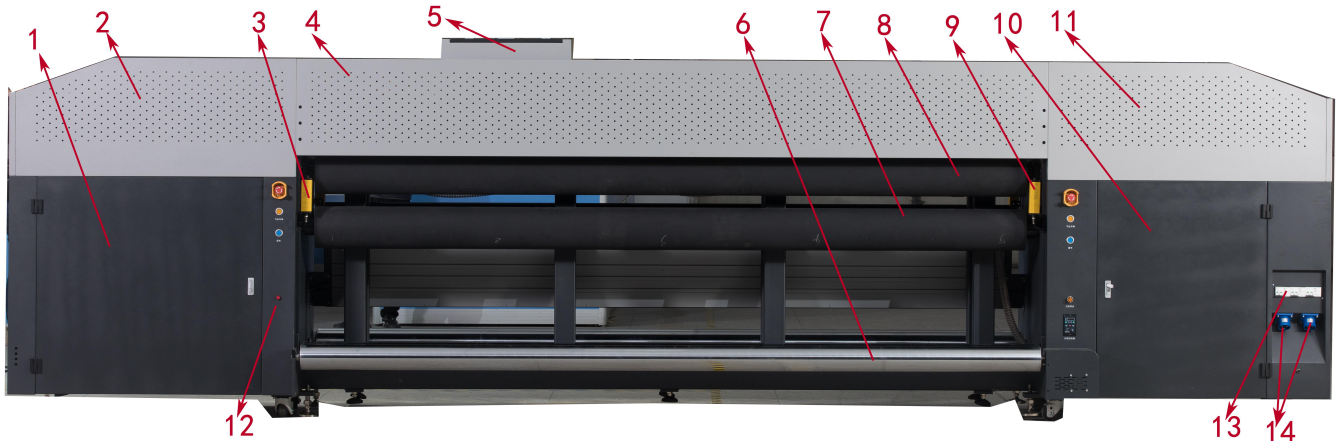
■ FS Front view



Code	Name of parts	Description
1	Lower gate of the left front box	Control signal line and terminal switching power supply are installed inside. Please notice the electric shock hazard!
2	Upper gate of the left front box	This location is for cleaning and maintenance, as well as for carriages' idle parking. It includes: ink collecting plate, flash spray pallet, positive pressure cleaning button and LED for lighting.
3	Front lifting rubber roller	It is used for clamping media when printing, and press against the front driving rubber roller after rising.
4	Front driving rubber roller	It rotates during printing, tightens the medium and is used for steady stepping.
5	Front take-up roller	It is used for rolling after printing the media.
6	Front LED light box	It is used to observe the effect of printing back light picture, also can check the picture effect.
7	Carriage	The carriage contains print head, circuit board, triple-valve body and other components.
8	Front light curtain	When the rollers are pressed, if there are foreign bodies or other shielding curtains, the rollers will stop rotating to prevent rolling.
9	Lower gate of the right front box	The control board card of the machine is installed inside it. No access for non-specialized persons! Please notice the electric shock hazard!
10	Keyboard pallet	It is used for placing the keyboard and mouse.
11	Display support	It is used for fixing the display.

12	<b>Adjustment foot</b>	<b>It is used for adjusting the levelness of the machine.</b>
13	<b>Universal wheel</b>	<b>Move the machine and suspend when printing.</b>
14	<b>Case adjustment foot</b>	<b>After adjusting the level of the machine, fix the foot of the case to ensure the stability of the machine.</b>

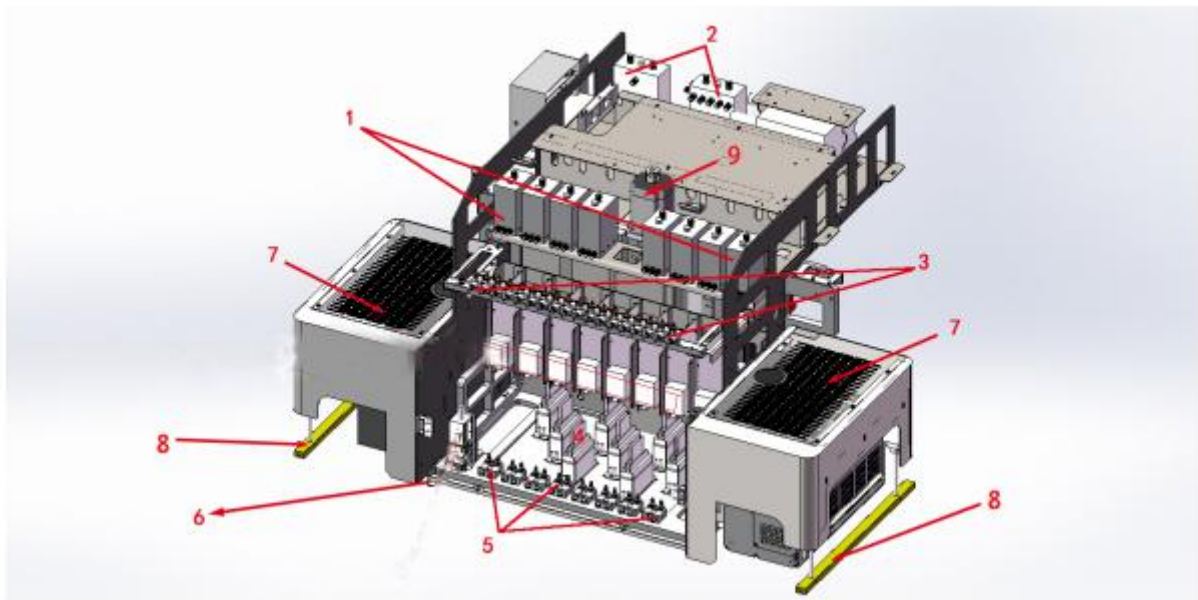
■ **FS Back view**



Code	Name of parts	Description
1	<b>Lower gate of the right back box</b>	<b>Ink pump and main ink box are installed inside, open this gate when filling ink.</b>
2	<b>Right back shield</b>	<b>Decorative shield above the back on the right side, which can prevent collision when the carriage is running.</b>
3	<b>Rear light curtain</b>	<b>When the rollers are pressed, if there are foreign bodies or other shielding curtains, the rollers will stop rotating to prevent rolling.</b>
4	<b>Back shield</b>	<b>Decorative shield in middle portion on the back, which can prevent collision when the carriage is running.</b>
5	<b>Carriage</b>	<b>The carriage contains print head, circuit board, triple-valve body and other components.</b>
6	<b>Rear feeding roller</b>	<b>It can load the whole roll of the printing media to realize automatic feeding system.</b>
7	<b>Rear lifting rubber roller</b>	<b>It is used for clamping media when printing, and press against the rear driving rubber roller after rising.</b>
8	<b>Rear driving rubber roller</b>	<b>It rotates during printing and synchronizes with the front driving roller to ensure smooth feeding and tension of the medium.</b>
9	<b>Rear light curtain</b>	<b>When the rollers are pressed, if there are foreign bodies or other shielding curtains, the rollers will stop rotating to prevent rolling.</b>

10	Lower gate of the left back box	The switch power supply of the mainframe and lifting solenoid valve are installed inside. No access for non-specialized persons! Please notice the electric shock hazard!
11	Left back shield	Decorative shield above the back on the left side, which can prevent collision when the carriage is running.
12	Ink empty alarm light	The light will flicker with alarm sound when the main ink box is empty.
13	Machine power switch	Totally three switches that control printer, computer and LED light respectively.
14	Machine power interface	Totally two interfaces, one for mainframe, and one for LED light power supply.

■ Carriage view



Code	Name of parts	Description
1	Auxiliary ink tank	Level 2 buffer negative pressure works as the ink in the main ink tank is filled to the auxiliary one.
2	Waste liquid tank	It's used for suck-back protection. The machine will stop working when the reflux ink flows to the waste liquid tank.
3	Three-way valve body assembly	Three states. It's used for printing, cleaning and closing.
4	Print heads	Deciding the numbers of print heads and putting them on right positions according to machine types.
5	Two-way valve body	It has two states, which can be used to discharge the gas in the print head.
6	Moisturizing tray	It is used for print head protection when the machine is

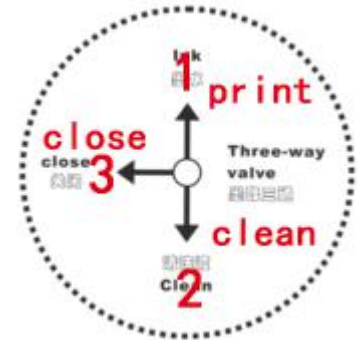
		<b>power off.</b>
7	<b>Left/right UV lamp (including casing)</b>	<b>It is used to solidify UV ink.</b>
8	<b>Left/right collision protection switch</b>	<b>When hitting an exorbitant foreign object during printing, the carriage will stop and the switch will protect the machine.</b>
9	<b>Z lifting motor</b>	<b>To control the height of the print head.</b>

The following pictures are details for three working statuses of the three-way valve body:

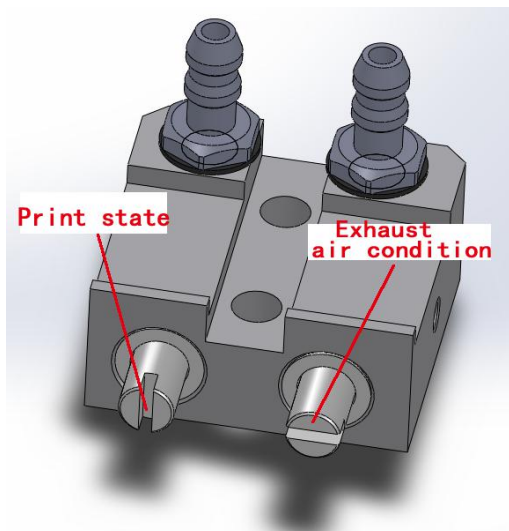
State 1: Working state, when the equipment is in normal operation, especially in printing, the valve shall be upward.

State 2: Cleaning state, when it's time to clean the print head with cleaning fluid, please place the valve downward.

State 3: Off state, when the equipment is shut down, place the valve in closed direction.

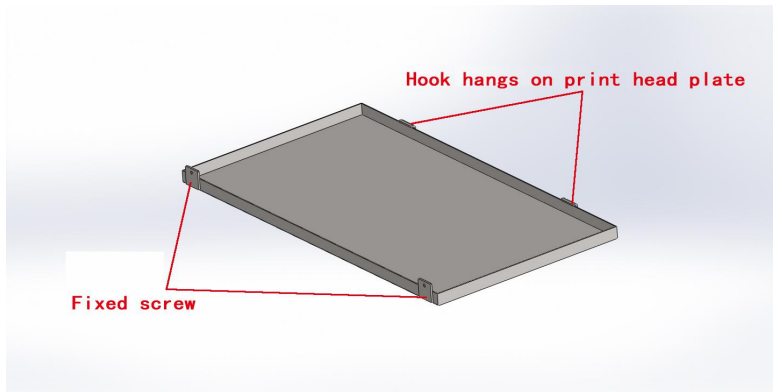


Two statuses of two-way valve assembly, explaining in detail:



**Print status:** upon printing for daily work, the valve core is vertical and valve body is closed.

**Air-extraction status:** When it is required to extract the air out from print heads, making the valve core rotate 90°, pressing ink at the same time and reinstate the valve core in print status after the air is fully discharged.



**Usage mode of moisturizing tray:** in the condition of power-off, the print head bottom board shall be covered by non-woven fabrics with cleaning solution, then be hung on the bottom of the print head floor and fastened by screws.



## ● *Consumables*

### ■ **Printing media**

The common media for the inkjet printer include such commonly used media for advertising equipment as Softfilm, Coated banner, Textile cloth and wall cloth. Please pay attention to the following matters as regards media purchase, storage, use and disposal:

- ✧ Inferior medium may reduce the printing quality, so it is suggested you select the high quality printing media.
- ✧ Do not store the media vertically so as to avoid clutter or damaged edge, especially for plate media, please place the plate media on flat surface and avoid any deformation of the plate.
- ✧ Do not preserve the media in the environment with great temperature and humidity changes, instead, the media shall be preserved in clean and tidy environment with proper temperature and humidity.
- ✧ Do not use the printing media with scratch, wrinkle, curl and surface bulge for the coiled material. The use of this kind of printing media may result in equipment failure or damage when printing.
- ✧ Ensure the clean and tidy printing surface of the media during printing, free from any dust and clutter, otherwise, equipment failure or damage may occur.

### ■ **Ink and cleaning fluid**

The print head of inkjet printer belongs to high precision equipment. Therefore, the ink quality will greatly affect the printing quality and the service life of print head. Please use the ink and cleaning fluid recommended by the manufacturer and pay attention to the following items at the same time:

- ✧ Failure to use the ink as recommended may cause lowered printing quality or equipment damage.
- ✧ The guarantee period of ink is six months in general (calculated from the production date), so please use the ink within guarantee period.
- ✧ Make sure that there is plenty of ink in main ink bottle during the working period of the machine.
- ✧ Ink should be kept in a shady and cool place.
- ✧ Since ink and cleaning fluid are strong acid or alkaline liquid, please store them properly and try to avoid skin contact, let alone swallow, and keep it away from eyes.

### ■ **Maintenance tools**

Please use the cleaning fluid recommended by the manufacturer to clean the print head, moreover, use the specialized wiping paper recommended by the manufacturer to wipe the print head, otherwise, it may lead to the permanent damage to the print head.

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## Chapter 2 Basic Operation

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This chapter illustrates the basic actions of machine installation and operation. The main content of this Chapter:

- Computer connection
- Installation environment for LYprint
- Installation steps for PCIE driver
- Installation and adjustment of print head
- Introduction to KONICA 1024i print head
- Print head installation
- Power ON/OFF of the FS\_32 printer
- Power ON
- Power OFF
- Add ink and fill the print head with ink
- Inject ink into the main ink tank
- Inject ink into the auxiliary ink box
- Fill the print head with ink
- Positive pressure ink
- Negative pressure adjustment

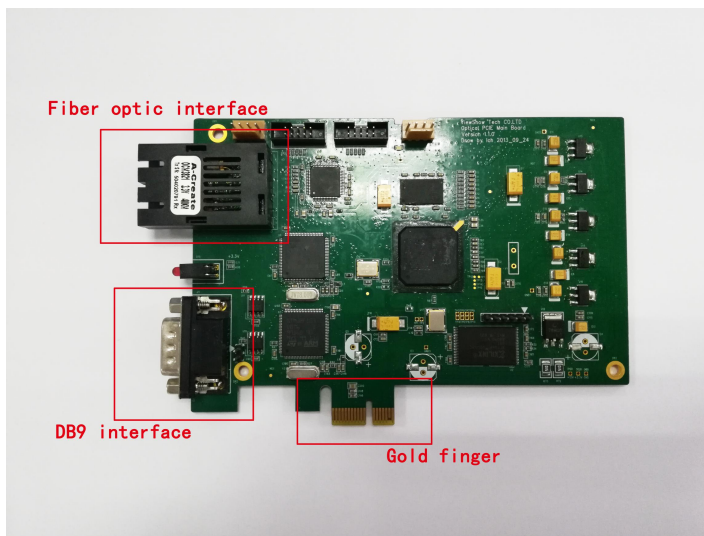
## ● *Computer connection*

### ■ Installation environment for LYprint

Please apply WIN7 64-bit and WIN10 64-bit operating systems to secure the normal working of the software.

### ■ Installation steps for PCIE driver

Plug PCIe card into its slot at first, double click the file LiYu PCIe(1.0.8).exe after the computer is started.

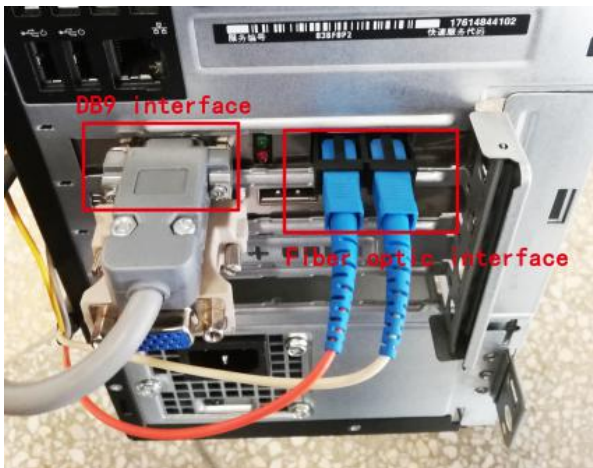
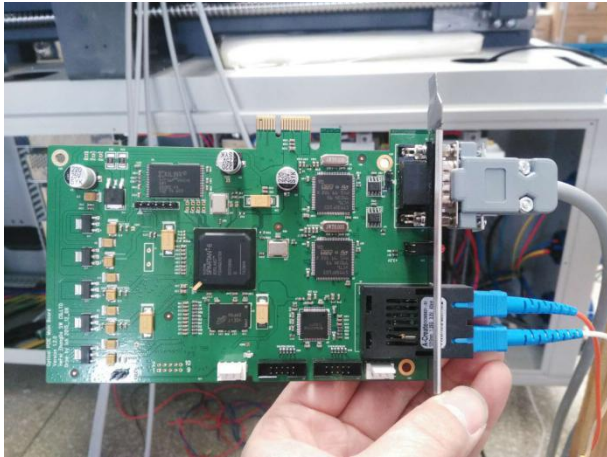


### Schematic Diagram of PCIE Card



### Schematic Diagram of the PCIE Slot on the Mainboard

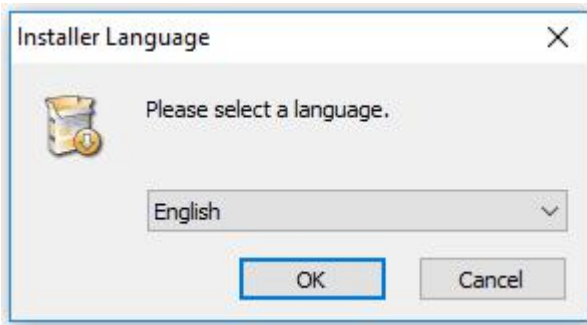
PCIE X1 interface shall be provided in PC configuration; unstable factors would exist if X4, X8, X16 interfaces are used.



### Post-connection Schematic Diagram

DiGiM.bin	2008/12/23 10:02	BIN 文件	6 KB
DiGiS.bin	2008/12/23 9:36	BIN 文件	5 KB
DiGiSS.bin	2015/10/28 10:16	BIN 文件	1 KB
ENUHelpFile.mht	2013/7/2 9:40	MHT 文件	8,853 KB
LiYu PCIe(1.0.0.8).exe	2016/12/8 16:02	应用程序	5,526 KB
liyupt.dll	2017/10/18 14:13	应用程序扩展	10 KB
lyprint.apw	2015/4/10 16:10	APW 文件	1 KB
LyPrint.exe	2017/10/18 15:13	应用程序	4,855 KB
lyprint.ini	2018/1/9 14:06	配置设置	21 KB

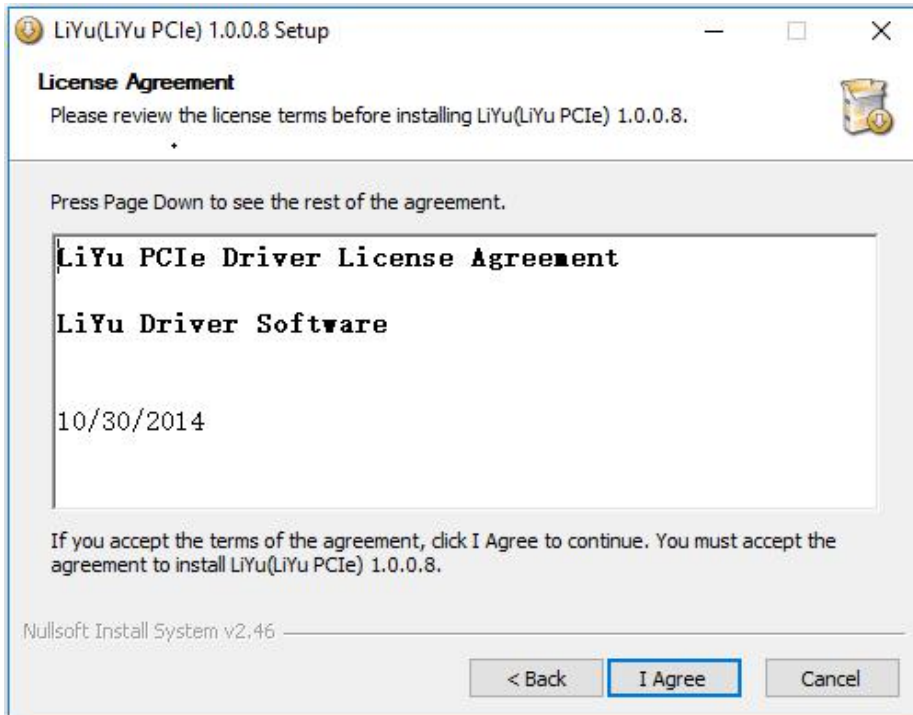
The following interface pops up.



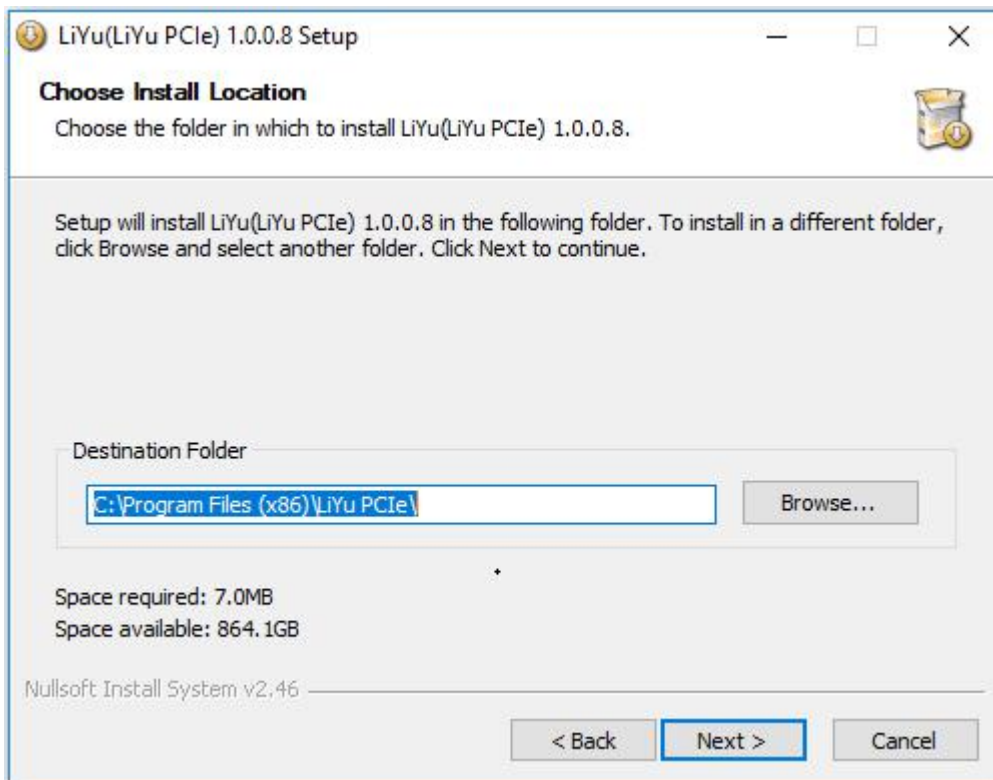
Select required language, then click “OK”.



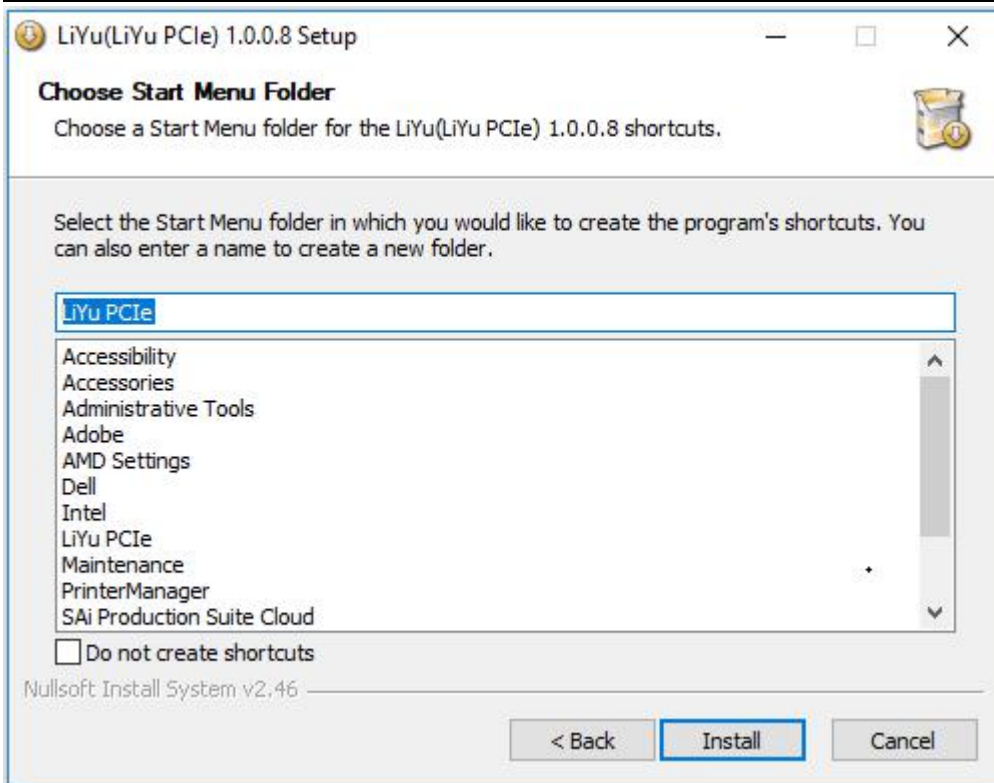
Click “Next”.



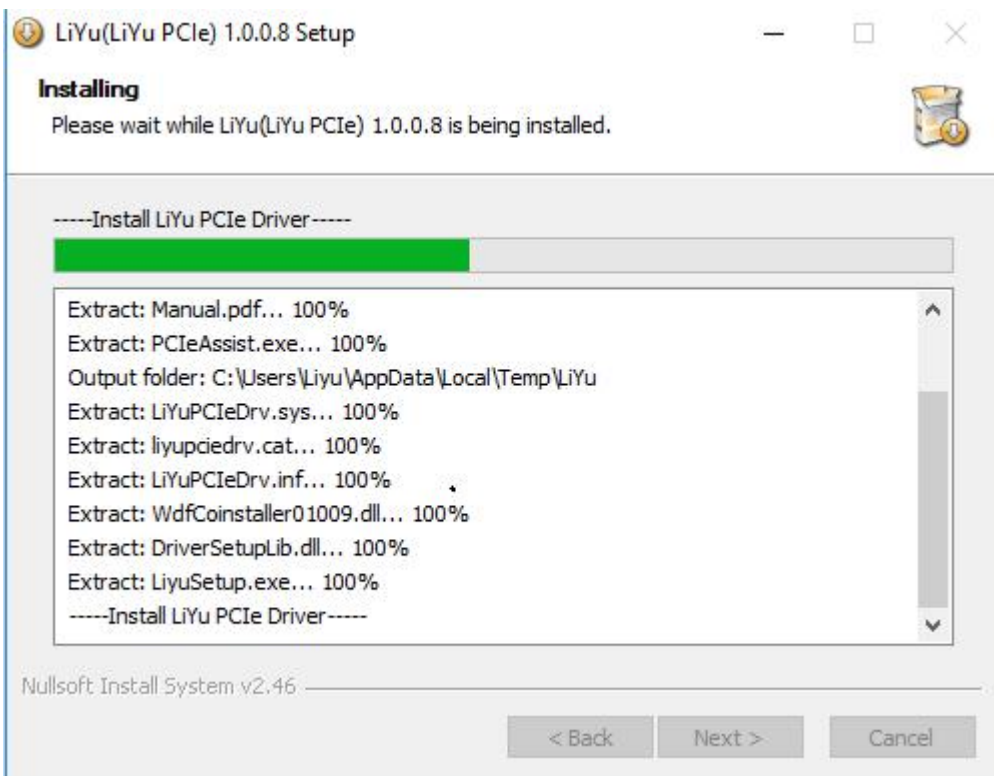
Select the required installation path, then click “Next”.

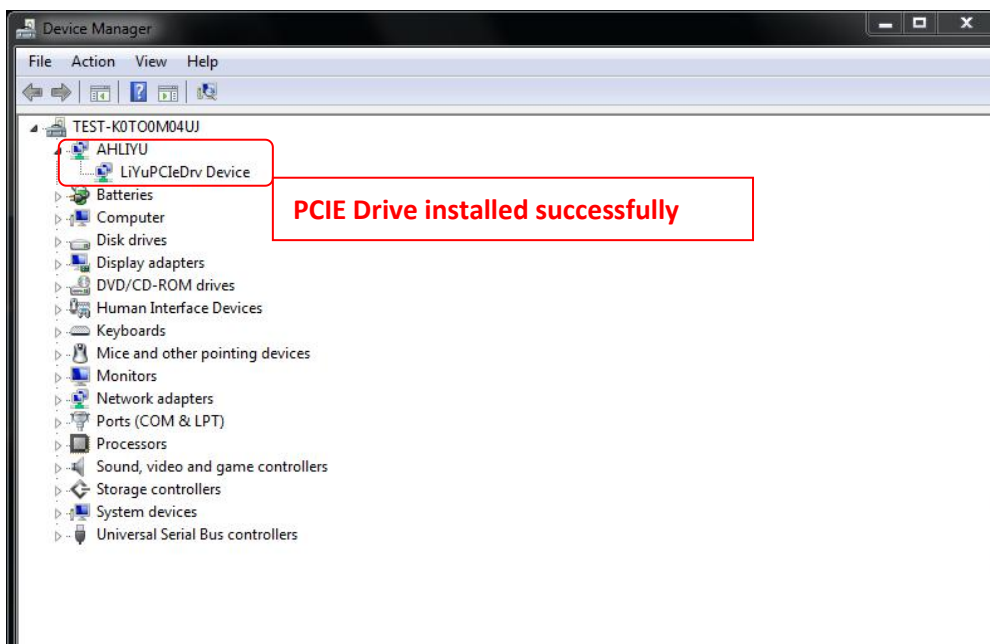


Click “Next”.



Please click “Install” when the prompt is pop up during the installation.





The driver has been successfully installed if the content in DevManView is shown as the figure above.

The carriage is pushed to the middle of the cross beam; the emergency buttons on both sides are released; the printer begins to work upon clicking Startup. The carriage automatically comes back to the flushing position on the left and ink is conveyed from the main inks tank to auxiliary ink tanks by ink-supply pump at the same time. During the period, the negative pressure gauge and electron magnetic

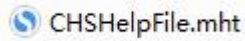


valve both jump. After ink conveyed to all auxiliary ink tanks reaches the position controlled by the liquid level sensor, ink supply is finished. Double click Lyprint icon; Lyprint operating interface pops up, and the carriage will move right and left for restoring its position.

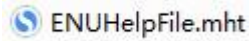
“**Ready**” is shown on the left bottom of the software, which means that the machine and software have been brought online successfully, and printing work can be carried out.

Please refer to random documents when using Lyprint.

(Lyprint Operation Manual) (Chinese)



(Lyprint Operation Manual) (English)



## ● *Installation and adjustment of print head*

### ■ Introduction of KONICA 1024i print head



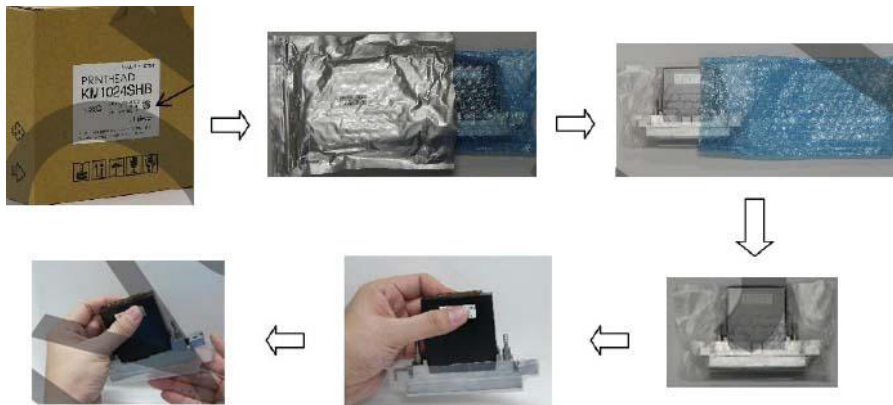
A high precision and high speed print head is widely used in the printer industry, and is also the most mainstream print head now supporting with 14PL and 6PL ink dot, among them the 6PL supports the grayscale printing. Two rows of ink eyelets are respectively on both right and left sides of the bottom of each 1024i print head; 512 nozzles stand in each row and a print head has  $512 \times 2 = 1024$  nozzles.

The print head identification is shown on the package of each print head. Please input referenced voltage into “Voltage Setting” of LyPrint.

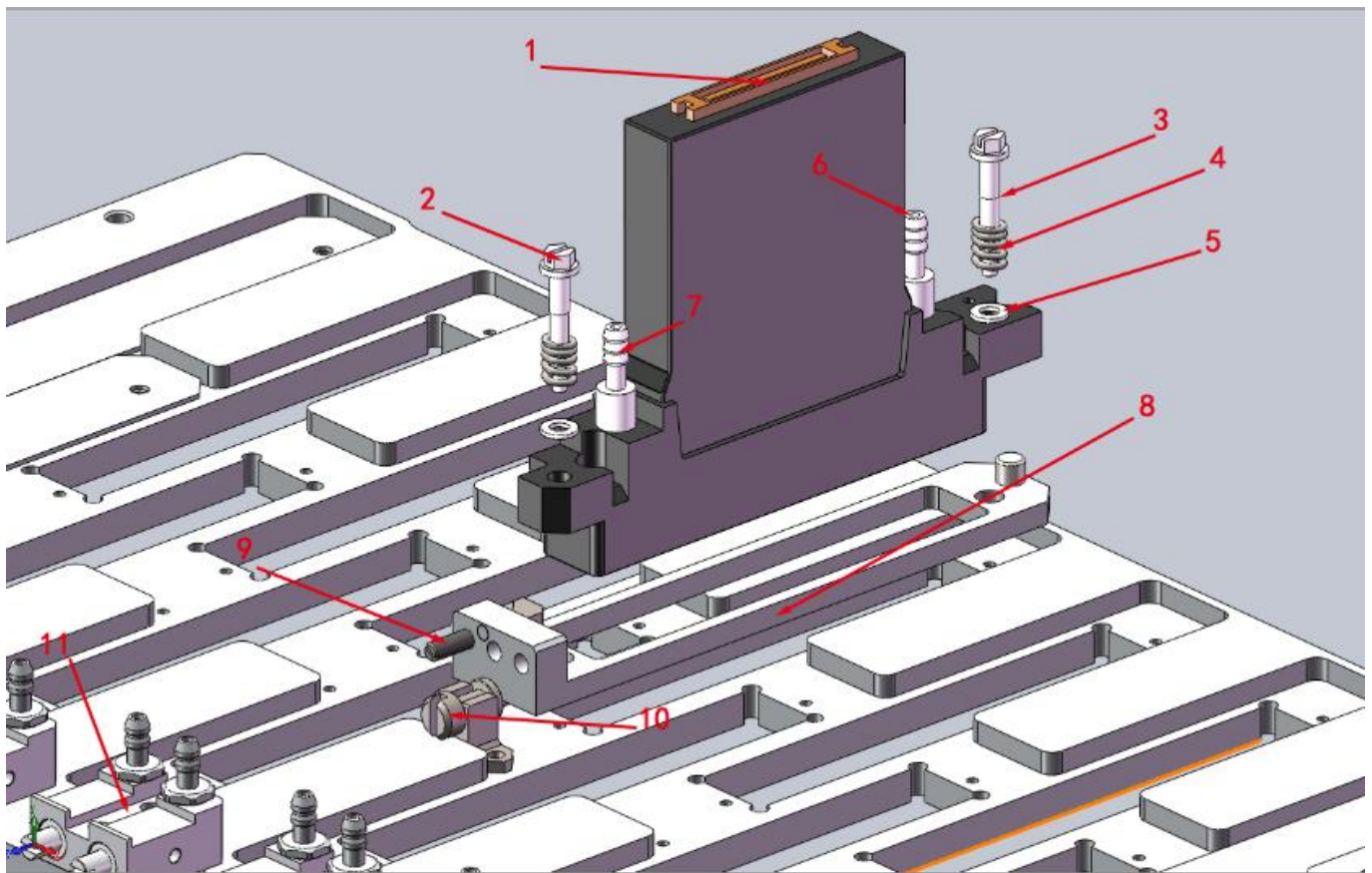
### ■ Print head installation

Some print heads of the machine have not been installed onto the machine. Therefore, this chapter will start from the installation of single print head to the machine. If print heads have been installed onto the machine, please omit the illustration of print head installation.

1. First install the bottom plate of print head onto the machine and place clean non-woven fabrics under the bottom plate of print head, so as to avoid soiling nozzle panel or blocking nozzle during print head installation process.
2. Remove the packing of print head according to the order below and take down the protection cover under print head (the protection cover is used to protect nozzle panel).



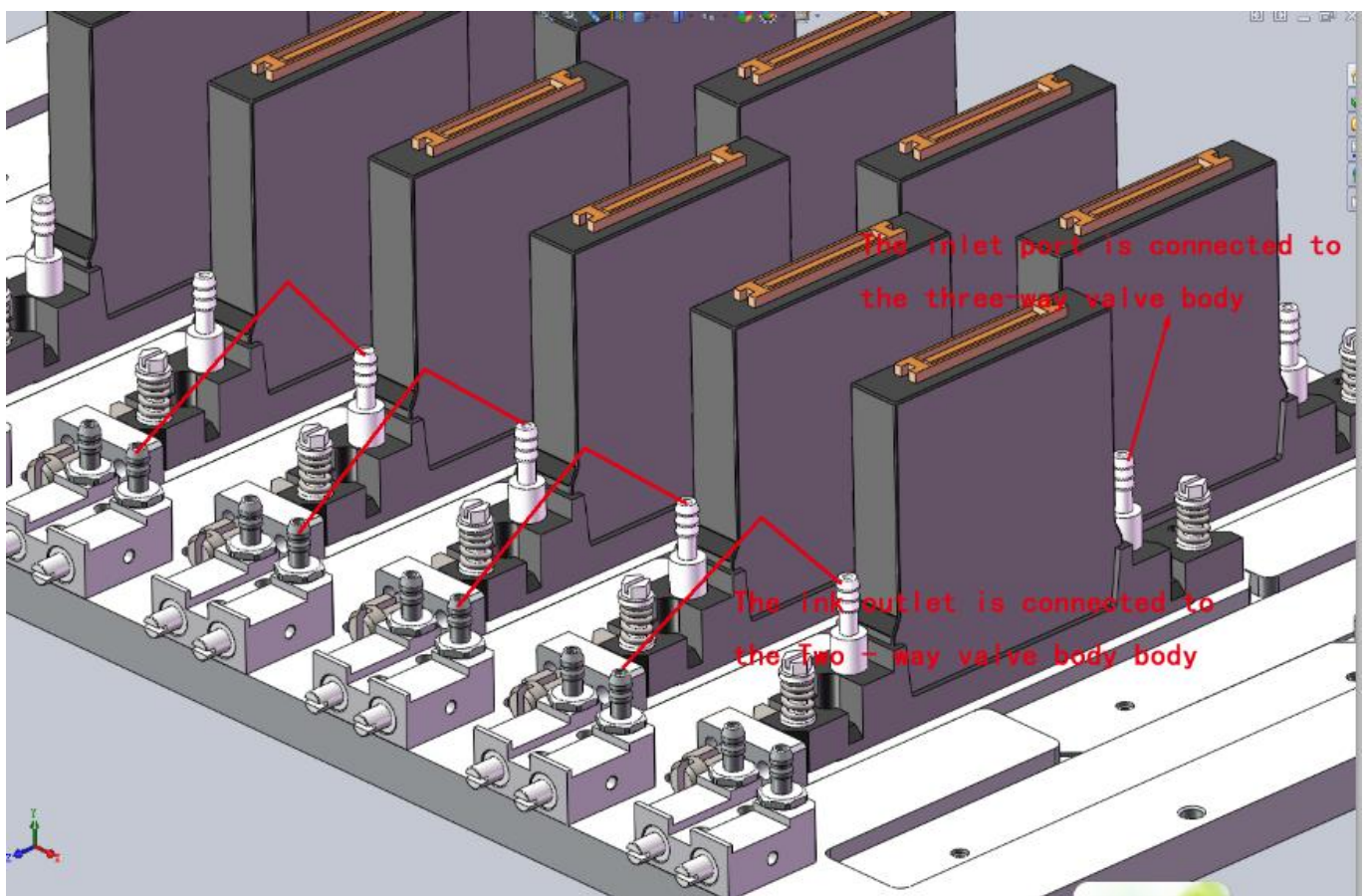
3. Place the print head to the adjusting support, and then the appointed nozzle position.



Installation Diagram of Print Head Konica 1024i

Code	Name of parts	Description
1	Print head FFC interface	Connect the driver board for print head to transmit the data signal.
2	Mounting screw for print head	Fix the print head on the adjusting support.
3	Mounting screw for print head	Fix the print head on the adjusting support.
4	Spring	Keep the effect of fixed print head
5	Spacer	Keep the effect of fixed print head

6	Ink inlet	Connect the outlet of three-way valve to supply the print head with the ink.
7	Ink outlet	To exhaust the air inside the print head to balance the differential pressure.
8	Adjusting support for print head	To adjust the physical position of the print head.
9	Inclined adjusting screw for print head	To adjust the inclined physical position of the print head.
10	Vertical adjusting screw for print head	To adjust the front and back physical position of the print head.
11	Two-way valve body	It can be used to discharge the gas in the print head.

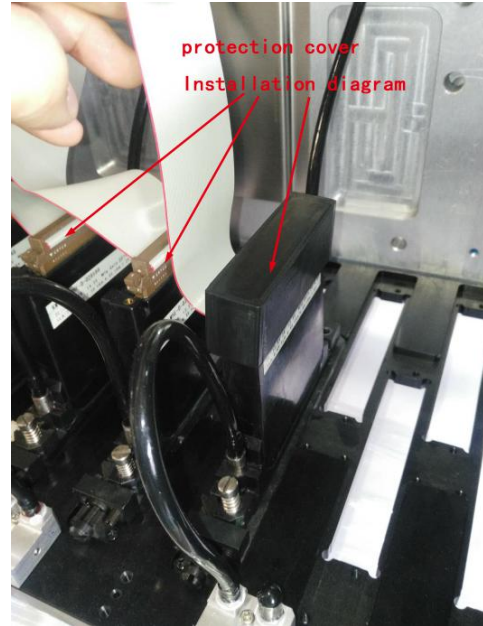


Installation Diagram of Print Head RKonica1024i

Please use the rubber cap for the used two-way valve to prevent leakage.

■ **Protective casing of the print head FFC interface**

The protective casing shall be used to protect the FFC interface to prevent FFC interface from being contaminated by ink and cleaning fluid, the effect is shown below.



- ***Power ON/OFF of the FS printer***

- **Power ON**

Please pay attention to the foreign object on the platform when starting FS printer, move the carriage to the middle of the girde (location of flash work),turn the Emergency Stop Switch, click the Start button and the machine will run self-inspection. The self-inspection process is accompanied by the beating of the negative pressure solenoid valve and the working sound of the ink pump. The FS printer will start to work after self-inspection and connection.

- **Power OFF**

The machine shall be powered off after the work completed. Firstly, press the ink to confirm that all nozzles are smooth, move the carriage to the left flask work position, close the three-way valve body, and add the moisturizing tray, press the Emergency Stop Switch. The inside of the moisturizing tray shall be kept clean.

- ***Add ink and fill the print head with ink***

- **Inject ink into the main ink tank**

You can find the inking port of the main ink box on the left side of the machine. Please infuse ink in accordance with the colors marked on the main ink boxes. The following is schematic diagram:



### ■ Inject ink into the auxiliary ink box

Before injecting ink into the auxiliary ink box, make sure that there is enough ink in the main ink box.

- ✧ Ensure that there is enough ink in the main ink bottle and conduct inspection of the machine before starting;
- ✧ When energizing the printer at the first time, auxiliary ink boxes are empty, so ink pumps of different colors will work automatically to pump ink from main ink boxes into auxiliary boxes;
- ✧ When all the ink pumps stop working, it means all the auxiliary ink tanks have been injected with ink;
- ✧ The transient buzzer sound during the process may be resulted from rather long ink pump route and timeout;
- ✧ In the event of ink pump not working or prolonged alarming of buzzer, please switch off the machine in time and examine. In case of failure to settle the problem, please contact the local dealer or after-sales department of our company immediately.

### ■ Fill the print head with ink

Since it is a very important operation to inject ink into the print head, please operate in strict accordance with requirements. There are two critical operations, namely print head cleaning and venting.

Print head cleaning:

The new print head must be purged with cleaning fluid before being injected with ink for the first time because protective liquid has been injected into the nozzle of print head, so the ink can only be injected into until the protective liquid being cleaned.

In view of the power of cleaning fluid pump, it is suggested that you clean a single print head every time. First, put the three-way valve of single print head at purging state with other print head valves off, then unscrew corresponding two-way valve, the cleaning fluid will flow out from the two-way valve through the ink chamber of the print head. About one or two seconds later, tighten two-way valve and make the cleaning fluid cascade out from nozzle for about five seconds. Clean other print heads according to the above method. After five minutes, clean all the print heads again as per the above method.

Venting of print head:

Inject ink into the print head after cleaning print head. Venting operation shall be conducted together with ink injection with the specific operation process as follows:

1. It is also suggested that you conduct venting for every single print head, that is to say, venting operation is conducted for only one print head every time with valve body of other print heads off.

First of all, put the corresponding three-way valve body in a working state.

2. Unscrew the corresponding two-way valve core to ensure a smooth ink outlet. Press positive pressure button and impress ink from the auxiliary ink tank into the print head, then ink will flow out from two-way valve core. Observing the flow state of the ink from the ink outlet and closing the two-way

valve as a blast of the ink falls plumb down without air bubbles, then the ink flows out from the jet orifice. (Tips: it may takes long to impress ink for the first time with such long pipelines, moreover, there is no sufficient ink in the auxiliary ink tank, please hold on for a while after positive pressure so as to enable ink supply system to refill the auxiliary ink tank and then continue positive pressure);

3. Carry out the above operation for every print head in succession. Place all three-way valves of the ink path in working state after completing venting for all print heads. Press positive pressure button and impress ink for all colors again, then complete ink injection of print heads.
4. Meanwhile, in case of bubble found in ink tube leading to print head, which affects ink out of the print head, the above method can also be adopted to carry out venting operation.

### ● *Positive pressure ink*

Positive pressure ink refers to impressing ink of the auxiliary ink tank into the print head by pressing positive pressure button, flush through the nozzle blocked not so seriously and eliminate the air in the print head, as well as solve some common problems of printing disconnection. You can impose positive pressure to either a single print head or several or all print heads with the specific operation steps as follows:

- ✧ Pushing the carriage to the non-operating position, i.e. the leftmost of the machine.
- ✧ Making sure that the ink-path three-way valve corresponding to the print head required to press ink stays in the state of working; the ink-path three-way valves corresponding to other print heads shall be rotated to the closing state if other print heads are on the same color.
- ✧ Rotating the air-channel three-way valve according to each color to the state of the positive pressure.
- ✧ Press positive pressure button and hold for a while, observe the ink out status of print head and release positive pressure button when you feel ink flowing smoothly.
- ✧ ·Wait for two seconds and wipe the nozzle surface with clean non-woven fabrics.

### ● *Negative pressure adjustment*

Since negative pressure is an important parameter for guarantying print quality, the operation of its adjustment is crucial. The target of adjustment is to make ink form meniscus in every nozzle printer. As long as sound meniscus is maintained, we can assure that ink droplets are ejected at a high speed with few flight drops. Vacuum negative pressure system is applied to FS to control the ink droplet.

#### **Introduction to the vacuum negative pressure system:**

The foregoing section has introduced that two-way negative pressure design is provided for FS series products. One is for colorful print heads and the other is for white print heads. However only one-way colours design for solvent products. The reason of this design is that there is a larger difference between LIYU FS\_Konica\_1024i Digital Coiled Material Inkjet Printer Operation Manual



the viscosity of the white ink and that of others, so an exclusive negative pressure control is provided for the white, with the purpose of achieving better printing quality.

● **Introduction to Dual Negative Pressure Control System :**

The dual negative pressure control system consists of three parts: **one main control board**, a set of **air pumps** and two **air buffer tanks**. The air pump consists of two PWM speed control no-return air pumping diaphragm pump and two air evacuation solenoid valves.

The system board card and buffer tanks are shown by the following figures.



(Fig. 1)



(Fig. 2)

● **System Parameters Description:**

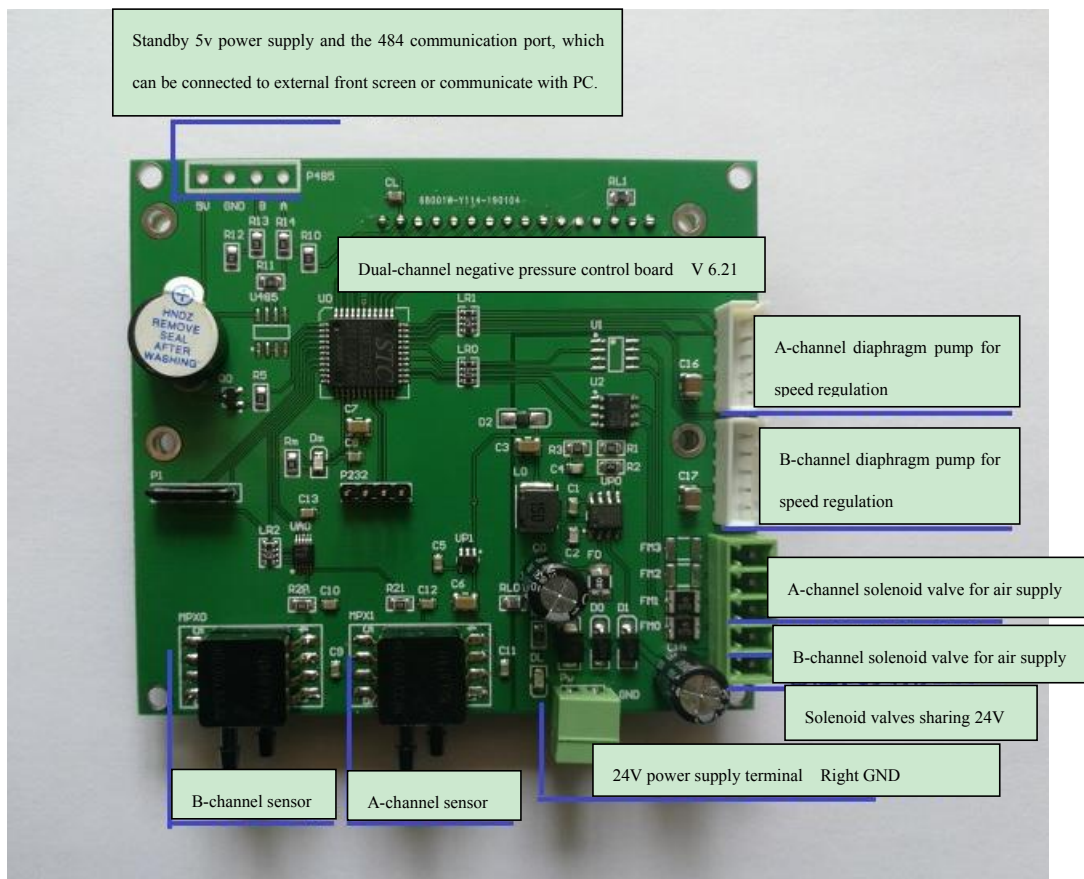
The effective measurement and control range of this board card is **0~ -7kp**. The accuracy will not be guaranteed for those beyond this range. The pressure sensor will be damaged when the pressure range exceeds **+14 ~ -21kp**.

The measuring accuracy of this product can reach 0.01KP. However, the pressure shown is close to the standard atmosphere, which cannot be referred as an absolute atmospheric value of the reference due to the lack of strict mathematical correction. Meanwhile, negative pressure values with error may be obtained by setting the same negative pressure parameters for different negative pressure control board due to the error of each sensor.

In order not to frequently rotate peristaltic pump to adjust the pressure, the default adjustment range of this system is set pressure value of  $\pm 0.02$  KP. The air pump or peristaltic pump can only be started to adjust the pressure if it is larger or smaller than this range. Therefore, the actual control accuracy of this system is  $\pm 0.02$  KP.

● **Instructions to Main Control Board Wiring of Double Negative Pressure:**

The wiring diagram of the main board is shown below.



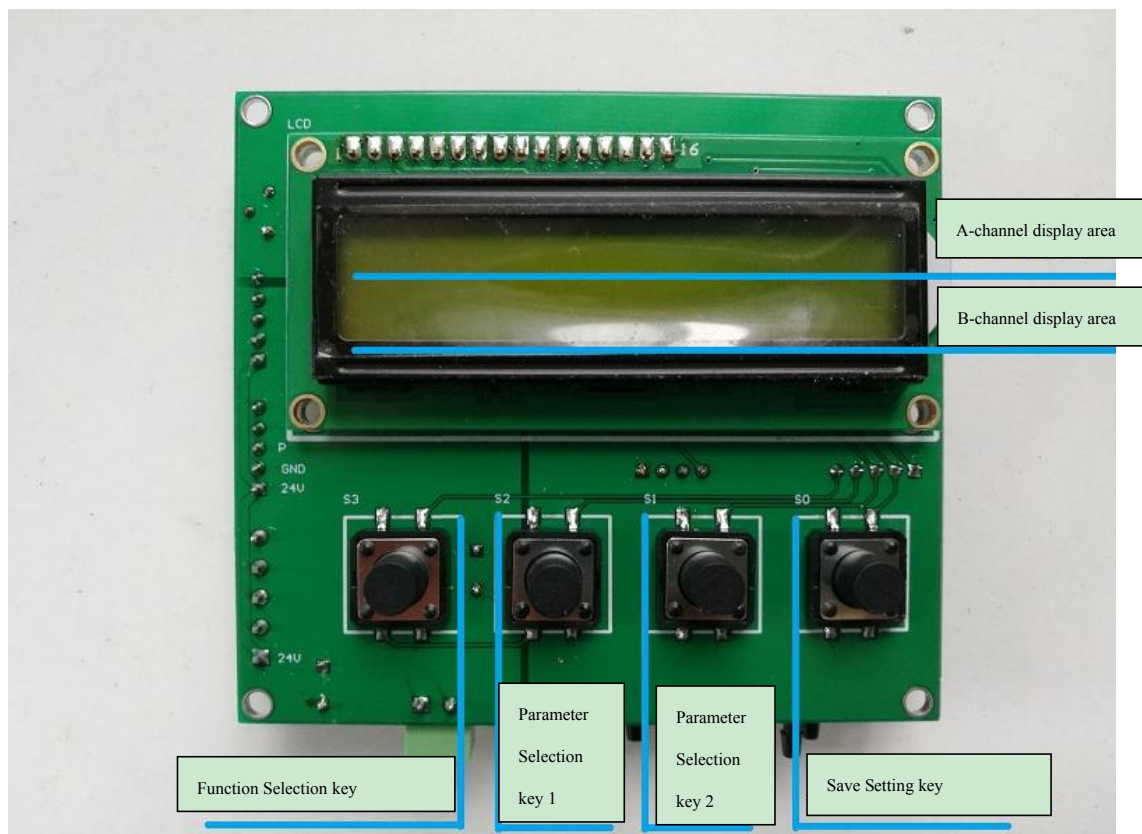
● **Connection Instructions:**

1. 24V DC power supply: this board card only needs to be connected to a 24V DC power supply.
2. Air pressure sensors in channel A and channel B: these sensors are connected to the negative pressure tank through a silicone hose (shipped at the factory) for measuring the negative pressure value of the air in the tank. **Note:** the negative pressure tank shall be connected to the sole air pipe, and not in series or parallel with other air tubes,

otherwise the fluctuation of the negative pressure will occur.

3. Speed regulating diaphragm pumps in channel A and channel B: two diaphragm pumps are connected here, the diaphragm pump motor is the direct-current motor regulating the speed through PWM. Before the current negative pressure reaches the set pressure negative value and the difference between the actual value and the set value is greater than 0.1 kP, the diaphragm pump works at full speed. When approaching the set value, (the difference between the actual value and the set value is less than 0.1 kP), the diaphragm pump can slowly approach the set value by pumping the air according to the PWM speed set by the system.
4. Air supply solenoid valves in A-channel and B- channel: the solenoid valves are connected. When the system detects that the negative pressure is greater than the set value, the solenoid valve will be started to supply the air to the system. For example, if the set pressure value is -3.00kP, the solenoid valves will be started when the current value is detected as -3.05 by the system.
5. 24V sharing power output: A-channel solenoid valve and B-channel solenoid valve share one 24V power supply on this terminal, and output 24V through this terminal.

The definition of the key is shown in the following figures:



● **Instructions:**

When the system is powered up normally, the first line on the screen (the top line) shows the current negative value

collected by the sensor in A-channel and the setting value of A-channel. The second line shows the current negative pressure value collected by sensor in B-channel and the setting value of B-channel.

**Setting key:** When the Setting key is pressed, the system enters the parameter setting interface. Every time the key is pressed, the setting menu jumps backward and cycles in turn.

In the setting mode, the size setting of the parameters is set by Setting Selection key 1 and Setting Selection key2.

When the setting is finished, press the OK key to save the parameters into the system, and exit the setting mode.

**During the reset of the sensor in A-channel or B-channel, it is necessary to hold down the Setting Selection key 2 and then press the OK key before the sensor can be reset. This setting is to avoid the misoperation to reset the sensor.**

**By pressing the Parameter Selection key 1 and the OK key at the same time, the negative pressure adjustment of A-channel can be ceased. After pressing these two keys again, the negative pressure adjustment of A-channel can be resumed. The negative pressure of A-channel can be ceased temporarily by this function.**

**By pressing the Parameter Selection key 2 and the OK key at the same time, the negative pressure adjustment of B-channel can be ceased. After pressing these two keys again, the negative pressure adjustment of B-channel can be resumed. The negative pressure of B-channel can be ceased temporarily by this function.**

## ● Introduction to Parameter Setting:

### **Parameter 1: Set vacuum A**

The parameter is negative pressure parameter that should be maintained when setting the A-channel negative pressure. After setting, the system will automatically control the peristaltic pump and adjust it to the set pressure value.

### **Parameter 2: Correct zero A**

Press the OK key in the setting screen. A-channel negative pressure will automatically correct the 0 pressure difference. **\*Note** Zero correction must be carried out without any pressure difference or with direct connection to the atmosphere. As there are errors in the electronic devices and the voltage of access, 0 pressure needs to be corrected before it can be used.

### **Parameter 3: MotorA base V**

The parameter is to set A-channel negative pressure to adjust the rotating speed of pneumatic peristaltic pump at low speed, including 16 levels of speed available for adjustment and setting. The minimum peristaltic pump speed means the method of slowly rotating the peristaltic pump to regulate the air pressure in this system when the air pressure parameter is close to the set value. The motor of the peristaltic pump will work at full speed when there is a big gap between the pressure measured by the pressure sensor and the set value; the speed of the peristaltic pump will decrease to achieve the purpose of approaching the set value at soft /variable speed, instead of just switching control, when the pressure approaches the set valve, so that the fluctuation of the pressure in the system can be minimized.

### **Parameter 4: Set vacuum B**

The parameter is negative pressure parameter that should be maintained when setting the B-channel negative pressure. After setting, the system will automatically control the peristaltic pump and adjust it to the set pressure value.

### **Parameter 5: Correct zero B**

Press the OK button in the setting screen. B-channel negative pressure will automatically correct the 0 pressure difference. **\*Note** Zero position must be corrected without any pressure difference or directly connected to the atmosphere. As there are errors in the electronic devices and the incoming voltage, 0 pressure needs to be corrected before it can be

used.

**Parameter 6: MotorB base V**

The parameter is to set B-channel negative pressure to adjust the rotating speed of pneumatic peristaltic pump at low speed, including 16 levels of speed available for adjustment and setting.

**Parameter 7: Software version**

The parameter only displays the software version of the system so that the after-sales service personnel can determine the functions of the system.

● **Cautions:**

- 1) The airtightness of the whole air route system should be guaranteed. If air leakage occurs, the air pump will work frequently, resulting in a decrease in the service life of the pump. Please check the airtightness if the air pump is found to be adjusted once 3~5 seconds.
- 2) Strictly prevent liquid and ink from entering the whole air system. The negative pressure sensor and rapid extraction diaphragm pump will be damaged once the ink and liquid entering.
- 3) **Air tube connected on the negative pressure sensor** must be a separate one way air tube on the negative pressure buffer tank. Do not share an air tube with the air pump. Sharing may cause the system to produce great fluctuations, and the peristaltic pump will be frequently adjusted by positive and negative rotation.
- 4) 24V DC power supply is applicable for the system. 12V supply power may be adopted according the situation, while 40V supply power may burn down the electronic components of the system. The connection of AC high voltage will break down all the components.

● **Additional Remarks:**

- 1) Single negative pressure system is operated according to double negative pressure system.

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## Chapter 3 System Function

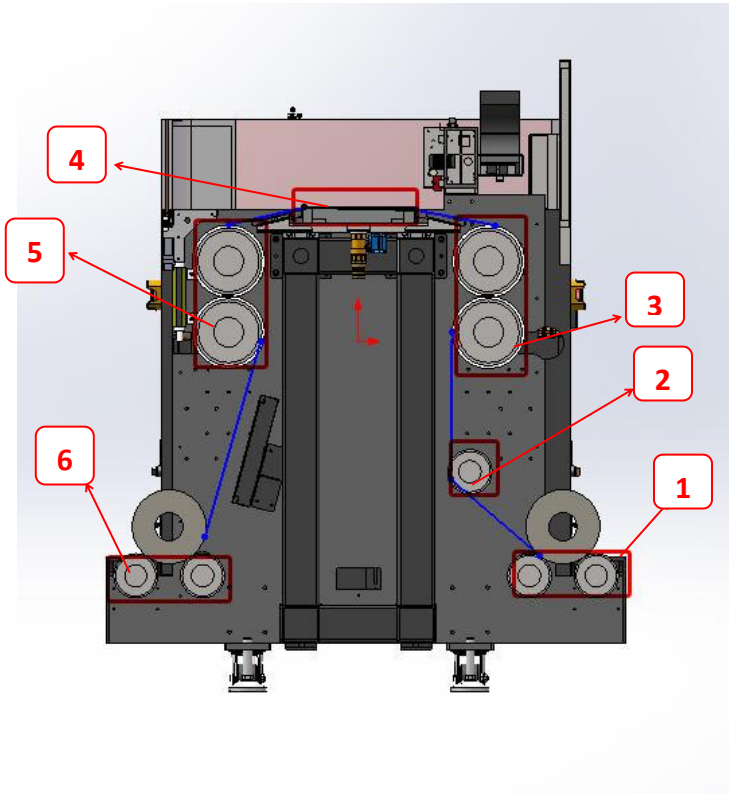
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Contents of this chapter:

- Printing media loading
- Diagram of printing media loading
- Switching of soft and hard media
- Setting of tensioning function
- Introduction to tensioning function
- Common print media parameter configuration
- System function introduction of FS\_Konica\_1024i
- Core Component
- PC
- PCIE board
- Carriage board
- Motion board
- Driver board
- Konica 1024i

● *Printing media loading of FS printer*

■ **Diagram of printing media loading**



Code	Name of parts	Description
1	Double rollers for rear feeding	It can load the printing media, and automatically feeding. It can realize reverse tightening of printing media.
2	Transition rod	It can adjust the angle when the media enters the roller, level the medium when tightening, and prevent printing wrinkle.
3	Double rollers for rear pressing paper	It can press the feeding printing media, which can synchronize with the front roller. It can delivery media when printing.
4	Printing platform	It is used for media printing. It has the adsorption function, and it can ensure the height when printing.
5	Double rollers for front pressing paper	It can press the feeding printing media, which can synchronize with the rear roller. It can delivery media when printing.
6	Double rollers for front feeding	It can roll the printed media.

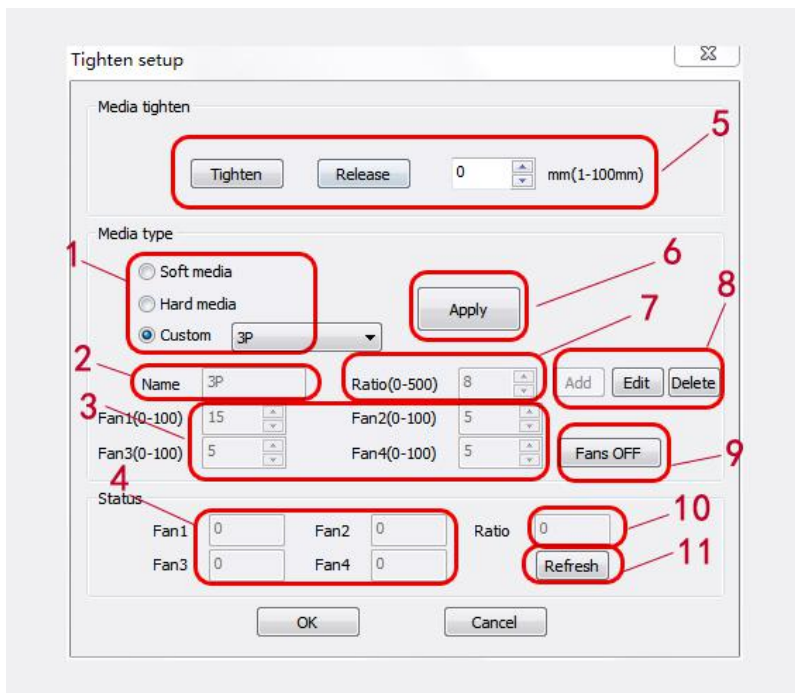
● **Switching of soft and hard media**

■ **Setting of tensioning function**

The tensioning function is specially designed for the FS rubber roller machine, which can achieve a key switch between hard and soft media. Different parameters can be set for soft and hard materials. When printing, you only need to select matching parameters to achieve one-key switch. The function can also be customized to add different materials and parameters, and saved for later selection.

■ **Introduction to tensioning function**

The tensioning function includes tightening and loosening materials, gear ratio replacement adjustment, adsorption size switch adjustment, adding new material parameters. The tensioning function shall be applied under the state of online, it can also applied in the states of standby, pause, flash spray. However, it can't applied when printing.



Code	Function name	Description
1	Media Type	Soft, hard and custom materials
2	Name	Material name setting
3	Fan	Parameter setting of adsorption fan 1, 2, 3 and 4 (1 for operation, 2, 3, and 4 for standby).
4	Fan status	Display real-time fan parameters after refresh (1 for operation, 2, 3, and 4 for standby).
5	Tightening device	It can tighten and loosen the material (length in mm).

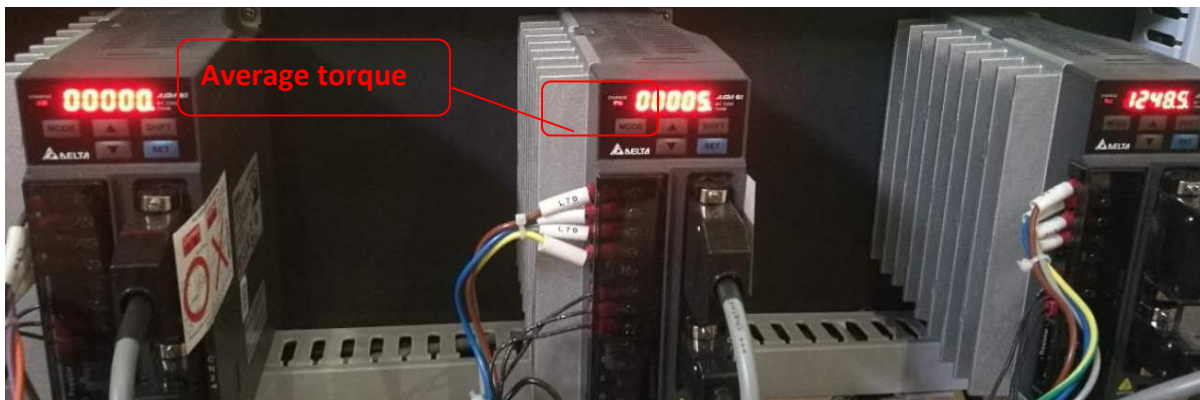


6	Application button	When changing different material, select and preset the corresponding material, and click this button to change material.
7	Gear ratio	Parameters set when printing different materials.
8	Preset and edit	Add, preset and delete keys.
9	Close the fan	It can turn off the adsorption function separately.
10	Gear ratio status	It displays the real-time gear ratio after refresh.
11	Refresh	Click to see the parameters of the status bar. The function can't communicate when printing.

■ **Function and introduction to gear ratio parameter**

The parameter setting of gear ratio is designed by FS32 printer for balancing Y forward and backward double rubber rollers while rotating the conveying media flat and stable. By setting the gear ratio, the tension of the front and back rollers in the printing area is uniform when stepping, so that the media can be smoothly conveyed and wrinkle-free when printing. The parameter setting of gear ratio can be divided into soft and hard media to distinguish. The soft media has larger elasticity that requires larger gear ratio, while the hard media has smaller elasticity that requires smaller gear ratio.

Gear ratio parameters can be set according to the following parameter configuration table to set the printing media. The parameters may need to be fine-adjusted due to differences of the media and the actual printing environment. The parameters can be adjusted by observing whether the media is wrinkled or not and the value of front roller driver when printing. If wrinkles occur during printing, it means that the gear ratio is small and needs to be increased; if the average torque of the driver keeps increasing during printing, the gear ratio needs to be reduced. See the below figure for the front roller driver in the middle:



■ **Common print media parameter configuration**

The parameters listed below are the results of the actual test. The parameters can be used as reference values for customers. The parameters may need to be fine-adjusted due to differences of the media and the actual printing environment. The actual printing situation shall prevail.

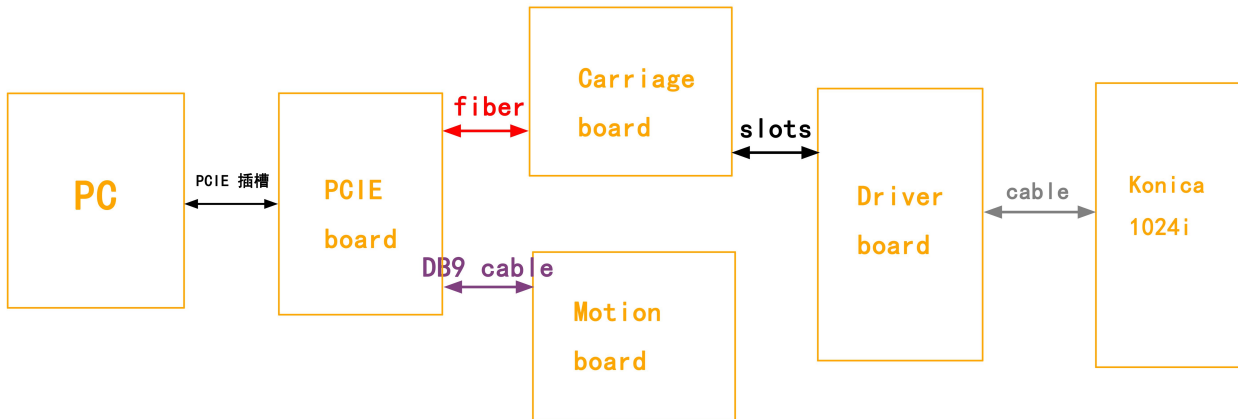
Media name and specification	Tightening length	Gear ratio	Adsorption motor parameter	Average torque
Carriage sticker	3mm	14	20	

Flex banner	4mm	15	30	50-70
Light slice	3mm	10	20	
Soft film/22s	4mm	50	5	10
Coated banner	3mm	14	30	50-70
Pearl cloth	3mm	9	15	10
3P cloth	3mm	11	15	
3M reflecting film	5mm	11	35	50-70
Backing adhesive light slice	2mm	5	18	

● *System function introduction of FS\_Konica 1024i*

■ **Core Component**

The core part of the FS\_Konica\_1024i system is made up of PC+PCIE board + Carriage board+Motion board + Driver board+Konica 1024i, as shown below:



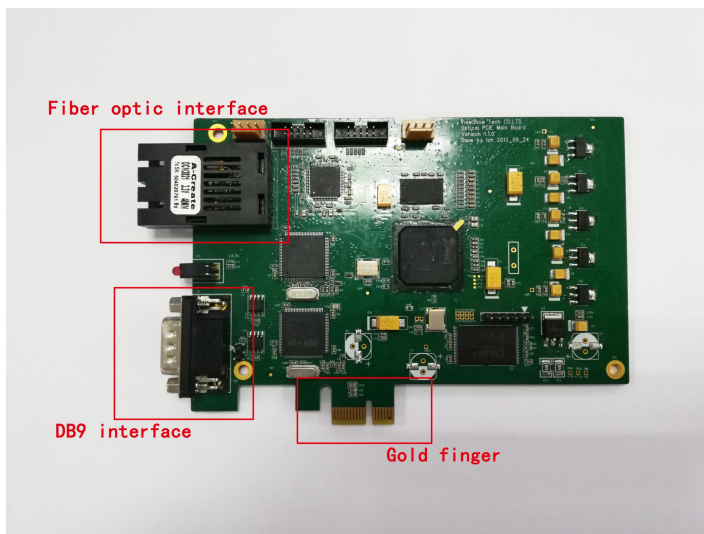
The six parts are described below.

■ **PC**

To guarantee the computer and the chassis grounding wire conform to the specifications.

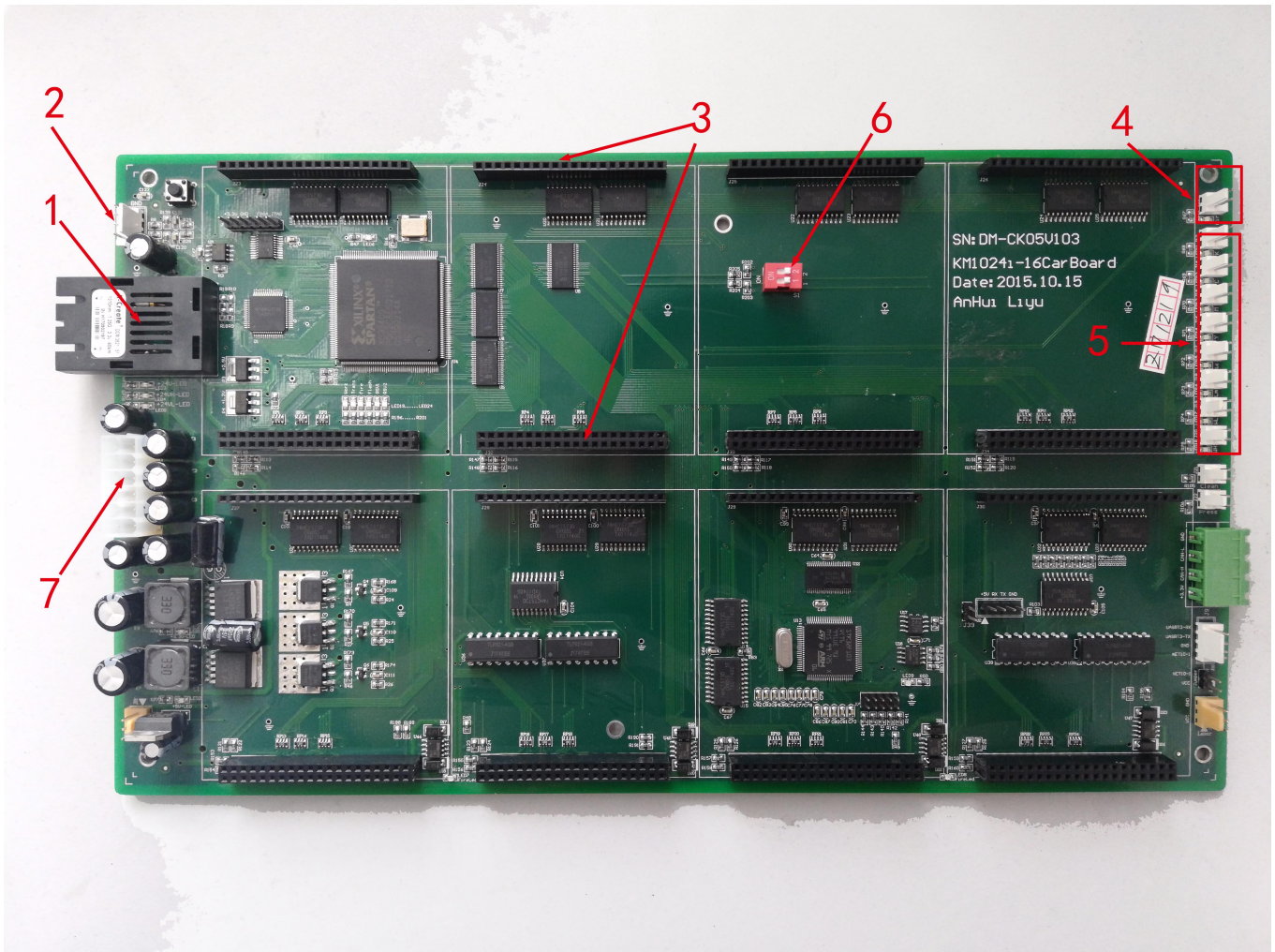
■ **PCIE board**

The PCIE board is the core of FS printer, all commands and actions are given by the PCIE board, as shown below:



■ Carriage board

The main functions of Carriage board are receiving printing date of the print head, print head data loading and print control, print head temperature, voltage compensation control and liquid level detection. The following is the example of 14PL carriage board (CK05V105 for 6PL carriage board), figure as follow:

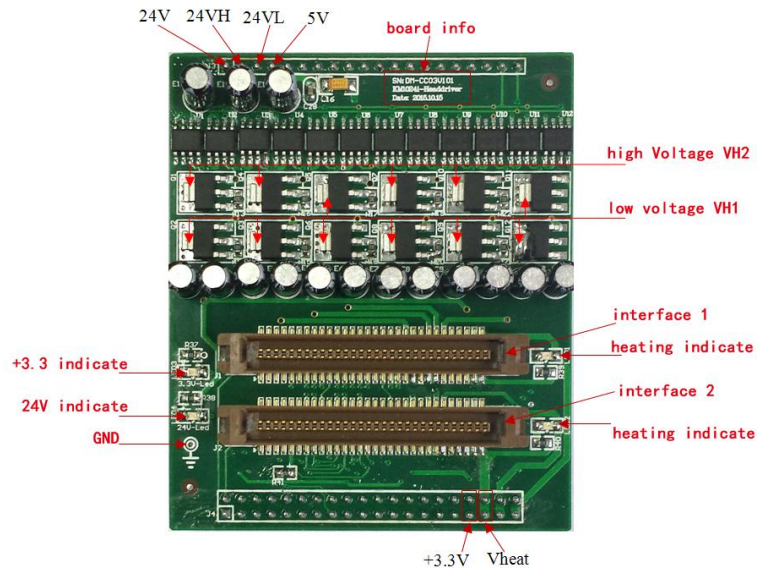


Code	Name of parts	Description
1	Fiber interface	Connect TX, RX respectively.
2	Optical grating decoder interface	Connect the optical grating decoder.
3	Driver board interface for print head	Be careful not to insert the pin obliquely during installation of the driver board for print head.
4	Liquid level signal of waste liquid tank	The whole machine stops running once the signal in the waste liquid tank is valid.
5	Supply ink liquid level signal	Guarantee printing is stable ink supply.
6	Dial switch	Do not toggle this switch, otherwise it will cause abnormal operation.

7	Power interface for board card	Provide power for carriage board
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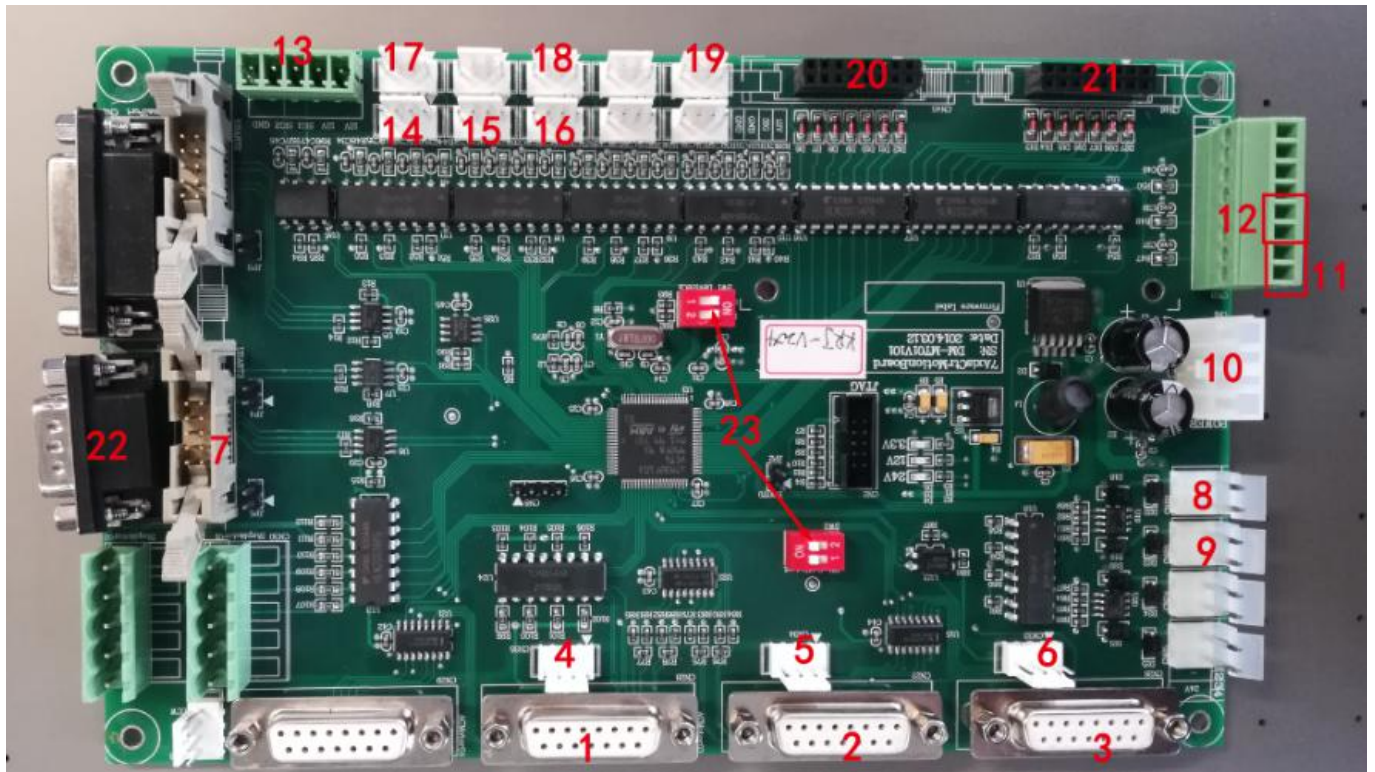
■ Driver board

As shown on the right, as the driver board for print head, Driver board plays a role in driving the print head, providing with voltage and data needed by the print head.



■ Motion board

As the motion control board, motion board mainly realizes the motion control of X, Y and Z motors, together with the control of UV lamp.



Code	Name of parts	Description
1	Y Right motor control signal interface	Control the motion of right motor in Y direction
2	Y Left motor control signal interface	Control the motion of left motor in Y direction
3	Y Motor control signal interface	Control the motion of motor in X direction
4	Y Right front limit switch & Y Right rear limit switch	The limiting plays a function of protection.
5	Y Left front limit switch & Y Left rear limit switch	The limiting plays a function of protection.
6	X Left limit switch & X Right limit switch	The limiting plays a function of protection.
7	Hand-held box interface	Connect the hand-held box
8	Lo KV1	Control of positioning pin electromagnetic valve
9	Height measurement control signal interface	Control of measuring the height of medium automatically
10	Power for board card	Provide power for motion control board
11	X LoSn	Positioning pin sensor in X direction
12	Y LoSn	Positioning pin sensor in Y direction
13	Maintenance control signal	Play a role in maintaining when pressing the ink
14	X Left limit sensor	It is a photoelectric sensor that plays a role in limiting and positioning
15	Y Left front limit sensor	It is a photoelectric sensor that plays a role in limiting and positioning
16	Y Right front limit sensor	It is a photoelectric sensor that plays a role in limiting and positioning
17	X Right sensor	It is a photoelectric sensor that plays a role in limiting and positioning
18	Y Right rear sensor	It is a photoelectric sensor that plays a role in limiting and positioning
19	Z Limit sensor	It is a photoelectric sensor that plays a role in limiting and positioning
20	UV Lamp control 1	Control the signal of UV lamp
21	UV Lamp control 2	Control the signal of UV lamp
22	CAN bus interface	Connect DB9 interface of PCIE card
23	Dial switch	To switch the program, generally, don't toggle

#### ■ Konica 1024i

The print head is the last link of printing on medium by the ink droplet in the system, therefore, the voltage and temperature of the print head must be set correctly according to the temperature and humidity of the environment, so that the perfect ink droplet can be printed.

## Chapter 4 Maintenance and Service

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Contents of this chapter:

- Daily maintenance instructions
- Print head maintenance instructions
- Ink use guidelines

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### ● *Daily maintenance instructions*

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1. Keep the working environment of the printer clean and ventilated, and clean dust and ink on the printer periodically;
2. Keep the work surface clean. Every time before starting it up, check whether the working board is cleaned, to avoid scratching the print head;
3. Inject lithium base greases into the slider by grease gun every forty hours operation, to reduce its frictional resistance against the guide rail and extend its service life;
4. Maintain an appropriate belt tightening of the ink carriage timing belt. The belt tightening of the ink carriage timing belt can be adjusted after removing the upper left end cap. After the adjustment, connecting screws must be fixed tightly;
5. Every time after finishing refilling ink, make sure the cover of the main ink tank is screwed tightly. Wipe off residual ink on the outer wall of the tank;
6. For positive pressure printing, after wiping the print head, flash spray for around 10 seconds first before printing pictures, to achieve sound meniscus formed by ink droplets in the nozzle;
7. The area around the orifice must be maintained clean. No residual ink, dust or fiber is allowed. Orifice shall not be scratched;
8. Since the ink and the cleaning fluid contain strong solvent, they mustn't contact electrical components and wires. Were ink or cleaning fluid spilled on them accidentally, they would be wiped off cleanly as soon as possible;
9. Clear liquid waste in the liquid waste box in time;
10. Every day before the startup and shutdown, it is recommended to print nozzle test chart to check whether the nozzle is in normal condition. Provided that ink outflows brokenly, press the ink or clean the nozzle to make it work properly.

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### ● *Print head maintenance instructions*

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As the core component, the print head is much expensive and sensitive, which requires good maintenance. Otherwise, print quality and its service life would be seriously affected. Print head maintenance instructions are as follows:

1. In using the printer, please use the ink appointed by the manufacturer. Do not change the ink at will, or it might lead to malfunction of print head;
2. When the device stops running, maintenance methods of different sorts should be adopted in accordance with the length of downtime:



- ✧ If printer downtime is within a working day and you are not willing to turn it off, it should be set under the state of flash spray. Before the flash work, please confirm the status of print head. If it is not in a good condition, do the ink press operation first;
- ✧ If the downtime is over 12 hours to one day, it is recommended that the valve knob shall be screwed to the closed state, the ink carriage shall be stopped on the right light shield, power shall be switched off, a layer of non-woven fabrics shall be embedded into the moisturizing tray, a small amount of cleaning liquid shall be injected into the moisturizing tray (non-woven fabrics should be drenched), and then the print head can be moisturized with the moisturizing tray, during which operation make sure that the whole nozzle surface is in touch with cleaning liquid.
- ✧ If the downtime is within two days, the maintenance operations are the same as the previous one. Meanwhile, non-woven fabrics in the wet protection tray should be replaced every day, and new cleaning liquid should be injected into it (Cleaning liquid needs to be changed, because components of moisturizing function within it are easy to volatilize);
- ✧ If the downtime is over three days, clean up the ink within the print head following its cleaning method, inject a little cleaning liquid into it (Leave some cleaning liquid in the print head when doing the cleaning.) Meanwhile, moisturize the nozzle surface with the wet protection tray according to method 2. In addition, replace non-woven fabrics in the wet protection tray every two days and inject new cleaning liquid into it.

### 3. Scrubbing the nozzle panel

- ✧ Every time when pressing ink with positive press or after cleaning the print head, scrub the nozzle panel. Wipe away residual ink and cleaning liquid on the nozzle panel, to prevent it dropping onto the printer or print media;
- ✧ When scrubbing the nozzle panel, dedicated non-woven fabrics should be used, and make sure of its cleanness. Non-woven fabrics contaminated by dust, stain ,oil or water, especially the one which has been used to scrub ink, should not be used to wipe the nozzle panel, as ink on it can lead to a seriously blocked nozzle;
- ✧ Scrub the nozzle panel along a single direction rather than back and forth. Do not scrub it with great strength, but touch it lightly, to avoid damage of nozzle surface;
- ✧ Dispose the used non-woven fabrics properly. Do not reuse it.

### 4. Adjusting the print head condition in printing

- ✧ To guarantee print quality, please make sure every nozzle on the print head is in good condition, whose condition can be improved by pressing ink with positive Negative pressure or doing the cleaning. The following items are very important to guarantee the nozzle condition;
- ✧ The requirement of printer's working environment shall be maintained well, especially the temperature. The print head temperature shall be between 15 and 26 .Print quality may be affected if the temperature is below 15 or above 28 ;

- ✧ Make sure the print head exhaust completely, and no bubble remains in it;
- ✧ Adjust voltage and negative pressure of print head. A higher print head voltage can improve the accuracy and color saturation of ink droplets, but it can cause the ink outflow to be frequently broken as well, so the best balance shall be adjusted.

## ● *Ink use guidelines*

### 1. **Special Note:**

Any part of the ink or ink path shall not touch water or any solution containing water molecule, otherwise gel would come into being which will block the ink path and even the print head.

### 2. **Safety instructions:**

Some chemical substances contained in ink are of very low toxicity and irritation, which will irritate eyes and respiratory system and cause allergic reaction. Contact with ink can be effectively reduced with sound ventilating device and personal protective devices. When dealing with ink, acrylic gloves and work clothes should be worn. If ink spills onto the skin, it should be washed immediately with soap-suds. Eating, drinking and smoking are forbidden in the workspace.

### 3. **Storage of ink:**

Ink should be stored in sealed containers and placed in a cool, dry place with good ventilation no long-period exposure to light (including indoor sunlight, illumination light, etc.) and with temperature of 10 ~ 40 . Although ink has a storage duration of 12 months, it recommended to use it up within 3 months. Pay attention to the production date. Out-of-date ink cannot be used. Ink viscosity is greatly affected by temperature and varies according to different seasons, especially in summer and winter, which would have influence on printing quality. In addition, ink producers would make adjustment in ink viscosity in keeping with seasons. Thus, you must see to it that you choose ink on the basis of actual environmental temperature.