

LIYU PCT Series Digital Inkjet Printer Operation Manual

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Introduction

Thank you very much for purchasing our LIYU PCT series inkjet printer (hereinafter referred to as printer). Please carefully read the manual before using the printer and put the manual at the place within easy reach at any time. This printer is one that uses environmental-ink or solvent-ink rolled printing media 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: Safety Precautions and Operation Cautions.

Technical Specifications

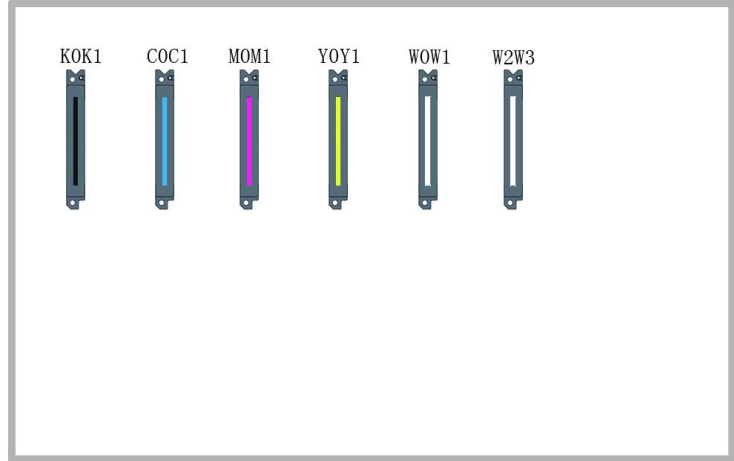
Konica 1024i print heads (hereafter referred to as 1024i print heads) are applied to PCT series printers. Please decide machine types and review machine parameters according to the following table:

- **Machine Model List**

| Machine Model (From LyPrint) | Description |
|---|---|
| <p>PCT3214-KY-LED(S123-W043)</p> | <p>UV type double-row K C M Y Lc Lm W 14 print heads with white color as an option.</p> <div data-bbox="715 730 1426 1178" style="border: 1px solid gray; padding: 10px; text-align: center;"> </div> <p style="text-align: right;">KM1024i 14PL 7 color</p> |
| <p>CT3208-KY-LED(S061-W011-V011)</p> | <p>UV type single row K C M Y Lc Lm W 7 print heads with white color as an option.</p> <div data-bbox="715 1411 1445 1868" style="border: 1px solid gray; padding: 10px; text-align: center;"> </div> <p style="text-align: right;">KM1024i 14PL 7 color</p> |

PCT3204-KY-LED(F041-W011-V011)

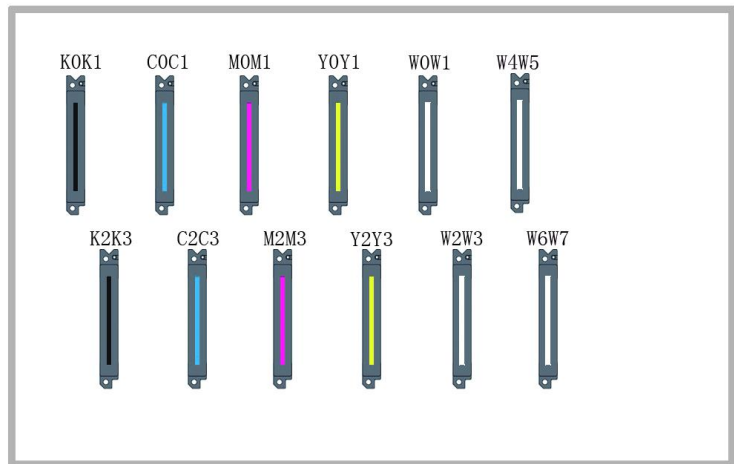
UV type single row K C M Y W W 6 print heads with white color as an option.



KM1024i 14PL 5 color

PCT3212-KY-LED(F083-W043)

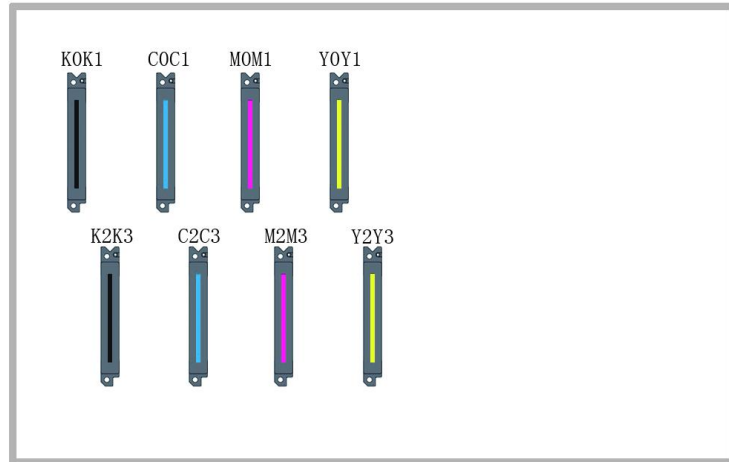
UV type double-row K C M Y W W 12 print heads with white color as an option.



KM1024i 14PL 5 color

PCT3208-KY(F083)

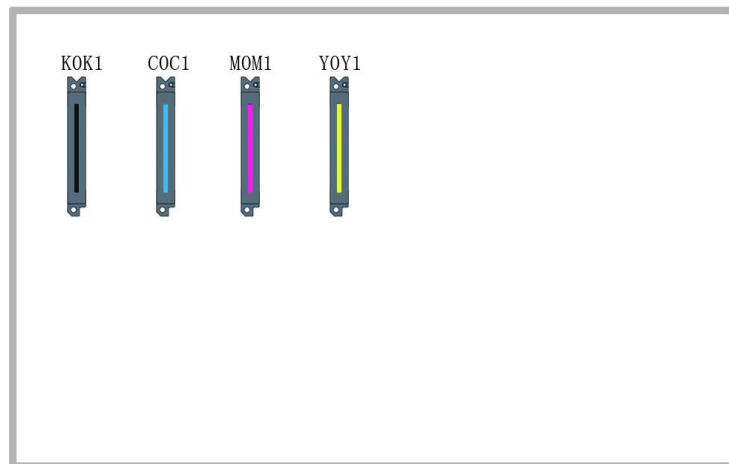
Solvent type double-row K C M Y 8 print heads



KM1024i 14PL 4 color

PCT3204-KY(F041)

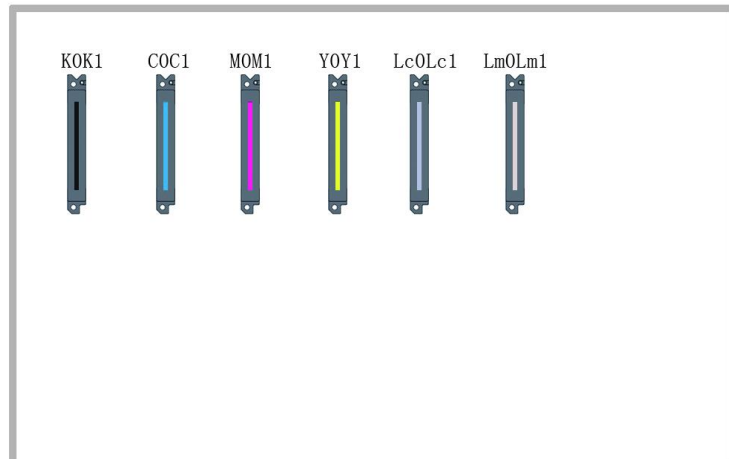
Solvent type single row K C M Y 4 print heads



KM1024i 14PL 4 color

PCT3206-KY(S061)

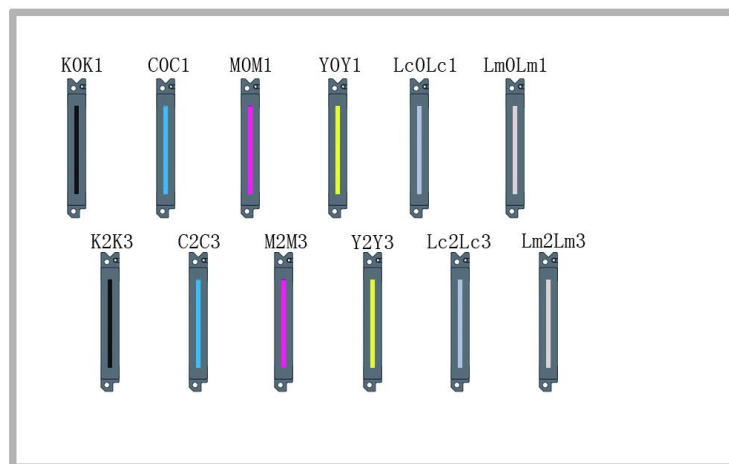
Solvent type single row K C M Y Lc Lm 6 print heads



KM1024i 14PL 6 color

PCT3212-KY(S123)

Solvent type double-row K C M Y Lc Lm 12 print heads



KM1024i 14PL 6 color

● **List of Main Technical Specifications:**

■ **Basic Specification**

| | |
|-----------------------------------|---|
| Machine Model | PCT_solvent / PCT_UV Solidification Type |
| Print Technology | Piezo continuous drop-on demand(DOD) |
| Print head | Konica 1024i 14pl (6988H) |
| Print Head Control | Use software to adjust the temperature and voltage |
| Print head Configuration | 4 color single row, double row; 6 color single row, double row/ 5 color single row, double row; 7 color single row, double row (white color is an option) |
| Maximum Printing Size | 3.3 m |
| Maximum Resolution | 2880 dpi |
| Printing Speed | 290 m ² / 120 m ² |
| Ink Type | Solvent ink /UV ink |
| Color Profile | K C M Y Lc Lm (optional) / K C M Y Lc Lm W (optional) |
| Scraping Device | Automatic intelligent scraping system (optional)/nil |
| Ink Supply System | Automatic continuous ink supply with vacuum negative pressure |
| Drying Device | Intelligent IR fan heating/ UV lamp solidification |
| Package Size | 5230x1130x1955 mm |
| Machine Dimensions | 5010x1065x1725 mm |
| Machine Weight | 1550 kg |
| Printing Interface | PCIE system |
| Power Interface | 220V±10% 50A 50HZ / 220V±10% 20A 50HZ |
| Environmental Requirements | Temperature 15 °C ~ 30 °C Relative humidity 40% ~ 80% |
| RIP Software | Photo print |
| Machine Characteristics | High-precision and high-speed print heads, separated intelligent negative-pressure ink-supply system, THK noiseless guide, integrated computing operation desk, additional full-width roller for printing more materials and single-roll or twin-roll media feeding function is optional. |

■ Printing Efficiency List

The printing speed of PCT series machinery is mainly decided by numbers of print heads in rows and printing modes. This table takes four 1024i print heads and four color as a sample.

| UV PCT | |
|------------------------------------|--------------------------|
| Printing Mode | Working Efficiency |
| Draft Mode (360*1440 4pass) | 60m²/h |
| Working Mode (720*1440 8pass) | 36m²/h |
| Quality Mode (720*1440 16pass) | 18m²/h |

| Solvent PCT | |
|-----------------------------------|---------------------------|
| Printing Mode | Working Efficiency |
| Draft Mode (360*360 2pass) | 150m²/h |
| Working Mode (360*1080 3pass) | 100m²/h |
| Quality Mode (360*1440 4pass) | 80m²/h |

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.
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 anything 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, in circumstances of normal printing, fill in the ink carriage linear guide once for every week.
- ✧ See contents in Chapter Maintenance and Service for maintenance method of ink and print head.

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Refer to document 1 “Automatic Scraping System Instructions”

Refer to document 2 “Setting Method of Panasonic Dp-101digital Vacuum Pressure Sensor”

Chapter 1: Introduction to Basic Knowledge

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

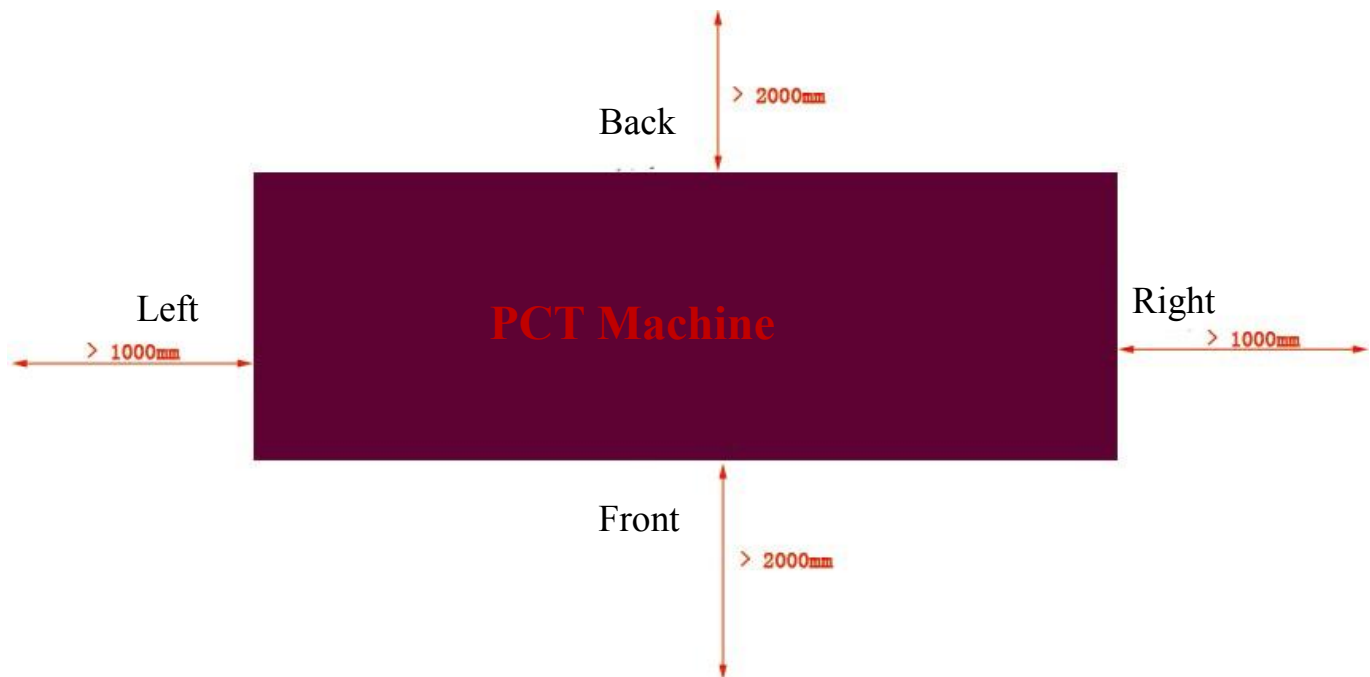
- **Working conditions**
- **Working space**
- **Environmental requirements**
- **Computer configuration requirements**
- **Appearance, name and functions of parts**
- **PCT_Solvent Front view**
- **PCT_Solvent Back view**
- **Carriage view**
- **Consumables**
- **Printing Media**
- **Ink and cleaning fluid**
- **Maintenance tools**

● Working Conditions

■ Working Space

There must be enough space surrounding the inkjet printer so as to facilitate replacement of some commonly used spare parts and printing 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 15°C - 27°C, 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.

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.

Mother board: High quality brand mother board, with PCIE X1 slot.

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

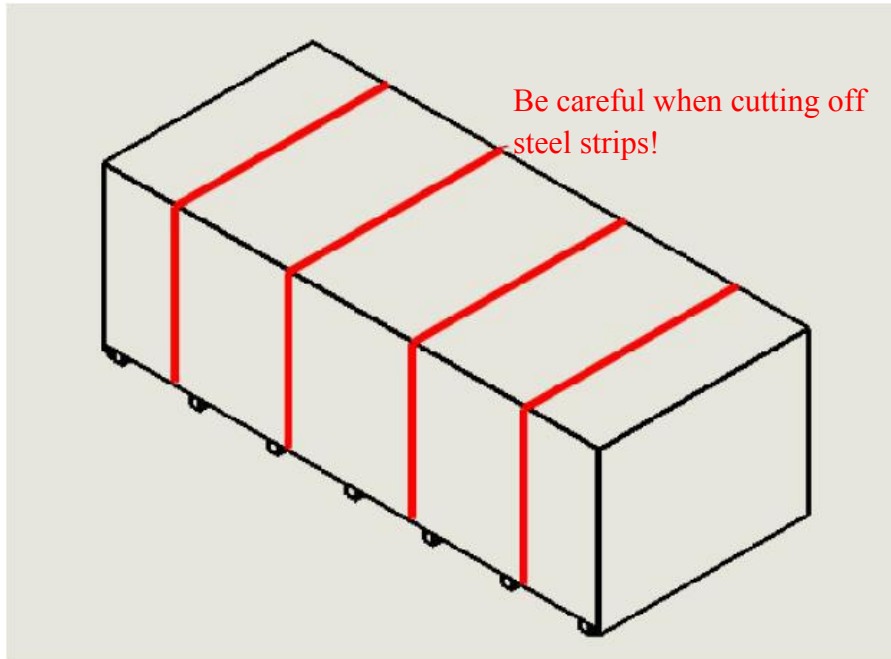
Memory: Memory above 4G. Other: CD—ROM drive.

Hard disk: Over 500 G room is left, please use NTFS format as the hard disk format.

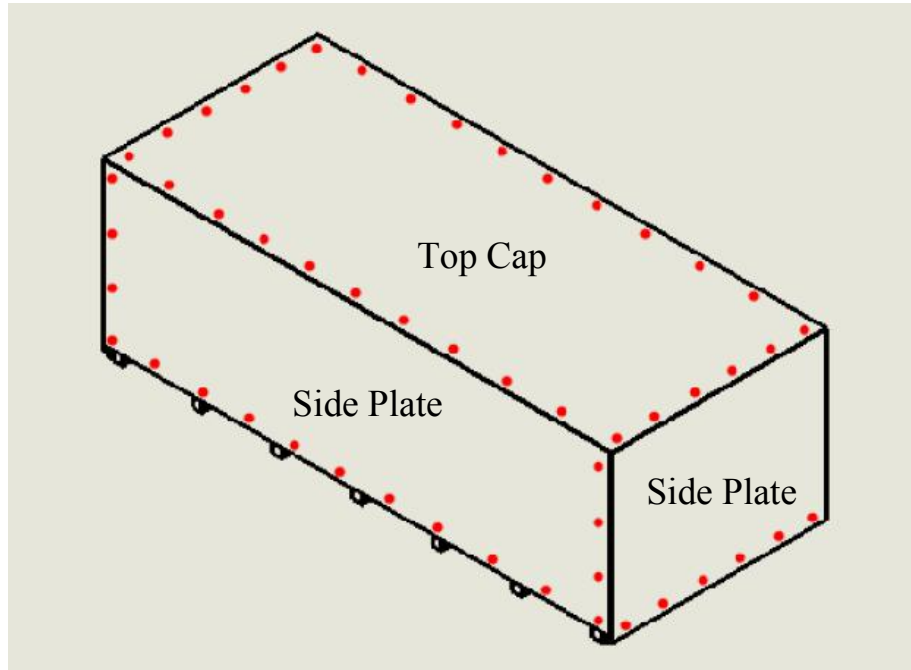
Operating system: WIN7 64-bit Professional or Ultimate

● *Machine Unpacking and Floor Installation*

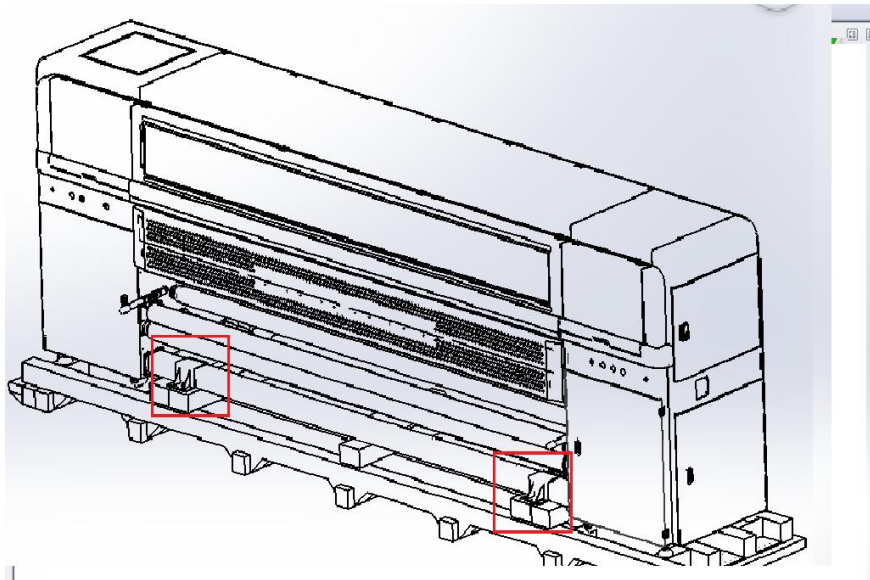
1. Cut the steel strips on the packing box. The location of steel strips in red mark is shown in the following figure:



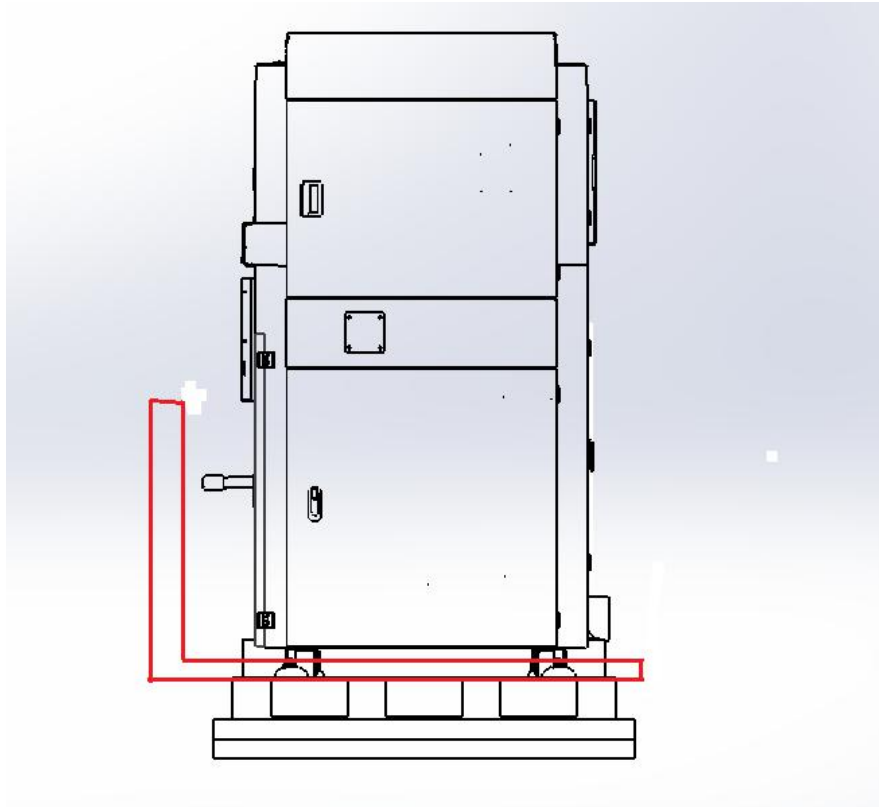
2. Remove the fastening screws of the packing box in turn, 5 sides in total, take down the side plate and top cap of the packing box. The location of screws in red mark is shown in the following figure:



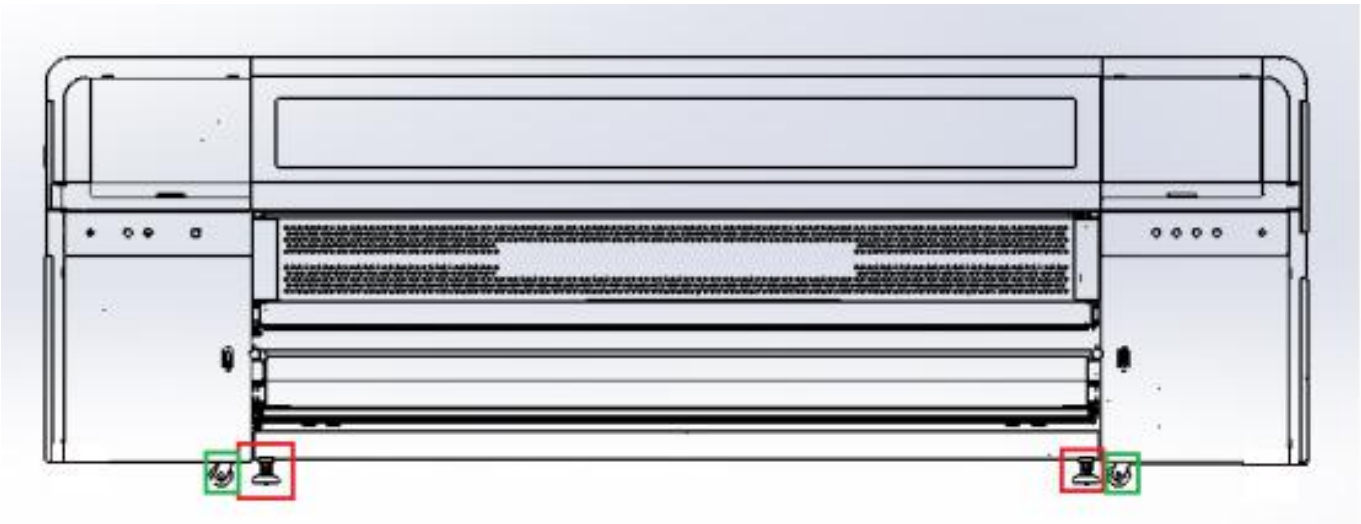
3. Remove the fasteners at the bottom plate. Four fasteners in total: two in front and two at the back.



4. Forklift above 5T is preferred to lift the machine to the ground, with the forklift placed in the position as shown in red mark below. The length of arm shall be 1.5 m.



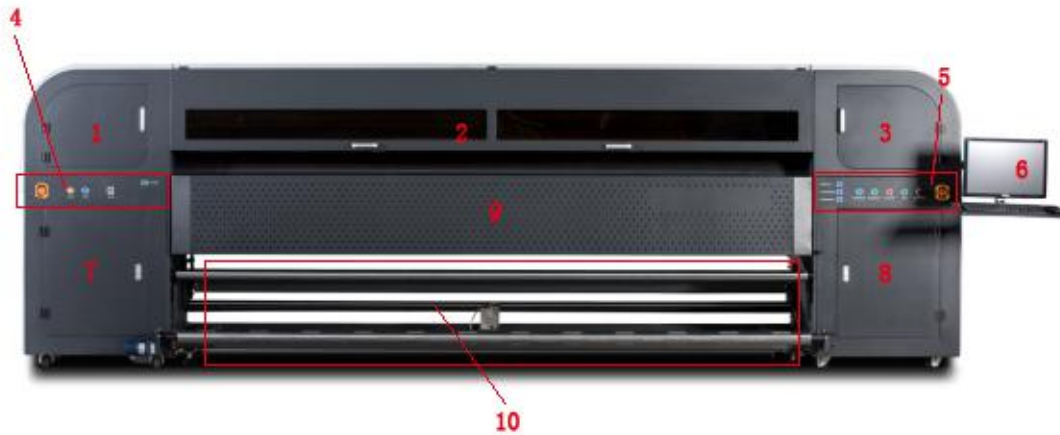
5. Screw out the four supporting feet (red) closer to swivel casters, to make swivel casters (green) suspended.



6. Adopt level gauge with accuracy over 0.05mm/m to adjust the levelness of worktable within 0.5mm/m, by screwing the supporting feet mentioned above. (Note: During the adjustment process, the swivel casters shall never touch the ground)

● *Appearance, name and functions of parts*

■ PCT_Solvent Front View



| Code | Name of Spare Parts | Instruction |
|------|------------------------------------|---|
| 1 | Left Front Upper Cover | Open it, you can find the operation, cleaning and maintenance area of print head, also the stop-over area for carriage during ideal |
| 2 | Front Shade | Open it, you can find the worktable and beam assembly |
| 3 | Right Front Upper Cover | Open it, you can find the right stop-over area for the carriage |
| 4 | Keyboard on the front left | Emergency stop, pressing ink, purge, maintenance, negative pressure gauge and the top light. |
| 5 | Keyboard on the front right | Emergency stop, start-up, high voltage of print heads, pinch roller up-and-down, platform adsorption, drying fan. |
| 6 | Display and bracket | It is used for controlling machines and its position can be adjusted. |
| 7 | Left Front Lower Door | A patch board is covered by it. |
| 8 | Right Front Lower Door | A circuit board and a electric motor driver are covered by it. |
| 9 | IR drying system | It is used to dry the ink on printing materials. |
| 10 | Take-up and feeding system | It is used for automatic media take-up when the printing work is carried out. |

■ PCT_Solvent Back View



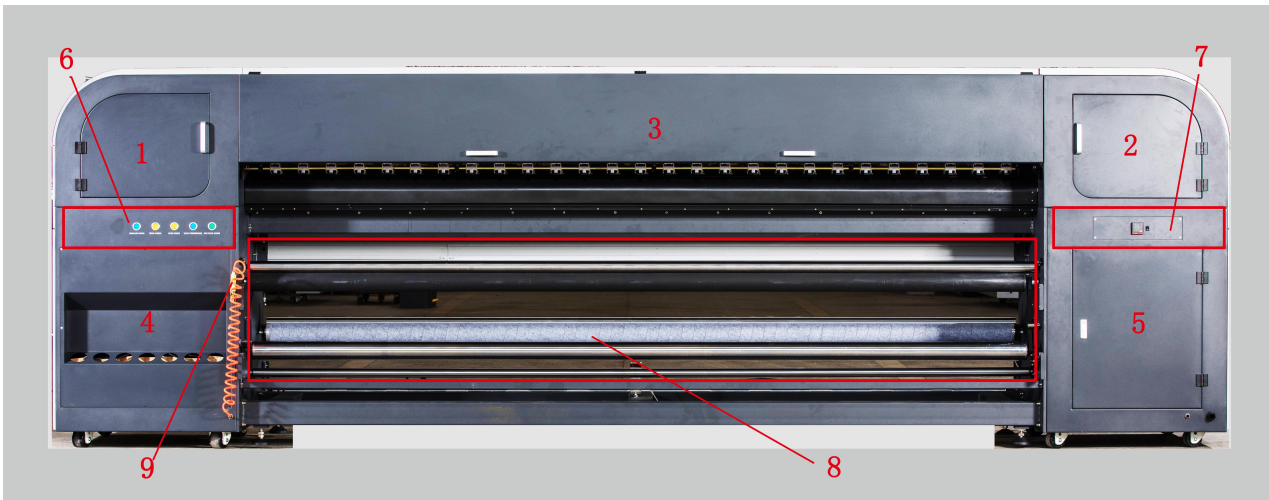
| Code | Name of Spare Parts | Instruction |
|------|-----------------------------------|---|
| 1 | Right Back Upper Cover | Open it, you can find the right stop-over area for the carriage |
| 2 | Back Shade | Open it, you can find the worktable and beam assembly |
| 3 | Left Back Upper Cover | Open it, you can find the operation, cleaning and maintenance area of print head, also the stop-over area for carriage during ideal |
| 4 | Right Back Button Panel | Control buttons for pinch roller up-and-down, media feeding and take-up. |
| 5 | Left Back Button Panel | Buttons for the IR dryer and the temperature controller of the heating membrane in front, middle and rear sections. |
| 6 | Right Back Lower Door | It is utilized to inject ink and the negative pressure system is covered by it. |
| 7 | Left Back Lower Door | Each switching power supply box can be found under it. |
| 8 | Take-up and Feeding System | It is used for automatic media feeding when the printing work is carried out. |
| 9 | Charging connector | Used for the air inflation of the air shaft. |

■ PCT_UV Front View



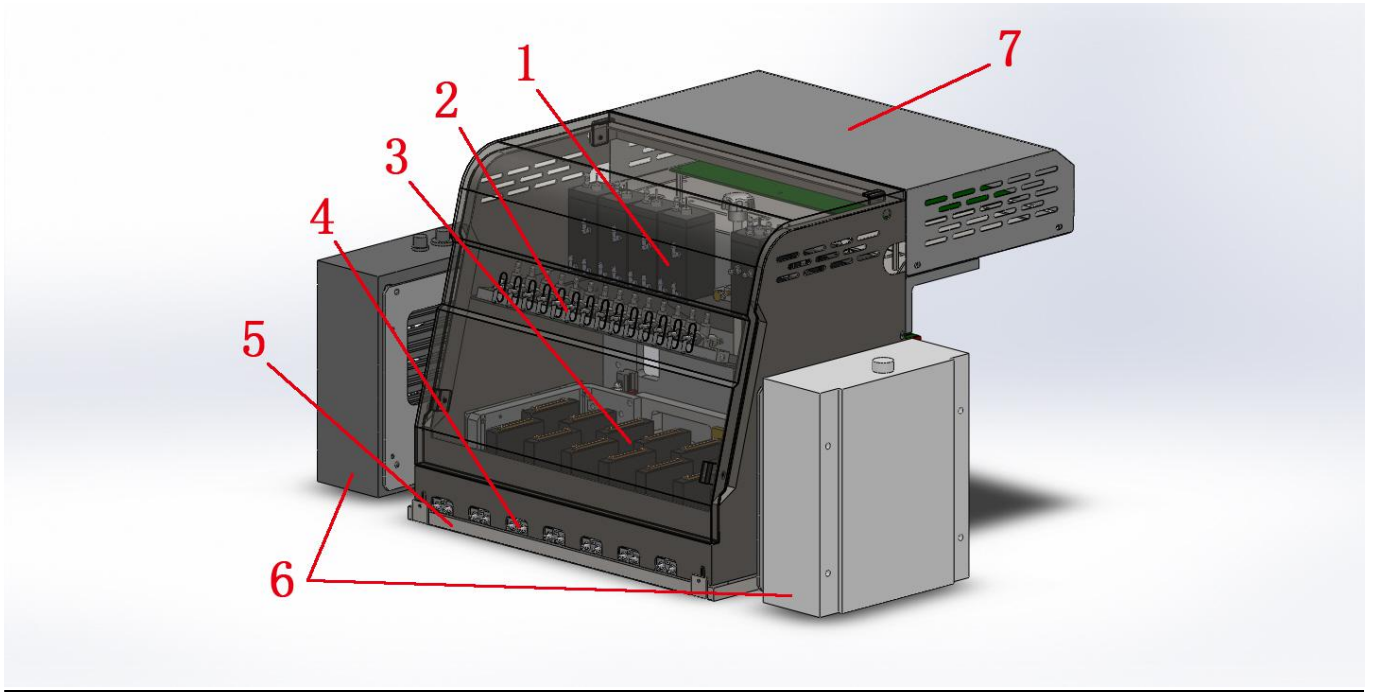
| Code | Name of Spare Parts | Instruction |
|------|------------------------------------|--|
| 1 | Left Front Upper Cover | Open it, you can find the operation, cleaning and maintenance area of print head, also the stop-over area for carriage during ideal |
| 2 | Front Shade | Open it, you can find the worktable and beam assembly |
| 3 | Right Front Upper Cover | Open it, you can find the right stop-over area for the carriage |
| 4 | Left Front Lower Door | A patch board is covered by it. |
| 5 | Right Front Lower Door | A circuit board and a electric motor driver are covered by it. |
| 6 | Keyboard on the front left | Emergency stop, pressing ink, purge, maintenance, the top light and front light of the negative pressure gauge (colorful, white) |
| 7 | Keyboard on the front right | Emergency stop, start-up, high voltage of print heads, pinch roller up-and-down, rotation and stop control of three-roller tension system, compress shaft up-and-down, platform adsorption, drying fan |
| 8 | Front Light | It is used to observe the quality of printed images. |
| 9 | Three-roller tension system | Printing media are pulled and flattened by the tension system while soft materials are printed. |
| 10 | Take-up and feeding system | It is used for automatic media take-up when the printing work is carried out. |
| 11 | Display and bracket | It is used for controlling machines and its position can be adjusted. |

■ PCT_UV Back view



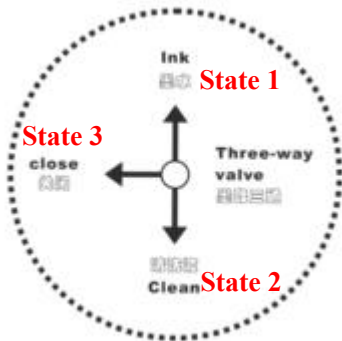
| Code | Name of Spare Parts | Instruction |
|------|-----------------------------------|---|
| 1 | Right Back Upper Cover | Open it, you can find the right stop-over area for the carriage |
| 2 | Left Back Upper Cover | Open it, you can find the operation, cleaning and maintenance area of print head, also the stop-over area for carriage during ideal |
| 3 | Back Shade | Open it, you can find the worktable and beam assembly |
| 4 | Right Back Lower Door | It is utilized to inject ink and the negative pressure system is covered by it. |
| 5 | Left Back Lower Door | Each switching power supply box can be found under it. |
| 6 | Right Back Button Panel | Control buttons for pinch roller up-and-down, media feeding and take-up. |
| 7 | Left Back Button Panel | Button for the temperature controller of the rear heating membrane. |
| 8 | Take-up and feeding system | It is used for automatic media feeding when the printing work is carried out. |
| 9 | Charging connector | Used for the air inflation of the air shaft. |

■ Carriage View



| Code | Name of Spare Parts | Instruction |
|------|-----------------------------|---|
| 1 | Auxiliary Ink Tank | Level 2 buffer works as the main ink tank is filled to such extent. |
| 2 | Purge valve | Three statuses for printing, purge and shut-off respectively. |
| 3 | Print heads | Deciding the numbers of print heads and putting them on right positions according to machine types. |
| 4 | Two-way Valve Body Assembly | Two states, It is used to discharge the air in the print head. |
| 5 | Moisturizing Tray | It is used for print head protection when the machine is power off. |
| 6 | UV lamp | It is used to solidify UV ink, but it is not prepared for solvent machines. |
| 7 | The cover of carriage | The carriage board unit and print head cables are hidden by it. |

The following pictures are details for three working statuses of the purge valve:

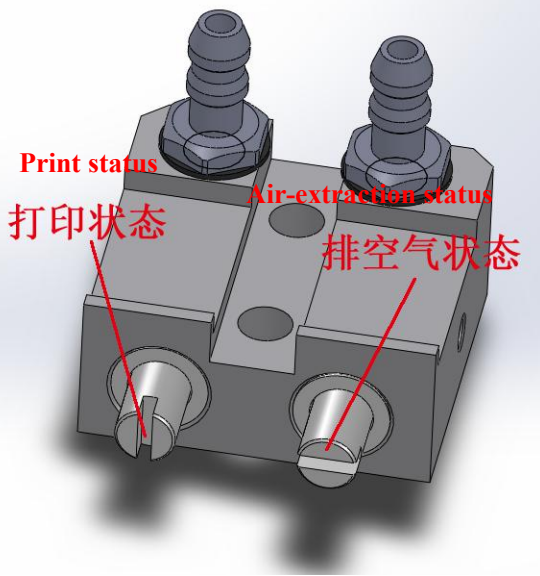


State 1: Working state, when the equipment is in normal operation, especially in printing, the valve shall be in up state.

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

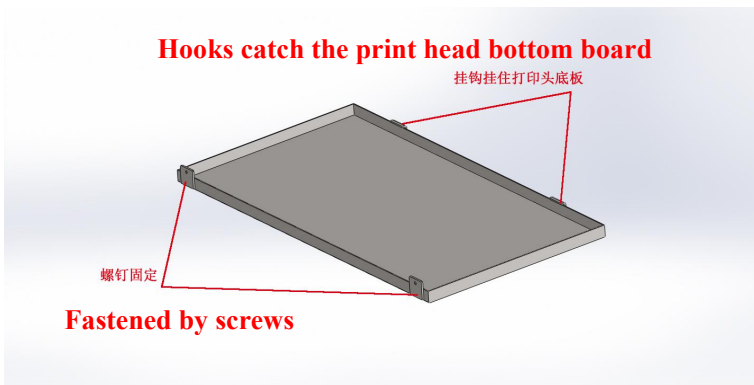
State 3: Closing state, when the equipment is shut down, place the valve in close state.

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 car sticker and light box 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. If you use this kind of printing media, paper feeding (printing media) on both sides of the roller will be affected, which may even result in equipment failure or damage in severe case.
- ✧ 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.

Chapter 2: Basic Operation

This chapter illustrates such basic movement as machine installation and operation.

- **Computer connection**
- **Installation Environment**
- **Installation Steps**
- **Installation and adjustment of print head**
- **The Introduction of KONICA 6988H print head**
- **Print head installation**
- **Add ink and fill the print head with ink**
- **Inject ink into the main ink tank**
- **Inject ink into the auxiliary ink tank**
- **Inject ink into the print head**
- **Positive pressure ink**
- **Negative pressure adjustment**

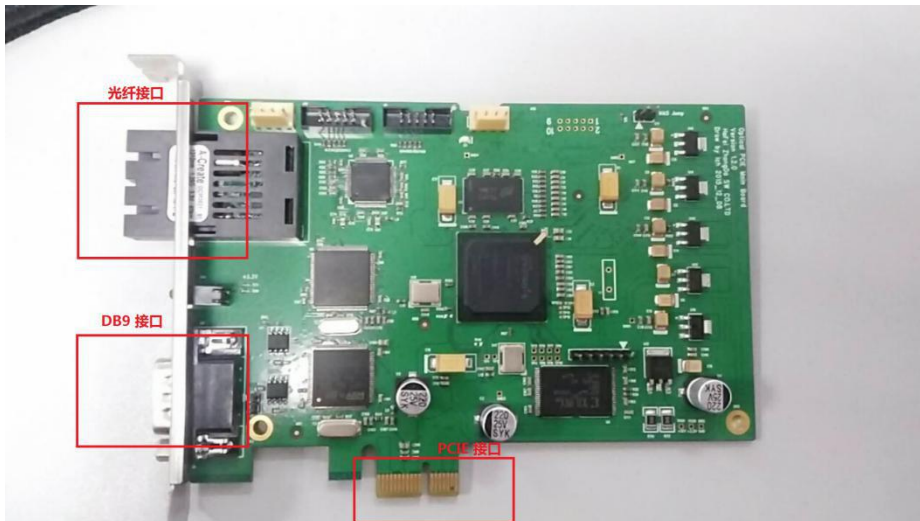
● *Computer Connection*

■ **Installation Environment:**

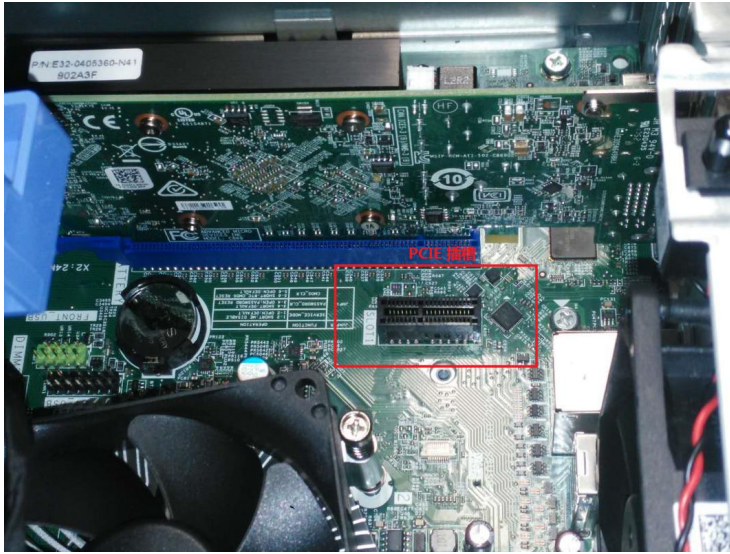
Please apply WIN7 64-bit operating system to secure the normal working of the software.

■ **Installation Steps**

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

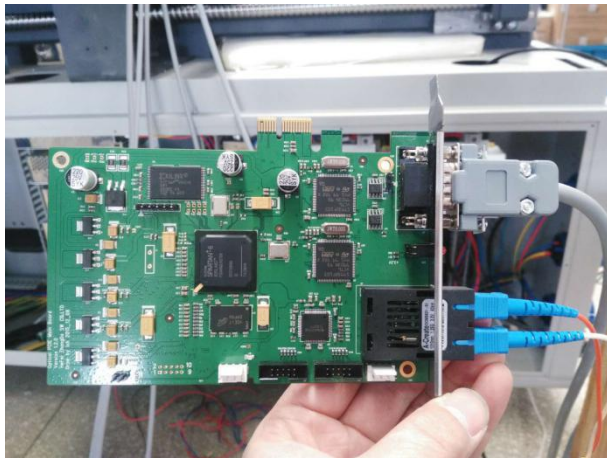


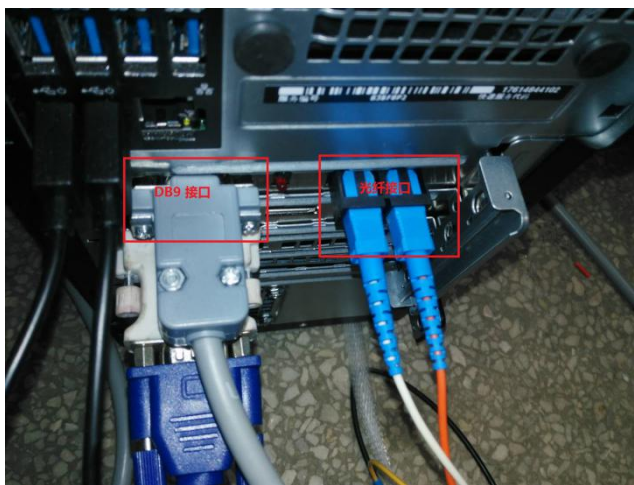
Schematic diagram of PCIe card



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 |

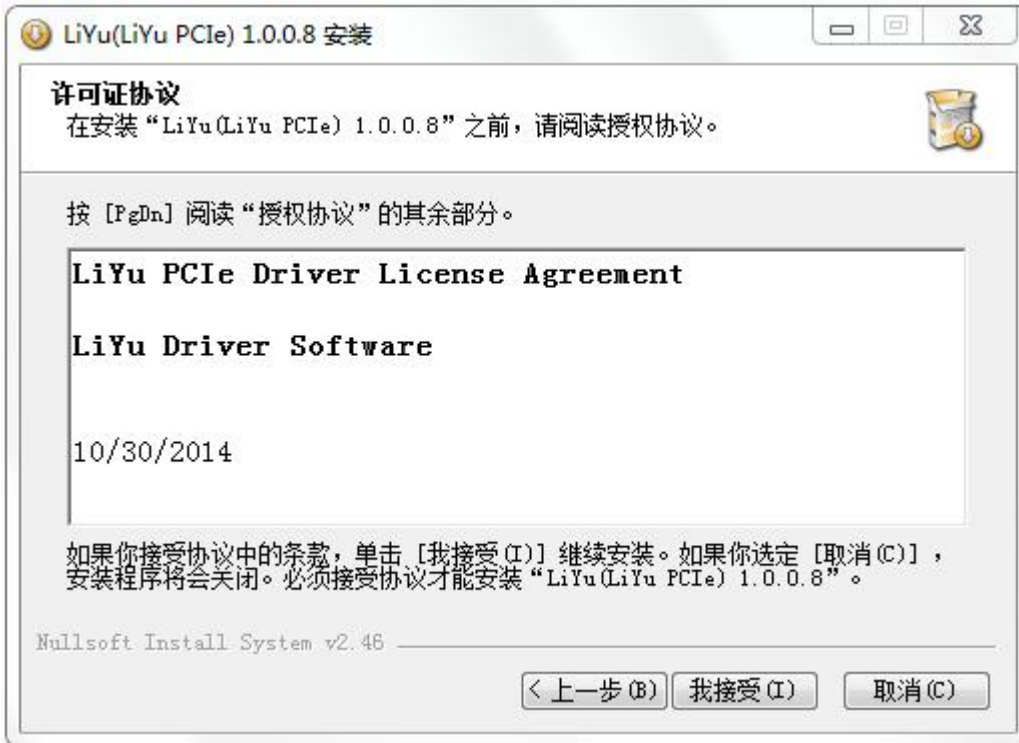
The following interface pops up.



Select required language, then click “OK”.



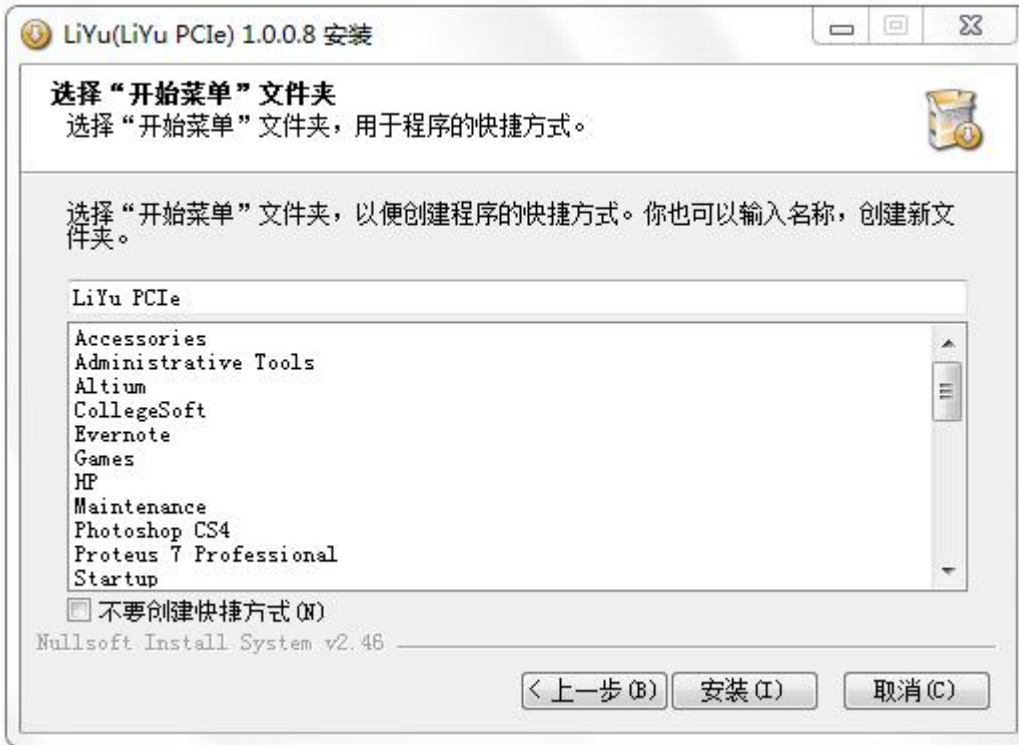
Click “Next”.



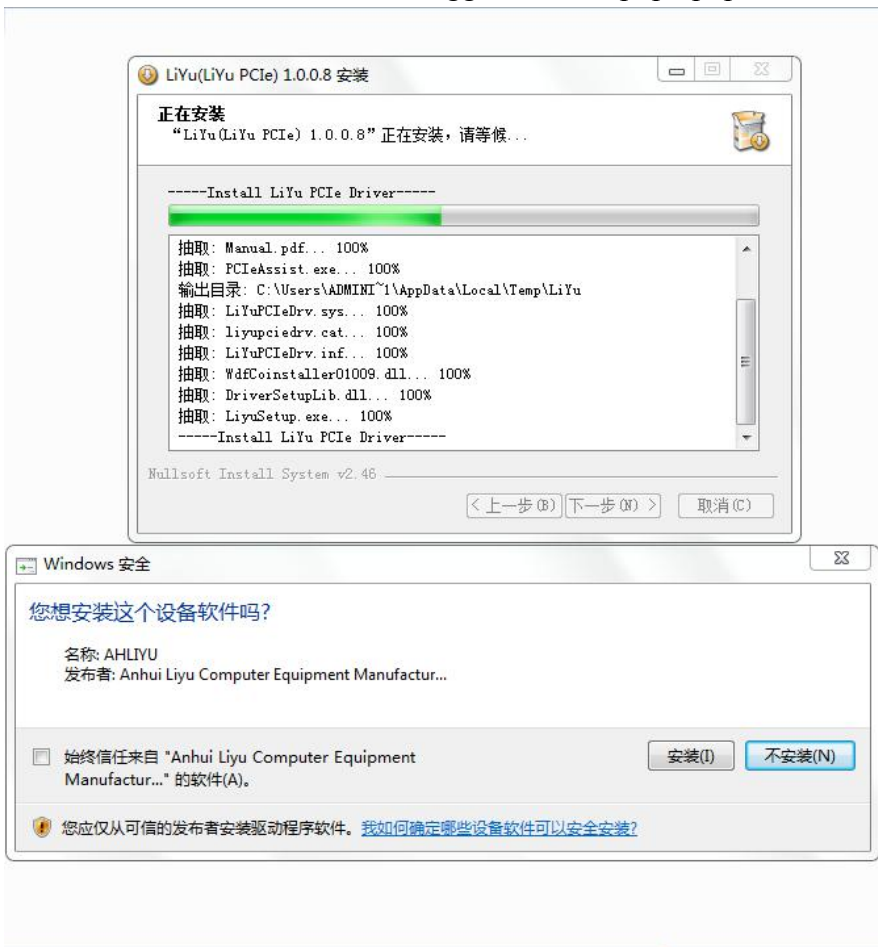
Select the required installation path, then click “Next”.

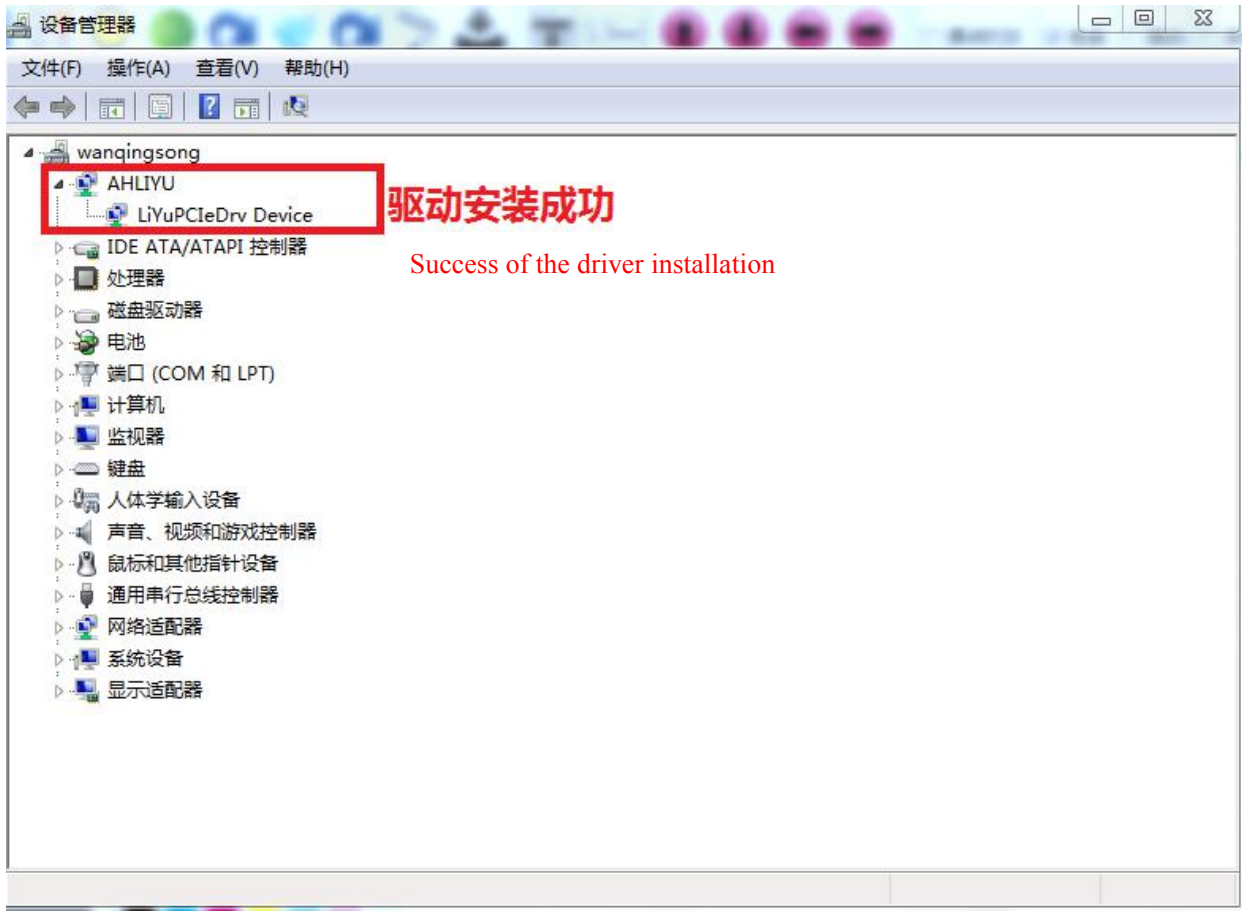


Click “Install”.





In the course of installation, the suggestion will pop up, please click “Install”.





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  CHSHelpFile.mht (Lyprint manual in Chinese) and  ENUHelpFile.mht (Lyprint manual in English) when using Lyprint.

● Installation and Adjustment of Print Head

■ The Introduction of KONICA 6988H print head

It is a print head with high precision and high speed, 14PL ink spots and Grayscale, which is extensively applied to the printing industry, and is the most popular print head now. Two rows of ink eyelets are respectively on both right and left sides of the bottom of each 6988 print head; 512 jet orifices stand in each row and a print head has 512x2=1024 jet orifices.



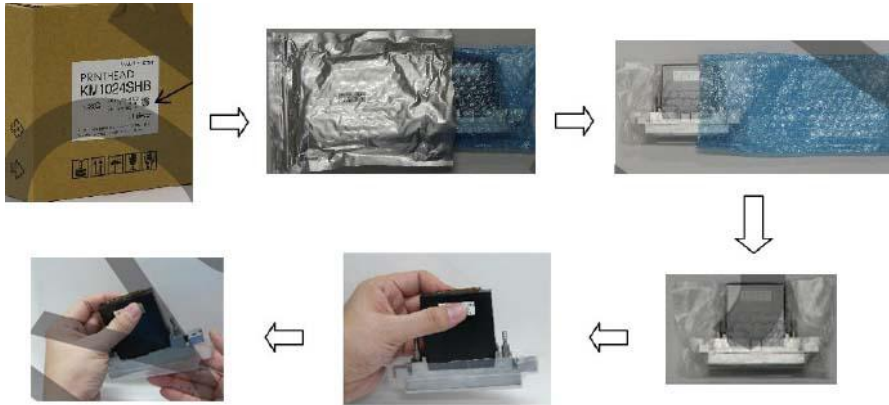
The print head identification is shown on the package of each print head. Please input referenced voltage into “Voltage Setting” of LyPrint.

■ Print head installation

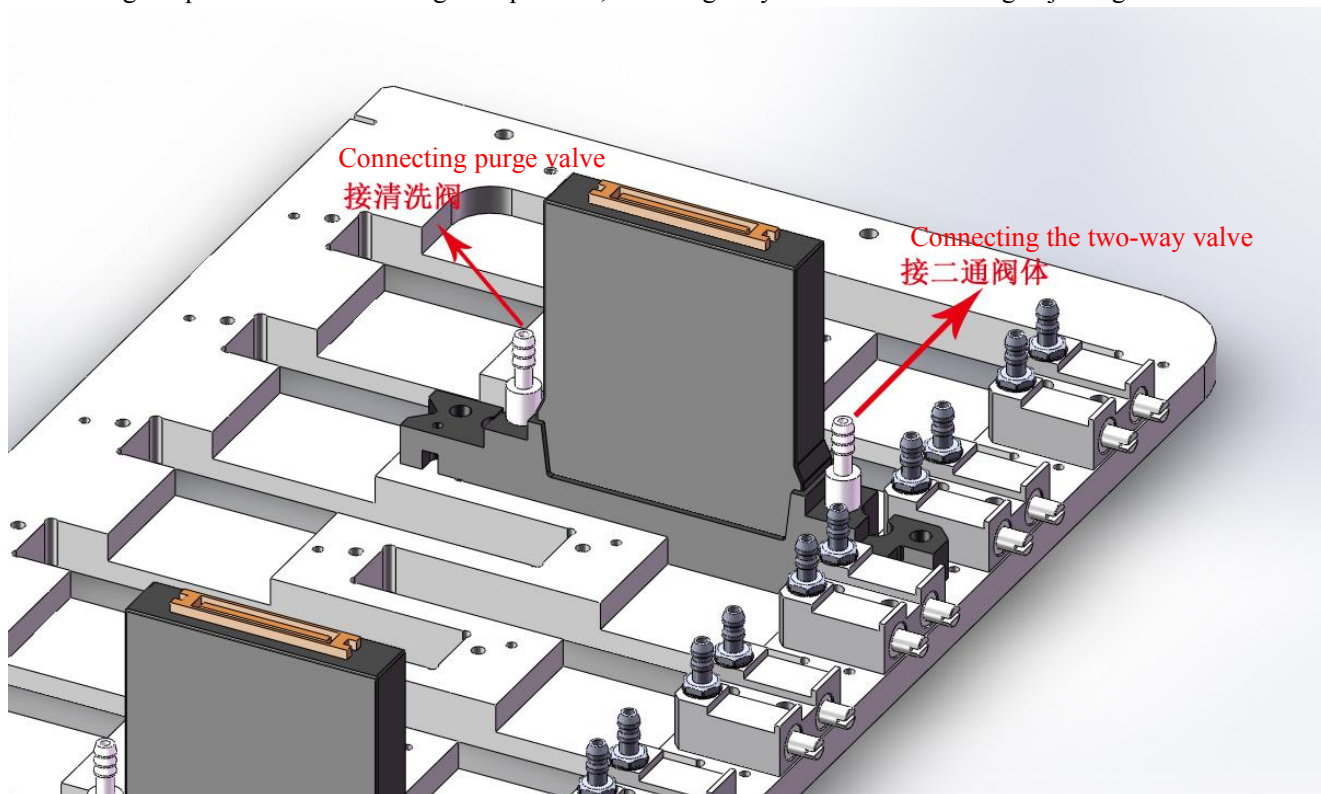
Some print heads of the machine have not been installed onto the machine. Therefore, this chapter will start from the installation of single print head to the machine. If print heads have been installed onto the machine, please omit the

illustration of print head installation.

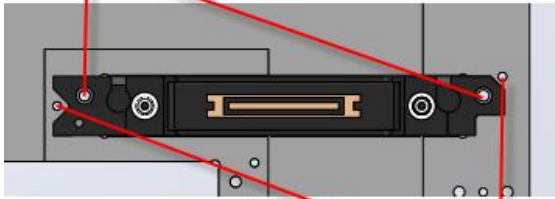
1. First install the bottom plate of print head onto the machine and place clean non-woven fabrics under the bottom plate of print head, so as to avoid soiling nozzle panel or blocking nozzle during print head installation process.
2. Remove the packing of print head according to the order below and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



3. Putting the print head on mounting hole position, fastening it by screws and installing adjusting screws.



安装螺钉 Mounting Screws



Adjusting Screws 调整螺钉

调整螺钉

Adjusting Screws



安装螺钉

Mounting
Screws



● Add Ink and Fill the Print Head with Ink

■ Inject ink into the main ink tank

The main ink box can be found as the cabinet door of the ink path on the left of the machine is open. 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 tank

Please make sure that there is enough ink in the main ink bottle before injecting ink into the auxiliary ink tank and the steps are as follows:

- ◇ Ensure that there is enough ink in the main ink bottle and conduct inspection of the machine before starting;

- ✧ Energizing the printer, air-channel three-way valve shall be rotated to the state of negative pressure after the self-inspection of the machine finishes. (if it stays in the closing state, ink can not be pumped because the air is not discharged from the original ink pipes).
- ✧ 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.

■ Inject ink into the print head

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.

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, press purging button and make the cleaning fluid flow out from two-way valve, clean the pipelines of this part. 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. Five minutes later, clean all the print heads again as per the above method.

Print head cleaning operation involves cleaning fluid pump directly pumping cleaning fluid to clean the print head, without any positive pressure, so pneumatic three-way valve body operation is not required.

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.

2. First of all, put the corresponding three-way valve in working state. And make the air-channel three-way valve in a state of the positive pressure meanwhile.
3. Unscrew the corresponding two-way valve core to ensure 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 tightening 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).
4. Carry out the above operation for every print head in succession. Place all three-way valves in working state after completing venting for all print heads. Press positive pressure button and impress ink for all print heads again, then complete ink injection of print heads.
5. 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 to eliminate the air in the nozzle and flush through the nozzle blocked not so seriously, 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 factor 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 this printer.

The introduction of the negative pressure system:

The foregoing section has introduced that two-way negative pressure design is provided for PCT series products. One is for colorful print heads and the other is for white print heads. However, only one-way negative pressure design for solvent products. The reason of this design is that there is a larger difference between 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.

Introduce of Vacuum Pressure Gauge (Negative Pressure Meter)



Vacuum pressure switch is shown in the figure, with the following functions for each area:

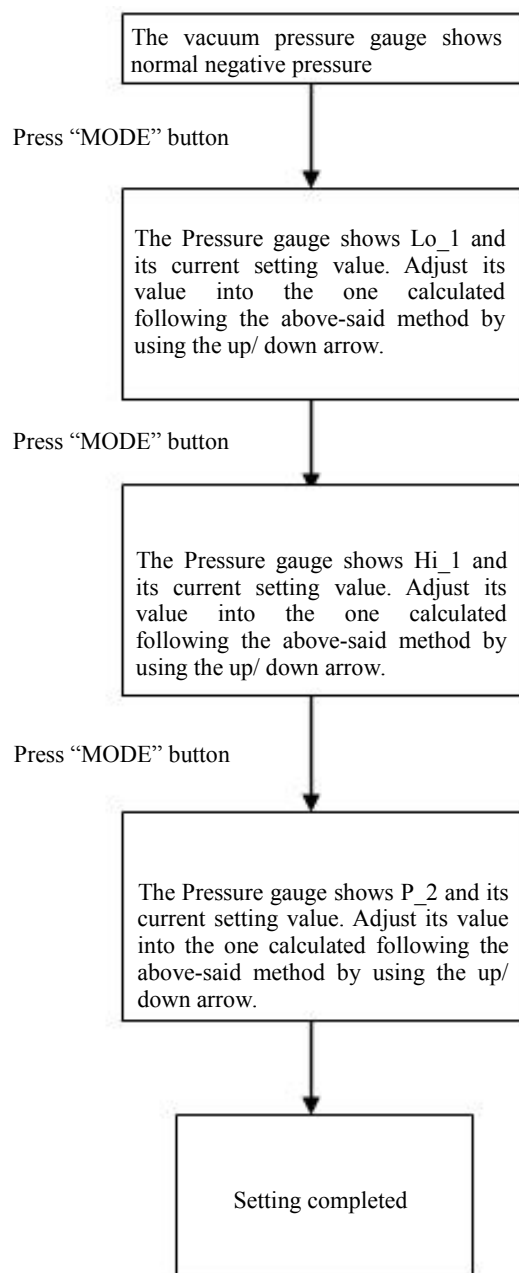
| | |
|----------------------------------|---|
| 1: Pressure Display Area | Display the current pressure value in the vacuum tank |
| 2: Setting Pressure Display Area | Display the setting pressure value |
| 3: Signal Output Prompt | Prompt the output status of current OUT1 and OUT2 |
| 4: Button Operation Area | MODE: mode setting. Up and down keys are used to set |

value or turn pages.

Note: please refer to Appendix 2 or browse vacuum pressure gauge instructions for the detailed operation of vacuum pressure gauge.

Vacuum Negative Pressure Adjustment

Relevant parameters of the machine have been set before leaving the factory. however, fine adjustment may be needed for the setting value according to the local environment. You may adjust negative pressure value setting as per the following method:



The above is the setting method for setting value in differential mode, and the setting method in EASY mode is similar. But you only need to set values of P-1 and P-2. For more details, please refer to detailed operation of vacuum pressure gauge.

Chapter3 System Function

Contents of this chapter:

- **Schematic diagram of keyboard functions**
- **System movement function**
- **Installation of Printing Media**

● Schematic diagram of keyboard functions

The button introduction of PCT_solvent machine:



Button schematic diagram of the right-front panel



Button schematic diagram of the right-back panel



Button schematic diagram of the left-front panel



Button schematic diagram of the left-back panel

Button introduction of the PCT_UV solidification-type machine:



Button schematic diagram of the right-front panel



Button schematic diagram of the right-back panel



Button schematic diagram of the left-front panel



Button schematic diagram of the left-back panel

● System Movement Function

Definition of movement phase

Scanning direction of carriage: X phase

Fore-and-aft moving direction of the cross beam: Y axis

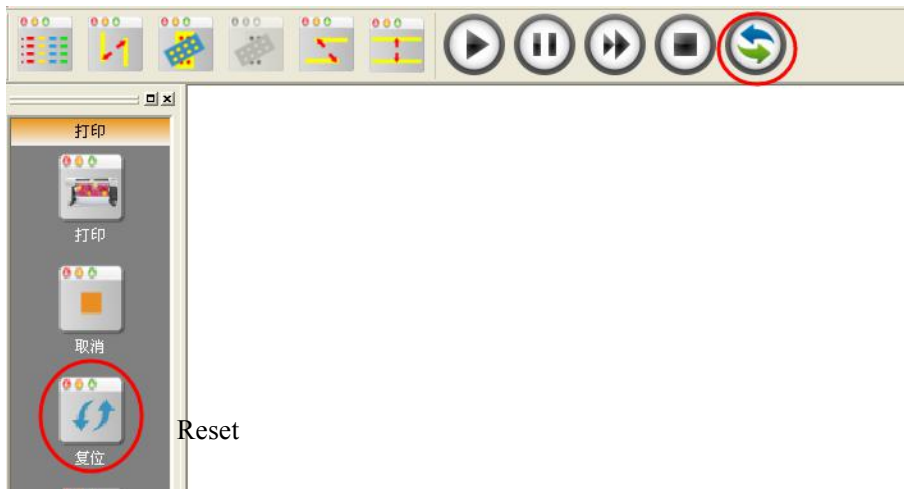
Up-and-down moving direction of the carriage: Z axis

System reset

Power on reset: the machine will reset X axis with the following operation:

X axis seeks its non-operating position again and strictly inspects the position once.

Software reset: LiyuPrint software contains system reset button, allowing users to reset the equipment if necessary. Pressing reset button will make X phase seek vacant location (similar to X phase power-on reset) again. The following two buttons marked are reset buttons.



Reset

Manual movement

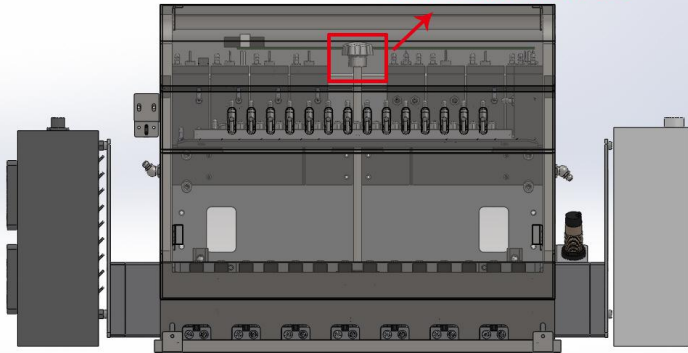
Manual movement of X phase and Y phase can be achieved by clicking movement control icon on main panel or pressing the direction keys on the keyboard.



Both X and Y axes can be moved by hands in accordance with two methods on the left figure.

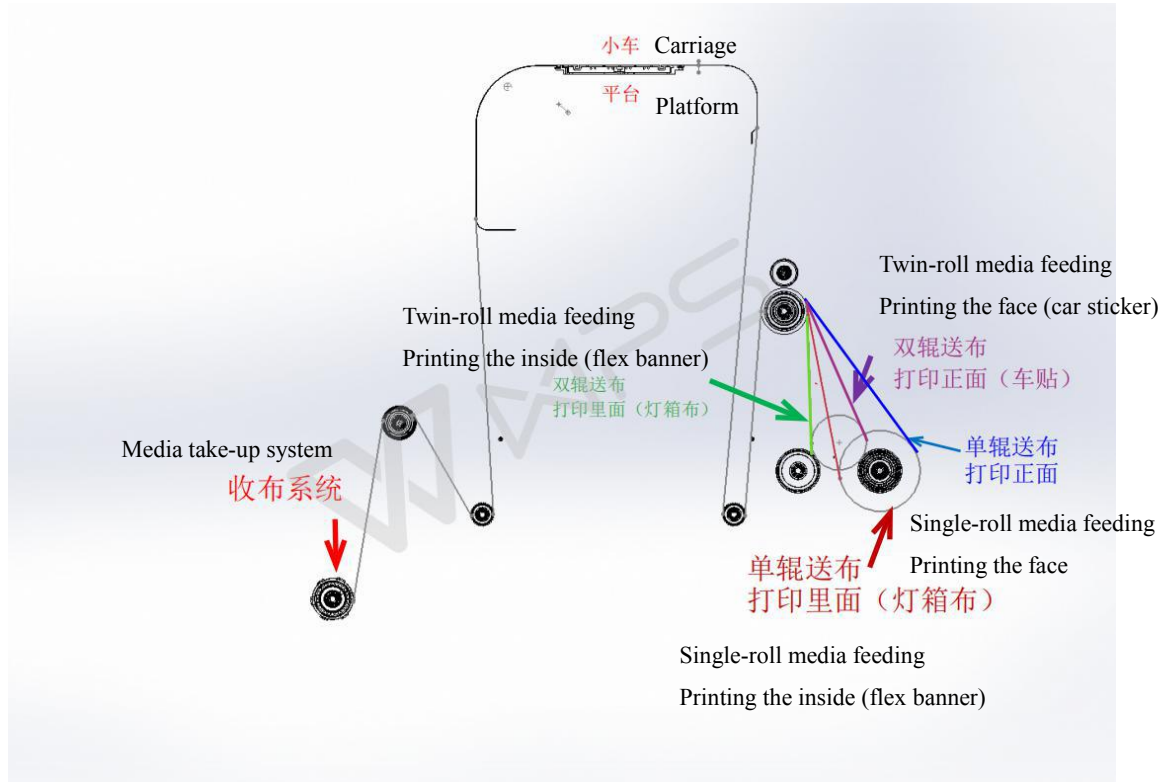
Lifting adjustment nuts on the bottom board of Z-direction print heads

Z向打印头底板升降调节螺母



Lifting adjustment nuts on the bottom board of Z-direction print heads are used to adjust the height from print heads to print media. Clockwise rotation for expansion, and counter-clockwise rotation for reduction.

● Installation of Printing Media



Schematic diagram of 4 media feeding modes of the PCT_solvent machine

1. Single-roll media feeding, printing the inside, being applicable to flex banner, coated banner and other

materials of this kind. Press this button.



2. Single-roll media feeding, printing the face, being applicable to the faces of car sticker, PP paper and so on.

Press this button.



3. Twin-roll media feeding, printing the face, being applicable to the faces of car sticker, PP paper and so on.

Press this button.

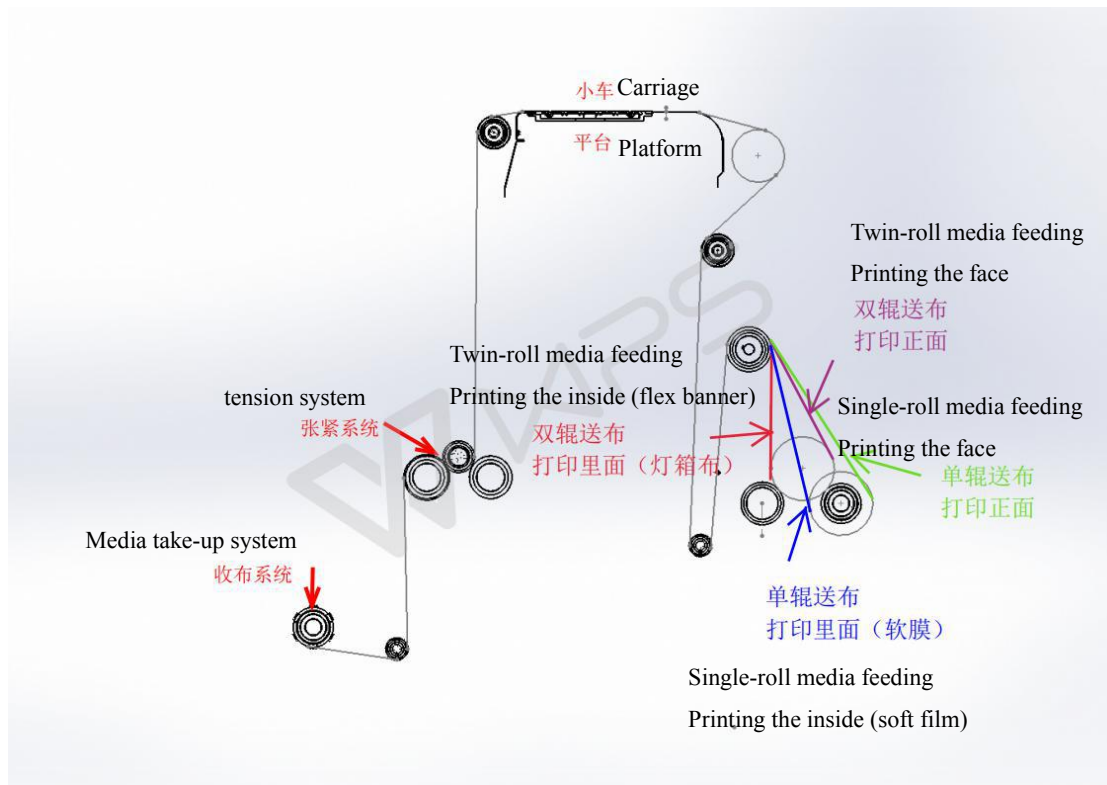


4. Twin-roll media feeding, printing the inside, being applicable to flex banner, coated banner and other

materials of this kind. Press this button.



Pressing this button for media take-up



Schematic diagram of 4 media feeding modes of the PCT_UV Solidification machine

1. Single-roll media feeding, printing the inside, being applicable to soft film, flex banner, coated banner and

other materials of this kind. Press this button.



2. Single-roll media feeding, printing the face, being applicable to the faces of soft film, car sticker, PP paper

and so on. Press this button.



3. Twin-roll media feeding, printing the face, being applicable to the faces of car sticker, PP paper and so on.



Press this button.

4. Twin-roll media feeding, printing the inside, being applicable to flex banner, coated banner and other



materials of this kind. Press this button.



Pressing this button for media take-up

Chapter 4 Maintenance and Service

Contents of this chapter:

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

● Daily Maintenance Instructions

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, which can be adjusted after removing the cover on the left of the cross beam. 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 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.

● Print Head Maintenance Instructions

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 be screwed to the closed state, the ink carriage be stopped within the upper left case, power be switched off, a layer of non-woven fabrics be embedded into the wet protection tray, a small amount of cleaning liquid be injected into the wet protection tray (non-woven fabrics should be drenched), and then the print head can be moisturized with the wet protection 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 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°C and 26°C. Print quality may be affected if the temperature is below 15°C or

above 28°C.

- ✧ 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.

● 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 and with temperature of 10°C ~ 40°C. 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.