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Introduction

Thank you for purchasing Artemis KR UV flatbed printer (hereinafter referred to as the printer). Please read this manual carefully before using the printer. Keep the manual in a place easily accessible anytime.

This printer uses the environment-friendly UV ink and can print on medium with a thickness up to 10cm (20cm customizable) and optional widths of 120cm×250cm, 100cm×300cm, and so on.

This manual describes the characteristics and parts of the printer, information to be known before using and basic operations, such as powering on and off and setting of parameters of the printer.

Read the following carefully before proceeding to Chapter 1:

Safety Precautions

Operation Precautions

Technical Parameters

A KR Hybrid UV Printer uses Konica KM1024/14pl solvent printheads. You can distinguish printer models and refer to printer parameters:

List of printer models:

Model	Description
KR2512 Basic	The basic model of this series. For details, see the configuration sheet.
KR2512 Roll	A roll material printing device is added to the basic model.
KR3020 Basic	A larger printing width is used than that used on the basic model.

Major Technical Specifications

■ Basic parameters

Model	KR2512 Basic/KR2512 Roll/KR3020 Basic
Printing technique	Piezo continuous drop-on demand (DOD)
Printhead	KM1024MH
Printhead control	Software-adjusted temperature and voltage
Printhead configuration	For printhead configuration, see the printhead configuration description.
Max. width	2500x1250/3050x2050
Max. resolution	720x2880
Ink type	UV inks
Color configuration	K C M Y LC LM W V optional
Drying device	IT 170UV lamp/self-owned 150UV lamp
Ink supply	Vacuum negative pressure, automatic continuous ink supply
Medium absorption	Vacuum absorption, zoned control
Workbench bearing	35kg/m ²
Package	5430*2320*1830

dimension s	
Printer dimension s	KR2512 Basic: 5210*2102*1530; KR2512 Roll: 5210*2202*1530 KR3020 Basic: 5760*2902*1530
Gross weight	KR2512 Basic: 1.4 tons; KR2512 Roll: 2.1 tons KR3020 Basic: 1.7 tons
Printer interface	USB2.0
Power interface	220V±10% 50HZ
Environme nt conditions	Temperature: 15 ⁰ C ~ 30 ⁰ C Relative humidity: 40% ~ 80%
Other functions	Impact resistance, medium positioning, white ink stirring and reflow, automatic distance detection, color positive flush, anti-static device (optional), white deaeration (optional), roll material printing device (optional), roll material edge scanning (optional), roll material duplex printing (optional)

■ Printhead Configuration List

Quantity	KM1024 printheads
4	4-color 4-printhead
5	4-color 4-printhead + 1 white printhead
6	6-color 6-printhead 4-color 4-printhead + 2 white printheads 4-color 4-printhead + 1 white printhead + 1 matte oil
7	4-color 4-printhead + 3 white printheads 4-color 4-printhead + 2 white printheads + 1 matte oil 6-color 6-printhead + 1 white printhead
8	4-color 8-printhead 4-color 4-printhead + 4 white printheads 4-color 4-printhead + 2 white printheads + 2 matte oil 6-color 6-printhead + 2 white printheads 6-color 6-printhead + 1 white printheads + 1 matte oil
9	None
10	4-color 8-printhead + 2 white printheads (in the same row) 4-color 8-printhead + 2 matte oil (in the same row)
11	None
12	6-color 6-printhead 4-color 8-printhead + 2 white printheads + 2 matte oil (in the same row)
	In the list above, if there exist white printheads only, the white ones can be replaced by matte oil ones.

■ Printing Speed

The efficiency of KR hybrid UV printers depends on the number of printheads and printing mode. The following will focus on the efficiency of color printing and the number of printheads refers to the number of color printheads.

Printhead	KM1024MH (14pl)	
Quantity	4	8
Draft mode (4 PASS)	40m ² /h	79.2m ² /h
Working mode (6 PASS)	25m ² /h	54.5m ² /h

Precision mode (8 pass)	21m ² /h	42.6m ² /h
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Important

The important notes mentioned below may severely affect the working conditions and service life of the printer and service life of relevant parts, and even may cause permanent damage to relevant parts and hazards to health of personnel. Therefore, please operate as instructed.

- 1、 Please use inks specified by the manufacturer; otherwise, printing effect may be affected or the printhead may permanently damaged.
- 2、 Please carefully read requirements on working space and environment of the printer before installing it and follow the instructions strictly; otherwise the working conditions and service life of the printer and service life of relevant parts may be affected, and even permanent damage to relevant parts and hazards to health of personnel may be caused.
- 3、 During printer operation and maintenance, prevent inks contacting any non-solvent liquids to avoid chemical reactions, which may damage the printer.
- 4、 Waste liquids produced by the printer may pollute the environment. Please dispose them in accordance with requirements of local environmental protection authorities.
- 5、 Subtanks, filters, ink pumps, air pumps, ink tubes and printheads are consumable parts and should be replaced regularly according to actual situations.

Safety Precautions

To ensure operators can operate the printer correctly and prevent damage to the printer and injury to personnel, please read the following safety precautions:

- Please use the voltage as instructed in the nameplate. Do not connect multiple devices to the same power socket so as to prevent fire hazard.
- Please check and make sure the printer is securely grounded; Otherwise, interference may be caused, causing abnormal operation of the printer.
- Do not dismantle or modify the printer by yourself; otherwise fire hazard, electric shock or other accidents may be caused.
- Do not contact the circuit control parts with metal products or liquids; otherwise, damage to the circuit board, fire hazard or other accidents may be caused.
- Do not touch the power cables with wet hands; otherwise electric shock may be caused.
- Shut off the printer when the following occur and contact local dealers if required:
 1. Switches are insensitive or do not function.
 2. Noises or smokes occur in the printer;
 3. Metal objects or liquids drop into the electric control parts;
 4. Problems that cannot be handled by operators occur.

Operation Precautions

Power supply

1. Install the printer at a place easily accessible to the power supply. The connector must be firm and reliable.
2. Use the power supply that is stable and meet the requirements of the printer.
3. Connected the power cable to an independent socket. Do not use the same socket with other devices.
4. Pay attention to the sequence of starting and stopping to prevent damaging the printhead.
5. If the voltage of the local power supply is not stable, please use voltage regulators to provide stabilized voltage. Please choose qualified voltage regulators; otherwise faults or damage of electrical parts may be caused (including printheads).

Printer

1. Do not place any object on the workbench of the printer to prevent damaging the printhead.
2. Disconnect the power supply of the printer when servicing electric parts of the printer.
3. Do not contact the printhead surface with hands or hard objects.

Regular Check and Maintenance

1. Regularly use a grease gun to add lithium soap base grease for mechanical parts. Under normal conditions, grease the linear rail of the carriage every five shifts.

2. For maintenance of ink and printheads, see Maintenance.

Table of Contents

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Chapter One Introduction to the Printer

This section describes information required for operating the printer. Please learn about this information before referring to other sections.

Contents of this chapter include:

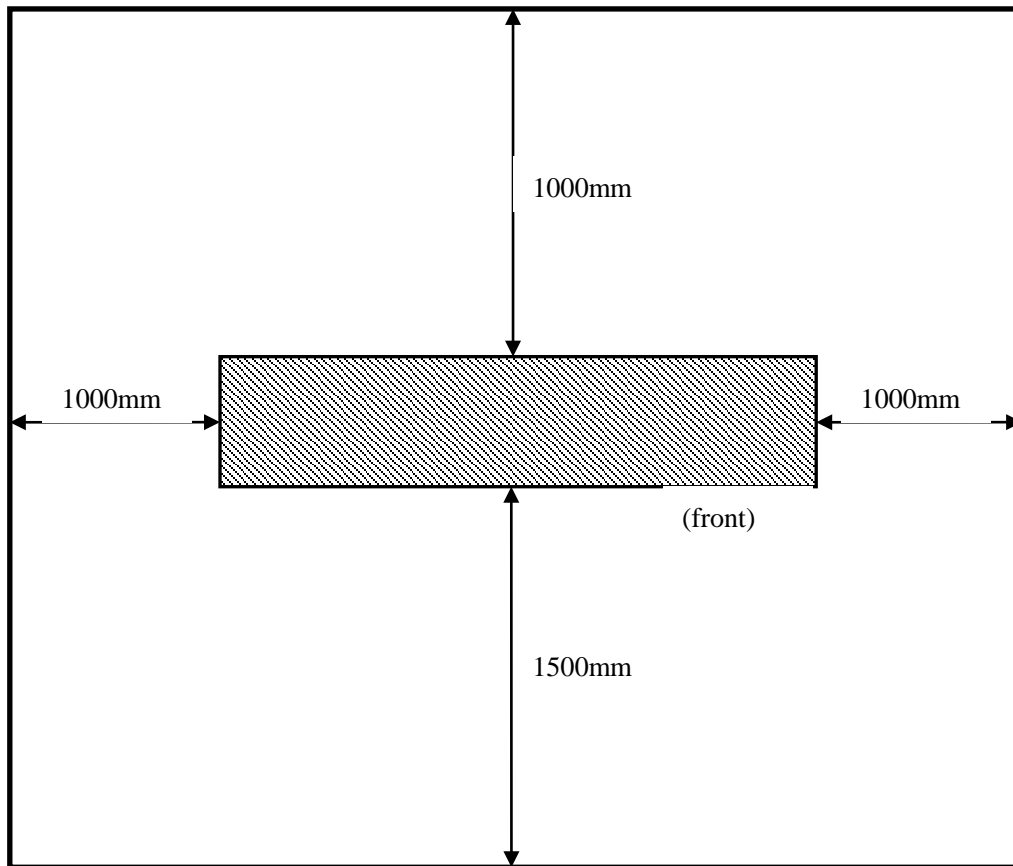
- Working Conditions
 - Working space
 - Environment conditions
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● Working Conditions

■ Working space

Sufficient spaces must be provided around the printer to facilitate replacement of common parts and printing medium, output drawings and provide ventilation. In addition, spaces should be provided for maintaining the printer or replacing parts, as shown below.

The installation and maintenance spaces are as shown below:



■ Environment conditions

Working temperature and humidity:

The optimum working temperature and humidity for the printer are 15⁰C - 30⁰C, 40%-80%.

Please make sure the printer works under the optimum temperature and humidity, otherwise the printing quality may be affected.

Do not install the printer at:

- ✧ Places with direct sunshine

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- ✧ Places with vibration
 - ✧ Places with much dust
 - ✧ Places with obvious temperature fluctuations
 - ✧ Places with fast air flows
 - ✧ Places near air-conditioners or heaters
 - ✧ Places that may be wetted
 - ✧ Places where polluting gases may occur
 - ✧ Places that are unstable

■ **System Requirements**

The minimum configuration requirements on the computer for the software are as follows:

CPU: dual-core 2.0G or above

Motherboard: high quality brand motherboard with USB 2.0 interfaces.

Graphics card: graphics card with 256 M or above video memory

Memory: 2G or above

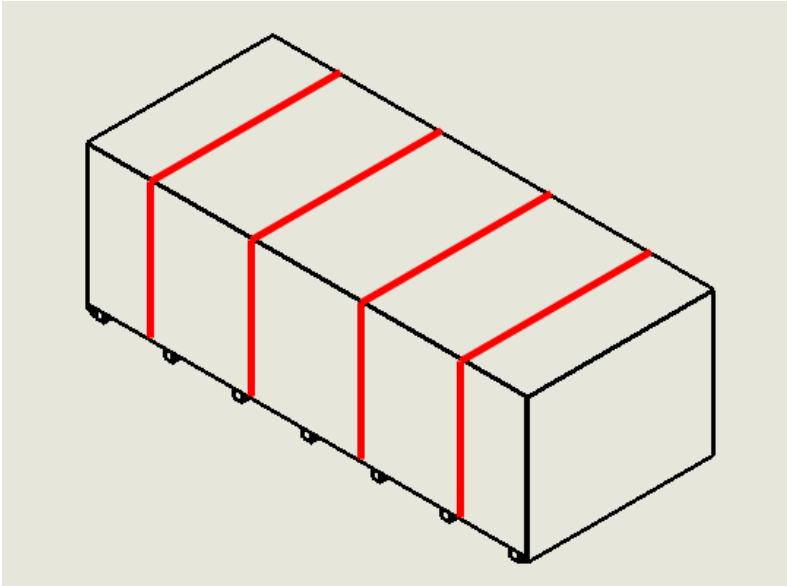
Other: CD-ROM

Hard disk: 40 G or above free space with NTFS format.

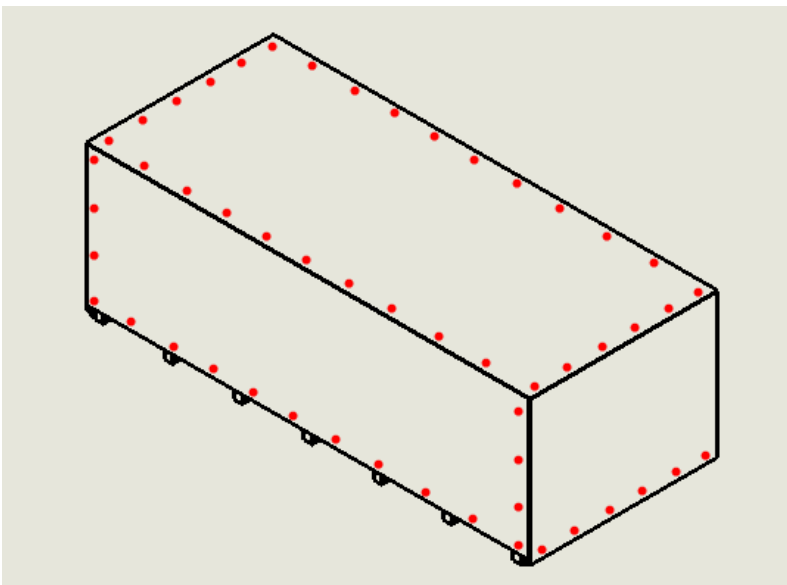
OS: Windows XP/WIN7.

● ***Unpacking and Installation***

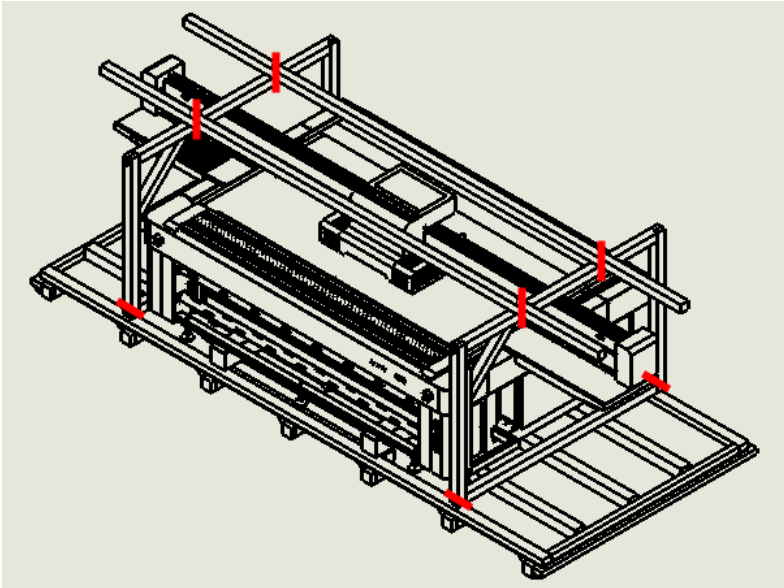
1. Shear off the four steel belts on the packing box, as shown below:



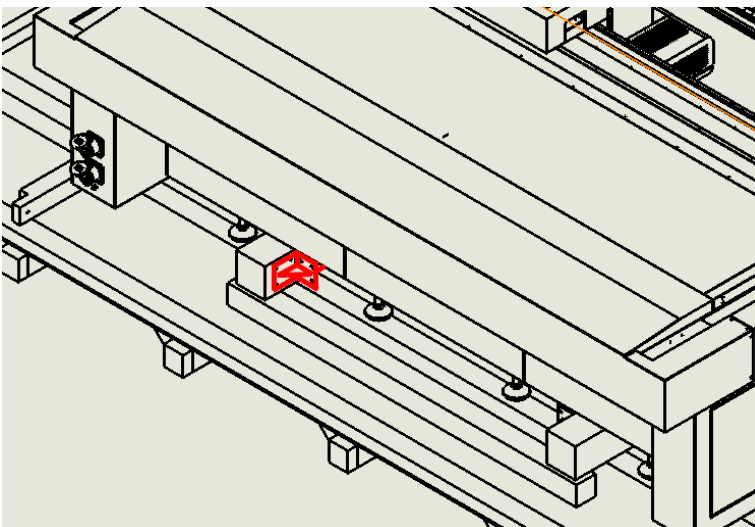
2. Remove all screws, the side plates and the top. The screws are as shown below:



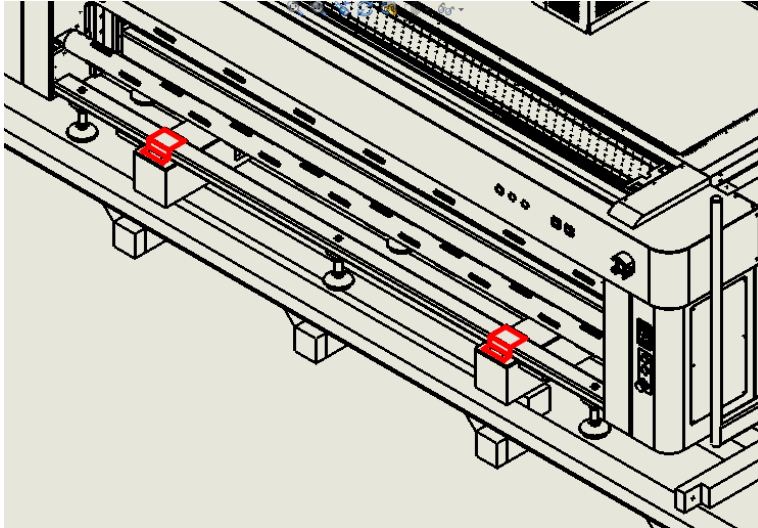
3. Remove the connecting screws (8) on the buttress brace on the packing box and the buttress brace. The screws are as shown below:



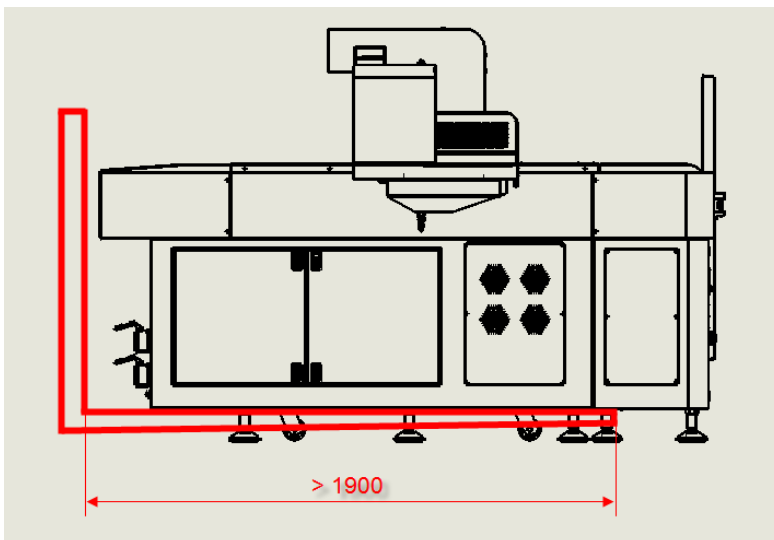
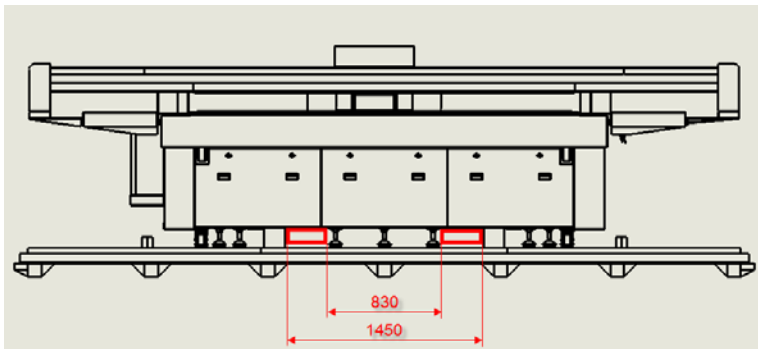
4. Remove the connecting plates (4) fixing the printer and the packing box. The connecting plates are as shown below:



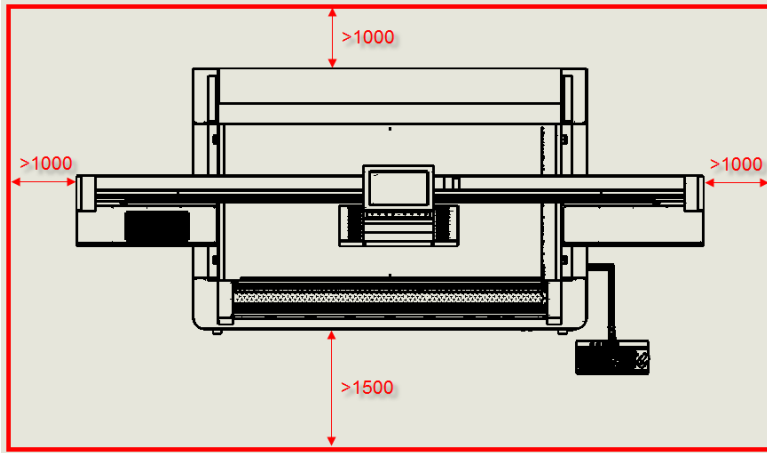
5. Remove the connecting plates (2) fixing the roll feed mechanism and the packing box. The connecting plates are as shown below: (Note: for models with roll printing functions)



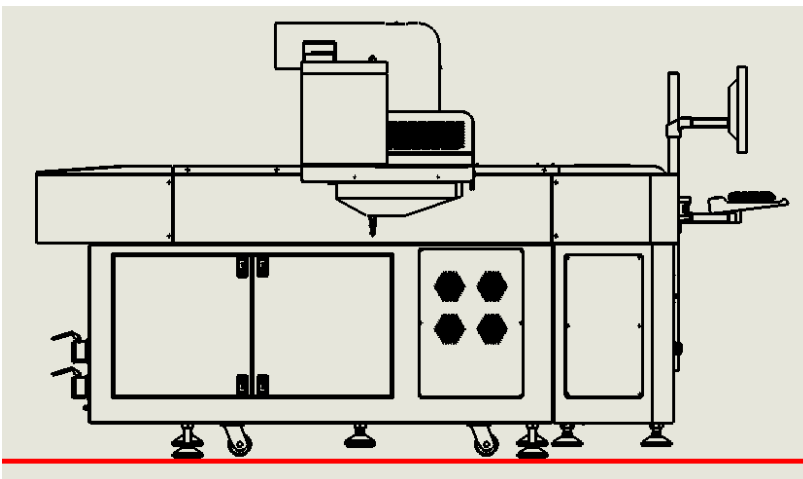
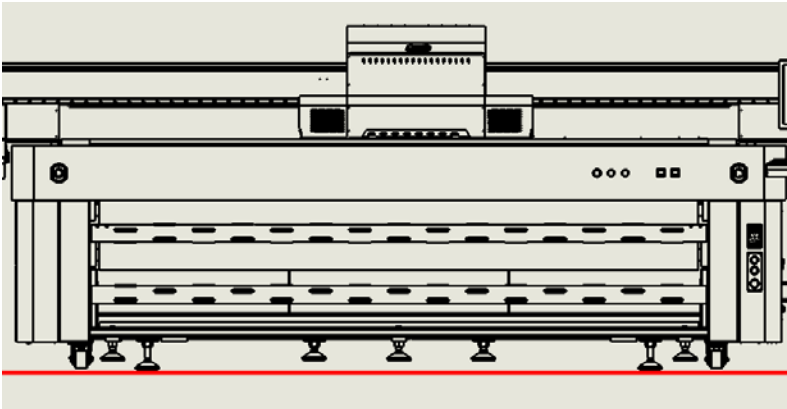
6. Favorably use a 10T or above forklift to unload the packing box to the ground, as shown below: (Note: ① For KR2512, the arm of the forklift should be longer than 1900; ② for KR3020, the arm should be longer than 2650.)



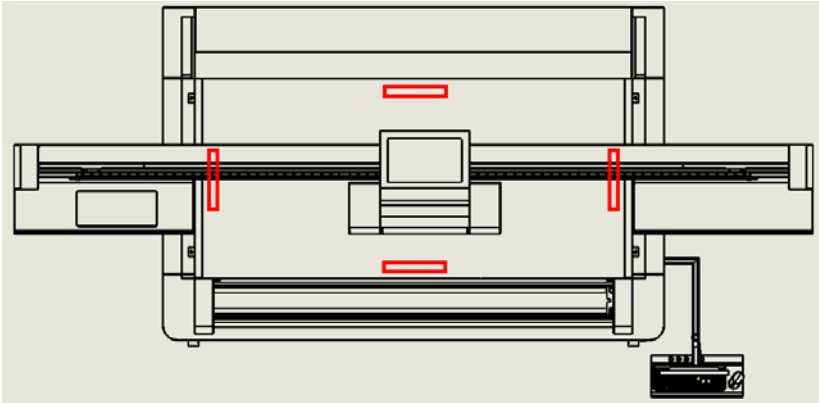
7. The following shows the space requirements for placing KR models:



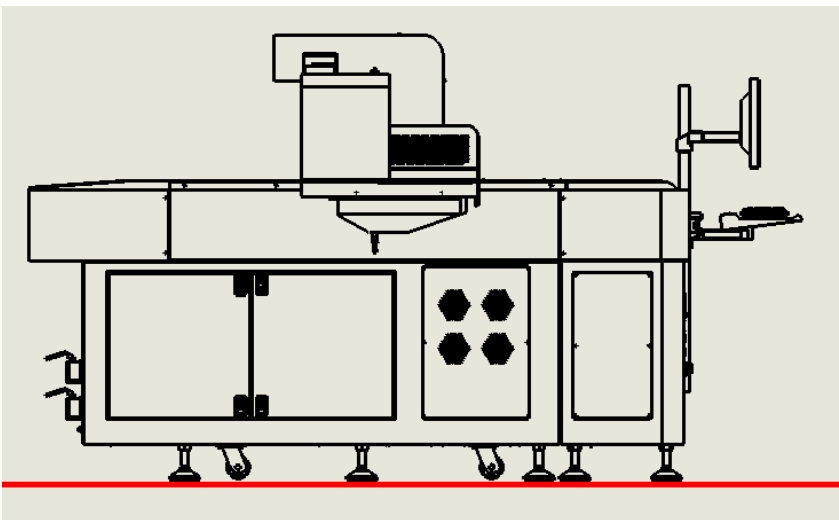
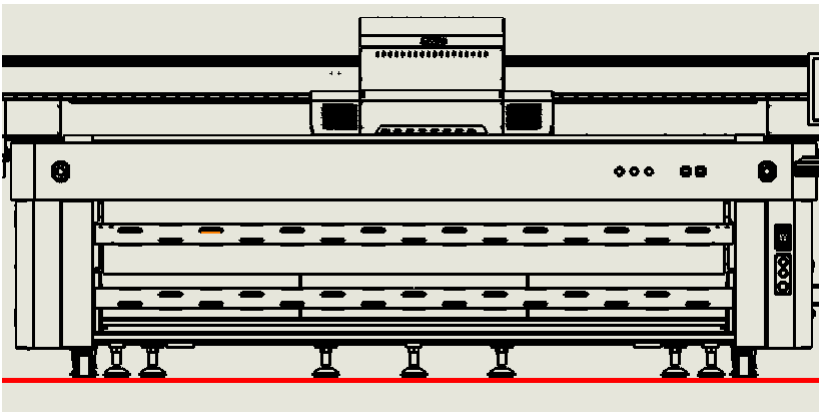
8. Loosen the four pillars to suspend the universal castor; fasten other pillars to lift it far from the ground, as shown below:



9. Use a level meter with a sensitivity higher than 0.05 mm/m and adjust the four pillars to set the horizontal precision of the red area shown within 0.1mm/m. (Note: The universal castor shall not contact the ground during adjustment)



10. Stretch other pillars out until they contact the ground.



● *Appearance, name and functions of parts and components*

■ Front view



No.	Name	Description
1	Left end cover	The transmission and tension components in the carriage scanning direction are installed in it.
2	Left shield box	This position is for cleaning and maintenance as well as for stay of the carriage when it is idle. The left shield box includes liquid carriage box, cleaning and maintenance panel and lighting LED. Pushing the liquid carriage box can switch on and off the lighting LED.
3	Grating cover	The grating cover is to prevent the grating from pollution of dust.
4	Platform	The printing platform, made of aluminum honeycomb panel
5	Power track	The power track is to guide cables, air ducts and ink tubes.
6	Carriage	The carriage contains circuits of the carriage and cleaning and maintenance valves, etc.

7	Crossbeam	It provides supports for the motion of the carriage.
8	Crossbeam rail	It is used for guiding the carriage scanning.
9	Right shield box	The right shield box is used for shielding when the carriage moves to the right end. For the symmetric purpose, a drawer is also designed on the right and can hold some common items (lighter than 3kg).
10	Right end cover	The motor components are installed in it.
11	Left electrical cabinet for roll feed	The left electrical cabinet is used to hold transmission components for roll feed and charging device for the flatulence axis as well as ionizer gun (if any).
12	Tension components for roll feed	It provides tension for roll feed and consists of tension bar and supporting components at the two ends.
13	Front cover	The front cover consists of the emergency stop buttons at the two ends and the main operation panel.
14	Roller	The roller is driven by the two cylinders at the two ends for vertical motion. It is released during feeding and pressed during printing.
15	Conveying axle	The conveying axle is used to place printing medium and is driven by a gear motor which is locked automatically when the power is down.
16	Media collecting axle	It is to roll printed media and is driven by a constant tension motor.
17	Right	It holds motor components, transmission

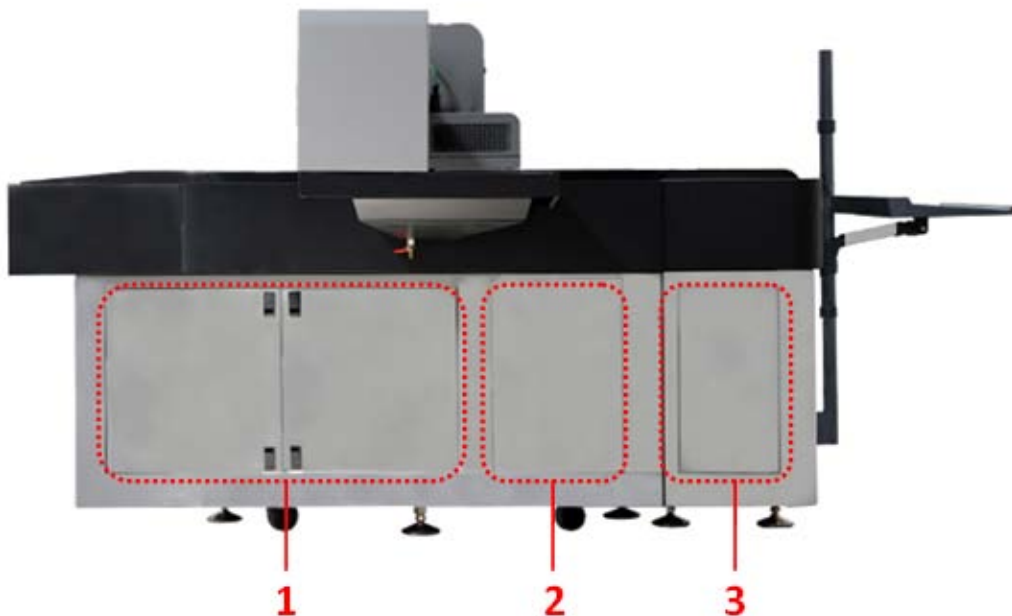
	electrical cabinet for roll feed	components, electric control circuits, lighting and absorbing switch.
18	Roll feed control panel	It consists of roller lifting, feeding control and absorption adjustment of the roll feeding platform.
19	Keyboard tray	It is used to hold the display and the keyboard tray platform and for the platform absorption zoned control.
20	Main operation panel	The main operation panel is used for operations usch as start, printhead high pressure, position and negative pressure control.
21	Cleaning and maintenance panel	The panel is used for operations including clean, flush and maintain.
Note: This takes a roll model as an example, for other models, main components are the same except for the roll material printing parts.		

■ Rear view



No.	Name	Description
1	Right electrical cabinet	The right electrical cabinet mainly holds the control circuits, including electrical control, circuit boards, switching power and motor driver.
2	Left electrical cabinet	The left electrical cabinet mainly holds the ink path, including main tanks, ink pumps and level 1 filters.
3	Power interface	The power input of the printer. There are two power inputs, one provides power supply for UV lamps and the other provides power input for other parts.

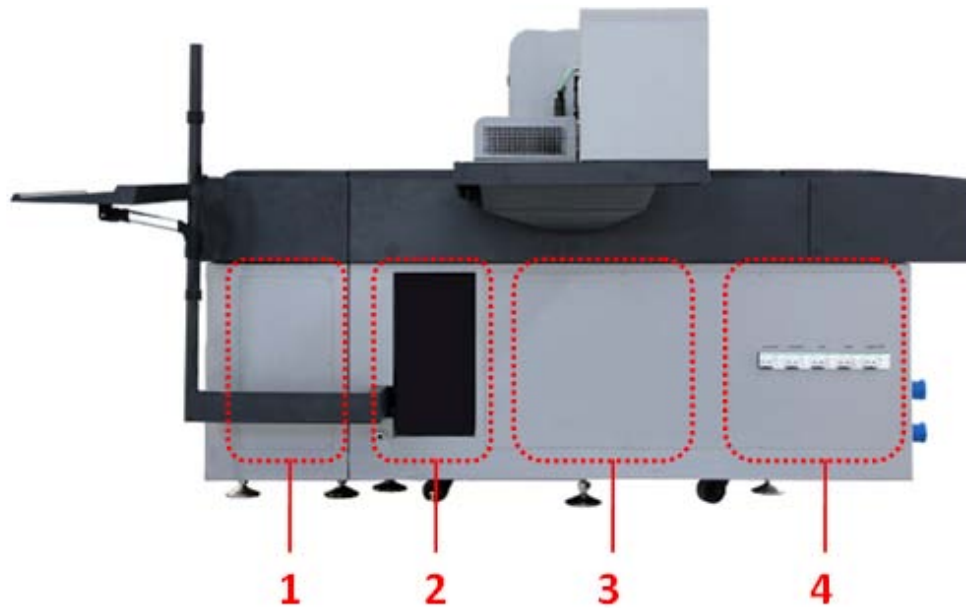
■ **Left view**



No.	Name	Description
1	Cabinet door of the ink path	The main ink path is behind this door and the door type is used to convenience ink refill.
2	Maintenance cover plate 1	The fan and other parts inside the printer can be seen when the cover plate is opened. It is used to

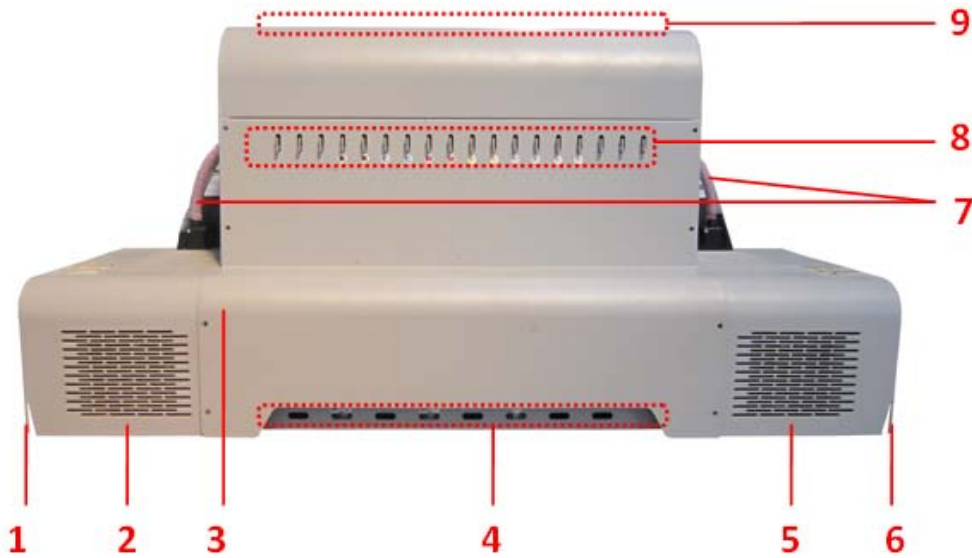
		convenience maintenance of parts inside.
3	Maintenance cover plate 2	It is designed for facilitating repair of some parts in the cabinet.

■ Right view



No.	Name	Description
1	Maintenance cover plate 3	It is designed for facilitating repair of transmission parts of the roll feed.
2	Host position	The host can be installed here. A multi-purpose switching board is located here to provide power supply for the host and the display.
3	Maintenance cover plate 4	It is designed to convenience the maintenance and repair of the circuit board and other electrical parts.
4	Electrical control panel	This panel is removable for maintenance and repair of some electrical parts and is also designed to carry switches for power supply control.

■ View of the Carriage

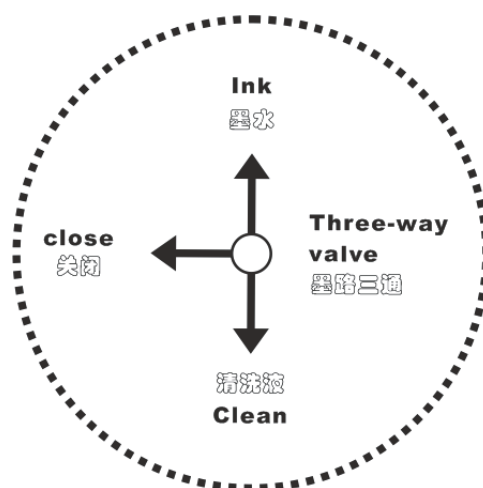


No.	Name	Description
1	Left collision prevention plate	It is a part of the collision prevention mechanism to realize the function.
2	Left UV lamp shade	It contains the UV lamp, UV lamp air ducting system and static elimination system.
3	Front cover plate of the carriage	This cover plate needs to be opened during printhead installation, height detection device adjustment and material detection device adjustment.
4	2-way valve	It is used to exhaust the air in printheads.
5	Right UV lamp shade	It contains the UV lamp, UV lamp air ducting system and static elimination system.
6	Right collision prevention plate	It is a part of the collision prevention mechanism to realize the function.

7	Cable	Cables of the UV lamps, collision prevention devices and static elimination devices.
8	3-way valve for flushing	The valve for the control the ink path.
9	3-way valve of the air path	The valve is designed to realize manual flushing and is located on the top of the carriage.

✧ **Operation of the 3-way valve for flushing:**

There is a row of valves in the front of the carriage. These valves control the on/off of the ink path from the sub-tank to printheads. The operation of each 3-way valve is as shown below:



State 1: Working state, the valve is set to the upward direction when the printer is working, especially printing.

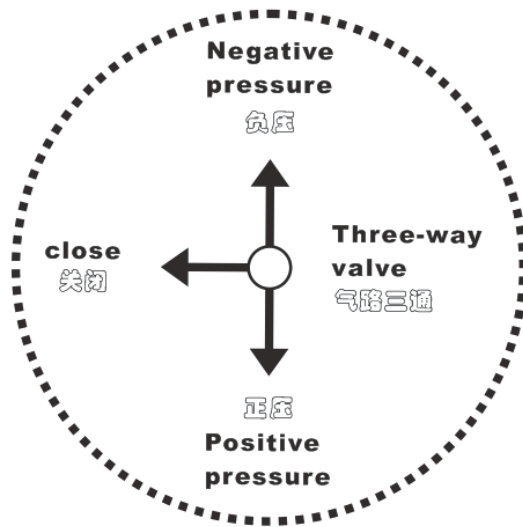
State 2: Cleaning state. The valve is set to the downward direction when the cleaning liquid is used to clean printheads.

State 3: Off state. When the equipment is closed, the valve is in the off state.

✧ **Operation of the 3-way valve of the air path:**

There is a row of valves similar to the vale of the ink path on the top of the carriage. These valves control the pressure in the sub-tank to realize flush of

each ink path. The operation is as shown below:



State 1: Positive pressure state. The valve is set to the forward direction when the positive pressure flushing is needed.

State 2: Negative pressure state. The valve is set to the backward direction when the printer is working, especially printing.

State 3: Off state. When the equipment is closed, the valve is in the off state.

Attention: Please set the valve to the negative pressure state when the first ink supply (pump the ink in the main tank to the sub-tank) is given; otherwise, the ink may not be pumped to the sub-tank.

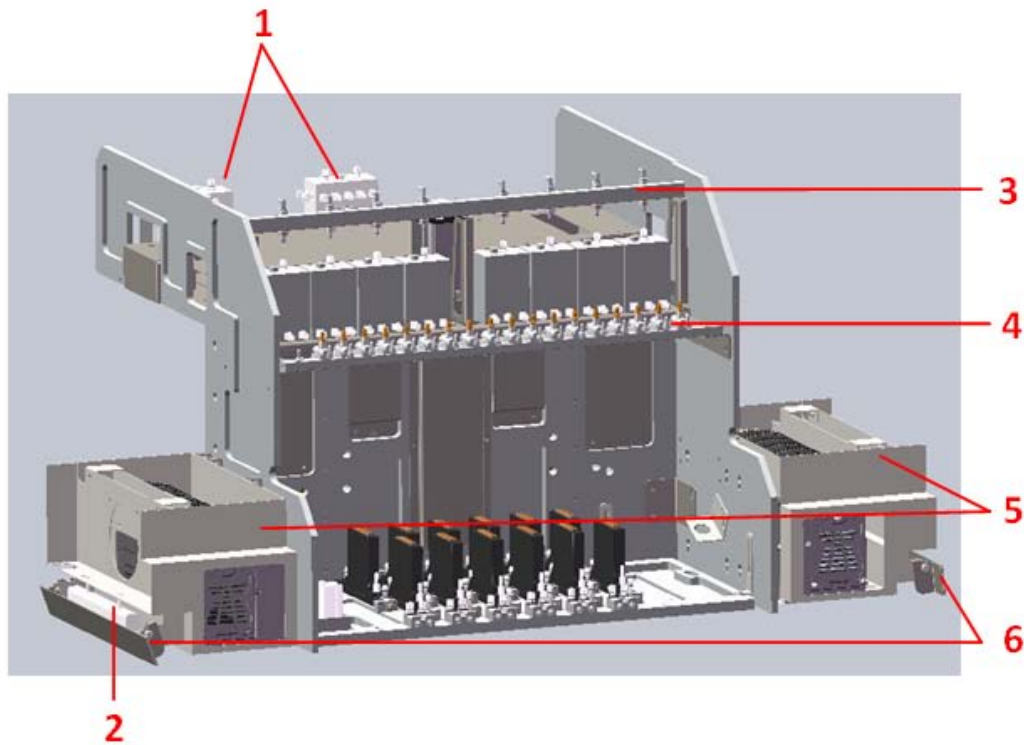
✧ **2-way valve:**

Each two-way valve has two nozzles respectively connecting to two different ink outlets through ink tubes.

Loosen the valve core. Ink and air bubbles flow to the two-valve through ink nozzles and flow out through the ink outlets. Tighten the valve core. The ink intake is closed.



■ Interior view



No.	Name	Description
1	Waste ink tank	It is used to prevent ink from flowing into the vacuum device below. This printer has two waste ink tanks: one is a color waste ink tank and the other is a white one. Ink supply will be stopped when either of the tanks has ink.
2	Static elimination device	If static elimination devices are used, a static elimination device will be installed on both sides. The devices is to eliminate static on the medium to prevent ink splash during printing.
3	3-way valve of the air path	See the description above.
4	3-way valve for flushing	See the description above.
5	Air ducting	It is designed to prevent printheads from being

	cover of UV lamps	affected by heat of UV lamps.
6	Collision prevention device	See the description above.

■ Drawings of accessories

✧ Humidifying tray

The humidifying tray is used to maintain the moisture of printheads. When preserving the moisture of printheads, put one or two layers of non-woven fabrics in the humidifying tray (make sure the cloth is fully wetted). Then add a small quantity of cleaning liquid. Cover the humidifying tray on the printhead bottom plate and tighten screws. Make sure the printhead surface reliably contacts with the clean liquid.



✧ Butterfly filter

The butterfly filter is installed between the 3-way valve of the ink path and the ink inlet of printheads to prevent foreign substances or impurities entering printheads so as to protect printheads. Butterfly filters are consumables and are recommended to be replaced every six months.



● **Consumables**

■ **Printing media**

The common media for the printer includes media used for ads such as flex cloth and paster. Please pay attention to the following during buying, storing, using and post-processing.

- ✧ Poor quality media may reduce the printing quality. Thus, quality printing media is recommended.
- ✧ Do not place the media vertically during storage to prevent damage. Particularly, for plate media, please put it horizontally on a flat plane prevent warp.
- ✧ Do not store media under environments with sharp changes in temperature and humidity. Store the media under clean and tidy environments with proper temperature and humidity.
- ✧ Do not use printing media with scratches, corrugations, warps and swells for roll materials. If such printing media is used, the feeding at both sides of the roller may be affected, and for serious cases, fault or damage may be caused.
- ✧ Keep the printing surface clean and tidy without dust and other objects during printing; otherwise fault or damage may be caused.

■ **Ink and cleaning liquid**

Printheads of the printer are precise equipment. Inks severely affect the printing quality and service life of printheads. Therefore, please use inks and cleaning liquids recommended by the manufacturer and pay attention to the following:

-
- ✧ If recommended inks are not used, printing quality may be reduced or the printer may be damaged.
 - ✧ The service life of inks is usually six months (from the date of production). Please use inks within the service life.
 - ✧ Please make sure the main tank has sufficient inks during operation of the printer.
 - ✧ Inks should be stored under cool shade.
 - ✧ Inks and cleaning liquids are strong acid or alkali liquids. Please store them properly and prevent them contacting with skins or splashing into eyes. do not swallow them.

■ **Maintenance tools**

Please use cleaning liquids recommended by the manufacturer to clean printheads and use cleansing tissue recommended by the manufacturer to wipe printheads; otherwise permanent damage may be caused to printheads.

Chapter Two Basic Operations

This section describes basic operations such as installation and operation.

Contents of this chapter include:

- Printer installation
- Powering on and off
- Installation and adjustment of printheads
- Installation of printing media
- Functions of keys and buttons
- Adding inks
- Positive flush
- Negative pressure adjustment

● **Printer installation**

■ **Accessory Installation**

1. Connect the display support and the display: Use M4*10 screws to fix the display support on the display, as shown below:



2. Connect the keyboard tray and the support: Use M5*10 screws to fix the keyboard tray support on the keyboard tray, as shown below:



3. Put the support positioning sleeve on the console support; rotating the support positioning sleeve as shown can adjust the height of the sleeve. Rotating the sleeve in the opposite direction can fix the sleeve.



4. Fix the support positioning sleeve, the display support and the keyboard tray support on the console support. The sequence is: Support positioning sleeve→ Keyboard tray support→ Support positioning sleeve → Display support (the height can be defined according to customers\ requirements).



5. After adjusting the angle of the keyboard tray, fasten the screws as shown.



6. Connect the plug of the cable of the keyboard tray to the printer, as shown below:



7. Connect the cables of PC and the display. It should be as shown below after assembly:



- **Powering On and Off**

- **Powering On**

1. Plug one end of the power cable provided with printer into the socket on the printer and the other end into an industrial adapter in the distribution cabinet.
(Note: This must be done by a qualified technician.)



Note: The upper one is the power interface of the control and the lower one is the

power interface of UV lamps. The power supply is 220V/32A. Please check if your grid output is qualified.

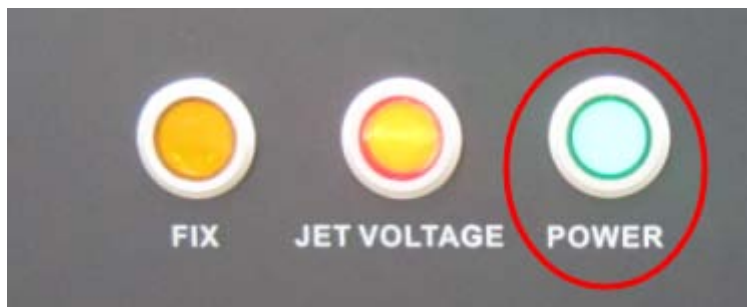
- Turn leakage protection switches on in the right electrical cabinet. Switch on the power supply as follows.



Description of symbols

Symbol	Description
UVLAMP	Power switch of UV lamps
CONTROL	Control power switch, providing power supply for the printer and the static elimination device.
COMPUTER	Power supply to the PC and the multi-purpose switching board at the host.
FAN1	Power supply to FAN1. The fan can work normally when a zone is turned on.
FAN2	Power supply to FAN2. Fan 2 can work normally when FAN1 is turned on.

- Check whether the two emergency stop buttons are released.
- Turn on the CONTROL switch and press POWER to start the printer.



- The printer will perform self-check after startup.
- After self-check, the carriage will stop at the clean position on the left. The powering on procedure is complete.
- You can turn on the high pressure by pressing JET VOLTAGE. Please make sure

the high pressure button is pressed before each printing.



8. Note: If FIX or MAINTAIN is pressed when you are starting the printer, the printer will enter the positioning or maintenance state after self-check and may not work normally. You need to release these buttons to resume the normal working state of the printer.

Note: Please power on the printer first and then start the high pressure of printheads.

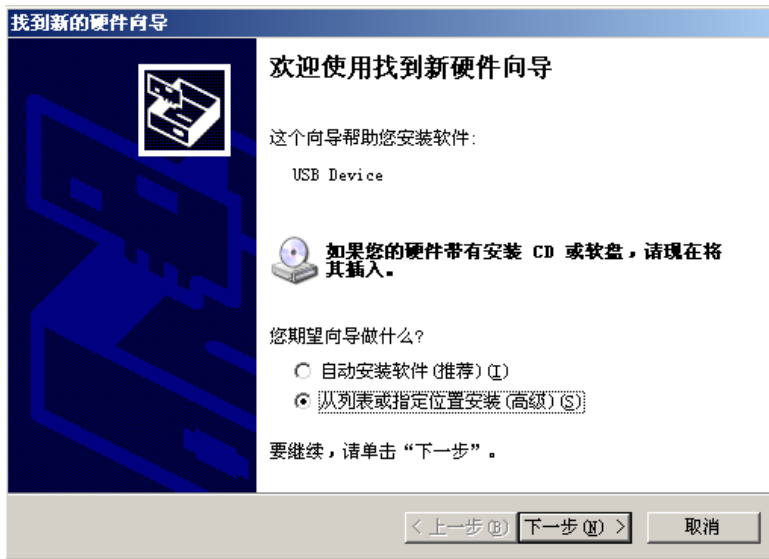
■ **Powering Off**

1. Please make sure printheras are not in the working state.
2. Stop the high pressure of the printhead;
3. Switch off the power supply of all other parts of the printer;
4. Press the Stop button.
5. Turn leakage protection switches off in the right electrical cabinet. (If you need to continue using the computer, you can keep the leakage protection switch of COMPUTER switched on.)

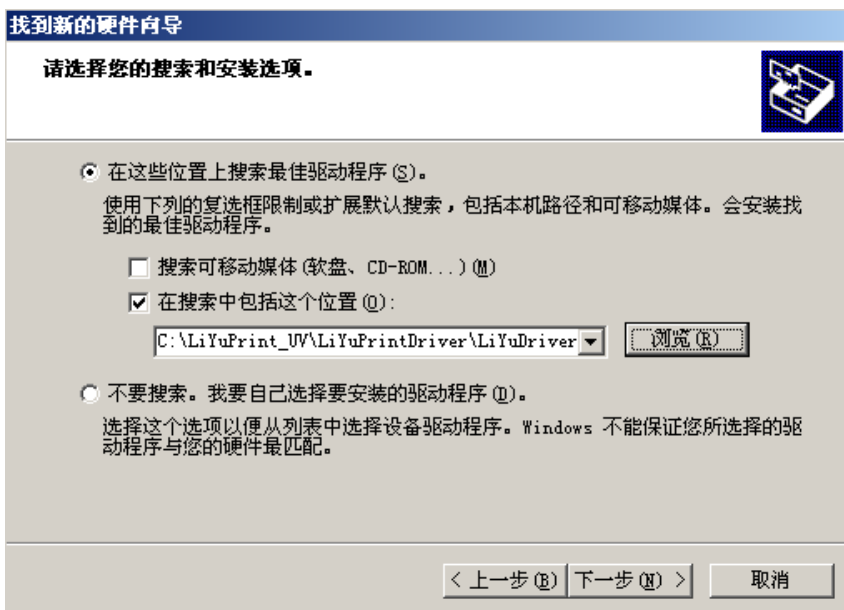
Note: Please do shut off the high pressure of printheads first and then power off the printer except for emergencies.

● **Connecting to PC**

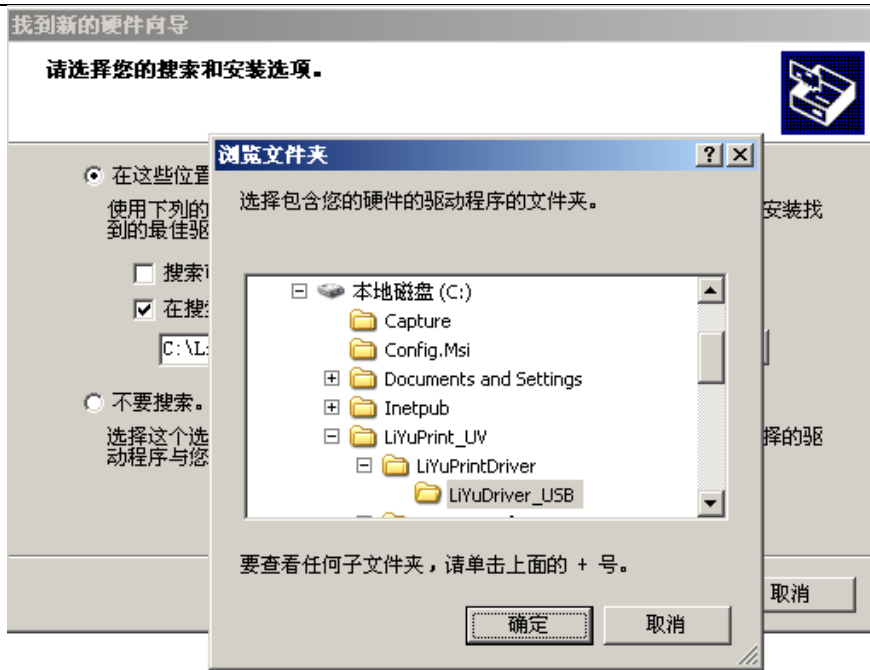
-
1. Connect the USB cable of the printer to the USB port of PC and start the printer. If no driver installed on the PC before, you will be prompted to install the driver.



2. Select "Install from a list or specific location" and click "Next". Browse to the location where the driver is stored (for example: c:\LiYuPrint_UV\LiYuPrintDriver\LiYuDriver_USB).



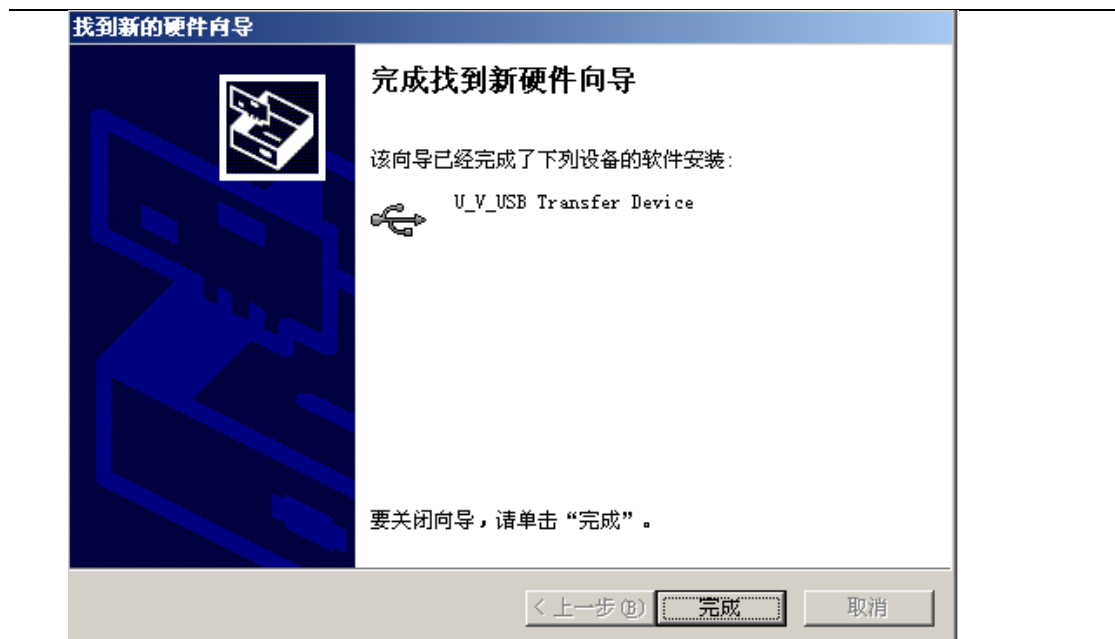
3. Click "Browse" and select the folder where the driver is stored, click "Confirm" and then click "Next".



4. The driver installation starts. If a prompt window appears, click "Continue Anyway" to continue the installation.



5. The first stage installation is complete.



6. After completing the installation of the previous stage, the system will prompt that a new hardware is found again. Repeat steps 1 to 4 to complete the installation.
7. After the installation is complete, start the Device Manager. If U_V_USB Transfer Device, it indicates that the installation is complete successfully.

● ***Installation and adjustment of printheads***

Printheads of some models are not installed on printers. Therefore, this section starts with the installation of a single printhead to the printer. If printheads have been installed, please ignore this part.

■ **Description of printheads**

There is printhead identification on each printhead package. The specific contents are as follows:



Printhead identification: KM1024 $\alpha\beta$

α : L: 42pl M: 14pl

β : N: without built-in printhead heating (all solvent printers are of this type)

H: built-in printhead heating (all UV printers are of this type)

003316: printhead code

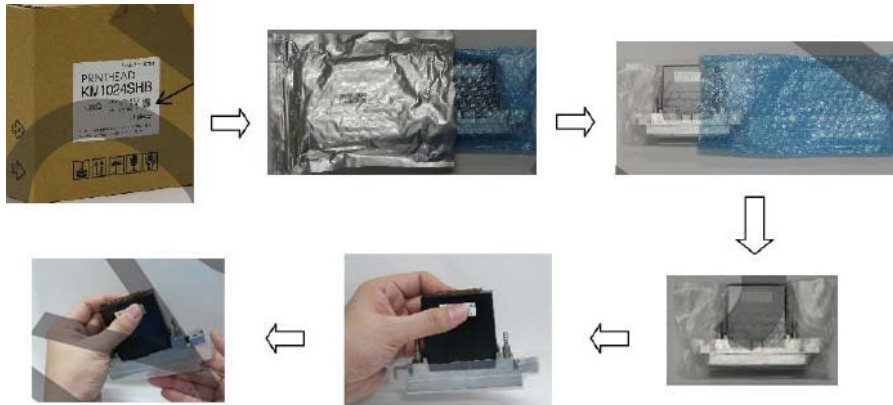
L: 12.8V R: 12.7V, indicating the reference voltage of the two rows of printheads

Before unpacking, please carefully check the identification on the printhead package. Please check whether the printhead mode is correct and record the voltages of printheads (this values will be used in later printhead state adjustment).

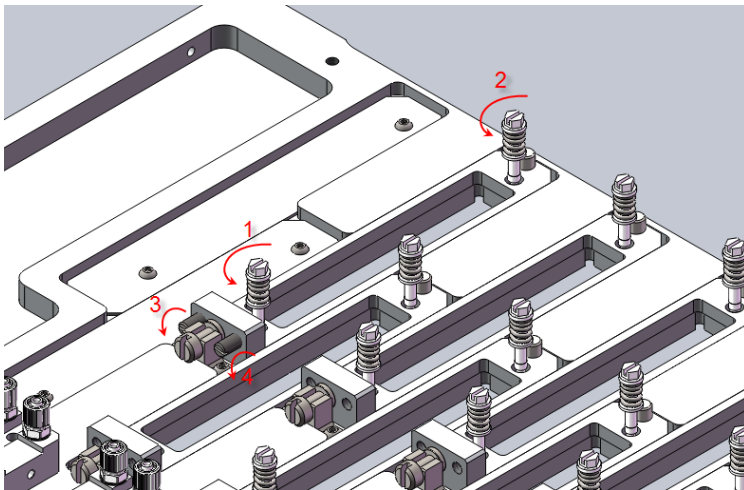
■ Printhead installation

1. Install the printhead bottom plate on the printer first and lay a layer of non-woven fabric under the bottom plate to prevent pollute the printhead panel or block the printhead during printhead installation.
2. Unpack the printhead and remove the protective cover (used to protect the

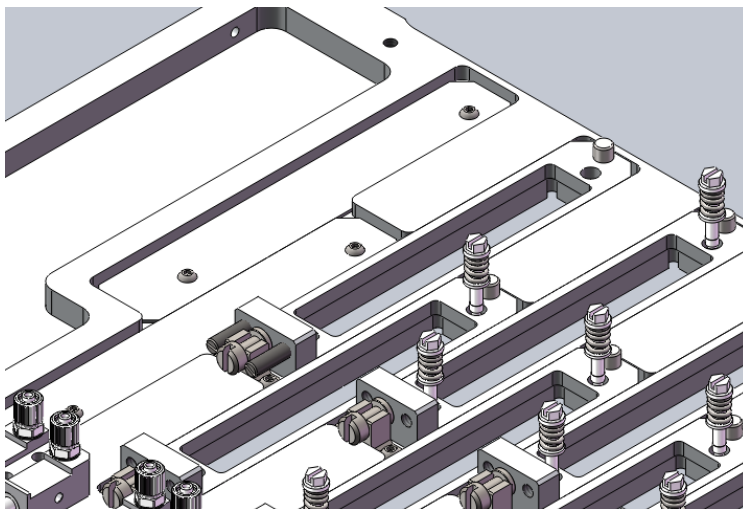
printhead panel).



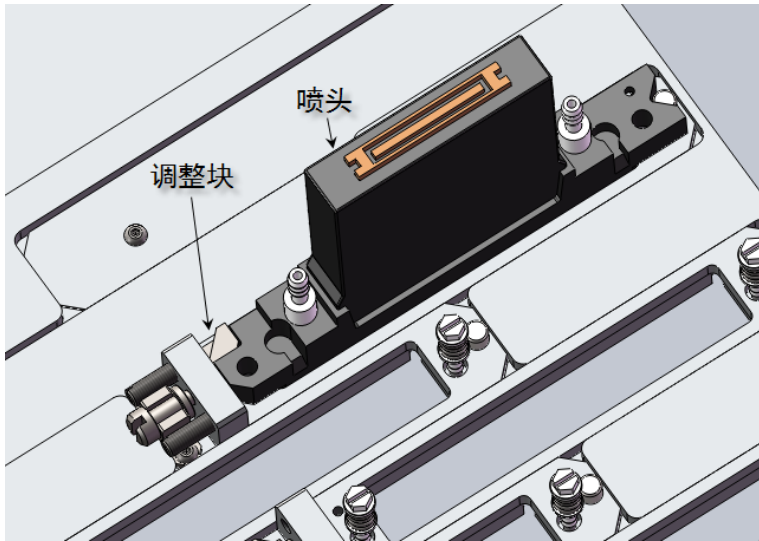
3. Generally, screws needed for install printheads have been installed on the printhead bottom plate. You need to remove screws 1 and 2 as shown first (please take care of the screws and springs). Then loosen screws 3 and 4.



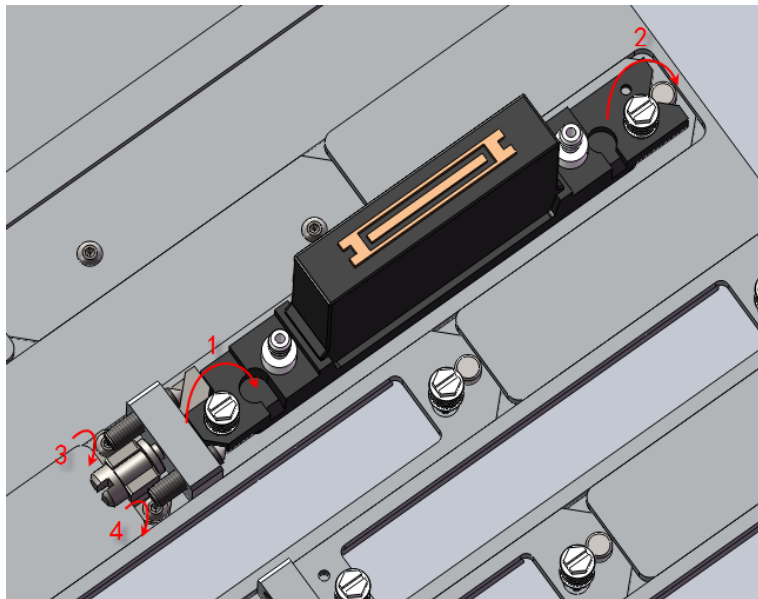
It should be as shown below when the operation is complete.



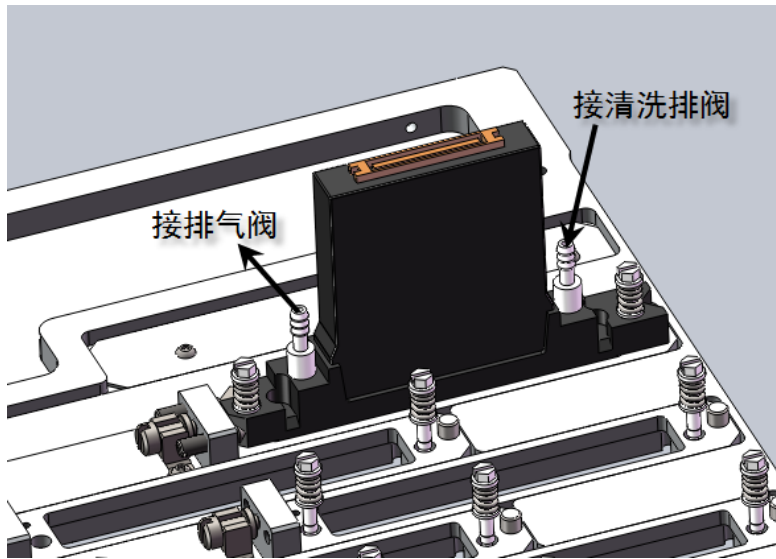
4. Place printheads as per the direction as shown below and then place the printheads adjusting block.



5. Fix printheads with screws 1 and 2. It should be performed as follows: Fasten screws 1 and 2 tightly and then rotate them backward for a turn, and fasten screws 3 and 4 until they lock printheads and the adjusting block firmly.

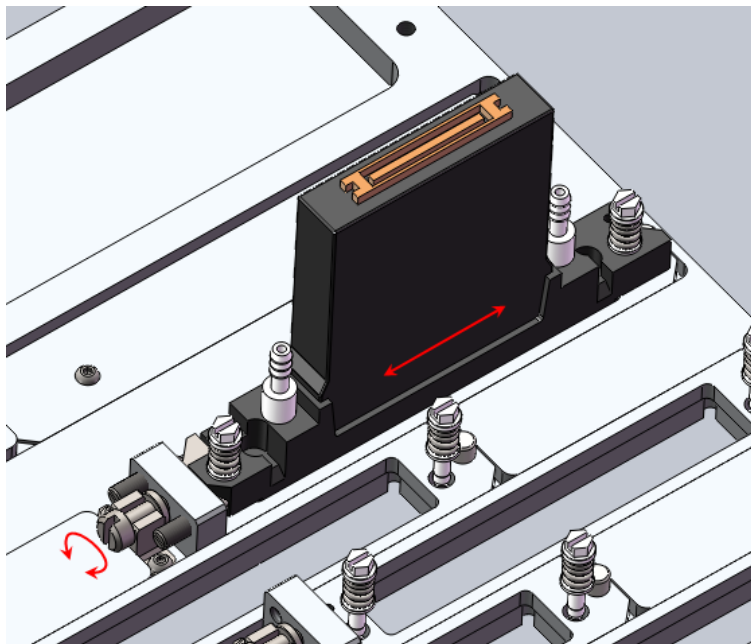


6. Connect the ink path, the 3-way valve (connecting to the butterfly filter) and the 2-way valve of the printheads as shown. Ink tubes should be installed on the printhead bottom plate in the factory. To protect the ink tube from dust, the ink tube may be connected in a whole. You may need to cut it properly into several segments.

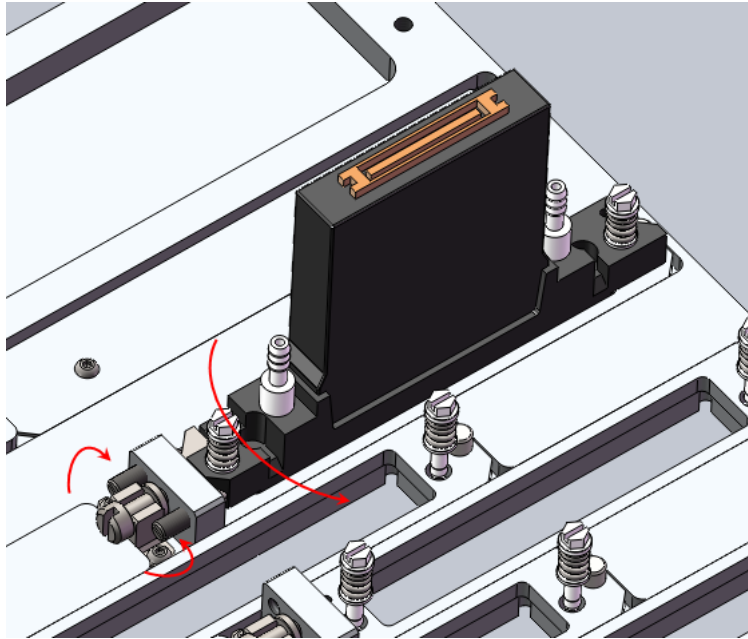


■ **Printhead adjustment**

1. Forward and backward adjustment: Rotate the screws as shown below to adjust the printheads forward or backward.



2. Adjusting the left and right screws can adjust the inclination of printheads.

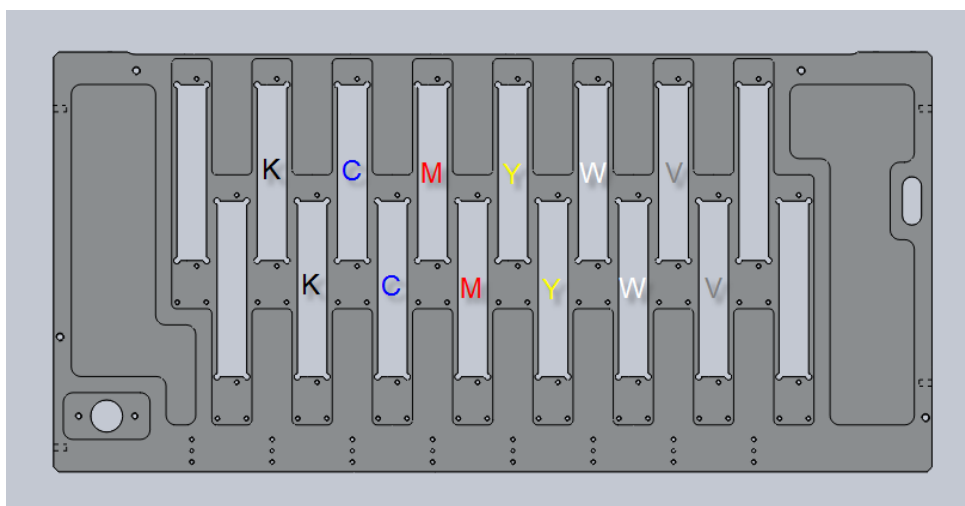


3. Note: You do not need to rotate the screws fixing printheads during adjustment for these screws have a spring locking mechanism.
4. To convenience future adjustment, please move K0 (reference printhead) to the center.
5. For printhead calibration, please refer to LiyuPrint Software User Manual.

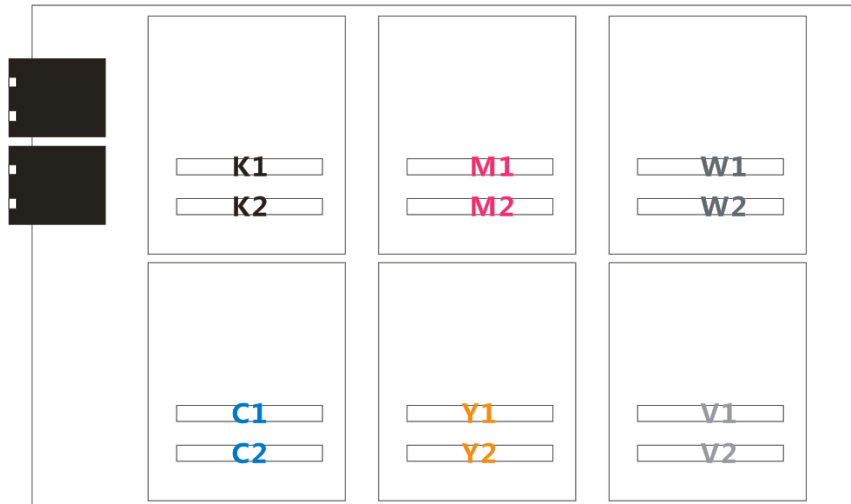
■ Electrical connections

1. Printhead and printhead drive board installation position, and corresponding colors

- Definitions of colors of the printhead bottom plate:



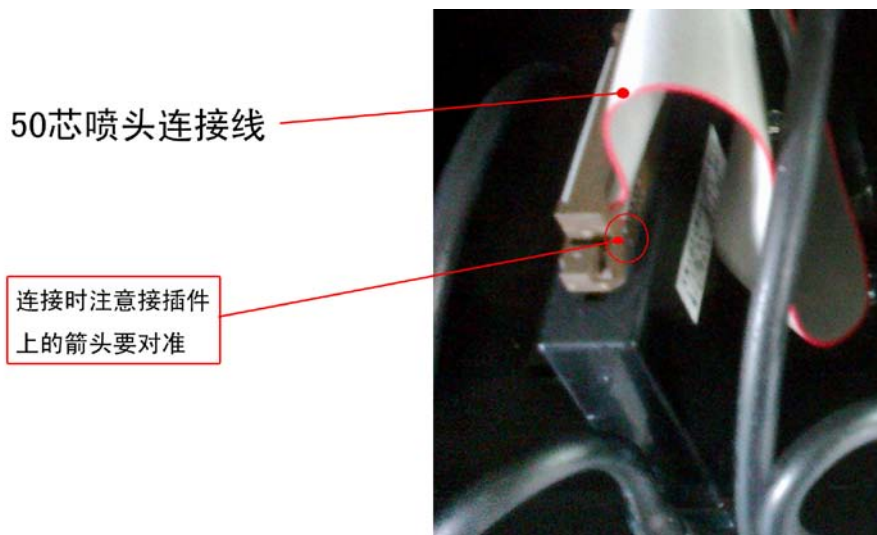
- Colors of the carriage PCB:



The sequence number of the printheads installed behind the printhead bottom plate is "1" and the sequence number of those in front of the bottom plate is "2".

- The electrical connections of printheads are very simple. You just need to connect the printhead drive board and the printhead board with the 50-pin cable. Pay attention to the direction of the interface.

See the following:



● **Installation of printing media**

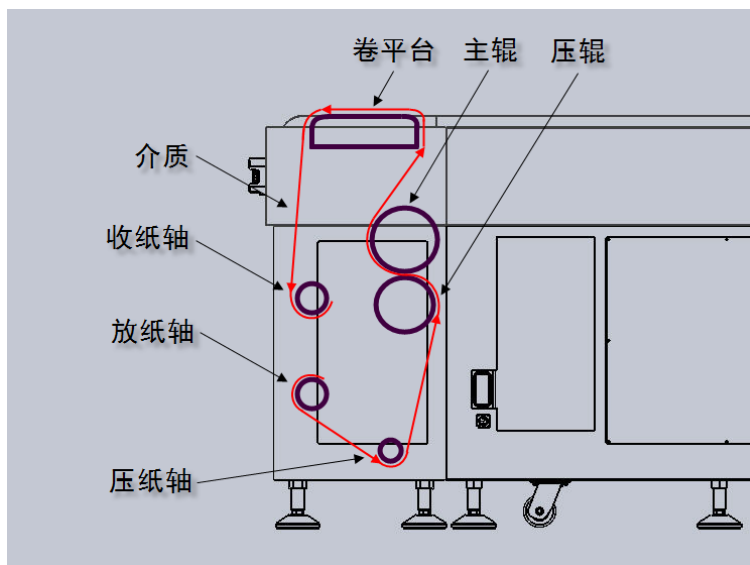
■ **Installation of flat media**

- Turn off the platform absorption system from the absorption zone control panel on the keyboard tray.

-
2. Place the flat media as required. The flat media must be flat. Place the media in the same absorption zone as possible. You can position the media with the media positioning device. For details, see Media positioning.
 3. Open relevant platform absorption zone.
 4. You need to cover the area of the medium beyond a zone with proper plate or masking tape as necessary to strengthen the absorption force.

■ Installation of roll media

1. The installation of roll media is as shown below: (Media is marked in red)



2. Do not lower the roller when installing the media. The media should be well aligned and then horizontal tension on the media should be consistent when it is fixed on the collecting axle.

● Functions of keys and buttons

■ Operation panel of the front cover



Button	
FIX	Positioning button. Pressing this button will release the media positioning device on the platform. If the carriage is not in the idle state before the device is released, the carriage will move to the idle state first. When the device is release, all moving parts cannot work until the FIX button is released and the positioning device is locked.
JET VOLTAGE	Switch of the driving voltage of printheads. Pressing this button will start the driving voltage of printheads; otherwise printheads will not work.
POWER	Startup button. It is a non self-locking button and is triggered by one pressing to start up the printer.
Instrument	
COLOR	Color vacuum pressure gauge for adjusting and displaying the vacuum pressure value of color printheads.
WHITE	White vacuum pressure gauge for adjusting and displaying the vacuum pressure value of white printheads.

■ **Maintenance panel of the left shield box**



FLUSH	Flush button for starting the positive flushing.
CLEAN	Cleaning button for starting the cleaning liquid pump.
MAINTAIN	Maintenance button, which is designed for conveniencing the

	printhead wiping after cleaning. Pressing this button will move printheads to the highest position. When it is released, printheads will resume the previous positions.
--	---

■ Operation panel of the absorption zone on the keyboard tray



AREA1	On/Off button of Area 1, as shown on the left.
AREA2	On/Off button of Area 2, as shown on the left.
AREA3	On/Off button of Area 3, as shown on the left.
AREA4	On/Off button of Area 4, as shown on the left.
VACUUM/FLOATAGE	For toggling between absorption and floating. It is in the absorption state by default. Pressing it will enter the floating state.

Note:

This is a schematic diagram of KR2512. A KR3020 has eight zones from AREA1 to AREA8. The schematic diagram of the zones is also on the left of the panel.

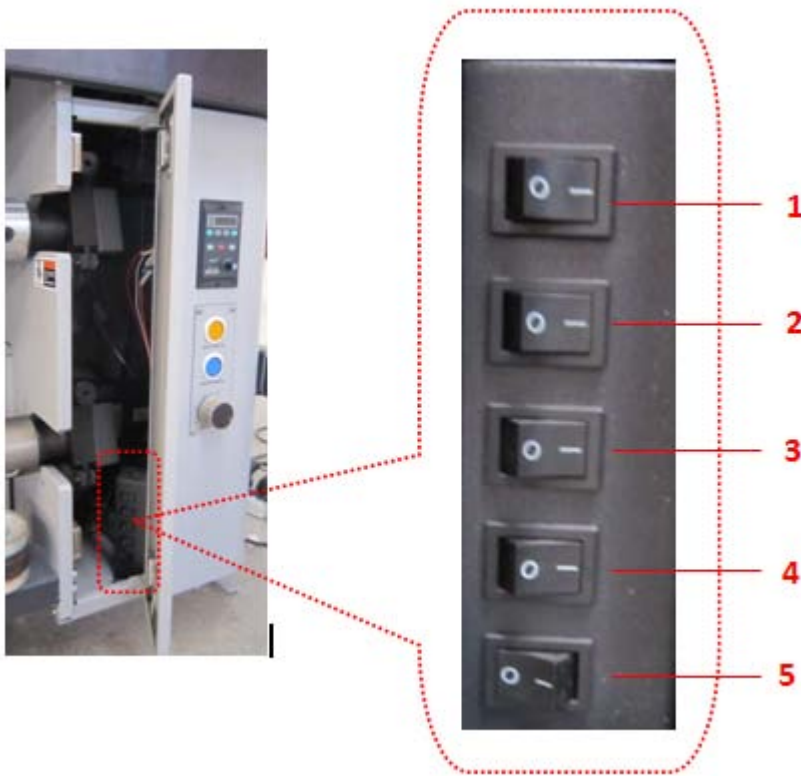
■ Roll feed control panel



The figure on the left above is a zoomed front view and the right one is the view after being rotated by 90 degrees.

1: Control panel of the torque motor	Controller of the media collecting motor. It can be used to adjust the direction of the motor and the tension.
2: MAIN ROLLER	Roller lifting button. The roller is lifted to press the media when it is pressed.
3: MANUAL FEEDING	Manual feeding control of the media collecting motor. When it is pressed, you can control the media collecting motor for manual collecting.
4: Absorption control knob	The absorption force of the platform can be adjusted by turning this knob.

■ **Control panel of the roll feed platform**



The control panel is located in the right electrical cabinet and can be seen by opening the cabinet door, as shown. The functions of the control panel are as follows:

1: Area 1 control button	To facilitate printing on media with small widths, the platform is divided into 4 zones, whose sequence numbers are as follows:
2: Area 2 control button	
3: Area 3 control button	

4: Area 4 control button	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center; color: red;">4</td> <td style="text-align: center; color: red;">3</td> <td style="text-align: center; color: red;">2</td> <td style="text-align: center; color: red;">1</td> </tr> </table>	4	3	2	1
4	3	2	1		
5: LED lamp control button	It is used for alignment during double-side printing.				

● **Adding inks**

■ **Ink adding**

You will see the main tank when opening the left ink path cabinet door. Add inks according to the colors marked on the main tank. The colors are marked as follows: K (black), C (blue), M (red), Y (yellow), LC (light blue), LM (light red), W (white) and V (matte oil). The last one which is not marked is used for cleaning liquid. An example is as shown below:



■ **Adding inks to the sub-tank**

Make sure sufficient inks are added to the main tank before adding inks to the sub-tank.

- ◇ Make sure that the main tank has sufficient inks and perform pre-start check on the printer.
- ◇ Start the printer and turn the 3-way valve of the air path to the negative pressure state after the printer self-check is complete. **(If the printer is in the off state, inks may not be pumped out because the air in the ink tubes cannot be exhausted)**
- ◇ When the printer is started for the first time, ink pumps will work automatically because the sub-tank is empty to pump inks from the main tank to the sub-tank.
- ◇ When all ink pumps stop, it indicates that all sub-tanks are filled with inks.

-
- ✧ If short buzzing is heard during the period, it may be caused by timeout due to long ink path.
 - ✧ If some ink pumps are found inoperative or long buzzing is heard, please shut down the printer immediately and check the printer. If problems persist, please contact your local distributor or us immediately.

■ Adding inks to printheads

Adding inks to printheads is an important operation. Please operate strictly according to requirements. This operation has two important steps: printhead cleaning and air drainage.

✧ **Printhead cleaning:**

Before adding inks to new printheads for the first time, please do clean printheads with cleaning liquids, because protective liquids are added in printheads before delivery. The protective liquids must be cleaned before adding inks;

c. Due to the power of the cleaning liquid pump, it is recommended to clean a single printhead each time. Set a printhead to the cleaning state and other printheads to the off state. Open the corresponding 2-way valve and press the clean button to drain the cleaning liquid through the 2-way valve to clean the tube in the part. Then tighten the 2-way valve one or seconds later to let the cleaning liquid flow out from the printhead for five seconds. Then clean other printheads similarly. Five minutes later, clean all printheads as described above once again and then finish printhead cleaning.

The printhead cleaning is performed by the cleaning liquid pump through pumping the clean liquid to clean printheads and positive flush is not needed; therefore, the 3-way valve of the air path does not need to be operated.

✧ **Printhead air drainage:**

After cleaning printheads, you can add inks to printheads. While adding inks, you need to discharge the air. The specific operations are as follows:

1. Similarly, it is recommended to discharge air of printheads one by one. That is, to perform air discharge on one printhead each time and set other printheads to the off state.
2. First, turn the 3-way valve of corresponding ink path to the working state and turn the 3-way valve of the air path to the positive pressure state.
3. Loosen the corresponding 2-way valve core to keep the ink outlet clear open. Press the positive flush button to press inks from the sub-tank to the printhead. At the time, inks flow out from the 2-way valve. Observe the ink tube of the ink outlet until no bubbles can be found. Then tighten the 2-way valve to let inks flow

out from the printhead. (Tip: due to long tubes, the first ink pressing may take a long time and the inks in the sub-tank may not be sufficient. Therefore, you may perform positive pressure after a while to let the ink supply system fill the sub-tanks.

4. Perform the above operations on each printhead and then set all 3-ways to the working state. Press the positive flush button to perform a flush for all printheads to complete ink adding.
5. In addition, if air bubbles are found during working of the printer and affect the ink supply, you can also perform the above operations to eliminate air bubbles.

● ***Positive flush***

When the positive flush button is pressed, the system is switched to the positive pressure mode and ink in the sub-tank is pressed into the printhead to eliminate air in the printhead and clear holes with light blocking, solving broken line problems during printing.

You can perform positive flush on one or more printheads. The specific operation procedures are as follows:

- ✧ Move the carriage to the idle position, at the leftmost end of the printer.
- ✧ Make sure the 3-way valve of the ink path corresponding to the printhead is in the working state; if there are other printheads of the same color, turn the 3-way valves of the ink path corresponding to other printheads of the color to off state.
- ✧ Turn the 3-way valve of the air path corresponding to the printhead to the positive pressure state.
- ✧ Press and hold the positive pressure button and observe the ink spray status. If the ink flows smoothly, release the button.
- ✧ Wait for about two seconds and use clean non-woven fabric to clean the printhead surface.

● ***Negative pressure adjustment***

The negative pressure is an important aspect to ensure the printing quality. The negative pressure adjustment is an important operation in the printer operation and mainly to form a smooth concave in each printhead. Maintaining a good concave in printheads can ensure fast ink spray with little splashes. This printer uses the vacuum negative pressure system.

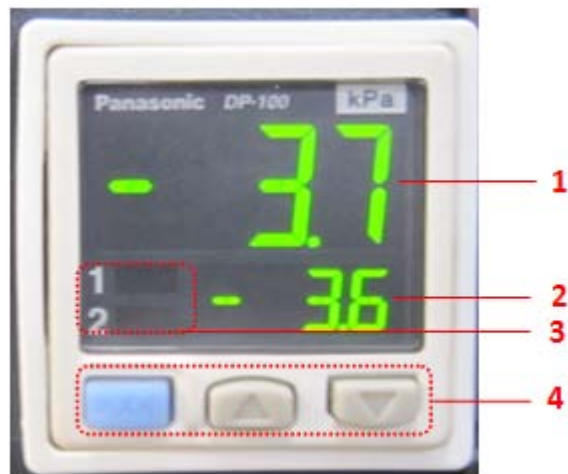
■ **Introduction to the negative pressure system**

As described above, KR printers have two negative pressure systems, one is for the

color printheads and the matte oil printheads and the other is for the white ones. This is because white inks have a viscosity different from other inks. To ensure good printing quality, a separate negative pressure control is used for white printheads. Additionally, if you use an ink deaeration device, a more negative pressure system is used to provide high negative pressure for deaeration. The negative pressure is adjusted with a vacuum pressure switch. The vacuum pressure switch for adjusting the pressure of printheads is located on the panel of the front cover (see "control panel of the front cover"). The high negative pressure switch of the vacuum pressure switch of the deaeration device are installed together, which can be found when you open the rightmost door on the back of the printer, as shown in red below:



■ Introduction to the vacuum pressure switch



The vacuum pressure switch is as shown and the functions of areas are as follows:

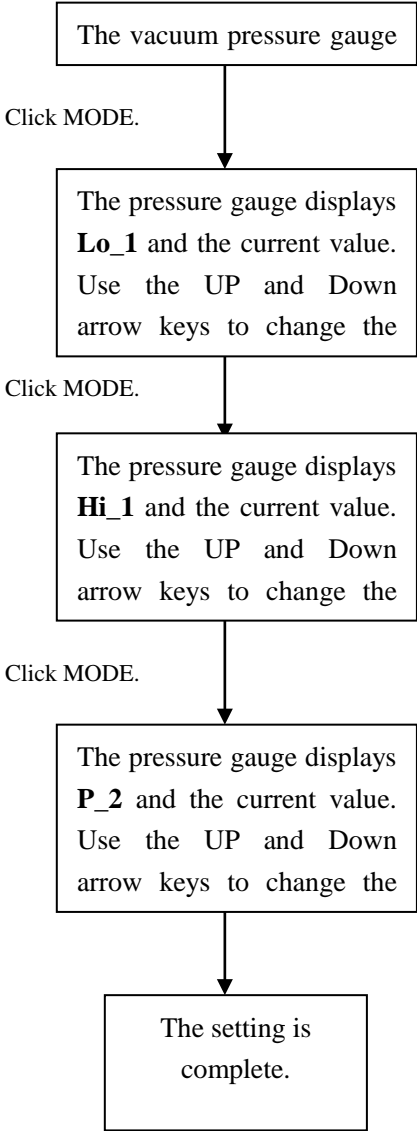
1: Pressure display	Displays the value of the pressure in the current vacuum tank
2: Set pressure display	Displays the value of the set pressure
3: Signal output prompt	Prompts the output status of OUT1 and OUT2

4: Button operation	MODE: mode setting. You can use the UP and DOWN keys to set values or shift pages.
---------------------	--

Note: For details about the operations of the vacuum pressure gauge, see Appendix 1 or refer to the instructions of the vacuum pressure gauge.

■ **Adjustment of the vacuum negative pressure**

Relevant parameters have been set in the factory and need to be adjusted according to local environments. You can adjust the set values of the negative pressure as follows:



The above is the method for setting the values in the responsive difference mode. The method for setting values in the EASY mode is similar. In the EASY mode, only P_1 and P_2 need to be set. For detailed description, see Appendix 1.

Chapter Three System Functions

Contents of this chapter include:

- System movement
- Check and adjustment of the distance detecting device
- Media positioning
- Check of the static elimination device
- UV curing system
- Printing test
- Printing of roll materials

For the operation of the software which is insufficiently described, please refer to LiyuPrint User Manual.

- **System movement**

- **Definition of the movement axes**

Carriage scanning direction: X-axis

Crossbeam movement direction: Y-axis

Carriage lifting direction: U-axis

Roll media feed direction: S-axis

- **System reset**

Startup reset: The printer resets the X-axis, Y-axis and U-axis at each startup. The operation is as follows:

The X-axis re-finds an idle position and detects an idle position accurately.

The Y-axis re-searches for the position of the front-most sensor and calibrates the crossbeam according to the position of the sensors in front. (The two sensors in the front of the Y-axis have been precisely calibrated in the factory. Do not adjust the sensors and the shutter unnecessarily)

The U-axis re-searches the position of the top sensor and locates the accurate position on the top, and then returns to the position where it stayed before last shut-down.

Note: *If it is started for the first time, or relevant data are lost because of incorrect shut-down, the printer will re-check the stroke or the U-axis cannot return to the position where it stayed before last shut-down when the printer is restarted.*

Software reset: There is a system reset button in LiyuPrint which allows users to reset the printer if necessary. Clicking the Reset button will allow the X-axis to re-search the idle position (similar to the reset operation of the X-axis during startup). The reset buttons are as shown below.



U-axis reset: There is a separate control dialog box for the U-axis in LyPrint for relevant operations of the U-axis separately, including reset of the U-axis. Clicking the reset button as shown below will enable the U-axis to re-searches the position of the sensor at the top and precisely locate it.



■ Manual movement

Manual movement of the X-axis, Y-axis and S-axis

The manual movement of the X-axis, Y-axis and S-axis can be implemented by clicking control icons on the main control panel or pressing direction keys on the keyboard.



The above two methods can be used to move the X-axis, Y-axis and U-axis manually. For the Y-axis and the S-axis, in different modes, you can decide to move the Y-axis and the S-axis.

Flat material printing mode: Move the Y-axis

Roll material printing mode: Move the S-axis

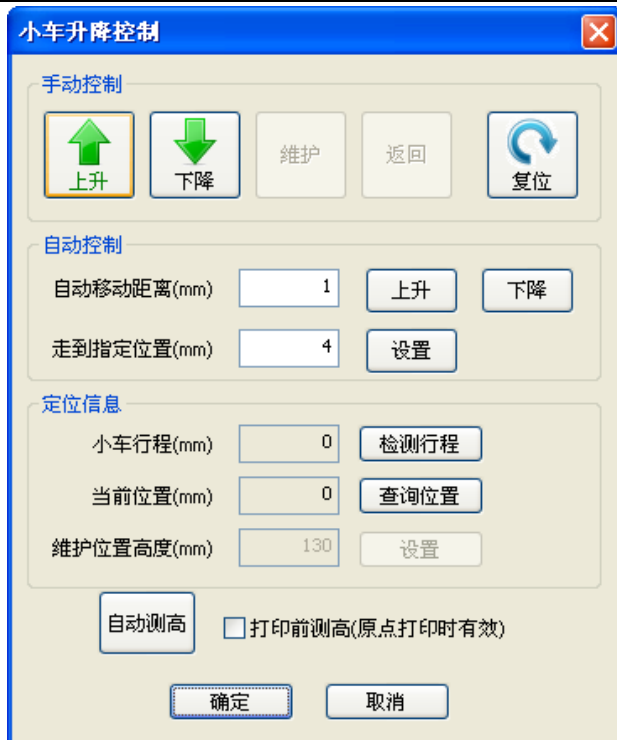
The shift between the flat material printing mode and the roll material printing mode can be implemented by checking the check box in the main interface of LiyuPrint.



When Roll material is checked, the crossbeam moves to the roll material printing position automatically (the front-most position of the Y-axis).

Manual movement of the U-axis

The manual movement of the U-axis is implemented in the carriage lifting control dialog box which can be opened through "Setting - Carriage lifting control".



Clicking Up/Down to manually move the carriage upward or downward.

■ Carriage movement during printing

To prevent warp of the media during printing due to some reasons and scratching printheads leading to scraps, the system allows slight adjustment of the height of the carriage. This operation is completed in the main interface, as shown below:



The right dialog box on the right shows the height that can be moved once. The height can be set accordingly. You can click the Up button on the left to move the carriage upward by the set height. **(Note: When you click this button during printing a line, you need to wait for the printer to complete the printing of the**

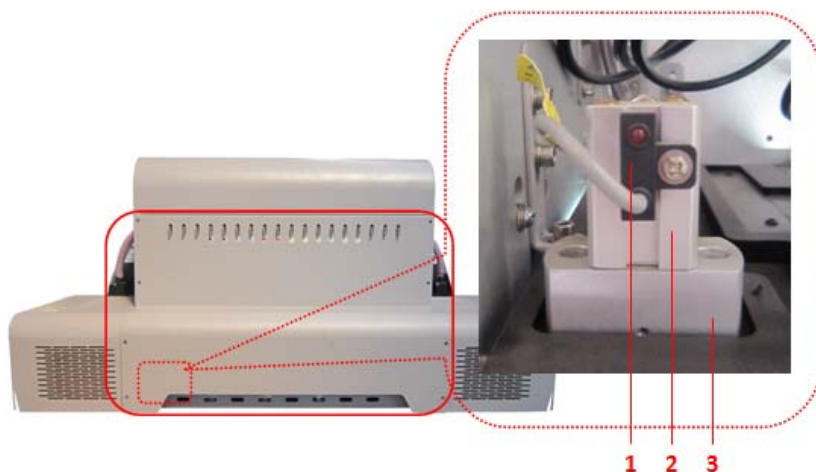
line before the carriage is moved upward. And no matter how many times you click the button during printing of the line, the carriage will be lift upward only once.)

● Check and adjustment of the distance detecting device

To convenience the positioning of the height of the carriage, the distance detecting device provided with the printer can be used. To make better use of the device, you may need to adjust the device based on your actual requirements.

■ Introduction to the distance detecting device

Open the front cover of the carriage, you can see the distance detecting device at the lower left corner of the carriage. The main mechanism consists of a cylinder and a distance detecting sensor, as shown below:

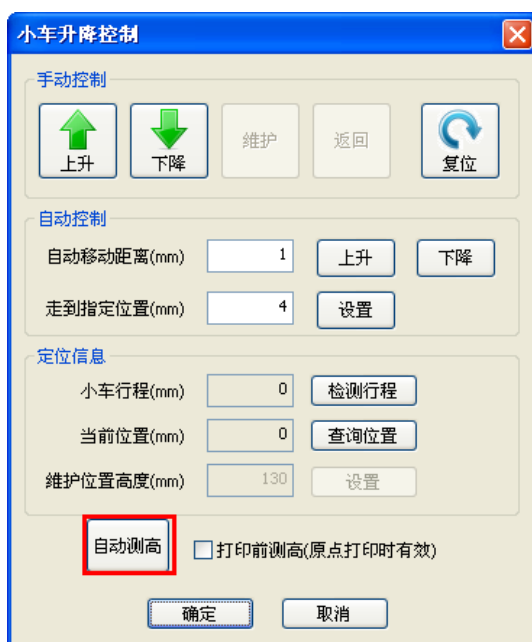


No.	Name	Description
1	Distance detecting sensor	Detects the position of the distance detecting probe. The distance between the printhead bottom plate and the media can be adjusted by adjusting the position of the distance detecting switch.
2	Distance detecting cylinder	Stretches out, keeps and withdraws the distance detecting probe.

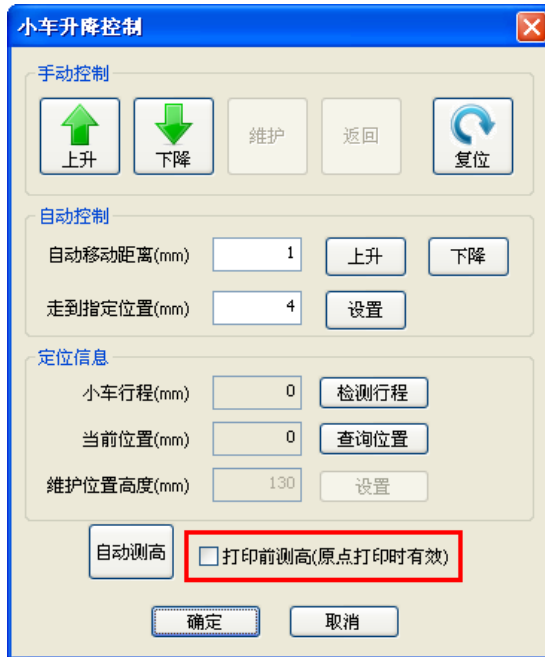
3	Base of the distance detecting device	It is used to install the distance detecting device.
---	--	--

■ **Operation procedure for the distance detecting device**

- 1) Clicking “Auto Height Detection” from LiyuPrint can start the distance detection. (Move the carriage to a sufficient height before height detection and then move the height detection device onto the media.) The “Auto Height Detection” button is located in the “Carriage lifting control” dialog box, as shown below:



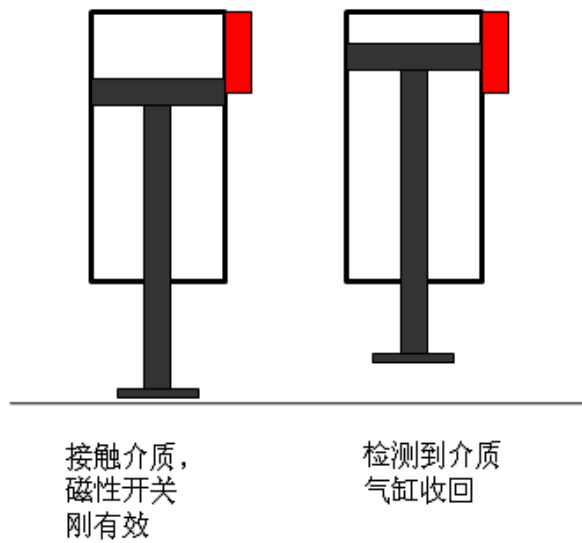
- 2) You may also check “Detect height before printing”. Then the printer will detect the height automatically before printing each time and start printing after successful height detection. It should be noted that this function can only be used when the origin printing is valid, because this function is based on the position of the media calculated according to the origin you set and the data of the image currently printed and then the carriage is moved to a certain position in the area automatically for height detection. You can enable this function by checking the box marked in red below.



- 3) When the height detection is started, the carriage is moved to the highest position and the highest point of the carriage stretches beyond the distance detecting probe. Then the carriage moves downward slowly until the media is detected. The probe is withdrawn back. If the height detection is successful, the carriage stays at the current position. And this position should be the distance between the bottom of the printhead and the media.
- 4) The distance detection will be prompted failed if the probe fails to stretch out or the media is not detected when the carriage moves downward for a complete stroke. Then the carriage will return to the position before the distance detection.

■ Height adjustment

Generally, the height for distance detection has been adjusted in the factory (the height between the printhead bottom to the media after distance detection). If it needs adjustment, you can adjust it by adjusting the position of the sensor. You can adjust the height of the sensor as follows so as to realize the height adjustment.



According to the figure above, the final distance is the distance between the valid position of the sensor and the point when the cylinder returns to the shortest distance. To reduce the distance between the media and the printhead bottom, move the sensor upward; to increase the distance, move the sensor downward. (**Note: Before sensor adjustment, make sure the sensor is valid before stretching out and is invalid after stretching out.**)

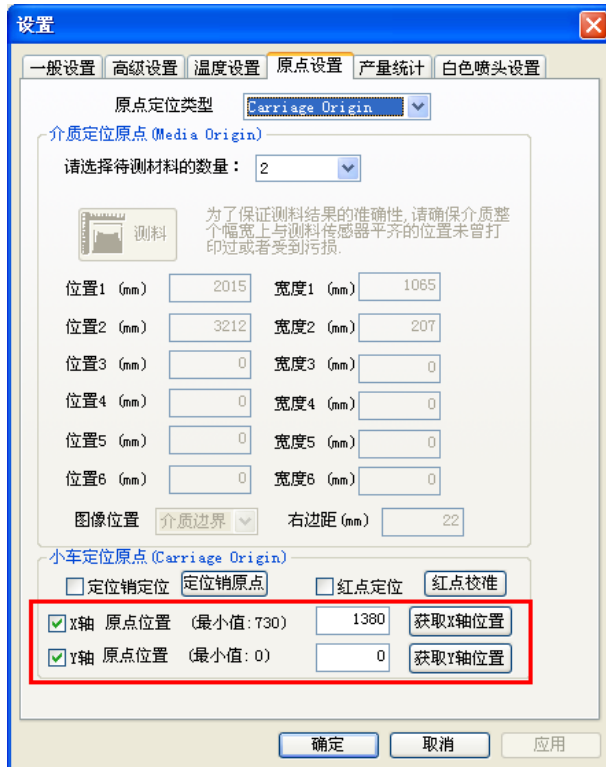
- ***Media positioning***

This printer has three positioning functions: origin positioning, locating pin and red dot positioning. For printing of roll materials, the media margin and width can be detected automatically and can be set in “System setting” – “Origin setting”. You can access the “Origin setting” by clicking the icon on the main interface of LiyuPrint.

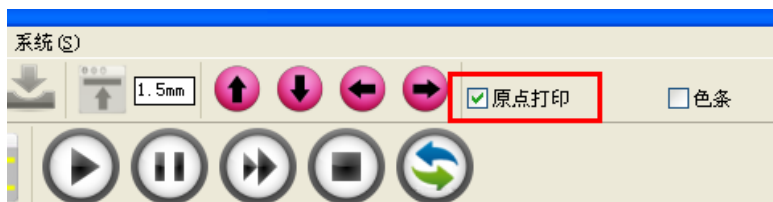


■ Red dot positioning:

Origin setting of the flat material printing: For the printing of flat materials, the media can be positioned based on X and Y coordinates to realize precise printing. However, the coordinates are based on the original “0” position of the printer, that is, the carriage stays at the rightmost position on the X-axis and the front-most position of the Y-axis. Generally, we cannot print from original “0” position; therefore, this value cannot be precisely positioned and further tests and calculations are needed. You can set the parameters in the red box marked below to realize this function:



When any of the origins are used, the origin printing function on the main interface of LiyuPrint will be used. You can check or uncheck “Origin printing” on the main interface to decide to use the function or not.



Meanwhile, you can move the carriage to a position and then obtain the coordinate of the position by obtaining the position on any axis. The coordinate is relative to the original “0” position.


Origin printing of roll materials: Only the coordinate on the X-axis can be positioned for the printing of roll materials. This is similar to that of flat materials. Meanwhile, you can detect the edge of the media through the material detection and the position it precisely.

Material detection: Select “Media Origin” from “Origin positioning type” in the Origin setting dialog box and then select the number of materials to be detected. You can detect up to 6 pieces of media. Then click “Material detection”. The printer will start material detection and display the positions and widths according to the number of materials you select.

原点定位类型 Media Origin

介质定位原点 (Media Origin)

请选择待测材料的数量: 1

 测料

为了保证测料结果的准确性, 请确保介质整个幅宽上与测料传感器平齐的位置未曾打印过或者受到污染.

位置1 (mm)	<input type="text" value="0"/>	宽度1 (mm)	<input type="text" value="0"/>	修正1
位置2 (mm)	<input type="text" value="0"/>	宽度2 (mm)	<input type="text" value="0"/>	修正2
位置3 (mm)	<input type="text" value="0"/>	宽度3 (mm)	<input type="text" value="0"/>	修正3
位置4 (mm)	<input type="text" value="0"/>	宽度4 (mm)	<input type="text" value="0"/>	修正4
位置5 (mm)	<input type="text" value="0"/>	宽度5 (mm)	<input type="text" value="0"/>	修正5
位置6 (mm)	<input type="text" value="0"/>	宽度6 (mm)	<input type="text" value="0"/>	修正6

图像位置 介质边界 右边距 (mm)

小车定位原点 (Carriage Origin)

X轴 原点位置 (最小值: 730) [获取X轴位置](#)

Due to the reason of the sensor or other reasons, the position and widths may not be so precise. If you find a large error during printing, you can adjust it through “Correct” for a more precise value.

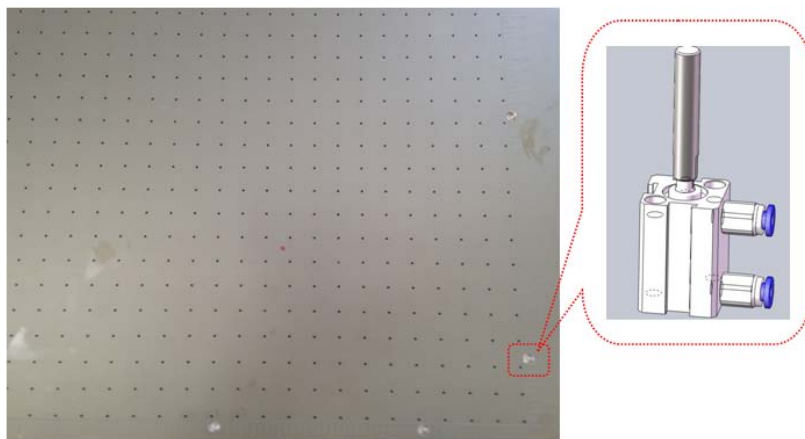
Positioning after material detection: After material detection, you can perform positioning through two ways:

1. Select “Carriage Origin” and fill in origin position with the material position and width obtained.
2. In the current interface, select the image position to print it directly. You can select to print through margin printing, center printing and custom. In the custom mode, you can set the distance between the image and the margin, as shown below:



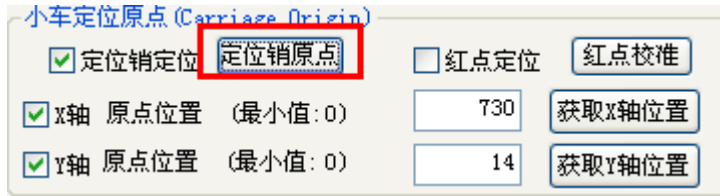
■ Locating pin positioning

There are some devices used for positioning in the front and right side of the printer. These devices are controlled by the cylinder. You can control them through FIX on the operation panel of the front cover.

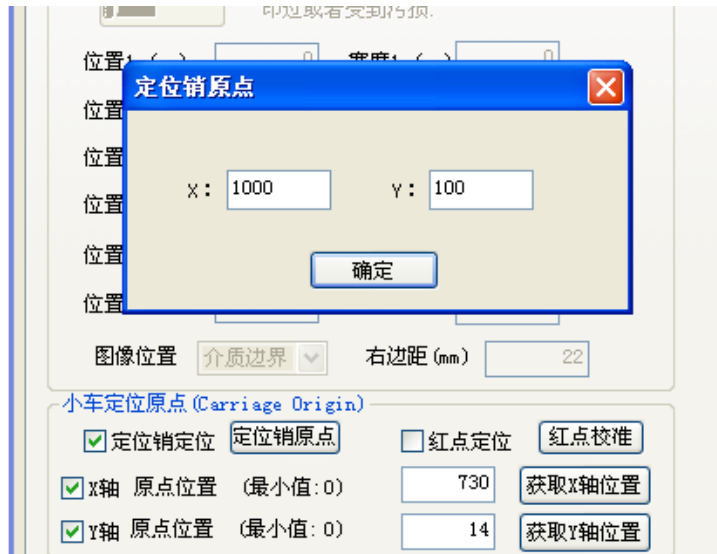


Calibration of the locating pin: To better the positioning through the locating pin, we can calibrate the coordinate of the locating pin through the software to fix the coordinate of the locating pin to (0,0):

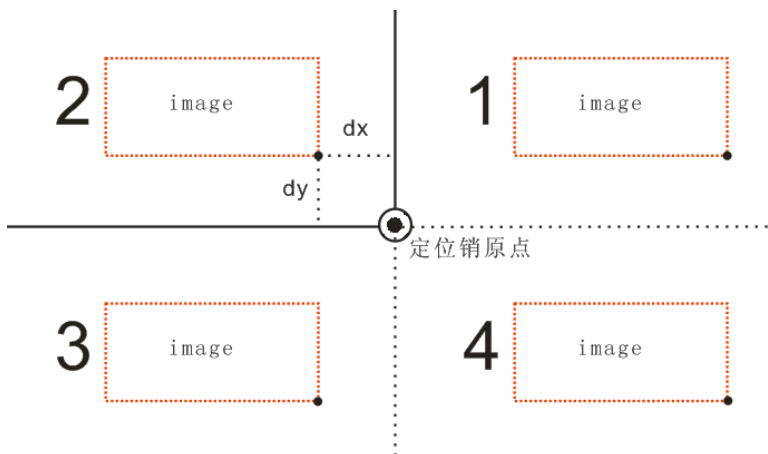
1. Click "Origin of the locating pin" in the "Origin setting" dialog box to open the calibration dialog box, as shown below:



2. You can fill the recommended initial value (1000,100). (Actually, you can fill any value, however, to ensure that the test image is printed on the media, please fill in the recommended value.)



3. Print a test image with frame and then obtain the calibration value to adjust the origin of the locating pin by measuring the difference between the origin of the image and the origin of the locating pin.



In the figure above, the center is the origin of the locating pin. After printing of the image, the origin of the image may in any of the four areas (the origin of the image is the black dot on the orange frame).

Assume the original calibration value is (X1,Y1), the difference between the

origin of the locating pin and the origin of the image is (dx, dy) and the calibrated calibration value is (X2,Y2), the calculation formula for the above four areas are as follows:

Area 1	$X2 = X1 + dx; Y2 = Y1 - dy$
Area 2	$X2 = X1 - dx; Y2 = Y1 - dy$
Area 3	$X2 = X1 - dx; Y2 = Y1 + dy$
Area 4	$X2 = X1 + dx; Y2 = Y1 + dy$

Based on the calculations above, modify the values on the dialog box and then test again to verify the values are precise. If not, continue the calibration as described above until precise values are obtained.

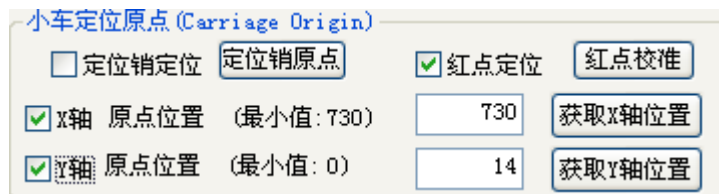
- After calibration, you can perform precise positioning with the locating pin and the scale on the platform.

■ **Red dot positioning:**

A red laser is installed on the height detecting device and can form a red dot on the platform with its laser beam. You can use the red dot for positioning.

Print with the red dot positioning:

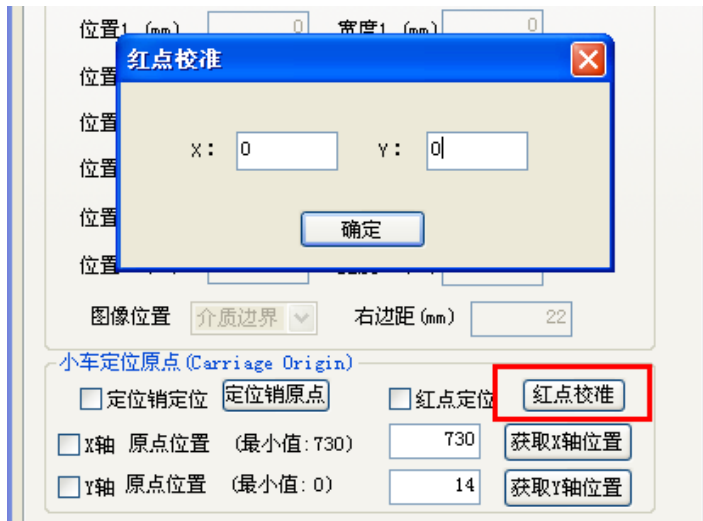
- Check the “Red dot positioning” first and select the origins of X and Y, as shown below:



- Move the carriage onto the media to align the red dot and the margin of the media or the origin you want on the media.
- Then click “Obtain the X-axis position” and “Obtain the Y-axis position”.
- Click “Print”. The software will calculate with the calibrated value of the red dot and move the moving mechanism to start printing as well as set the origin of the image to the red dot.

Red dot calibration:

The calibration of the red dot is similar to that of the origin of the locating pin. Reset the “Red dot calibration” dialog box and set the value to (0,0), as shown below:



Then use the red dot positioning method (to facilitate measurement, mark the red dot before printing) to print a test image and then determine with the distance of the test image and the distance from the red dot. The method is the same as that for calculating and calibrating the origin of the locating pin.

- ***Check of the static elimination device***

1. If you select the static elimination device, the device has been installed in the factory. The device will start automatically when the printer is started.
2. A static elimination system is installed on the two end of the carriage on models without roll to neutralize static on the media during printing.
3. An ionizer gun is installed on roll models to clear away dust on the media before printing, neutralize the static on the media and inflate the flatulence axis.
4. The power supply of the static elimination device is installed in the frame. Generally, it is started when the printer is delivered. If you find the device not working, check whether the power supply is turned on.
5. When the printer is started or powered on, the static elimination device may cause some sound occasionally. This is normal.
6. Due to the static, the probe of the static elimination device may attach some dust which needs to be cleaned regularly. The method for cleaning the dust is to move the carriage to the highest point, power off the printer and clean the probe and nearby areas with a brush.

- ***UV curing system***

The UV curing system have been installed before delivery. The power supply for control of the UV curing system is installed in the printer and the UV curing system is installed at the two sides of the carriage. You need to turn on the leakage protection switch of the UV LAMP on the electrical control panel to power on the UV curing system and then can operate the UV curing device. Meanwhile, there is a power switch for the control power supply of the system. Generally, the switch is turned on before delivery and do not need to be operated. If you find the system not working when the printer is started for the first time, please check whether this switch is turned on.

■ Control of the UV curing system

The operation of the UV curing system is performed in the Setting – UV lamp setting” dialog box of LiyuPrint. The dialog box is as shown below:

UV灯控制

UV灯当前状态

左灯 OFF 右灯 OFF 刷新

光闸 全闭

UV灯设置

左灯 OFF 右灯 OFF 应用

光闸模式 全闭 UV灯类型 通用灯管

UV灯开灯保护时间设置 30 s

UV灯闲置自动关闭设置

闲置时是否自动关闭UV灯 10min

UV灯宽度 170 底板宽度 580 应用

UV灯左边距 200 UV灯右边距 100

注意：将UV灯关闭至少10分钟以后才可以再次开启

返回

You can use the UV lamp setting bar to select the power of the UV lamps and the grating mode lamp and then click “Apply”. Generally, it takes some time to make the UV lamps reach a stable working power; therefore, there will appear a progress bar when the UV lamps are turned on and you can only perform other operations when the progress bar is complete.

UV灯设置

左灯 OFF 右灯 OFF 应用

光闸模式 全闭 UV灯类型 通用灯管

UV灯开灯保护时间设置 30 s

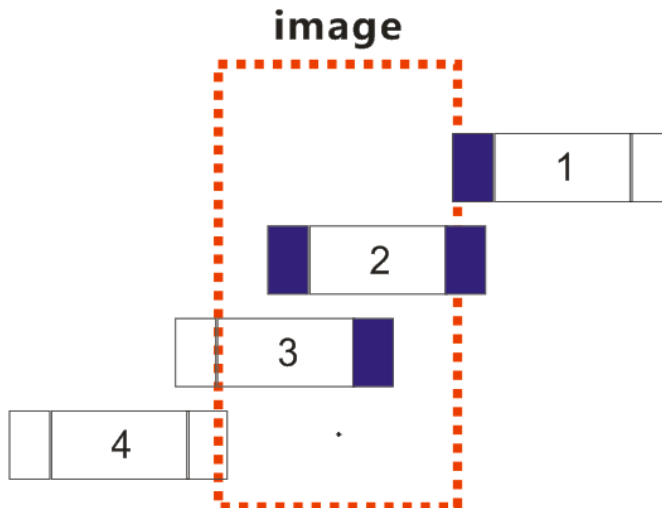
Setting of the protection time when the UV lamps are turned on: To prevent

deform or damage the media caused by long stay of the carriage on the media when the UV lamps are turned, when the UV lamps are turned on, the carriage will move to an idle position if the carriage does not stay on an idle position. This dialog box is used to set the duration of the protection time in seconds (s).

Auto turning off the UV lamps during the idle state: To prevent waste of energies caused by UV lamps during the idle state, you can set the UV lamps to be turned off automatically when the printer is in the idle state for a certain period of time.

■ **Turning on/off the grating of UV lamps at the image margin**

Meaning: Turning on/off the grating of the UV lamps at the margin of images is to ensure that the light of UV lamps is valid only in the image area, which can solve the following problems: 1. Discoloration of the media in the non-printing area caused by UV lamps during partial printing; 2. Prevention of affects on eyes by UV lamps when thick media is printed.



There are four positions of the image relative to UV lamps during printing:

Position 1: Turn on the grating of the left UV lamp

Position 2: Turn on the grating of the right UV lamp

Position 3: Turn off the grating of the left UV lamp

Position 4: Turn off the grating of the right UV lamp

Four parameters need to be set for this function:

UV灯宽度	<input type="text" value="170"/>	底板宽度	<input type="text" value="580"/>	<input type="button" value="应用"/>
UV灯左边距	<input type="text" value="0"/>	UV灯右边距	<input type="text" value="0"/>	

The width of UV lamps and the width of the bottom plate are the physical widths of UV lamps and the printhead bottom plate and can be measured with ruler. For KR printers, these parameters can be set as above.

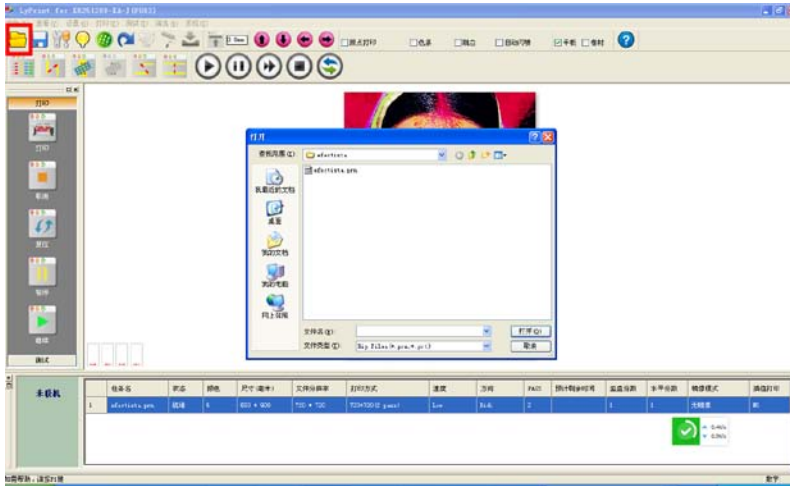
Left edge distance of UV lamps: During print from right to left, the distance from the leftmost of the carriage to the rightmost edge of the image when the printing starts.

Right edge distance of UV lamps: During print from right to left, the distance from the rightmost of the carriage to the leftmost edge of the image when the printing ends.

● **Printing test**

■ **Print procedure**

1. Rip a image file with the RIP software;
2. Open the ripped image file in LiyuPrint;



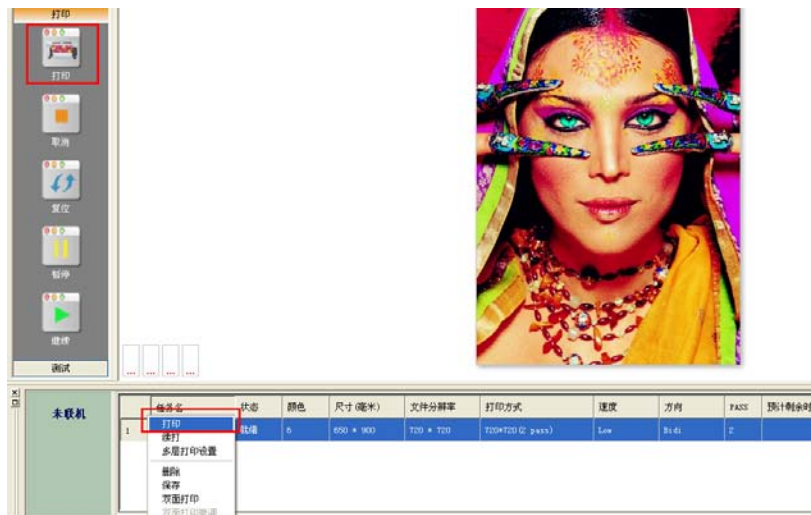
3. Select the printing mode, speed and printing direction;

打印方式	速度	方向
720*720 (2 pass)	Low	Bidi

4. You can set the number of printed images in the horizontal and vertical directions, whether to mirror the image or whether to use the interpolation printing mode;

竖直份数	水平份数	镜像模式	插值打印
1	1	无镜像	NO

5. Select the Origin printing or position the carriage on the media manually;
6. Select the image and click "Print" or right-click and then select "Print";



7. During printing, you can suspend the printing by pressing “Pause” and then click “Continue” to continue printing, or you can cancel the printing with the Cancel button.

■ White printing

If you use white printheads, you can print white. It can be configured in “Setting – White printhead setting”, as shown below:

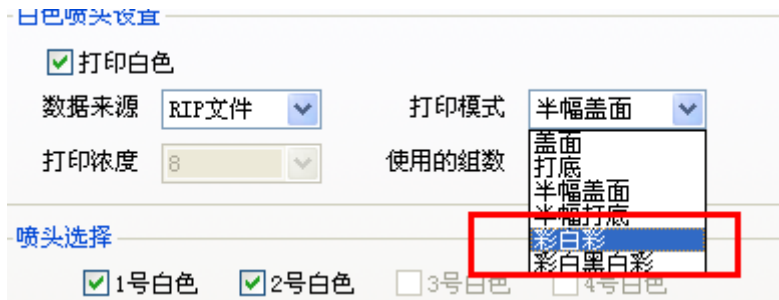


You can only use the white printing function when “Print white” is checked in the dialog box above and configured relevant parameters correctly. For details, see LiyuPrint

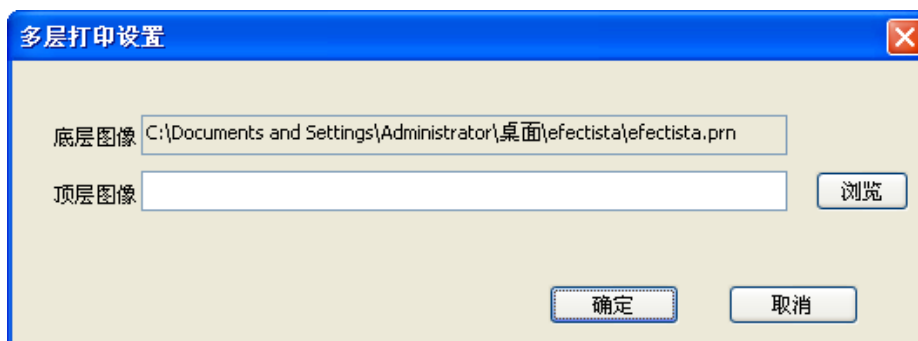
■ Color-white-color and Color-white-black-white-color printing

The Color-white-color and Color-white-black-white-color printing are designed for special requirements and allow users to realize 3-layer (Color-white-color) or 5-layer (Color-white-black-white-color) printing (Color-white-black-white-color).

You can implement this printing function by selecting printing mode. The printing mode can be set in the “White printhead setting” dialog box, as shown below:



In the Color-white-color and Color-white-black-white-color printing modes, different colors can be set. Open the first file, select the image and right-click and select “Multi-layer printing”. The “Multi-printing setting” dialog box appears, as shown below:



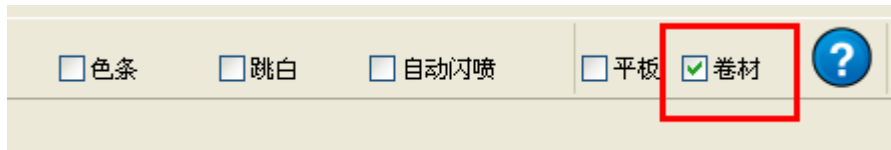
Click “Browse” in the dialog box to select the image for the top layer.

For details, refer to LiyuPrint User Manual.

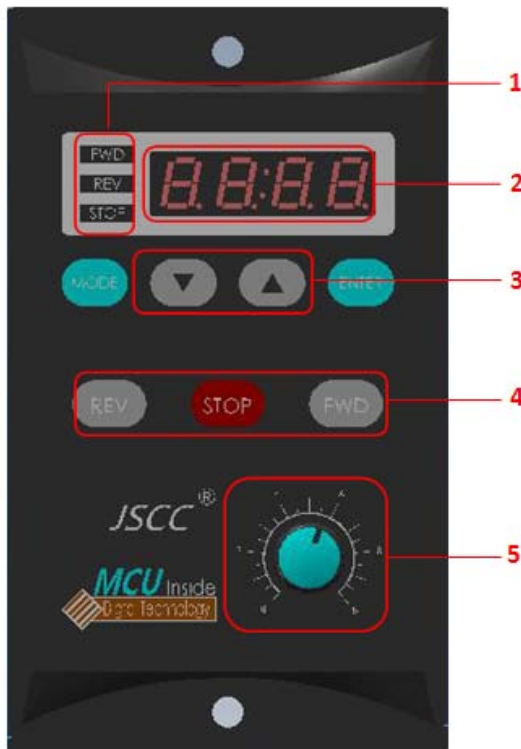
● **Printing of roll materials**

Printing of roll materials is similar to that of flat materials. Attentions should be paid to the follow:

1. Before printing, change the printing mode to the roll material printing by checking Roll materials in the main interface of LiyuPrint. The crossbeam will move to the position for roll material printing automatically.



2. The media should be placed according to the requirements for roll material printing; otherwise, printing may not be performed. This may cause waste; therefore, it is recommended to print a whole roll.
3. The media collecting system is controlled by a constant tension motor through a controller panel, as shown below:



No.	Name	Description
1	Motor status	Displays the current status of the motor: FED:

	display	forward state; REV: reversed state; STOP: stop state
2	Tension display	Displays the set tension value of the motor
3	Tension adjustment	In the digital adjustment mode, you can adjust the tension with Up/Down keys
4	Motor control	FWD: Forward; STOP: Stopped REV: Reversed (normal working state for KR printers) The FED and the REV need to be shifted in the STOP state
5	Analog tension adjustment	In the analog adjustment mode, you can rotate the knob to adjust the tension

For details, please refer to *Appendix 1: Instructions for Setting the TF Series Torque Driver*.

Chapter Four Maintenance

Contents of this chapter include:

- Daily maintenance precautions
- Printhead maintenance precautions
- Ink use precautions

- ***Daily maintenance precautions***

1. Keep the working environment of the printer clean and ventilated and regularly clean dust and inks on the printer.
2. Keep the workbench clean and free of objects. Check whether there are any objects on the workbench before each start to prevent scratch printheads.
3. Use a grease gun to grease the sliding block with lithium soap base lubricating grease every 40 hours to reduce the friction resistance of the rail and to prolong the service life.
4. Proper tension should be maintained for the long belt of the carriage. To adjust the tension of the long belt of the carriage, remove the left end cover of the printer. After adjustment, tighten the connecting screws firmly.
5. After each ink adding, ensure that the tank cover is tightened securely. Wipe the ink on the external wall.
6. After positive flush and printhead wiping, perform flashjet for about 10 seconds and then start to print so as to form a good intrados for the ink in the jet orifices.
7. Areas around jet orifices must be clean without ink residuals, dust and fibers. Do not scratch the orifice plane.
8. Inks and cleaning liquids contain strong solvents. Do not expose them to electric parts and conductors. If inks or cleaning liquids accidentally splash onto electric parts and conductors, power off the printer and clean immediately.
9. Clean waste liquid in the used liquid tanks timely.
10. It is recommended to print the printhead test image to check whether the printheads are normal before shutdown every day. If ink breaking is found, positive flush or cleaning should be used to correct the printhead.

- ***Printhead maintenance precautions***

Printheads are core parts of the printer and expensive parts. At the same time, printheads are precision parts and should be well maintained; otherwise, printing quality and even printhead service life may be affected. You need to pay attention to the following when maintaining printheads:

1. During the use of the printer, please use inks specified by the manufacturer. Do not use inks of different brands arbitrarily; otherwise printhead fault may be caused.
2. When the printer stops, use different maintenance methods according to the

shutdown duration.

- ✧ If you do not want shut down the printer during a temporary stop in a working day, you should set the printer to the flashjet state. Make sure the printhead state before flashjet. If printheads are not good, perform positive flush first.
- ✧ When the printer is not used to print images from 12 hours to one days, it is recommended to turn valves to the off state and stop the carriage to the upper left box. Power off the printer and place a piece of cleaning cloth in the humidifying tray, and add some clean liquids in the tray (wet the cleaning cloth). Then use the tray to keep printheads moist. Make sure printhead surfaces contact with the cleaning liquid.
- ✧ If the printer is not used for 2 days, the maintenance methods are the same as above. At the same time, replace the cleaning cloth in the humidifying tray every day and add new cleaning liquids (the moisturizing contents in the cleaning liquid are easily volatile and should be replaced regularly).
- ✧ If the printer is not used for printing for over 3 days, please clean printheads according to printhead cleaning methods and add some cleaning liquid into printheads (keep some clean liquids in printheads during cleaning). At the same time, keep the printhead surface moist with the humidifying tray according to the second method above and replace the cleaning cloth every two days and add new cleaning liquids.

3. Cleaning of the printhead plate

- ✧ Wipe the printhead plate after positive flush or printhead cleaning to remove residual inks and cleaning liquids on the plate; otherwise, the residual inks and cleaning liquids may drop on the printer or printing medium.
- ✧ Use the special use cleaning cloth to wipe the printhead plate and make sure the cleaning cloth is clean. Do not use cleaning cloth polluted with dust, stains, oil and water, especially the cloth which has been used to clean inks, to wipe the plate. Inks on the cloth may block printheads.
- ✧ Wipe along a single direction. Do not wipe forward and backward. Do not wipe the plate heavily. Wipe the surface gently to prevent damage the printhead surface.
- ✧ Please dispose the used cleaning cloth properly and do not reuse it.

4. Adjusting printhead state during printing

- ✧ To ensure the printing quality, please ensure all printheads work at good conditions. Printhead state can be improved through positive flush and cleaning. In addition, the following are also important ways to ensure good printhead state:
- ✧ Ensure the working environment of the printer meets the working conditions

requirements, especially the working environment temperature must be kept in the range from 15°C to 26°C. If it is used in an environment with temperature lower than 15°C or higher than 28°C, the printing quality may be affected.

- ✧ Ensure the air discharge is performed thoroughly without any bubbles in printheads.
- ✧ Adjust the printhead voltage and negative pressure. Higher printhead voltage can increase the printing precision and color saturation; however, it may also cause frequent ink breaking.

● ***Ink use precautions***

1. Important: Never let the ink or any part of the ink path contact with water or any solvent contain water molecules; otherwise, gel may be caused, jamming the ink path and even printheads.

2. Safety precautions:

Some chemicals contained in inks are low toxic and irritating, irritant to eyes and the respiratory system, and allergic reactions. Therefore, good ventilation and personal protection equipment can effectively reduce contacts with inks. Please wear acrylic gloves and uniforms when handling inks. If inks splash onto skins, flush with soap water thoroughly immediately. Eating, drinking and smoking in the working area is forbidden.

3. Ink storage:

Inks must be stored in sealed containers in dry, cool and ventilated places without direct sunshine. The proper storage temperature scope is 10°C to 40°C. Although the shelf life of inks is 12 months, it is recommended to use inks within 3 months. Pay attention to the date of production of inks. Do not use inks exceeding the validity period. The viscosity of inks is highly susceptible to temperature and varies from season to season, and affects printing quality. In addition, ink manufacturers usually adjust the ink viscosity along with the change of seasons. Therefore, inks should be chosen according to the actual environment temperature.

Appendix 1: Methods for Setting Panasonic DP-101 Digital Vacuum Pressure Sensor

- 1. Setting of the Vacuum Pressure Gauge**
- 2. Vacuum Pressure Adjustment**
- 3. List of Parameters of Models**
- 4. Schedules**

1. Setting of the Vacuum Pressure Gauge

Panasonic DP-101 digital pressure gauges are designed to detect and control vacuum with the range from -100 to -100KPa. 4-core cables are used for the control signal cables and the negative pressure interfaces, which are fully compatible with the ink supply board and SMC ZSE 30A. DP-101 has two displays. The main display shows the real-time pressure value and the secondary displays shows the set pressure value.

(1) Calibration of the reference pressure (**The reference pressure must be calibrated as follows when the parameters are set for the first time**)

The reference pressure calibration of the gauge is to set one standard atmospheric pressure as the reference zero point and has been completed before delivery. It does not need to be calibrated during normal operation.

When the reference pressure is changed due to unexpected factors, it should be calibrated; otherwise deviation will occur between the displayed pressure and the actual pressure and affect the normal use of the gauge.

Calibration method: 1. The calibration method is as follows: 1. Remove the air tube of the pressure gauge to let the air tube expose to the free air.

2. Power on the pressure gauge. The pressure gauge will display pressure values.

3. Press and hold ▲ and ▼ for over two seconds. The pressure gauge displays "0.0".

The reference pressure calibration is complete.

(2) Working mode

The gauge uses the **RUN mode** for daily use, the **Menu setting mode** for basic settings and the **PRO mode** for advanced functions.

The RUN mode is used for reference value adjustment and locking; the Menu setting mode is used for output mode setting and NO?NC shift; the PRO mode is used for responsive difference adjustment and copy.

In the RUN, press MODE for 2 seconds to shift to the Menu setting mode; in the RUN mode, press MODE for 5 seconds to shift to the PRO mode.

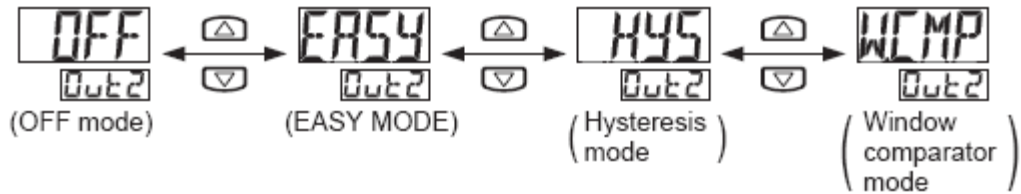
(3) Output mode and setting

For Comparative output 1 and 2, you can select the output mode from EASY mode, Responsive difference mode and Window comparison mode.

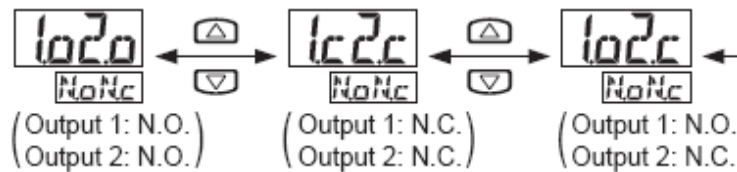
1. Press MODE for 2 seconds. The main display shows EASY and the secondary display shows OUT1.
2. Set the OUT1 with ▲ and ▼. Select from EASY, Responsive difference or Window comparison modes. When it is powered on for the first time, it displays EASY. The interface is shown as follows:



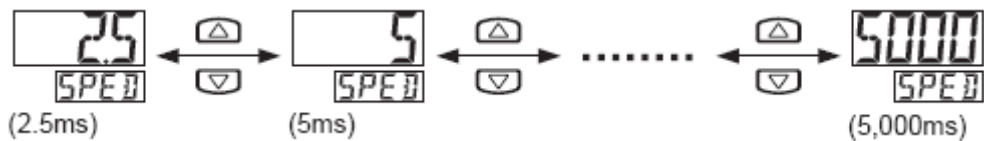
3. Press MODE to enter OUT2. If it is powered on for the first time, the main display shows OFF. Set OUT2 with ▲ and ▼. The interface is shown as follows:



4. Press MODE to enter NO/NC and set NO/NC with ▲ and ▼. We set OUT1 to NO and OUT2 to NC. The display shows as follows:

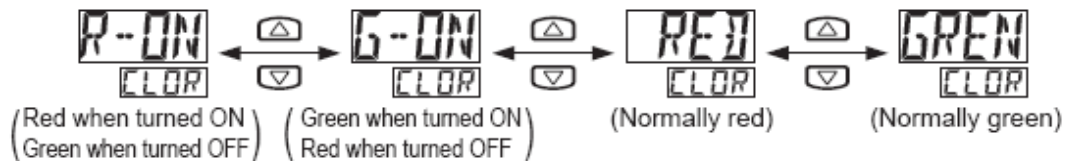


5. Press MODE to enter the response time setting. The default shift time is 2.5. The displays shows as follows:



6. Press MODE to set the color of the main display. Select the color with ▲ and ▼.

We select R-ON
CLOR. The displays shows as follows:



7. Press MODE to enter the unit setting. The displayed unit is KPa. You can select with ▲ and ▼. The displays shows as follows:



8. We have set all parameters. Press MODE again to return. The main display shows the actual air pressure. You may also press MODE for 2 seconds to return to the main menu.

9. Press MODE for 5 seconds to enter the PRO mode. We need only to set the fixed value of the responsive difference to 11. The default value is 111. The gauge jumps frequently during control. The operation procedure is as follows: Press MODE

three times. The display shows

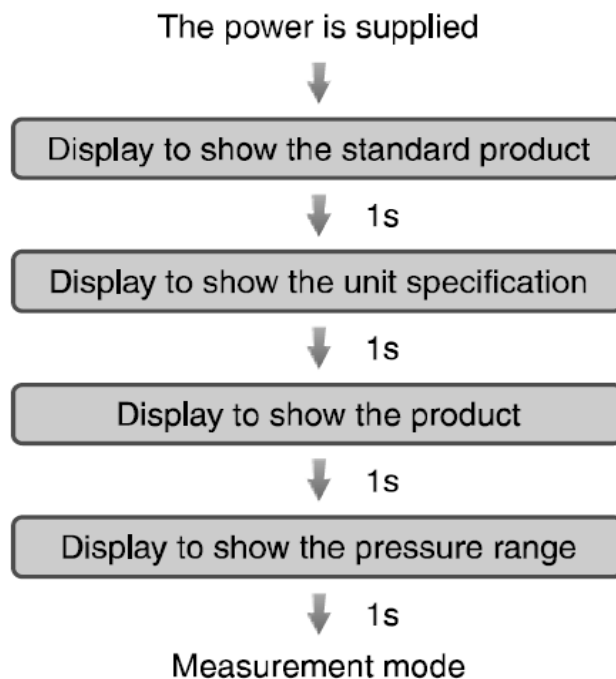
Use ▲ and ▼ to adjust to "F2".

Press MODE for 5 seconds to return to the main menu.

10. Press MODE to enter P_1 and P_2 setting to set these values to the normal operating pressure for the ink supply system. For the setting methods, refer to the second part "Adjustment of the vacuum negative pressure" below.

Note:

1. The values set above are common values. Actual values in use may differ slightly.
2. The pressure gauge at the moment during powering on does not in the inspection state, as shown below:



That is, five seconds after being powered on, the pressure gauge enters the working

state.

2. Adjustment of the Vacuum Negative Pressure

The vacuum negative pressure is adjusted through vacuum pressure gauge. The negative pressure has been set before delivery. You need only to fine-tune it. **Note: When you are changing the set negative pressure values, please make sure the air tube has been disconnected or connect other air paths of the negative pressure system so as to prevent sucking back of the sub-tank due to high pressure.**

The adjustment is as follows:

1. Calculation of the set value of the negative pressure gauge

A) Responsive difference mode: Three values need to be set: Lo_1, Hi_1 and P_2. The unit is Kpa, wherein $p_2 = Lo_1 = Hi_1 - 0.2$;

*For example, $Hi_1 = -50$; $-50 - 0.2 = -50.2$; the set values of **p_2** and **Lo_1** should be -50.2 ; and the final negative pressure value is between **Lo_1** and **Hi_1**.*

B) EASY mode: Two values need to be set: P_1 and P_2, the unit is Kpa; wherein $p_2 = P_1 - 0.2$;

For example: $P_1 = -1.6$; $-1.6 - 0.2 = -1.8$; the set value of p_2 should be -1.8 ; the final negative pressure value is between P_1 and p_2 .

2. Methods for modifying the set negative pressure value

A) Responsive difference mode: Press MODE to enter the setting state; the secondary display shows Lo_1 and then the value of Lo_1. Adjust the value with ▲ and ▼.

Continue pressing MODE to enter the setting of Hi_1, the secondary display shows Hi_1 and then the value of Hi_1. In this state, change the value of Hi_1 with ▲ and ▼.

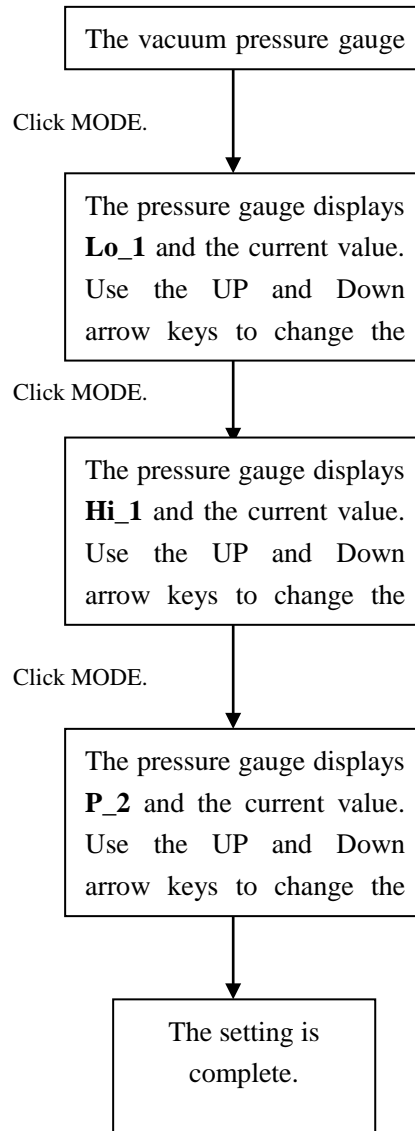
Continue pressing MODE to enter the setting of P_2, the secondary display shows P_2 and then the value of P_2. In this state, change the value of P_2 with ▲ and ▼.

B) EASY mode: Press MODE to enter the setting state; the secondary display shows P_1 and then the value of P_1. Adjust the value with ▲ and ▼.

Continue pressing MODE to enter the setting of P_2, the secondary display shows P_2 and then the value of P_2. In this state, change the value of P_2 with ▲ and ▼.

Note: During setting of the negative pressure values, the value difference of each setting is better not to exceed 0.2.

The following describes the setting procedure with an example:



3. List of Parameters of Models

The following table lists the reference values. The specific values are dependent on the local seasons and climates. You need to fine-tune them accordingly.

Model	OUT1	OUT2
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	Mode	Pressure (Kpa)	Mode	Pressure (Kpa)
KR (white pressure gauge)	EASY	- 1.6	EASY	- 1.8
KR (color pressure gauge)	EASY	- 1.6	EASY	- 1.8
KR (Suction type pressure gauge)	Responsive difference	-50/-51	EASY	-51

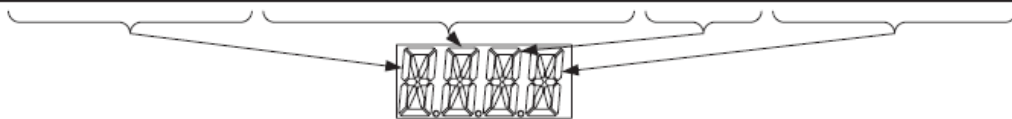
5. Schedules

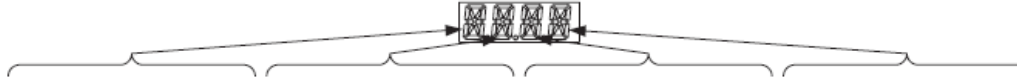
In the PRO mode, you can use the code setting and check settings with these codes, as shown:



Code List

Code	1st digit		2nd digit			3rd digit	4th digit	
			Standard type		High-function type		Main display section display color	Only standard type
	Comparison output 1 output mode	N.O./N.C.	Comparison output 2 output mode	N.O./N.C.	Analog voltage output/external input	Threshold display		Display color interlock
0	EASY	N.O.	OFF	OFF	Analog voltage output	P-1, Lo-1	Red when turned ON	Comparison output 1
1		N.C.	EASY	N.O.	Automatic reference	Hi-1		Comparison output 2
2	Hysteresis	N.O.	Hysteresis	N.C.	Remote zero adjusting	P-2, Lo-2	Green when turned ON	Comparison output 1
3		N.C.		N.O.	-	Hi-2		Comparison output 2
4	Window comparator	N.O.	Window comparator	N.C.	-	ADJ.	Normally red	Comparison output 1
5		N.C.		N.O.	-	-		Comparison output 2
6	-	-	-	N.C.	-	-	Normally green	Comparison output 1
7	-	-	-	-	-	-		Comparison output 2



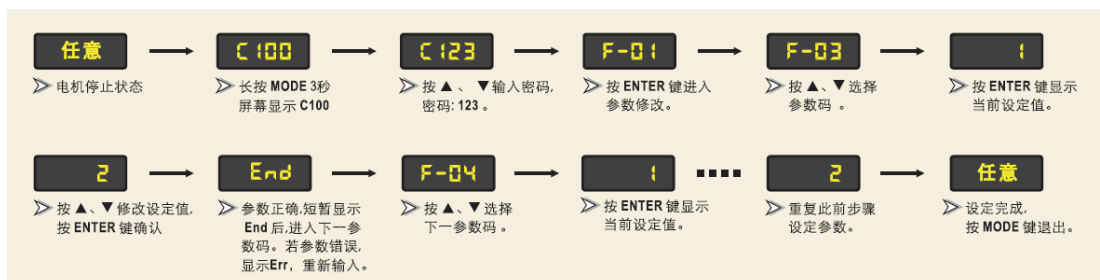


Code	5th digit	6th digit	7th digit	8th digit
	Response time	Switching unit	Display speed	ECO MODE
0	2.5ms	MPa	250ms	OFF
1	5ms	kPa	500ms	Std
2	10ms	kgf/cm ²	1,000ms	Full
3	25ms	bar	-	-
4	50ms	psi	-	-
5	100ms	mmHg	-	-
6	250ms	inchHg	-	-
7	500ms	-	-	-
8	1,000ms	-	-	-
9	5,000ms	-	-	-

Limited to export models with unit select functions

Appendix 2 Instructions for the settings of TF Series Torque Driver

● Parameter modification:



● Description of parameters:

参数码	参数功能	设定范围	功能说明	出厂设定值	用户设定值
F-01	运转控制方式	<ol style="list-style-type: none"> 1. 操作面板按钮控制、无记忆 2. 外接开关控制, 面板STOP键无效 3. 外接开关控制, 面板STOP键有效 4. 操作面板按钮控制、有记忆 	选择“1”由面板按钮控制电机, 关闭驱动器电源后再次打开电源, 驱动器不记忆关电前的运转状态, 重新上电电机为停止状态。 选择“4”驱动器记忆关电前的运转状态, 重新上电后电机为上次关电前的状态, 例如: 关电前电机正转, 再次上电电机立即正转。选择此功能, 请注意安全! 选择外接开关控制时, 由FWD、REV外接开关 K1、K2控制电机。	1	
F-02	旋转方式	<ol style="list-style-type: none"> 1. 允许正反转 2. 允许正转, 禁止反转 3. 允许反转, 禁止正转 	限制电机旋转方向, 防止设备故障或事故。	1	
F-03	旋转方向	<ol style="list-style-type: none"> 1. 不取反 2. 取反 	无需改变电机接线, 轻而易举改变电机转向, 使之与习惯或要求一致。	1	
F-04	力矩调整方式	<ol style="list-style-type: none"> 1. 面板 ▲ ▼ 按钮 2. 面板旋钮 	按 ▲ ▼ 按钮在 0 至最大力矩范围内, 调整电机力矩。面板旋钮自动匹配 0-最大力矩。	1	
F-05	最大力矩	50% ~ 100%	限制最大力矩, 防止力矩过大, 损坏产品或设备。	80	
F-06	正转启动时力矩增大至最大值时间	0.1~10.0秒	时间越长, 电机启动越平缓, 启动时间长, 时间越短, 电机启动越快, 启动时间短。	1.0	
F-07	正转停止时力矩减小至 0 时间	0.1~10.0秒	时间越长, 电机停止越平缓, 停止时间长, 时间越短, 电机停止越快, 停止时间短。	1.0	
F-08	反转启动时力矩增大至最大值时间	0.1~10.0秒	时间越长, 电机启动越平缓, 启动时间长, 时间越短, 电机启动越快, 启动时间短。	1.0	
F-09	反转停止时力矩减小至 0 时间	0.1~10.0秒	时间越长, 电机停止越平缓, 停止时间长, 时间越短, 电机停止越快, 停止时间短。	1.0	
F-29	恢复出厂设定	<ol style="list-style-type: none"> 1. 不恢复 2. 恢复出厂设定 		1	
F-30	程序版本	代码 + 版本		06.**	