



DS32 Series UV Hybrid Printer

Installation Manual



Note:
Indicating that it is useful for the efficient operation or installation of the machine.



Cross-reference:
Indicating a further reference for information or procedures.



Important Information:
Indicating that the information provided is important and should be carefully noted.



Warning:
Indicating a warning of a hazard.



Notes:
Indicating the only safe method of installation or operation that must be followed.

DS32 Series UV Hybrid Printer Installation Manual

First Edition, September 30, 2024


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Revision History

Version	Prepared by	Date	Remarks
1.00	Liyu	09/30/2024	Release version

EC Declaration of Conformity


INKJET PRINTER
Model No: DS32

Product Date: **S/N:**

Net Weight: 2870 KG

Power Requirement: 200-240V~ 15A 3300W 50Hz

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Note:
The installation consists of 13 major steps. The installation process is continuous, beginning with a pre-site inspection and ending with operator training. It is summarized below:

List of Installation Steps

Step S/N	Process description	Page
1	Pre-site inspection	28
2	Unloading and placement of the machine	33
3	Connection of components/external components	45
4	Connection services	53
5	Software installation	59
6	Mechanical leveling and positioning	91
7	Installation of print heads and connection of ink routes	105
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Safety

This chapter details the risks and hazards that can be encountered when operating the DS Series Hybrid Printer. Please read and comprehend carefully this chapter before operating the printer.



Cross-reference:

Indicating a further reference for information or procedures.

General safety instructions



Notes: Purpose

The printer can only be used for its specific purpose as designed, and any use other than that intended by the manufacturer may result in serious injury.



Caution: Protection

The printer is designed to include specific protective measures that may pose a hazard if they are not in place. Do not operate the printer if the protective device is missing or damaged.



Caution: Moving Parts

Pay attention to moving parts.



Caution: Entanglement Hazard

Due to the entanglement hazards associated with the printer, please do not dress loosely, and long hair should be tied up.



Caution: Modification

Do not make any modifications to the printer. Any modifications may have safety implications for operators.



Caution: Control System

Do not modify the control system. If the control system is damaged or inoperative, stop using the printer immediately. Do not operate the printer until the control system has been repaired by a qualified LIYU engineer.



Caution: Training

The printer should only be installed by professionally trained technicians.



Caution: High Voltage

Since the printer is fitted with a power supply that operates at high voltage, special care must be taken when operating in these areas or when installing it.



Caution: Restricted

Since electrical cabinets are installed with equipment that operates at hazardous voltages, the area should only be maintained or installed by authorized personnel. Operators are prohibited from entering such cabinets.



Caution: UV

Since the printer contains an LED ultraviolet (UV) light source, prolonged exposure to it may cause eye pain or skin burns. Please wear appropriate personal protective equipment when operating. Do not stare directly at the light source.



Caution: Installation Hazard

When installing the printer, be sure to wear appropriate personal protective equipment, including protective gloves, safety shoes, and safety glasses.



Caution: Manual Handling

During installation, the printer is subject to manual handling hazards that may not arise in the process of normal operation, including lifting and moving parts and moving the printer. Always evaluate the lifting or operation beforehand and use appropriate lifting aids whenever possible. If lifting aids are not feasible, use appropriate manual handling techniques.

Safety of UV inks and cleaning fluids

UV inks and associated cleaning fluids are mainly used in the DS32 Series UV Hybrid Printer. Information on safety issues related to the handling, storage, and use of UV inks and associated cleaning fluids is detailed in their respective documents. Please read these documents before handling UV inks and associated cleaning fluids.

All UV inks and associated cleaning fluids are available from local LIYU distributors.

Personal safety

Operators must wear nitrile gloves, protective clothing (e.g., lab coat, coveralls, or protective apron), and safety glasses with side shields when handling ink or maintaining print heads. Safety information for handling inks and cleaning fluids is detailed in the Guide.



Warning:

Given that UV inks and cleaning fluids begin to penetrate disposable nitrile gloves in less than 10 minutes, gloves should be changed frequently, especially if they are contaminated. If heavy contamination is expected, heavy duty nitrile gloves should be used. Do not reuse disposable gloves. In the unlikely event that gloves are contaminated, they should be handled appropriately.

Due to the colorless nature of the chemicals in the gloves that UV ink penetrates, the ink is not easily visible. However, this does not mean that exposure does not occur even if there is no visible contamination on the skin.

Latex gloves provide little or no protection, which only temporarily prevent the penetration of certain components of UV ink, while allowing invisible harmful chemicals to penetrate freely, contaminating the skin with these chemicals and thus increasing the risk of exposure.



Important Information:

Always wear nitrile gloves when using UV inks.

Considering that UV inks contain irritating and sensitive ingredients, cumulative exposure may cause allergic reactions. Avoid contact of the ink with skin.

If ink sticks to your skin, wash it off immediately with soap and water. Do not use alcohol to remove the ink as this will transport the chemicals from the ink further into the skin, increasing irritation.

Check your hands regularly for any signs of irritation or inflammation.

If skin irritation or inflammation is caused by contact with UV inks, consult a physician.

**Important Information:**

Always wear protective clothing when handling UV inks.

If clothing is contaminated with ink, remove the clothing as soon as possible and rinse off any ink that comes in contact with your skin with soap and water.

Contaminated clothes can be washed with standard detergents. Avoid washing contaminated clothes at home as this may contaminate other items being washed. A professional laundry service is recommended.

Disposal of UV ink and waste ink

All waste contaminated with solidified or partially solidified UV ink is hazardous and must be disposed of separately. Do not mix contaminated waste with non-hazardous waste (domestic waste, office waste, etc.). Ink waste includes gloves, cleaning cloths, filters, empty containers and any other material containing solidified or partially solidified ink. Waste UV inks and cleaning fluids are prohibited from being fed into the sewage system or water supply system. All waste must be disposed of in accordance with local regulations and advice on local waste disposal regulations should be sought from local authority.

Designated individual containers should be provided to dispose of contaminated waste.

Routine use

UV inks can only be dried under UV light and will remain liquid unless exposed to UV light. Ink can easily be accidentally spilled, which increases the risk of skin contact.

Good cleaning is necessary to avoid accidental contact with UV ink. Always make sure that any leaks, no matter how a small amount of, can be cleaned up as quickly as possible. Make sure the lids of any containers storing inks and cleaning fluids are tightly closed and that the containers are properly placed to prevent them from being easily knocked over.

Any spilled ink and contaminated material should be disposed of as special waste in accordance with local regulations.

Plane views of the Hybrid Printer

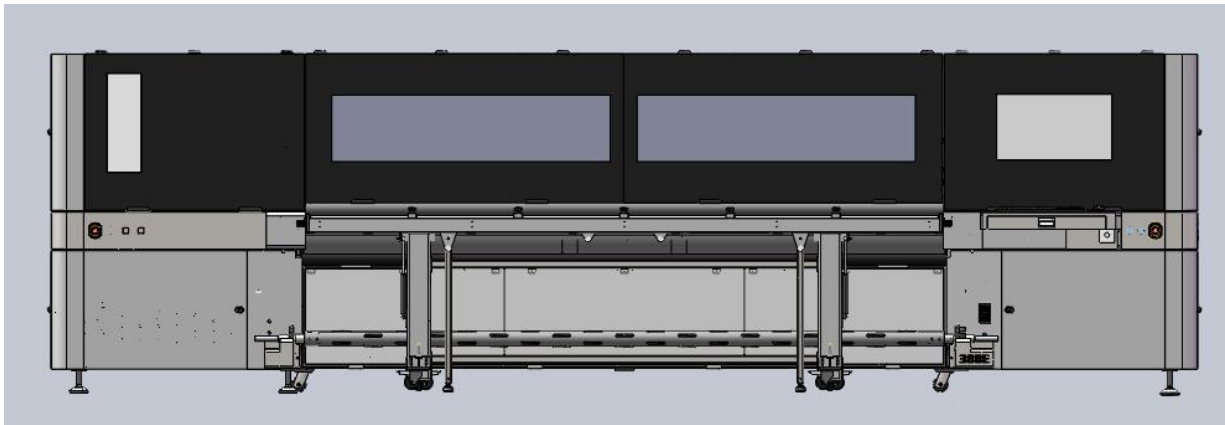


Fig.1 Front view

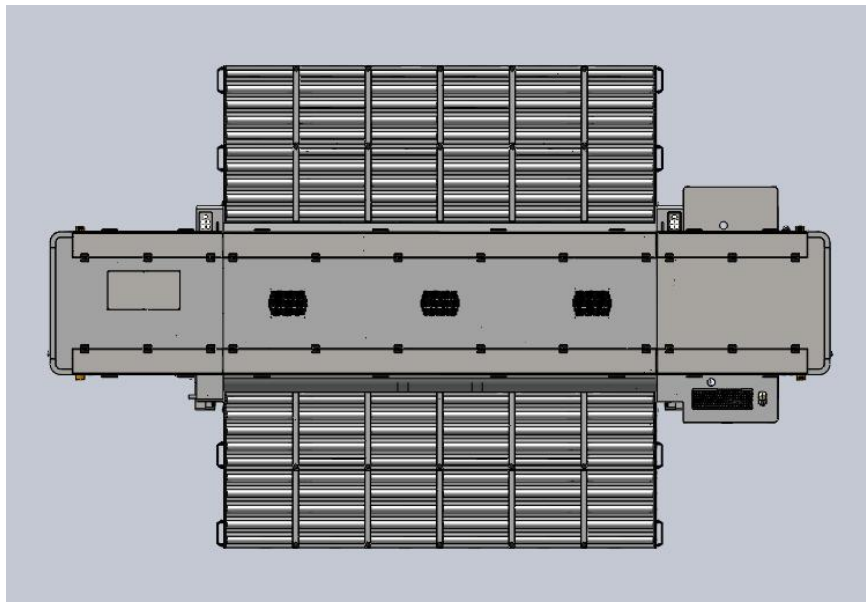


Fig. 2 Rear side view

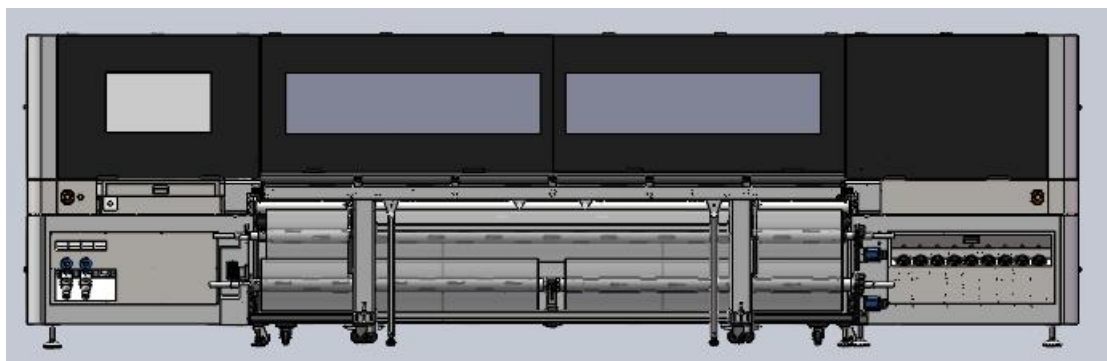


Fig. 3 Right side view

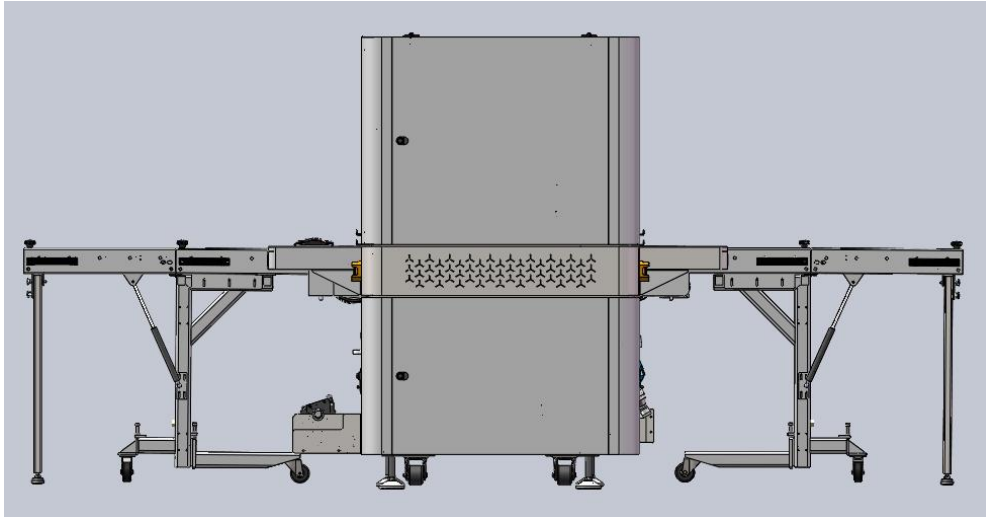


Fig. 4 Left side view

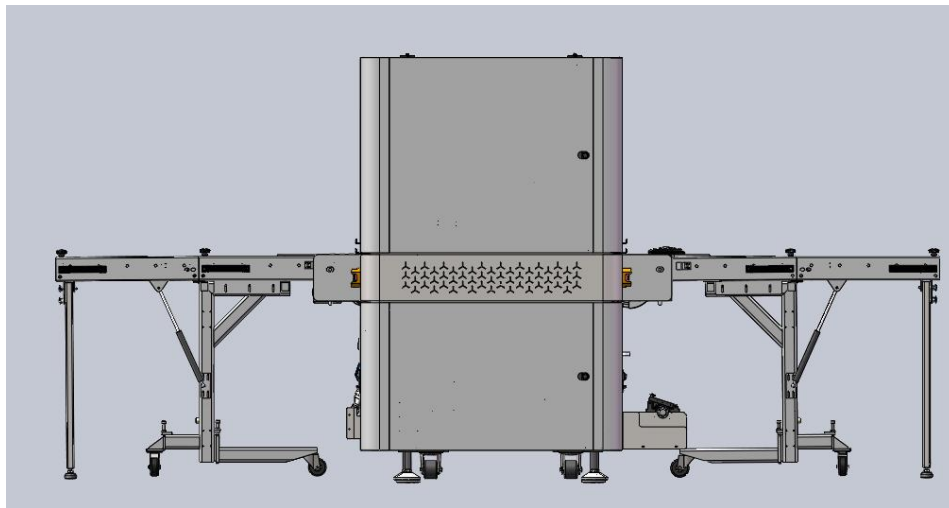


Fig. 5 Right side view

Tools required



Note:

The list of tools below specifies the minimum requirements for installing the DS32 Series Hybrid Printer.

Unpacking and installing		
Quantity	Tool	Remarks
1	Hand electric drill (18 v)	Sleeve (8 mm, 16 mm)
1	Cross screwdriver	6*300
1	Straight screwdriver	3*200
1	Internal hexagonal wrench	2/2.5/3/4/5/6/8
1	Internal hexagonal wrench	6*300, lengthened T type
1	Paper cutter	
1	Open end wrench	14
1	Adjustable wrench	375MM
1	Hemostatic forceps	Standard locking type with soft cover at the tip
1	Adjustable wrench	375MM
1	Multimeter	Standard type
1	Tape	
1	Dial indicator	Magnetic base
1	Laser level meter	

Installation consumables

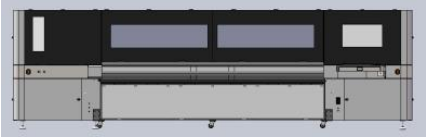




Note:





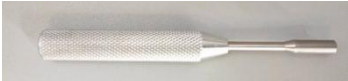

The list of consumables below specifies the minimum requirements for installing the DS32 Series UV Hybrid Printer. End users should use the items highlighted in red in the daily operation of the Hybrid Printer.







List of consumables		
Name	Purpose	Minimum quantity used
Carriage sticker (1.2m)	Printing test	1 roll
PVC, KT sheets, etc.	Printing test	10 sheets
Non-woven fabrics	Manual wiping of print heads	1 pack
Full set of ink	Ink injecting and debugging	2 sets
Cleaning fluid	Rinsing the print head	2 bottles
Nitrile gloves	Protection	1 box
Filter	Attached with the printer	1 of each color
Lithium base grease	Suitable for lubrication of rails, lead screws and bearing blocks, to be maintained by the customer at a later stage	1 tube

Packing List

Diagram	Name	Quantity
	DS32 Hybrid Printer	1
	Extension platform	As per the order
	Three-roller take-up and feeding system	As per the order
	Host	As per the order
	Computer monitor	As per the order
	HDMI adapter	As per the order

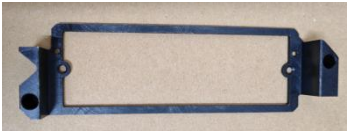





	<p>Power distribution lines of the computer monitor</p>	<p>As per the order</p>
	<p>Attached USB flash disk</p>	<p>1</p>
	<p>Cross screwdriver</p>	<p>1</p>
	<p>Straight screwdriver</p>	<p>1</p>
	<p>Internal hexagonal wrench set</p>	<p>1 sets</p>
	<p>Extended internal hexagonal wrench</p>	<p>1</p>







	<p>Extended internal hexagonal wrench</p>	<p>1</p>
	<p>Wiping paper</p>	<p>1 pack</p>
	<p>Adjustable wrench</p>	<p>1</p>
	<p>Hand lift wrench</p>	<p>1</p>
	<p>Exhaust valve screwdriver</p>	<p>1</p>
	<p>Moisturizing tray</p>	<p>As per the order/1</p>

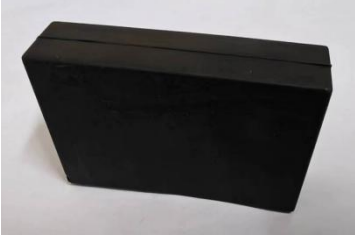



	<p>Set screws of the moisturizing tray</p>	<p>As per the order</p>
	<p>Rubber sealing strip</p>	<p>As per the order + 1.5 m</p>
	<p>Outer wiper</p>	<p>As per the order/4 pcs</p>
	<p>Ink scraping blade</p>	<p>No automatic ink scraping device/1</p>
	<p>Power box of LED water-cooled lamp</p>	<p>1</p>
	<p>Water tank of LED water-cooled lamp</p>	<p>1</p>

	<p>RIP software</p>	<p>As per order/1 set</p>
	<p>Print head</p>	<p>As per the order/pc</p>
	<p>UV ink</p>	<p>As per the order/liter</p>
	<p>UV cleaning fluid</p>	<p>As per the order/liter</p>
	<p>Ink tube</p>	<p>10m</p>
	<p>Polyurethane tube</p>	<p>3m</p>

	<p>Polyurethane tube</p>	<p>5m</p>
	<p>Flexible ink tube</p>	<p>3m</p>
	<p>Joint</p>	<p>Print head quantity*4+4</p>
	<p>Filter</p>	<p>Print head quantity</p>
	<p>Plastic hose clamp</p>	<p>Print head quantity*4+4</p>
	<p>Single degassing assembly kit</p>	<p>As per the order, installed on the machine</p>

	<p>Holder of print head</p>	<p>As per the order, installed on the machine</p>
	<p>Fastening screw of print head</p>	<p>As per the order, installed on the machine</p>
	<p>Adjusting screw of print head</p>	<p>As per the order, installed on the machine</p>
	<p>Leaf spring</p>	<p>As per the order, installed on the machine</p>
	<p>M4*10 screws</p>	<p>As per the order, installed on the machine</p>
	<p>Hollow tube</p>	<p>As per the order, installed on the machine</p>

	<p>Ricoh print nozzle plug</p>	<p>As per the order, installed on the machine</p>
	<p>SATA cable</p>	<p>As per the order</p>
	<p>3*2.5*8 m power line</p>	<p>1 pc</p>
	<p>3*6*8m power line</p>	<p>1 pc</p>
	<p>Hand-held box</p>	<p>As per the order</p>
	<p>USB cable</p>	<p>1 pc</p>

	<p>FFC protective cover (KM1024I)</p>	<p>Print head quantity</p>
	<p>Threading wire of guiding belt</p>	<p>1 pc</p>
	<p>High performance structural AB glue</p>	<p>1 sets</p>
	<p>Grating feeler gauge</p>	<p>1</p>



Note:

The above list is a generalized list, and the actual materials in the accessory case are subject to the order.

Factory requirements



Important Information:

Please note the tonnage of the forklift prior to installation as a forklift with the appropriate tonnage and fork arm size may be required on site, especially when unloading.



Important Information:

Give that the gross weight of the machine in the transport container is about 3720 kg, a forklift with a tonnage of at least 5 tons, a fork length of at least 2200 mm (with the fork protruding from the edge of the packaging box by at least 100 mm), and a spacing between the fork arms of more than 850 mm is required.

The Manual is not applicable for unloading the parked hybrid printer from the original shipping container.

On-site requirements



Note:

The following on-site services are critical to the smooth and timely installation of the machine and the subsequent safe and efficient operation of the hybrid printer.

AC power supply	Voltage	Frequency	Wiring	Current
	220 240 VAC	50 / 60 Hz	Single phase	15A

Compressed air	Pressure (min.)
Clean, dry and oil-free. Filter before the machine	90 psi
	0.6 MPa

Ventilation

It is recommended that the DS32 Series Hybrid Printer be placed in a clean, dust-free, well-ventilated area. If in an enclosed location, a ventilation system is required with a recommended ventilation rate of 50 m³/min.

DS32 Series UV Hybrid Printer

Pre-installation Preparations

Space requirements



Note:

The areas specified in the chart below are the minimum recommended values for safe and efficient operation of the DS32 Series Hybrid Printer. Larger values should be allowed, if possible.

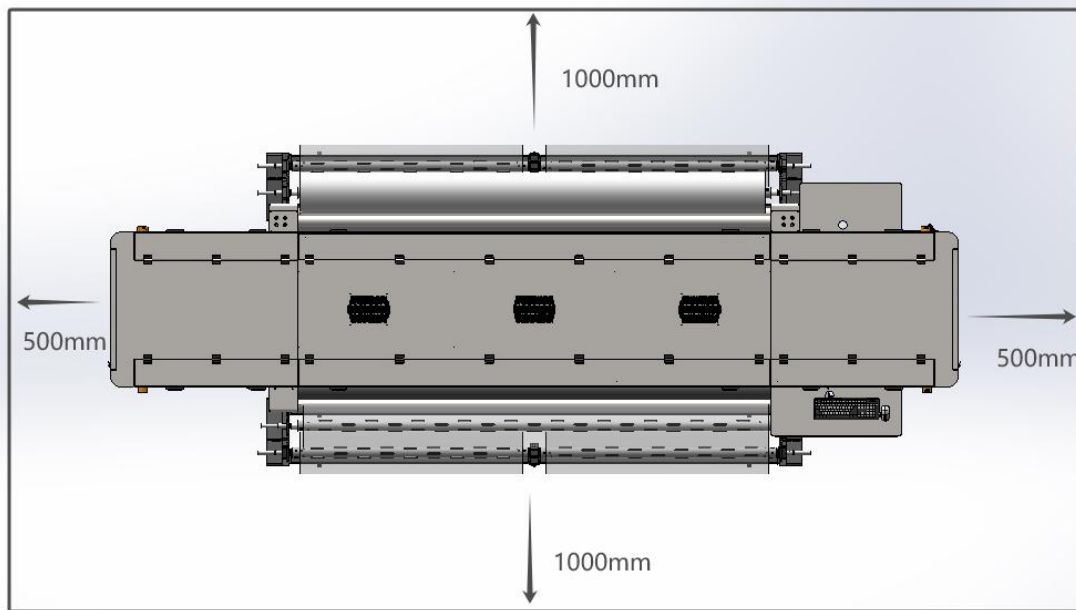


Fig. 6 Space requirements for the DS32 Series Hybrid Printer

Floor area of DS32 main machine (incl. take-up and feeding system): 6060*2220*1790 mm; floor area after adding 2 expansion platforms: 6060*3732*1790 mm. To ensure safe operation, an operating space of 7000 * 4700 mm is required.

The space in the above figure is subject to no extended platform. If front or rear extension platform is used, at least a space of 2500 mm shall be reserved before and after the printer.

Restricted area



Warning:

It is recommended that the minimum operating area be marked on the floor around the printer. Trained operators are only allowed to operate within the smallest operating area.

Moving the Hybrid Printer



Important Information:

Once the entire machine has been removed from the packaging box, it is recommended that the packing and filling materials not be removed while moving it to its final location.

Ideally, the route of the whole machine moving to the final position should be as smooth as possible to avoid shock when moving.

The machine can be moved using a forklift or manually pushed into position using the machine's casters. If manually positioned, it requires at least 4 people distributed at each corner of the machine to push and guide it into position.

Trolleys are not permitted as they may cause deformation of the rack and thus damage the machine. The minimum requirements for the placement of the machine should take into account its size and the way in which it will be moved.

Ground requirements

The printer must be placed on a level, stable surface capable of supporting the weight of itself and all nearby materials and equipment during normal operation.

Do not place the printer on carpet or any ground that may settle over time, as its accuracy may change, resulting in reduced print quality or damage.



Note:

If the preferred area for positioning the printer is uneven or has a soft carpeted surface, a metal substrate can be used to hold the printer.

Do not place the printer on any surface that cannot support its weight, as this may be dangerous and it may twist or move over time!

Environmental requirements

Parameter	Specification
Operating temperature (°C)	15 - 28
Operating humidity (RH %)	30 - 70
Storage temperature (°C)	20 - 60
Storage humidity (RH %)	5- 85 (non-condensing)



Notes:

- Do not store or install the printer in the following locations:
- near any local heat source;
 - places exposed to direct sunlight;
 - places subject to vibration;
 - places where there is excessive dust;
 - places where there are extreme changes in temperature or humidity;
 - places where the printer may get wet;
 - places where there is poor ventilation/air circulation;
 - places where the floor is unstable or unable to support the load of the printer and other equipment and materials; and
 - places likely to produce other polluting gas.

Ventilation

Parameter	Specification
Air quality	Well-ventilated area where ink fumes can be kept to a minimum
Ventilation requirement	≥ 50 m ³ /min

Power and gas supply requirements

AC supply	power	Voltage	Frequency	Wiring	Current
		220 - 240 VAC	50 / 60 Hz	Single phase	15A

Compressed air	Pressure (min.)
Clean, dry and oil-free. Filter before the machine	90 psi
	0.4 MPa



Note:

The printer is not supplied with operating computers, users must purchase their own (unnecessary if optional).

For optimal performance, we recommend that the computer should meet the recommended requirements below. As with all computer software, systems with faster processors, more memory, and more storage space allow for larger files to be processed, and processing time can be reduced.

Computer configuration requirements



Note:

The computer shall be configured to meet the following requirements. The specifications of the printer's computer are shown below. Deviations from the minimum specifications listed below may cause the printer's computer and the services it runs to operate slowly and unreliably.

Parameter	Specification
Operating system	Windows 10, 64-bit
CPU	Intel(R) Core™ i7 11700 @3.30GHz3.29 GHz
RAM	≥ 16 GB
Internal HDD	≥ 500G
USB port	USB 3.0 (2 required)
Input voltage	220V
Mainboard	Brand Mainboard of high quality
Monitor	Recommended brands, ≥ 27 inches

It is highly recommended to purchase a branded desktop computer instead of a cheap assembled one.



Note:

The computer must meet the minimum requirements listed above.

DS32 Series UV Hybrid Printer

Unloading and Placement of the Printer

Unloading of the machine

Machine size - packaging case size and net size

Please see the following table for the actual size of the Hybrid Printer and the packaging case for shipping.

Item	Hybrid Printer	packaging case
Length	6060mm	6340mm
Width	1680mm	2100mm
Height	1790mm	2268mm
Weight	2870 kg	850 kg

Arrival of machine

The machine will be packed in a standard container and transported to the port where the machine will be removed and then transported to the customer's site or local warehouse. Please keep in contact with your local service team to confirm how the Hybrid Printer will be delivered.

Unloading method



Note:

Unloading of transport vehicles should be carried out by experienced personnel with correct devices.



Note:

The gross weight of the packaging case in the container is 3,720kg, and the weight of the Hybrid Printer is about 2,870kg. A forklift with a capacity of at least 5 tons and a fork length of at least 0mm (the fork protrudes at least 0mm from the edge of the packaging case) is required.

Unloading space

Note:



The information provided here is very useful for efficient operation or installation of the machine.

For the purpose of convenience, it is recommended that the area for unpacking should be 3-4 times of the packaging case. In this particular case, an area of 8m x 5m is shown.

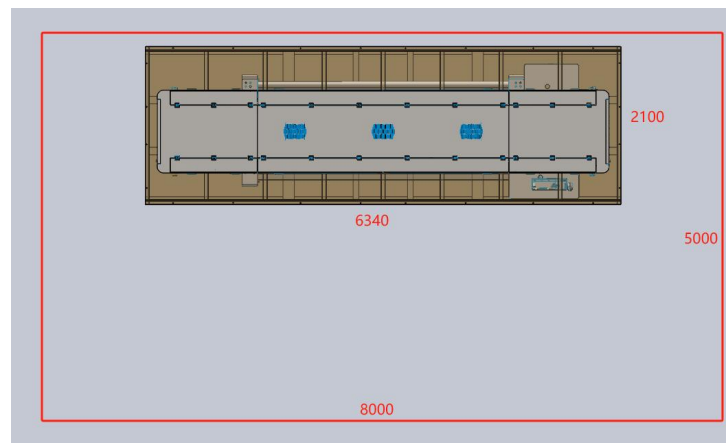


Fig. 7 Recommended unloading area around the packaging case

This provides a sufficient space for the entry of the forklift in front of the packaging case.

The center of gravity of the machine

Note:



The Hybrid Printer is in the center of the packaging case, and the carriage is fixed onto the right end of the crossbeam. Therefore, the center of gravity of the packaging case is at the center point of the long edge of the packaging case.



Note:

In order to help remove the Hybrid Printer out of the packaging case, the hoisting point of the fork of the forklift is clearly marked with a label on the lower edge of the rear side of the machine.

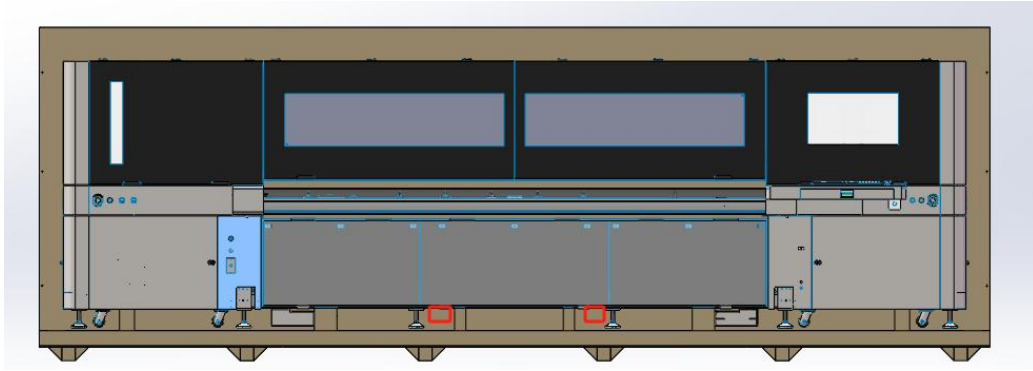


Fig. 8 Fork position of the forklift

Unpacking of the Hybrid Printer

The Hybrid Printer is packed in a wood case with a base. The rack of the Hybrid Printer is fixed onto the base with bolts via 4 packaging fixing frames; 2 packaging fixing frames are in the front, and 2 packaging fixing frames are on the back. The inside of the packaging case will be equipped with reinforced frames based on the specific model.

Open the packaging case

Fastening steel strips and fixed bolts are attached on the packing box, please cut off the steel strips before unpacking. Please disassemble the plates in this order: (1) top plate, (2) front plate, (3) back plate, (4) left plate and (5) right plate. Remove screws or bolts around the perimeter of each plate.

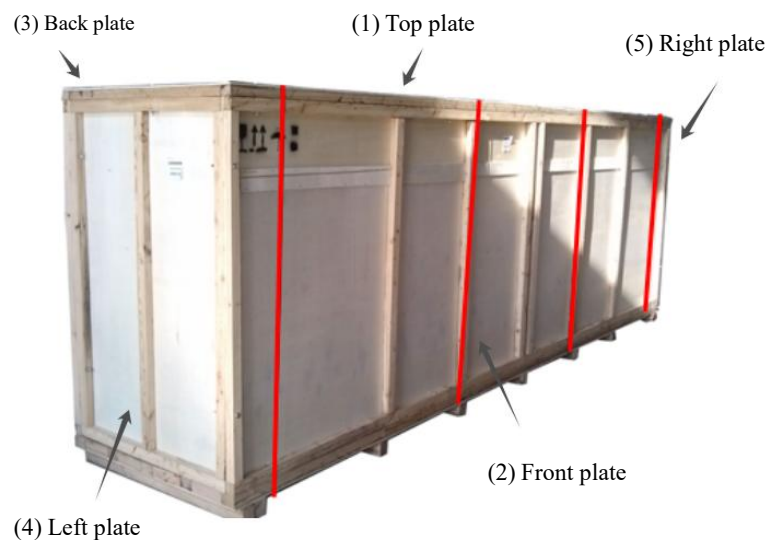


Fig. 9 Packaging case



Note:

The following figure shows the location and size of each type of screws and bolts to facilitate disassembly of the packaging case.

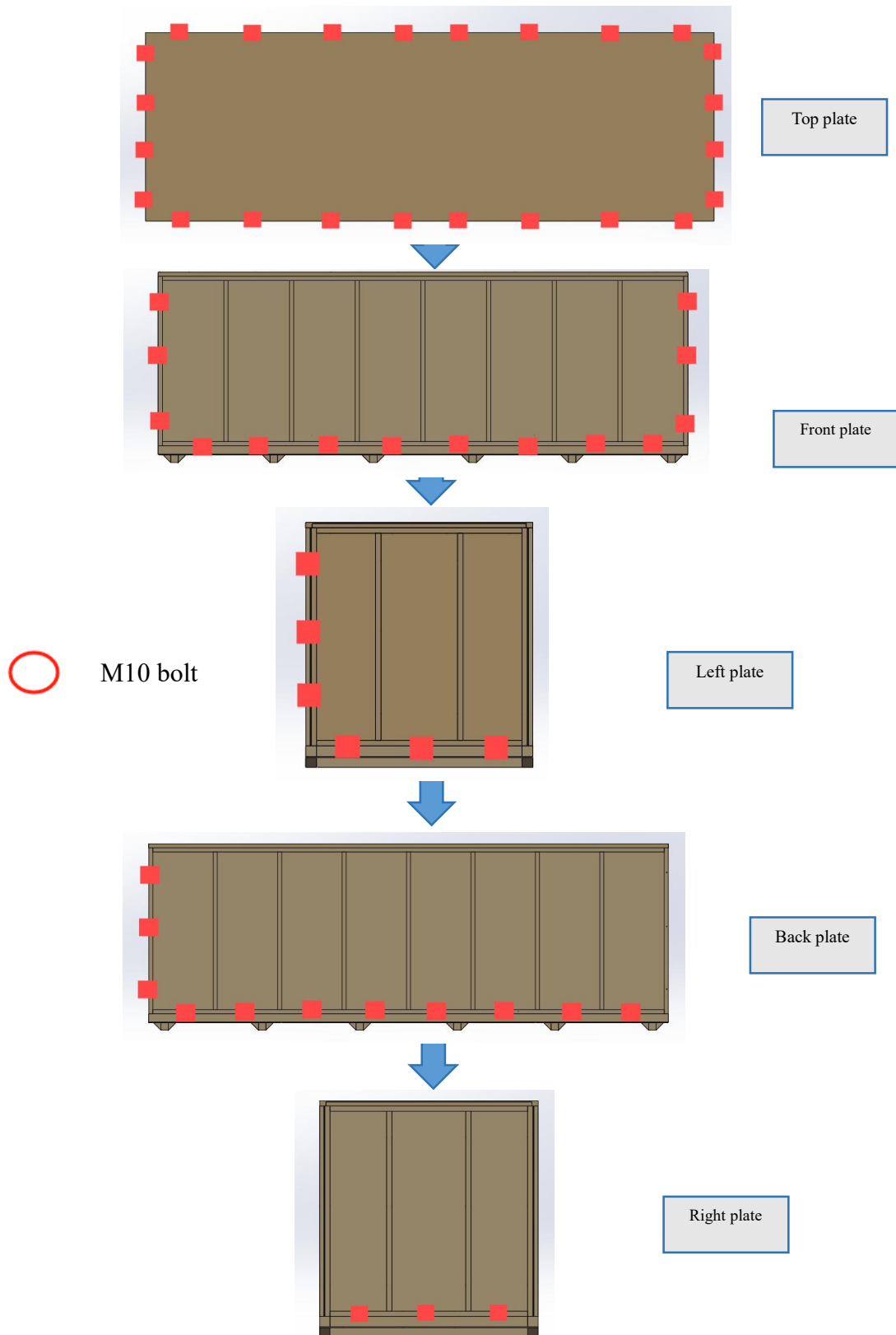


Fig. 10 The order for disassembling packaging plates

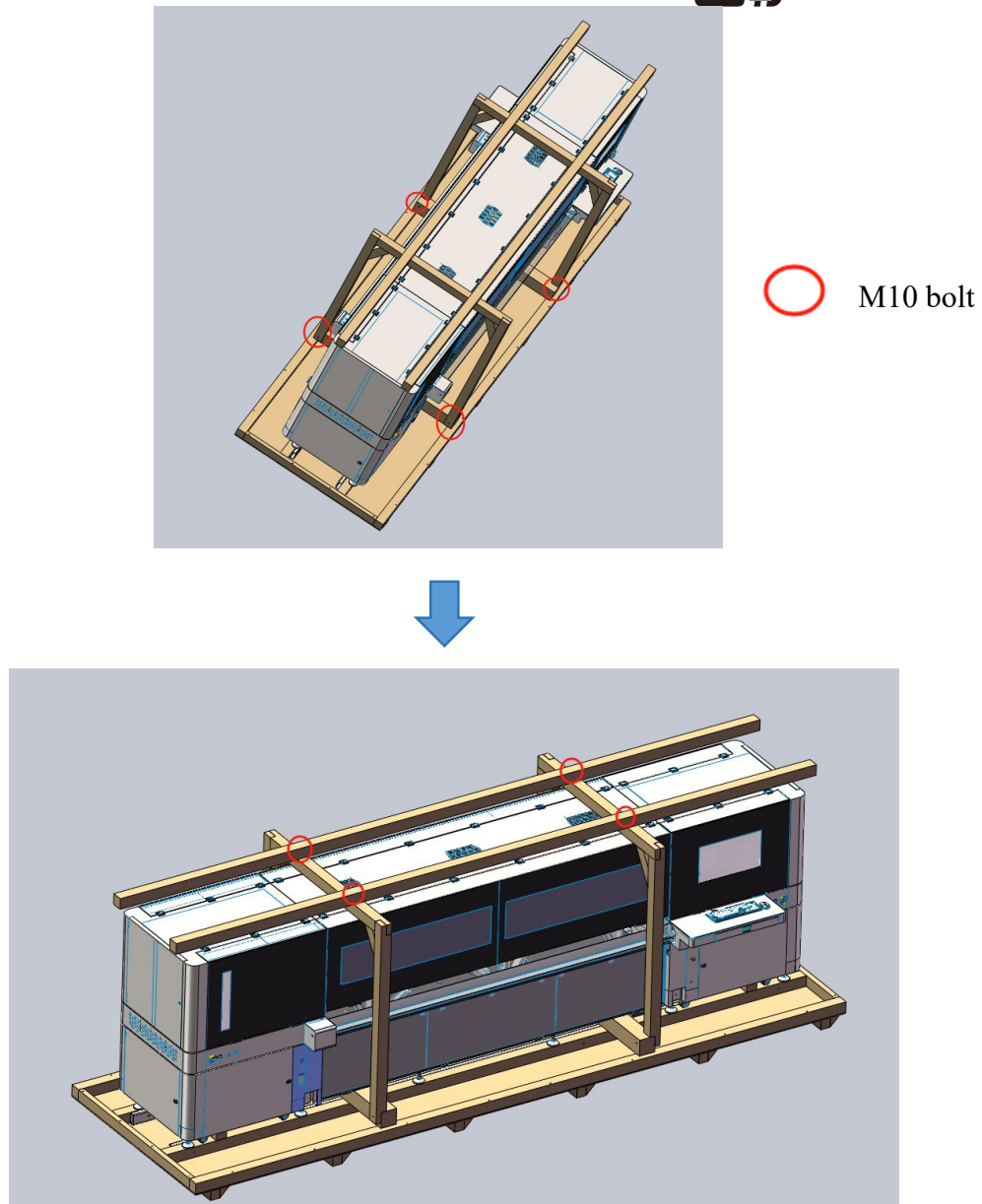


Fig. 11 The order for removing reinforced frames (optional based on model)

Disassembly of packaging fixing frames

These packaging fixing frames fix the Hybrid Printer onto the packaging base to ensure the stability in transportation.



Important Information:

Please be sure to remove all the packaging fixing frames fixed onto the rack before lifting the Hybrid Printer from the packaging base.

If not, the machine may be damaged. The location of such packaging fixing frames is as shown in Figures 12 - 14.

Packaging fixing frames must be disassembled before lifting the machine from the packaging base. Bolts should be removed by using an appropriately sized wrench. The following figures show the location of packaging fixing frames.

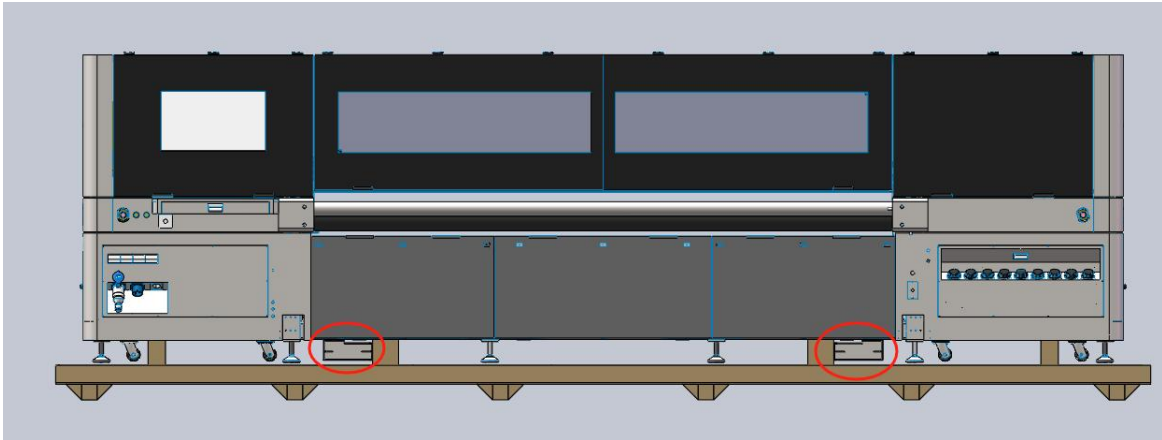


Fig. 12 Packaging fixing frame (front)

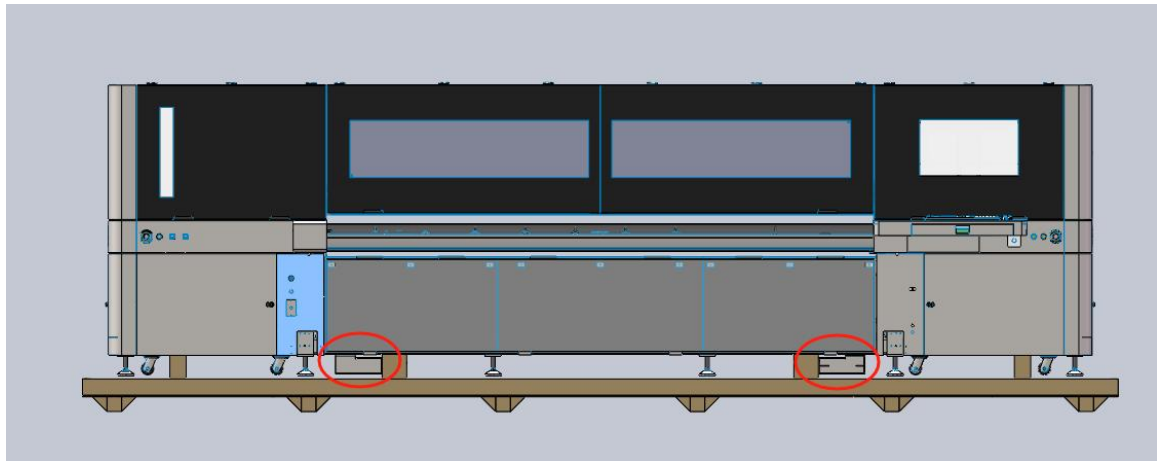


Fig. 13 Packaging fixing frame (back)

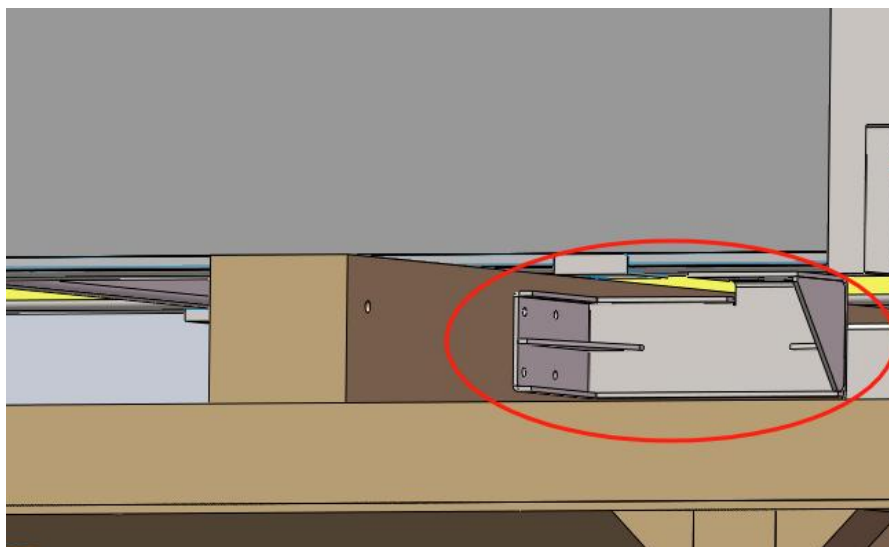


Fig. 14 Packaging fixing frame

Lifting of the machine from the packaging base



Important Information:

Please be sure to remove all the packaging fixing frames fixed onto the rack before lifting the Hybrid Printer from the packaging base. If not, the machine may be damaged. The location of such packaging fixing frames is as shown in Figures 12 - 14.

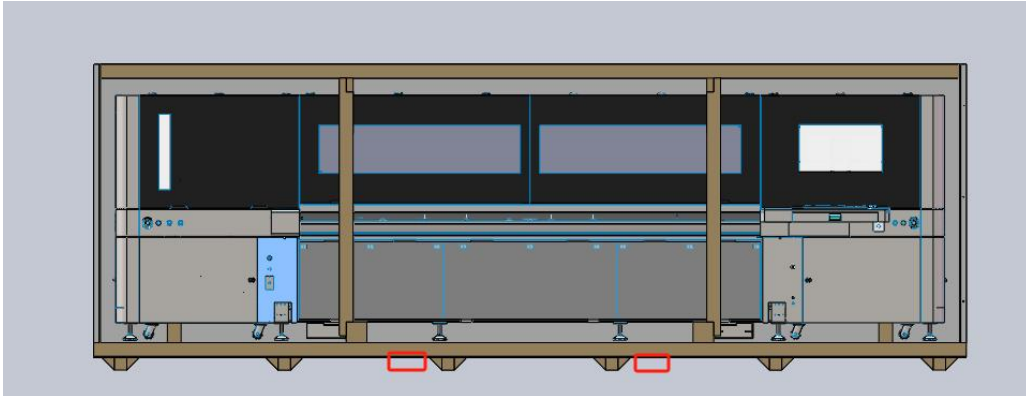


Fig. 15 Packaging Case with the Top Plate and the Front Plate Removed

Figure 15 shows the packaging case with the top plate and the front plate removed. Reinforced frames and other plates still stay at the original location and must be removed before the machine is unloaded from the packaging case. The lifting points of the packaging case are circled in red.

Like the packaging case, the machine also needs to be lifted with a forklift. When inserting the fork arm under the Hybrid Printer, special attention should be paid to prevent damage to the machine.

The machine is packed in a vacuum aluminum foil bag. First, the aluminum foil bag and some packaging materials should be removed to show the machine itself and the position of the lifting points.

Figure 16 shows the Hybrid Printer in remaining package after removing the vacuum aluminum foil bag. It is suggested that the remaining package is not removed, until the machine arrives at the final location. The lifting points of the Hybrid Printer are circled in red.



Fig. 16 Hybrid Printer in inner package

**Important Information:**

It is forbidden that the machine is transported with a forklift whose fork is directly inserted under both ends of the machine. Otherwise, the doors on both sides are damaged when moving the machine.

Due to the width of customer's door and the existence of step or gradient, the machine needs to enter directly when entering. Forklift can be used to lift from behind to assist in entering. In particular cases, when the forklift forks the machine from left or right, the side door must be opened or removed first, and wooden blocks must be padded on the forklift inserts. This can prevent the damage of the door due to forklift problems. As shown in the following figure:



Fig. 17 Transportation of the printer with fork under both ends

Proper placement of Hybrid Printer



Important Information:

Once the machine is removed out of the packaging case, it is recommended that the inner package and protective materials should stay on the machine before the machine is moved to the final location.

Ideally, the route of the whole machine moving to the final position should be as smooth as possible to avoid shock when moving.

The machine can be moved using a forklift or manually pushed into position using the machine's casters. If manually positioned, it requires at least 4 people distributed at each corner of the machine to push and guide it into position.

Trolleys are not permitted as they may cause deformation of the rack and thus damage the machine. The minimum requirements for the placement of the machine should take into account its size and the way in which it will be moved.

Removal of packaging limit block



Notes:

Please be sure to remove the packaging limit block before any other operation of the machine. The packaging limit block may be removed after the machine is placed at the expected location.

If the carriage moves in the X direction during transportation of the packaging limit block, it must be removed before the machine is energized.

Fig. 18 and Fig. 19 show the location of the packaging limit block (red).

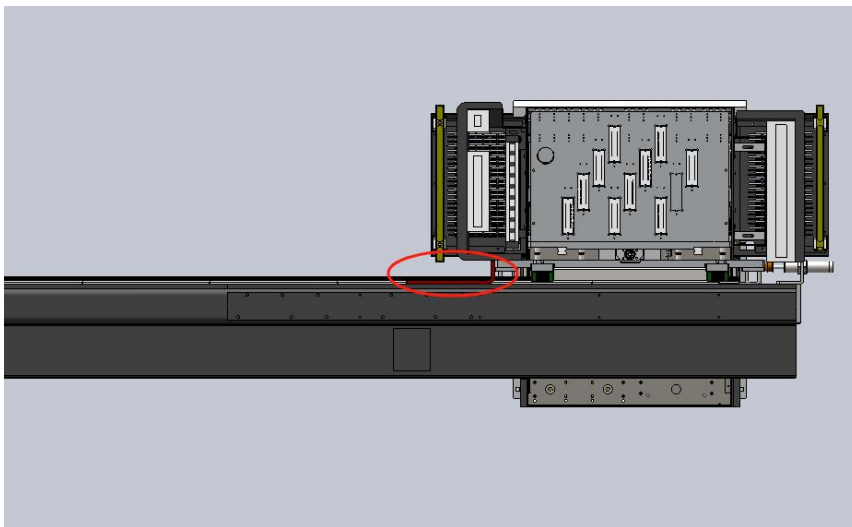


Fig. 18 Location of packaging limit block



Fig. 19 Packaging limit block

Opening of the packaging case of accessories

Optional extension platform and three-roller retracting/releasing cloth assembly are packed in an independent packaging case. They are fixed onto the base with bolts via 4 packaging plates respectively. The disassembly method of packaging case is the same as that of the main unit.

Lifting of the extension platform and three-roller retracting/releasing cloth assembly from the packaging base

The machine is packed in a vacuum aluminum foil bag. First, the aluminum foil bag and some packaging materials should be removed to show the machine itself and the position of the lifting points.



Important information:

Please be sure to remove all the packaging fixing frames fixed onto the rack before lifting the extension platform and three-roller retracting/releasing cloth assembly from the packaging base. If not, the machine may be damaged. The location of such packaging fixing frames is as shown in the following figure.

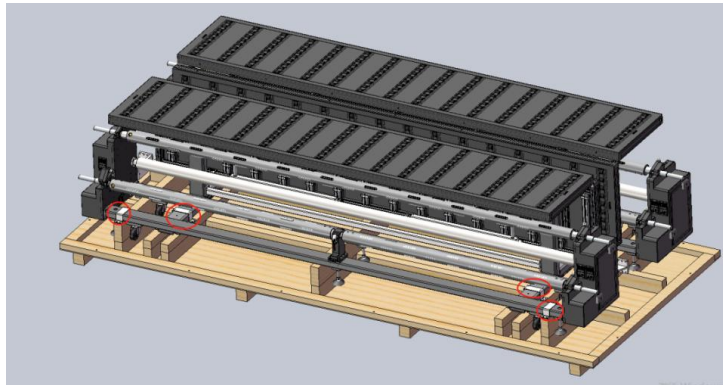


Fig. 20 Location of packaging fixing frames

The assembly is packed in a vacuum aluminum foil bag. First, the aluminum foil bag and some packaging materials should be removed to show the assembly itself and the position of the lifting points. Figure 21 shows the assembly with the inner package removed. Lifting points are circled in red. First, the three-roller retracting/releasing cloth assembly is removed from the base by using a forklift, and then the extension platform assembly is unloaded. Please pay attention to the center of gravity when unloading the extension platform assembly with a forklift.

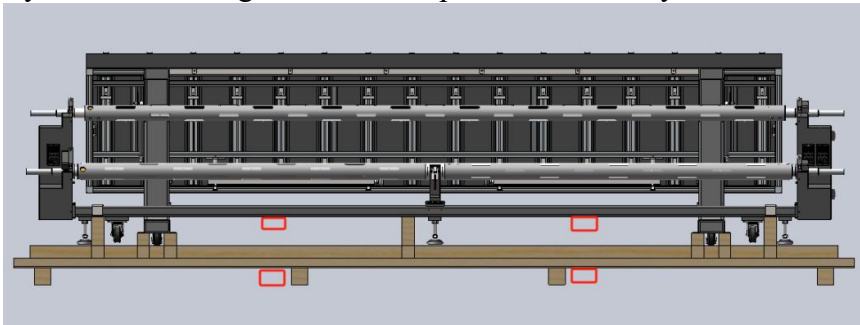



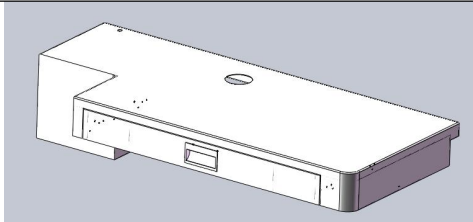


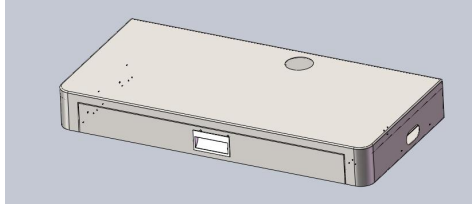
Fig. 21 Assembly with inner package removed

DS32 Series UV Hybrid Printer

Assembly of External Components

Assembly of External Components

Several sub-components/parts of the Hybrid Printer need to be recovered according to the configuration. Such components separate from the main unit during shipment for convenient loading and transportation. Some of these components are packed independently, and some of them are packed and placed inside the machine. The installation position is as shown in Fig. 22.

Marks	Diagram	Name	Quantity
(1) , (5)		Display	As per the order
(2)		Front keyboard holder	1
(3) , (7)		Three-roller take-up and feeding system	As per the order
(4) , (8)		Extended platform	As per the order
(5)		Rear keyboard holder	As per the order

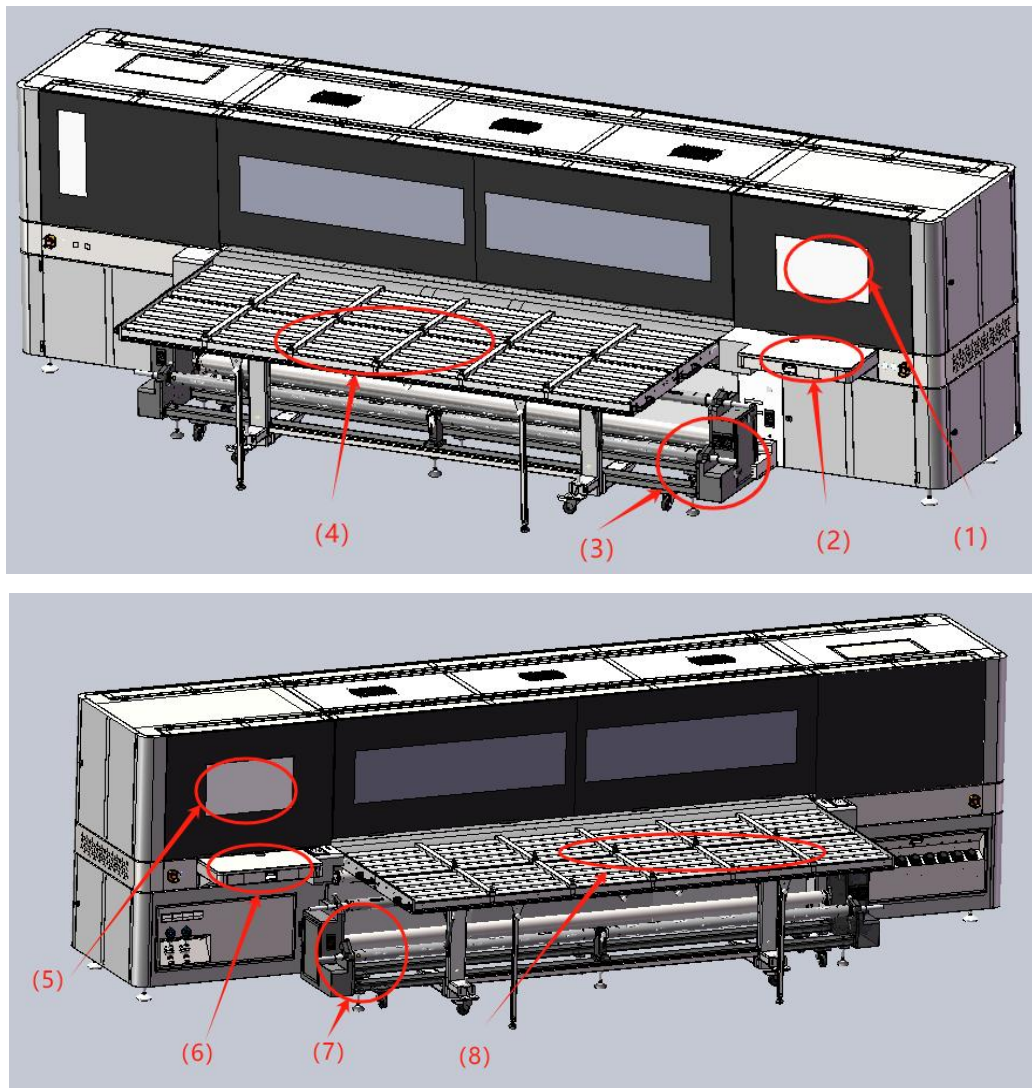


Fig. 22 Assembly position of sub-components

Installation of monitor and front/rear keyboard holders

The operating position of the machine is on the front right side, and a dual-workstation console (with a front workstation and a rear workstation) is optional. The rear monitor and the front/rear keyboard holders are installed according to the optional quantity, and the video cable and power cable should be connected properly.

Step 1: Open the packaging case of monitor, take the monitor out of the case, fix the monitor onto the monitor support with M4 screws. Adjust the position of the monitor to make it align with the transparent area of glass of the front right door when fixing the monitor.

Step 2: Connect the power cable and video cable in the monitor package, make it get through the bottom cable hole to access the lower part of the machine case for connecting the mainframe of the computer. Figure 23 shows the position of the fixing screws of monitor and the cable route.

Step 3: Install the reinforced support of the front keyboard holder and then install the

front keyboard holder. Figure 24 shows the position of the fixing screws (M4 screws).

Step 4: Install the reinforced support of the rear keyboard holder and then install the rear keyboard holder. Figure 25 shows the position of the fixing screws (M4 screws).

Step 5: Install the USB docking station at last, place the keyboard and mouse, make the USB cable get through the cable hole to access the lower part for connecting the mainframe of the computer.

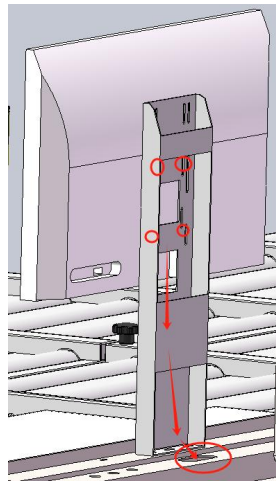


Fig. 23 Position of fixing screws of the monitor and cable route

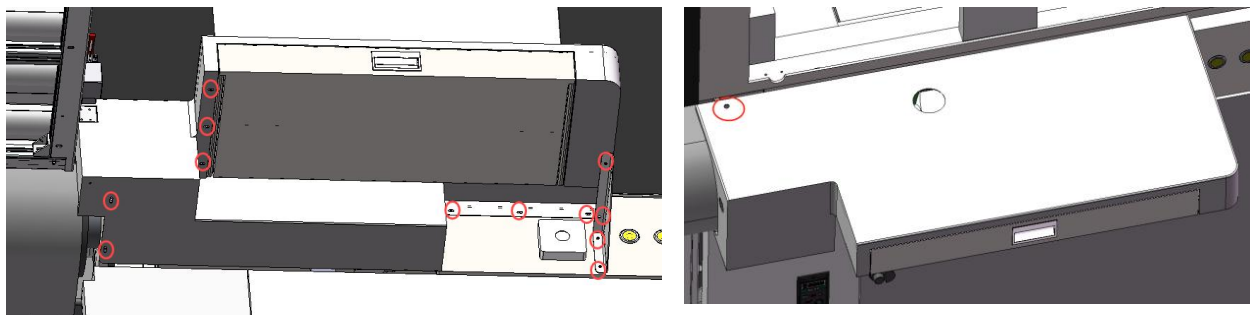


Fig. 24 Position of fixing screws of the front keyboard holder

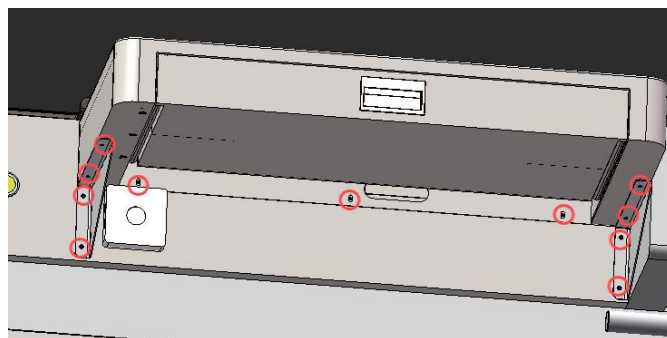


Fig. 25 Position of fixing screws of the front keyboard holder

Connection of three-roller retracting/releasing cloth assembly



Important information:

The three-roller retracting/releasing cloth assembly must not connect the mainframe of the Hybrid Printer before the mainframe of the Hybrid Printer is moved to the final position, located and leveled.

There is a group of three-roller releasing cloth assembly and three-roller retracting cloth assembly respectively in front and on the back of the mainframe. The three-roller retracting/releasing cloth assembly itself is provided with universal casters. After it is moved to the corresponding position of the mainframe, it should connect the three-roller connecting block on the mainframe for initial locating, leveling should be achieved by adjusting the four supporting feet, and then final fixing is completed.

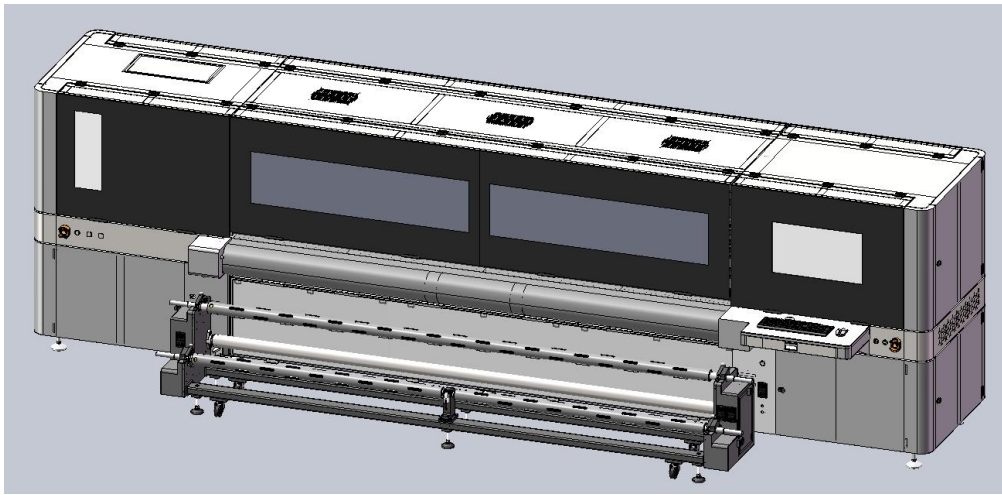


Fig. 26 Three-roller retracting cloth assembly

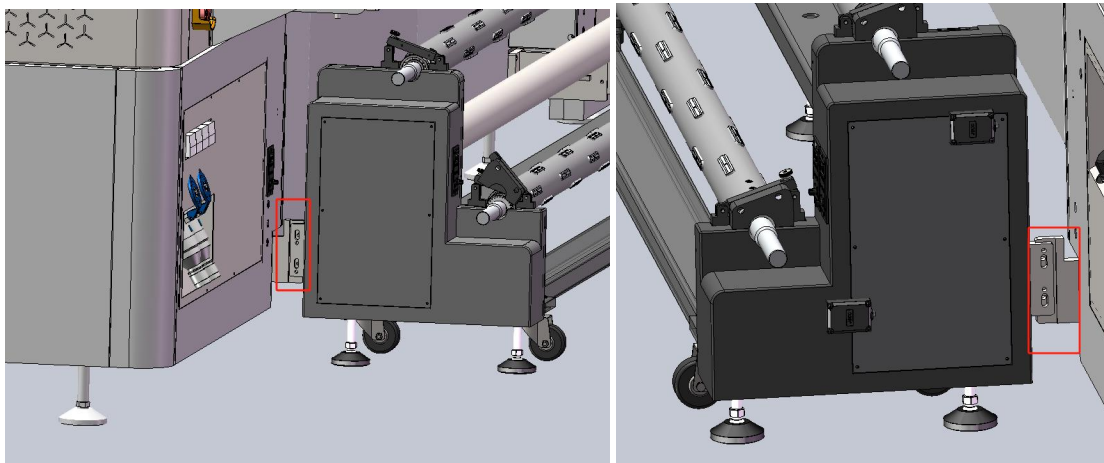


Fig. 27 Position of three-roller connecting block

After locating of three-roller retracting/releasing cloth assembly, four cable plugs (front, back, left and right) are inserted. The following figure shows the position of four plugs.



Fig. 28 Position of cable plugs

Connection of extension platform assembly



Important information:

The extension platform must not connect the mainframe of the Hybrid Printer before the mainframe of the Hybrid Printer is moved to the final position, located and leveled. They are connected in a flexible way. When the extension platform needs to be used, it can be moved to other places.

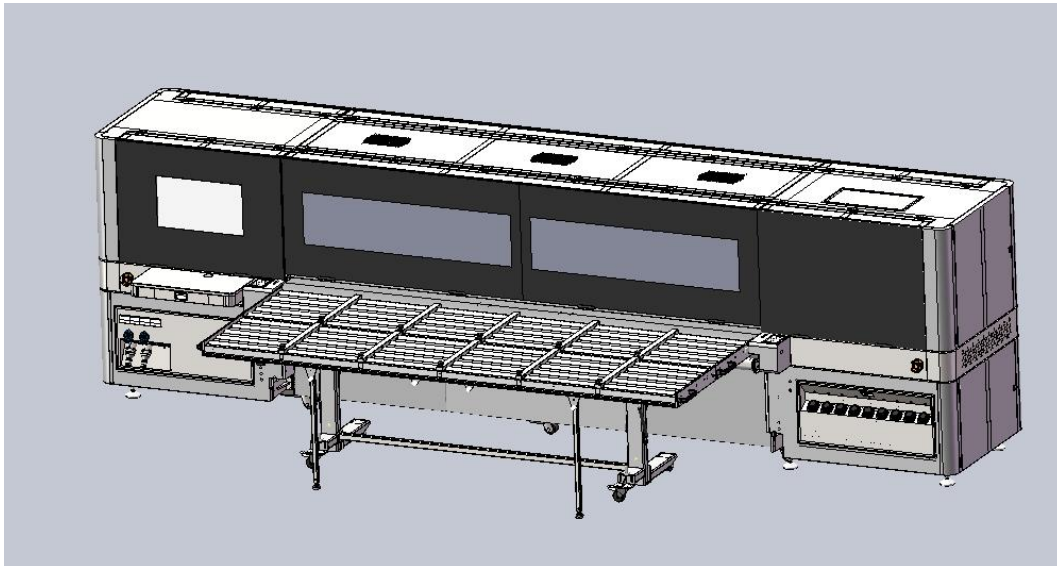


Fig. 29 Extension platform assembly

There is a group of extension platform assembly in front and on the back of the mainframe. The extension platform assembly is provided with universal casters. After it is moved to the position corresponding to the mainframe, it is located initially, its height is adjusted by adjusting the four supporting feet, and then it is located via the latch bolts on the left and the right. The operating handle of the latch bolts is just under the housing.

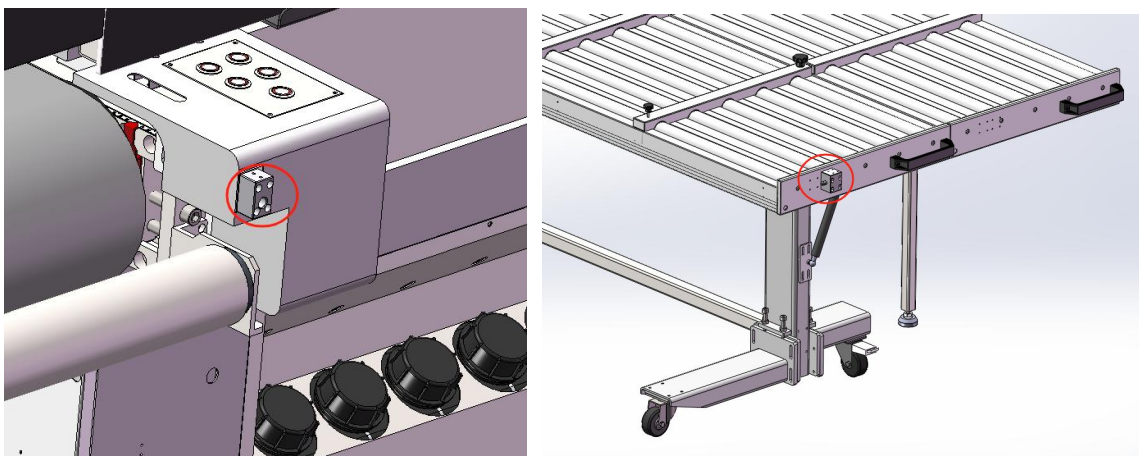


Fig. 30 Locating pin of extension platform

**Important information:**

The extension platform assembly can be folded for use and storage. Please be sure to keep the platform folded when moving the extension platform assembly. Two auxiliary supporting feet must be released when the extension platform is open, and the locating pins of supporting feet are working.

The extension platform assembly can be folded for use and storage. Please be sure to keep the platform folded when moving the extension platform assembly. When unfolding the platform, the pneumatic spring plays an assisting role. When the extension platform is open, two auxiliary supporting feet must be released, and the locating pins of the supporting feet are working.

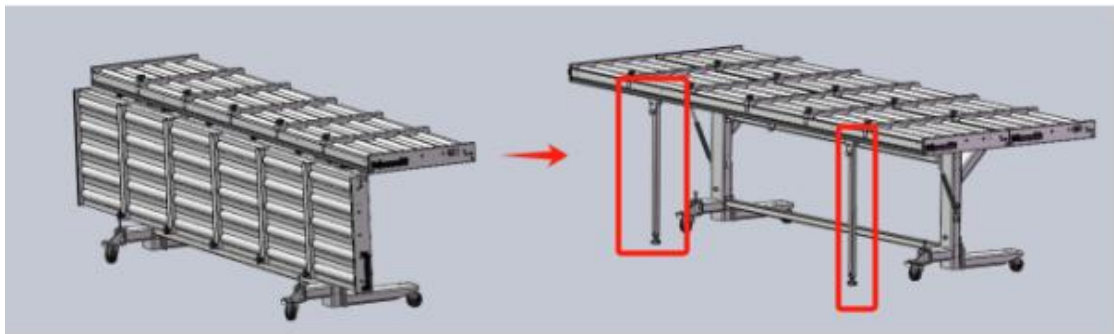


Fig. 31 Schematic diagram of the working state of extension platform assembly

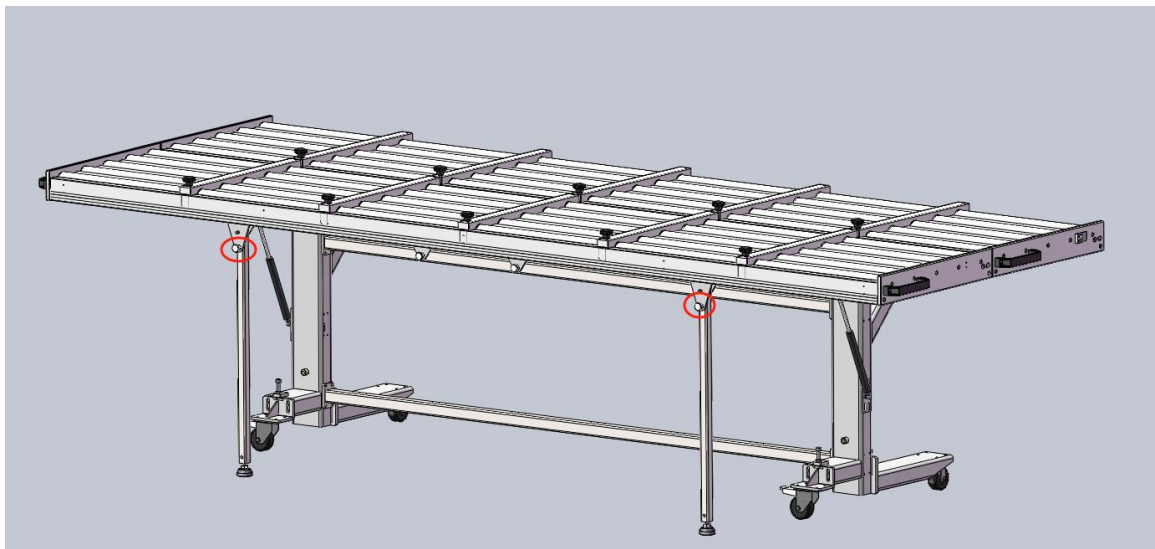


Fig. 32 Locating pins of supporting feet of the extension platform in working state

DS32 Series UV Hybrid Printer

Connection Services

Connection services

Power supply connection of Hybrid Printer



Notes:
NOTE!! Any work involving machine wiring or connection to the main power must be performed by qualified electrical technicians.

AC power supply	Voltage	Frequency	Wiring	Current
	220 - 240 V	50 / 60 Hz	Single phase	25A

The Hybrid Printer can be connected to the power supply in two ways: direct connection to the electrical box on the wall or connection to the wall outlet via IP44 32A 200 -250VAC plug. Due to the semi-industrial nature of most factory environments, it is suggested that cables should be provided with metal sheath to prevent accidental damage. See Figure 35.

Ds32 LIYU Hybrid printer the POWER wiring diagram

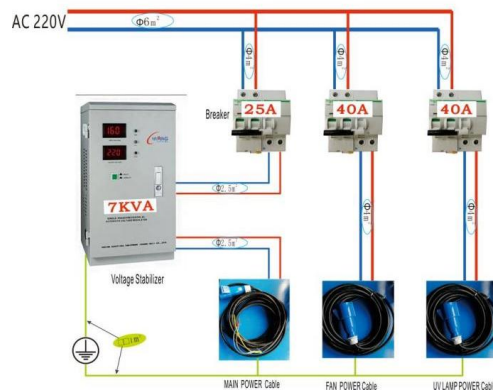


Fig. 33 AC Power connection of the hybrid printer

Grounding



Notes:

All the grounding connection points are on the back of the Hybrid Printer.



Fig. 34 Grounding connection of the hybrid printer

Connection between Hybrid Printer and computer



Important Information:

The Hybrid Printer and computer are connected via USB 3.0 coupler. USB 3.0 should be coded in blue and marked with the following symbols.



See the following figure.

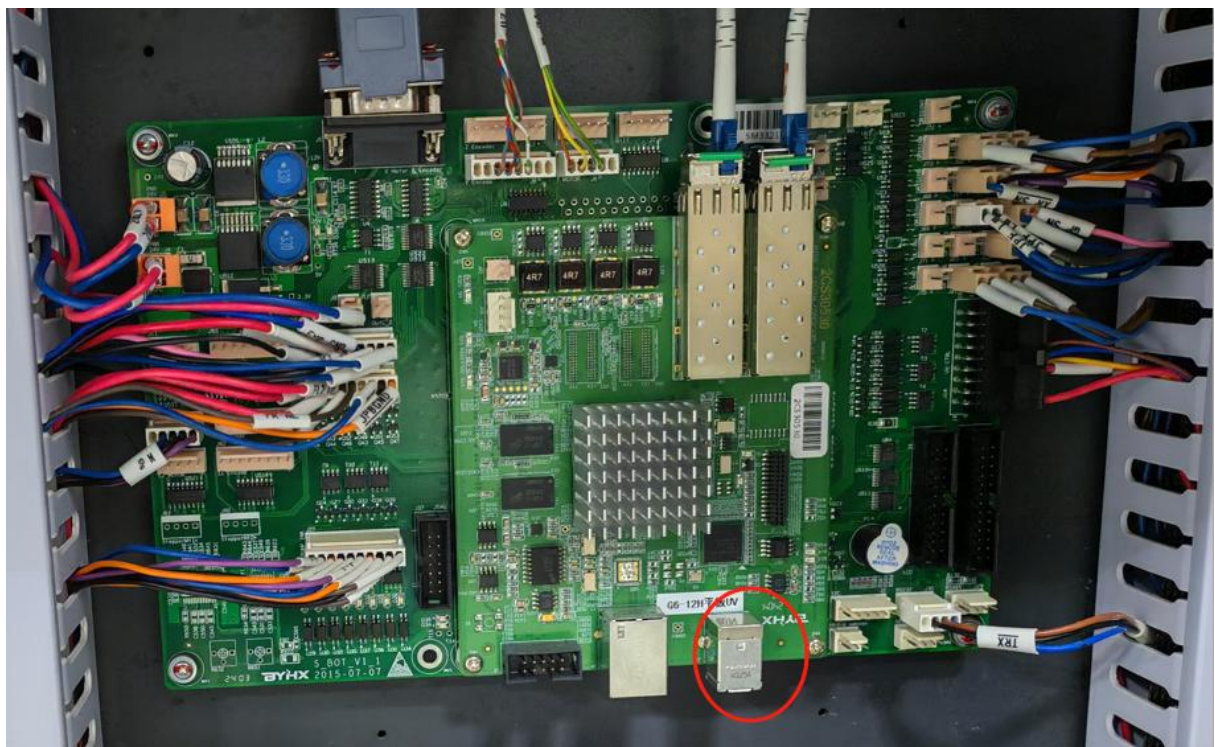


Fig. 35 Connection between Hybrid Printer and computer

Connection to compressed air



Note:

Compressed air conforms to the following requirements

Compressed air	Pressure (min.)
Clean, dry and oil-free. It should be filtered before connecting to the machine.	90 psi
	0.6MPa

Powering-on



Important Information:

Before powering-on of the machine, please check whether the packaging fixing frames that fix the carriages onto the crossbeam have been removed. In addition, it should be ensured that the computer, electrical devices and compressed air facilities are correctly installed and connected to the Hybrid Printer.

Release all the emergency stop buttons at each corner of the Hybrid Printer. Turn the button heads counterclockwise to remove them. The location of 4 emergency stop buttons are as shown in the following figure.

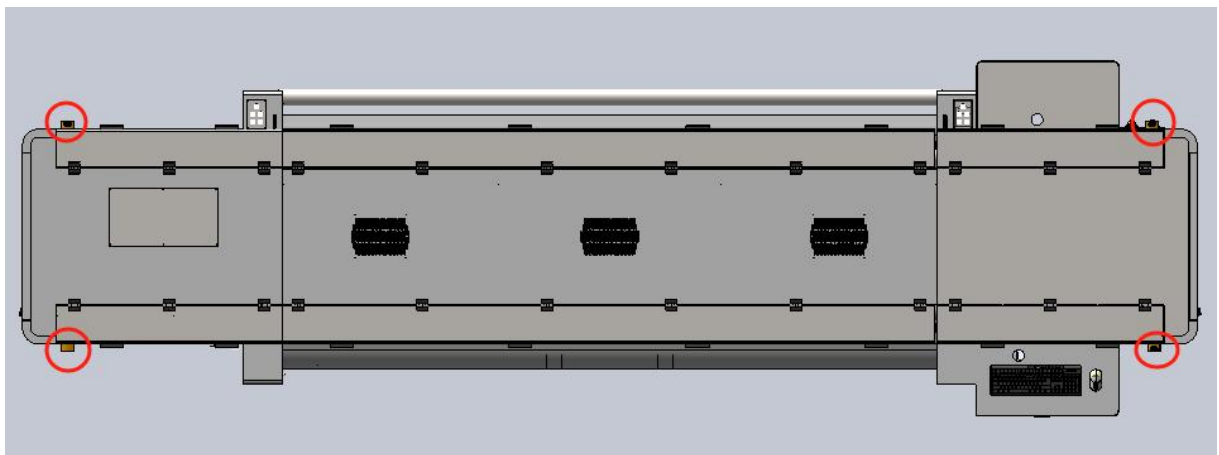


Fig. 36 Location of emergency stop buttons

DS32 Series UV Hybrid Printer

Introduction to Functions of Machine

Introduction to the main components and buttons of the machine

1. Front components and buttons of the printer

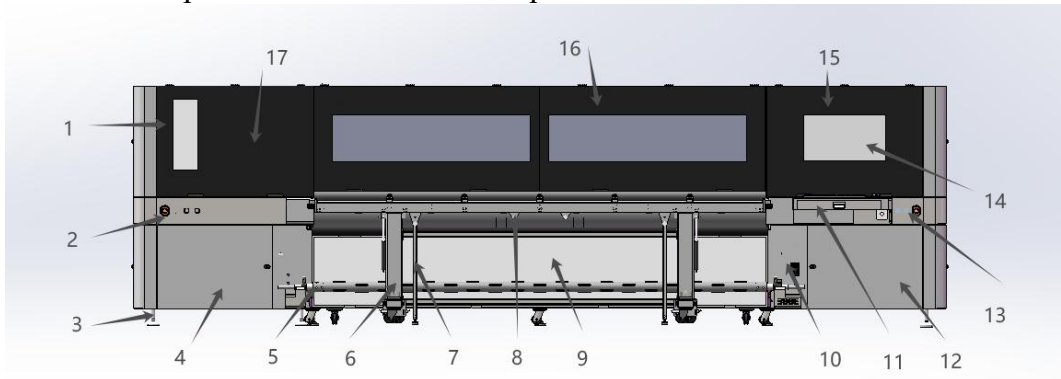


Fig. 37 Front components and buttons of the printer

Code	Name of parts	Description
1	LOGO light	
2	Left button	Emergency button and start button from the left to the right
3	Legs of the machine	For adjusting the level and fixing of the machine
4	Lower left box	There is mainly a negative pressure control system and a front/middle/rear rod control system inside it
5	Take-up rod	It is inflated and expanded after the retracting cloth and material cover it
6	Front extension platform pillar	It can be adjusted to level the extension platform
7	Extension platform supporting rod	The supporting rod is used for unfolding the front half of the extension platform
8	Supporting rod fixing pin	It plays a locking role after retracting the supporting rod
9	LED backlight	For watching the effect during printing with backlight materials.
10	Button and controller	The upper button is the LED backlight switch, and the lower controller controls positive/negative rotation and torque of the retracting cloth
11	Keyboard pallet	For placing keyboard and mouse. Drawer at the bottom for tools storage
12	Lower right box	Control cabinet of circuit board; there are main board, deviation correction board and main control components inside.
13	Right button	Right to left: right emergency stop, start, sensor switch of media measurement
14	Monitor window	There are monitor installation brackets and the monitor installation position on the back
15	Upper right door	This door can be opened upward and it is supported by a pneumatic rod
16	Middle door	This door can be opened upward and it is supported by a pneumatic rod

17	Upper left door	This door can be opened upward and it is supported by a pneumatic rod
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2. Rear components and buttons of the machine

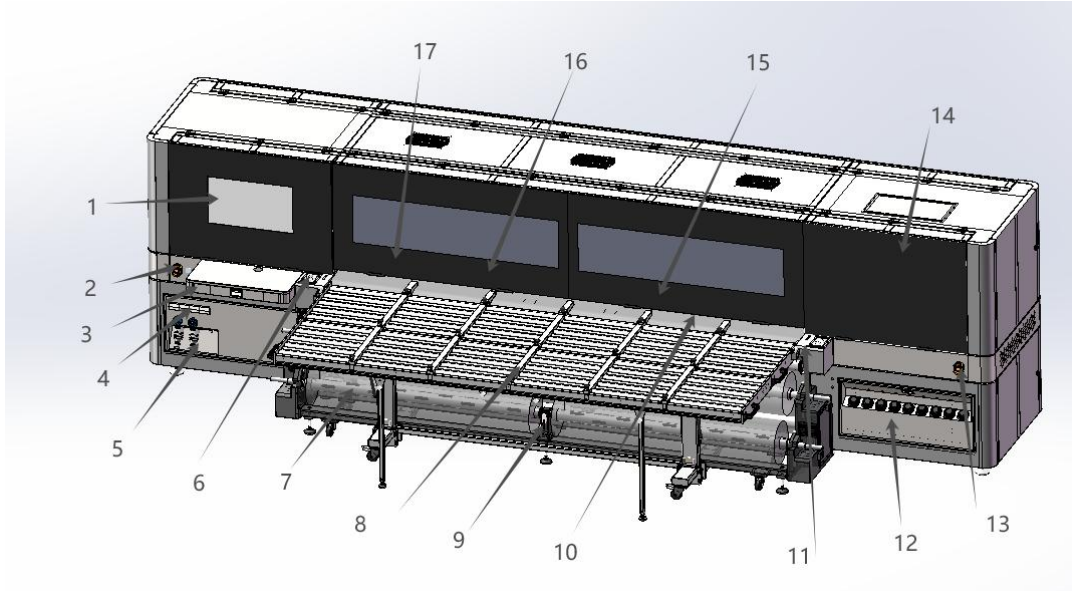


Fig. 38 Rear components and buttons of the printer

Code	Name of parts	Description
1	Monitor window	Installation location of rear monitor
2	Button	Emergency button and start button from the left to the right
3	Keyboard pallet	For placing keyboard and mouse. Drawer at the bottom for tools storage
4	Main power switch	They are UV LAMP (UV lamp main switch), FAN (adsorption main switch), PC (computer switch), MAIN (machine main switch).
5	Main power interface	There is UV LAMP POWER (adsorption UV lamp total input) and MAIN POWER (main unit power input)
6	Control panel for left rear operation	One on the left and one on the right, which can control printing, printing suspend and continue printing, positioning, adsorption, and the rise and fall of the back pressure bar.
7	Feeding rod	One piece of 3.2m material or two pieces of 1.6m materials can be placed
8	Extension platform partition	There are 5 pieces, the interval between two adjacent pieces is about 55cm, and it can be unfolded to broaden the printed material
9	Double-roll rod middle support	It supports the releasing cloth rod for placing two rolls of materials.
10	Optical sensor	There are 6 optical sensors for identifying printed hard materials
11	Control panel for right rear operation	One on the left and one on the right, which can control printing, printing suspend and continue printing, positioning, adsorption, and the rise and fall of the back pressure bar.

12	Main ink tank and alarm	The positions for adding ink are KCMYLCLMWVF. There is an ink lack alarm beside it and the sound-light alarm will be given when the ink in the main ink cartridge lacks.
13	Back emergency stop	Four in total, one on the front, rear, left and right.
14	Upper rear door	This door can be opened upward and it is supported by a pneumatic rod
15	Cable carrier	It connects to the motion part of the carriage, and there is ink tube, cable and UV lamp tube inside it
16	Cable carrier	Dragging chain plays a supporting role when it moves
17	Carriage crossbeam	It is the main part for supporting motion of the carriage

3. Rear button plate

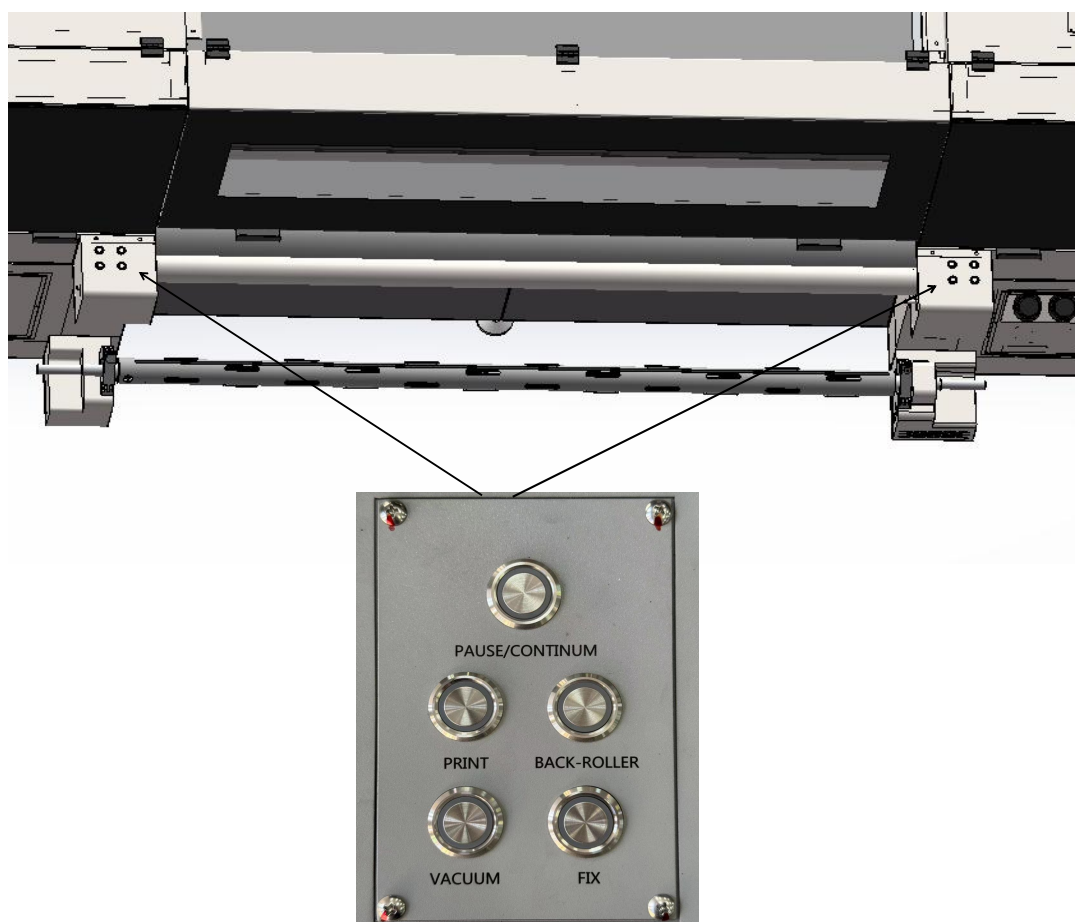


Fig. 39 Rear button plate

Name of parts	English	Description
Print	PRINT	One on left and one on right. Easy to print from the back
Back roller up and down	BACK-ROLLER UP/DOWN	To control back roller up and down.

Absorption	VACUUM	Two in total, one on the left and right of the back. It can be independently controlled absorption to open and close.
Positioning rod	FIX	Two in total, one on the left and one on the right of the back. Positioning rod up and down, positioning function of media.
Pause/Continue	PAUSE/CONTINUE	Easy to pause and continue from the back.

4. Inside of the front of the upper left cabinet

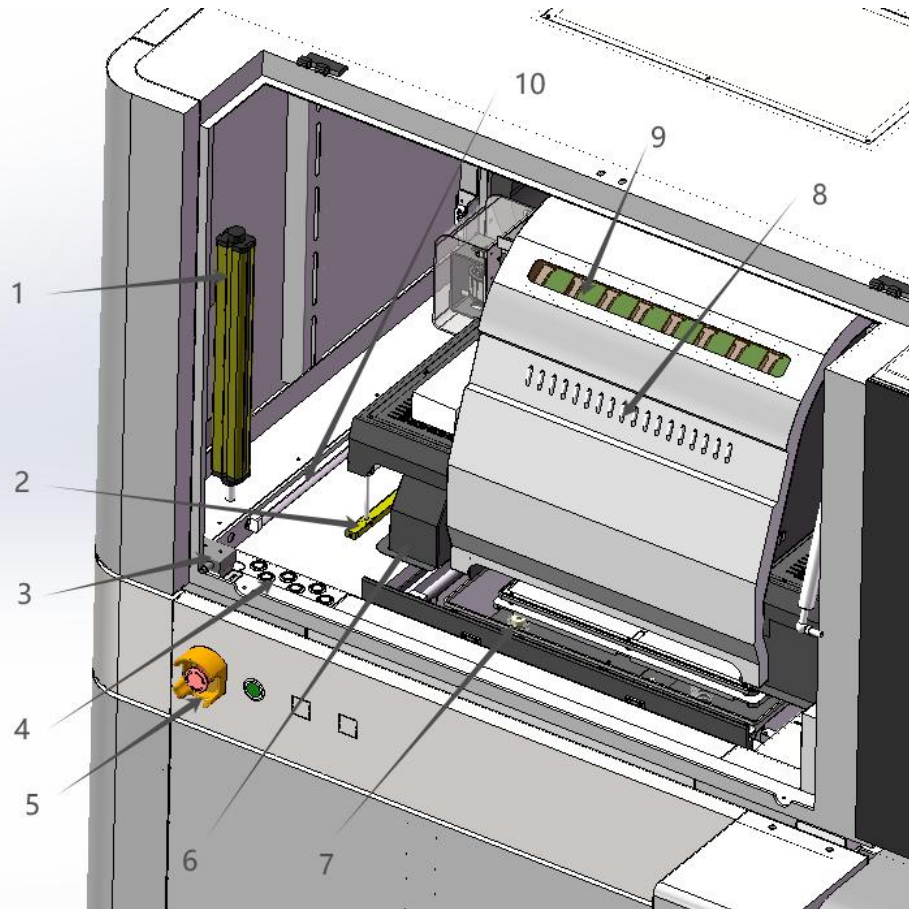


Fig. 40 Inside of the front of the upper left cabinet

Code	Name of parts	Description
1	Light curtain	To ensure the safety. The carriage will stop slowly after triggering the light curtain.
2	Anti-collision switch	It is located on both sides of the carriage and plays a protection role by preventing materials from warping or being higher than the height of the printing base plate
3	Door switch	There is a switch on both the front door and the rear door, and the carriage stops printing when the door is opened; after the door is closed, the carriage will continue to print.

4	Maintenance button	LIGHT, MAINTAIN, PUR/COLOR, CLEANING, PUR/WHITE from the left to the right
5	Start the machine button	Emergency stop and start from the left to the right
6	UV lamp and anti-static assembly	It is installed on both sides of the carriage. Static electricity solidifying and eliminating device
7	Automatic ink scraping system	Automatic ink scraping and automatic capping
8	Cleaning valve assembly	Three-way valve with ink route and cleaning functions.
9	Temperature control board	Control the temperature of ink in the secondary ink cartridge.
10	Light	Facilitate users to observe the print head surface

5. Maintain button area



Fig. 41 Maintenance button

Name of parts	English	Description
Light switch	LIGHT	One on left and one on right. Easy to print from the back
Maintenance	MAINTAIN	To control back roller up and down.
PUR/COLOR	PUR/COLOR	Two in total, one on the left and right of the back. It can be independently controlled absorption to open and close.
Cleaning	CLEANING	Two in total, one on the left and one on the right of the back. Positioning rod up and down, positioning function of media.
PUR/WHITE	PUR/WHITE	Easy to pause and continue from the back.

Switch and sensor of media measuring

Media measuring function works: If the switch is not pressed, the media is in the effective state by default. In case of media shortage, there will be a prompt of media shortage in the control interface.

Off state of media measuring function: If you want to continue printing after media shortage is detected, press the MEDIA SENSOR to continue printing. As long as the MEDIA SENSOR is pressed, the media shortage will not be detected.

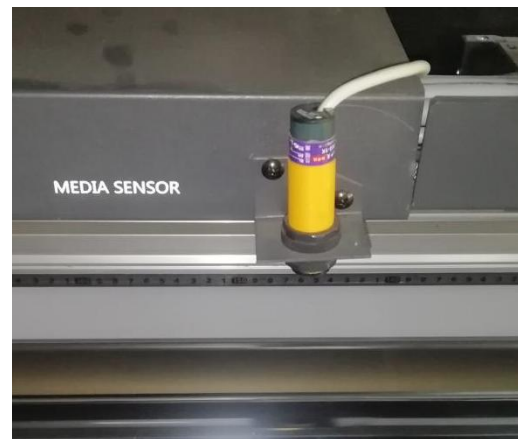
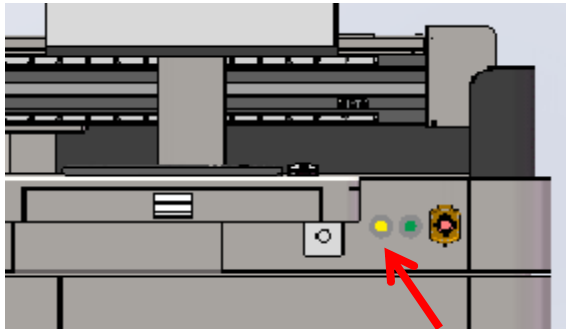


Fig. 42 Switch and sensor of media measuring

Parts of carriage assembly

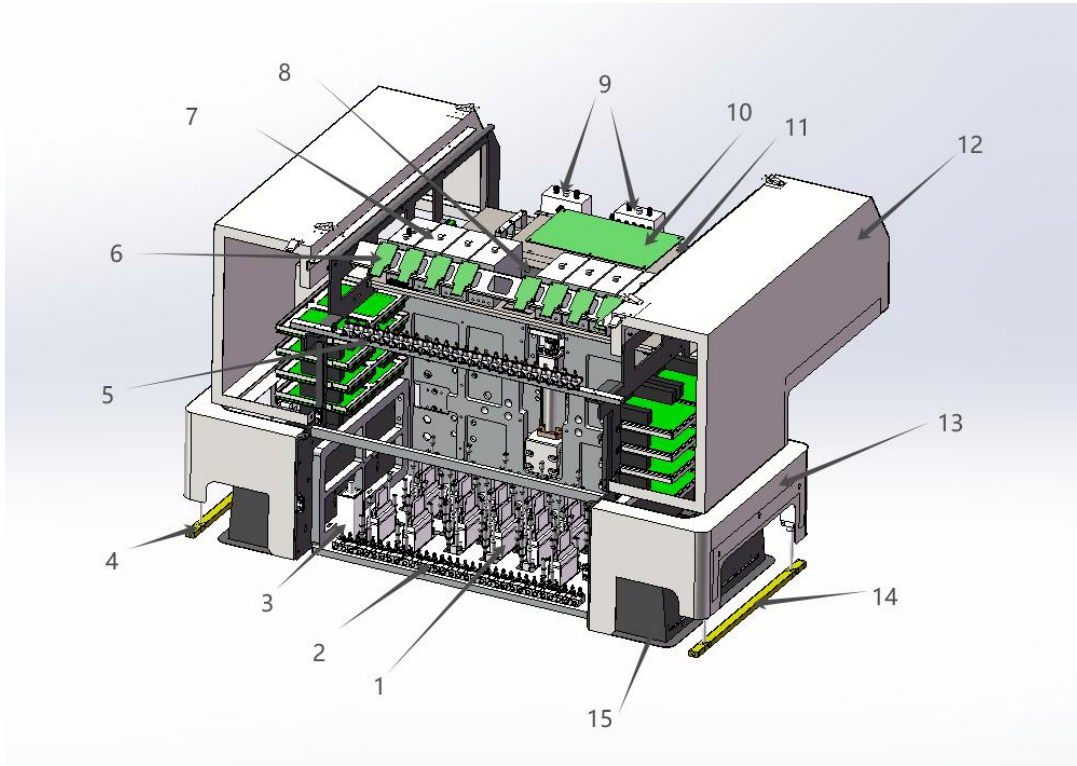


Fig. 43 Parts of carriage assembly

Code	Name of parts	Function
1	Print head	Deciding numbers and positions of print heads according to print heads types.
2	Two-way valve body	It has two states, which can be used to discharge the gas in the print head.
3	Height measurement system	It's used for automatic measurement of media height by handle operation and software operation.
4	Left collision protection switch	When hitting a high foreign object during printing, the carriage will stop and the switch will protect the printer.
5	Three-way valve body assembly	It has three states. It's used for printing, cleaning and closing.
6	Temperature control board	For adjusting the temperature of each auxiliary ink tank to the specified settings.
7	Auxiliary ink tank	Level 2 buffer negative pressure works as the ink in the main ink tank is filled to the auxiliary one.
8	Z lifting motor	To control the height of the print head.
9	Waste liquid tank	It's used for suck-back protection. Refluent ink will be stored here. It has two types: color and white.
10	Carriage board	For controlling ignition signal and data of print head.
11	Signal switchboard	For transferring all sensor signals from the carriage to the movable board and PCIE board through the switchboard.
12	Cover lock	For fixing the cover plate lock of carriage.

13	LED UV light	Used to solidify UV ink. According to the printer configuration, air-cooled and water-cooled UV light can be equipped.
14	Right collision protection switch	When hitting a high foreign object during printing, the carriage will stop and the switch will protect the printer.
15	Electrostatic removal device	One on left and one on right.

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

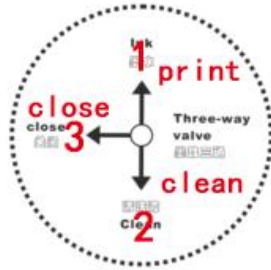


Fig. 44 Three-way valve

State 1: Print, when the printer is in normal operation, especially in printing, the valve shall be upward;

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

State 3: Close, when the printer is shut down, place the valve in closed direction.

Introduction to two states of two-way valve assembly:

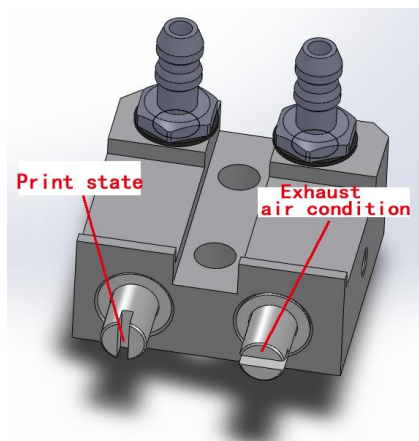


Fig. 45 Two-way valve body

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

Air-extraction sstate: when it is required to extract the air out from print heads, making the valve core rotate 90°, pressing ink at the same time and reinstate the valve

core in print status after the air is fully discharged.

Introduction to buttons of handheld box (optional)

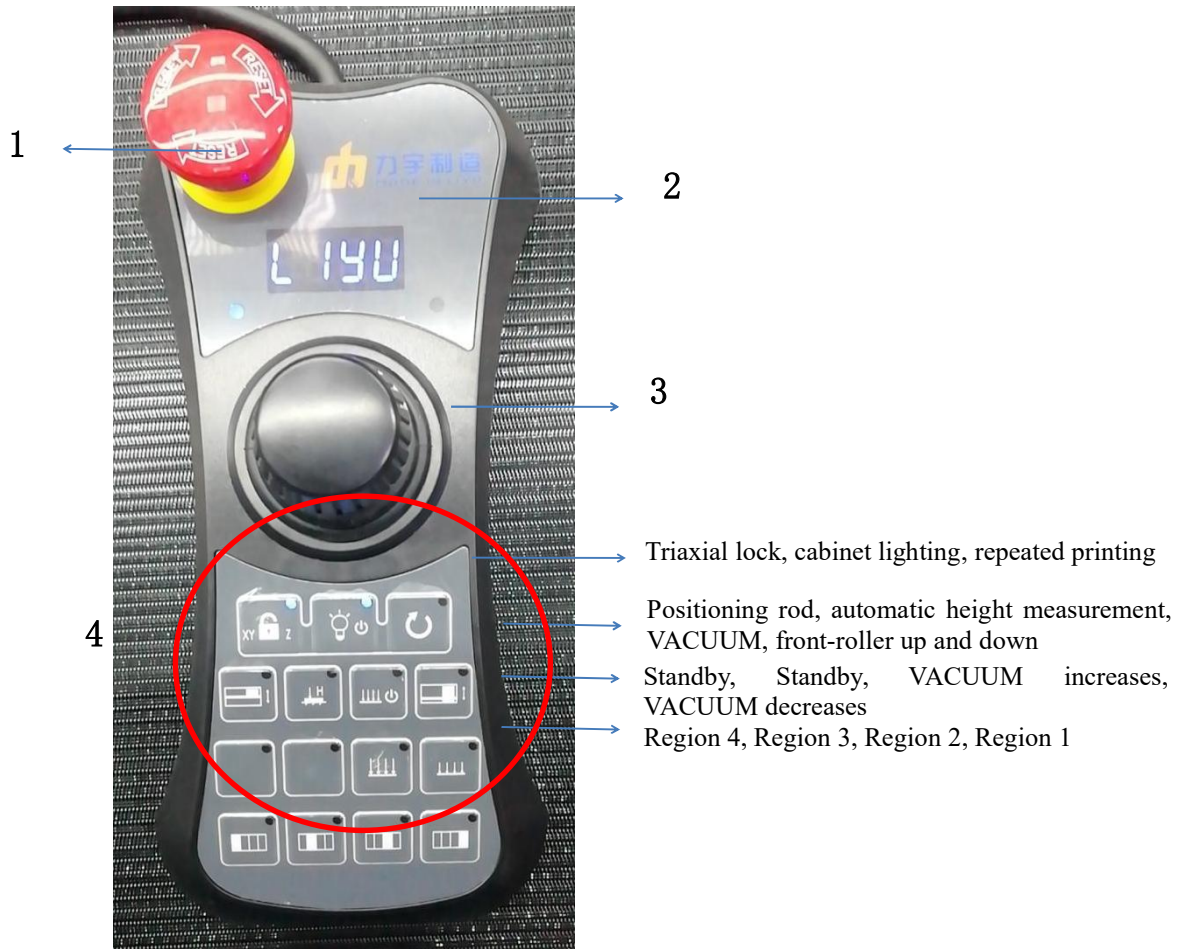


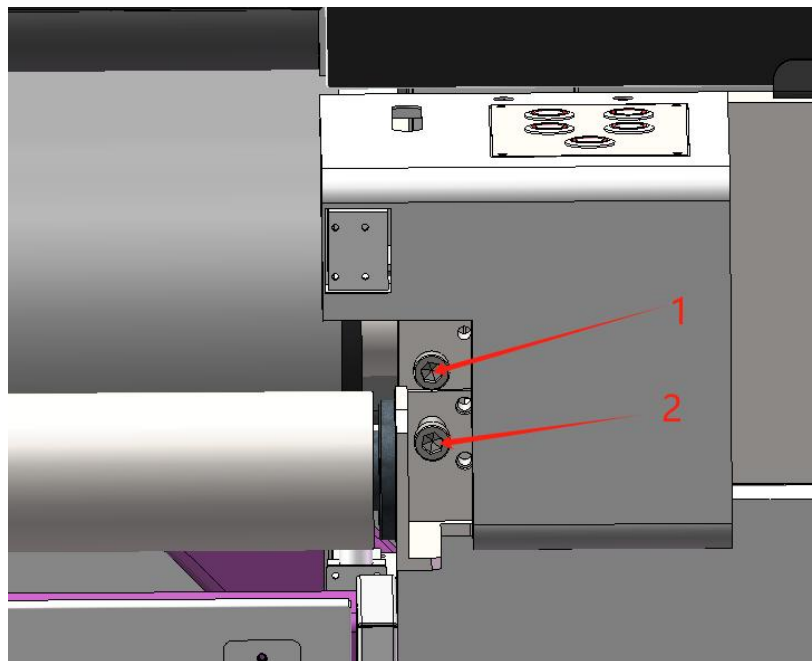
Fig. 46 Buttons of handheld box

Code	Name of parts	Description
1	Emergency stop	Four on the model, one on the handle lever, five in total. Mainly for switch of the machine power supply and emergency stop
2	Display the LIYU LOGO and VACUUM value	Display the LIYU logo normally. During VACUUM adjustment, the VACUUM value is displayed as a percentage standard.
3	Handle lever	For controlling forward, backward, leftward, rightward, upward and downward movement.
4	Functional area	All functions are shown in the figure above.

Automatic correction function of guiding belt

The correction system consists of correcting roller, shielding photoelectric switch, stepping motor, driving screw and limit switch. Considering the deviation of the conveyor belt due to uneven tension at the two ends, the correction roller is used as an adjustment mechanism. One end of the correction roller is fixed, in which a rotatable circular bearing is installed. The other end can detect the deviation signal of the guiding belt via shielding photoelectric switch, control the rotation of step motor; it moves back and forth to adjust the structure of the conduction band (there's a limit switch for adjustment of the screw rod), so that the tension at both ends of the conduction band can be balanced.

Adjustment of the tension roller



1-tensioning roller adjusting screw 2-tensioning locking screw

Fig. 47 Tensioning roller adjustment

Please loosen the tensioning screw before adjusting tensioning of the guiding belt, and then tighten the locking screw.

After the guiding belt is installed, the left and right screws of the tension roller need to be tightened according to the deviation of the guiding belt, so that the tension roller can tension the guiding belt. Adjustment principle: The end to which the guiding belt is offset needs to be tensioned and adjusted.

Adjustment of the shielding photoelectric sensor position

In order to correct the guiding belt deviation fast and accurately, two photoelectric sensors are installed with a dislocation less than 2 mm, and the guiding belt is driven between the two photoelectric sensors. It can be divided into three states:

When the guiding belt is between the two photoelectric sensors, the yellow and green lights of the internal sensor are on, and the external photoelectric sensor has only one green light on;

When the guiding belt is offset to the leftmost side, the yellow and green lights of the internal sensor and external sensor are on;

When the guiding belt is offset to the rightmost side, only the green lights of the internal sensor and external sensor are on;

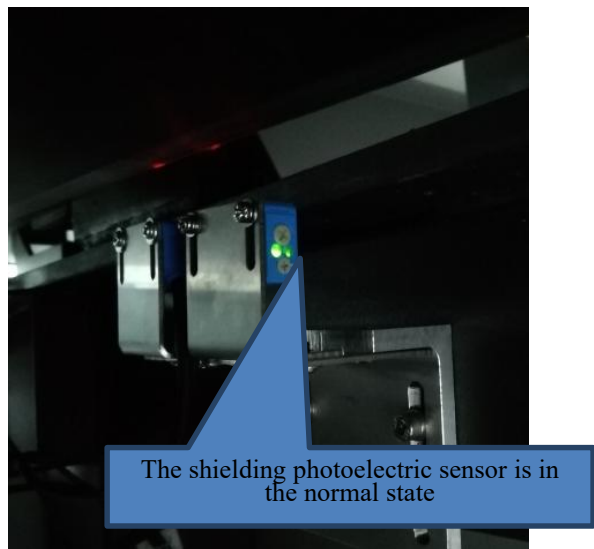
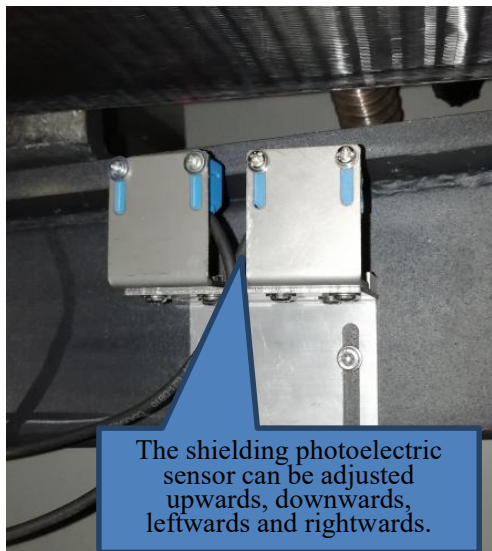


Fig. 48 Adjustment of the shielding photoelectric sensor position

Initialization action of deviation correction

Move forward to the limit switch first——>Then move backward to the limit switch——> After the carriage reset——> Return to the middle position

Working state of correction roller

If the guiding belt always moves to the left when it moves forward, the correction rod will move forward to correct it to the middle position.

If the guiding belt always moves to the right when it moves forward, the correction rod will move backward to correct it to the middle position.

If the guiding belt always moves to the left when it moves backward, the correction rod will move backward to correct it to the middle position.

If the guiding belt always moves to the right when it moves backward, the correction rod will move forward to correct it to the middle position.

Automatic ink scraping control function (optional)

Front side of the ink scraping device:

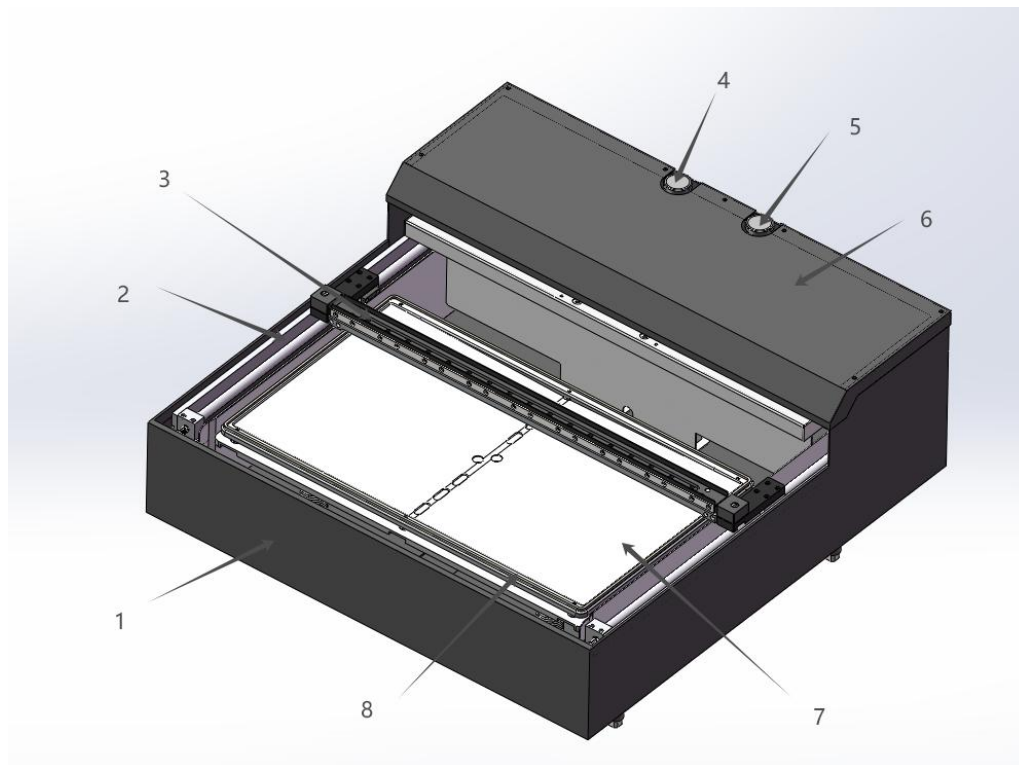


Fig. 49 Front side of automatic ink scraping

Code	Name of parts	Description
1	Liquid receiver tank	Recover waste liquid.
2	Rodless cylinder	One on the both side respectively to control the movement of wiper
3	Wiper	For cleaning the wiper on surface of print head.
4	Y cylinder total intake	For controlling the total air inflow for back and forth movement of wiper.
5	Z cylinder total intake	For controlling of total air inflow for tray up and down.
6	Back cover plate	There are air pipe joints inside to control front and back, up and down, and cleaning fluid.
7	Moisturizing tray	For moisturizing the tray.
8	Rubber strip	Seal the plate

Back of the ink scraping device

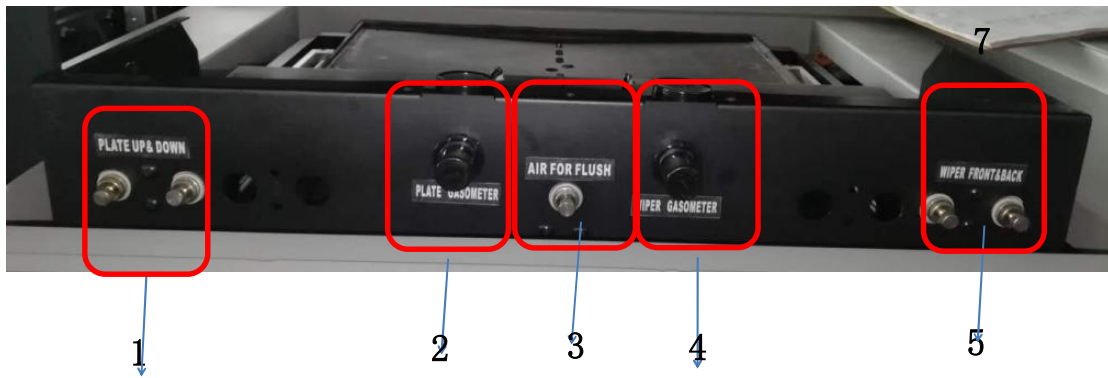


Fig. 50 Back of automatic ink scraping

Code	Name of parts		Description
1	Up and down control buttons of plate	PLATE UP&DOWN	Adjust the air pressure to control the speed and force of the tray cylinder upward or downward
2	Plate gasometer	PLATE GASOMETER	To control the intake air pressure of plate
3	Air pressure for flush	AIR FOR FLUSH	To control the intake air pressure of flush
4	Wiper gasometer	WIPER GASOMETER	To control the intake air pressure of wiper
5	Front and back control buttons of wiper	WIPER FRONT&BACK	To adjust the air pressure to control the speed and force of the wiper forward or backward



Note: Plate gasometer and wiper gasometer control the air pressure of above and below the moisturizing tray as well as forward and backward movements of the wiper. The normal air pressure value is 0.3kpa instead of more than 0.4kpa.

1. Parameter setting of automatic ink scraping interface in PrinterManager software: Edit - Setting - Basic setting extension

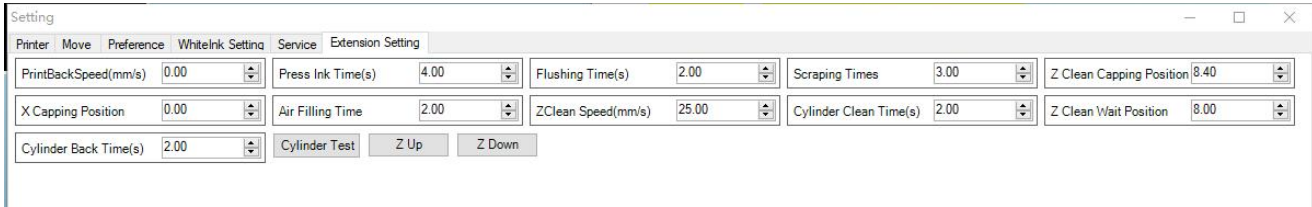


Fig. 51 Automatic ink scraping setting interface

- **Print Back Speed:** This setting is used for increasing the speed when ink is not jetted during return in high-precision uni-directional print, and the maximum speed is 1,700MM/S. It is suggested that the speed is set as 1,500MM/S.



Notes:

This setting parameter has no relation to automatic ink scraping parameters. Please note that this parameter is not entered incorrectly.

- **Ink pressing time:** in seconds, the automatic ink pressing time after setting.
- **Flushing time:** in seconds, set the flushing time after each wiper operation.
- **Wiper times:** the number of round-trip scraping times of the wiper can be controlled.
- **Z-axis ink scraping position:** based on the wiper, the carriage drops to the height where the wiper can touch the print head surface. The higher the value, the lower the height, and the smaller the value, the higher the height.
- **X-axis moisturizing position:** the position of the bottom board of print head on the wiper can be set. There is no need to enter numerical values.
- **Air supply time:** in seconds, it is mainly used to clean the cleaning fluid on the wiper by air flushing after flushing the wiper.
- **Z Clean Speed:** This parameter is used for setting the lifting speed during Z cleaning.
- **Scraping Time:** The waiting time of wiper for forward ink scraping.
- **Z Wiper Back Wait Position:** When the wiper returns, the carriage needs to be raised first, and the return height of wiper is usually higher than the setting height of ink scraping on the Z axis.
- **Ink Scraping Back Time:** The time set for the wiper's return to the original point after the carriage is raised.
- **Wiper inching:** Wiper is moved back and forth manually.
- **Up and Down:** Control lifting and lowering actions of the carriage manually.

2. Movement and flow of ink scraping control:

The wiper can push forward and backward by adjusting the size of the air valve. When pressing the ink scraping button in PrinterManager, the cleaning solution will first flush the wiper, and then air will flush the cleaning solution on the wiper, the carriage will rise to the ink scraping height, the wiper moves forward to the forefront after the automatic PUR time, the carriage is raised to the wiper return height, the

wiper returns to the original point, and then the carriage is lowered to the ink scraping height. If the number of ink scraping times is set, the carriage will rise to the ink scraping height again, the wiper moves forward, the carriage rises again, and then the wiper returns. After the ink scraping process is over, the cleaning solution flushes the wiper again, and then air flushes cleaning solution on the wiper. The whole process is over.

Setting parameter of the middle support

The middle support is jacked up by the cylinder, and controls the air pressure for the air inlet of the cylinder. A group of pressure gauges and check valves are added to the front and back respectively. These can control the air pressure in a specified pressure range and lock the air source in a certain period of time, and keep the cylinder to support rubber rollers.

	Pressure range	Unit
Pressure gage of the front support	0.40 ± 0.05	Kpa
Pressure gage of the back support	0.30 ± 0.05	Kpa

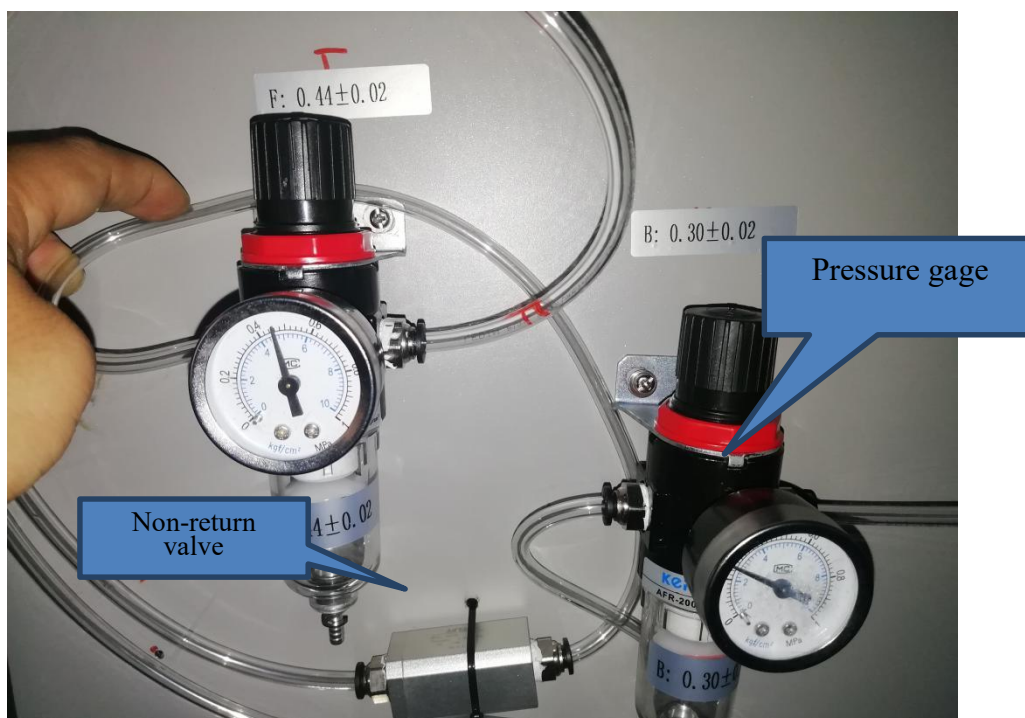


Fig. 52 Middle supporting pressure regulator

Retracting and releasing cloth loading mode (coiled material)

As an independent system, the take-up and feeding function of DS32 printer enables to print two rolls of materials. When installing the printer, special attention shall be paid to the height and power connector. The following figure is the diagram of feeding. If the printing material is soft, the rear pressure bar of the high ceiling bar will be used. If the printing material is hard, like carriage sticker or banner, it may be absorbed and printed by directly passing the rear pressure bar to the guiding belt, without passing the high ceiling bar.

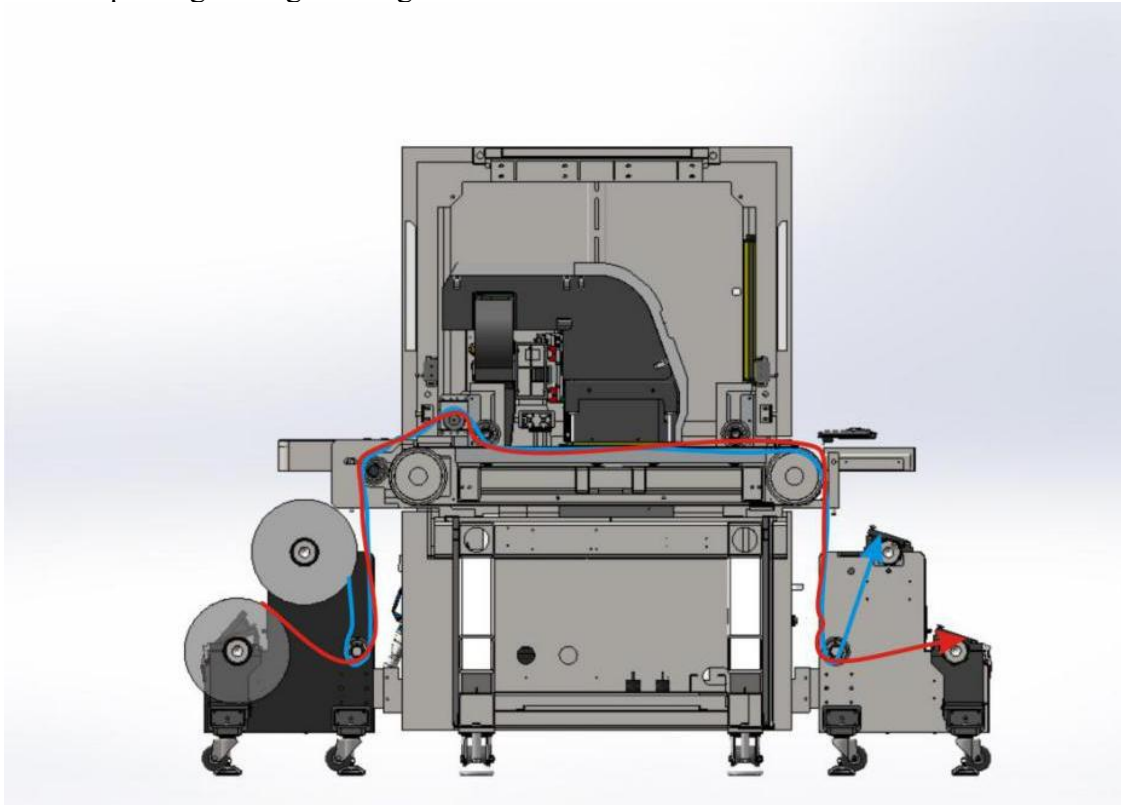


Fig. 53 Feeding method for material take-up and feeding



Notes:
Red lines are for double-roll feeding, while blue lines for single-roll feeding.

Four outer joints and four gas filling nozzle are set to combine with the double take-up and feeding system. Besides, reduce forward and reverse rotary knobs, and use the control panel to operate.



REV: Reverse Control STOP: Stop FWD: Forward Control

Fig. 54 Retracting and releasing cloth control panel

Switch order of the DS printer

Power ON



Note: Please check whether there are foreign matters on the guiding belt when starting DS machine!

Startup processes

1. Connect the input power of the machine, and push on the leakage protection switch of general power on the rear left.
2. Unscrew the emergency stop buttons on the four corners in the front and at the back of the machine (including the emergency stop switch on the handheld box).
3. Remove the moisturizing tray (models without automatic ink scraping function).
4. Turn on the computer and start the PrinterManager software.
5. Press the start button on the left or right side of the machine. After the Hybrid Printer starts, first correct the two origins before and after the rod self inspection → the carriage rises to the highest point → to the left to the origin → the carriage drops to the height set before by the software → correct the rod to the middle position → get ready (automatic ink scraping system: before power on, the external air compressor pump needs to work in advance to ensure that the air pressure reaches the set value. Start → drop the moisturizing tray → correct the two origins before and after the rod self inspection → the carriage rises to the highest point → to the left to the origin → the carriage drops to the height set before by the software → correct the rod to the middle position → get ready)
6. Unscrew the three-way ink path valve body and press the Ink Pressing button to allow the ink flow from the auxiliary ink tank into the print head through the three-way ink path valve body and then flow out; the air can be exhausted through the blowoff valve.
7. Press “Automatic maintenance”, the carriage rises to the highest position, which is convenient to clean the print head surface. (The automatic ink scraping system can be operated automatically, which is described in detail below.)
8. Put in the print material, set the print height and original point.
9. Start printing.

Ink pressing of the print head during printing

In case of printing disconnection during printing, click "Automatic cleaning" or "Maintenance" in the software. The carriage will move to the leftmost end of the beam and rise to the highest after printing current PASS. After manual inking, clean the print head surface, click "Maintenance", the carriage will automatically return to the last printing height and continue printing.

Power OFF

Power OFF processes



1. Press the emergency stop switch, close the moisturizing tray and the ink valve body.
2. Shutdown the computer.
3. Pull down the leakage protection

DS32 Series UV Hybrid Printer

Software Installation

Software installation

This chapter will show how to install software of the Printer Manager. It will be used as the graphical user interface (GUI) of the printer. It also includes Microsoft components and Windows driver that need to run the Printer Manager.

PC setting

PrinterManager software operates under the Windows operating system. It conforms to specifications to achieve the best computing performance.



Cross reference: See Pre-installation Preparation - Computer Configuration Requirements for detailed configuration.

*You may encounter some communication problems in the use of USB 3.2 port.

Please check whether the Windows language is set as English.

To make the software work normally, Windows language must be set as English (American or British) as the default system language.

Therefore, please access Setting > Time and Language > Language.

Please be sure to set the window display language and preferred language as English.

Installation package content

The installation package includes PrinterManager installation package and PM environment installation package, main board firmware upgrading package, carriage board firmware upgrading package, print head driver board firmware upgrading package, waveform file, user manual for all series of models and PM screenshot file in relevant debugging.

Installation of PrintManager

Open the attached USB disk and locate the PrintManager folder.

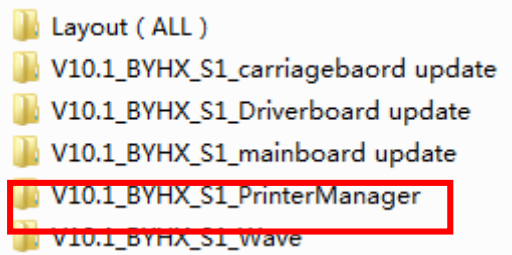


Fig. 55 PrintManager folder



Note:

But you need to make sure that Microsoft .NET Framework V4.5 or above is installed on your PC before installation, if not, the following error will be reported during installation:

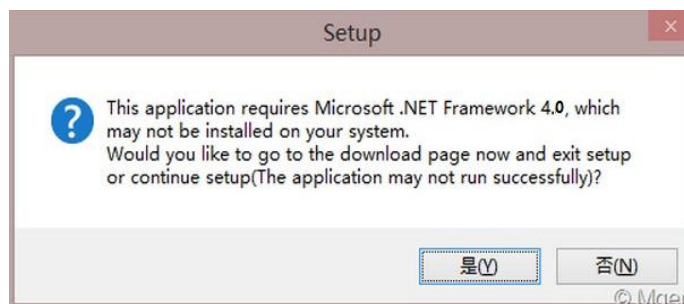


Fig. 56 Installation process figure

Locate the Setup.exe installation file after opening.

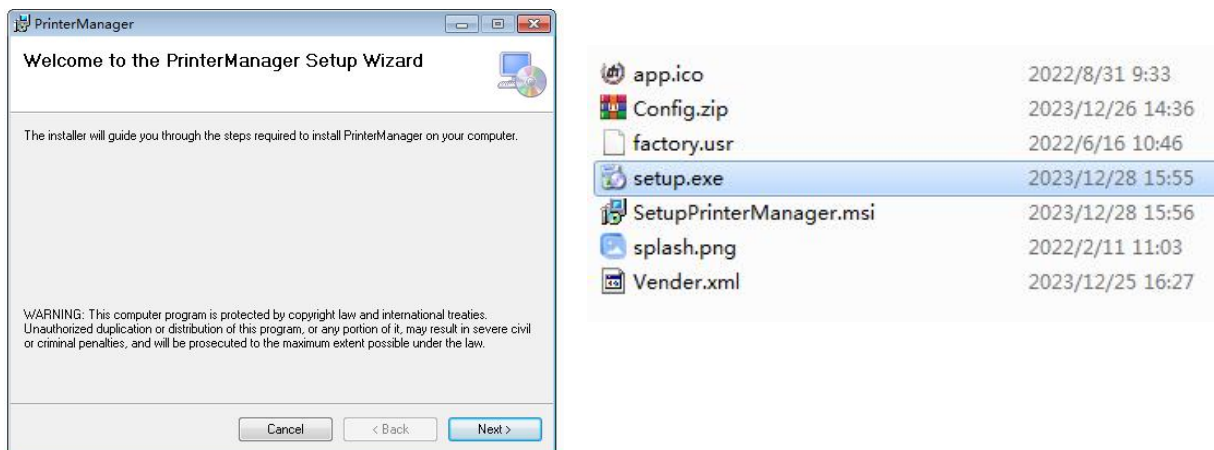


Fig. 57 Installation process figure

Select Next and then select the installation path. Choose C disk by default for installation.

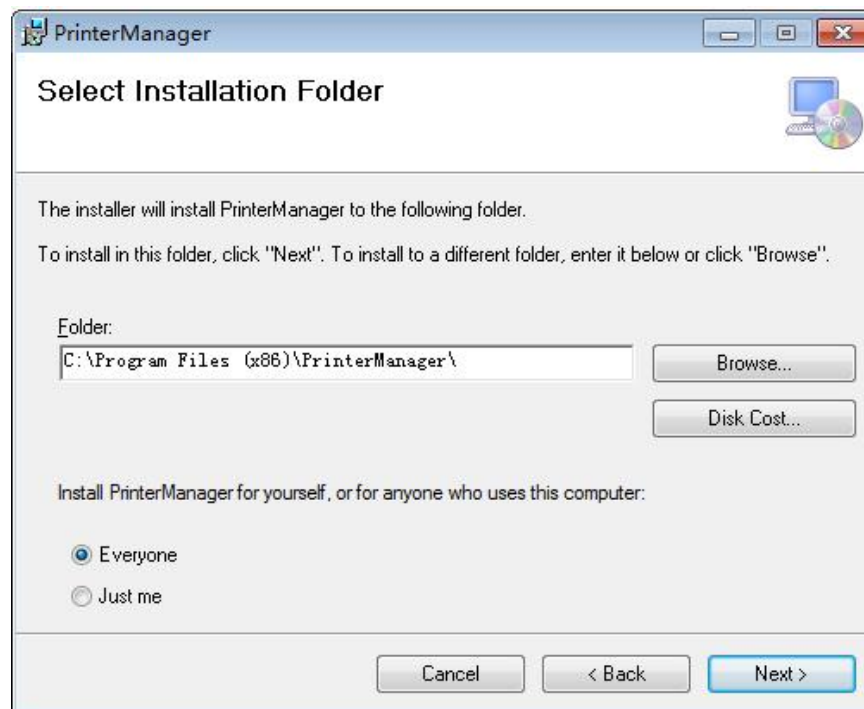


Fig. 58 Installation process figure

Select Next

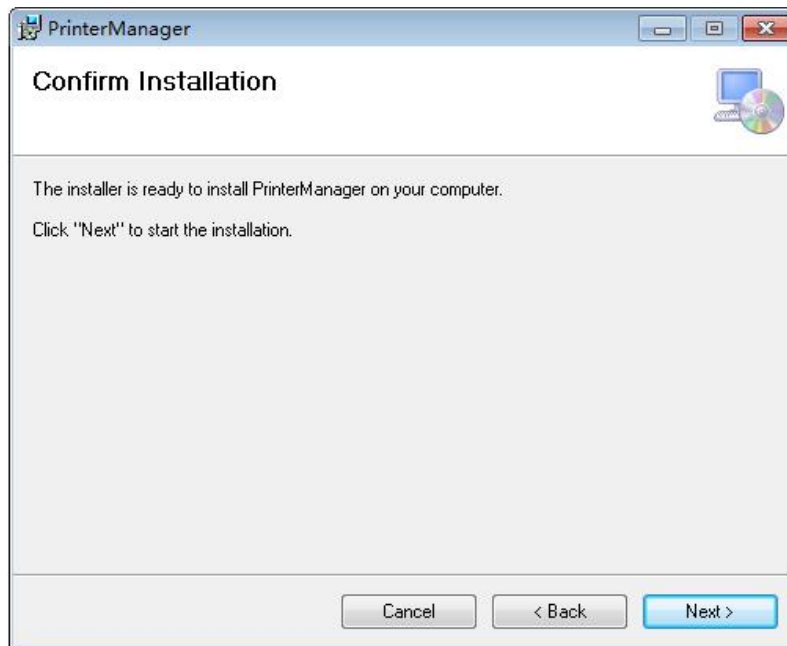


Fig. 59 Installation process figure

Select Next

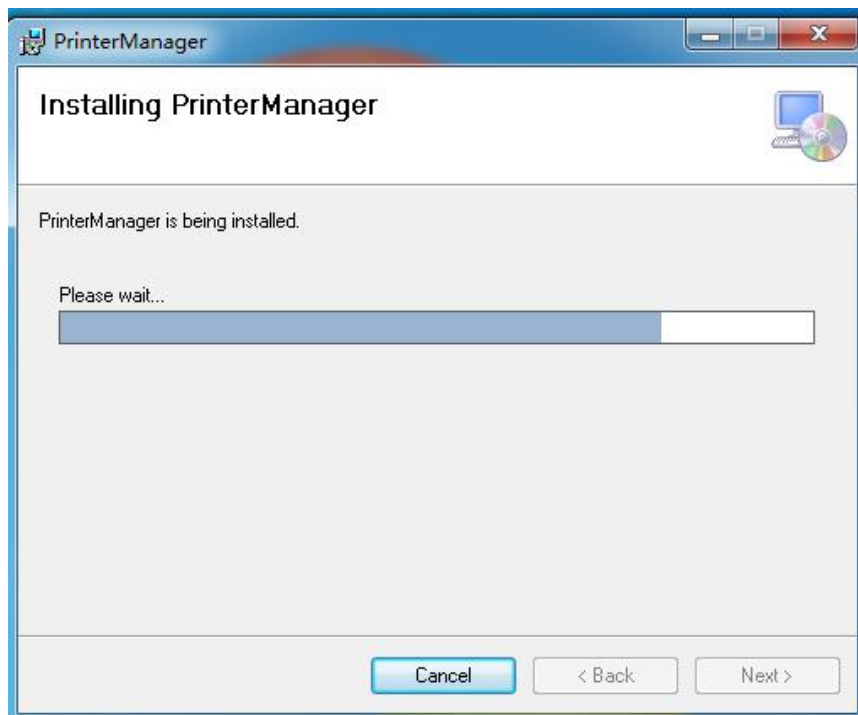


Fig. 60 Installation process figure

Close the window after completion of installation.

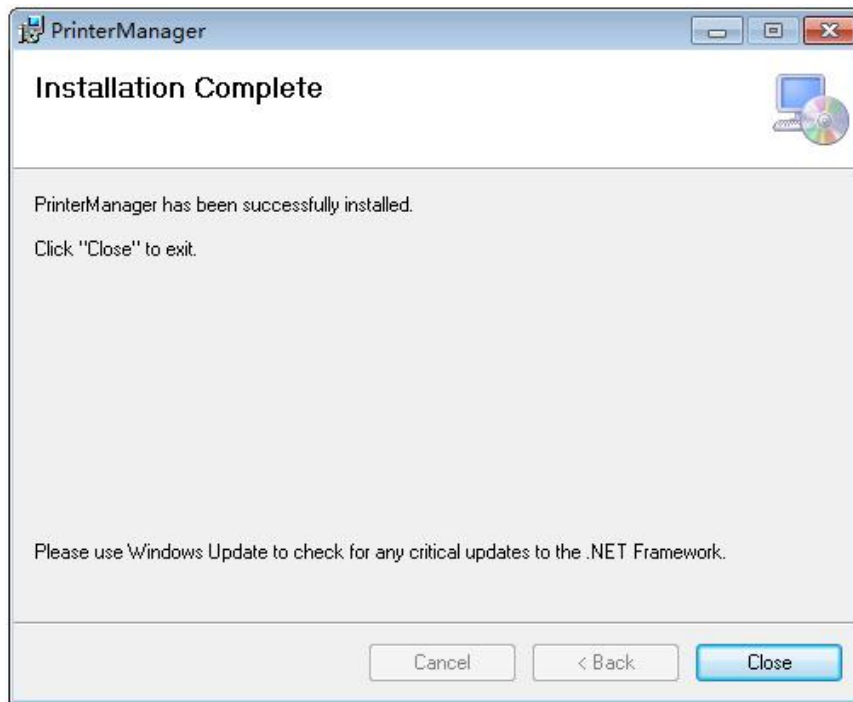


Fig. 61 Installation Completed

After completion of installation, the PrintManager icon will appear on the desktop

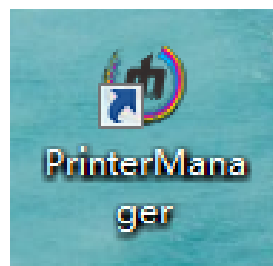


Fig. 62 Software Icon



Note:

If PrintManager has been installed, it is suggested that it should be cleared first: Click the right key of PrintManager - open file location - double click ClearEnv.

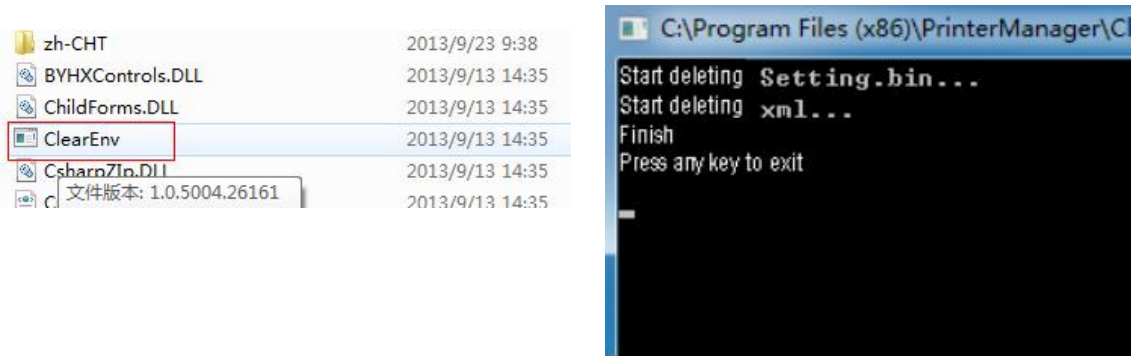


Fig. 63 Click the right key to clear PrintManager



Note:If PrintManager has not been installed before, it can be directly started.

Connect the USB cable, start the machine, "BYHX Wide Format Printer" will be found in the "Device Manager" - "Universal Serial Bus Controller" of the computer, indicating that the Driver has been installed successfully. As shown below:



Fig. 64 Check printer manager



Notes:

If it is powered off when running PM.

- 1. Printer is not started;**
- 2. USB is not connected or it is connected but the driver is not installed successfully, reinstall the driver;**
- 3. Install USB 3.0: click control panel → device manager → universal serial bus controller → double-click FX3 → update driver software → manually find the driver → install software.**

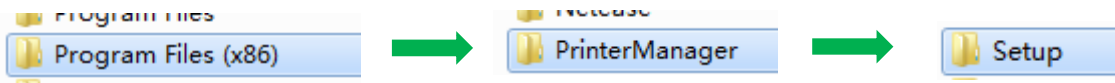


Fig. 65 File location

ID of model matches the main board (V10.1 as an example):

Model	Mainboard ID	Motor type	Mainboard upgrade package
KC	08011610	G5/G6 belts	LiYu_KC_UV_G5&G6_S1_RD2_0x01_963_240111
	08011670	G5/G6 linear motors	LiYu_KC_UV_G5&G6_S1_RD2_0x01_ZX_1094_240111
	080116B0	G6 3 linear motors	LiYu_KCP_UV_G6_S1_RD2_0x01_3L_ZX_1924_240111
DS	00811620	G5/G6 belts	LiYu_DS_UV_G5&G6_S1_RD2_0x81_1000_240110
	00811640	G5/G6 linear motors	LiYu_DS_UV_G5&G6_S1_RD2_0x81_ZX_1372_240110
	00811650	G6 linear motor	



Notes:

- 1. Simplify and optimize the Mainboard upgrade packages and IDs for all models:**
- 2. The Mainboard upgrade packages of G5 belts and G5 linear motors of KC models have been deleted, corresponding to IDs 00811600 and 0081660, respectively.**
- 3. The Mainboard upgrade packages of G5 belts and G5 linear motors of DS models have been deleted;**
- 4. The above deleted upgrade packages have been integrated into the Mainboard upgrade packages of G5/G6 belts and linear motors.**
- 5. All carriage speeds of all models are unified.**

LIYU BYHX system printing of parameters

NO	Printer	Motor	DPI	Speed (mm/s)						
				G5			G6			
				VSD1 (high)	VSD2 (middle)	VSD3 (low)	VSD1 (high)	VSD2 (middle)	VSD3 (low)	
1	DS	G5/G6 belts		16KH Z	15KHZ	12KH Z	18KH Z	15KHZ	12KH Z	
			300	1350	1270	1000	1520	1300	1000	
			400	1000	950	760	1140	950	760	
600		680	635	508	680	635	508			
2		DS	G5/G6 linear motors		18KH Z	16KHZ	14KH Z	22KH Z	18KHZ	15KH Z
				317	1440	1300	1120	1760	1440	1200
	508			900	800	700	1100	900	750	
635	720		640	560	880	720	600			
3	KC		G5/G6 belts		18KH Z	15KHZ	13KH Z	22KH Z	18KHZ	15KH Z
				360	1270	1050	1000	1550	1270	1050
		540		845	705	610	1035	850	700	
720		635	530	460	780	635	530			
4		KC	G5/G6 linear motors		18KH Z	16KHZ	14KH Z	22KH Z	18KHZ	15KH Z
				317	1440	1300	1120	1760	1440	1200
	508			900	800	700	1100	900	750	
635	720		640	560	880	720	600			

- The print head board and the print head driver board are all compatible: the new upgrade package mainly solves the problems of incomplete display of feedback voltage and low temperature.

Contents	Board card upgrade package
Print head board upgrade package	Updater_common_head_ARM20211214_V0.1.8_FPGA20201112_V1_V1.1.0.dat
Upgrade package for driver board for print head	Updater_RICOH_G5G6_16H_DRV_ARM20210810_v0.1.8_FPGA20210909_V4_FIREDLY_3v.dat

- Different firing frequency of print head and grating resolution lead to different Mainboard upgrade package. It should be classified according to the corresponding model and grating resolution.

Model	X-direction motor type	Printing resolution			Grating type
KC	G5/G6 belts	360	540	720	180DPI rubber grating
	G5/G6 linear motors	317	508	635	50800 (5UM) metal grating
DS	G5/G6 belts	300	400	600	300DPI rubber grating

	G5/G6 linear motors	635	508	317	50800 (5UM) metal grating
--	---------------------	-----	-----	-----	---------------------------

3. Installation of Printmanager and firmware upgrading of board cards

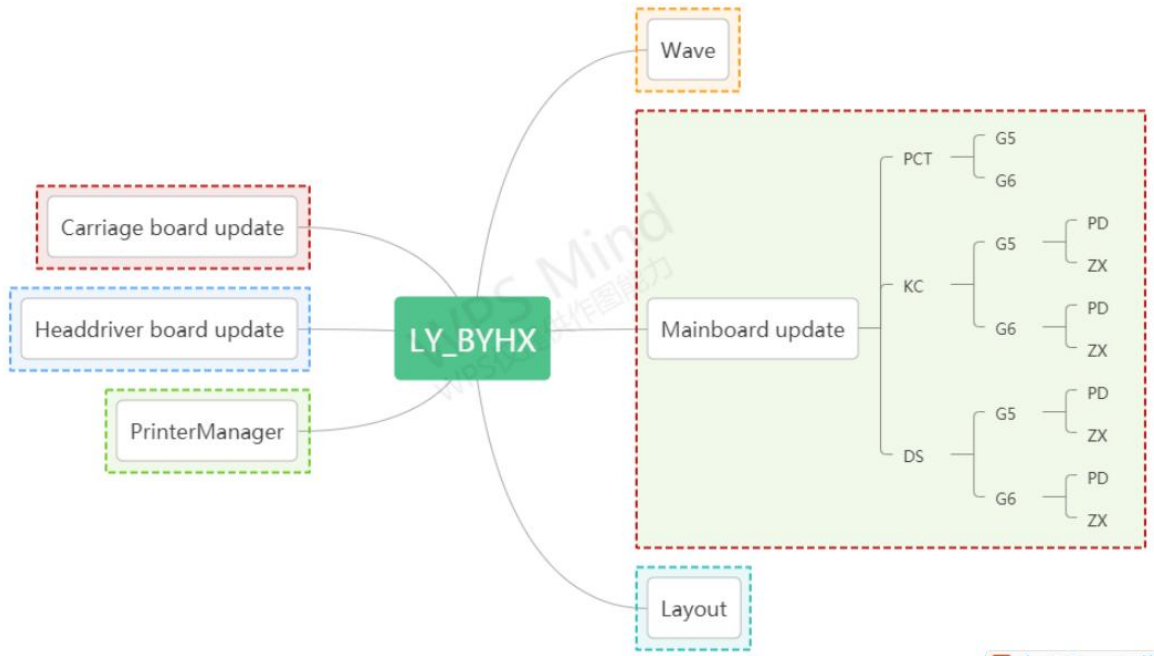


Fig. 66 Upgrade package

Sequence	Installation or upgrade package	Version
1	New version of PM	SW version: 1.0.28520 12/28/2023 1550G Layout 64bit
2	Mainboard upgrade package	Upgrade corresponding programs according to different models. The ID corresponding to this model will be generated
3	Print head board upgrade package	Updater_common_head_ARM20211214_V0.1.8_FPGA20201112_V1_V1.1.0.dat
4	Upgrade package for driver board for print head	Updater_RICOH_G5G6_16H_DRV_ARM20210810_v0.1.8_FPGA20210909_V4_FIREDLY_3v.dat
5	Print head layout package	Upgrade according to the actual print head configuration.
6	Waveform	According to the actual corresponding model, use the print head and ink to upgrade the waveform.



Note:

All models of 1, 3 and 4 are unified and can be upgraded directly.

DS32 Series UV Hybrid Printer

Printer Leveling and Locating

Mechanical leveling and positioning

Hybrid Printer leveling

Hybrid Printer leveling is the first step as well as one of the most important steps in installation of the machine. There are 8 adjustable feet to support the Hybrid Printer. The height of each foot can be adjusted with bolts to achieve the best leveling. You can unscrew the feet of 4 corners of the rack to make its universal casters suspended; screw other feet to make its universal casters go above the ground; the following figure shows the style of one foot used by this machine.

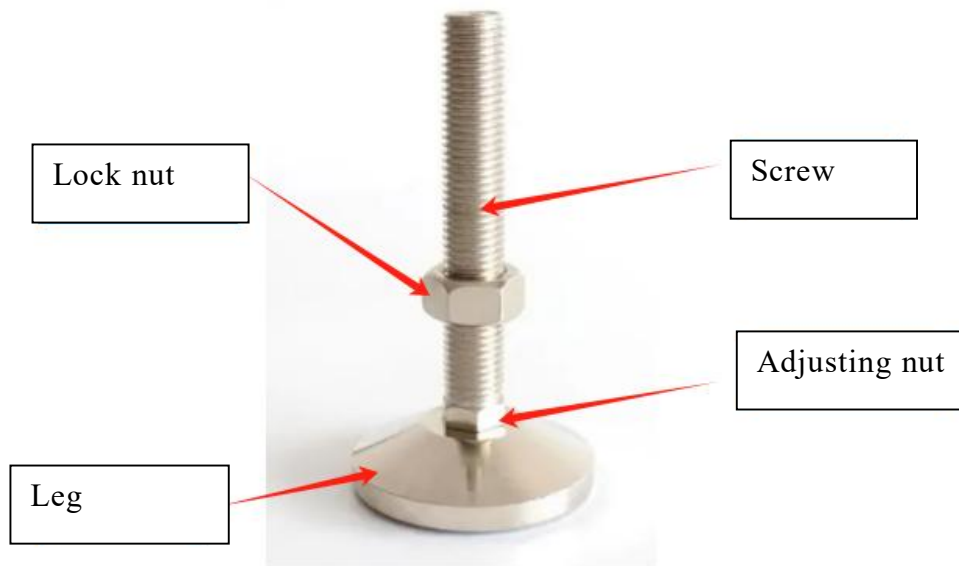


Fig. 67 Leg

Once the machine is leveled, the foot should be locked onto the base of the Hybrid Printer by using the lock nut. Use an adjustable wrench or open wrench to rotate the lock nut clockwise to unlock the foot and rotate the lock nut counterclockwise to lock the foot.

Use the adjustable nut to raise or lower the foot cup base. Use an adjustable or open wrench to rotate the nut clockwise to lower the foot cup base and then raise the Hybrid Printer. When rotating this nut counterclockwise, the foot cup base will be raised and then the Hybrid Printer is lowered.

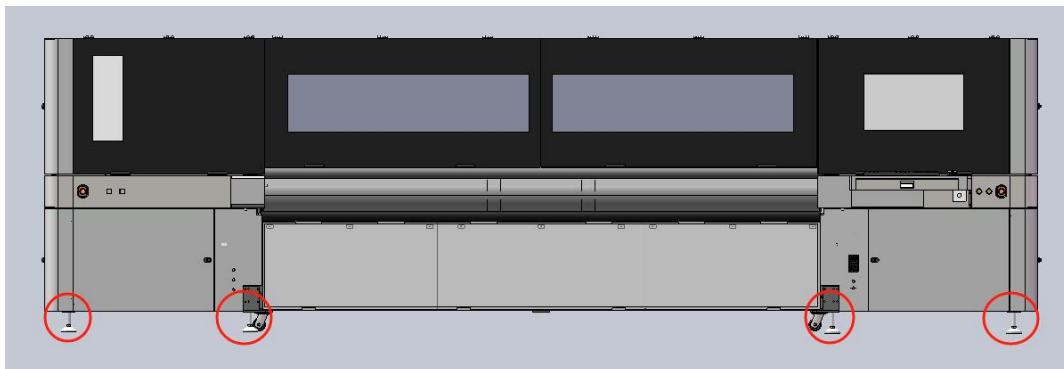


Fig. 68 Leg

A level gauge is installed in the middle position on the back of the machine crossbeam and on both sides of the printing platform. Figure 69 and Figure 70 show the position of the level gauge in X direction and Y direction.

By adjusting the leg of the machine frame, level the machine by using the level gauge that comes with it (leveled before leaving factory), make the level vial of machine in the middle part, and the precision blister in the left or right of the middle within 1 grid.



Fig. 69 X Position of level gauge



Fig. 70 Y Position of level gauge

Adjustment of the air suction platform of machine



Important information:

Please carefully read the following method for adjusting the flatness of the platform. It needs to be adjusted by professional after-sales personnel. Improper adjustment method will lead to permanent damage to the platform. The platform can bear 25Kg per square meter. Please do not stand on it.

The flatness error of the platform is no greater than 0.25mm. It needs to be adjusted only when the platform flatness error is substandard and affects the print precision.

Since the air suction platform is inside the mesh belt, when readjusting the platform, the mesh belt must be removed before adjusting the platform, and then the mesh belt is installed for adjustment.

Disassembly/assembly and adjustment of guiding belt

Dismounting of the mesh belt:

Step 1: Transfer the joint of guiding belt to the position above the platform near the operation surface;

Step 2: Turn off the middle supporting pressure, turn off the main air source and then unplug the air pipe connecting the middle supporting cylinder.

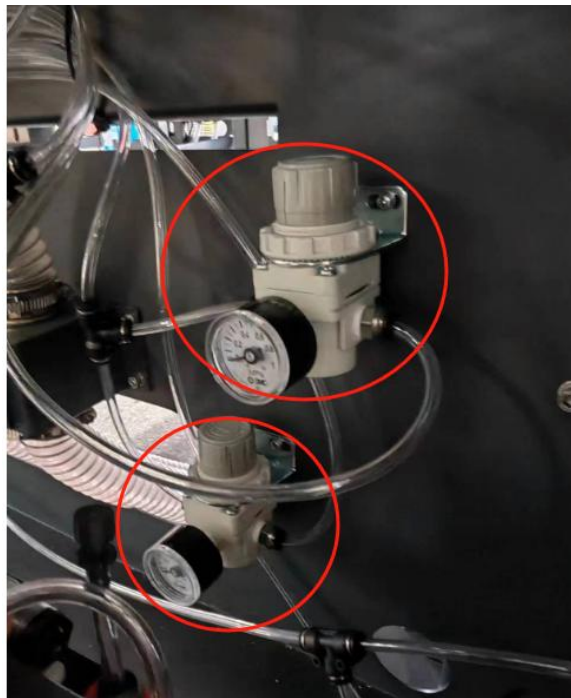


Fig. 71 Middle supporting pressure regulating valve

Step 3: Adjust the tension roller to the position nearest to the driving roller;

Step 4: Remove the glue at the sealing parts at both ends of the guide belt joint;

Step 5: Pick out the head of filler wire at both ends from the joints with an awl and straighten it;

Step 6: Draw the filler wire out of the guiding belt; Please note that the wire should

be pulled out slowly with constant force;

Step 7: Pull off the joint of the guiding belt directly by hand or with a pen slowly;

Step 8: Roll up the dismantled mesh belt with a paper tube, and protect the joint and corner well.

Mounting of the mesh belt:

Step 1: Adjust the tension roller to the position nearest to the driving roller;

Step 2: Clean the oil stain, dust and other foreign objects on the surfaces of the suction platform, driving roller, tension roller and middle support roller;

Step 3: Bind the driving roller, tension roller and correction roller with mesh belt for one circle, then keep the joints at both ends of the mesh belt in the center above the platform, and align the two ends to connect them. Please note that the loops with white marks shall be put outward;



Fig. 72 Mesh belt alignment

Step 4: Buckle and press the loops at both ends of the mesh belt joints alternately in order by fingers, marker pens, screwdriver handles or other non-metallic tools ;



Fig. 73 Staggered pressing of mesh belt

Step 5: Thread the round filler wire from one end to the other end of the joint, and allow for ends of about 20mm on both sides;

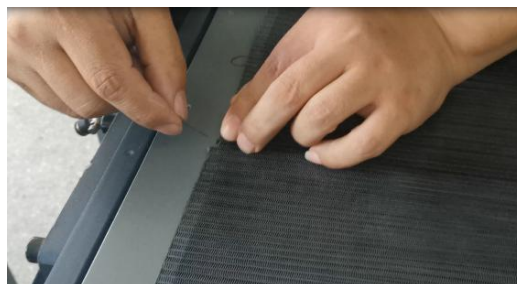


Fig. 74 Filling filament threading of mesh belt

- Step 6: Insert the ends into the joints reversely;
- Step 7: Thread one upper filling filament and one lower filling filament through mesh belt;
- Step 8: Adjust the mesh belt connected with the joints to the middle position of the platform, and make sure that the front and rear positions can be aligned as far as possible without twisting;
- Step 9: Adjust the tensioning screws at both ends of the tensioning roller to tighten the mesh belt, connect the pipeline, and turn on the middle supporting pressure.
- Step 10: In the first time of adjustment, the mesh belt should be slightly tensioned and not slip; at last, it is required that 60% of the suction force should be realized, the complete piece of car sticker should be placed on the platform, and the mesh belt should not slip.
- Step 11: Turn on the machine to keep the driving roller working in the positive direction. Then check the tightness of both sides of the mesh belt and the deviation;
- Step 12: In case of deviation, fine adjust the tension screws at both ends of the tension roller; It is noteworthy that the adjustment shall be carried out slowly rather than quickly at large angles;
- Step 13: If the mesh belt runs continuously for more than 0.5 hour in the positive direction with no correction device without deviation, bulging or distortion, it is deemed as acceptable; (Paste woodgrained paper on the edge of the mesh belt, and mark a point as the check point).
- Step 14: If the machine with a correction device involves the deviation correction structure in the mesh belt operation control and can operate continuously for more than 1 hour, it is deemed as acceptable if there is no abnormality.
- Step 15: After adjustment, the two ends of the mesh belt joint can be properly sealed. Please note that a piece of paper should be placed under the joint at both ends to prevent the glue from polluting other parts when sealing.



Note: If you encounter resistance in threading of filling filaments, please operate with the following method.

Adjustment of air suction platform

The air suction platform is fixed with a single adjusting (supporting) point.

The single adjusting point of the air suction platform consists of the air suction platform, machine rack, jacking screw (platform adjusting screw), tensioning screw (hexagon socket head cap screw), flat washer and spring washer (Fig. 46);

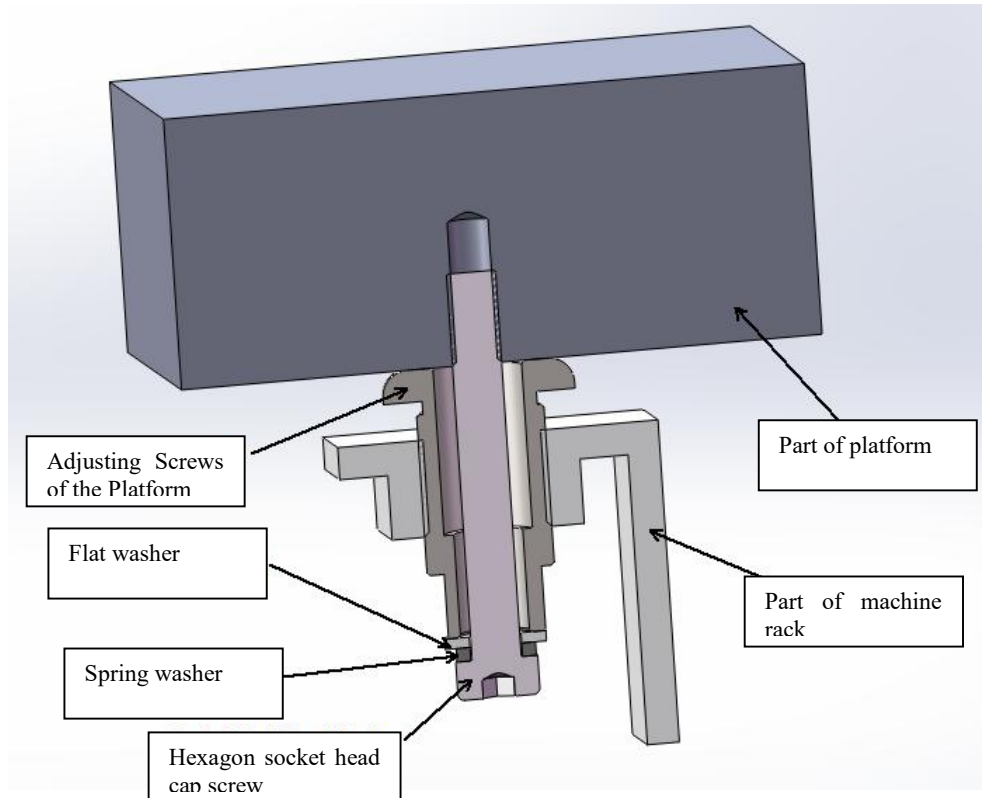


Fig. 75 Air suction platform adjusting point position diagram

Methods of Adjusting the Platform: Select the adjustment point as the zero point according to the initial inspection error value, first adjust a row of adjustment points close to the beam, and then adjust the outer row of adjustment points; Requirements for flatness error of the platform: the adjustment point of the printing area shall be less than 0.10mm, and the non printing area shall be less than 0.25mm.

During adjustment, it shall be noted that there shall be no gap between the adjusting bolt and the platform; Remove all tooling parts after adjustment.

Adjusting screws are placed below the adjustment points marked on the platform. Under the platform at the corresponding position of the adjustment points, the tightened screws should be adjusted with an internal hexagonal wrench(6); while the upward bolt should be adjusted with an open end wrench;

The platform is adjusted with the adjusting (supporting) point position of the machine. As shown in the following figure:

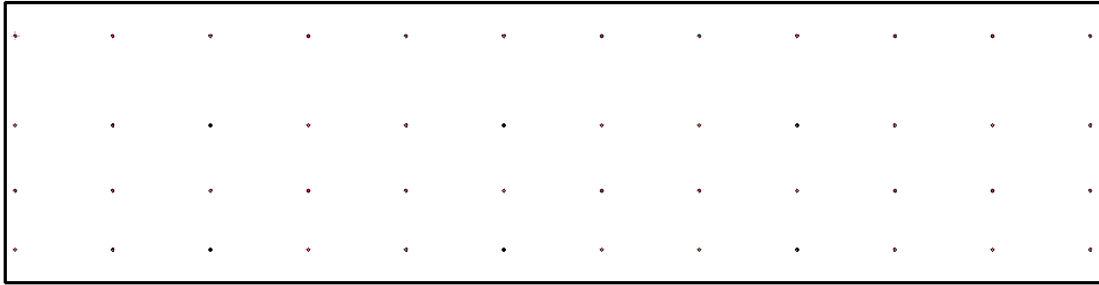


Fig. 76 Adjustment points of the platform

Adjustment steps of the air suction platform of machine:

Step 1: There are marked points corresponding to the adjusting points on the platform, and such points can be circled with a marker pen to facilitate identification.

Step 2: Fix the dial indicator onto the carriage head by using the magnetic meter base; move the carriage to ensure all the adjusting points are measured.

Step 3: Move the carriage and measure all the adjusting points with the dial indicator and record the results.

Step 4: Take the mean value of the measured values or the more concentrated height value as the reference value, and adjust the height of each adjusting point to the reference value.

Step 5: Move the carriage to measure the overall flatness of the platform and check the platform flatness error after adjustment; if it cannot meet the acceptance standard, the position where the flatness is substandard should be recorded; properly adjust the height of the nearby adjusting points, until the platform flatness error meets the requirement of the acceptance standard.

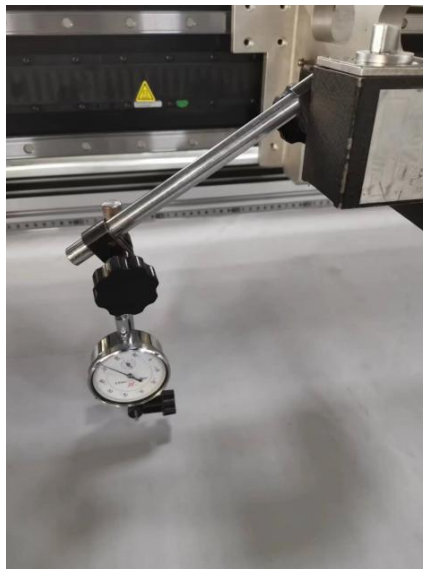


Fig. 77 Dial indicator



Note:

This work will be completed by 2 persons. One person adjusts the screw under the machine, and one person read the numerical value above the machine. The second person who reads the numerical value

can be one worker of the client.



Note:

In this process, the machine has been powered on. Since the platform is adjusted under the platform, work needs to be performed nearby the electrical system. The machine must be powered off in adjustment. Please note all the electric shock warning signs.



Note:

The flatness adjustment process of the platform is completed and the machine is prohibited from working. If you operate the Hybrid Printer, the machine may be damaged.

Tools required

S/N	Tool specification	Quantity
1	Allen wrench 6mm	1 for each
2	Open-end wrench 14mm	1 for each
3	Dial indicator with a magnetic seat	1

Leveling of print head base plate

Adjust the parallelism between the print head base plate and the mesh belt print platform and measure it with a feeler gauge or dial indicator; Drag the carriage to measure the spacing between the print head base plate and the platform (overall length). If there is an error, the print head base plate or platform can be adjusted to ensure the entire platform error is less than 0.5mm.

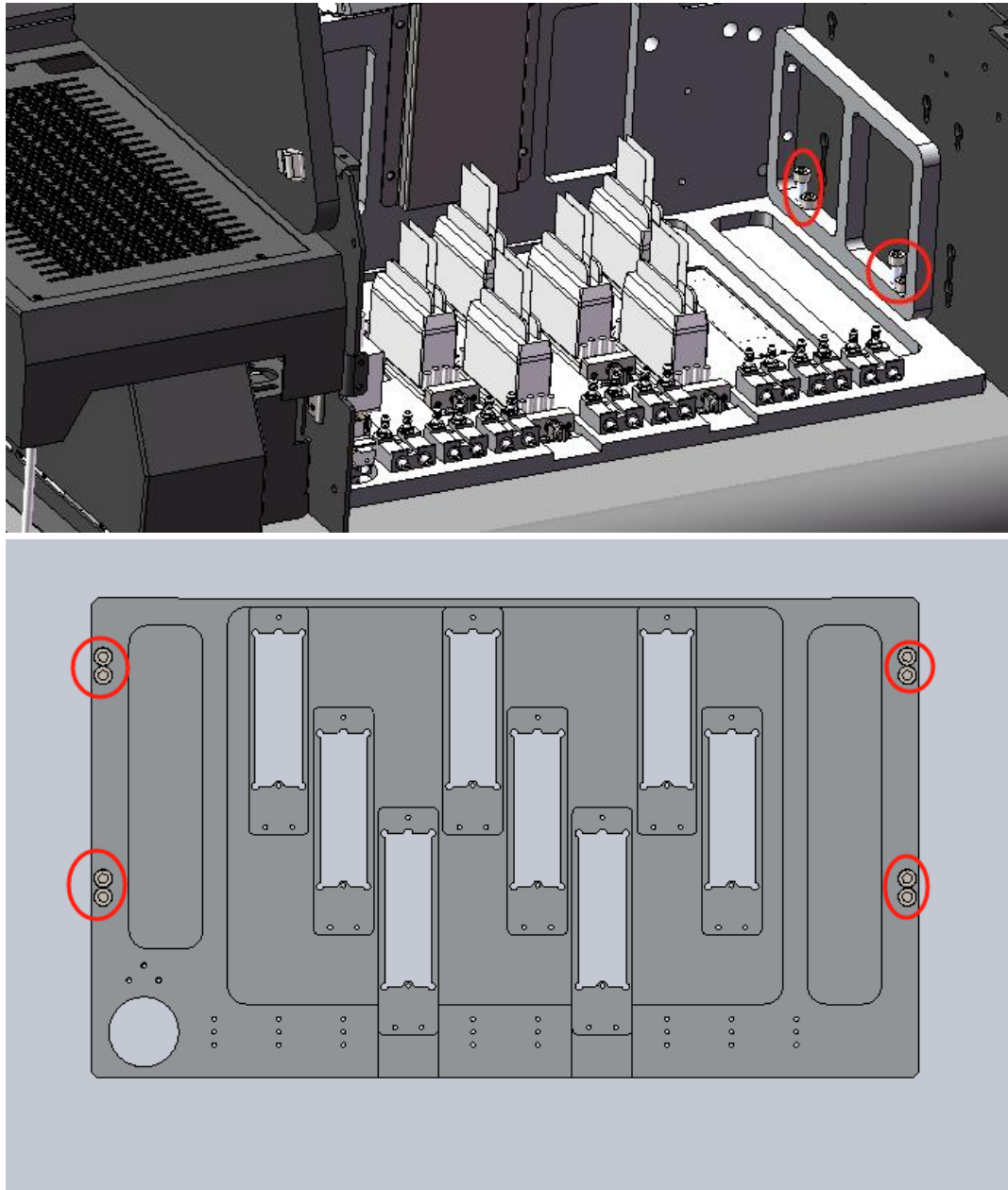


Fig. 78 Position of adjusting screws of print head base plate

**Note:**

Fig. 49 shows the position of adjusting screws on the print head base plate. By fastening the locking screw, the base plate can be pushed downward to the platform. By fastening the fixing screw, the base plate can be pulled upward and get further from the platform.

**Note:**

To adjust screws more conveniently and make preparation for future calibration, any other parts should not be installed onto the print head base plate at first.

Print head base plate adjustment steps:

Step 1: Push the carriage to the middle of the platform manually.

Step 2: Lower the carriage to make it about 2mm from the print head base plate to the mesh belt surface, and use the manual lift wrench in the accessory box to rotate the hand wheel seat at the tail of the motor in the Z direction (see Figure 50 for the position).

Step 3: Measure the height of four corners of the print head base plate with a feeler gauge and calculate the error value.

Step 4: Take the mean value of the measured values or the more concentrated height value as the reference value, and adjust the height of each adjusting point to the reference value.

Step 5: Place four identical coins at four corners of the print head base plate after making the print head base plate level through adjustment (Figure 51) and check the gap at four corners; if the error is greater than 0.5mm, perform fine adjustment to make the level error meet the requirement.

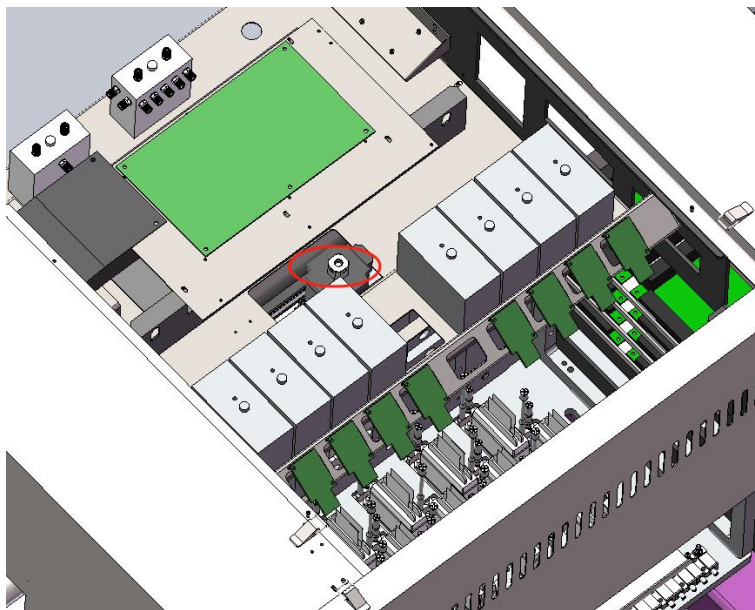


Fig. 79 Z lifting hand wheel base

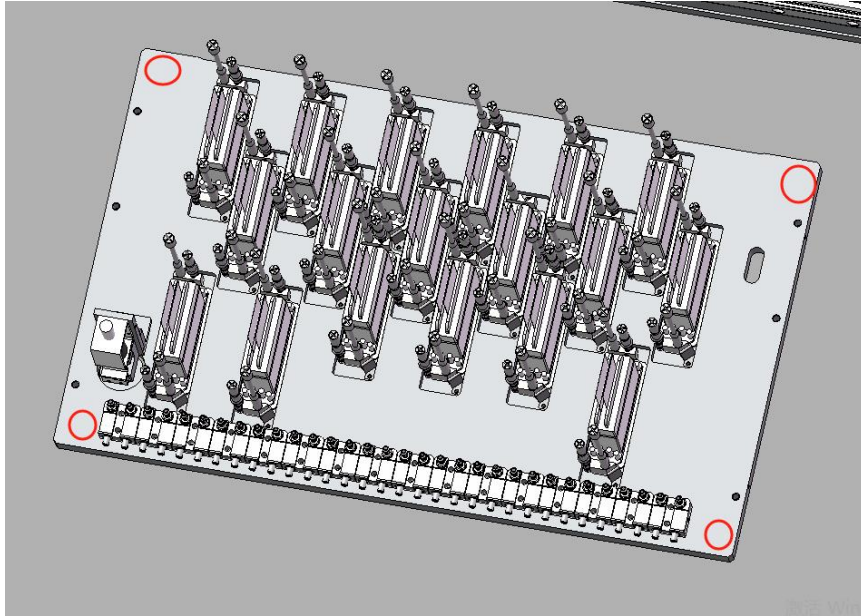


Fig. 80 Position for placing the retest coins on the print base plate

Adjustment of anti-collision assembly

2 anti-collision sensors are installed on both sides of the carriage. If there are abnormal protruding matters higher than the normal height of printed materials on the X motion path, the anti-collision sensor will be triggered, and the sensor will control the Hybrid Printer to make an emergency stop, and the carriage stops moving. If any anti-collision sensor is triggered, the Hybrid Printer needs to be restarted.



Notes:

Anti-collision sensor is a key part for protecting the print head. Please be sure to make it safe and effective in work. If the height of the anti-collision assembly is not set correctly, the print head may be damaged.

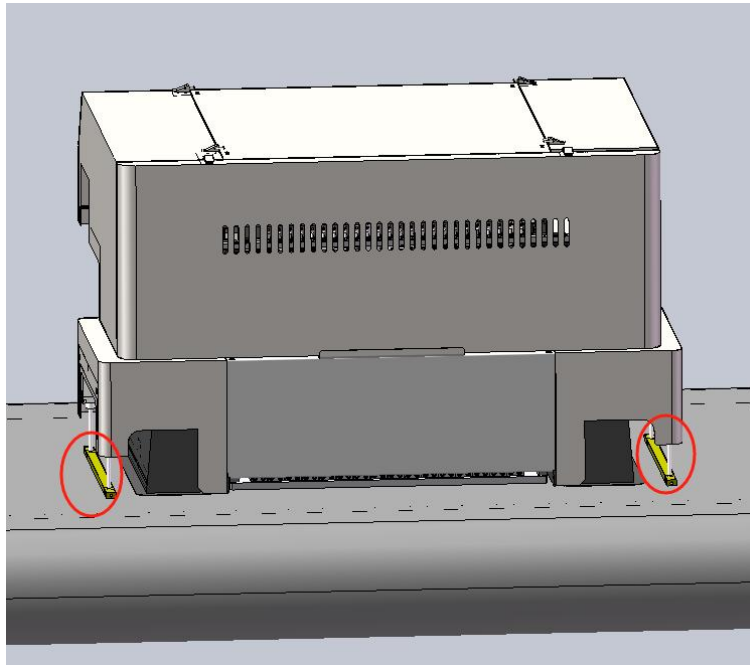


Fig. 81 Anti-collision assembly

Anti-collision assembly adjustment steps:

Step 1: Push the carriage to the middle of the platform manually.

Step 2: Lower the carriage to ensure the print head base plate just contacts the mesh belt. Use the manual lift wrench in the accessory box to rotate the hand wheel seat at the tail of the motor in the Z direction (see Figure 50 for the position).

Step 3: Adjust the fixing screws of the anti-collision assembly on both sides of the carriage to ensure that the front and back of the anti-collision strip just contacts the mesh belt.

Step 4: Raise the carriage for about 2mm after adjusting the position of the anti-collision assembly, and push the carriage left and right to check the distance between the anti-collision assembly and the mesh belt.

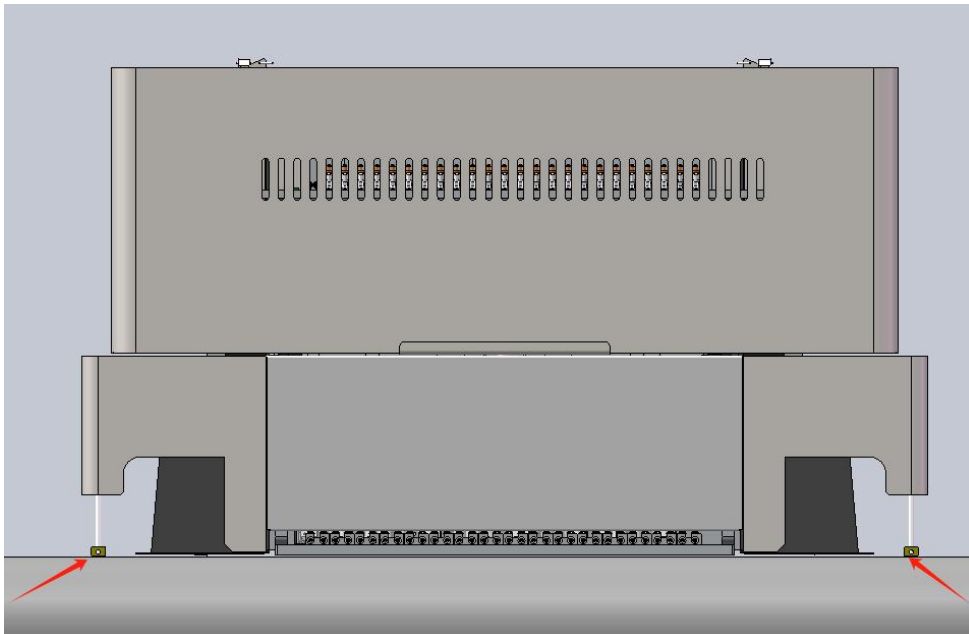


Fig. 82 Adjustment of the distance between the anti-collision strip of the anti-collision assembly and the mesh belt

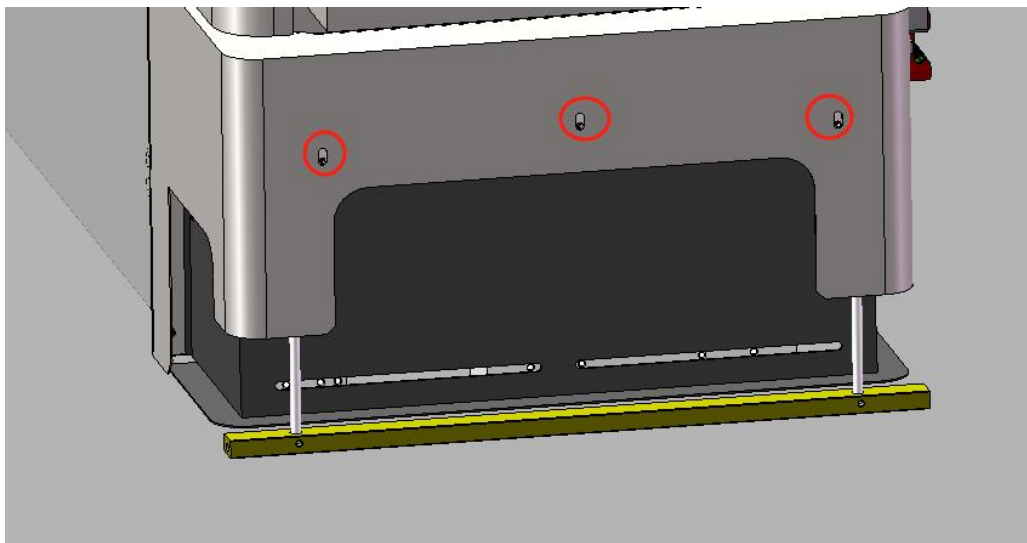


Fig. 83 Fixing screws of anti-collision assembly



DS32 Series UV Hybrid Printer

Installation of Print Heads and Connection of Ink Routes

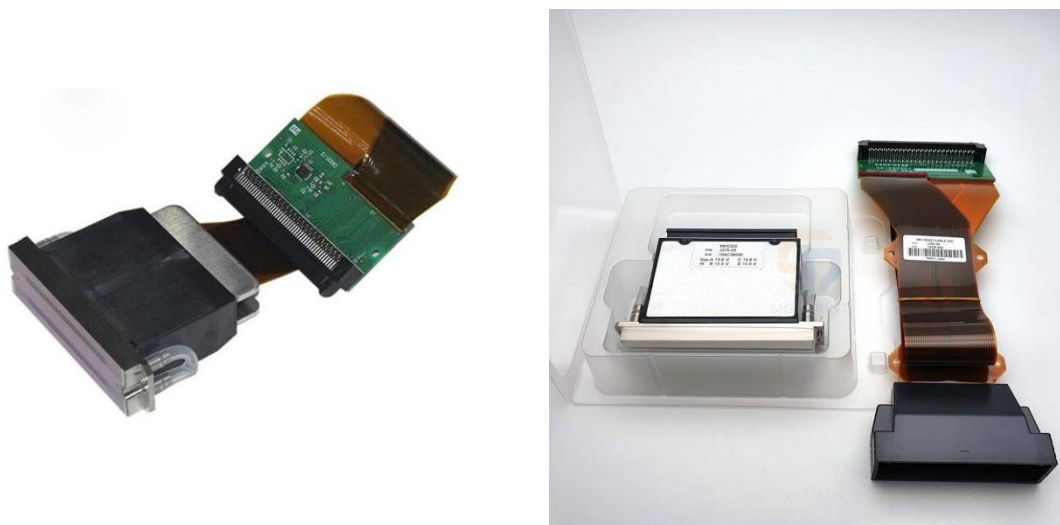
Print head (Ricoh Gen5 MH5420 or Gen6 MH5320)

Fig. 84 Print head

1,280 nozzles are configured as 4 x 150dpi rows. The head realizes high definition of 300dpi of every channel. In addition, ink paths are isolated, enabling that one print head jets as many as two colors of ink. This is the configuration of the print head of sensitive series of printers.

The print head of Ricoh Hybrid Printer is made of stainless steel. Such hydraulic heads are very firm, and provide extraordinary anti-corrosion performance for types of printing ink to achieve extraordinary durability and longer service life.

With a built-in heater, such heads are capable of jetting high-viscosity printing ink. In addition, the ink route and actuator (piezoelectric element) are separated, preventing ink contact. Multi-droplet function allows setting of a series of droplet sizes to realize grayscale printing.

Open the Print Head Package



Open the outer packaging box



Open the Inner Packaging Box



Remove the plug tube of the ink inlet and remove the protective cover for the nozzle surface.

Fig. 85 Unpacking of Print Head

Installation and locating of print head supporting seat

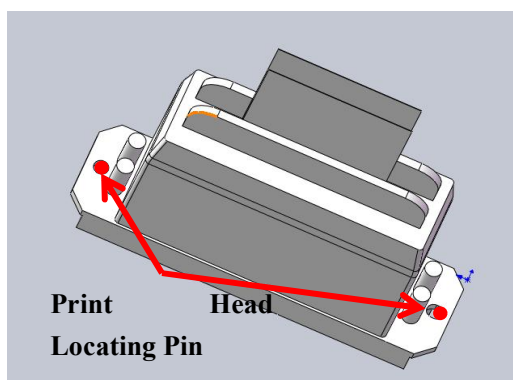


Fig. 86 Print Head Locating Pin

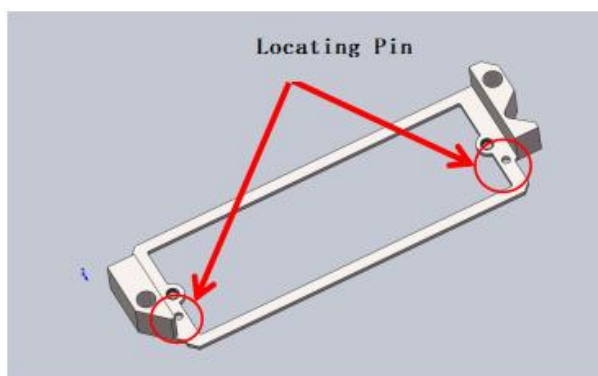


Fig. 87 Holder of print head

Explosive Drawing of Adjusting Screws of Print Head

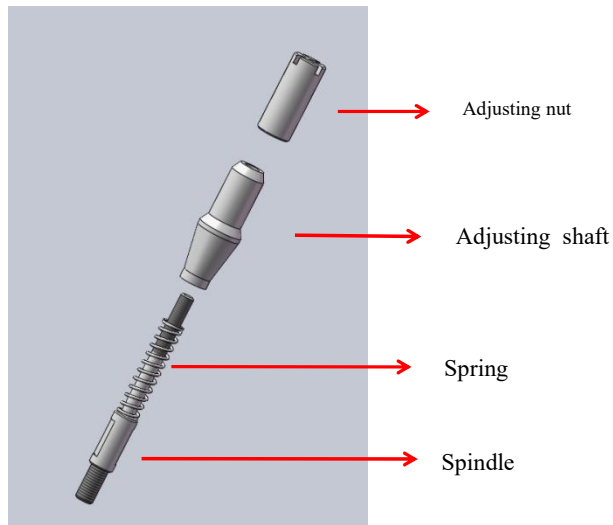


Fig. 88 Explosive drawing of adjusting screws of print head

Print Head Installation Assembly

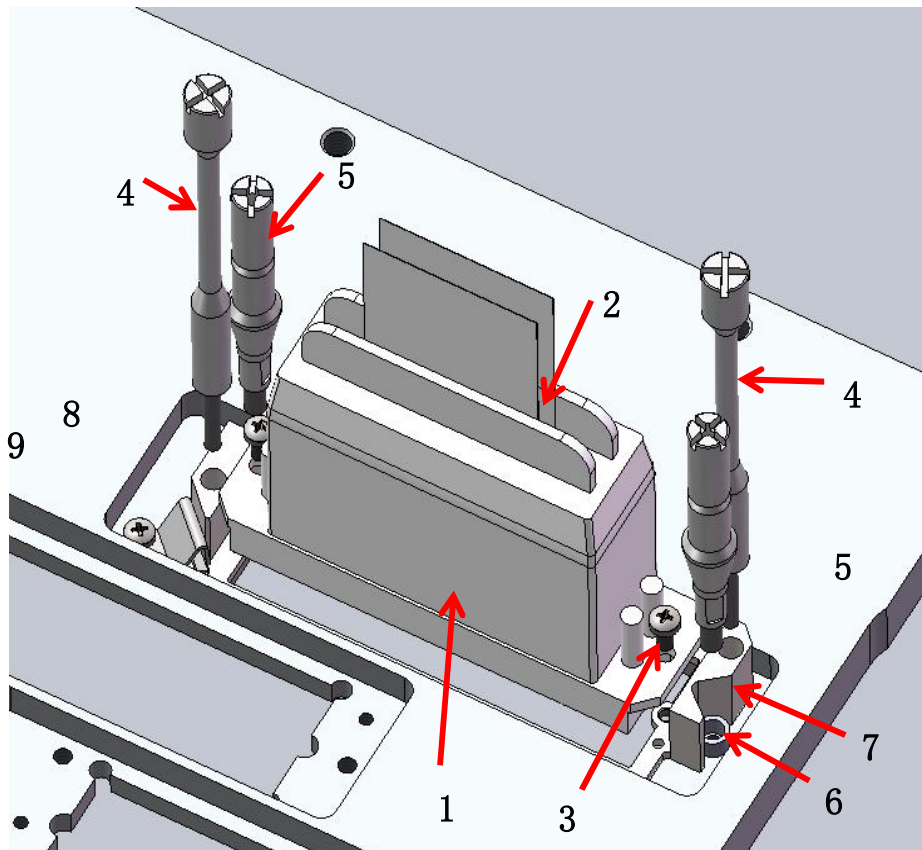


Fig. 89 Print head installation assembly

Code	Name of parts	Quantity	Specification	Description
1	Print head	Based on the installation quantity on order	Ricoh G6	
2	Print head cable	Based on the installation quantity on order	45cm	
3	Print head fixing screw	2	M3X6	Fix the print head onto the print head supporting seat
4	Fastening screw of print head	2	M4	Fix the print head supporting seat (extension screw)
5	Adjusting Screw for Print Head	2	M4	Adjust the inclination and front/back position of the print head
6	Hollow isolating column	2		Fix print head adjusting screws
7	Holder of print head	1		Main component of print head adjusting mechanism
8	Leaf spring	1		Adjust the print head
9	Clip fixing screw	1	M3X6	Fix clip

Print head installation steps

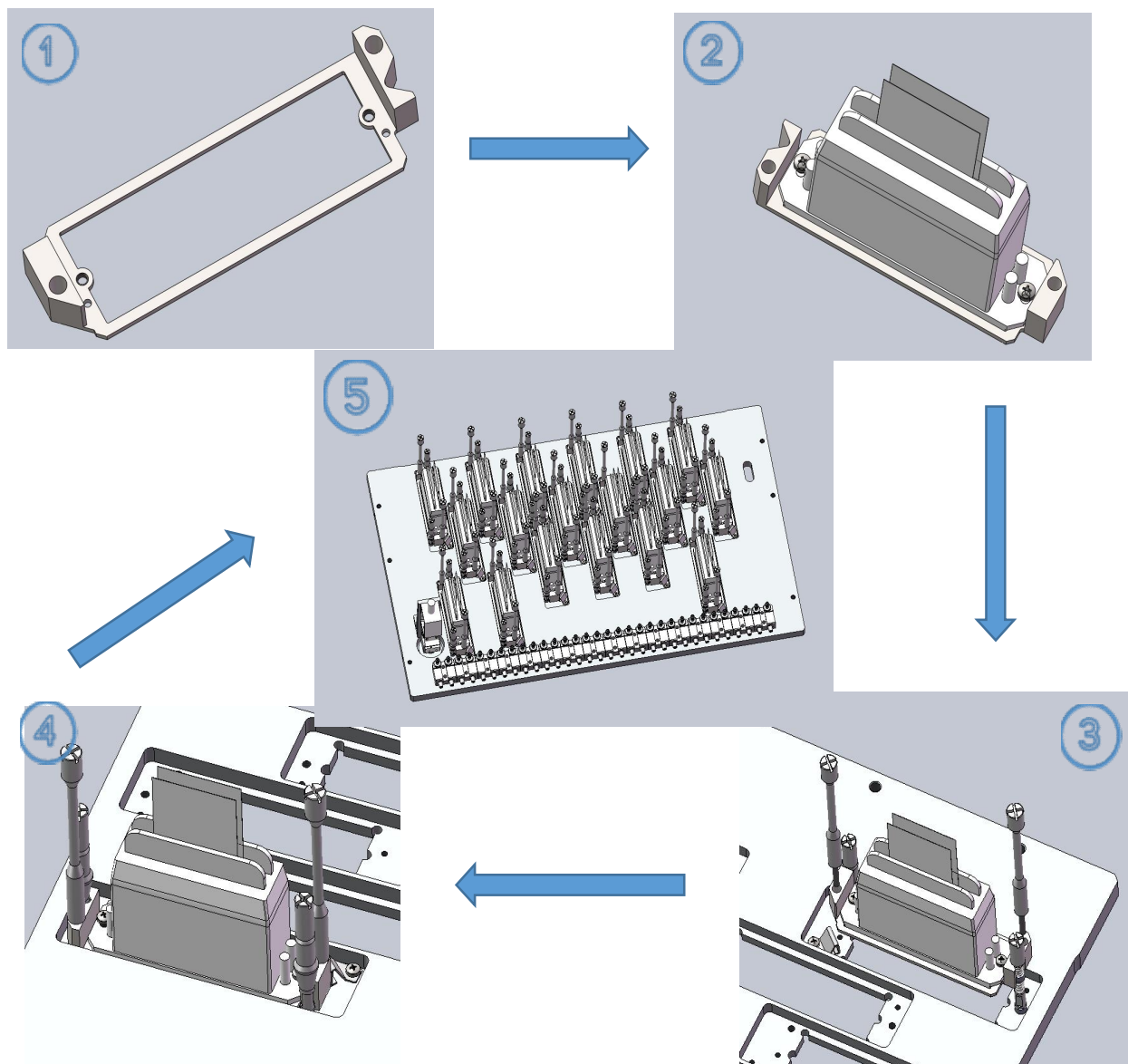


Fig. 90 Print head installation steps



Notes:

1. The print head is provided with a locating pin. The position of the locating pin and the locating hole of the print head supporting seat are determined.
2. All the print head fixing screws must be tightened and should not be loose.
3. After the print head is adjusted, all the screws should be checked to ensure that they are tightened.
4. When there are more than two rows of print heads, it is suggested that the first row should be installed and calibrated. And then the second row of print heads are installed and calibrated. This will save labor and time.

Connection of the ink tube of print head

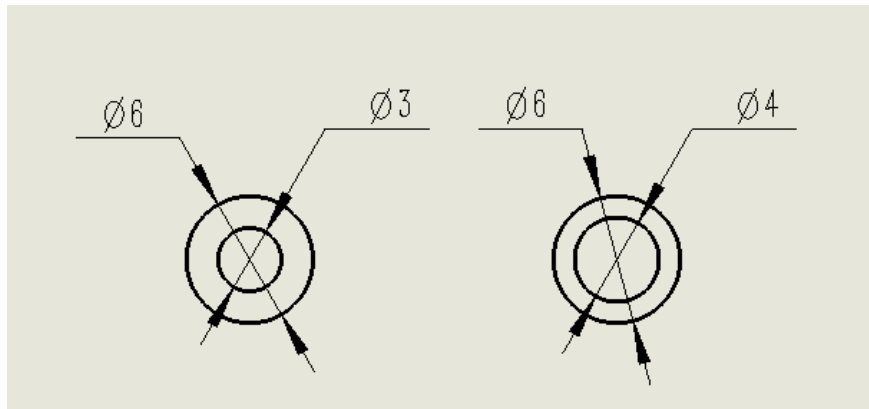


Fig. 91 Ink tube



Note:

There are two types of ink tubes. 3X6 ink tube mainly connects to the nozzle interface;

4X6 ink tube mainly connects to the upper part.

Connection of filter

15UM filter are between the secondary ink cartridge and the print head. This will prevent solid contaminants from entering and clogging the print head. Filter should be checked to ensure the correctness. It should follow the printing ink flow arrow direction or fit the ports.

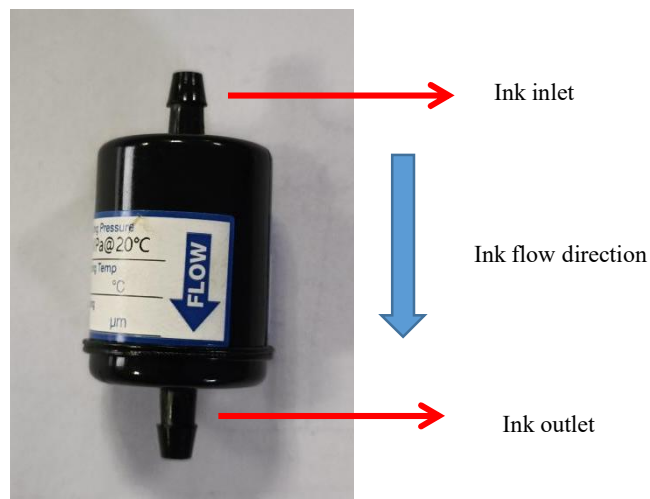


Fig. 92 Filter

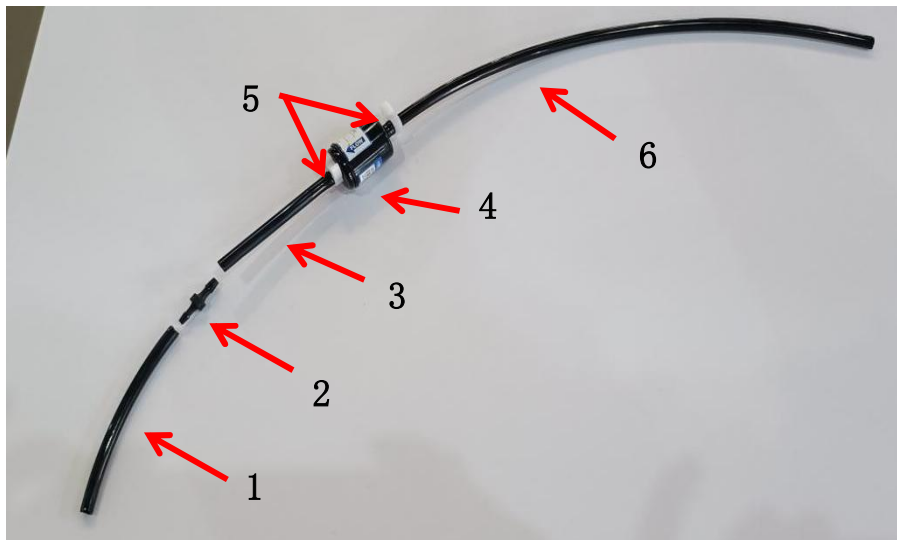


Note:

Check whether the twist and clamp on the filter are sufficiently tightened to ensure that they do not accidentally come loose, and the ink will not leak onto the harness or print head inside the compartment.

Connection method of One Head Two Color ink tube

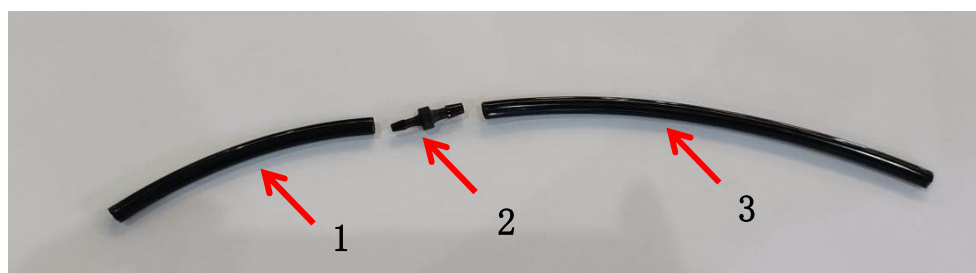
Print Head Ink inlet Ink Tube Connection Diagram



S/N	Parameter	Length	Specification
1	Ink tube	10CM	3X6
2	Straight-through connector		4X6
3	Ink tube	10CM	4X6
4	Filter		15UM
5	Clamp		6-7
6	Ink tube	25-30CM	4X6
	Type-Y three-way valve		6X4

Fig. 93 Connection method 1 of one head two color ink tube

Print head ink outlet ink tube connection diagram

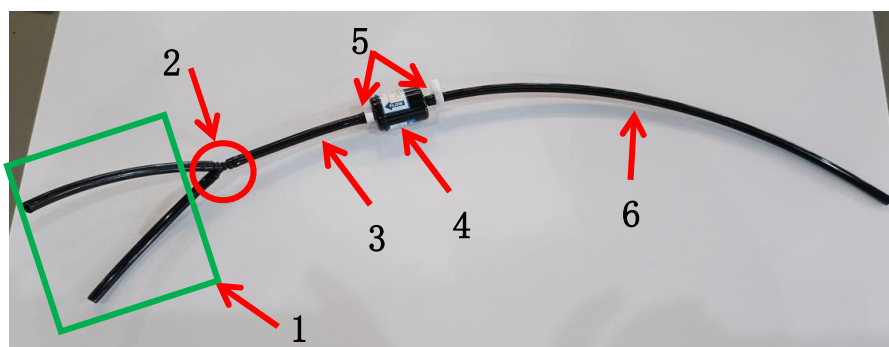


S/N	Parameter	Length	Specification
1	Ink tube	10CM	3X6
2	Straight-through connector		4X6
3	Ink tube	20CM	4X6

Fig. 94 Connection method 2 of one head two color ink tube

Connection method of One Head One Color ink tube

Print Head Ink inlet Ink Tube Connection Diagram

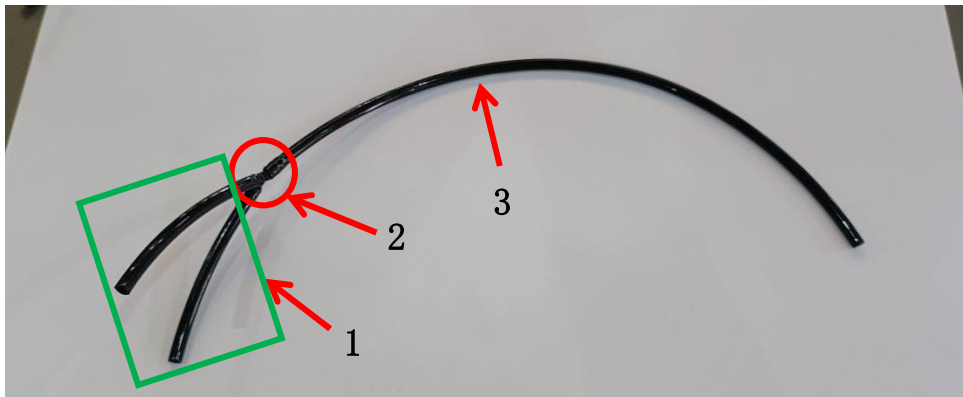


S/N	Parameter	Length	Specification
1	Ink tube	10CM	3X6
2	Type-Y three-way valve		6X4
3	Ink tube	10CM	4X6
4	Filter		15UM

5	Clamp		6-7
6	Ink tube	25-30CM	4X6

Fig. 95 Connection method 1 of one head one color ink tube

Print head ink outlet ink tube connection diagram



S/N	Parameter	Length	Specification
1	Ink tube	10CM	3X6
2	Type-Y three-way valve		6X4
3	Ink tube	20-25CM	4X6

Fig. 96 Connection method 2 of one head one color ink tube

Connection of ink tube to the entire print head

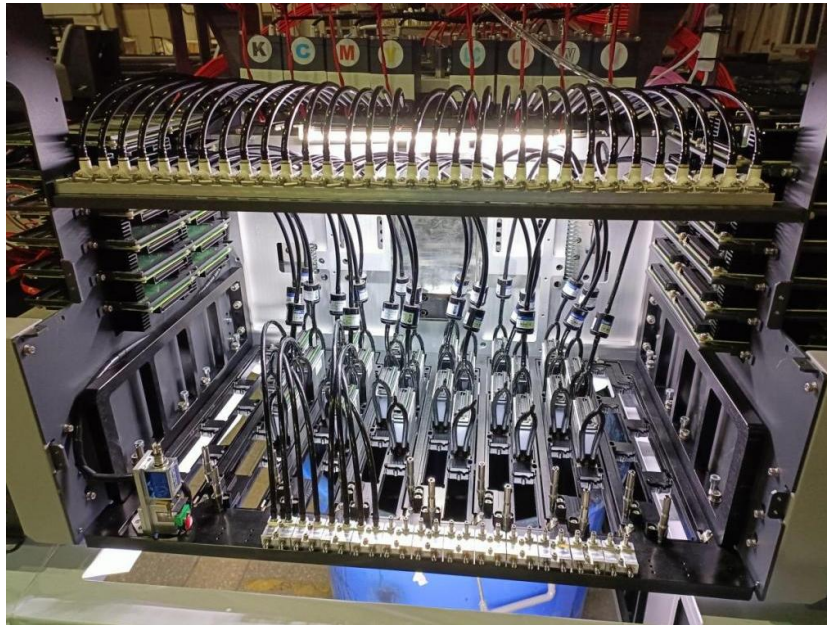


Fig. 97 Connection of ink tube to the print head

Connection of the secondary ink cartridge to three-way valve body

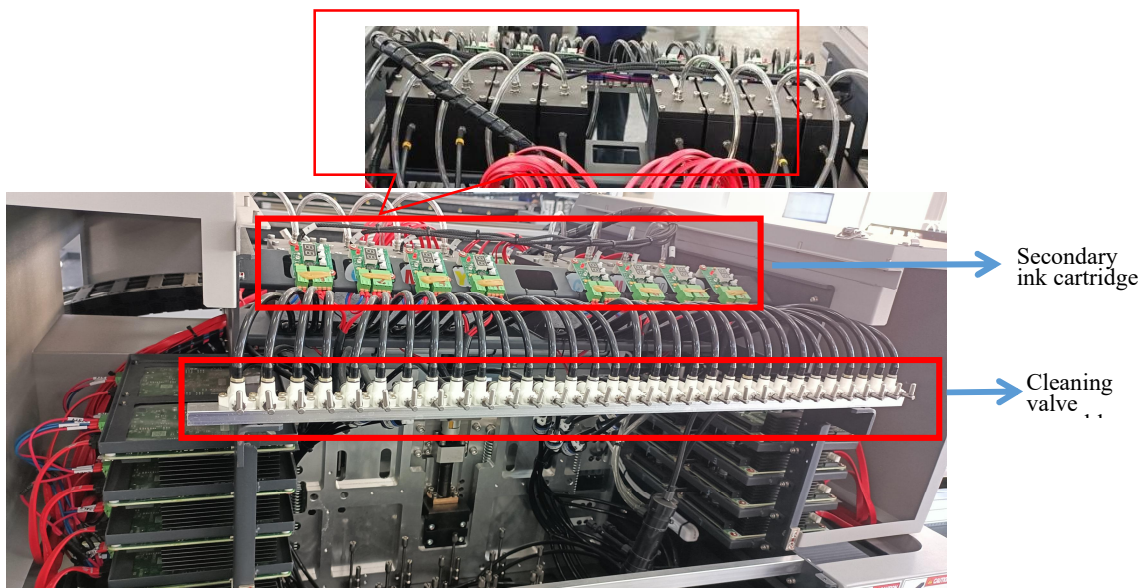


Fig. 98 Connection of the secondary ink cartridge to three-way valve body

Three-way valve body to print head and two-way valve

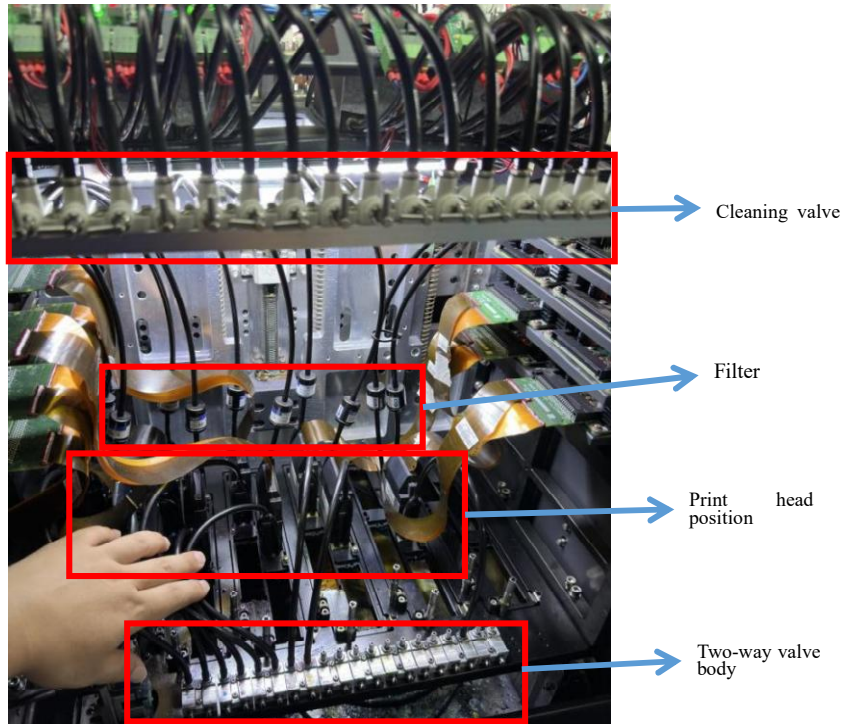


Fig. 99 Three-way valve body to print head and two-way valve

Print head connection

Print head wiring configuration

1. Wiring method of single carriage board with no more than 16 heads:



Notes:

1. Interfaces on the carriage board from the right to the left are port H1, H2, H3 . . . H16 respectively.
2. STAT wiring should be firm, and looseness is forbidden.

2. At present, DS is intermediate carriage. The print head driver board will be installed on both sides and in the middle of the carriage.

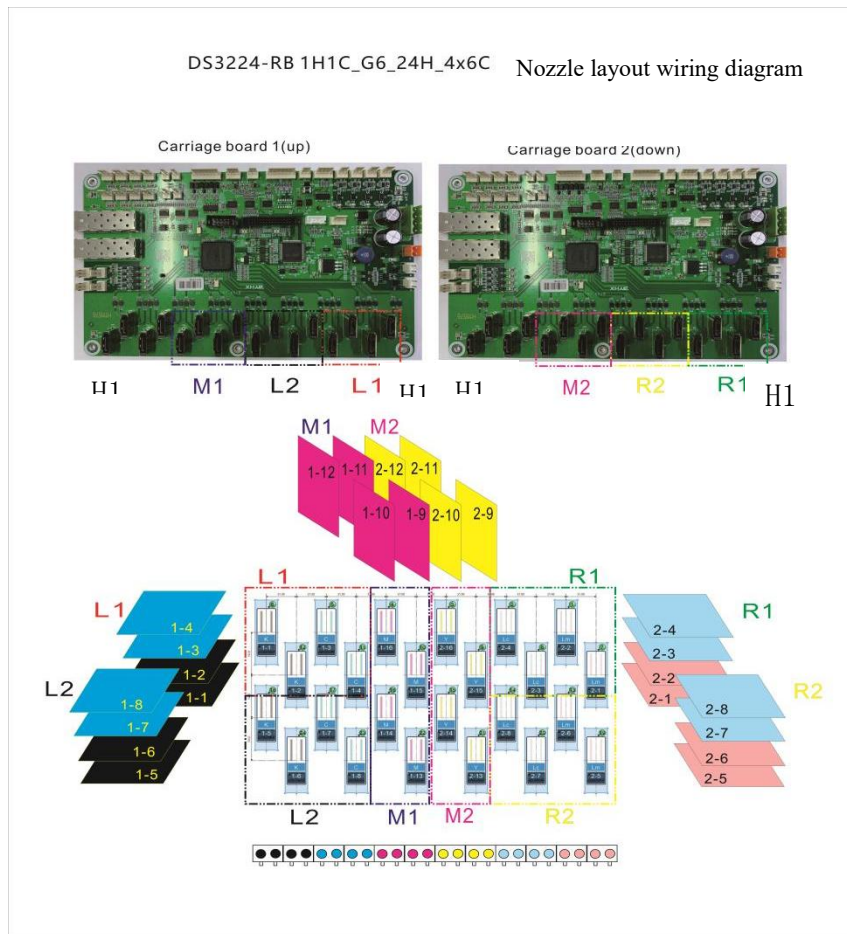


Fig. 102 Installation position for the print head driver board

(1) The above picture shows the DS medium carriage. 8 print head driver boards are installed in the middle position, and 8 are installed on each side.

Area	Code	Sequence
L1	1-1, 1-2, 1-3, 1-4	From bottom to top
L2	1-5, 1-6, 1-7, 1-8	From bottom to top
M1	1-9, 1-10, 1-11, 1-12	From outside to inside
R1	2-1, 2-2, 2-3, 2-4	From bottom to top
R2	2-5, 2-6, 2-7, 2-8	From bottom to top
M2	2-9, 2-10, 2-11, 2-12	From outside to inside

(2) Two carriage boards are installed in the upper and lower layers. The first

carriage board (the upper main carriage board) controls the left print head driver board: left (L1 and L2) and middle left (M1); The second carriage board (the lower auxiliary carriage board) controls the right print head driver board: right (R1 and R2) and middle right (M2)

(3) The first carriage board (upper layer) is the main carriage board, and the second carriage board (lower layer) is the auxiliary carriage board, only connected to the print head driver board. Channels are defined from right to left as 1-16. You can arrange them in reverse order, or define them separately from both sides according to the actual situation.

Connection of print head USB cable to print head driver board

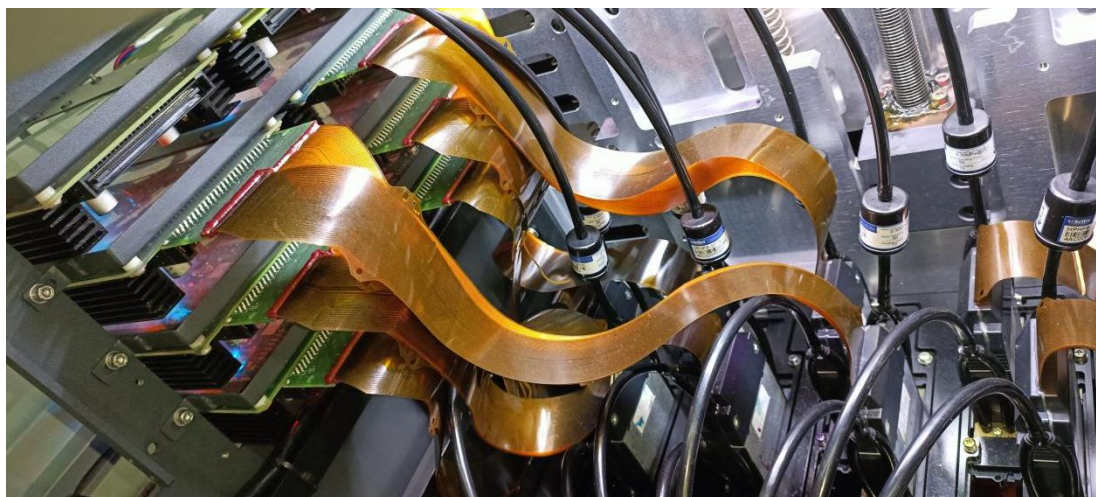


Fig. 103 Connection of print head usb cable

DS32 Series

UV Hybrid Printer

Ink Injection Into Ink Routes

Ink injection of the main ink tank



Note:

When operating printing ink, please always wear personal protective equipment (PPE), goggles, powder-free gloves and protective clothes to protect your arms. Please note overflow of ink around the printer, because this may lead to the slippery danger on floor.



Fig. 104 Main ink tank



Notes:

- 1. The signal interface J27 on the main board controls working of the ink pump of the main ink cartridge.**
- 2. If the ink pump does not work normally, you can check whether the signal interface of the main board is correct.**

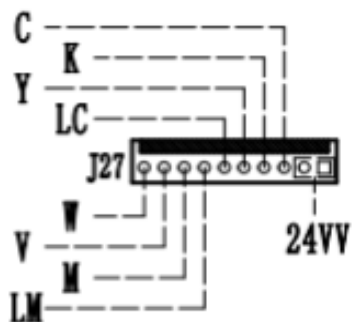


Fig. 105 Ink Pump Signal Interface on Mainboard

Inject ink into the auxiliary ink box



Notes: Before injecting ink into the auxiliary ink box, make sure that enough ink in the main ink box.

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

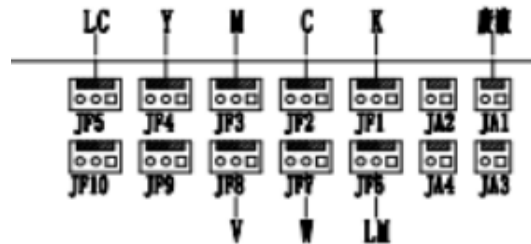
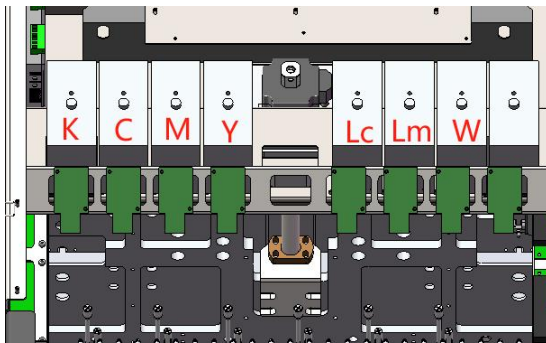


Fig. 106 Secondary ink cartridge

Adding of ink to print head



Note:

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

- Print head cleaning:

The new print head must be purged with cleaning fluid before being injected with ink for the first time because protective liquid has been injected into the nozzle of print

head, so the ink can only be injected into until the protective liquid being cleaned.

It is suggested that one print head should be cleaned at every time. The ink route three-way valve of one print head is set at the cleaning state, and other print head valves set at the closed state.

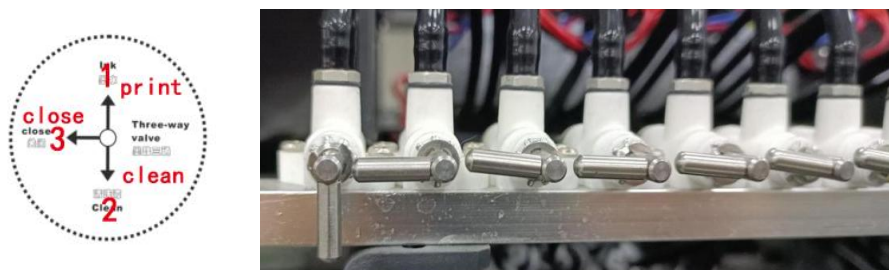


Fig. 107 Three-way valve at the cleaning state

Then turn on the corresponding two-way valve

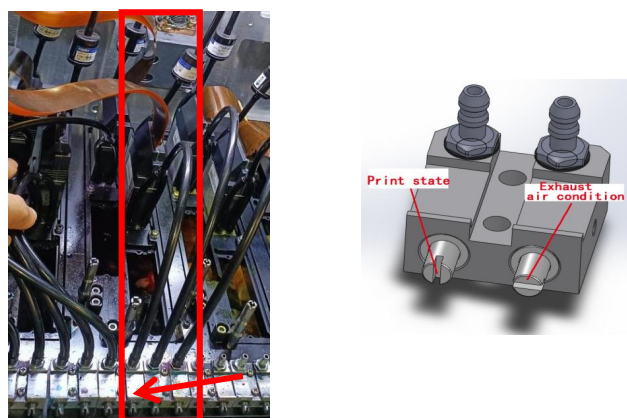


Fig. 108 Ink route two-way valve

Press the cleaning button to make the cleaning solution flow out of the two-way valve through the print head ink cavity, turn off the two-way valve 1~2s later, and then make the cleaning solution flow out of the nozzle and form a waterfall for 5s; and then clean other print heads respectively with the above method. After five minutes, clean all the print heads again as per the above method.



Fig. 109 Purge button

➤ Venting of print head:

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

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

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



Fig. 110 Three-way valve at the print state

2. Unscrew the corresponding two-way valve core and keep the ink outlet unblocked.
3. Press the button of PUR/COLOR or PUR/WHITE



Fig. 111 Positive pressure button

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

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

Negative pressure adjustment

1. Introduction to Dual Negative Pressure Control System:

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



Code	Name	Quantity	Description
1	Air buffer bottle	2	Negative pressure storage
2	Two-position Three-way Solenoid Valve	2	Keep switching of negative and positive pressure
3	Two-way solenoid valve	2	Air supply
4	Diaphragm pump	2	Speed adjustable one-way air suction
5	Control board of	1	Two-way color and white negative pressure control

Fig. 112 Dual Negative Pressure Control System

2. System Parameters Description:

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

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

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

3. Display interface:

After the system is powered on and started

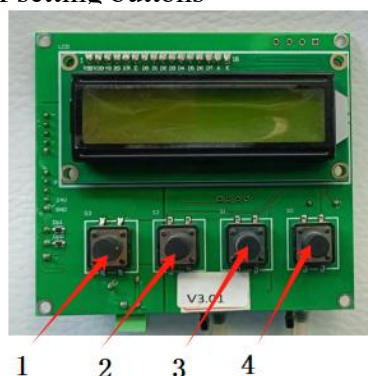


Fig. 113 Negative Pressure Display Interface

Color negative pressure control The first row of the screen (top row) shows the current negative pressure value collected by the sensor in route A and the set value in route A. We specify: route A is the color negative control.

White negative pressure control: The second row (bottom row) shows the current negative pressure value collected by the sensor in route B and the set value in route B. We specify: Route B is white negative pressure control.

4. Introduction to functions of setting buttons



Code	Name	Description
1	Setting button	Enter the parameter setting interface
2	+ button	The setting for increasing parameters under the setting mode
3	- button	The setting for decreasing parameters under the setting mode
4	Confirmation button	Save parameters and exit

Fig. 114 Setting buttons for negative pressure control

5. Set parameter reset

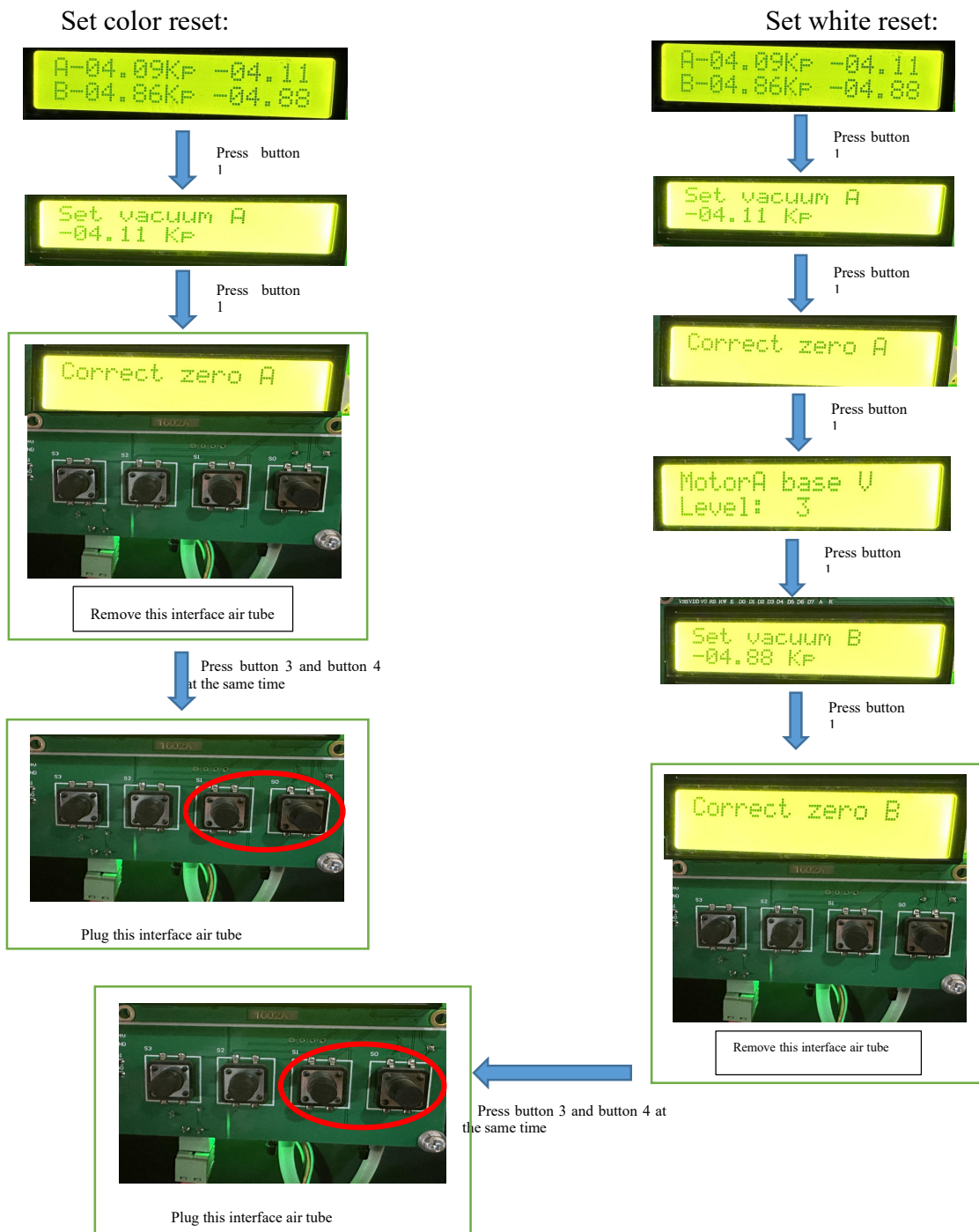


Fig. 115 Negative pressure clearing



Note:

During the reset in A-channel (color) or B-channel (white), it is necessary to hold down the Setting Selection key 3 and then press the OK key 4 before resetting. This setting is to avoid the misoperation to reset the sensor.

6. Setting of Pause or Recovery of Negative Pressure Regulation

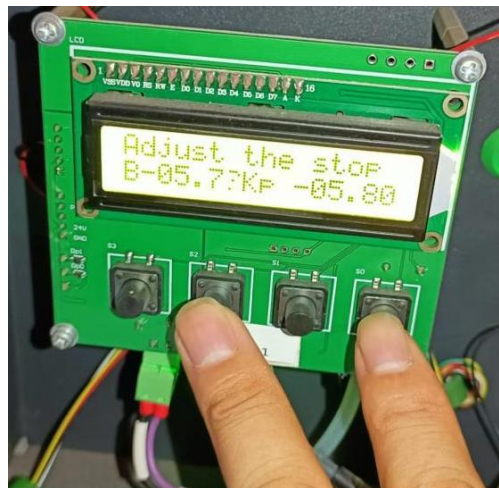


Fig. 116 Setting of pause or recovery of negative pressure regulation

- a) By pressing the Parameter Selection key 2 and the OK key 4 at the same time, the negative pressure adjustment of A-channel can be ceased. After pressing these two keys again, the negative pressure adjustment of A-channel can be resumed. The negative pressure of A-channel can be ceased temporarily by this function.
- b) By pressing the Parameter Selection key 3 and the OK key 4 at the same time, the negative pressure adjustment of B-channel can be ceased. After pressing these two keys again, the negative pressure adjustment of B-channel can be resumed. The negative pressure of B-channel can be ceased temporarily by this function.

7. Introduction to Parameter Setting:

a) Parameter 1: Set vacuum A



Fig. 117 Set vacuum A

This parameter is set to maintain the negative pressure of route A. After setting with + and - in the middle, the system will automatically control the peristaltic pump and regulate to the set pressure value.

b) Parameter 2: Correct zero A

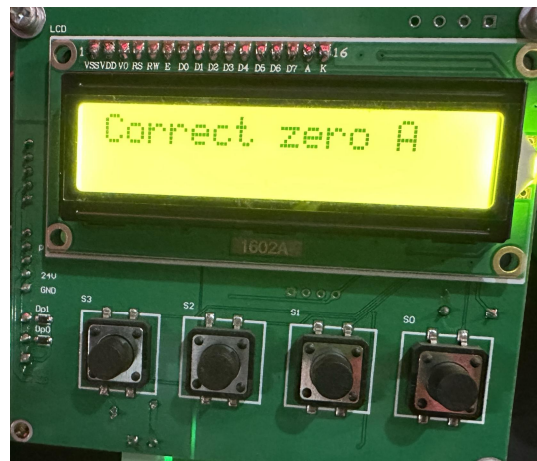


Fig. 118 Correct zero A

In this setting interface, correcting zero of route A (color) negative pressure difference will be automatically performed by pressing the function confirmation button 4.



Note:

Correcting zero must be performed in the case of no pressure difference or in the case where the atmosphere is directly connected. As there are errors in the electronic devices and the incoming voltage, 0 pressure needs to be corrected before it can be used.

c) Parameter 3: MotorA base V



Fig. 119 MotorA base V

The parameter is to set A-channel negative pressure to adjust the rotating speed of pneumatic peristaltic pump at low speed, and the factory speed is level 3 (including 16 levels of speed available for adjustment and setting).

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

d) Parameter 4: Set vacuum B

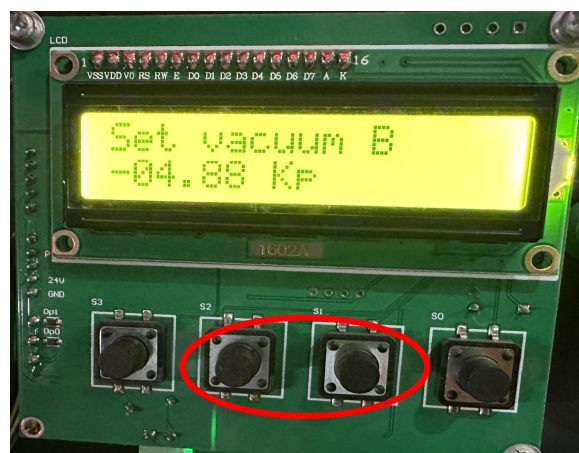


Fig. 120 Fig. 125: MotorA base V

This parameter is set to maintain the negative pressure of route B (white).

After setting with + and - in the middle, the system will automatically control the peristaltic pump and regulate to the set pressure value.

e) Parameter 5: Correct zero B

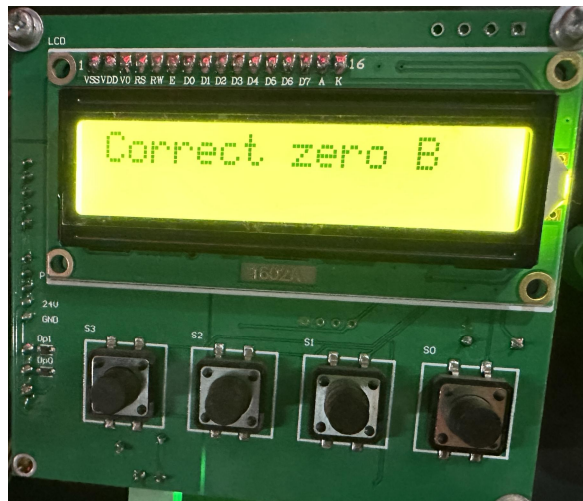


Fig. 121 Correct zero B

In this setting interface, correcting zero of route B (white) negative pressure difference will be automatically performed by pressing the function confirmation button 4.



Note:

Correcting zero must be performed in the case of no pressure difference or in the case where the atmosphere is directly connected. As there are errors in the electronic devices and the incoming voltage, 0 pressure needs to be corrected before it can be used.

f) Parameter 6: MotorB base V



Fig. 122 MotorB base V

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

available for adjustment and setting.

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

g) Parameter 7: Software version

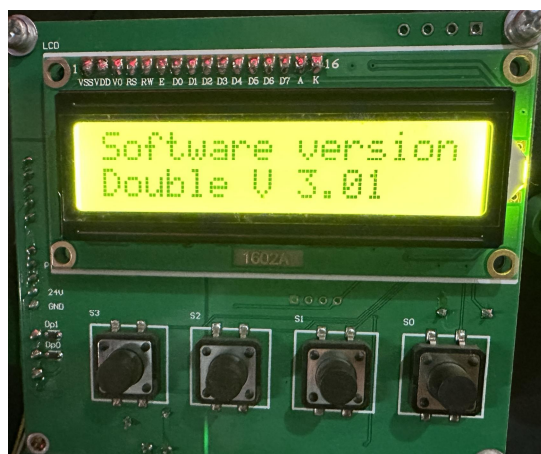


Fig. 123 Software version

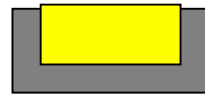
The parameter only displays the software version of the system so that the after-sales service personnel can determine the functions of the system.

8. Cautions:

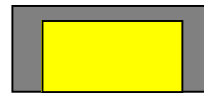
- a) The airtightness of the whole air route system should be guaranteed. If air leakage occurs, the air pump will work frequently, resulting in a decrease in the service life of the pump. Please check the airtightness if the air pump is found to be adjusted once 3~5 seconds.
- b) Strictly prevent liquid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

Negative pressure maintaining button

A yellow button switch is installed beside the negative pressure system. Its main purpose is to realize emergency stop and shutdown in the case of connecting the main power. The negative pressure power will not be cut off when the yellow button is pressed. In other words, the negative pressure will be maintained. It is suggested that the negative pressure maintaining button is on.



Off state of negative pressure maintaining



Negative pressure maintaining state

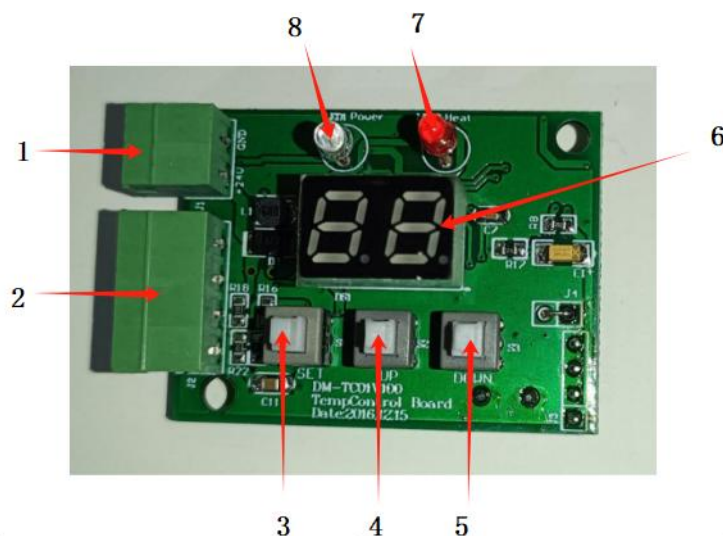
Fig. 124 Negative pressure maintaining button

Secondary ink cartridge temperature setting



Fig. 125 Secondary ink cartridge temperature control board

Temperature control board



Code	Name	Description
1	Power input port	Input voltage 24V
2	Temperature control port	Heating control and temperature sensor access
3	Temperature setting button	It is the setting state by pressing it, and this button will pop up by default after setting
4	UP button	The setting for increasing parameters under the setting mode
5	DOWN button	The setting for decreasing parameters under the setting mode
6	LED display screen	Display the current temperature
7	LED red lamp	Displayed when temperature rises
8	LED green lamp	Power indicator

Fig. 126 Temperature control board button

Temperature setting steps

1. By pressing SET button (3), the setting mode will be enabled, and the figures on the display screen will flash
2. By selecting button UP (4) or DOWN (5), the numerical value will be adjusted to the designated temperature.
3. By pressing the SET button (3), the setting mode will exit. At this moment, digits on the display screen will be normal.



Note:

The ex-factory temperature setting value is 40-42°C. It will vary based on the actual situation of ink.



Fig. 127 Operating state of temperature control board

Print head temperature and voltage setting

Menu - tools - real-time setting

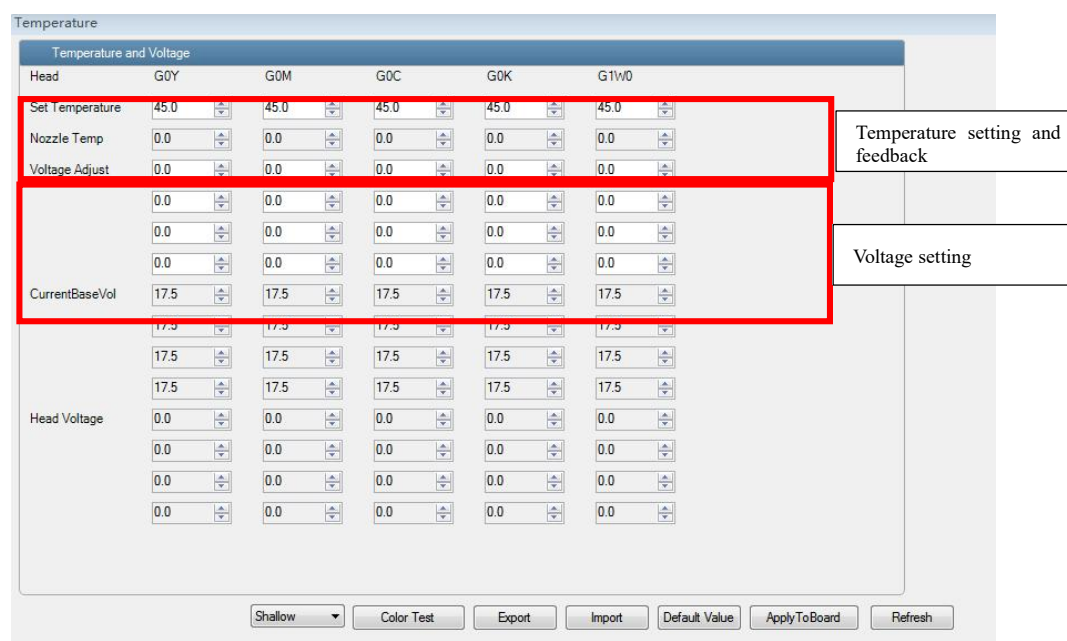


Fig. 128 Print Head Temperature and Voltage Setting Interface

- Setting temperature: set the temperature according to the ink viscosity. Generally, UV ink is set at 40-45°;
- Print head temperature: display the real-time temperature of the currently connected print head. If the print head is not read, it is displayed as 0;
- Correction voltage: slightly adjust the voltage parameters of each row of print heads, and the recommended setting range is ± 2 ;
- Current reference voltage: display the platform voltage of the current waveform;
- Apply to Mainboard: save the set parameters. Click this button to save after modifying the correction voltage and temperature;

DS32 Series UV Hybrid Printer

Calibration of Print Head

Physical calibration of print head

Main menu → tools → calibration guide → mechanical check

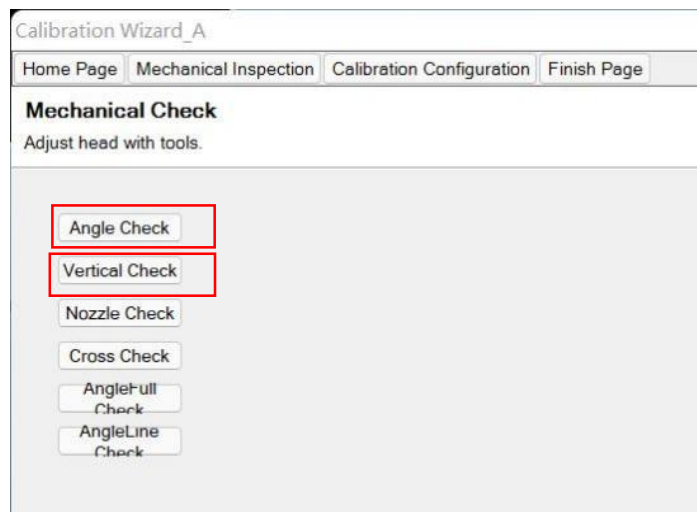
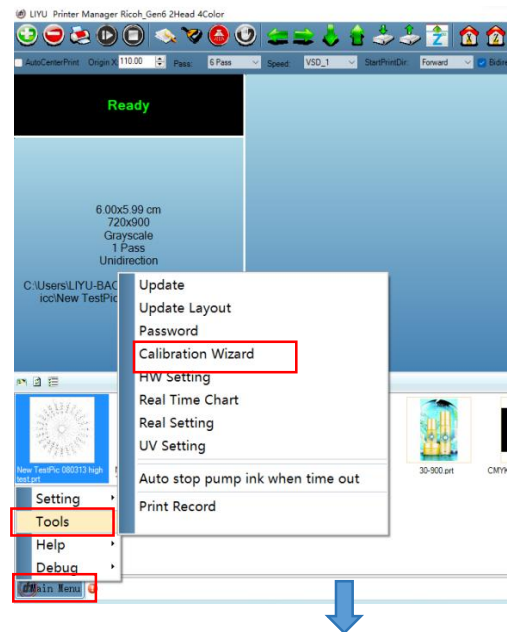


Fig. 129 Operation interface of physical calibration for print head

Angle check



Fig. 130 Diagram for angle check of the print head

- (1) Angle check: It is checked whether the upper and lower line segments of the color label are overlapped. If yes, it means that the vertical installation of the print head is correct. If not, the verticality needs to be corrected by mechanical adjustment of the print head installation angle. In other words, if the upper line and the lower line are not overlapped, the position of the print head needs to be adjusted.
- (2) Comparison between the calibration diagram and the reality:
 - The best physical state of print head

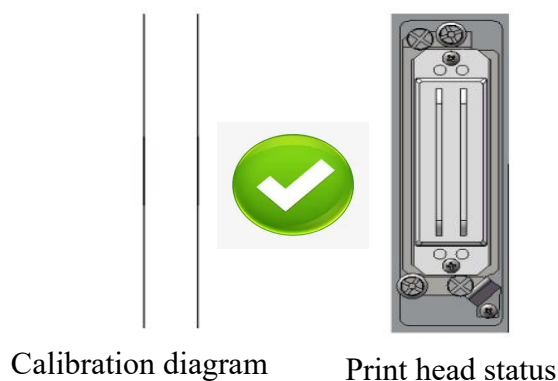


Fig. 131 The best physical state of print head



Note:
The print head does not need to be adjusted

- The physical state of the print head is tilted to the left

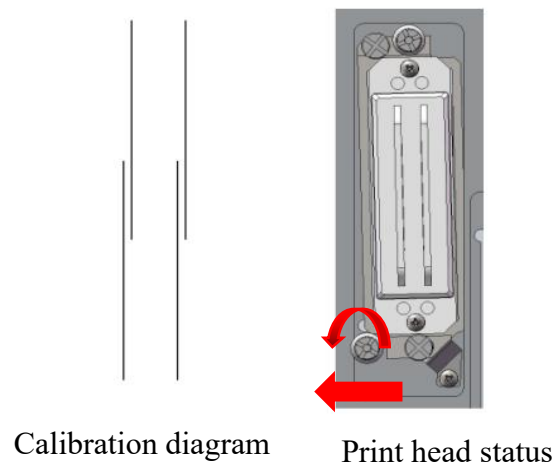


Fig. 132 Print head tilt to the left



Notes:

- 1. Loosen the long screw fixing the module.**
- 2. Turn the conical adjusting screw clockwise down and move the print head to the right.**
- 3. And then tighten the long screw fixing the module.**

- The physical state of the print head is tilted to the right

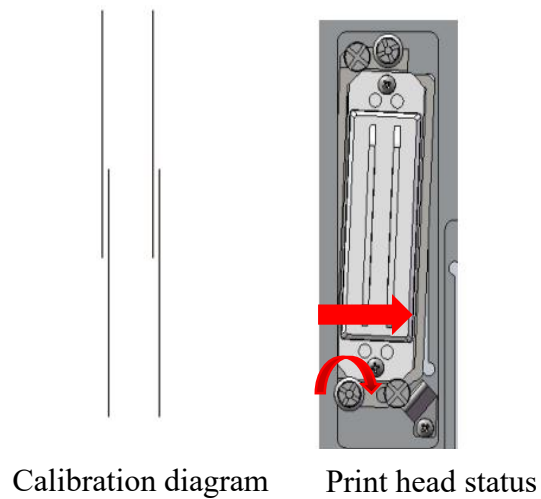


Fig. 133 Print head tilt to the right



Notes:

- 1. Loosen the long screw fixing the module.**
- 2. Turn the conical adjusting screw counterclockwise up and move the print head to the left.**
- 3. And then tighten the long screw fixing the module.**

Vertical check



Fig. 134 Vertical check diagram

Decomposition of the vertical check test diagram of printing is as follows:

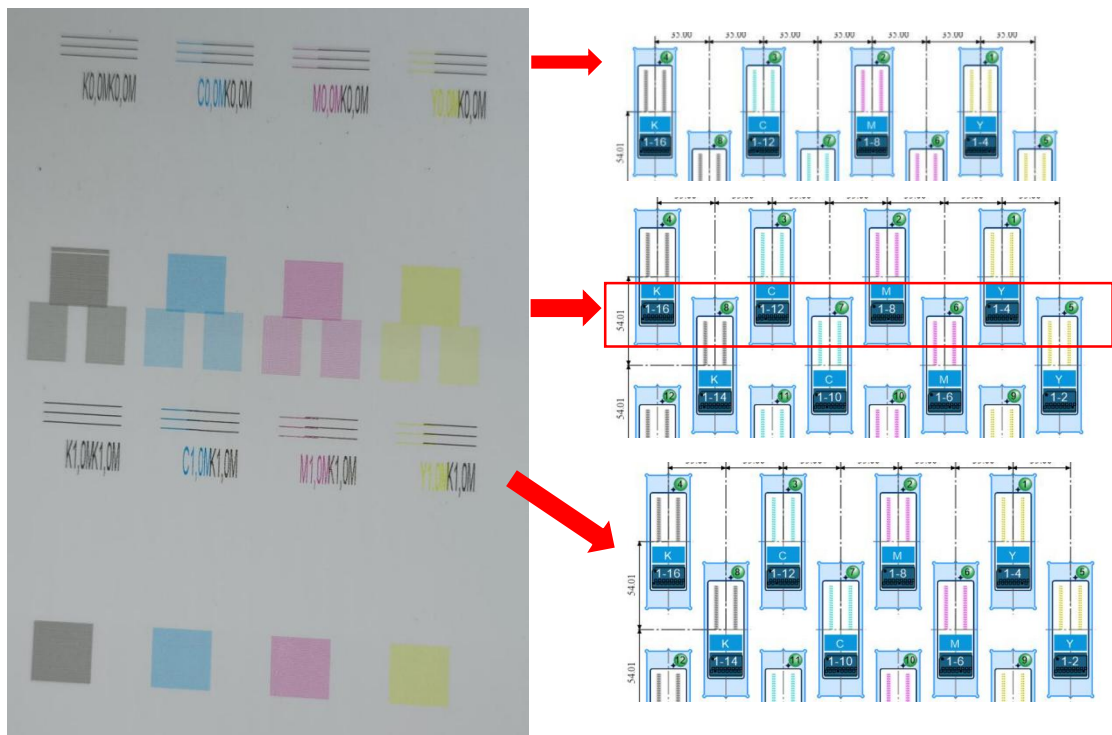


Fig. 135 Decomposition of the vertical check test diagram

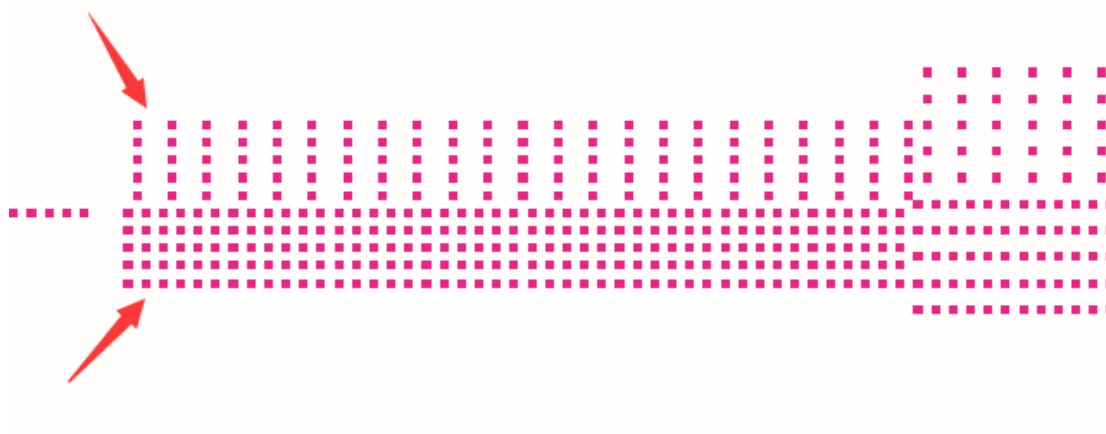


Fig. 136 Amplification of the test diagram



Note:

The top 5 rows of nozzles are punched by one print head (with an interval of one nozzle), and the lower nozzles are punched by another print head.

Software calibration

Main menu → tools → calibration guide → level check

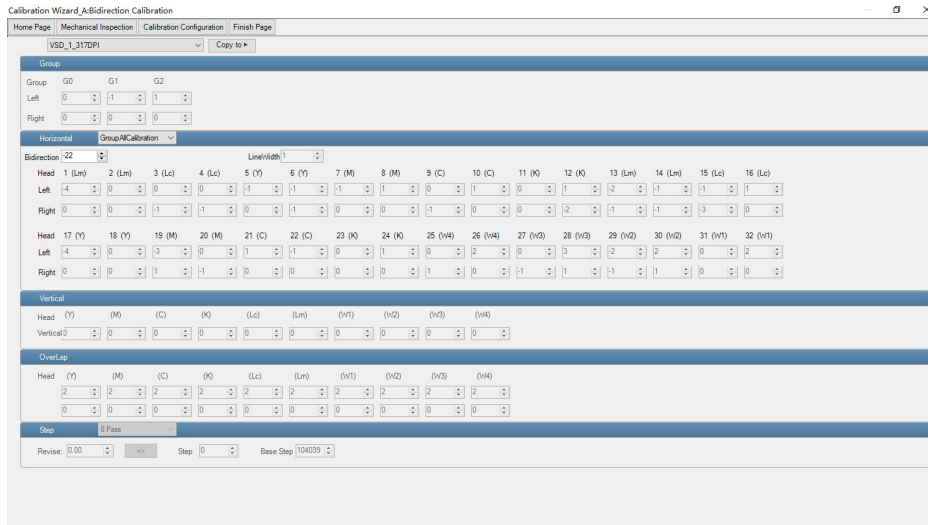


Fig. 137 Print head software calibration operation interface

Comparison table calibration can realize calibration of high precision 635DPI (VSD1-high speed, VSD2-medium speed, VSD3-low speed), high speed 317DPI (VSD1-high speed, VSD2-medium speed, VSD3-low speed), and high precision 508DPI (VSD1-high speed, VSD2-medium speed, VSD3-low speed) at the request of customers. By clicking Next, the corresponding calibration box will show the bright color, and the other area is gray. The user can click the Print at the lower left corner, print the test line, enter the corresponding numerical value, click save and then perform the next step of calibration.

Group level calibration

Calibrate the left (reverse) and right (forward) twice, find the line with the best coincidence, and fill the corresponding value back into the corresponding number box. If there is no complete coincidence, it can also be estimated and read from the middle of the two values with the best coincidence. (G0 represents the first group of color print heads, all other rows are aligned with the first row, and the calibration line is black)



Fig. 138 Group level calibration

**Note:**

The left calibration and right calibration are used for calibrating the left or right print ink jetting spots of carriage, and the ideal effect is that the upper line and the lower line are overlapped at the position of value 0. If they are not overlapped, numerical values that enable overlapping on the vertical line should be selected to add corresponding numerical value in the software and then the result is entered into the corresponding position.

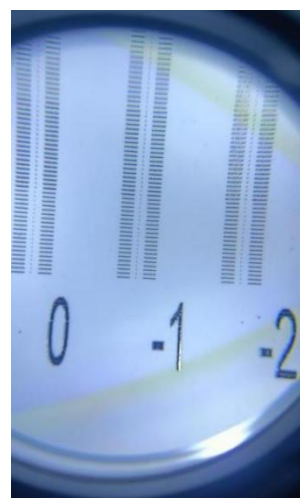
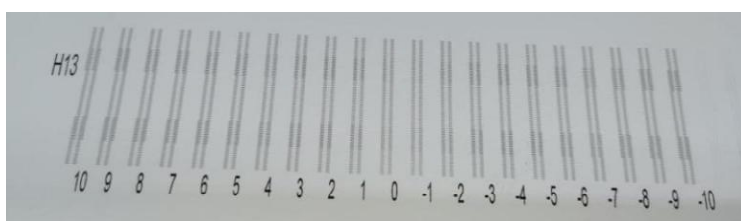
Bidirectional calibration

Fig. 139 Bidirectional calibration

**Note:**

Bidirectional calibration means that the carriage prints and ejects bidirectionally. The ideal effect is that the value 0 is on the same line. If they are not overlapped, numerical values that enable overlapping should be selected to add corresponding numerical value in the software and then the result is entered into the corresponding position.

Left calibration and right calibration

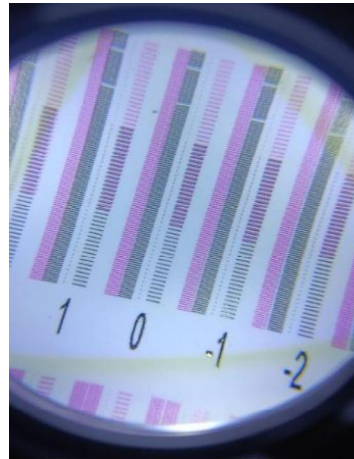
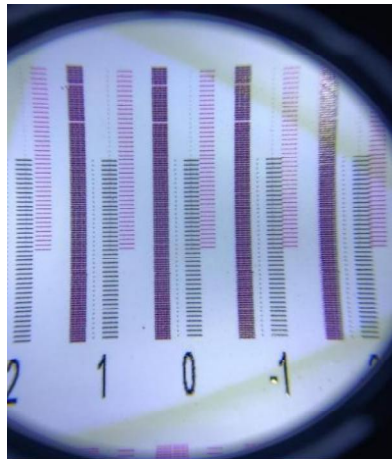
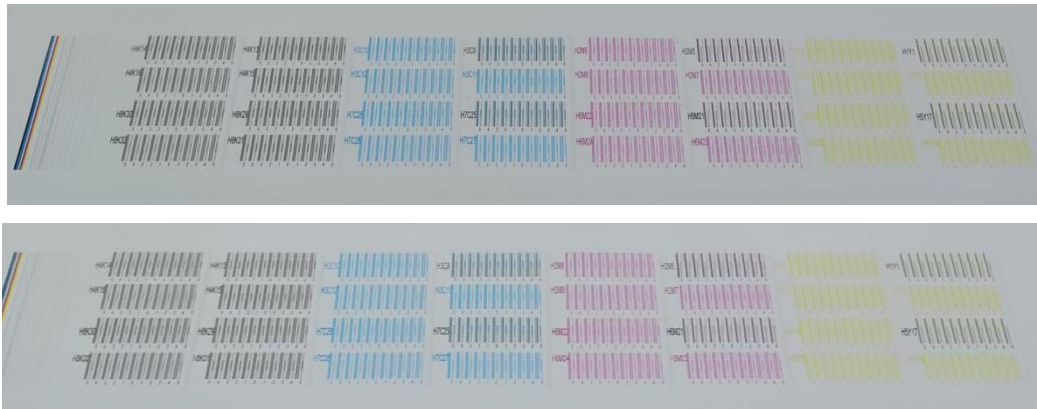


Fig. 140 Left calibration and right calibration



Note:

For left calibration and right calibration, the ideal effect is that the lines are overlapped at the numerical value 0. If they are not overlapped, numerical values that enable overlapping should be selected to add corresponding numerical value in the software and then the result is entered into the corresponding position.

Stepping check

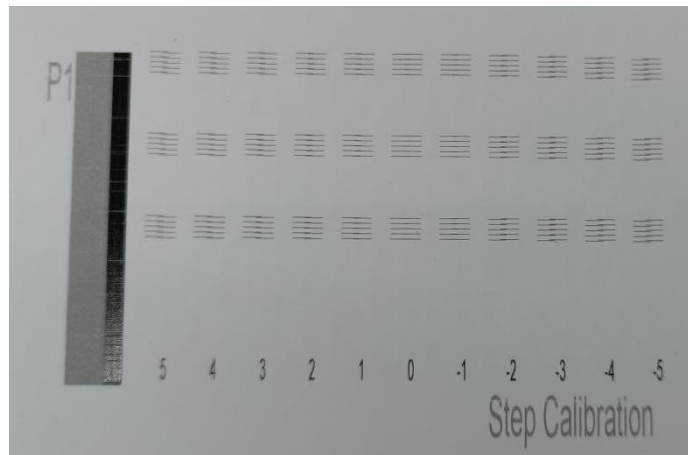


Fig. 141 Stepping check



Note:

Stepping calibration means that the carriage prints and ejects in the Y direction. The ideal effect is that the value 0 is on the same line. Otherwise, select the value on the same line and fill it in the corresponding position of the software.

Vertical check

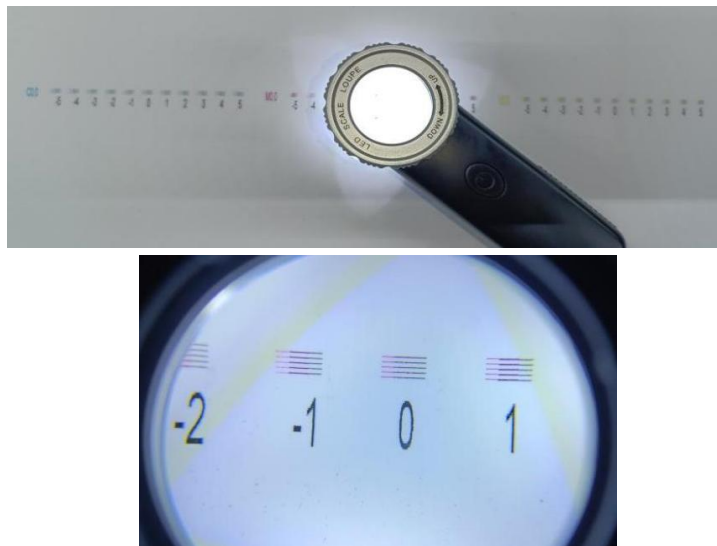


Fig. 142 Vertical check



Note: Vertical calibration means that the software calibration of print head and nozzle in the Y direction. The ideal effect is that the value 0 is on the same line. Otherwise, select the value on the same line and fill it in the corresponding position of the software.

Overlap calibration

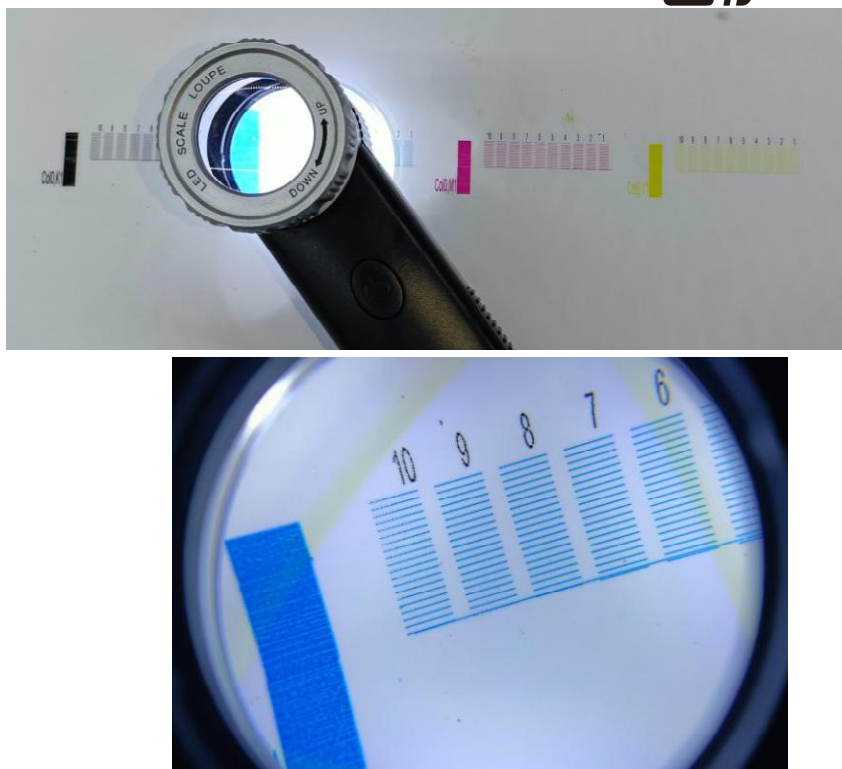


Fig. 143 Overlapping check



Note: Overlap calibration is to adjust whether there is nozzle overlap between the first and the second group of print heads with the same color. The ideal effect is that the color blocks are evenly distributed without white lines and black lines. If there is overlap, fill the figure corresponding to the overlap of dotted line and solid line into the corresponding position of the software.



DS32 Series UV Hybrid Printer

Print Software Interface and Functions

Interface Introduction

PrintManager opening interface

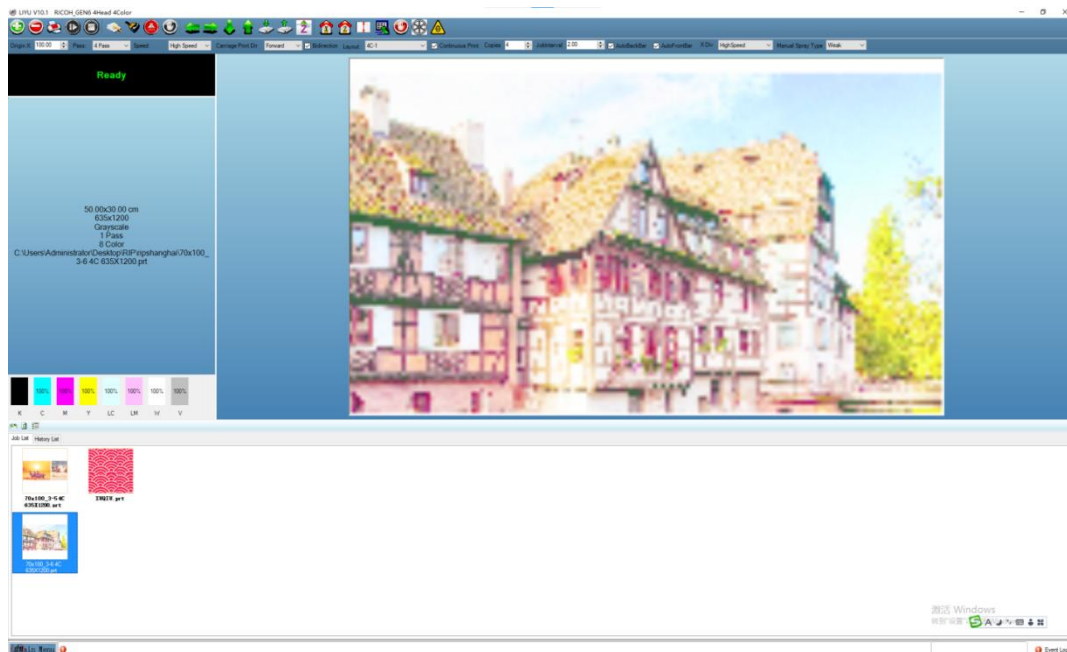


Fig. 144 PrintManager interface

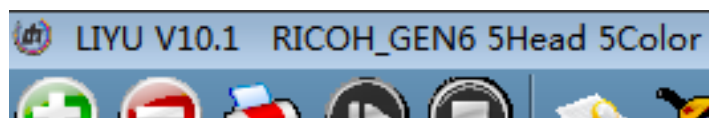


Fig. 145 Software version identification














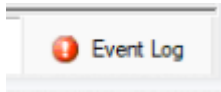






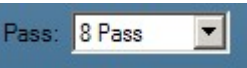
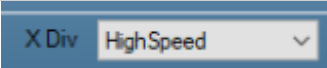
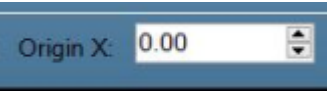


Note:

After installing version V10.1, there will be a version label in the upper left corner of the software interface

Icon function description

For icon function, please move the cursor over this icon, and the icon's description will appear after 1s

 : Add job	 : Cancel
 : Printing job	 : Pause or recover
 : Stop	 : Print nozzle check
 : Clean print head	 : Setting tab
 : Manual flash and cancel	 : Moving upwards and downwards
 : X-axis moving	 : Set current Z position as printing height
 : Y-axis moving	 : PM error message
 : To origin	 : Pinch roller control
 : One-key moisturizing	 : UV lamp control
 : Height measurement interface window	 : Bidirectional printing
 : Set pass quantity	 : High precision and high speed selection
 : Origin setting	

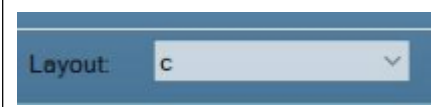

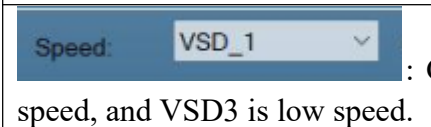

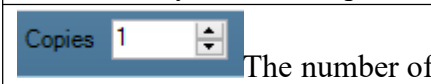
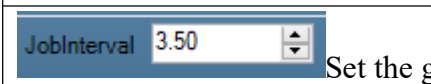
	: Select the current layout;
	: Step, which can be debugged in printing with real-time effect
	: Carriage speed: VSD1 is high speed, VSD2 is medium speed, and VSD3 is low speed.
	: PASS quantity of current printing.
<input checked="" type="checkbox"/> Continuous Print	Continuous printing option, when selecting the sheet type, it can automatically control the positioning rod to lift and fall.
	The number of copies of the current job when printing continuously.
	Set the gap for typesetting job copies.
<input type="checkbox"/> AutoBackBar <input checked="" type="checkbox"/> AutoFrontBar	Automatic control options for the front and back bars during the printing process.

Fig. 146 Icon function description

Software Setting

Help information

Main Menu-Help-About-Get Factory Settings Password

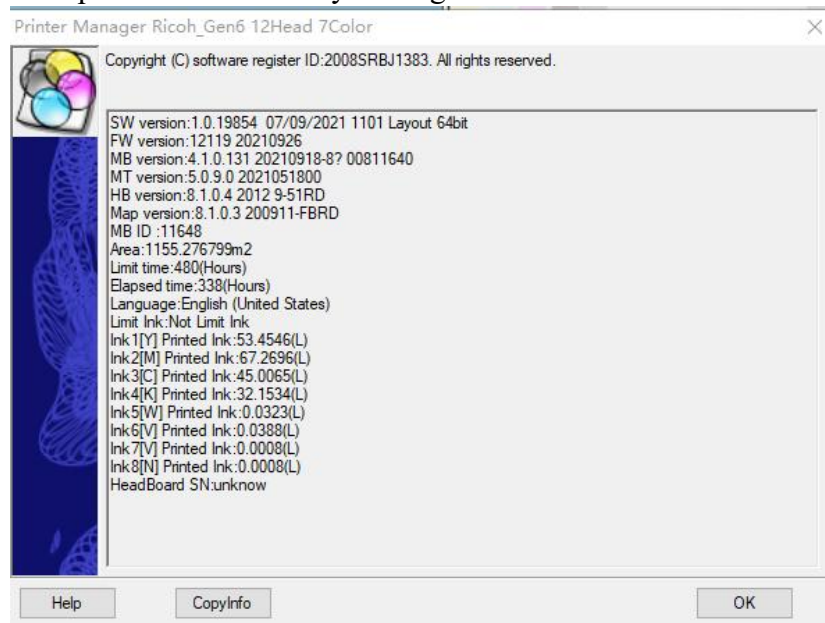


Fig. 147 Help information interface

- SW version: PrintManager version information
- MB version: Mainboard version information
- MT version: DSP version information
- HB version: Driver board version information
- Map version: Print head board version information
- ID: 40911 (core-board No.)
- Limit time: Permanent (unlimited)
- Elapsed time: 0Hour (running time: 0h)
- Language: Chinese (simplified)
- Limit ink: Not limit ink
- C Printed ink0(L): No cyan printed ink
- M Printed ink0(L): No magenta printed ink
- Y Printed ink0(L): No yellow printed ink
- K Printed ink0(L) : No black printed ink



Note:

Mainboard ID of DS guiding belt machine and factory setting password: 00811620 or 00811640

PrintManager model parameter setting

Close PrintManager, click the right key of PrintManager icon --> open file location --> FactoryWrite.exe

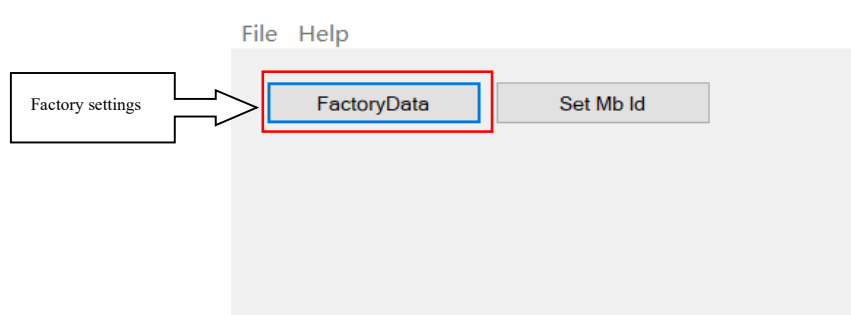


Fig. 148 Click the right key of PrintManager

Click FactoryData

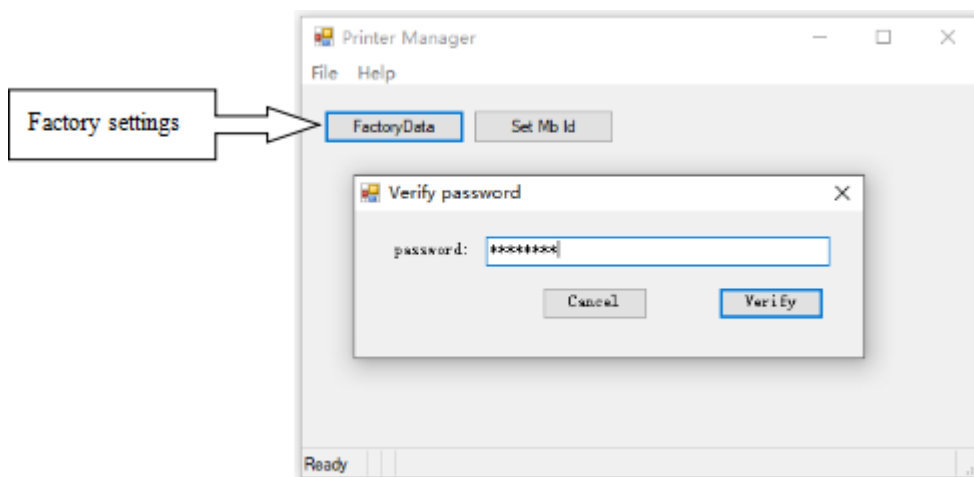


Fig. 149 FactoryData



Password introduction:

Manufacturer ID (i.e. 00811640), click to verify and enter the factory setting interface

Enter the factory settings interface

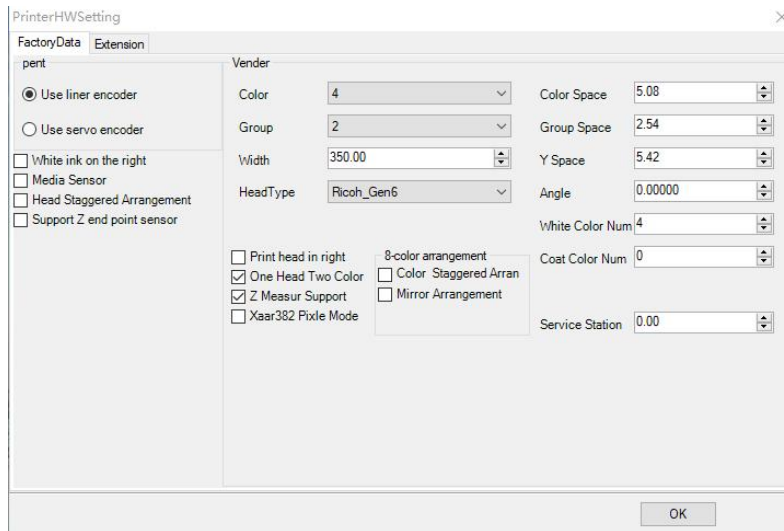


Fig. 150 Factory setting interface

- Color: Set according to the color to be used. The new software has been decided based on the layout, setting is not required here.
- Group: Set according to the actual number of groups to be used. The new software has been decided based on the layout, setting is not required here.
- Width: Set according to the actual machine length;
- HeadType: Ricoh-Gen6 (Note: Ricoh-Gen6 should be selected for both GEN5 print head and GEN6 print head)
- Print Head in right: If selected, it is the right origin, if not, it is the left origin. Set according to whether the head is on the left or on the right;
- One Head Two Color: One Head Two Color is enabled when ticking it; One Head One Color is enabled when not ticking it.
- Support Z-axis measurement: This function is targeted for machines with height measuring function, and check it in case of height measurement.
- Coding number: Set according to the actual conditions;
- Number of white: 1 white color or 2 white colors is selected as the case may be in use. After setting the white ink option, the white ink mixing and white ink cycling parameter settings will be valid. Otherwise, they will be invalid.
- Laminated film color number: It is set as the case may be in use. This is the number setting of varnish print heads.



Notes:

- 1. Width is the setting for the actual print width of this model.**
- 2. Setting of white color number: For the model with only white layout, the number of white print heads actually installed must be set. This is the setting that mainly enables white ink mixing.**

Extension Setting Interface

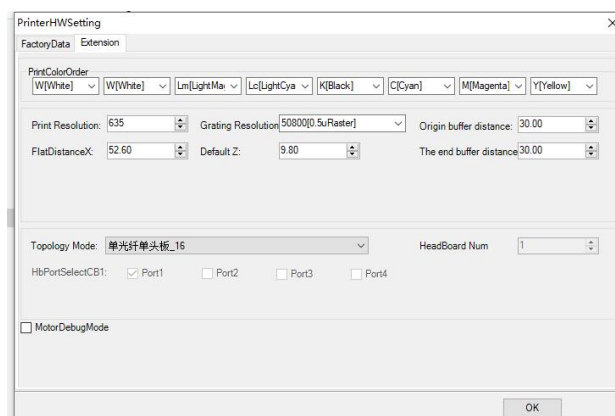


Fig. 151 Extension setting interface

- 1. X encoder resolution DPI: It is related to the resolution of grating, and 1200DPI shall be selected for 300DPI grating; 50800 [5u grating] shall be selected for 5u metal grating or magnetic grating.
- Buffer distance for origin and destination: Different printing ignition methods will lead to different setting distances, and please contact the supplier for the set value;
- Platform distance X: adjusting the printing position in X direction, and the parameter needs to be greater than or equal to the buffer distance;
- Platform distance Y: adjusting the printing position in Y direction, either positive or negative;
- Topology mode and number of print head board: Select according to the number of print head boards actually used; When the number of print heads are less than or equal to 8, select single print head board and single fiber_8, and select single fiber and single print head board_16 for more than 8 print heads;
- 1 port selection of switchboard: Check according to the number of print head boards actually used, check No.1 port for one print head board, No. 1 and No.2 ports for two print head boards, which cannot be skipped to check them.
- There is no need to set the Z default position and debugging mode.

Click "OK" when the configuration is completed and restart the printer according to the prompts.

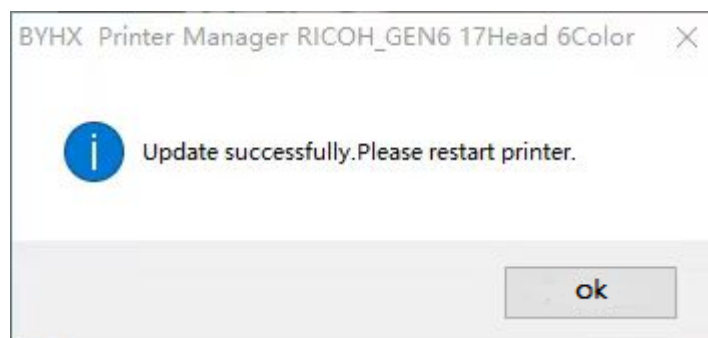


Fig. 152 Configuration completion interface



Note:

If you click "Sure to report error", the information in the above figure will not be prompted. You can check the error according to the report or send the screenshot to LIYU after-sales service department for troubleshooting.

Job Editing and Printing

Add job



Select the prt or prn to be printed

30x20-1K.prt	2022/6/6 15:03	PRT ↕
30x20-2K.prt	2022/6/6 15:04	PRT ↕
30x20-3K.prt	2022/6/6 15:04	PRT ↕
30x20-4K.prt	2022/6/6 15:05	PRT ↕
30x20-5K.prt	2022/6/6 15:05	PRT ↕

Fig. 153 Adding operation interface

Status bar

The left area displays the information of the job, including the size, resolution, gray level and file path of the job.



Fig. 154 Status bar

Job preview and editing

The job in the preview area displays the job editing and preview window



Fig. 155 Job preview and editing

- Clip: The printing area in the screenshot can be selected
 - Tile: The printing quantity of the cut area or the whole image can be set
 - Footnote: It will add job information automatically when printing it, and if checked, the selected parameters of this job will be printed out;
 - Ink reduction: This parameter can be used to reduce the amount of ink;
- The gray area on the right shows the information of the prt/prn file and their locations.

Setting Options

Main menu—Setting—Edit

Printer

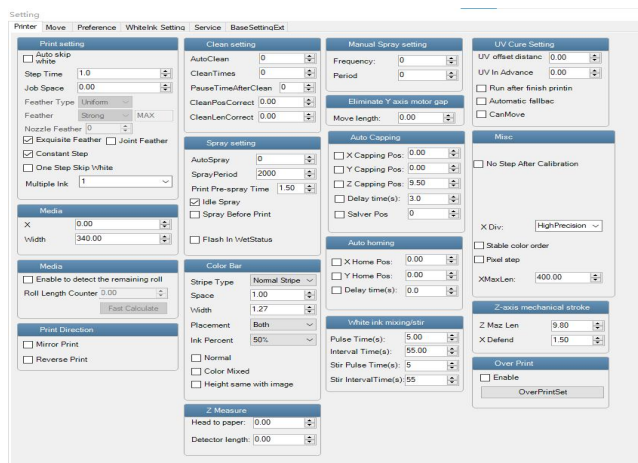


Fig. 156 Printer interface

1. Printing Settings

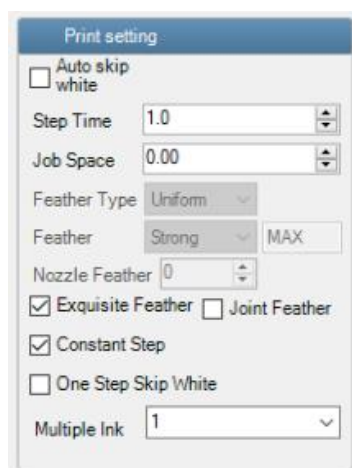


Fig. 157 Print setting interface

- Auto skip white: when there is no data in XY directions, it can be stepping and realize printing without scan;
- Y continuous printing: it is used on flatbed machine, and can print at the Y position without moving to Y origin;
- Skip white time: increasing the time of X-axis movement in skip-white process, which is conducive to the drying of ink on media and paper receiving;
- Job space: the space between two jobs;
- Feather type: choosing the feather mode, with common using of gradient and even;
- Feather intensity: choosing feather intensity, including normal, moderate, and strong;
- Fine feather and constant stepping: feather mode;
- Feather between print heads: used when there are multiple group of print heads. It is the transfer position of feather print heads;
- One-step skip white: used with auto skip white;
- Ink volume: controlling the volume of colorful ink with the default of 1, and using multiple times of ink volume in printing;

2. Media: media setting

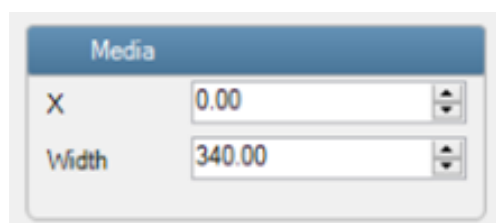


Fig. 158 Medium setting interface

- X: origin
- Width: the maximum width in X direction that the printer can print

3. Printing direction

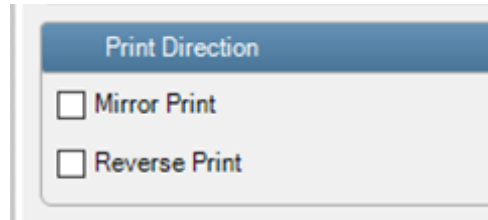


Fig. 159 Print direction interface

- **Mirror Print:** Mirror print requirements for operation invoked can be set here.
- **Reverse Print:** It is the reverse print in Y direction, that is, the motion direction is the reverse print of the Y original point set.

4. Clean setting

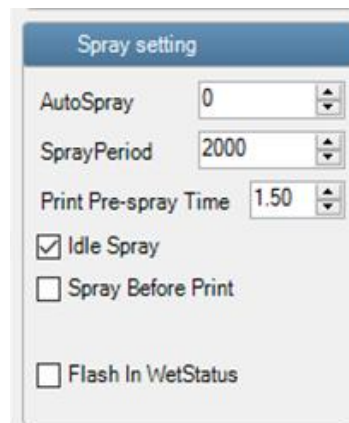


Fig. 160 Cleaning setting interface

- **Auto flash spray:** setting the unit as pass, and returning to origin for a flash spray after printing the set pass value;
- **Flash spray cycle:** controlling the cycle of idle flash spray when the carriage is at the X origin, unit: m/s;
- **Duration of flash spray before printing:** the duration of flash spray before printing;
- **Idle flash spray:** idle flash spray switch of carriage at the X origin;
- **Flash spray before printing:** switch of flash spray before printing;

5. Color bar setting

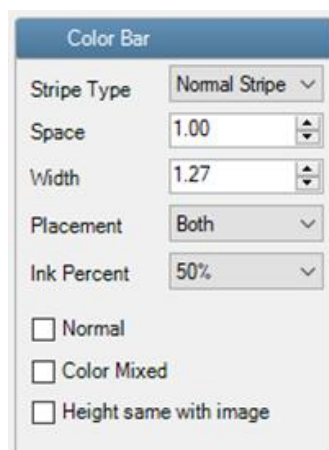


Fig. 161 Color bar setting interface

- Space: Space from the color bar to the image edge
- Width: width of color bar
- Placement: Set on both sides/left/right of image or no color bar
- Normal: separate printing of different color ramps
- Color overlapping: printing with overlapped color
- Same height as image: the color ramp is the same height as the image

6. Stack printing

Set values for corresponding layers of corresponding colors to achieve stack printing effect.

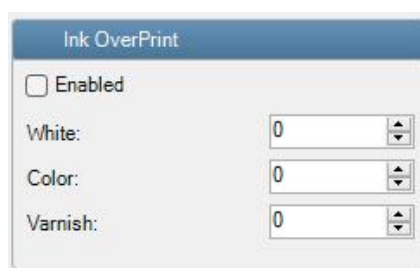


Fig. 162 Stack printing setting interface

- White: The white overprint number can be set separately
- Color: The white overprint number can be set separately
- Varnish: The white overprint number can be set separately



Notes:

1. The set quantity 0 means the default of one layer of normal print. If the number is set as 1, it means 2 layers. In other words, the actual overprint number is N+1.

2. All the options must be enabled. Otherwise, the setting will be invalid.

7. Automatic moisturizing

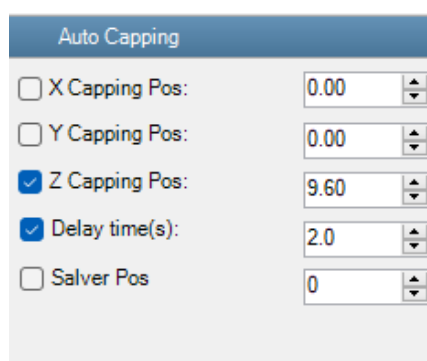


Fig. 163 Auto capping setting interface

- X Capping Pos: It may not be set
- Y Capping Pos: It may not be set
- Z Capping Pos: The set parameter is the distance from the original point to the plate.
- Delay time: After the carriage arrives at the original point, the delay time set will decline to the capping position.
- Salver Pos: It may not be set.

8. Circulation \ mixing of white ink



Fig. 164 White ink cycling/stir setting interface

- Enable: It will be valid by ticking this option
- Pulse Time: Working time of circulating pump
- Interval Time: Every interval time
- Stir Pulse Time: Working time of stir pump
- Stir Interval Time: Every interval time



Note:

1. All the options must be enabled. Otherwise, the setting will be invalid.
2. Whether this option takes effect mainly depends on the white number setting in the Factory Setting.

**Cross-reference:**

Detailed are shown in the last chapter "Software Setting - Factory Setting - White Number".

9. Setting of UV lamp solidification

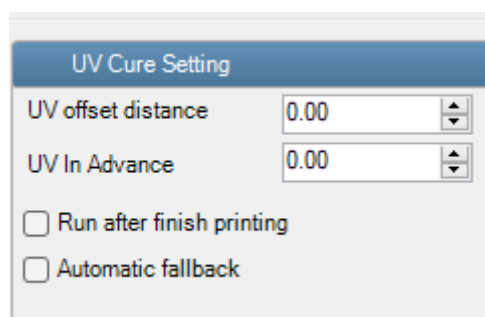


Fig. 165 Interface for setting of UV lamp solidification

- UV offset distance: It is used to set the distance from the varnish to the image edge when the light segment comes to an end. It aims to completely cure all the varnish with UV lamp.
- UV In Advance: It may not be set.
- Run after finish printing: Set parameter should be enabled, so that it can be valid.
- Automatic fallback: After varnish print, Y direction will automatically return to the image edge.

10. X-printing speed

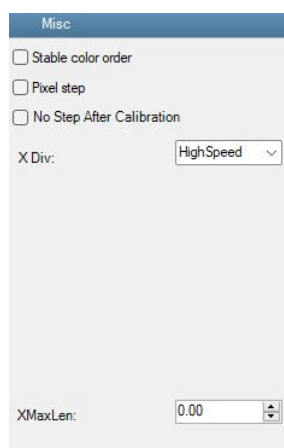


Fig. 166 X Print speed setting interface

- Stable color order:
- Pixel step:
- No Step After Calibration: No movement after test calibration.
- X Div: it can be divided into high-precision mode and high-speed mode

- X MaxLen: The maximum stroke parameter that is set when the sensor can be collided in the motion setting.



Notes:

The high speed and high precision modes are correlated to X Div option on the software interface.

After setting of X MaxLen, the machine should be restarted, so that the setting can be valid.

11. Z direction setting and X maintenance distance setting

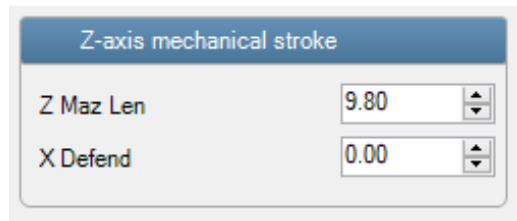


Fig. 167 Z direction setting and X maintenance distance setting interface

- Z Maz Len (maximum mechanical stroke of Z-axis): Set the maximum limit parameter for the Z-axis.
- X Defend (X maintenance position): Set the distance the carriage moves during X maintenance.

12. Setting of liquid level display for main ink box

Contents displayed on the interface can be set based on the configuration of the model.

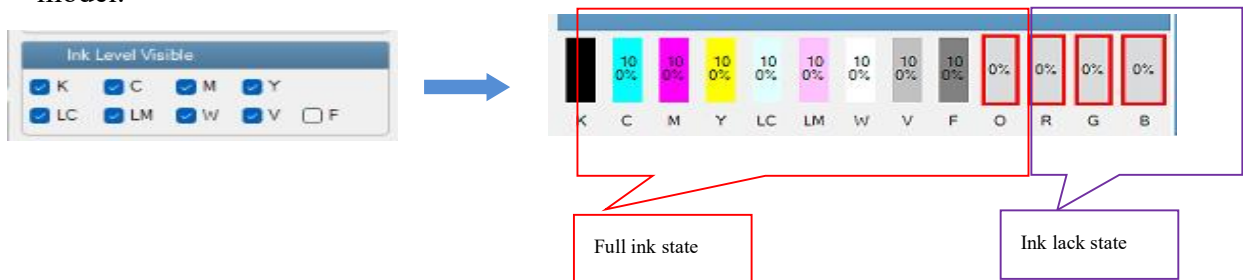


Fig. 168 Interface for setting of liquid level display for main ink box

13. RIP Color Sequence

The color sequence settings for adding spot colors can be set on the interface.

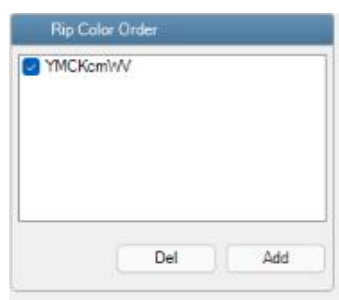


Fig. 169 RIP color sequence interface

**Notes:**

1. Four colors setting addition: YMCKWV
2. Six colors setting addition: YMCKmWV

14. Manual spray intensity setting:

As the spray frequency is higher, the spray intensity will be greater. The longer the time, the greater the intensity.

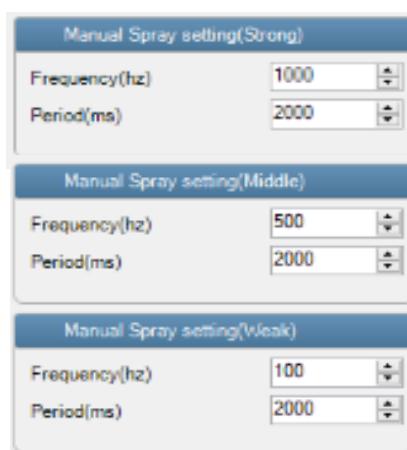


Fig. 170 Spray intensity selection interface

**Notes:**

Suggested setting: it is suggested that the spray time should be 2,000ms

1. Spray - weak frequency: Setting range: 100-500HZ
2. Spray - medium frequency: Setting range: 1,000-1,500HZ
3. Spray - strong frequency: Setting range: 2,000-2,500HZ

Movement

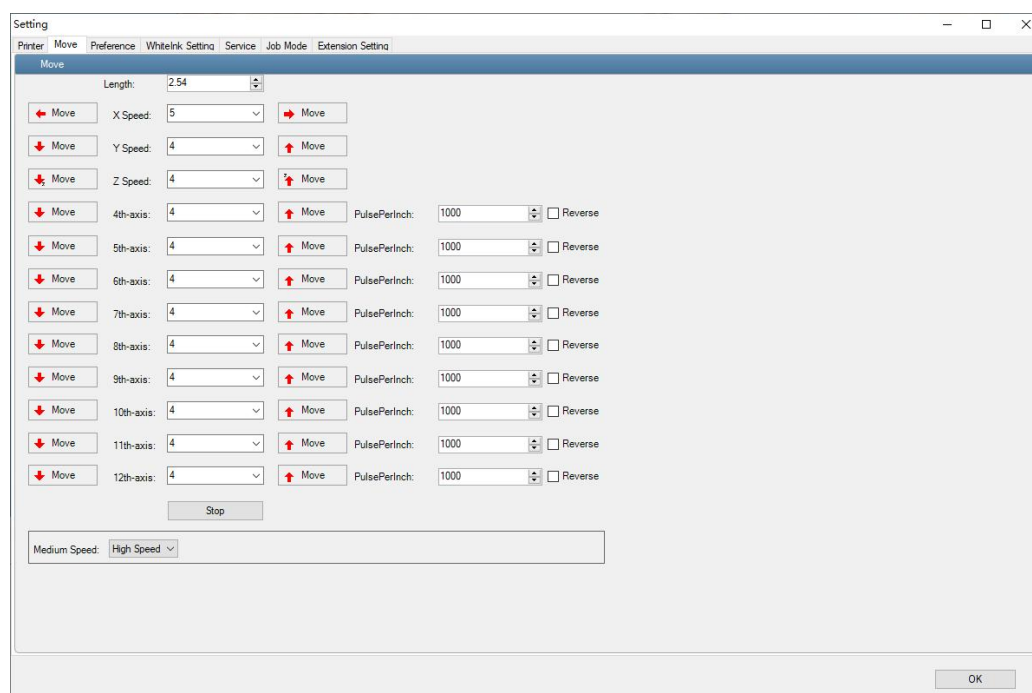


Fig. 171 Moving interface



Notes:

- 1. The moving speed on this interface can be set to control the manual moving button speed on the main interface; In version V10.1, XYZ gears are unified as gears 1-7. As the numerical value is smaller, the speed is slower; as the numerical value is greater, the speed will be faster. In addition, the step movement speed during media printing has been added, making it convenient for users to set.**
- 2. Material stepping speed: There are three gears (high, medium, low) that can be set for different PASS stepping speeds.**

Personal setting

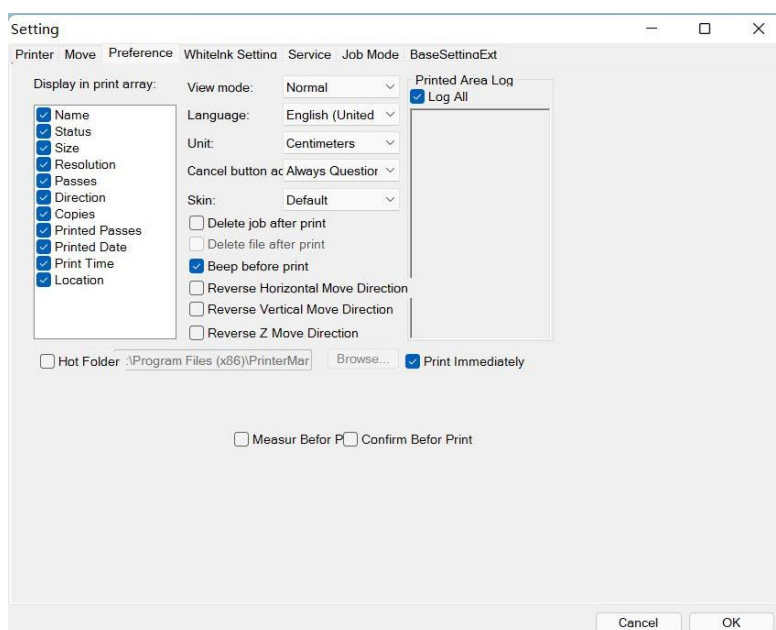


Fig. 172 Personalized setting interface

- Checking mode: normal, wide screen, and old interface;
- Language: simplified Chinese, traditional Chinese, and English. Set language according to the needs, which requires a language password;
- Unit: setting the unit displayed in the software;
- Cancel the printing default, skin: default;
- Delete the job after printing: the switch of deleting the job after printing;
- Delete the file after printing: this function can be selected when selecting "delete the job after printing", and the files in the computer can be deleted;
- Reverse of motion from left to right, front and back, reverse of Z axis: reverse switch of the motion button on the main interface, and it does not affect the printing movement direction;
- Hotfolder: used with "Print now". When the new prt file is placed in the selected folder path, the print action will be performed immediately;
- Measurement before printing: click the Print button to pop up the height measuring interface, then you can choose to remeasure the height or print it immediately;
- Confirm before printing: click the Print button to pop up the OK interface, then you can confirm and print with the current Z position as the print origin;



Note:

After setting the language, the machine needs to be restarted. Otherwise, some functional languages cannot be set successfully.

White ink setting

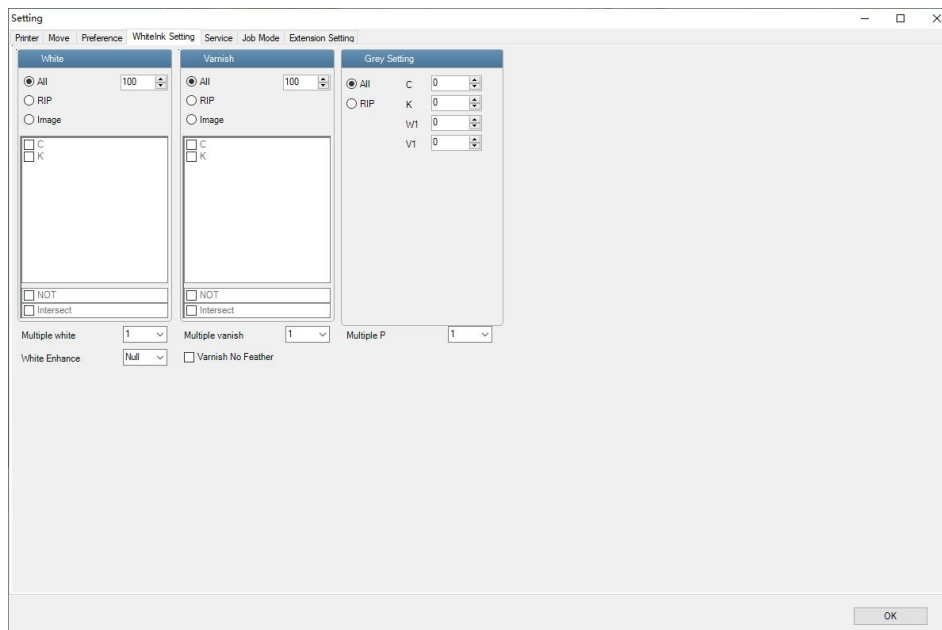


Fig. 173 White ink setting interface

- The whole figure: set the whole job with white background, and the white ink output can be set as required
- RIP: print white ink where there is data
- Image: if you check this option, the color channel below will be lighted up, and it is optional to specify a color and print white under it according to the job,
- Ink volume: White ink volume and gloss oil ink volume can be set separately.
White ink enhancement: It is equivalent to setting the feathering function of white ink volume.
- Varnish without feather: If not selected (default), it is the same as gloss oil feathering settings. If selected, it is varnish without feather, meaning that color ink uses feathering method, while gloss oil does not use feathering method, and printing is done simultaneously.

Service

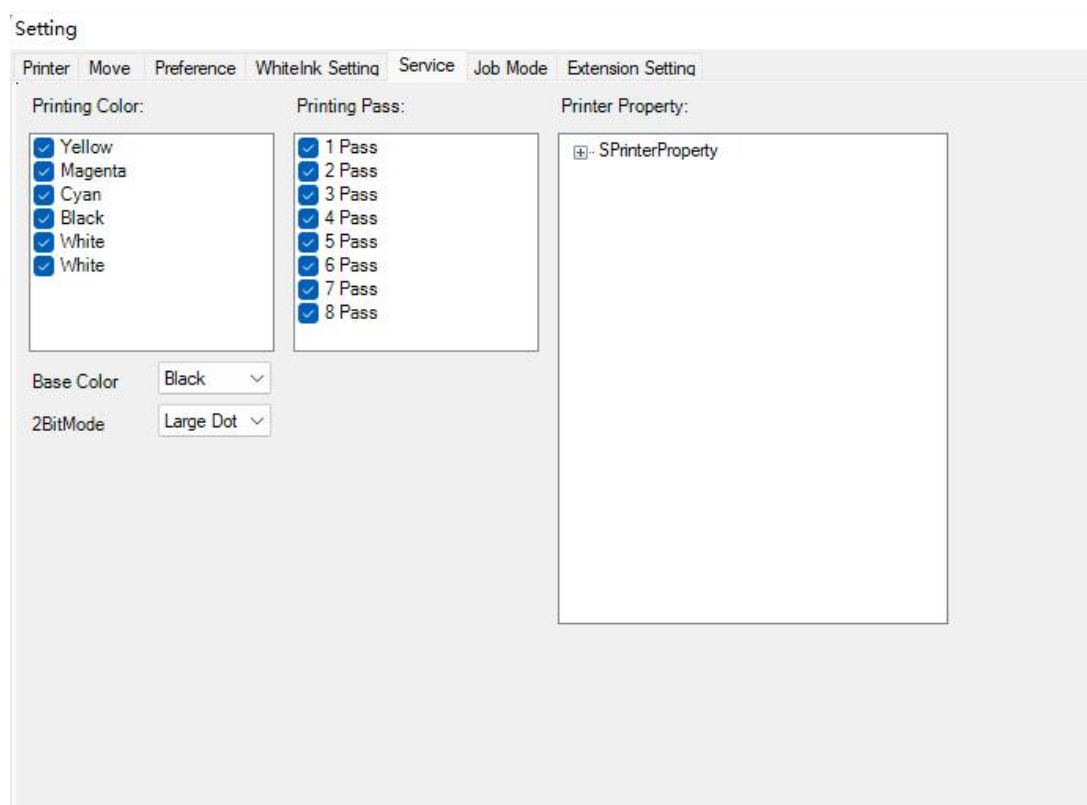


Fig. 174 Service interface

- Printing Color: This parameter can be set to control whether ink is sprayed.
- Base Color: It is used to set the base color for printing.
- 2BitMode: carry out print nozzle check to calibrate the dot type used for printing;
- Other parameters are used by default and do not need to be set.

**Note:**

It will not be displayed without adding the factory.usr file

Printing Modes



Note:

It will not be displayed without adding the factory.usr file

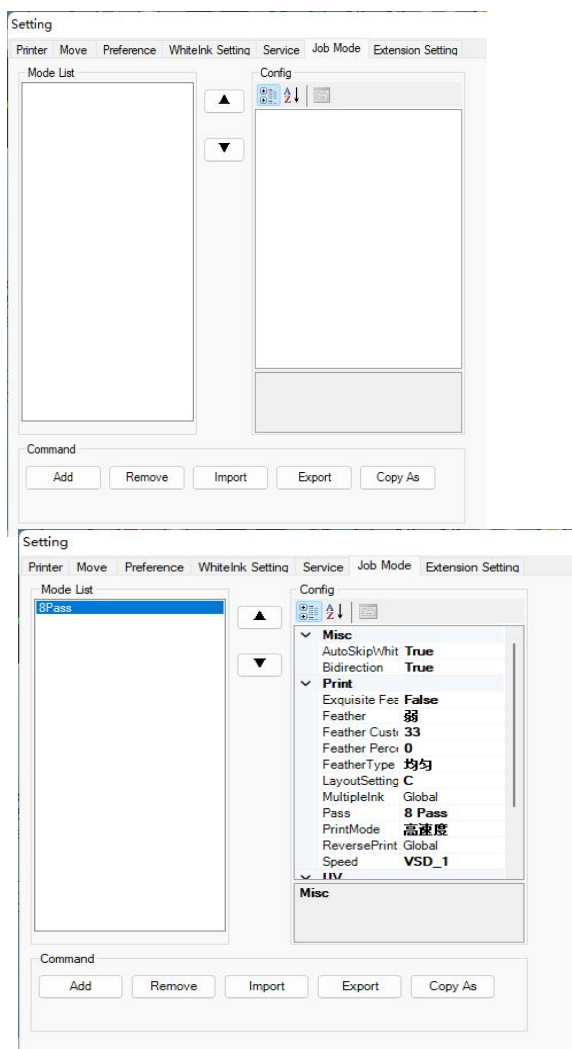


Fig. 175 Print mode interface 1

To facilitate special customers, different print modes can be added in the print mode column. By selecting the mode list, customers can set all the printing related parameters in the right setting column.

After setting up, the PM interface will generate a printing mode interface. Customers only need to select the set parameters from the pull-down menu to print.

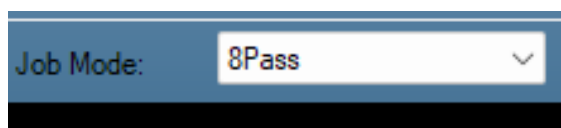


Fig. 176 Print mode interface 2

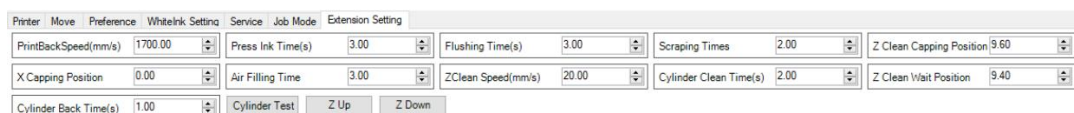


Fig. 177 Extension interface of basic setting

- **PrintBackSpeed:** When using high-precision unidirectional printing, it increases the speed of the unidirectional ink return process to improve printing efficiency. The highest speed should be no more than 1,700MM/S.

**Notes:**

This setting parameter has no relation to automatic ink scraping parameters. Please note that this parameter is not entered incorrectly.

- **Press Ink Time:** Automatic ink pressing time
- **Air Filling Time:** The time it takes to blow dry the cleaning solution on the scraper after cleaning.
- **Flushing Time:** Setting the time for cleaning the scraper with cleaning solution
- **Z Clean Speed:** The speed at which the Z axis rises or falls during automatic ink scraping
- **Scraping Time:** Set the number of round trips for the scraper.
- **Cylinder Time:** The time set for the scraper to reach the front end.
- **Z-axis cleaning and moisturizing position (Z Clean Capping Position):** The carriage is lowered to the height of touching the scraper.
- **Z Clean Wait Position:** The scraper moves forward to the front of the printing baseboard. In order to facilitate the return of the scraper, the carriage will lift a specified action beyond the height of the scraper.
- **X Capping Position:** No need to set.
- **Cylinder Back Time:** The time it takes for the scraper to return to origin.

Height Measurement

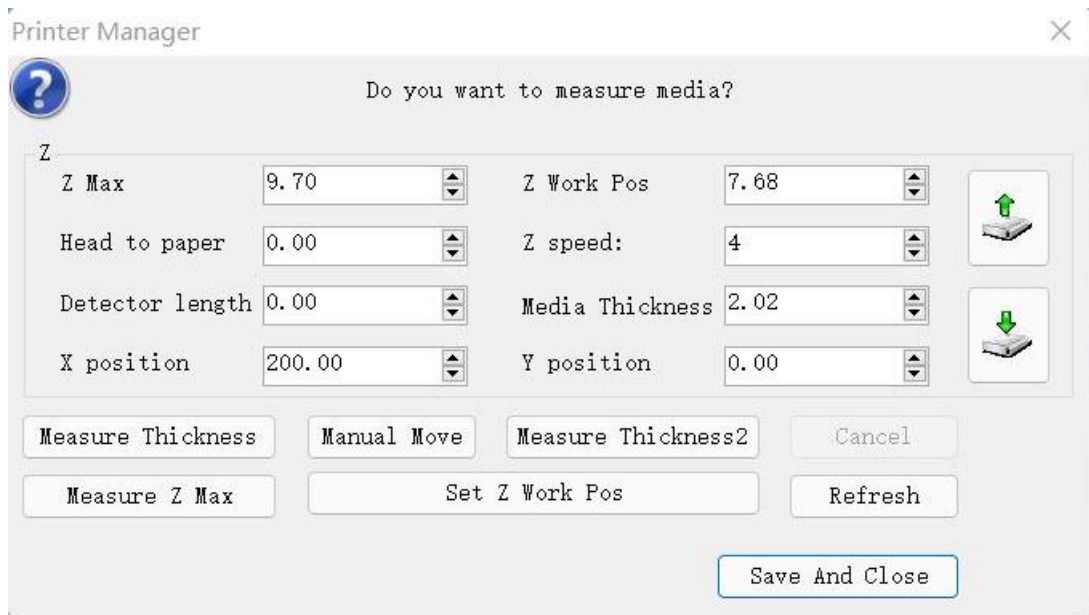


Fig. 178 Height measurement setting interface

➤ Z Max (max Z stroke):

Press the button of automatical measurement to measure the max Z stroke, and the measured position is controlled by the following XY directions; The parameter can be manually modified. After the machine is installed, the max Z stroke needs to be measured in the first step of height measurement;

➤ Head to paper (distance between media and print head):

This parameter can control the actual height of the print head from the media after measuring. During the height measurement, once triggered, the probe will move again according to the value set in this parameter, with a minimum of 0. For example, if the height between media and print head is set to 0, and after height measurement, the height of the print head to the print media is measured to be 1.5mm by caliper. If the value of the height from the print head to the media is changed to 0.5mm, then, you need to measure the height again. At this time, the height from the print head to the print media is 2.0mm;

- Detector length (length of probe): It is suggested to set this value to 0 all the time;
- Z Work Pos (Z job position): This parameter will be updated automatically after the height measurement or manual input of the value of material thickness, and this parameter does not need to be modified;
- Z Speed (moving speed in Z direction): set the up and down moving speed in Z direction.
- Media Thickness (material thickness): This parameter will be automatically updated after the height measurement;

If the value of material thickness is known, you can also manually input it to this position, then click Close and save it, and it will automatically move Z to the set

height to print according to the set parameters during printing,

- X /Y Position (measuring position X and Y): Used with automatic positioning height measurement and max stroke measurement;
- Measure Thickness 1 (automatic positioning height measurement): After pressing this button, the carriage will move according to the set measuring position X and Y, and carry out height measurement after reaching;
- Manual Move: Move according to the parameters set in the interface;
- Measure Thickness 2 (manual positioning height measurement): After pressing this button, the carriage will conduct height measurement at the current position without moving to X or Y, but you need to move it manually;
- Measure Z Max (max Z stroke measurement): After pressing this button, the carriage will move according to the set measuring position X and Y, and carry out max Z stroke measurement after reaching. Besides, you need to set the correct Z resolution before using this function;
- Set Z Work Pos (set the Z printing origin): Press this button to set the height of Z as the default printing height, and the value of material thickness will be updated accordingly. The effect of it is same as that of setting the Z printing origin in the main interface;
- Z axis moving upwards and downwards button: It can control the lift and fall of the Z axis, and the effect of it is same as that of the main interface;
- Save and Close: Save parameters and then exit.



Note:

If parameters are modified, you must press this save button before exiting. The parameters modified will not be saved by clicking the X at the upper right corner (you directly exit).

Waveform import and export

Main menu→Setup→Waveform import and export

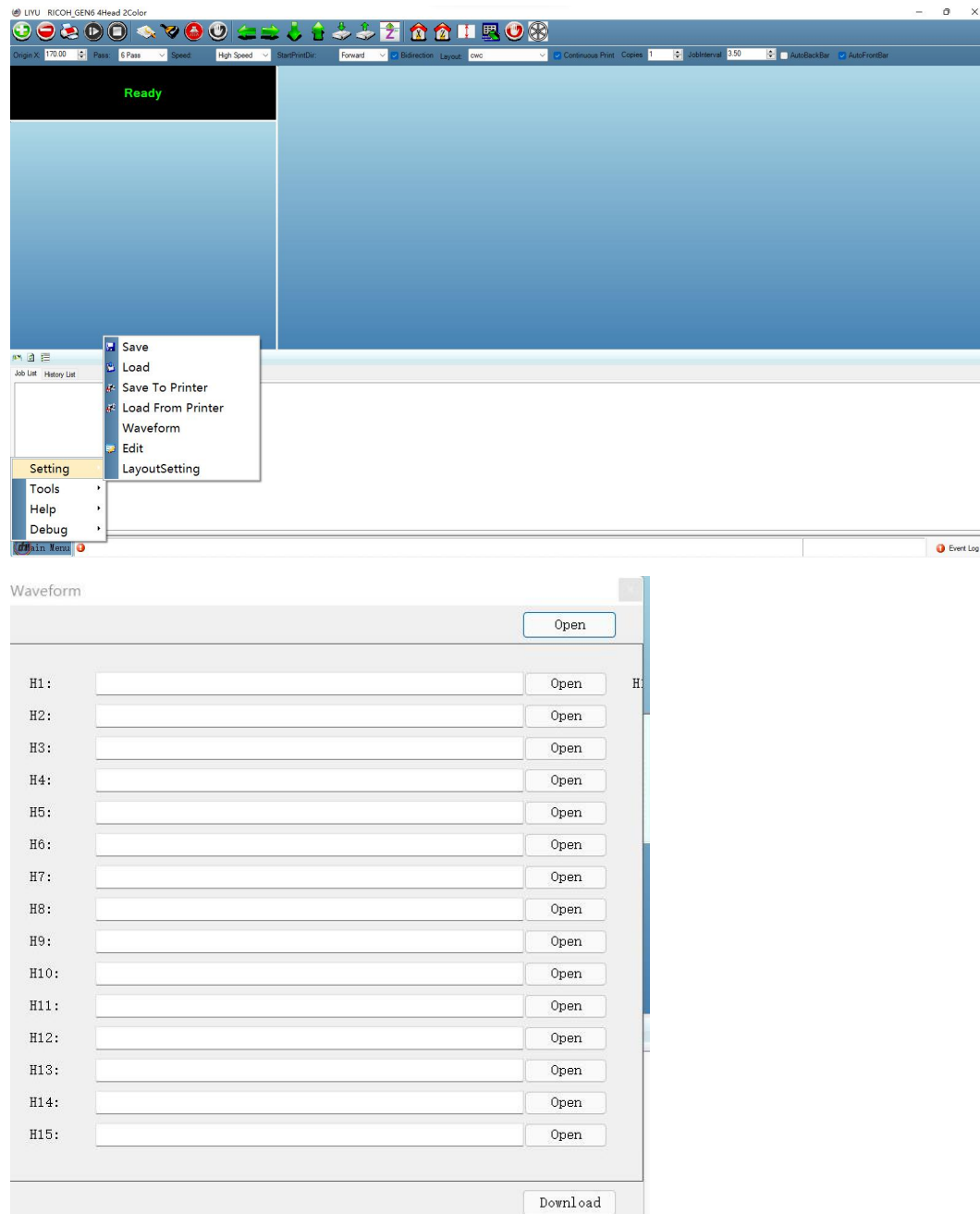


Fig. 179 Interface of waveform import and export

This function is used to load waveform. H1-16 corresponds to 1-1, 1-2.....1-16 in the layout package;

Click "Open" to select the waveform to be downloaded. After selection, click "Download". After downloading, you will be prompted that the download is completed without restarting the printer.

Tool Options

Main menu→Tool

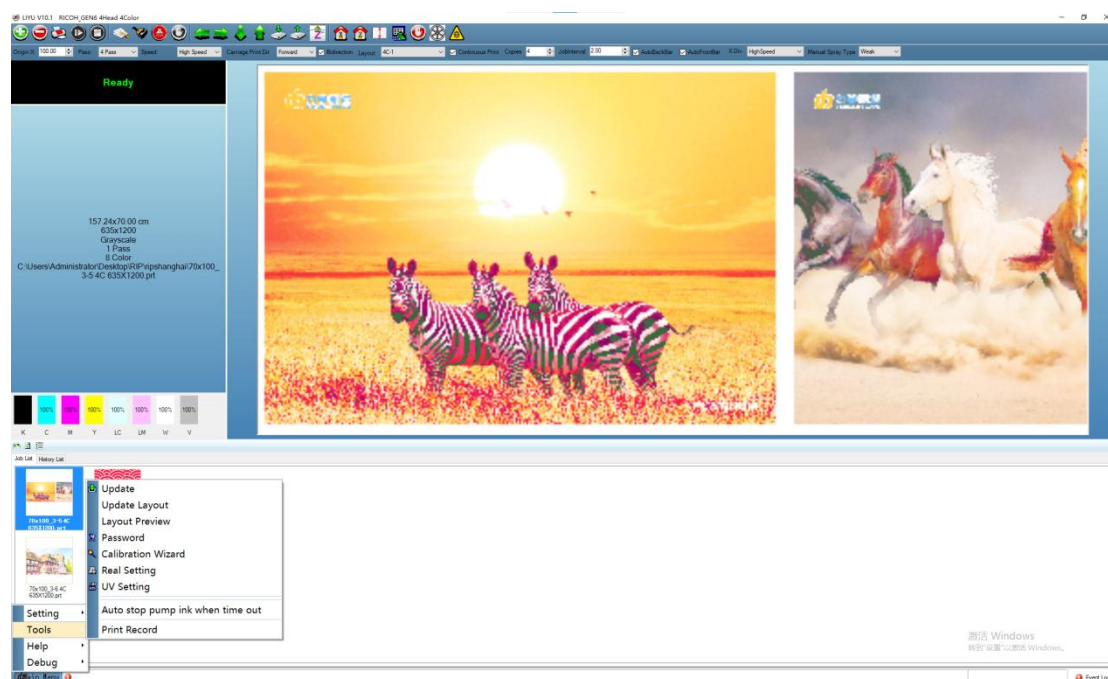


Fig. 180 Tools interface

Updating

Upgrade the version of the driver board for print head board of Mainboard, and the upgrade package will be provided in the attached USB flash disk or by LIYU;

Print head layout upgrade

Upgrade the free layout version arranged for print head, so that the actual arrangement of print heads can correspond to the software; the layout package will also be kept in the USB flash disk or provided by LIYU.

Layout preview

In the layout preview in the new version, the print head color sequence can be modified and the channel can be adjusted according to user requirements. In special needs, the distance between print heads can also be modified.

Password

For inputting time password and language password;

Calibration wizard

Adjust the physical angle of print head and calibrate it by the software. The detailed calibration wizard will be introduced in the following chapters;

Real time settings

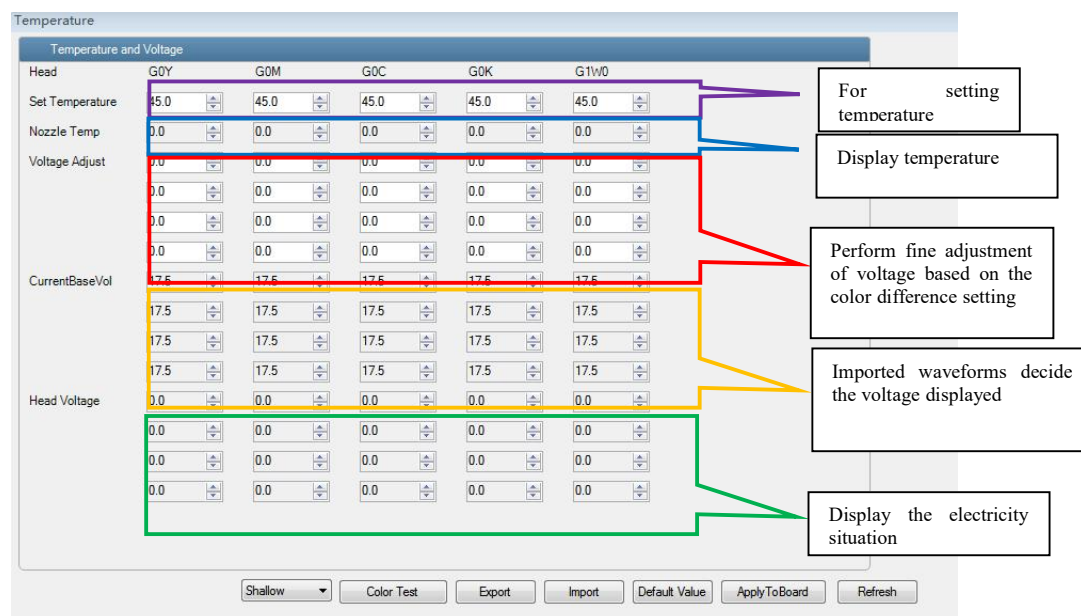


Fig. 181 Real-time setting interface

- Setting temperature: set the temperature according to the ink viscosity. Generally, UV ink is set at 40-45°;
- Print head temperature: display the real-time temperature of the currently connected print head. If the print head is not read, it is displayed as 0;
- Correction voltage: slightly adjust the voltage parameters of each row of print heads, and the recommended setting range is ± 2 ;
- Current reference voltage: display the platform voltage of the current waveform;
- Color test: The pull-down menu on the left will display three ink output modes: light, medium, and deep. It mainly prints 1PASS color blocks for multiple rows of print heads, and can check the color difference of each color corresponding to the print head.



Note:

The printing color block can be light, medium and deep. The color difference of each row of print heads can be checked respectively according to the specific color depth value, and the corresponding voltage value for fine adjustment can be entered for modification, until there is basically no obvious color difference. As shown in the following figure:

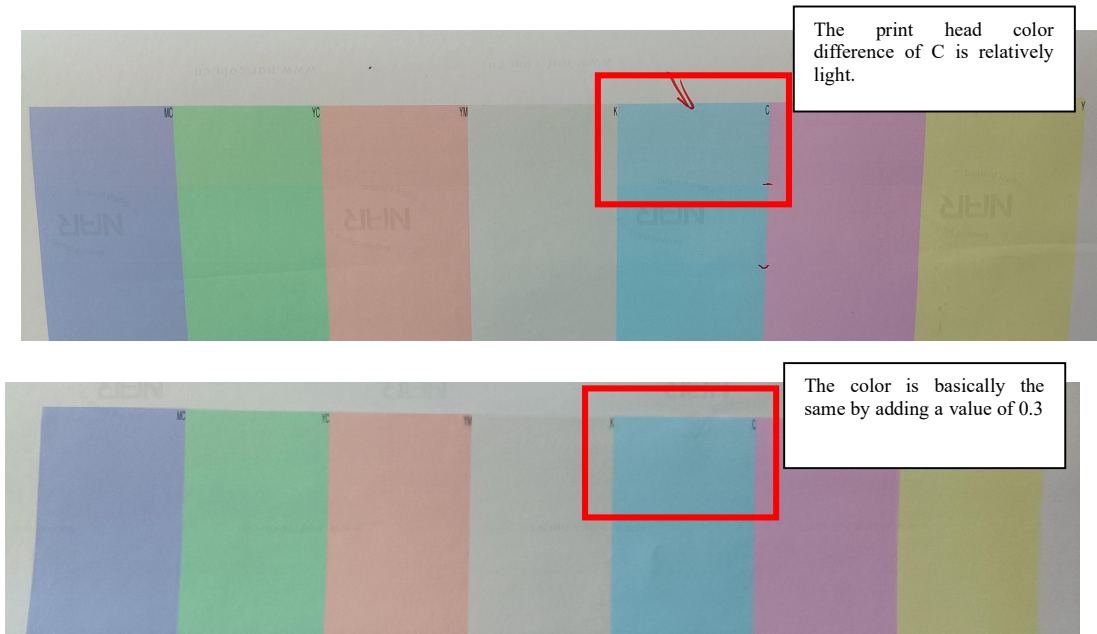


Fig. 182 Color difference check

- Export to file: save the current set parameters to a file;
- Import from file: export to the file generated by the file to import. This operation is only for the same Hybrid Printer with the same configuration;
- Apply to the mainboard: save the set parameters. Click this button to save after modifying the correction voltage and temperature;
- Update: refresh the current interface;

UV setting

Main menu

Tools - uv setting

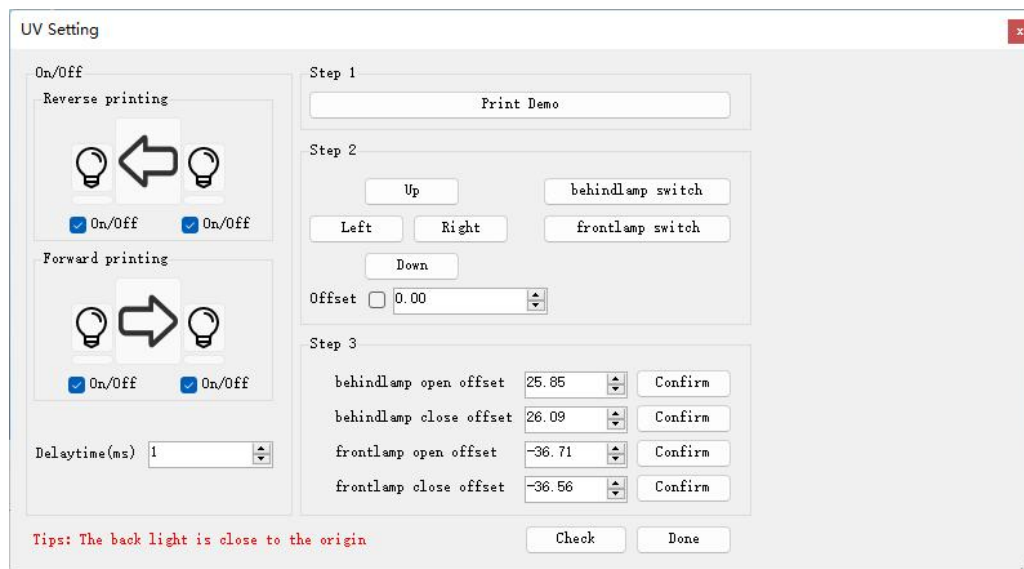


Fig. 183 Real-time setting interface

Tick switch (switch delay: 0)

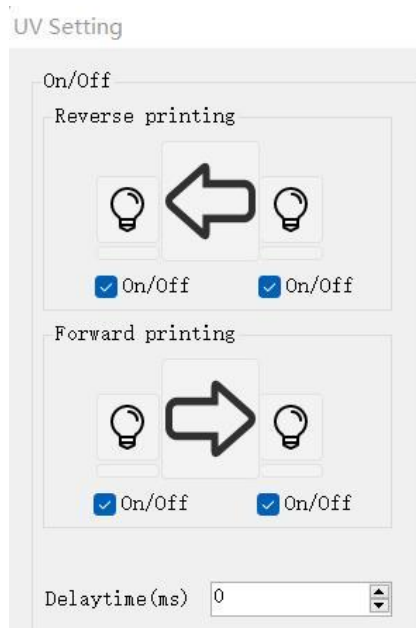


Fig. 184 ON/OFF delay interface

Step 1: printing test chart

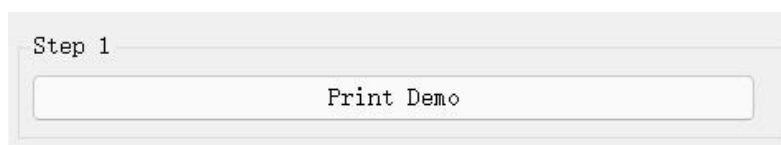


Fig. 185 STEP1

The printing chart is as follows:



Fig. 186 Print diagram

Step 2: (facing the ink carriage, the rear lamp is the left lamp, and the front lamp is the right lamp)



Fig. 187 STEP2

- Click move right to move the right lamp to the outside of the left color bar of the test chart and click (Front lamp on offset - Confirm the setting)
- Continue moving right to move the right lamp to the outside of the right color bar of the test chart and click (Front lamp off offset - Confirm the setting)
- Click move right to move the left lamp to the outside of the left color bar of the test chart and click (Rear lamp on offset - Confirm the setting)
- Continue moving right to move the left lamp to the outside of the right color bar of the test chart and click (Rear lamp off offset - Confirm the setting)

- Submit data to complete



Note:

When turning on/off UV lamp manually, if the carriage stops on the guiding belt, the software will prompt that the carriage should move to the original point when turning on the lamp.

Introduction to UV lamp segmented control (optional):



Fig. 188 UV lamp segmented control interface

- Left and right lamp control: divided into full setting and segmented setting options. When any parameter is set in full, the above 20 segments of parameters can be changed. The following 1-20 segments are independent settings. Mainly convenient for setting different light intensity and segmented control for different print head layouts.
- Automatic UV: Select automatically segmented printing during the printing process.
- UV lamp length: Set the actual length of the installed lamp for the current model.



- The length of the UV lamp beyond the first row of nozzles. The main function is to set the movement distance between the UV lamp and the first row of print heads.

Automatic stop after ink pump timeout

The switch for whether to stop automatically after the pump ink timeout, which is used to prevent the ink from reflowing to the negative pressure;

Printing record

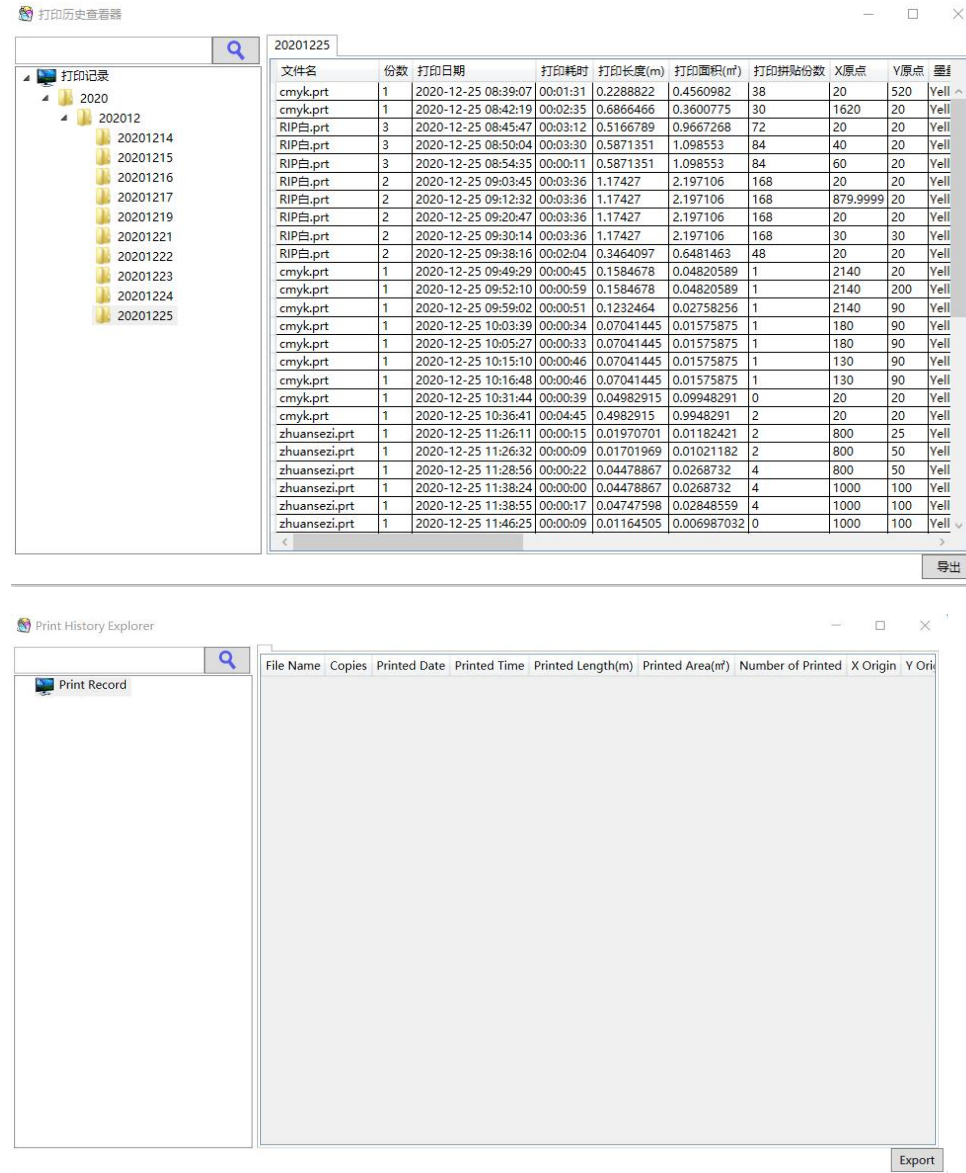


Fig. 189 Print record interface

Ink Counting

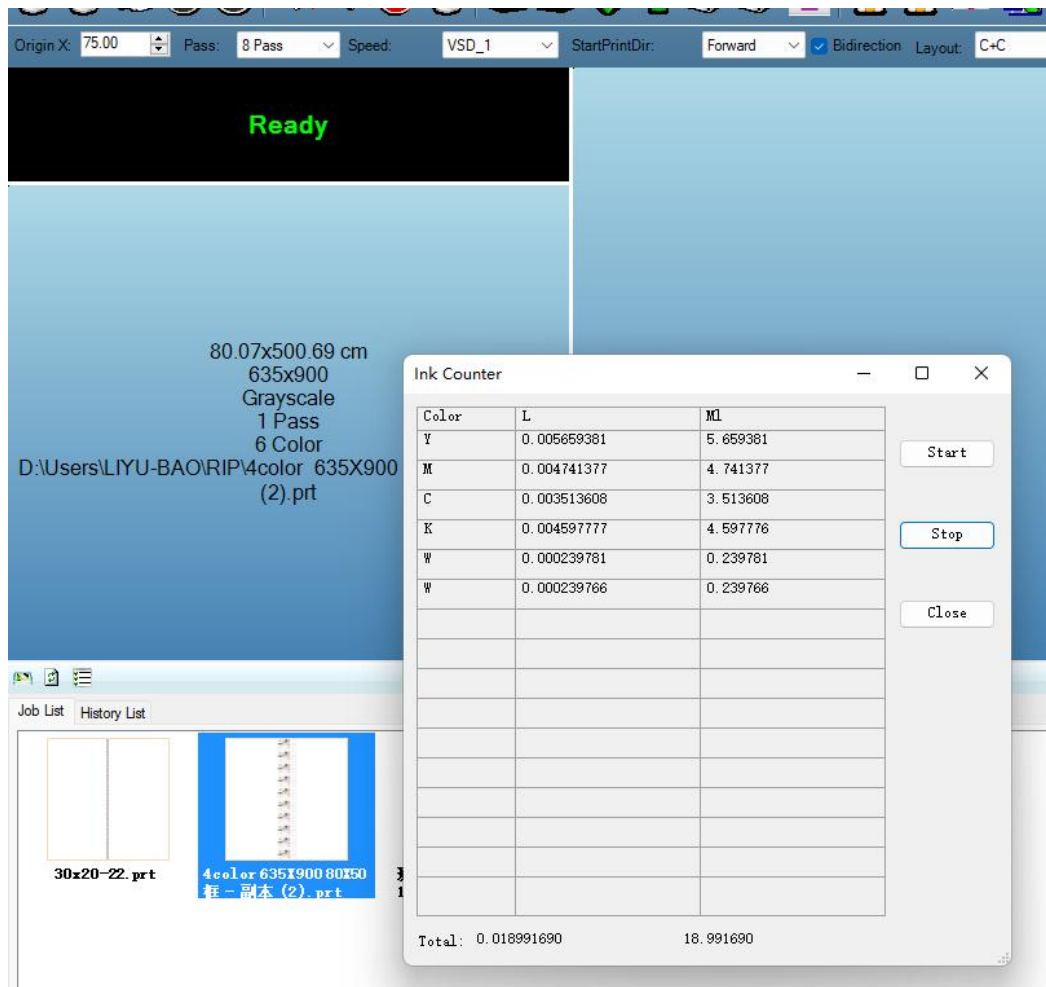


Fig. 190 Ink counting interface

Select the job chart, right-click and select ink counting to calculate the ink used in this job;

Factory Debugging

Main menu→Debugging→Factory debugging

1. General

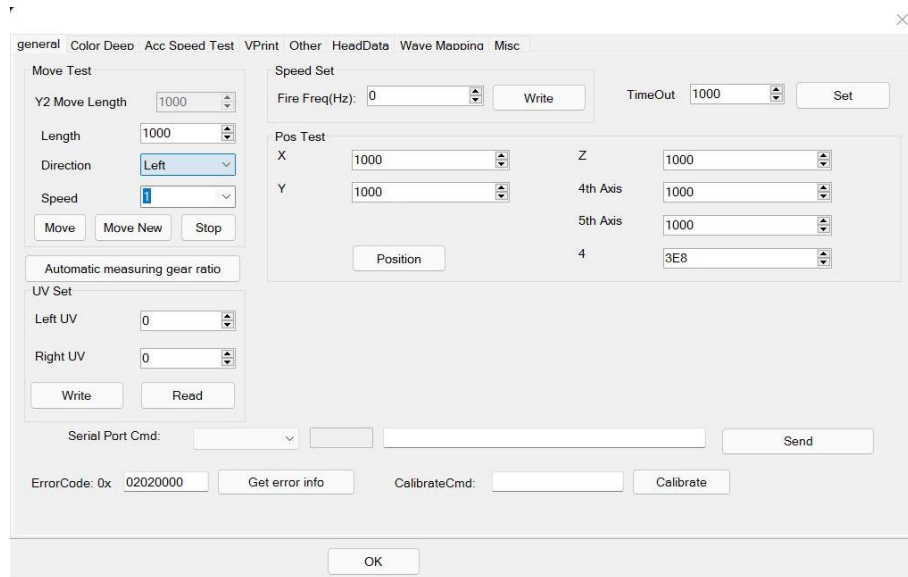


Fig. 191 Factory commissioning general interface

- Fire Freq (Hz): used to set the temporary firing frequency. After entering the parameters, click "Write" to enable it, restart the printer and restore the default value;
- Move Test: It is used to measure the gear ratio of each shaft for feedback;

2. colordeep

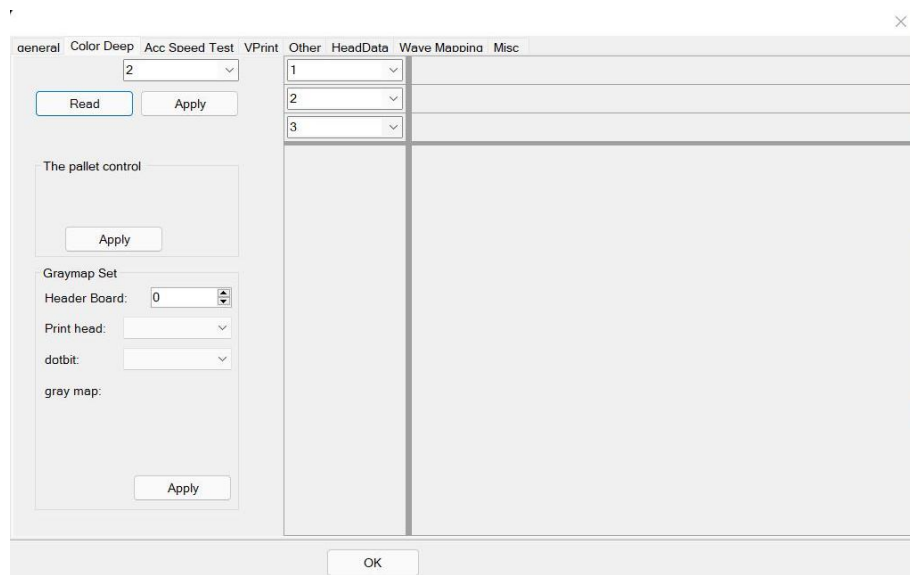


Fig. 192 Factory commissioning colordeep interface

This is the interface for grayscale setup, and that of Ricoh shall be set to 2; Click "Read". If it is displayed as 1, set it to 2, and click "Apply".

Layout settings

Main Menu→Settings→Layout Settings

Interface Introduction

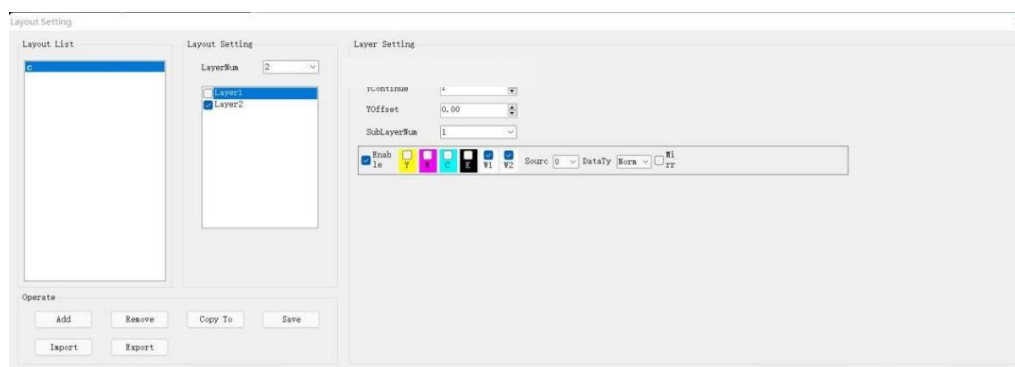


Fig. 193 Layout setting interface



Note:

Y mixing: In version V10.1, the operation error rate of customers is relatively high, so the direct reading layout has been optimized, and this setting item will not be adopted anymore. (Versions prior to V 10 will also be displayed. It refers to the number of Y interleaving and the number of rows of colors in the same print head. For Ricoh GEN6 print head, if it has one head and two colors, the Y-splicing and insertion is set to 2; if one head and one color, the Y-splicing and insertion is set to 4.)

- Layout list: display all current layout configurations, which can be configured according to different print modes. Just select the print layout mode in the main interface to use;
- Layout settings:
 - Number of layers: set according to the number of rows of print heads in the layout package. For example, if there are 3 rows of print heads in the layout picture, the number of layers is set to 3, and the display area under the number of layers will be refreshed in real time according to the number of layers;
- Layer settings:
 - ❖ Y-continuous: it refers to the number of rows of print heads with the same color. For 2 consecutive groups of four colors and two groups, the Y-continuous is 2. Generally, this parameter is set only in full color, basically 1;
 - ❖ Y offset: for the case when there are multiple rows of print heads. The distance from the first nozzle on this layer to the first nozzle on the first layer

is the number of nozzles, and the number of nozzles in a row.



Note:

For multi-row (layer) GEN6 print heads, each row (layer) takes 320 as the base number, and the set parameter will increase in ascending order based on the specific number of print head rows (layers).

For example, 0 is entered as the Y offset for the first row (layer), 320 is entered as the Y offset for the second row (layer), 640 is entered as the Y offset for the third row (layer), and 960 is entered as the Y offset for the fourth row (layer). .

- ❖ Sub-layer number: If it is set as 1, it means there is one row, and ink is sprayed completely. If it is set as 3, it means there are 3 layers on one layer, that is, the 1/3 ink spraying print mode is adopted.
- ❖ Data source: the default value is 0. It can be used when printing color-white-color. You can print patterns of two sides;
- ❖ Data type: generally the default value. It needs to be set when two rows of colors are separated, as described below.
- Mirroring: if you check this function, the printing will be mirrored on this layer;
- Add: add a layout mode according to actual use;
- Remove: delete the existing layout mode;
- Copy as: copy a layout mode to quickly set it;
- Save: click Save after setting and modifying the layout, otherwise the set layout will not be saved;
- Import: import the exported layout file into the software;
- Export: export the set layout to a file to save;

Print head layout arrangement:

The actual layout is described in detail. Ricoh GEN6 (One Head One Color) as an example (see the following figure)

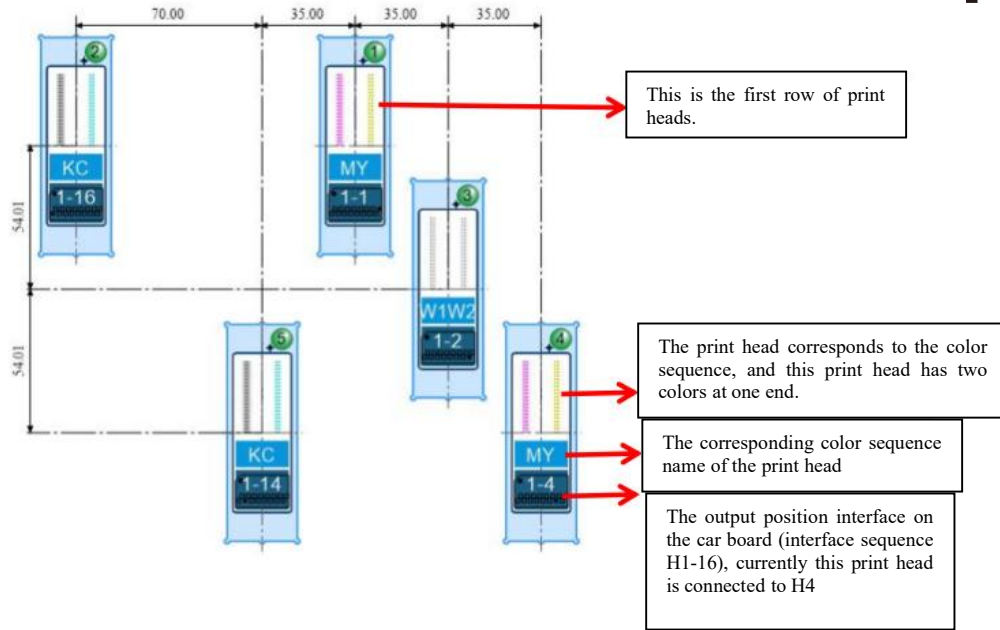


Fig. 194 Print head layout arrangement

There are three layers on the upper part:
The first layer is set as shown in the following figure

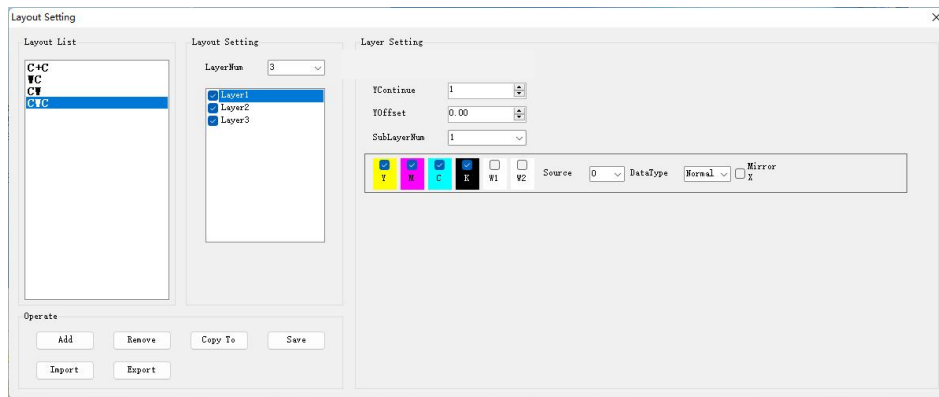


Fig. 195 Print head layout setting interface 1

The second layer is set as shown in the following figure:

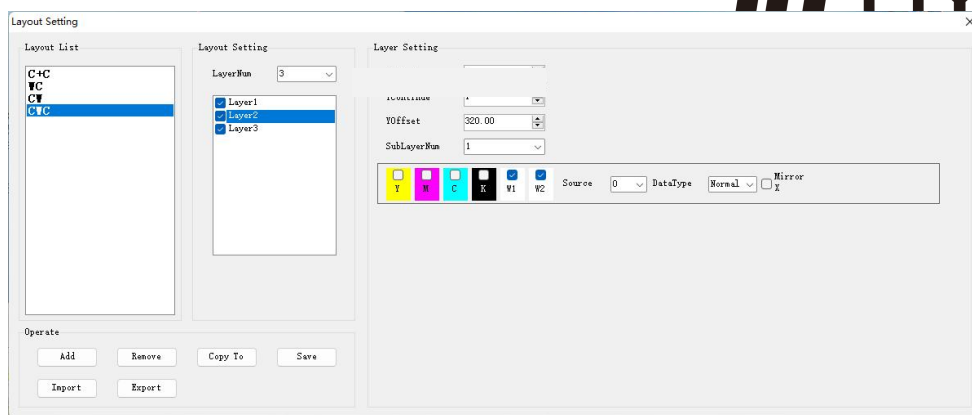


Fig. 196 Print head layout setting interface 2

The third layer is set as shown in the following figure:

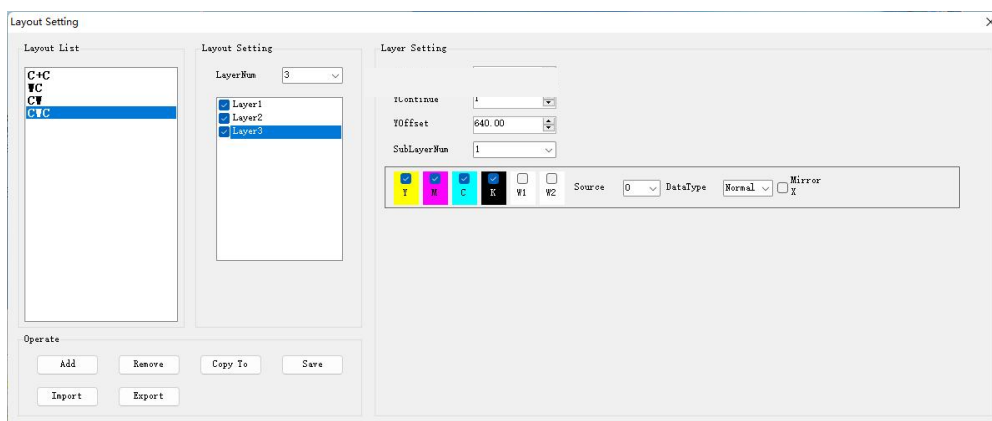


Fig. 197 Print head layout setting interface 3



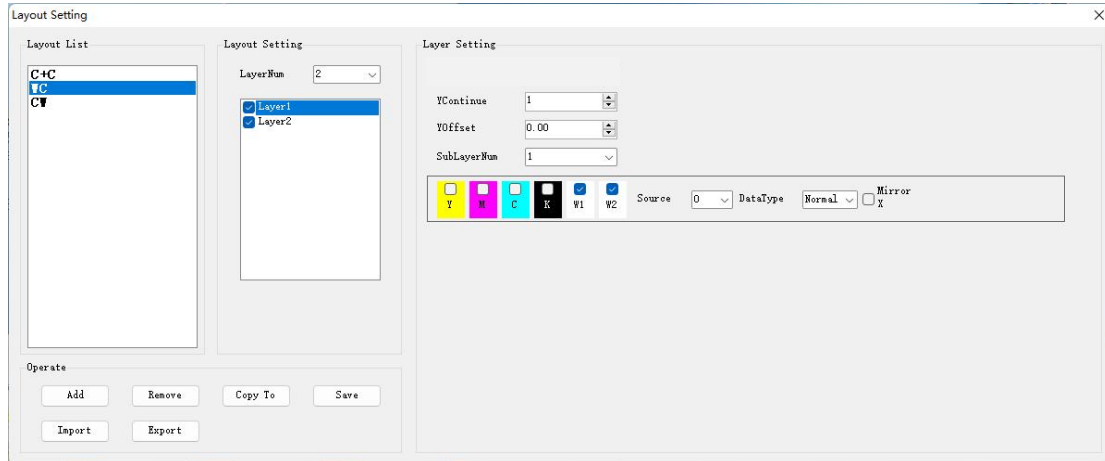
Note:

If double-sided printing is required, the data source of the third layer needs to be set to 1.

Several common layout cases

1. White color (WC):

First layer:



Second layer:

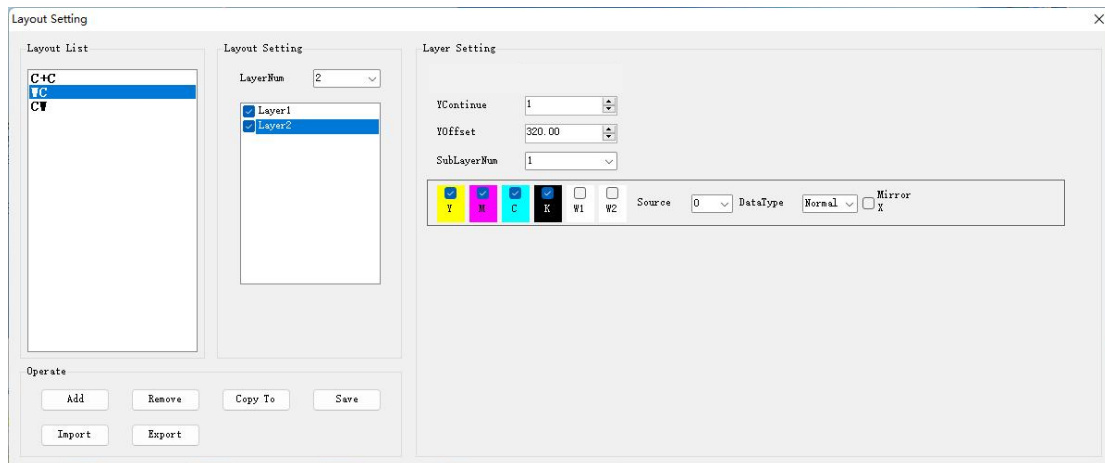
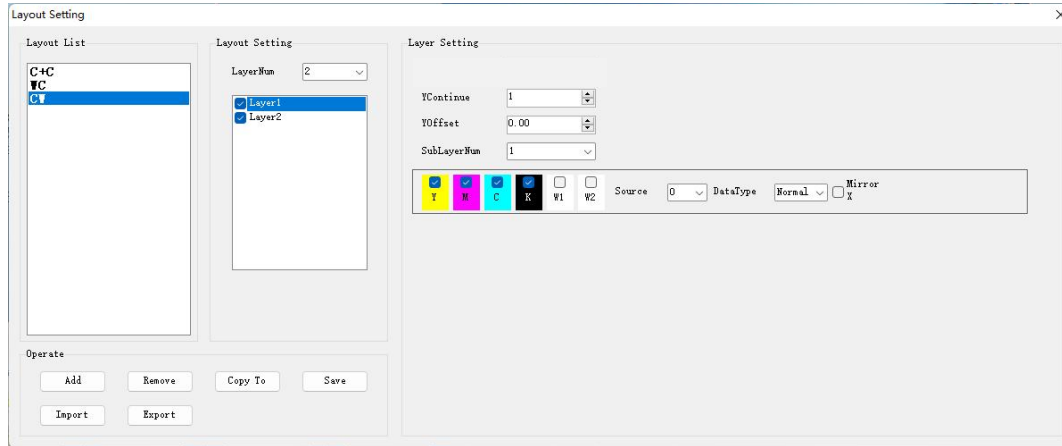


Fig. 198 Several common layout case 1

2. Color white (CW):

First layer:



Second layer:

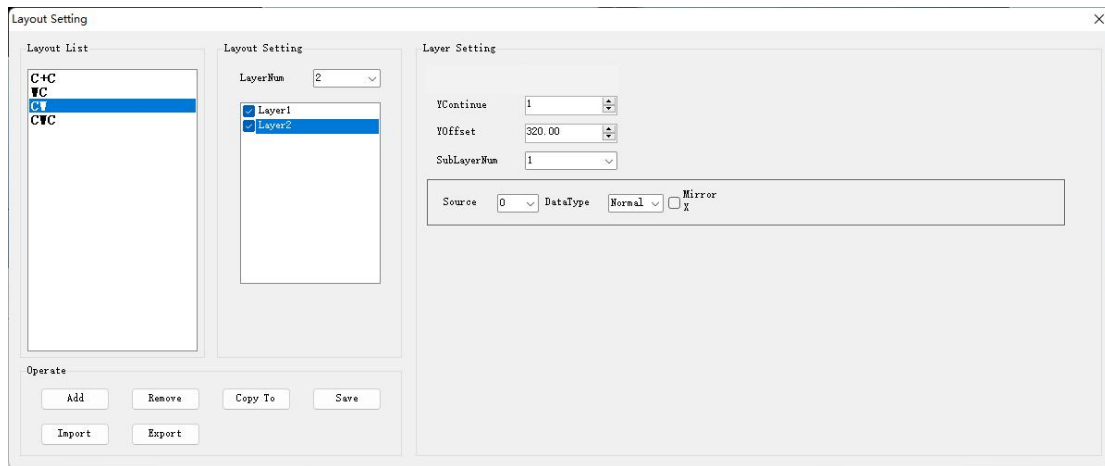


Fig. 199 Several common layout cases 2

Continuous Printing Process and Operation Precautions for DS Models

Introduction to continuous printing function window

1. Main interface options

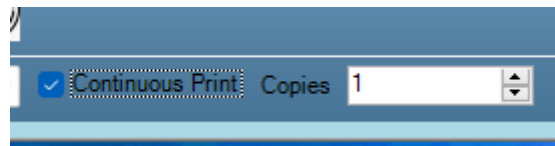


Fig. 200 Main interface of continuous print function

- Continuous printing: if you select this check box, the continuous printing process can be realized. In the pinch roller control interface, the control of the front and rear rods will be automatically selected to enter the automatic continuous printing process.
 - Number of copies: it can print multiple copies of a picture continuously. If multiple copies of different pictures (with the same size) are selected at the same time, for example, print 2 copies of 3 pictures, the printing process is 1 → 2 → 3 for the first time and second time, and then the continuous printing is completed.
- #### 2. Introduction to pinch roller interface: (7 parts in total)
- (1) Part 1: manually control the lifting and falling areas of front, rear and positioning rods.
 - (2) Part 2: Feeding direction: place the material to be printed in front or behind the positioning rod, generally rear feeding.
 - (3) Part 3: Before printing, you need to determine the functions to be used, for example, the front, rear and positioning rods are needed for continuous printing; and adsorption needs to be turned on automatically before printing. Select the required function to realize.
 - (4) Part 4: several parameters for continuous printing of hard materials. The unit is length.
 - Front rod distance: the distance from the front rod to the positioning rod. After setting, this parameter will be read in the continuous printing process. When the media moves under the front rod, the front pressure bar will automatically lower and press the material to be printed.
 - Front media length: if the material is placed in front of the positioning rod, enter the length of the material to be printed (Y direction).
 - Distance from image to media edge: the blank distance from the image to be printed to the media edge (Y direction), mainly used when the image is smaller than the media.
 - Distance from the front positioning rod to the print head: the distance from the front material of the positioning rod to the starting position of the first PASS of the print head during front feeding.
 - Distance from the rear positioning rod to the print head: the distance from the rear material of the positioning rod to the starting position of the first PASS of the

print head during rear feeding.



Note: The distances from the front positioning rod and rear positioning rod to the print head have been calibrated before delivery. If necessary, you need to lower the positioning rod, draw lines with soft materials, print the pictures, check the starting point, and then slightly adjust the parameters.

- Stepping distance after printing (Y direction): not used temporarily.
- Lifting length of front rod: the length of the material minus the set parameter is the length of the front rod staying in the material from falling to lifting,
- Width of positioning rod: actual width of positioning rod. For example: DS32 means the width of locating rod is 80mm, and DS20 means the width of locating rod is 60 mm.
- Material length: the length of the material to be printed during rear feeding.
- Feeding interval: different sizes of materials will lead to different feeding times. The time setting shall be based on the actual requirements of customers. Generally the default is 3 seconds.

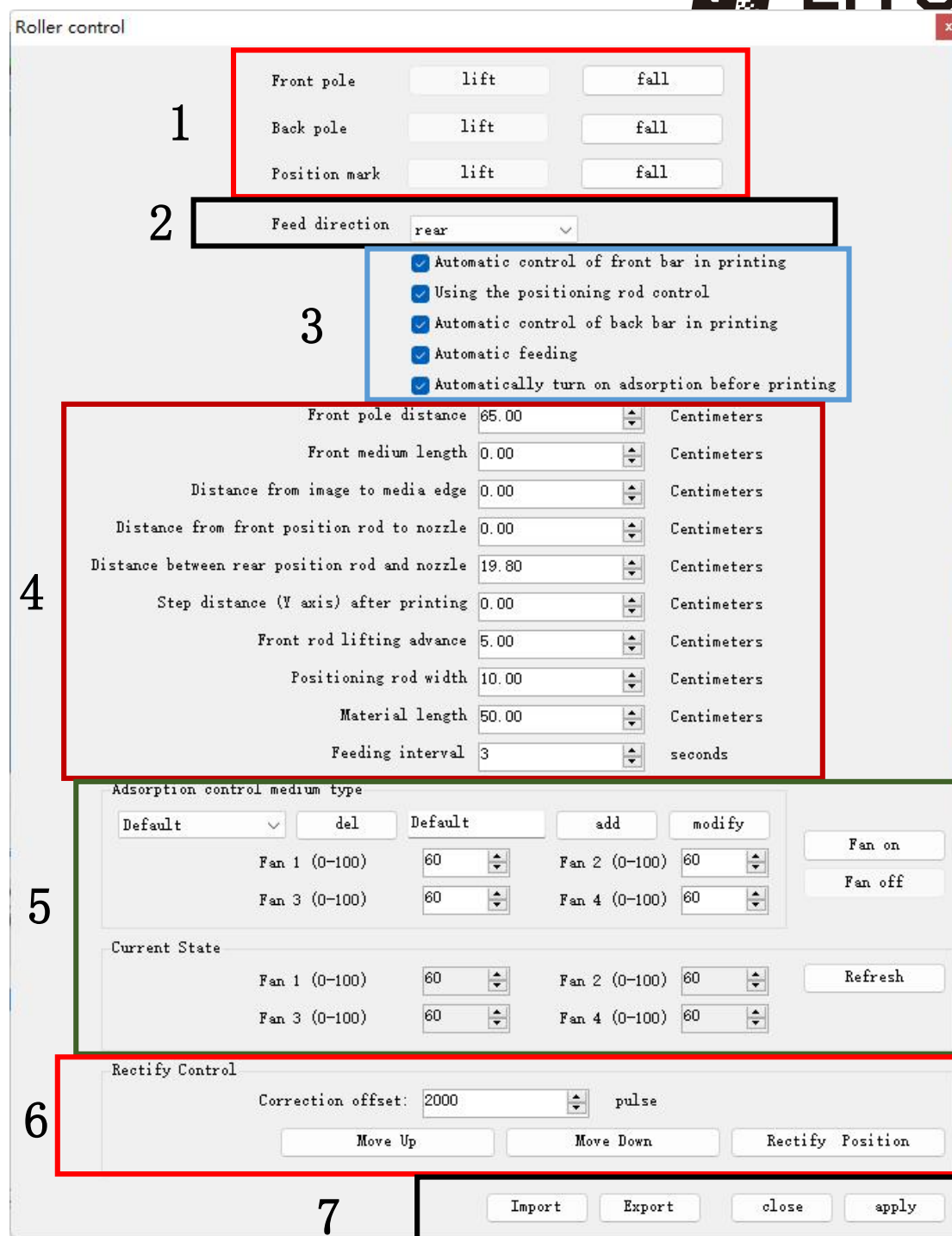


Fig. 201 interface of continuous printing function

(5) Part 5: type of adsorption control media

Different adsorption values can be set for different media. The specific operations are as follows:

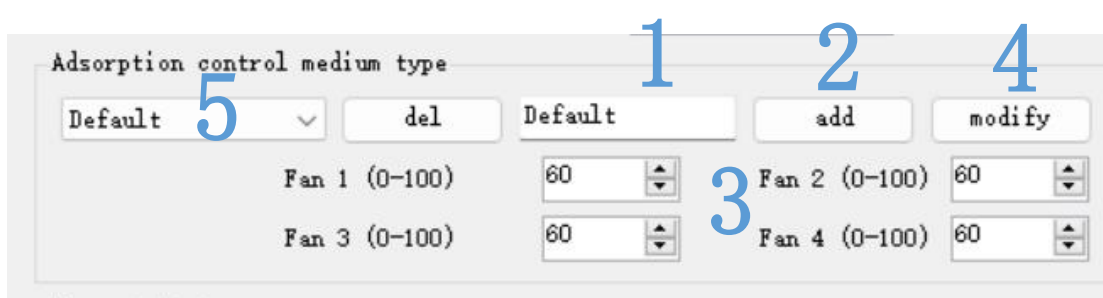


Fig. 202 Interface of media type

Enter material name → Add → Enter adsorption parameters → Modify → Save in the pull-down list. Then several adsorption parameters can be applied later by selecting the material name in the pull-down list.



Fig. 203 Medium parameter interface

After setting the parameters and refreshing, the interface will display the current parameters.

The right button can manually control the adsorption on and off

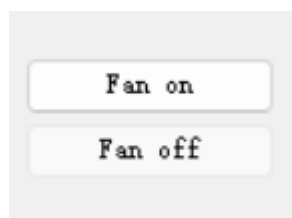


Fig. 204 Fan ON/OFF Interface

(6) Part 6: correction control

It is mainly used to realize setting of the automatic correction parameter. Moving back and forth and resetting back to the middle can be realized manually at the lower part.



Note:

The ex-factory default setting value is 2000

(7) Part 7:



Fig. 205 Import/Export interface

Import: the debugged and exported parameters last time can be imported.

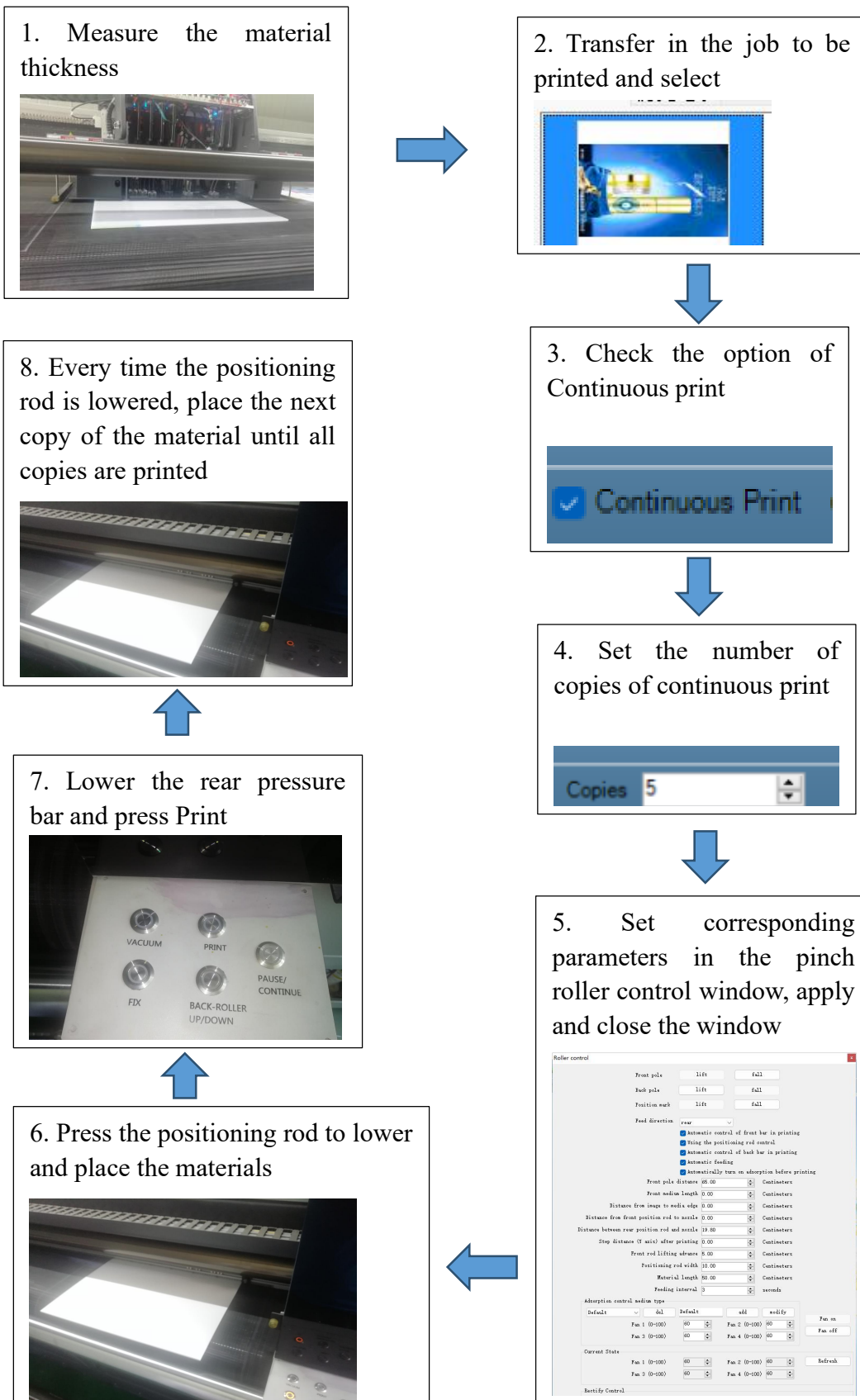
Export: all the correct current parameters can be exported and saved for backup.

Close: close the current window.

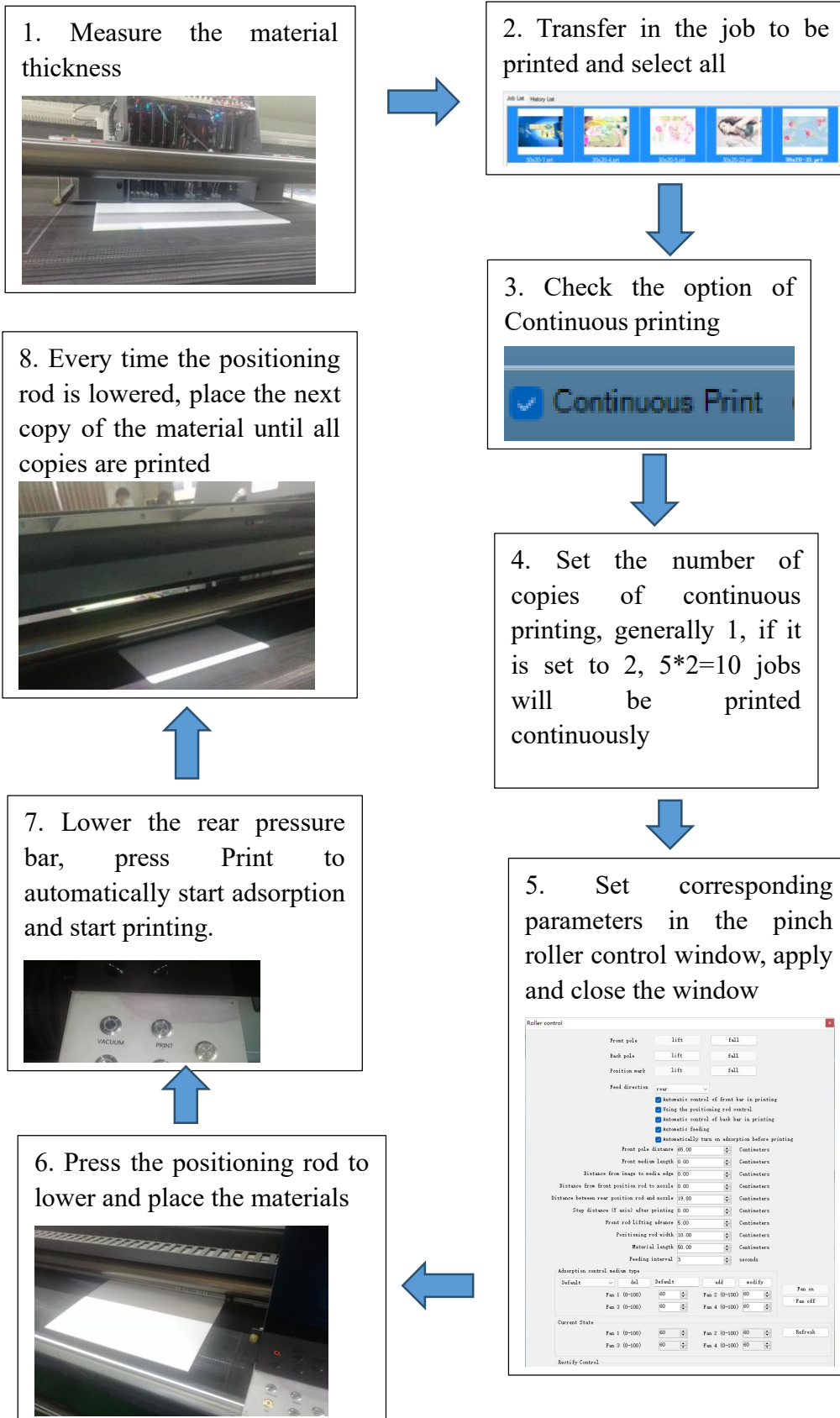
Apply: after setting the current window parameters, click Apply to save.

Steps of continuous printing process

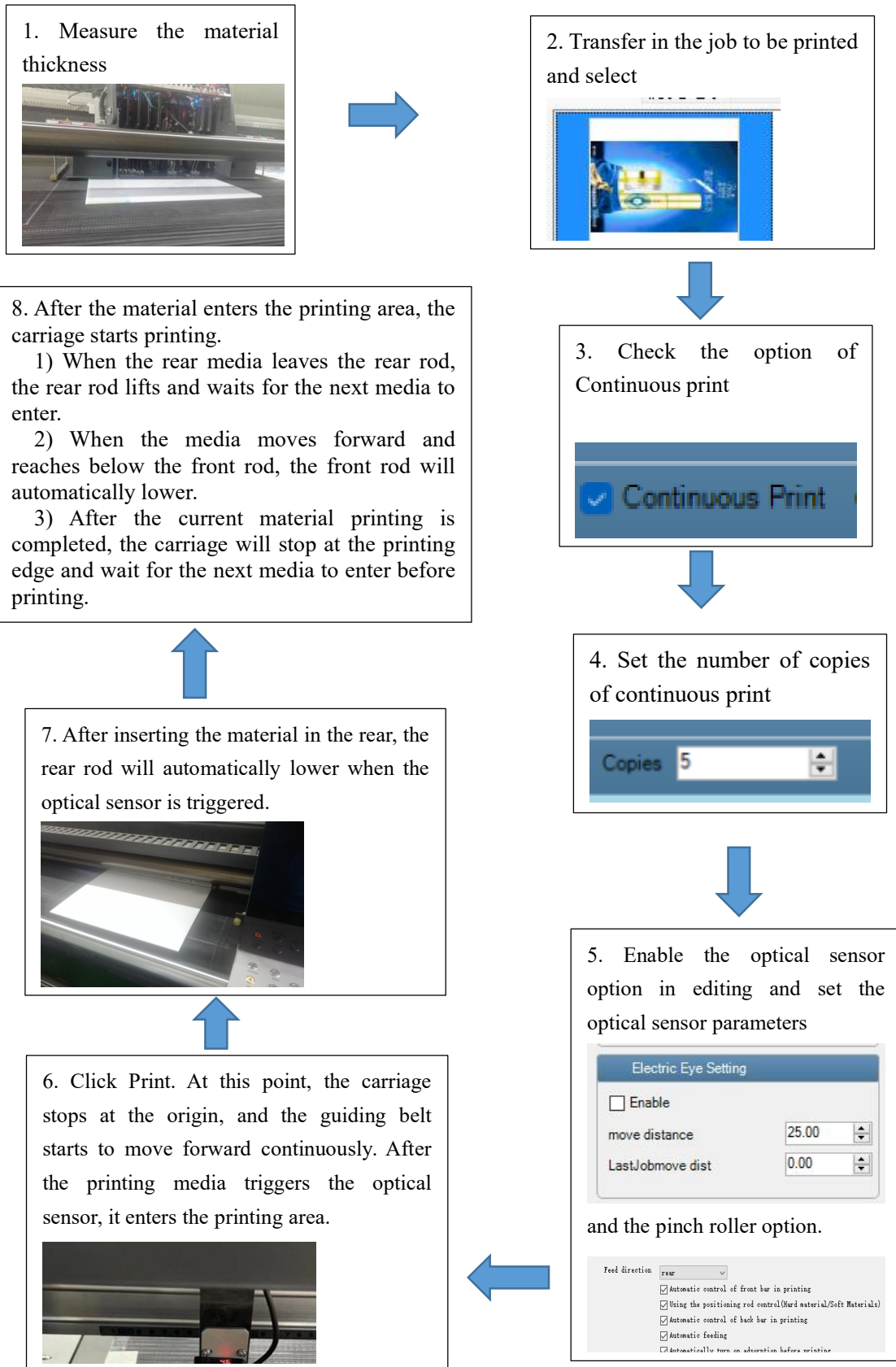
1. Continuous print of single operation



2. Continuous print of multiple different patterns



3. Control the continuous printing process by optical sensor, as shown in the following figure:



DS32 Series

UV Hybrid Printer

Quality Inspection and Receipt

Quality Inspection and Receipt

Once the machine is installed and commissioning is completed, we need to check the print quality of this machine.



Notes:

There is no abnormal sound or jitter when the machine is working.
All the functional buttons and indicating lights work normally.

The picture print quality is high, and there are not messy codes or floating ink on the printed pictures. Small characters can be seen clearly.

ICC can fully reflect the color saturation, and it is required that the transition, highlight, gradation and many other details should be presented perfectly.

No horizontal or vertical strips and a large area of line breakage of the print head are found when printing pure color blocks.

The machine can print the whole picture. The platform levelness is checked. The print precision of each area of the platform is observed.

It is recommended to use ONYX Quality Evaluation. prt as the sample test picture.

White ink and varnish solutions are provided. It is guaranteed that the white ink picture overlaps with the color one. There is no lack of color. White ink pixel can be shrunk properly with software.



Fig. 206 Test picture of ONYX Quality Evaluation .prt

After completion of print head and a series of printing tests, the engineer needs to



install all sheet metal parts, including the machine housing, and then perform another print test. After it is confirmed that there is no error, the engineer can guide the customer to start production tasks and train the customer's operators.

DS32 Series UV Hybrid Printer

Common Troubleshooting

Basic fault troubleshooting

This chapter overviews the basic troubleshooting tips and troubleshooting methods for some typical problems that may occur during installation of the Hybrid Printer. Please note that the information in this part will be updated as more Hybrid Printers are installed and the knowledge library expands.

Print head does not spray ink

Description - one or several print heads do not work.

Code	Phenomena	Solutions
1	Print head needle broke	Press the ink, until the print head drops ink smoothly
2	There is ink on the surface of print head	Regulate the numerical value of the negative pressure meter
3	The hole at the print head fixing position is blocked	Try to flush the print head with cleaning solution
4	There are broken lines on the printed pattern	Try to regulate the two-way valve to exhaust air in the print head
5	The ink pressing flow is insufficient	Replace the filter
6	Backflow brings ink into the air tube	Replace the air tube
7	Ink in the ink cartridge does not flow smoothly in winter	Adjust the cartridge heating
8	The print head surface is damaged	Replace the print head
9	There are ink drops on the printed pattern	There is batting on the print head base plate. Wipe the dirty matter on the print head base plate with clean cloth dipped in alcohol
10	One print head in multiple groups does not spray ink when printing the test strip	Check the temperature and voltage of the print head, power off the machine and unplug and plug the connecting line or red SATA line between the print head and the driver board.

Ink reflowing

Ink in the secondary ink cartridge flows into the air tube.

Code	Phenomena	Solutions
1	The negative pressure is too high	Regulate the negative pressure to the optimal value
2	Fill the secondary ink cartridge	Fill each secondary ink cartridge one by one
3	The liquid level sensor of the secondary ink cartridge encounters a fault/short circuit	Replace liquid level sensor
4	Ink pump encounters a fault/short circuit	Replace ink pump
5	The USB board breaks down, and the USB always sends the signal of starting ink pump	Replace USB board

Software error code

S/N	Error code	Error message	Reason for error	Troubleshooting
1	40020052	PACKAGE running time exceeds the limit	The test package shows 2H of low permission limit and 48H of high permission limit	① Restart ② Replace the official package
2	40020018	Serious error: Exceeded the time limit, please enter a new password	Exceeded the time limit	Reenter password
3	4002000C	Step 1 of print head board	No print head board serial port information detected when powered on	① Check the connection status of the circuit in the print head board ② Check the power supply of the print head board
4	2002010E	Measurement failed	Height and width measurement failed	① Height measurement failed, check if the height measurement block pops up normally ② Height measurement failed, check if the feedback from the block is normal ③ Width measurement failed, check if the feedback from the width sensor is normal ④ Save the log and contact the R&D personnel
5	2002008B	The Mainboard does not have a valid waveform	Trigger emergency stop during printing process	① Check the emergency stop signal
6	0402004A	USB2.0 connection	S system does not use USB3.0 connection	① Check whether USB cable is 3.0 ② Check if the PC supports USB 3.0 connection, ports, and drivers
7	20020085	1band print data of S	At the end of the current band, the	① Check the gear ratio feedback signal



		system is not reported completely	data has not been sent out completely	② Check if the motor is moving normally and if the driver is giving an alarm ③ Check if the grayscale settings are correct ④ Check if there is an emergency stop limit triggered ⑤ Check if the buffer distance and platform distance are 0 or if the value is too small ⑥ Check for high-resolution filtering phenomenon ⑦ Save the log for R&D personnel to analyze
8	04020020	Print data less than ignition frequency		① Check the grating ② Check the gear ratio ③ Check the waveform and ignition frequency ④ Reduce ignition frequency, increase acceleration and deceleration time, and confirm if LVDS data is overloaded ⑤ Save LOGO
9	20020003	Head board COM timeout	Communication timeout between print head board and Mainboard	① Troubleshooting: Check the running light of the print head board to confirm if it is crashing ② Replace the print head board card ③ Replace the upgrade package version of the print head board
10	2002008D	Ultra-wide image	The current image requires a width greater than the printer width	① Check image size ② If there is no initialization, check the factory settings and printer width settings to find the endpoint ③ If there is initialization,



				confirm if the endpoint stroke is sufficient to print the current image to find the endpoint
11	40020088	Motion initialization failed	New motion initialization failed	<ul style="list-style-type: none"> ① Check if the sensor status is normal ② Check if the motion parameter is normal ③ Save the log and contact the R&D personnel
12	04020005	Black indicates that it is pumping ink	Detected ink shortage: black	<ul style="list-style-type: none"> ① Check for ink shortage ② Short circuit/disconnect the ink detection sensor on the print head board ③ If there is no problem with the sensor, please try replacing the print head board

Anti-collision system reports an error

The anti-collision system is triggered due to uneven materials that become warping in printing.



Fig. 207 Emergency stop anti-collision rod on both sides of carriage

Check whether the anti-collision rod is lower than the print head base plate plane. If yes, please adjust them to the same level.

If the anti-collision systems on both sides of carriage are triggered due to uneven materials, and the machine is shut down, the material levelness can be adjusted manually and the continuous print of the software can be clicked when the collision is minor and the printing pattern effect is not affected.

When collision is serious and the carriage sheet metal parts are deformed, please timely stop the printing task, raise the carriage to the highest point and move the carriage to the rest position on the side of waste ink. Observe whether the print head is damaged, and whether the metal surface is warping.

DS32 Series UV Hybrid Printer

Maintenance of Print Heads and the Printer

Daily maintenance of print heads

1. Every day before the startup and shutdown, it is recommended to print nozzle test chart to check whether the nozzle is in normal condition and to observe whether the ink droplet on the surface of the print head drips smoothly when ink is pressed.



Fig. 208 Observe the ink droplet on the surface of the print head

2. If a great deal of bubbles appear on the surface of the print head when ink is pressed, the two-way valve can be turned on to exhaust air.



Fig. 209 Air exhaust from the print head



Notices about installing print heads

1. To prevent the blockage of the nozzle, a clean environment should be kept when the print head is installed.
2. To prevent the chip of the print head from damaging caused by static electricity, please install the print head in an environment with ESD protection.
3. To prevent the nozzle from damaging and clogging, crashing or directly touching the nozzle with your hands is forbidden.
4. The cable of the print head should be protected from being squeezed by external forces, scratched or cut off.
5. To prevent the port of ink supply from damaging, the installation and removal of the ink tube by lateral force is forbidden.
6. The cable itself and the end should be carefully checked before connecting the cable of print head to make sure no squeezes or scratches.
7. Connecting or disconnecting the cable of the print head without cutting power is forbidden.
8. Ink and cleaning fluid should be kept away from the electrical interface, board card and wire of the print head.

Initial ink refilling

1. Preparations for initial ink refilling
 - (1) All kinds of solutions, including ink, cleaning fluid, and humectant, should be matched with the print head.
 - (2) Please check the filter of the ink route system. In the ink route system, a filter of 15um or less is usually installed in the front of the print head.
 - (3) The initial ink refilling can be started when the work environment of the print head reaches the desired temperature.
2. Steps for refilling inks
 - (1) This Manual only describes the work of ink refilling of non-cyclical print heads. For ink refilling of cyclical print heads, please read the relevant product manual as a reference.
 - (2) It is recommended that the ink can be refilled directly, but the cleaning fluid is not recommended for cleaning the print head before refilling.
 - (3) Refilling can be done in two steps. The pressure of ink refilling should usually be kept below 30Kpa, and the manual of the print head can be referred to in particular cases.
 - ① Step 1: The two-way valve should be opened first, and the ink is refilled to the ink tube, filter, print head by ink pressing with positive pressure; the impurities and bubbles of these parts are removed with the flowing ink.
 - ② Step 2: Shut down the two-way valve and keep ink pressing until the ink flows out of the print head. (Maintenance of Print Heads, V1.00)
 - ③ The change of liquid level in ancillary ink tank during ink pressing should be noticed or ink pressing in an intermittent way (stop ink

pressing about 3~5s or wait the indicator light of liquid level turning off after continuous ink pressing for 3~5s) can be adopted to avoid pressing the air into the ink route system and print head when the ancillary ink tank is empty.

- ④ In step 1, the amount of ink discharged is different because of different print heads, but no less than 100ml ink is suggested to discharge to make the ink route system clean and the bubbles are completely discharged.
- ⑤ In step 1, the two-way valve should be shut down after the ink is discharged in a straight line.

3. Abnormal handling methods for ink refilling

The print heads should be wiped and a nozzle test chart printed after finishing refilling. Normally, all print heads can discharge the ink. If several print heads fail to discharge the ink or discharge the skew ink, which may be caused by the small bubbles. In this circumstance, you can press the ink several times or continuously print for a period of time.

Daily maintenance and wiping of print heads

1. Materials and methods for wiping print heads

- (1) The residual ink on the print head can be wiped with an absorbent lint-free cloth/non-woven cloth, or be scraped with a non-absorbent scraper. Materials with high friction coefficient or fuzz and scrapers with foreign matter are forbidden to wipe the print head. Dust-free cloth and scrapers made of EPDM rubber are recommended.
- (2) The residual ink on the nozzle should be slightly wiped in the same direction (wiping from back to front is recommended) and hard wiping back and forth is forbidden. The residual ink on the gap of mounting hole and baseboard of the print head should also be wiped.

2. Daily maintenance of print heads

- (1) This section mainly describes the way and period for maintaining print heads in daily use.
- (2) Daily maintenance includes ink pressing and flash spray. The way and period of maintenance is different based on the different ink types. In normal circumstances, when the machine is idle, the solvent and water-based machine should always be kept in the flash spray state to prevent the print head from blocking caused by drying ink; UV printer is recommended to keep in the flash spray state with low frequency.
- (3) It is recommended that ink pressing should be stopped when the needles are seriously broken (more than 3 newly increased broken needles in a single print head). Maintenance of print head-V1.00
- (4) There are two steps before the start and the end of each working periods: pressing the ink and checking the ink discharged from all nozzles. Besides, maintenance based on the instructions before shutdown is also a step before the end of each working periods. During working hours, it is recommended to press the ink every 4 hours and ensure that all nozzles can discharge the

ink.

Short-term outage of nozzles for maintenance

1. The short-term outage is less than 7 days.
2. If the printer stops printing for several hours, the flash spray should be turned on standby to minimize the probability of the blockage of nozzles.
3. For short-term outage of more than 1 day, the print head require daily maintenance first to ensure that all nozzles discharge the ink, and then cover the bottom surface of the entire baseboard of the print head with a moisturizing tray to reduce the drying speed of the ink in the nozzles and to prevent dust from entering the nozzle.
4. Before covering, the moisturizing tray should be kept clean. The materials for wiping the print head are applied to the tray and moisturized by a little cleaning fluid and humectant.
5. During outage, the printer should be kept in an environment with required temperature and humidity of the manual. The materials for wiping the print head in the moisturizing tray should be checked everyday to make sure it keeps in a moist state.
6. If possible, nozzle can be checked everyday by printing test strips to troubleshoot any possible malfunctions in time.

Long-term outage of nozzles for maintenance

1. The long-term outage is more than 7 days.
2. The ink in the print head should be completely cleaned when there is a long-term outage and the cleaning fluid should be drained. For humectant suitable for the print head, it should be injected into the print head for moisturizing according to the maintenance of short-term outage. What calls for special attention is that the liquid injected into the print head should be consistent with that used to moisturize the materials for wiping in the moisturizing tray.

Machine maintenance

1. Regular cleaning and check shall be made for mechanical operating parts, so that these parts can remain clean and keep working well. Moderate lubricating grease is evenly applied to the guide rail and lead screw, and sliding blocks are lubricated with lubricating oil from oil gun.

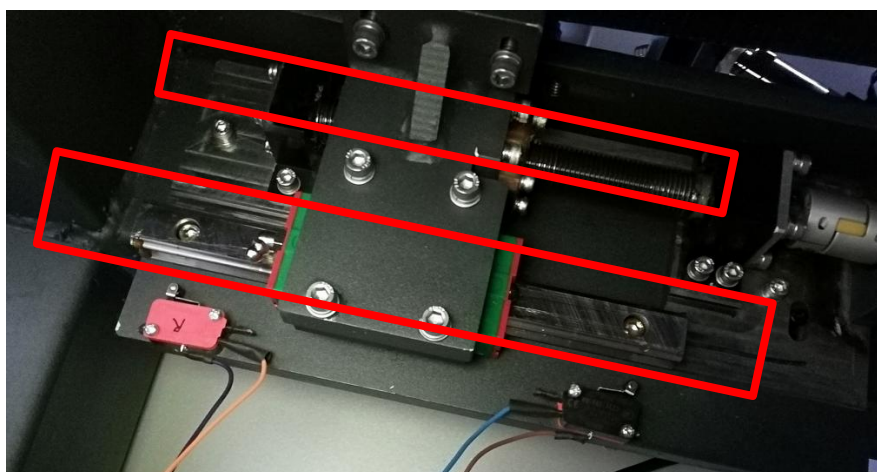


Fig. 210 The lead screw and guide rail are lubricated with the lubricating oil.

2. Dust in the metal or magnetic gratings on the beam of the machine are wiped by clean cloth suitable for wiping the print head with small amount of alcohol every other week.

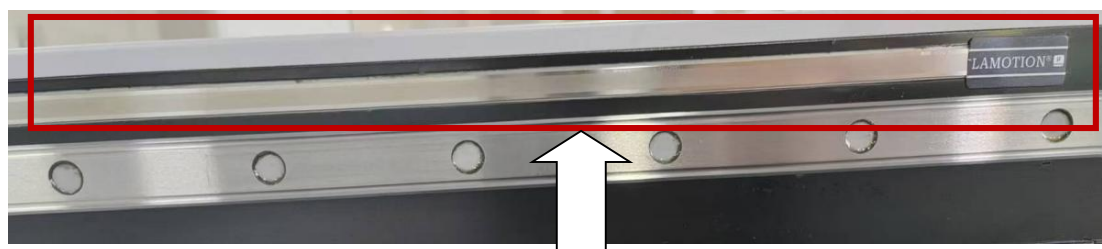


Fig. 211 Wipe the metal / magnetic gratings

3. Prolonged printing may generate static electricity between the baseboard and the

materials, or wool on the edge of the baseboard. The clean cloth suitable for wiping the print head with alcohol can be used to wipe the baseboard, so as to improve the print quality.

4. If the machine keeps power on for 24 hours, it is necessary to turn on the flash spray for idle time in the software to avoid the blockage of the nozzle caused by the machine that does not work in a certain period of time.
5. Because of printing for a long time, the base plate generates static electricity with the materials and the edge of the baseboard stains the wool. The clean cloth suitable for wiping the print heads with alcohol can be used to wipe the base plate. Improve the print quality.
6. The dirt on the surface of the guiding belt should be regularly cleaned because it may influence the size of suction.
7. If the machine keeps power on for 24 hours, it is necessary to turn on the flash spray for idle time in the software to avoid the blockage of the nozzle caused by the machine that does not work in a certain period of time.
8. White ink is easily to deposit. Because of printing with color ink, it is recommended to add color bar when printing pictures to make the white ink discharged. The main white ink tank shall be set to circulate and mix.
9. When the machine stops working in holiday or vacation, it is recommended to drain the ink of the print head, clean with the cleaning fluid and moisturize by the moisturizing tray.
10. Maintenance of the motor screw rod: Be sure to apply advanced grease to the screw rod and guide rail every month.

DS32 Series UV Hybrid Printer

Operator Training

Operator training

Operator training is executed by installation engineers. The specific training depends on the understanding and experience to this product of the customer operators.

A proposed training syllabus is listed below.

It is recommended to schedule 3 days for operator training. Based on the machine types and the experience of the operator, especially for UV ink and RIP, an extra day may be required.

If the RIP training is required, it should be considered separately and may be provided by the RIP suppliers or application experts.

It is recommended to train a maximum of 3 personnel at a time. More than three trainees are difficult to manage and present potential safety risks.

Because the correct operation will keep the machine working in a good condition, correct use of safe procedures and devices (such as personal safety equipment) should be emphasized all the time during the operator training.

The operator training is tried to satisfy the expectation of customers for the usage mode of the machine.

Besides, management personnel must keep the trainees from the external disturbance, as it is common for trainees to be asked to complete other tasks. If the training is uncompleted or unsatisfactory for the trainer, which means operators do not sign the permission of operating the printer properly and safely.

During training, operators will be encouraged to read the user's manual as a reference guide when operating the printer.

Proposed training syllabus



Note:

The following list gives you a suggestion about what topics should be included during the operator training.

If you do not want to follow this list, the user's manual is a good template, because it includes required safe and efficient information for operating machine.

After trainees accept the training of specific topics and indicate they understand the areas covered, please make sure they sign on the right side of the training form.



Machine safety	Signature
The key areas (electric appliance, ultraviolet light, collision, fragmentation) of machine should be highlighted	
Electric safety	Signature
The key risky areas should be highlighted.	
The importance of the insulation of power supply should be emphasized for the work with electricity.	
It should be emphasized that only trained electrical engineers can check the electrical system.	
The safety of UV ink and cleaning fluid	Signature
Personal protective equipment - the protective measures and processes about the treatment of UV ink and cleaning fluid should be discussed.	
The material safety data sheet of UV ink and cleaning fluid should be highlighted and discussed.	
Emphasize the importance of ink and cleaning fluid that should be put next to the machine in an emergency.	
Safe storage and disposal of UV ink and cleaning fluid	Signature
The conditions of the safe storage of UV ink and cleaning fluid should be discussed.	
The importance of the storage conditions for the shelf life of product should be emphasized.	
The risk of UV ink and cleaning fluid should be emphasized--cleaning up in time in the case of leakage.	
Keep the working area clean and tidy with no danger of tripping.	
The safety of LED solidification system	Signature
The location of LED ultraviolet ray should be highlighted and its operating time should be discussed--operating only for printing and power off when not printing	
The safety of the radiation of ultraviolet ray should be emphasized - no looking directly at the lamp source during printing.	
Disposal of material	Signature
Safe disposal of heavy-duty material	
The marking and surface contamination of material should be avoided before printing.	
Static electricity caused by removing protective gasket should be prevented.	
Sharp corners and edges	
Safety system	Signature
Emergency stop button - location, operation and reset	
Anti-collision system	
Light curtain	
Other safety precautions	Signature
Based on the customers situation, residual risks should be avoided.	



Machine inspection	Signature
Operators are guided to inspect machine	
The key areas of the machine should be emphasized (such as ink cartridge and electrical cabinet)	
The safety of the key areas should be emphasized (such as electrical cabinet)	
The areas accessible to operators and only recommended for engineers should be pointed out.	
Power on the machine - from power off to restart	Signature
Power on	
Restart after power off	
Demonstrate the isolation of the main power supply and air compression.	
Demonstrate the system of emergency stop and reset.	
Demonstrate the anti-collision and reset.	
Check Hybrid Printer before printing	Signature
Check and assess the nozzles after the outage for a period of time.	
Clean the nozzles if necessary.	
Demonstrate the cleaning of print heads Click the maintenance button to stop the carriage in the waste ink area. Press the button of ink pressing, observe the surface of the print head and the button is pressed until every color of ink can smooth drip. The ink on the surface of the print head can be wiped by the clean cloth suitable for wiping the print heads. Click the maintenance button again to stop the carriage at the origin.	
Retest the print nozzle to check it is ready for printing.	
Power off of the machine	Signature
Power off at night Turn off the three-way valve inside the head of the carriage. Turn off the control software Press "EMERGENCY STOP" button of the machine. Cover the baseboard of the print head with the moisturizing tray.	
Send images from RIP software to the Hybrid Printer.	Signature
Import files to RIP.	
Applied color management(including spot color of file), size and rotation.	
Define the use of white and special colors.	
Send files to the Hybrid Printer	
Description of any other functions of RIP that are useful or relevant to operators.	
Introduction of interface of control software of the Hybrid Printer.	Signature

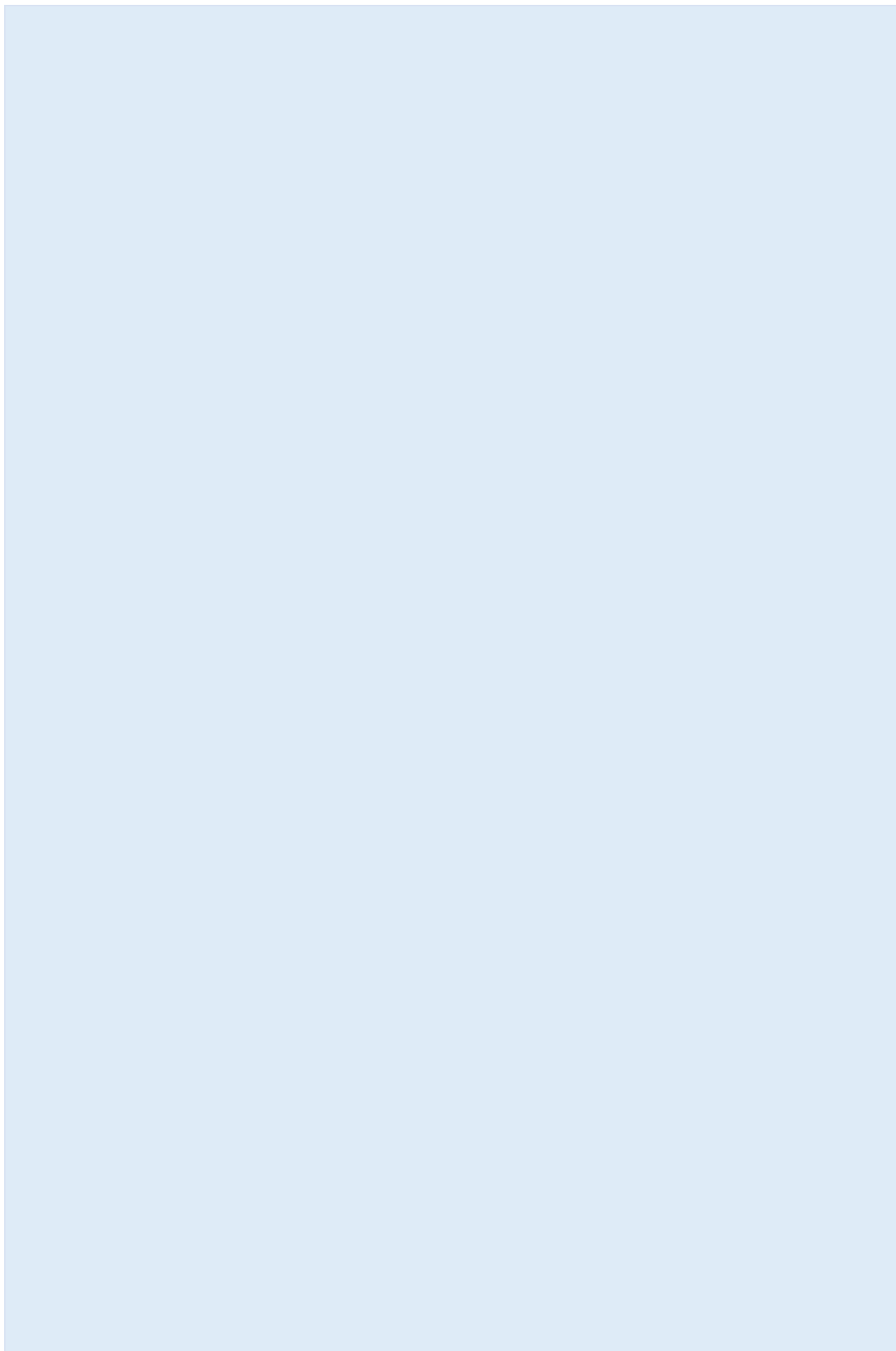
Turn on and off the control software.	
Demonstrate the icon position and main functions of the home page.	
Explain the purpose of each function.	
Manage printing jobs and printing.	Signature
Description of printing process	
Explain the printing modes and the speed and quality of printing in these modes. Draft mode Production mode High accuracy mode	
File management - explain the location of printed files imported from RIP on the Hybrid Printer.	
Printing job loading Create a folder for files completed by RIP Click Add job to add PRT in the RIP folder by control software.	
Place printing materials into the printing platform.	
Turn on the absorption fan of the platform	
Measure the material thickness	
Printing job	
Turn off the absorption fan after printing and take away the materials.	
White and other special colors are used.	Signature
Explain the mode of white and special colors	
Demonstrate how to use special color such as white ink varnish to print on materials.	
Define white in the control software of the Hybrid Printer - different settings.	
Define white in the RIP software - different settings.	
Precautions for using white	
The effect of layered printing on output speed.	
White and varnish effect and the effect on the quality of printing performance.	
Maintenance	Signature
Personal protective equipment - many tasks require operators to touch the ink, cleaning fluid or lubricating grease. The importance of the need and the correct use of the personal protective equipment in operating should be emphasized.	
User' manual is used to describe the task of regular maintenance. Daily Monthly Semiannually On demand	



Dayily - Clean the moisturizing area of the print head	
Dayily - Clean the surface of machine workbench	
Dayily - Clean the print head	
Dayily - Test and check the print nozzle	
Continuous maintenance	Signature
Monthly - Check and grease the linear guide and slide on the beam	
Monthly - Check and grease the linear guide and ball screw on the Y-axis	
Monthly - Check and grease the linear guide and screw on the Z-axis	
Trouble removal	Signature
Guide operators to learn the relevant chapters of the operating manual.	
Raise technical questions and provide local service support	Signature
Make sure the operators know how to contact with the local service teams to solve the problems emerging from Hybrid Printer.	

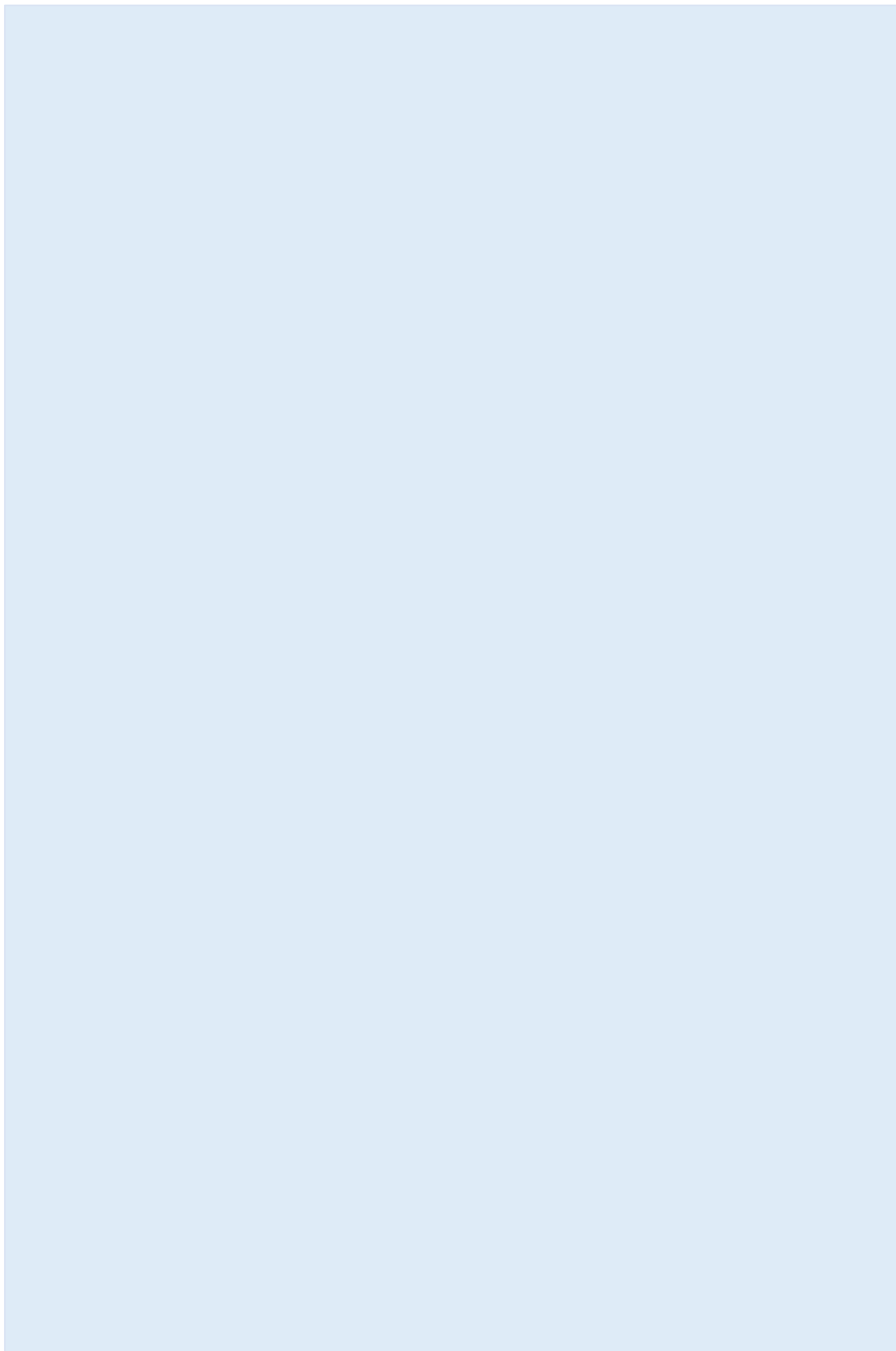


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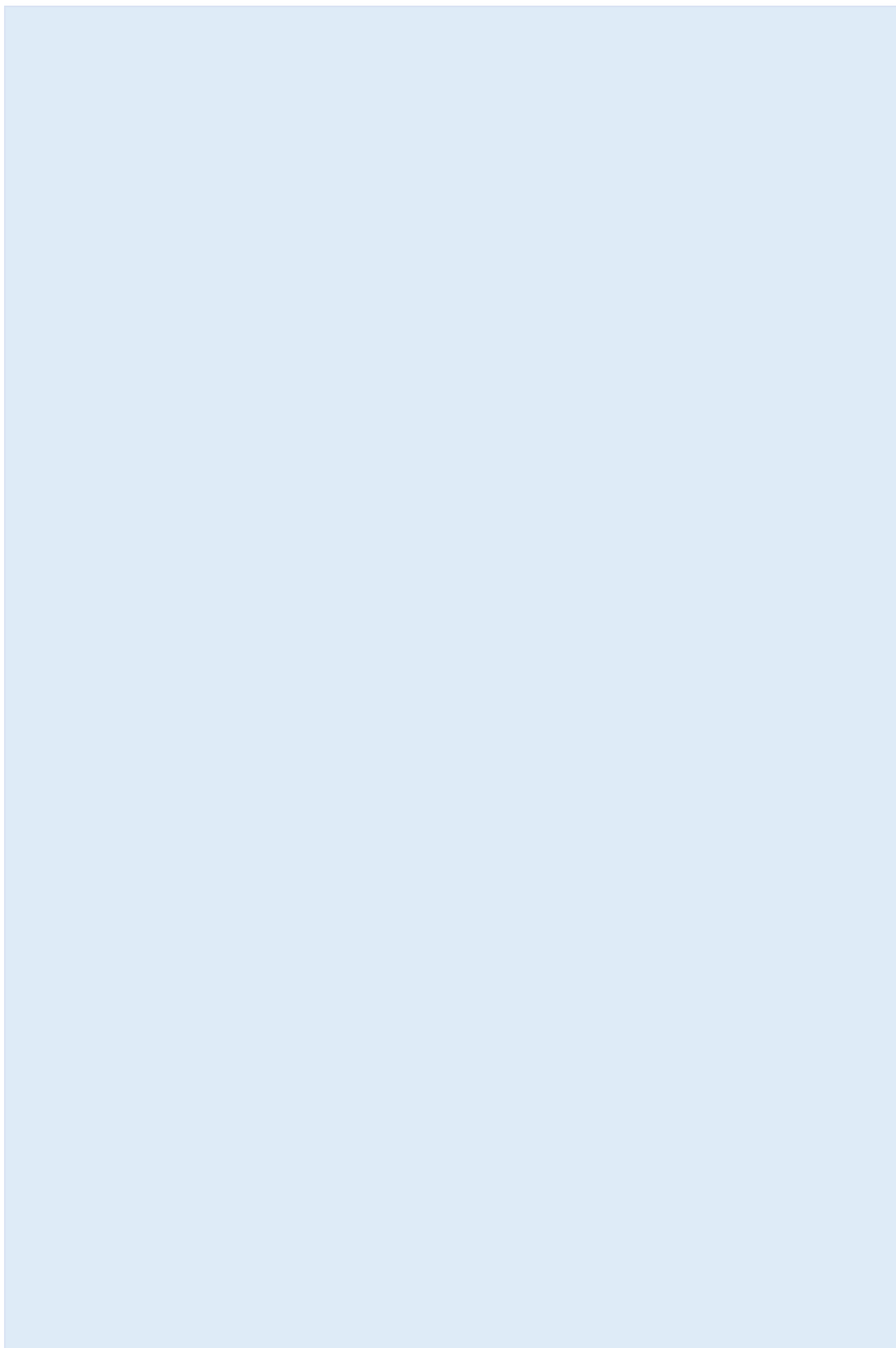




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