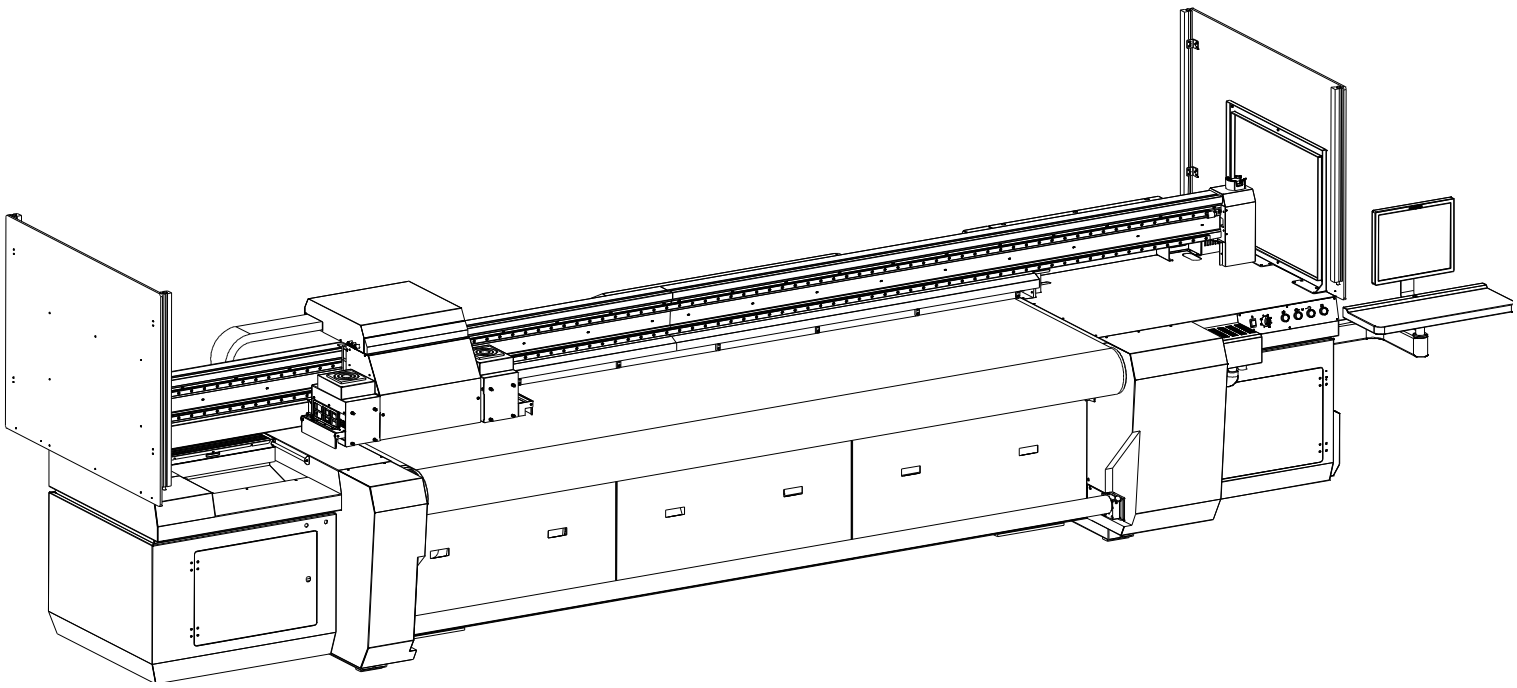
HT2500UV

Handtop Large Format UV Printer

Operation Manual

-Original Instructions-



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Foreword

The UV inkjet printer is a precision machine equipped with extremely fine mechanisms and integrated circuit. With a view to use the printer in an optimal condition, we sincerely compiled this operation manual for your reference.
This manual has been prepared for end users' easy understanding and using of this printer safely and efficiently. Please read all the contents carefully in detail before operating the printer.
Alterations of any contents in this manual are subjected to change without notice for technical updates.
If you have any question on using this printer, please do not hesitate to contact your local dealer or our technical assistance.

Safety Precautions

1. Indications of symbols

Note the specific features given with these symbols to avoid property damage and personal injury in the operating process.

	This symbol indicates the failures to be caused by the ignorance of misunderstanding of the instruction may probably lead to equipment damage or personal injury
	This symbol indicates the possible risk of the given operation
	This symbol indicates the improper operation to be strictly prohibited
	This symbol indicates the proper protections needed for the given operation
	This symbol indicates the reference part of this manual
	This symbol indicates the useful tips

2. Precautions of operations

Working environment
Never use the printer in a non-ventilated or stuffy workplace, or it may lead to toxic hazards to operators. A ventilator is always a necessity.
The printer is a precision equipment and should always avoid strong impact or shake in any process of loading, installation and operation, or it may result in equipment damage.
Do not use the machine in the explosive atmosphere.
Avoid setting foot or heavy items placed on the printer or it may result in equipment damage.
Verify that there is no individual or item within the printing area.
See ***2. Working environment***
Forbidden modification
Any unauthorized alteration is strictly prohibited，or it might cause parts malfunction or damage to the printer.
Any disassemble or replacement of the parts and cables is strictly prohibited in the state of power-on.
Electricity
Please supply the printer with rated voltage and frequency, improper power input may cause functional abnormality or damage to the printer.
Avoid any liquid spilled on the electronic parts or it may result in parts malfunctions.
Verify that the printer is properly ground wired or it might cause some electric shock risks.
See ***4.5 Power*** input requirement
UV light protection
Avoid continuous eye-contact with the ultra-violets of the lamp.
Wear an anti-UV goggles when the printer is working to protect the operator from accidental direct eye-contact with the UV light.
Operator awareness
Any disassemble or replacement of the parts and cables is strictly prohibited in the state of power-on.
Avoid any body contact with the locomotion parts in the process of printer working, or it may lead to equipment breakdown or personal injury.
The operator must be well-properly trained and should operate the machine under the instructions, or it may easily cause equipment damage or personal injury.

Wear rubber gloves to avoid chemical liquid spilled on human body.

Flush with adequate purified water immediately if accident happened and see a doctor afterwards.

Ink store

Keep the chemical consumables away from non-qualified individuals and stored according to the specific instructions.

Continuous-flow drying awareness

To avoid printing issue and explosion risks,
only the inks and varnishes qualified by HANDTOP can be applied to the machinery.

Physical and chemical properties of HANDTOP inks	
Specific Physical Form: Liquid	General Physical Form: Liquid
Color: Y/M/C/K	Odor: Acrylic odor
pH: N/AV	Boiling Point: >120℃
Decomposition Temperature: N/AV	Flash Point: >120℃ （Test Method: Closed Cup）
Auto-ignition Temperature: N/AV	Flammable Limits: N/AV
Vapor Pressure: <1mmHg@20℃	Vapor Density: (Air = 1) >I
Specific Gravity: 1.01	Solubility in Water: Negligible

Solvents are not allowed to be placed on the printing area.
Solvents shall not be present at the printhead nozzle surface.

Exhaust system from the top of the machinery is needed to vacuum the hazardous ink mist.

Deposing waste ink and liquid

The treatment of the waste chemicals should abide by local environment regulations.

Emergency reaction

Always remember to press the scram stop at any emergency, and the printer should not be activated until all the malfunctions are settled.

See ***Troubleshooting***

Introduction

1. Printer brief introduction

The model of HT2500UV-C-HK4 Kyocera Hybrid UV inkjet printer is highly cost-effective equipment specially designed for commercial printing enterprises.
Assembled with high-performance piezo heads that enables an output speed of up to 52 ㎡/h at the precision of 1200 x 1200 DPI.

2. Printer applications

The UV digital printer can print directly on diversified media. The model can be used in advertising production such as banner, panel led, POP stand, vinyl display, meanwhile make creative innovation to the traditional craftwork in the decoration industry, of which fine-art glass, wooden products, natural or artificial leather, ceramic tiles and wallpaper, etc. can also be printed on.

3. Printer Features

With the self-R&D ability that enables constant advancement
Professional assembly crafts guarantee the perfect qualities.
Adopt excellent quality parts of worldwide famous brands, e.g. towline of EGUS.GERMANY, servomotor of FUJI. JAPAN, synchronous belt of MEGADYNE.
Ironic beam plus dual lead rails assembly on X-directional mechanical structure enables the carriage to run stably.
High precision linear encoder strip for the positioning of the carriage.
Optical fiber with a maximum transmitting speed of 1.25Gb/S and zero-interference ability.
Industrial PCIE data transmitting interface with excellent proof to electric-magnetic interference.
Automatic head height adjustment enables the head height adjustable to different media thickness of 0-100mm.
A dual lead screw on the Y-directional mechanical structure guarantees the

basis of the stable and high precision stepping movement.
Anti-crashing attachment can effectively reduce the head-strike risks.
Self-checking on printer running malfunctions.
Double-class ink-heating automatic control guarantees the optimum viscosity of ink for printhead continuously discharging.
Special negative pressure tank for keeping the pressure in the state of main power-off.
More intuitive and user-friendly operating interface.
With the ability to 24hoursX7days continuous running of commercial printing production.

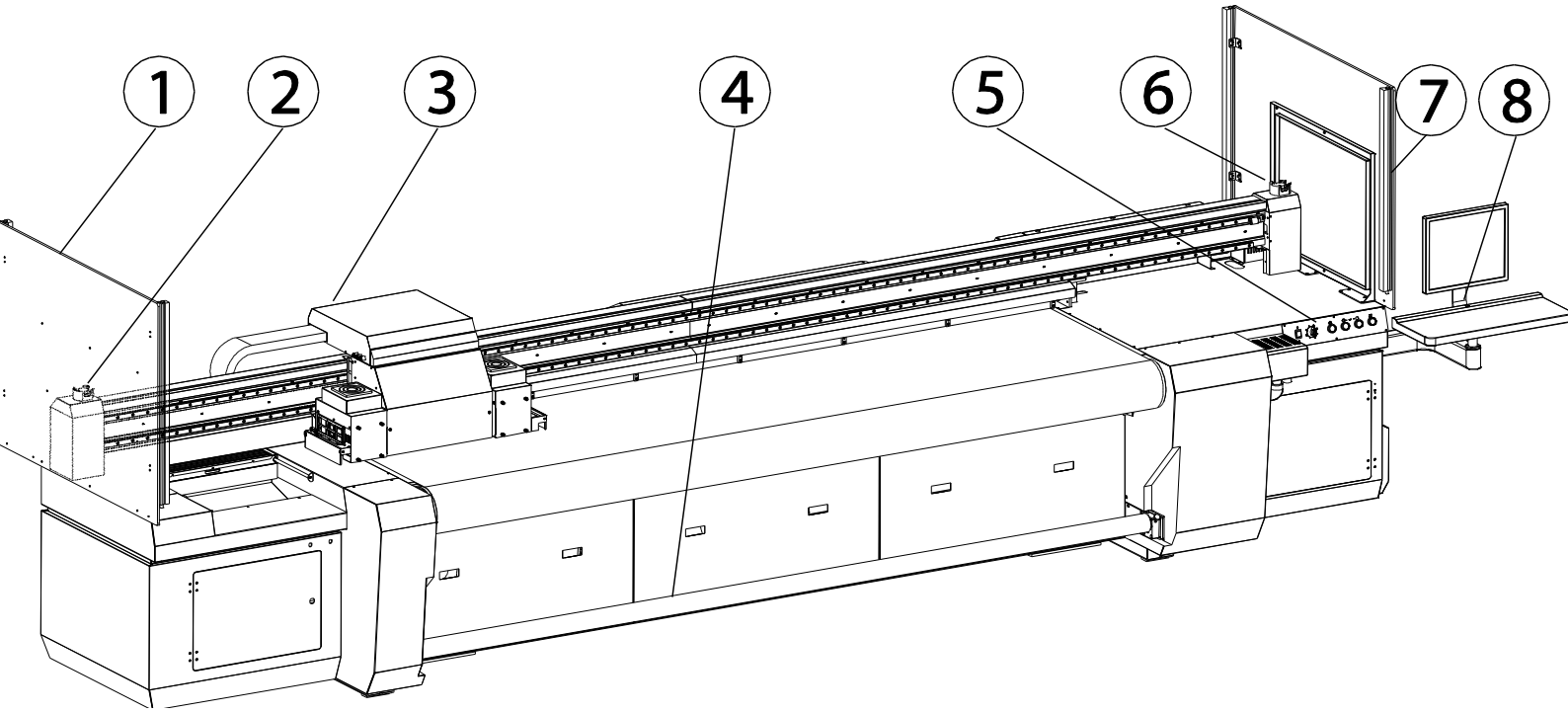
4. Printer configurations

Model	HT2500UV			
Printhead type	Kyocera high-performance drop-on-demand piezo heads			
Printhead array	2-4PCS			
Maximum resolution	1200*1200 DPI			
Printing speed (4 Printheads)	Production	4 Pass	6 Pass	8 Pass
	m^2/h	52	37	27
Print size	Up to 2.5m of printing width			
Media type	Rigid and flexible printing media			
Printed thickness	0-50 mm			
Applications	glass, acrylic, wooden board, ceramic tile, metals, PVC board, corrugated board, plastic board, etc.			
Ink type	Environmental-friendly UV ink (non-VOC)			
Color mode	Lc, Lm, K, C, M, Y, V, W			
Support file	Adobe Postscript Level 3, PDF, JPEG, TIFF, EPS, AI			
Support RIP	SeeGet, Onyx, Caldera			
Computer system	Windows2000 / XP, Windows7			
NET. Weight	1450kg			
Dimension	1800mm [H] × 860mm [W] × 4900mm [L]			
Power consumption	8kW(20A)			
Noise	The A-weighted emission sound pressure level at workstations does not exceed 60dB(A)			
Radiation	cat.1			
Certificate	CE，FCC			
Remark. All technical configurations are subjected to change without notification.				

AC Supplies	Nominal Voltage	400V
	Nominal Frequency	50Hz
	Steady state voltage	0,9 to 1,1 of nominal voltage
	Frequency	0,99 to 1,01 of nominal frequency continuously
	Harmonic distortion	Harmonic distortion not exceeding 10 % of the total r.m.s. voltage between live conductors for the sum of the 2nd through to the 5th harmonic. An additional 2 % of the total r.m.s. voltage between live conductors for the sum of the 6th through to the 30th harmonic is permissible.
	Voltage unbalance	Neither the voltage of the negative sequence component nor the voltage of the zero-sequence component in three-phase supplies exceeding 2 % of the positive sequence component.
	Voltage interruption	Supply interrupted or at zero voltage for not more than 3 ms at any random time in the supply cycle with more than 1 s between successive interruptions.
	Voltage dip	Voltage dips not exceeding 20 % of the peak voltage of the supply for more than one cycle with more than 1 s between successive dips.

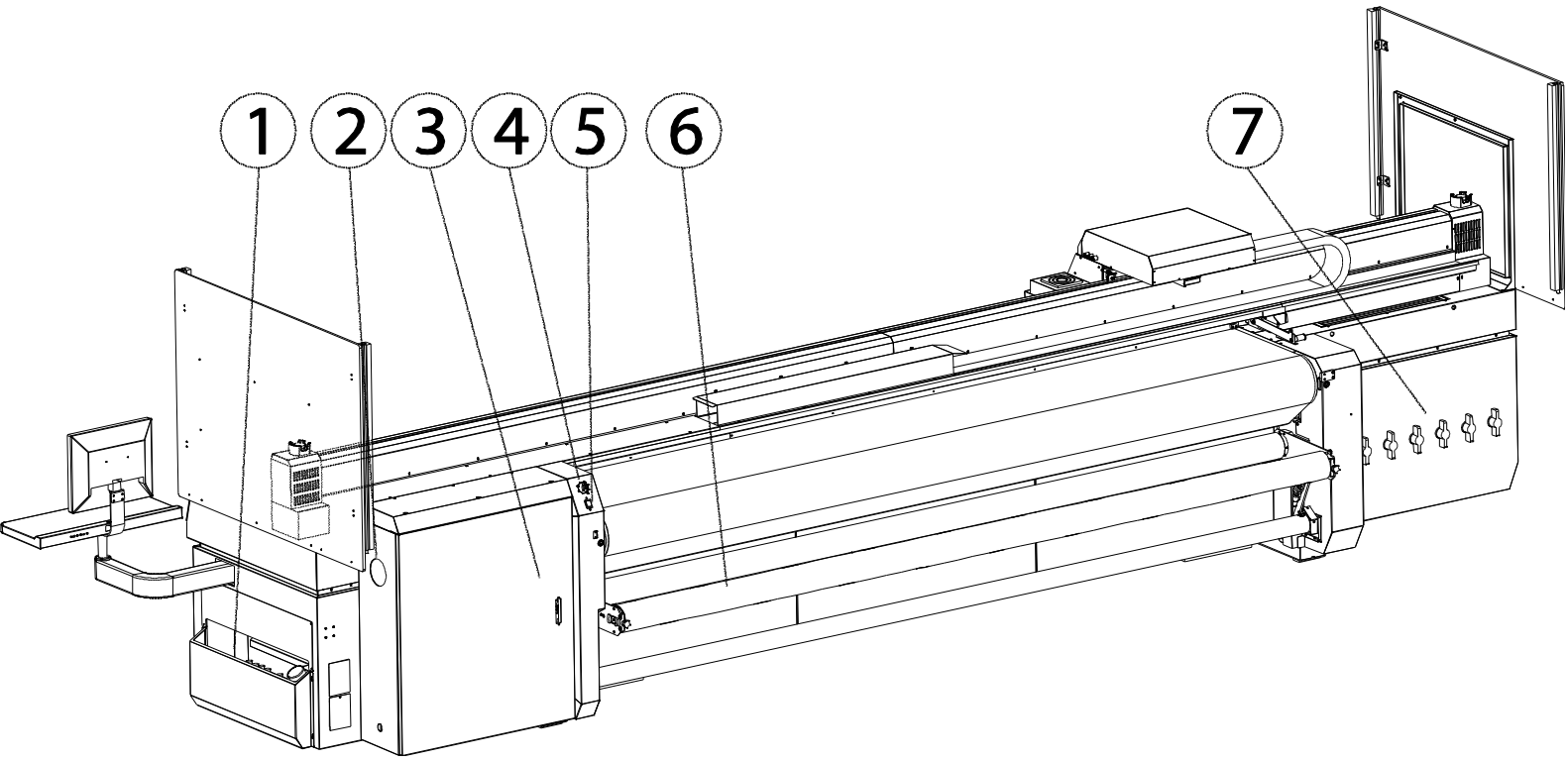
5. Structure Diagrams

5.1 Front view of the printer



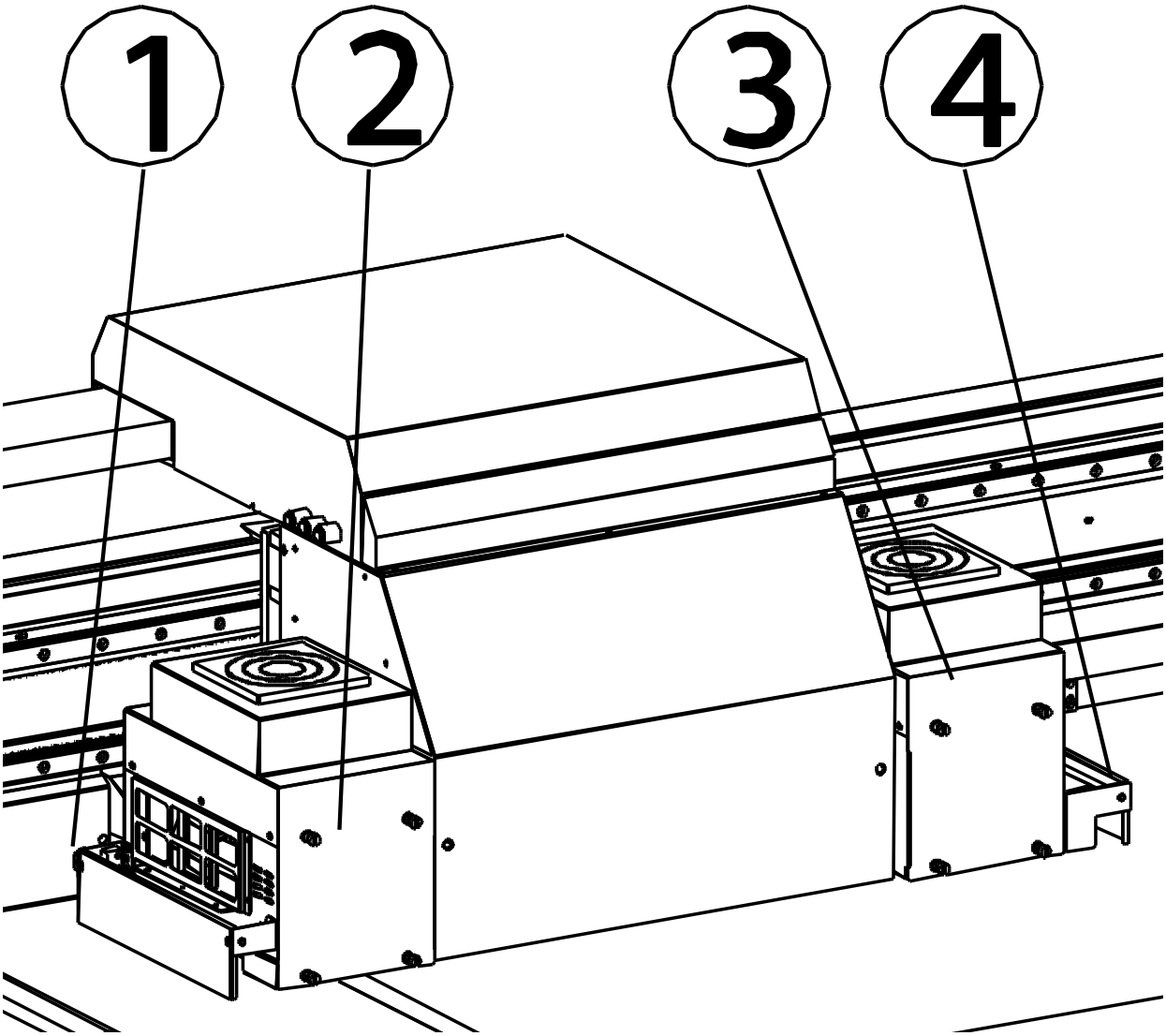
1. Light Curtain Left
2. Emergency Stop Button Left
3. **Carriage Assembly**
4. Media Take up Roller
5. **Electric Control Panel**
6. Emergency Stop Button Right
7. Light Curtain Right
8. Computer Start-up Button

5.2 Rear view of the printer



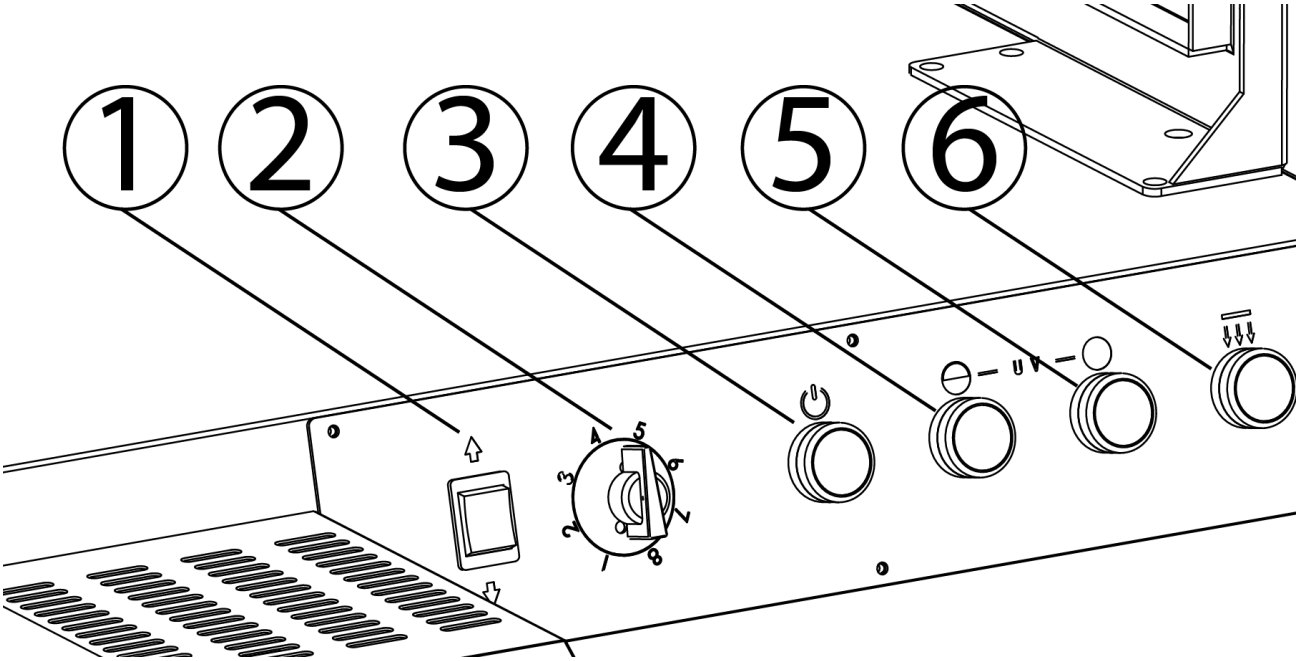
1. Main Ink Tank Tray
2. Main Power Switch
3. **Electric Box**
4. Media Take-up Speed Switch
5. Media Take-up Direction Switch
6. Media Feeding Roller
7. **Suction Control Panel**

5.3 Carriage Assembly



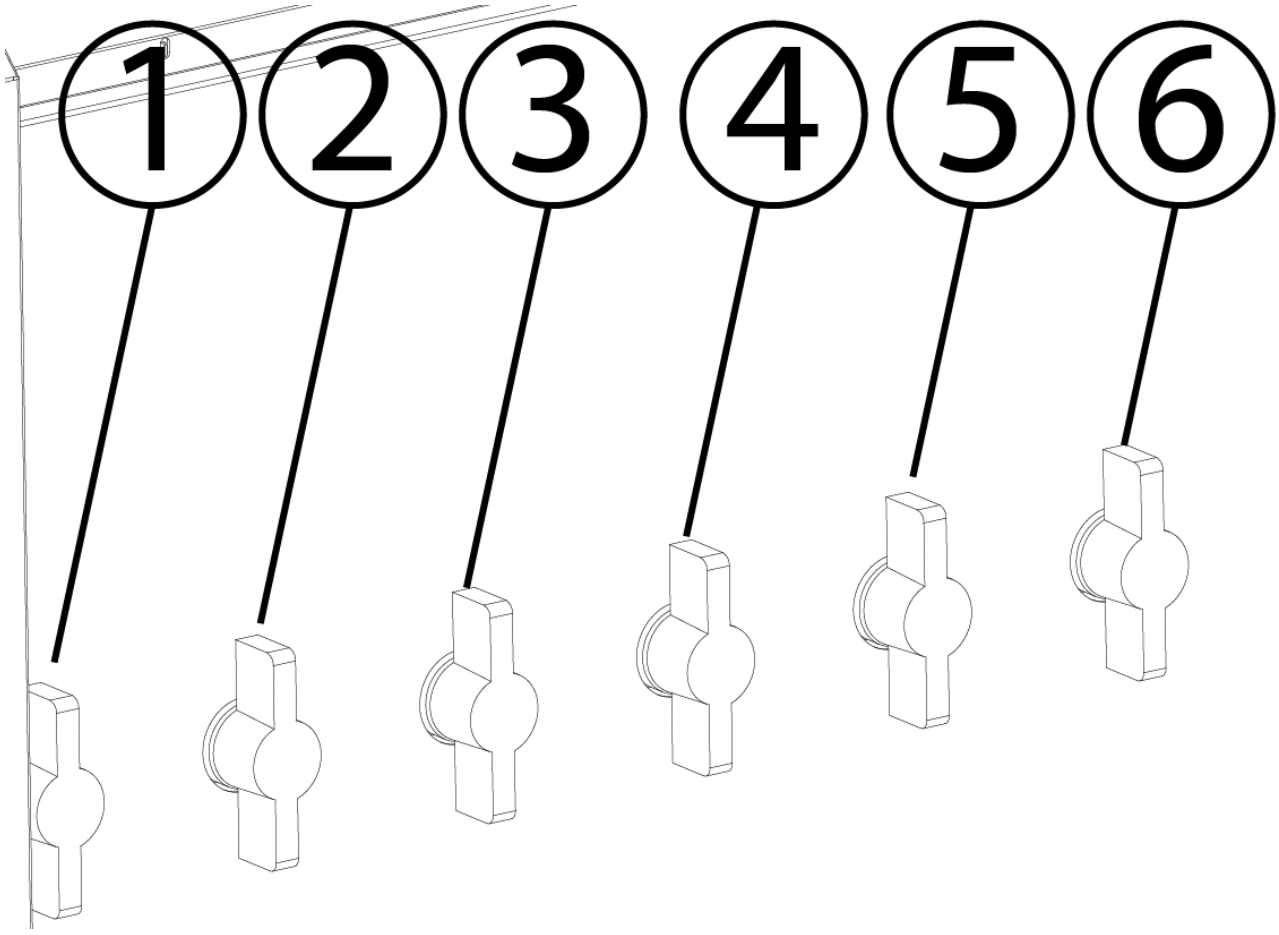
1. Anti-crash bar Left
2. UV lamp housing Left
3. UV lamb housing Right
4. Anti-crash bar Right

5.4 Electric Control Panel



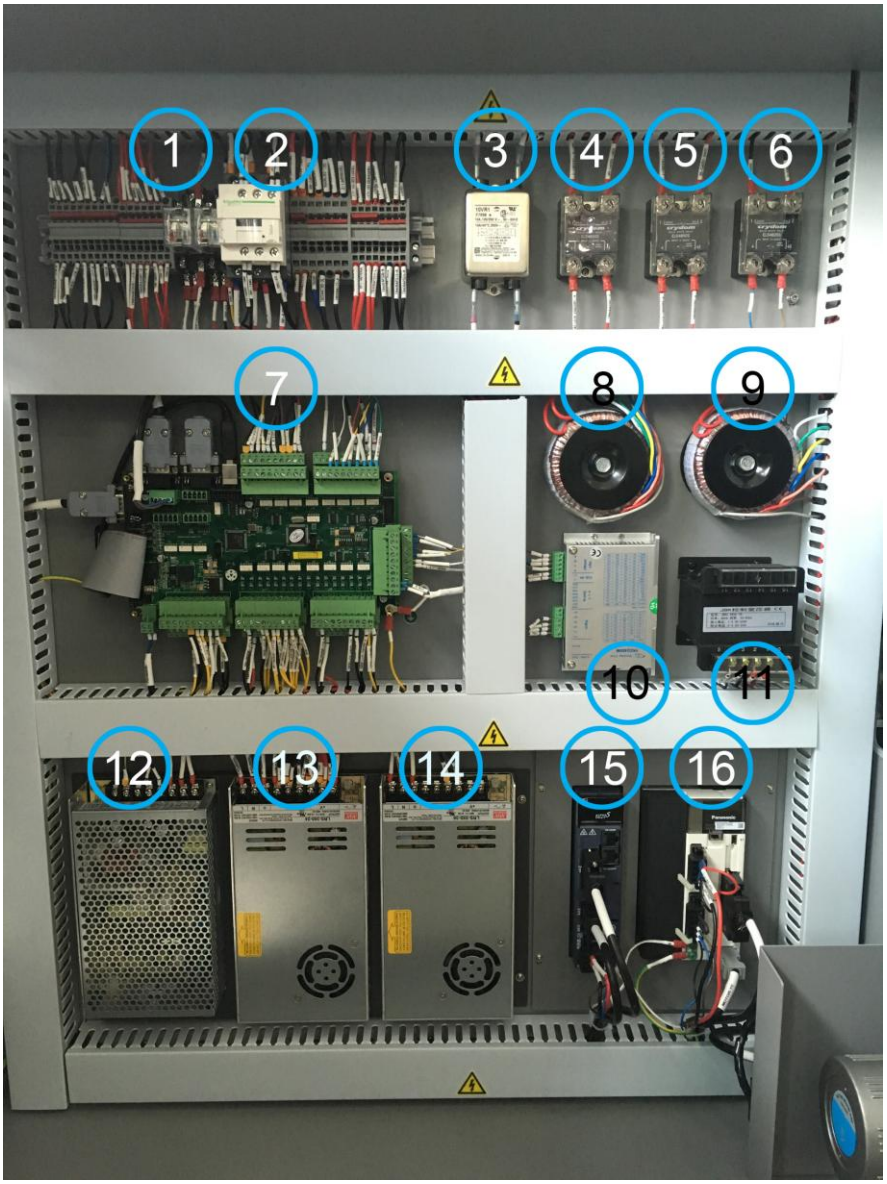
1. Media Take-up Direction Control Switch
2. Media Take-up Speed Control Switch
3. Power/Start Button
4. UV lamp Power Button Low Power
5. UV lamp Power Button High Power
6. Suction/Vacuum Button

5.5 Suction Control Panel



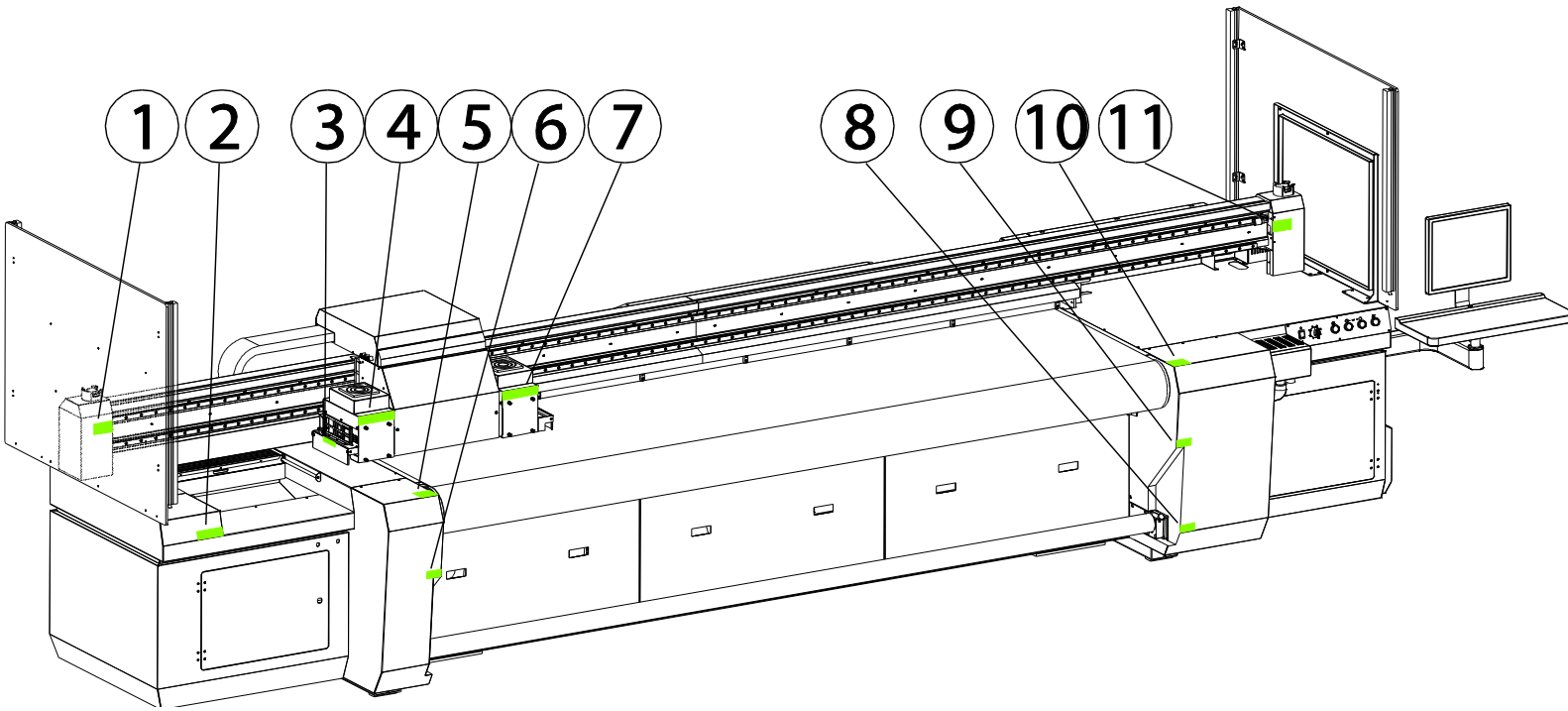
1. Suction Zone 4 Valve
2. Suction Zone 3 Valve
3. Suction Zone 2 Valve
4. Suction Zone 1 Valve
5. Print Zone Valve
6. Global Suction Volume Valve

5.6 Electronic box



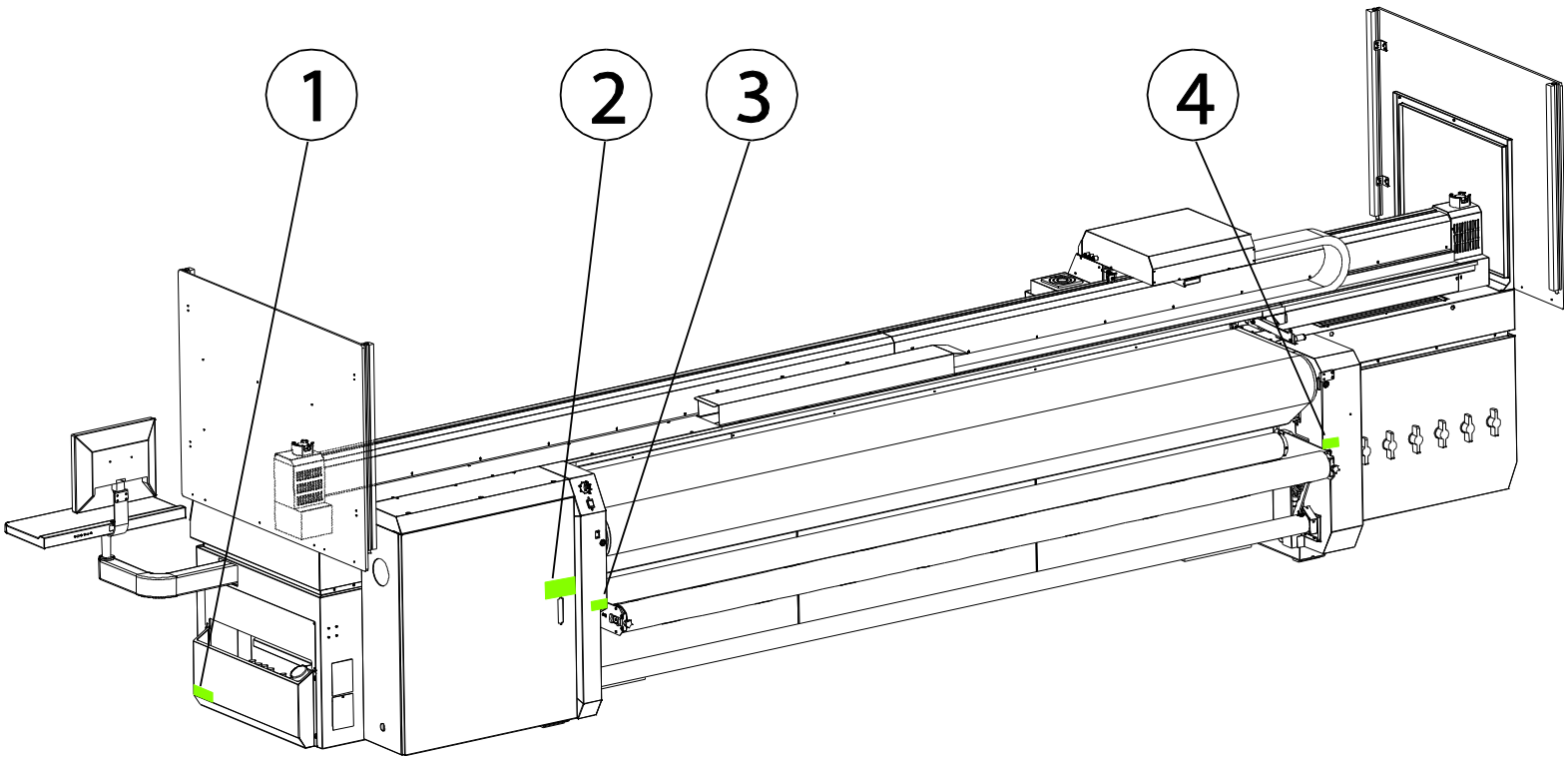
1. Relays
2. AC Contactor
3. Filter
4. Solid state relay 1
5. Solid state relay 2
6. Solid state relay 3
7. External device board
8. Media take-up transformer
9. Media feeding transformer
10. Carriage height motor driver
11. 220V to 24V transformer
12. 15V Switch power supply
13. 24V Switch power supply
14. 36V Switch power supply
15. Carriage motor driver
16. Belt motor driver

5.6 Labels and logo on printer



1,11	
2	

3	PREVENTIVE MAINTENANCE RECOMMENDATION CLEAN THE QUARTZ GLASS DAILY CHANGE THE UV DUST FILTER EVERY 2 WEEKS
4,7	
5,10	
6,9	
8	


1
2
3
4

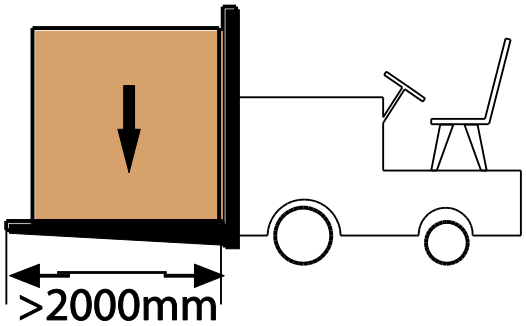
1	 WARNING Hazard. Eye protection and gloves required.
2	 DANGER RISK OF ELECTRIC SHOCK Turn electricity off prior to servicing.  WARNING Hazardous voltage inside. Only authorized personnel may service this equipment.
3,4	 CAUTION Heavy object. Two person lift required.

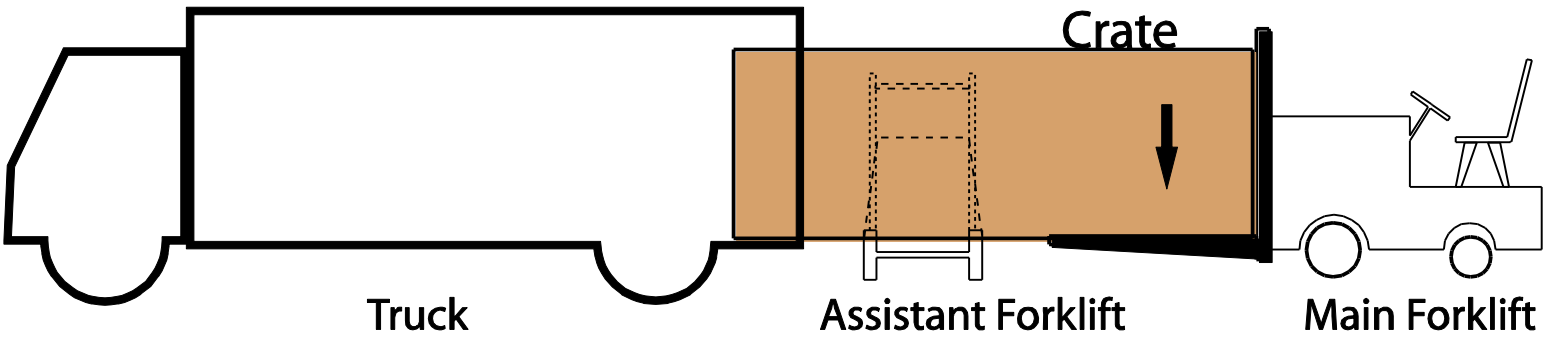
Printer Installation

1. Loading and transporting

The net weight of the printer is 1450kg
Transportation and storage temperature: -20℃~60℃

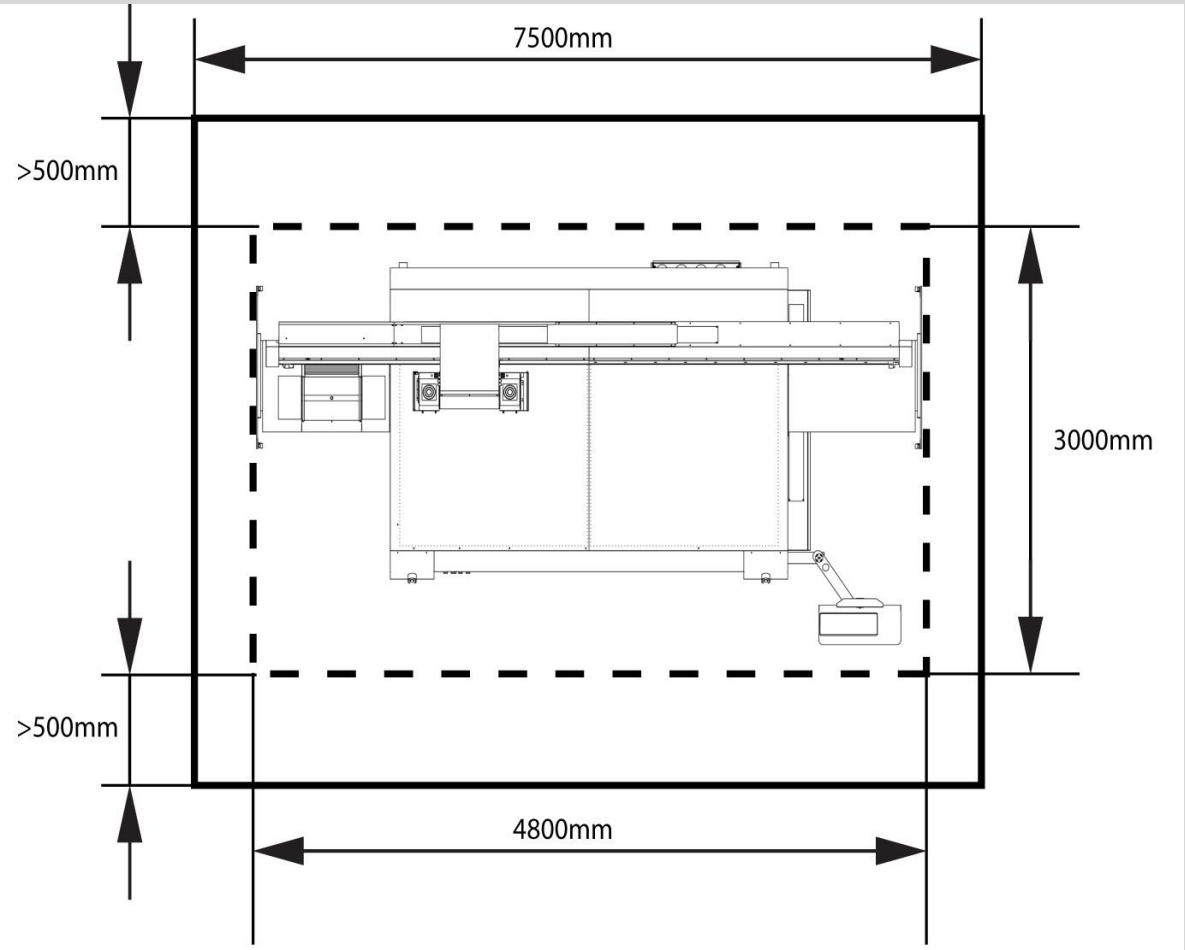
	The printer is a heavy-duty precision equipment of great value; thus the loading and transporting assignment must be assumed by qualified individuals, with a view to reduce the risks unexpected.
	The lift of the wooden package should be executed to the front side (with an identification mark of FRONT).
	The equipment must be hoisted with the package box by the crane, with a view to avoid printer damage caused by external force.
	It is recommended that a 3-ton forklift to be used in the loading and unloading job. Basically, the distance between the two arms of the forklift should be 1.3 m at the minimum, and the length of the arm should be 2.0m at the minimum.





2. Working environment

The limit distance of the moving part the machinery can reach is illustrated with dot-line box below.
Set barriers for the area illustrated with black-line box below to prevent moving part doing damage to operators.
Note that at least 500mm free area should be set for both front and rear side.



Individual, clean, shadowy and dust-free workplace with associated ventilation
Altitude: Below 1000 meter
Constant humidity: 30%~70%RH(non-condensing)
Ambient Temperature: 18℃ ~ 30℃ (64℉ ~ 86℉)
Clean and dust-free
Sheltered from sunlight
In a good ventilating condition
Certified power outlet of which maximum consumption of 8kW and amperage of 20A is required
Rated voltage of 400VAC and the grounded voltage should below the value of 3V
See

4.5 Power input

3. Computer configuration

Motherboard	CPU	RAM	Hard Disk Driver	Operating system
PCIE port supported	I5	4G	500G	Windows 7 64Bit
	**Windows8** and **Windows10** are not supported			

4.Installation instructions

4.1 Check and acceptance

1. Verify that all electronic units and mechanism are in normal state as soon as the printer is placed properly.
2. Disassemble all the fixtures of the printer.
3. Verify that all the accessories listed are included and sign the bill.

 See Appendix ***4. Tools and properties*** for all information

4.2 Installation of the computer attachments

1. Connect all I/O devices of the computer
2. Install the PCIE card into the computer case
3. Connect the optical fibers, serial data cables of each corresponding circuit

4.3 Installation of the UV lamp assembly

1. Take the lamp assembly out of the box carefully

2 Load the assembly to the carriage. and fasten the screws

3 The anti-crash attachment needs to be adjusted to some 0.5mm lower than the level of the bottom of the printhead tray when reassembling in the printer

How to adjust the anti-crash attachment
1. Place one panel of acrylic on the printing table 2. Run a “Nozzle test” based on the acrylic and fine adjust up to 0.6mm 3. Click “Printing cancel” and adjust the anti-crash bar to the same level of the acrylic panel.

4.4 Leveling adjustment

1 Keep the printer’s castors laid on the ground with the supports not enabled.

2 Use the level to measure the middle of the four edges of the platen and find out the highest point of the platen.

3 Take the highest point as a reference and adjust the support screws of the other three corners, and get to make the four edges on the same level.

4 Fasten the nut of the support screws to keep the whole frame steady.

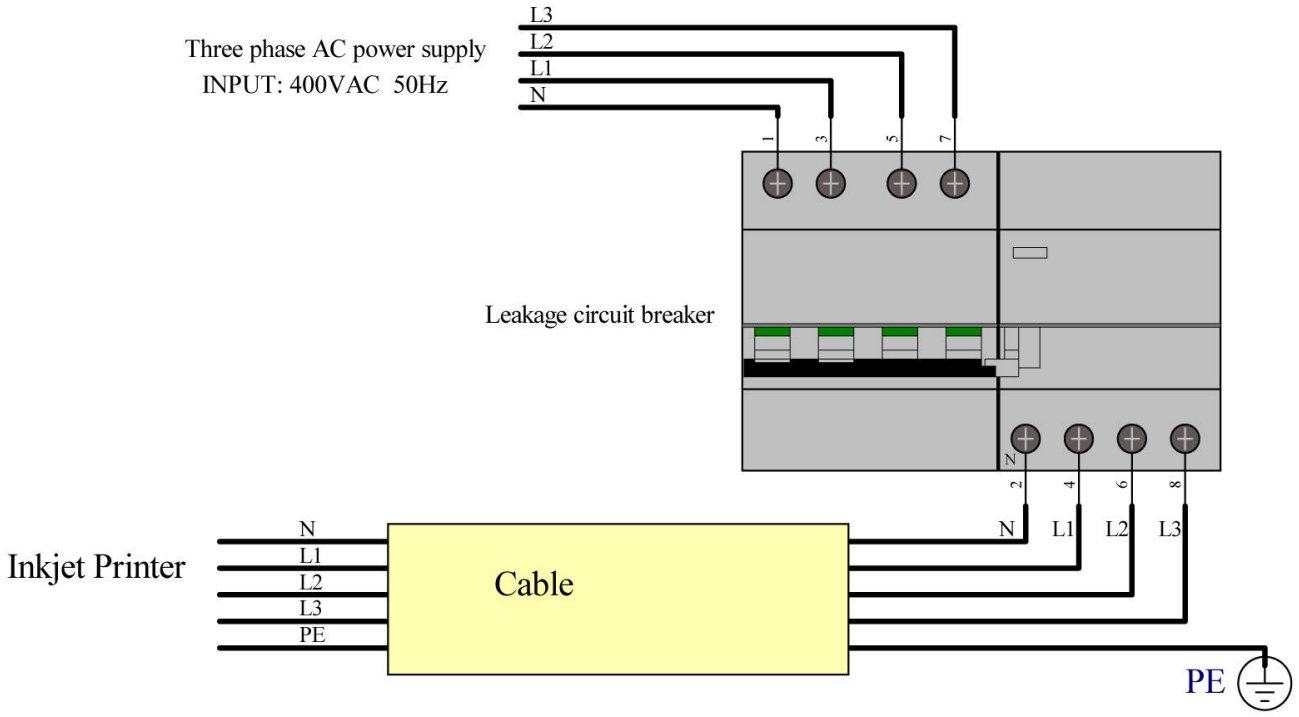
4.5 Power input requirement

The printer is high power consumption equipment of 8kW.	
The input power should meet with the rated value of AC voltage and 20A.	
	Voltage between N and PE should lower than 3V.
	The specification of the power cable should be the diameter of 4 ㎡ GB.

	The printer should be properly ground wired.

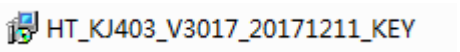
Diagrams below show the wiring method for various power input.

400VAC 50Hz

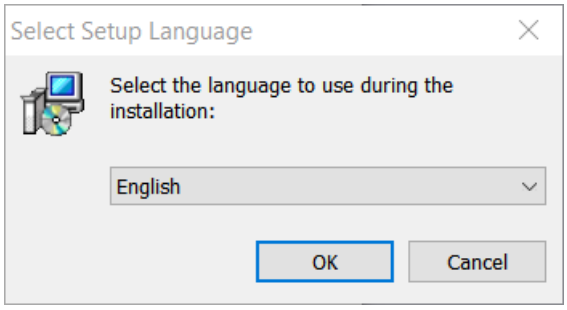


4.6 Software and driver installation

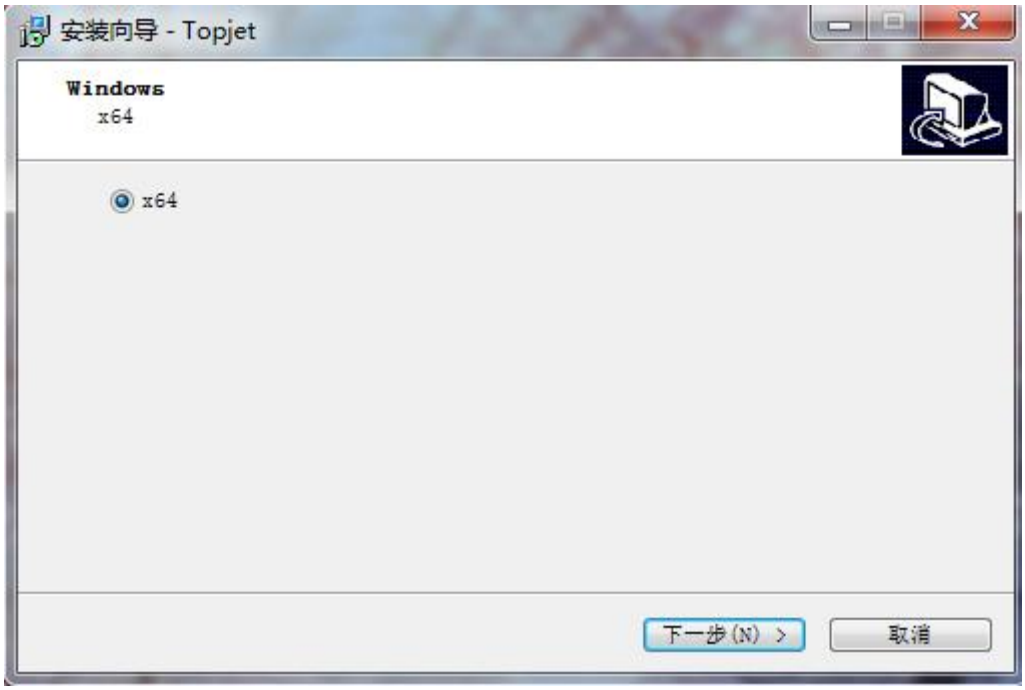
1 Double click the corresponding installation package to start



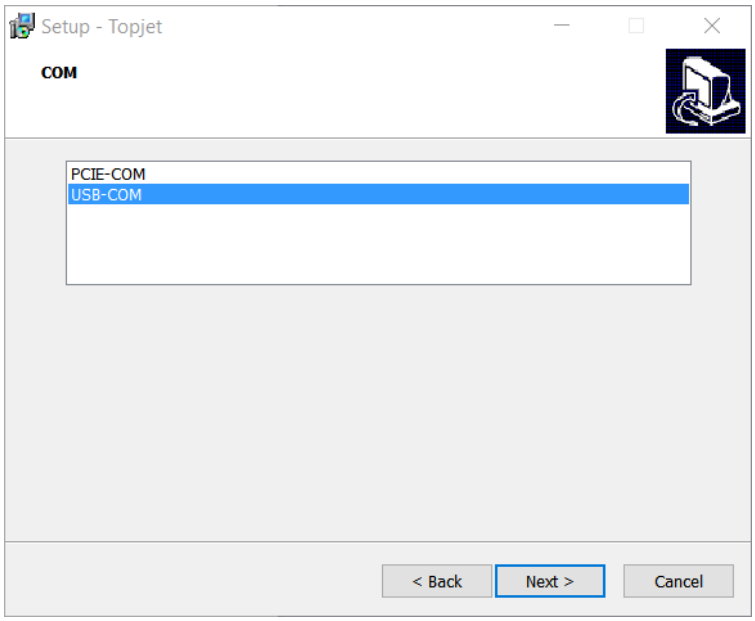
2 Select your own language



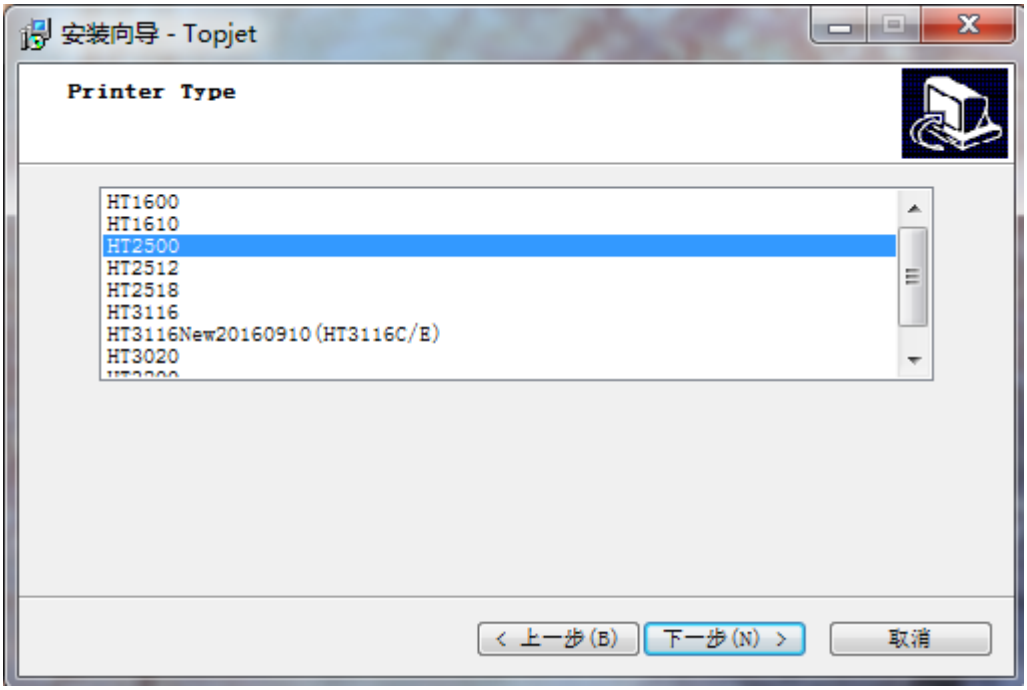
3 Select OS version. x64 for 64 bit windows



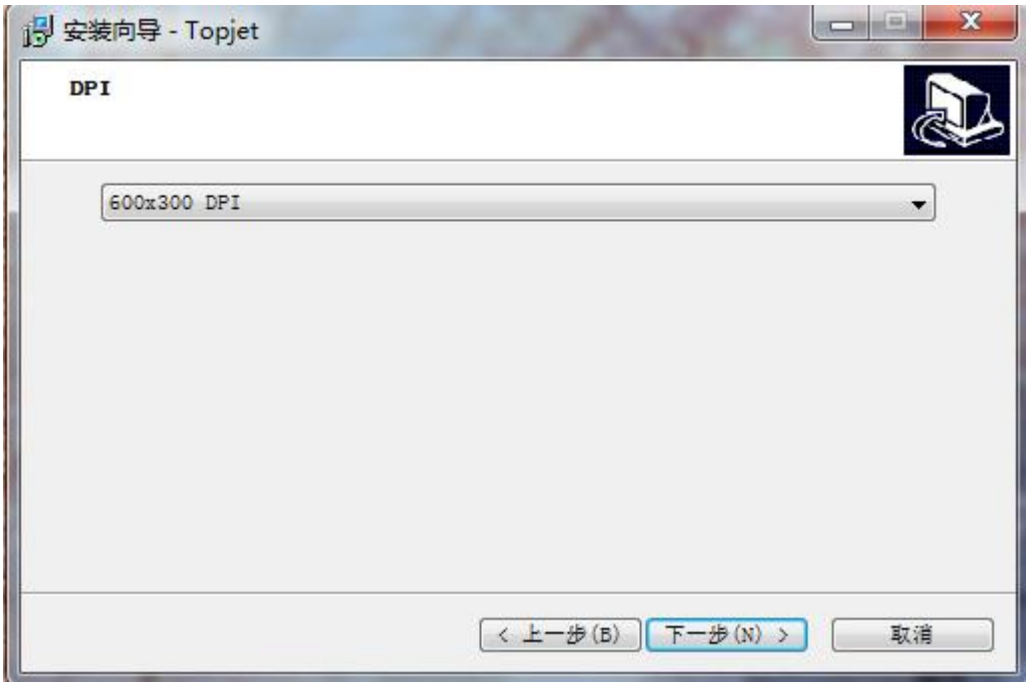
4 Select the communication port.



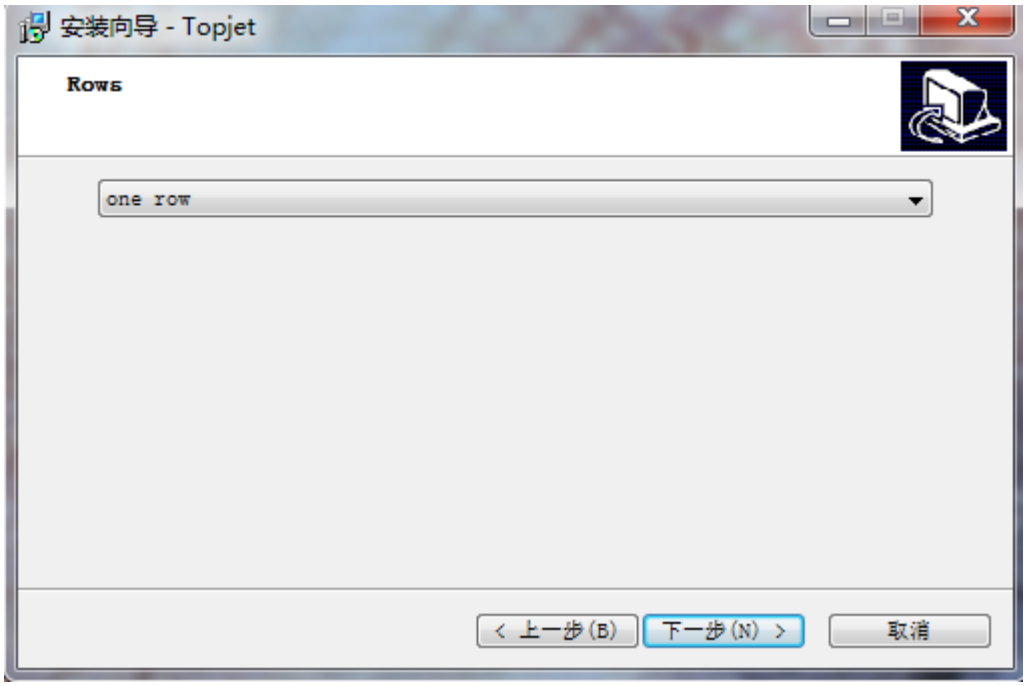
5 Select the printer model .



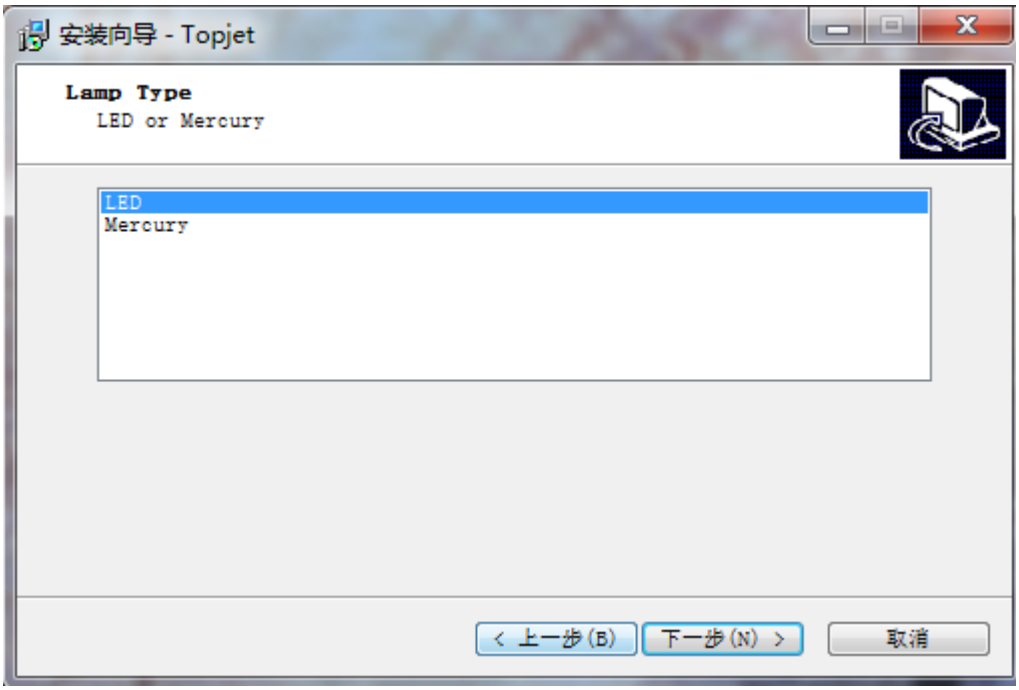
6 Select DPI.



7 Select rows.

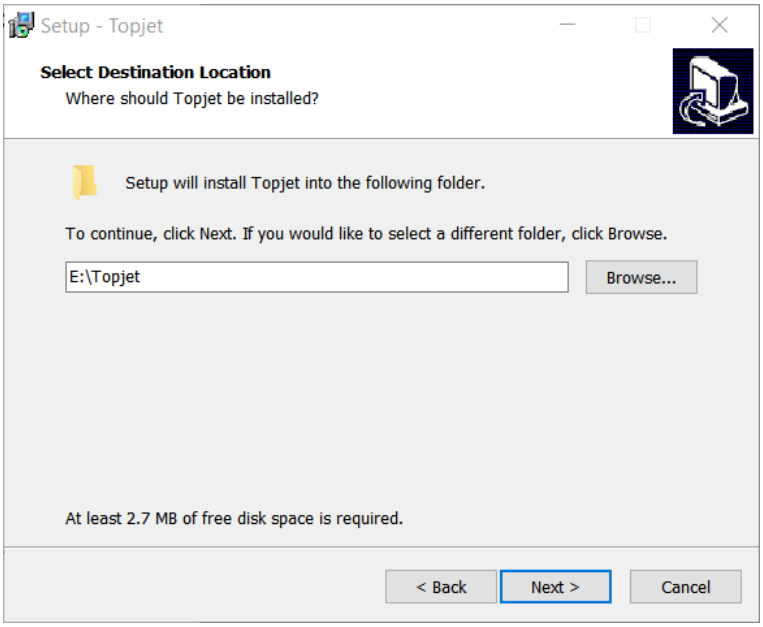


8 Select UV lamp type

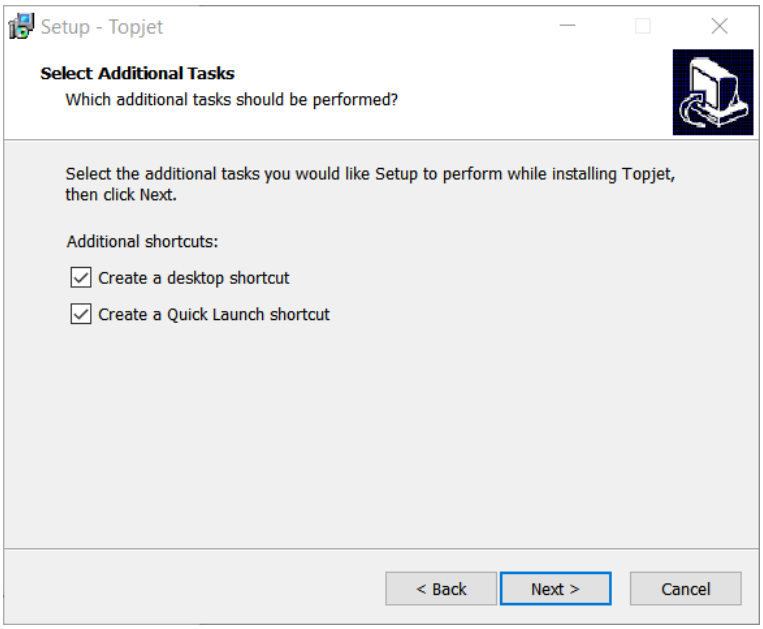


9 Browse a path for TOPJet.

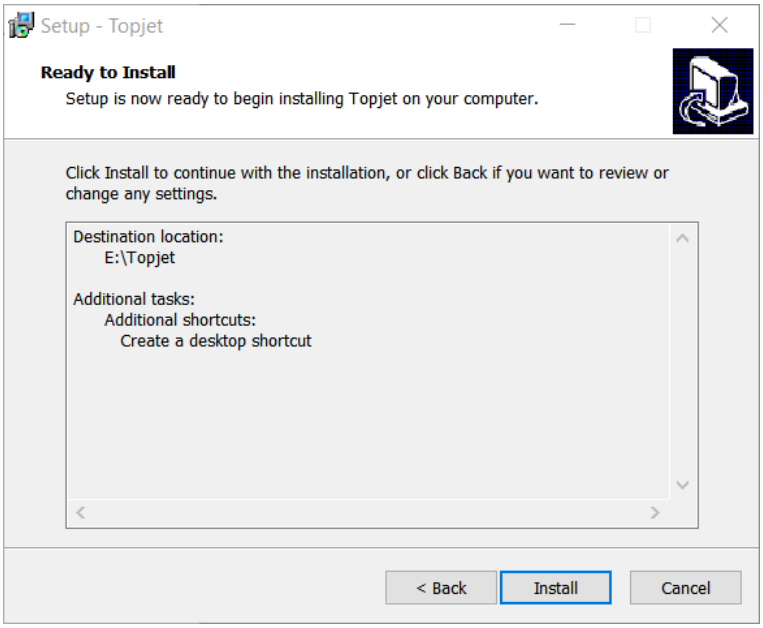
It’s recommended to not choose system disk as installation folder. For example, “E:\”. Thus, the package will generate a folder named “E:\TOPJet” automatically.



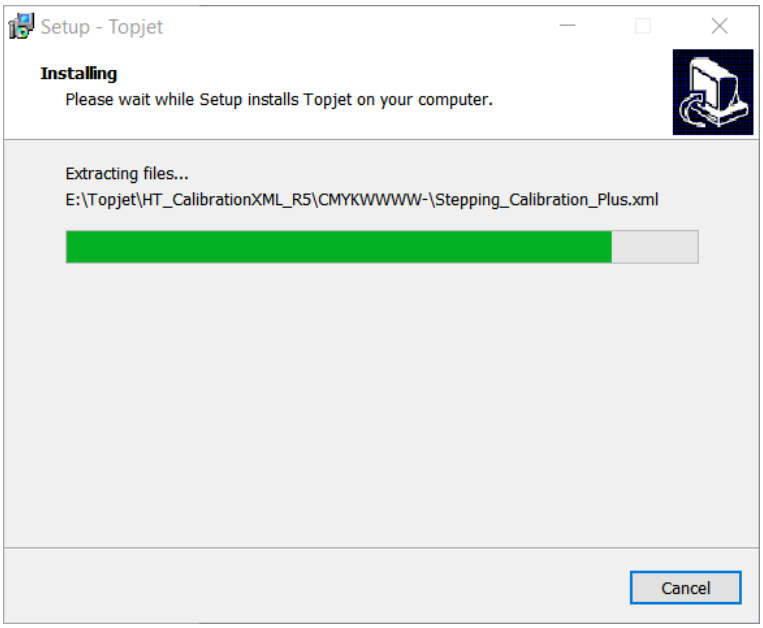
10 Select additional task



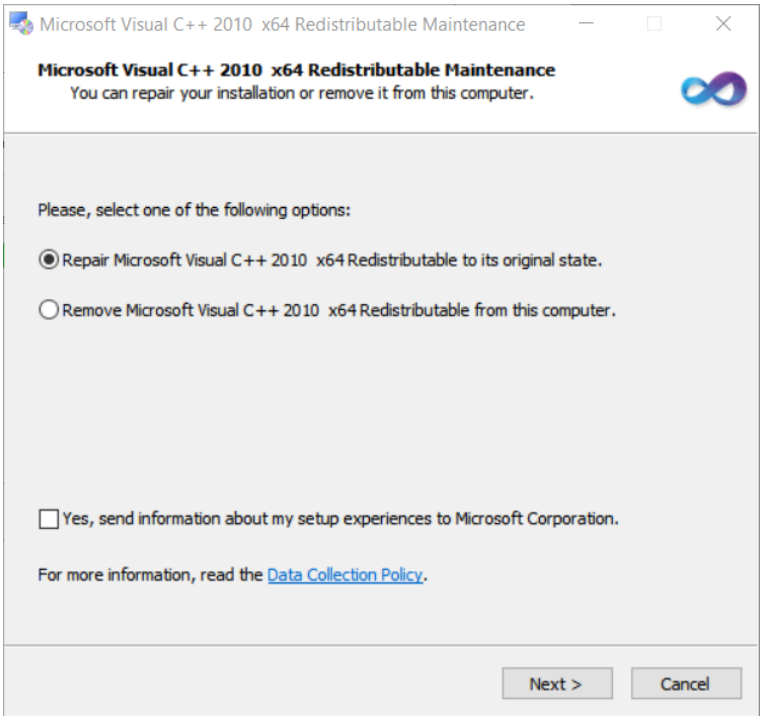
11 Confirm and install



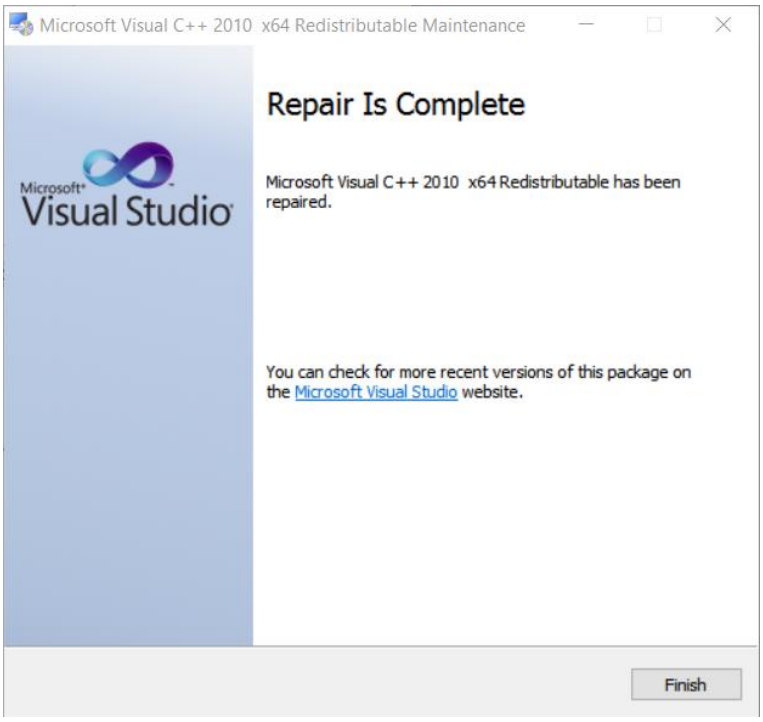
12 Wait for installation



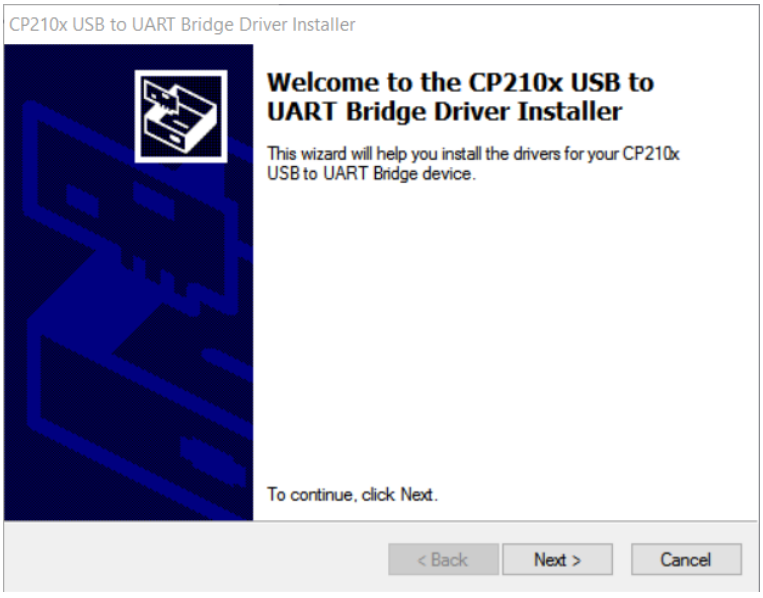
13 Install the initiations



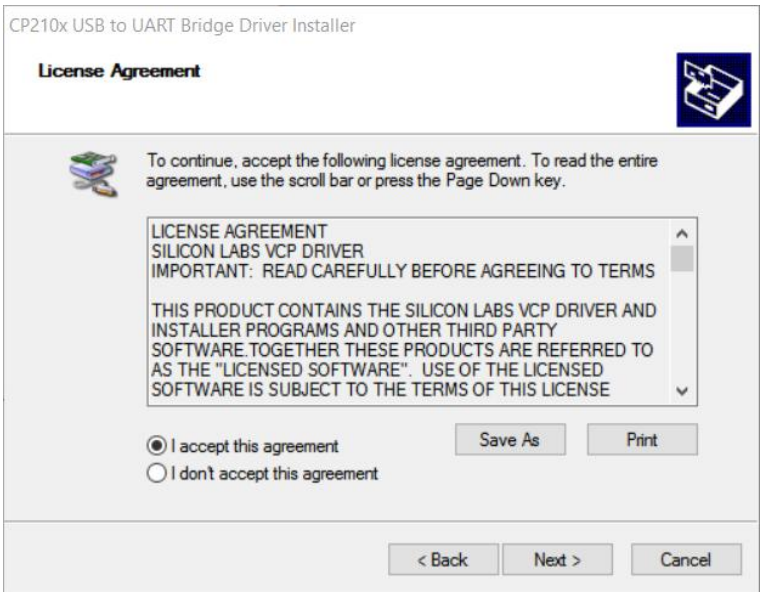
14 Click finish to continue



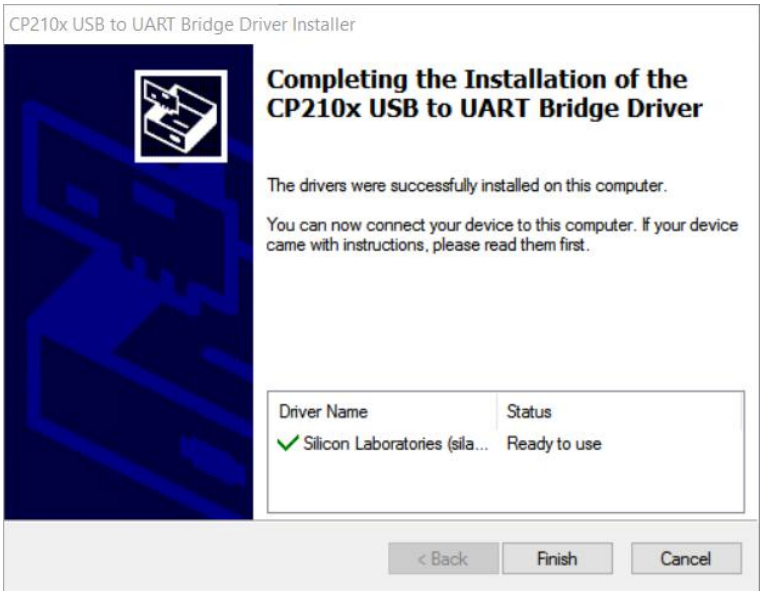
15 Install the driver for PCIE card



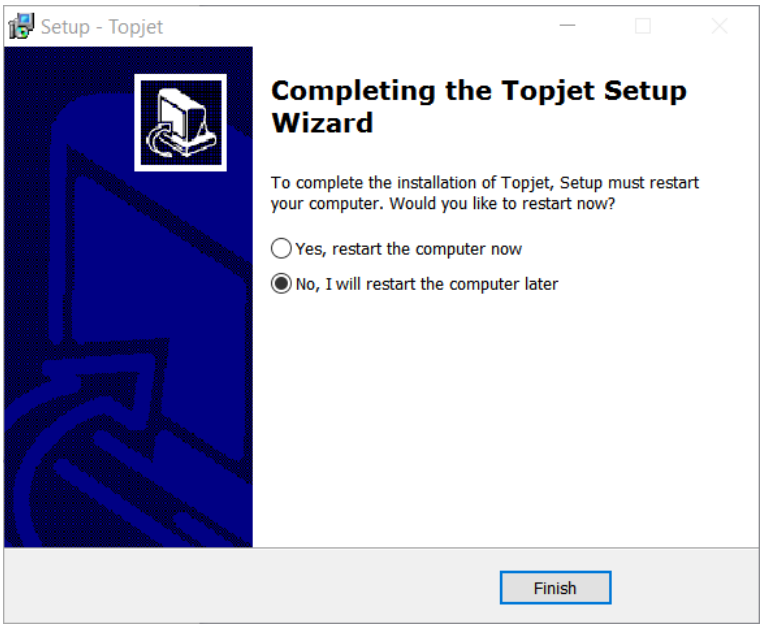
16 Accept



17 Continue



18 Finish. Normally we do not have to reboot computer after installation.



4.7 Functional tests

Double-check the power supply, and test the following functions of the printer:

Maximum and partial UV lamp power output activated properly
Maximum and partial UV lamp power output activated properly
X and Y directional moving properly
Head height locating function running properly
Print test OK

4.8 Printhead installation

	This step must be operated by qualified technicians with a view to avoid damage to printhead and integrated circuit, and reduce the risk of unexpected hazard due to improper operations.

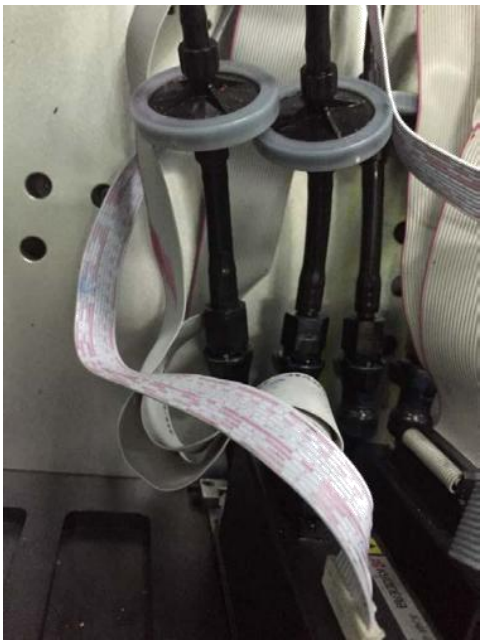
	The connection of printhead cables can only be executed in the state of power-off. The pins of the cables must avoid to be dipped with any liquid and should never be bent.
	When dismantling the printhead, Wear rubber gloves goggle to protect yourself from the ink.

1 Take all the assistant parts out and connect the connectors

2 Finish Connecting as below

3 Pay more attention to the heads and take the printhead out of the packing case

4 Finish the connecting between sub tank to heads and fix the printhead



6 Finish installing the printheads one by one

☞ See Appendix ***5. Channel information of yocera head*** for connection of printhead cables

4.9 Filling ink

!	The ink filling operation can only be executed when the ink lines and the connections of the cables are carefully double-checked after the printhead installation.

1 Shutdown the spray function of the program and adjust the value to -1.5kPa, avoid the automatic protection of system when the negative pressure fluctuates in the ink filling operation process.

2 Verify that all cables of the ink pumps are connected properly and then fill in each main tank with the color of ink accordingly.

3 The ink pumping function will be interrupted if the Sub Tank is still not filled to its standard ink amount every 15s, and the buzzer will make a three-alert. Normally this alert can be ignored by resetting of the ink filling function, and the ink filling can be accomplished by the repeating the operation a couple of times.

4 When finishes the ink filling, adjust the pressure to a value of -3.8kPa, then turn on the valves of the Sub Tank.

4.10 Air exhausting of the printhead

💡	The exhausting operation should be done the first time of printhead installation
	This operation can help exhaust the air bubbles in the chamber.
	This operation can also be used to deal with the nozzles missing problem.

	Wearing rubber gloves goggle to protect yourself from the ink

1 Shutdown the spray function

2 Turn off all the valves except the valves of the printhead, which needs to be exhausted and adjust the pressure to a value of -1.0kPa.

3 Loosen the cap of the air exhaust tube of the printhead, and press the ink prime button till you see a constant ink stream comes out of the tube. Then seal the tube with the cap.

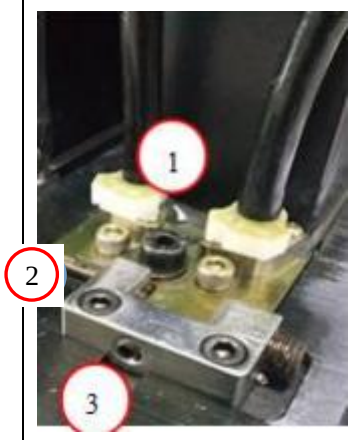
	The operation must not exceed 3 seconds so as to avoid the generation of bubbles. If the system alert occurs, click the “reset” and continue the exhausting operation when the alert ceases

4 Execute the exhaust on each printhead as the operations described above. When finishes exhaust operation, adjust the pressure to a value of -3.5kPa and turn on all the valve, press the prime button till you see the ink comes out of the nozzles of each printhead.

5 Use the lint-free towel to wipe up the ink residues on the nozzles surface.

6 Print a “nozzle test” and check the status of the nozzles.

4.11 Printhead calibration and alignment

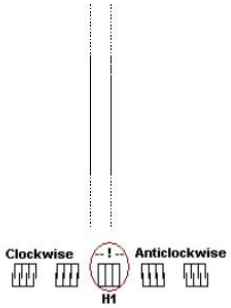
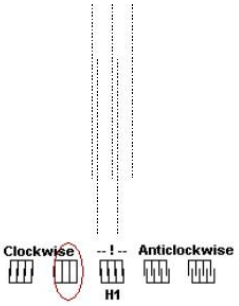
	The operations of the Printhead Calibration and Alignment consist of physical alignments (Horizontal and Vertical directions), Left/Right Direction Offset, Bi-directional Offset and Stepping calibration.
	Print Head diagram
	 ①**Head Fixing Screw**

	②**Vertical Adjusting Screw** ③**Horizontal Adjusting Screw**

4.11.1 Vertical alignment

1. Run the TOPJet program, click “Setup” to enter the “Printer Parameters setting” interface. Illustrated as below.
2. Select the printhead vertical alignment in the drop-down-list of the alignment checking and run printing.
3. Use the magnifier to observe the upper and lower parts of the small iron printed and sees whether the two parts merge into a complete one.
4. Adjust the **Vertical Adjusting Screw** of the printhead base according to the “Heads Vertical” calibration print and repeat the Step3.
5. Repeat Step2, Step3 and Step4 until they were aligned.

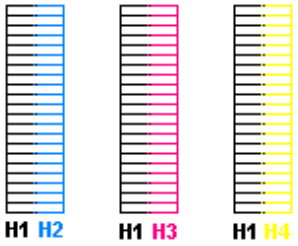
	How to read the Vertical Calibration print	
	Picture A Vertical calibration print(Good)	Picture B Vertical calibration print(Bad)

		
	The lines of the two parts printed are completely overlapped. Vertical calibration is good.	There is one icon in the clockwise side. Adjust the screw clockwise to make it aligned to the middle position with the exclamation mark
	How to adjust the **Vertical Adjusting Screw**	
	1. Loosen the **Head Fixing Screw** 2. Adjust the **Vertical Adjusting Screw** according to the Vertical calibration print. 3. Fasten the **Head Fixing Screw** when the vertical alignment accomplished.	

4.11.2 Horizontal alignment

1. Select the horizontal checking in the drop-down-list of the alignment checking and run printing. The printing result is shown as below.
2. Use the magnifier to observe the left and right parts of the small iron printed and sees whether the two parts merge into a complete one.
3. Adjusting the **Horizontal Adjusting Screw** of the printhead base according to the “Nozzle alignment” calibration print and check the alignment again.
4. Repeat Step2 and Step3 until they were aligned.

	The horizontal alignment takes the first printhead of the black color as reference.	
	How to read the Horizontal Calibration print	
	Picture C Horizontal calibration (Good)	Picture D Horizontal calibration (Bad)

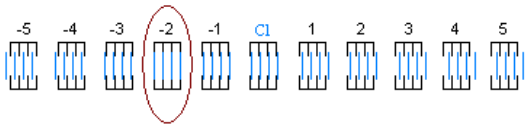
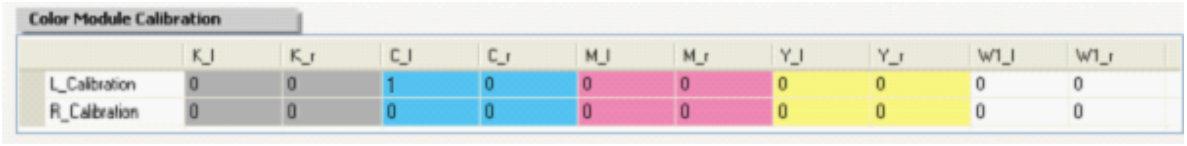
		
	H2, H3 and H4 are aligned to H1. Horizontal calibration is good.	H2 is not aligned to H1. Adjust the screw clockwise to make it aligned to the left black head.
	How to adjust the **Horizontal Adjusting Screw**	
	1. Loosen the **Head Fixing Screw** 2. Adjust the **Horizontal Adjusting Screw** according to the Vertical calibration print. 3. Fasten the **Head Fixing Screw** when the vertical alignment accomplished.	

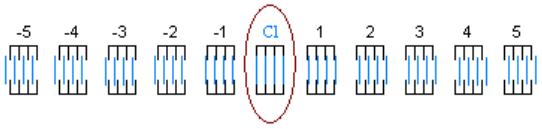
4.11.3 Left/Right heads offset

	“Left-dir heads offset” means color calibration of left-directional print. “Right-dir heads offset” means color calibration of right-directional print.

1. Select the “Left-dir Heads Offset” in the drop-down-list of calibration and alignment, print the checking icons as the sample shown below.
2. Use the magnifier to observe the best alignment of the offset calibration print and take it as a variable to adjust the original value.
3. Modify the value with a variable in the corresponding blank of “Color Module Calibration” sector and check the alignment again.
4. Repeat Step1, Step2 and Step3 until they were aligned.

	How to read the Left/Right Offset Calibration print

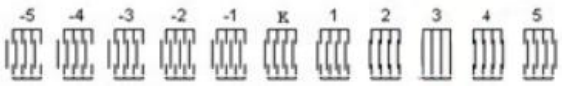
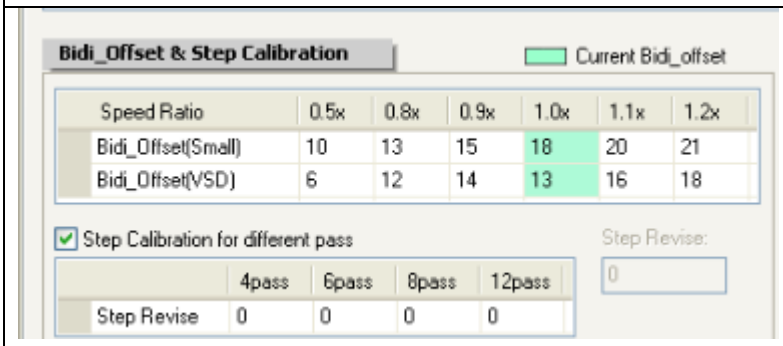
<table>
<tr><td rowspan="4"></td><td> 
</td><td>The left-side nozzles of the printhead (Cl) printed line align with the black line more perfectly in the icon with a figure of “-2”.</td></tr>
<tr><td colspan="2"> 

Subtract 2 on the basis of the origin for C_l</td></tr>
<tr><td> 
</td><td>Aligned after adjusting the offset parameters.</td></tr>
<tr><td colspan="2">Right Direction Offset using the same method with Left Direction Offset</td></tr>
</table>

4.11.4 Bi-directional Offset Calibration

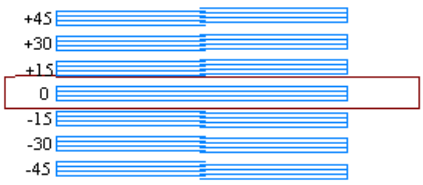
1. Select the “bi-directional offset” (Small & Middle mode) in the drop-down-list of “Calibration and Alignment” and get it output at the carriage speed of 1.0x.
2. Use the magnifier to observe the best alignment of the offset calibration print and take it as a variable to adjust the original value.
3. Modify the value with a variable in the corresponding blank of “Bidi_Offset & Step Calibration” sector and check the alignment again.
4. Repeat Step1, Step2 and Step3 until they were aligned.

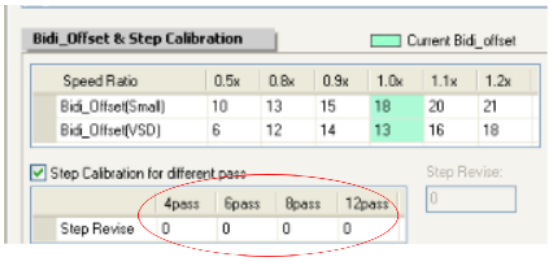
<table>
<tr><td rowspan="3"></td><td>The Bi-directional Offset Calibration consist of “Small &Middle Dots” and “Gray-scale& Large Dots” mode.
They use similar adjusting method.</td></tr>
<tr><td>The calibration parameter differs for different carriage speed.
Calibrate the Bi-direction offset parameters for them separately.</td></tr>
<tr><td>How to read the Bi-directional Offset Calibration print</td></tr>
</table>

		The line overlaps the best at the position of figure +3
		Plus 3 to the corresponding parameter (Here is the 1.0x speed, 18+3=21).

4.11.5 Stepping calibration

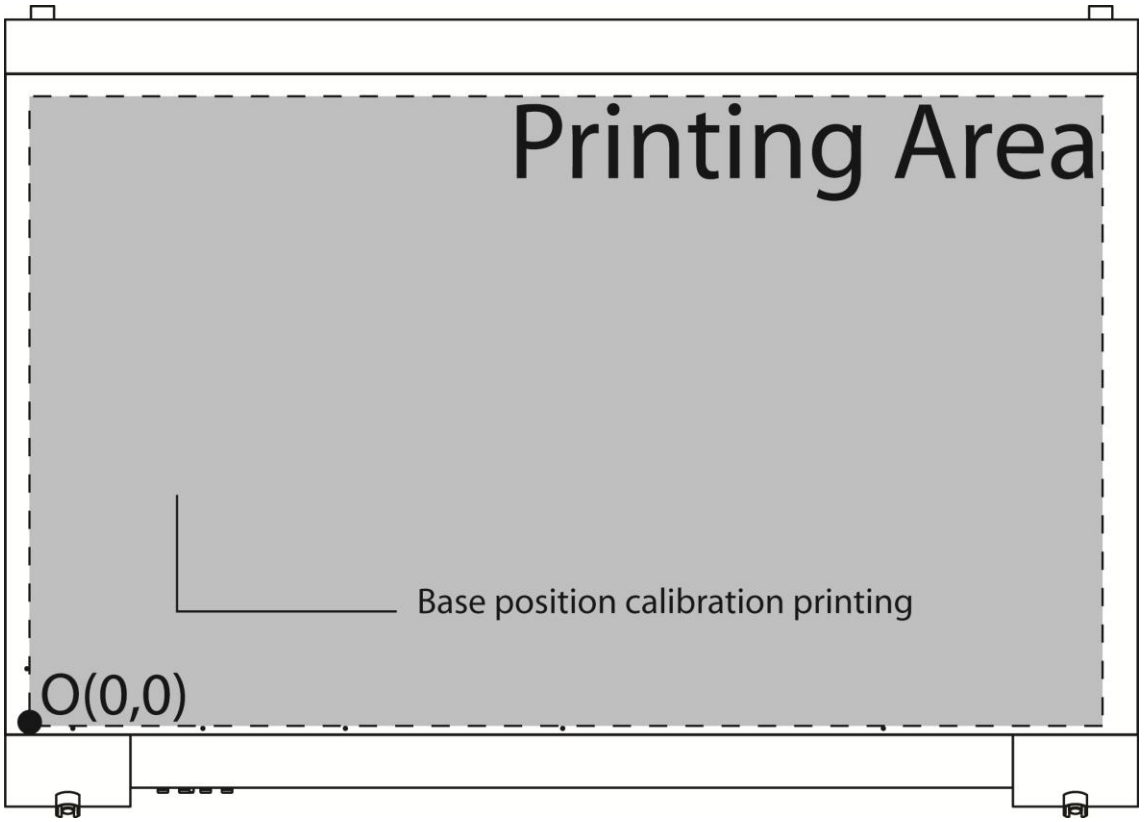
1. Select the stepping checking print in the drop-down-list of calibration and alignment and get it output.
2. Use the magnifier to observe and find a number indicates the best overlapping of the tiny lines.
3. Modify the value with a variable in the corresponding parameter and check the alignment again.
4. Repeat Step1, Step2 and Step3 until they were aligned.

	How to read the Stepping Calibration print	
		An aligned Stepping Calibration print

		Adjust the parameter here. This method is not using a precise parameter calculating. Choose the most close one.

4.11.6 Base Position Calibration

1. Select the “print base position” in the drop-down-list of calibration and alignment and get it output.
2. Measure the distance between the datum checking print and the mechanical base point.



3 Reset the value of the zero position in the layout option.

Operating Instructions

1. Start-up and shutdown operation

	The user should go through the ***Safety Precautions*** chapter before the first-time operation. And all operations to be done by beginners must be executed under the instructions of professional technicians.
	For emergency stop press the any of the Emergency stop buttons.

1.1 Printer start-up operation

1 Connect the power cable plugs to the wall socket.

	These four power circuit breakers only should be turned on in the initial operation. Once the equipment maintains in constant working phase, there is no need to turn them off anymore.	
	Before maintenance and service please lock the main switch in OFF position.	

2 Turn the main power breaker on.

3 Start the computer.

4 Turn on the four Emergency Stop Buttons on each corner of the printer.
Then press the green “Power/Start” button for activation.

5 Run the self-checking on the initial start of the printing system.

6 Check if the reading value of the pressure is normal.

	Normally the value of the negative pressure reads -3.8KPa. But various slightly in different models and locations. Adjust the pressure in the TOPJet software.

7 Activate the air blower and turn on the corresponding suction sector of the platform where the media laid.

8 Activate the UV lamp and start the normal printing job.

	See 错误！未找到引用源。 *for detail information*
	If ever encountered with an alert or an error message. Refer to the ***Troubleshooting*** chapter.

1.2 Printer shutdown operation

1 Print the nozzle test on an A4-size paper and compare with the previous one.

2 Turn off the air blower and the UV lamps.

3 Verify that the negative pressure is normal and the automatic spray function is activated.

4 Shutdown the computer.

5 Clean the printer and the workplace.

	If any nozzles missing is observed, execute the exhausting operation immediately.  See ***4.10 Air exhausting of the printhead***

Printer Maintenance

1. Periodic maintenance for printer parts

	With a view to keep the printer in good working conditions, operators should do the maintenance job periodically according to the following instructions.

Daily routine maintenance	Clean the frame
	Clean the waste ink sink
	Clean the quartz glass of the UV lamp assembly
	Clean the bottom of the printhead tray
	Check the negative pressure system
	Take a nozzle checking.

Weekly routine maintenance	Clean the towline and its internal cables
	Clean the fans, electronic parts
	Clean the waste ink collecting tray
	Replace the filter fiber
	Do the calibration and alignment.

Monthly routine maintenance	Lubricate the rolling and moving mechanical parts
	Check the joints of ink lines and air lines
	Replace the air pump

Quarterly routine maintenance	Reset the pressure indicator
	Replace the capsule filter
	Ink pump and optical fiber

Yearly routine maintenance	Replace the quartz glass of the UV lamp assembly
	Replace the disk filter and the tubes within the towline

*** The following maintenance instructions with a star mark "*" is provided for skilled person.**

2. Maintenance of the mechanical parts

Lubricate the moving mechanical parts with lithium grease monthly.	
Mechanical parts	X-directional Slide Way Y-directional Slide Way Y-directional Screw Leads Z-directional Screw Lead
	Use the lever type grease gun to eject the lubricating grease into the slide block via the lubricating nipple assembly on the block.
	Non-clean lithium grease must avoid to be used for lubrication job or it will result in slide way and slide block damage.

3. Precision part maintenance

All precision parts must be strictly cleaned with isopropanol and lint-free tissue according to the maintenance instructions.	
Precision parts	Encoder Strip Opt-electric Sensor head height finder assembly

4. Printhead maintenance*

4.1 Printhead daily routine maintenance

1 Every day before or after work, take a nozzle checking print and see if there is any blockage.

	Execute priming or flushing immediately as soon as any blockage is observed.
	In the case, only one or two color are jetting during the printing process, a synchronize color bar printed with the image is strongly recommended. All the other colors can also be working during the whole printing. Thus, avoid constant reflective UV light causes the non-discharging nozzles clog.

2 Tidy and clean the printing platform and the bottom of the printhead tray.

3 Execute anti-dust and anti-electrostatic operation.

4.2 Printhead preservation

If ever encountered with
1. A power failure yet the recovery time remained unknown
2. Vacation longer than 3 days
A printhead preservation needs to be done.
Follow the instructions below.

1 Get a KT board the size of the printhead tray and wrap it with preservation film.

2 Carefully lay some lint-free tissue on the surface and use some flushing to moisture it.

3 Put the moisturized KT board under the printhead tray, then roll the Z-directional screw lead manually, making the carriage low down till the two surface adhere to each other. (slightly contact is right, avoid pressing too hard)

4 Turn off the valves and disconnect the cable terminal of the air pump.

5 Turn off the main circuit breaker.

5. Replacement of consumable parts

5.1 Replacement of ink pump

	When hearing three-consecutive buzz, Check and see if the ink pump malfunctions.
	A three-consecutive buzz may be caused by other malfunctions. You should verify the cause before parts replacing.

1 Disconnect the plug of the ink pump cable and loosen the screws of the fixture.


2 Remove the broken ink pump and remove the tubes connected to the pump.
Illustrated as below.

3 Cut the deformed heads of the tubes and reconnect them to the new pump.

4 Carefully connect the tubes to the ink pump proper inlet and outlet with corresponding arrows indicating the flow directions.

5 Fasten the screw and reconnect the power cable.

	The buzzer might generate three-consecutive buzz in the process of replacing. You should reset the external device board after the replacement.

5.2 Ink refill

	When the hearing three-consecutive buzz, check and see if the ink is running out.
	A three-consecutive buzz may be caused by other malfunctions. You should verify the cause before refilling.

1. Get a new bottle of ink and uncap it, put it nearby.
2. Uncap the main ink tank which needs to be refilled.
   Carefully pour the ink of the new bottle into the main tank.
3. Press the reset key of the external device board.

	The ink tube must be inserted into the bottom of the main tank.

5.3 Replacement of ink filter

	The ink filter requires seasonal replacement.

1. Disconnect the power cable connects of the ink pump.
2. Clamp the inlet tube to avoid ink leaking or withdrawal.
3. Disconnect the joints of the tube and the filter. Remove the filer.
4. Replace with a new one and pay attention to the flow direction indicated by the arrow mark on the filter.

5. Remove the clamp and reconnect the power cable.

	The buzzer might generate three-consecutive buzz in the process of replacing. You need to reset the external device board after the replacement.

5.4 Replacement of air pump

	When hearing a single buzz during normal working hours, it means the main air pump has stopped working and the backup air pump is activated.
	Verify that the main air pump is broken or not before the replacement, just in case that there might be alert caused by operation failure.

1 Turn off the valves to avoid ink leaking from the nozzles.

2 Disconnect the plug of the main air pump.

3 Loosen the screws of the fixture and remove the main air pump.

4 Remove the air tube connected on the air pump. Cut the deformed head of the tube and reconnect them to the new pump.

	Pay attention to the air flow indicated by the arrow mark on the pump.

5 Fasten the fixing screw and reconnect the power cable.
Then press the reset key on the external device board.

6 Switch the power cable of the backup air pump to the main one.
And check if the main pump runs properly.

5.5 Replacement of ink/air tubes

	The replacement must be replaced when any damage or spoil is found on certain tubes.

1. Move the beam to the backward.
2. Shutdown the spray and turn off the valves.
3. Turn off the scram stop and disconnect the power cables of both air pumps.
4. Disassemble the cover of the towline.
5. Replace the used tubes with new ones.
6. Mark the tubes accordingly to avoid incorrect connection.
7. Connect and fix the tube properly.
8. Reassemble the cover of the towline. Reconnect the power cable and then activated the printer.
9. Turn on the valve and activate the spray function.

	The valves must be turned off and disconnect all power cables of the both air pump before replacement. Or it would easily cause ink leakage.

Troubleshooting

1. Buzz indications and troubleshooting

There are six kinds of buzz alert programmed in the printer. Below is the list of indications and troubleshooting.

Buzz type	1 BEEP
Buzz indication	Air pump issue
	Main air pumps stop working and the backup air pumps activated.
Troubleshooting	When hearing the single-buzz alert Click the “Reset” in the ink line options. If this does not work, check as following: 1. Check if the main air pump is normal or not. 2. Verify that the connection of the power cables of the main air pump and check its input voltage of DC 24V.

Buzz type	2 BEEPS
Buzz indication	Pressure issue
	Pressure exceed the standard protection value
Troubleshooting	Click “Reset” in the software.

Buzz type	3 BEEPS
Buzz indication	Ink starvation
	One or more Sub Tank detect ink shortage for more than 15 seconds
Troubleshooting	1. Check if the ink of the main tank is running out. a) Refill it if so. 2. Check if the pump works properly by manual contact. a) Replace the ink pump if so. 3. Check if there is any blockage of the pump a) Disconnect the bottom joint of the capsule filter and b) Click “Reset” in the software. c) Check if the ink comes out of the tube. d) Replace the pump if not. 4. Check if there is blockage of the capsule filter. a) Disconnect the upper joint of the capsule filter. b) Click “Reset” in the software. c) Check if the ink comes out of the tube. d) Replace the filter if not.

Buzz type	4 BEEPS
Buzz indication	Data transmitting issue
	Data transmitting through PCB boards and printer failed
Troubleshooting	Occasional alert is normal. Constant 4 BEEPS alert might be PCB boards or connection cable issue. Please contact local dealer for technical service.

Buzz type	5 BEEPS
Buzz indication	Ink backflow
	Ink backflow and triggers the sensor in Safe Tank. Possible causes: 1. Malfunctioning level sensor 2. Improper operation when disconnecting the ink tube. (Without the valve turned off or the pressure adjusted to -1.0kPa) 3. Ink filter blockage
Troubleshooting	1. Shutdown the spray and turn off all the valves. 2. Adjust the pressure to -1.0KPa, and press the Emergency Stop Button. 3. Uncap the tube at the bottom of the air tank and drain the tank. 4. Open the cover of the air tank and clean it with some flushing. 5. Replace the contaminated tubes.  Be careful with the blade using when disconnecting the tubes so as not to damage the nipple of the tank. Or this might lead to air leakage which usually causes the pressure fluctuation. 6. Activate the printer and turn on the valves of the Sub Tanks that withdraw. 7. Drain the excessive ink of the Sub Tank till the liquid level comes back to the standard.  The withdrawal would probably occur once more if without these operations. 8. Adjust the pressure to the normal value and then turn on all the valves.

Buzz type	6 BEEPS
Buzz indication	Ink Starvation
	One or more sensor in Main Tank detect ink shortage
Troubleshooting	1. Check the level sensor assembled in the main tank. 2. Refill the main tank with ink

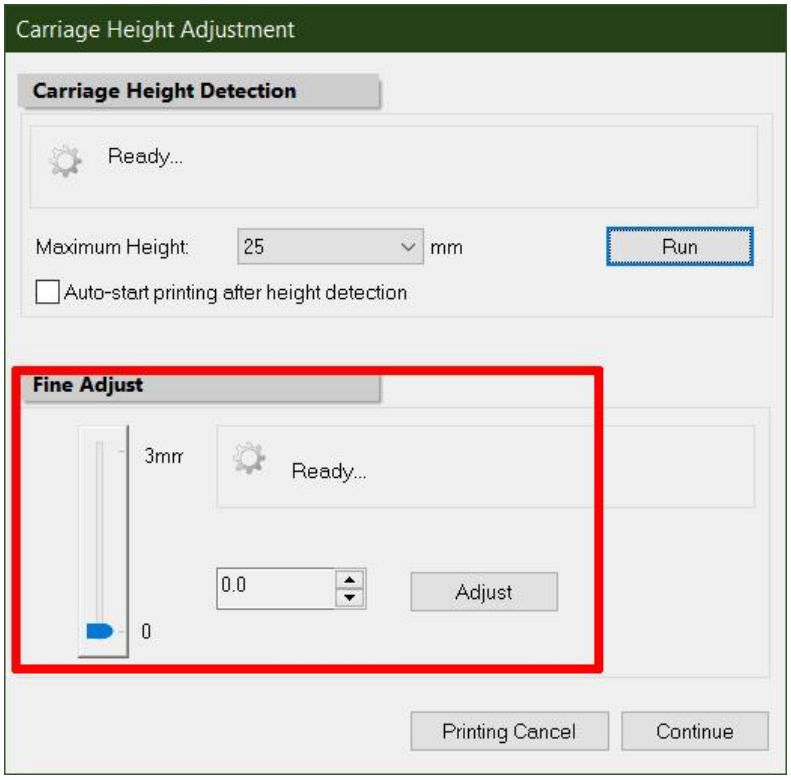
2. Pressure system problems

2.1 Priming issue

Issue Description	Ink does not come out from the nozzles when keep pressing the Prime Button
Troubleshooting	1. Check if the ink valves to the corresponding ink is open. 2. Check if the sub-tank is empty (3 beeps alert). 3. Check in the software if the positive pressure can go up high enough when priming.

3. Printhead strike

3.1. How to avoid head strike

The automatic head height adjustment must be run whenever changes material.
For some inflated or unsmooth or even some heat sensitive media Fine adjust the head height after the automatic adjustment. 
When printing on some heat sensitive materials 1. Shut the non-used suction sectors of the platform. 2. Cover the tiny holes of air leaking.

to reduce the possibility of deformation by strengthen the corresponding suction.
There is a certain distance between the Head Height Sensor and the datum point. If the media is too small to be detected when placed near the datum point, you should put the media on the location for head height founder first. And move it to the printing position when head height adjustment accomplished.
Never try to lift the media positioning lever otherwise it may lead to head strike incident. Besides the servomotor might come to an accidental stop by automatic protection and thus result in printing failure.

4. Carriage moving malfunction

4.1 Carriage moving failure

There are error messages displayed on the screen of the servo driver.
Deal with the issue according to the corresponding information.
Below is the list of information display on screen of the servo driver and the corresponding indication and troubleshooting.

Order	Code	Indication	Troubleshooting
1	OC1 or OC2	Current overload	Check and see power connection of the motor
2	OL1 or OL2	Overload	Check and see power connection of the motor
3	Hu	Voltage overload	Verified that the power input is within the rated values
4	Fb	Fuser break	Replace the servo driver
5	AH	Amplifier overheat	Keep the environment maintain below 40℃ Keep the servo driver away from any heat resource
6	EH	Encoder overheat	Keep the environment maintain below 40℃ Remove any item baffles the heat dissipating of the servo driver
7	LuP	Main circuit voltage defected	Check if there is any power supply interruption Verify the power input stably with rated values
8	¯PoF	Anti-crashing & scram stop activated	Check if any anti-crashing attachment or scram stop activates, reset correspondingly.
9	¯Pn0	Media locating attachment enabled	Check the media locating attachment and turn it down if ever enabled
10	=Pot	Y-directional origin indicating	Check the opt-electric sensor if the code displays in the Y-directional non-origin position
11	=PP1	Pulse signal transmitting (the state of running)	Indicates a normal state during X-directional moving Indicates a normal state of non-origin position

4.2 Cache problem

Description
The carriage pause too long at the two ends of the lead rail during the printing process.
Troubleshooting
1 Excessive image size or excessive file gross result in long data processing, and thus relate to printing data transmitting slowdown. Normally when processing some large image or a great number of images, adopt the mode of print after RIP. 2 A virus might have affected the computer. Execute anti-virus operation periodically.

4.3 Printing error

Description
With a message reads “Device is busy, please check the media location plate, raster reader and motor driver, try again.”
Troubleshooting
1 Anti-crashing attachment enabled 2 Media positioning attachment enabled 3 Encoder malfunction due to accidental crash with obstacle. 4 Data transmitting error due to abrasion of the optical fiber.

5. Automatic head height adjustment malfunctions

If the carriage can only be operated going up but not going down. 1 Check if there are too many dirt makes the electromagnet clog and not able to effect action. 2 If the head height finder is broken.

6. Printing quality troubleshooting

Abnormality	Troubleshooting
Horizontal banding	Check horizontal alignment
	Check color calibration
Unclear(blurred) printing	Check if the head height is right for the printing job, normally 2mm would be optimum.
	Clean the nozzles surface
	Do the calibration again
Color deviation	Adjust the total ink limit by 10%-30%.
The printed image appears dark	Check color calibration
	Adjust the brightness by 3-6 in Photoshop
	Select all options in the vector image. This method only effects in vector image printing.
Vertical blank or banding	Check vertical calibration and alignment
	Change the screen type
Blurred printed lines	Do the calibration again

Appendix

1. Routine Maintenance Guide

It is recommended that end users have this sheet printed and placed nearby the operation bracket, carefully execute the maintenance job and make notes.

Number	Maintenance Items	Period
1	Cleaning printer appearance	daily
2	Check if there is ink in the air tube	daily
3	Clean the platform and the sucking holes	daily
4	Check the nozzle state	daily
5	Clean the quartz glass and the printhead tray	daily
6	Cleaning the towline and check if there is any leakage of tubes	daily
7	Execute calibration and alignment	weekly
8	Clean the waste ink collection	weekly
9	Replace the filtration fiber	weekly
10	Clean the fans and internal device	weekly
11	Lubricate the rolling or moving parts	weekly
12	Check and see the joints of tubes	monthly
13	Replace the shutter of UV lamp assembly	monthly
14	Replace the pump and filter	half-year
15	Replace the optical fiber	half-year
16	Reset the pressure indicator	yearly
17	Replace the quartz glass of UV lamp	yearly
Please contact with HANDTOP for more technical report when necessary.		

2. Certifications

EC DECLARATION OF CONFORMITY

For the following machinery:

Product name: **Handtop Large Format UV Printer**

Model: **HT0604UV,**
HT1610UV,HT2512UV,HT2518UV,HT3116UV,HT3020UV;
HT1600UV, HT2500UV,HT3200UV.

serial No.: **N/A**

is herewith confirmed to fulfill all the relevant provisions of Machinery Directive (2006/42/EC) and Electromagnetic Compatibility Directive (2014/30/EC)

and the following harmonized standard have been complied with:

-- EN 60204-1:2006+A1:2009， EN 1010-1:2004+A1:2010，EN 1010-2:2006+A1:2010

Responsible for marking this declaration is the:

Manufacturer ☑ **Authorized representative established within the EU ☐**

Manufacture's Name	:	***SHENZHEN HANDTOP TECH CO.,LTD.***
Manufacturer's Address:	:	**The third plant of North Gate, NO. 322, Yuanhu Road, Xinlian Community, Longcheng Street, Longgang District, Shenzhen, China**
Authorized Rep's Name	:	**Wu Faan**
Authorized Rep's Address	:	**Shenzhen, China**

Person responsible for compiling the technical files established within the EU

Name, Surname	:	**Ronald Scheepers**
Address	:	**Morsestraat 11a,4004 JP Tiel,Netherlands**

Person responsible for making this declaration

Name, Surname	:	**Wu Faan**
Position/Title	:	**Overseas sales manager**

Shenzhen , China

_____	10th Nov,2016	_____
(Place)	**(Date)**	**(Company stamp and legal signature)**

3. Company information

Company name: Shenzhen HANDTOP Tech Co., Ltd
Legal Representative: Xiao Di

Offiec
Address:（Ciyu Factory, the third sub-factory）,No 322, Yuanhu Rd, Zhangbei Industrial area.Xinlian Community,Longcheng street, Longgang district, Shenzhen, China.
Tel: 86 755 29781665 / 29375551
Fax: 86 755 29781665
E-mail: info@handtoptech.com
Website: www.handtoptech.com

Factory:

Address:（Ciyu Factory, the third sub-factory）,No 322, Yuanhu Rd, Zhangbei Industrial area.Xinlian Community,Longcheng street, Longgang district, Shenzhen, China.
TEL： （86-755）27960430
FAX： （86-755）27960462
24 hours' service Hot line :400 666 4809

4. Rating plate

SHENZHEN HANDTOP TECH CO.,LTD.

HandTop CE

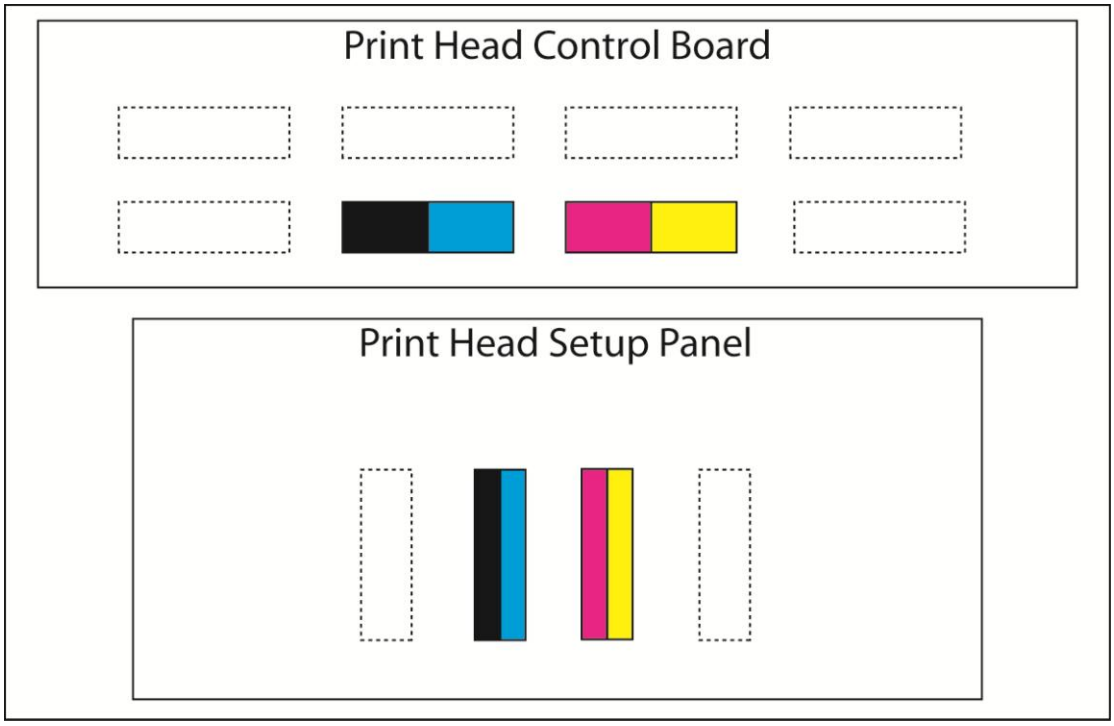
Name	Handtop Large Format UV Printer
Model	HT2500UV
Power Supply	400V a.c. 50Hz 3P/N/PE
Total Power (kW)	8.0
Full Load Current (A)	20
Short Circuit Rating(kA)	5
Mass (kg)	1450
Main Document No.	002
Stopping Time (s)	0.034
Distance between the light curtain and the carriage (mm)	270
UV radiation emission levels	cat.1
Serial No.	
Year of Construction	
Add.: The third plant of North Gate,NO.322,Yuanhu Road,Xinlian Community,Longcheng Street,Longgang District,Shenzhen,China	

4. Tools and properties

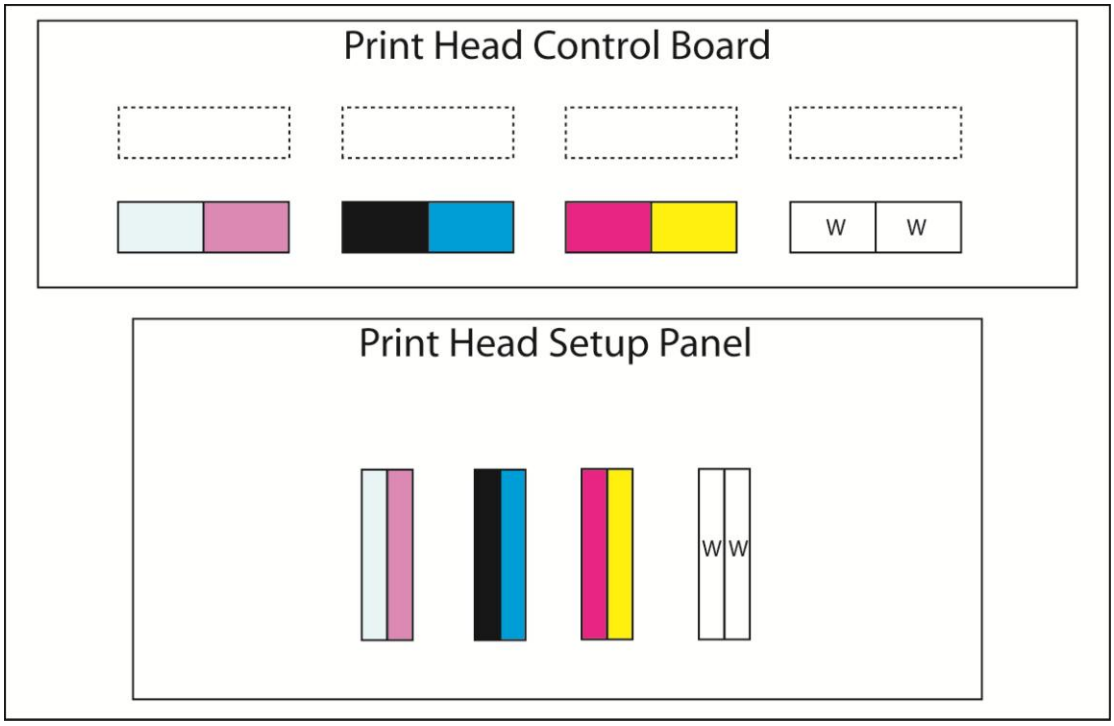
	Tool/Spare parts name	Description
1	Needle Nose Pliers	Cutting metal fuse
2	Ink valve wrench	Open or close the valve of the Sub Tank
3	Adjustable spanner	Adjusting the level of the printer when placed and future maintenance
4	Allen wrench	Loosen or fix the Allen screws for installation and future maintenance
5	Phillips screwdriver Flat Screw drivers	Loosen or fix screws for installation and future maintenance
6	Flush	Cleaning the printhead when clogging
7	Lint-free tissue	Wiping the printhead nozzles
8	Alcohol	Cleaning the printer body
9	Towel	Cleaning the printer body
10	Rubber gloves	Protect your hands when dealing with ink associated process.
11	Grease gun and	Lubricating
12	Lithium lubrication oil	Lubricating
13	Plastic syringe	Cleaning

5. Channel information of Kyocera head

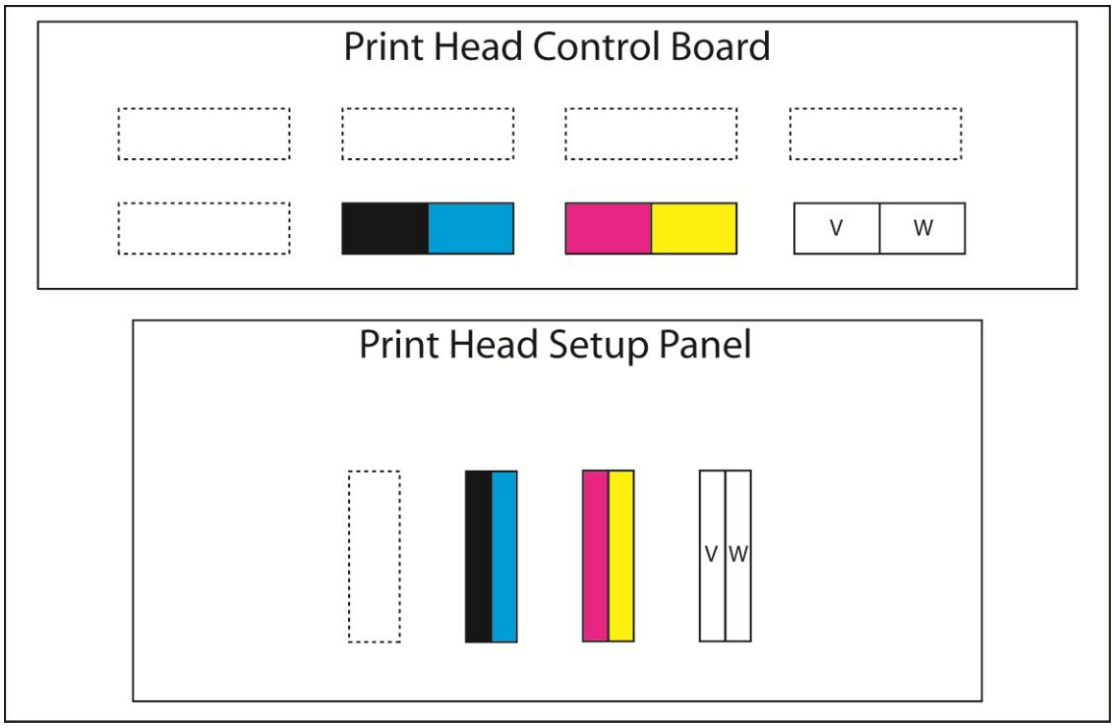
i. CMYK



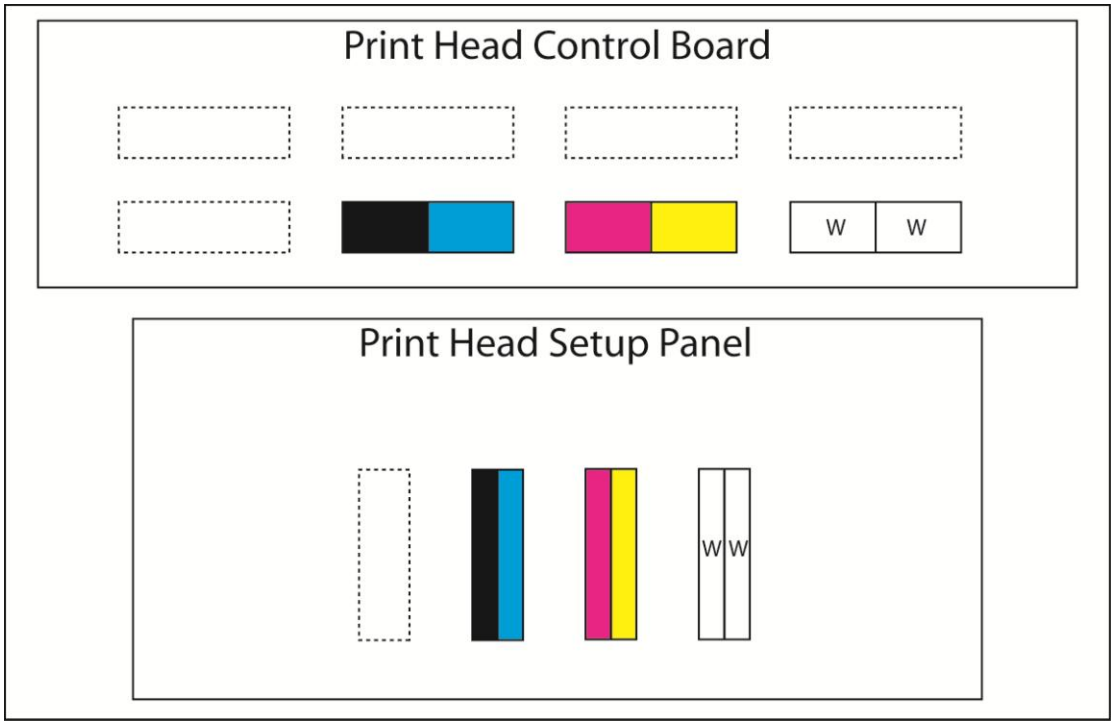
ii. CMYKLcLmWW-



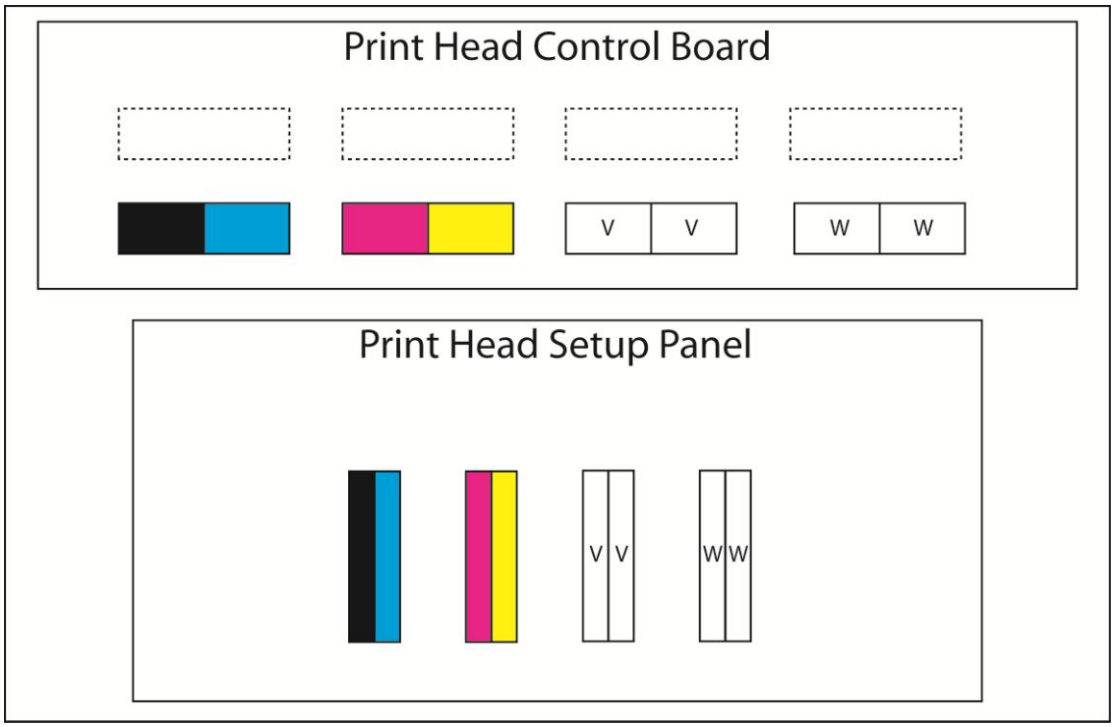
iii. CMYKVW-



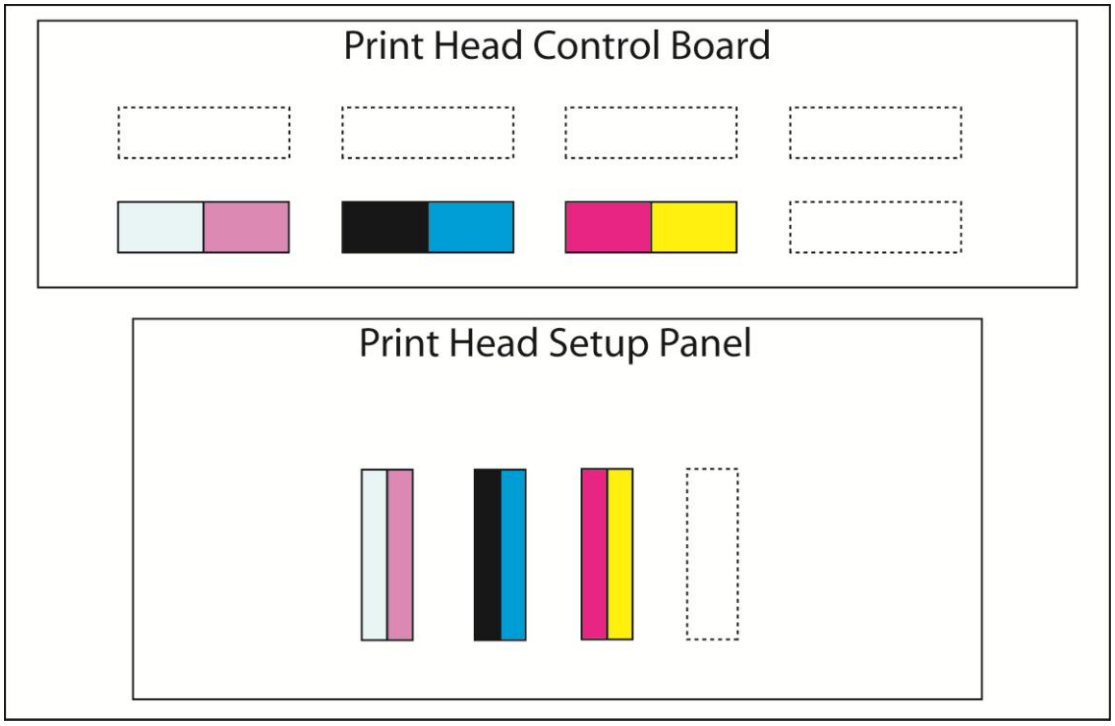
iv. CMYkWW-



v. CMYKVVWW-



vi. CMYKLcLm


Print Head Control Board
Print Head Setup Panel