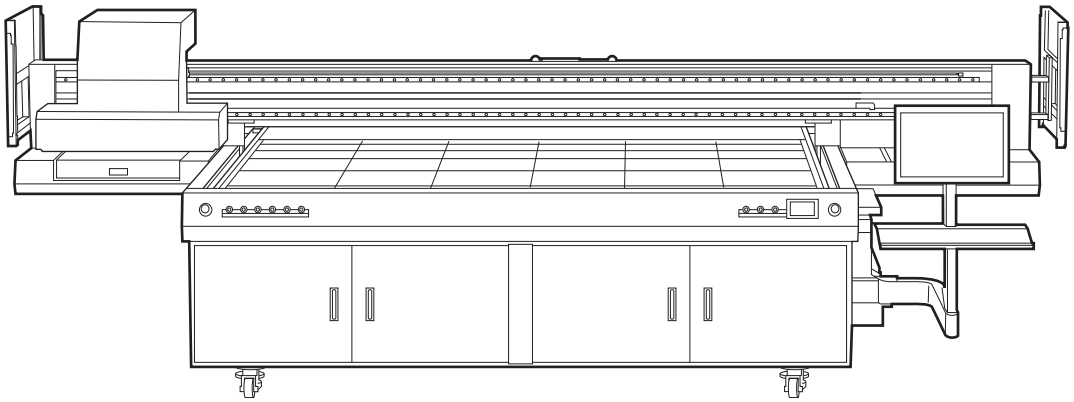
EU2-1000MF

User's Manual



Thank you very much for purchasing this product.

- To ensure correct and safe usage with a full understanding of this product's performance, please be sure to read through this manual completely.
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- The specifications of this product and the contents of this operation manual are subject to change without notice.
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Basic Handling Methods

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About this Manual

This document is the manual for the four-color, five-color, and six-color EU2-1000MF machines.

The six-color machine is used in procedures and illustrations.

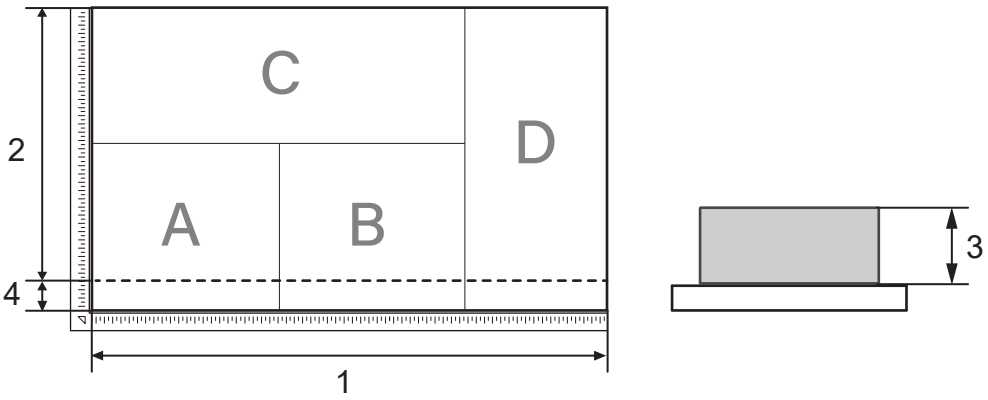
- If you are using a four-color machine, information pertaining to white (Wh), gloss (Gl), and primer (Pr) does not pertain to you. Refer only to information pertaining to cyan (C), magenta (M), yellow (Y), and black (B).
- If you are using a five-color machine, read information pertaining to gloss (Gl) as pertaining to primer (Pr).

Maximum Printing Area

The maximum printing area of the machine is width: 2,440 mm (96 in.) (1) × length: 1,120 mm (44 in.) (2) × thickness: 95 mm (3.74 in.) (3).

MEMO

The maximum printing area is different from the maximum size of the object to be printed on. The length 1,120 mm (44 in.) (2) is the range excluding 0 to 100 mm (0 to 3.93 in.) (4) on the scale on the flat table.



Fully understand the safety precautions before extending the length to the maximum value of 1,220 mm (48 in.) (2 + 4). When the length is extended, the floor may be subjected directly to UV radiation, which increases the risk of exposure to this radiation.

IMPORTANT

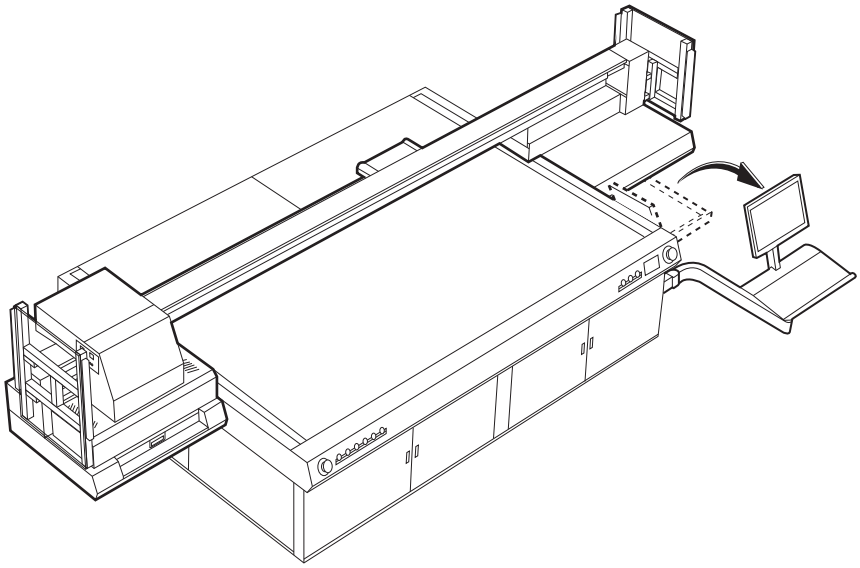
When the length is extended, pay attention to the following notes during printing.

- To prevent UV light from entering your eyes, do not lean over or look directly at the UV-LED device.
- Stay more than 1 m (39.37 in.) away from the UV-LED device.
- Only place the object to be printed on in the location exposed to the UV light.

Precautions for Operation

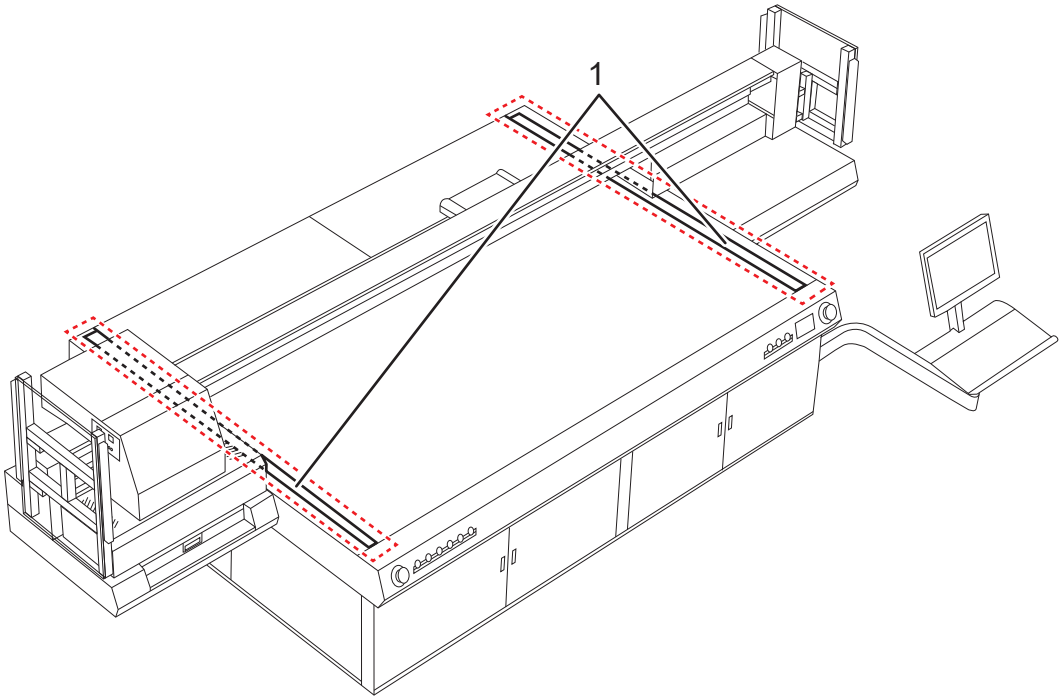
Do not operate this machine with the computer holder folded in.

Doing so may lead to the gantry coming into contact with the computer holder, possibly damaging the machine.



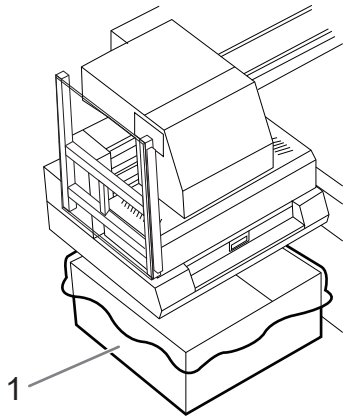
Points That Must Be Observed

The flat table has grooves (1) on both sides to contain the rails to move the gantry forward and backward. Never drop trash or foreign materials into these grooves. Doing so may damage the machine.



Items to Be Prepared Separately

Place a container (1) under the maintenance station to use for print head cleaning and maintenance. Prepare a polyethylene container with size equivalent to the maintenance station and a height of approximately 50 cm (19.69 in.).



Basic Information

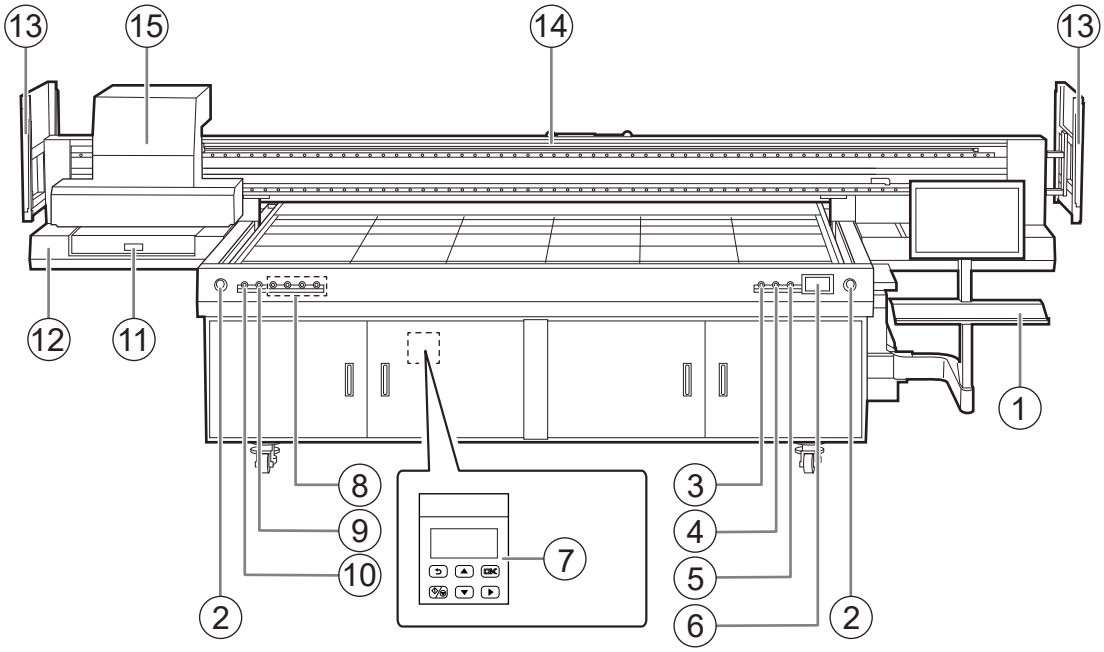
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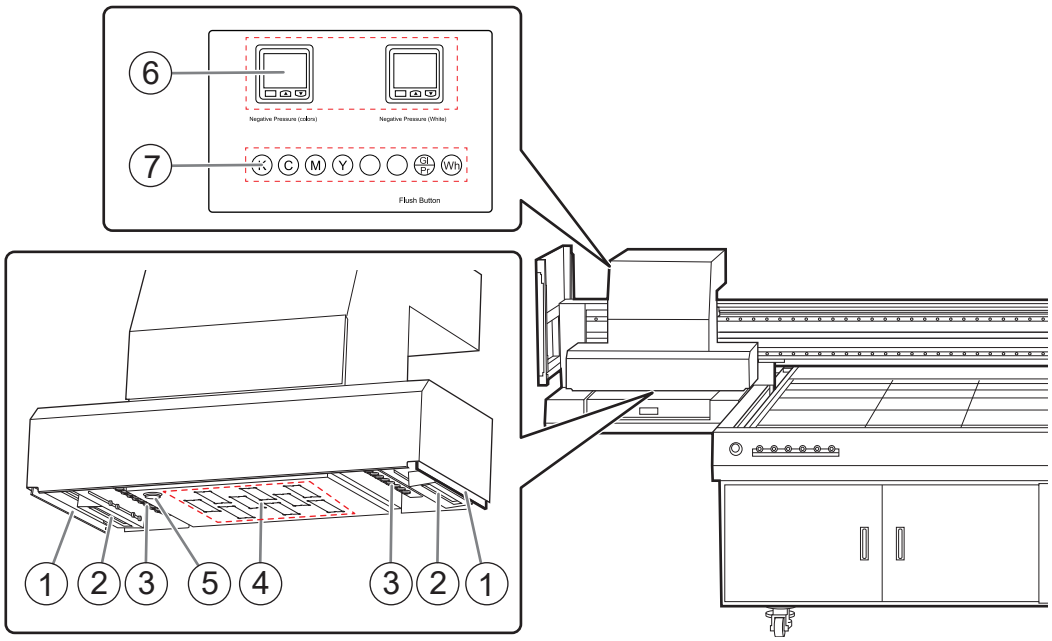
Part Names and Functions

Front



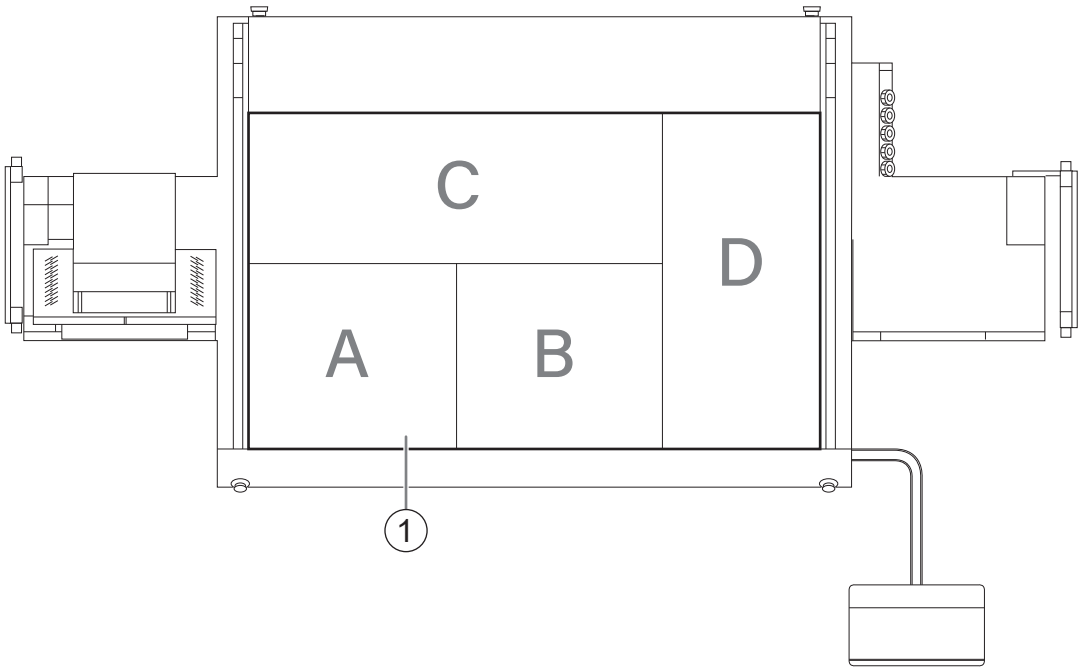
No.	Name	Function overview
①	Computer holder	Installs a computer for operating this machine.
②	Emergency stop buttons	Forcibly interrupts the power supply to stop all operations of the machine immediately or recovers from an emergency stop.
③	[On] button	Press this button to turn on the sub power of the machine.
④	[Off] button	Press this button to turn off the sub power of the machine.
⑤	[Reset] button	Press to fill the sub-ink tank of the print head with ink. Usually, the sub-ink tank is filled automatically. An alarm sounds to signal if the tank is not filled with ink completely within a specified time. Press this button to complete ink filling and stop the alarm.
⑥	Ink tank & alarm display	This displays the amount of ink remaining. A warning is displayed when the amount of ink remaining is low.
⑦	Vacuum controller	Adjusts the vacuum output.
⑧	[Vacuum Area] button	Selects the area of the flat table to activate negative pressure at.
⑨	[Main Power of Flatbed Vacuum] button	Turns the negative pressure pump power on and off.
⑩	[Home Position] button	Extends and retracts the pins for positioning the object to be printed on.
⑪	Ink receiver	This tray collects the ink discharged from the print heads to prevent clogging.
⑫	Maintenance station	This is where the print heads are cleaned. Discharge ink and maintain the print heads here.
⑬	Proximity sensor	This sensor detects intrusions into the movable range of the print-head carriage. When it detects an intrusion, it stops operation of the machine.
⑭	Gantry	Transports the print-head carriage forward, back, left, and right.
⑮	Print-head carriage	Transports the built-in print heads and UV-LED device.

Around the Print Head



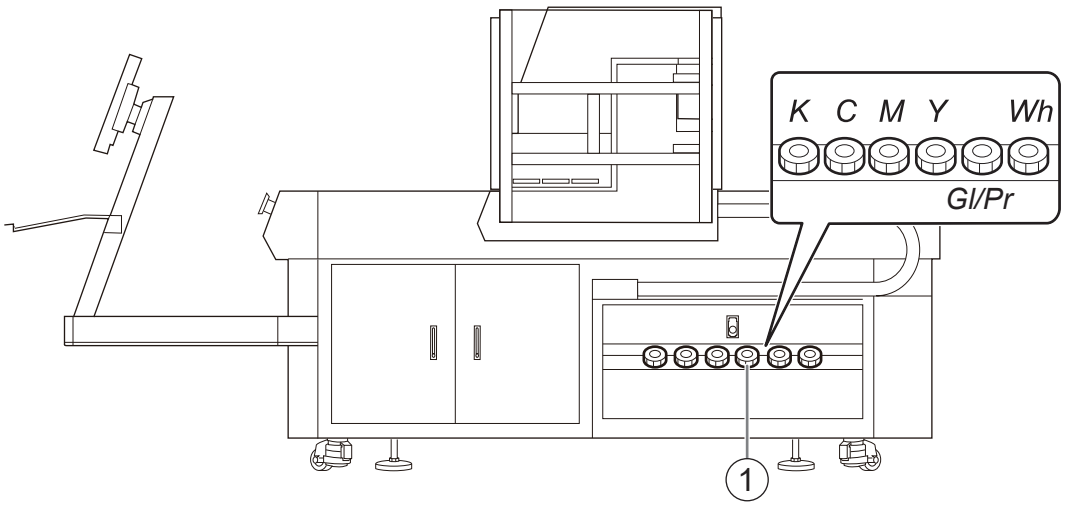
No.	Name	Function overview
①	Crash sensor	This sensor prevents the print heads from contacting the objects to be printed on.
②	UV-LED device	Irradiates the ultraviolet light. Irradiates the ultraviolet light on the print surface to cure the ink.
③	Ionizer	This is a device to remove static electricity. This device removes static electricity from objects to be printed on to stabilize printing quality.
④	Print heads	Discharges ink onto the object to be printed on.
⑤	Height sensor	Detects the height from the print head to the object to be printed on.
⑥	Negative pressure display	This displays the negative pressures of the color ink (CMYK) print head and the spot color ink (Wh, Gl/Pr) print head.
⑦	Ink flush button	Discharges ink from the print heads in order to prevent clogging.

Flat Table



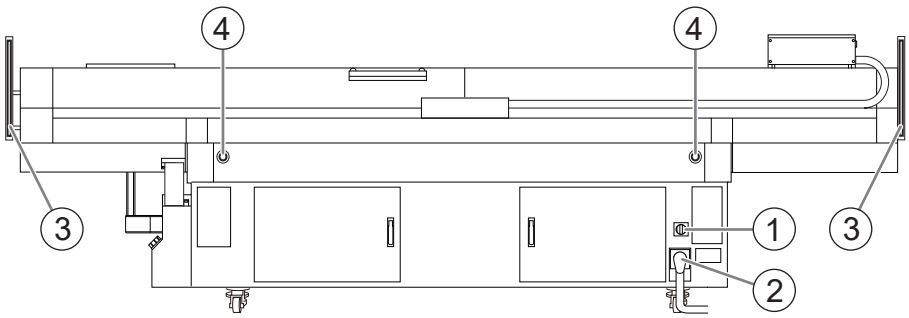
No.	Name	Function overview
①	Negative pressure activation area	The negative pressure activation area on the flat table is segmented into four sections: A, B, C, and D. Press the [Vacuum Area] button to select the negative pressure activation area.

Right Side



No.	Name	Function overview
①	Ink tanks	These are the ink tanks for each color. When the amount of ink is low, fill with ink from the opening of this bottle.

Rear



No.	Name	Function overview
①	Main power switch	Switches the main power of the machine on/off.
②	Power-cord connector	Connects the included power cable.
③	Proximity sensor	This sensor detects intrusions into the movable range of the print-head carriage. When it detects an intrusion, it stops operation of the machine.
④	Emergency stop buttons	Forcibly interrupts the power supply to stop all operations of the machine immediately or recovers from an emergency stop.

Object to Be Printed On

IMPORTANT

In this manual, the printed matter is called "object to be printed on," "object," or "media."

The UV ink used in this machine is an ink that instantly adheres to the object to be printed on by irradiating it with ultraviolet light. This makes it possible to perform printing on objects that are difficult to print on using conventional inks.

This section explains the materials and forms of objects to be printed on using the machine.

Even materials with the same name have many variations with different properties depending on slight differences in ingredients. Even if the ingredients are the same, printing may or may not be possible depending on differences in surface treatment such as plating or coating.

Even if a material is listed as a printable material, always be sure to perform a test print to confirm that satisfactory print quality can be achieved.

Objects that cannot be printed on or have print quality issues

- In the case of objects that easily reflect light, the reflection of UV light may accelerate the curing of the UV ink on the surface of the print heads, resulting in ink discharge failure.
- Objects to be printed on that are electrostatically charged should be discharged before use.

  If the ink is electrostatically charged, the position of the ink landing will not be stable, and printing quality will be adversely affected.
- Objects with excessive unevenness cannot be used for printing.
- If the object to be printed on still comes loose even with the flat table negative pressure activated, use commercially available tape or some other means to hold the object in place.

  If the object to be printed on comes loose, the ink emission surface of the print heads and the print surface can rub together, resulting in malfunction.

Conditions for Settable Objects to Be Printed on

The conditions for objects to be printed on that can be set in the machine are shown below.

Maximum size	Width	2,440 mm (96 in.)
	Length	1,220 mm (48 in.)
	Thickness	95 mm (3.74 in.)
Maximum weight		45 kg/m^2 (99 lb./m^2)

IMPORTANT

- Objects to be printed on that carry an electrical charge may cause ink discharge problems or decrease printing quality.
- This printer cannot print on all materials. When selecting the object to be printed on, be sure to carry out testing in advance to make sure that satisfactory print quality can be obtained.
- The variation in the unevenness on the print surface needs to be within 1 mm (39.37 mil). Variation larger than 1 mm (39.37 mil) may decrease printing quality.
- Depending on the type of object to print on and the installation method, the height may not be set correctly. The machine may malfunction if printing is performed when an incorrect installation method is used or if printing is performed on an inappropriate material. Be careful when setting objects to be printed on that match the status or material shown below.

  Objects that easily become loose:

  If the object to be printed on is not firmly held in place, the height cannot be detected correctly. Be sure to set the object to be printed on firmly in place. If the media becomes loose, you can use a substance such as commercially available adhesive tape to hold the media in place.

  Objects made from soft material:

The correct print head height cannot be automatically detected when printing on soft objects. In such cases, set the print head height manually.Setting the Print Head Height Manually(P. 34)

PrintExp Screen and Functions

PrintExp is an application that allows users to operate the machine from a computer screen.

It loads print data that was processed by the RIP with VersaWorks and outputs the print data. A variety of printing settings can also be configured using PrintExp. Use it when you want to change the printing settings of data that has been RIP processed.

It also displays the machine status, errors, and other information.

Toolbar

IMPORTANT

[Adjust], **[Voltage]**, and **[Advance]** are used when this machine is installed. Do not change the settings.

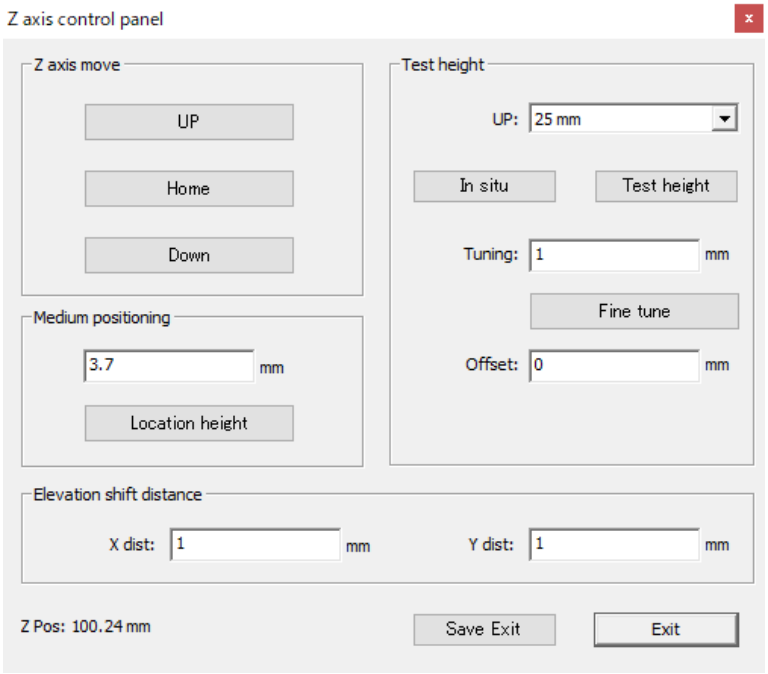
The following table shows the menu in the **[File]** tab and explains each function.



Icon	View	Description	
	[Print]	This executes printing. Click this button to display the **[Confirm before printing]** window.	
		[Start Printing]	Printing starts.
		[Cancel Print]	This cancels printing.
		[Z axis Debugging]	This adjusts the head height again. Click this button to display the **[Z axis control panel]** window.
	[Pause]	Pauses printing.	
	[Cancel]	This cancels printing.	
	[Check]	This starts a test printing. Click this button to display the **[Confirm before printing]** window.	
		[Start Printing]	Printing starts.
		[Cancel Print]	This cancels printing.
		[Z axis Debugging]	This adjusts the head height again. Click this button to display the **[Z axis control panel]** window.
	[Flush]	This selects whether or not to perform automatic periodic discharge of ink in order to prevent clogging of the print head nozzles. When this button is clicked with ink discharge enabled, **[TIP: Whether to close flush?]** is displayed. When this button is clicked with ink discharge disabled, **[TIP: Whether to open flush?]** is displayed. Selection choices: **[OK]**/**[Cancel]**	
	[Margin]	Click this button to set the current print head position as the base point on the X axis (scan direction). Clicking this button displays the pop-up window asking **[TIP: Whether to the current pos is X margin?]**. Selection choices: **[OK]**/**[Cancel]**	
	[Left]/**[Right]** **[Ahead]**/**[Back]**	Click each button to move the print-head carriage.	

Icon	View	Description
	[X Reset]/[Y Reset]	These reset the printing start position on the X axis (scan direction) and Y axis (feed direction). Click this button to return the [**Margin Setting**] value on the [**Setting**] tab to 0.
	[Z Axis]	This sets the Z axis (height). Click this button to display the [**Z axis control panel**] window.
	[Spot]	This machine does not use this function.

[Z axis control panel] Window

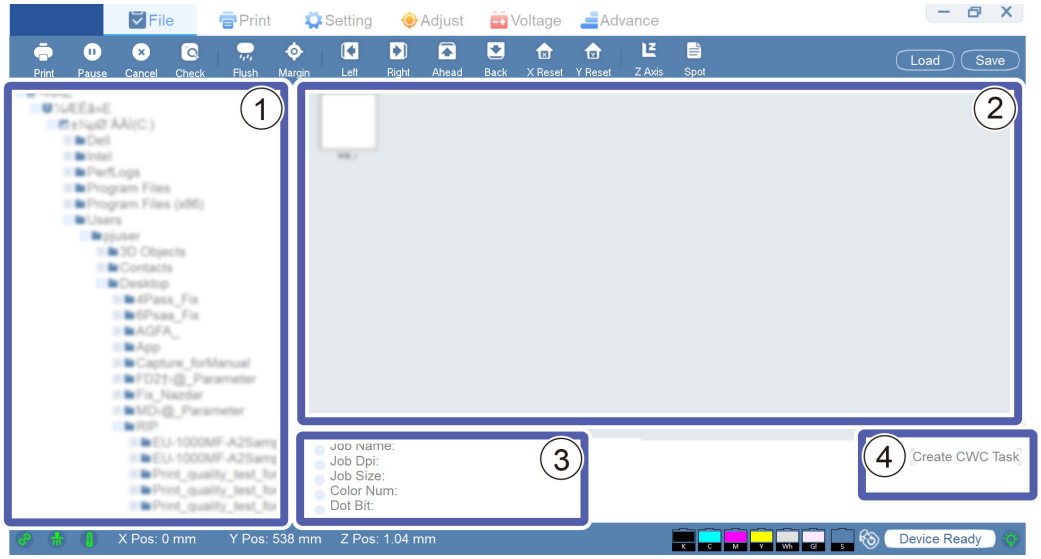


View	Description	
[**Z axis move**]	This moves the print-head carriage on the Z axis.	
	[**UP**]	Moves the print-head carriage upward.
	[**Home**]	Returns the print-head carriage to a specified value position.
	[**Down**]	Moves the print-head carriage downward.
[**Medium positioning**]	This moves the print-head carriage on the Z axis. Enter a value and click [**Location height**]. The print-head carriage moves to the height of the entered value.	

View	Description	
[**Test height**]	This detects the thickness of the object to be printed on and automatically adjusts the print-head carriage height.	
	[**In situ**]	This automatically adjusts the print-head carriage height after the carriage moves from the current position to the position specified with [**UP**]. *1 When automatic adjustment is complete, the [**Test height fine-tuning/Finishing**] window is displayed. To change the automatically adjusted height, enter the desired value in [**Tuning**] and click [**Fine tune**]. The value entered in [**Tuning**] will be added to the print-head height that has automatically been adjusted, for fine tuning. The print-head carriage moves upward or downward by the value entered in [**Tuning**] every time [**Fine tune**] is clicked. To exit, click [**Test Height completed**].
	[**Test height**]	This machine does not use this function.
	[**Fine tune**]	The print-head carriage moves upward or downward by the value entered in [**Tuning**]. The print-head carriage moves upward or downward by the value entered in [**Tuning**] every time [**Fine tune**] is clicked.
[**Elevation shift distance**]	This machine does not use this function.	
[**Z Pos**]	This displays the current height of the print-head carriage (the distance between the flat table and the bottom surface of the print-head carriage).	

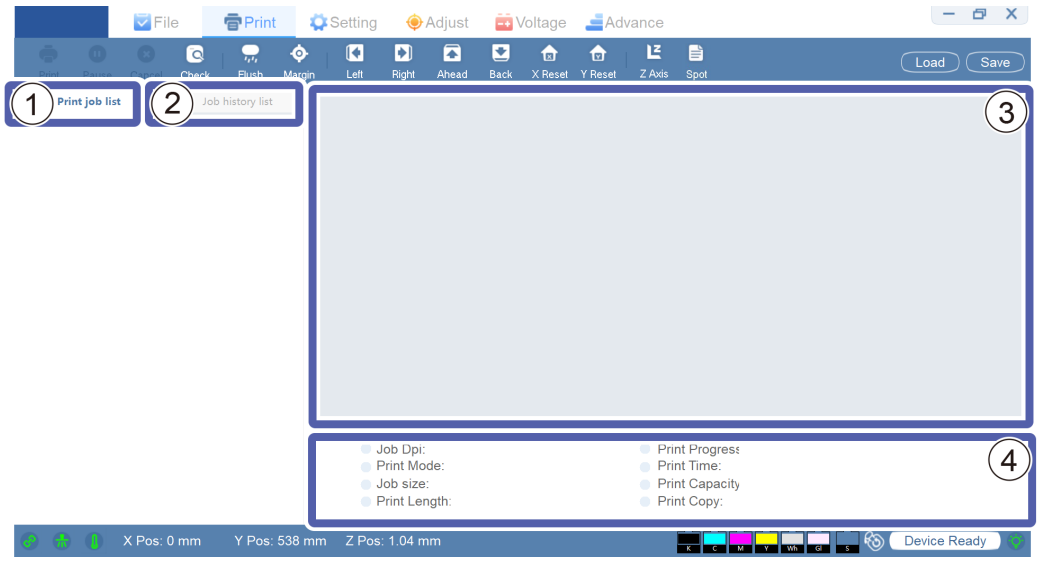
*1 Enter a value in [**UP**] to specify the position at which to start automatic detection of the print-head carriage height.
In [**UP**], enter a value that is larger than the thickness of the object to be printed on. If a value smaller than the thickness of the object to be printed on is entered, the print head may contact the object, causing damage. If a value that is much larger than the thickness of the object to be printed on is entered, this will increase the time required for height measurement. Enter an appropriate value.

[File] tab



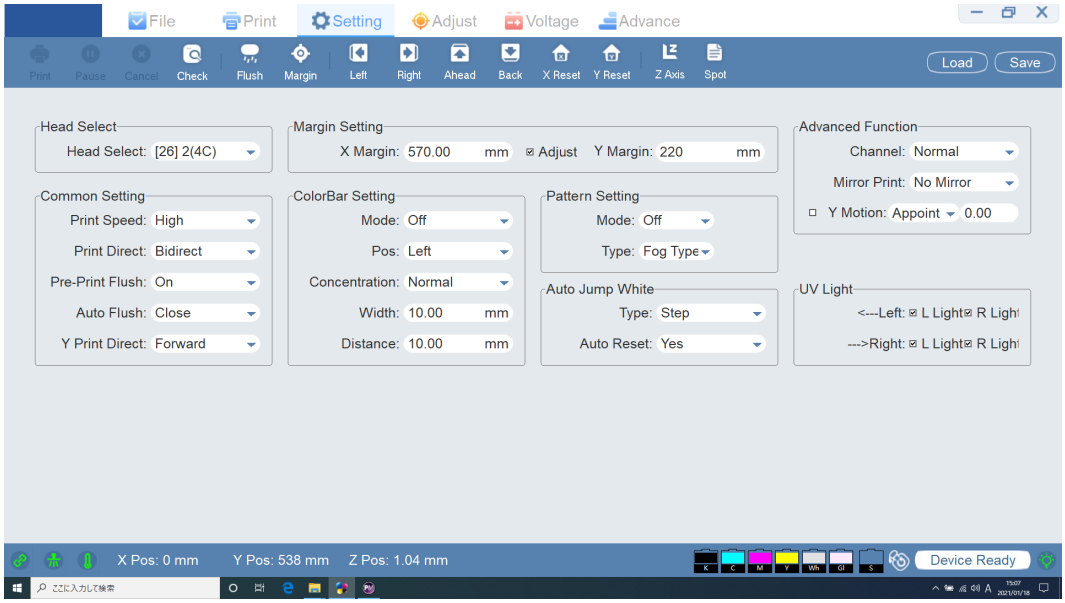
No.	Description
①	This indicates the place to save printing data.
②	This displays the preview image of the selected job.
③	This displays the properties of the selected job.
④	This sets printing in which two jobs are superimposed at the same position. This is used for printing on a transparent target that is expected to be viewed from both sides.

[Print] tab



No.	View	Description
①	**[Print job list]**	This displays jobs being printed or waiting to be printed.
②	**[Job history list]**	This displays the history of previously printed jobs.
③	This displays the preview image of the selected job.	
④	This displays the properties of the selected job.	

[Setting] tab



Display	Description		
[Head Select]	This sets the printing mode.		
	[Head Select]	[[26] 2(4C)]	Select this to print data in CMYK only.
		[[26] 4C+ WV]	Select this to print data including Wh, Gl, and Pr.
[Common Setting]	[Print Speed]	This sets the printing speed. Selection choices: [Low]/[Middle]/[High]	
	[Print Direct]	This sets the printing direction: unidirectional printing (left to right, right to left) or bidirectional printing. Selection choices: [Left]/[Right]/[Bidirect]	
	[Pre-Print Flush]	This selects whether or not to perform discharge of ink each time before printing in order to prevent clogging of the print head nozzles. Selection choices: [Off]/[On]	
	[Auto Flush]	This machine does not use this function.	
	[Y Print Direct]	This sets the print feed direction on the Y axis.	
		[Forward]	This prints from the near side to far side.
		[Reverse]	This prints from the far side to near side.
[Margin Setting]	This sets the printing-start position.		
	[X Margin]	Enter the printing-start position on the X axis.	
	[Y Margin]	Enter the printing-start position on the Y axis.	

Display	Description		
[**ColorBar Setting**]	This sets whether to print the color bar and status together with printing data. Printing the color bar and status stabilizes ink discharge and maintains printing quality.*1		
	[**Mode**]	[**Off**]	The color bar and status are not printed.
		[**Wetting**]	This prints the color bar. This injects ink from nozzles that are not used for printing, preventing the nozzles from clogging.
		[**Status**]	This prints a color bar using smaller amounts of ink than used when printing with [**Wetting**]. It is possible to check for nozzle drop-out that cannot be detected with the color bar printed by [**Wetting**].
		[**Wetting and stat**]	This prints the color bar and status.
	[**Pos**]	This sets the printing positions of the color bar and status. Selection choices: [**Left**]/[**Right**]/[**Both**]	
	[**Concentration**]	This sets the print density of the color bar. A higher density maintains quality more effectively but consumes more ink.	
		[**Weak**]	This prints lightly.
		[**Normal**]	This prints with moderate density.
		[**Strong**]	This prints using deep colors.
	[**Width**]	This specifies the printing width of the color bar.	
	[**Distance**]	This specifies the margins between printing data, color bar, and status.	
[**Pattern Setting**]	When using, select [**Depth**] for [**Mode**], and select [**Fog Type**] for [**Type**].		
[**Auto Jump White**]	This sets whether the print-head carriage skips margins with no data when it moves.		
	[**Type**]	[**Off**]	The print-head carriage does not skip margins.
		[**Step**]	The print-head carriage skips margins. With this setting, the print-head carriage skips at higher speed than [**Together**].
		[**Together**]	The print-head carriage skips margins.
	[**Auto Reset**]	This machine does not use this function.	
[**Advance Function**]	This sets other functions.		
	[**Channel**]	This sets the inks to use in printing.	
		[**Normal**]	This prints with CMYK and white inks.
		[**Only Color**]	This prints with CMYK inks only.
		[**Only White**]	This prints with white ink only.
	[**Mirror Print**]	This sets whether to invert printing data during printing.	
		[**No Mirror**]	This prints without inverting data.
		[**Horz Mirror**]	This inverts data horizontally for printing.
	[**Y Motion**]	This sets the position on the Y axis to which the print-head carriage returns after printing is complete.	
		[**Appoint**]	Enter a value. The Y axis moves to the specified position after printing is complete.
		[**Origin**]	The print-head carriage moves to the home position (Y-axis origin) after it completes printing.
		[**Current**]	The print-head carriage moves onto the maintenance station through the Y-axis position when it completes printing.
		[**Terminus**]	The print-head carriage moves to the end position on the Y axis after it completes printing.
[**UV Light**]	This sets whether to turn [**ON**] or [**OFF**] the UV-LED device in each printing direction. Unchecking the box turns the UV-LED device [**OFF**] during printing.		

*1 The color bar and status are printed on the left or right side or both sides of printing data.
To print the color bar and status together with printing data, it is necessary to reduce the width of the printing data or increase the width of the objects to be printed on.

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- Adjusting the Print Head Height Automatically 36

Pausing and Canceling Printing 39
- Pausing and Resuming Printing 39
- Canceling Printing 39

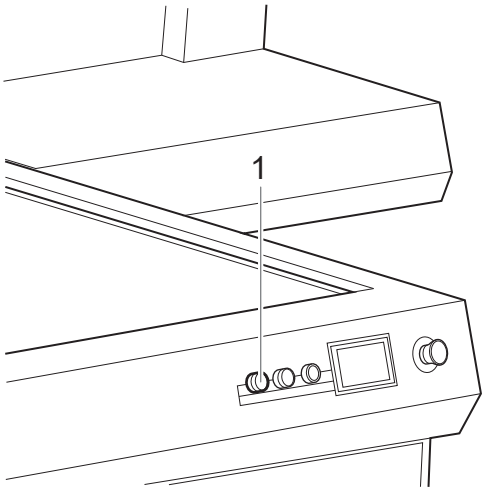
Power Supply Operations

Turning the Power On

Procedure

1. **Check that the area around the machine is free of people and obstacles.**
   Be sure to keep everyone away from the area around the machine and to remove any obstacles.

2. **Press the [On] button (1) on the front of the machine.**
   Sub power turns on and the button mark illuminates.



3. **Start PrintExp.**

Turning the Power Off

IMPORTANT

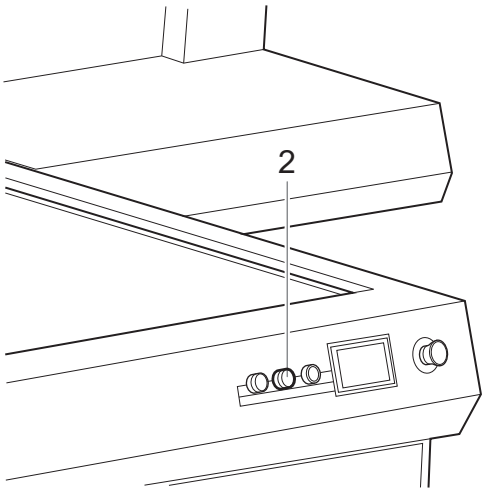
Check the following before turning off the power.

- Printing has been completed.
- The print-head carriage has returned to the maintenance station.
- No error message is displayed in PrintExp.
- The [Main Power of Flatbed Vacuum] button is off.

Procedure

1. **Exit PrintExp.**

2. **Press the [Off] button (2) on the front of the machine.**
   The sub power switches off and the lamp turns off.

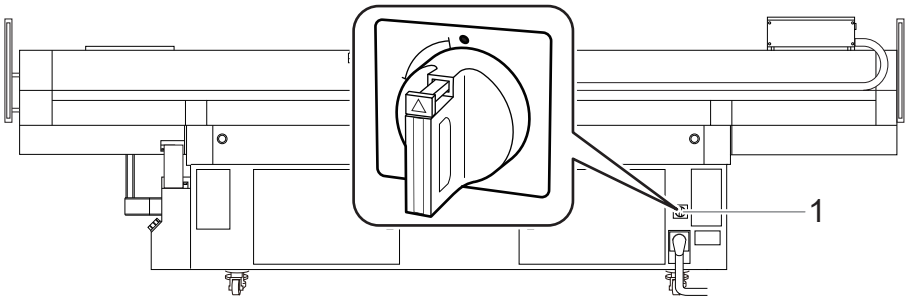


Precautions for the Power Supply

IMPORTANT

Do not disconnect the power cord plug. Do not turn off the main power (1).

While the main power is on, the machine circulates and mixes white ink. If you have to switch off the main power, contact your authorized dealer.



Safety Devices

The machine is equipped with the following safety devices.

- Emergency stop buttons
- Crash sensor
- Safety Protection Function

Emergency stop buttons

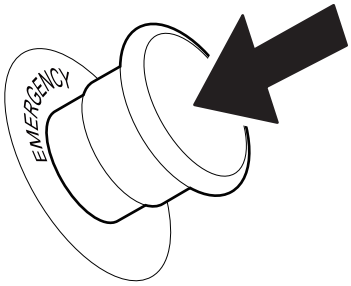
Press these buttons to immediately stop machine operation for safety reasons.

The emergency stop buttons are located in two positions: two buttons on the front of the machine and two buttons on the rear of the machine. After performing an emergency stop, check that the area around the machine is safe before canceling the emergency stop.

Procedure

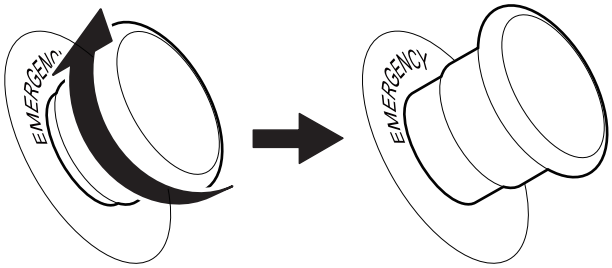
1. **Press the button on either the left edge or right edge of the flat table.**

   Printer unit sub power turns off and machine operation immediately stops.



2. **After confirming that it is safe to restart operation, turn the part of the pressed button shown in the figure clockwise.**

   The button pops out.



3. **Press the [On] button on the front of the machine.**

   Sub power turns on and the button mark illuminates.

> **MEMO**
>
> When you press an emergency stop button, the machine's sub power turns off automatically.

Crash Sensor

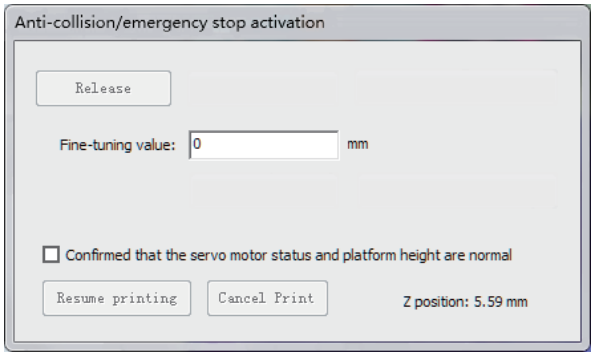
Crash sensors are installed inside the cover of the print-head carriage.

During printing, when there is a chance that the media will collide with the print head due to factors such as the media wrinkling, lifting up, and warping, the machine immediately stops the operation of the print-head carriage.

Procedure

1. **Check the PrintExp screen.**

   If a crash sensor activates, the [**Anticollision/emergency stop activation**] window appears.



2. **Check and correct the cause of the machine operation stop.**

   - Media wrinkling:

     Smooth out the wrinkles and fix the media in place with tape or something similar.
   - Media lifting:

     Adjust the vacuum so the media does not become lifted, and as necessary fix the media in place with tape or something similar.
   - Media warping:

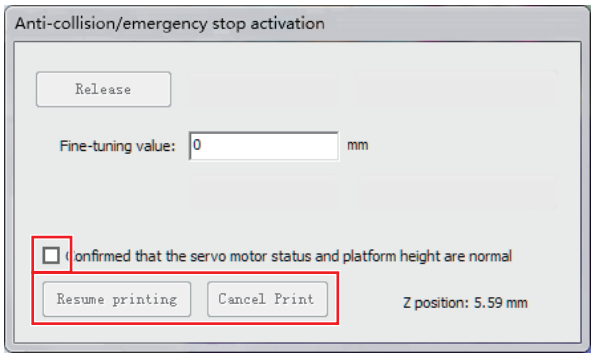
     Unless the warping can be corrected, replace the media.

3. **Check the safety of the surrounding area.**

   Check that there are no persons or objects within the machine movement range, then after confirming safety, proceed to the next step.

4. **Perform the operations shown below in the [Anticollision/emergency stop activation] window.**

   - Select the [**confirmed that the servo motor status and platform height are normal**] check box.
   - Click [**Resume printing**] or [**Cancel print**].



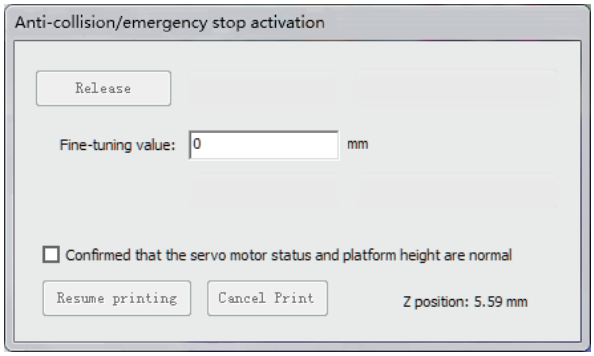
Safety Protection Function

If the machine detects that a person or object has intruded into the movable range of the print-head carriage while the machine is operating with the print-head carriage not positioned above the maintenance station, the machine immediately stops operation. This function prevents contact with the print-head carriage, which moves at high speed.

Procedure

1. **Check the PrintExp screen.**

   When the safety protection function is activated, the [**Anticollision/emergency stop activation**] window appears.

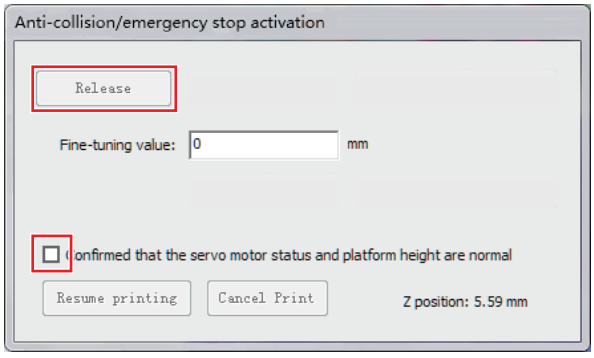


2. **Check the safety of the surrounding area.**

   Check that there are no persons or objects within the machine movement range, then after confirming safety, proceed to the next step.

3. **Perform the operations shown below in the [Anticollision/emergency stop activation] window.**

   - Select the [**confirmed that the servo motor status and platform height are normal**] check box.
   - Click [**Release**].



Procedure up to Printing

This section explains the basic procedure for printing with the machine.

1. **Create print data using Adobe Illustrator or other commercially available design software.**

   Print data should be 9.86 mm × 9.86 mm (0.39 in. × 0.39 in.) or larger, and should be saved in the following format.

   - PDF (PDFs are saved in artboard size, so exercise caution regarding the margins.)
   - EPS
   - JPEG
   - PostScript
   - TIFF (with/without LZW compression)
   - PNG

   The methods for creating print data differ depending on the color layering and whether a primer has been applied.

   Refer to the instructions linked below for information on how to create typical print data.

   https://downloadcenter.rolanddg.com/contents/manuals/UV-Guide_USE_EN

2. **Load the created print data into VersaWorks and configure the printing settings.**

   For the VersaWorks operation procedures and other details, see the First Step Guide.

   https://downloadcenter.rolanddg.com/VersaWorks7

3. **Perform RIP processing of the print data with VersaWorks and save it.**
4. **Load the print data processed by the RIP into PrintExp.**

   Adding and changing the printing settings can also be done from PrintExp. For more information, refer to PrintExp Screen and Functions(P. 18).

5. **Output using the EU2-1000MF.**

Print Head Height Adjustment

Setting the Print Head Height Manually

Set the print head height manually so that the distance between the print head and the object to be printed on is optimal.

Manual setting is suitable for printing on soft objects and when you want to set a specific distance between the print head and the surface of the object to be printed on. Set the distance between the print head and the surface of the object to be printed on within the range from 0.8 to 2.0 mm (31.50 to 78.74 mil). A smaller value decreases ink mist but increases the risk that the print head will contact the object to be printed on.

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

Procedure

1. **Measure the thickness of the object to be printed on.**

   Measure using a measuring tape or vernier caliper.

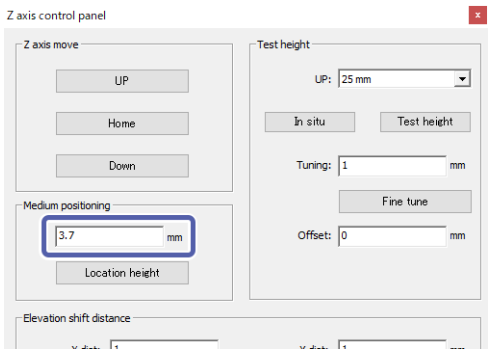
2. **Click [Z Axis].**

   The [**Z axis control panel**] screen appears.



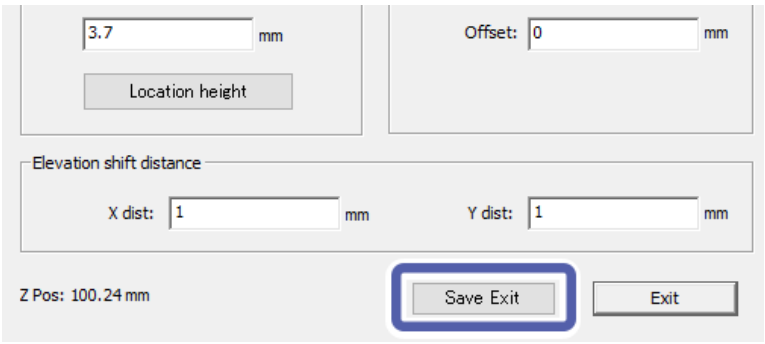
3. **Enter the print head height in [Medium positioning].**

   Set the print head height according to the thickness of the object to be printed on. Set a value derived by adding 0.8 to 2.0 mm (31.50 to 78.74 mil) to the thickness of the object to be printed on.



4. **Click [Save Exit].**

   The settings are saved and the [**Z axis control panel**] window closes.


3.7
mm
Location height
Offset:
0
mm
Elevation shift distance
X dist:
1
mm
Y dist:
1
mm
Z Pos: 100.24 mm
Save Exit
Exit

Adjusting the Print Head Height Automatically

The height of the object to be printed on is automatically detected, and the print heads are adjusted to the appropriate height for printing.

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

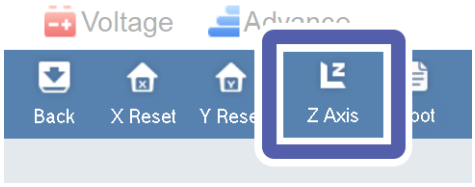
Procedure

1. **Measure the thickness of the object to be printed on.**

   Measure using a measuring tape or vernier caliper.

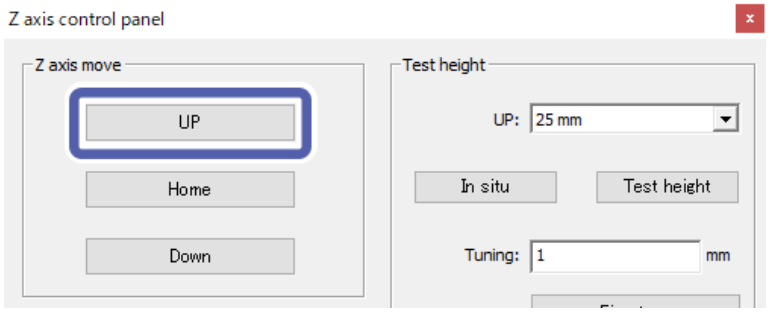
2. **Click [Z Axis].**

   The [**Z axis control panel**] screen appears.



3. **Click [UP] under [Z axis move].**

   The print head will be moved over the object to be printed on in Step 6. Move the print head up to a height such that it does not contact the object to be printed on when it moves.

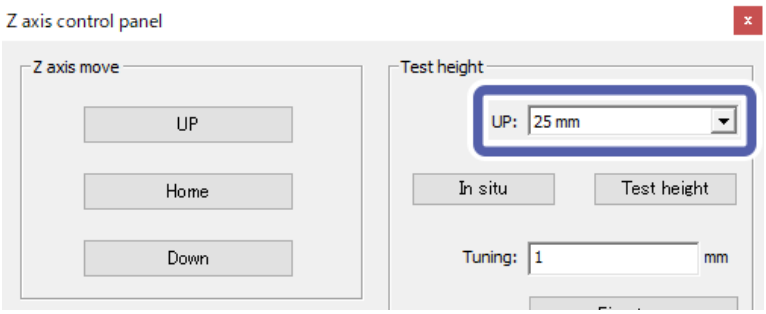


4. **Select the value of [UP] in [Test height].**

   The value selected here will be the print head height at which height detection starts.

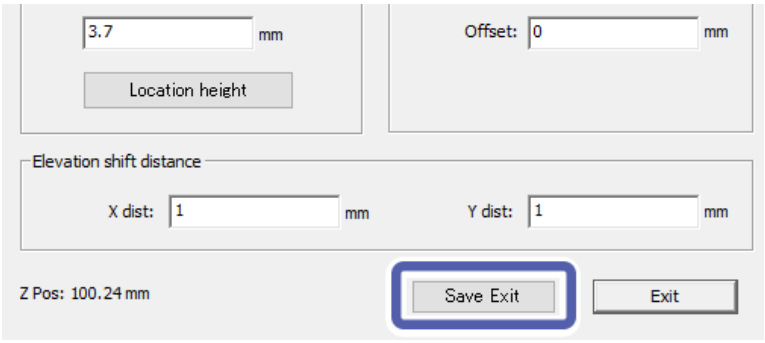
IMPORTANT

Select a value larger than the thickness of the measured object to be printed on.
If not selected correctly, there is the risk that the print heads may contact the object to be printed on, damaging the print heads.



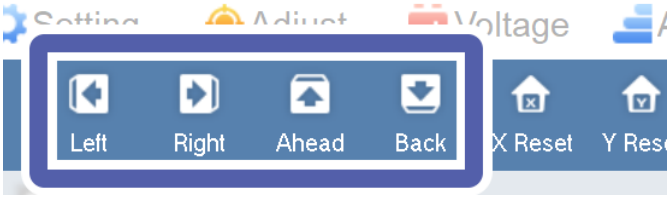
5. **Click [Save Exit].**

The settings are saved and the [**Z axis control panel**] window closes.



6. **Click [Left], [Right], [Ahead], or [Back].**

Move the print-head carriage to a position above the object to be printed on.

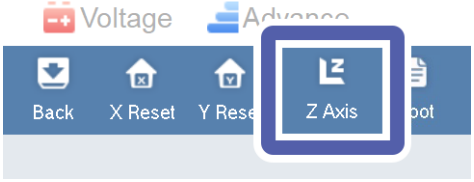


7. **Click [Z Axis].**

The [**Z axis control panel**] screen appears.

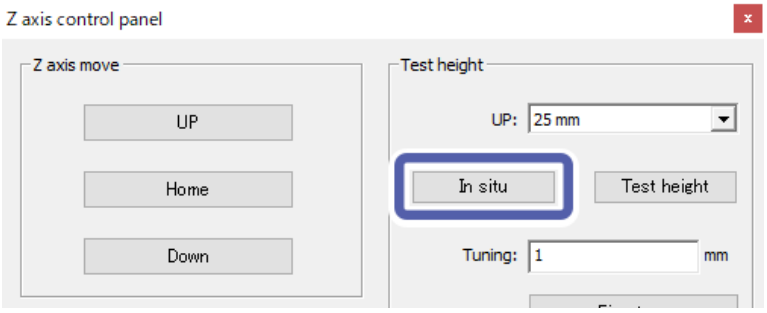
IMPORTANT

Detects the height of the object to be printed on in Step 8. Check that nothing other than object to be printed on is on the flat table.



8. **Click [In situ].**

Automatically detects the height of the object to be printed on at the position where the print-head carriage is located.


Z axis control panel
Z axis move
UP
Home
Down
Test height
UP:
25 mm
In situ
Test height
Tuning:
1
mm

Pausing and Canceling Printing

You can pause and cancel printing before it finishes.

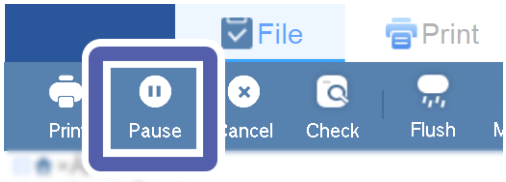
Pausing and Resuming Printing

MEMO

We do not recommend resuming printing because horizontal stripes are produced at the place where printing was paused.

Procedure

1. **During printing, click [Pause].**
   Printing pauses.

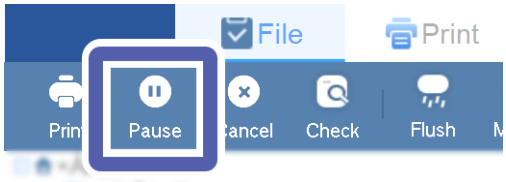


2. **Click [Pause] again.**
   Printing resumes.

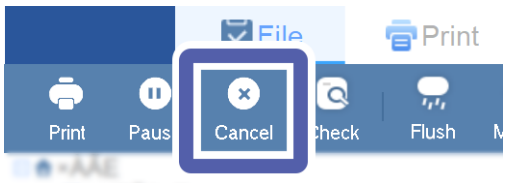
Canceling Printing

Procedure

1. **During printing, click [Pause].**
   Printing pauses.



2. **Click [Cancel].**
   Printing is canceled.



Output Method

Preparations for Output and Output Methods

Checking Before Printing 42
Preparations before Daily Operations 42
Performing Printing 56

Checking Before Printing

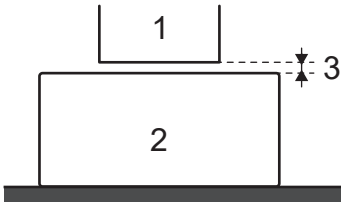
In this machine, ink affixed on the surface of the print heads may be cured by reflection of the UV light and ink mist (ink splash upon printing). If ink affixed on the surface of the print heads is cured, dot drop-out or dot displacement may occur. Continued use of the product in this state may cause a failure that requires the replacement of the print heads. While daily cleaning is important to prevent dot drop-out and dot displacement, there are also two important points to check before printing.

1. Objects that easily reflect light cannot be used as objects to be printed on.

Materials that are likely to reflect the UV light, such as mirrors and stainless steel, accelerate the curing of the surface of the print heads and therefore cannot be used as the object to be printed on.

2. Shorten the distance between the print heads and the object to be printed on.

Ink mist scatters as the distance between the print head (1) and the print surface of the object to be printed on (2) increases. The print head is more likely to contact the object to be printed on as the distance between them decreases. Set the print head height so that the distance between the object to be printed on and the print head (3) becomes 0.8 to 2.0 mm (31.50 to 78.74 mil). The distance is automatically set to 2.0 mm (78.74 mil).



Preparations before Daily Operations

Perform a printing test to ensure that dot drop-out, dot displacement, and ink dropping do not occur.

- Be sure to perform a printing test before daily operations.
- If dot drop-out, dot displacement, or ink dropping is present after a printing test, perform cleaning again.

1. Cleaning the Print Heads

Dirt on the print heads can affect print quality. Clean them before starting operations, when resuming operations, and after operations.

Print head cleaning discharges a small amount of ink from the print head. Wipe off unwanted ink. Cleaning can remove unwanted ink and clear ink clogging.

Negative pressure is applied to the print heads to hold ink. Print head cleaning also allows users to determine whether the negative pressure value needs to be adjusted. For details of negative pressure adjustment, see Adjusting Negative Pressure of the Print Heads(P. 121).

⚠ WARNING

Be sure to put on protective gloves and UV protective eyewear before performing this work.
Ink may drop or scatter.

IMPORTANT

- Use new non-woven fabric when cleaning the bottom surface of the print-head carriage. When cleaning the surface, pay careful attention not to rub the nozzle surfaces.
- Use cleaning sticks when cleaning the print head nozzle surfaces. Cotton swabs or other lint-producing items may damage the print heads.

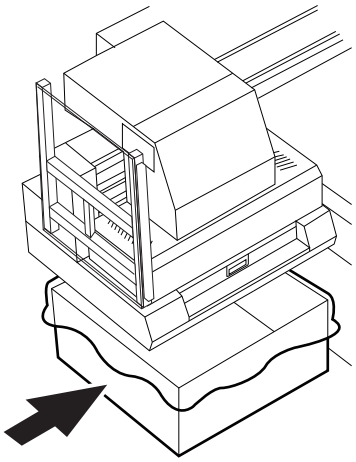
- Be sure to clean the print-head carriage on a daily basis to prevent its bottom surface from becoming dirty due to adhesion of ink and dust. If the bottom surface is dirty, the nozzles may be rubbed with foreign materials and coagulated ink during cleaning.

MEMO

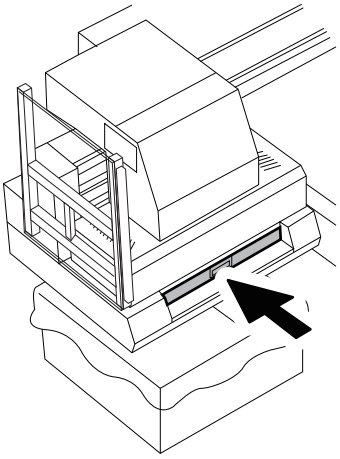
Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

Procedure

1. Place the container under the maintenance station.



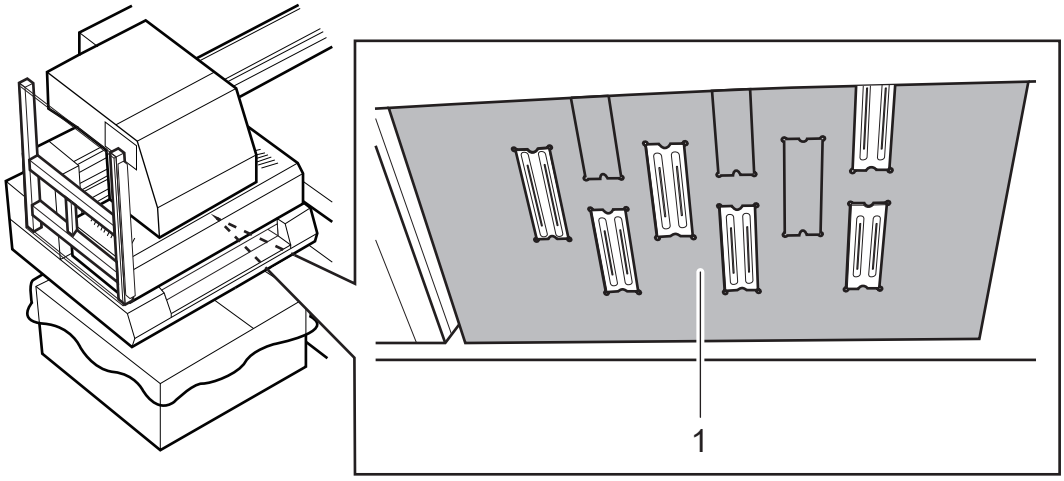
2. Slowly insert the ink receiver all the way.



3. Clean the entire bottom surface (1) of the print-head carriage using new non-woven fabric.

IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Do not touch the nozzle surfaces when cleaning the print heads and their surrounding areas.
- Clean the entire bottom surface and both side surfaces of the print-head carriage by removing adhering ink.



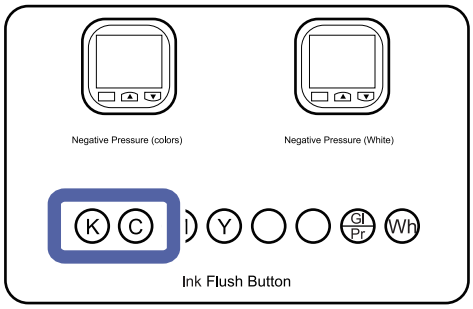
4. **Press the ink flush button on the left side of the print-head carriage to discharge ink from the print head.**

a. Press and hold the [K] button for 10 seconds.

b. Press and hold the [C] button for 10 seconds.

IMPORTANT

Do not hold down the buttons for more than 10 seconds.
The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.

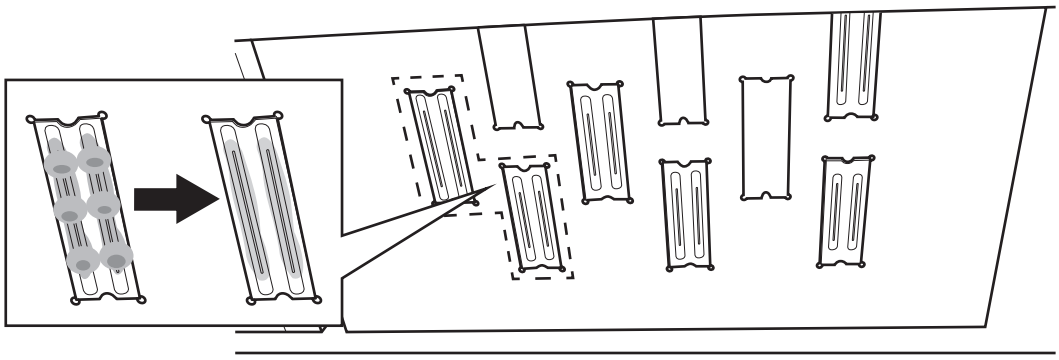


5. **Determine if the print head negative pressure value is set appropriately by checking the print head nozzle surfaces.**

The negative pressure value is appropriate if discharged ink droplets are kept on the nozzle surfaces.

If the negative pressure value of the print head nozzle is too high, ink droplets on the nozzle surfaces are sucked into the nozzles. If this is the case, lower the negative pressure value of the print head nozzle.

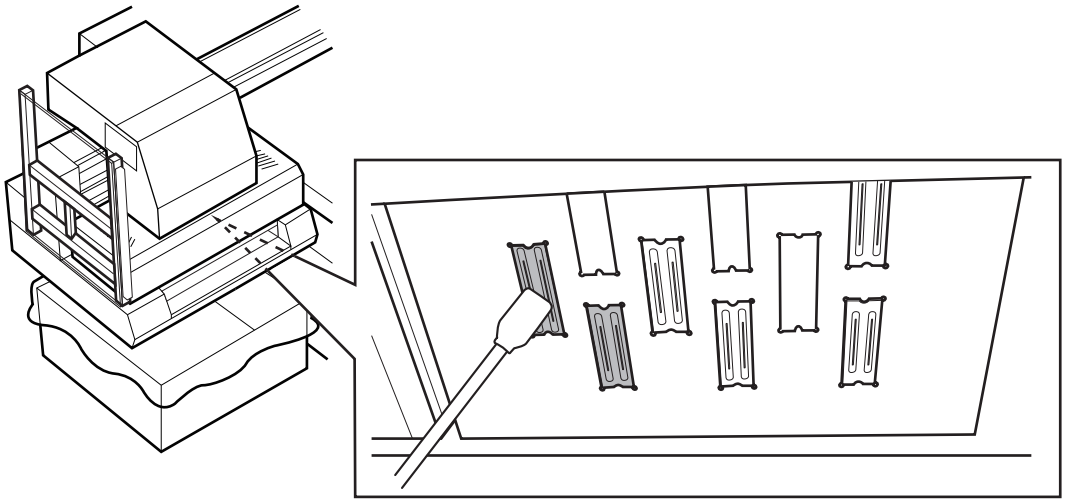
Lowering the Negative Pressure Value of the Print Heads(P. 121)



6. **Clean the K and C print head nozzle surfaces using new cleaning sticks.**

IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Never rub the nozzle surfaces hard.

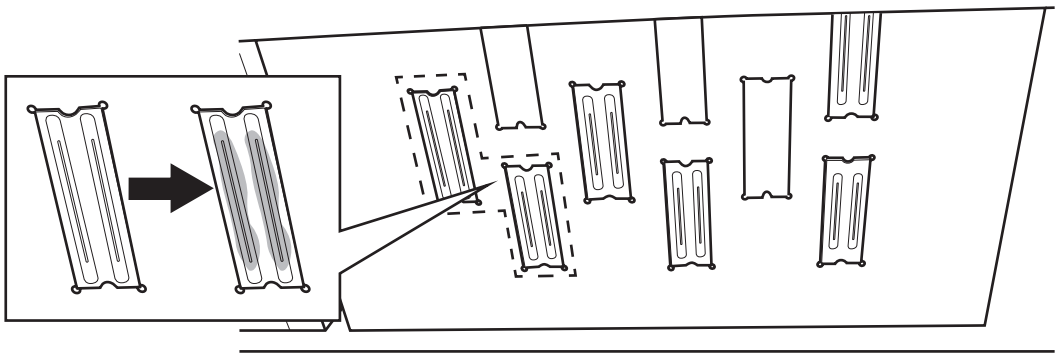


7. **Determine if the print head negative pressure value is set appropriately by checking the print head nozzle surfaces.**

If the nozzle surfaces maintain conditions immediately after cleaning, the negative pressure value is appropriate.

If the negative pressure value of the print head nozzle is too low, ink seeps from the nozzle surfaces. If this is the case, increase the negative pressure value of the print head nozzle.

Increasing the Negative Pressure Value of the Print Heads(P. 124)

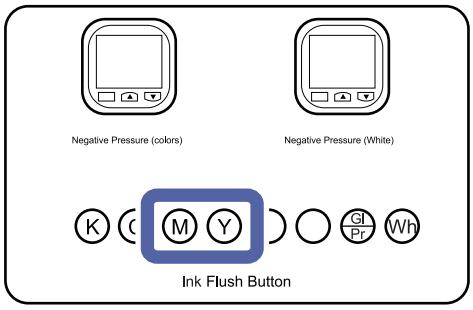


8. **Clean the M and Y print heads.**

Press the [M] and [Y] ink flush buttons, and clean the print heads following the same procedure as in Steps 5 to 7.

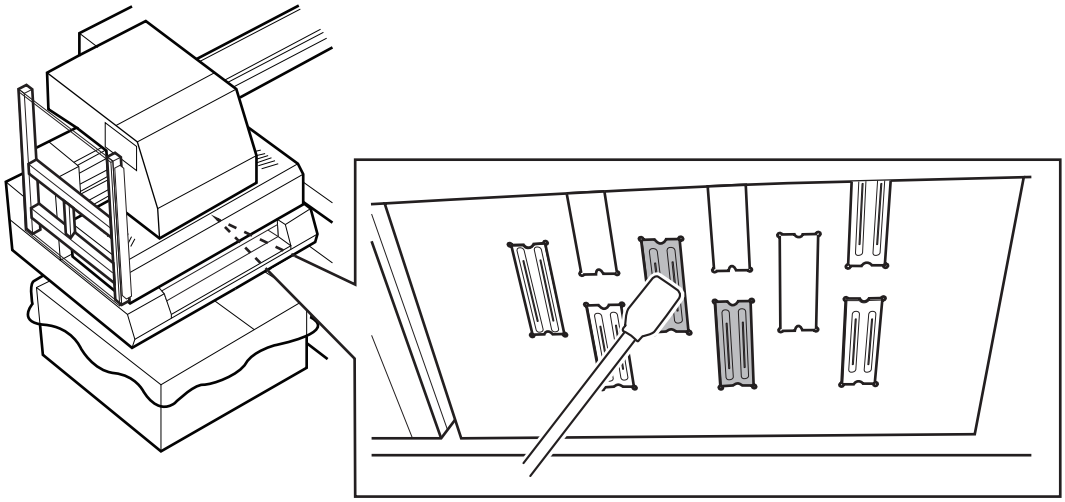
IMPORTANT

Do not hold down the buttons for more than 10 seconds.
The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.



IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Never rub the nozzle surfaces hard.

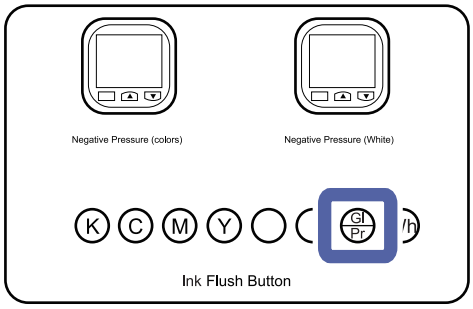


9. **Clean the Gl/Pr print head.**

Press the [Gl/Pr] ink flush button, and clean the print head following the same procedure as in Steps 5 to 7.

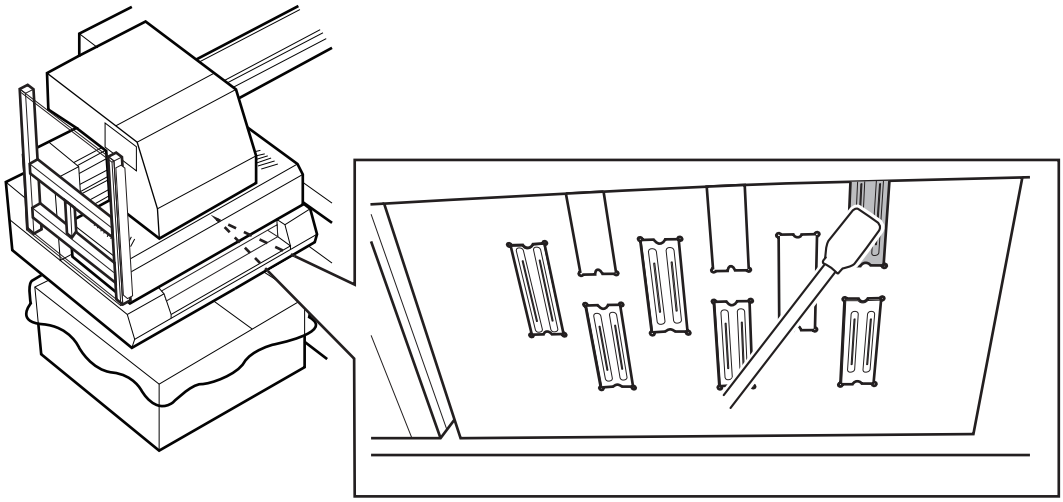
IMPORTANT

Do not hold down the buttons for more than 10 seconds.
The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.



IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Never rub the nozzle surfaces hard.

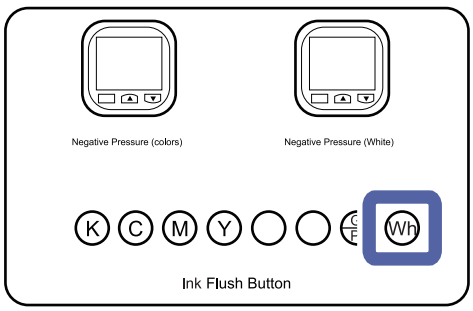


10. Clean the Wh print head.

Press the [Wh] ink flush button, and clean the print head following the same procedure as in Steps 5 to 7.

IMPORTANT

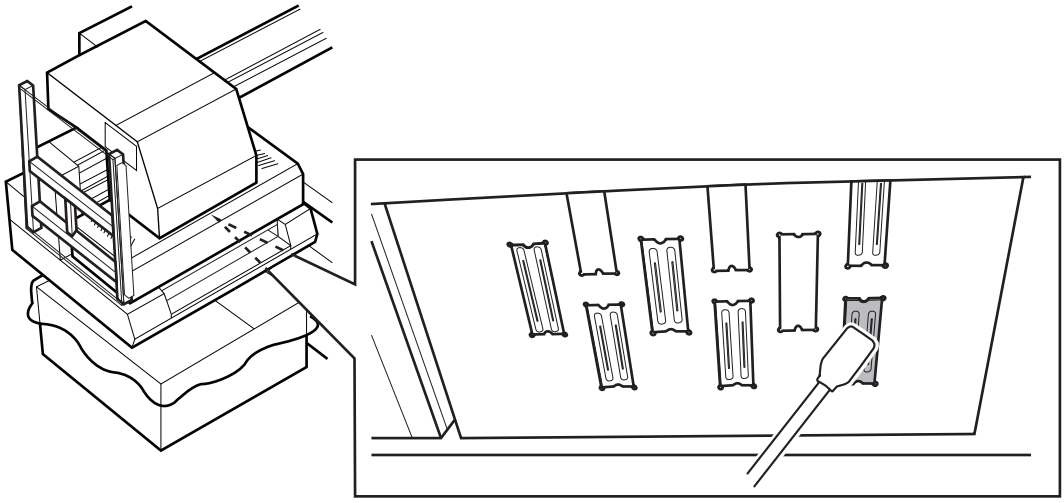
Do not hold down the buttons for more than 10 seconds.
The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.



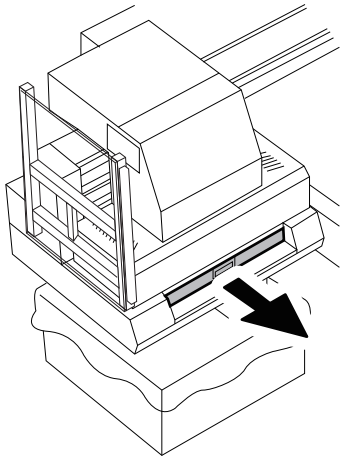
IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.

- Wipe off the Wh ink thoroughly because it easily adheres to the print head surface.
- Never rub the nozzle surfaces hard.



11. **Slowly pull the ink receiver back toward you.**



2. Attach the Object to Be Printed on for the Printing Test

⚠ WARNING

Never climb on the table.

Doing so may result in injury. It may also decrease the table accuracy.

⚠ CAUTION

Wear protection such as safety shoes and gloves when handling heavy objects to be printed on.

Failure to do this may cause injury.

IMPORTANT

- If there are suction holes that are not covered with an object to be printed on in the suction area, cover them by placing thin sheets such as paper, film, and tape.
- Lower the suction pressure when setting a thin object to be printed on. Strong suction may leave marks of the suction holes.

- The edges of an object to be printed on may warp. Objects to be printed on that warp may become torn or may damage the print heads when contacting the print-head carriage. Use adhesive tape to additionally secure these objects.
- To prevent the table from deforming, note the following points when setting objects to be printed on.
  - Do not drop heavy objects on the table.
  - Do not concentrate the weight of an object to be printed on.

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

Procedure

1. **Prepare an object for a printing test.**

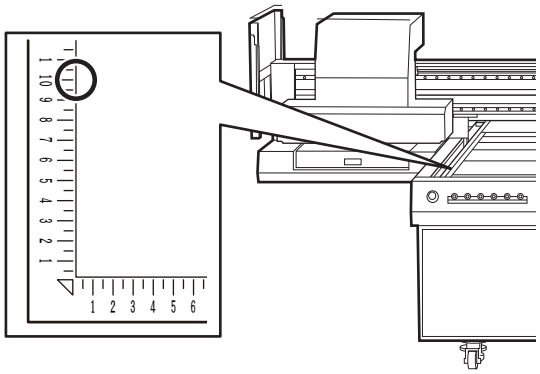
Printing tests are used to check that no dot drop-out or dot displacement occurs. Use an object prepared for the printing test (width 200 mm (7.88 in.) × length 300 mm (11.82 in.) or larger), instead of using an actual object to be printed on.

2. **Place the object on the flat table.**

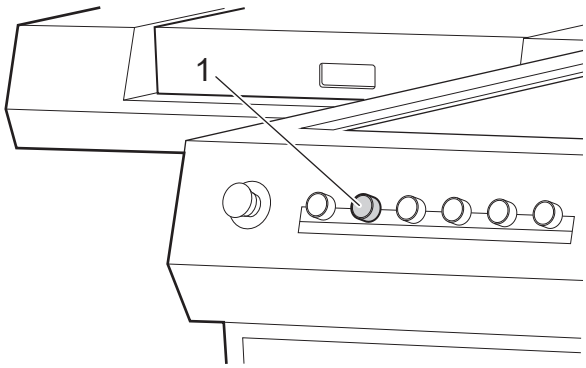
Align the edges of the object to the X and Y axes of the flat table.

IMPORTANT

The print origin on the Y axis is set at 100 mm (3.94 in.) on the scale of the flat table.



3. **Press the [Main Power of Flatbed Vacuum] button (1) to activate the negative pressure.**

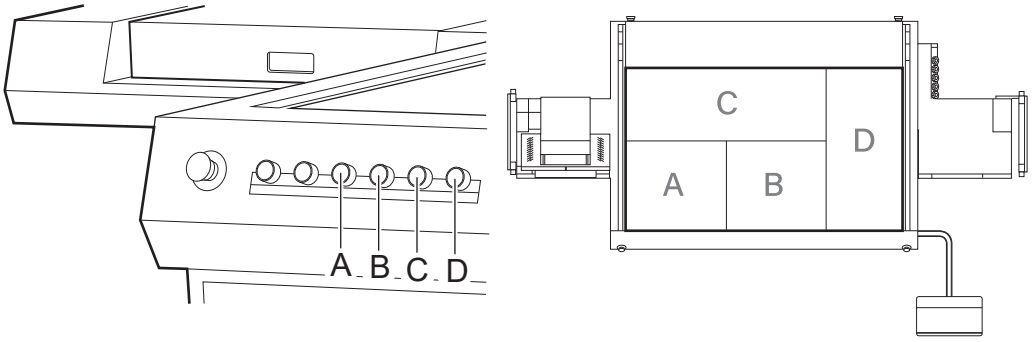


4. **Press the [Vacuum Area] button in the location where the object to be printed on was placed.**

The negative pressure is activated, fixing the object to be printed on in place.

MEMO

If more than one [Vacuum Area] button is pressed simultaneously, negative pressure temporarily may become insufficient, failing to secure the object to be printed on firmly. If this is the case, wait until negative pressure becomes stabilized or press the [Vacuum Area] buttons at intervals.

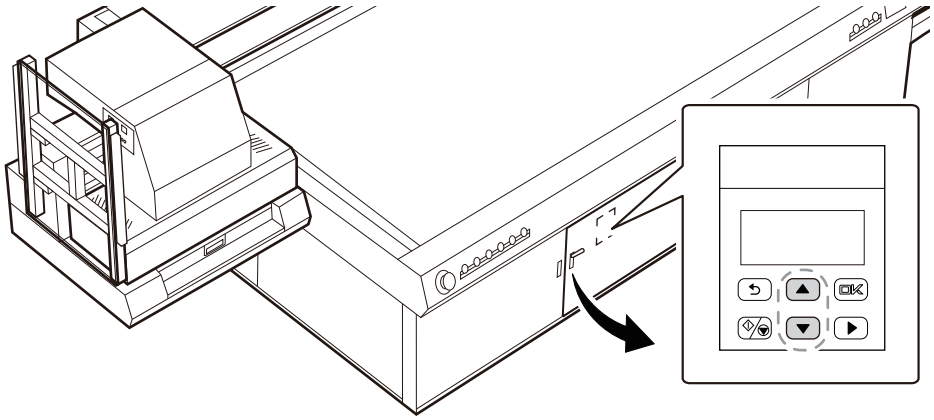


5. **Adjust the negative pressure acting on the object to be printed on by pressing the [▲] or [▼] button on the vacuum controller.**

If the object to be printed on cannot be secured firmly, try the following.

- Change the negative pressure activation area with the [Vacuum Area] buttons.Flat Table(P. 13)
- Press the [▲] button on the vacuum controller to increase the output.

  To lower the output, press the [▼] button.



3. Adjusting the Print Head Height Automatically

The height of the object to be printed on is automatically detected, and the print heads are adjusted to the appropriate height for printing. If height of the object to be printed on is known, the print head height can be set manually.

Setting the Print Head Height Manually(P. 34)

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

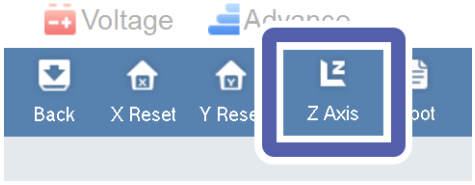
Procedure

1. **Measure the thickness of the object to be printed on.**

   Measure using a measuring tape or vernier caliper.

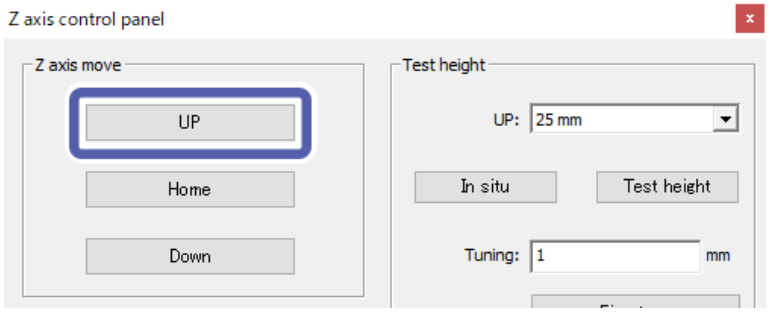
2. **Click [Z Axis].**

   The [**Z axis control panel**] window appears.



3. **Click [UP] under [Z axis move].**

   The print head will be moved over the object to be printed on in Step 6. Move the print head up to a height such that it does not contact the object to be printed on when it moves.

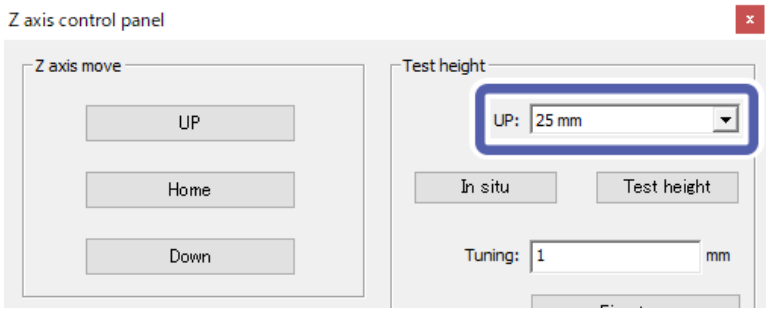


4. **Select the value of [UP] in [Test height].**

   The value selected here will be the print head height at which height detection starts.

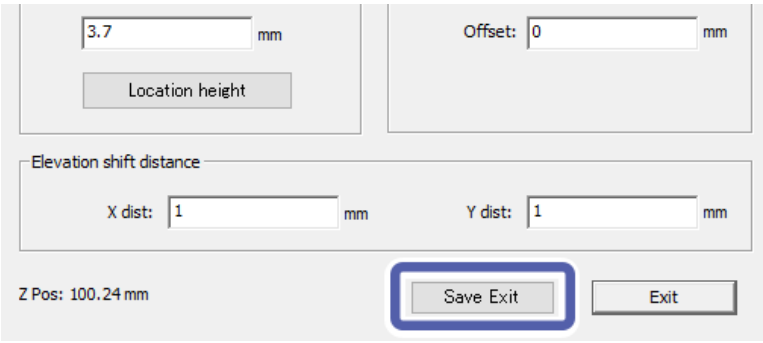
IMPORTANT

Select a value larger than the thickness of the measured object to be printed on.
If not selected correctly, there is the risk that the print heads may contact the object to be printed on, damaging the print heads.



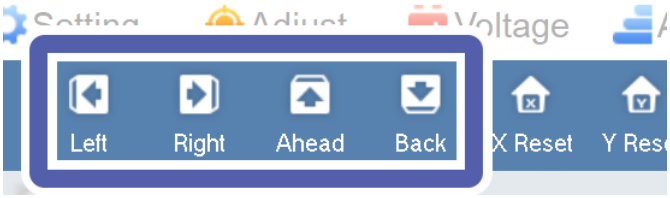
5. **Click [Save Exit].**

   The settings are saved and the [**Z axis control panel**] window closes.



6. **Click [Left], [Right], [Ahead], or [Back].**

   Move the print-head carriage to a position above the object to be printed on.



7. **Click [Z Axis].**

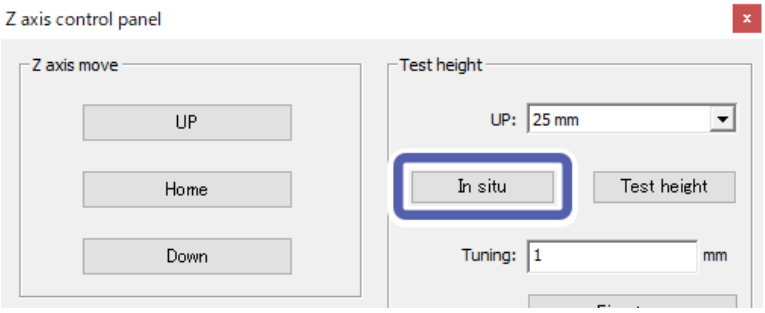
   The [**Z axis control panel**] screen appears.

> **IMPORTANT**
>
> Detects the height of the object to be printed on in Step 8. Check that nothing other than object to be printed on is on the flat table.



8. **Click [In situ].**

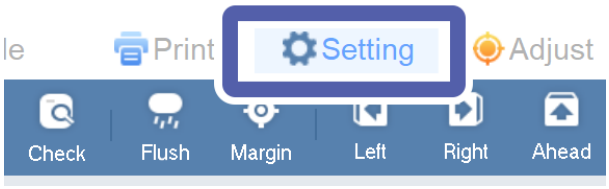
   Automatically detects the height of the object to be printed on at the position where the print-head carriage is located.



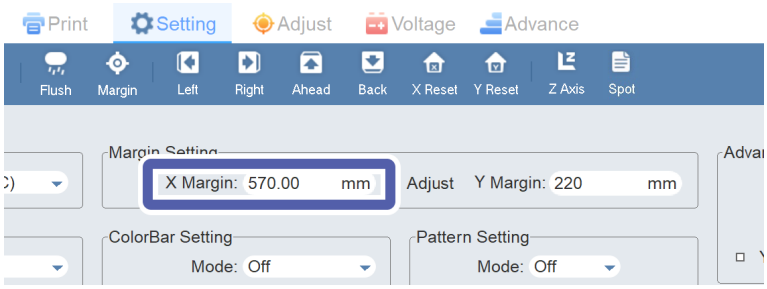
4. Configuring Printing Settings

Procedure

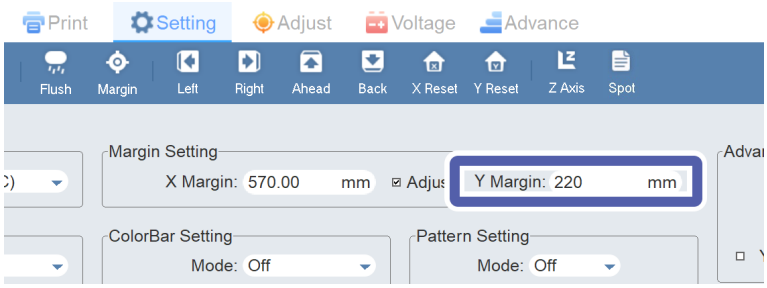
1. **Click the [Setting] tab.**



2. **Enter the printing-start position on the X axis to [X Margin] in [Margin Setting].**



3. **Enter the printing-start position on the Y axis to [Y Margin] in [Margin Setting].**



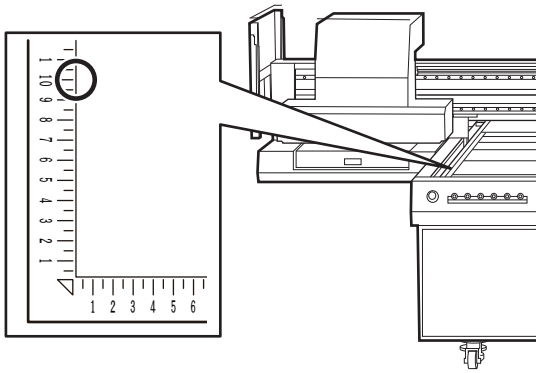
MEMO

If [**Y Margin**] cannot be viewed due to letters overlapping on the screen, set the screen resolution to 1,366 × 768.



IMPORTANT

The print origin on the Y axis is set at 100 mm (3.94 in.) on the scale of the flat table.



5. Performing a Printing Test

Check the remaining ink amounts before starting printing. When the amount of ink becomes low, the machine will sound a warning beep. Refill the ink and resume operation.

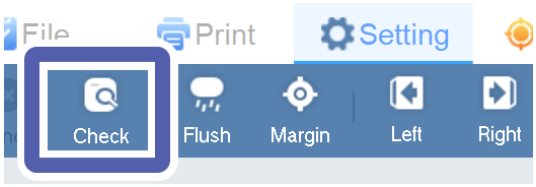
Refilling Inks(P. 91)

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

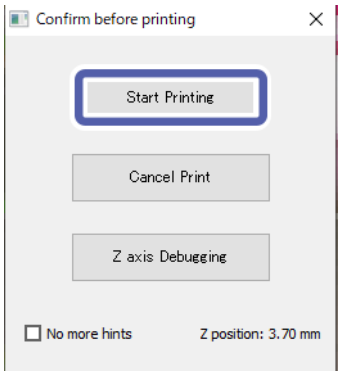
Procedure

1. **Click [Check].**

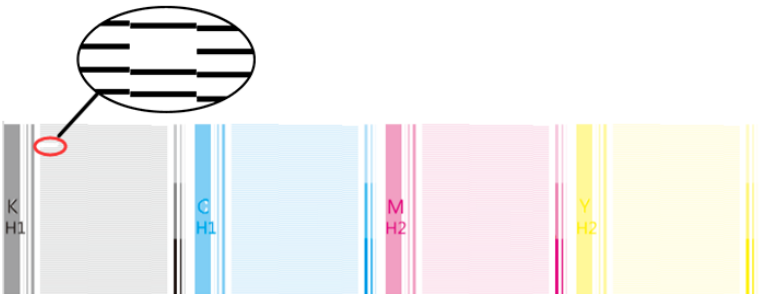


2. **In the [Confirm before printing] window, click [Start Printing].**

   The machine starts printing of a test pattern.



3. **Check the printing result.**



When printing is complete, check that no dot drop-out or dot displacement has occurred. If dot drop-out or dot displacement is present, perform head cleaning again. If the printer has been used for a long period, dot drop-outs may not be fixed even after performing head cleaning two or three times. If this is the case, perform liquid cleaning.

- 1. Cleaning the Print Heads(P. 42)
- Liquid Cleaning(P. 115)

Performing Printing

1. Attaching the Object to Be Printed on

⚠ WARNING

Never climb on the table.

Doing so may result in injury. It may also decrease the table accuracy.

⚠ CAUTION

Wear protection such as safety shoes and gloves when handling heavy objects to be printed on.

Failure to do this may cause injury.

IMPORTANT

- If there are suction holes that are not covered with an object to be printed on in the suction area, cover them by placing thin sheets such as paper, film, and tape.
- Lower the suction pressure when setting a thin object to be printed on. Strong suction may leave marks of the suction holes.
- The edges of an object to be printed on may warp. Objects to be printed on that warp may become torn or may damage the print heads when contacting the print-head carriage. Use adhesive tape to additionally secure these objects.
- To prevent the table from deforming, note the following points when setting objects to be printed on.
  - Do not drop heavy objects on the table.
  - Do not concentrate the weight of an object to be printed on.

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

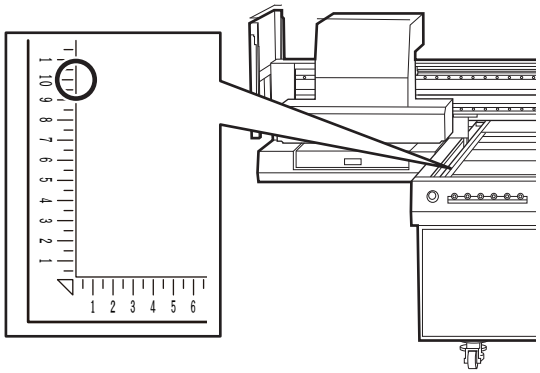
Procedure

1. **Place the object on the flat table.**

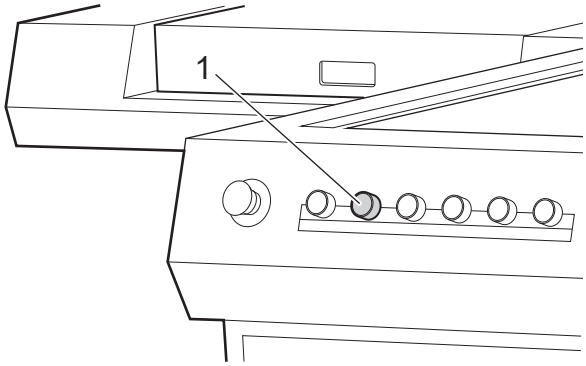
   Align the edges of the object to the X and Y axes of the flat table.

   IMPORTANT

   The print origin on the Y axis is set at 100 mm (3.94 in.) on the scale of the flat table.



2. **Press the [Main Power of Flatbed Vacuum] button (1) to activate the negative pressure.**

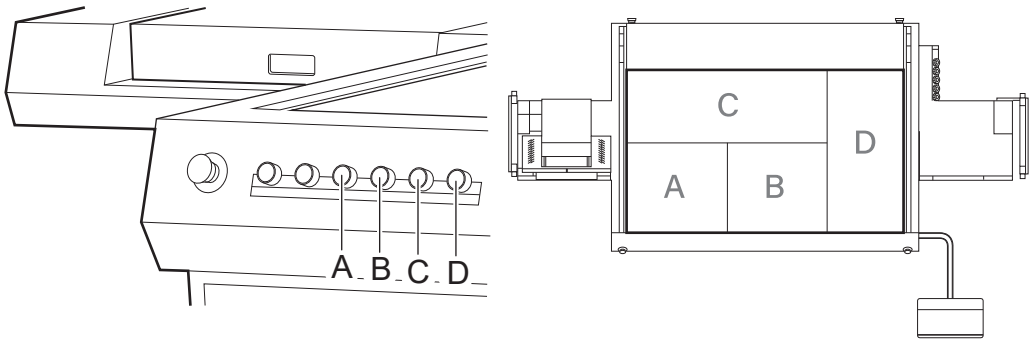


3. **Press the [Vacuum Area] button in the location where the object to be printed on was placed.**

The negative pressure is activated, fixing the object to be printed on in place.

MEMO

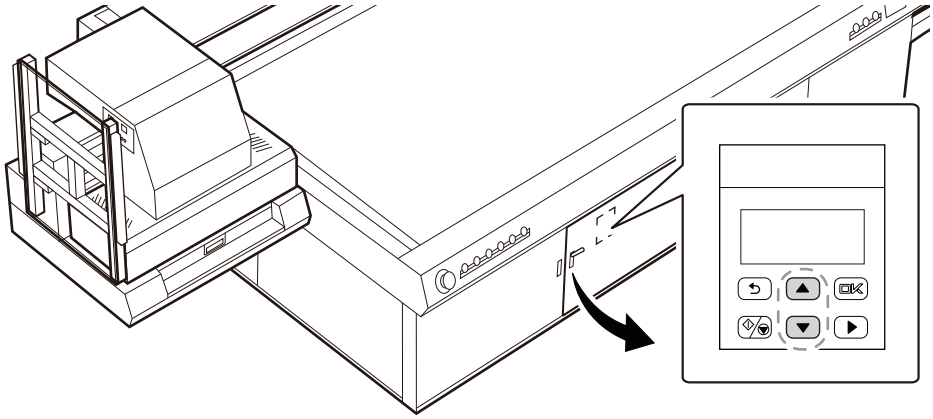
If more than one [Vacuum Area] button is pressed simultaneously, negative pressure temporarily may become insufficient, failing to secure the object to be printed on firmly. If this is the case, wait until negative pressure becomes stabilized or press the [Vacuum Area] buttons at intervals.



4. **Adjust the negative pressure acting on the object to be printed on by pressing the [▲] or [▼] button on the vacuum controller.**

If the object to be printed on cannot be secured firmly, try the following.

- Change the negative pressure activation area with the [Vacuum Area] buttons.Flat Table(P. 13)
- Press the [▲] button on the vacuum controller to increase the output.
  To lower the output, press the [▼] button.



2. Adjusting the Print Head Height Automatically

The height of the object to be printed on is automatically detected, and the print heads are adjusted to the appropriate height for printing. If height of the object to be printed on is known, the print head height can be set manually.

Setting the Print Head Height Manually(P. 34)

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

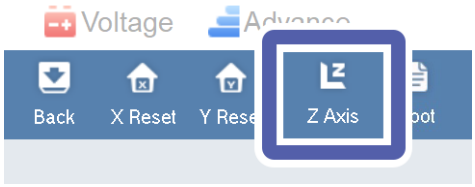
Procedure

1. **Measure the thickness of the object to be printed on.**

   Measure using a measuring tape or vernier caliper.

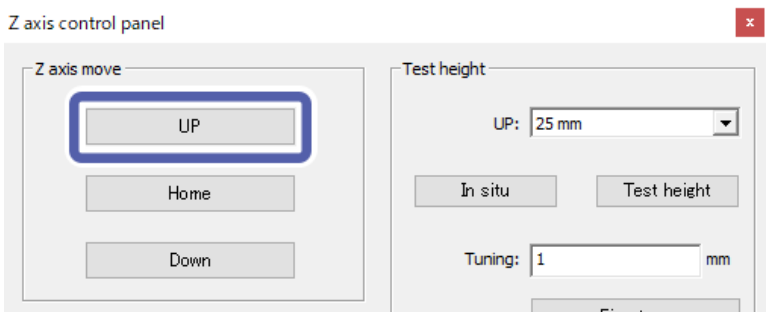
2. **Click [Z Axis].**

   The [**Z axis control panel**] window appears.



3. **Click [UP] under [Z axis move].**

   The print head will be moved over the object to be printed on in Step 6. Move the print head up to a height such that it does not contact the object to be printed on when it moves.

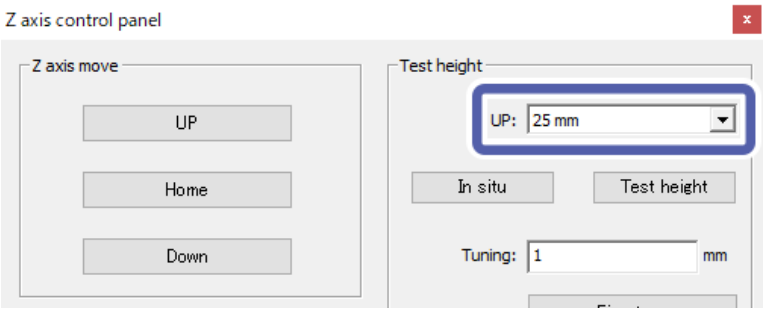


4. **Select the value of [UP] in [Test height].**

The value selected here will be the print head height at which height detection starts.

IMPORTANT

Select a value larger than the thickness of the measured object to be printed on.
If not selected correctly, there is the risk that the print heads may contact the object to be printed on, damaging the print heads.



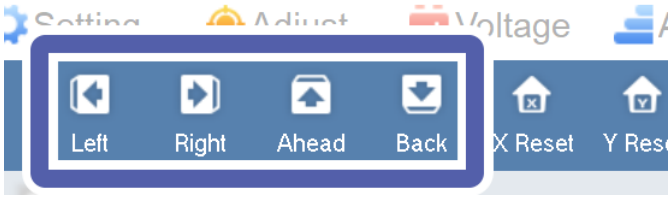
5. **Click [Save Exit].**

The settings are saved and the [**Z axis control panel**] window closes.



6. **Click [Left], [Right], [Ahead], or [Back].**

Move the print-head carriage to a position above the object to be printed on.

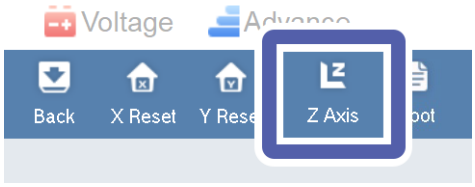


7. **Click [Z Axis].**

The [**Z axis control panel**] screen appears.

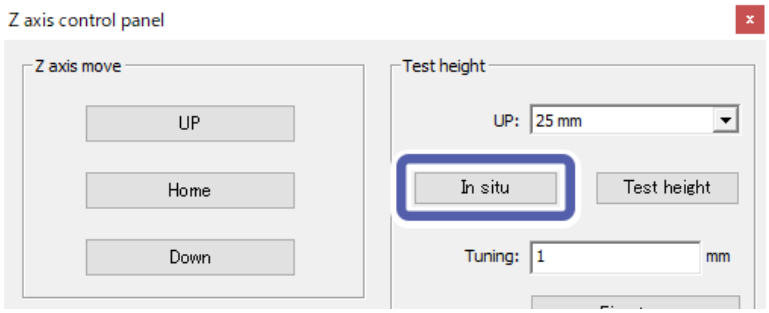
IMPORTANT

Detects the height of the object to be printed on in Step 8. Check that nothing other than object to be printed on is on the flat table.



8. **Click [In situ].**

   Automatically detects the height of the object to be printed on at the position where the print-head carriage is located.

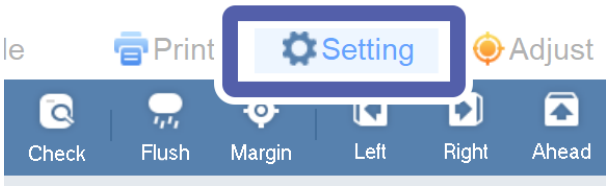


3. Configuring Printing Settings in PrintExp

Although printing settings are configured using VersaWorks, there also are items that must be set each time in PrintExp. This section explains the items that must be set each time in PrintExp. Configure other settings as necessary.[Setting] tab(P. 23)

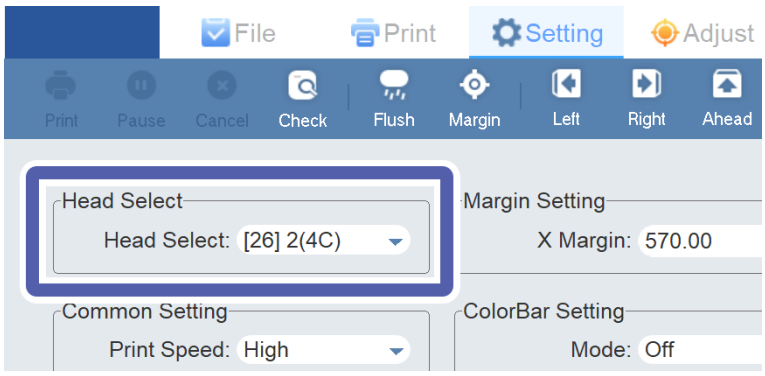
Procedure

1. **Click the [Setting] tab.**

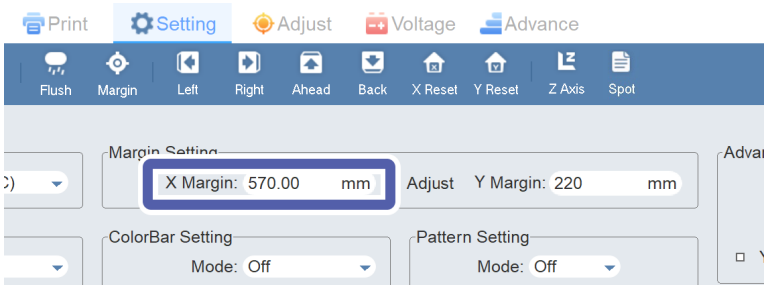


2. **Select the print head of the color to use with [Head Select].**

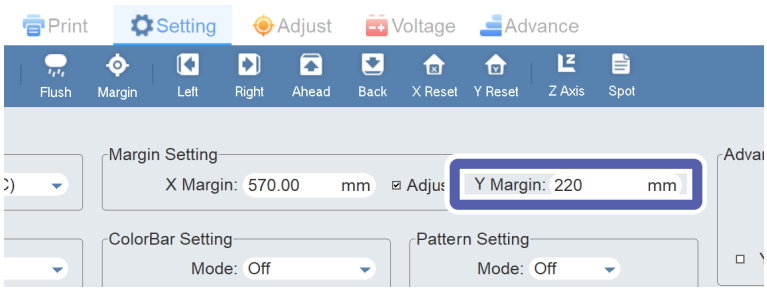
   For CMYK-only print data, select **[[26] 2(4C)]**. For print data that includes Wh, Gl, and Pr, select **[[26] 4C+ WV]**.



3. **Enter the printing-start position on the X axis to [X Margin] in [Margin Setting].**

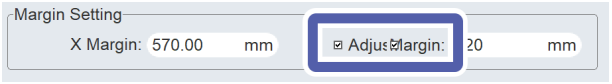


4. **Enter the printing-start position on the Y axis to [Y Margin] in [Margin Setting].**



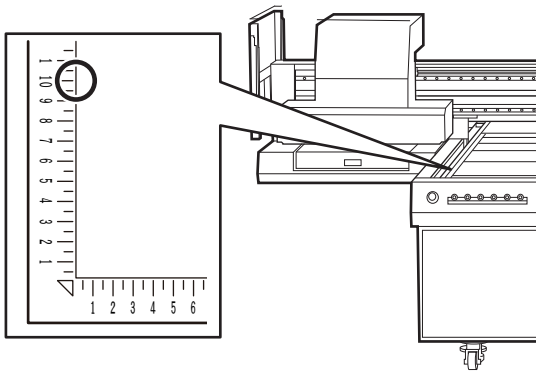
MEMO

If [**Y Margin**] cannot be viewed due to letters overlapping on the screen, set the screen resolution to 1,366 × 768.



IMPORTANT

The print origin on the Y axis is set at 100 mm (3.94 in.) on the scale of the flat table.

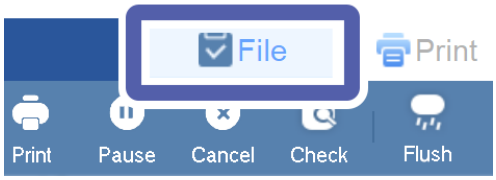


4. Adding a Job Created with VersaWorks to the PrintExp [Print Job List]

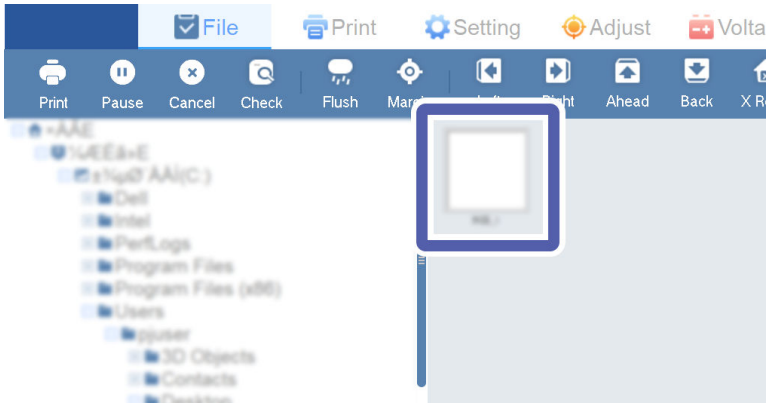
Use VersaWorks to configure various print settings and perform RIP for print data that was created with commercially available design software. Then add the print data processed by the RIP with VersaWorks to PrintExp [**Print job list**] and perform printing.

Procedure

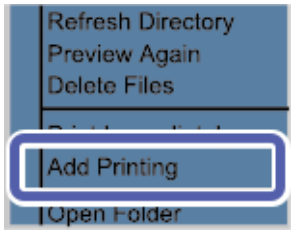
1. **Click the [File] tab.**



2. **Select the folder where the print data processed by the RIP with VersaWorks is stored.**
   The preview of the print data file in the selected folder is displayed.



3. **Right-click the print data file and select [Add Printing].**
   The print data file will be added on [**Print job list**].



5. Performing Printing

Check the remaining ink amounts before starting printing. When the amount of ink becomes low, the machine will sound a warning beep. Refill the ink and resume operation.

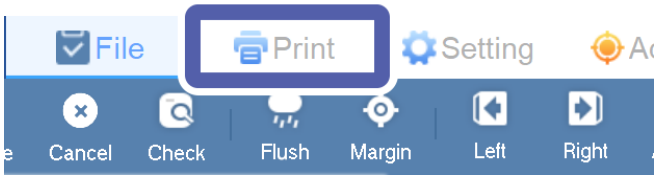
Refilling Inks(P. 91)

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

Procedure

1. **Click the [Print] tab.**

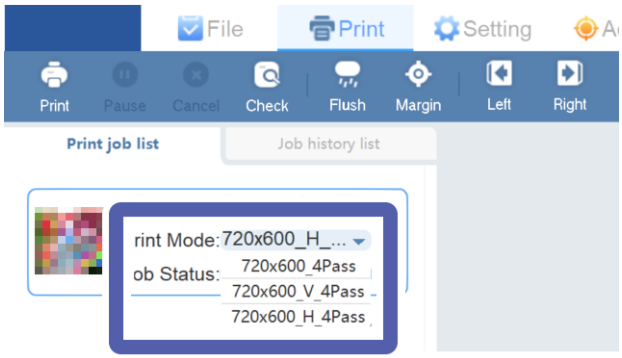


2. **Use [Print job list] to check the print job [Print Mode].**

[**Print Mode**] displays the resolution when print data RIP is performed.

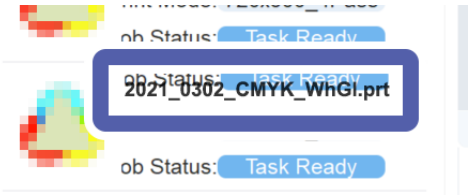
MEMO

When the print data is processed by the RIP at 720 x 600 dpi
Select [**720x600_H_4Pass**] if [**[26] 2(4C)**] has been selected in [**Head Select**] on the [**Setting**] tab.
Select [**720x600_4Pass**] if [**[26] 4C+ WV**] has been selected in [**Head Select**] on the [**Setting**] tab.

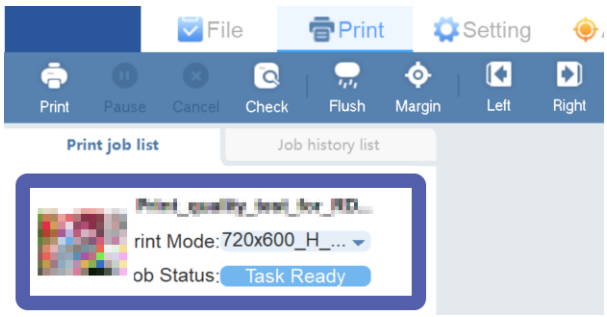


MEMO

If letters are overlapping on the screen, click another job and click the job to print again.

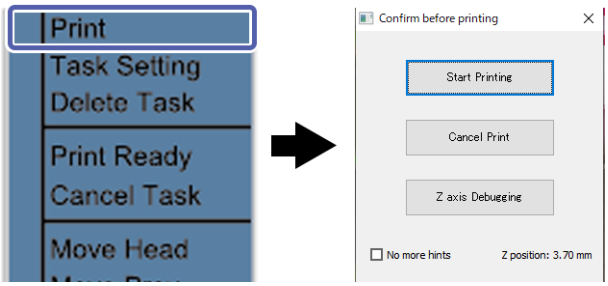


3. **Right-click a job to print on [Print job list].**



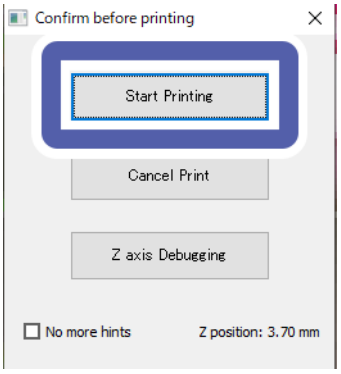
4. **Click [Print].**

The [**Confirm before printing**] window appears.



5. **Click [Start Printing].**

Printing starts.



Maintenance

Introduction

Important Notes on Handling and Use.....67
Safety Precautions 67
Precautions for Operating Environment and Other Related Conditions.....68
Basic Maintenance Knowledge.....69
Types and Timing of Maintenance 69
Measures When the Printer Is Not in Use for a Prolonged Period 71

Important Notes on Handling and Use

This section explains safety precautions for maintenance of this machine.

Safety Precautions

⚠ DANGER

Do not remove covers or parts from this machine.
Doing so may result in electrical shock.

⚠ WARNING

Never climb on the table.
Doing so may result in injury. It may also decrease the table accuracy.

⚠ WARNING

Clean the machine regularly.
Debris or dust collecting on the parts in use may cause current leakage or deterioration of the insulation, resulting in fire and smoke hazards.

⚠ WARNING

Do not place vases, flowerpots, cups, cosmetics, chemicals, containers of water, or small metal objects on or near this machine.
Water and metal objects entering the machine may result in fire and electrical shock.

⚠ WARNING

Do not touch the UV-LED device.
The UV-LED device becomes very hot during operation. Touching it may cause injury or burns.

⚠ WARNING

Perform cleaning of the UV-LED device only after it has cooled completely.
Failure to wait until the LED UV device cools completely may cause burns.

⚠ WARNING

Do not disassemble or modify the machine.
Doing so may result in fire or electrical shock.

⚠ WARNING

This printer uses ultraviolet curable inks (UV inks).
Be sure to wear protective gloves and UV protective eyewear during maintenance.

⚠ CAUTION

When cleaning the inside of the machine, be sure to contact your authorized dealer.
If the machine is not cleaned for a long time with dust accumulated inside of it, it may result in fire or malfunction.

⚠ CAUTION

Keep the print heads, their surrounding areas, and the nozzle surfaces away from water and alcohol.
Inks may coagulate when mixed with water or alcohol.

⚠ CAUTION

Do not use chemicals containing benzine, paint thinner, or abrasives.
Doing so may degrade or deform the cover surfaces.

⚠ CAUTION

Do not lubricate the inside of the machine.
Doing so may cause the machine to malfunction.

⚠ CAUTION

Be sure to inspect the machine and replace specified parts periodically.

⚠ CAUTION

The machine contains components that may be damaged when touched.
Do not touch components such as connectors, sensors, and LEDs. Doing so may cause malfunctions.

Precautions for Operating Environment and Other Related Conditions

Appropriate printing settings and maintenance frequencies differ according to the operating environment and objects to be printed on.

Please note the following points when operating the machine.

Operating environment	Points to consider
When the print head gap value is set high for reasons such as fabric sticking out of the object to be printed on.	The nozzles may be exposed to UV light due to thick scattered mist. Increase the frequency of all types of maintenance.
When the object to be printed on is highly reflective of UV light, such as glass and glossy metal.	
When the object to be printed on is easily charged with static electricity.	Take adequate measures such as installing a humidifier. Static electricity attracts mist and dust to printing areas, the print heads, and their surrounding areas.
When printing is performed in low-humidity environments.	

Basic Maintenance Knowledge

Types and Timing of Maintenance

This section explains how to clean and maintain this machine.

Maintenance Frequency

⚠ WARNING

Clean the machine regularly.

Debris or dust collecting on the parts in use may cause current leakage or deterioration of the insulation, resulting in fire and smoke hazards.

⚠ WARNING

Store the cleaning liquid for maintenance in a cool, dark location.

Keep them out of the reach of children.

⚠ WARNING

This printer uses ultraviolet curable inks (UV inks).

Be sure to wear protective gloves and UV protective eyewear during maintenance.

⚠ CAUTION

Be sure to inspect the machine and replace specified parts periodically.

To use this machine under its optimal conditions, maintain it periodically. The print head nozzles, in particular, need to be maintained appropriately because the nozzles, which inject ink, can reduce printing quality when attached with dust and dirt.

Regular Maintenance

These are the maintenance items that are required on a daily basis.

Timing	Item	Reference
Before daily operations	Cleaning the Print Heads	• Cleaning the Print Heads(P. 73) • Cleaning and Printing Test(P. 98)
When printing is resumed		
After daily operations are finished		
When printing quality has decreased	Cleaning the Print Heads	Liquid Cleaning(P. 115)
	Adjusting Negative Pressure of the Print Heads	Adjusting Negative Pressure of the Print Heads(P. 121)

Timing	Item	Reference
Maintenance to perform as needed	Cleaning the UV-LED Device	Cleaning the UV-LED Device(P. 85)
	Cleaning the Table and Outside of the Machine	Cleaning the Table and Outside of the Machine(P. 80)
	Cleaning the Maintenance Station and Its Surrounding Areas	Cleaning the Maintenance Station and Its Surrounding Areas(P. 82)
	Removing Inks Adhering to the Table	Removing Inks Adhering to the Table(P. 88)
	Refilling Inks	Refilling Inks(P. 91)
	Disposing of Drained Ink	Disposing of Drained Ink(P. 94)

Tools required for maintenance

Wear UV protective eyewear and protective gloves during maintenance.

Prepare paper towels, non-woven fabric, alcohol cleaner, polyethylene gloves, and nitrile (rubber) gloves. Prepare new items instead of reusing them.

- **Paper towels**

  Use paper towels to remove dirt from the table and the machine exterior. Do not use them for the print heads and their surrounding areas.
- **Non-woven fabric**

  Use non-woven fabric to clean the print heads, their surrounding areas, and the maintenance station. Also use it for relatively large areas.
- **Cleaning sticks**

  Use cleaning sticks to clean the print head nozzle surfaces and the inside of the maintenance station. Also use them for relatively narrow spaces such as gaps and steps.
- **Cleaning liquid**

  Use cleaning liquid to remove tough dirt and hardened ink. For information about purchasing cleaning liquid, contact your authorized dealer.
- **Alcohol cleaner**

  Use alcohol cleaner to remove tough dirt from the irradiation surfaces of the UV-LED device and hardened ink. Use alcohol for cleaning.
- **Polyethylene gloves**
- **Nitrile (rubber) gloves**
- **UV protective eyewear**

MEMO

Wear three layers of gloves and put them on in the following order: nitrile (rubber) gloves, polyethylene gloves, nitrile (rubber) gloves.

Measures When the Printer Is Not in Use for a Prolonged Period

IMPORTANT

Do not disconnect the power cord plug. Do not turn off the main power (1).

While the main power is on, the machine circulates and mixes white ink. If you have to switch off the main power, contact your authorized dealer.

Operations to take when the printer will not be in use for a prolonged period

Perform the following operations before stopping the machine for a prolonged period.

- Cleaning the print heads
- Cleaning the irradiation surfaces of the UV-LED device
- Cleaning the table and outside of the machine
- Disposing of drained ink

Operations to take before the printer resumes printing

Before resuming printing, clean the machine and perform test printing to examine the results.

If the results are not satisfactory, clean the machine using cleaning liquid. Repeat cleaning until the machine outputs satisfactory results.

Regular Maintenance

Cleaning the Print Heads 73
Cleaning the Table and Outside of the Machine 80
Cleaning the Maintenance Station and Its Surrounding Areas 82
Cleaning the UV-LED Device 85
Removing Inks Adhering to the Table 88

Cleaning the Print Heads

Dirt on the print heads can affect print quality. Clean them before starting operations, when resuming operations, and after operations.

Print head cleaning discharges a small amount of ink from the print head. Wipe off unwanted ink. Cleaning can remove unwanted ink and clear ink clogging.

Negative pressure is applied to the print heads to hold ink. Print head cleaning also allows users to determine whether the negative pressure value needs to be adjusted. For details of negative pressure adjustment, see Adjusting Negative Pressure of the Print Heads(P. 121).

⚠ WARNING

Be sure to put on protective gloves and UV protective eyewear before performing this work.
Ink may drop or scatter.

IMPORTANT

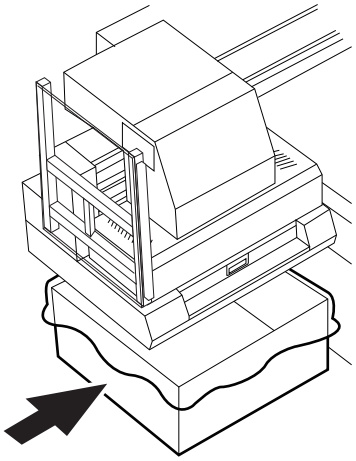
- Use new non-woven fabric when cleaning the bottom surface of the print-head carriage. When cleaning the surface, pay careful attention not to rub the nozzle surfaces.
- Use cleaning sticks when cleaning the print head nozzle surfaces. Cotton swabs or other lint-producing items may damage the print heads.
- Be sure to clean the print-head carriage on a daily basis to prevent its bottom surface from becoming dirty due to adhesion of ink and dust. If the bottom surface is dirty, the nozzles may be rubbed with foreign materials and coagulated ink during cleaning.

MEMO

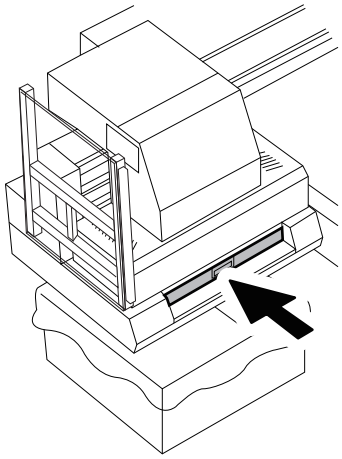
Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

Procedure

1. **Place the container under the maintenance station.**



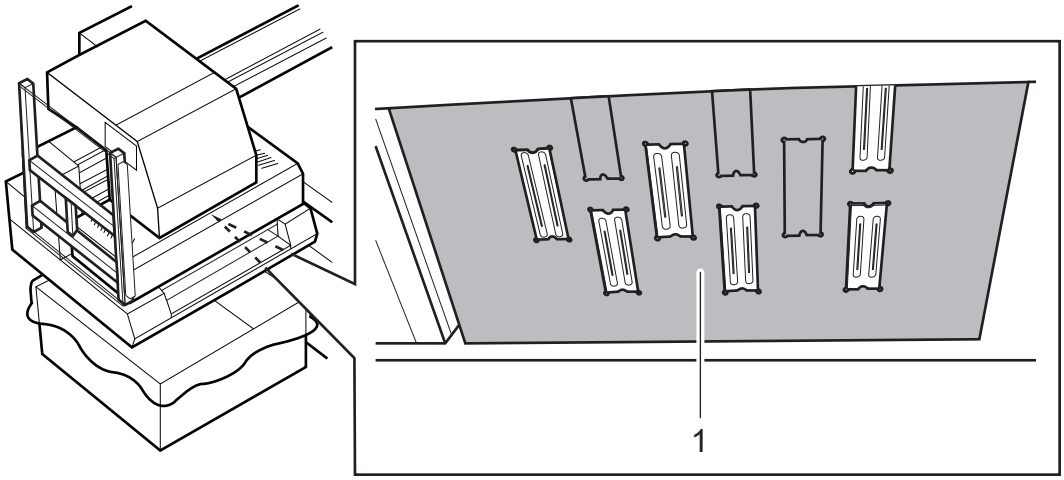
2. **Slowly insert the ink receiver all the way.**



3. **Clean the entire bottom surface (1) of the print-head carriage using new non-woven fabric.**

IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Do not touch the nozzle surfaces when cleaning the print heads and their surrounding areas.
- Clean the entire bottom surface and both side surfaces of the print-head carriage by removing adhering ink.



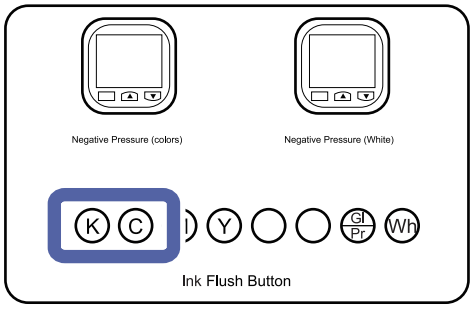
4. **Press the ink flush button on the left side of the print-head carriage to discharge ink from the print head.**

a. Press and hold the [K] button for 10 seconds.

b. Press and hold the [C] button for 10 seconds.

IMPORTANT

Do not hold down the buttons for more than 10 seconds.
The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.

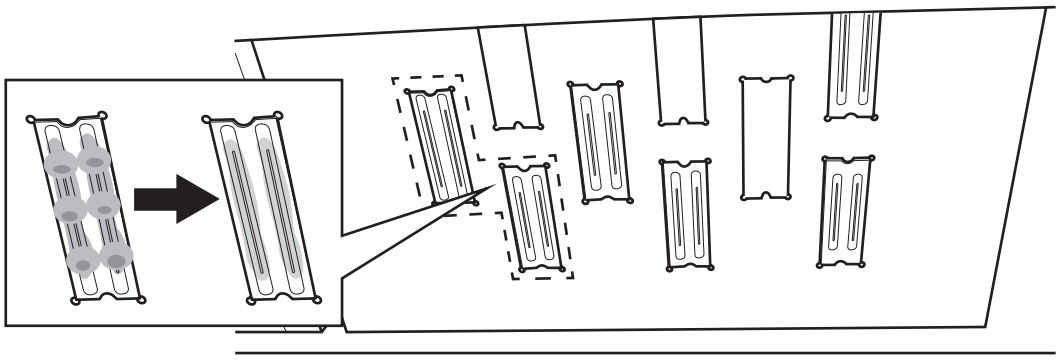


5. **Determine if the print head negative pressure value is set appropriately by checking the print head nozzle surfaces.**

The negative pressure value is appropriate if discharged ink droplets are kept on the nozzle surfaces.

If the negative pressure value of the print head nozzle is too high, ink droplets on the nozzle surfaces are sucked into the nozzles. If this is the case, lower the negative pressure value of the print head nozzle.

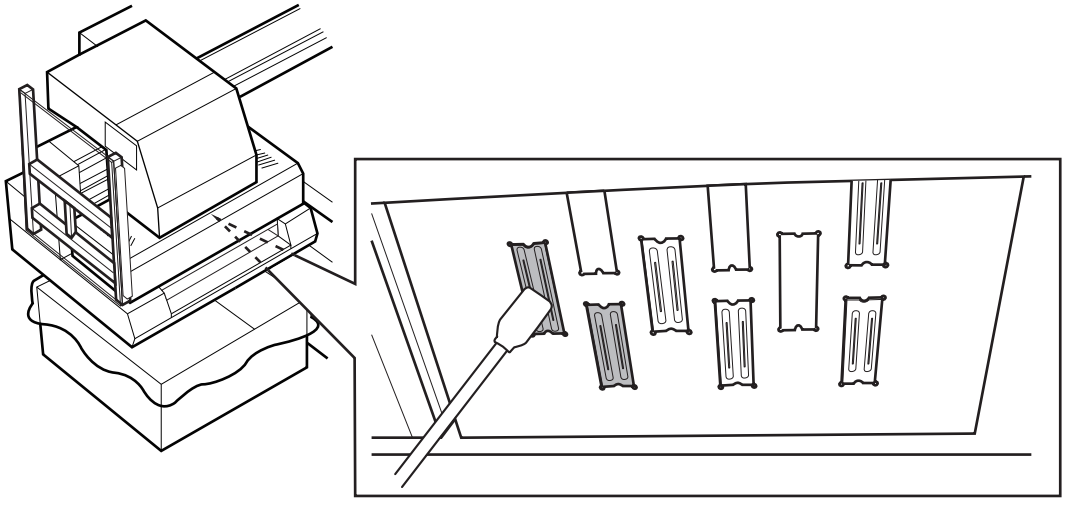
Lowering the Negative Pressure Value of the Print Heads(P. 121)



6. **Clean the K and C print head nozzle surfaces using new cleaning sticks.**

IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Never rub the nozzle surfaces hard.

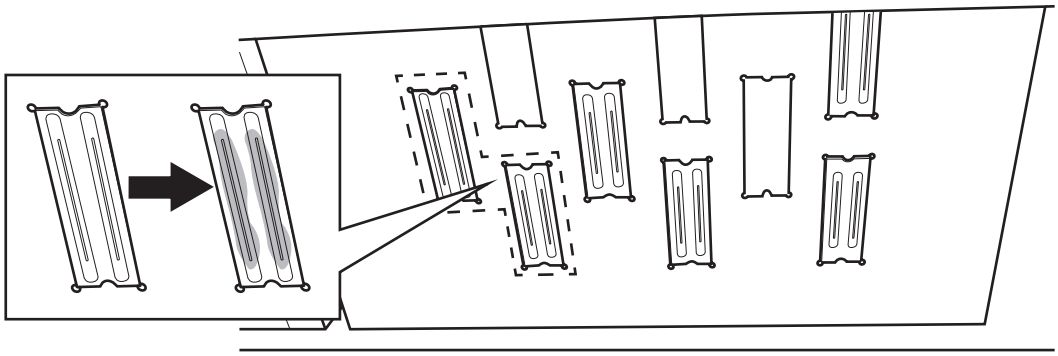


7. **Determine if the print head negative pressure value is set appropriately by checking the print head nozzle surfaces.**

If the nozzle surfaces maintain conditions immediately after cleaning, the negative pressure value is appropriate.

If the negative pressure value of the print head nozzle is too low, ink seeps from the nozzle surfaces. If this is the case, increase the negative pressure value of the print head nozzle.

Increasing the Negative Pressure Value of the Print Heads(P. 124)

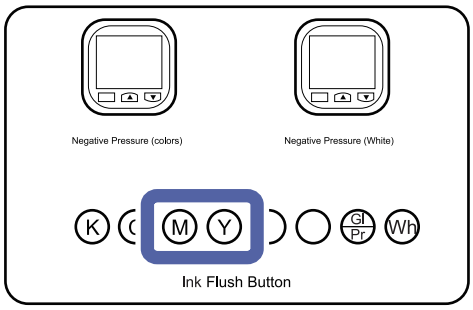


8. **Clean the M and Y print heads.**

Press the [M] and [Y] ink flush buttons, and clean the print heads following the same procedure as in Steps 5 to 7.

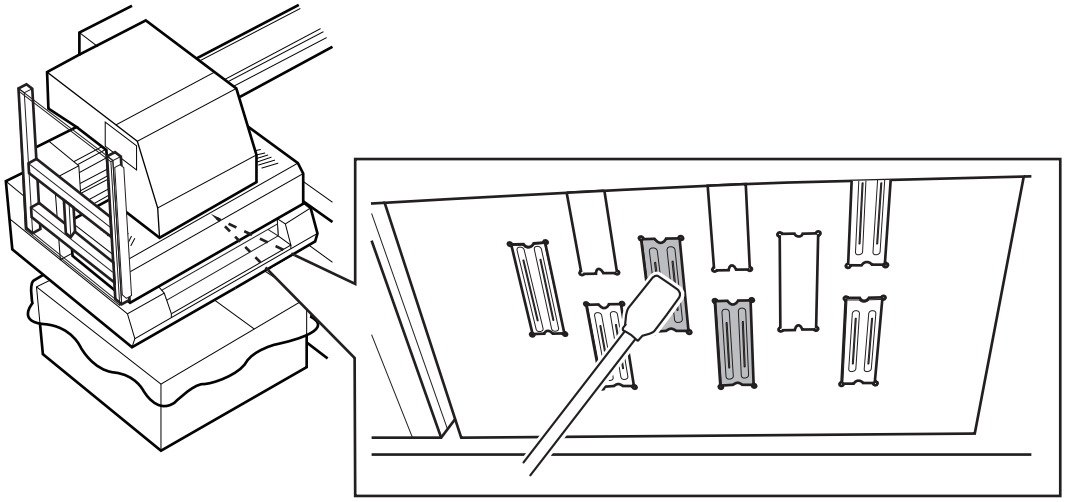
IMPORTANT

Do not hold down the buttons for more than 10 seconds.
The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.



IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Never rub the nozzle surfaces hard.

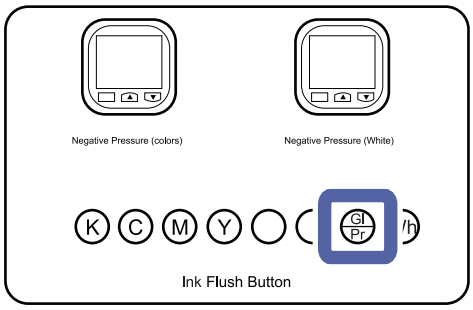


9. **Clean the Gl/Pr print head.**

Press the [Gl/Pr] ink flush button, and clean the print head following the same procedure as in Steps 5 to 7.

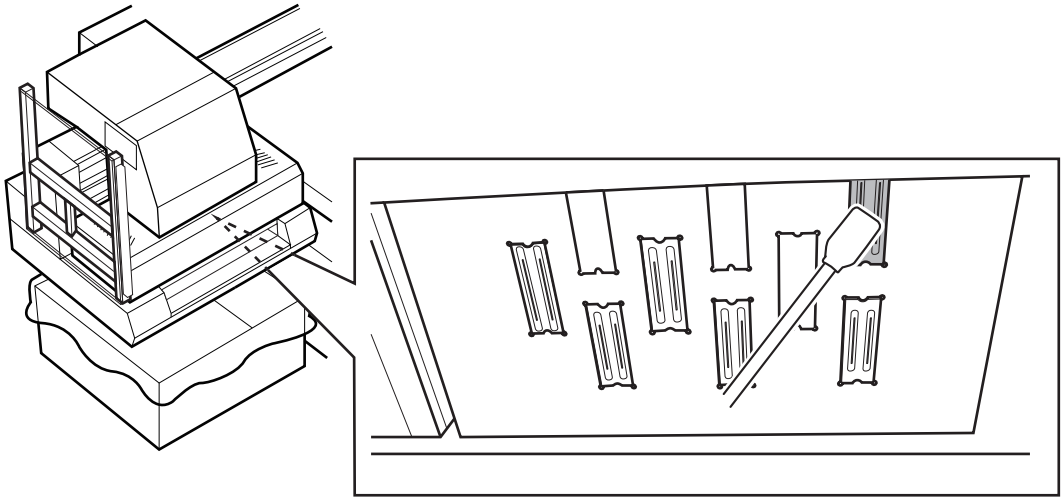
IMPORTANT

Do not hold down the buttons for more than 10 seconds.
The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.



IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Never rub the nozzle surfaces hard.



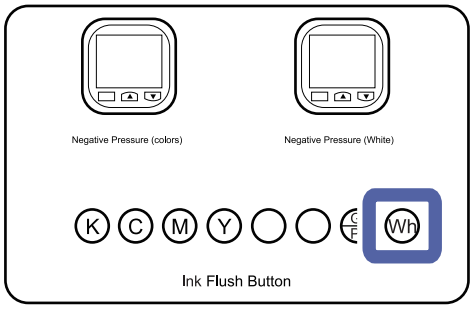
10. **Clean the Wh print head.**

Press the [Wh] ink flush button, and clean the print head following the same procedure as in Steps 5 to 7.

IMPORTANT

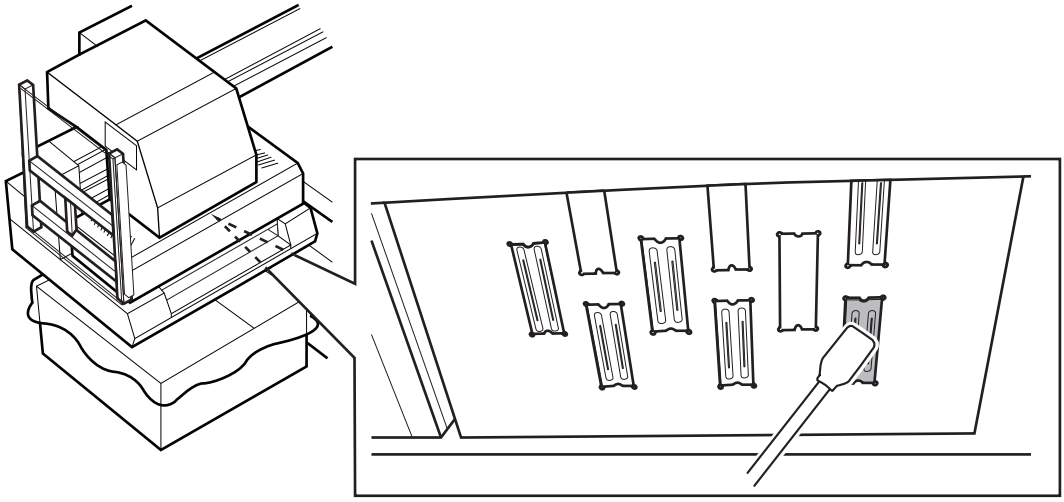
Do not hold down the buttons for more than 10 seconds.

The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.

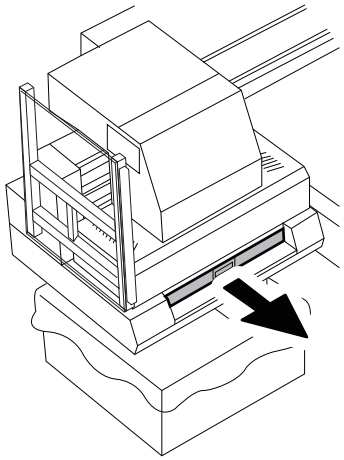


IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Wipe off the Wh ink thoroughly because it easily adheres to the print head surface.
- Never rub the nozzle surfaces hard.



11. Slowly pull the ink receiver back toward you.



Cleaning the Table and Outside of the Machine

To use this machine safely for a long time, maintain it periodically.

⚠ WARNING

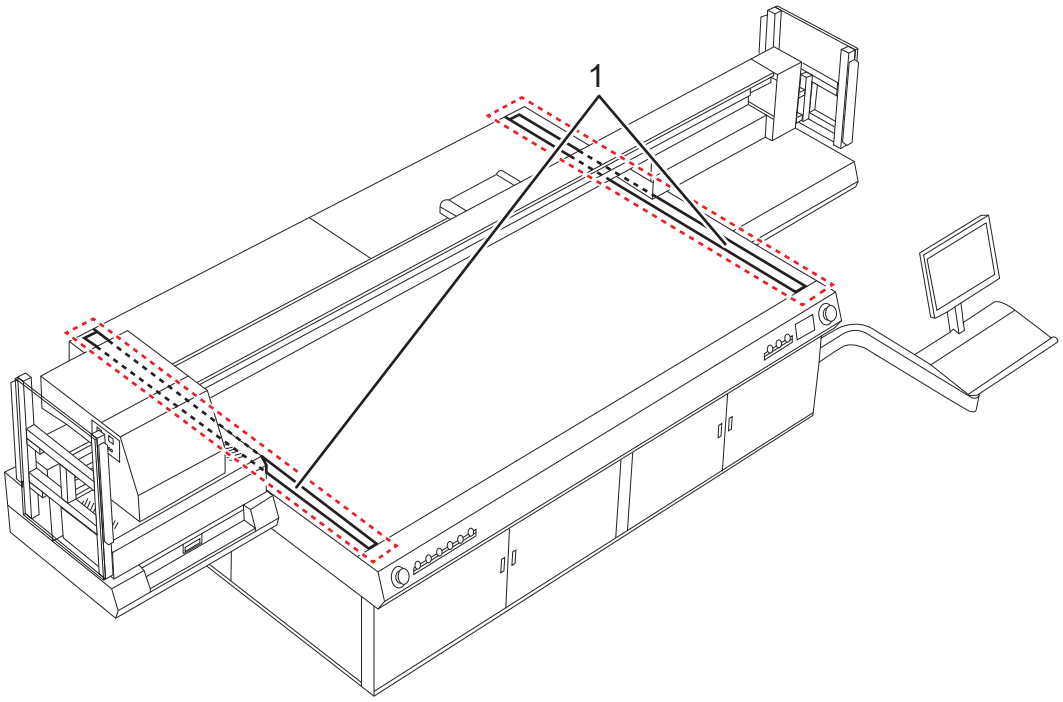
Never climb on the table.
Doing so may result in injury. It may also decrease the table accuracy.

⚠ WARNING

Be sure to put on protective gloves and UV protective eyewear before performing this work.
Ink may drop or scatter.

IMPORTANT

- Set sufficient print margins to prevent ink from adhering to the table and put masking tape around the object to be printed on.
- If printing is applied to the table by mistake, stop printing immediately and wipe the ink off with dry fabric.
  Removing Inks Adhering to the Table(P. 88)
- Maintain the warning labels on this machine to ensure that they are clean and readable at any time.
  If the warning labels are not readable because they are dirty or have peeled off, replace them with new copies of the same warning labels. To order warning labels, contact your authorized dealer or visit our website (https://www.rolanddg.co.jp/).
- To prevent cleaning tools and trash from dropping into the grooves (1) on the left and right edges of the flat table, cover the grooves with plastic sheets or similar material before performing this work.



How to maintain

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

Wipe the table and machine exterior with a dry soft cloth. If this does not work, wipe with a cloth that has been wetted with water and then wrung out very well. After wiping with a wet cloth, wipe with a dry cloth to completely remove any moisture.

Cleaning the Maintenance Station and Its Surrounding Areas

Clean the maintenance station and its surrounding areas periodically. Ink may adhere to these areas.

⚠ WARNING

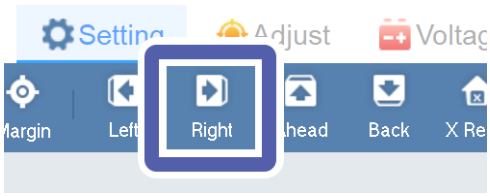
Be sure to put on protective gloves and UV protective eyewear before performing this work.
Ink may drop or scatter.

IMPORTANT

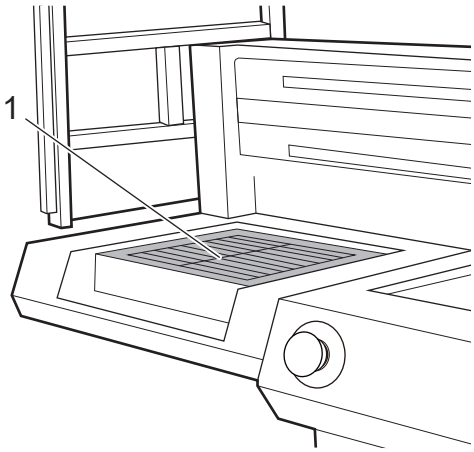
- The print-head carriage needs to be moved during cleaning. Do not place anything on the table.
- It becomes difficult to remove dirt when it is completely hardened. Clean the maintenance station and its surrounding areas frequently if ink and dust are adhering to these areas.

Procedure

1. **Click [Right] on the Print Exp toolbar.**
   Move the print-head carriage to a position above the flat table.



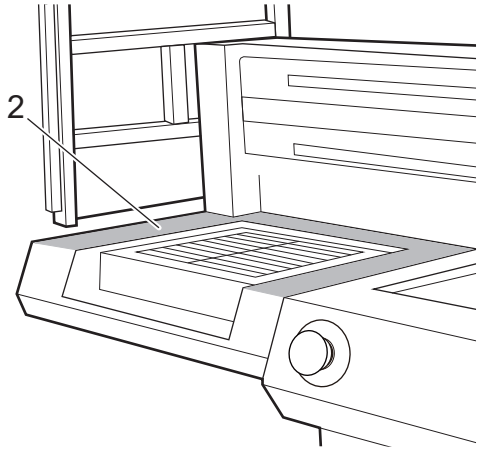
2. **Clean the ink receiver (1) with a non-woven fabric impregnated with cleaning liquid.**



3. **Wipe the area around the ink receiver (2) with a soft cloth.**
   If this does not work, wipe with a cloth that has been wetted with water and then wrung out very well. After wiping with a wet cloth, wipe with a dry cloth to completely remove any moisture.

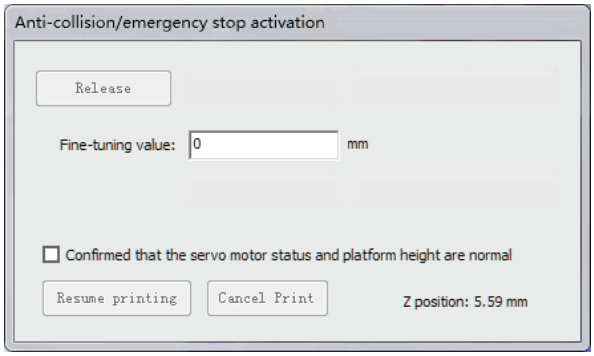
IMPORTANT

Do not use the non-woven fabric impregnated with cleaning liquid used in Step 2.



4. **Cancel the activated safety protection function.**

When the safety protection function is active, the [**Anticollision/emergency stop activation**] window is displayed on the PrintExp screen.

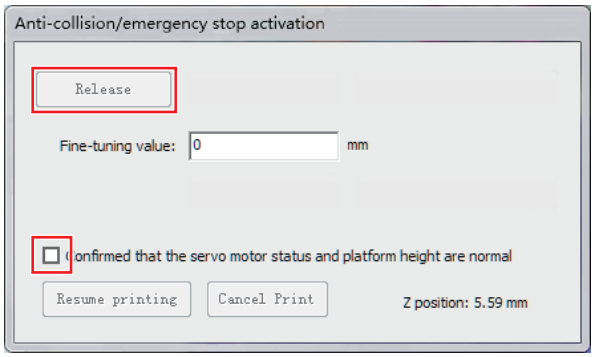


5. **Check the safety of the surrounding area.**

Check that there are no persons or objects within the machine movement range, then after confirming safety, proceed to the next step.

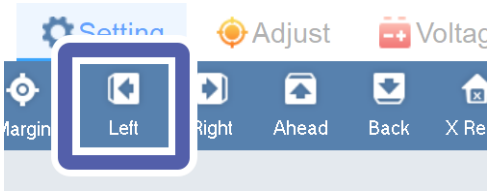
6. **Perform the operations shown below in the [Anticollision/emergency stop activation] window.**

- Select the [**confirmed that the servo motor status and platform height are normal**] check box.
- Click [**Release**].



7. **Click [Left] on the Print Exp toolbar.**

Move the print-head carriage to a position above the maintenance station.


Adjust
Left
Right
Ahead
Back

Cleaning the UV-LED Device

Clean the irradiation surfaces of the UV-LED device when it becomes dirty due to ink and dust.

If the irradiation surfaces are blocked with adhering dirt or ink, ink will not be appropriately hardened, resulting in uneven printing.

⚠ WARNING

Perform cleaning of the UV-LED device only after it has cooled completely.

Failure to wait until the LED UV device cools completely may cause burns.

⚠ WARNING

Be sure to put on protective gloves and UV protective eyewear before performing this work.

Ink may drop or scatter.

IMPORTANT

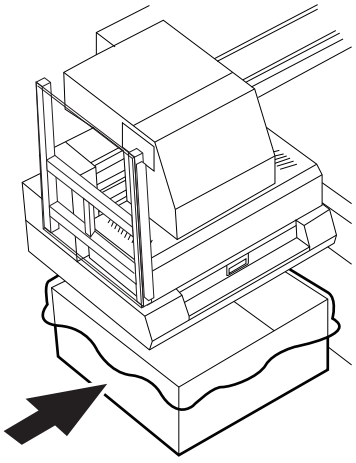
- The print-head carriage needs to be moved during cleaning. Do not place anything on the table.
- If the glass on the irradiation surface is damaged, the parts need to be replaced. If dirt cannot be removed or adhering ink is hardened, contact your authorized dealer.

MEMO

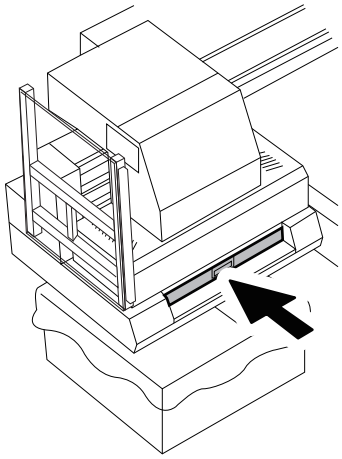
Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

Procedure

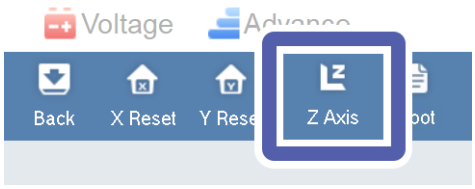
1. **Place the container under the maintenance station.**



2. **Slowly insert the ink receiver all the way.**

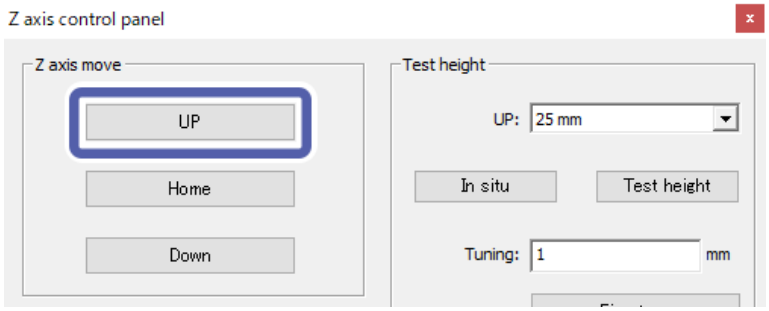


3. **Click [Z Axis] on the Print Exp toolbar.**



4. **Click [UP].**

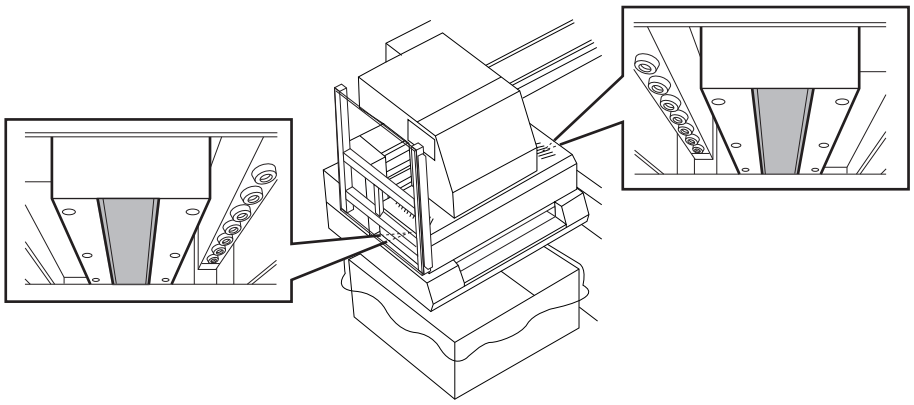
   Raise the print-head carriage to a height where cleaning of the UV-LED device is possible.



5. **Clean the irradiation surfaces of the UV-LED device with a new non-woven fabric impregnated with cleaning alcohol.**

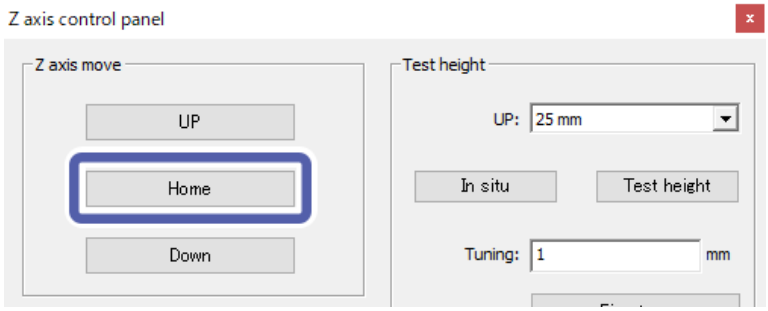
IMPORTANT

- Wipe alcohol off completely from the irradiation surfaces.
- Do not use force to tear off hardened ink adhering to the irradiation surfaces. If adhering ink cannot be removed, contact your authorized dealer.

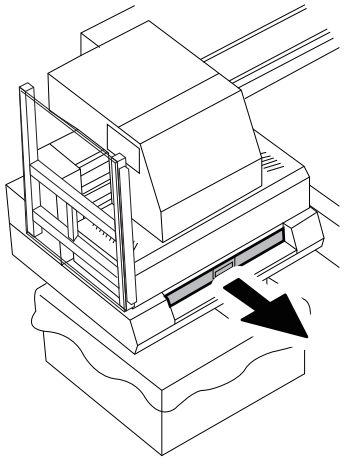


6. **Click [Home].**

   The print-head carriage will return to its previous position before it was raised.



7. **Slowly pull the ink receiver back toward you.**



Removing Inks Adhering to the Table

IMPORTANT

The appropriate maintenance frequency differs according to the period of use and usage environment. Maintenance may also be required more frequently depending on the object to be printed on or the image being printed. Change the maintenance frequency according to your usage conditions.

If printing is applied to the table by mistake, stop printing immediately and wipe the ink off with dry fabric. This section explains how to remove hardened ink adhering to the table that cannot be removed by wiping.

⚠ WARNING

Never climb on the table.

Doing so may result in injury. It may also decrease the table accuracy.

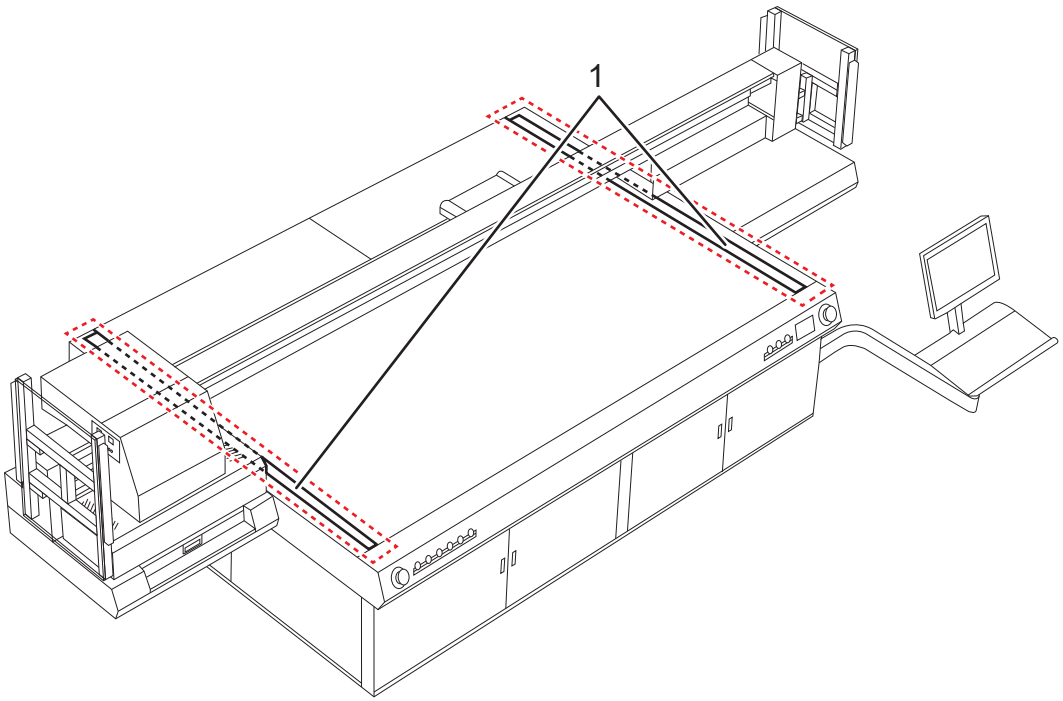
⚠ WARNING

Be sure to put on protective gloves and UV protective eyewear before performing this work.

Ink may drop or scatter.

IMPORTANT

- Pieces of hardened ink remaining on the table may deform objects to be printed on or cause insufficient suction. Remove all of them using a cleaner or similar tools.
- Do not push pieces of hardened ink into the suction holes during cleaning.
- So that the removed ink pieces do not enter the grooves (1) on the left and right edges of the flat table, cover the grooves with plastic sheets or similar material before performing this work.



MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

Procedure

1. **Remove ink adhering to the tabletop plate.**

   If hardened ink adhering to the tabletop plate cannot be removed by wiping with a dry cloth, use a cloth that has been wetted with water and then wrung out very well. After wiping with a wet cloth, wipe with a dry cloth to completely remove any moisture.

2. **Remove ink adhering to the suction holes.**

   Scrape out ink hardened in the suction holes using a tool with a sharp point. Clear scraped pieces of ink. These pieces of ink can be cleared using adhesive tape such as duct tape.

Refilling Inks and Disposing of Discharged Fluid

Refilling Inks.....91
Disposing of Drained Ink.....94

Refilling Inks

A warning beep is sounded when the amount of ink remaining in the ink tank becomes low. Prepare an ink refill to refill the tank with ink.

The warning beep stops when the tank is refilled with ink or the [**Stir**] button is pressed.

⚠ WARNING

Do not mix ink with any materials for which mixing is prohibited.

⚠ WARNING

Be careful not to spill ink. Prevent inks from draining to natural water systems and domestic wastewater.

Inks are highly irritating or toxic.

⚠ WARNING

Be sure to put on protective gloves and UV protective eyewear before performing this work.

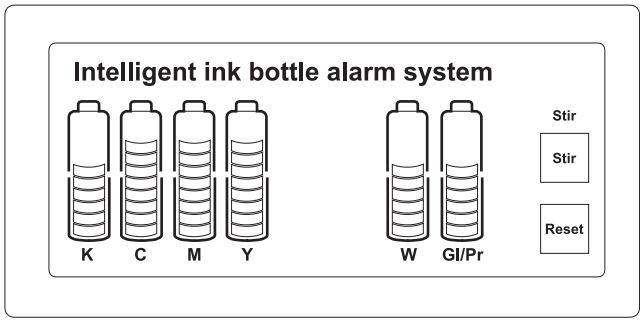
Ink may drop or scatter.

IMPORTANT

- Do not refill the tank with ink during printing because the gantry may move and come into contact with the operator. Do not place caps or related items on the table.
- Use an industrial waste disposal service to dispose of used ink bottles.

The remaining amounts of inks are indicated on the display on the front of the machine.

The graduations indicate the amount of ink. A large number of graduations shows a larger amount of remaining ink. The displayed amount of remaining ink is just a guide. It may differ somewhat from the actual amount remaining.

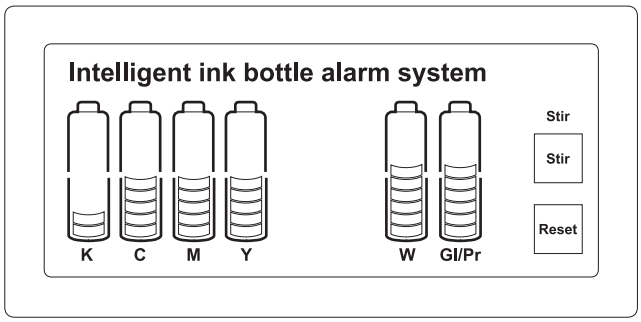


Graduation color	Amount of remaining ink (approximate)
Green	40 to 100%
Yellow	20 to 40%
Red	0 to 20%

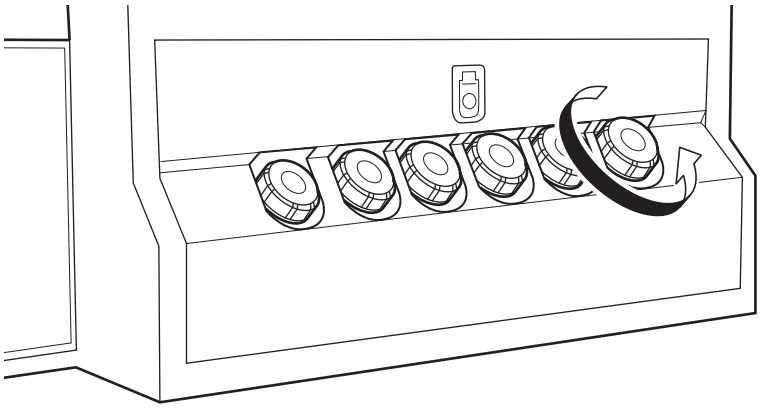
When the ink concentration becomes low, press the [Reset] button to circulate the ink.

Procedure

1. Check the ink tank and alarm display to find the inks that need to be refilled.



2. **Remove the cap from an ink tank that needs refilling.**

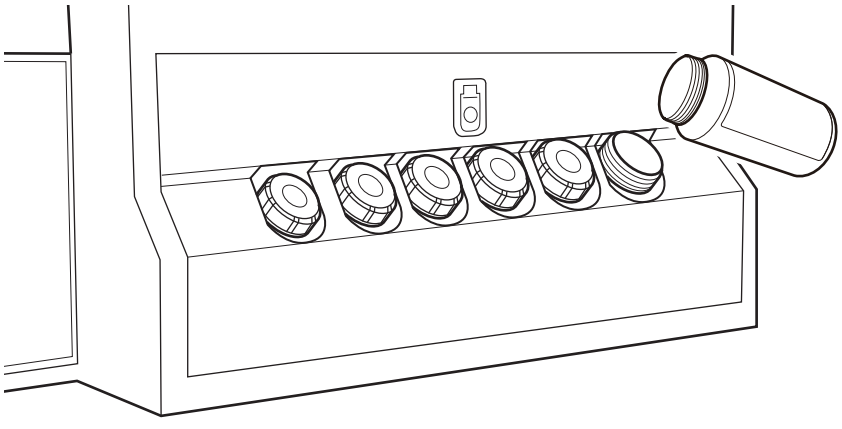


3. **After checking that the cap is tightened on the refill ink bottle, shake the bottle.**

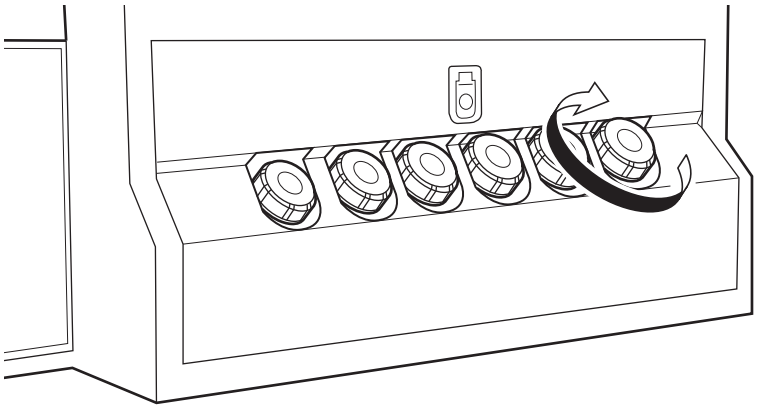
4. **Remove the cap from the refill ink bottle and refill the tank with the ink.**

IMPORTANT

- Pour the ink without spilling it. If the ink is spilled, wipe it off immediately with a dry cloth.
- The warning beep stops when the tank is filled with the ink. Do not leave any ink in the refill ink bottle.



5. **Tighten the cap on the ink tank.**



Disposing of Drained Ink

To protect the print heads from drying and dirt, this machine periodically discharges ink from the print heads into the ink receiver when the main power is on. The discharged ink is accumulated in the ink receiver, which needs to be drained periodically.

⚠ WARNING

Do not mix ink with any materials for which mixing is prohibited.

⚠ WARNING

Be careful not to spill ink. Prevent inks from draining to natural water systems and domestic wastewater.

Inks are highly irritating or toxic.

⚠ WARNING

Be sure to put on protective gloves and UV protective eyewear before performing this work.

Ink may drop or scatter.

IMPORTANT

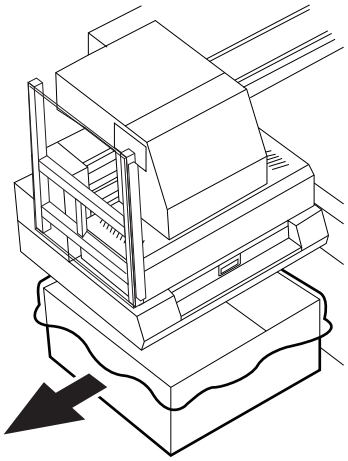
- Do not drain flushed ink from the ink receiver during printing because the gantry moves.
- Use an industrial waste disposal service to dispose of drained inks.
- Some components, such as photo-initiators, are toxic to water creatures. Do not drain inks to natural water, such as rivers, or domestic wastewater, such as toilets or road drains.
- When disposing of drained ink, spread protections, such as paper, to prevent staining floors and other related materials with the drained ink.

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

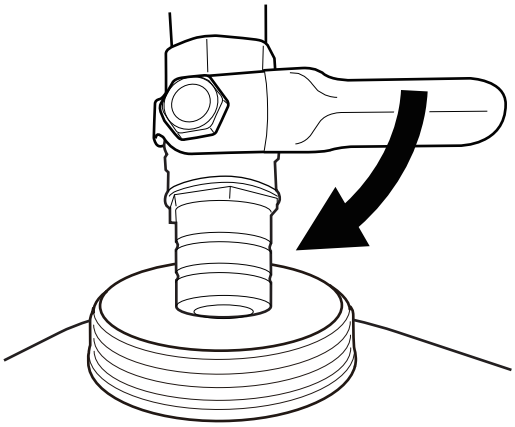
Procedure

1. Move the container out of the way of operations to drain flushed ink.



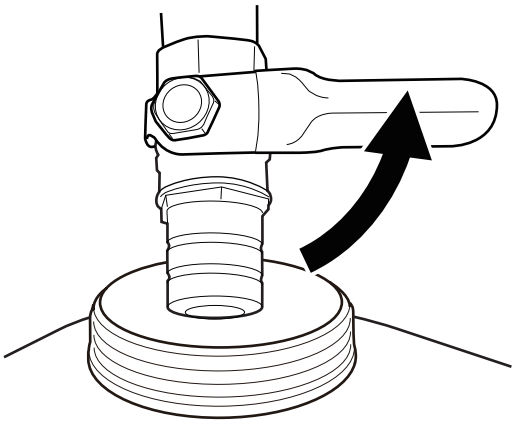
2. **Prepare a container for storing drained ink.**

3. **Turn the drain cock on the bottom of the ink receiver in the direction indicated with the arrow, which is shown in the following figure, to drain ink flushed from the ink receiver into the container.**

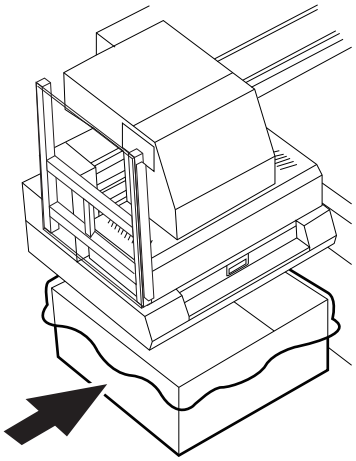


4. **Turn the drain cock in the direction indicated with the arrow to close it.**

   Wipe off ink adhering to the discharge spout completely with a cloth.



5. **Place the container under the maintenance station.**



Maintenance Before the Start of Operations

Cleaning and Printing Test 98
Step 1: Cleaning the Print Heads 98
Step 2: Attach the Object to Be Printed on for the Printing Test 105
Step 3: Adjusting the Print Head Height Automatically 108
Step 4: Configuring Printing Settings 111
Step 5: Performing a Printing Test 113
Liquid Cleaning 115
Adjusting Negative Pressure of the Print Heads 121
Lowering the Negative Pressure Value of the Print Heads 121
Increasing the Negative Pressure Value of the Print Heads 124

Cleaning and Printing Test

Perform a printing test to ensure that dot drop-out, dot displacement, and ink dropping do not occur.

- Be sure to perform a printing test before daily operations.
- If dot drop-out, dot displacement, or ink dropping is present after a printing test, perform cleaning again.

Step 1: Cleaning the Print Heads

Dirt on the print heads can affect print quality. Clean them before starting operations, when resuming operations, and after operations.

Print head cleaning discharges a small amount of ink from the print head. Wipe off unwanted ink. Cleaning can remove unwanted ink and clear ink clogging.

Negative pressure is applied to the print heads to hold ink. Print head cleaning also allows users to determine whether the negative pressure value needs to be adjusted. For details of negative pressure adjustment, see Adjusting Negative Pressure of the Print Heads(P. 121).

⚠ WARNING

Be sure to put on protective gloves and UV protective eyewear before performing this work.
Ink may drop or scatter.

IMPORTANT

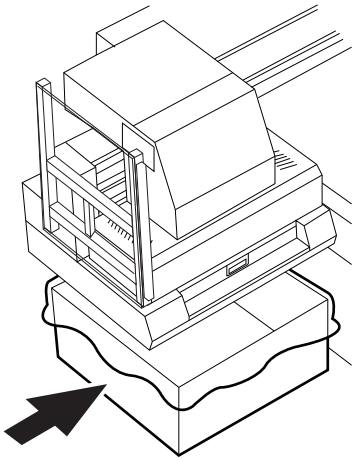
- Use new non-woven fabric when cleaning the bottom surface of the print-head carriage. When cleaning the surface, pay careful attention not to rub the nozzle surfaces.
- Use cleaning sticks when cleaning the print head nozzle surfaces. Cotton swabs or other lint-producing items may damage the print heads.
- Be sure to clean the print-head carriage on a daily basis to prevent its bottom surface from becoming dirty due to adhesion of ink and dust. If the bottom surface is dirty, the nozzles may be rubbed with foreign materials and coagulated ink during cleaning.

MEMO

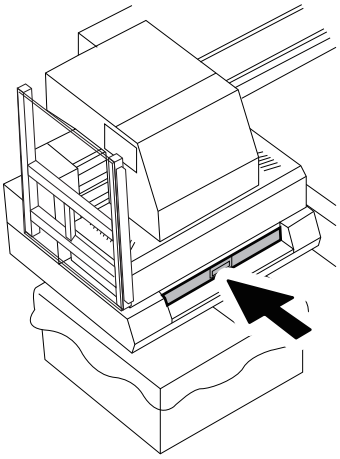
Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

Procedure

1. Place the container under the maintenance station.



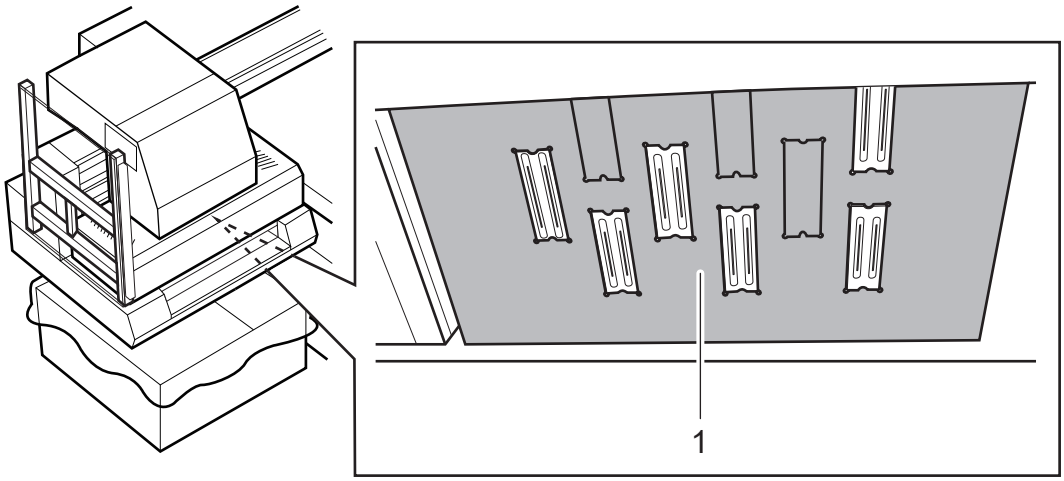
2. **Slowly insert the ink receiver all the way.**



3. **Clean the entire bottom surface (1) of the print-head carriage using new non-woven fabric.**

IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Do not touch the nozzle surfaces when cleaning the print heads and their surrounding areas.
- Clean the entire bottom surface and both side surfaces of the print-head carriage by removing adhering ink.



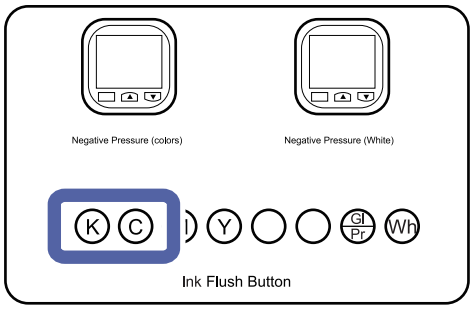
4. **Press the ink flush button on the left side of the print-head carriage to discharge ink from the print head.**

a. Press and hold the [K] button for 10 seconds.

b. Press and hold the [C] button for 10 seconds.

IMPORTANT

Do not hold down the buttons for more than 10 seconds.
The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.

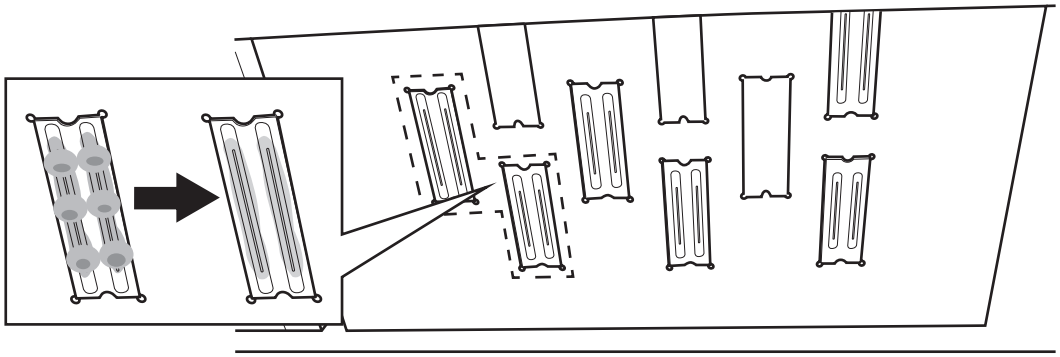


5. **Determine if the print head negative pressure value is set appropriately by checking the print head nozzle surfaces.**

The negative pressure value is appropriate if discharged ink droplets are kept on the nozzle surfaces.

If the negative pressure value of the print head nozzle is too high, ink droplets on the nozzle surfaces are sucked into the nozzles. If this is the case, lower the negative pressure value of the print head nozzle.

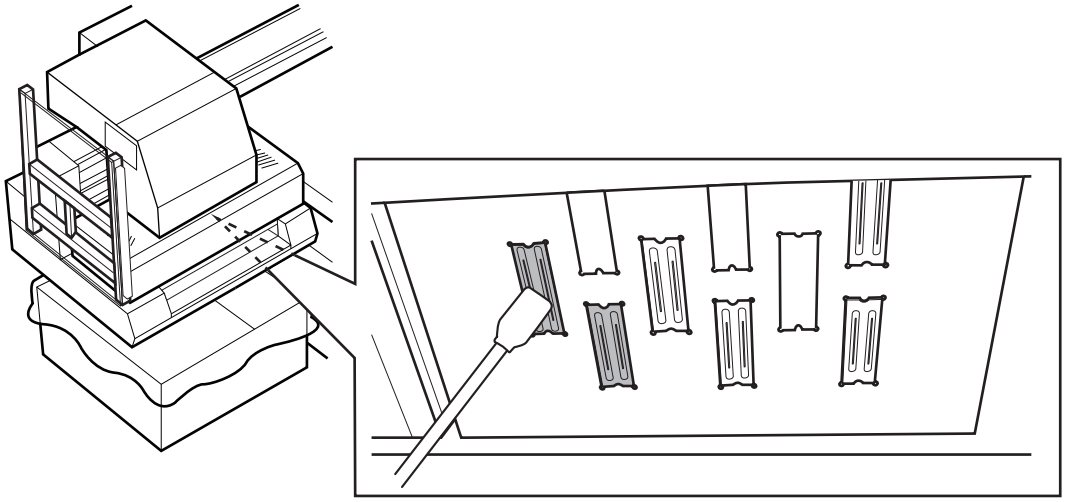
Lowering the Negative Pressure Value of the Print Heads(P. 121)



6. **Clean the K and C print head nozzle surfaces using new cleaning sticks.**

IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Never rub the nozzle surfaces hard.

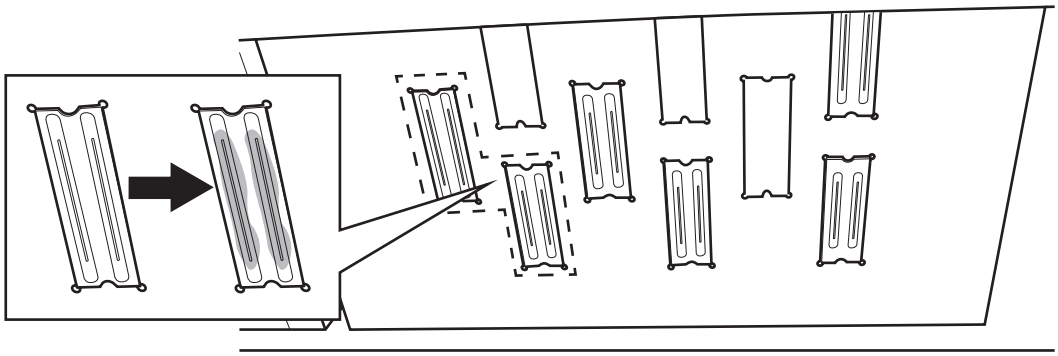


7. **Determine if the print head negative pressure value is set appropriately by checking the print head nozzle surfaces.**

If the nozzle surfaces maintain conditions immediately after cleaning, the negative pressure value is appropriate.

If the negative pressure value of the print head nozzle is too low, ink seeps from the nozzle surfaces. If this is the case, increase the negative pressure value of the print head nozzle.

Increasing the Negative Pressure Value of the Print Heads(P. 124)



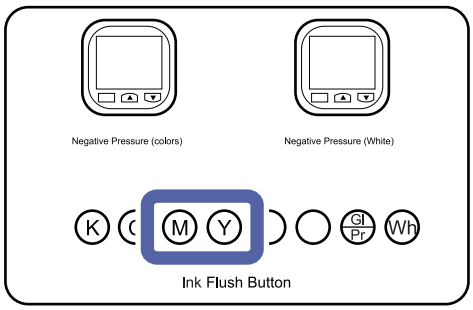
8. **Clean the M and Y print heads.**

Press the [M] and [Y] ink flush buttons, and clean the print heads following the same procedure as in Steps 5 to 7.

IMPORTANT

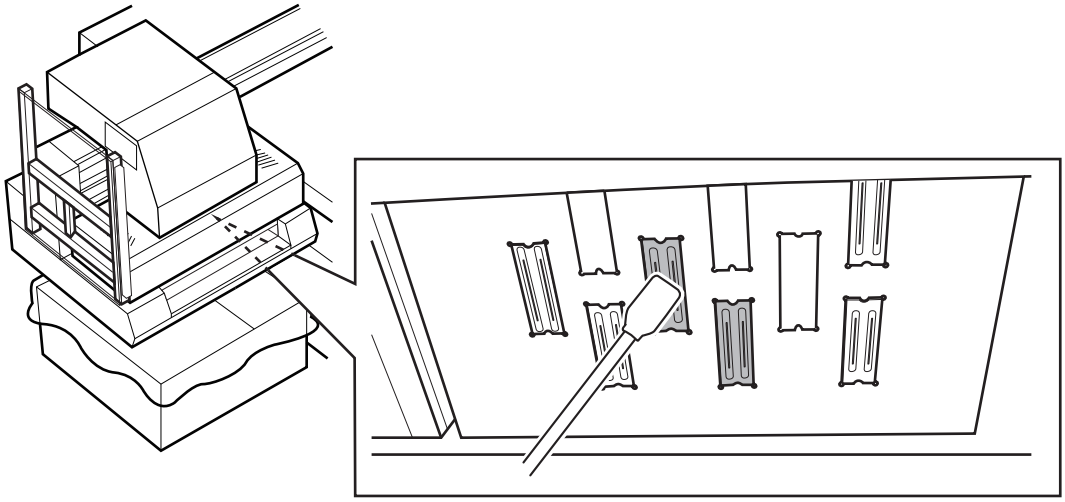
Do not hold down the buttons for more than 10 seconds.

The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.



IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Never rub the nozzle surfaces hard.

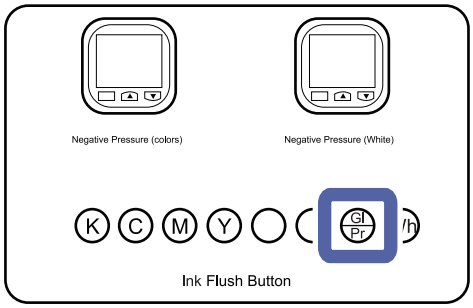


9. Clean the Gl/Pr print head.

Press the [Gl/Pr] ink flush button, and clean the print head following the same procedure as in Steps 5 to 7.

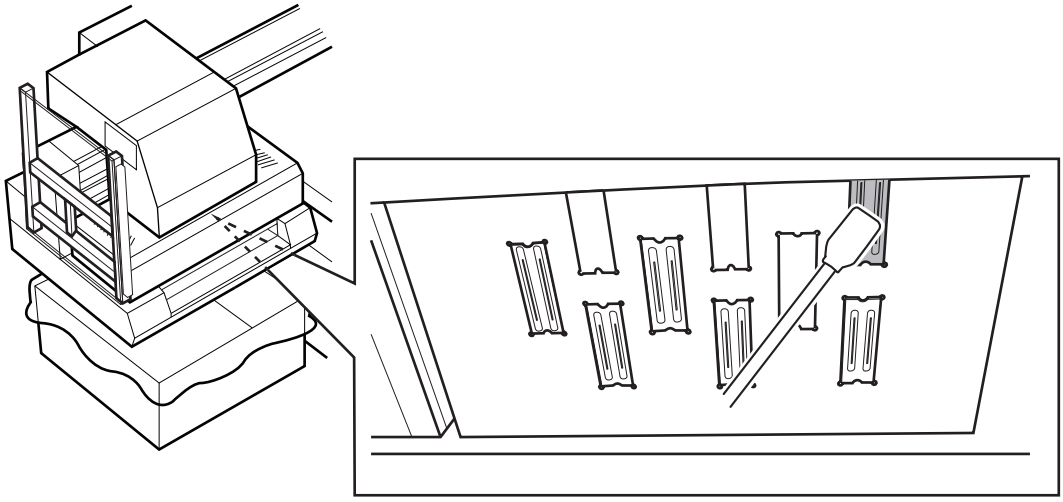
IMPORTANT

Do not hold down the buttons for more than 10 seconds.
The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.



IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Never rub the nozzle surfaces hard.



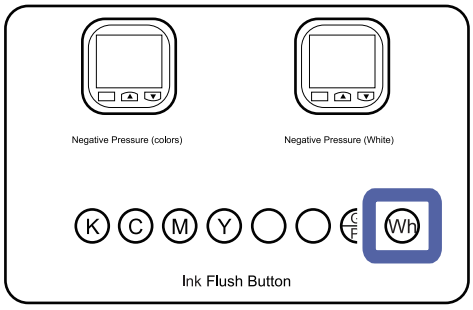
10. **Clean the Wh print head.**

Press the [Wh] ink flush button, and clean the print head following the same procedure as in Steps 5 to 7.

IMPORTANT

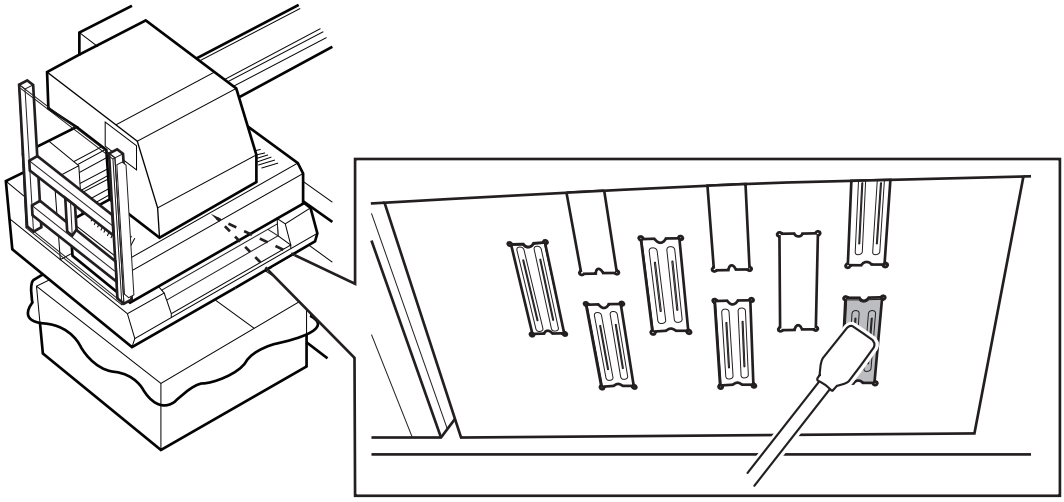
Do not hold down the buttons for more than 10 seconds.

The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.

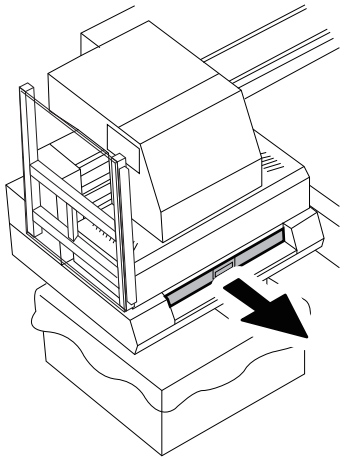


IMPORTANT

- Use dry non-woven fabric without using cleaning liquids.
- Wipe off the Wh ink thoroughly because it easily adheres to the print head surface.
- Never rub the nozzle surfaces hard.



11. Slowly pull the ink receiver back toward you.



Step 2: Attach the Object to Be Printed on for the Printing Test

⚠ WARNING

Never climb on the table.

Doing so may result in injury. It may also decrease the table accuracy.

⚠ CAUTION

Wear protection such as safety shoes and gloves when handling heavy objects to be printed on.

Failure to do this may cause injury.

IMPORTANT

- If there are suction holes that are not covered with an object to be printed on in the suction area, cover them by placing thin sheets such as paper, film, and tape.
- Lower the suction pressure when setting a thin object to be printed on. Strong suction may leave marks of the suction holes.
- The edges of an object to be printed on may warp. Objects to be printed on that warp may become torn or may damage the print heads when contacting the print-head carriage. Use adhesive tape to additionally secure these objects.
- To prevent the table from deforming, note the following points when setting objects to be printed on.
  - Do not drop heavy objects on the table.
  - Do not concentrate the weight of an object to be printed on.

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

Procedure

1. **Prepare an object for a printing test.**

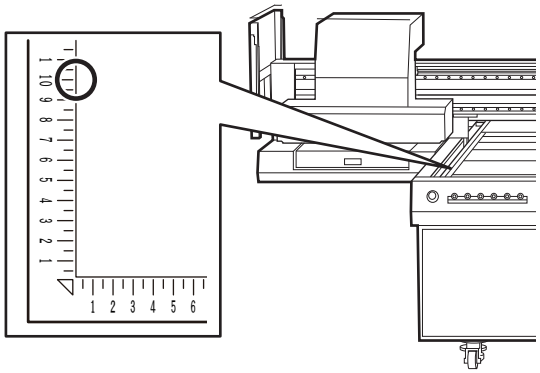
   Printing tests are used to check that no dot drop-out or dot displacement occurs. Use an object prepared for the printing test (width 200 mm (7.88 in.) × length 300 mm (11.82 in.) or larger), instead of using an actual object to be printed on.

2. **Place the object on the flat table.**

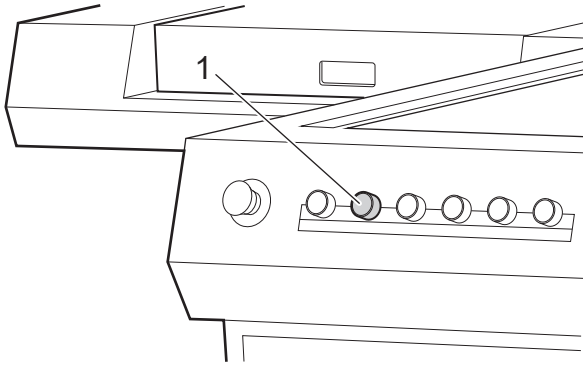
   Align the edges of the object to the X and Y axes of the flat table.

   IMPORTANT

   The print origin on the Y axis is set at 100 mm (3.94 in.) on the scale of the flat table.



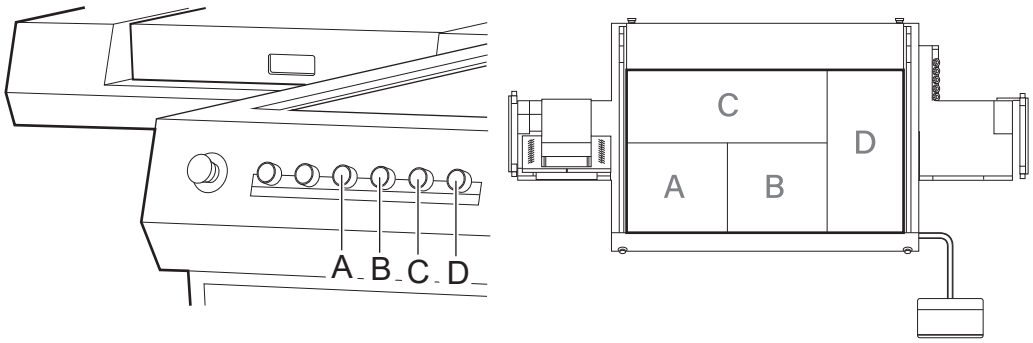
3. **Press the [Main Power of Flatbed Vacuum] button (1) to activate the negative pressure.**



4. **Press the [Vacuum Area] button in the location where the object to be printed on was placed.**

   The negative pressure is activated, fixing the object to be printed on in place.

> MEMO
>
> If more than one [Vacuum Area] button is pressed simultaneously, negative pressure temporarily may become insufficient, failing to secure the object to be printed on firmly. If this is the case, wait until negative pressure becomes stabilized or press the [Vacuum Area] buttons at intervals.

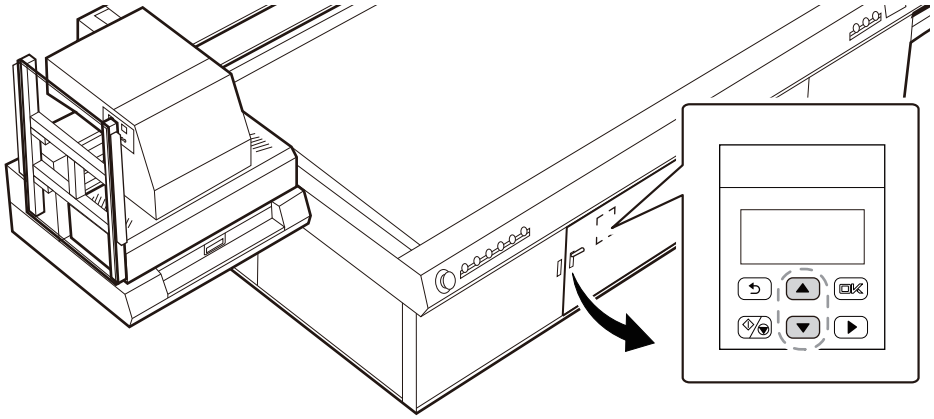


5. **Adjust the negative pressure acting on the object to be printed on by pressing the [▲] or [▼] button on the vacuum controller.**

   If the object to be printed on cannot be secured firmly, try the following.

   - Change the negative pressure activation area with the [Vacuum Area] buttons.Flat Table(P. 13)
   - Press the [▲] button on the vacuum controller to increase the output.

     To lower the output, press the [▼] button.



Step 3: Adjusting the Print Head Height Automatically

The height of the object to be printed on is automatically detected, and the print heads are adjusted to the appropriate height for printing. If height of the object to be printed on is known, the print head height can be set manually.

Setting the Print Head Height Manually(P. 34)

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

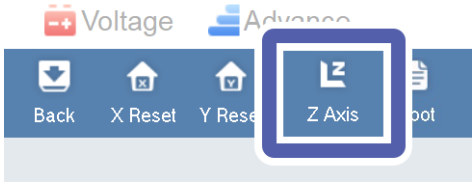
Procedure

1. **Measure the thickness of the object to be printed on.**

   Measure using a measuring tape or vernier caliper.

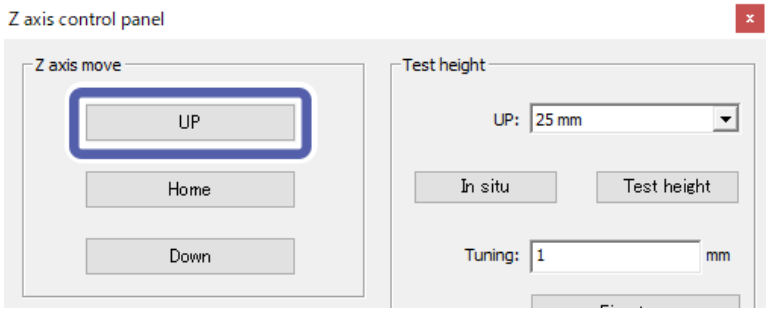
2. **Click [Z Axis].**

   The [**Z axis control panel**] window appears.



3. **Click [UP] under [Z axis move].**

   The print head will be moved over the object to be printed on in Step 6. Move the print head up to a height such that it does not contact the object to be printed on when it moves.

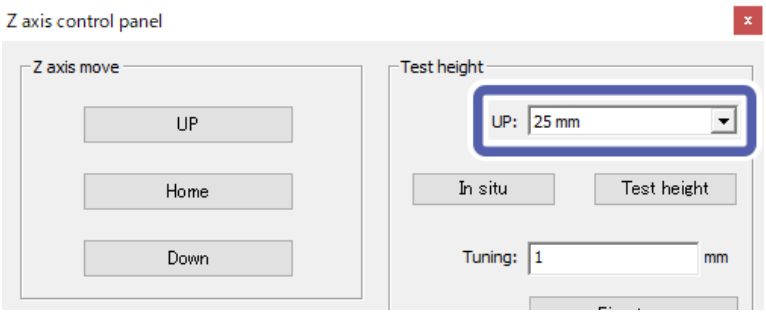


4. **Select the value of [UP] in [Test height].**

   The value selected here will be the print head height at which height detection starts.

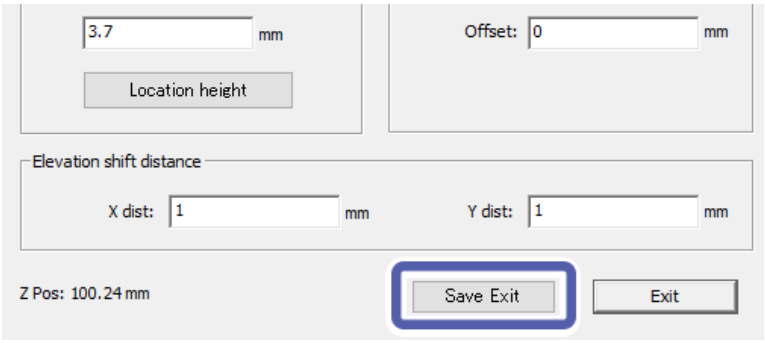
IMPORTANT

Select a value larger than the thickness of the measured object to be printed on.
If not selected correctly, there is the risk that the print heads may contact the object to be printed on, damaging the print heads.



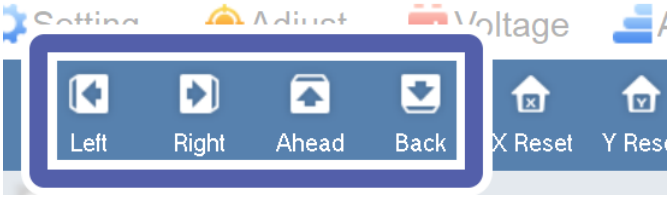
5. **Click [Save Exit].**

The settings are saved and the [**Z axis control panel**] window closes.



6. **Click [Left], [Right], [Ahead], or [Back].**

Move the print-head carriage to a position above the object to be printed on.

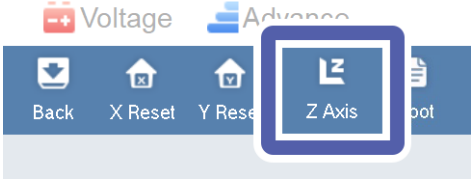


7. **Click [Z Axis].**

The [**Z axis control panel**] screen appears.

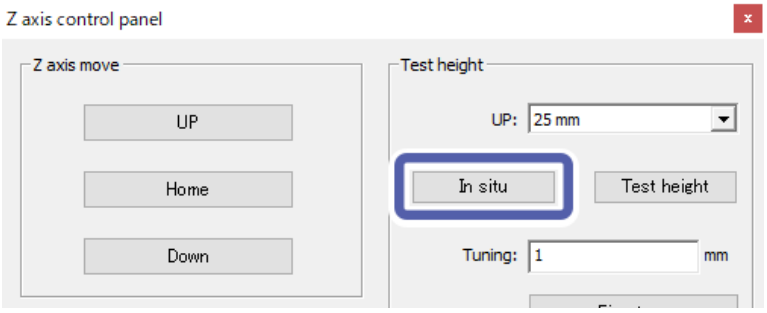
IMPORTANT

Detects the height of the object to be printed on in Step 8. Check that nothing other than object to be printed on is on the flat table.



8. **Click [In situ].**

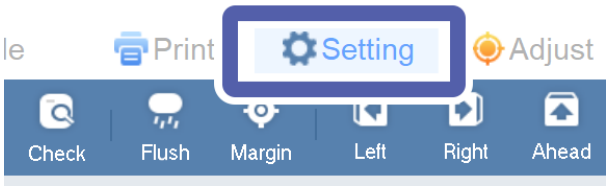
Automatically detects the height of the object to be printed on at the position where the print-head carriage is located.


Z axis control panel
Z axis move
UP
Home
Down
Test height
UP:
25 mm
In situ
Test height
Tuning:
1
mm

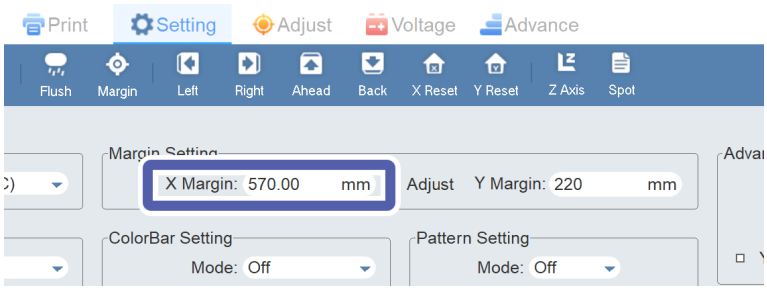
Step 4: Configuring Printing Settings

Procedure

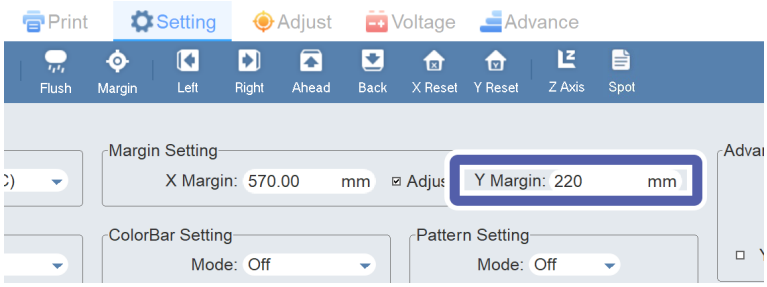
1. **Click the [Setting] tab.**



2. **Enter the printing-start position on the X axis to [X Margin] in [Margin Setting].**

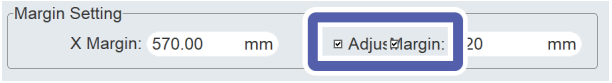


3. **Enter the printing-start position on the Y axis to [Y Margin] in [Margin Setting].**



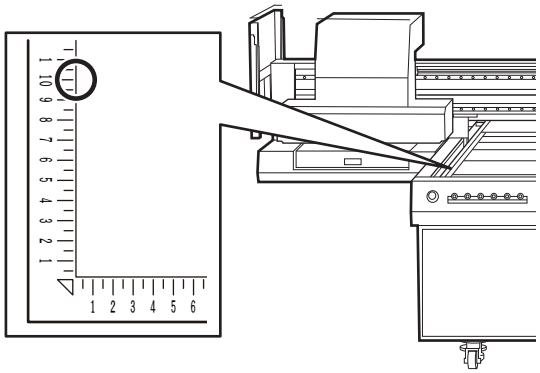
MEMO

If [**Y Margin**] cannot be viewed due to letters overlapping on the screen, set the screen resolution to 1,366 × 768.



IMPORTANT

The print origin on the Y axis is set at 100 mm (3.94 in.) on the scale of the flat table.


1 10 9 8 7 6 5 4 3 2 1
1 2 3 4 5 6

Step 5: Performing a Printing Test

Check the remaining ink amounts before starting printing. When the amount of ink becomes low, the machine will sound a warning beep. Refill the ink and resume operation.

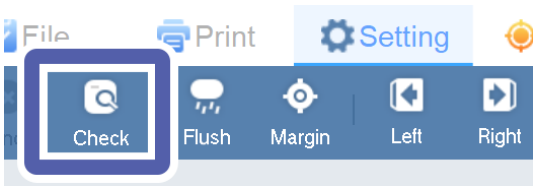
Refilling Inks(P. 91)

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

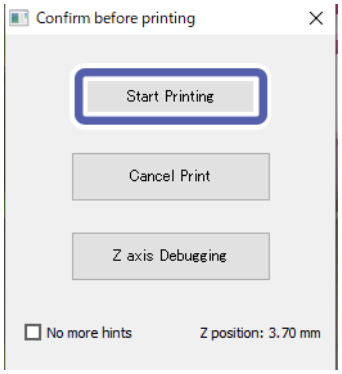
Procedure

1. **Click [Check].**

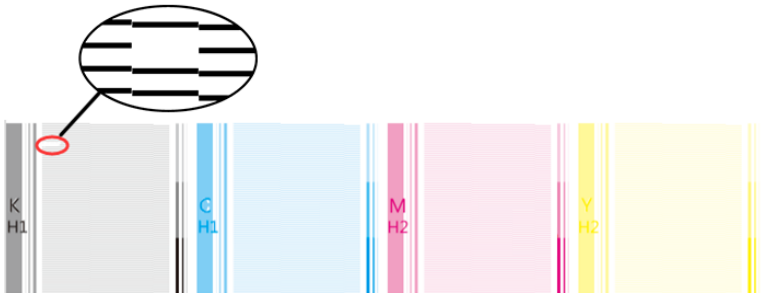


2. **In the [Confirm before printing] window, click [Start Printing].**

   The machine starts printing of a test pattern.



3. **Check the printing result.**



When printing is complete, check that no dot drop-out or dot displacement has occurred. If dot drop-out or dot displacement is present, perform head cleaning again. If the printer has been used for a long period, dot drop-outs may not be fixed even after performing head cleaning two or three times. If this is the case, perform liquid cleaning.

- 1. Cleaning the Print Heads(P. 42)

- Liquid Cleaning(P. 115)

Liquid Cleaning

If dot drop-out or dot displacement persists even after cleaning, perform liquid cleaning.

⚠ WARNING

Be sure to put on protective gloves and UV protective eyewear before performing this work.
Ink may drop or scatter.

IMPORTANT

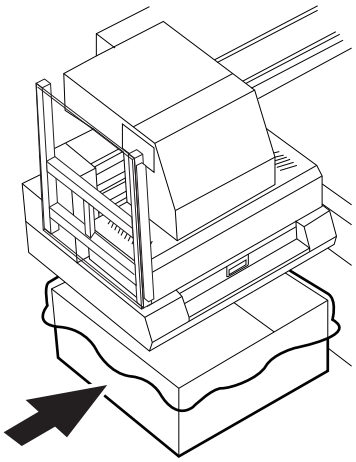
- For liquid cleaning, an optional cleaning liquid is required. Contact your authorized dealer or visit our website (https://www.rolanddg.co.jp/).
- Use new non-woven fabric when cleaning the bottom surface of the print-head carriage. When cleaning the surface, pay careful attention not to rub the nozzle surfaces.
- Use cleaning sticks when cleaning the print head nozzle surfaces. Cotton swabs or other lint-producing items may damage the print heads.

MEMO

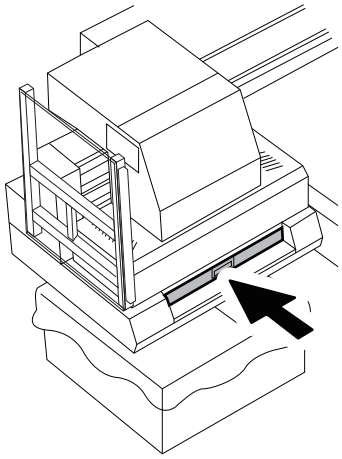
Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

Procedure

1. **Place the container under the maintenance station.**



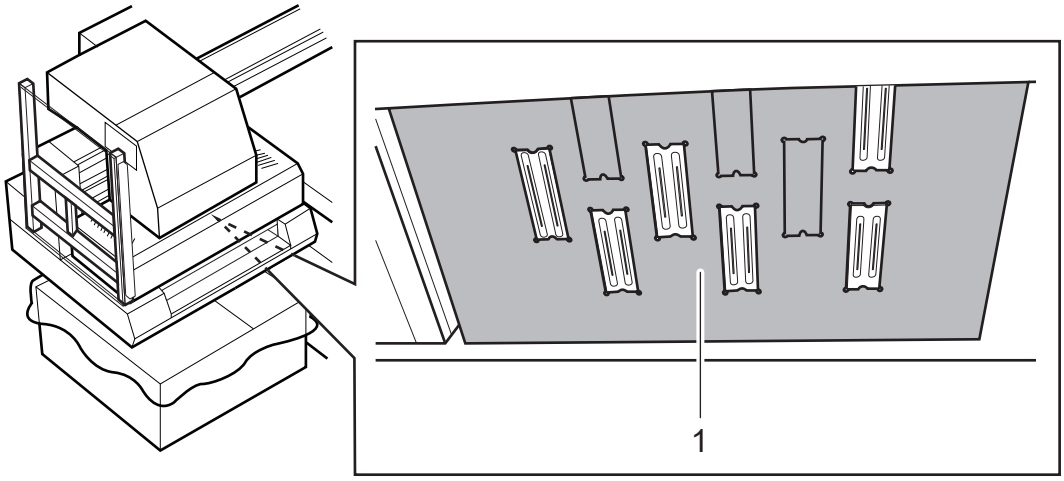
2. **Slowly insert the ink receiver all the way.**



3. **Clean the entire bottom surface (1) of the print-head carriage using new non-woven fabric impregnated with cleaning liquid.**

IMPORTANT

- Wipe off the cleaning liquid completely.
- Do not touch the nozzle surfaces when cleaning the print heads and their surrounding areas.
- Clean the entire bottom surface and both side surfaces of the print-head carriage by removing adhering ink.



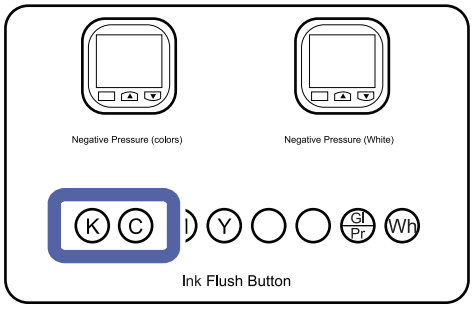
4. **Press the ink flush button on the left side of the print-head carriage to discharge ink from the print head.**

a. Press and hold the [K] button for 10 seconds.

b. Press and hold the [C] button for 10 seconds.

IMPORTANT

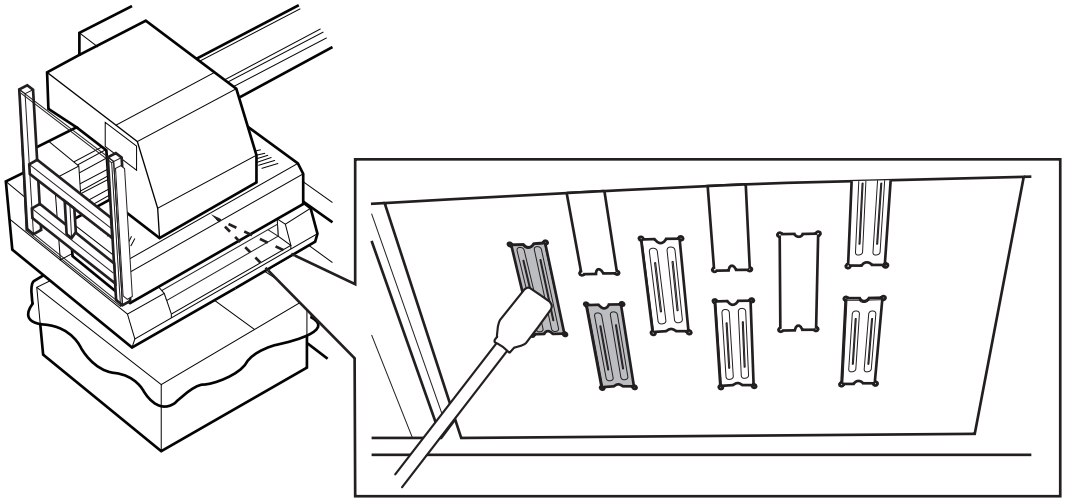
Do not hold down the buttons for more than 10 seconds.
The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.



5. **Clean the K and C print head nozzle surfaces using new cleaning sticks impregnated with cleaning liquid.**

IMPORTANT

- Wipe off the cleaning liquid completely.
- Never rub the nozzle surfaces hard.



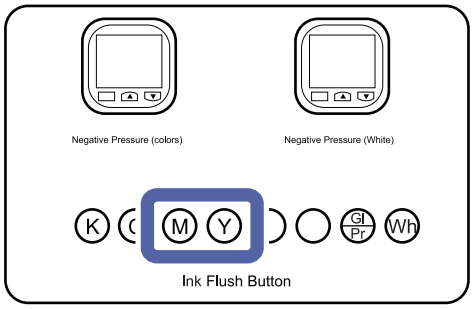
6. **Clean the M and Y print heads.**

Press the [M] and [Y] ink flush buttons, and clean the print heads following the same procedure as in Step 5.

IMPORTANT

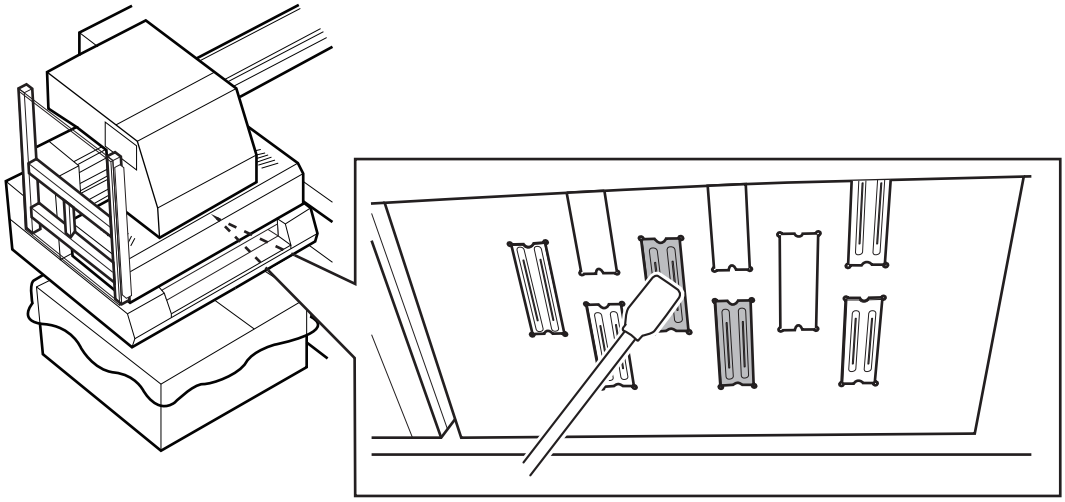
Do not hold down the buttons for more than 10 seconds.

The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.



IMPORTANT

- Wipe off the cleaning liquid completely.
- Never rub the nozzle surfaces hard.

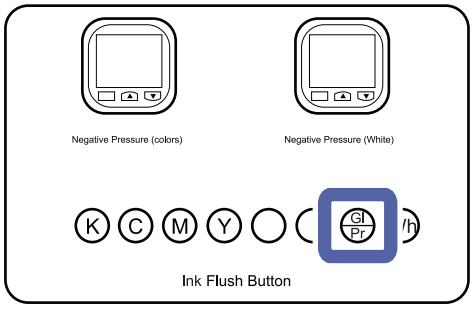


7. Clean the Gl/Pr print head.

Press the [Gl/Pr] ink flush button, and clean the print head following the same procedure as in Step 5.

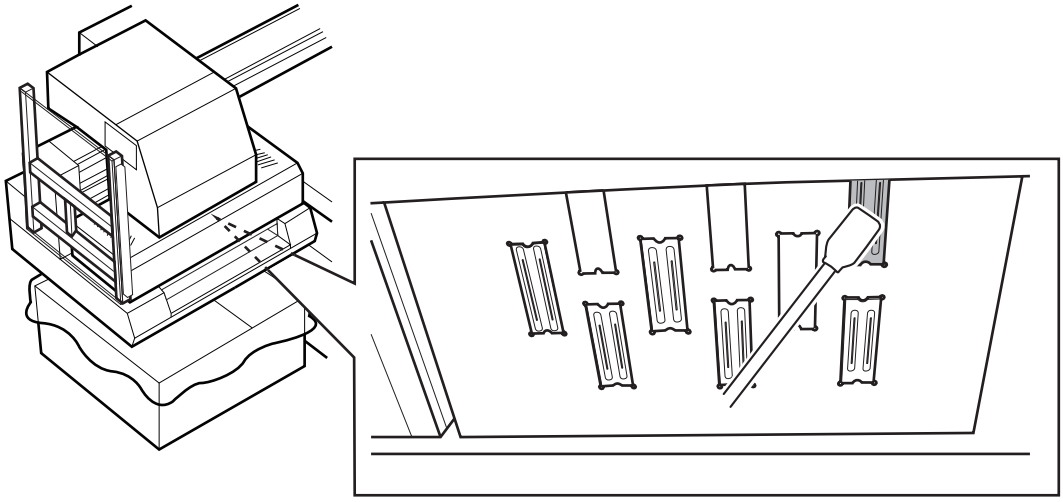
IMPORTANT

Do not hold down the buttons for more than 10 seconds.
The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.



IMPORTANT

- Wipe off the cleaning liquid completely.
- Never rub the nozzle surfaces hard.



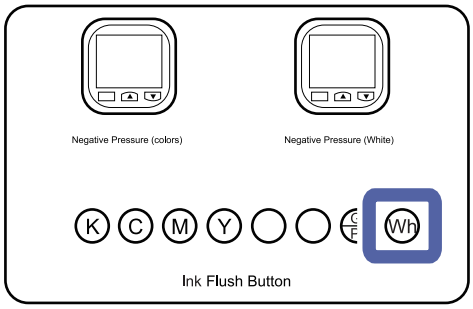
8. **Clean the Wh print head.**

Press the [Wh] ink flush button, and clean the print head following the same procedure as in Step 5.

IMPORTANT

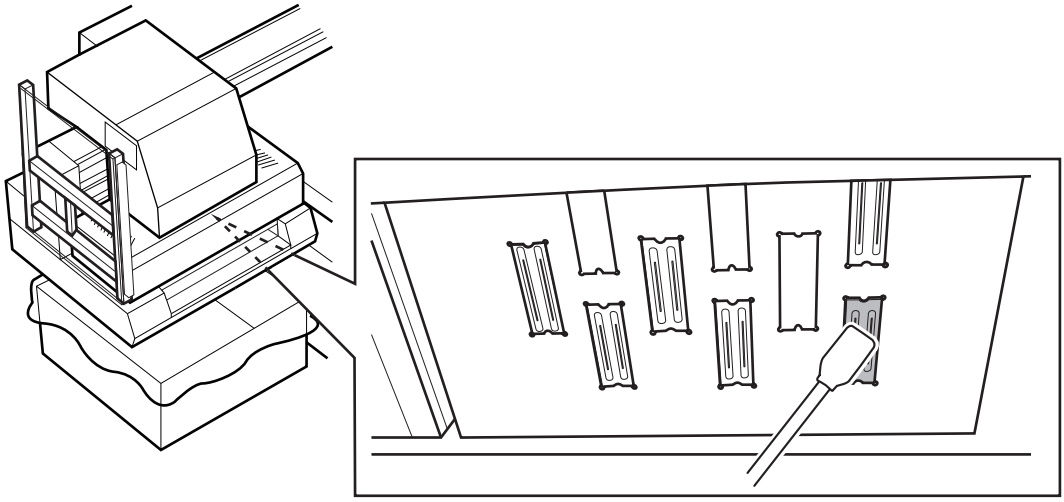
Do not hold down the buttons for more than 10 seconds.

The ink storage, which is located on the upper side of the print head, runs out of ink. This allows air to enter the ink tube, causing ink discharge failure or decreased printing quality.

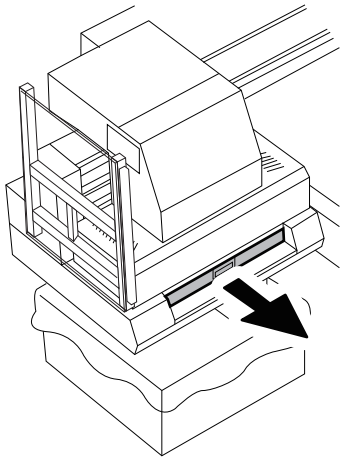


IMPORTANT

- Wipe off the cleaning liquid completely.
- Wipe off the Wh ink thoroughly because it easily adheres to the print head surface.
- Never rub the nozzle surfaces hard.



9. **Slowly pull the ink receiver back toward you.**



Perform a printing test to ensure that no dot drop-out or dot displacement occurs. If dot drop-out or dot displacement persists, repeat liquid cleaning.

Adjusting Negative Pressure of the Print Heads

This machine injects inks from the print head nozzles to print on media.

Negative pressure is applied to the print heads to prevent ink from leaking from the heads while the machine is waiting for printing. The negative pressures applied to the print heads are adjusted appropriately when the machine is installed. However, it needs to be adjusted if the usage environment changes, such as different humidity, temperature, or air pressure. An inappropriate negative pressure may cause dot displacement, dot drop-out, or ink dropping, resulting in deteriorated print quality.

If these problems persist even after repeated cleaning, check the negative pressure value by referring to the following.

- Dot drop-out, dot displacement

  Lowering the Negative Pressure Value of the Print Heads(P. 121)
- Ink dropping

  Increasing the Negative Pressure Value of the Print Heads(P. 124)

Lowering the Negative Pressure Value of the Print Heads

Adjust the negative pressure value to be suitable for your usage environment. Dot drop-out and dot displacement occur when the negative pressure value is too high. In these cases, set a lower value.

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

Procedure

1. **Attach the object to be printed on for the printing test.**

   P. 48 Attach the Object to Be Printed on for the Printing Test

2. **Adjust the print head height automatically.**

   P. 50 Adjusting the Print Head Height Automatically

3. **Configure printing settings.**

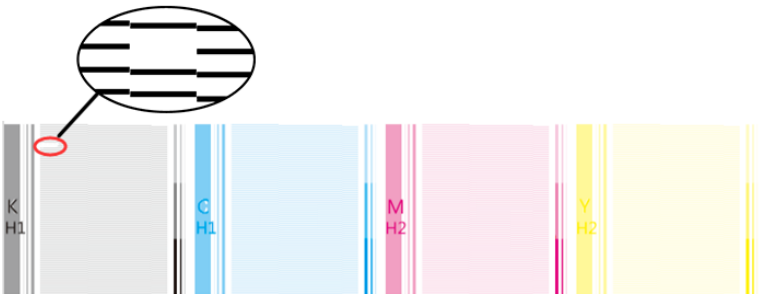
   P. 52 Configuring Printing Settings

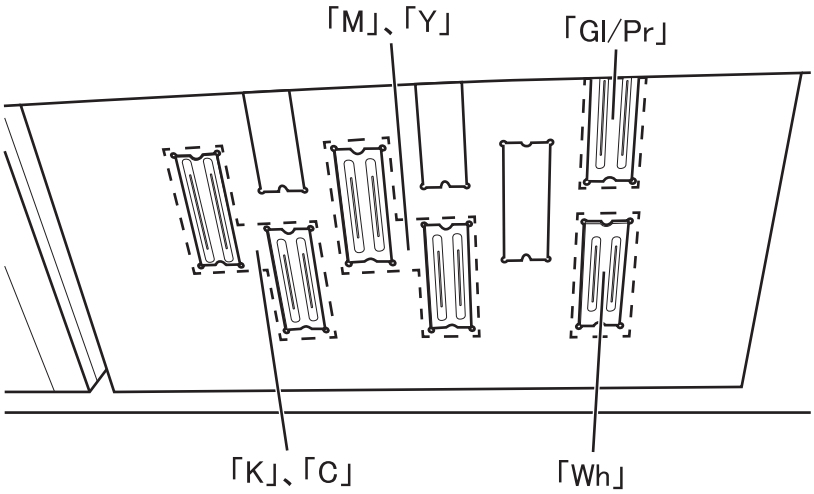
4. **Perform a printing test.**

   P. 54 Performing a Printing Test

5. **Check the result of the printing test.**

   Check where dot drop-out or dot displacement occurs.





6. **Adjust the negative pressure of the print head for which dot drop-out or dot displacement is occurring.**

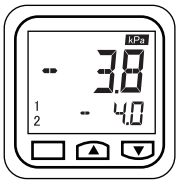
Adjust the negative pressure for the print heads K, C, Y, and M on [**Negative Pressure (colors)**] and for the print heads Gl/Pr and Wh on [**Negative Pressure (White)**].

IMPORTANT

- Make a note of the negative pressure values [**P - 1**] and [**P - 2**] before starting adjustment.
- To adjust the negative pressure, adjust the values of both [**P - 1**] and [**P - 2**]. Be sure to set a value for [**P - 2**] that is larger than [**P - 1**].
- Change the value by 0.1 at a time during adjustment.



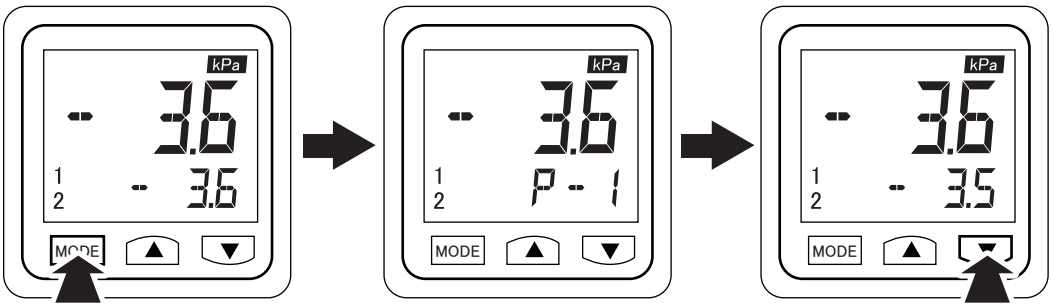
Negative Pressure (colors)



Negative Pressure (White)

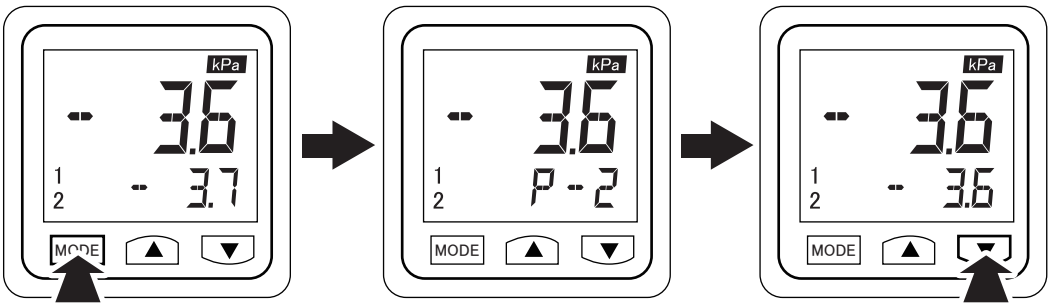
(1) **Press the [MODE] button to enter the [P - 1] adjustment mode.**

(2) **Press the [▼] button once.**



(3) **Press the [MODE] button to enter the [P - 2] adjustment mode.**

(4) **Press the [▼] button once.**



7. Perform a printing test.

Perform Steps 1 to 4, and perform a printing test.

8. Check the result of the printing test.

Check whether or not the problem has been resolved. It the problem persists, repeat adjustment until it is resolved.

Increasing the Negative Pressure Value of the Print Heads

Adjust the negative pressure to be suitable for your usage environment. Ink dropping occurs when the negative pressure value is too low. If this is the case, set a larger value.

MEMO

Check that the print-head carriage has returned to the maintenance station. If the machine detects an intrusion into the movable range of the print-head carriage while the carriage is not in the maintenance station, the safety protection function is activated to stop the machine.Safety Protection Function(P. 32)

Procedure

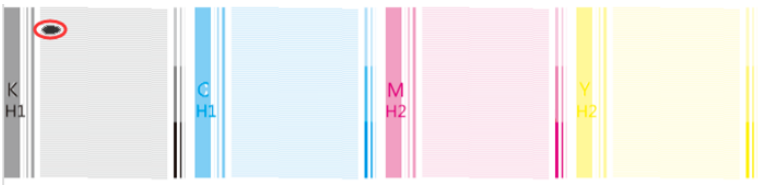
1. **Attach the object to be printed on for the printing test.**
   P. 48 Attach the Object to Be Printed on for the Printing Test

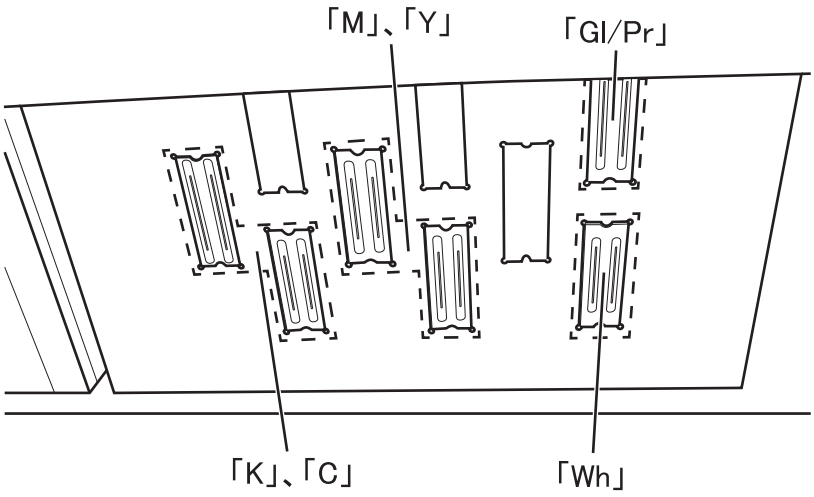
2. **Adjust the print head height automatically.**
   P. 50 Adjusting the Print Head Height Automatically

3. **Configure printing settings.**
   P. 52 Configuring Printing Settings

4. **Perform a printing test.**
   P. 54 Performing a Printing Test

5. **Check the result of the printing test.**
   Check where dot drop-out or dot displacement occurs.





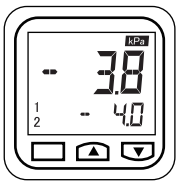
6. **Adjust the negative pressure of the print head for which ink dropping is occurring.**
   Adjust the negative pressure for the print heads K, C, Y, and M on [**Negative Pressure (colors)**] and for the print heads Gl/Pr and Wh on [**Negative Pressure (White)**].

IMPORTANT

- Make a note of the negative pressure values [**P - 1**] and [**P - 2**] before starting adjustment.
- To adjust the negative pressure, adjust the values of both [**P - 1**] and [**P - 2**]. Be sure to set a value for [**P - 2**] that is larger than [**P - 1**].
- Change the value by 0.1 at a time during adjustment.



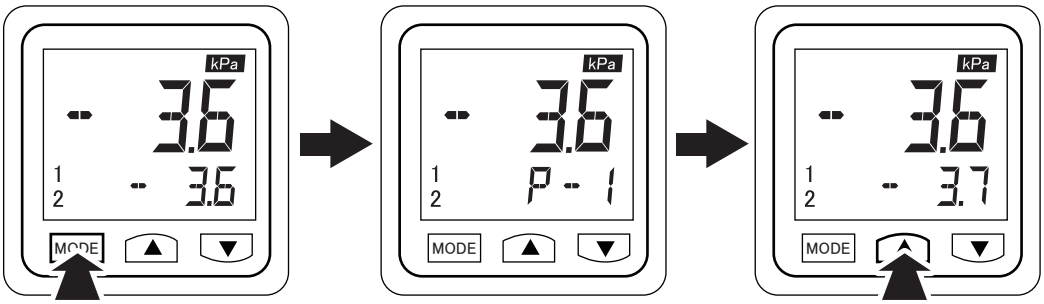
Negative Pressure (colors)



Negative Pressure (White)

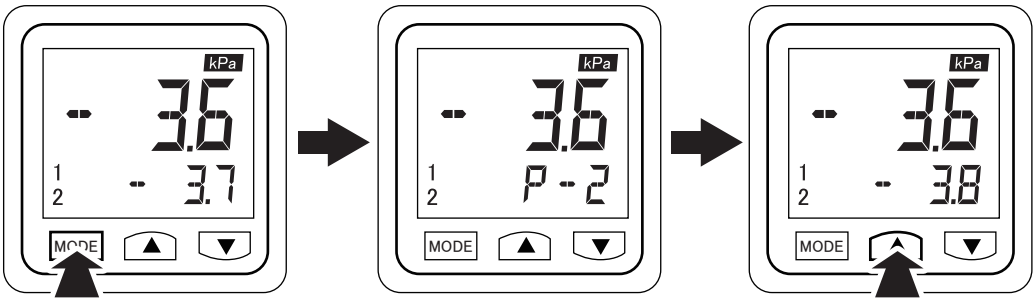
(1) **Press the [MODE] button to enter the [P - 1] adjustment mode.**

(2) **Press the [▲] button once.**



(3) **Press the [MODE] button to enter the [P - 2] adjustment mode.**

(4) **Press the [▲] button once.**



7. Perform a printing test.

Perform Steps 1 to 4, and perform a printing test.

8. Check the result of the printing test.

Check whether or not the problem has been resolved. It the problem persists, repeat adjustment until it is resolved.

Inquiries for Consumable Parts and Products

Items That You Can Purchase by Yourself 127
Consumable Parts That Require Inquiries before Replacement 128

Items That You Can Purchase by Yourself

To purchase the following consumable products, contact your authorized dealer or visit our website (http://www.rolanddg.com/).

Item	Related page
Cleaning sticks	• Cleaning the Print Heads(P. 73) • Cleaning and Printing Test(P. 98) • Liquid Cleaning(P. 115)
Cleaning liquid	Liquid Cleaning(P. 115)

Consumable Parts That Require Inquiries before Replacement

When replacing the following consumable parts, contact your authorized dealer.

Item	Related page
Print heads	-

Troubleshooting Methods

Troubleshooting

The Printer Does not Run 131
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- Are there more than five jobs on the job list? 134

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The Printer Does not Run

Is the Power Switched On?

Check that the power distribution board switches and the printer's main power are on, and then press the [**Start**] button on the front of the printer and check that the power lamp is lit.

RELATED LINKS

- P. 27 Turning the Power On

Is the emergency stop button activated?

After confirming safety in the surrounding area, clear the stop state.

RELATED LINKS

- P. 30 Emergency stop buttons

Has the Safety Protection Function Been Activated?

If a human or object approaches the movable range of the print-head carriage of the running machine, the safety protection function is activated to stop the machine. After confirming safety in the surrounding area, clear the stop state.

RELATED LINKS

- P. 32 Safety Protection Function

Has a Crash Sensor Been Activated?

The possibility of the print heads coming into contact with the object to be printed on was detected. Remove the obstruction and clear the stop state. Also appropriately adjust the print head height.

RELATED LINKS

- P. 31 Crash Sensor

Is the alarm sounding?

The alarm goes off if the sub-ink tank is not filled with ink completely within a specified time. Press the [**Reset**] button to complete ink filling and stop the alarm.

RELATED LINKS

- P. 11 Front

Is an Error Displayed on the PrintExp Screen?

Check the error displayed on the screen and take the necessary action.

RELATED LINKS

- P. 135 If an Error Message Appears

Print Quality Is Unstable

Are the Print Heads Dirty?

A dirty print head may cause ink to drip on the object to be printed on.

If the print head is dirty, clean it. After cleaning, perform a printing test to check that no ink drips on the object to be printed on.

RELATED LINKS

- P. 98 Cleaning and Printing Test

Do the print heads cause dot drop-out or dot displacement?

If dot drop-out or dot displacement is present, perform cleaning.

After cleaning, carry out a printing test and make sure that no dot drop-out or dot displacement occurs.

RELATED LINKS

- P. 98 Cleaning and Printing Test

Is the printer installed in a level and stable location?

Never install the machine in a location where it is tilted or where it may wobble or experience vibration. These factors may lead to dot drop-out or reduced printing quality.

Is the printer being used in a location subject to severe changes in the operating environment?

Large fluctuations in temperature or humidity while printing is in progress may cause the colors to change partway through the printing. When printing, use the machine in a location where the temperature and humidity are stable.

PrintExp Screen Display Overlapping

Has the screen resolution been changed?

When the screen resolution is changed, letters being displayed may overlap.

If this occurs, set the screen resolution to 1366 × 768.

Are there more than five jobs on the job list?

If there are more than five jobs in the PrintExp job list, some problems such as displayed letters overlapping may occur.

If the overlapping problem occurs, click one job and then click another job. The display is refreshed and the display overlapping is corrected.

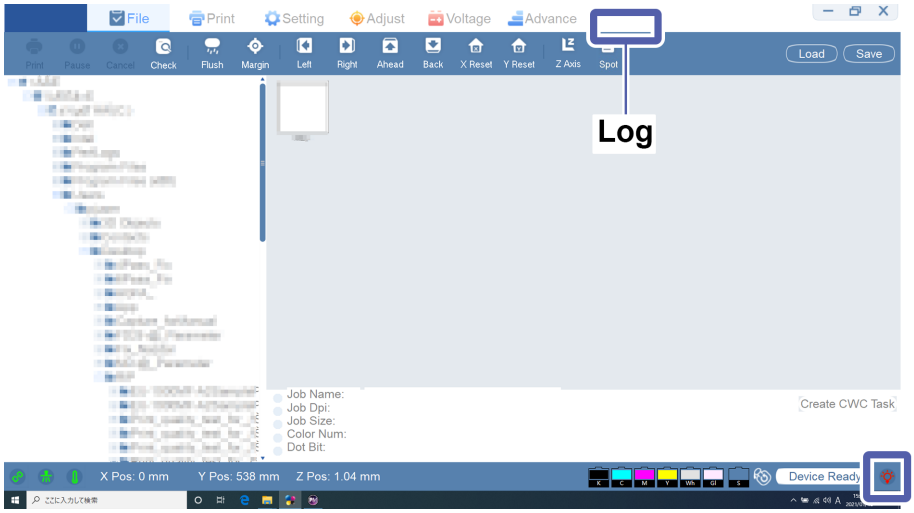
If an Error Message Appears

If an error has occurred on this machine,  at the bottom right of the screen changes to . Click  to display the [**Log**] tab on the right side of the [**Advance**] tab. Open the tab to check possible error causes and measures. Take actions according to the instructions on the screen.

If it is impossible to take the displayed actions or the error persists after carrying out the actions, contact your authorized dealer immediately.

IMPORTANT

If you have any questions about the actions, contact your authorized dealer immediately without taking any action. Taking actions you are uncertain about may damage the machine.



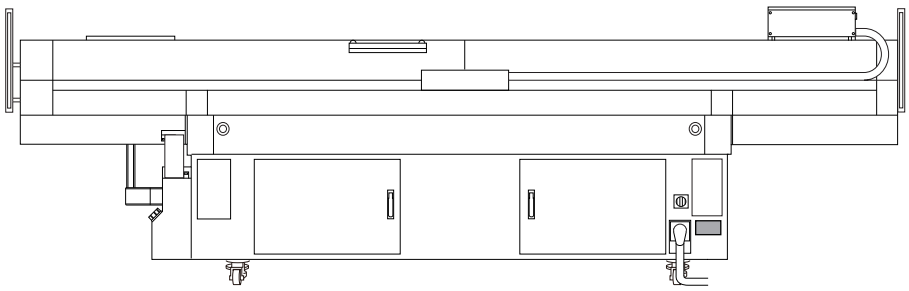
Appendix

Specifications

Location of the Power Rating and Serial Number Label 138
Specifications 139
MEMO 140

Location of the Power Rating and Serial Number Label

Rear



- **Serial number**
  This number is required when you seek maintenance, servicing, or support. Never peel off the label.
- **Power rating**
  Use an electrical outlet that meets the requirements for voltage, frequency, and amperage given here.

Specifications

Printing method		Piezo ink-jet method
Attachable objects to be printed on	Width	Max. 2,440 mm (96 in.)
	Length	Max. 1,220 mm (48 in.)
	Thickness	Max. 95 mm (3.74 in.)
	Weight	Max. 45 kg/m^2 (99 lb./m^2)
Printing width/printing length (width × length)*1		Max. 2,440 mm × 1,120 mm (96 in. × 44 in.)
Ink	Type	E-US, UV-Ink (EUV-H)
	Color	• E-US Six colors (cyan, magenta, yellow, black, gloss, and white) Four colors (cyan, magenta, yellow, and black) • UV-Ink (EUV-H) Six colors (cyan, magenta, yellow, black, gloss, and white) Five colors (cyan, magenta, yellow, black, and white) and primer Four colors (cyan, magenta, yellow, and black)
	Tank capacity	2.5 L
Ink-curing unit		Built-in UV-LED lamp
Printing resolution (dots per inch)		Max. 720 dpi × 1,200 dpi
Connectivity		Ethernet 1000BASE-T for control PC only
Power requirements		220 VAC, 50/60 Hz, 32 A
Power consumption	During operation	Approx. 5,900 W
Acoustic noise level	During operation	80 dB (A) or less
Dimensions (width × depth × height)		4,750 mm × 2,100 mm × 1,470 mm (188 in. × 83 in. × 58 in.)
Machine occupation dimensions		7,000 mm × 5,000 mm or more (276 in. × 197 in. or more)
Weight		1,300 kg (2,870 lb.)
Environment	During operation	Temperature: 18 to 25°C (64.4 to 77°F), humidity: 40%RH to 70%RH (no condensation)
Included items		Power cable, user's manual (download), software (download), protective eyewear, etc.

*1 The maximum printing area can be extended up to 2,440 × 1,220 mm (96 × 48 in.) under certain conditions.
For more information, refer to Maximum Printing Area(P. 6).

MEMO

This document contains the original instructions.


Roland