

HITACHI Printer

Model UX2

Basic Operation Manual

- This manual describes the basic operating procedures for the printer.
- Before using the printer, thoroughly read the separate Instruction Manual for optimum printer use.
- After reading this Basic Operation Manual, properly keep it for future reference.

To export the product, check the export control-related regulations, such as the Foreign Exchange and Foreign Trade Law and the Export Administration Regulations, and follow the necessary procedures.

If you have any questions, contact your Hitachi sales representative.

January 2025 (Rev.J)

- No part of this manual may be copied or reproduced without permission.
- The contents of this manual are subject to change without notice for improvement.

Important Notes

■ Precautions before using the product

- Be sure to read the separate Instruction Manual and related documents thoroughly before using this product. Follow the instructions, such as product description, safety information and precautions, and operation and handling methods, for proper use.
 - Make sure that you always use the product within the specification range mentioned in this Instruction Manual.
 - Perform proper inspection and maintenance to prevent failures.
- After reading the manual, keep it in an easily accessible place for future reference.

■ Restrictions on Export

- User hereby agrees not to export or re-export this product to any end-user who the user has reason to suspect may utilize the product for the design, development or reproduction of nuclear, chemical or biochemical weapons.
- The product or system including the product cannot be used in countries or areas other than those which have concluded a sales contract.

■ Disclaimer

- Do not perform operation not in accordance with this Instruction Manual, such as using replacement parts other than ones supplied by Hitachi or modifying parts. Doing so may cause machine failure or personal injury. Hitachi will not bear any responsibility for damage resulting from these actions. For the details on the product warranty and agreement terms, see the separate written agreement.
- The warranty does not cover any production loss due to downtime or physical loss (damage to a printed object and related equipment) due to a failure or malfunction of the delivered product. Should any failure occur, Hitachi will send a technician as soon as possible to try to minimize the downtime.
 - It is recommended that you check the printing state periodically in a process even during production.
 - When starting the IJ printer, check if the printing state and print description are correct.

Important Notes (Continued)

■ Related laws

- Never drain the ink or makeup waste solution into a public sewer system. Waste disposal must comply with all appropriate regulations. Consult the appropriate regulatory agency for further information.
- The printer must be managed in compliance with all appropriate regulations. Read and understand the appropriate Safety Data Sheet (SDS) before using any ink or makeup.

■ Security precautions

- More control systems are getting connected with information and telecommunications systems recently, which results in an increased number of security risks such as cyberattacks.

A system using this product requires both physical security measures mainly in the installation location and security measures against network usage.

[Examples of security risks via network]

- Abnormal operation, performance degradation, information leakage, and data tampering by attacks from outside
- Malfunction, harm, and damage due to program and/or data tampering from outside
- Used as a step for attacking other systems

However, the security level required in control systems varies depending on the system. In addition, potential security risks are not consistent but change on a daily basis. Not only in Hitachi products but also in system components, the security protection support functions are just one means to ensure the security level required for the system but do not completely prevent increased security risks.

The security level required in each control system must be constructed by the system and customer.

The maintenance of the security level requires continuous improvement measures.

Hitachi will not bear any responsibility for trouble, accident, or damage caused by unauthorized external access in a system using this product.

- Please use USB memory only on this product.
Use a computer where the latest anti-virus software is installed and perform a periodic virus check on the computer.

Important Notes (Continued)

- **Open source software licenses used in the product**

For the Open Source Software used in this product, refer to Appendix 15-1 of the instruction manual.

- **Intellectual property**

Hitachi owns the rights of intellectual property for all the contents of this Instruction Manual. No part of the manual shall be disclosed to third parties without prior written consent of Hitachi.

- **Contact**

If you have any questions about this manual or need consultation or after-sales services, contact your dealer or nearest local distributor.

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Safety Precautions

- You should observe the precautions set forth below in order to use the product properly and avoid endangering you or other persons or damaging property. For the purpose of clarifying the severity of injury or damage and likelihood of occurrence, the precautions are classified into three categories, WARNING, CAUTION, and NOTE, all of which describe hazardous situations that may arise if you ignore the precautions and perform an incorrect handling or operating procedure. These precautions are all important and must therefore be observed without fail.

 WARNING	Indicates the presence of a hazard which may cause severe personal injury or death unless avoided.
 CAUTION	Indicates the presence of a hazard which may cause moderate or minor personal injury unless avoided.
NOTE	Indicates the presence of a hazard which may cause non-personal damage unless avoided.

Pictograph examples

	The Δ symbols are used to indicate precautions (including those related to potential warnings) to be observed. Detailed information is furnished by a picture within the symbol outline (a shock hazard is indicated by the example shown at left).
	The ⊘ symbols are used to describe prohibited actions. The details of a prohibited action are given by a picture within or near the symbol outline (the example shown at left dictates that you must keep flames away).
	The ● symbols are used to describe mandatory actions. Detailed instructions are given by a picture within the symbol outline (the example shown at left dictates that a ground connection must be made).

Installation environment

 WARNING
- Ensure that no flame- or arc-generating devices are installed around the product. - Fire: (Examples) Matches, lighters, cigarettes, heaters, stoves, gas burners, welders, grinders, static electricity, etc. - Flammable: (Examples) Ink, makeup - Arc-generating device: (Examples) Open-type relays, open-type switches, brush motors, etc. Before handling ink and makeup, remove static electricity from your body, peripheral equipment, and so on. In the interest of safety, place a dry-chemical fire extinguisher near the product.

Safety Precautions (Continued)

Installation environment (continued)

WARNING

- Install the product in an adequately ventilated location.
- Do not install the product in an enclosed space.
- Connect the product to exhaust equipment to prevent it from being filled with organic solvent vapor.
- Secure adequate space for the ink/makeup handling area and product installation site. At least 200 m³ must be provided per print head. Ensure that adequate ventilation is provided.

NOTE

- If extraneous noise enters the product, it may malfunction or break down.
For maximum noise immunity, observe the following installation and wiring precautions.
 - Ensure that 100 or 200 VAC power cables are not bundled with other power supply cables.
 - Insulate the product main body and print head so that they do not come into direct contact with the conveyor or other devices.
 - If the employed print target detector is housed in a metal case, use a plastic mounting brace to insulate the detector from the conveyor and other devices.
 - Ensure that the print target detector wiring is not bundled together with other power supply cables.

Safety Precautions (Continued)

Grounding

WARNING

- Ensure that all electrical wiring, connections, and grounding comply with applicable cords. Properly connect the product to its dedicated ground. Complete the above procedure to avoid electrical shock hazards.
- When welding, keep enough space between the product and the welding work area to prevent the arc from starting a fire. Also, insulate the print head and product frame to keep the welding current from flowing to the control section of the product, and make a separate ground connection for the product.
- If you need to receive ink particles in a beaker, a printing test for example, use an electrically conductive beaker and connect the beaker securely to the ground. Do not let the tip of the printing head enter the beaker. Ink particles used for printing are electrically charged. An ungrounded beaker has a gradually rising charge, possibly catching on or causing a fire.

Power cable handling

WARNING

- Use an AC voltage of 100 to 120 V or 200 to 240 V $\pm 10\%$ only and a power frequency of 50 or 60 Hz only. If the above requirements are not met, the electric parts may overheat and burn, causing a fire or electric shock.

Safety Precautions (Continued)

Ink and makeup handling

WARNING

- When handling ink or makeup, such as replenishment or replacement, take enough care not to spill ink or makeup.
If you spill any ink or makeup by mistake, wipe it off neatly and promptly with wiping paper or something similar. Do not close the maintenance cover until you make sure that the portion you have just wiped is completely dry.
You must pay particular attention when you have spilled ink or makeup inside the printer and it is not completely dry. This is because vapors of ink or makeup will stay inside the product and may catch on or cause a fire.
If you find it hard to wipe the printer with the power on, stop it with the maintenance cover open. Power it down and then wipe it off again.
- If you need to clean the casing of the product with wiping paper soaked with makeup, be sure to do so when the power is off.
Attempting to clean it with the power on will cause vapors of ink or makeup to enter the product, possibly catching on or causing a fire.
When the cleaning is finished, open the maintenance cover and make sure that no makeup has entered and no vapors remain inside.
- Should you find a leak of ink or makeup inside the product while the product is running or being maintained, wipe it off promptly with wiping paper or something similar. Then, with the maintenance cover open, stop the product, power it down, and repair the leak. Otherwise, contact your nearest local distributor.
Continuing operation with a leak of ink or makeup will cause an anomaly, resulting in abnormal printing. Ink and makeup are flammable. They may therefore catch on or cause a fire.
- Ink and makeup, their waste solution, used wiping paper and empty containers are flammable. Make sure that these waste disposals are kept away from a flame or arc

CAUTION

- When cleaning the product or replenishing ink or makeup, wear protective gloves and safety goggles to avoid direct skin contact. If the ink or makeup comes into contact with skin, wash thoroughly with soap and warm or cold water.
- When transferring the ink or makeup to or from a bottle, exercise caution to prevent it from coming into contact with the product or surrounding articles. If there is any spillage, immediately wipe it to clean using a cloth moistened with makeup.

Safety Precautions (Continued)

Main body handling

WARNING

- Do not insert tweezers, a screwdriver, or any other metal article into the ink ejection hole at the end of the print head.
When the product is ready to print, a high voltage (approximately 6 kV) is applied to the deflection electrode section in the print head.
Exercise caution to avoid electric shock, injury, and fire.
- Do not remove covers and/or screws not specified in the separate Instruction Manual.
A high voltage is applied to some sections of the product.
Exercise caution to avoid electric shock and injury.
- Exercise caution to avoid inadvertently disconnecting, forcibly pulling, or bending piping tubes.
Since the ink and makeup in some portions of piping tubes are pressurized, they may splash into your eyes or mouth or onto your hands or clothing.
If any ink or makeup enters your eyes or mouth, immediately flush with warm or cold water and consult a physician.
- While the product is operating, do not look into the ink ejection hole at the end of the print head.
Ink or makeup may enter your eyes or mouth or soil your hands or clothing. If any ink or makeup enters your eyes or mouth, immediately flush with warm or cold water and consult a physician.
- Make sure that there is no one in the ink ejection direction before starting the product.
Operate with the end of the print head inserted in a beaker, etc.
- Before servicing the product, be sure to stop the ink ejection.
This is because ink or makeup may splash into your eyes or mouth or onto your hands or clothing.
If any ink or makeup enters your eyes or mouth, immediately flush with warm or cold water and consult a physician.
- If an earthquake, fire, or other emergency occurs while the printer is engaged in printing or just turned on, press the main power switch to turn off the power.
Do not perform this operation in any other situation than emergency.

NOTE

- Only people who have completed an operator training course for Hitachi can operate and service the product.
 - If the printer is operated or serviced incorrectly, it may malfunction or break down.
- Do not attempt to repair the product for any other purpose than operation or maintenance.
Otherwise, it may cause a malfunction, so if a repair is needed, contact your nearest local distributor.

Safety Precautions (Continued)

Related Regulations

WARNING

- Never drain the ink or makeup waste solution into a public sewer system. Waste disposal must comply with all appropriate regulations. Consult the appropriate regulatory agency for further information.
- The printer must be managed in compliance with all appropriate regulations. Read and understand the appropriate Safety Data Sheet (SDS) before using any ink or makeup.

FCC Notice

- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions. (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
- This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Instruction Manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Safety Precautions (Continued)

Related Regulations (continued)

WARNING

< Keep all fire away.>

- Ink and Makeup are flammable.
- All fire must be kept away from the machine.
- Spilled Ink and Makeup must be wiped off and dried up immediately.

<Caution when handling Ink/Makeup>

- Strage must comply with local regulatory requirements .
- Read and understand Safety Data Sheet(SDS).
- Be sure to wear protective gloves and safety goggles.
- If the Ink/Makeup in used is an organic solvent, it must be managed in compliance with the Ordinance on the prevention or Organic Solvent poisoning. Refer to the "Instruction Manual" and the "Handling guidance of each ink" for details.

AVERTISSEMENT

< Tenir hors de portée du feu. >

- L'encre et la composition sont inflammables.
- Tenir la machine hors de portée du feu.
- Nettoyez et séchez immédiatement les projections d'encre et de composition.

<Soyez prudent lorsque vous manipulez l'encre/la composition>

- Le stockage doit respecter les obligations réglementaires locales.
- Lisez attentivement la fiche signalétique de sécurité de l'appareil (FSSP).
- Assurez-vous de porter des gants et des lunettes de protection.
- Si l'encre/la composition utilisée est un solvant biologique, vous devez le manipuler conformément au décret sur la prévention des empoisonnements par solvant biologique. Reportez-vous au «Mode d'emploi» et aux «Conseils de manipulation de chaque type d'encre» pour plus de détails.

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Preface

Hitachi Inkjet (IJ) Printer (hereinafter referred to as "the unit") employs a non-contact, ink-jet method to print onto a print target.

This Basic Operation Manual describes the basic operating procedures.

The separate Instruction Manual details the basic operating procedures to provide the users with a better understanding of the handling procedures of the unit.

If the unit is improperly handled or maintained, it may not operate smoothly and may become defective or cause an accident. It is therefore essential that you read the Instruction Manual thoroughly to gain a complete understanding of the printer and use it correctly.

After reading the manual, properly keep the related documents for future reference.

<Scope of application>

This Basic Operation Manual is prepared for all the models of "HITACHI IJ Printer Model UX2 for Dye Ink", which are listed in the table below.

Please be advised that the differences among these models such as a nozzle size or applicable functions are referred to in the relevant section in this Instruction Manual.

[HITACHI IJ Printer Model UX2 for Dye Ink]

		Model type	Nozzle diameter
UX2-D160W	Standard model	UX2-D	65 μm
UX2-D140W	Small character	UX2-D	40 μm
UX2-D150W	High speed printing	UX2-D	55 μm

Preface (Continued)

<Trademark>

- Ethernet is a registered trademark of Xerox Corporation in the United States.
- Microsoft is a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.
- Microsoft Excel is a product name of Microsoft Corporation in the United States.
- Windows XP is a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.
- Windows 7 is a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.
- Windows 10 is a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.
- EtherNet/IP is a registered trademark of ODVA (Open DeviceNet Vendor Association).

<Contents of the Basic Operation Manual>

This Basic Operation Manual consists of the following chapters.

Chapter 1. Delivered Items and Accessories

This chapter describes the usage purpose and precautions for use of the accessories supplied with the unit.

Chapter 2. Component Names and Functions

This chapter describes the names and functions of the components of the unit.

Chapter 3. Basic Operation

This chapter describes the basic operations of the unit.

Chapter 4. Ink and Makeup Replenishment

This chapter describes the procedures to replenish ink and makeup.

Chapter 5. Emergency Procedures

This chapter describes the operations to be performed if an emergency such as an earthquake or fire occurs while the unit is running.

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- Safety Precautions
- Preface

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Chapter 1

Delivered Items and Accessories

Chapter 1.

Chapter 2.

Chapter 3.

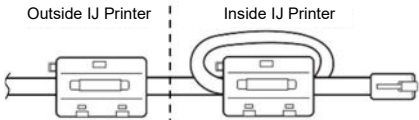
Chapter 4.

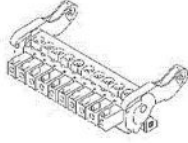
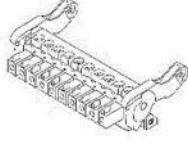
Chapter 5.

1.1. Delivered Items and Accessories

1.1. Delivered Items and Accessories

The delivered items and accessories are shown in the table below.

No.	Item name	Quantity	Item code No.	Remarks
1	IJ Printer	1	-	
2	CD	1	-	describes about Safety Guide
3	Magnifying glass	1	451274	Used to check the shape of ink drop and the position of ink stream.
4	Tweezers	1	451412	Used to remove the orifice.
5	Cleaning bottle	1	451058	Used to contain makeup for print head cleaning.
6	Beaker with handle	1	451410	Used when cleaning the print head or replacing ink.
7	Waste solution bottle	1	-	Used when replacing ink or a filter.
8	Wiping paper	1	-	Used to wipe the print head after cleaning.
9	Blower	1	451522	Used to dry the print head after cleaning.
10	Cable seal	3	-	Seal for the power cable or the external communication cable.
11	Drainage tube	1	-	Used when replacing ink or a filter. (When using the beaker with handle instead of the waste solution bottle)
12	Ferrite core	2	-	When connecting the LAN cable to the IJ Printer, put one core around the cable outside the printer and the other through one loop of the cable inside the printer as shown below. 

No.	Item name	Quantity	Item code No.	Remarks
13	I/O plug 10 pins 	1	-	Used to connect the input/output (I/O) signals. See the Technical Manual "4. ELECTRIC SIGNAL CONNECTION" for details on how to use the plug.
14	I/O plug 13 pins 	1	-	Used to connect the input/output (I/O) signals. See the Technical Manual "4. ELECTRIC SIGNAL CONNECTION" for details on how to use the plug.
15 (*1)	Nozzle rubber seal 	1	-	Used when the IJ Printer will not be used for several days. It is explained in "3.2.3. Turning Off Main Power Switch".
16 (*1)	Replenishment port cap 	2	-	It is attached to the ink/makeup reservoir when shipped. Used when the IJ Printer will not be used for several days.

(*1) Store these items in a plastic bag, etc., to protect them from dirt and dust.

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Chapter 2

Component Names and Functions

2.1. External Views

2.2. Main body Internal Parts Arrangement

2.3. Print Head

2.4. Safe-Clean Station (Optional parts)

2.5. Screen Display

Chapter 1.

Chapter 2.

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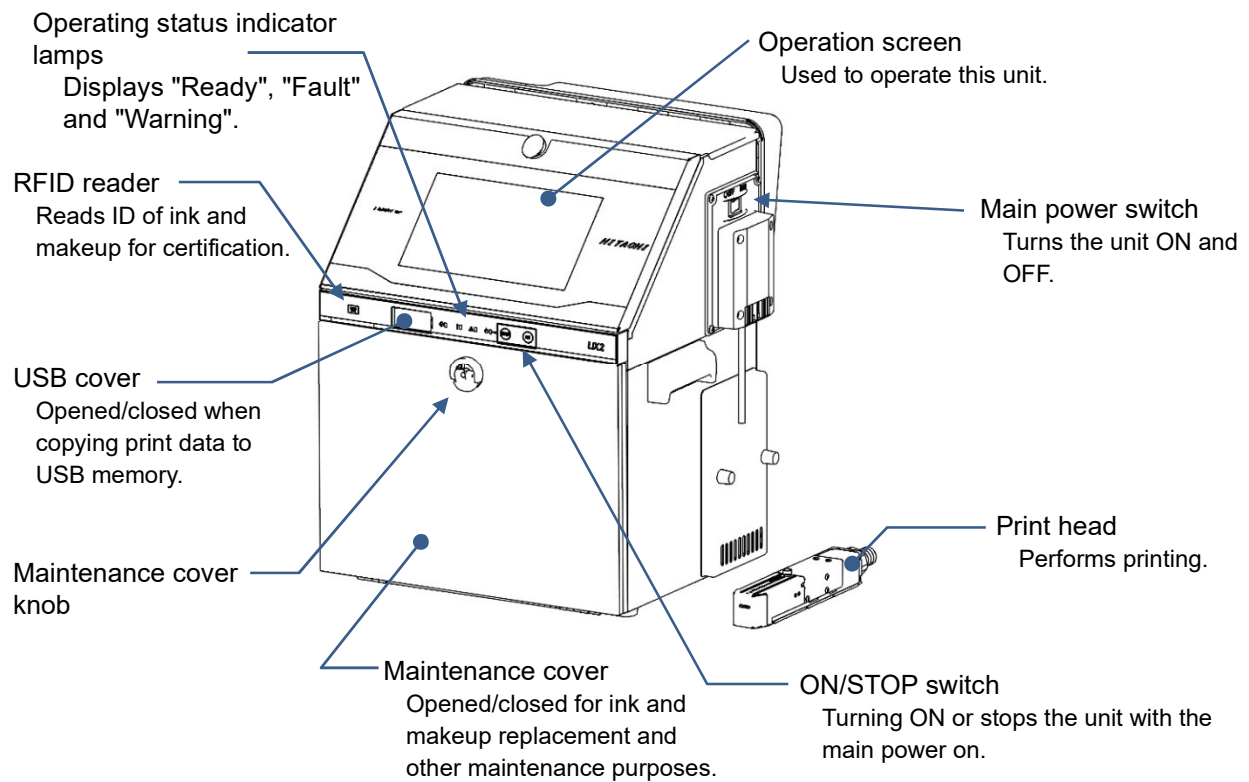
Chapter 5.

This chapter describes the names and functions of components of this unit.

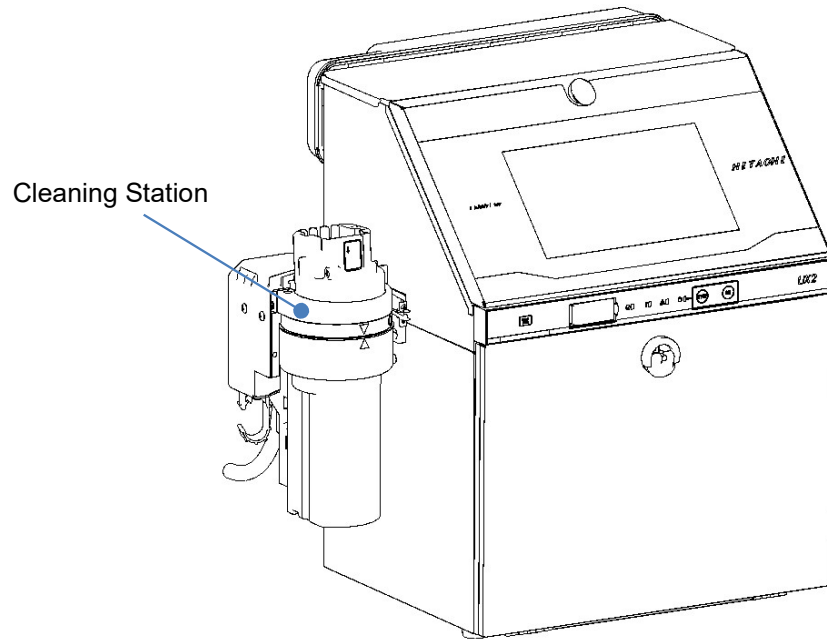
2.1. External Views

(1) External views (front side)

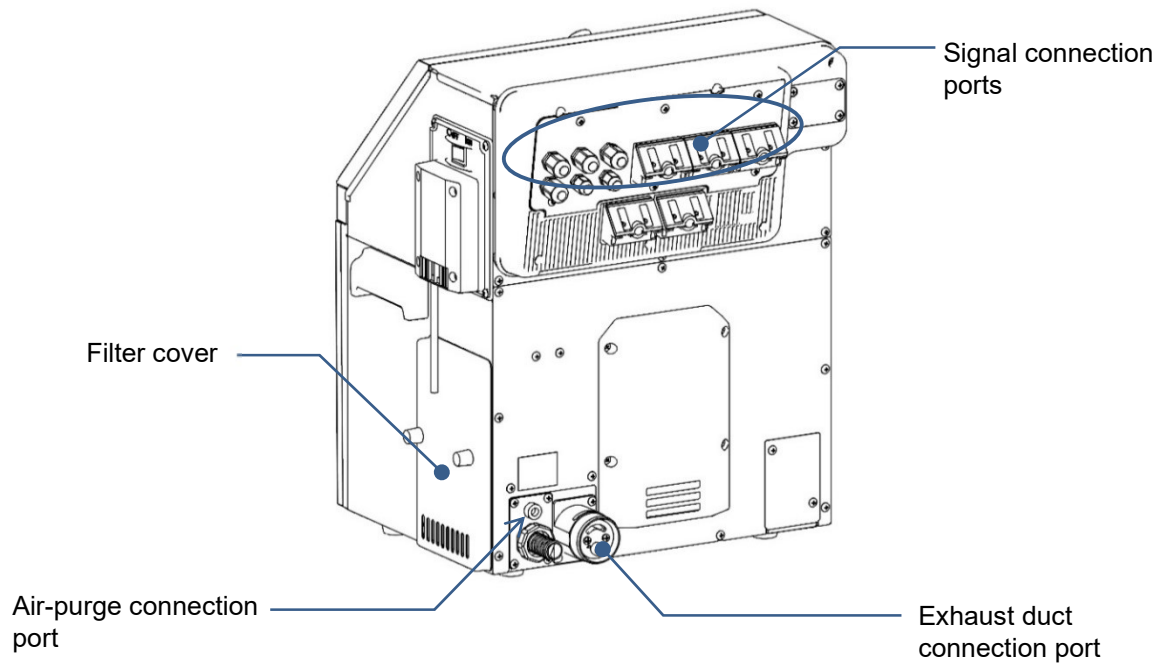
The external views of the unit are as follows.



Safe-Clean Station (Optional parts)



(2) External views (rear side)

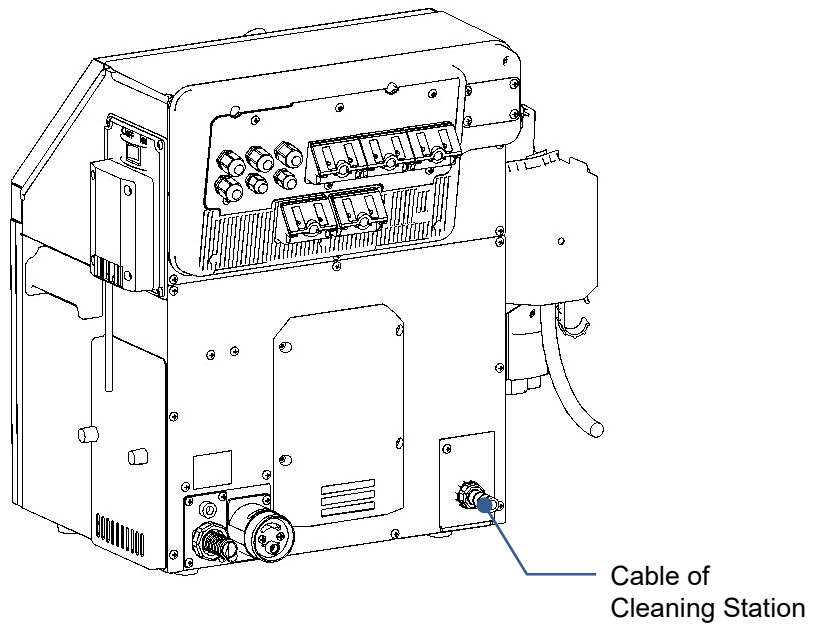


Precautions for use

Stainless steel of the main body is not easily rusted, but it may be affected by the environment or cause rust if the unit is left for a long time.

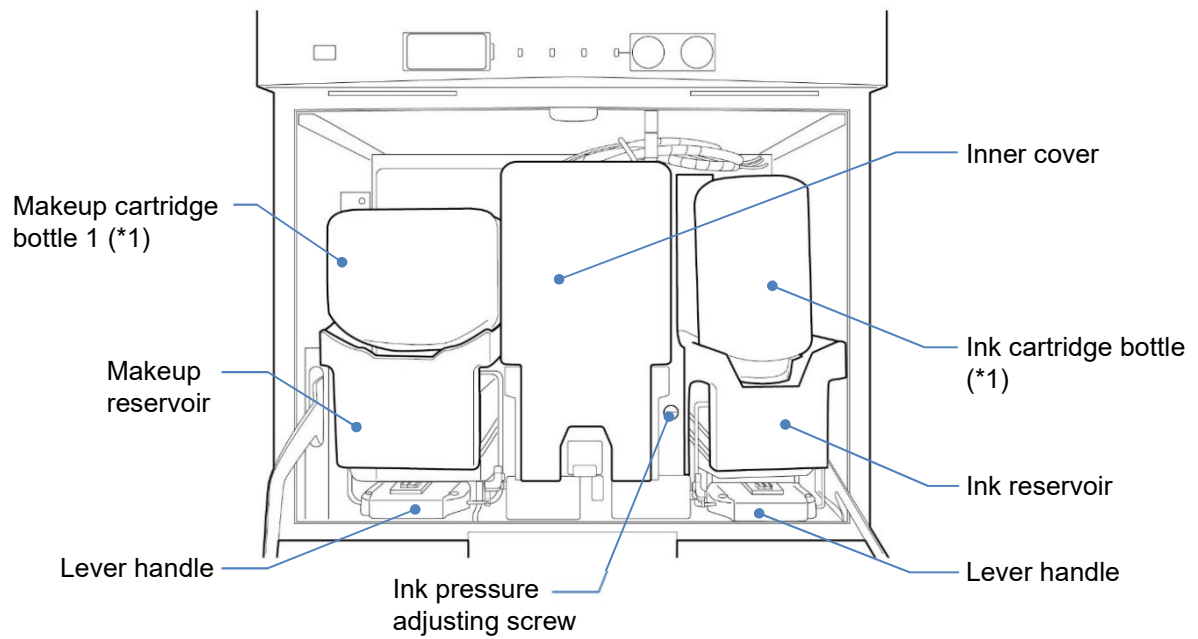
To prevent rust from forming, it is recommended that the surface of the main body be kept as clean as possible.

Safe-Clean Station (Optional parts)

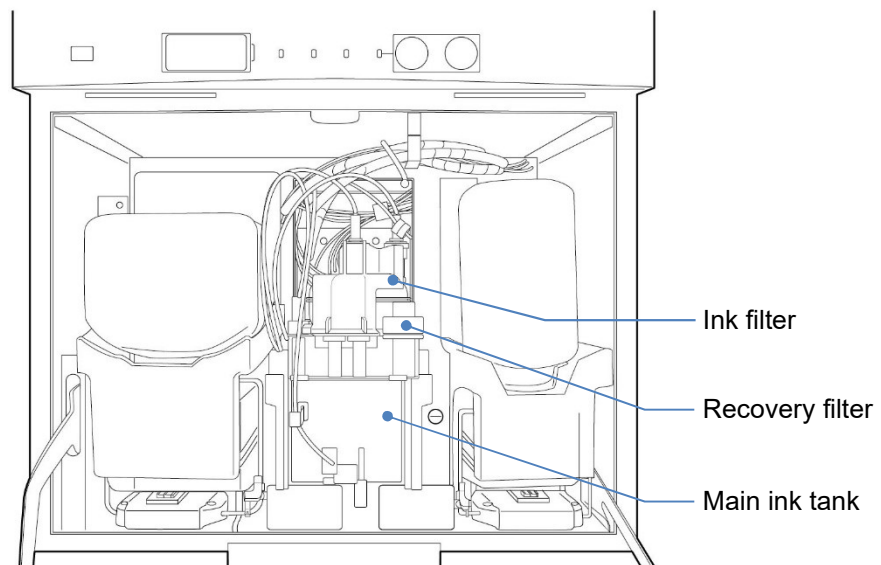


2.2. Main body Internal Parts Arrangement

The internal structure of the main body is as follows.



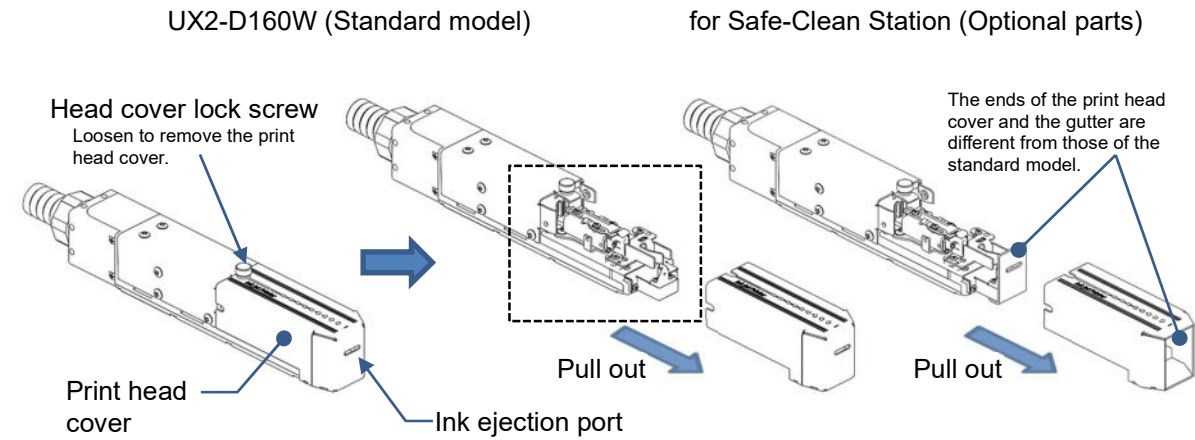
Appearance with inner cover removed



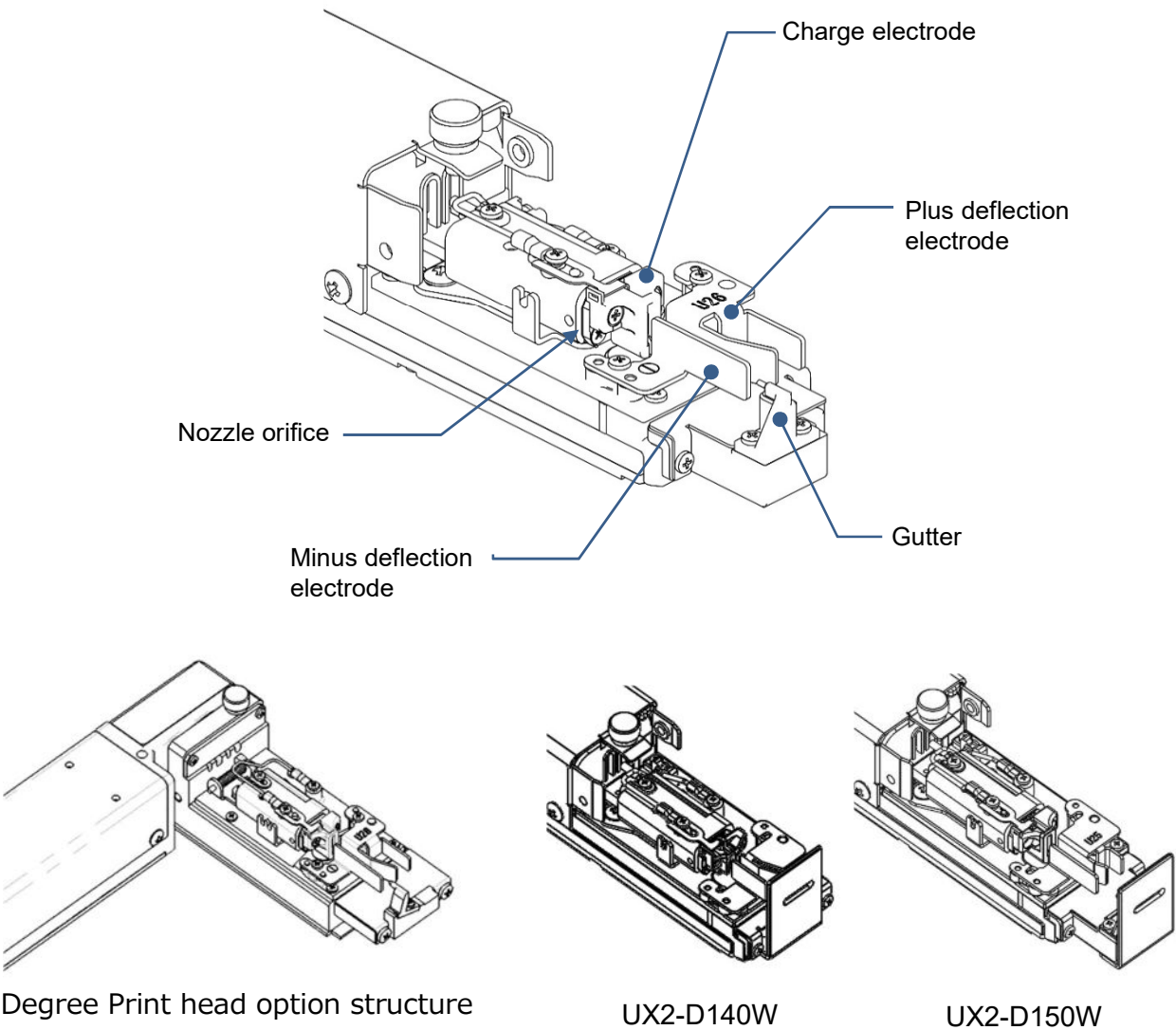
*1: The ink cartridge bottle and the makeup cartridge bottle are sold separately.

2.3. Print Head

The internal structure of the print head is as follows.

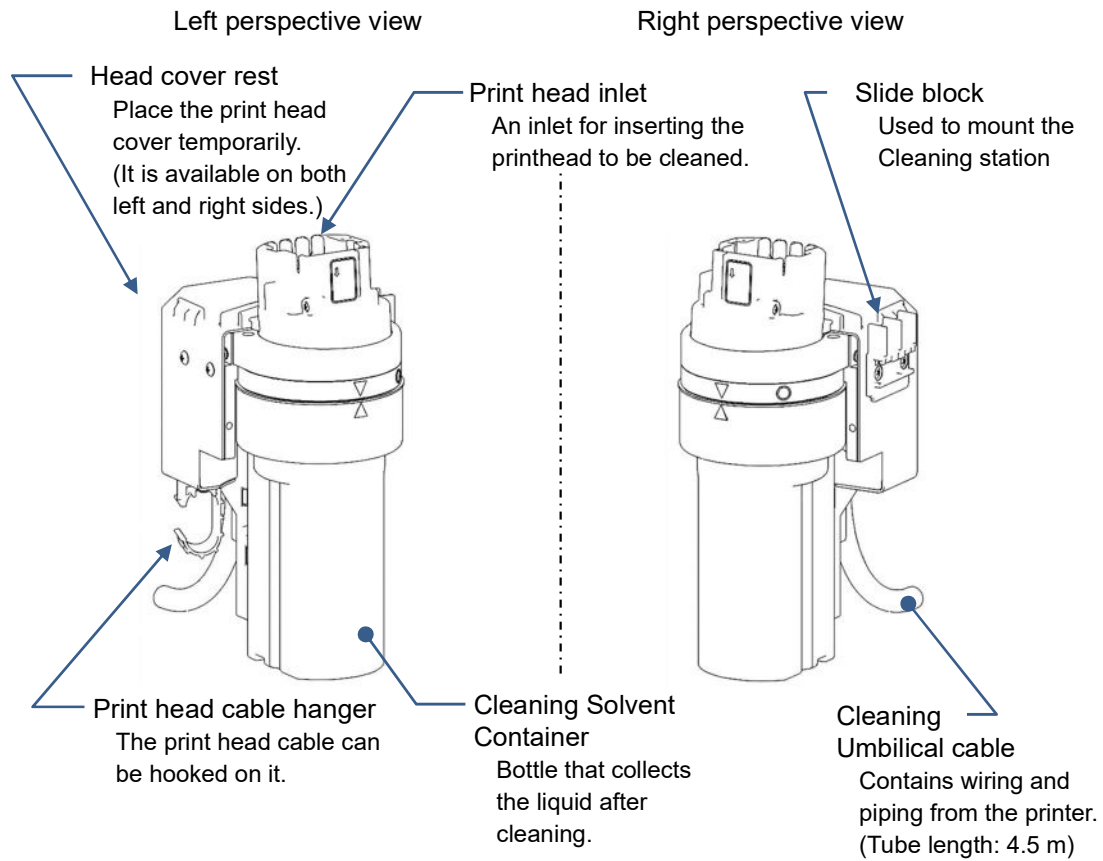


The internal structure of the print head (inside the dotted box in the figure above) is as follows.



2.4. Safe-Clean Station (Optional parts)

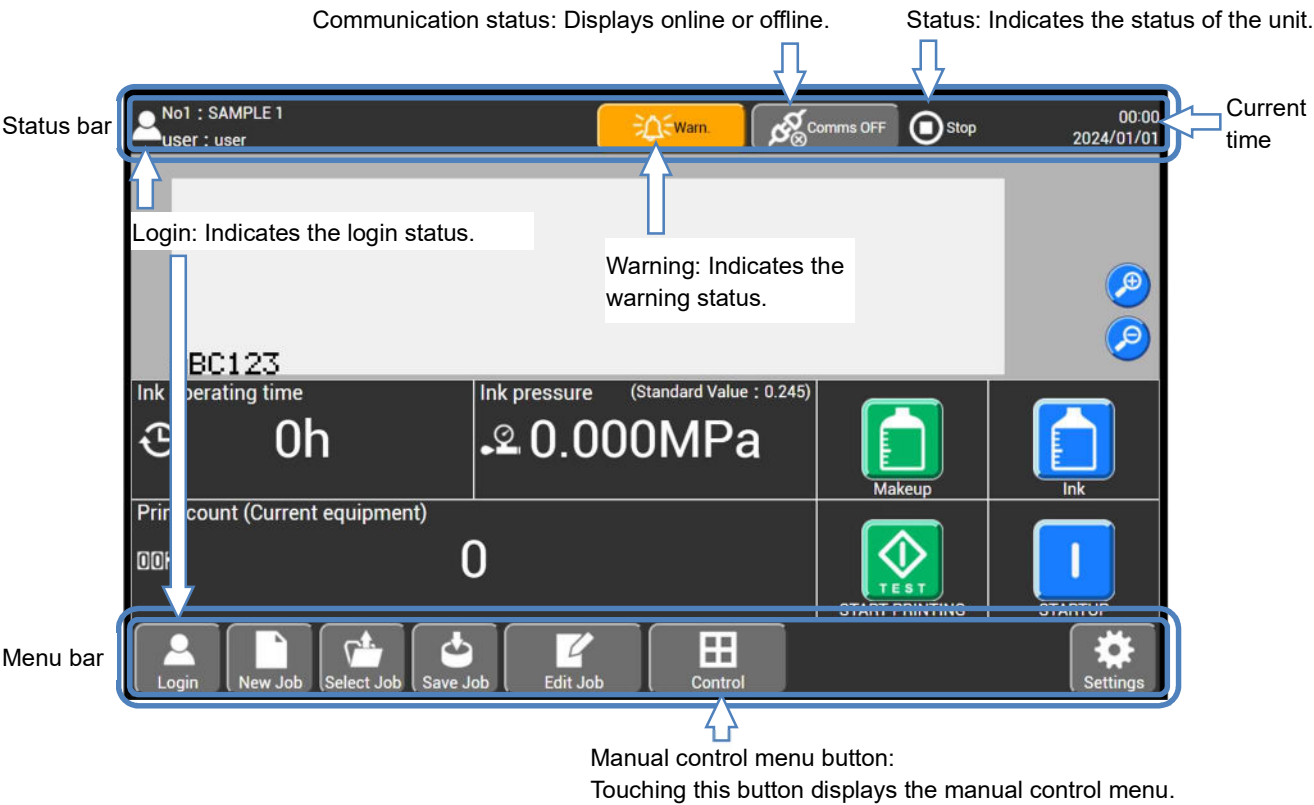
The structure of the Cleaning station is as follows.



2.5. Screen Display

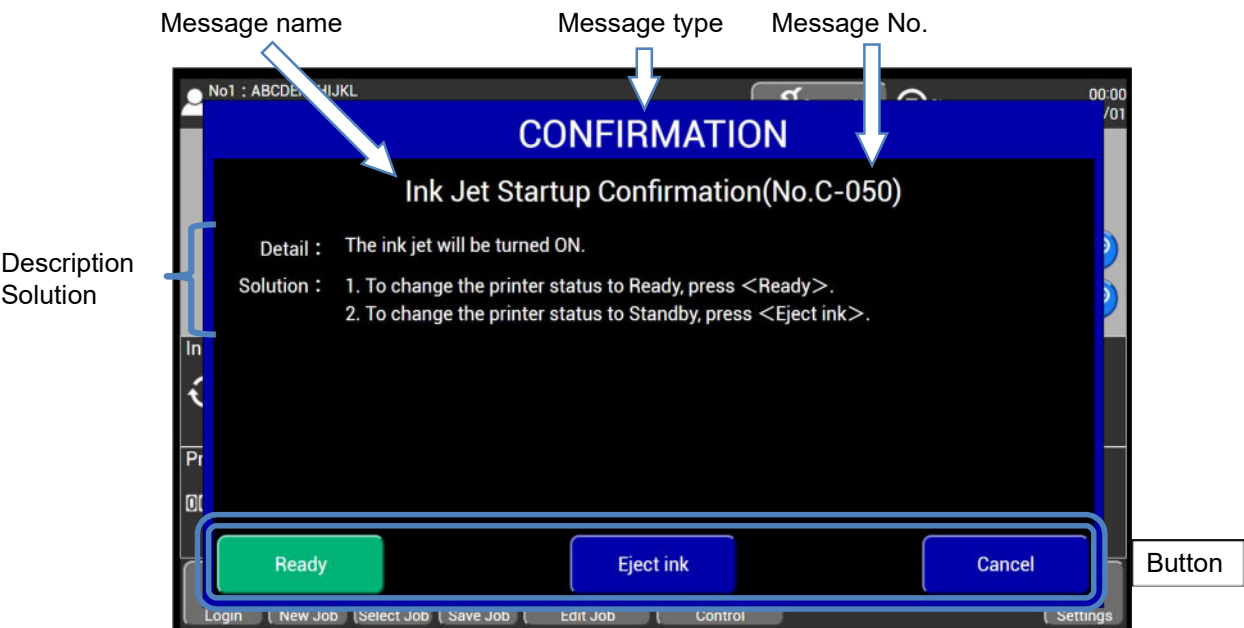
<<[HOME] screen>>

The [HOME] screen appears mostly when the power is turned ON.

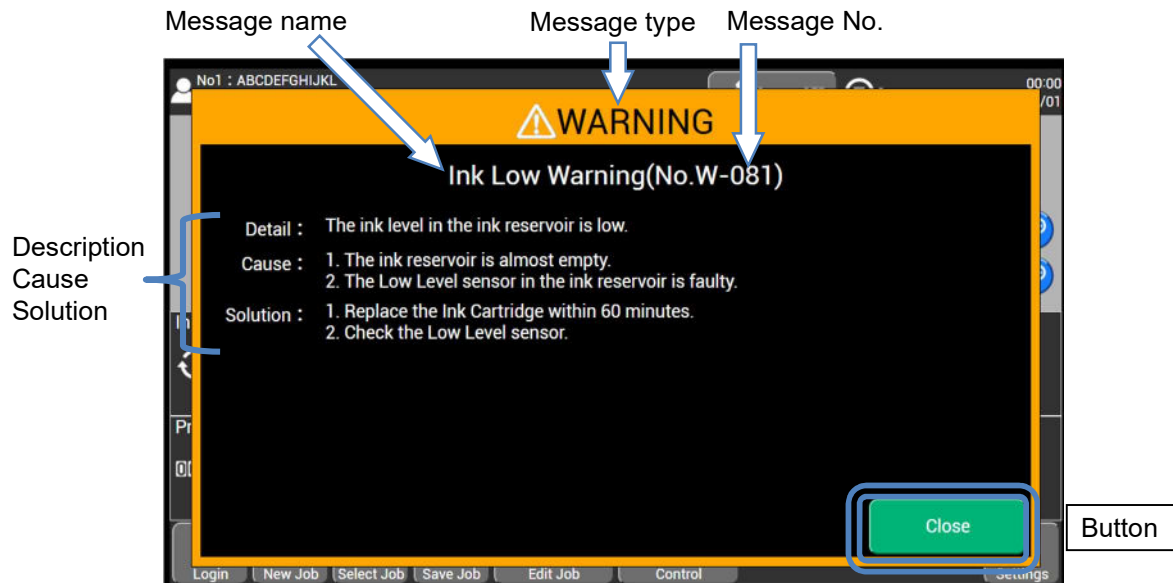


<<Message screen>>

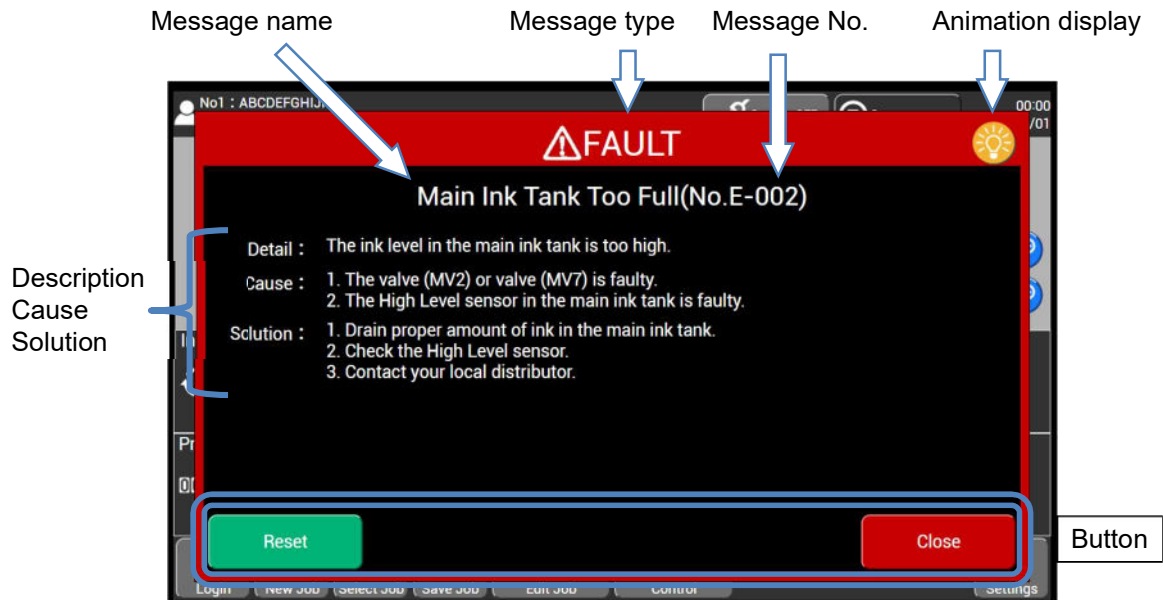
The [Confirm] message is displayed in blue. It is mostly for confirmation.



The [Warning] message is displayed in orange. It contains the detail, cause, and solution. Solve the problem according to the instruction in the message.



The [Fault] message is displayed in red. It contains the detail, cause, and solution. Solve the problem according to the instruction in the message.



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Chapter 3

Chapter 1.

Basic Operation

Chapter 2.

3.1. Start Operation

3.2. Shutdown Operation

3.3. Print Head Cleaning

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Chapter 5.

3.1. Start Operation

This section describes how to start the unit.

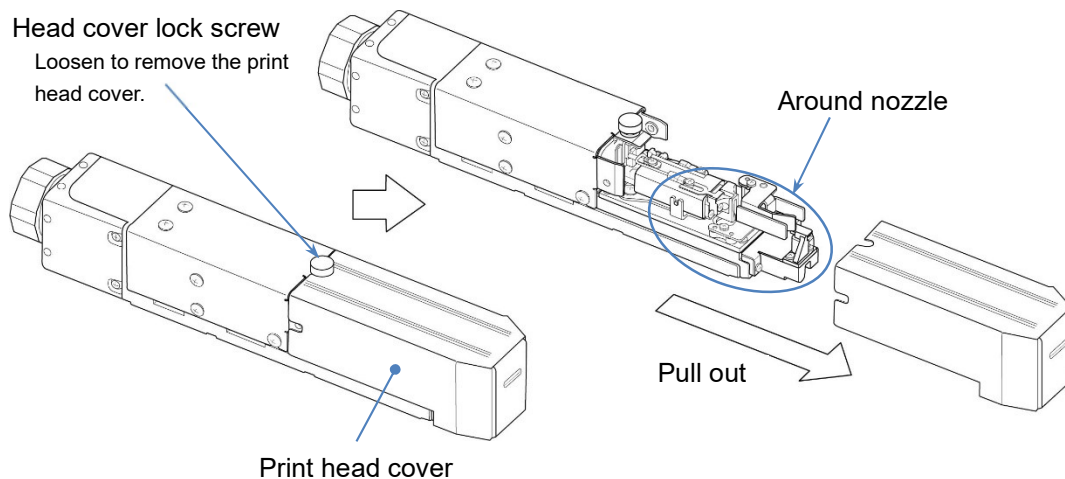
Required operations are explained in detail, including the procedure for starting the unit.

3.1.1. Procedure for Starting Operation

CAUTION

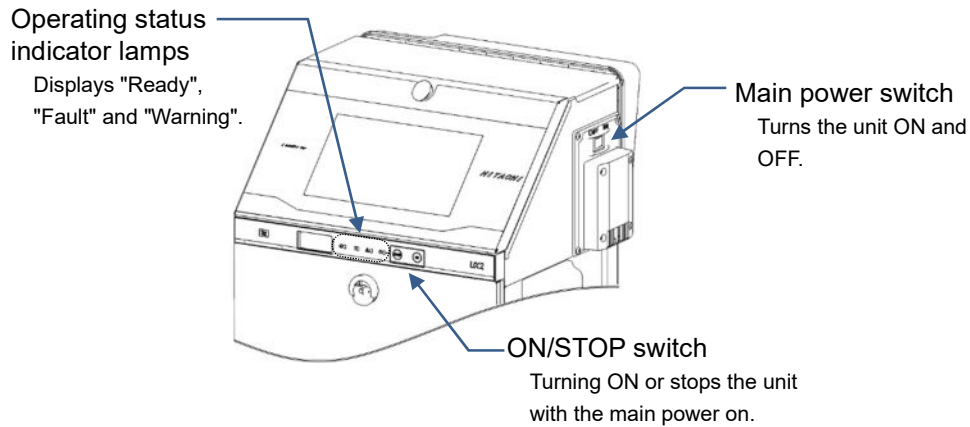
- Ink and makeup may contain organic solvents.
When handling ink or makeup, wear protective gloves and goggles so that it does not come in direct contact with your skin
- An LCD touch panel is used for the screen.
Do not press the buttons with unreasonable force.
- If the system shuts down, turn off the main power switch. To turn on the power again and reuse the system, see "Chapter 5. Emergency Procedures".

- 1** Loosen the head cover lock screw and remove the print head cover. Then, check whether or not the print head cover and the area around the nozzle are soiled by ink.

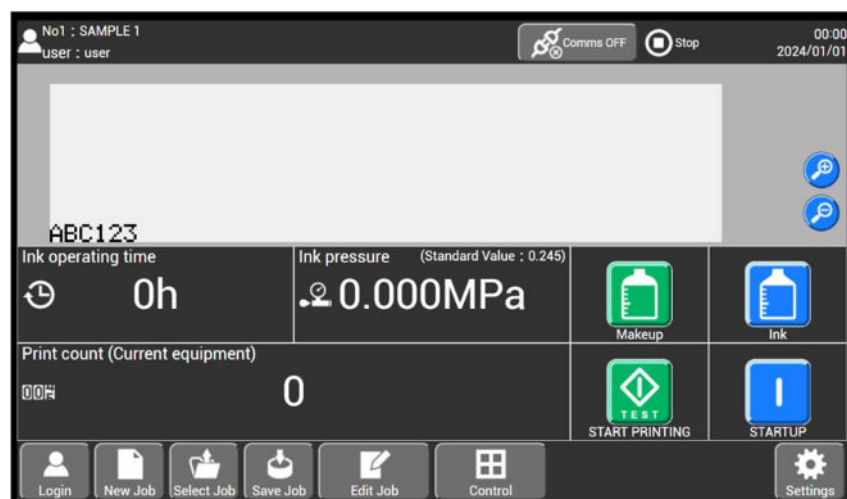


Since this unit prints by ejecting ink against the print material, the outside and inside of the print head cover are soiled by splashing of the ink from the print material. To prevent printing problems due to soiling, check the soiling state and clean the unit where necessary.
See "3.3. Print Head Cleaning" for the cleaning method.

- 2** Turn ON the main power switch to turn on the power.



The power is turned on, and the [HOME] screen appears.



(If the [Select login user] screen appears, see the next page.)

If the power is not turned on, it may have been shut down with the STOP switch last time. Press the ON switch for about two seconds to turn on the power.

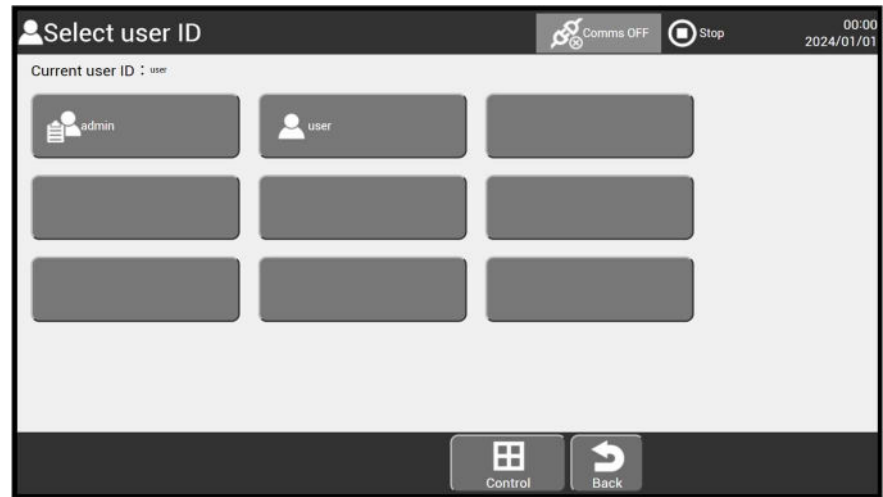
* To turn on the power again, ensure that the operating status indicator lamps are off.

- You can check the print description, count value, and calendar character contents on the [HOME] screen.

If the [Select login user] screen appears when the power is turned on

- A** Turn on the power.
The [Select login user] screen appears. Select any user.

The saved user names are displayed.



An icon showing a binder represents a user with administrator rights.



An icon showing no binder represents a general user.

- B** Press the user name user.
The password input window appears.

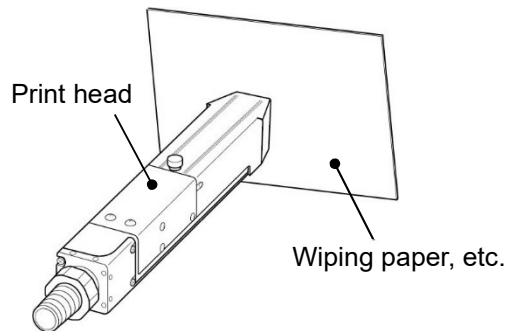
Input the password for the user name "user".



- C** Input the password for the user name "user" and press Enter.
The [HOME] screen appears.

- 3** Place a piece of wiping paper, etc., against the ink ejection port at the end of the print head to be ready for ink ejection.

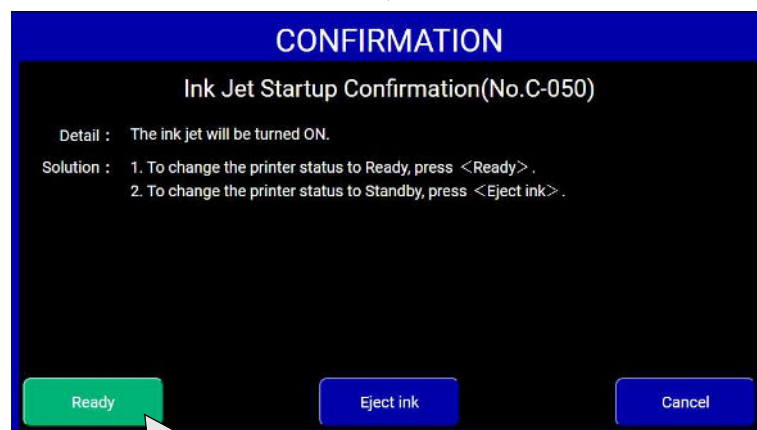
(* Immediately after ink ejection, a little amount of ink may spurt out and soil the surroundings.)



Press **STARTUP** at the bottom right of the [HOME] screen.



Press **STARTUP**



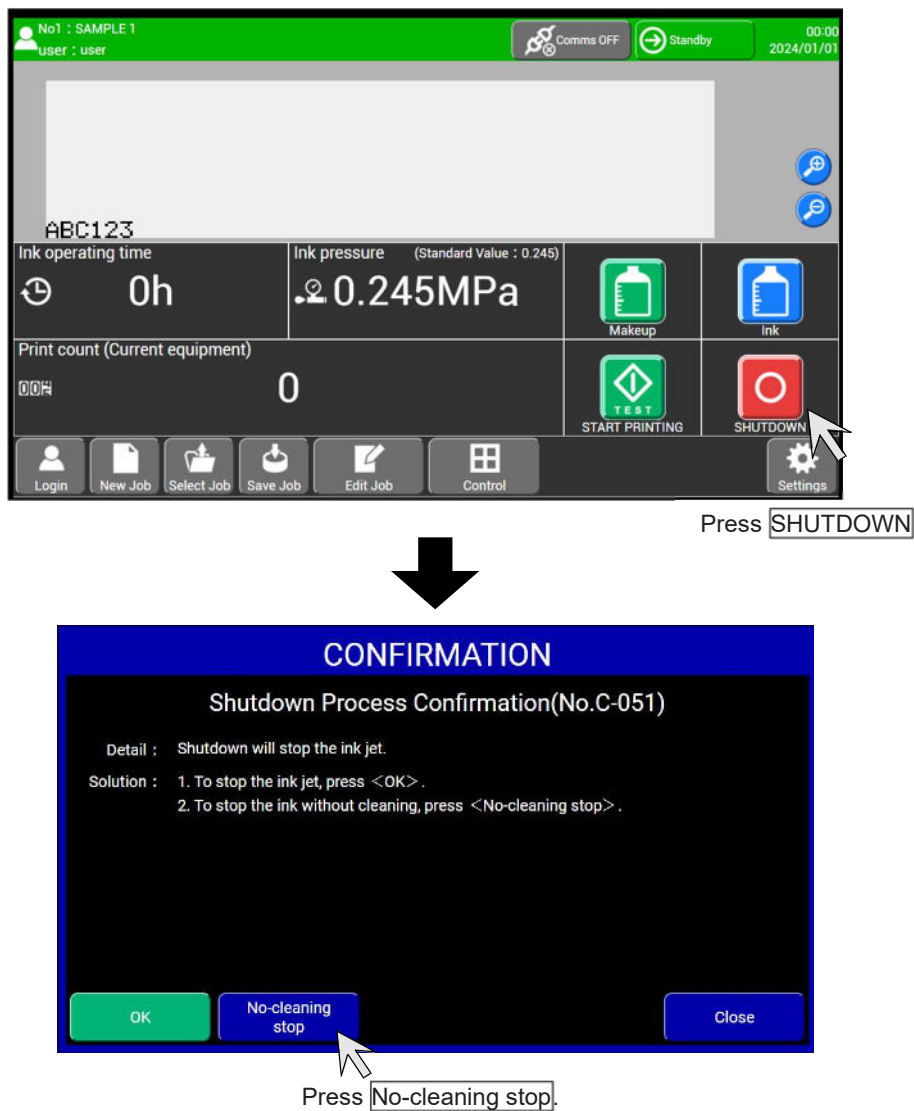
Press **Ready**.

- You cannot eject ink when the print head is inserted into the Cleaning station.

Note: If ink continuously splashes and soils the wiping paper even when not printing, there may be some fault in the print head, such as the ink stream not entering the gutter or the ink not being recovered from the gutter. In this case, stop the operation using the following no-cleaning stop procedure.

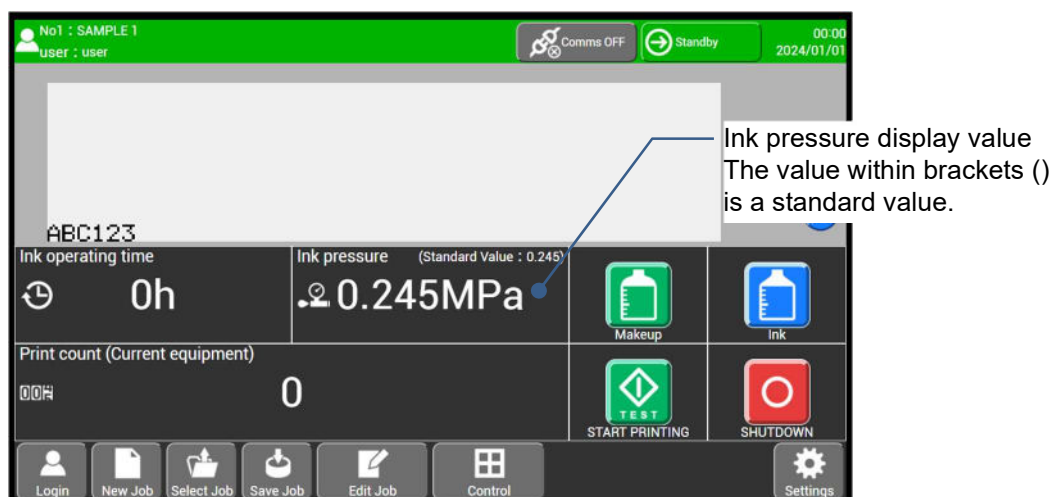
No-cleaning stop procedure

Press **SHUTDOWN** at the bottom right of the [HOME] screen.

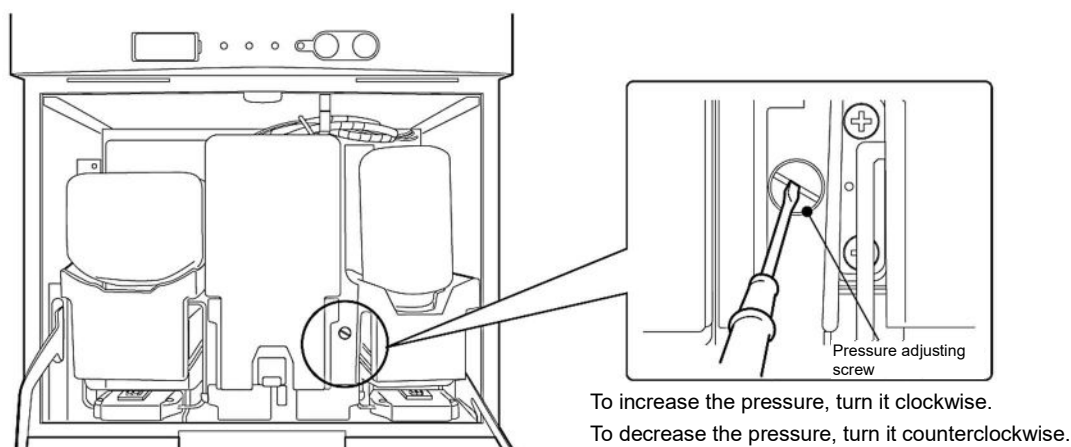


This no-cleaning stop procedure is possible even while the startup sequence is being executed. If you stop the unit with this procedure, restart the operation according to "3.1.2. When Error Occurs at Start of Operation".

- 4 Wait until the status changes from [Starting] to [Ready].
- When this unit is used at a low temperature (approximately 25 °C or lower), it may take longer than usual for the printer to enter the [Ready] state.
 - Check the ink pressure.



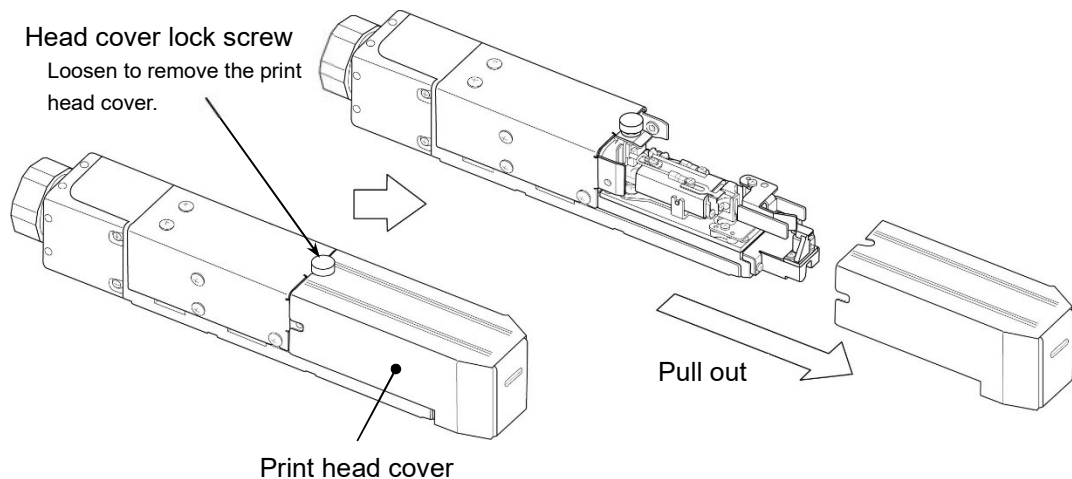
If there is a difference of 0.010 MPa or more between the displayed value and the standard value, adjust the pressure by turning the pressure adjusting screw with a flat screwdriver so that the difference falls within ± 0.002 MPa of the standard value.



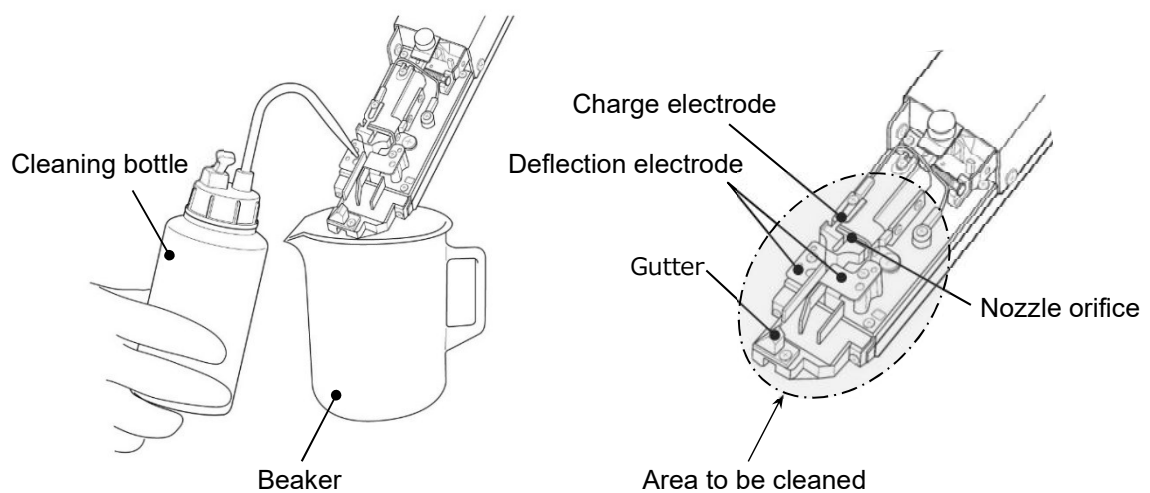
- 5 Input the print target detection signal and check whether or not the printing state and print description are correct.
- If the print target detection signal is input when the status is [Ready], the set print description is printed.

3.1.2. When Error Occurs at Start of Operation

- 1** Make sure that the unit is in the [Stop] state.
- 2** Loosen the head cover lock screw and remove the print head cover.



- 3** Clean inside the area to be cleaned with makeup.
Clean the nozzle orifice, charge electrode, deflection electrode, and gutter with makeup. (Also, see "3.3. Print Head Cleaning").



* Wipe the makeup on the surface of each part (including the mounting base) thoroughly with wiping paper and dry the part.

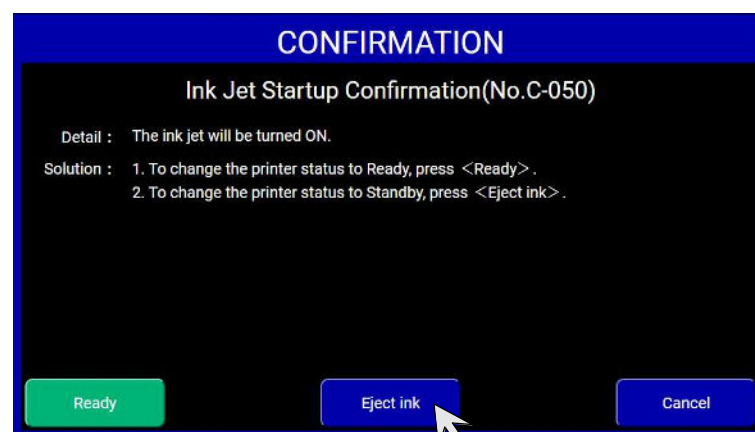
- 4 Remove the print head cover and put the end of the print head in the beaker to be ready for ink ejection.



Press **STARTUP** at the bottom right of the [HOME] screen.



Press **STARTUP**



Press **Eject ink**.

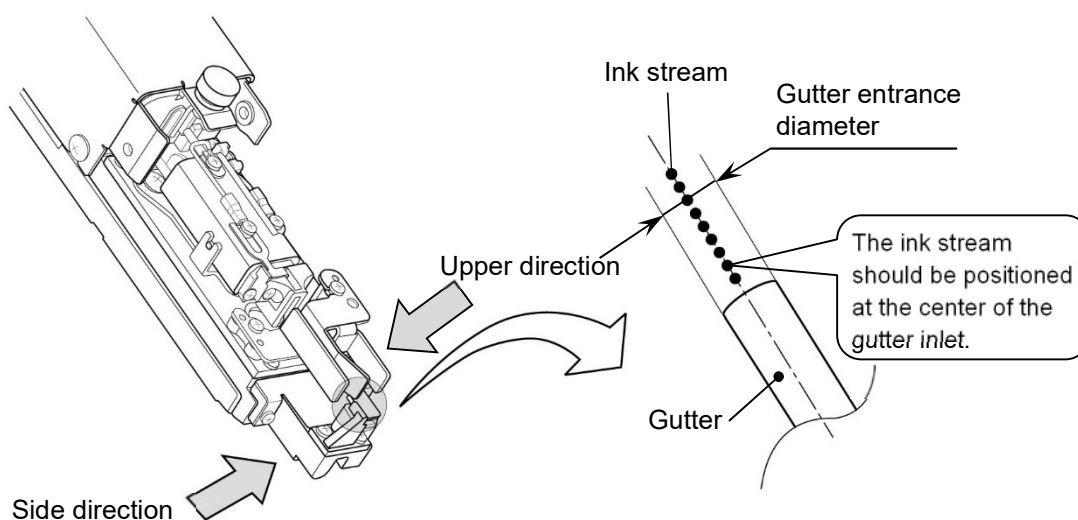
- Cannot eject ink when the print head is inserted into the Print head inlet of the Cleaning station.
(Optional parts)

- 5** Make sure that the ink stream is at the center of the gutter.

WARNING

- Wear protective gear (goggles and mask) when checking the position of the ink stream.
- If any ink or makeup enters your eyes or mouth, immediately flush with warm or cold water and consult a physician.
- Before ejecting the ink, make sure that there is no one in the ejection direction.
(Perform this operation with the end of the print head inserted in a beaker, etc.)

- Check the position of the ink stream from the sides and top of the print head as shown in the figure to make sure that it is at the center of the gutter.



- If the ink stream is not at the center of the gutter, perform [No-cleaning stop] to stop the ink ejection. Also, take action in accordance with the Technical Manual "6.4 How to correct ink stream bending and nozzle clogging".

- 6** Install the print head cover and put the unit in the [Ready] state.

- If the screen status does not change from [Cover open] to [Standby], the print head cover may not be appropriately installed. Install the print head cover again.
- See 3.1.3(2) Switching from [Standby] state to [Ready] state and put the unit in the [Ready] state.
- If the [Cover open] error is displayed, press **Close**.

- 7** Input the print target detection signal and check whether or not the printing state and print description are correct.

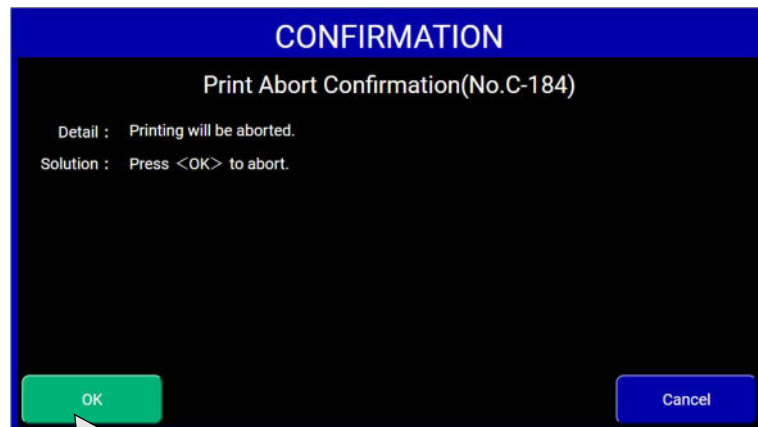
- If the print target detection signal is input when the status is [Ready], the set print description is printed.

3.1.3. Ready and Standby State Switching Operation

(1) Switching from [Ready] state to [Standby] state

- * When the conveyor interlock is activated by the [Ready] output signal, if the status is changed to [Standby], the conveyor will stop.

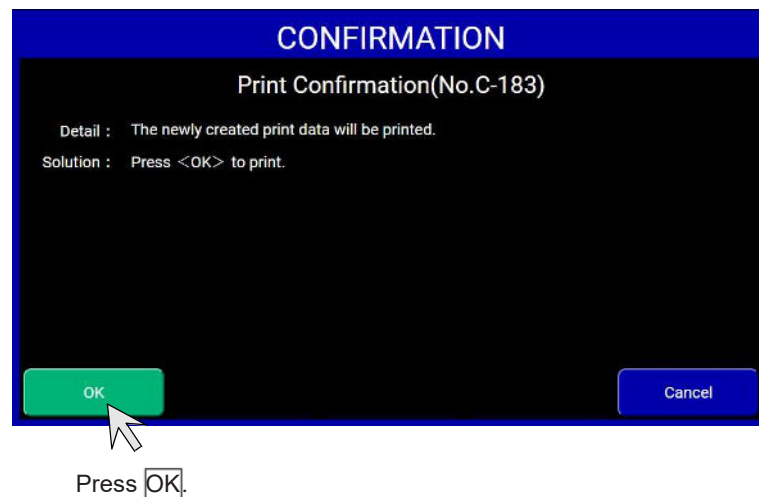
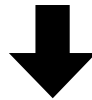
- 1 Press **Ready** at the top of the screen, and the [Print Abort Confirmation] message appears. Then, press **OK**.



Press **OK**.

(2) Switching from [Standby] state to [Ready] state

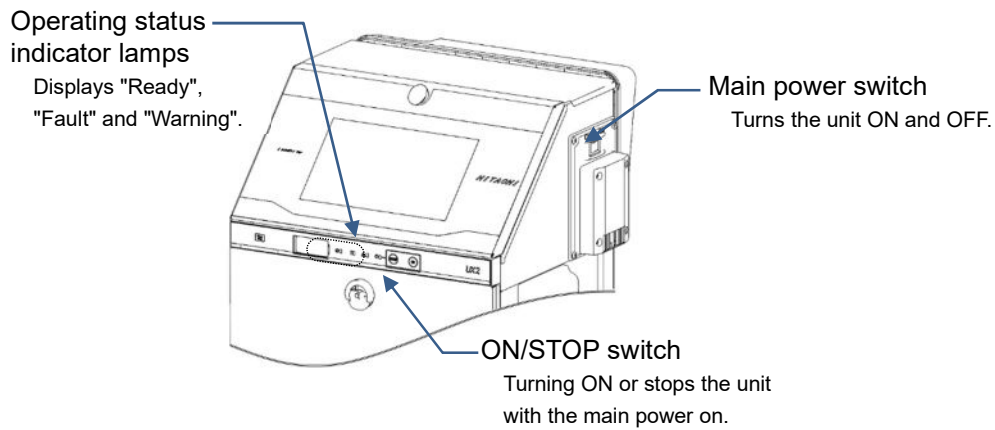
- 2 Press **Standby** at the top of the screen, and the [Print Confirmation] message appears. Then, press **OK**.



3.2. Shutdown Operation

3.2.1. Automatically Stopping by Pressing STOP Switch Button

- 1 Press and hold the STOP switch for about two seconds.
All operations up to the unit power OFF are performed automatically.



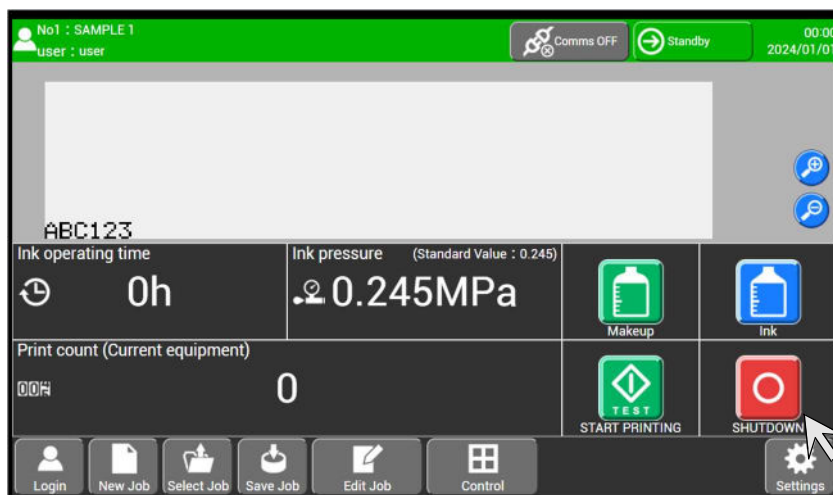
- The power is turned OFF by the STOP switch when ink is being ejected or stopped. (The main power switch does not have to be turned off. Power consumption does not change even if the main power switch remains ON.)
- When the Safe-Clean Station (Optional parts) is attached, the head can be cleaned automatically before the power is turned off. For the setting method, see "11.4. Shutdown Operation Using Cleaning station".

3.2.2. Stopping Ink Ejection by Pressing Button on the Screen

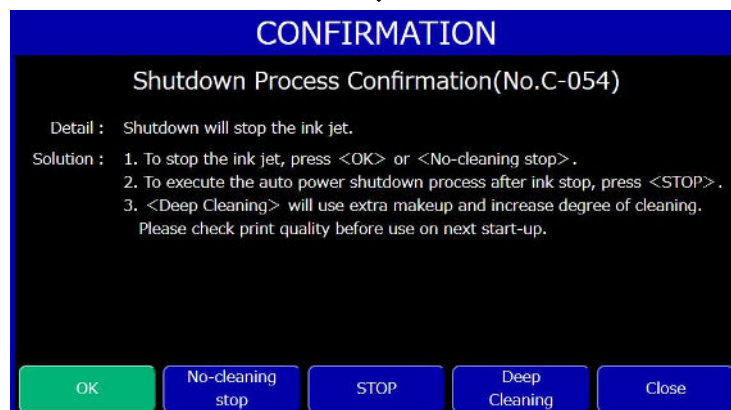
- Use the following procedure to stop ink ejection.

Procedure to stop ink ejection

Press **SHUTDOWN** at the bottom right of the [HOME] screen.



Press **SHUTDOWN**.



- ↑
Stops ink ejection with cleaning the circulation route.
This button does not turn off the power.
- ↑
Stops ink ejection without cleaning the circulation route.
(Not recommended)
- ↑
Turns OFF the power automatically after ink jet is stopped,
like the STOP switch.

Deep Cleaning

- This is a function to clean the printer carefully when the unit is frequently used in a high-temperature environment, or before the weekend, such as a 2-3 day shutdown period. This deep cleaning uses a larger amount of makeup than normal cleaning.
- Contact your nearest distributor to use this function.

3.2.3. Turning Off Main Power Switch

When turning off the main power switch, note the following.

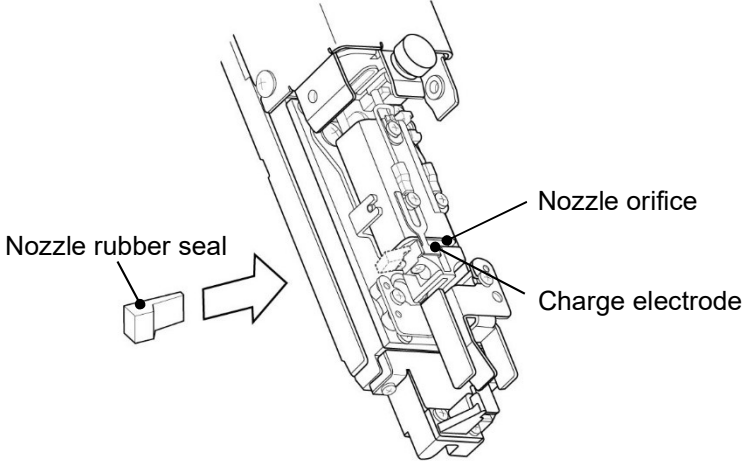
- Normally, press the STOP switch instead of the main power switch to turn off the power at the end of operation.
- If the unit will not be used for a long time, turn OFF the main power switch.
- Do not turn OFF the main power switch while ink is being ejected, except for an emergency. (See "Chapter 5. Emergency Procedures".)
- Note that the power-on method varies depending on the turn-off method.

Relationship between the turn-off method and the power-on method

Turn-off method	Power-on method
When turning OFF the main power switch after stopping the unit by the STOP switch	Turn ON the main power switch and press the ON switch for about two seconds to turn on the power.
When turning OFF the main power switch without using the STOP switch	Turn ON the main power switch to turn on the power.

Handling the nozzle rubber seal

- The "nozzle rubber seal" prevents the nozzle orifice from being dried and dust from attaching to the plate. When the unit will not be used for several days over a holiday, etc., it is recommended that the nozzle rubber seal be installed between the nozzle orifice and charge electrode at shutdown.



Usage precautions

- Store the nozzle rubber seal in a plastic bag, etc., to protect it from dirt and dust.
- Install the nozzle rubber seal after cleaning it with makeup.
- Do not deform the charge electrode when installing the nozzle rubber seal.

3.3. Print Head Cleaning

This section describes the cleaning procedure when the area around the nozzle is soiled by ink.

WARNING

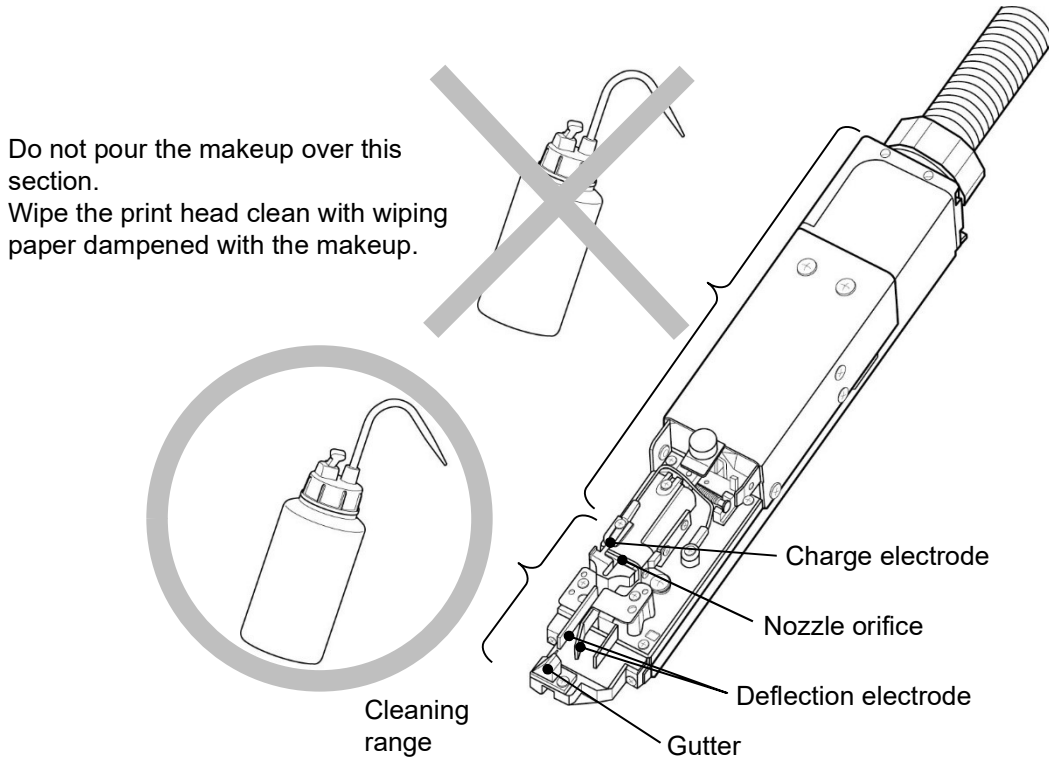
- Makeup used for cleaning is flammable. Ensure that no flame- or arc-generating devices are installed.
- Remove static electricity from your body and peripheral equipment before cleaning the print head.
- See "Safety Precautions" in this Basic Operation Manual for detailed precautions.

NOTE

- Never drain the ink or makeup waste solution into a public sewer system. Waste disposal must comply with all appropriate regulations. Consult the appropriate regulatory agency for further information.
- If you spill any ink or makeup by mistake, wipe it off neatly and promptly with wiping paper or something similar.

3.3.1. Cleaning with Cleaning Bottle

- (1) Face the end of the print head downward and pour makeup onto the dirty part and clean while catching the makeup in a beaker.



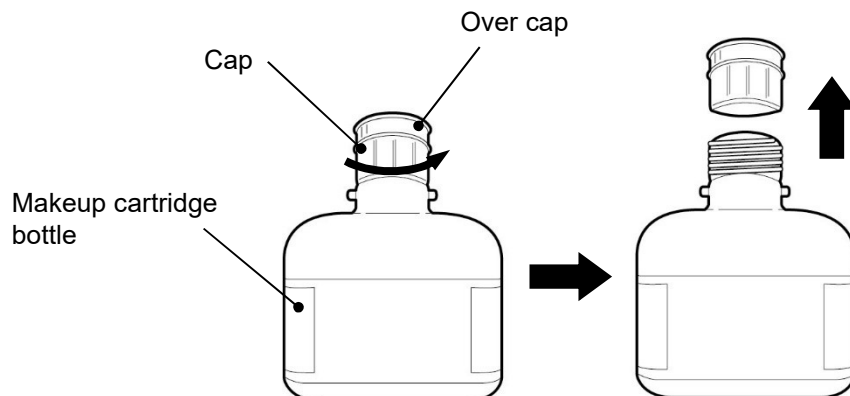
- (2) After cleaning, thoroughly wipe the print head with wiping paper and dry it with the blower.
 - Thoroughly dry the nozzle orifice, charge electrode, deflection electrode, and fringe of the gutter in particular. Make sure that the print head is sufficiently dry before starting the operation. If operated while the print head is wet, the printer will not start normally
 - While the print head is wet, do not face its end upward.
- (3) Do not immerse the print head in the makeup.
The makeup may enter the print head.
- (4) When printing is frequently performed or the distance between the print material and the print head is short, ink splashes may stain the end of the print head and the print head cover. If this condition is left unresolved, the staining will be worse, resulting in a print error or emergency stop. If a print error or emergency stop frequently occurs due to staining caused by ink splashes, stop the operation in progress and clean the end of the print head (around the nozzle, charge electrode, deflection electrode, mounting base and gutter) and the print head cover. Perform this operation in addition to the cleaning at the end of each day's work.

Air purging of the print head is effective against staining due to ink splashing.
See the Technical Manual "3.1 Print head air purge".

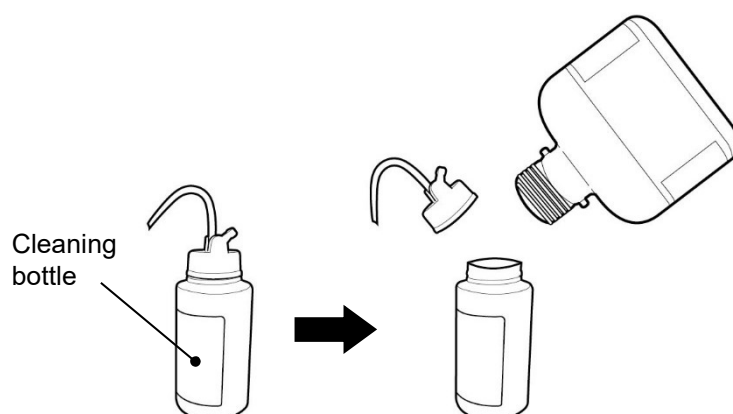
(*) When using the cartridge bottle makeup as a cleaning solution

(a) Open the makeup cartridge bottle by turning its cap.

At this time, do not remove the over cap.



(b) Use the makeup by transferring it to the cleaning bottle.



- Notes:
- If no cleaning solution is available, transfer the makeup in the makeup cartridge bottle to the cleaning bottle before setting the makeup cartridge bottle.
 - Tighten the cap of the makeup cartridge bottle after use. Turn it upside down to check if there is no leakage of makeup.
 - If the makeup in the makeup cartridge bottle is used as a cleaning solution, the volume of makeup in the makeup cartridge bottle decreases. When it is set in the unit, please use a makeup cartridge bottle that contains makeup more than half of the bottle.
 - If makeup is accidentally spilled, promptly wipe it up with wiping paper.

3.3.2. Cleaning with Safe-Clean Station (Optional parts)

WARNING

- Solvent steam is produced during head cleaning. If you have no choice but to touch the print head or Cleaning station during head cleaning, be sure to remove static electricity from your body before the operation.
- See "Safety Precautions" in this Basic Operation Manual for detailed precautions.

CAUTION

- When stopping the head cleaning and removing the print head, wear protective gloves and goggles and prepare wiping paper. The print head may not be dried enough.

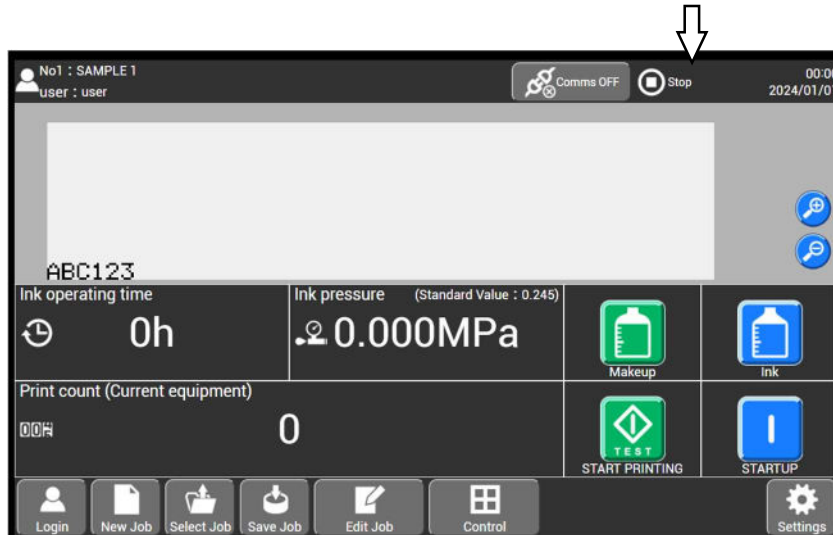
NOTE

- Do not insert any other item than the print head of the unit. Otherwise, it may cause an unexpected failure or malfunction.
- When the unit is operated for the first time or the head cleaning function is not used for several days (four or more days), the volume of makeup used for head cleaning may change to fill the piping.
- Do not remove the print head until the cleaning is complete. Otherwise, the makeup may splash or high-concentration solvent steam may remain inside.

Operation procedure

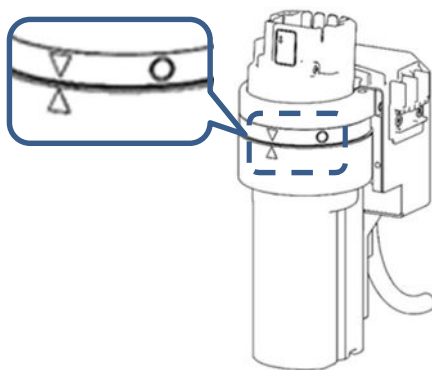
- 1 Make sure that the unit is in the [Standby] or [Stop] state.

Status: Indicates the status of the unit.

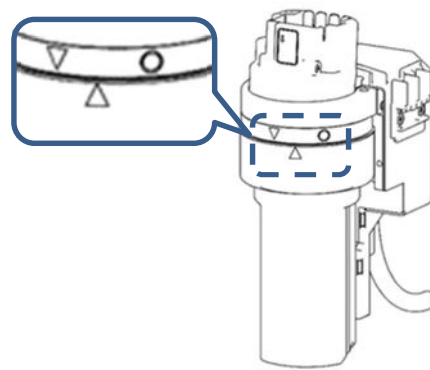


- 2 Make sure that the cleaning solvent container of the Cleaning station is correctly installed.
 - Make sure that the "▽" mark on the main unit side of the Cleaning station is aligned with the "△" mark on the cleaning solvent container.
 - If the marks are misaligned or the cleaning solvent container is installed incorrectly, this function cannot be executed.

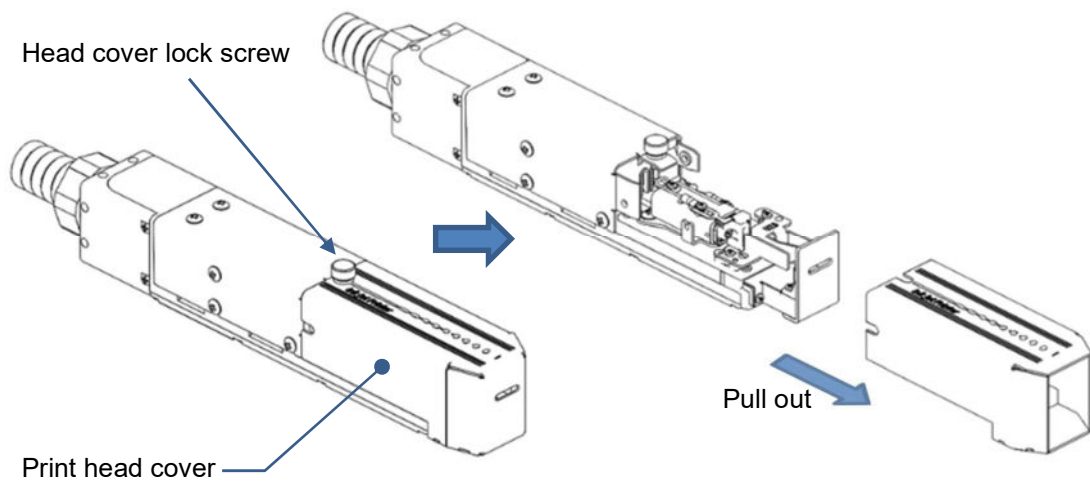
<Correctly installed>



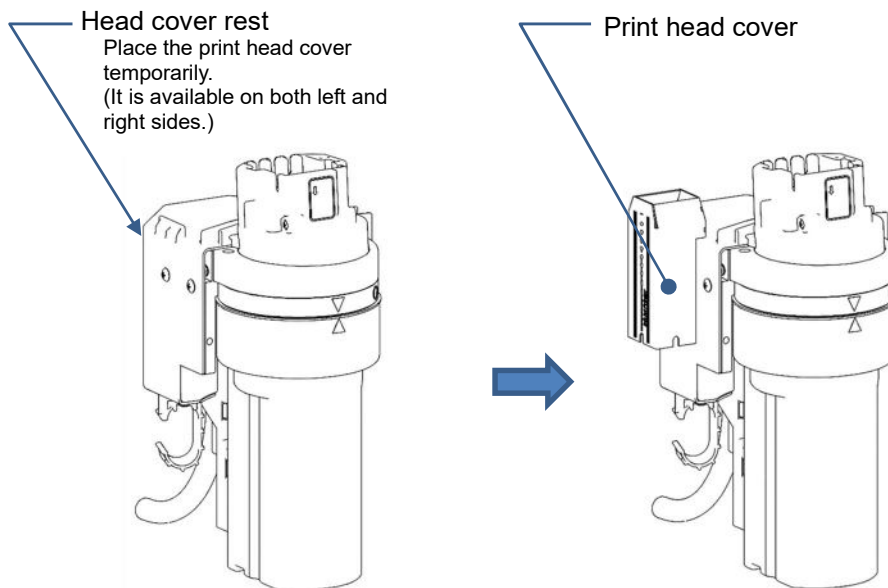
<Incorrectly installed>



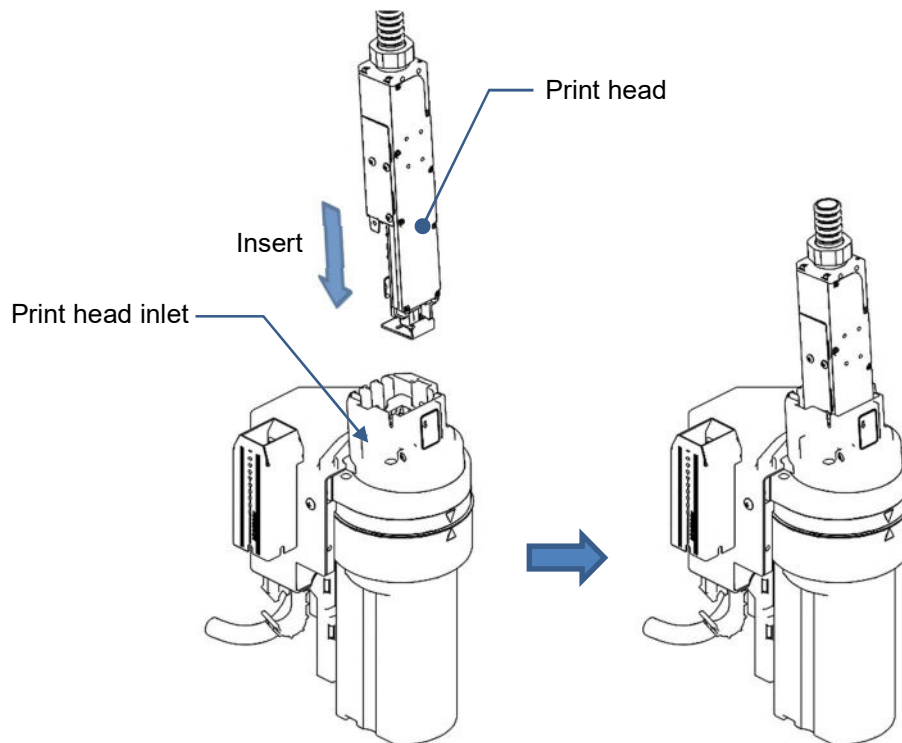
- 3** Loosen the head cover lock screw and remove the print head cover.



- 4** Make sure that the print head cover is not lost after it is removed, such as by hanging it on the head cover rest for the Cleaning station.



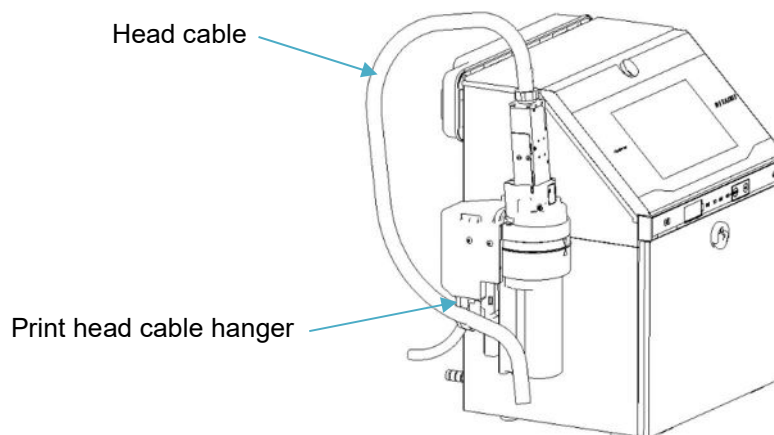
- 5** Insert the print head into the Print head inlet of the Cleaning station in the direction indicated in the figure below.



NOTE

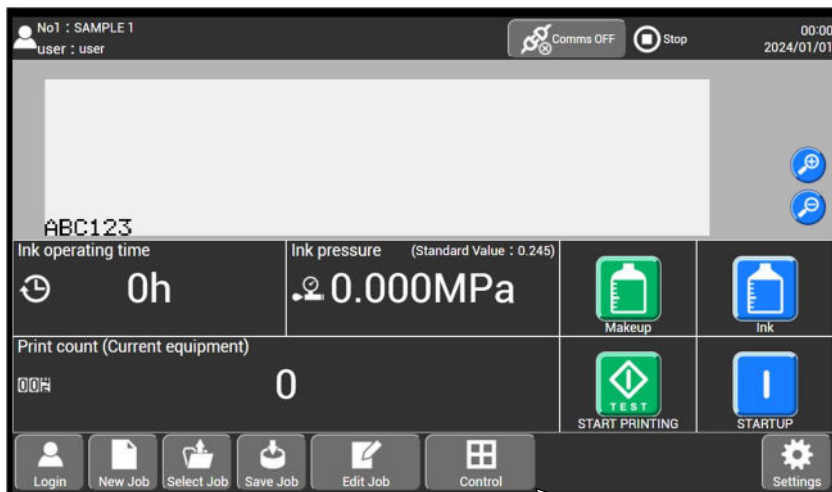
- Do not insert the print head into the Cleaning station forcibly. Otherwise, some part may deform, fall off, or be damaged.

- 6** To prevent a load on the base of the print head under the weight of the head cable, hang the head cable on the Print head cable hanger attached to the Cleaning station.



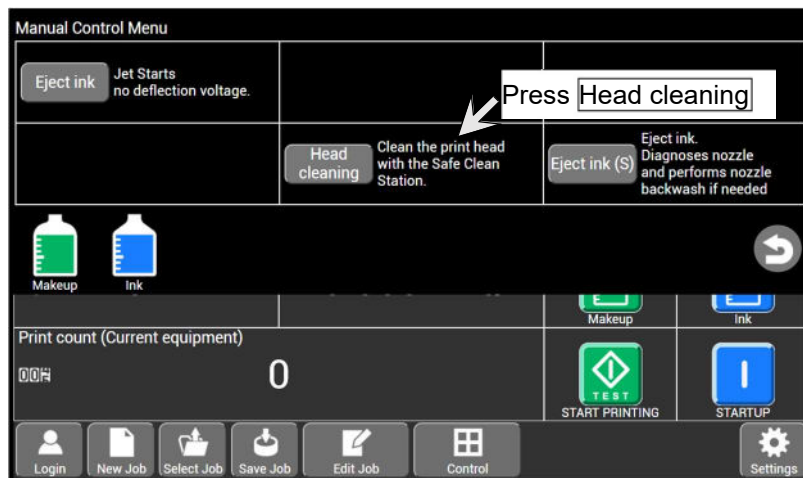
- There is no need to use the Print head cable hanger if the head cable is fixed in any other way so that no load is applied to the base of the print head.

- 7 Press the [Manual Control Menu] button on the [HOME] screen to display the [Manual Control Menu] screen.



Press **Control**.

- 8 Press the [Head cleaning] button on the [Manual Control Menu] screen.

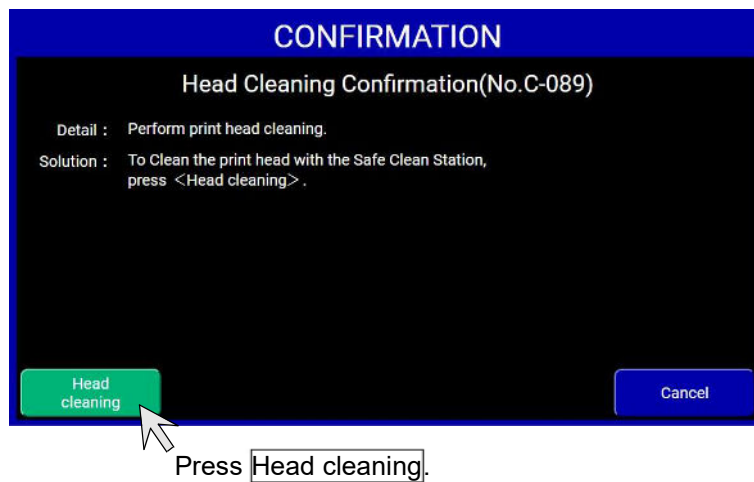


- 9 The [Confirm] message appears.

The following describes how to perform head cleaning when the unit is in the [Stop] state and when in the [Standby] state.

<<When performing head cleaning in the [Stop] state>>

- (1) The following [Confirm] message appears. Press [Head cleaning].

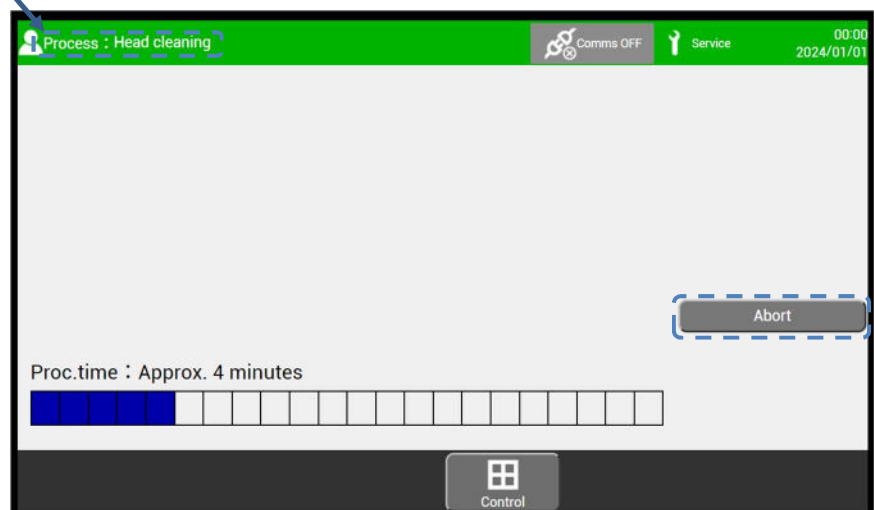


- (2) When the cleaning starts, the following screen appears.

The set cleaning mode is displayed.

Cleaning mode	Display
Eco	Eco head cleaning
Standard	Head cleaning
Deep	Deep head cleaning

For details on how to change the cleaning mode, see 11.1 in the Instruction Manual.

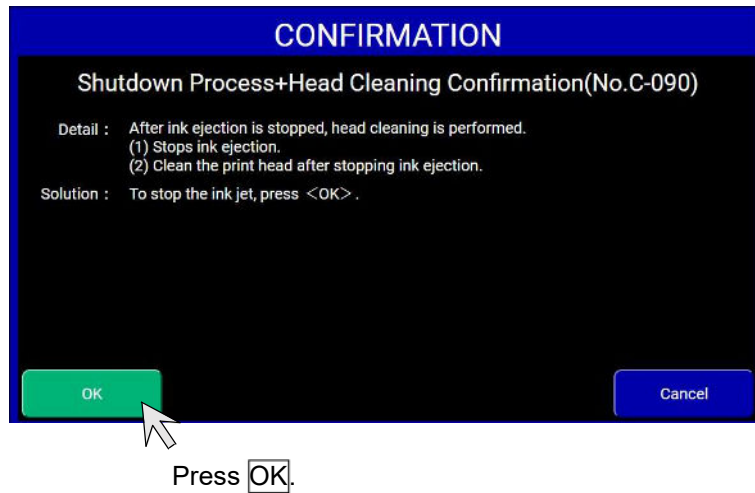


- To stop the Head cleaning, press the [Abort] button.

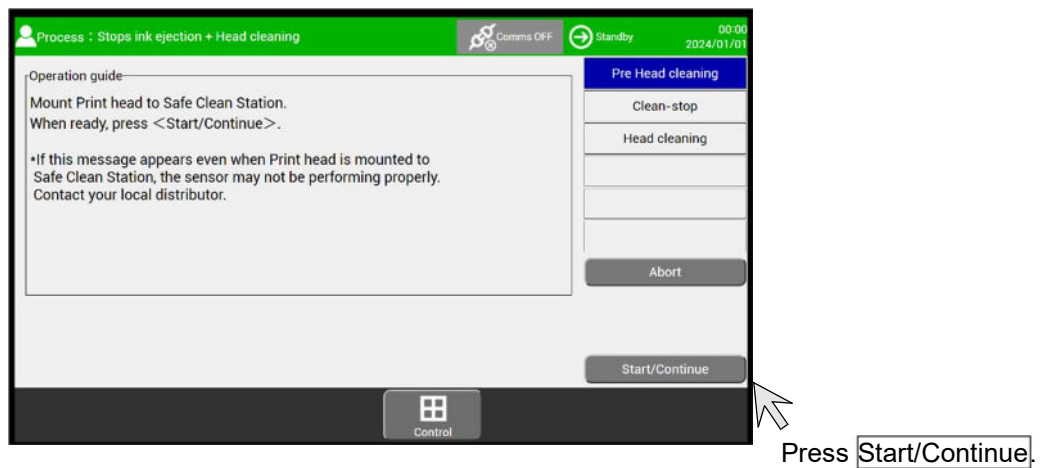
<<When performing head cleaning in the [Standby] state>>

Operations from ink stop to head cleaning are automatically performed.

- (1) The following [Confirm] message appears. Make sure that the print head is inserted into the Cleaning station and press [OK].

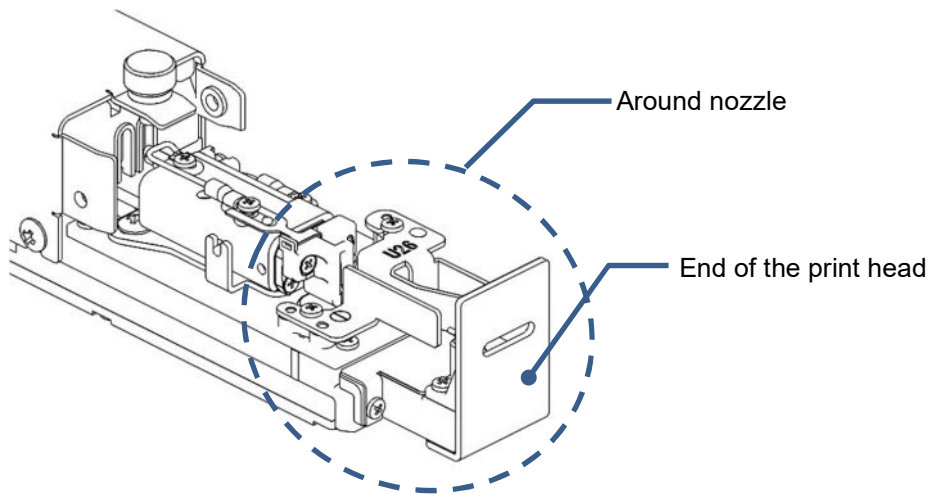


- (2) When [Start/Continue] is pressed, operations from ink stop to head cleaning are automatically performed.



- To stop the operation, press the [Abort] button.

- 10** Remove the print head from the Cleaning station and make sure that the area around the nozzle including the end of the print head is cleaned and the makeup is dried up.



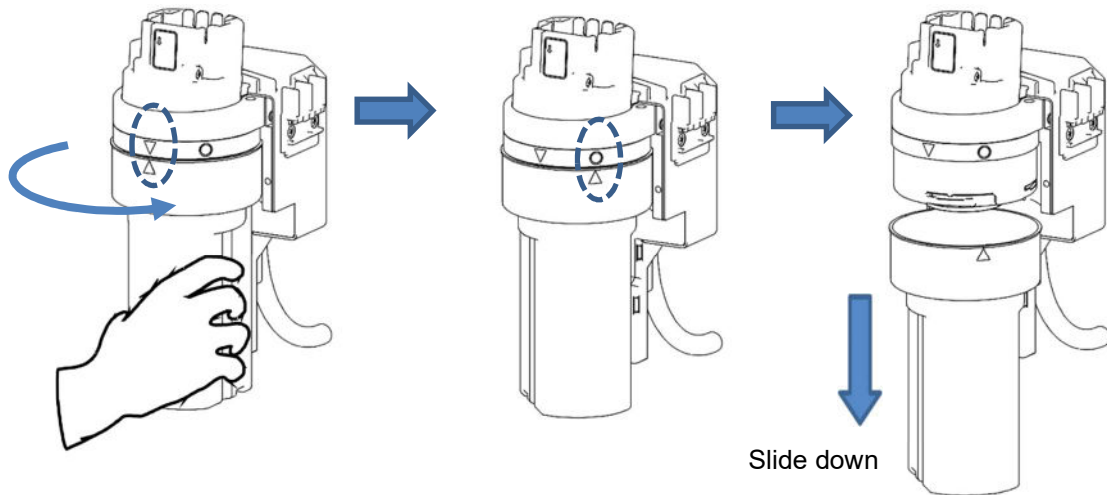
NOTE

- The ink stain may remain or the head is not dried enough depending on the ink stain level or operating environment.
- After cleaning, wipe off the print head with wiping paper if it is wet.
- If the print head is stained after cleaning, perform head cleaning again or clean the print head using a cleaning bottle.
- If the ink does not come off easily, wipe it off with wiping paper soaked in makeup.
- Do not apply excessive force to the electrode when wiping. Otherwise, it may deform, causing an unexpected malfunction.

- 11 Remove the cleaning solvent container from the Cleaning station and drain the makeup in the container.

<<How to remove the cleaning solvent container>>

Hold and turn the cleaning solvent container until its "△" mark is aligned with the "○" mark on the Cleaning station. Then, slide the cleaning solvent container down to remove it from the Cleaning station.



NOTE

- Waste solution must be treated according to the local regulations.
- If any vibration or impact is applied to the Cleaning station after the cleaning solvent container is removed, the solution may leak from the inside.

- 12 Install the cleaning solvent container in the reverse order of the removal operation.

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Chapter 4

Chapter 1.

Chapter 2.

Chapter 3.

Chapter 4.

Chapter 5.

Ink and Makeup Replenishment

4.1. Replenishing Ink

4.2. Replenishing Makeup

WARNING

- Exercise caution to avoid inadvertently disconnecting, forcibly pulling, or bending piping tubes. Since the ink and solvent in some portions of piping tubes are pressurized, they may splash into your eyes or mouth or onto your hands or clothing.
If any ink or makeup enters your eyes or mouth, immediately flush with warm or cold water and consult a physician.
- When handling ink or makeup, such as replenishment or replacement, take enough care not to spill ink or makeup.
If you spill any ink or makeup by mistake, wipe it off neatly and promptly with wiping paper or something similar. Do not close the maintenance cover until you make sure that the portion you have just wiped is completely dry.
You must pay particular attention when you have spilled ink or makeup inside the printer and it is not completely dry. This is because vapors of ink or makeup will stay inside the product and may catch on or cause a fire.
If you find it hard to wipe the printer with the power on, stop it with the maintenance cover open. Power it down and then wipe it off again.
- Should you find a leak of ink or makeup inside the product while the product is running or being maintained, wipe it off promptly with wiping paper or something similar. Then, with the maintenance cover open, stop the product, power it down, and repair the leak.
Continuing operation with a leak of ink or makeup will cause an anomaly, resulting in abnormal printing. Ink and makeup are flammable. They may therefore catch on or cause a fire.
- Ink and makeup, their waste solution, used wiping paper and empty containers are flammable. Make sure that these waste disposals are kept away from a flame or arc.

 CAUTION

- Pay careful attention to the following items regarding handling of the ink and makeup:
 - Wear protective gloves and goggles so that it does not come in direct contact with your skin. If the ink or makeup comes into contact with skin, wash with soap and warm or cold water.
 - When removing the bottle from the unit, exercise caution to prevent ink from coming into contact with the product or surrounding articles. If there is any spillage, immediately wipe it to clean using a cloth moistened with makeup.
 - When opening the bottle, note the following. Since the vapor pressure of makeup is generally high, if the ambient temperature is high like in the summer, the internal pressure may rise, causing makeup to spurt out when the outside cover is removed.
 - Do not hold the bottle near your face.
 - Place the bottle on a level surface.
 - Open the bottle while covering the cap with a waste cloth.

NOTE

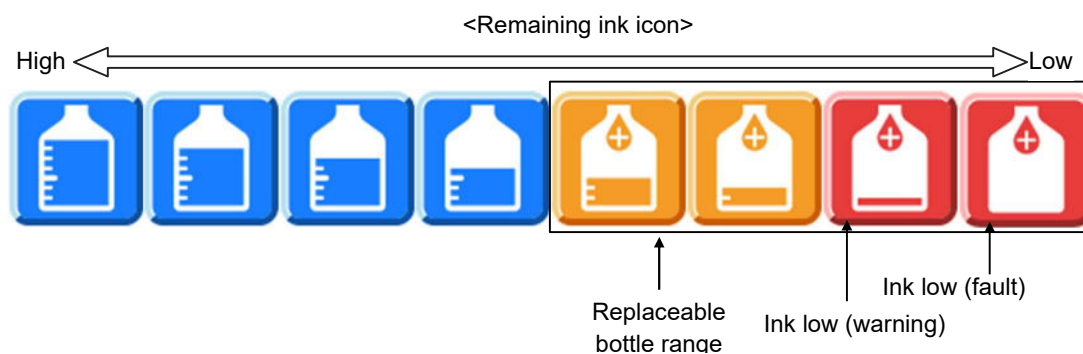
- Never drain the ink or makeup waste solution into a public sewer system. Waste disposal must comply with all appropriate regulations. Consult the appropriate regulatory agency for further information.

4.1. Replenishing Ink

This section describes how to replenish ink in this unit. It also provides ink replenishment timing and precautions.

(1) Overview

- Ink can be refilled when the remaining ink icon is positioned in a range where the cartridge bottle can be replaced.
 - Replenish the ink in the ink reservoir within 60 minutes (*1) after the warning [Ink Low Warning] occurs. If the ink is not refilled, the unit will stop.
- (*1) The specification differs depending on the ink type. See the "Handling guidance of each ink, Chapter 4" for details.
- When the ink is replenished, the warning is automatically reset.
 - Ink can be refilled only while the power is ON.



* If the icon color is blue, the ink cartridge bottle cannot be replaced.

- If the ink level in the ink cartridge bottle is low, the level of the remaining ink icon may suddenly drop to the replaceable bottle range. However, you can continue the operation as this is not a problem.

(2) Replenishment procedure

NOTE

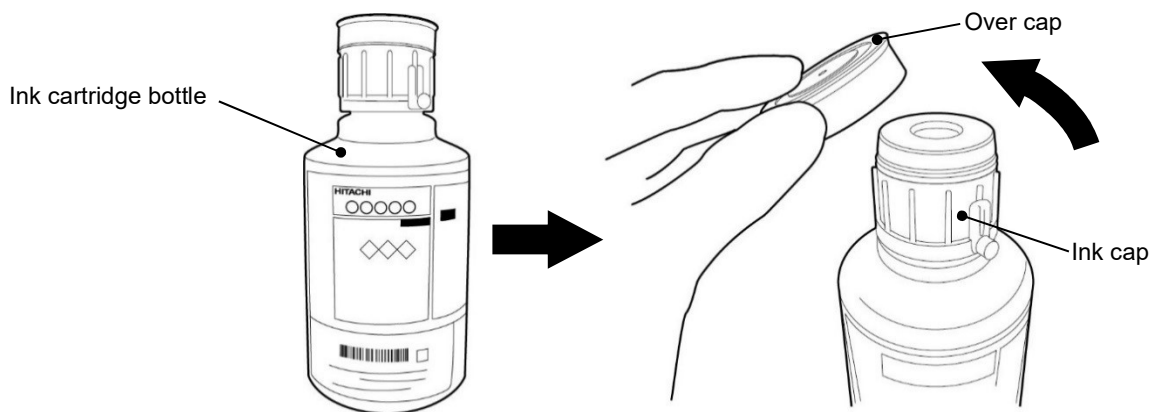
- Do not lift the cartridge bottle by holding the over cap. Otherwise, the cartridge bottle may fall.
- Since the cartridge bottle contains an IC chip, avoid strong shock/electromagnetic waves or liquid leakage.

- 1 Remove the over cap of the ink cartridge bottle.

NOTE

- After loosening the ink cap, be sure to tighten it before setting the cartridge bottle. Otherwise, the ink may spill when the bottle is set.
- After removing the over cap, do not allow your finger, foreign matter, or dirt to get into the hole of the ink cap. Doing so could cause ink leakage and equipment failure.
- Do not swap the cap between the ink cartridge bottle and the makeup cartridge bottle. Otherwise, ink or makeup may spill.

The over cap is required only for storage.
It is unnecessary when refilling ink.



- 2** Hold the IC tag mark of the label on the cartridge bottle over the RFID reader of the printer to read the ink ID.

NOTE

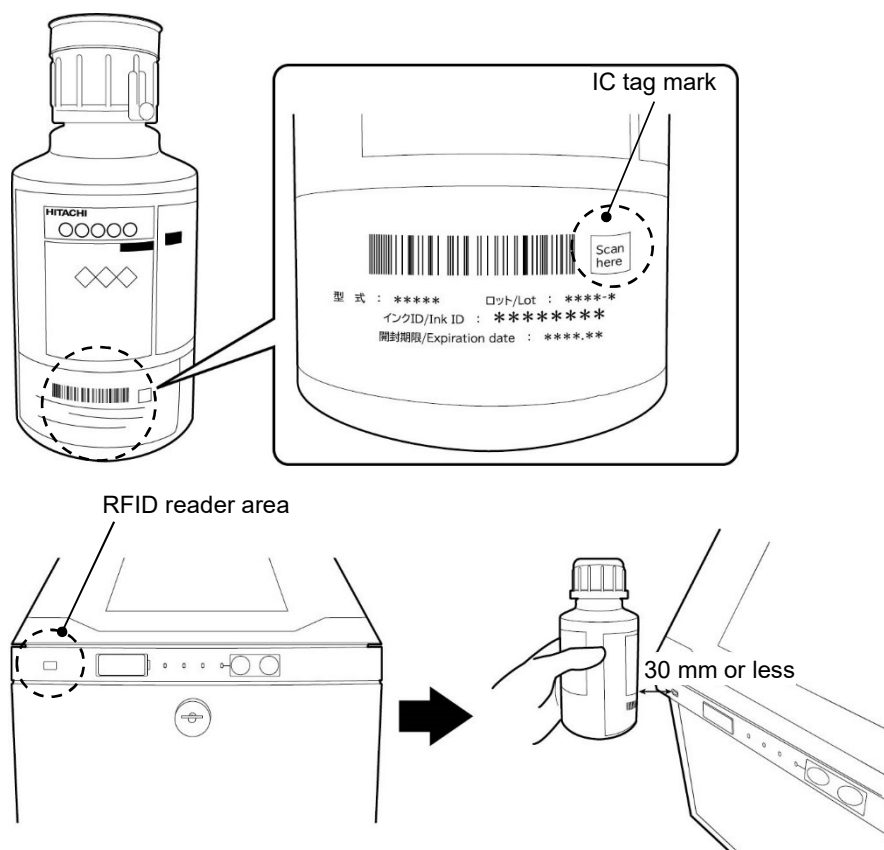
- If there is ink remaining in the cartridge bottle even when the bottle is replaceable, do not replace it but contact your nearest local distributor because some part may be broken.

* If there is no reaction when you hold the cartridge bottle over the reader of the printer, the IC tag of the cartridge may be damaged.

In this case, you can manually input the ink ID from the IJP screen.

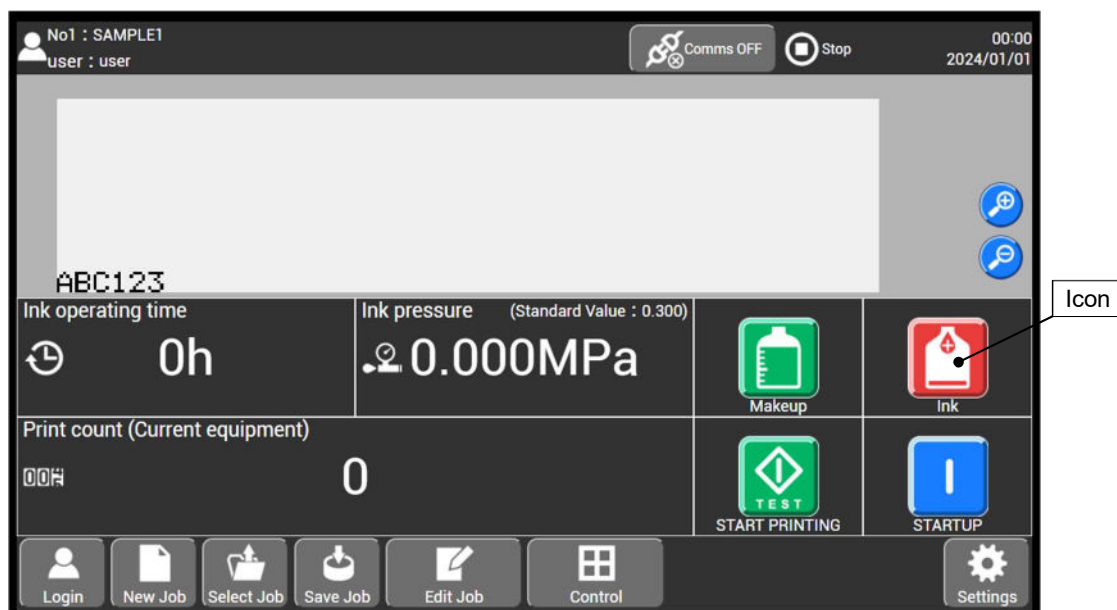
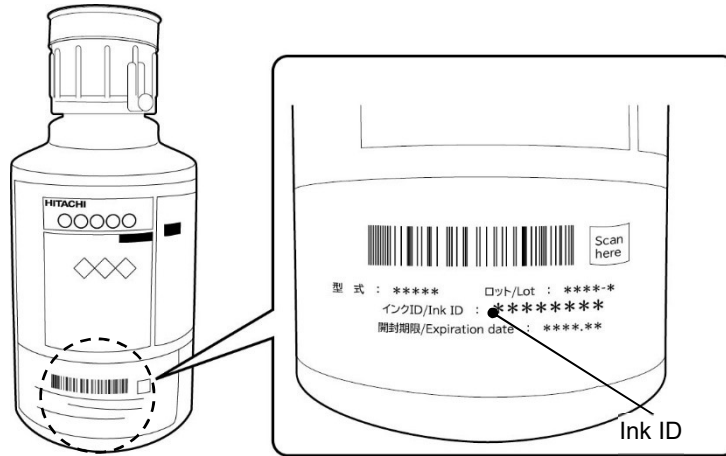
(Steps **2**-1 and **2**-2)

- If the ink ID is read by the IJ printer, steps **2**-1 and **2**-2 are not necessary.



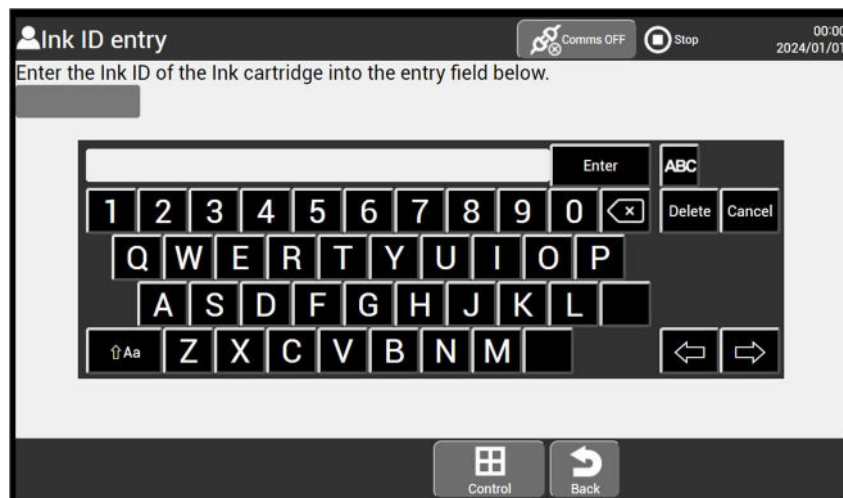
- 2**-1 If you manually input the ID, touch the icon on the [HOME] screen of the unit to open the ID input screen and input the ink ID.

- The ink ID is printed on the label of the cartridge bottle.



- 2** -2 Manually input the ink ID in the ID input area.

To toggle between uppercase and lowercase characters, use .



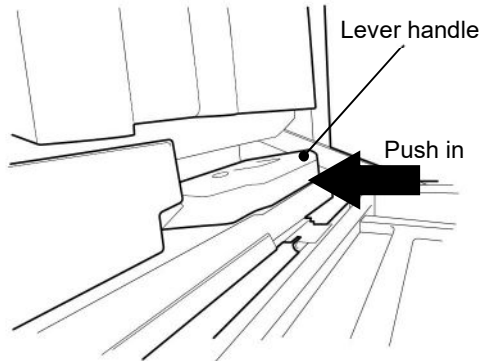
* If the ID is too stained by ink to be read, contact your nearest local distributor.

3 When the ink ID is recognized, the lever handle on the ink side is unlocked.

4 (1) Tilt the lever handle toward yourself, (2) lift it, and (3) remove the cartridge bottle.

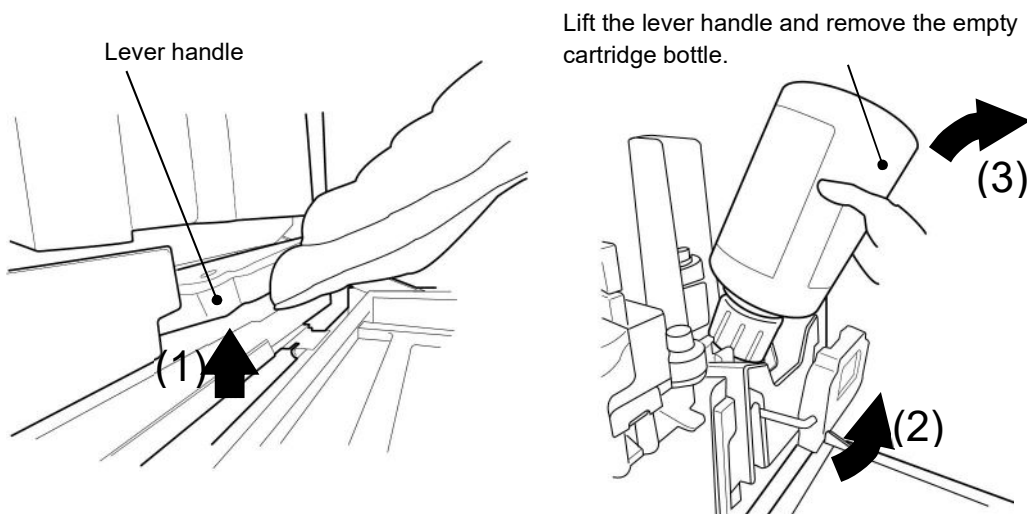
NOTE

- If the lever handle cannot be lifted, do not pull it with excessive force but push the lever handle all the way in.

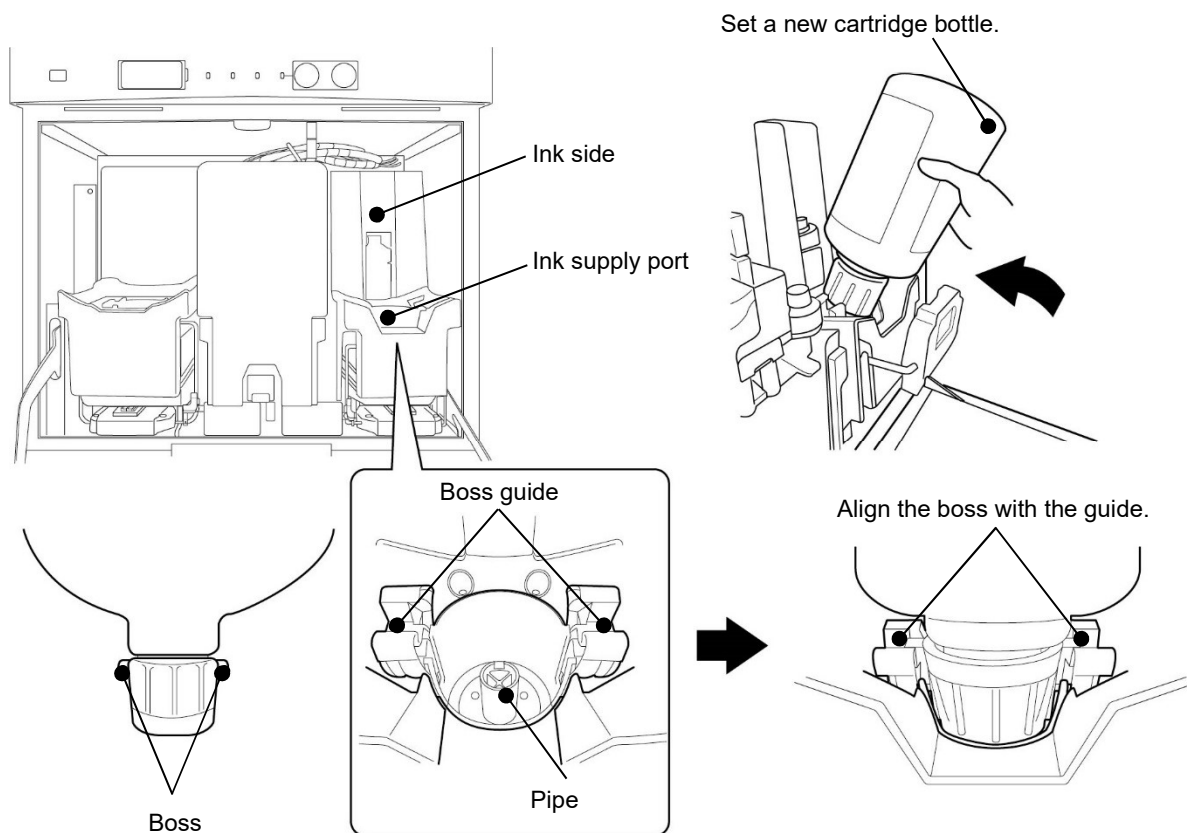


NOTE

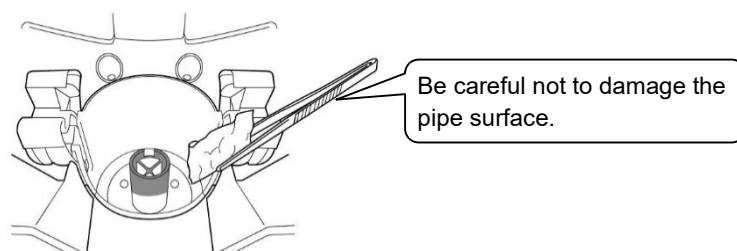
- After removing the cartridge bottle from the unit, face the cap upward immediately. Also, do not expose the removed cartridge bottle to any impact. Doing so may cause ink to splatter.
- Do not turn the cartridge bottle with the cartridge bottle set in the unit. The ink cap may become loose, causing ink to overflow.
- Do not put waste solution in a used cartridge bottle. Otherwise, waste solution may spill. Note that a used cartridge bottle is not completely sealed even when the over cap is mounted.
- If a used cartridge bottle is filled with ink or makeup and reused, ink or makeup may spill.



- 5** Set a new cartridge bottle in the specified position.
Install the boss of the cartridge bottle on the boss guide of the ink supply port.



* If ink has accumulated on the pipe surface, wipe it off using wiping paper dampened with makeup.

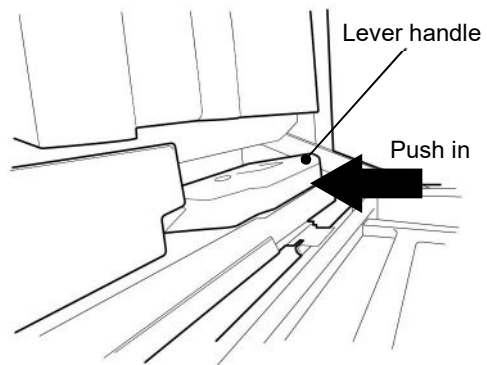
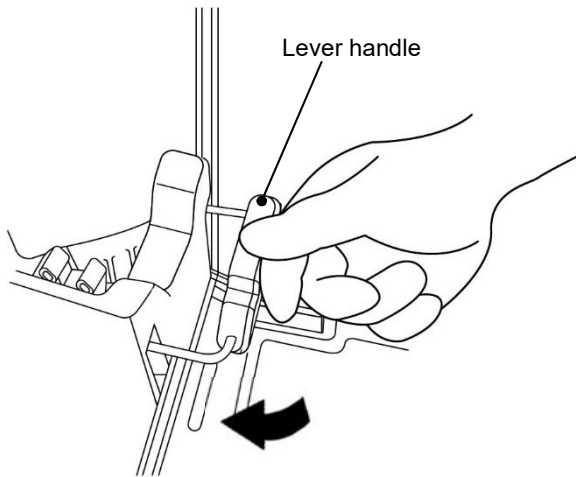
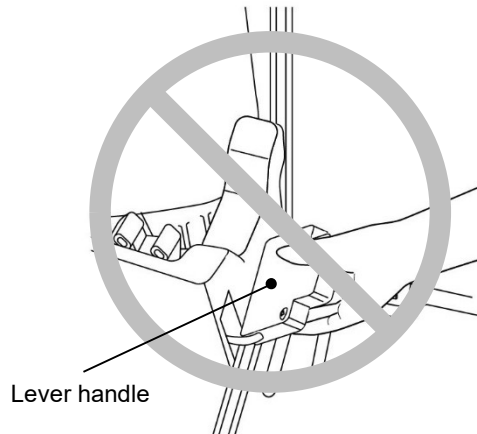
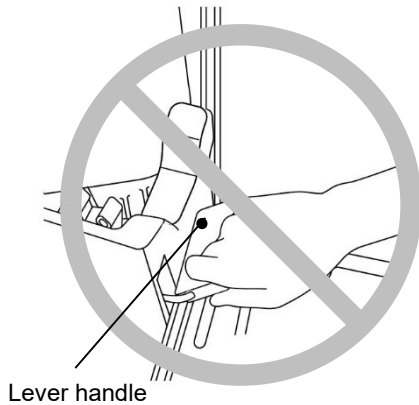


* If a foreign object such as a screw is found or gets in the ink supply port, remove it.

- 6 When a new cartridge bottle is set, push the lever handle down and then push it all the way into the unit.

CAUTION

- Be careful not to get your hand or fingers pinched when pushing down the lever handle. (See the figure below.)



- 7** The cartridge replacement (ink refilling) is now completed.
Press **Complete** on the guidance screen of the unit.
Pressing **Complete** confirms that ink refilling is complete.



4.2. Replenishing Makeup

This section describes how to replenish makeup in this unit. It also provides makeup replenishment timing and precautions.

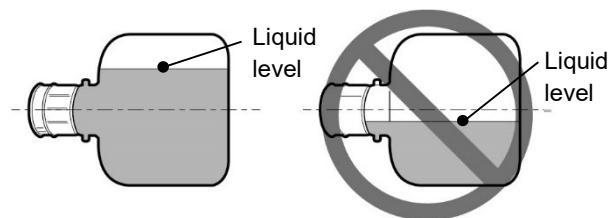
(1) Overview

- Makeup can be refilled when the remaining makeup icon is positioned in a range where the cartridge bottle can be replaced.
- Replenish the makeup in the makeup reservoir within 60 minutes after the warning [Makeup Low Warning] occurs. If the makeup is not refilled, the unit will stop.
- When the makeup is replenished, the warning is automatically reset.
- Makeup can be refilled only while the power is ON.



* If the icon color is green, the makeup cartridge bottle cannot be replaced.

- Use an unopened makeup cartridge bottle. If opened, use one that contains makeup more than half of the bottle. If the makeup level in a makeup cartridge bottle is low, place the bottle horizontally and make sure that it contains makeup more than half of the bottle before use.



- If the makeup level in the makeup cartridge bottle is low, the level of the remaining makeup icon may suddenly drop to the replaceable bottle range. However, you can continue the operation as this is not a problem.

(2) Replenishment procedure

NOTE

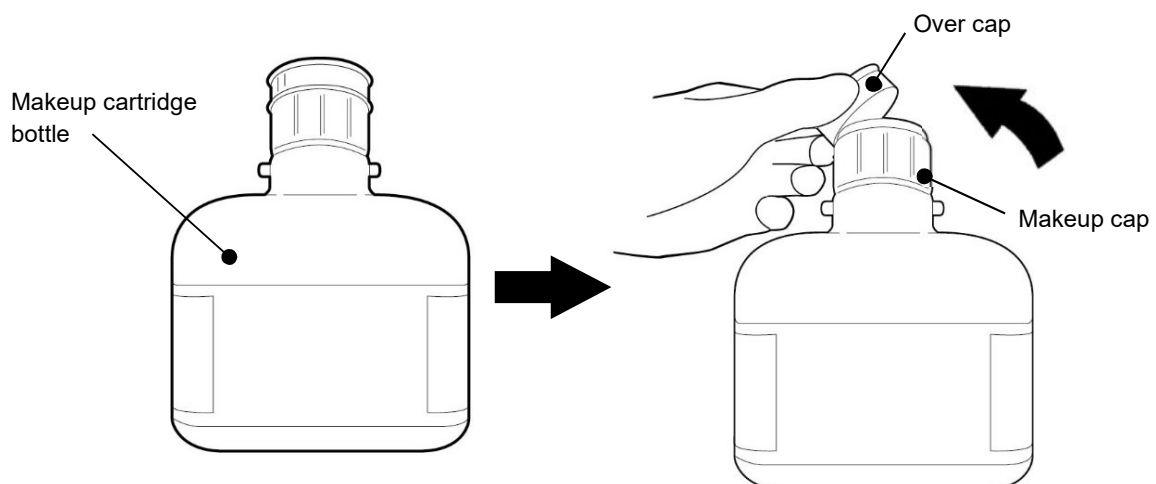
- Do not lift the cartridge bottle by holding the over cap. Otherwise, the cartridge bottle may fall.
- Since the cartridge bottle contains an IC chip, avoid strong shock/electromagnetic waves or liquid leakage.

- 1 Remove the over cap of the makeup cartridge bottle.

NOTE

- After loosening the makeup cap, be sure to tighten it before setting the cartridge bottle. Otherwise, the makeup may spill when the bottle is set.
- After removing the over cap, do not allow your finger, foreign matter, or dirt to get into the hole of the makeup cap. Doing so could cause makeup leakage and equipment failure.
- Do not swap the cap between the ink cartridge bottle and the makeup cartridge bottle. Otherwise, ink or makeup may spill.

The over cap is required only for storage.
It is unnecessary when refilling makeup.



- 2** Hold the IC tag mark of the label on the cartridge bottle over the RFID reader of the printer to read the makeup ID.

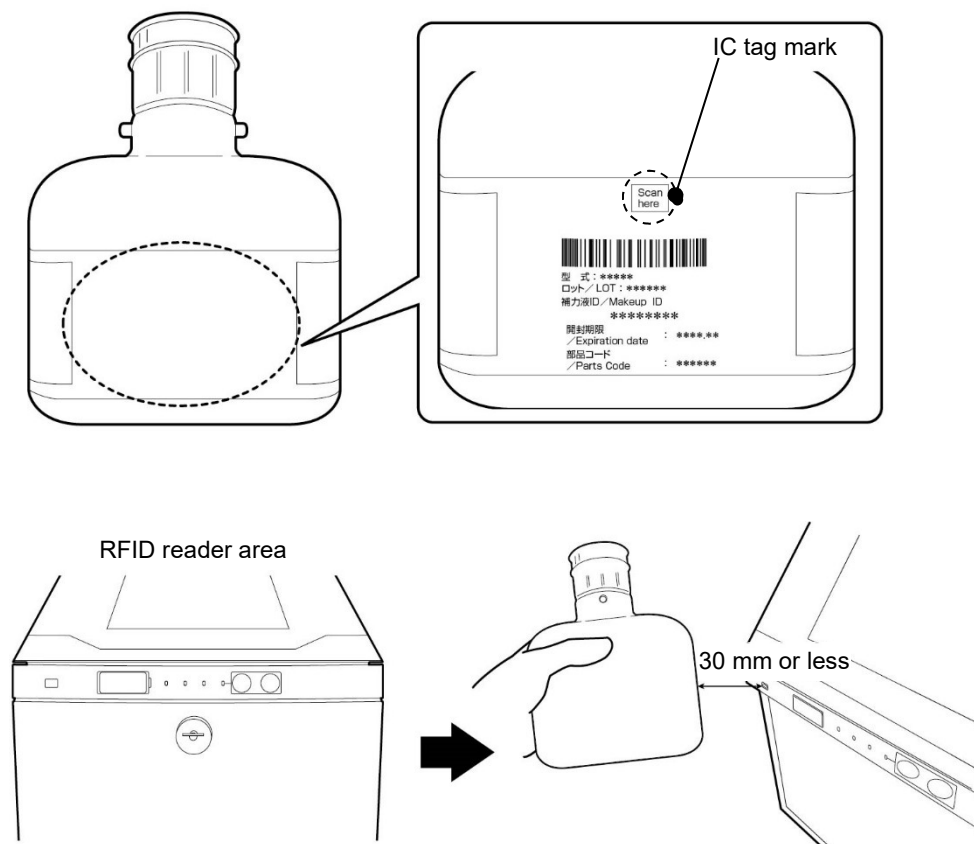
NOTE

- If there is makeup remaining in the cartridge bottle even when the bottle is replaceable, do not replace it but contact your nearest local distributor.

Some part may be broken.

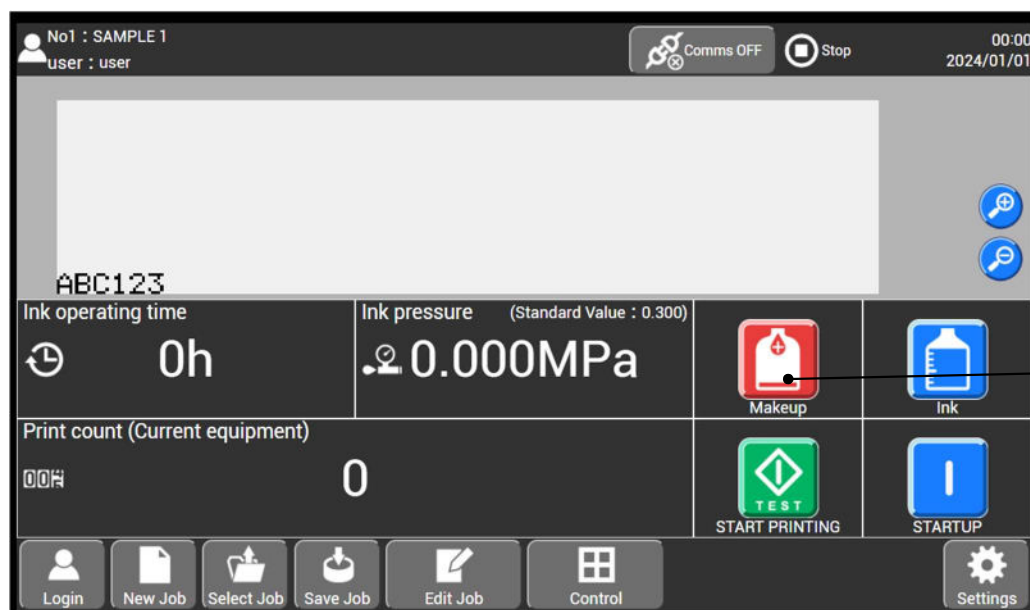
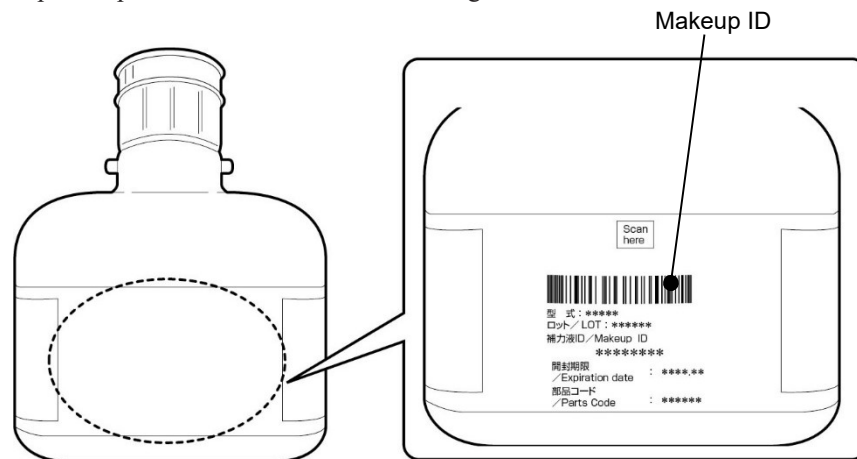
- * If a makeup cartridge bottle containing makeup less than half of the bottle is used, [Cartridge replacement error] may appear on the screen. In that case, select the volume of the new makeup cartridge bottle according to the guidance displayed on the screen.
- * If there is no reaction when you hold the cartridge bottle over the reader of the printer, the IC tag of the cartridge may be damaged.
In this case, you can manually input the makeup ID from the IJP screen.
(Steps **2**-1 and **2**-2)

- If the makeup ID is read by the IJ printer, steps **2**-1 and **2**-2 are not necessary.

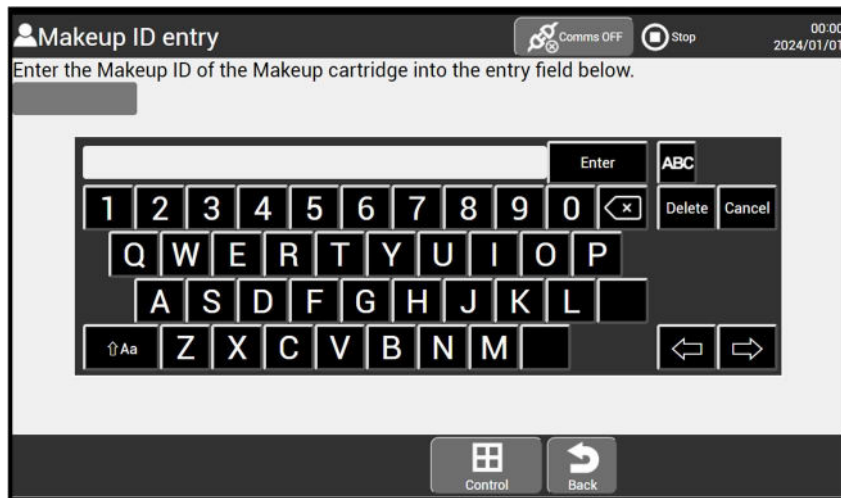


- 2** -1 If you manually input the ID, touch the icon on the [HOME] screen of the unit to open the ID input screen and input the makeup ID.

- The makeup ID is printed on the label of the cartridge bottle.



- 2** -2 Manually input the makeup ID in the ID input area.
To toggle between uppercase and lowercase characters, use .



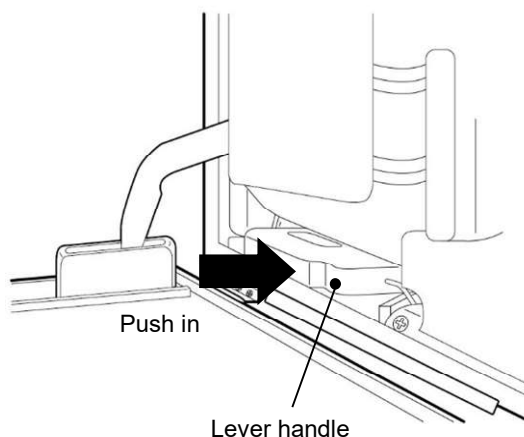
* If the ID is too stained by ink to be read, contact your nearest local distributor.

3 When the makeup ID is recognized, the lever handle on the makeup side is unlocked.

4 (1) Tilt the lever handle toward yourself, (2) lift it, and (3) remove the cartridge bottle.

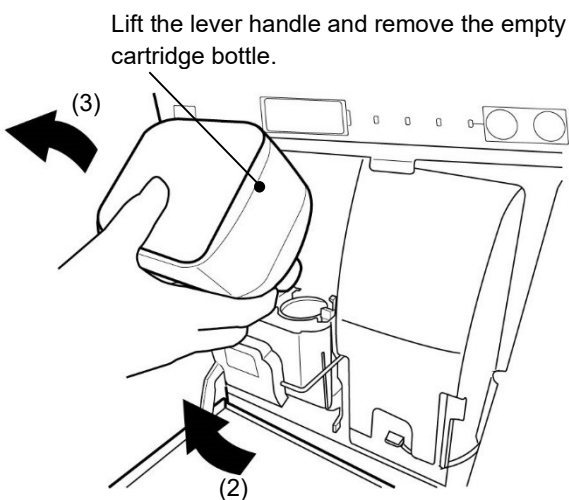
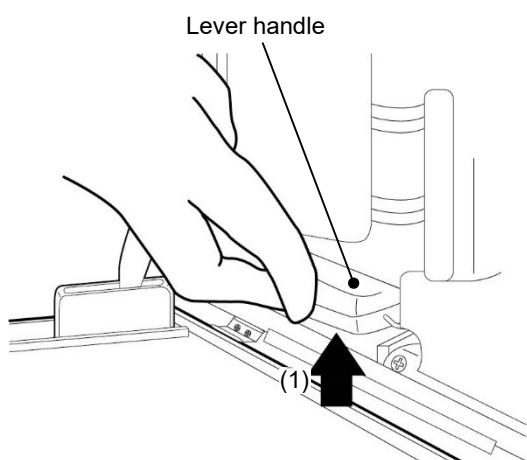
NOTE

- If the lever handle cannot be lifted, do not pull it with excessive force but push the lever handle all the way in.

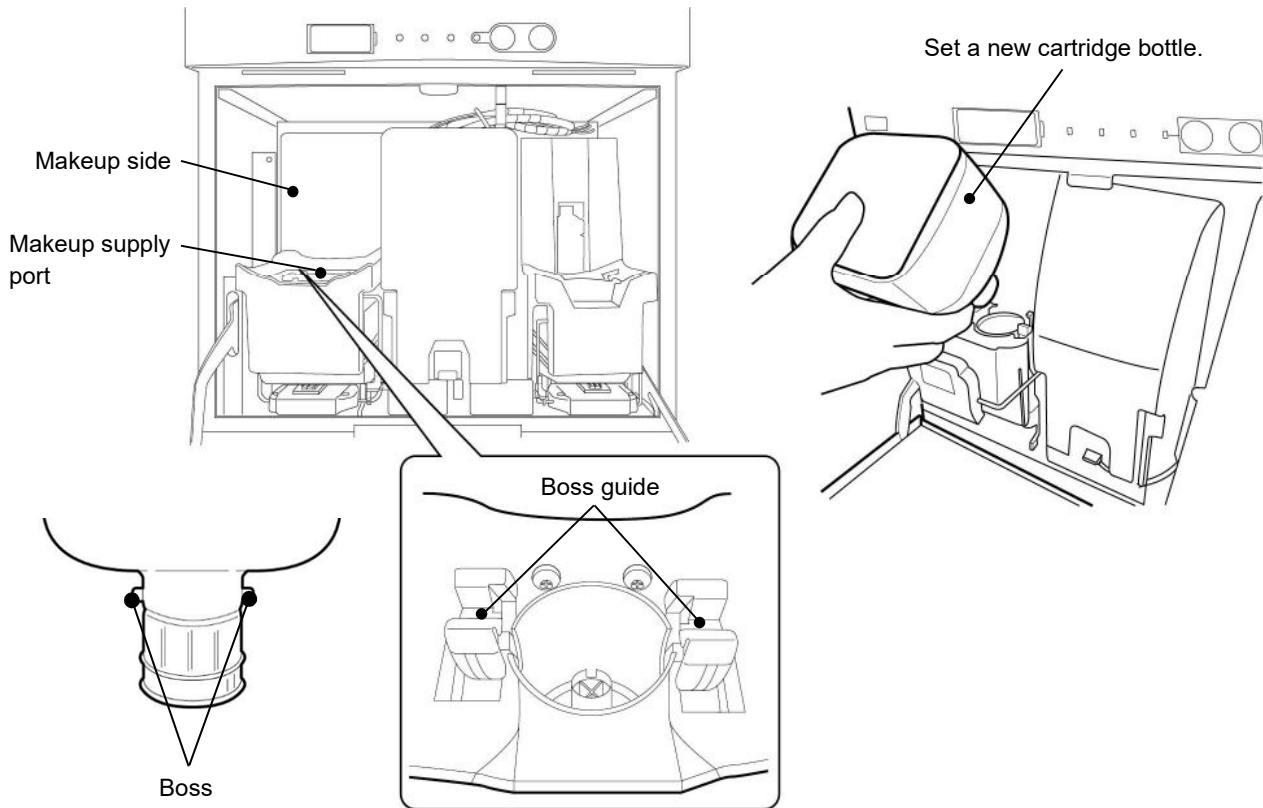


NOTE

- After removing the cartridge bottle from the unit, face the cap upward immediately. Also, do not expose the removed cartridge bottle to any impact. Doing so may cause makeup to splatter.
- Do not put waste solution in a used cartridge bottle. Otherwise, waste solution may spill. Note that a used cartridge bottle is not completely sealed even when the over cap is mounted.
- If a used cartridge bottle is filled with ink or makeup and reused, ink or makeup may spill.



- 5** Set a new cartridge bottle in the specified position.
Install the boss of the cartridge bottle on the boss guide of the makeup supply port.

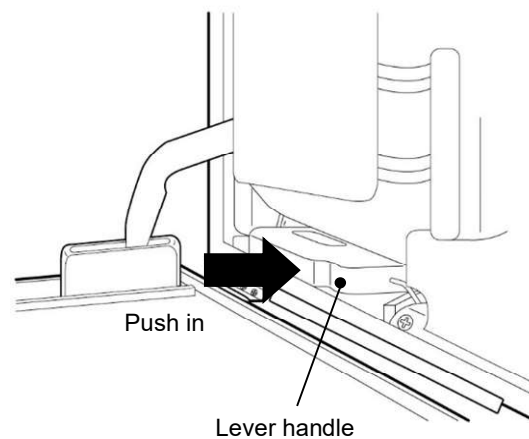
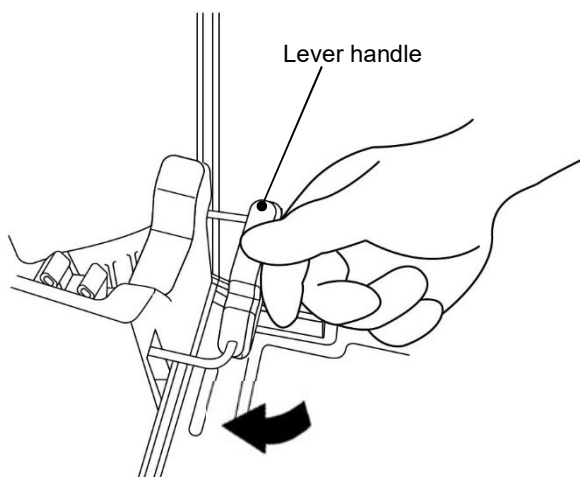
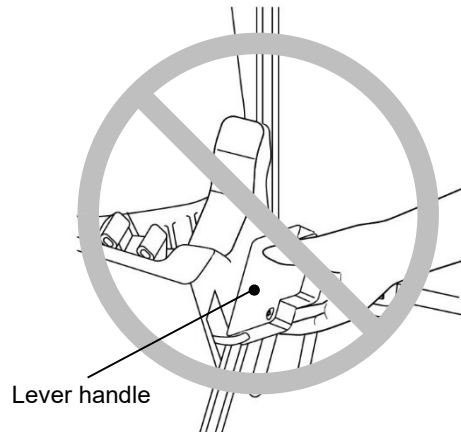
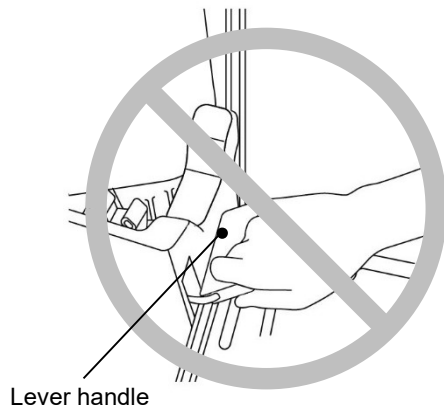


Note: If a foreign object such as a screw is found or gets in the makeup supply port, remove it.

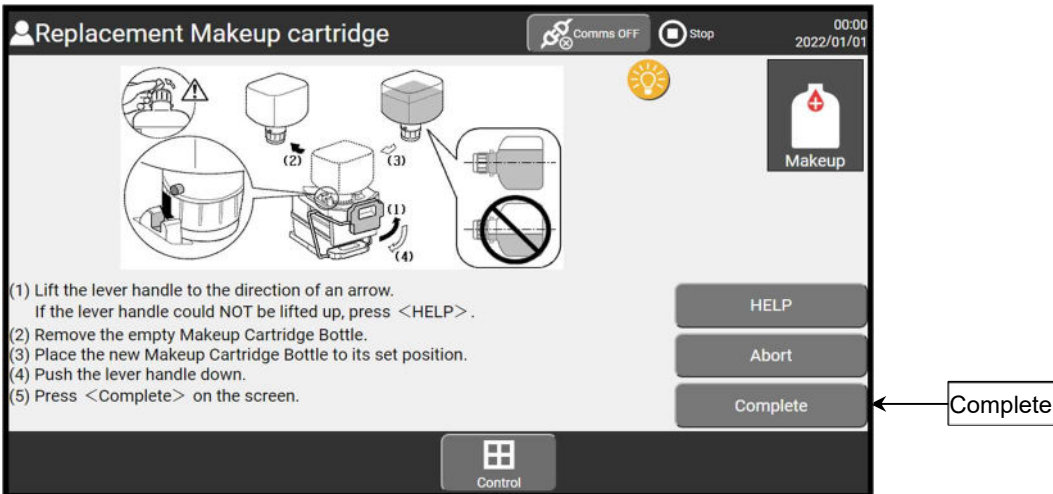
- 6** When a new cartridge bottle is set, push the lever handle down.

CAUTION

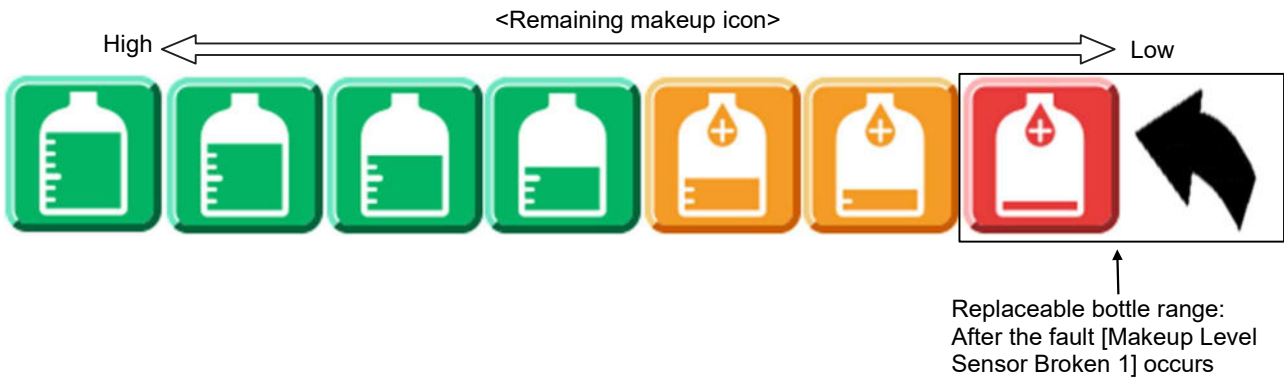
- Be careful not to get your hand or fingers pinched when pushing down the lever handle. (See the figure below.)



- 7** The cartridge replacement (makeup refilling) is now completed.
Press **Complete** on the guidance screen of the unit.
Pressing **Complete** confirms that makeup refilling is complete.



* In the unit where the fault [Makeup Level Sensor Broken 1] occurred, the makeup cartridge cannot be replaced until the warning [Makeup Low Warning] appears.



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Chapter 5

Emergency Procedures

Chapter 1.

Chapter 2.

Chapter 3.

Chapter 4.

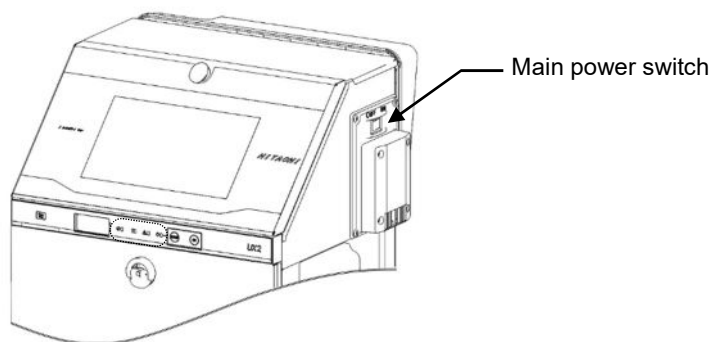
Chapter 5.

This chapter describes the operations to be performed if an emergency such as an earthquake or fire occurs while the unit is running.

WARNING

- If an earthquake, fire, or other emergency occurs while the printer is engaged in printing or just turned on, press the main power switch to turn off the power.
Do not perform this operation in any other situation than emergency.

Press the main power switch to turn off the power.



- Immediately after the emergency is over, make sure that there are no abnormalities in the unit appearance, wiring, and inside of the head. Then, press the main power switch to turn the power back ON and press **STARTUP** to start ink ejection.
- If the power is shut down by a power failure
If the power failure lasts for more than five minutes, open the print head cover and clean the orifice plate, its surrounding parts, and gutter by applying makeup to them. Before resuming the operation by starting ink ejection, be sure to thoroughly clean the orifice plate, its surrounding parts, and gutter by applying makeup to them.

Note: In the event of a power failure, make sure that the print description and other settings are correct when restoring the operation by turning the power ON again. If they are incorrect, reconfigure them.

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