Operating Instructions

CO_2 Incubator

MCO-171AICD
MCO-171AICUVD

Please read the operating instructions carefully before using this product and keep the operating instructions for future use.

See page 96 for the model number.

CONTENTS

INTRODUCTION

■ Read the operating instructions carefully before using the product and follow the instructions for safe operation.

■ PHC Corporation takes no responsibility for safety if the product is not used as intended or is used with any procedures other than those given in the operating instructions.

■ Keep the operating instructions in a suitable place so that they can be referred to as necessary.

■ The operating instructions are subject to change without notice for improvement of performance or function.

■ Contact our sales representative or agent if any page of the operating instructions is lost or the page order is incorrect, or if the instructions are unclear or inaccurate.

■ No part of the operating instructions may be reproduced in any form without the express written permission of PHC Corporation.

IMPORTANT NOTICE

PHC Corporation guarantees this product under certain warranty conditions. However, please note that PHC Corporation shall not be responsible for:

- any loss or damage to the contents of the product
- any indirect damage caused by data damage or loss

<Intended Use>

This equipment is designed for cell and tissue culture for laboratory use. Not for clinical diagnosis or treatment of humans or animals.

SAFETY PRECAUTIONS

Be sure to observe the operating instructions as they contain important safety advice.

For correct and safe use of the product, follow the precautions and procedures in these operating instructions carefully. Failure to do so could result in injury or damage to the product.

Precautions are illustrated in the following way:

⚠WARNING

Warning indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.

⚠ CAUTION

Failure to observe CAUTION signs could result in injury to personnel and damage to the unit and associated property.

The following symbols are used in this document and some of them are attached to the unit.

	Actions are prohibited.
	Actions are mandatory.
	Caution must be taken.
	This symbol indicates the possibility of an electric shock. High-voltage electrical components are placed under the covers. Only a qualified engineer or service personnel should be allowed to open these covers.
	This symbol indicates a risk of burns from contact with hot surfaces.
	This symbol indicates a risk of an electric shock by touching the product with wet hands.
	This symbol indicates an earth terminal. Connect the earth terminal to the ground to prevent an electric shock.
	This symbol indicates a risk of an electric shock by an electric leakage caused by a wet product.
	This symbol indicates a risk of injuries such as an electric shock caused by disassembling the product.
	This symbol indicates that the user must disconnect the mains plug for the purposes of maintenance, in the case of malfunction or when left unattended.

SAFETY PRECAUTIONS

	This symbol indicates “ON” for the power switch.
	This symbol indicates “OFF” for the power switch.

⚠WARNING

As with any equipment that uses CO_2 gas, there is a likelihood of oxygen depletion in the vicinity of the equipment. It is important that you assess the work site to ensure there is suitable and sufficient ventilation. If restricted ventilation is suspected, then other methods of ensuring a safe environment must be considered. These may include atmosphere monitoring and warning devices.

⚠WARNING

Installation

- **Do not use the unit outdoors.**
  Exposure to rain may cause an electric leakage and/or an electric shock.
- **Do not install the unit in a location where flammable or volatile substances are present.**
  Installing the unit in such a location may cause explosions and/or a fire.
- **Do not install the unit in a location where there are high levels of moisture or where it may be splashed with water.**
  This may cause the insulation to deteriorate, leading to an electric leakage and/or an electric shock.
- **Do not install the unit in a location where corrosive gases such as acids are present.**
  Deterioration of the insulation due to corrosion of the electric components may cause an electric leakage or an electric shock.
- **Do not install the unit in a location where there are water or steam pipes above it.**
  This may cause the insulation to deteriorate, leading to an electric leakage and/or an electric shock.
- **Do not leave the plastic bags used for packing in a place where they can be reached by children.**
  This may result in unexpected accidents such as suffocation.

- **Only qualified engineers or service personnel should install the unit.**
  Installation by unqualified personnel may cause water leakage, an electric shock, or a fire.
- **Install the unit in a location capable of bearing the total combined weight (product + optional accessories + stored items). After installing the unit, be absolutely sure to take precautions to prevent the unit from falling over.**
  If the unit is installed in a location which is not strong enough or if the proper precautions are not taken, the unit may fall over and cause injuries.
- **Connect the unit to a dedicated power source as indicated on the rating label attached to the unit.**
  Use of any other voltage or frequency other than that on the rating label may cause a fire or an electric shock. Also, a power strip may cause a fire resulting from abnormal heating.
- **When handling harmful samples (for example, those which consist of toxic, pathogenic or radioactive substances), install the unit inside a designated isolation facility.**
  If the unit is installed in a location other than an isolation facility, there may be detrimental effects on both people and the natural environment.
- **Install the unit in a well-ventilated (airy) location.**
  As with any equipment that uses CO_2 gas, there is a likelihood of oxygen depletion in the vicinity of the equipment. It is important that you assess the work site to ensure there is suitable and sufficient ventilation. If lack of ventilation is suspected, then other methods of ensuring a safe environment must be considered. These may include atmosphere monitoring systems and warning devices with alarms.
- **This unit must be plugged into a dedicated circuit protected by branch circuit breaker.**
  Otherwise it may cause an electric shock or a fire.
- **When stacking incubators, use the hooks on the back panel of the incubator and secure it to the wall by passing a strong rope or chain through the hooks.**
  The incubator may fall over and cause injuries.

- **Be absolutely sure to earth (ground) the unit to prevent an electric shock.**
  Failure to earth the product may cause an electric shock. If necessary, ask a qualified contractor to do this work.
- **Do not connect the earth wire to a gas pipe, water pipe, or lightning rod when earthing the unit.**
  Earthing the unit improperly may cause an electric shock.

SAFETY PRECAUTIONS

⚠WARNING

Power supply plug and cord

- **Never damage the power supply cord or power supply plug (by breaking, adapting, placing near a source of heat, bending with force, twisting, pulling, adding weight, or binding).**
  A damaged power supply cord or power supply plug may cause an electric shock, a short circuit, or a fire. Contact our sales representative or agent for repairing the cord and plug.
- **Do not place this unit or other equipment in a position where it is difficult to disconnect the power supply plug.**
  Failure to disconnect the power supply plug may cause a fire in the event of a problem or malfunction.
- **Do not pull the power supply cord, the power supply plug, or the product side plug (inlet part) hard.**
  If the cord breaks, it may cause electric shock or fire.
- **Do not use the power supply cord that came with this product for other electrical equipment.**
  It may cause a fire or an electric shock.

- **Do not plug or unplug the power supply plug with wet hands.**
  This may cause an electric shock.

- **Remove dust from the power supply plug periodically.**
  Dust on the power supply plug may lead to an insulation failure due to moisture and thus cause a fire. Disconnect the power supply plug and wipe it with a dry cloth.
- **Make sure the power supply plug is pushed fully in.**
  Faulty insertion of the power supply plug may cause an electric shock or a fire due to a generation of heat. Never use a damaged power supply plug or loose power outlet.
- **Grip the power supply plug when disconnecting the power supply cord from the outlet.**
  Pulling the power supply cord may cause an electric shock or a short circuit.
- **Always use the detachable power supply cord that came with the product.**
  Other power supply cord may cause electric shock or fire.

- **Disconnect the power supply plug before moving the unit.**
  Take care not to damage the power supply cord. A damaged power supply cord may cause an electric shock or a fire**.**
- **Disconnect the power supply plug when the unit is not in use for long periods.**
  Keeping the unit connected may cause an electric shock, an electric leakage, or a fire due to the deterioration of insulation.
- **Before proceeding with maintenance or checking the unit, turn off the power switch (if the switch is provided), and disconnect the power supply plug.**
  Performing the work while power is still being supplied to the product or while the power supply plug is still connected may cause an electric shock and/or injuries.

When something is wrong with the unit

- **Never disassemble, repair, or modify the unit yourself.**
  A high-voltage area is located inside the unit. Any work carried out by unauthorized personnel may result in an electric shock. Contact our sales representative or agent for maintenance or repair.

- **Turn off the power switch and disconnect the power supply plug if something is wrong with the unit.**
  If the unit keeps running under such conditions, there may be a risk of an electric shock or a fire. Contact our sales representative or agent immediately for maintenance or repair.

⚠WARNING

When using the unit

- **Never put containers with liquid on top of the unit.**
  This may cause an electric shock or short circuit if the liquid is spilled.
- **Never insert metal objects such as pins and wires into any vent, gap, or outlet on the unit.**
  This may cause an electric shock or injury by accidental contact with moving parts.
- **When opening the incubator door, do not directly inhale the air in the chamber.**
  It may be harmful to your health, causing gas poisoning or lack of oxygen.
- **Do not look directly at UV light.**
  UV light is harmful to the eyes.

- **Never splash water directly onto the unit.**
  This may cause an electric shock or short circuit.

- **Perform circuit breaker test.**
  Using the unit with the broken circuit breaker may cause an electric shock or a fire.
- **Never store volatile or flammable substances in this unit except in a sealed container.**
  Such substances may cause an explosion or a fire if they leak.

- **Protect from strong shock or vibration when moving or using the unit.**
  The piping may be damaged, causing gas poisoning or lack of oxygen due to gas leakage.

When using gas cylinders

- **When connecting a gas cylinder to the incubator, check the gas type.**
  Using an incorrect gas type may result in explosion or fire, or may cause gas poisoning or oxygen deprivation in the event of gas leakage.
- **Check that the gas cylinder is connected securely and that the gas will not leak.**
  Gas leakage may result in explosion or fire, or may cause gas poisoning or oxygen deprivation.
- **When using CO_2 gas, ventilate the room.**
  A poorly ventilated confined space may cause gas poisoning or oxygen deprivation.
- **Be sure to use the specified pressure.**
  Using an incorrect pressure may result in explosion or fire, or may cause gas poisoning or oxygen deprivation due to gas leakage.

When storing and disposing of the unit

- **If the unit is to be stored unused in an unsupervised area for a long period, ensure that children do not have access to the unit and that doors cannot be closed completely.**
  There may be a risk of child entrapment.
- **Ask a qualified contractor to carry out disassembly/disposal of the unit and do not leave CO_2 incubator in a location that can be accessed by third parties.**
  This may result in unexpected accidents (e.g. the incubator may be used for unintended purposes).

SAFETY PRECAUTIONS

⚠CAUTION

- **Do not climb on top of the unit or put any objects on the unit.**
  Falling from the unit may cause injury; falling objects may cause damage to the unit.
- **Do not damage the glass or give it a shock.**
  The inner door of the CO_2 incubator is made of tempered glass, but it can be broken and cause injury if it is used incorrectly.
- **Do not stack three or more incubators.**
  Falling incubators may cause injuries.
- **Do not unlock and open the outer door using the accessory key during dry heat sterilisation or during a power failure when performing dry heat sterilisation.**
  The chamber becomes hot during dry heat sterilisation. Doing so may result in burns.

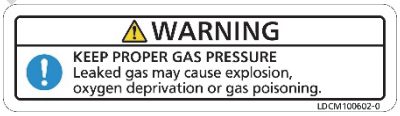
- **Turn the leveling feet to level the unit.**
  If the unit is not level, the unit may inadvertently move out of position when its door is opened or closed, causing injury.
- **Never store corrosive substances such as acids or alkalis in this unit except in a sealed container.**
  These may be harmful to your health and may cause corrosion of internal components or electrical parts.
- **Wear rubber gloves and a mask when cleaning the chamber.**
  You may get injured by the corners of interior parts. Also, touching or inhaling chemicals or aerosols from around the unit may be detrimental to health.
- **When stacking the product, the floor should be strong enough to bear the weight.**
  If the products fall, it may cause injury.
- **When performing dry heat sterilisation, make sure to close the outer and inner doors and do not touch the doors.**
  The doors become hot during dry heat sterilisation. Touching them may result in burns.
- **During dry heat sterilisation, cover the access ports (from the inside and back side of the chamber) with the silicon caps that came with the product.**
  The chamber becomes hot during dry heat sterilisation. Failure to do so may result in burns.

- **When moving the unit, be sure to take precautions to prevent it from falling over.**
  Moving the unit with too much force may cause it to fall over, possibly resulting in damage or injury.
- **Set up or remove the shelf with both hands.**
  If the shelf falls down, it may cause injury.

- **Be careful not to burn yourself.**
  During operation, the inside of the outer door becomes hot. Touching the hot parts may result in burns.

LABELS ON INCUBATOR

Users are advised to read carefully the warnings and cautions contained on stickers at key locations on the interior and exterior of the incubator.

Possible Danger	**Warning/Caution Type** Location of Danger	Warning/Caution Label	Description of Danger
Burns	**Hot Surface** Door & Chamber		During operation, avoid touching the inside of the door and chamber, which can reach high temperatures and may cause burns.
Personal injury	**Hazardous UV Light** Interior		The UV light is hazardous. Do not look directly at the UV light.
Personal injury	**Gas Poisoning or Oxygen Deprivation** Environment		When using CO_2 gas, ensure there is adequate ventilation. Using CO_2 gas in a small room without adequate ventilation may cause gas poisoning or oxygen deprivation. In addition, when opening the incubator doors, do not directly inhale the air in the chamber.
Personal injury	**Gas Poisoning or Oxygen Deprivation** Interior		Excessive pressure may cause gas supply lines inside the incubator to come loose, which may result in gas poisoning or oxygen deprivation due to the escape of gas.
Personal injury	**Electric shock** Rear cover		Never remove this cover. Only service personnel should remove the cover to avoid the electric shock.

INSTALLATION

Installation site

To run the incubator properly, install the incubator in a location which meets all the conditions described below.

■ **Appropriate air environment**
Install the incubator in an appropriate air environment.

■ **A well-ventilated (airy) location**
In order to ensure ventilation, leave clearances of at least 10 cm around the unit (at the left, right, top (excluding when stacking incubators), and back). Blocking the ventilation may degrade the product performance or cause the product to malfunction. Also, at the front of the unit, allow 62 cm of space for opening and closing the door.

■ **A location not exposed to direct sunlight**
Do not install the incubator in a location where it will be exposed to direct sunlight. If the incubator is operated in direct sunlight, the product performance will be adversely affected.

■ **A location away from heat sources**
Do not install the incubator near significant heat sources, such as heaters, boilers, ovens, or autoclaves. Heat will adversely affect the performance of the incubator.

■ **Ambient temperature at least 5°C lower than set temperature**
The control temperature of the incubator is at least 5°C higher than the ambient temperature. For example, if the chamber is controlled at 37°C, the ambient temperature must be 32°C or lower. Do not allow the ambient temperature to be too high.

■ **Firm and level floor**
Select a site with a strong and level floor. If the floor is uneven or the installation is not level, the incubator will be unstable and this may cause accident or injury. To avoid vibration and noise, ensure that the incubator is stable. An unstable surface may result in vibration or noise.

■ **Away from products that cause vibration**
Do not install the incubator near products that cause vibration. Vibration may adversely affect cultures.

■ **Low humidity**
Select a site with a relative humidity of 80% RH or lower. Using the incubator in high humidity may result in current leakage or electric shock.

■ **No inflammable or corrosive gas**
Never install the incubator in a location where it will be exposed to inflammable or corrosive gas. Doing so may result in explosion or fire. In addition, insulation may deteriorate due to corrosion of protective casing, resulting in current leakage or electric shock.

■ **No falling objects**
Do not install the incubator in a location where there is the possibility of objects falling from above. Doing so may result in damage or an accident.

■ **Quiet place**
Do not install the incubator in a high noise level location. If the incubator status becomes abnormal, users may not notice the audible alarm, causing damage to the cultures.

Note:
Keep electric products which emit electromagnetic waves away from the unit. Interference from the electromagnetic waves may cause the unit to malfunction.

To prevent contamination:

■ **Avoid locations with high temperatures or humidity** where the air may contain more microorganisms.

■ **Do not place the incubator near doors, air conditioners, fans, etc,** where fast-moving air currents and high-traffic may increase the risk of microorganisms entering the chamber.

■ **Keep the incubator out of direct airflows from air conditioners or fans.** Airflow from an air conditioner may cause condensation or lead to possible contamination.

■ **If possible, use a cleanroom.**
To achieve a better culture, it is recommended that a cleanroom be used if one is available.

Installing the incubator

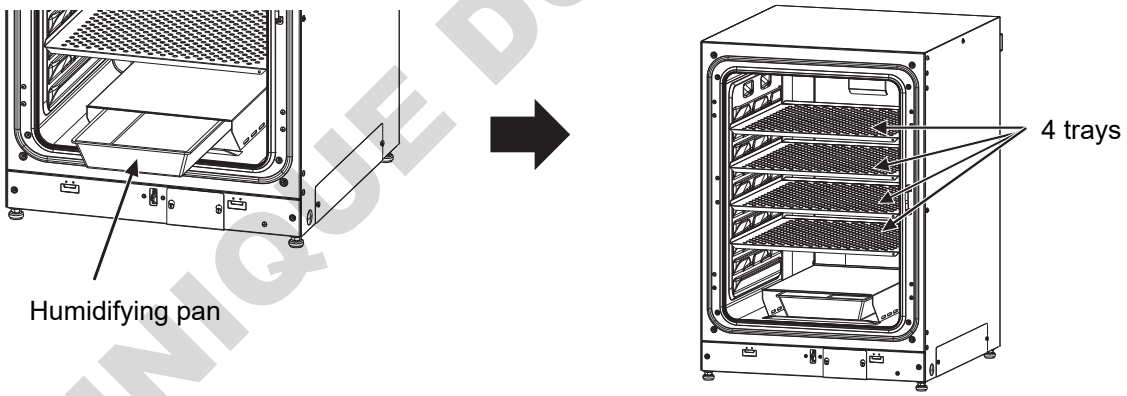
1. Remove the packing tape.

Remove all the tapes securing the doors and the internal components. Take all accessories out of the chamber. Open the doors to ventilate the chamber for a while. If the outer panels are dirty, use a cloth to wipe them with a diluted neutral detergent (undiluted detergent can damage the plastic components. For the dilution, refer to the instructions on the detergent).
Wipe off the residual detergent with a piece of gauze moistened with water and then wipe off any moisture with a dry cloth.

Note: Remove the cable tie around the power supply cord to prevent corrosion of the cord coating.

2. Set the humidifying pan and trays.

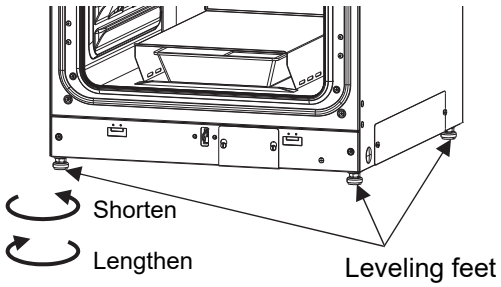
First, set the humidifying pan and then put the four trays at desired levels.



3. Adjust the leveling feet.

Check that the incubator is level by placing a spirit level on a tray. Adjust the leveling feet by turning them to level the incubator.

Note: Incubating in a sloping condition may adversely affect the cultures.



4. Earth the incubator.

Earth the incubator during installation to prevent electric shock. If there is no earth wire at the location, consult with qualified service personnel.

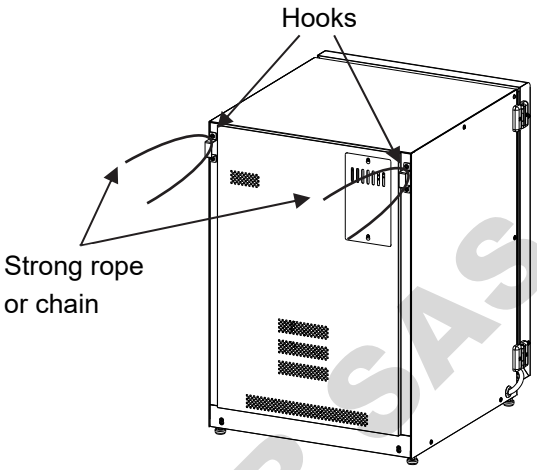
When an earth must be installed

If an earthed 3-pole outlet is not available, then an earth must be installed. Consult with qualified service personnel.

INSTALLATION

When stacking an incubator

The optional double stacking bracket (MCO-170PS) or the stacking plate (MCO-170SB or MCO-230SB) is required to stack an incubator with this product.
Contact our sales representative or agent to purchase these options and fix them.



Notes:

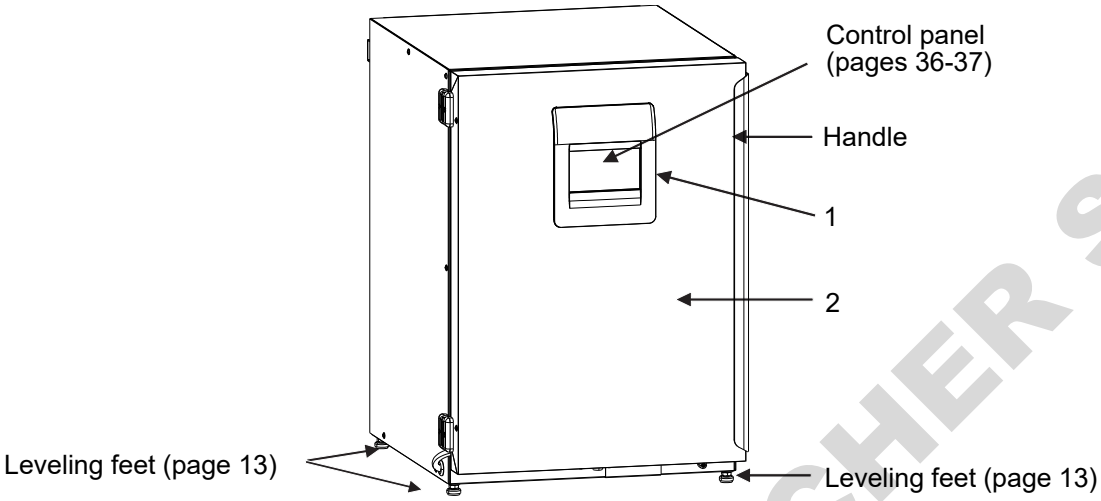
- When stacking an incubator, fix the upper incubator to the wall by passing a strong rope or chain through the hooks on the back side of the unit to prevent falling over.
- When stacking our other CO_2 incubator or O_2/CO_2 incubator with this product, the brackets/plates to be used vary depending on the combination. Refer to Table 2 on page 95.

⚠ WARNING	● **When stacking incubators, use the hooks on the back panel of the incubator and secure it to the wall by passing a strong rope or chain through the hooks.** If not, the incubator may fall over and cause injuries.

INCUBATOR COMPONENTS

Main body

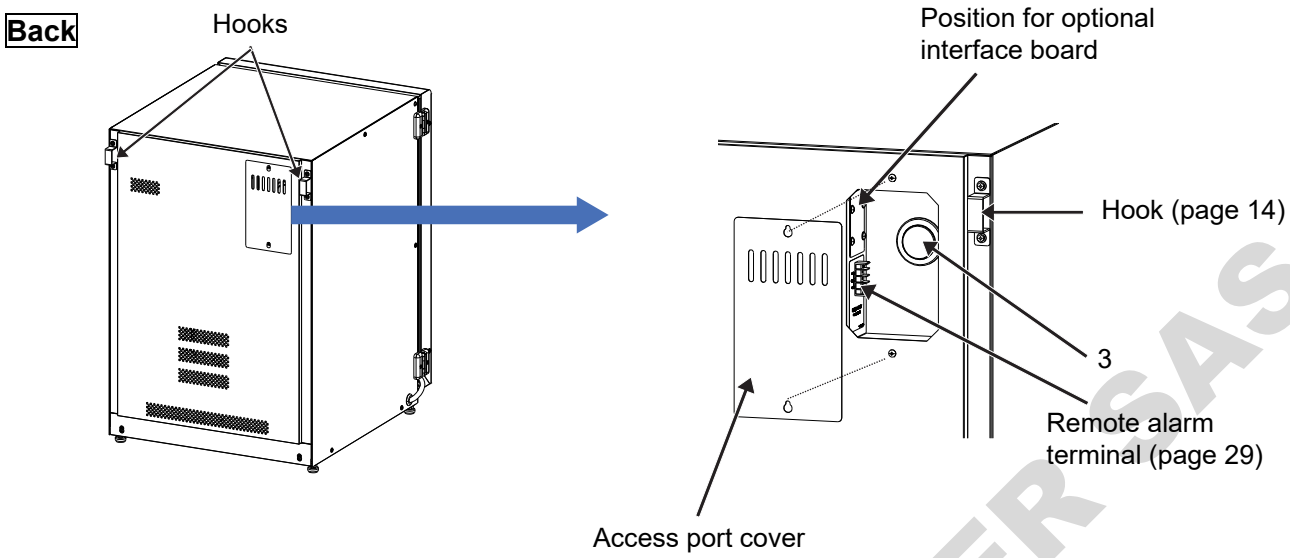
Front



1. **USB port:** A USB flash drive is inserted here when exporting log data.
   Note:
   USB flash drives with a capacity of 32 GB or less that employ the FAT16/FAT32 file system are supported. USB flash drives that require passwords cannot be used. We do not guarantee the correct operation of all USB flash drives even if these conditions are satisfied. Do not insert devices other than USB flash drives into the USB port.

2. **Outer door:**
   Close the outer door properly. If the outer door is kept half-open, the incubator may not achieve its intended performance. Always open and close the door gently. Opening and closing the door forcefully may cause spillage of the culture medium, incomplete closing, or damage to the gasket. The direction of the door opening is reversible. Contact our sales representative or agent to change the door hinge from left to right or vice versa.

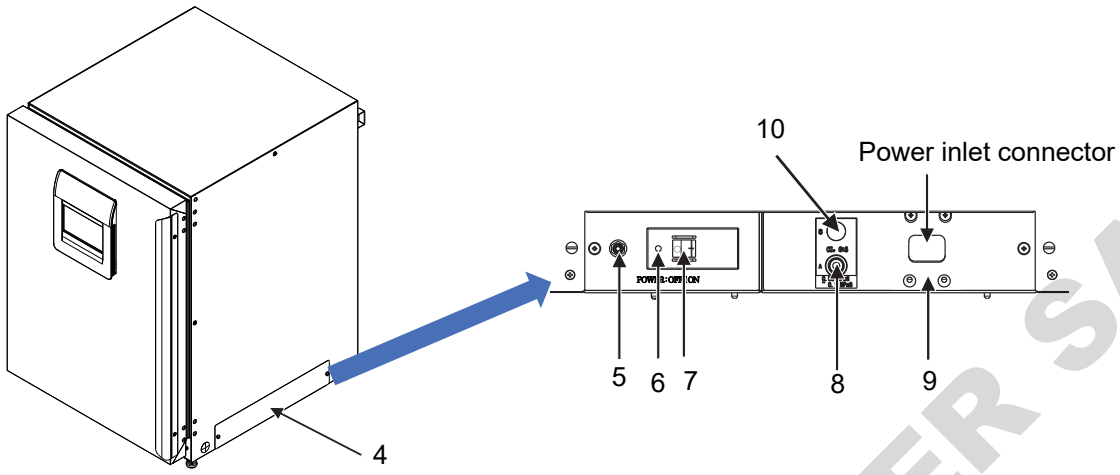
INCUBATOR COMPONENTS



3. Access port (back side):

Used when routing cables such as the sensor cable of a measurement instrument into the chamber. Place the silicon cap when the port is not used.

Right side



4. **Switch cover:**
   Prevents shutting down of the unit in case of accidental pressing of the main power switch or prevents the gas tube from accidentally being pulled out. The cover is fixed by screws at its right and left sides.

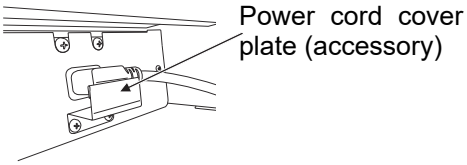
5. **Sample air outlet:**
   Used for obtaining sample air from the chamber. When this outlet is not used, cover the outlet with the sample air outlet cap. If not covered, condensation may form, causing leakage of liquid or corrosion.

6. **Circuit breaker test button:**
   If you press this button when the circuit breaker is working properly, the power switch is automatically turned off. Be sure to press this button to check the circuit breaker works when using this product for the first time, after a long unused time, or after relocating the incubator. If the switch is not turned off after pressing this button, the circuit breaker may be broken. In such a case, unplug the incubator immediately and contact our sales representative or agent. When the test is successful, you need to turn on the switch to use the incubator.

7. **Power switch (also functions as a circuit breaker):**
   Main switch for the incubator (ON-“I”, OFF-“O”). This switch also functions as a circuit breaker for preventing excessive current.

8. **CO_2 gas connection port A:**
   The gas tube is connected here. Refer to pages 26-28 for gas cylinder connection.

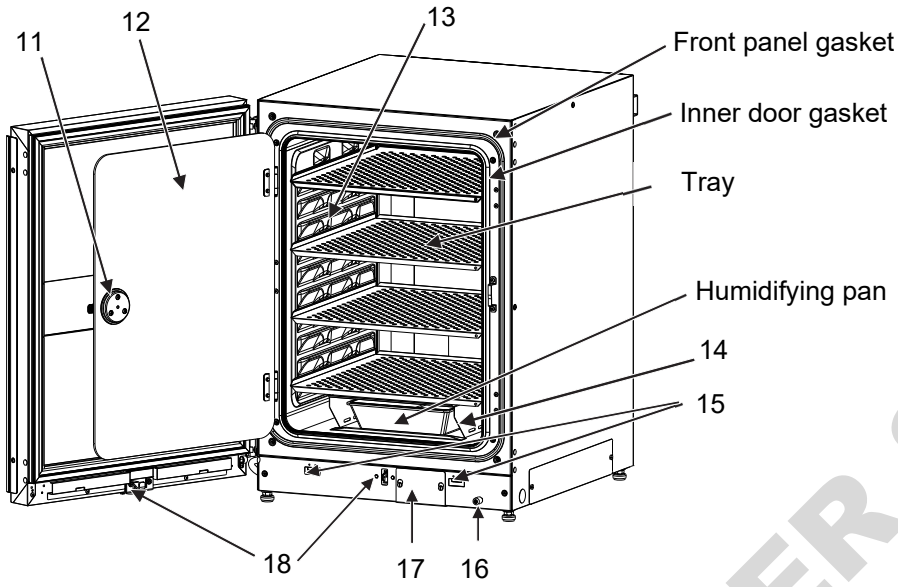
9. **Position for power cord cover plate (accessory):**
   Prevents the power supply cord from being disconnected. Fix the cover plate after the power supply cord is connected to the power inlet connector.



10. **CO_2 gas connection port B:**
    When the optional gas auto-changer (MCO-21GCP) is installed, both ports A and B are available. Refer to pages 71-73 for optional gas auto changer.

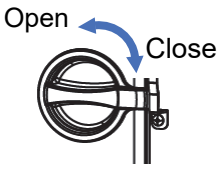
INCUBATOR COMPONENTS

Inside



11. Inner door latch

You can open or close the inner door using this inner door latch. When closing the inner door, make sure to engage the latch. Otherwise, the incubator may not achieve its intended performance.



12. Inner door

Close the inner door properly. If the inner door is kept half-open, the incubator may not achieve its intended performance. Although the inner door is made of tempered glass, do not subject the glass to excessive impact. The glass may break and cause injuries.

13. Tray runners

Trays are inserted to fit into the integrated shelf runners.

14. Humidifying pan cover

Prevents the UV light from leaking. Always use it. Using without the cover may have an impact on the chamber temperature distribution and humidity recovery.

15. Door switch

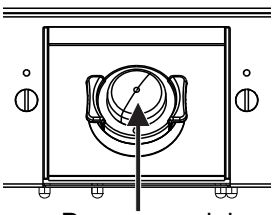
Detects the opening/closing status of the outer door. When the door is open, “Door:Open” blinks in orange on the Top screen, and audible alarm sounds after set door alarm delay time (1 to 30 minutes) (pages 41-42).

16. Service port

The sample air outlet at the right side of the incubator can be relocated here. Contact our sales representative or agent when relocation is needed.

17. Space for storing dummy module*

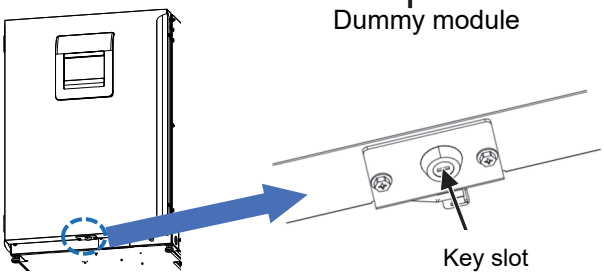
When performing dry heat sterilisation, to protect the UV-LED module from heat, you need to exchange the UV-LED module in the chamber with the dummy module stored here. To open the cover, remove the knurled thumb screws at the both sides of the cover.



18. Electric lock

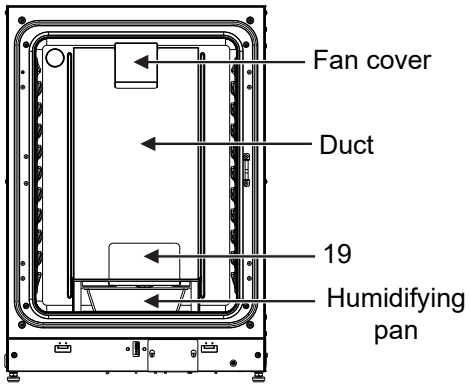
Usually, the outer door is locked automatically by the electric lock. During a power failure, if you need to unlock the outer door manually using the accessory key that came with this product, insert the key into the key slot at the bottom central part of the outer door.

Note:
The accessory key is used only for emergencies.
Do not use the key to lock the outer door in ordinary use.

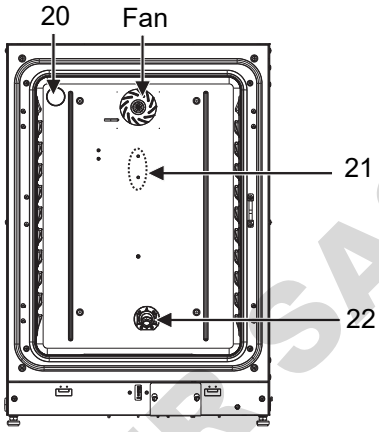


*: Available for MCO-171AICUVD, or MCO-171AICD with the optional UV system kit (MCO-LUVSD).

Inside (viewed from front)



[With inner attachments]



[Without inner attachments]

19. Duct cover:

Remove this cover when replacing the dummy module with the UV-LED after dry heat sterilization.

20. Access port (inside):

Used when routing cables such as the sensor cable of a measurement instrument into the chamber. Place the silicon cap when the port is not used.

21. CO_2 density measurement port:

The CO_2 sensor inside measures CO_2 density. Make sure not to spray ethanol into the port when cleaning the chamber.

22. UV-LED*

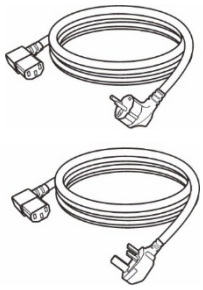
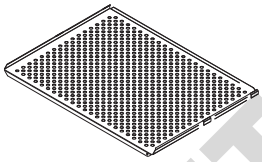
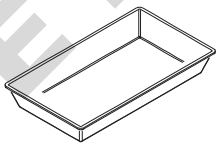
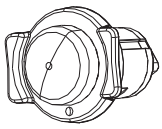
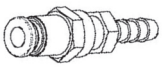
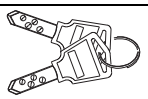
The UV-LED does not generate ozone. For details about UV-LED, refer to pages 44-45. For replacement, contact our sales representative or agent.

*: Available for MCO-171AICUVD, or MCO-171AICD with the optional UV system kit (MCO-LUVSD).

INCUBATOR COMPONENTS

Accessories

Check that following accessories are included with this product. If any accessories are missing, contact our sales representative or agent.

Name	Qty	Appearance	Usage
Power supply cord	2		Detachable power supply cords for the incubator (UK/EU type)
Power cord cover plate	1		Prevents the power supply cord from being accidentally pulled out of the unit.
Tray	4		Trays are set in the chamber and used for putting plates etc. on them.
Gas tube	1		Connects a gas cylinder and the incubator.
Humidifying pan	1		Used by filling sterile distilled water or pure water to keep the humidity in the chamber.
Dummy module*	1		Used to protect the UV-LED module from heat during dry heat sterilisation by exchanging the UV-LED module in the chamber with the dummy module (page 18).
Conversion joint	1		Connects a tube from a gas cylinder and a tube from the incubator.
Key	2		For manually unlocking the outer door locked by the electric lock during a power failure.

*: Only for MCO-171AICUVD.

CLEANING

Before using the incubator for the first time, or setting the incubator again after moving the incubator, always thoroughly clean the chamber, inner attachments, and humidifying pan (accessory) to remove dirt (tape residue, oil, etc.). Cleaning these items is essential to ensure the best performance of the incubator. Follow the steps described in the following sections to properly clean the incubator.

CAUTION	● **Wear rubber gloves and a mask when cleaning the chamber.** You may get injured by the corners of interior parts. Also, touching or inhaling chemicals or aerosols from around the unit may be detrimental to health.

Removing the components

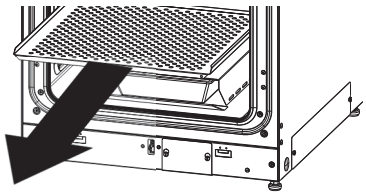
Before cleaning the chamber, remove the inner attachments in the chamber. Be careful not to damage the UV-LED.*
*: For MCO-171AICUVD, or MCO-171AICD with the optional UV system kit (MCO-LUVSD).

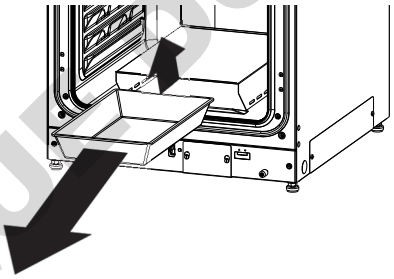
Removing the inner attachments

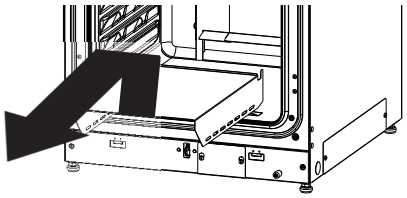
1. Turn off the power to the incubator.

2. Open the outer door and inner door, then pull out the parts in the following order.

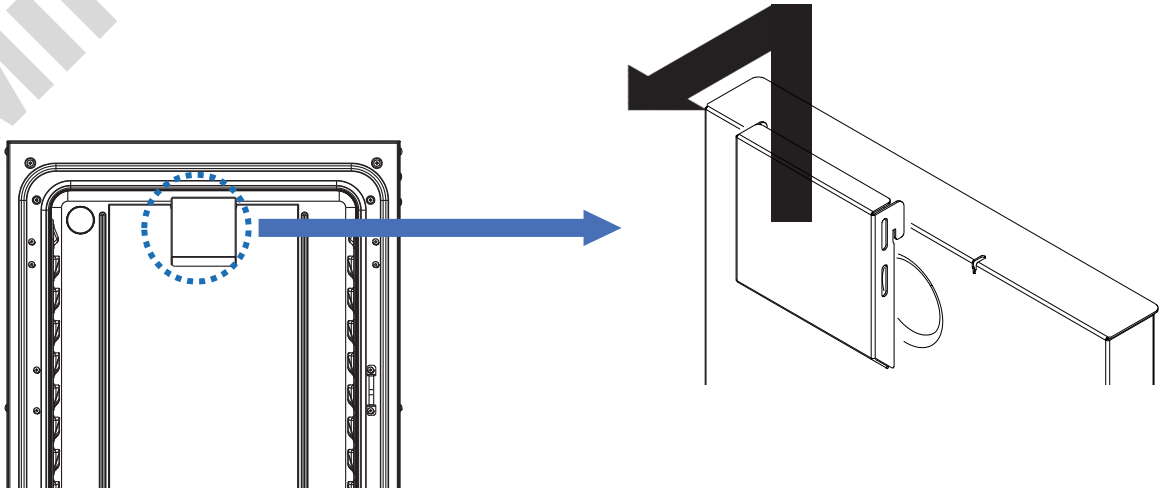
Pull out all the trays. → Lift the humidifying pan cover and pull out the humidifying pan. → Lift the humidifying pan cover a little to disengage the cover from the pins on the duct at the back of the chamber and pull it out.





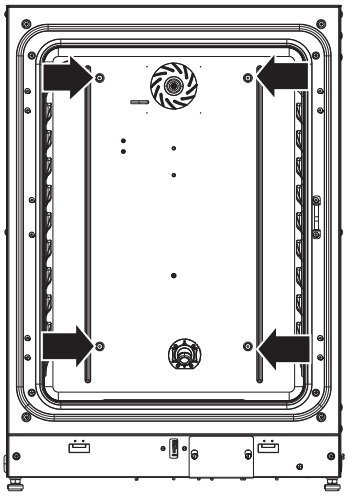


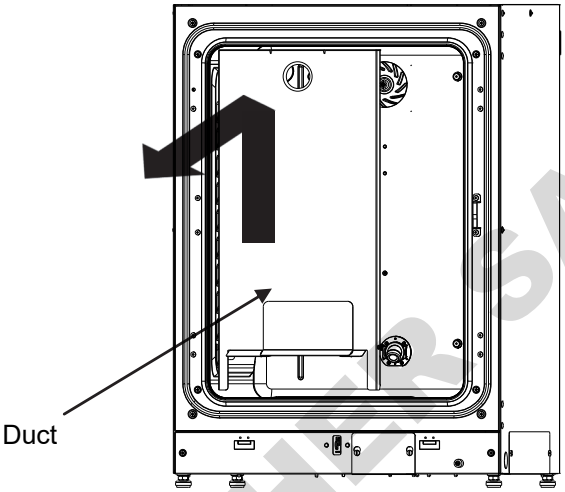
3. Lift the fan cover to detach it from the duct and pull it out.



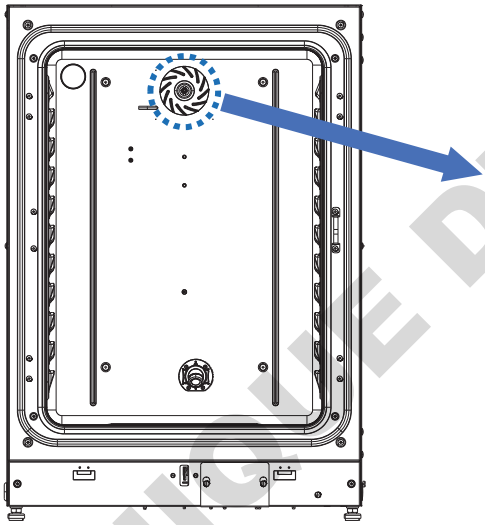
CLEANING

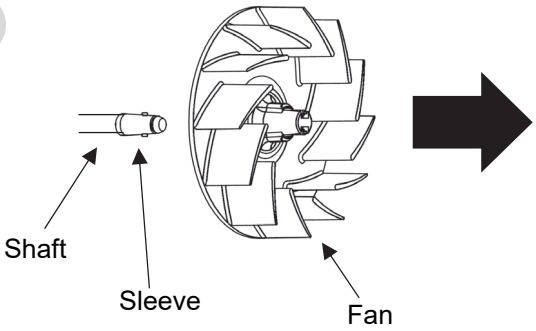
4. Lift the duct with the duct cover and disengage it from the pins on the rear side and pull it out.
Note:
Be careful not to drop the duct cover.





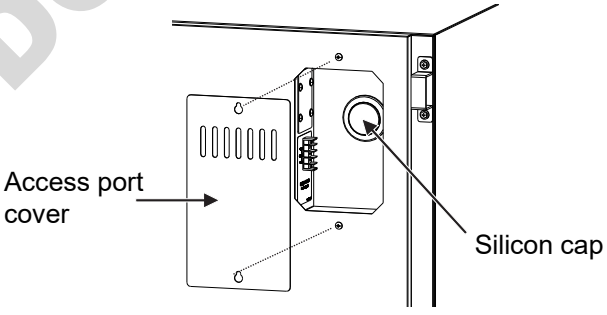
5. Pull out the fan.



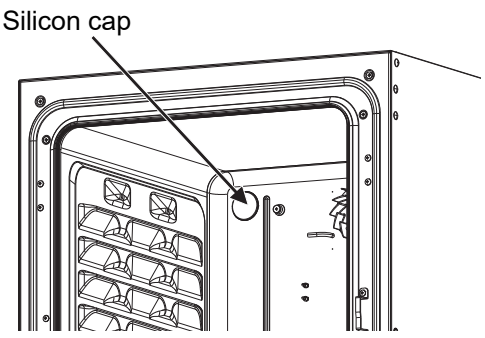


6. Remove the silicon caps on the interior side and exterior side.

[Exterior side]
Loosen the screws at the access port cover and remove the cover by lifting it. Then, remove the silicon cap.



[Interior side]
Remove the silicon cap at the rear top left corner of the chamber.

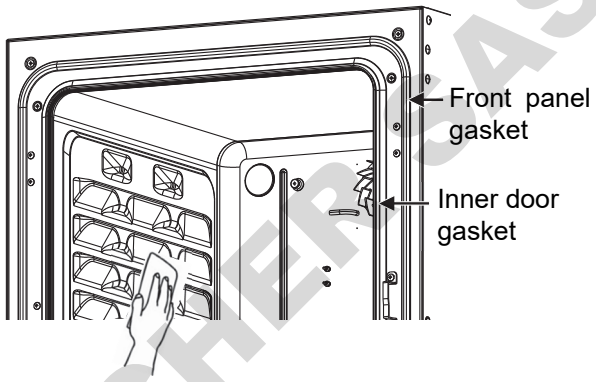


Cleaning the chamber and components

Turn off the incubator before cleaning.

1. Put on rubber gloves, and then disinfect the surface of the rubber gloves with ethanol for disinfection.

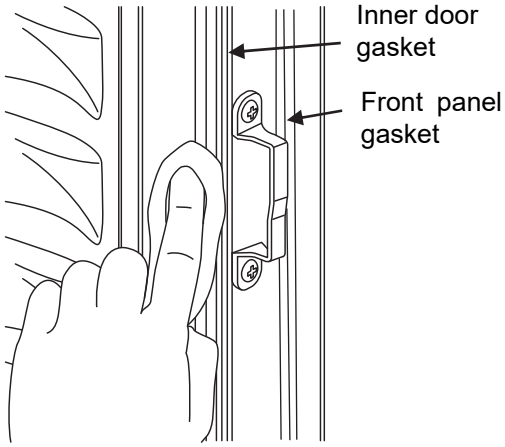
2. Thoroughly wipe clean the inner walls of the chamber, the removed inner attachments, the temperature sensor, the humidity control bar, and the UV-LED using gauze moistened with a proper amount* of ethanol for disinfection. Make sure to take particular care in cleaning corners and joints of the product.



3. Thoroughly wipe clean the inner door, inner door gasket (contact points between the unit and the gasket, that is back side of the gasket), front panel gasket, handle, and inner door glass using gauze moistened with a proper amount* of ethanol for disinfection. Especially, take special care of the back side of the gasket since an unclean gasket may lead to contamination.

Note:

If the incubator starts operation with the inner door gasket or the front panel gasket not in place, the humidified air in the chamber will leak and will cause condensation between the unit and outer door. After wiping, confirm that the inner door gasket and front panel gasket are securely in place and do not have any creases.



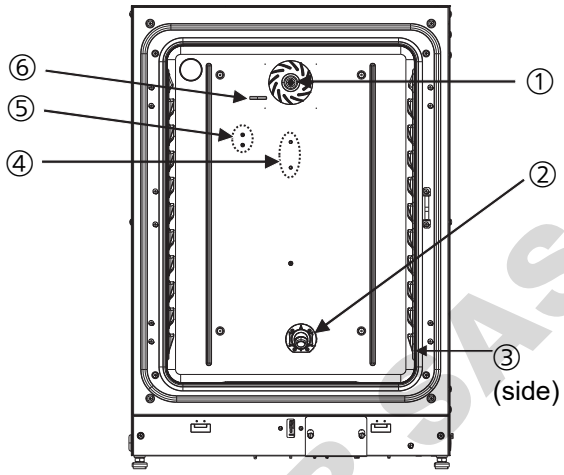
* The amount that cannot form droplets on the surface.

Notes:

- The most effective procedure to prevent contamination is to clean each part with a cloth or sponge moistened with a neutral detergent diluted to 5% or less, and then wipe down each part with gauze moistened with distilled water or pure water. You can also use autoclave sterilisation (121°C for 20 minutes) for the silicon caps for access ports (2 pcs),and the fan.
- If the result of cultivation is undesirable due to dirt (tape residue, oil, etc.) on the removed inner attachments, clean the removed inner attachments by following the steps below.
  1) Wash with a neutral detergent.
  2) Rinse well with distilled water or pure water.
  3) Wipe with gauze, non-woven cloth, or sterile paper.

CLEANING

Do not use acidic, alkaline or chlorine solvents or disinfectants. Use of these solutions may cause discoloration, corrosion or rust.
Be careful not to spray solutions such as ethanol for disinfection to the ①fan motor shaft bearing, ③inner sample gas access port, ④ CO_2 density measurement port, ⑤temperature sensor, and ⑥ CO_2 gas injection port. Also, do not wash ②UV-LED* module using detergent. Use of these solutions may cause damage.



*: For MCO-171AICUVD, or MCO-171AICD with the optional UV system kit (MCO-LUVSD).

Cleaning the control panel

When sterilizing and cleaning the control panel, follow the precautions below.

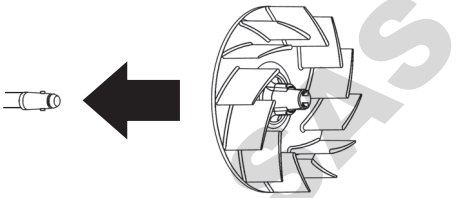
- Do not spray liquid on the control panel directly. This may break the control panel.
- When sterilizing and cleaning, wipe the surface using a piece of gauze moistened with a proper amount of ethanol for disinfection (the amount that cannot form droplets).

Installing the cleaned components

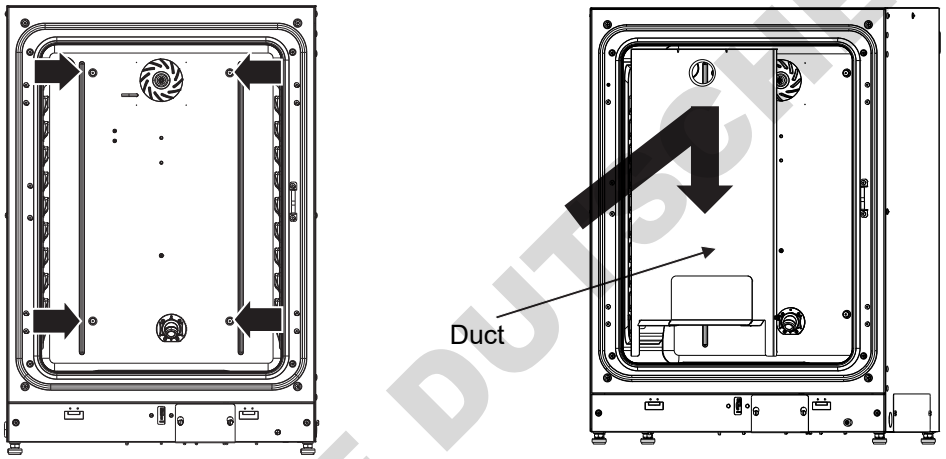
To reinstall the inner attachments, perform the procedure in reverse order from step 6 on pages 21 to 22. If the inner attachments are not inserted properly, the intended air velocity cannot be achieved, and it may cause culture failure.

Notes when reinstalling the inner attachments:

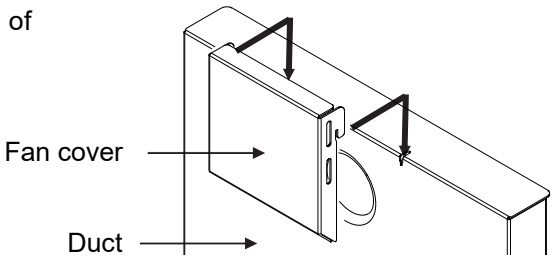
- When installing the fan, position the center hole of the fan over the projection of the motor shaft and push it fully in. Manually turn the fan lightly to check that it does not touch the rear wall. Then, pull the fan lightly to check that it does not come off.



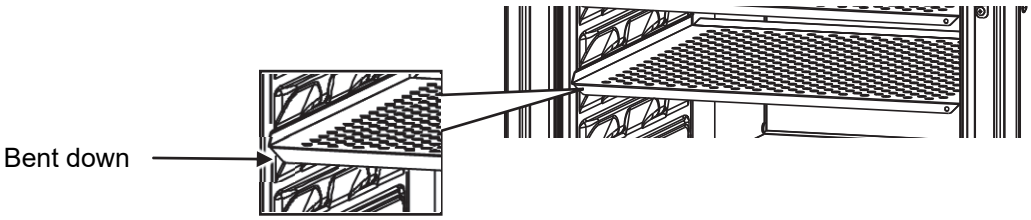
- When installing the duct, be sure to fit the 4 pins at the rear side of the chamber (shown by ➡ in the figure below) into the 4 holes of the duct.



- When attaching the fan cover, be sure to insert the two hooks on the upper part of the fan cover into the holes on the top of the duct.



- Insert the tray so that the bent-down part of the tray is at the front.



- Set the humidifying pan in a longitudinal direction with its shorter side touching the chamber's rear wall.

PREPARATION BEFORE USING

Before running the incubator, you need to connect a CO_2 gas cylinder to the incubator, install a remote alarm device (if necessary), and fill sterile distilled water or pure water into the humidifying pan.

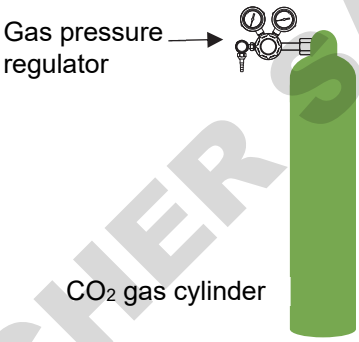
Connecting a CO_2 gas cylinder

Note: Before connecting a CO_2 gas cylinder, read “SAFETY PRECAUTIONS” on pages 5 to 10.

1. Prepare a CO_2 gas cylinder and attach the optional gas regulator MCO-010R to it.

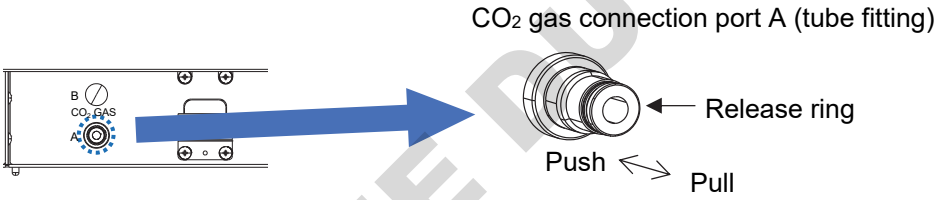
Notes:

- Use a liquefied-CO_2 gas cylinder (at least 99.5 % pure). The siphon (dip tube) type cannot be used.
- When MCO-010R is not available, attach a two-stage gas pressure regulator rated at 25 MPa(G) (250 kgf/cm^2(G), 3,600 psi(G)) for the primary side, and 0.25 MPa(G) (2.5 kgf/cm^2(G), 36 psi(G)) for the secondary side.



2. Connect one end of the gas tube that came with this product to the CO_2 gas connection port A. When the CO_2 gas auto-changer MCO-21GCP (option) is installed, refer to page 71 for the connection.

Lower right side of the unit



About tube fitting

This product employs tube fittings for the connection ports. When connecting and removing a tube, follow the instruction below.

1) Connection

Insert the tube into the gas connection port all the way to the end so that the tube is secured by the inner locking stopper and sealed with elastic sleeve around it.

* In order to make sure that the tube is securely connected, pull the tube after connection. If the tube comes off, pull the release ring, and then reconnect the tube and check if it does not become detached.

2) Removal

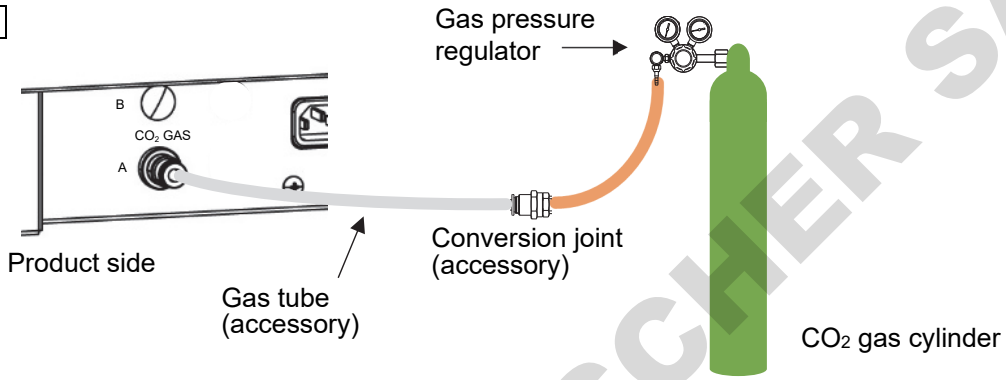
While pushing the release ring, pull the tube to remove it.

3. Connect the other end of the gas tube to the gas regulator (MCO-010R). There are following two ways to connect to the gas regulator.

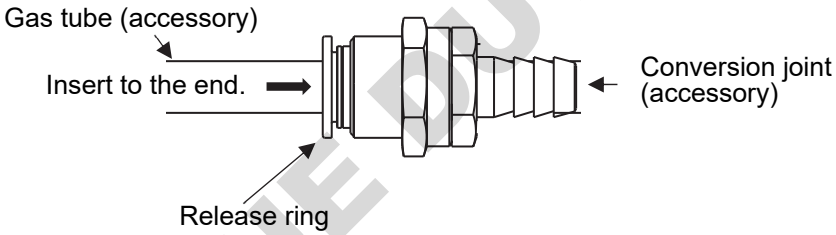
Notes:
- Use the gas tube that came with this product for the connection between the unit and the conversion joint.
- Check that the connected tubes are not bent.
- Do not connect multiple incubators to one CO_2 gas cylinder by branching the gas tube. Doing so may not obtain the intended performance.

When connecting to the hose joint of the gas regulator

General view

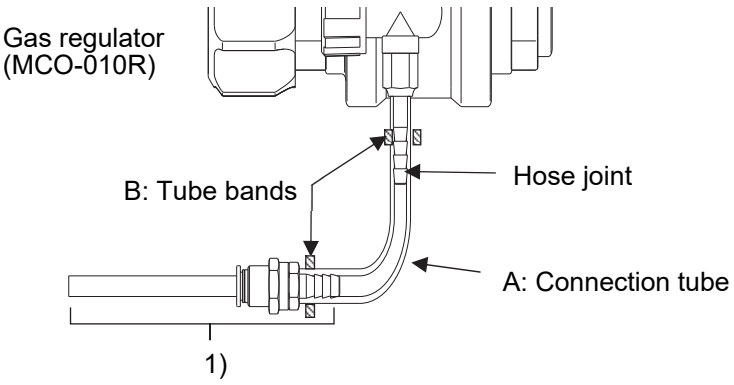


1) Insert the other end of the gas tube into the release ring of the conversion joint that came with this product.



2) Connect the hose joint of the gas pressure regulator and the other side of the conversion joint using the connection tube (A) between them, and tighten the tube ends using the tube bands (B).

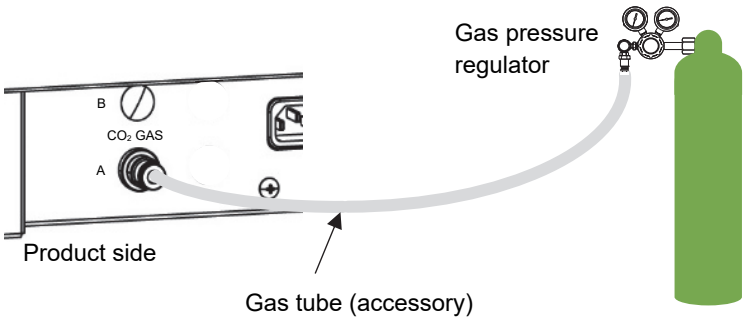
Preparation of parts (Reference)	A. Connection tube: φ6 inner diameter/Tygon tube B. Tube bands



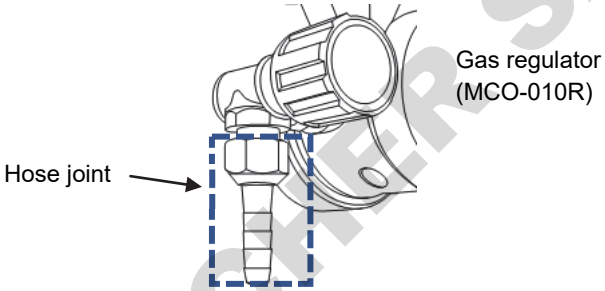
PREPARATION BEFORE USING

When connecting using a tube fitting

General view

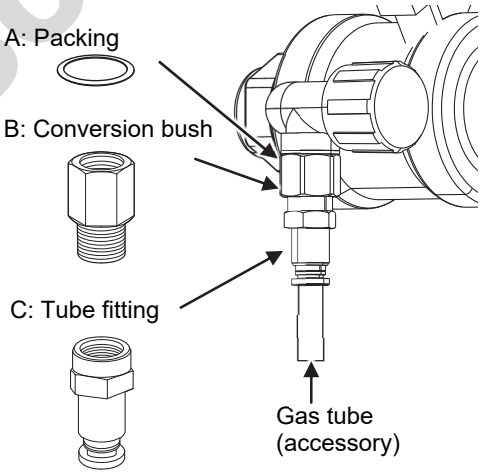


1) Remove the hose joint from the gas regulator.



2) Attach the prepared conversion bush (B) to the gas regulator using the packing or seal tape (A) and then, attach the tube fitting (C) to the conversion bush.

Preparation of parts (Reference)	A. Packing: 6A (ID13 mm x OD 18 mm) or seal tape B. Conversion bush: bush A M12 x 1, R1/8 C. Tube fitting: female straight, adaptive tube OD 6 mm, Rc1/8



3) Insert the other end of the gas tube described in step 2 to the release ring of the tube fitting (C).

Note: If you use seal tape, wind it around the thread part only. Make sure that the seal tape does not stick out of the thread.

4. After connecting the gas tube, make sure that no gas is leaking (e.g. by using a gas leak detector spray).

5. Set the secondary pressure for the CO_2 gas to 0.03 MPa(G) to 0.1 MPa(G) (0.3 kgf/cm^2(G) to 1 kgf/cm^2(G), 4.4 psi(G) to 14.5 psi(G)) for gas injection. Recommended pressure: 0.03 MPa(G) (0.3 kgf/cm^2(G), 4.4 psi(G)).

Note: Do not set the secondary pressure too high. As the pressure increases, the CO_2 gas density will fluctuate widely. Also, excessive pressure may cause gas supply lines inside the incubator to come loose, which may result in gas poisoning or oxygen deprivation due to leaking gas. If gas lines come loose, the incubator must be repaired.

6. When there is no CO_2 gas left and the CO_2 gas empty alarm is activated, replace the empty gas cylinder with a new one.
When the optional gas auto-changer MCO-21GCP is installed, it automatically switches the empty CO_2 gas supply line to the other cylinder. Refer to page 72.

Notes:
- The gas tubes connected to the incubator will degrade over time. If any deterioration or abnormalities are found during inspection, replace the tubes immediately.
- Close the valve of the CO_2 gas cylinder when the CO_2 gas is not in use.

Installing a remote alarm device

The alarm condition of the incubator can be transferred to a remote location by connecting an external alarm device (commercially available) to the remote alarm terminals. Especially, the use of the remote alarm device is recommended if the incubator is placed in an unattended environment to ensure that alarm condition is notified to the administrator. For installing the alarm device, contact our sales representative or agent.

The terminals for the remote alarm are provided under the access port cover on the back side of the unit (see the right figure). Alarm signals are transmitted from these terminals as non-voltage contact outputs. Contact capacity is DC 30 V, 2 A.
Table 1 shows the terminal status and the behaviour of the remote alarm when the Buzzer button is tapped.

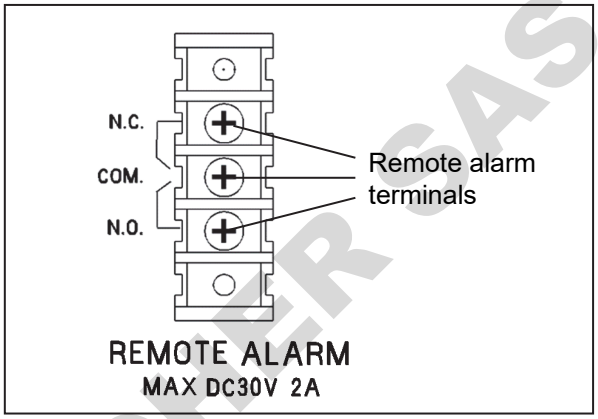


Table 1 Terminal status and behaviour of remote alarm when Buzzer button is tapped

"Remote Alarm" setting (pages 41-42)	Connection terminal	Normal condition	Abnormal condition (Including in the event of power outage and when power plug is pulled out.)	
				When Buzzer button is tapped
ON: Not linked with Buzzer button	COM.-N.C.	Close	Open	Open (indicates abnormal condition)*
	COM.-N.O.	Open	Close	Close (indicates abnormal condition)*
OFF: Linked with Buzzer button	COM.-N.C.	Close	Open	Close (goes back to normal condition)
	COM.-N.O.	Open	Close	Open (goes back to normal condition)

*When the error is Err01 (CO_2 Gas Empty), the incubator goes back to normal condition.

Notes:
- For the types of alarms that can be transferred to the remote alarm device, refer to pages 84 to 86.
- For the door alarm, remote alarm function does not activate (page 86).
- Use a commercially available alarm device when using the remote alarm function. Making a new device or remaking an existing device yourself may cause an electric shock or malfunction.
- When connecting an alarm device to the remote alarm terminals, turn off the power switch and unplug the incubator. Otherwise, it may cause an electric shock.
- Use shielded wire for connection. A maximum length of 30 meters of the cable is recommended.

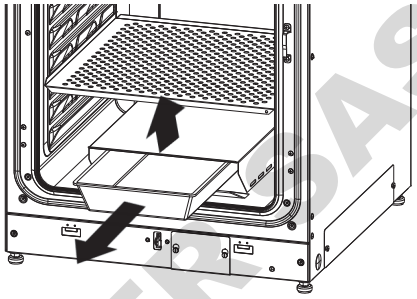
Use a twisted shield wire for the connection.
Type: UL 2343, UL 2448, UL 2464, UL 2552, UL 2623.
Length: 30 m max.

PREPARATION BEFORE USING

Filling the humidifying pan

To fill the humidifying pan with sterile distilled water or pure water or to change the water in the humidifying pan, follow the steps below.

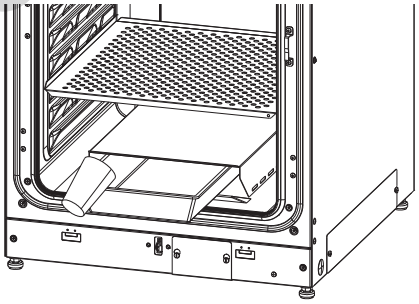
1. Lift the humidifying pan cover and pull out the humidifying pan.



2. Dispose of the remaining water in the pan. Then, rinse it thoroughly with distilled water or pure water and wipe it using ethanol for disinfection.

3. Wipe any moisture on the bottom of the chamber.

4. Put back the humidifying pan under the humidifying pan cover and pour sterile distilled water or pure water (approx. 1.5 L, preheated to 37°C).



5. Set the humidifying pan in a longitudinal direction with its shorter side touching the chamber's rear wall. Then, close the inner door and the outer door.

Notes:

- If you run the incubator without sterile distilled water or pure water in the humidifying pan, the chamber temperature may temporarily increase, resulting in a higher temperature than the set temperature.
- Use sterile distilled water or pure water and change the water once a week.
- Before pouring sterile distilled water or pure water, preheat it to the chamber temperature. Adding cool water will lower the temperature and humidity in the chamber.
- Refill the water when the water in the pan is running low.
- Do not mix any reagent in the water for humidifying pan. Doing so may affect the cultures.
- After cleaning the chamber using ethanol for disinfection, change the water in the humidifying pan. The ethanol that got into the pan may influence the correct control of the incubator operation.
- Do not use a humidification water bag (commercially available). Using such a water bag may not obtain the product's intended performance.
- When the incubator is not used, dispose of the water in the humidifying pan, eliminate moisture in the chamber, and close the doors once the interior is dry. The presence of humidity may lead to failure of the incubator.

START-UP PROCEDURE

Follow the procedure below to start test run or start operation of this product.

Cleaning

1. Clean the chamber by following the steps (removing components, cleaning the chamber, and installing the components) on pages 21-25.

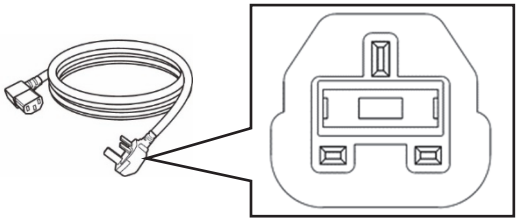
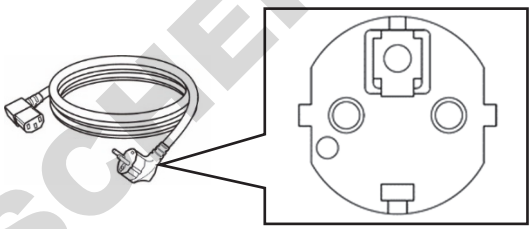
Note:
Check that the UV-LED has been installed. If the incubator operation started without installing the UV-LED, the product may be damaged (in the case of MCO-171AICUVD, or MCO-171AICD with the optional UV system kit (MCO-LUVSD)).

Preparation & Start-up

2. Prepare the incubator for cultivation (pages 26-30).

3. Connect the power supply cord to the port on the lower right side and fix the power cord cover plate over the port (page 17). Then, insert the power plug into the dedicated outlet.

Note: Two removable power supply cords for UK and for EU countries are included with this product.

For UK	For EU countries
	

4. Turn on the power switch for the unit.

5. Press the circuit breaker test button (page 17) to check if the circuit breaker can work properly. When the circuit breaker is working properly, the power switch is automatically turned off. Turn on the switch to use the incubator. If the switch is not turned off after pressing the test button, the circuit breaker may be broken. In such a case, unplug the incubator immediately and contact our sales representative or agent.

6. Fix the switch cover.

Configuration

7. Configure the settings for cultivation (page 40).
Set the chamber temperature, CO_2 density in the chamber, and high temperature limit for overheat alarm.

Note:
When running the incubator for the first time, or after a long unused period, set the temperature to desired temperature and CO_2 density to 0%. Run the incubator at this setting for more than about 4 hours until the temperature and incubator status become stable. Then, set the desired CO_2 density and high temperature limit for overheat alarm. If the message “Status: Gas sensor initializing.” (page 86) appears in the message display area after setting the desired CO_2 density, wait for a while until it disappears.

Cultivation

8. Configure other settings such as alarm, UV-LED, and key lock, if necessary.

9. Put cultures into the chamber.

DURING/AFTER POWER FAILURE

Operation during power failure

When a power failure occurs, the incubator behaves as follows.

- All of the incubator operations stop.
- Nothing is displayed on the control panel.
- The outer door is locked by the electric lock.
- The clock does not stop.

Operation after recovery from power failure

During a power failure, the setting values are stored in the nonvolatile memory. Therefore, after the power comes back, the incubator resumes the operation using the setting values before the power failure. Reconfiguration for setting values is not required but check the settings such as operation settings and alarm settings.

Notes:
- After the power comes back, an alarm may be activated due to increased or decreased temperature or CO_2 density during the power failure.
- If the temperature of the CO_2 sensor has decreased during the power failure, after the power comes back, the CO_2 control does not start and indicates “Status: Gas Sensor initializing” message on the message display area until the CO_2 sensor becomes stable.

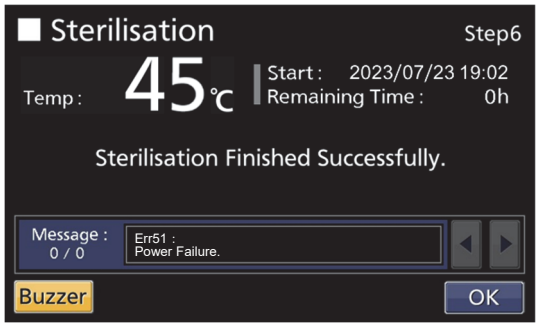
Power failure when performing dry heat sterilisation

When a power failure occurs during dry heat sterilisation operation, the operation resumes from the step described below.

- During Step 1 and Step 2 (page 77):
  The dry heat sterilisation process is terminated and the screen returns to the Top screen. The dry heat sterilisation process has not successfully completed. Try the steps again from the beginning.

- During Step 3 and Step 4 (page 78):
  After the power comes back, the Step 5 screen is displayed and the incubator is cooled down. Then, in Step6, the process ends. At this time, the message “Sterilisation Stopped With Error” is displayed on the center of the screen and Err51 is displayed on the message display area. The dry heat sterilisation process has not successfully completed. Try the steps again from the beginning.

- During Step 5 (page 78)
  After the power comes back, the Step 5 screen is displayed and the incubator is cooled down. Then, in Step6, the process completes. Dry heat sterilisation completes successfully. At this time, the message “Sterilisation Finished Successfully” is displayed on the center of the screen and Err51 is displayed on the message display area.



- During Step 6 (page 78)
  After the power comes back, the Step 6 screen is displayed. Dry heat sterilisation has already completed successfully. At this time, the message “Sterilisation Finished Successfully” is displayed on the center of the screen and Err51 is displayed on the message display area.

FOR OPTIMAL CULTIVATION

Precautions for cultures

- **Leave space between culture containers.**
  Always leave space for ventilation between culture containers (petri dishes, flasks, etc.). Inadequate spacing may result in uneven temperature distribution and CO_2 gas density.
- **Do not place harmful materials in the chamber.**
  Never place samples that release acidic, alkaline, or corrosive gas into the chamber. Doing so may cause damage resulting from discoloration or corrosion.
- **Close the inner door.**
  Make sure to engage the inner door latch properly to close the inner door. Failure to close the inner door will adversely affect the performance of the incubator even if the outer door is closed.
- **Open and close the doors gently.**
  Closing the doors forcefully may cause spillage of the culture medium, incomplete door closing, or damage to the gasket. Also, before opening the inner door, check that the UV-LED is turned off by looking through the glass.
- **Be careful when closing the outer door.**
  Use the handle when closing the outer door. Not doing so may cause injury by getting fingers caught in the door. Do not hang on to the outer door. Doing so may result in injury from the outer door coming loose or the incubator falling over, or may cause current leakage or electric shock.
- **Be careful of the inside of the outer door.**
  There is a heater in the outer door. The inner side of the outer door may become hot.
- **Avoid using excessive force on the inner door.**
  Do not hit the glass, poke it with sharp objects, or apply strong force. Doing so may result in injury from breaking the glass.
- **Check the cause of any alarm.**
  If an audible alarm sounds while the incubator is in use, check the cause of the alarm immediately. For details on what may cause an audible alarm to sound, refer to pages 79-86. If the cause of an audible alarm is uncertain, contact our sales representative or agent.
- **Vibration of a shaker.**
  When an incubator is stacked, the operation of a shaker in the chamber of one CO_2 incubator may adversely affect the other incubator.

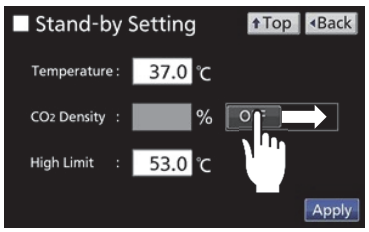
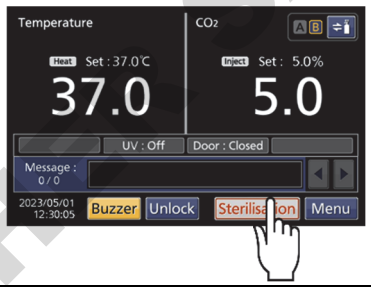
Preventing contamination

- **Use clean containers.**
  Dirty containers are the greatest cause of contamination for cultures. Be careful not to get containers or trays dirty when taking them in and out.
- **Keep the chamber clean.**
  Wipe off any fingerprints. If water spills from the humidifying pan, or if the doors are left open for a long time, condensation may form on the inner side of the inner door. Wipe off condensation with a piece of dry sterile gauze. In particular, if the culture medium is spilled, clean and disinfect the chamber immediately (pages 23-24). Also, clean the chamber and inner attachments at least once a month.
- **Use sterile distilled water or pure water for the humidifying pan (do not use ultrapure water).**
  Use sterile distilled water or pure water that has been purified through methods such as deionization or desalination for the humidifying pan and replace it once a week. Note that if ultrapure water is used or if the humidifying water is not replaced for more than a week, red rust-like particles may appear in the humidifying pan. If these red rust-like particles appear, promptly discard the water, thoroughly clean and rinse the pan, and then refill it with fresh sterile distilled water or pure water.
- **Take care when putting items that emit heat into the chamber.**
  Putting items such as shakers which emit heat into the chamber may cause condensation and lead to possible contamination.

USING THE TOUCH SCREEN

For controlling the incubator, the LCD touch screen is provided at the front of the incubator.

Basic Operation

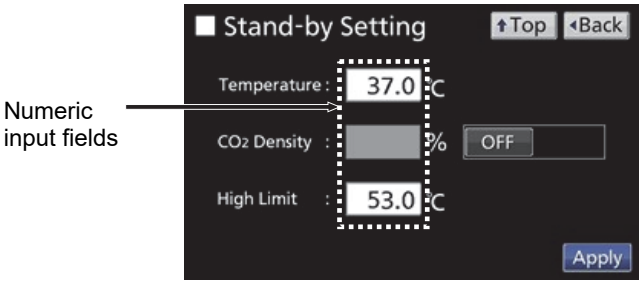
Tap Lightly touch the screen with your finger and immediately release the finger from the screen.	**Slide** With lightly touching the screen with your finger, move to the destination and then release the finger from the screen.	**Long tap** Lightly touch the screen for a few seconds and then release the finger from the screen.
		

Notes:
- Use your finger or a stylus pen to protect the screen.
- Do not use sharp pointed hard items such as the tip of a ballpoint pen for touching the screen.

Entering alphanumeric values and symbols

Entering numerical values:

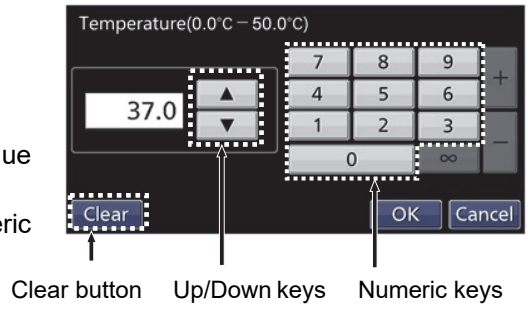
1. Tap the numeric input field.
►The numeric input window is displayed.



2. Tap the numeric keys or Up/Down keys to enter a numerical value.

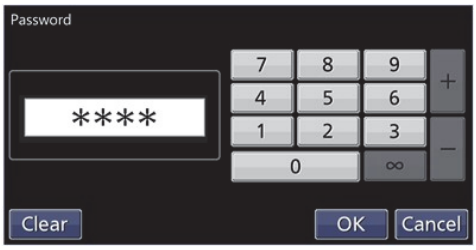
Details of keys in the numeric input window
- Numeric keys (0 to 9): Input numbers directly.
- Up/Down keys (▲/▼): Increase or decrease the numerical value displayed in the numeric input field.
- Clear button: Deletes the numerical value displayed on the numeric input box.

Note:
∞, +, and - keys are unavailable.

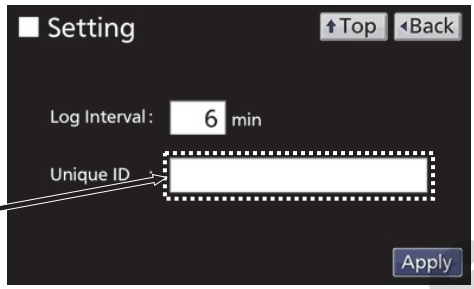


3. Tap the OK button.

Notes:
- In some situations, the Up/Down keys are not displayed.
- When the numeric input window is displayed, the Top and Back buttons are unavailable.



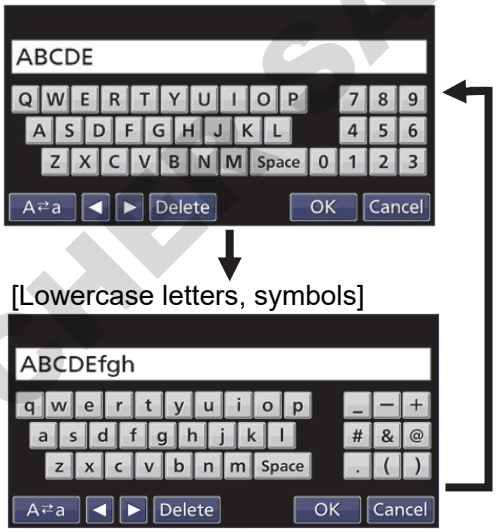
Entering alphanumeric characters and symbols:



1. Tap the alphanumeric input field.
►The alphanumeric input window is displayed.

2. Tap the alphabetic keys, numeric keys, or symbol keys to enter alphanumeric characters and symbols.
You can switch the uppercase letters/numbers window to lower case letters/symbols window by tapping the A⇄a button. The screen switches in the order of the uppercase letters/numbers window → lowercase letters/symbols window.

[Uppercase letters, numbers]



[Lowercase letters, symbols]

Details of keys in the alphanumeric input window
• Alphabetic keys (A to Z, a to z, Space): Input alphabetic characters or spaces.
• Numeric keys (0 to 9): Input numbers.
• Symbol keys: Input symbols.
• Left/Right buttons (◄/►): Move the cursor to the left/right.
• Delete button: Deletes an alphanumeric character or symbol immediately to the left of the cursor.

3. Tap the OK button.

Note:
While the alphanumeric input window is open, the Top and Back buttons are unavailable.

Other operations

1. Common button operation on the touch screen:

Button	Name/Details
OK	OK button Confirm the selected setting and return to the previous screen (the setting has not been saved yet).
Cancel	Cancel button Cancel the selected setting and return to the previous screen.
Apply	Apply button Apply and save the setting into the unit and return to the previous screen.
Abort	Abort button Abort ongoing operation.
Top *	Top button Return to the Top screen.
Back *	Back button Return to the previous screen.

* If you tap these buttons on the screens for selecting/setting values before tapping the Apply button, the values are not saved into the unit.

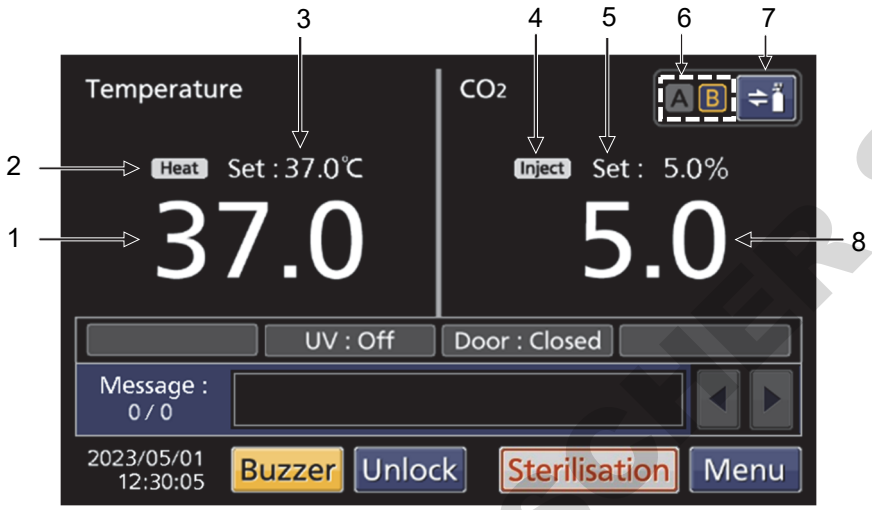
2. Auto return function
When there is no touch screen operation for about 90 seconds on screens other than the Top screen, the display automatically returns to the Top screen. Therefore, when you are in the middle of setting some values and do not touch the screen for more than about 90 seconds, the screen returns to the Top screen without saving the data.
When the sleep function is set to ON and there is no touch screen operation for about 90 seconds without any alarm or error in the sleep state, the display automatically returns to the Top screen.

TOP SCREEN

The following screen is displayed on the LCD display after turning on the power switch for the incubator. This screen is known as “Top screen” and shows basic information about the status of the incubator. It will take about 20 seconds before the Top screen is displayed after turning on the power switch.

Note:

During warm-up, the messages “Status: Gas sensor initializing.” appears on the message display area. Also, “--.-“ is displayed on the current CO_2 density display area.



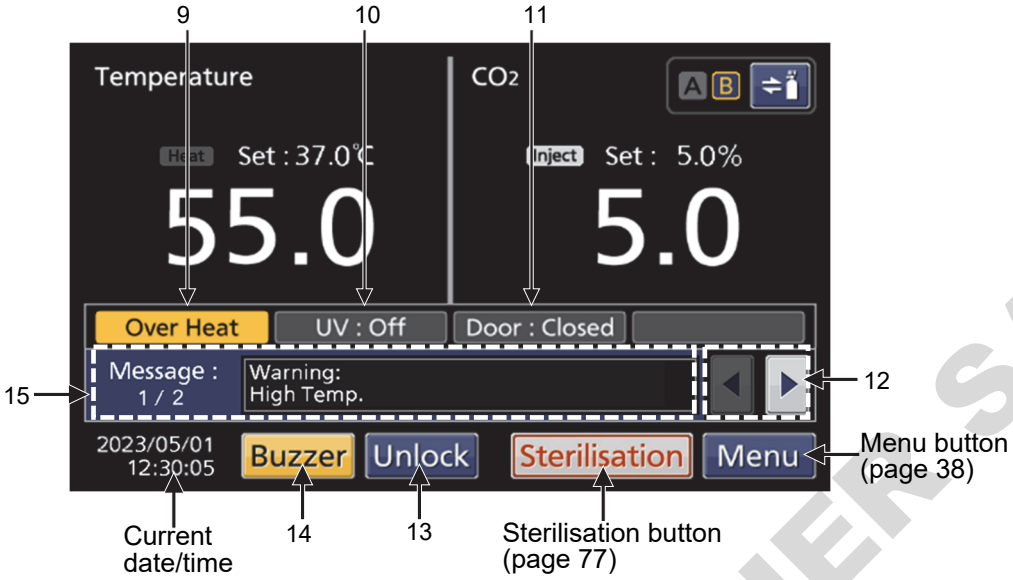
Temperature section

1. **Current temperature in the chamber**
2. **Heating indicator:** Turns on while the heater is working.
3. **Temperature set point**

CO_2 section

4. **CO_2 gas injection indicator:** Turns on while CO_2 gas is being injected into the chamber.
5. **CO_2 density set point**
6. **CO_2 gas supply line indicator A and B*:** The indicator of the CO_2 gas supply line (A or B) that is currently supplying CO_2 gas is turned on. When the current CO_2 gas cylinder becomes empty, and the gas supply line switches to the other one, the gas line indicator of the empty gas cylinder is displayed in reverse video and blinks.
7. **CO_2 gas supply line selection button*:** When the optional CO_2 gas auto changer MCO-21GCP is installed, long tapping this button can switch the CO_2 gas supply line manually. When the current CO_2 gas cylinder becomes empty, the CO_2 gas supply line automatically switches to the other cylinder.
8. **Current CO_2 density:** When CO_2 density is set to “0.0,” nothing is displayed here.

* The indicator and button are displayed only when the optional gas auto changer (MCO-21GCP) is installed.



9. Overheat alarm indicator:
When overheat status occurs, “Over Heat” blinks in orange.

10. UV-LED status indicator (available for MCO-171AICUVD, or MCO-171AICD with the optional UV system kit (MCO-LUVSD)**:**
UV-LED ON: “UV : On” is displayed in orange.
UV-LED OFF: “UV : Off” is displayed.

11. Outer door (open/close) status indicator:
Open: “Door : Open” blinks in orange.
Closed: “Door : Closed” is displayed.
Locked: “Door : Locked” is displayed.

12. Message selection button: When there are multiple messages relating to errors, warnings, or the status of the incubator, tapping these buttons can switch to the previous or next message.

13. Unlock button (outer door): Tapping this button unlocks the outer door when it is locked by the electric lock. This button is not displayed when the automatic door lock function is set to “OFF.”

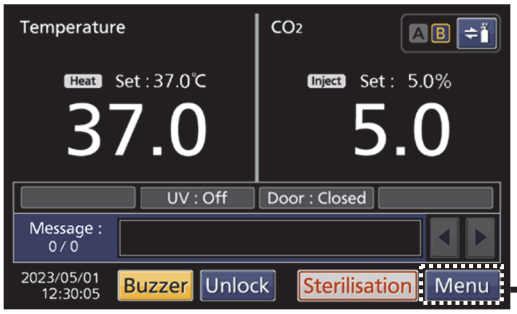
14. Buzzer button: Tapping this button stops the audible alarm. However, when the ring back is set to “ON,” the audible alarm will sound again if the preset amount of time has elapsed after this button was tapped and the alarm condition still continues (refer to the description of “Ring Back” on page 42).

15. Message display area: The error, warning, or the status of the incubator is displayed here.

MENU SCREEN

Tapping the Menu button on the Top screen displays the Menu screen where you can select one of the buttons for configuring setting or using log function (chart view or log data export).

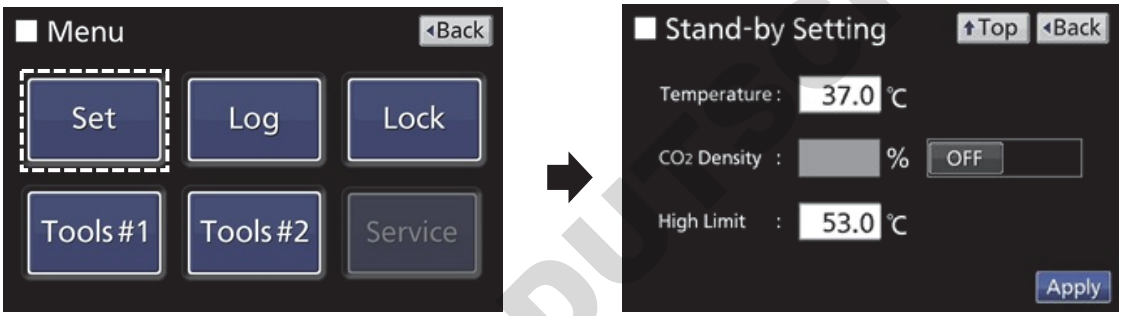
<Top screen>



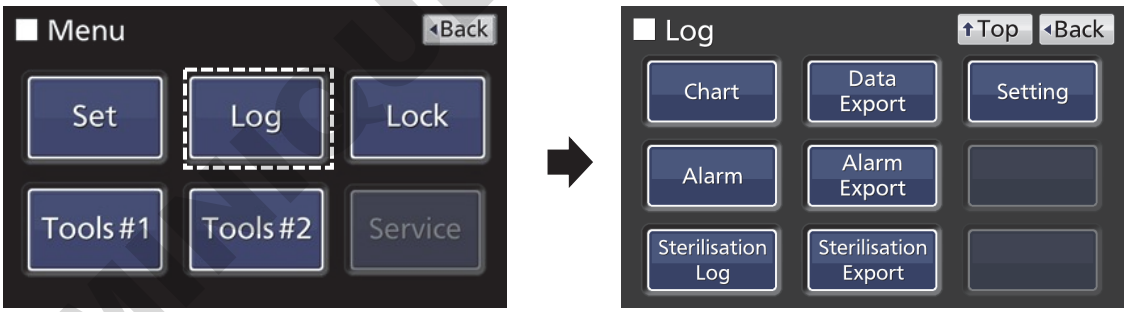
<Menu screen>

Buttons on the Menu screen

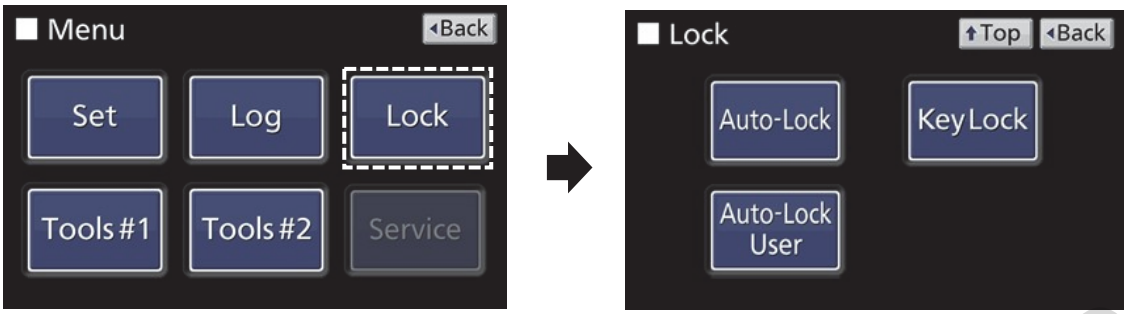
1. Set button: For setting temperature set point, CO_2 density, and high temperature limit (page 40).



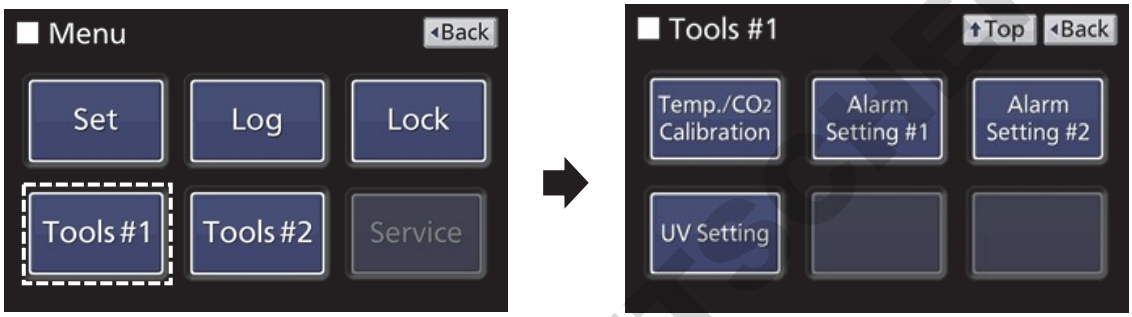
2. Log button: For viewing and exporting operation/alarm log (pages 60-70, 80-83).



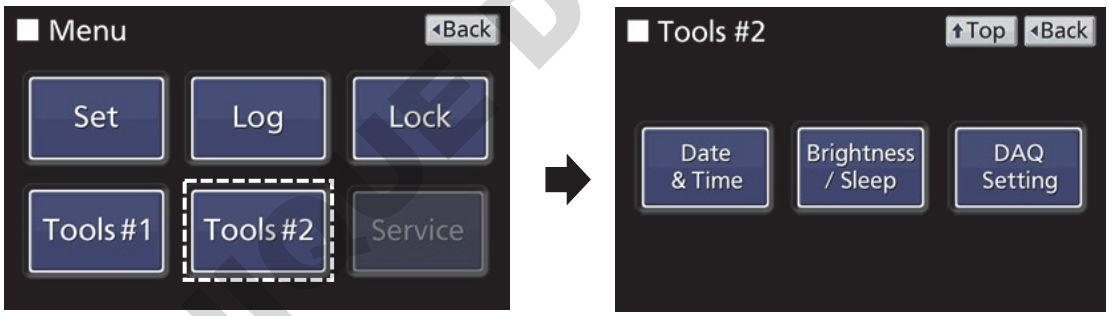
3. Lock button: For configuring the key lock and automatic door lock settings (pages 46-56).



4. Tools #1 button: For configuring alarms (pages 41-43) and UV-LED* (pages 44-45).
*: Available for MCO-171AICUVD, or MCO-171AICD with the optional UV system kit (MCO-LUVSD).



5. Tools #2 button: For setting date and time, screen, and DAQ (pages 57-59).



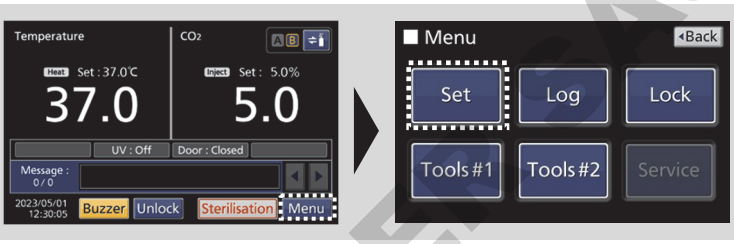
SETTING FOR BASIC OPERATION

Setting temperature, CO_2 density, and high temperature limit

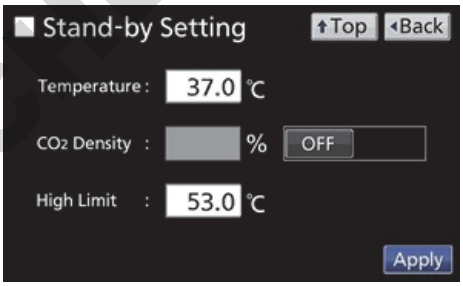
The chamber temperature, CO_2 density, and high temperature limit for overheat alarm can be set by following the steps below.

1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

2. Tap the Set button on the Menu screen.
►Stand-by Setting screen is displayed.



3. Tap the numeric input field to enter each value or slide the ON/OFF buttons to configure the settings.



Details of entry

Item	Details	Settable range	Default value
Temperature	Temperature set point of the chamber. **Note:** Set a value of at least 5°C or higher than the ambient temperature.	0.0°C to 50.0°C	37.0°C
CO_2 density	To control the CO_2 density in the chamber, turn ON the slide switch by sliding it to the right. Then tap the numeric input field to enter desired CO_2 density value (initially 5.0 is displayed). When you turn OFF the slide button, the value is deleted and the CO_2 density control is turned off. Also, when you enter "0" in the numeric input field, the button is automatically turned to "OFF."	ON/OFF 0.0% to 20.0%	OFF
High Limit	When the chamber temperature exceeds the high temperature limit set here, "Over Heat" alarm activates to notify the user of the incubator's over temperature status. This function works independently of the high/low temperature alarm. **Notes:** • This setting should be done after the chamber temperature reached the set temperature set point. • Set a value of at least 1°C higher than the temperature set point.	20.0°C to 53.0°C	53.0°C

Note:
• When running the incubator for the first time, or after a long unused period, set the temperature to desired temperature and CO_2 density to 0%. Run the incubator at this setting for more than about 4 hours until the temperature and incubator status become stable. Then, set the desired CO_2 density and high temperature limit for overheat alarm. If the message "Status: Gas sensor initializing." (page 86) appears in the message display area after setting the desired CO_2 density, wait for a while until it disappears.

4. Tap the Apply button.
►The values are saved and the screen returns to the Menu screen.

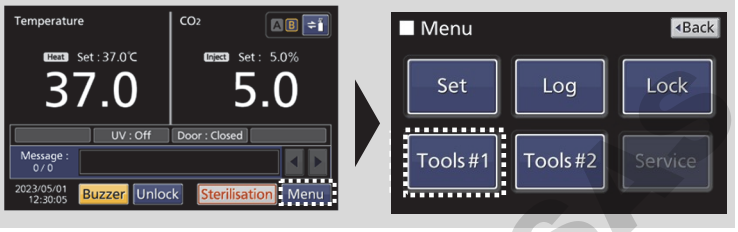
5. Tap the Back button on the Menu screen.
►The screen returns to the Top screen.

Configuring alarm settings

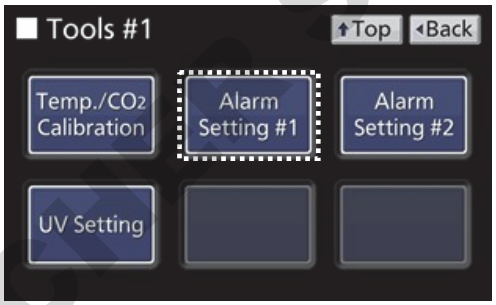
On the Alarm Setting screens, various alarm settings can be configured.

1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

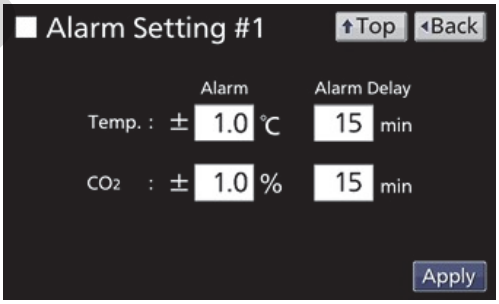
2. Tap the Tools #1 button on the Menu screen.
►The Tools #1 screen is displayed.



3. On the Tools #1 screen, tap the Alarm Setting #1 button.
►The Alarm Setting #1 screen is displayed.



4. Tap the numeric input field to enter each value.



Details of entry for “Alarm” fields

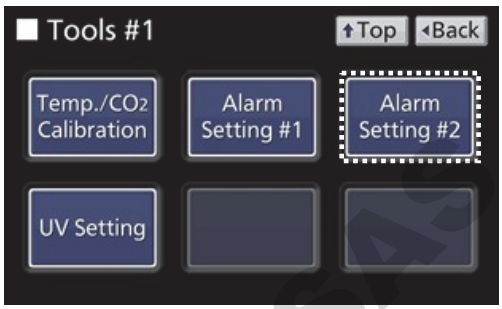
Item	Details	Settable range	Default value
Temp.	When the chamber temperature gets higher or lower than the set temperature set point plus or minus the value set here, the temperature alarm is activated.	±1.0 to ±5.0°C	±1.0°C
CO_2	When the CO_2 density gets higher or lower than the set CO_2 density plus or minus the value set here, the CO_2 density alarm is activated.	±0.5 to ±5.0%	±1.0%

Details of entry for “Alarm Delay” fields

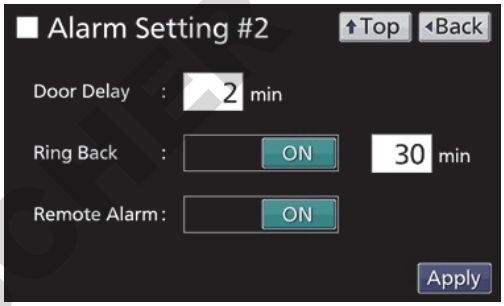
Item	Details	Settable range	Default value
Temp.	Alarm delay is a function that when the alarm status occurs, instead of activating audible alarm or remote alarm immediately, activates the alarm after the elapse of the set alarm delay time. **Note:** When the incubator recovers from the alarm status within the set alarm delay time, audible alarm or remote alarm does not activate after the elapse of the alarm delay time.	0 to 15 min	15 min
CO_2			

5. Tap the Apply button.
►The values are saved and the screen returns to the Tools #1 screen.

6. Tap the Alarm Setting #2 button.
►The Alarm Setting #2 screen is displayed.



7. Tap the numeric input field to enter a value or slide the ON/OFF buttons to configure the settings.



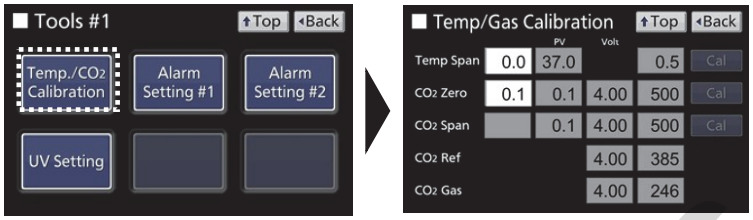
Details of entry

Item	Details	Settable range	Default value
Door Delay	Door delay is a function that when the incubator is in the door alarm (the outer door is open) status, instead of sounding immediately, the alarm will sound after the elapse of the set door delay time. **Note:** When the incubator recovers from the alarm status within the set door alarm delay time, the door alarm does not activate after the elapse of the door alarm delay time.	1 to 30 min	2 min
Ring Back	Ring back is a function that the audible alarm sounds again when an alarm status still continues after the ring back set time elapsed even though the alarm sound was stopped by tapping the Buzzer button. The Ring Back can be turned ON or OFF by sliding the ON/OFF button. When turning it on, enter the ring back time in the right numeric input field. **Note:** For Err01 (CO_2 gas empty) or the door alarm, the alarm does not activate again since the alarm itself is deactivated by tapping the Buzzer button (page 43).	ON/OFF 1 to 99 min	ON 30 min
Remote Alarm	Selects behaviour of the remote alarm when the Buzzer button is tapped to stop the audible alarm sound of the incubator. When "ON" (not linked with the Buzzer button) is selected by sliding the button to the right, the alarm indication by the remote alarm device does not stop even if the Buzzer button is tapped. ON: Not linked with the Buzzer button (remote alarm continues). OFF: Linked with the Buzzer button (remote alarm stops).	ON/OFF	ON

8. Tap the Apply button.
►The values are saved and the screen returns to the Tools #1 screen.

9. Tap the Top button on the Tools #1 screen.
►The screen returns to the Top screen.

Note:
On the Tools #1 screen, do not tap the Temp./CO_2 Calibration button. If you tap the button by mistake, the Temp/Gas Calibration screen is displayed. In such a case, tap the Back button to return to the Tools #1 screen or tap the Top button to return to the Top screen.
If you change the values on the Temp/Gas Calibration screen, inaccurate temperature and CO_2 density may be displayed on the Top screen.



Alarm and Buzzer button

The behaviour of the alarm indication and the ring back function when tapping the Buzzer button are as follows.
Tapping the Buzzer button when the audible alarm is beeping stops the sound. However, the cause of the alarm is not solved by only tapping this button except for Err01 and door alarm[*1]. Refer to pages 79 and 86 to know the cause of the alarm and solve the problem.

<Setting of the incubator>

Remote alarm setting	Ring back setting
ON: Not linked with Buzzer button	ON
	OFF
OFF: Linked with Buzzer button	ON
	OFF

<Alarm behaviour>

Alarm sound from incubator		Remote Alarm	
When Buzzer button is tapped	After the set ring back time has elapsed	When Buzzer button is tapped	After the set ring back time has elapsed
OFF (Alarm is not cancelled)	ON	ON	ON (Alarm status is continuing)
	OFF		
	ON	OFF (Alarm is not cancelled)	ON
	OFF		OFF

Note:
The audible alarm sound for the over temperature alarm does not stop even if you tap the Buzzer button.

*1: In the cases of Err01 (CO2 Gas Empty) and the door alarm[*2].

<Setting of the incubator>

Remote Alarm setting	Ring Back setting
ON: Not linked with Buzzer button	ON
	OFF
OFF: Linked with Buzzer button	ON
	OFF

<Alarm behaviour>

Alarm sound from incubator		Remote Alarm	
When Buzzer button is tapped	After the set ring back time has elapsed	When Buzzer button is tapped	After the set ring back time has elapsed
OFF (Alarm is cancelled)	OFF (Alarm is already cancelled)	Alarm is cancelled[*2]	OFF[*2]

*2: Door alarm does not link with remote alarm.

Note:
When the Err01 alarm occurs, connect a new CO_2 gas cylinder properly and tap the Buzzer button to stop the audible alarm. When the optional MCO-21GCP gas auto-changer is installed, and the gas supply is switched to the reserve gas cylinder, tap the Buzzer button to stop the audible alarm and replace the empty gas cylinder.

DISINFECTION BY UV-LED

The water in the humidifying pan can be disinfected by UV-LED light. You can set if the UV-LED is turned on or not each time the outer door is closed. When set to ON, in order to reduce the heat impact on the chamber by the UV light, the UV-LED is automatically turned on or off during the automatically calculated time.

UV-LED is available for the models configured as follows:

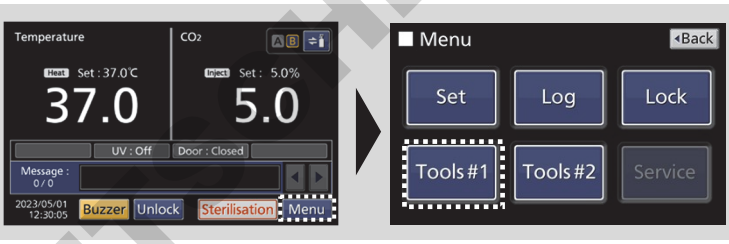
- MCO-171AICUVD
- MCO-171AICD with the optional UV system kit (MCO-LUVSD)

Setting the UV-LED

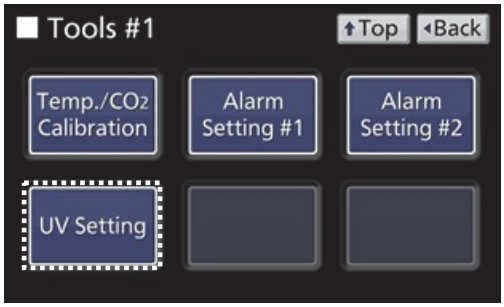
In this setting, you can select if the UV-LED is turned on or off after the outer door is closed, and select the period for which the UV-LED is ON (Normal or Extended).
The UV light ON period is automatically calculated based on the set chamber temperature set point, selected “UV Light Time” (Normal or Extended), and the value automatically calculated and displayed at “UV Timer Ext.”.

1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

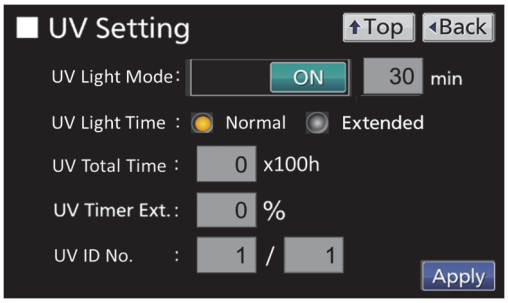
2. Tap the Tools #1 button on the Menu screen.
►The Tools #1 screen is displayed.



3. On the Tools #1 screen, tap the UV Setting button.
►The UV Setting screen is displayed.



4. Slide the ON/OFF buttons for “UV Light Mode,” and select Normal or Extended for “UV Light Time” if you turned ON the UV Light Mode.



Details of each item

Item	Details	Settable range	Default value
UV Light Mode	Slide the slide button to ON to set the UV-LED light to turn on after closing the outer door. When ON is selected, the UV-LED light ON period is automatically calculated and displayed in the right box (users cannot enter a value). The default ON period differs depending on the setting[*1].	ON/OFF	ON[*1]
UV Light Time	Select the duration of the UV-LED light ON period: Normal: For usual use. Extended: When longer disinfection time is needed. Based on this selection, actual ON period is calculated and displayed in the box at the UV Light Mode.	Normal/Extended	Normal

Details of each item

Item	Details	Settable range	Default value
UV Total Time	Indicates the UV-LED's total ON period up to now. If "1" is displayed in the box, it means that the UV-LED has been turned on for a total of 100 hours (1 x 100h). (Users cannot enter a value.)	-	0
UV Timer Ext.	Indicates how much UV-LED ON period is extended*2. The amount of UV irradiation decreases as the accumulated UV-LED light ON period increases. To compensate for this, the UV-LED light ON period is automatically extended as the total UV-LED light ON period increases (this value is used by the incubator to calculate the time indicated at "UV Light Mode"). (Users cannot enter a value.)	-	0%*3
UV ID No.	Left box: UV-LED ID number of the UV-LED currently used for the incubator is displayed. Right box: The UV-LED ID number of the latest UV-LED that can be used for the incubator is displayed.	-	1/1*3

*1: Default UV light ON period:

Temp. Set Point	UV Light Time	UV Light Ext.	Default UV light ON period (min)
Temp. set point ≤ 40.0°C	Normal	0	30
	Extended		45
Temp. set point > 40.0°C	Normal		70
	Extended		105

*2: For example, the UV-LED light ON period is 10 minutes and the UV Timer Ext. is 40%, actual UV-LED ON period becomes 14 minutes.

*3: The default values differ depending on the types of UV-LED.

5. Tap the Apply button.

►The values are saved and the screen returns to the Tools #1 screen.

6. Tap the Top button on the Tools #1 screen.

►The screen returns to the Top screen.

Using UV-LED

WARNING

- **Do not look directly at UV light.**
  UV light is harmful to the eyes.

1. With all the inner attachment installed correctly, put in the cultivation samples on the trays in the chamber.

Notes:

- Be sure to install all the inner attachment correctly.
- Never turn the UV-LED on when the humidifying pan cover is removed.
- Always use the humidifying pan cover even when using the incubator with the UV-LED turned off. Using without humidifying pan cover may affect the chamber temperature distribution and humidity recovery.

2. Close the inner door and outer door.

►"UV : On" is displayed at the UV-LED status indicator on the Top screen, and the UV-LED turns on and off repeatedly for the time automatically calculated by the incubator.

Notes:

- If the outer door is opened while the UV-LED is lit, the light turns off. Then, when the door is closed, the UV-LED turns on and off repeatedly for the time automatically calculated by the incubator.
- If the outer door is opened and closed repeatedly, it may cause condensation in the chamber, and may affect the chamber temperature distribution because of the long-time heat generation by the UV-LED.
- If the outer door is not opened for more than 2 consecutive hours, the UV-LED automatically lights for 1/6 of the automatically preset ON time (e.g. for five minutes when the UV-LED light ON period is displayed as "30 min").
- If a UV-LED error occurs, an error number and message related to the error is displayed on the message display area. Refer to page 84 for the details of the error and contact our sales representative or agent.

KEY LOCK

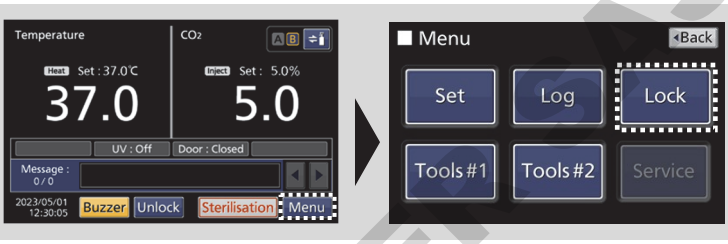
Key lock function prevents unauthorized dry heat sterilisation operation or changes to the incubator setting by prompting the user to enter a password when the Sterilisation or Menu button on the Top screen is tapped.

Setting key lock

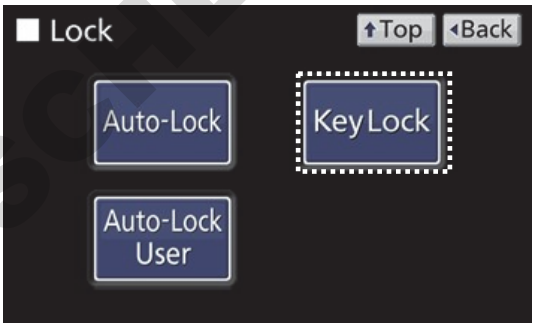
The key lock function can be turned ON as follows.

1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

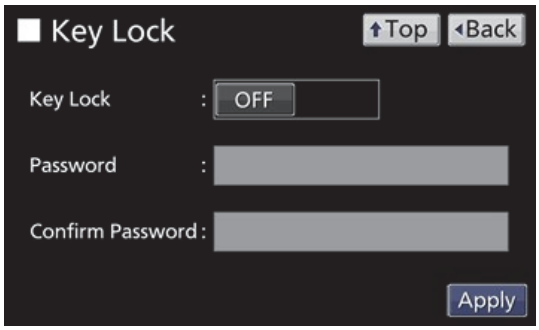
2. Tap the Lock button on the Menu screen.
►The Lock screen is displayed.



3. Tap the KeyLock button on the Lock screen.
►The Key Lock screen is displayed.



4. Configure the key lock settings.



Details of entry

Item	Details	Settable range	Default value
Key Lock	Slide the slide button to turn ON or OFF the key lock function. To turn ON, slide the button to the right.	ON/OFF	OFF
Password	Enter a password to be used for unlocking the key lock. You can use a 1 to 6 digit number for the password. Tap the Password input field to enter the password.	1 to 6 digit number	-
Confirm Password	Tap the Confirm Password input field to enter the same password as you entered in the Password input field and tap the OK button. **Note:** If the password does not match the password entered in the Password field, the following message is displayed. Tap the OK button and enter the same correct passwords in both input fields again. 	1 to 6 digit number	-

5. Tap the Apply buton.
►The values are saved and the screen returns to the Lock screen.

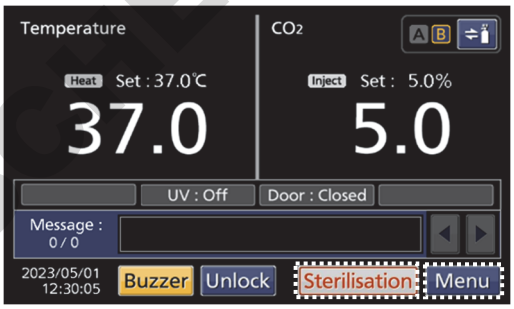
6. Tap the Top button.
►The screen returns to the Top screen.

Note:
Be sure to manage the passwords properly.

Operation when key lock is ON

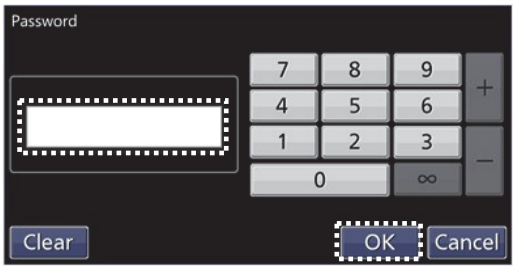
When the key lock is set to ON, if you try to tap the Menu button or try to long tap the Sterilisation button on the Top screen, you are asked to enter a password.

1. On the Top screen, tap the Menu button or long tap the Sterilisation button.
►The Password input window is displayed.



2. Enter the password and tap the OK button.
►The Menu or Sterilisation screen is displayed.

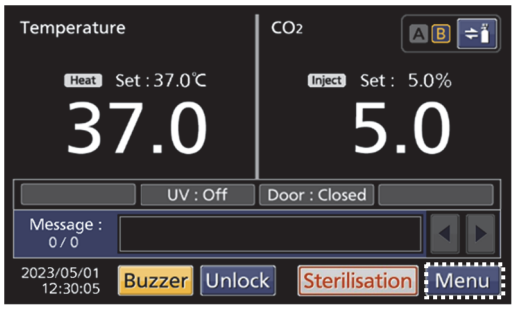
Note:
When the password you entered is incorrect, the Notice message is displayed. Tap the OK button, and return to Step 1 to enter the correct password.



Cancelling key lock setting

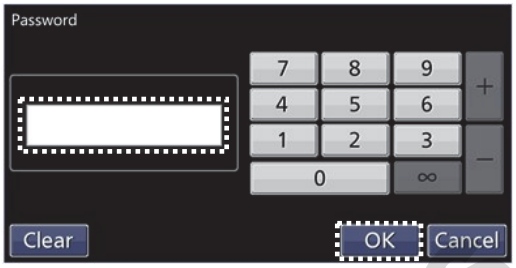
You can turn off the key lock setting by following the steps below.

1. On the Top screen, tap the Menu button.
►The Password input window is displayed.

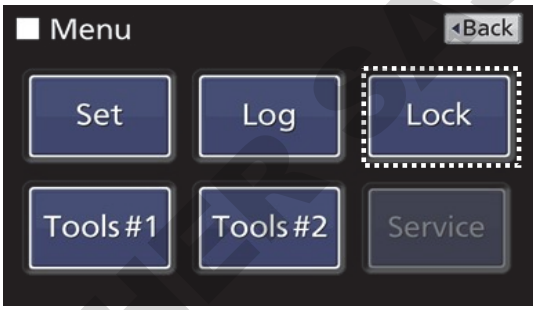


KEY LOCK

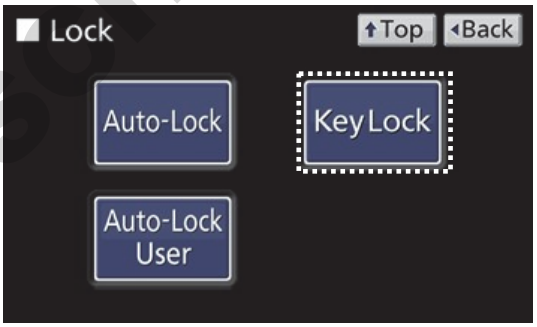
2. Enter the password and tap the OK button.
►The Menu screen is displayed.



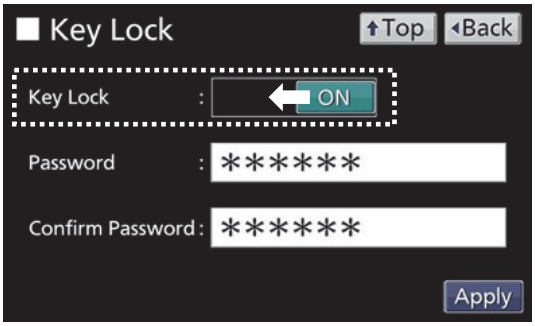
3. Tap the Lock button.
►The Lock screen is displayed.



4. Tap the Key Lock button.
►The Key Lock screen is displayed.



5. Slide the Key Lock slide button to the left.
►The key lock is set to OFF.



6. Tap the Apply button.
►The setting is saved and the screen returns to the Lock screen.
Note:
The registered password is deleted.

7. Tap the Top button on the Lock screen.
►The screen returns to the Top screen.

AUTOMATIC DOOR LOCK

When you set the automatic door lock function to ON, the outer door is automatically locked by the electric lock after it is closed and a preset amount of time is elapsed. To unlock the outer door, you can select one of the following unlock mode:

• Quick mode: Tap the Unlock button.
• User-ID mode: After tapping the Unlock button, enter the User-ID and the password.

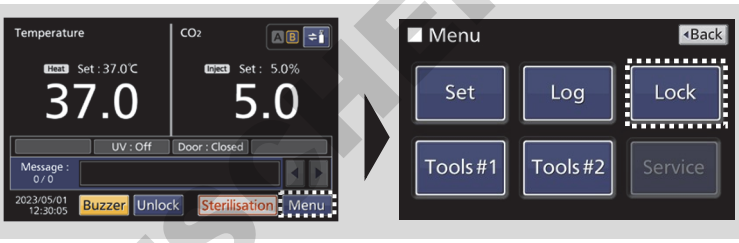
Note:
The outer door is also locked by the automatic door lock function when a power failure occurs or the power cord is pulled out.

Setting user-ID and password

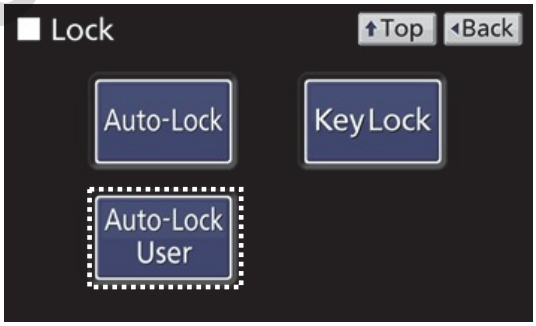
To use the user-ID mode for unlocking the outer door, register the user ID and the password beforehand.

1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

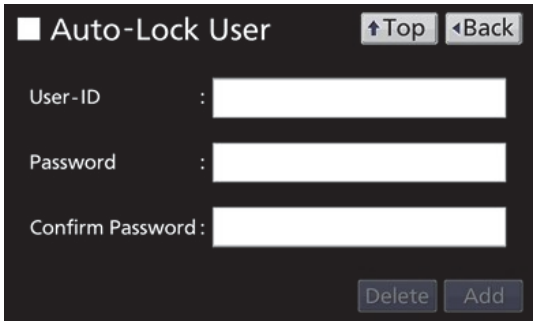
2. Tap the Lock button on the Menu screen.
►The Lock screen is displayed.



3. Tap the Auto-Lock User button on the Lock screen.
►The Auto-Lock User screen is displayed.



4. Enter a user ID and password.

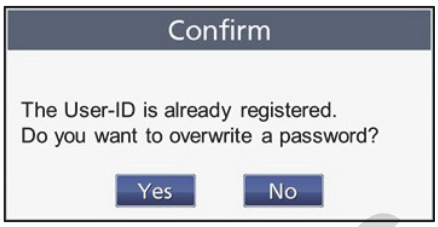


Details of entry

Item	Details	Settable range	Default value
User-ID	Tap the input field to enter a user ID to be used for unlocking the outer door.	1 to 8 digit alphanumeric characters	-
Password	Tap the input field to enter a password to be used for unlocking the outer door. **Note:** You can skip the registration of the password if you want to use only user ID when unlocking the outer door.	1 to 6 digit number	-
Confirm Password	Tap the input field to enter the same password as you entered into the “Password” input field and tap the OK button.	1 to 6 digit number	-

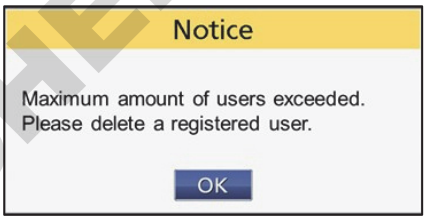
Notes:

- If the entered user ID is the same as the user ID that is already registered, the following Confirm message is displayed. Tapping the Yes button overwrites the old password with the new one, and tapping the No button keeps the old password.

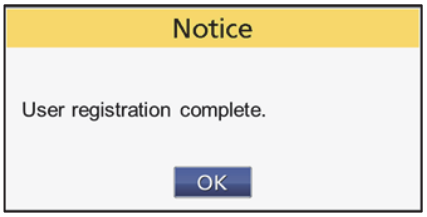


- If the password entered into the Confirm Password input field does not match the password entered in the Password field, the following Notice message is displayed. Tap the OK button and enter the same correct passwords in both input fields again.

- Up to 99 user IDs and passwords can be registered. If you try to register the 100th user ID, the following Notice message is displayed. In such a case, tap the OK button, and delete unused user ID by referencing pages 51 and 52 before registering them.



5. Tap the Add button.
►The values are saved and the following Notice message is displayed.



Note:
If an error occurs, the following Error message is displayed. Tap the OK button and register the user ID and password again.

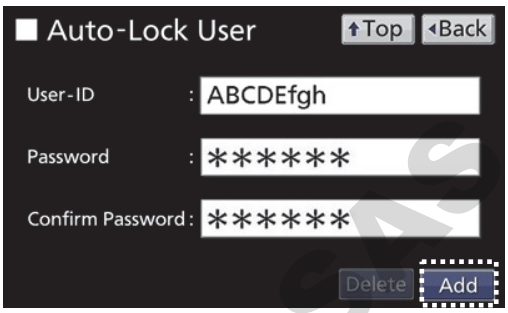
6. Tap the OK button on the Notice message window.
►The Auto-Lock User screen is displayed.

7. Tap the Top button on the Auto-Lock User screen.
►The screen returns to the Top screen.

Note:
To prevent unauthorized use of IDs and passwords, they should be properly managed by only qualified administrators.

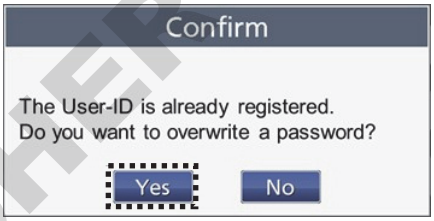
Changing the password

You can change the registered password for a user ID.



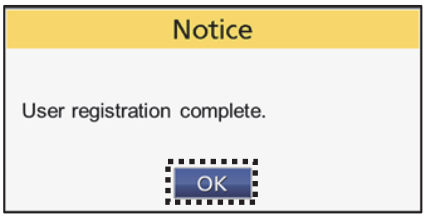
1. On the Auto-Lock User screen, enter the user ID already registered to the incubator. Then, enter a new password in both of the Password and Confirm Password input fields and tap the Add button.
►The following Confirm message is displayed.

2. Tap the Yes button.
►The new password is registered and the following Notice message is displayed.



Note:
If you tap the No button, the password is not changed and the screen returns to the Auto-Lock User screen.

3. Tap the OK button on the Notice messsage window.
►The Auto-Lock User screen is displayed.



4. Tap the Top button on the Auto-Lock User screen.
►The screen returns to the Top screen.

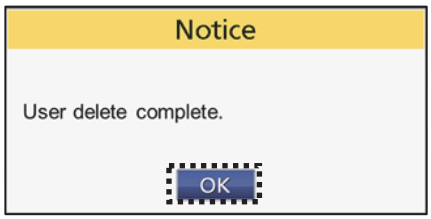
Deleting user ID and password

1. On the Auto-Lock User screen, enter the user ID and password you want to delete into each input field. Then, tap the Delete button.
►The following Confirm message is displayed.

2. Tap the Yes button.
►The user ID and password are deleted and the following Notice message is displayed.

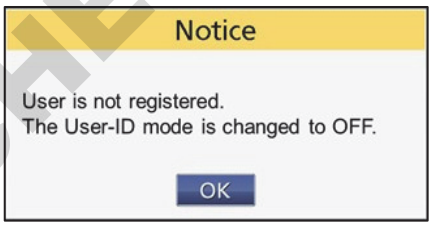
Note:
If you tap the No button, the user ID and password are not deleted and the screen returns to the Auto-Lock User screen.

3. Tap the OK button.
►The Auto-Lock User screen is displayed.



Notes:
• If the user ID and password cannot be deleted, the following Error message is displayed. Tap the OK button and return to step 1.

• If you delete all user IDs, and the User-ID mode has been set to “ON” on the Auto-Lock screen (pages 52-53), the following Notice message notifying you that the User-ID mode is tuned off is displayed. Tap the OK button to return to the Auto-Lock User screen.



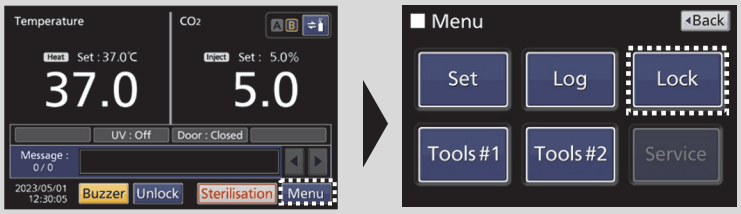
4. Tap the Top button on the Auto-Lock User screen.
►The screen returns to the Top screen.

Setting automatic door lock

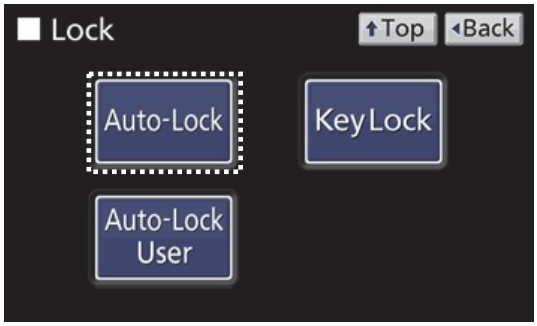
To turn on or off the automatic door lock function and to select the unlock mode, follow the steps below.

1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

2. Tap the Lock button on the Menu screen.
►The Lock screen is displayed.



3. Tap the Auto-Lock button on the Lock screen.
►The Auto-Lock screen is displayed.



4. Configure each setting.

Details of entry

Item	Details	Settable range	Default value
Auto-Lock	Slide the slide button to turn ON or OFF the automatic door lock function. If you select to turn ON, tap the input field next to the slide button to enter the time period from the outer door is closed until the outer door is automatically locked by the electric lock. **Note:** Sliding to OFF while the outer door is locked unlocks the outer door.	ON/OFF 1 to 60 min	ON 1 min
User-ID	Select the unlock mode: ON: User ID mode You need to enter your user ID and password to unlock the outer door after tapping the Unlock button on the Top screen (54 page). OFF: Quick mode You can unlock the door by just tapping the Unlock button (page 54).	ON/OFF	OFF

5. Tap the Apply button.
►The values are saved and the screen returns to the Lock screen.

6. Tap the Top button on the Lock screen.
►The screen returns to the Top screen.

Notes:
• When no User-ID is registered, the following Notice message is displayed. Tap the OK button, and then register a User-ID and its password with reference to pages 49-50).

• In the User-ID mode, User-ID entered to unlock the outer door is saved as a part of log data that shows the open/close state of the outer door (pages 60-66).
• Even if the User-ID mode is turned OFF, registered User-IDs are not deleted.
• When all the registered User-IDs are deleted, the User-ID mode is turned OFF (pages 51-52).

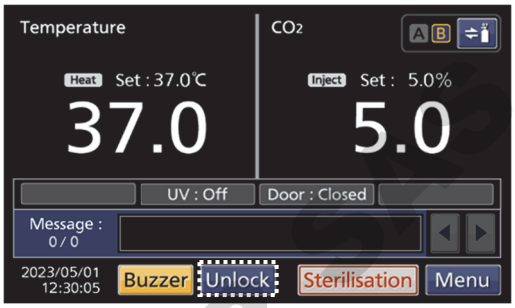
AUTOMATIC DOOR LOCK

Unlocking the outer door

To unlock the outer door, use either of the following depending on the set unlock mode.

Quick mode (“User-ID” setting is OFF)

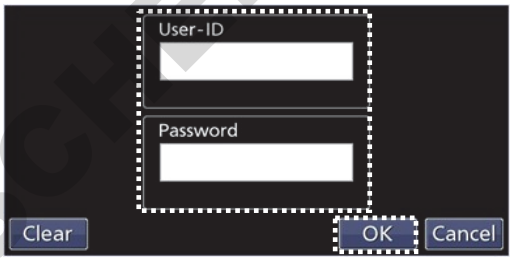
Tap the Unlock button on the Top screen.
►The outer door is unlocked.



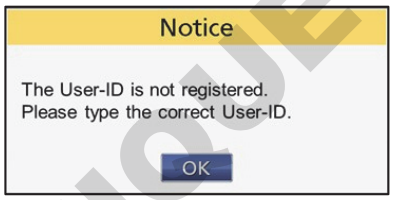
User-ID mode (“User-ID” setting is ON)

1. Tap the Unlock button on the Top screen.
►The User ID input window is displayed.

2. Enter your user ID and password and then tap the OK button.
►The outer door is unlocked.



Notes:
- When a user ID with no password is registered, enter only the user ID and tap the OK button.
- The user ID entered to unlock the outer door is saved as a part of log data that shows the open/close state of the outer door (pages 60-66).
- If a wrong user ID or password is entered, one of the following Notice messages is displayed. Tap the OK button and enter a correct user ID or password.

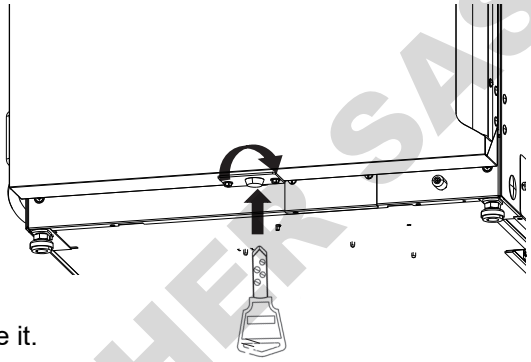


- The outer door is automatically locked again after unlocking and closing the door, and a preset amount of time has elapsed.

Unlocking and locking the outer door during a power failure

In case of a power failure, the outer door is locked by the electric lock. To unlock the outer door during the power failure, use the key that came with the product.

Unlock



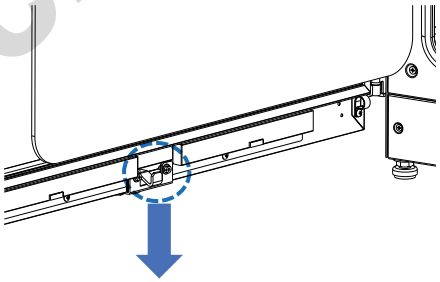
1. Insert the key into the key slot.

2. Turn the key 30° counterclockwise.
►The outer door is unlocked.

3. Open the outer door.

4. Turn the key to the position at which it is inserted and remove it.

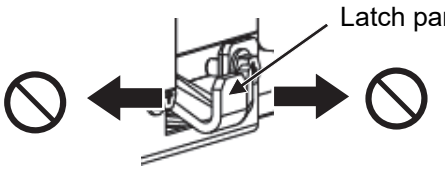
Lock



1. With the outer door opened, check that the key is not inserted in the key slot (if you close the outer door with the key left in the slot, the electric lock may be damaged).

2. Set the latch part so that it comes in the central position.

3. Close the outer door.
►The outer door is locked.



Set the latch part so that it comes in the central position.
(Not the right or left side.)

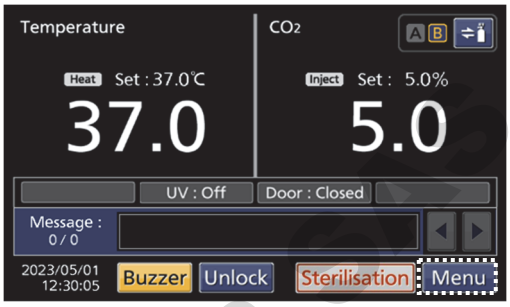
Note:
• The keys should be kept in a safe place and managed carefully. If the key is lost, contact our sales representative or agent and provide the number stamped in the metal near the key slot.

AUTOMATIC DOOR LOCK

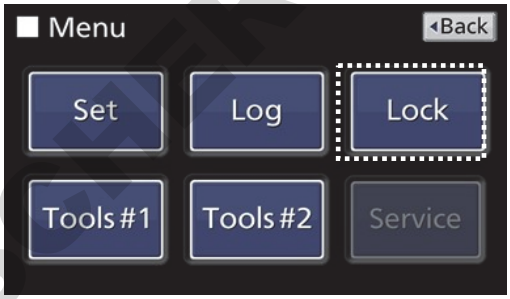
Cancelling the automatic door lock

The automatic door lock function can be turned off by following steps below.

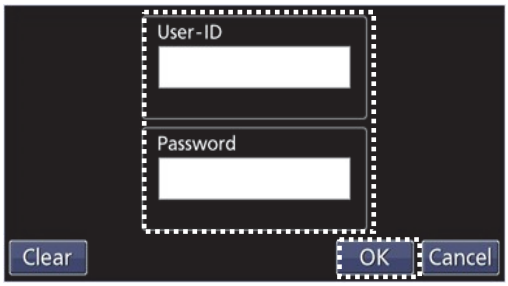
1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.



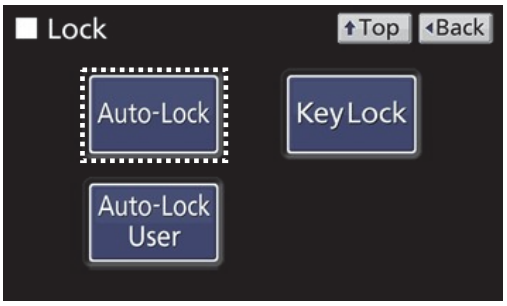
2. Tap the Lock button on the Menu screen.
►(User-ID mode) The User ID input window is displayed. Proceed to Step 3.
►(Quick mode) The Lock screen is displayed. Proceed to Step 4.



3. Enter your user ID and password, then tap the OK button.
►The Lock screen is displayed.



4. Tap the Auto-Lock button on the Lock screen.
►The Auto-Lock screen is displayed.



5. Slide the Auto-Lock slide button to the left.
►The Auto-Lock slide button changes to OFF.

6. Tap the Apply button.
►The values are saved and the screen returns to the Lock screen.

7. Tap the Top button on the Lock screen.
►The screen returns to the Top screen.

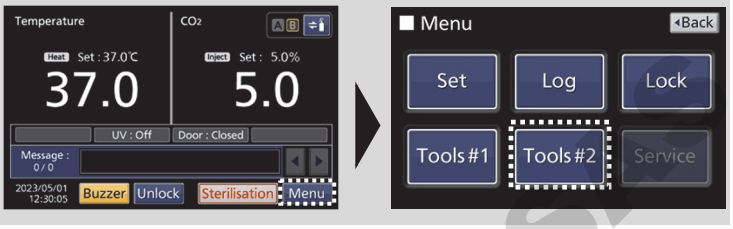
OTHER SETTINGS

Setting date and time

You can set date and time for the incubator.

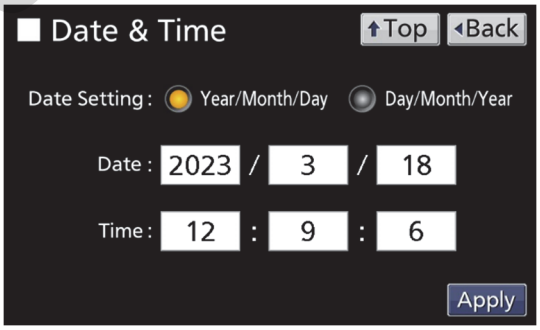
1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

2. Tap the Tools #2 button on the Menu screen.
►The Tools #2 screen is displayed.



3. Tap the Date & Time button on the Tools #2 screen.
►The Date & Time screen is displayed.

4. Configure the settings for date and time.



Details of entry

Item	Details	Settable range	Default value
Date Setting	Select the date format by tapping the radio button.	Year/Month/Day or Day/Month/Year	Day/Month/Year
Date	Enter the current date by tapping each input field and tapping the ▲/▼ buttons or numeric keys on the input window. Then, tap the OK button.	-	The date and time has been temporarily set at the factory. Set the correct date and time.
Time	Enter the current time by tapping each input field (hour: minute: second) and tapping the ▲/▼ buttons or numeric keys on the input window. Then, tap the OK button. The time is expressed using a 24-hour clock. **Note:** It is advisable to set the right time regularly since the error of about 1 minute may be observed within a month.	-	

5. Tap the Apply button.
►The values are saved and the screen returns to the Tools #2 screen.

6. Tap the Top button on the Tools #2 screen.
►The screen returns to the Top screen.

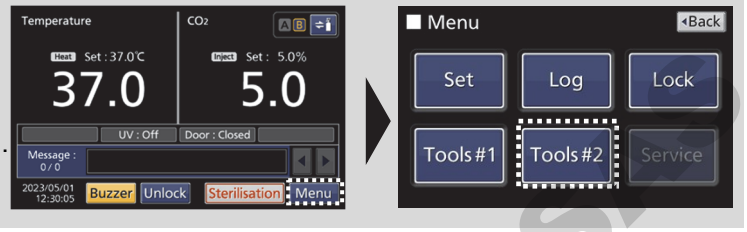
OTHER SETTINGS

Setting brightness and sleep

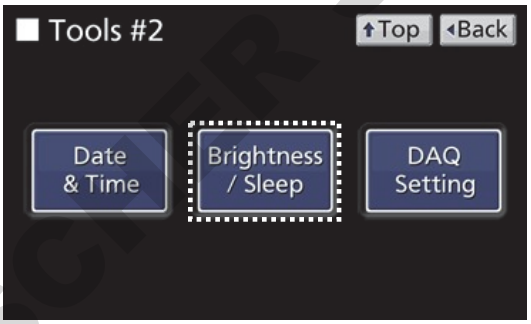
You can configure the brightness of the control panel and the sleep function.

1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

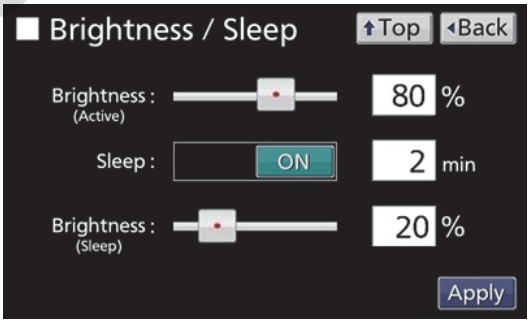
2. Tap the Tools #2 button on the Menu screen.
►The Tools #2 screen is displayed.



3. Tap the Brightness/Sleep button on the Tools #2 screen.
►The Brightness/Sleep screen is displayed.



4. Configure each setting on the Brightness/Sleep screen.



Details of entry

Item	Details	Settable range	Default value
Brightness (Active)	Brightness of the control panel in normal state. You can set the value using the slider bar or tapping the input field to enter the value.	50 to 100%	80%
Sleep	Sleep is a function that decreases the brightness of the control panel to save electricity when there is no touch screen operation. Slide the Sleep slide button to the right to turn ON the Sleep function. Then, enter the time period from the last touch screen operation to the time the Sleep state starts.	ON/OFF 1 to 5 min	ON 2 min
Brightness (Sleep)	Brightness of the control panel in sleep state. You can set the value using the slider bar or tapping the input field to enter the value.	0 to 50%	20%

5. Tap the Apply button.
►The values are saved and the screen returns to the Tools #2 screen.

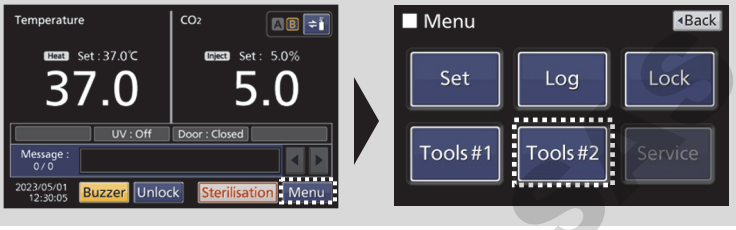
6. Tap the Top button on the Tools #2 screen.
►The screen returns to the Top screen.

Setting DAQ

The DAQ setting is required when the optional interface board (MTR-L03) is installed (page 95).
For installing the interface board, contact our sales representative or agent.

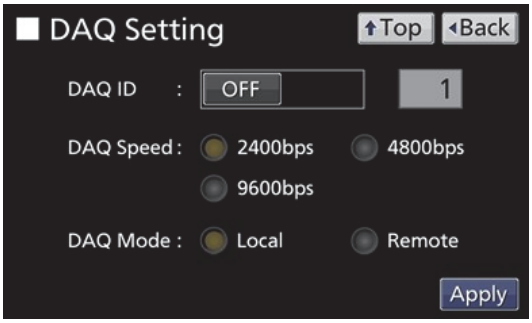
1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

2. Tap the Tools #2 button on the Menu screen.
►The Tools #2 screen is displayed.



3. Tap the DAQ Setting button on the Tools #2 screen.
►The DAQ Setting screen is displayed.

4. Configure each setting on the DAQ Setting screen.



Details of settings:

Item	Details	Settable range	Default value
DAQ ID	Slide the DAQ ID to the right to set it to ON. Then, tap the input field next to the slide button to enter the ID value (1 to 250). Enter the value that is not used for other equipment. **Note:** Setting for the DAQ Speed and DAQ Mode becomes available when this setting is turned ON.	ON/OFF ID value: 1 to 250	OFF
DAQ Speed	Select the communication speed when the centralized monitoring (DAQ system) is connected by tapping the radio button.	2,400 bps, 4,800 bps, or 9,600 bps	2,400 bps*2
DAQ Mode	Select Local or Remote by tapping the radio button.	Local/Remote*1	Local*2

*1 When “Remote” is selected, you cannot set the chamber temperature set point, CO_2 density, high temperature limit, and automatic door lock function, or cannot start dry heat sterilisation from the incubator. The configuration can be set from the remote side.
*2 These are the values when the DAQ ID is turned on for the first time.

5. Tap the Apply button.
►The values are saved and the screen returns to the Tools #2 screen.

6. Tap the Top button on the Tools #2 screen.
►The screen returns to the Top screen.

OPERATION LOG

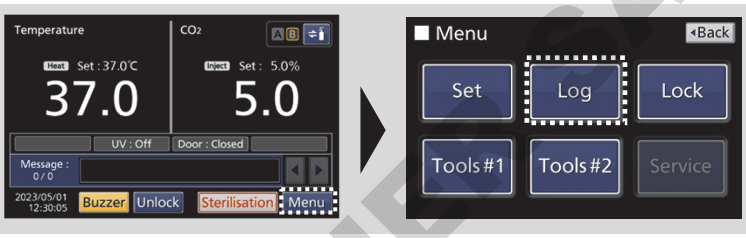
The product is equipped with a function to store operation log data (chamber temperature, CO_2 density, and outer door open/close status).
Up to about 664-day log data (when the log interval is set to 30 minutes) can be stored. When log data reaches the maximum storage amount, the oldest log data is overwritten with the new data.

Setting log interval and unique ID

The interval to record the operation log data and the unique ID that is used when exporting the operation log data can be set as follows.

1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

2. Tap the Log button on the Menu screen.
►The Log screen is displayed.



3. Tap the Setting button on the Log screen.
►The Setting screen is displayed.

4. Enter each value in the Setting screen by tapping each input field.

Details of entry:

Item	Details	Settable range	Default value
Log Interval	Enter the interval for storing the operation log data. • Log interval and the estimated amount of data that can be stored: Every 2 minutes: Approx. 46-day data Every 6 minutes: Approx. 135-day data Every 30 minutes: Approx. 664-day data	2 to 30 min (in 2 minute increments)	6 min
Unique ID	The unique ID entered in this field is shown at the beginning of the exported log file (.csv) following the product name. e.g. Product name: MCO-171AICUVD, Unique ID: ABC00001 →MCO-171AICD, ABC00001	8 alphanumeric characters	-

5. Tap the Apply button.
►The values are saved and the screen returns to the Log screen.

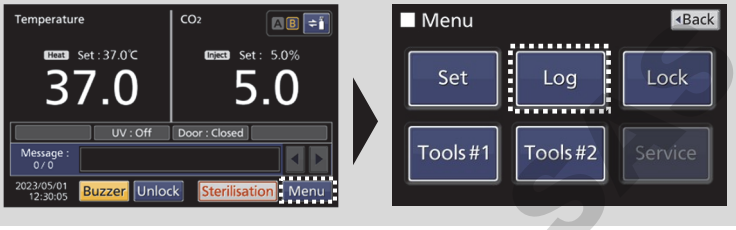
6. Tap the Top button on the Log screen.
►The screen returns to the Top screen.

Displaying operation log chart

Operation log data (chamber temperature, CO_2 density, and outer door open/close status) stored in the incubator can be displayed on the control panel in chart format.

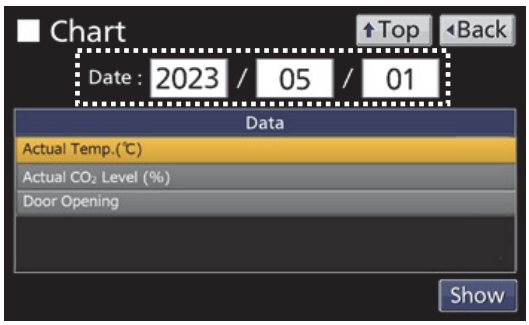
1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

2. Tap the Log button on the Menu screen.
►The Log screen is displayed.



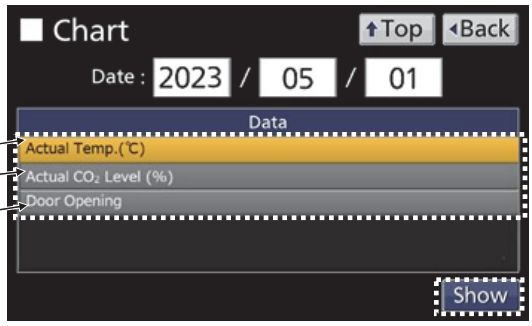
3. Tap the Chart button on the Log screen.
►The Chart screen is displayed.

4. Tap each of the Date input fields to enter the date of the operation log you want to display.
►The numeric input window is displayed.



5. Tap a desired operation log type item.
►Selected item is highlighted in orange.

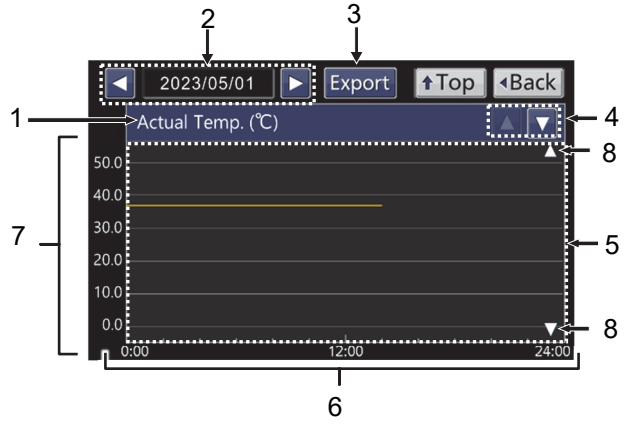
Actual Temp.: Chamber temperature log chart
Actual CO_2 Level: CO_2 density log chart
Door Opening: Outer door open/close status log chart



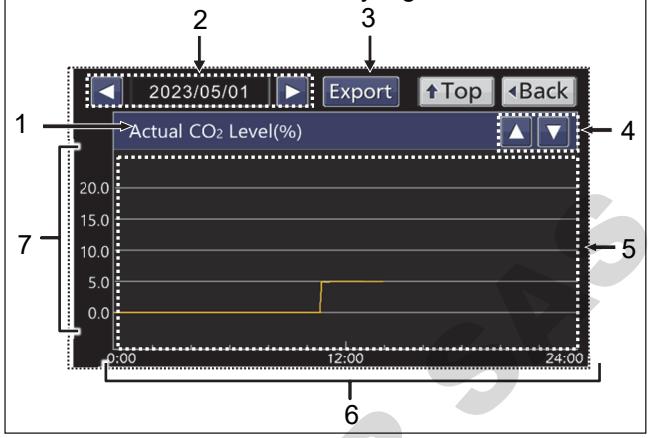
6. Tap the Show button.
►Operation log chart on the selected date and type is displayed.

OPERATION LOG

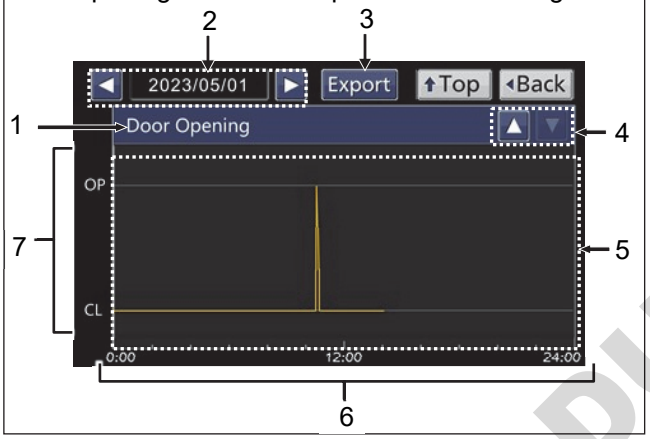
Actual Temp.: Chamber temperature log chart



Actual CO_2 Level: CO_2 density log chart



Door Opening: Outer door open/close status log chart



No.	Item	Details
1	Chart title	Title of the selected chart is displayed here. Actual Temp.: Chamber temperature log chart Actual CO_2 Level: CO_2 density log chart Door Opening: Outer door open/close status log chart
2	Date	Indicates the day when the operation log data was recorded. Tapping the ◄ and ► buttons can display the previous date and next date respectively.
3	Export button	Tapping this button exports the data displayed on the chart to the USB flash drive inserted into the USB port in CSV format.
4	Chart selection buttons	Tapping the ▲ or ▼ button switches the chart displayed on the screen.
5	Chart display area	A chart is displayed within this area.
6	Horizontal axis	Indicates time.
7	Vertical axis	Actual Temp.: Indicates temperature in the chamber. Actual CO_2 Level: Indicates CO_2 density in the chamber. Door Opening: Indicates the outer door status. OP: Opened, CL: Closed.
8	Scroll buttons	Tapping the ▲ or ▼ buttons scrolls up or down.

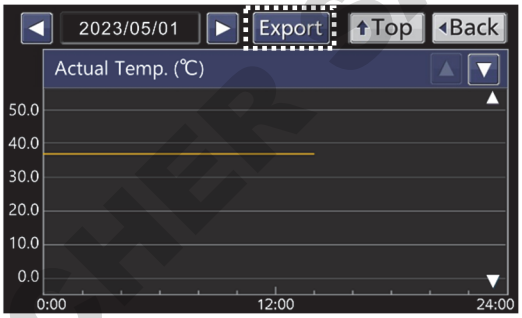
7. Tap the Top button on the Chart screen.
►The screen returns to the Top screen.

Exporting the operation log chart data displayed on the screen

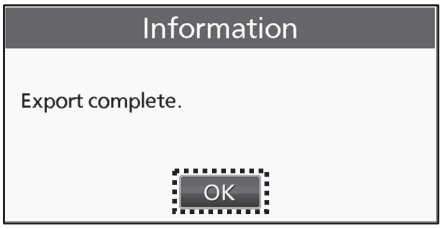
The operation log data displayed on the screen in chart format can be exported to a USB flash drive inserted into the USB port in CSV format.

1. Insert a USB flash drive into the USB port.
For supported USB flash drives, refer to “1. USB port” on page 15.

2. Tap the Export button on the screen displaying the operation log data to be exported.
►Export of the operation log data starts.



3. Tap the OK button when the Information message notifying the completion of the export is displayed.
►The screen returns to the Chart screen.
A folder named “log” is created in the USB flash drive and the exported data file is saved in the folder in CSV format.
The file name consists of the unique ID, date (YYYY/MM/DD or DD/MM/YYYY), and data name. The date format specified on the Date & Time screen is used for the date (see page 57).



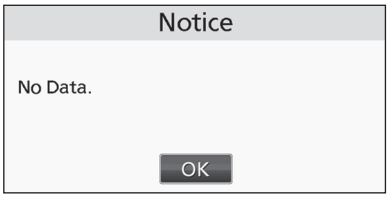
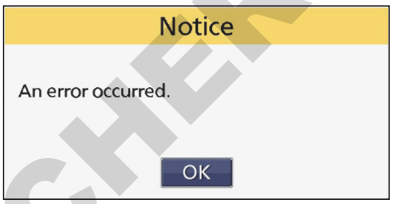
[Unique ID]_[date of the log data]_[data name].csv

- Actual Temp. data → Temp
- Actual CO_2 Level data → CO2
- Door Opening data → Door

e.g. When the temperature log on April 1 in 2023 with the unique ID ABC00001 is exported.

Year/Month/Day	ABC00001_20230401_Temp.csv
Day/Month/Year	ABC00001_01Apr2023_Temp.csv

Notes:
- If a unique ID is not specified, the name of the exported file will be [date of the log data]_[data name].csv.
- The operation log data stored in the incubator is not deleted even if the operation log data is exported to the USB flash drive.
- If an export error occurs, one of the following Notice messages appears.

•USB flash drive is not inserted into the USB port. •USB flash drive is not inserted properly.  ►Tap the OK button, and then insert a USB flash drive properly into the USB port.	•There is not enough free space in the USB flash drive. •The USB flash drive is not formatted in FAT16 or FAT32 format.  ►Tap the OK button, and then check the capacity and format type of the USB flash drive.
•The log data during the specified period does not exist.  ►Tap the OK button and specify the data again.	• The export was unsuccessful.  ►Tap the OK button and specify the data again.

4. Remove the USB flash drive from the USB port.

5. Tap the Top button on the screen displaying the chart.
►The screen returns to the Top screen.

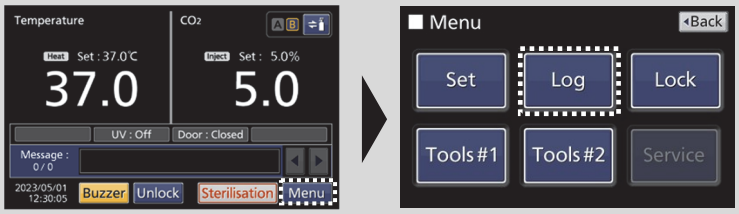
Exporting operation log data

Operation log data stored in the incubator can be exported to a USB flash drive inserted into the USB port in CSV format. The data can be exported all together or separately by selecting the log type (chamber temperature, CO_2 density, and outer door open/close status).

1. Insert a USB flash drive into the USB port.
For supported USB flash drives, refer to “1. USB port” on page 15.

2. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

3. Tap the Log button on the Menu screen.
►The Log screen is displayed.



4. Tap the Data Export button on the Log screen.
►The Export screen is displayed.

5. Tap the radio button (All or 1 Day) to select the period during which the data was logged.
►The selected radio button turns orange.

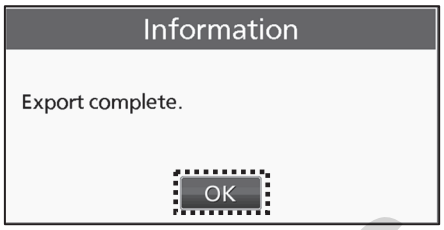
Item	Details
All	Selects the entire period.
1 Day	Selects specified 1 day. (Enter the date when the log data you want to export was stored.)

Note: The error of about 1 minute may be observed within a month. Refer to page 57 for setting the time.

6. Tap the All Ch button, or select a log data type and tap the Selected Ch button to export the log data.

Button	Details
All Ch	Exports all types of the operation log data.
Selected Ch	Exports only one selected operation log data type. Before tapping this button, select one of the operation log type from the above list (selected data type turns orange).

7. Tap the OK button when the Information message notifying the completion of the export is displayed.



►The screen returns to the Export screen.
A folder named “log” is created in the USB flash drive and the exported data file is saved in the folder in CSV format.
The file name consists of the unique ID, specified date (YYYY/MM/DD or DD/MM/YYYY) or date period (YYYY/MM/DD-YYYY/MM/DD or DD/MM/YYYY-DD/MM/YYYY), and data name. The date format specified on the Date & Time screen is used for the date (see page 57).

[Unique ID]_[date of the log data]_[data name].csv

All Ch data	→ AllCh
Actual Temp. data	→ Temp
Actual CO_2 Level data	→ CO2
Door Opening data	→ Door

Examples of exported file names when unique ID is set to “ABC00001”, “All” period (in the case of April 1 in 2023 to May 1 in 2023) is selected and the “All Ch” button is tapped to export all types of operation log data.

Year/Month/Day	ABC00001_20230401-20230501_AllCh.csv ABC00001_20230401-20230501_Door.csv
Day/Month/Year	ABC00001_01Apr2023-01May2023_AllCh.csv ABC00001_01Apr2023-01May2023_Door.csv

*When the “All Ch” button is selected to export all types of operation log data, two files (AllCh.csv which includes chamber temperature and CO_2 density data, and Door.csv which includes outer door open/close status data) are exported.

Examples of exported file names when “1 Day” (in the case of April 1 in 2023) is selected, unique ID is set to “ABC00001”, “Door Opening” log is selected, and the “Selected Ch” button is tapped to export the door open/close status log.

Year/Month/Day	ABC00001_20230401_Door.csv
Day/Month/Year	ABC00001_01Apr2023_Door.csv

Notes:
- If a unique ID is not specified, the name of the exported file will be [date of the log data]_[data name].csv.
- The operation log data stored in the incubator is not deleted even if the operation log data is exported to the USB flash drive.
- If an export error occurs, refer to page 64.

8. Remove the USB flash drive from the USB port.

9. Tap the Top button on the Export screen.
►The screen returns to the Top screen.

ALARM LOG

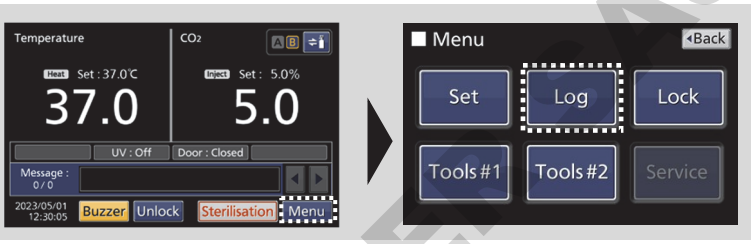
This product is equipped with a function to store alarm log data.
Up to about 256 alarm log data can be stored. When the log data exceeds the maximum size, the oldest log data is overwritten with the new data.

Referring to the alarm logs

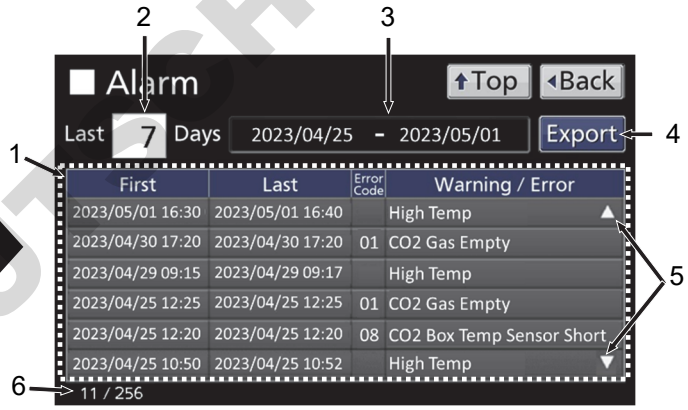
Alarm log data stored in the incubator can be displayed for reference by selecting the period during which the alarms occurred.

1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

2. Tap the Log button on the Menu screen.
►The Log screen is displayed.



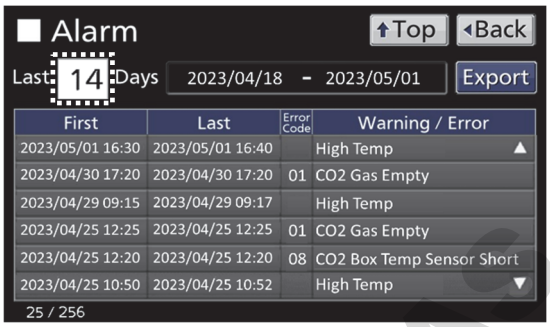
3. Tap the Alarm button on the Log screen.
►The Alarm screen is displayed.



Details of the Alarm screen

No.	Item	Details
1	Alarm log information	Indicates alarm log information stored in the incubator. First: Date and time when the alarm condition occurred. Last: Date and time when the alarm condition ended. *The date format specified on the Date & Time screen is used for the date indication (see page 57). Error Code: Error code. Warning/Error: Details of the warning/error.
2	Number of days	Tap the input field to enter the period of days you want to display the alarm log that occurred on and before the current date. Settable range: 1 to 45 days
3	Period indication	Period corresponding to the days input in the number of days (No.2) field is displayed here. *The date format specified on the Date & Time screen is used for the date indication (see page 57).
4	Export button	Tapping this button exports the alarm log data during specified period to the USB flash drive inserted into the USB port in CSV format.
5	Scroll buttons	When logs during the specified period are more than 6, tapping the scroll button shows the upper or lower log. Tapping the ▲ button scrolls up one line. Tapping the ▼ button scrolls down one line.
6	Number of alarms	Number of alarms during the specified period / Total alarms.

4. Tap the Number of days input field.
►Numeric input window for entering number is displayed.



5. Enter desired number of days and tap the OK button.
►Alarm log data during the specified period is displayed.

Note:
When alarms during the specified period are more than 6, tapping the scroll button shows the upper or lower alarms.

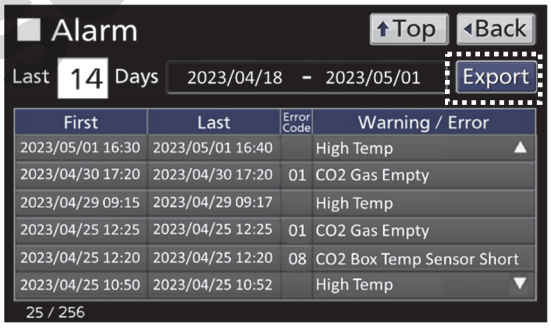
6. After referencing the alarm logs, tap the Top button.
►The screen returns to the Top screen.

Exporting alarm log data when referring to the data

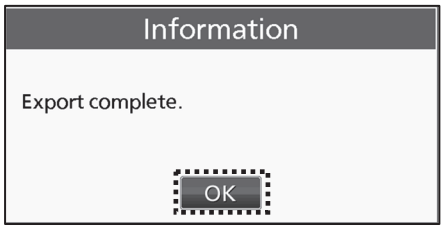
The alarm log data displayed on the Alarm screen for reference can be exported to a USB flash drive inserted into the USB port in CSV format.

1. Insert a USB flash drive into the USB port.
For supported USB flash drives, refer to “1. USB port” on page 15.

2. Tap the Export button on the Alarm screen.
►Export of the alarm log data during the specified days starts.



3. Tap the OK button when the Information message notifying the completion of the export is displayed.
►The screen returns to the Alarm screen.
A folder named “log” is created in the USB flash drive and the exported data file is saved in the folder in CSV format.
The file name consists of the unique ID, specified date period (YYYY/MM/DD-YYYY/MM/DD or DD/MM/YYYY-DD/MM/YYYY) and data name (AlarmLog). The date format specified on the Date & Time screen is used for the date (see page 57).



Examples of exported file names when the unique ID is set to “ABC00001” and “7” is input in the number of days field on April 1 in 2023 (in this case, the days correspond to the period from March 26 in 2023 to April 1 in 2023).

Year/Month/Day	ABC00001_20230326-20230401_AlarmLog.csv
Day/Month/Year	ABC00001_26Mar2023-01Apr2023_AlarmLog.csv

Notes:
- If a unique ID is not specified, the name of the exported file will be [date of the log data]_[data name].csv.
- The alarm log data stored in the incubator is not deleted even if the alarm log data is exported to the USB flash drive.
- If an export error occurs, refer to page 64.

4. Remove the USB flash drive from the USB port.

5. Tap the Top button on the Alarm screen.
►The screen returns to the Top screen.

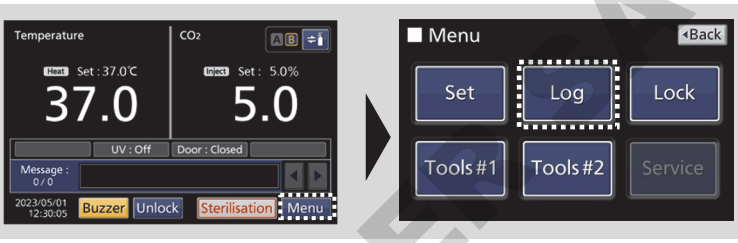
Exporting alarm log data

Alarm log data stored in the incubator can be exported to a USB flash drive inserted into the USB port in CSV format.

1. Insert a USB flash drive into the USB port.
For supported USB flash drives, refer to “1. USB port” on page 15.

2. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

3. Tap the Log button on the Menu screen.
►The Log screen is displayed.



4. Tap the Alarm Export button on the Log screen.
►The Alarm Export screen is displayed.

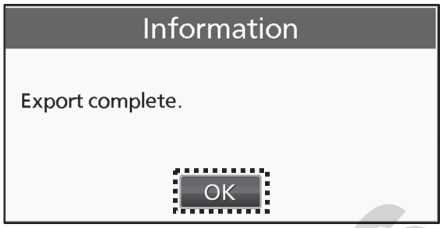
5. Tap the “All” or “Last ☐ Days” radio button to select the period during which the data was logged.
►The selected radio button turns orange.

Item	Details
All	Selects the entire period.
Last ☐ Days	Tap the input field to enter the period of days you want to export the alarm log that occurred on and before the current date. Settable range: 1 to 45 days

Note:
The error of about 1 minute may be observed within a month. Refer to page 57 for setting the time.

6. Tap the Export button.
►Export of the log data in the selected period starts.

7. Tap the OK button when the Information message notifying the completion of the export is displayed.
►The screen returns to the Alarm Export screen.
A folder named “log” is created in the USB flash drive and the exported data file is saved in the folder in CSV format.
The file name consists of the unique ID, specified date period (YYYY/MM/DD-YYYY/MM/DD or DD/MM/YYYY-DD/MM/YYYY), and data name (AlarmLog). The date format specified on the Date & Time screen is used for the date (see page 57).



Examples of exported file names when the unique ID is set to “ABC00001” and “All” period (in the case of March 1 in 2023 to May 1 in 2023) is selected to export the alarm log data.

Year/Month/Day	ABC00001_20230301-20230501_AlarmLog.csv
Day/Month/Year	ABC00001_01Mar2023-01May2023_AlarmLog.csv

Examples of exported file names when “Last ☐ Days” is selected to export the alarm log data (in this case, “1” is entered in the field and the day correspond to May 1 in 2023).

Year/Month/Day	ABC00001_20230501_AlarmLog.csv
Day/Month/Year	ABC00001_01May2023_AlarmLog.csv

Notes:
- If a unique ID is not specified, the name of the exported file will be [date of the log data]_[data name].csv.
- The alarm log data stored in the incubator is not deleted even if the alarm log data is exported to the USB flash drive.
- If an export error occurs, refer to page 64.

8. Remove the USB flash drive from the USB port.

9. Tap the Top button on the Alarm Export screen.
►The screen returns to the Top screen.

GAS AUTO CHANGER (OPTION)

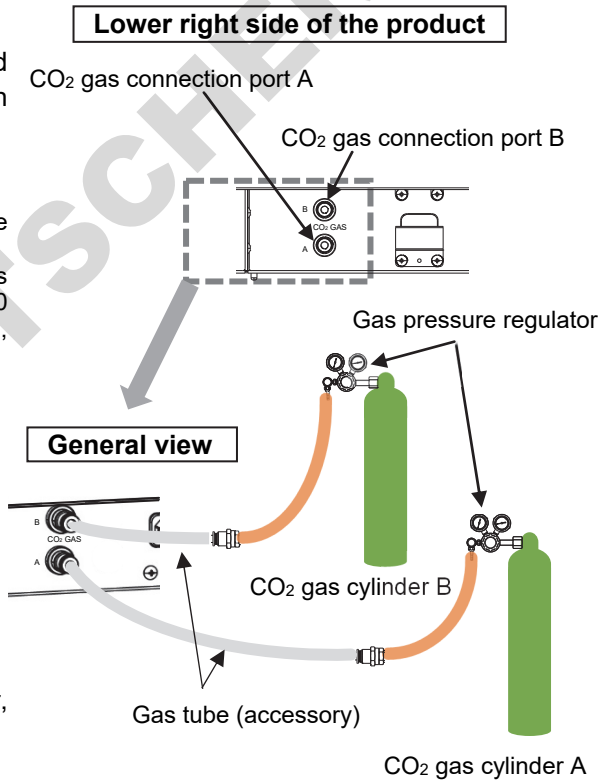
When the optional gas auto changer MCO-21GCP is installed, two connection ports for CO_2 gas pipes A and B are available, and you can connect two CO_2 gas cylinders. This enables the CO_2 gas supply line to be automatically switched when one of the CO_2 gas cylinders becomes empty.

Connecting CO_2 gas cylinders

- For purchase and installation of the gas auto changer MCO-21GCP, contact our sales representative or agent.
- Before connecting CO_2 gas cylinders, read “SAFETY PRECAUTIONS” on pages 5-10.
- For the tubes, use each gas tube that came with this product and optional gas regulator.
- Make sure that the connected tubes are not bent.
- Do not connect multiple incubators to a single gas cylinder. If the CO_2 gas is supplied to multiple incubators from a single gas cylinder, the intended performance may not be achieved.

1. Prepare two CO_2 gas cylinders (CO_2 gas cylinder A and B) and attach the optional gas regulators MCO-010R to both of the CO_2 gas cylinders.

Notes:
- Use a liquefied-CO_2 gas cylinder (at least 99.5 % pure). The siphon (dip tube) type cannot be used.
- When MCO-010R is not available, attach a two-stage gas pressure regulator rated at 25 MPa(G) (250 kgf/cm^2(G), 3,600 psi(G)) for the primary side, and 0.25 MPa(G) (2.5 kgf/cm^2(G), 36 psi(G)) for the secondary side.



2. Connect the CO_2 gas connection port A and the gas regulator for the CO_2 gas cylinder A using the gas tube and conversion joint that came with this product.

3. Connect the CO_2 gas connection port B and the gas regulator for the CO_2 gas cylinder B using the gas tube and conversion joint that came with the gas auto changer MCO-21GCP.
Note: For the connection of the product and the gas cylinder, refer to pages 26-28.

4. After connecting the gas tube, make sure that no gas is leaking (e.g. by using a gas leak detection spray).

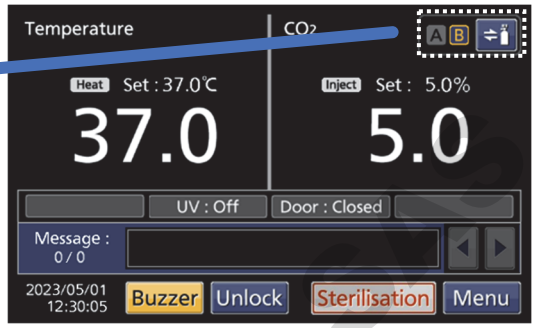
5. For both CO_2 gas cylinders A and B, adjust the secondary side pressure of the gas regulator to 0.03MPa(G) – 0.1 MPa(G) (0.3 kgf/cm^2(G) – 1 kgf/cm^2(G), 4.4 psi(G) –14.5 psi(G)) while CO_2 gas is injecting.

Note: Do not set the secondary pressure too high. As the pressure increases, the CO_2 gas density will fluctuate widely. Also, excessive pressure may cause gas supply lines inside the incubator to come loose, which may result in gas poisoning or oxygen deprivation due to leaking gas. If gas lines come loose, the incubator must be repaired.

GAS AUTO CHANGER (OPTION)

Automatic CO_2 gas supply line switching

When the optional gas auto changer MCO-21GCP is installed, the following icons are displayed on the Top screen.



- CO_2 gas supply line indicator A and B:
  The icon of the CO_2 gas line currently supplying CO_2 gas to the incubator turns orange.

- CO_2 gas supply line select button:
  Long tapping this button switches the gas supply line to the other line.

When the CO_2 density level in the chamber remains unchanged even though the CO_2 gas valve in the incubator is open, the incubator assumes the currently connected CO_2 gas cylinder to be empty and automatically switches the CO_2 gas supply line to the other one. The following table shows the automatic switching of the line.

Automatic switching from CO_2 gas cylinder A to B

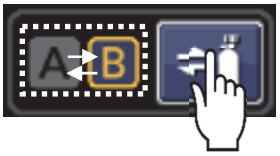
	Status	CO_2 gas			CO_2 gas supply line indicator		
		Supply line	Cylinder A	Cylinder B		A	B
1	CO_2 gas is being supplied from cylinder A.	A	Remaining	Remaining	A B	ON	OFF
2	CO_2 density in the chamber does not increase even if CO_2 gas valve is open.	A	Empty	Remaining	A B	ON	OFF
3	If the above status continues for 2 or 3 minutes, the CO_2 gas supply line is automatically switched to cylinder B. At this time, the CO_2 gas empty alarm activates, and an audible alarm sounds with the indication of the message “Err01: CO_2 Gas Empty” on the message display area on the Top screen.	B	Empty	Remaining	A B	Reverse video and blink	ON
4	If you tap the Buzzer button, the audible alarm stops, indicator A turns off, and the message disappears.	B	Empty	Remaining	A B	OFF	ON
5	Empty gas cylinder A is replaced with a new one.	B	Remaining	Remaining	A B	OFF	ON

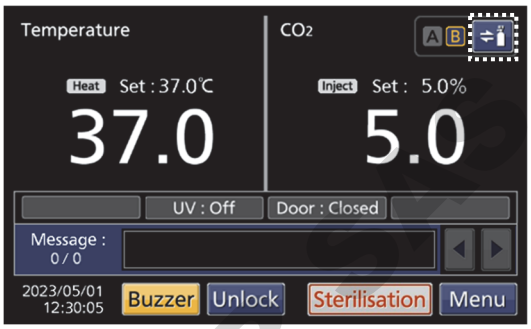
Notes:

- The switching of CO_2 gas supply line is determined by an increase of CO_2 density in the chamber. The switching of CO_2 gas cylinders may also occur in the situations where the gas tube is clogged, the gas is leaking, the gas pressure has dropped down, or the valve on the gas cylinder is insufficiently open etc., even though the CO_2 gas cylinder being used is not empty. Check the remaining amount of gas in the gas cylinder before removing it.
- When the Buzzer button is not tapped and the cylinder is not replaced with a new one when the both CO_2 gas cylinder A and B gets empty, the switch operation between CO_2 gas supply lines A and B will be repeated. In this case, replace the both CO_2 gas cylinders A and B with new ones immediately, and tap the Buzzer button.

Manual CO_2 gas supply line switching

The CO_2 gas supply lines A and B can be switched manually at any time by long tapping the CO_2 gas supply line select button displayed on the Top screen.





The following table shows the behaviour when the CO_2 gas supply line is switched by the CO_2 gas automatic switching function and then manually switched back to the empty CO_2 gas supply line before tapping the Buzzer button.

Manual switching from cylinder B to empty cylinder A

Status		CO_2 gas			CO_2 gas supply line indicator		
		Supply line	Cylinder A	Cylinder B		A	B
1	CO_2 gas is automatically switched to the supply line B.	B	Empty	Remaining	A B	Reverse video and blink	ON
2	Without tapping the Buzzer button, the CO_2 gas supply line select button is long tapped.	A	Empty	Remaining	A B	Blink	OFF

In both 1 and 2 cases, the CO_2 gas empty alarm activates, and an audible alarm sounds with the indication of the message “ Err01: CO_2 Gas Empty” on the message display area on the Top screen.

ROUTINE MAINTENANCE

Clean the exterior and interior of the incubator and inner attachments once a month. Regular cleaning keeps the incubator in good condition.

When the chamber is contaminated or when cleaning the chamber prior to starting a culture, you can perform dry heat sterilisation (pages 75-80).

Also, when the product will not be used for a long periods of time, dispose of the water in the humidifying pan. Then, eliminate the moisture in the chamber and dry it enough before closing the door. Storing the incubator without drying the interior for a long period of time may cause the failure of the incubator.

Cleaning the exterior, interior, and inner attachments

CAUTION	**Wear rubber gloves and a mask when cleaning the chamber.** You may get injured by the corners of interior parts. Also, touching or inhaling chemicals or aerosols from around the unit may be detrimental to health.

1. Take the humidifying pan out of the incubator, dispose of the water in it, and turn off the power to the incubator.

2. Take the inner attachments out of the chamber (pages 21-22).

3. Clean the exterior, inner attachments, and chamber (pages 23-24).
If the outside panels are dirty, clean them by wiping them with a gauze moistened with a diluted neutral detergent (using an undiluted solution of detergent may cause the unit's plastic areas to crack. Follow the directions on the detergent for details of dilution). After that, be absolutely sure to wipe the surfaces using a cloth moistened with clean water to remove traces of the detergent and wipe the surfaces with a dry cloth. After that, wipe the surfaces with a cloth moistened with ethanol for disinfection.

4. Put back the inner attachments to the original positions (page 25).

5. Open the doors for a while to dry the chamber.

6. Wipe the control panel with a dry cloth.
If the stain will not come out, wipe it using a cloth moistened with a proper amount of water (the amount that cannot form droplets) and then, wipe thoroughly with a dry cloth. If the water enters the control panel, it may cause the panel to malfunction.

Notes:
- If the stain is stubborn, consult our sales representative or agent.
- Do not use a brush, acid, thinner, laundry soap, powder detergent, or boiling water for cleaning. These may cause damage to painted surfaces or cause perishing of plastic and rubber components. Moreover, do not wipe plastic and rubber components with a volatile material.
- Do not clean the entire incubator unit using peracetic acid or hydrogen peroxide, or do not disinfect the unit by formalin fumigation.
- Never pour water onto or into the unit. Doing so can damage the electric insulation and cause failure.

Dry heat sterilisation

When the chamber is contaminated or when cleaning the chamber prior to starting a culture, you can perform dry heat sterilisation to decontaminate the chamber.

Notes:
- Before performing dry heat sterilisation, read the safety precautions on pages 5-10.
- Perform dry heat sterilisation under the following ambient conditions:
  Temperature: 15°C to 30°C, humidity: 80% R.H. or lower
- When performing dry heat sterilisation for multiple incubators simultaneously, check the power supply capacity is sufficient for the operation.
- The door is locked by the electric lock during the dry heat sterilisation process. However, if the key that came with this product has been inserted into the key slot and left in the unlocked position, the door cannot be locked by the electric lock. When performing dry heat sterilisation, be sure to take the key out of the key slot and store and manage the key in a safe place.

Preparation for dry heat sterilisation

Before starting dry heat sterilisation, the following preparation is required.

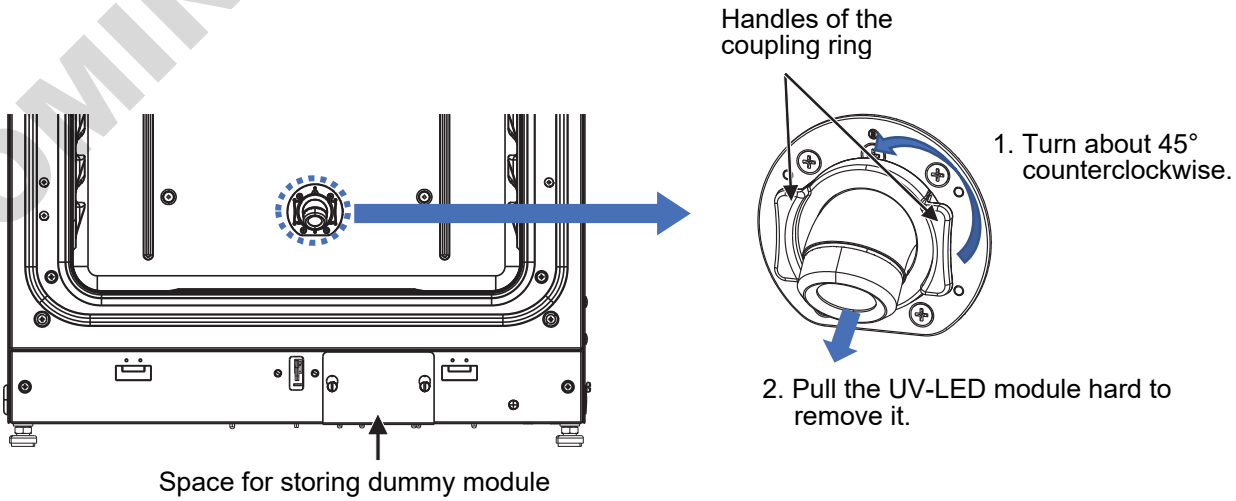
Note:
Be sure to turn off the power to the incubator before the preparation.

1. Clean the chamber and inner attachments.
1) Take out the trays, humidifying pan, humidifying pan cover, fan cover, duct, duct cover, and fan from the chamber (pages 21-22).
2) Dispose of the water in the humidifying pan, and wipe the inner attachments removed from the chamber with a gauze containing ethanol for disinfection.
3) Wipe the inner walls of the chamber with a gauze containing ethanol for disinfection.

2. Attach the dummy module.*
When performing dry heat sterilisation, the UV-LED module in the chamber needs to be exchanged with the dummy module to protect it from the heat.

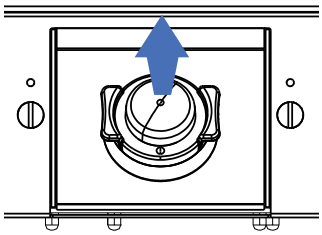
Note:
If the dummy module is not attached, dry heat sterilisation cannot be performed.

1) Remove the UV-LED module in the chamber by holding the handles of the coupling ring, turning it counterclockwise 45°, and then pulling it hard.



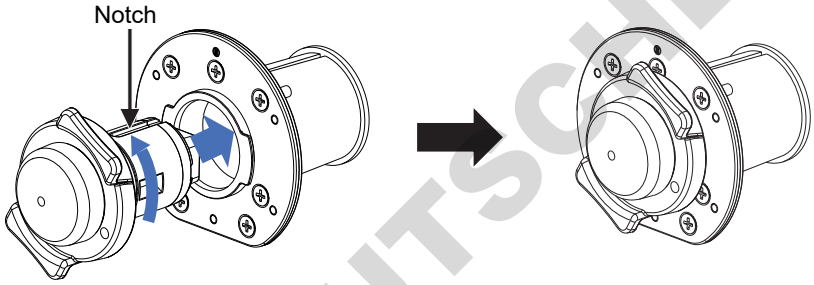
*1: For MCO-171AICUVD, or MCO-171AICD with the optional UV system kit (MCO-LUVSD).

2) Remove the dummy module stored in the space for storing dummy module at the bottom front of the incubator by pulling it out. Then, insert the UV-LED module removed in step 1) into the space and store it.

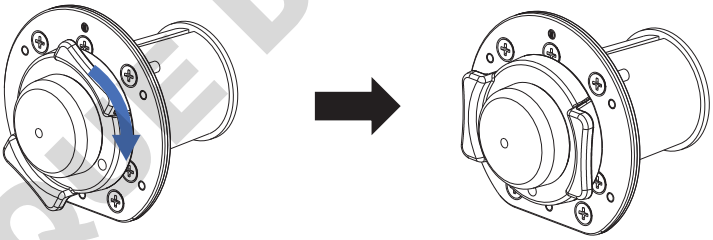


Note:
Do not perform dry heat sterilisation with the UV-LED module put into the chamber. Doing so will damage the UV-LED module.

3) Turn the coupling ring of the dummy module counterclockwise 45° so that the notch of it faces upward. Then, insert the dummy module into the place where the UV-LED module was placed so that the notch on the dummy module fits the projected part in the sleeve.



4) Turn the coupling ring of the dummy module clockwise 45° by pushing it to fix the dummy module. Then, check that the dummy module is securely fixed by pulling the coupling ring.



3. Put the inner attachments into the chamber for dry heat sterilisation as follows.

1) Attach the fan, duct, duct cover, and fan cover (page 25).

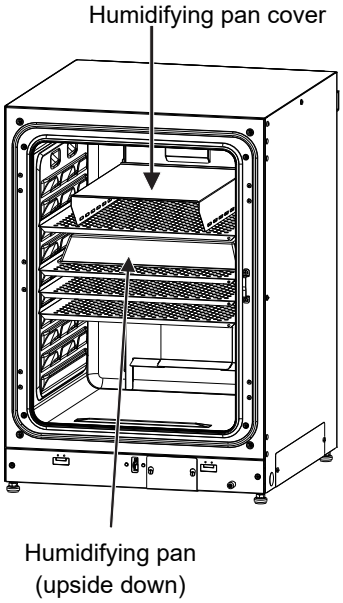
2) Set the trays on the 3rd, 5th, 6th, and 7th tray runners from the top.

Note:
Be sure to set the trays that came with the incubator. Otherwise, sterilisation may not be sufficiently effective.

3) Set the humidifying pan and the humidifying pan cover at the position shown in the right figure.

Notes:

- When performing dry heat sterilisation, only the chamber and inner attachments can be sterilised. Do not place anything (such as dishes or flasks) other than the designated inner attachments into the chamber during dry heat sterilisation.
- Do not fill the humidifying pan with water (sterile distilled water or pure water) when performing dry heat sterilisation.

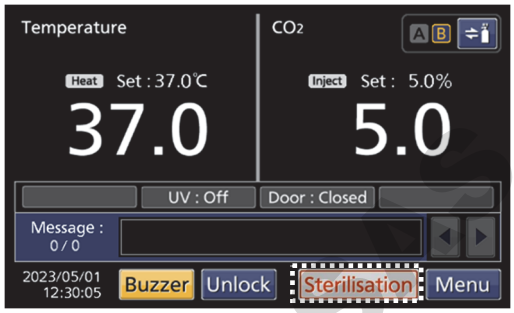


4) Close the inner door and outer door.

Note:
Check that the inner door latch is engaged securely.

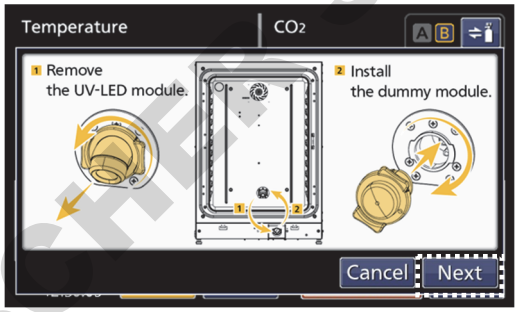
Steps for performing dry heat sterilisation

After the preparation, follow the steps below to perform dry heat sterilisation.

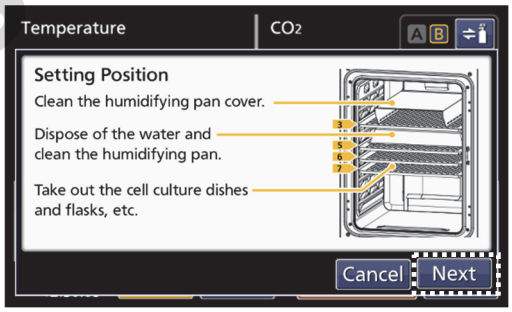


1. On the Top screen, long tap the Sterilisation button.
►The screen showing how to exhange the UV-LED module with the dummy module is displayed.

Note:
When the key lock function is set to “ON,” the password input window is displayed. Enter the password and tap the OK button (page 47).



2. Check that the dummy module is correctly inserted and fixed in the position shown in the screen and tap the Next button.
►The Setting Position screen is displayed.

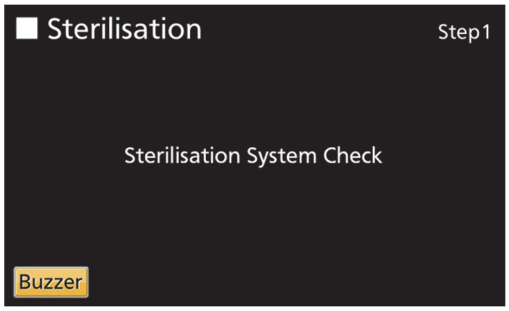


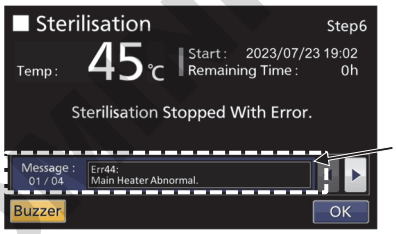
3. Check that the inner attachments are properly set by looking at the description on the screen. Then, tap the Next button.
►The Sterilisation Step1 screen is displayed.

Note:
Perform dry heat sterilisation with the inner attachments arranged as specified by our company. Arranging them in a different way may result in insufficient sterilisation.

Step 1

System check is performed automatically.
►After the system check finishes successfully, the Sterilisation Step2 screen is displayed.
If there is a problem, an error message is displayed. In such a case, refer to the description of “Failure during dry heat sterilisation” for the cause of the problem on page 85.





Error message

Step 2

4. Slide the slide button to the right to select “Yes” and tap the OK button.
►The outer door is locked by the electric lock, and dry heat sterilisation process starts (Step 3 to Step 6).

Note:
It takes about 11 hours to complete the dry heat sterilisation process. When completed, you can hear the beeping sound.

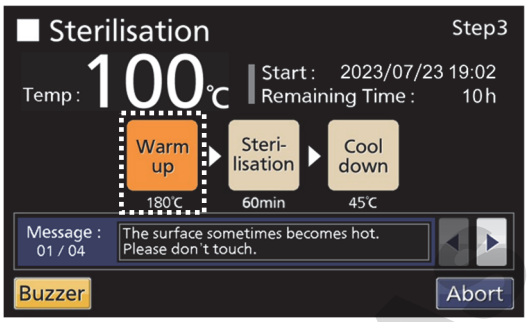
CAUTION	**Do not unlock and open the outer door using the accessory key during dry heat sterilisation or during a power failure when performing dry heat sterilisation.** The chamber becomes hot during dry heat sterilisation. Doing so may result in burns.

ROUTINE MAINTENANCE

Step 3

The chamber is warmed up to 180°C.

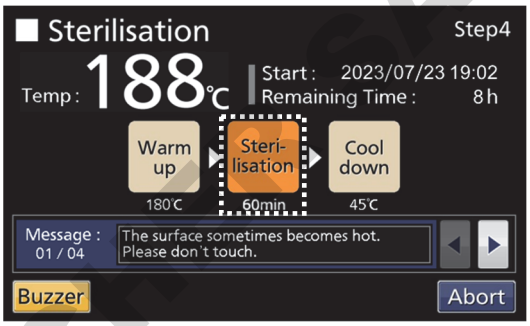
►When the temperature reaches 180°C, the screen proceeds to Step4.



Step 4

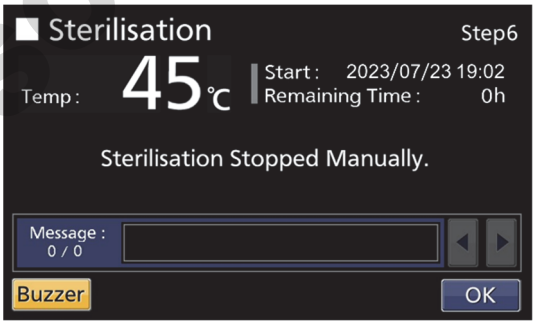
The chamber is kept at 180°C or higher for 60 minutes to sterilise the chamber.

►On completion of the dry heat sterilisation step, the screen proceeds to Step5.



Notes:

- During Step 3 or Step 4, the temperature indication may be over 180°C, but it is normal.
- During sterilisation in Step 4, there may be an unusual smell, but it is normal.
- If you tap the Abort button to cancel the sterilisation operation during Step 3 or Step 4, the process proceeds to Step5 (cool down step). After that, the Step 6 screen indicating "Sterilisation Stopped Manually." is displayed. Tap the OK button to return to the Top screen.



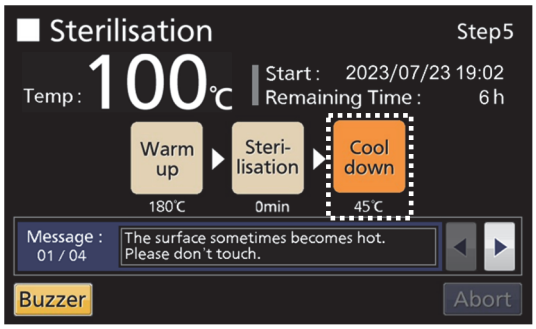
Step 5

The chamber is cooled down to 45°C.

►When the chamber temperature reaches 45°C, the Step 6 screen is displayed with a beeping sound, and the outer door is unlocked.

Notes:

- You cannot change the temperature 45°C to other values.
- You cannot abort during Step 5 (the Abort button is grayed out and unavailable).



Step 6

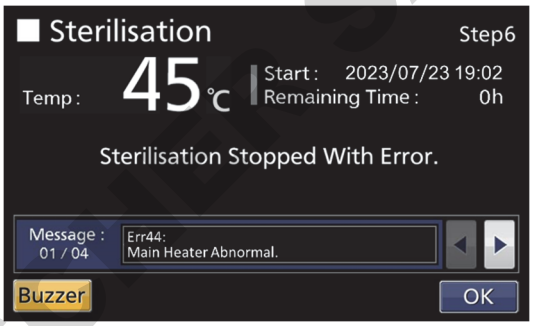
5. Tap the OK button.

►The screen returns to the Top screen.

Notes:

- If the chamber temperature is not cooled down to 45°C or lower after elapse of 10 hours, “Warning: Cool Down Abnormal : Hot.” is displayed on the message display area. However, sterilisation itself has finished properly. Wait a while longer until the chamber cools down to 45°C and tap the OK button to return to the TOP screen.

- If an error occurs during the sterilisation process, and the process incompletely stopped, “Sterilisation Stopped With Error.” is displayed on the screen. Also, its error code and message are displayed on the message display area. Take an appropriate measure by referring to the table “Errors related to dry heat sterilisation” on page 85. If the error cannot be resolved, stop the operation of the incubator and contact our sales representative or agent.
  Tap the OK button to return to the Top screen.

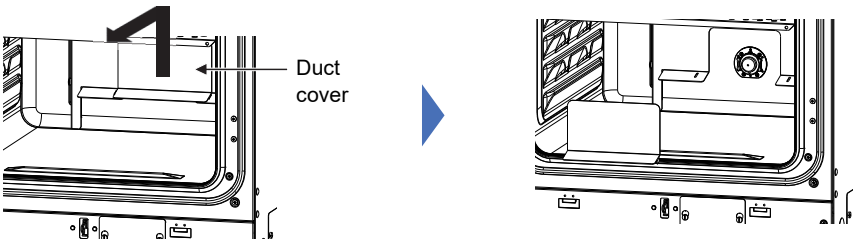


- If dry heat sterilisation has been performed at the temperature between 160°C and 180°C due to low ambient temperature or low voltage, the following screen may be displayed. However, the sterilisation process has automatically been extended and completed successfully. Tap the OK button to return to the Top screen.

- When dry heat sterilisation has been performed a predetermined number of times, “Warning: Steri. Count Exceeded.” is displayed in the message display area. Contact our sales representative or agent when you see this message since this may affect incubation or dry heat sterilisation function.

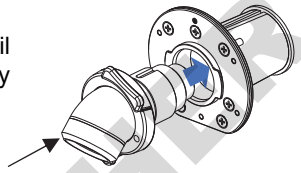
- If a power failure occurs during the sterilisation process, refer to page 32 for the operation after recovery from the power failure. During a power failure, the outer door is kept locked by the electric lock.

6. Open the outer door and inner door, and take out the duct cover from the chambber by lifting it to disengage the protruded parts from the duct. Then, put the UV-LED module (for the models with UV-LED) and dummy module in the original place in the reverse order described in “2. Attach the dummy module.” (page 75) after wiping the UV-LED module with a gauze containing ethanol for disinfection. Ensure that the UV-LED module is securely attached. Otherwise, UV-LED may not work properly due to condensation.

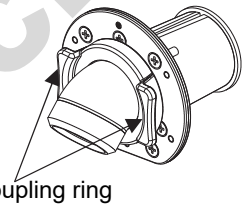


Notes:

- When attaching the UV-LED module, insert the UV-LED module firmly until it is fully seated. If it is not inserted deeply enough, a connection error may occur.



- After attaching, pull the handles of the UV-LED coupling ring towards you to ensure that it is securely attached and cannot be pulled out.



Finally, return the duct cover and inner attachments to the original position in the chamber.
You can start cultivation after filling the humidifying pan with sterile distilled water or pure water, and the chamber temperature and CO_2 density value reach the set points and become stable.

Dry heat sterilisation log

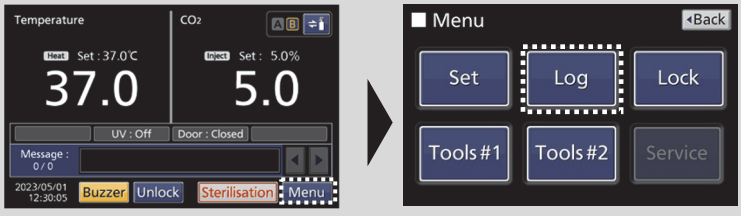
This product is equipped with a function to store dry heat sterilisation log data.
Up to about 250 dry heat sterilisation log data can be stored. When the log data exceeds the maximum size, the oldest log data is overwritten with the new data.

Referring to the sterilisation log

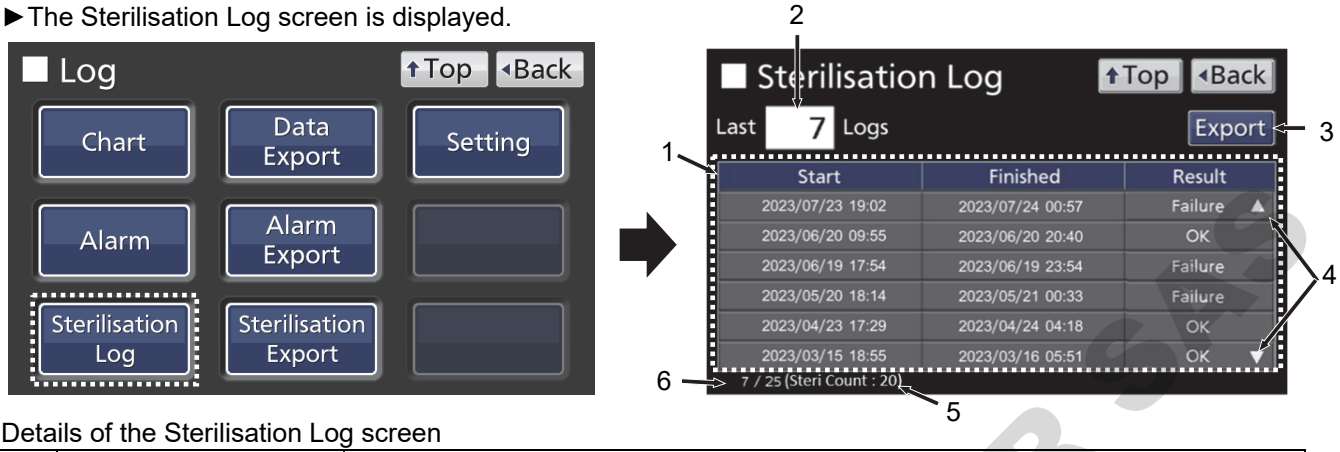
Dry heat sterilisation log data stored in the incubator can be displayed for reference.

1. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

2. Tap the Log button on the Menu screen.
►The Log screen is displayed.



3. Tap the Sterilisation Log button on the Log screen.
►The Sterilisation Log screen is displayed.



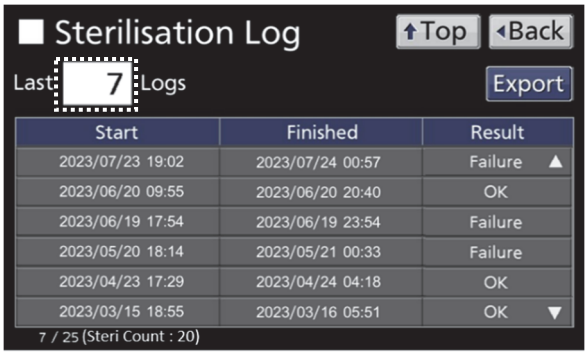
Details of the Sterilisation Log screen

No.	Item	Details
1	Dry heat sterilisation log information	Indicates sterilisation log information stored in the incubator. Start: Date and time when the sterilisation started. Finished: Date and time when the sterilisation completed. *The date format specified on the Date & Time screen is used for the date indication (see page 57). Result: Result of sterilisation.
2	Number of log data	Enter the number of log data you want to check. You can see the latest sterilisation log data of the specified number. For example, if you enter “7” into this box, the latest 7 log data is displayed. Settable range: 1 to 250
3	Export button	Tapping this button exports the sterilisation log data of specified number to the USB flash drive inserted into the USB port in CSV format.
4	Scroll buttons	When logs of the specified number are more than 6, tapping the scroll button shows the upper or lower log. Tapping the ▲ button scrolls up one line. Tapping the ▼ button scrolls down one line.
5	Number of sterilisation cycles performed	The count of sterilisation cycles that have been performed up to this point (counted when the chamber temperature exceeds the predetermined temperature after sterilisation started) is indicated here.
6	Number of sterilisation log data	Specified number entered in the input field 2 on the above figure / Total log data

4. Tap the Number of log data input field.
►Numeric input window for entering number is displayed.

5. Enter desired number and tap the OK button.
►The latest sterilisation log data of the specified number is displayed.

Note:
When the number of specified sterilisation log data is more than 6, tapping the scroll button shows the upper or lower sterilisation log data.



6. After referring to the sterilisation log data, tap the Top button.
►The screen returns to the Top screen.

ROUTINE MAINTENANCE

Exporting sterilisation log data when referring to the data

The sterilisation log data displayed on the Sterilisation Log screen for reference can be exported to a USB flash drive inserted into the USB port in CSV format.

1. Insert a USB flash drive into the USB port.
For supported USB flash drives, refer to “1. USB port” on page 15.

2. Tap the Export button on the Sterilisation Log screen.
►Export of the specified number of sterilisation log data starts.

3. Tap the OK button when the Information message notifying the completion of the export is displayed.
►The screen returns to the Sterilisation Log screen.
A folder named “log” is created in the USB flash drive and the exported data file is saved in the folder in CSV format.
The file name consists of the unique ID, date period of the data (YYYY/MM/DD-YYYY/MM/DD or DD/MM/YYYY-DD/MM/YYYY) and data name (SterilisationLog). The date format specified on the Date & Time screen is used for the date (see page 57).

Examples of exported file names when the unique ID is set to “ABC00001” and “5” is displayed in the number of logs field (in this case, the sterilisation log started between the period from March 26, 2023 and April 1, 2023 corresponds to the 5 logs).

Year/Month/Day	ABC00001_20230326-20230401_SterilisationLog.csv
Day/Month/Year	ABC00001_26Mar2023-01Apr2023_SterilisationLog.csv

Notes:
- If a unique ID is not specified, the name of the exported file will be [date period of the log data]_[data name].csv.
- The sterilisation log data stored in the incubator is not deleted even if the sterilisation log data is exported to the USB flash drive.
- If an export error occurs, refer to page 64.

4. Remove the USB flash drive from the USB port.

5. Tap the Top button on the Sterilisation Log screen.
►The screen returns to the Top screen.

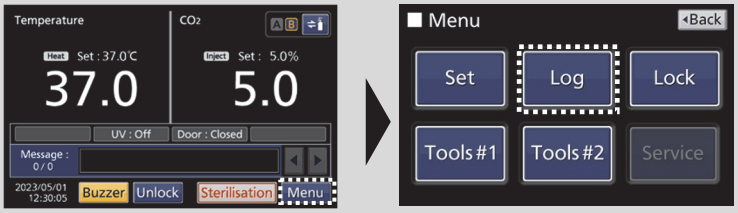
Exporting sterilisation log data

Sterilisation log data stored in the incubator can be exported to a USB flash drive inserted into the USB port in CSV format.

1. Insert a USB flash drive into the USB port.
For supported USB flash drives, refer to “1. USB port” on page 15.

2. On the Top screen, tap the Menu button.
►The Menu screen is displayed.

3. Tap the Log button on the Menu screen.
►The Log screen is displayed.



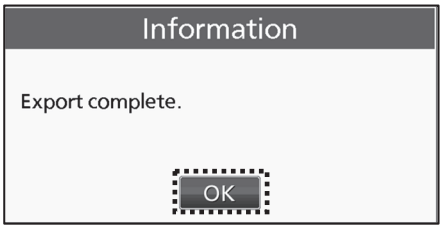
4. Tap the Sterilisation Export button on the Log screen.
►The Sterilisation Export screen is displayed.

5. Tap the "All" or "Last ☐ Logs" radio button to select the number of log data to be exported.
►The selected radio button turns orange.

Item	Details
All	Selects the entire sterilisation log data stored on the incubator.
Last ☐ Logs	Tap the input field to enter the number of the latest log data you want to export. Settable range: 1 to 250

6. Tap the Export button.
►Export of the log data in the selected period starts.

7. Tap the OK button when the Information message notifying the completion of the export is displayed.
►The screen returns to the Sterilisation Export screen.
A folder named "log" is created in the USB flash drive and the exported data file is saved in the folder in CSV format.
The file name consists of the unique ID, date period of the data (YYYY/MM/DD-YYYY/MM/DD or DD/MM/YYYY-DD/MM/YYYY) and data name (SterilisationLog). The date format specified on the Date & Time screen is used for the date (see page 57).



Examples of exported file names when the unique ID is set to "ABC00001" and "All" is selected to export the sterilisation log data (in this case, the first sterilisation started on March 1, 2023 and the last sterilisation started on May 1, 2023).

Year/Month/Day	ABC00001_20230301-20230501_SterilisationLog.csv
Day/Month/Year	ABC00001_01Mar2023-01May2023_SterilisationLog.csv

Examples of exported file names when "Last ☐ Logs" is selected to export the sterilisation log data (in this case, "5" is entered in the field and it corresponds to the log data started between March 26, 2023 and April 1, 2023).

Year/Month/Day	ABC00001_20230326-20230401_SterilisationLog.csv
Day/Month/Year	ABC00001_26Mar2023-01Apr2023_SterilisationLog.csv

Notes:
- If a unique ID is not specified, the name of the exported file will be [date period of the log data]_[data name].csv.
- The sterilisation log data stored in the incubator is not deleted even if the sterilisation log data is exported to the USB flash drive.
- If an export error occurs, refer to page 64.

8. Remove the USB flash drive from the USB port.

9. Tap the Top button on the Sterilisation Export screen.
►The screen returns to the Top screen.

ALARMS AND SELF-DIAGNOSIS

Error messages

Incubation and sterilisation performance has been significantly degraded. Stop the operation of the incubator and contact our sales representative or agent except when the cause is apparent and the incubator can be expected to recover.

Control panel Message display area	Type	Situation	Audible alarm	Remote Alarm
Err 01: CO2 Gas Empty.	CO_2 gas cylinder empty	The CO_2 density does not increase when the CO_2 valve is opened.	Intermittent tone	ON
Err 05: Temp Sensor Open.	Chamber temp. sensor error	The chamber temperature sensor has been disconnected.		
Err 06: Temp Sensor Short.		The chamber temperature sensor has short-circuited.		
Err 07: CO2 Box Temp Sensor Open.	Temp. sensor for sensor box error	The temperature sensor for the sensor box has been disconnected.		
Err 08: CO2 Box Temp Sensor Short.		The temperature sensor for the sensor box has short-circuited.		
Err 09: AT Sensor Open.	Ambient temp. sensor error	The ambient temperature sensor has been disconnected.		
Err 10: AT Sensor Short.		The ambient temperature sensor has short-circuited.		
Err 11: CO2 Sensor Vref Abnormal.	CO_2 sensor error	The Vref output voltage for the CO_2 sensor is abnormal.		
Err 12: CO2 Sensor Vgas Abnormal.		The Vgas output voltage for the CO_2 sensor is abnormal.		
Err 13: Main Heater Abnormal.	Main heater error	Main heater has been disconnected or the main heater SSR has short-circuited.		
Err 14: Bottom Heater Abnormal.	Bottom heater error	Bottom heater has been disconnected or the bottom heater SSR has short-circuited.		
Err 15: Door Heater Abnormal.	Door heater error	Door heater has been disconnected or the door heater SSR has short-circuited.		
Err 16: CO2 Box Heater Abnormal.	Sensor box heater error	Overheat alarm has been activated, the sensor box heater has been disconnected, or the sensor box heater SSR has short-circuited.		
Err 17: Heater SSR Open.	Heater SSR burnout	The overheat alarm has been activated, or SSR for the main heater, bottom heater, door heater, or sensor heater has short-circuited.		
Err 18: UV-LED Abnormal.	UV-LED failure	UV-LED ON was detected even if the UV light was OFF.	Continuous tone	
Err 20: Door Lock Failure.	Door lock error	The outer door was opened when the automatic door lock function was ON.*1	Intermittent tone	
Err 39: Fan Motor Error.	Fan error	Rotational speed of fan motor is abnormal.		
Err 56: Communication Failure.	Communication error*2	Communication between the control panel and control circuit board has been disconnected or unstable.		-----
Err 74: UV-LED Circuit abnormal.	UV-LED circuit board error	The electric current value has exceeded or fallen below the defined value, or the internal heater has short-circuited.	Intermittent tone*3	ON*3
Err 75: UV-LED Short Circuit.		The UV-LED circuit board has short-circuited.		
Err 76: UV-LED Open Circuit.		The UV-LED circuit board has been disconnected.		
Err 77: UV-LED Parameter Error.		The drive parameter for the installed UV-LED is not supported by this product.	Intermittent tone	ON

*1: The error may occur when the outer door is opened by unlocking using the accessory key or when the door handle is pulled while the outer door is locked.
*2: When a communication error occurs, the control panel becomes unavailable.
*3: When the UV Light Mode is set to “OFF,” the audible alarm and remote alarm do not activate.

Errors related to dry heat sterilisation

Control panel Message display area	Type	Situation	Audible alarm	Remote Alarm
Err 40: Dummy Module Missing.	Failure during dry heat sterilisation	The UV-LED module in the chamber has not been exchanged with the dummy module.	Intermittent tone	ON
Err 42: Temp Sensor Open.		The chamber temperature sensor has been disconnected.		
Err 43: Temp Sensor Short.		The chamber temperature sensor has short-circuited.		
Err 44: Main Heater Abnormal.		Main heater has been disconnected or has short-circuited.		
Err 45: Bottom Heater Abnormal.		Bottom heater has been disconnected or has short-circuited.		
Err 46: Door Heater Abnormal.		Door heater has been disconnected or has short-circuited.		
Err 47: Heater SSR Open.		SSR for the door heater has been disconnected.		
Err 48: Heater Output Shortage.		Lack of heater power during warming up (Step 3).		
Err 49: Over Heating Error.		Excessive heater power during warming up (Step 3) or dry heat sterilisation.		
Err 50: Heater Output Error.		The heater power has decreased during dry heat sterilisation.		
Err 51: Power Failure.		There was a power failure during or after warming up (Step 3).		
Err 52: Door Lock Failure.		The outer door was opened during dry heat sterilisation.	Continuous tone	ON (Linked with the outer door opening.)
Err 53: AT Sensor Open.		The ambient temperature sensor has been disconnected.	Intermittent tone	ON
Err 54: AT Sensor Short.		The ambient temperature sensor has short-circuited.		

ALARMS AND SELF-DIAGNOSIS

Warning messages

Incubation performance may degrade. When the change is temporary due to user operation, wait for the recovery. In other cases, contact our sales representative or agent.

Control panel Message display area	Type	Situation	Audible alarm	Remote Alarm
Warning: Over Heat.	Overheat alarm*1	Temperature in the chamber has exceeded the value set for the high temperature limit for overheat alarm.	Continuous tone	ON
Warning: High Temp. or Warning: Low Temp.	Temperature alarm*2	Temperature in the chamber has become higher or lower than the set temperature set point plus or minus the value (±1.0°C to ±5.0°C) set for the temperature alarm.	Intermittent tone after preset alarm delay time (0 to 15 min)	Activates after preset alarm delay time (0 to 15 min)
Warning: High CO2 Density. or Warning: Low CO2 Density.	CO_2 density alarm*2	CO_2 density in the chamber has become higher or lower than the set CO_2 density plus or minus the value (±0.5% to ±5.0%) set for the CO_2 density alarm.		
Warning: UV-LED Not Found.	UV-LED not installed	UV-LED is not installed.	Intermittent tone	ON
Warning: Please Calibrate UV-LED.	UV-LED not calibrated	UV-LED is not calibrated.		
Warning: USB Over Current.	USB overcurrent	Overcurrent was applied to the USB connector.	-----	-----
Warning: Steri Count Exceeded.	Dry heat sterilisation execution number limit	Dry heat sterilisation has been performed a predetermined number of times.		
Warning: Cool Down Abnormal: Hot.	Dry heat sterilisation cool down error*3	The chamber has not cooled down to 45°C or lower after elapse of 10 hours from the completion of dry heat sterilisation.	Intermittent tone	

*1: Err 16 (sensor box heater error) and Err17 (Heater SSR burnout) are generated when a certain period of time has elapsed after the overheat alarm activated.
*2: When the fan motor speed becomes slow due to malfunction or the end of its life, these alarms may activate because of uneven temperature distribution or CO_2 density in the chamber.
*3: Dry heat sterilisation has been completed correctly.

Status messages

Indicates status of the incubator.

Control panel Indication	Type	Situation	Audible alarm	Remote Alarm
“Door: Open” blinks in orange. (Outer door (open/close) status indicator)	Door open	The outer door is open.	Intermittent tone after preset alarm delay time (1 to 30 min)	-----
Status: Gas sensor initializing. (Message display area)	Gas control preparation	Waiting for the temperature to be stable for controlling the gas after the power to the incubator has been turned on, or after the chamber temperature set point has been changed.	-----	

TROUBLESHOOTING

If the incubator does not seem to be working properly, check the following solutions before calling for service.

Problem	Cause/Solution
The incubator does not operate at all.	• The incubator is not connected to the power supply properly. • A power failure has occurred, or the circuit breaker has interrupted the power. • The power switch has not been turned on after the circuit breaker test. • The removable power supply cord is not connected to the power supply port on the lower right side of the incubator.
The power switch is not turned off after pressing the circuit breaker test button.	• The circuit breaker may be broken. Unplug the incubator immediately and contact our sales representative or agent.
An alarm is activated.	[When starting operation] • The chamber temperature does not match the set value. • The CO_2 gas density in the chamber does not match the set value. (1) Is the secondary pressure for the gas pressure regulator of CO_2 gas cylinder at the specified value of 0.03 MPa(G) to 0.1 MPa(G) (0.3 kgf/cm^2(G) to 1 kgf/cm^2(G), 4.4 psi(G) to 14.5 psi(G))? (2) Is the gas tube properly connected? [During operation] • The high-limit temperature for the overheat alarm has not been set at least 1°C higher than the temperature set for the chamber. • The temperature setting has been changed. The outer door has been left open for a long time. A high or low temperature object has been placed in the chamber. If any of these is the case, the alarm is cancelled automatically after a short time. • The humidifying pan is empty. • The gas tube has come loose, or there is a gas leak. • The CO_2 gas density setting has been changed. • The gas cylinder is empty. Check the primary pressure of the gas cylinder once a week (A primary pressure reading of 3.8 MPa(G) (38 kgf/cm^2(G), 551 psi(G)) or lower is a sign that there is little gas remaining. Replace the cylinder soon). • The incubator is operating beside an appliance that generates electromagnetic waves.
	• When the control panel is unavailable, turn off the power to the incubator and again turn it on.
The chamber temperature does not match the set value.	• The ambient temperature should be at least 5°C lower than the temperature set for the chamber. • The outer door is closed with the inner door left open. • The incubator is operating beside an appliance that generates electromagnetic waves.
The CO_2 gas density does not match the set value.	• The secondary pressure for the gas pressure regulator of CO_2 gas cylinder is not at the specified value of 0.03 MPa(G) to 0.1 MPa(G) (0.3 kgf/cm^2(G) to 1 kgf/cm^2(G), 4.4 psi(G) to 14.5 psi(G)). • The gas tube is blocked. • The duct is not attached securely. Check that the 4 pins at the rear side of the chamber securely fit into the 4 holes of the duct (page 25). • The fan is not attached properly. Check that the fan is fully pushed in the projection of the motor shaft (see page 25). • The incubator is operating beside an appliance that generates electromagnetic waves.

TROUBLESHOOTING

Problem	Cause/Solution
A large quantity of CO_2 gas is being consumed.	• The outer and inner doors are frequently opened and closed. • Check if gas is not leaking from connectors due to deterioration of the gas tube, or check if there may be any pinhole leaks. The gas tube is a consumable part, and replacing the tube once a year is recommended. • The door gasket for the inner door is defective. • The access port is open.
Cannot culture properly and the CO_2 gas density in the chamber may be the cause.	• The air environment around the incubator is abnormal. There is a source of polluted gas in the vicinity.
CO_2 gas is not being injected.	• This incubator adopts PID control method for controlling CO_2. The CO_2 gas is intermittently injected as the gas density in the chamber approaches the set value. Injections may stop for approximately 15 seconds, but that is not an error. • The CO_2 gas is not injected until the temperature of the CO_2 sensor becomes sufficiently stable (approximately 1 hour after turning ON the power switch or after recovery from a power failure).
The CO_2 gas density is slow to recover.	• A dust filter is used for the incubator gas piping. If CO_2 gas density is slow to recover when the gas pressure is normal, the dust filter may be clogged. Contact our sales representative or agent. • There is little gas remaining in the gas cylinder. • The secondary pressure for the gas pressure regulator of CO_2 gas cylinder is not at the specified value of 0.03 MPa(G) to 0.1 MPa(G) (0.3 kgf/cm^2(G) to 1 kgf/cm^2(G), 4.4 psi(G) to 14.5 psi(G)). • The gas tube is blocked. • The duct is not securely attached. Check that the 4 pins at the rear side of the chamber securely fit into the 4 holes of the duct (page 25). • The fan is not attached properly. Check that the fan is fully pushed in the projection of the motor shaft (see page 25).
The outer door will not open.	• The outer door is automatically locked by the electric lock when the power is not supplied to the incubator. To unlock the outer door, turn on the incubator or use the key that came with this product. • The outer door is automatically locked by the electric lock during dry heat sterilisation.
Data cannot be exported to the USB flash drive.	• The USB flash drive is not inserted properly. • Data during the specified time period does not exist. • The USB flash drive is full. • The USB flash drive has not been formatted in FAT16 or FAT32 format. • The USB flash drive that requires password is used. • The USB flash drive with capacity of more than 32 GB is used.
Cannot perform dry heat sterilisation.	• The access port is not covered with the silicon cap. • The inner door is open. • The UV-LED module in the chamber has not been exchanged with the dummy module.

Note:
If the problem is not still solved after trying the above solutions, or for any problems not covered here, contact our sales representative or agent.

DISPOSAL OF UNIT

When disposing of the CO_2 incubator, contact our sales representative or agent.

WARNING	● **Ask a qualified contractor to carry out disassembly/disposal of the unit and do not leave the CO_2 incubator in a location that can be accessed by third parties.** This may result in unexpected accidents (e.g. the incubator may be used for unintended purposes).

Before disposing the CO_2 incubator with biohazardous danger, decontaminate the CO_2 incubator to the extent possible by the user.

■ This label is a recycle mark complying with the Taiwanese battery regulation.

DISPOSAL OF UNIT

Disposal of Old Equipment and Batteries

Only for European Union and countries with recycling systems

These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries must not be mixed with general household waste.

For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points in accordance with your national legislation.

By disposing of them correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment.

For more information about collection and recycling, please contact your local municipality.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

Note for the battery symbol (bottom symbol):
This symbol might be used in combination with a chemical symbol. In this case it complies with the requirement set by the Directive for the chemical involved.

Likvidácia opotrebovaných zariadení a batérií

Len pre Európsku úniu a krajiny so systémom recyklácie

Tieto symboly uvádzané na výrobkoch, balení a/alebo v sprievodnej dokumentácii informujú o tom, že opotrebované elektrické a elektronické výrobky a batérie sa nesmú likvidovať ako bežný domový odpad.

V záujme zabezpečenia správneho spôsobu likvidácie, spracovania a recyklácie odovzdajte opotrebované výrobky a batérie na špecializovanom zbernom mieste v súlade s platnou legislatívou.

Správnym spôsobom likvidácie týchto výrobkov a batérií prispejete k zachovaniu cenných zdrojov a predídete prípadným negatívnym dopadom na ľudské zdravie a životné prostredie.

Podrobnejšie informácie o zbere a recyklácii vám poskytnú miestne úrady.

Pri nesprávnej likvidácii tohto druhu odpadu môžu byť v súlade s platnou legislatívou udelené pokuty.

Poznámka týkajúca sa symbolu batérie (spodný symbol):
Tento symbol môže byť použitý spolu so symbolom chemickej značky. V takom prípade vyhovuje požiadavke stanovenej Smernicou týkajúcou sa príslušnej chemikálie.

Изхвърляне на излезли от употреба електрически и електронни уреди и батерии

Само за Европейския съюз и страните със системи за рециклиране

ТТози символ върху продуктите, опаковката и/или придружаващите документи означава, че изразходваните електрически и електронни продукти и батериите не бива да се изхвърлят в общите битови отпадъци.

Моля, предавайте старите продукти и изхабените батерии за обработка, преработка и рециклиране на компетентните пунктове за събиране на отпадъци съгласно законовите разпоредби.

Като изхвърляте тези продукти и батериите правилно, Вие помагате за запазване на ценни ресурси и за избягване на евентуално вредните влияния върху човешкото здраве и околната среда.

За повече информация относно събирането и рециклирането се обърнете към Вашето предприятие на място, предлагащо услуги във връзка с изхвърлянето на отпадъците.

Съгласно разпоредбите в страната за неправилно изхвърляне на тези отпадъци могат да бъдат наложени парични глоби.

Указание за символа батерия (символ долу):
Този символ може да е изобразен в комбинация с химически символ. В този случай това се прави поради изискванията на директивите, издадени за съответния химикал.

Tájékoztatás felhasználók számára az elhasználódott készülékek, szárazelemek és akkumulátorok begyűjtéséről és ártalmatlanításáról.

Csak az Európai Unió és olyan országok részére, amelyek begyűjtő rendszerekkel rendelkeznek

A termékeken, a csomagoláson és/vagy a kísérő dokumentumokon szereplő szimbólumok azt jelentik, hogy az elhasználódott elektromos és elektronikus termékeket, szárazelemeket és akkumulátorokat tilos az általános háztartási hulladékkal keverni.

Az elhasználódott készülékek, szárazelemek és akkumulátorok megfelelő kezelése, hasznosítása és újrafelhasználása céljából, kérjük, hogy a helyi törvényeknek, megfelelően juttassa el azokat a kijelölt gyűjtőhelyekre.

E termékek, szárazelemek és akkumulátorok előírásszerű ártalmatlanításával Ön hozzájárul az értékes erőforrások megóvásához, és megakadályozza az emberi egészség és a környezet károsodását.

Amennyiben a begyűjtéssel és újrafelhasználással kapcsolatban további kérdése lenne, kérjük, érdeklődjön a helyi önkormányzatnál.

E hulladékok szabálytalan elhelyezését a nemzeti jogszabályok büntethetik.

Megjegyzés a szárazelem- és akkumulátor-szimbólummal kapcsolatban (alsó szimbólumpélda):
Ezek a szimbólumok kémiai szimbólummal együtt alkalmazhatók. Ebben az esetben teljesíti az EU irányelvnek vegyi anyagra vonatkozó követelményét.

Pozbywanie się zużytych urządzeń elektrycznych i elektronicznych oraz baterii.

Dotyczy wyłącznie obszaru Unii Europejskiej oraz krajów posiadających systemy zbiórki i recyklingu.

Niniejsze symbole umieszczane na produktach, opakowaniach i/lub w dokumentacji towarzyszącej oznaczają, że nie wolno mieszać zużytych urządzeń elektrycznych i elektronicznych oraz baterii z innymi odpadami domowymi/komunalnymi.

W celu zapewnienia właściwego przetwarzania, utylizacji oraz recyklingu zużytych urządzeń elektrycznych i elektronicznych oraz zużytych baterii, należy oddawać je do wyznaczonych punktów gromadzenia odpadów zgodnie z przepisami prawa krajowego.

Poprzez prawidłowe pozbywanie się zużytych urządzeń elektrycznych i elektronicznych oraz zużytych baterii pomagasz oszczędzać cenne zasoby naturalne oraz zapobiegać potencjalnemu negatywnemu wpływowi na zdrowie człowieka oraz na stan środowiska naturalnego.

W celu uzyskania informacji o zbiórce oraz recyklingu zużytych urządzeń elektrycznych i elektronicznych oraz baterii prosimy o kontakt z władzami lokalnymi.

Za niewłaściwe pozbywanie się tych odpadów mogą grozić kary przewidziane przepisami prawa krajowego.

Dotyczy symbolu baterii (symbol poniżej):
Ten symbol może występować wraz z symbolem pierwiastka chemicznego. W takim przypadku wymagania Dyrektywy w sprawie określonego środka chemicznego są spełnione.

Pomembna informacija za pravilno odstranjevanje izrabljene opreme in baterij

Samo za države EU in države, kjer imajo vzpostavljen sistem recikliranja odpadnih snovi

Simboli na samem izdelku, embalaži ali spremljajočih dokumentih pomenijo, da po koncu življenske dobe aparata, z njim ni dovoljeno ravnati kot z drugimi gospodinjskimi odpadki.

Vaša dolžnost je, da izrabljeno opremo ali napravo ter baterijske vložke predate v odstranjevanje na posebna zbirna mesta za ločeno zbiranje odpadkov v okviru vaše lokalne skupnosti oziroma zastopniku, ki opravlja dejavnost prevzemanja odpadne električne in elektronske opreme.

S tem, ko jih pravilno odstranite (recikliranje in sortiranje nevarnih odpadkov) varujete naše življensko okolje ter preprečujete negativni vpliv na naravo okrog nas, na naše življensko pomembne vire in vode.

Za dodatne informacije o zbiranju in recikliranju, prosim kontaktirajte vašo lokalno skupnost.

Nepravilno odstranjevanje nevarnih in izrabljenih snovi ter naprav je lahko kaznivo dejanje.

Obvestilo za baterijski simbol (spodnji simbol):
Ta simbol se uporablja v kombinaciji s kemičnim simbolom. V takšnem primeru odgovarja zahtevi, ki jo določa direktiva za dotično kemikalijo.

Likvidace použitých zařízení a baterií

Jen pro státy Evropské unie a země s fungujícím systémem recyklace a zpracování odpadu.

Tyto symboly na výrobcích, jejich obalech a v doprovodné dokumentaci upozorňují na to, že se použitá elektrická a elektronická zařízení, včetně baterií, nesmějí likvidovat jako běžný komunální odpad.

Aby byla zajištěna správná likvidace a recyklace použitých výrobků a baterií, odevzdávejte je v souladu s národní legislativou na příslušných sběrných místech.

Správnou likvidací přispějete k úspoře cenných přírodních zdrojů a předejdete možným negativním dopadům na lidské zdraví a životní prostředí.

O další podrobnosti o sběru a recyklaci odpadu požádejte místní úřady.

Při nesprávné likvidaci tohoto druhu odpadu se vystavujete postihu podle národní legislativy.

Poznámka k symbolu baterie (značka pod symbolem):
Tento symbol může být použitý v kombinaci s chemickou značkou. Takový případ je souladu s požadavky směrnice pro chemické látky.

Vanhojen laitteiden ja paristojen hävittäminen

Vain EU-jäsenmaille ja kierrätysjärjestelmää käyttäville maille

Tämä symboli tuotteissa, pakkauksessa ja/tai asiakirjoissa tarkoittaa, että käytettyjä sähköllä toimivia ja elektronisia tuotteita ei saa laittaa yleisiin talousjätteisiin.

Johda vanhat tuotteet ja käytetyt paristot käsittelyä, uusiointia tai kierrätystä varten vastaaviin keräyspisteisiin laissa annettujen määräysten mukaisesti.

Hävittämällä tuotteet asiaankuuluvasti, autat samalla suojaamaan arvokkaita luonnonvaroja ja estämään mahdollisia negatiivisia vaikutuksia ihmiseen ja luontoon.

Lisätietoa keräämisestä ja kierrätyksestä saa paikalliselta jätehuollosta vastuulliselta viranomaiselta.

Maiden lainsäädännön mukaisesti tämän jätteen määräystenvastaisesta hävittämisestä voidaan antaa sakkorangaistuksia.

Huomautus paristosymbolista (symboli alhaalla):
Tämä symboli voidaan näyttää jonkin kemiallisen symbolin yhteydessä. Siinä tapauksessa se perustuu vastaaviin direktiiveihin, jotka on annettu kyseessä olevalle kemikaalille.

Eski Ekipman ve Bataryaların Tasfiyesi

Sadece Avrupa Birliği ve geri dönüşüm sistemleri olan ülkeler için

Ürünlerin, ambalajın ve/veya ek olarak gelen belgelerin üzerindeki bu semboller, elektrikli ve elektronik ürünlerin ve bataryaların genel ev atıklarıyla karıştırılmaması gerektiği anlamına gelir.

Eski ürünlerin ve kullanılmış bataryaların doğru şekilde işlenmesi, geri kazanım ve geri dönüşümü için lütfen bunları ulusal kanunlara uygun olan toplama noktalarına götürün.

Bunları doğru şekilde tasfiye ederek değerli kaynakları kurtarmaya ve insan sağlığı ve çevre üzerinde oluşabilecek olumsuz etkileri önlemeye yardım edeceksiniz.

Toplama ve geri dönüşüm hakkında daha fazla bilgi için lütfen bölgenizdeki belediye ile irtibat kurun.

Bu atığın yanlış şekilde tasfiye edilmesi durumunda ulusal kanunlar uyarınca cezalar verilebilir.

Batarya sembolüne bakın (alttaki sembol):
Bu sembol bir kimyasal sembolü ile birlikte kullanılmış olabilir. Bu durumda batarya, kullanılan kimyasal maddeye yönelik Direktif ile belirlenen şartlarla karşılıyordur.

Entsorgung von Altgeräten und Batterien

Nur für die Europäische Union und Länder mit Recyclingsystemen

Dieses Symbol, auf den Produkten, der Verpackung und/oder den Begleitdokumenten, bedeutet, dass gebrauchte elektrische und elektronische Produkte sowie Batterien nicht in den allgemeinen Hausmüll gegeben werden dürfen.

Bitte führen Sie alte Produkte und verbrauchte Batterien zur Behandlung, Aufarbeitung bzw. zum Recycling gemäß den gesetzlichen Bestimmungen den zuständigen Sammelpunkten zu. Endnutzer sind in Deutschland gesetzlich zur Rückgabe von Altbatterien an einer geeigneten Annahmestelle verpflichtet. Batterien können im Handelsgeschäft unentgeltlich zurückgegeben werden.

Indem Sie diese Produkte und Batterien ordnungsgemäß entsorgen, helfen Sie dabei, wertvolle Ressourcen zu schützen und eventuelle negative Auswirkungen auf die menschliche Gesundheit und die Umwelt zu vermeiden.

Für mehr Informationen zu Sammlung und Recycling, wenden Sie sich bitte an Ihren örtlichen Abfallentsorgungsdienstleister.

Gemäß Landesvorschriften können wegen nicht ordnungsgemäßer Entsorgung dieses Abfalls Strafgelder verhängt werden.

Hinweis für das Batteriesymbol (Symbol unten):
Dieses Symbol kann in Kombination mit einem chemischen Symbol abgebildet sein. In diesem Fall erfolgt dieses auf Grund der Anforderungen derjenigen Richtlinien, die für die betreffende Chemikalie erlassen wurden.

L'élimination des équipements et des batteries usagés

Applicable uniquement dans les pays membres de l'Union européenne et les pays disposant de systèmes de recyclage.

Apposé sur le produit lui-même, sur son emballage, ou figurant dans la documentation qui l'accompagne, ce pictogramme indique que les piles, appareils électriques et électroniques usagés, doivent être séparées des ordures ménagères.

Afin de permettre le traitement, la valorisation et le recyclage adéquats des piles et des appareils usagés, veuillez les porter à l'un des points de collecte prévus, conformément à la législation nationale en vigueur.

En les éliminant conformément à la réglementation en vigueur, vous contribuez à éviter le gaspillage de ressources précieuses ainsi qu'à protéger la santé humaine et l'environnement.

Pour de plus amples renseignements sur la collecte et le recyclage, veuillez vous renseigner auprès des collectivités locales.

Le non-respect de la réglementation relative à l'élimination des déchets est passible d'une peine d'amende.

Note relative au pictogramme à apposer sur les piles (pictogramme du bas) :
Si ce pictogramme est combiné avec un symbole chimique, il répond également aux exigences posées par la Directive relative au produit chimique concerné.

Eliminación de Aparatos Viejos y de Pilas y Baterías

Solamente para la Unión Europea y países con sistemas de reciclado.

Estos símbolos en los productos, su embalaje o en los documentos que los acompañen significan que los productos eléctricos y electrónicos y pilas y baterías usadas no deben mezclarse con los residuos domésticos.

Para el adecuado tratamiento, recuperación y reciclaje de los productos viejos y pilas y baterías usadas llévelos a los puntos de recogida de acuerdo con su legislación nacional. En España, los usuarios están obligados a entregar las pilas en los correspondientes puntos de recogida. En cualquier caso, la entrega por los usuarios será sin coste alguno para éstos.El coste de la gestión medioambiental de los residuos de pilas, acumuladores y baterías está incluido en el precio de venta.

Si los elimina correctamente ayudará a preservar valuosos recursos y evitará potenciales efectos negativos sobre la salud de las personas y sobre el medio ambiente.

Para más información sobre la recogida u reciclaje, por favor contacte con su ayuntamiento.

Puede haber sanciones por una incorrecta eliminación de este residuo, de acuerdo con la legislación nacional.

Nota para el símbolo de pilas y baterías (símbolo debajo):
Este símbolo puede usarse en combinación con el símbolo químico. En este caso, cumple con los requisitos de la Directiva del producto químico indicado.

DISPOSAL OF UNIT

Smaltimento di vecchie apparecchiature e batterie usate

Solo per Unione Europea e Nazioni con sistemi di raccolta e smaltimento

Questi simboli sui prodotti, sull'imballaggio e/o sulle documentazioni o manuali accompagnanti i prodotti indicano che i prodotti elettrici, elettronici e le batterie usate non devono essere buttati nei rifiuti domestici generici.

Per un trattamento adeguato , recupero e riciclaggio di vecchi prodotti e batterie usate vi invitiamo a portarli negli appositi punti di raccolta secondo la legislazione vigente nel vostro paese.

Con uno smaltimento corretto, contribuirete a salvare importanti risorse e ad evitare i potenziali effetti negativi sulla salute umana e sull'ambiente.

Per ulteriori informazioni su raccolta e riciclaggio, vi invitiamo a contattare il vostro comune.

Lo smaltimento non corretto di questi rifiuti potrebbe comportare sanzioni in accordo con la legislazione nazionale.

Note per il simbolo batterie (simbolo sotto):
Questo simbolo può essere usato in combinazione con un simbolo chimico. In questo caso è conforme ai requisiti indicati dalla Direttiva per il prodotto chimico in questione.

Eliminação de Equipamentos Usados e Baterias

Apenas para a União Europeia e países com sistemas de reciclagem

Estes símbolos nos produtos, embalagens, e/ou documentos que os acompanham indicam que os produtos elétricos e eletrónicos e as baterias usados não podem ser misturados com os resíduos urbanos indiferenciados.

Para um tratamento adequado, reutilização e reciclagem de produtos e baterias usados, solicitamos que os coloque em pontos de recolha próprios, em conformidade com a respetiva legislação nacional.

Ao eliminar estes produtos corretamente estará a ajudar a poupar recursos valiosos e a prevenir quaisquer potenciais efeitos negativos sobre o ambiente e a saúde humana.

Para mais informações acerca da recolha e reciclagem, por favor contacte a sua autarquia local.

De acordo com a legislação nacional podem ser aplicadas contraordenações pela eliminação incorreta destes resíduos.

Nota para o símbolo da bateria (símbolo na parte inferior):
Este símbolo pode ser utilizado conjuntamente com um símbolo químico. Neste caso estará em conformidade com o estabelecido na Diretiva referente aos produtos químicos em causa.

Depunerea la deşeuri a echipamentelor şi a bateriilor vechi

Doar pentru Uniunea Europeană şi pentru ţările cu sisteme de reciclare

Aceste simboluri de pe produse, ambalaje şi/sau documentele însoţitoare indică faptul că produsele electrice şi electronice, precum şi bateriile uzate nu trebuie să fie amestecate cu deşeurile menajere obişnuite.

Pentru un tratament corespunzător, pentru recuperarea şi reciclarea produselor vechi şi a bateriilor uzate, vă rugăm să le depuneţi la punctele de colectare special amenajate, în conformitate cu legislaţia naţională

Prin depunerea corespunzătoare a acestora la deşeuri, veţi ajuta la economisirea unor resurse valoroase şi veţi preveni potenţiale efecte negative asupra sănătăţii umane şi asupra mediului înconjurător.

Pentru mai multe informaţii despre colectare şi reciclare, vă rugăm să contactaţi autorităţile locale.

Este posibil ca depunerea incorectă la deşeuri să fie pedepsită în conformitate cu legile naţionale.

Notă pentru simbolul de baterie (ultimele două exemple de simboluri):
Acest simbol poate fi utilizat în combinaţie cu un simbol chimic. În acest caz, acesta este conform cu cerinţele stabilite de Directivă pentru elementul chimic în cauză.

Indsamling af elektronikskrot og brugte batterier

Kun for Den Europæiske Union og lande med retursystemer

Disse symboler på produkter, emballage og/eller ledsagedokumenter betyder, at brugte elektriske og elektroniske produkter og batterier ikke må blandes med almindeligt husholdningsaffald.

For korrekt behandling, indsamling og genbrug af gamle produkter og batterier, skal du tage dem til indsamlingssteder i overensstemmelse med den nationale lovgivning.

Ved at skaffe sig af med dem på korrekt vis hjælper du med til at spare værdifulde ressourcer og forhindre eventuelle negative påvirkninger af menneskers sundhed og miljøet.

Ønsker du mere udførlig information om indsamling og genbrug skal du kontakte din kommune.

Usagkyndig bortskaffelse af elektronikskrot og batterier kan eventuelt udløse bødeforlæggelse.

Information om batterisymbol (eksempler nedenfor):
Dette symbol kan anvendes sammen med et kemisk symbol. I så fald opfylder det kravene for det direktiv, som er blevet fastlagt for det pågældende kemikalie.

Senų prietaisų ir akumuliatorių utilizavimas

Taikoma tik Europos Sąjungai ir šalims, kuriose naudojamas perdirbimo sistemos

Jei ant pakuotės ir (arba) lydimuosiuose dokumentuose nurodytas šis simbolis, vadinasi, naudotų elektrinių ir elektroninių gaminių ir akumuliatorių negalima išmesti kartu įprastomis buitinėmis atliekomis.

Senus produktus ir naudotus akumuliatorius perduokite apdirbti, likviduoti arba perdirbti kompetentingiems surinkimo punktams pagal įstatymų galios potvarkius.

Šiuos gaminius ir akumuliatorius perdavę tinkamai utilizuoti, padėsite išsaugoti vertingus išteklius ir išvengti neigiamo poveikio žmogaus sveikatai ir aplinkai.

Jei norite gauti daugiau informacijos apie surinkimą ir perdirbimą, kreipkitės į vietos atliekų utilizavimo paslaugų teikėją.

Remiantis šalyje galiojančiais potvarkiais, už netinkamą tokių atliekų utilizavimą gali būti skirta bauda.

Akumuliatoriaus simbolio nuoroda (simbolis apačioje):
Kartu su šiuo simboliu gali būti pateiktas cheminių medžiagų simbolis. Šis simbolis pateikiamas, kai būtina laikytis atitinkamiems chemikalams taikomų direktyvų reikalavimų.

Rimi ta' Tagħmir Antik u Batteriji

Għall-Unjoni Ewropea u għall-pajjiżi b'sistemi ta' riċiklaġġ biss

Dawn is-simboli fuq il-prodotti, l-imballaġġ u/jew id-dokumenti ta' akkumpanjament ifissru li prodotti elettriċi u elettroniċi u batteriji użati ma jridux jiġu mħallta ma' skart domestiku ġenerali.

Għal trattament, irkupru u riċiklaġġ xieraq ta' prodotti antiki u batteriji użati, jekk jogħġbok ħudhom f'punti tal-ġbir applikabbli f'konformità mal-leġiżlazzjoni nazzjonali tiegħek.

Billi tarmihom b'mod xieraq, tgħin sabiex tikkonserva riżorsi prezzjużi u tipprevjeni kwalunkwe effett negattiv potenzjali fuq is-saħħa tal-bniedem u l-ambjent.

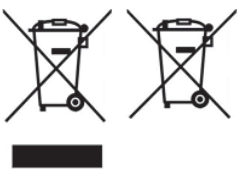
Għal aktar informazzjoni dwar il-ġbir u r-riċiklaġġ, jekk jogħġbok ikkuntattja lill-muniċipalità lokali tiegħek.

F'każ ta' rimi mhux korrett ta' dan l-iskart jistgħu japplikaw penali, f'konformità mal-leġiżlazzjoni nazzjonali.

Nota għas-simbolu tal-batterija (simbolu ta' taħt):
Dan is-simbolu jista' jintuża f'kombinazzjoni ma' simbolu tal-kimika. F'dan il-każ jikkonforma mar-rekwiżit stabbilit mid-Direttiva għall-kimika involuta.

Zbrinjavanje starih uređaja i baterija

Samo za Europsku uniju i zemlje koje posjeduju sustav recikliranja



Ovaj simbol na proizvodima, pakiranju i/ili popratnim dokumentima znači da se iskorišteni električni i elektronički proizvodi te baterije ne smiju bacati u kućanski otpad.
Molimo vas da prema zakonskim odredbama stare proizvode i istrošene baterije predate na ovlaštenim sabirališima na daljnju obradu, pripremu odn. recikliranje.
Ako te proizvode i baterije propisno zbrinete, pomažete pri zaštiti dragocjenih resursa, a istovremeno i izbjegavate eventualne negativne utjecaje na ljudsko zdravlje i okoliš.
Za više informacija o zbrinjavanju i recikliranju obratite se svojem lokalnom komunalnom poduzeću.
Zbog nepropisnog zbrinjavanja ovog otpada mogu se, ovisno o lokalnim propisima zemlje, izreći i novčane kazne.

Napomena za simbol baterije :
Ovaj simbol može biti prikazan samo u kombinaciji s kemijskim simbolom. U tom se slučaju upotrebljava na temelju zahtjeva onih direktiva koje su donesene za dotičnu kemikaliju.

Avfallshantering av produkter och batterier
Endast för Europeiska Unionen och länder med återvinningssystem

Dessa symboler på produkter, förpackningar och/eller medföljande dokument betyder att förbrukade elektriska och elektroniska produkter och batterier inte får blandas med vanliga hushållssopor.
För att gamla produkter och använda batterier ska hanteras och återvinnas på rätt sätt ska dom lämnas till passande uppsamlingsställe i enlighet med nationella bestämmelser.
Genom att ta göra det korrekt hjälper du till att spara värdefulla resurser och förhindrar eventuella negativa effekter på människors hälsa och på miljön.
För mer information om insamling och återvinning kontakta din kommun.
Olämplig avfallshantering kan beläggas med böter i enlighet med nationella bestämmelser.
Notering till batterisymbolen (nedanför):
Denna symbol kan användas i kombination med en kemisk symbol. I detta fall uppfyller den de krav som ställs i direktivet för den aktuella kemikalien.

Brukerinformasjon om innsamling av gammelt utstyr og brukte batterier
Bare for EU og land med retursystemer

Slike symboler på produkter, emballasje, og/eller på medfølgende dokumenter betyr at brukte elektriske/elektroniske produkter og batterier ikke må blandes med vanlig husholdningsavfall.
For riktig håndtering og gjenvinning av gamle produkter og brukte batterier,vennligst lever dem til innsamlingssteder i samsvar med nasjonallovgivning.
Ved riktig håndtering av disse produktene og batteriene, hjelper du til med å spare verdifulle ressurser og forhindre potensielle negative effekter på menneskers helse og miljø.
For mer informasjon om innsamling og gjenvinning vennligst ta kontakt med din kommune.
Ukorrekt håndtering av dette avfallet kan medføre straffansvar, i overensstemmelse med nasjonal lovgivning.
Merknader for batterisymbolet (nederste symbol):
Dette symbolet kan bli brukt i kombinasjon med et kjemisk symbol. I dette tilfellet etterkommer det kravet satt av direktivet for det kjemikaliet det gjelder.

Het ontdoen van oude apparatuur en batterijen.
Enkel voor de Europese Unie en landen met recycle systemen.

Deze symbolen op de producten, verpakkingen en/of begeleidende documenten betekenen dat gebruikte elektrische en elektronische producten en batterijen niet samen mogen worden weggegooid met de rest van het huishoudelijk afval.
Voor een juiste verwerking, hergebruik en recycling van oude producten en batterijen, gelieve deze in te leveren bij de desbetreffende inleverpunten in overeenstemming met uw nationale wetgeving.
Door ze op de juiste wijze weg te gooien, helpt u mee met het besparen van kostbare hulpbronnen en voorkomt u potentiële negatieve effecten op de volksgezondheid en het milieu.
Voor meer informatie over inzameling en recycling kunt u contact opnemen met uw plaatselijke gemeente.
Afhankelijk van uw nationale wetgeving kunnen er boetes worden opgelegd bij het onjuist weggooien van dit soort afval.
Let op: het batterij symbool (Onderstaand symbool).
Dit symbool kan in combinatie met een chemisch symbool gebruikt worden. In dit geval volstaan de eisen, die zijn vastgesteld in de richtlijnen van de desbetreffende chemische stof.

Απόρριψη παλαιών συσκευών και μπαταριών
Μόνο για την Ευρωπαϊκή Ένωση και χώρες με συστήματα ανακύκλωσης

Το σύμβολο αυτό, πάνω στα προϊόντα, τη συσκευασία ή/και τα συνοδευτικά έγγραφα, υποδηλώνει ότι τα χρησιμοποιημένα ηλεκτρικά και ηλεκτρονικά προϊόντα, καθώς και οι μπαταρίες, δεν πρέπει να απορρίπτονται στα κοινά οικιακά απορρίμματα.
Παρακαλούμε παραδώστε τα παλαιά προϊόντα και τις χρησιμοποιημένες μπαταρίες για διαχείριση, επεξεργασία ή/και ανακύκλωση σύμφωνα με τις νομικές διατάξεις των αρμόδιων αρχών αποκομιδής.
Με την ορθή απόρριψη αυτών των προϊόντων και μπαταριών, συμβάλλετε στην εξοικονόμηση πολύτιμων πόρων και την αποφυγή τυχόν αρνητικών επιπτώσεων στην ανθρώπινη υγεία και το περιβάλλον.
Για περισσότερες πληροφορίες σχετικά με τη συλλογή και την ανακύκλωση, παρακαλούμε απευθυνθείτε στις κατά τόπους υπηρεσίες συγκομιδής απορριμάτων.
Σε περίπτωση αντικανονικής απόρριψης αυτού του προϊόντος ενδεχομένως να επιβληθούν πρόστιμα, ανάλογα με τη νομοθεσία του εκάστοτε κράτους.
Σημείωση για το σύμβολο μπαταρίας (σύμβολο κάτω):
Το σύμβολο αυτό μπορεί να απεικονίζεται σε συνδυασμό με ένα χημικό σύμβολο. Αυτό γίνεται ώστε να υπάρχει συμφωνία με τις απαιτήσεις των εκάστοτε οδηγιών, που εκδόθηκαν για το εν λόγω χημικό.

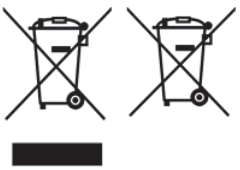
Nolietoto elektronisko ierīču un elektropreču un bateriju utilizācija
Tikai Eiropas valstīs ar utilizācijas sistēmu

Šis simbols, kas izvietots uz ražojumiem, iesaiņojuma un/vai pavaddokumentiem nozīmē, ka nolietotās elektroniskās ierīces un elektropreces, kā arī baterijas nedrīkst izmest kopā ar parastiem mājsaimniecības atkritumiem.
Nogādājiet nolietotos ražojumus un nokalpojušās baterijas tālākai apstrādei, pārstrādei, resp., materiālu otrreizējai pārstrādei attiecīgajās atkritumu savākšanas vietās saskaņā spēkā esošajām likumdošanas prasībām.
Nododot šos ražojumus un baterijas profesionālai utilizācijai, jūs palīdzēsiet saudzēt vērtīgus resursus un novērsīsiet iespējamo kaitējumu cilvēku veselībai un un apkārtējai videi.
Lai iegūtu plašāku informāciju par atkritumu savākšanu un otrreizējo pārstrādi, lūdzam vērsties savā vietējā atkritumu pārstrādes uzņēmumā.
Saskaņā ar nacionālo likumdošanu par nepareizu šāda veida atkritumu utilizēšanu var uzlikt naudas sodu.
Norāde par baterijas simbolu (simbols apakšā):
Šis simbols var būt attēlots kombinācijā ar ķīmiskās vielas simbolu. Tādā gadījumā tas ir apzīmēts atbilstoši attiecīgo Direktīvu prasībām, kas pieņemtas attiecībā uz attiecīgo ķimikāliju.

Уклањање старих апарата и батерија
Само за Европску Унију и државе са системима рециклирања

Овај симбол на производима, паковању и/или пратећим документима значи да коришћени електрични и електронски апарати не смеју бити бачени у обично кућно ђубре.
Молимо да сходно законским одредбама однесете старе производе и искоришћене батерије у надлежна сабирна места на третман, прераду, односно рециклирање.
Тиме што ћете ове производе и батерије правилно уклонити помажете да се притом заштите вредни ресурси и избегну евентуална негативна дејства на људско здравље и човекову околину.
Молимо да се за више информација у вези сакупљања и рециклирања обратите Вашој месној служби за уклањање отпада.
За непрописно уклањање овог отпада могу бити изречене новчане казне према прописима државе.
Упутство за симбол за батерију (симбол доле:)
Овај симбол може бити илустрован у комбинацији са хемијским симболом. У том случају ово следи на основу захтева оних смерница које су донешене за дотичне хемикалије.

Vanade seadmete ja patareide jäätmekäitlus
Ainult Euroopa Liidule ja ringlussevõtu süsteemidega riikidele



Toodetel, pakendil ja/või kaasasolevatel dokumentidel olevad sümbolid tähendavad, et elektri- ja elektroonikatooteid ja patareisid ei tohi visata tavaliste olmejäätmete hulka.
Vanade toodete ja kasutatud patareide nõuetekohaseks töötlemiseks, taastamiseks ja ringlusse võtmiseks viige need ettenähtud kogumiskohtadesse vastavalt riiklikele õigusaktidele.
Nende toodete ja patareide korrektse kõrvaldamisega aitate säästa hinnalisi ressursse ning vältida võimalikke kahjulikke mõjusid inimeste tervisele ja keskkonnale.
Täpsema teabe saamiseks kogumise ja ringlussevõtu kohta pöörduge kohaliku omavalitsuse poole.
Vastavalt riiklikele õigusaktidele võib selliste jäätmete ebakorrektse käitlemisega kaasneda trahv.
Märkus patarei sümboli kohta :
Seda sümbolit võib kasutada kombinatsioonis keemilise sümboliga. Sellisel juhul vastab see asjaomase kemikaali kasutamist reguleeriva direktiivi nõuetele.

SPECIFICATIONS

Product name	CO_2 Incubator MCO-171AICD	CO_2 Incubator MCO-171AICUVD
External dimensions	W620 mm x D755 mm x H905 mm (W24.4 in. x D29.7 in. x H35.6 in.)	
Internal dimensions	W490 mm x D523 mm x H665 mm (W19.3 in. x D20.6 in. x H26.2 in.)	
Interior volume	165 L (5.83 cu.ft.)	
Exterior	Painted steel (Bottom and rear cover have no paint.)	
Interior	Stainless steel containing copper	
Outer door	Painted steel	
Inner door	Tempered glass	
Trays	4 trays made of stainless steel containing copper W470 mm x D450 mm x H12 mm (W18.5 in. x D17.7 in. x H0.47 in.) Maximum load: 7 kg (15 lbs.)/tray	
Access port	Inner diameter: 30 mm (1.18 in.), On the back side	
Insulation	Glass-wool insulation	
Heating system	Heater jacket system	
Humidifying system	Natural evaporation with humidifying pan	
Temperature controller	PID control system	
Temperature display	Digital display	
CO_2 controller	PID control system	
CO_2 density display	Digital display	
Air circulation	Fan assisted	
Gas line filter	0.01 μm, Efficiency: 99.99 % or higher	
UV LED	-	UVC-LED x 1 (ozone-free emission)
Alarms	Temperature alarm, CO_2 density alarm, Over heat alarm, CO_2 gas, various sensor/heater alarms	
Remote alarm contacts	Allowable contact capacity: DC 30 V, 2 A*	
CO_2 inlet connection	Soft Polyurethane tube can be connected (ID 4 mm, OD 6 mm (ID 0.157 in. ,OD 0.236 in.))	
CO_2 inlet pressure	0.03 MPa(G) - 0.1 MPa(G) (0.3 kgf/cm^2(G) - 1 kgf/cm^2(G), 4.4 psi(G) - 14.5 psi(G))	
Weight	80 kg (176 lbs.)	
Accessories	1 removable power supply cord for UK, 1 removable power supply cord for EU countries, 1 power cord cover plate, 4 trays, 1 gas tube, 1 humidifying pan, 1 conversion joint, 2 keys to outer door	
		1 dummy module

*A maximum length of 30 meters is recommended for the cable used for the connection.

Product name	CO_2 Incubator MCO-171AICD	CO_2 Incubator MCO-171AICUVD
Optional accessories required for stacking incubator (see Table 2 below)	Double stacking bracket (MCO-170PS) Stacking plate (MCO-170SB, MCO-230SB)	
Optional accessories	UV system kit (MCO-LUVSD)	
	Gas regulator (MCO-010R) Gas auto changer (MCO-21GCP) Tray (MCO-170ST) Half tray (MCO-25ST) Reinforced tray (MCO-170RT) Roller base (MCO-170RB) Interface board (MCO-420MA)* Interface board (MTR-L03)*: For LAN Interface board (MTR-480)*: For RS-232C/RS-485	

* For purchase of the interface boards, contact our sales representative or agent.
A maximum length of 30 meters is recommended for the cable used for the connection.

Note:
Refer to the updated catalog when ordering an optional component.

Table 2 Combination of incubators and required stacking bracket/plate (other combinations are not recommended).

		Upper incubator			
		MCO-170 series	MCO-230 series	MCO-50 series	MCO-171 series
Lower incubator	MCO-170 series	MCO-170PS or MCO-170SB	—	—	MCO-170PS or MCO-170SB
	MCO-230 series	MCO-230SB	MCO-170PS	—	MCO-230SB
	MCO-50 series	—	—	MCO-170PS	—
	MCO-171 series	MCO-170PS or MCO-170SB	—	—	MCO-170PS or MCO-170SB

—: Cannot be stacked.

PERFORMANCE

Product name		CO_2 Incubator MCO-171AICD	CO_2 Incubator MCO-171AICUVD
Model number		MCO-171AICD-PE	MCO-171AICUVD-PE
During culture	Temperature control range	Ambient temperature plus 5°C to max. 50°C* (ambient temperature: 5°C to 35°C)	
	Temperature distribution	±0.25°C (ambient temperature: 23°C, setting: 37°C, CO_2: 5%, no load)	
	Temperature variation	±0.1°C (ambient temperature: 23°C, setting: 37°C, CO_2: 5%, no load)	
	CO_2 setting range	0% to 20%	
	CO_2 variation	±0.15% (ambient temperature: 23°C, setting: 37°C, CO_2: 5%, no load)	
	Chamber humidity	95% RH ± 5% RH	
	Environmental conditions	Ambient temperature: 5°C to 35°C, Humidity: max. 80% RH (The designed performance may not be obtained if the ambient temperature is 15°C or lower)	
	Noise level	25 dB (A scale)	
	Heater	915 W	
	Power consumption	Max. 635 W	
	Heat emission	Max. 3,300 kJ/h	
	Rated voltage, frequency	AC 220 V-240 V, 50/60 Hz	
	Amperage	Max. 2.6 A	
During dry heat sterilisation	Environmental conditions	Ambient temperature: 15°C to 30°C, Humidity: max. 80% RH	
	Noise level	25 dB (A scale)	
	Heater	915 W	
	Power consumption	Max. 925 W	
	Heat emission	Max. 3,300 kJ/h	
	Rated voltage, frequency	AC 220 V-240 V, 50/60 Hz	
	Amperage	Max. 3.9 A	

*When set temperature is 37°C, ambient temperature must be 32°C or lower. Regardless of ambient temperature, the maximum of temperature control range is always 50°C.

Notes:

- The unit with CE mark complies with EU directives.
- Based on our measuring method.
- Default calibration conditions: 37°C, CO_2: 5%
  When using under other conditions, we recommend performing calibration under the conditions of use.
- We recommend performing calibration every year.

SAFETY ENVIRONMENTAL CONDITIONS

This equipment is designed to be safe at least under the following conditions (based on the IEC 61010-1):

■ Indoor use;

■ Altitude up to 2,000 m;

■ Temperature 5˚C to 40˚C

■ Maximum relative humidity 80% for temperature up to 31˚C decreasing linearly to 50% relative humidity at 40˚C;

■ Mains supply voltage fluctuations up to ±10% of the nominal voltage;

■ Transient overvoltages up to the levels of OVERVOLTAGE CATEGORY II;

■ Temporary OVERVOLTAGES occurring on the mains supply;

■ Applicable pollution degree of the intended environment (POLLUTION DEGREE 2 in most cases);

* Above conditions do not indicate the performance of this product. For the performance of this product, refer to the "PERFORMANCE" section.

SAFETY CHECK SHEET

⚠ CAUTION	**Please copy and fill out this form before servicing. Hand over the form to the service engineer for their and your safety.**

Safety check sheet

1. Stored material

   Risk of infection: ☐Yes ☐No ☐Maybe

   Risk of toxicity: ☐Yes ☐No ☐Maybe

   Risk from radioactive sources: ☐Yes ☐No ☐Maybe

   List all potentially hazardous materials that have been stored in this unit:

   _____

   _____

2. Contamination in the unit

   a) Contamination ☐Yes ☐No ☐Maybe

   Types of contamination (if any):_____

   _____

   b) Decontaminated ☐Yes ☐No

   Methods used for the decontamination work:

   _____

   _____

3. Status of the unit

   a) The unit is now safe to work on ☐Yes ☐No

   b) If the answer is "No,"

   Details on the danger:_____

   _____

   Measures we should take to reduce the danger:

   _____

   _____

   Date:

   Signature:

   Address, Division:

   Telephone:

Product name: CO_2 incubator	Model No. MCO-	Serial number:	Date of Installation:

Please decontaminate the unit yourself before calling the service engineer.

MEMO

PHC Corporation

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