

PHCbi

Operating Instructions

Blood Bank Refrigerator

MBR-305GR



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

See page 34 for model number.

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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.

<Intended Use>

This equipment is designed for storage of blood and blood products.

<Proposal for safe storage of refrigerator contents>

A remote alarm system can be provided with the refrigerator to protect the blood against accidental rises in temperature. Contact our sales representative or agent for details of the systems or to arrange installation.

PRECAUTIONS FOR SAFE OPERATION

It is imperative that the user complies with the operating instructions as they contain important safety advice.

Items and procedures are described so that you can use this unit correctly and safely. Following these precautions will prevent possible injury to the user and any other person.

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.



Symbols have the following meanings:










-  This symbol means caution.
-  This symbol means an action is prohibited.
-  This symbol means an instruction must be followed.

Be sure to keep the operating instructions in a place that is accessible to users of this unit.

PRECAUTIONS FOR SAFE OPERATION

WARNING













-  **Do not use the unit outdoors.** Exposure to rain may cause leakage and/or electric shock.
-  **Only qualified engineers or service personnel should install the unit.** Installation by unqualified personnel may cause water leakage, electric shock, or 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.
-  **Do not install the unit where there are high levels of moisture or where it may be splashed with water.** Installing the unit where there are high levels of moisture or where it may be splashed with water may cause the insulation to deteriorate and give rise to leakage and/or electric shock.
-  **Do not install the unit in a location where flammable or volatile substances are present.** Installing the unit in a location where flammable or volatile substances are present may cause explosions and/or a fire.
-  **Do not install the unit in a location where corrosive gases such as acids are present.** Installing the unit in a location where corrosive substances are present may cause electric components to corrode, leading to leakage and/or electric shock due to the deterioration of insulation resulting from corroded electrical components.
-  **Do not place this unit in a location where it is difficult to disconnect the power supply plug.** Failure to disconnect the power supply plug may cause fire in the event of a problem or malfunction.
-  **Be absolutely sure to earth (ground) the unit in order to prevent electric shock.** Failure to earth the product may give rise to 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 give rise to electric shock.
-  **Connect the unit to a 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 fire or electric shock.
-  **Never store volatile or flammable substances in this unit except in a sealed container.** Such substances may cause explosion or fire if they leak.
-  **Never insert metal objects such as pins and wires into any vent, gap, or outlet on the unit.** This may cause electric shock or injury by accidental contact with moving parts.

PRECAUTIONS FOR SAFE OPERATION










WARNING

-  **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 which is not an isolation facility, there may be detrimental effects on both people and the natural environment.
-  **Before proceeding with maintenance or checking of the unit, set the power switch to OFF and disconnect the power supply plug.** Performing the work while power is still flowing to the product or while the power supply plug is still connected may give rise to electric shock and/or injury.
-  **Do not touch any electrical parts (such as power supply plug) or operate switches with a wet hand.** This may cause electric shock.
-  **Wear protective gloves and mask during maintenance.** Touching or inhaling chemicals or aerosols from around the unit may be detrimental to health.
-  **Never splash water directly onto the unit** as this may cause electric shock or short circuit.
-  **Never put containers with liquid on top of the unit** as this may cause electric shock or short circuit if the liquid is spilled.
-  **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 electric shock, short circuit, or fire.
-  **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 electric shock. Contact our sales representative or agent for maintenance or repair.
-  **Make sure the power supply plug is pushed fully in.** Faulty insertion of the power supply plug may cause electric shock or fire due to generation of heat. Never use a damaged power supply plug or loose power outlet.
-  **Disconnect the power supply plug if there is anything wrong with the unit.** Continued abnormal operation may cause electric shock or fire.
-  **Grip the power supply plug when disconnecting the power supply cord from the outlet.** Pulling the power supply cord may cause electric shock or short circuit.
-  **Remove dust from the power supply plug periodically.** Dust on the power supply plug may cause insulation failure due to moisture and thus cause a fire. Disconnect the power supply plug and wipe it with a dry cloth.









PRECAUTIONS FOR SAFE OPERATION

WARNING

-  **Disconnect the power supply plug before moving unit.** Take care not to damage the power supply cord. A damaged power supply cord may cause electric shock or fire.
-  **Disconnect the power supply cord when the unit is not in use for long periods.** Keeping the unit connected may cause electric shock, leakage, or fire due to the deterioration of insulation.
-  If the unit is to be stored unused in an unsupervised area for a long period, **ensure that children do not have access and that doors cannot be closed completely.**
-  **Ask a qualified contractor to carry out disassembly and disposal of the unit.** Leaving the unit in a location that can be accessed by third parties may result in unexpected accidents (e.g. the unit may be used for unintended purposes).
-  **Do not leave the plastic bags used for packing in a place where they can be reached by small children** as this may result in unexpected accidents such as suffocation.
-  **Never replace the battery for the power-failure alarm yourself.** Only qualified engineers or service personnel should replace the battery.
-  **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 injury. A qualified individual must be assigned to supervise the safe movement and relocation of the unit.

PRECAUTIONS FOR SAFE OPERATION

CAUTION

-  **Never install the unit in a location where corrosive materials such as sulphur compounds are likely to be generated (e.g. near a drainage facility).** Corrosion of the copper pipes may result in the deterioration and consequently the failure of the cooling unit.
-  **This unit must be plugged into a dedicated circuit** protected by branch circuit breaker.
-  **Use a dedicated power source as indicated on the rating label attached to the unit.** A multiple-tap may cause fire resulting from abnormal heating.
-  **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.
-  **Always store items in the drawers.** Storing items outside the drawers may cause the items to degrade and decrease in quality.
-  **Never store corrosive substances such as acids or alkalis in the unit except in a sealed container.** These may be detrimental to health and may cause corrosion of internal components or electrical components.
-  **Before resuming operation after the unit has been turned off, be absolutely sure to check the settings.** The settings may have changed as a result of stopping the unit. Items stored inside the unit may be adversely affected if operation of the unit is resumed with changed settings.
-  **To ensure the safety of the service engineer, submit a safety check sheet with the required items filled out.** This is provided as the photocopyable “Safety Check Sheet” at the end of these operating instructions.

LABELS ON UNIT




<Labels applied to the unit>

To avoid accidents, users are advised to read carefully the hazard labels found at key locations on the interior and exterior of the unit.

Possible Danger	Caution Type Location of Danger	Caution Label	Description of Danger
Burns	Hot surface Cooling unit and heat cover		Avoid touching the cooling system and heat cover, which can reach high temperatures and may cause burns.

SYMBOLS ON UNIT

The following symbols are attached to the unit. The table describes the meaning of the symbols.

	This symbol is attached to covers that access high-voltage electrical components to prevent electric shock. Only a qualified engineer or service personnel should be allowed to open these covers.
	This symbol indicates that caution is required. Refer to product documentation for details.
	This symbol indicates an earth.
	This symbol means "ON" for a power switch.
○	This symbol means "OFF" for a power switch.

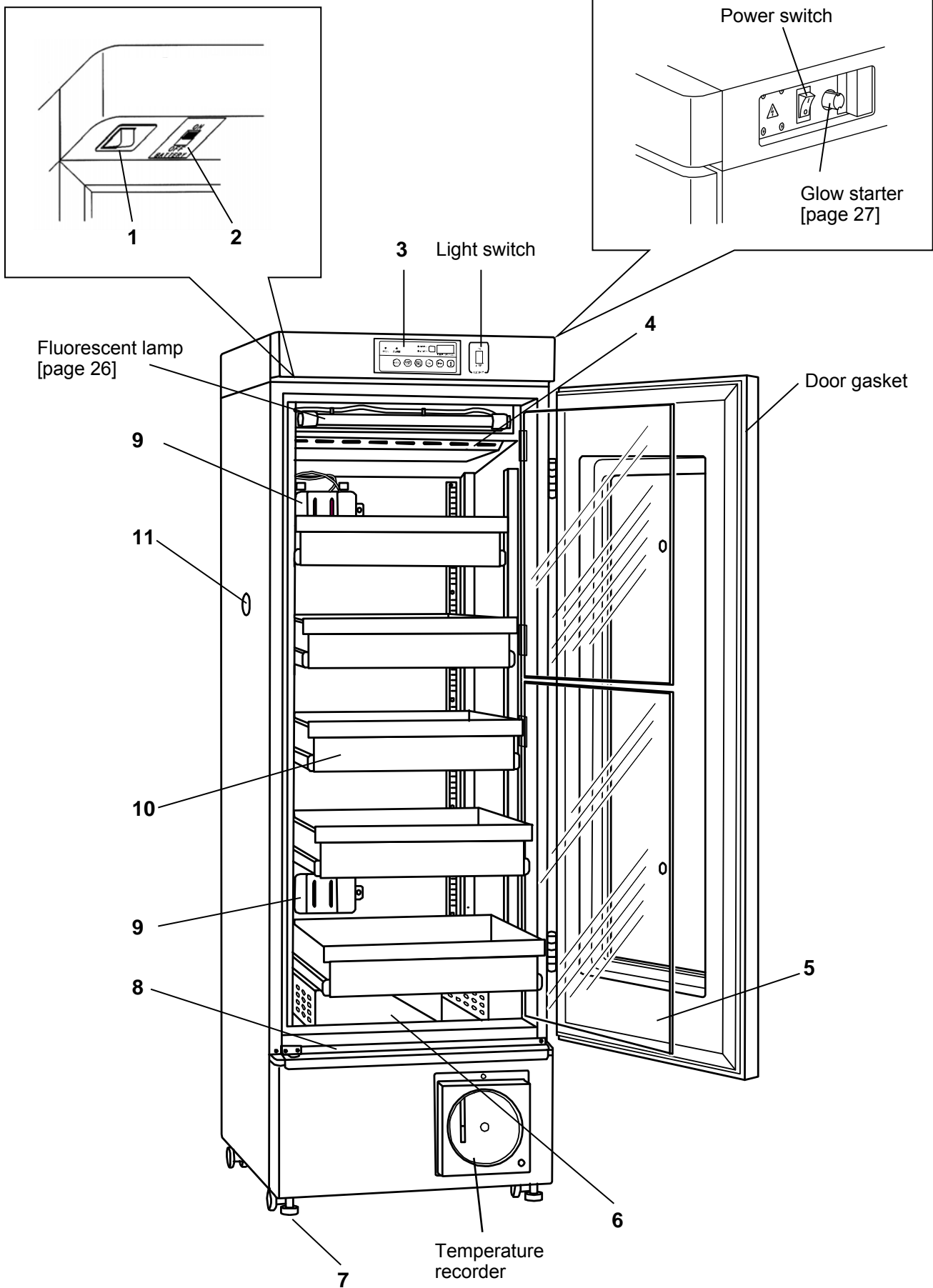
ENVIRONMENTAL CONDITIONS

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

- Indoor use;
- Altitude up to 2000 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);

REFRIGERATOR COMPONENTS

Refrigerator unit



REFRIGERATOR COMPONENTS

1. Door alarm switch: This switch detects the door status (open/closed). The door alarm indicator is ON when the outer door is open and the alarm buzzer sounds after a 2-minute delay. [page 23]

2. Battery switch: This is an ON-OFF switch for the battery for the power-failure alarm. Always turn this switch on when the unit is operating to ensure that the power-failure alarm is working. Turn this switch off when the unit is not used for a long period in order to protect the battery.

3. Control panel: Using the keys on the control panel, temperature display can be changed and the alarm test is available. In addition, the LED panel (temperature display) displays the running temperature and indicator lamps alert users in the event of an alarm condition. [page 12]

4. Air intake vent (upper front): Do not block this vent. Blocking this vent may cause unstable chamber temperature. Do not insert fingers or other objects into the vent.

5. Inner door: This prevents cold air from escaping when the outer door is opened. Always close the inner door securely before closing the outer door.

6. Air exhaust vent (bottom front): Do not block this vent. Blocking this vent may cause unstable chamber temperature. Arrange the stored items so that they are not directly subjected to the cold air from this vent.

7. Levelling foot (front, 2 locations): These are screw bolts used to install and fix the unit. Adjust the height of the levelling feet by turning the screw bolts until the two front casters are away from the floor. [page 14]

8. Dew collector: The condensation on the outer door is accumulated in this dew collector. Wipe off the water from the dew collector with a cloth.

✧ Condensation may be found on the outer door frame with ambient humidity of about 50 %R.H. and on the glass surface of the outer door with ambient humidity of about 60 %R.H. This is not a malfunction.

9. Monitor bottle (upper and lower): A sensor to measure the chamber temperature is attached to the monitor bottle. Fill the bottle with 200 mL of 10 % glycerol fluid or water before commencing operation. [page 15]

10. Drawer: The maximum load is 20 kg per drawer. (W 435 mm x D 358 mm x H 100 mm)

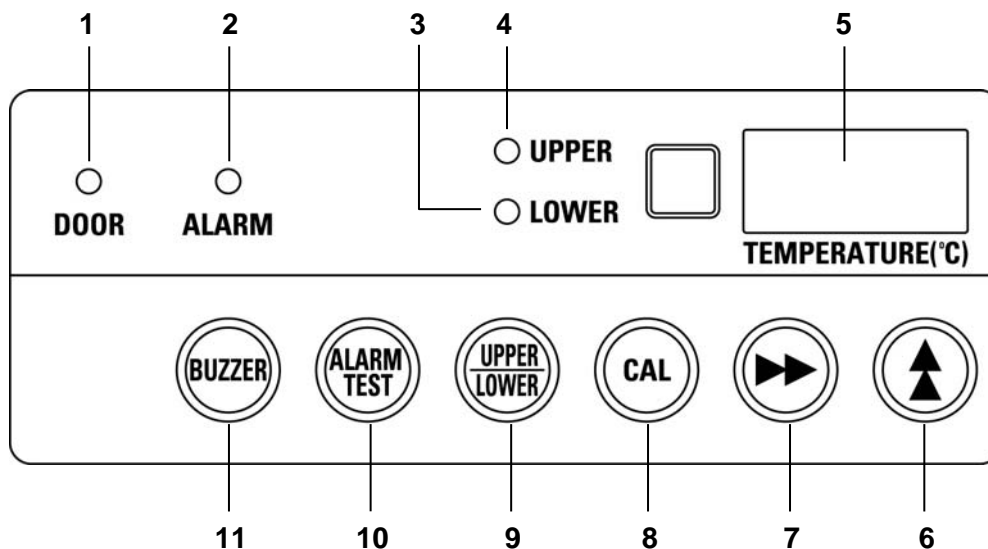
✧ Items to be stored in the chamber must be placed in the drawers. Do not store items directly on the bottom of the chamber.

11. Access port (left side): This port allows a sensor or measuring cable to enter the chamber from outside.

✧ Replace the insulation and the rubber caps when the access port is not in use. Improper replacement may cause an increase in chamber temperature or condensation around the access port.

REFRIGERATOR COMPONENTS

Control panel



- 1. Door check indicator (DOOR):** The red LED lamp lights up when the outer door is opened.
✦ 2 minutes after the door check indicator is turned ON, the buzzer is activated to notify the user that the door is open. [page 23]
- 2. Alarm indicator (ALARM):** The red LED lamp blinks in the event of an alarm. [page 23]
- 3. Temperature display indicator (LOWER):** This lamp lights up when the lower monitor bottle temperature is displayed or when the average of the lower and upper monitor bottle temperatures is displayed on the temperature display.
- 4. Temperature display indicator (UPPER):** This lamp lights up when the upper monitor bottle temperature is displayed or when the average of the lower and upper monitor bottle temperatures is displayed on the temperature display.
- 5. Temperature display:** Normally this shows the present chamber temperature; during an alarm, the display blinks [page 23]. An error code and a chamber temperature are displayed alternately when the self-diagnostic function detects any abnormality. [page 24]
- 6. Up arrow key (▲):** This key is used during calibration of the sensor for temperature display. This key is for service use only and should be used only by service personnel.
- 7. Scroll key (▶▶):** This key is for service use only and should be used only by service personnel.
- 8. Calibration key (CAL):** This key is used for the calibration of the sensor for temperature display. This key is for service use only and should be used only by service personnel.
- 9. Temperature display changeover key (UPPER/LOWER):** By pressing this key, the displayed temperature is changed in the following sequence:- upper temperature, lower temperature, average of upper and lower temperature. [page 18]
- 10. Alarm test key (ALARM TEST):** This key is used to check the operation of the alarm buzzer, alarm indicator, and remote alarm terminal. [page 25]
- 11. Alarm buzzer stop key (BUZZER):** Pressing this key stops the alarm buzzer when the alarm indicator blinks and the alarm buzzer sounds.
✦ In the event of a power failure, the alarm buzzer cannot be stopped by the alarm buzzer stop key.

INSTALLATION SITE

This unit must be installed in a location which meets all the conditions described below.

✧ If the unit is installed in a location which does not meet the conditions, its specified performance may not be achieved or malfunctions and accidents may occur.

■ A location not exposed to direct sunlight

Avoid any location which is exposed to direct sunlight. Installing the unit in a location exposed to direct sunlight may reduce its cooling performance.

■ A well-ventilated (airy) location

In order to ensure ventilation, leave clearances of at least 10 cm around the unit (at the left, right, back, and top). Blocking the ventilation may reduce the unit's cooling performance or cause malfunctions.

■ A location away from sources of heat

Avoid any location which is close to a major source of heat (such as a heater or boiler). Installing the unit near a major source of heat may reduce the unit's cooling performance.

■ A location with minimal changes in temperature

Avoid any location where the ambient temperature is subject to sudden changes. If the unit is installed in a location where the ambient temperature is subject to sudden changes, it will not be possible to achieve a stable cooling performance.

■ A flat surface where the floor is also capable of bearing the total combined weight (product + optional accessories + stored items)

Install the unit on a flat surface which is even and which is capable of bearing the total combined weight (product + optional accessories + stored items). If the unit is installed where the surface is uneven or where the unit will be inclined at an angle, the unit will be unstable, and accidents or injuries may occur and/or vibration or unnecessary noise may be generated.

■ A location with minimal humidity

Install the unit in a location where the relative humidity is less than 80 %R.H. Installing the unit in a very humid location may cause earth faults and/or electric shock.

■ A location free of flammable or corrosive gases

Avoid any location exposed to flammable or corrosive gases. Flammable or corrosive gases can cause explosions and/or a fire. Furthermore, corrosion of electrical parts may cause insulation to be reduced and result in earth faults and/or electric shock.

■ A location where nothing can fall onto the unit

Avoid locations where objects may fall onto the unit. Objects falling and hitting the unit may cause it to break down or fail.

INSTALLATION

1. Preparations after unpacking

Remove all the tape used to secure the doors and interior parts, and leave the doors open for a short while for ventilation.

If any surfaces of the outer cabinet are dirty, wipe the surface using a cloth moistened with a diluted neutral dish-washing 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 wiping the unit using the diluted detergent, be absolutely sure to wipe the surfaces with a cloth dipped in clean water to remove traces of the detergent. After this, be absolutely sure to wipe the surfaces with a dry cloth, allowing the surfaces of the outer cabinet to dry out completely, and then proceed with the installation.

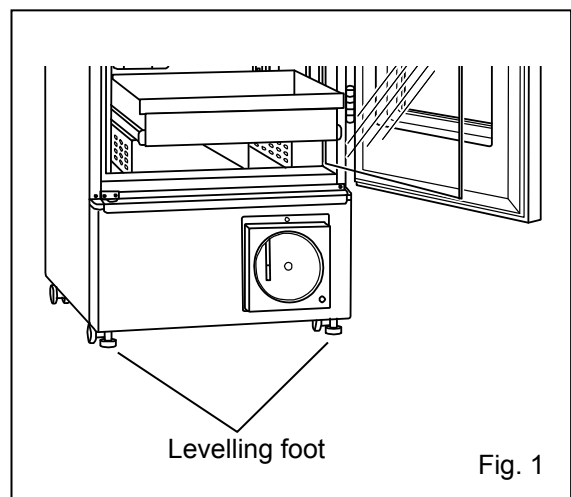
Note:

Remove the cable tie that binds the power supply cord. Prolonged contact with the tie may cause corrosion of the cord coating.

2. Securing and levelling the unit using the levelling feet

Rotate the front levelling feet clockwise until the casters are raised 5 mm to 10 mm above the floor surface. [Fig. 1] In addition, rotate the levelling feet slightly clockwise or anticlockwise, and adjust them so that the unit is completely level.

✧ When the casters are raised from the floor surface, the unit will be secured. If they are left touching the floor, the unit may accidentally move when its door is opened or closed.



3. Securing the unit by using the spacers

Use the spacers on the rear panel of the unit (which are also used to prevent the product from tilting or toppling over), and secure the unit to a wall with a strong rope or chain. [Fig. 2]

Note:

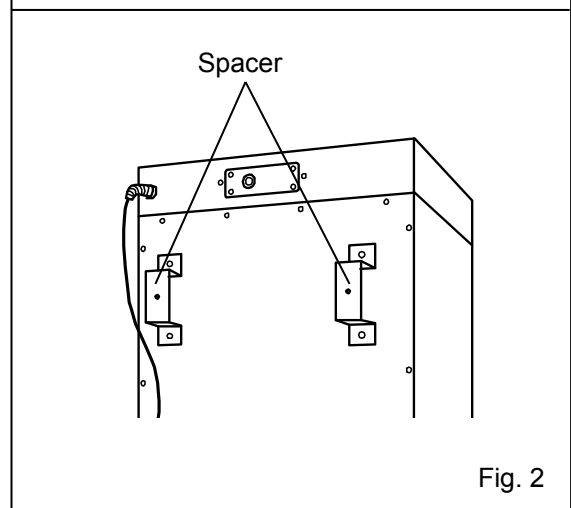
Contact our sales representative or agent if the unit needs to be secured for earthquake resistance.

4. Preventing electric shock by earthing the unit

When installing the unit, be absolutely sure to earth (ground) it. Earthing is necessary to prevent electric shocks resulting from deterioration of electrical insulations.

✧ This unit comes with a 3-pin plug having one earth pin. Earthing is not required in the case of a 3-pin power outlet equipped with an earth contact.

✧ If the power outlet is not a 3-pin outlet equipped with an earth contact, ask a qualified contractor to do the earthing work.



PREPARATION OF MONITOR BOTTLE

Before commencing operation, fill the monitor bottles (upper and lower) 200 mL of 10 % glycerol fluid or water by following the procedure below.

1. Remove the top and bottom drawers.

2. Remove the cover on the monitor bottle.

✧ The cover is fixed by clicking the top and bottom into place. It can be removed by pulling the upper side forward as shown in Fig. 1.

3. Take the sensor for temperature display out of the monitor bottle.

✧ The sensor for temperature display is not fixed, and so can be removed together with the cover.

✧ Take out the recorder sensor from the upper monitor bottle as well.

4. Remove the fixing screws (2 screws) and take out the monitor bottle.

5. Remove the (screw-type) cap from the monitor bottle as shown in Fig. 2.

6. Pour 200 mL of 10 % glycerol fluid or water (using the marking on the bottle) into the monitor bottle.

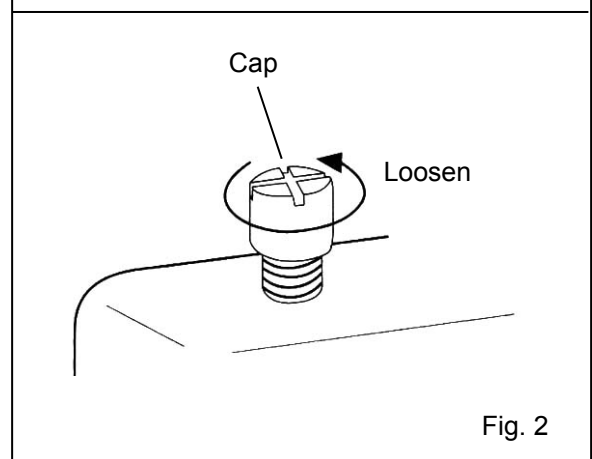
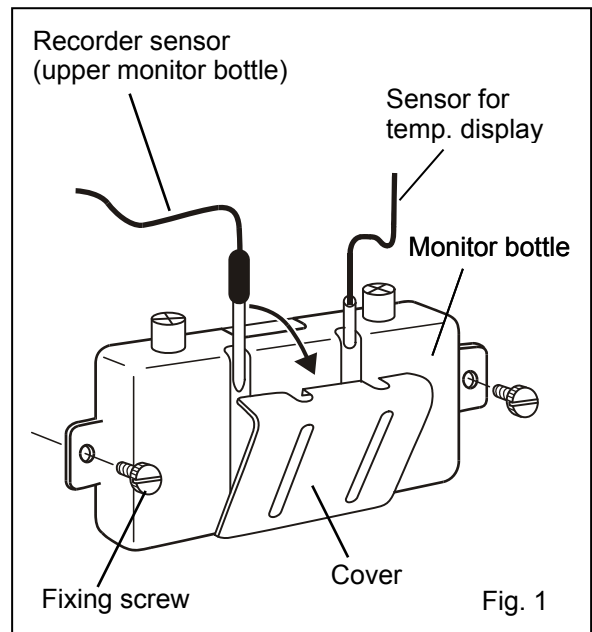
✧ The displayed chamber temperature cannot be accurate if the fluid volume in the monitor bottle is low. Check the fluid volume regularly.

7. Put the cap back on the monitor bottle and fix the monitor bottle to its original location using the fixing screws.

8. Attach the sensor for temperature display to the monitor bottle and replace the cover.

✧ Attach the recorder sensor to the upper monitor bottle as well.

9. Replace the top and bottom drawers.



START-UP OF UNIT

Follow this procedure for the initial operation of the unit and for consequent operations (after temporary stoppages for cleaning, maintenance, or moving).

◇ After a power failure, the unit will restart operation automatically with the temperature setting of 4 °C.

1. With the unit empty, connect the power supply plug to a dedicated outlet with appropriate rating, and turn on the power switch.

▶ The alarm buzzer will operate. Stop the alarm buzzer by pressing the alarm buzzer stop key (BUZZER). The alarm buzzer recovers after 30 minutes. (This is caused by the high-temperature alarm function and is not a malfunction.)

2. Fill the monitor bottles with 200 mL of 10 % glycerol fluid or water. [page 15]

<Important>

Close the doors (both outer and inner doors) securely. The door check indicator will be lit when the outer door is open. The alarm buzzer will be activated when the outer door is open for more than 2 minutes. The alarm buzzer will turn off when the outer door is closed.

3. The chamber temperature is set to 4 °C at the factory. Check that the chamber temperature reaches 4 °C on the temperature display.

◇ Check that the chamber temperature falls to 4 °C on the temperature display when restarting the unit after cleaning, maintenance, or moving.

4. Turn on the light switch to check that the fluorescent lamp is on. After checking, turn off the light switch if the light is not required.

5. Turn on the battery switch.

<Important>

Always turn the battery switch on when the unit is operating to ensure that the power-failure alarm is working.

6. Turn on the power switch of the temperature recorder. [page 20]

7. When putting items into the chamber, it is recommended to do so gradually in order to minimize the sudden increase in temperature.

<Important>

Never store items on the bottom of the chamber. Always store items in the drawers.

Never store items other than blood in the chamber together with blood products.

Never stack blood bags in the drawers.

<Attention>

Under high ambient temperature and humidity, condensation will accumulate on the outer door glass during operation of the unit. Wipe off the condensation with a dry soft cloth. Also, wipe off the water from the dew collector regularly.

PLACEMENT OF STORED ITEMS

Do not place stored items so as to disrupt the air circulation in the chamber. Disruption of air circulation can cause the freezing of stored items or can impair the temperature distribution in the chamber.

Air intake vent

Do not block the air intake vent with the stored items. Care should be taken not to put any paper or plastic chips near the air intake vent. These may be sucked in and block the air intake vent.

Air exhaust vent

Do not block the air exhaust by the stored items near the air exhaust vent. Care should be taken not to place stored items near to the air exhaust vent. The stored items may become frozen.

<Important>

Never block the air intake or exhaust vent. Moreover, never disrupt the air circulation. Always place stored items so that they have adequate space around them.

Load line

The storage area is limited to ensure adequate air flow in the chamber. The label "load line" is attached to the right and left sides of the chamber. Always place stored items within the area limited by these labels.

<Important>

Blood bags should always be stored in the drawers. Never store the blood bags directly on the bottom of the chamber.

In addition, never stack the blood bags in the drawers.

DISPLAY OF CHAMBER TEMPERATURE

The chamber temperature is set to 4 °C at the factory. The temperature on the temperature display shows the temperature of the sensor for temperature display attached to the monitor bottle (upper and lower).




By pressing the temperature display changeover key, the displayed temperature is changed in the following sequence: upper temperature, lower temperature, average of upper and lower temperature. Table 1 shows the procedure for changeover.

<Important>

The upper temperature represents the temperature of the upper monitor bottle and the lower temperature represents the temperature of the lower monitor bottle. Accordingly, the displayed temperature is not always 4 °C. This is not a malfunction.

Table 1. Changeover of temperature display

● : Lamp ON ○ : Lamp OFF

	Operation	Key operated	Indication after operation	Display mode
1	Plug-in the power supply plug and turn on the power switch.	-----	Average temperature is displayed. ● UPPER ● LOWER	Average temperature
2	Press the temperature display changeover key.		Upper temperature is displayed. ● UPPER ○ LOWER	Upper temperature
3	Press the temperature display changeover key.		Lower temperature is displayed. ○ UPPER ● LOWER	Lower temperature
4	Press the temperature display changeover key.		Average temperature is displayed. ● UPPER ● LOWER	Average temperature
5	Repeat from step 2.			

DEFROSTING OF EVAPORATOR

The following two defrosting methods are adopted in this unit. Both of them are controlled automatically.

■ Cycle defrost

To keep the chamber temperature stable, the compressor is turned on and off in cycles. During the “off” period any frost which has accumulated on the evaporator is melted by a defrosting heater. This will not have any significant effect on the chamber temperature.

■ Forced defrost

When the ambient humidity is high, or when a large number of damp items are being stored in the chamber, there is a possibility that the cycle defrost may not be sufficient to remove all of the frost on the evaporator. In this case, a forced defrost can be initiated.

When the unit is operating under the forced defrost, the current chamber temperature and “dF” are displayed alternately on the temperature display.

Once the forced defrost is completed, the normal operation will resume. The temperature of blood bags (400 mL) in the chamber will rise by approximately 1 °C during the forced defrost.

REMOTE ALARM TERMINAL

The alarm is relayed to a remote location when a remote alarm device (commercially available) is connected to the remote alarm terminal. Installation of a remote alarm device is recommended when the unit is installed in an unattended location so that the operator of the unit is notified of the alarm.

✧ Contact our representative or agent to arrange the installation of a remote alarm device.

- Location of remote alarm terminal: inside the terminal cover (upper rear)
- Allowable contact capacity: DC 30 V, 2 A

Contact output:

	between COM and N.O.	between COM and N.C.
At normal status	open	closed
At abnormal status	closed	open

✧ The alarm mode of the remote alarm terminal is cancelled by pressing the alarm buzzer stop key (BUZZER) since the remote alarm terminal is operated in conjunction with the alarm buzzer. However, the alarm mode of the remote alarm terminal is not cancelled by pressing the alarm buzzer stop key (BUZZER) when the unit is under power-failure alarm.

✧ The remote alarm terminal will be in alarm mode when the power supply cord is unplugged because this will be interpreted as a power failure. In this case, the alarm mode of the remote alarm terminal will not be cancelled by pressing the alarm buzzer stop key (BUZZER).

Connecting a remote alarm device

1. Remove the terminal cover at the top of the back side by unscrewing 4 screws. [Fig.1]
2. Connect the lead wire of the remote alarm device to the remote alarm terminal. [Fig.2]
3. Pass the lead wire of the remote alarm device through the port on the terminal cover.
4. Replace the terminal cover and fix it by 4 screws.

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

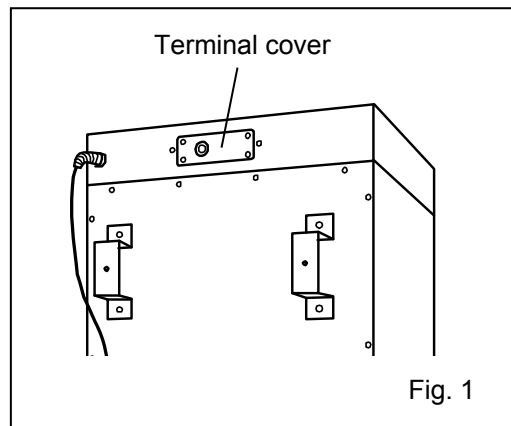


Fig. 1

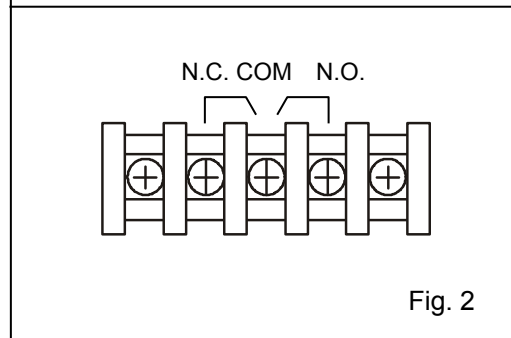
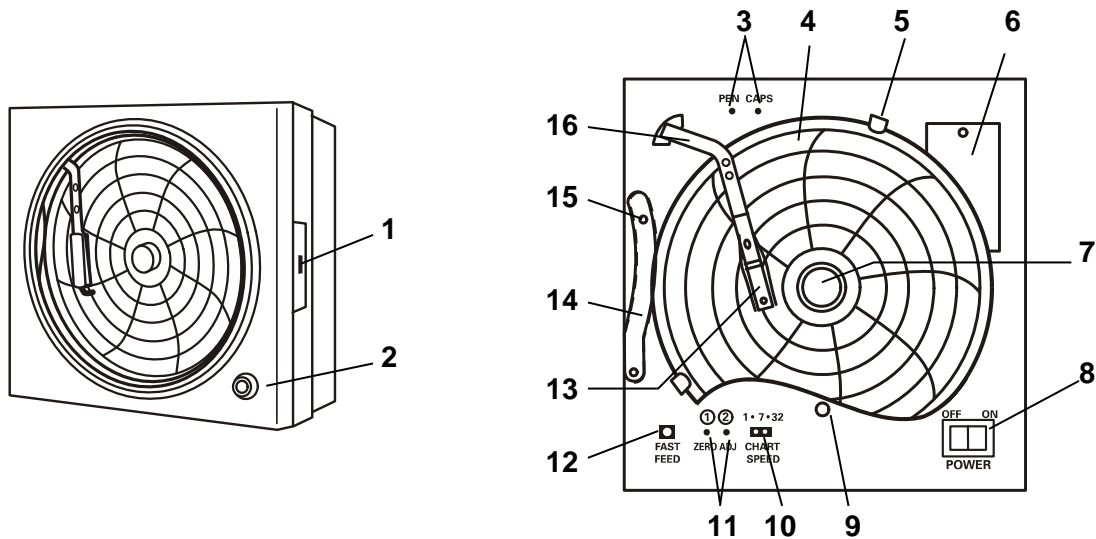


Fig. 2

TEMPERATURE RECORDER

Recorder unit



- 1. Cover button:** To open the cover, pull the cover forward while pressing the cover button.
- 2. Key lock:** To lock the cover, insert the enclosed key and turn to the right while pushing.
- 3. Pen cap holder:** The pen cap that is removed when loading the pen cartridge can be placed on this holder.
- 4. Recording chart:** Circular chart with an outer diameter of 155 mm. Always use the chart provided.
- 5. Chart guide:** These guides are used to hold down the recording chart. Another guide is located at the bottom-left side.
- 6. Back-up battery:** A Ni-MH battery is used as a back-up power source. In the event of power failure, the temperature recorder is operated using this battery. The back-up operation lasts about 24 hours.
- 7. Chart hub cover:** This cover is used to hold the recording chart. The recording chart does not feed properly unless this hub cover is present.
- 8. Power switch:** This switch is used to turn the power ON and OFF.
- 9. Pilot lamp:** A green light is seen through the recording chart when the power is ON. This lamp will not turn ON when the temperature recorder is being powered by the back-up battery.
- 10. Chart speed selector:** This selector is used to set the time for one full chart revolution (1, 7, or 32 days).
- 11. Zero adjustment screw:** This screw is used to align the pen tip recording value with the previously set value.
- 12. Fast feed button:** This button is used to set the loaded chart to the correct time. The speed is 10 minutes per revolution.
 - ✧ Due to the structural design, there may be a delay of 2 to 3 seconds before movement starts, even when pushing this button.
- 13. Pen cartridge:** The cartridge is red. The pen life is approximately 6 months.
- 14. Pen lifter:** Turn clockwise to raise the pen. This function helps to prevent the recording chart from becoming marked when it is removed or when loading a pen cartridge.
- 15. Pen lifter stopper:** The pen lifter is placed at this stopper position during recording operation.
- 16. Pen arm:** The accessory pen cartridge is attached to this arm.

TEMPERATURE RECORDER

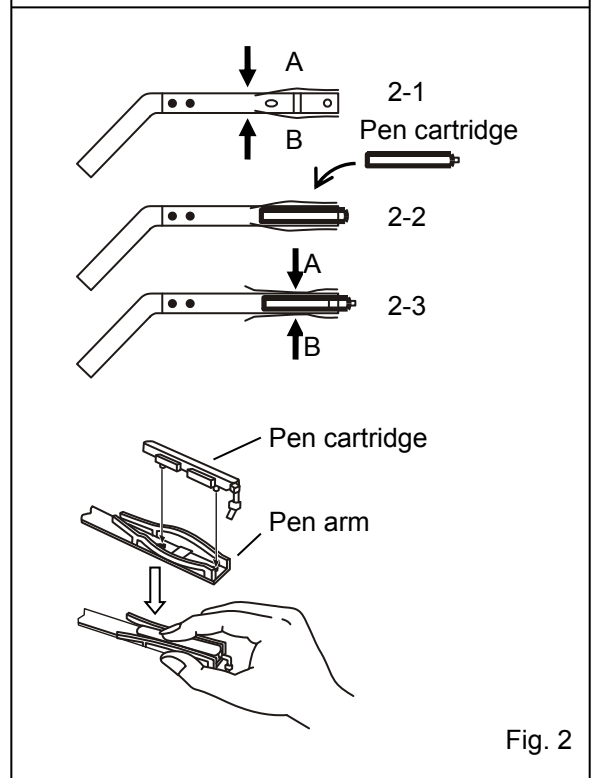
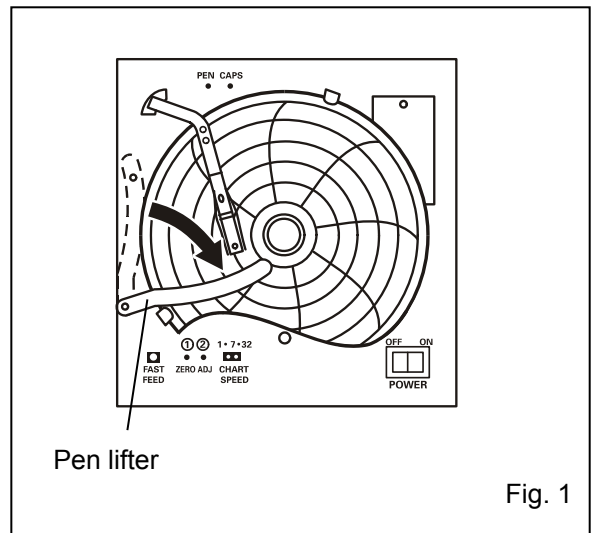
Loading the pen cartridge

1. Turn off the power switch.
2. Slightly raise the end of the pen lifter and remove from the pen lifter stopper. Then rotate clockwise (until the pen tip is on the pen lifter) as shown in Fig. 1.
 - ◇ This helps to prevent the recording chart from becoming marked when it is removed or when loading a pen cartridge.
3. Remove the pen cartridge from the bag and remove its cap.
 - ◇ The cap can be conveniently kept on the cap holder located at the upper left corner.
4. As shown in 2-1 in Fig. 2, press the both sides of the pen arm as indicated by the arrows to open the head clamp at A and B.
5. As shown in 2-2 in Fig. 2, position the pen cartridge so that the guide pins fit into the guide holes on the pen arm.
6. As shown in 2-3 in Fig. 2, press the two sides of the head clamp by the arrows (at A and B) to secure the pen cartridge.

From the side view, the cartridge should sit perfectly on the pen arm. Make sure the pen arm is attached to both sides of the pen cartridge.
7. Return the pen lifter to the original position and secure with the pen lifter stopper.
8. Turn on the power switch.

<Important>

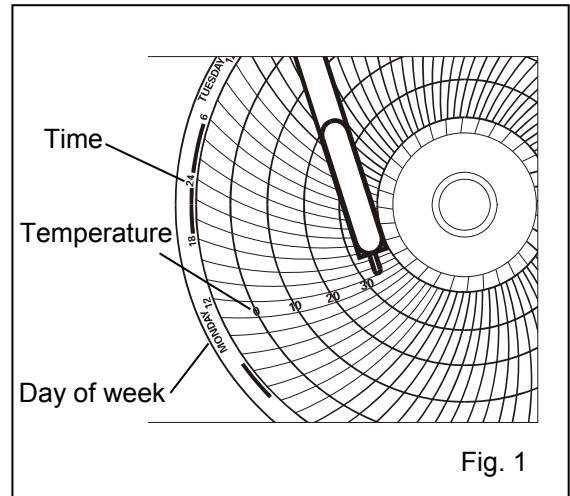
Remove the pen cartridge from the pen arm and cover with the cap to avoid evaporation of ink when the recording is stopped for a while.



TEMPERATURE RECORDER

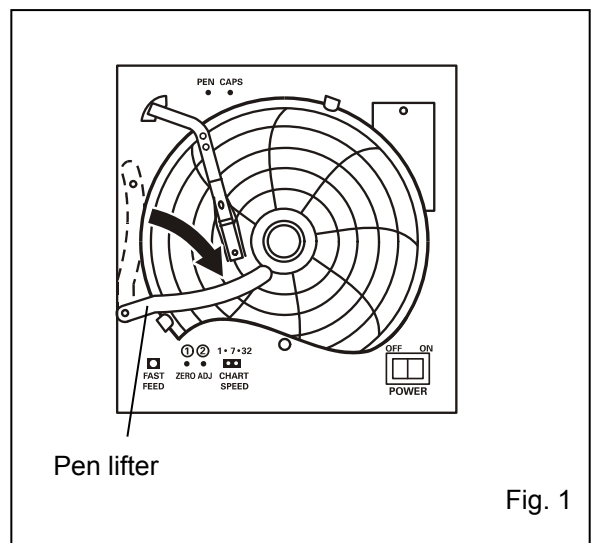
Setting the start time

1. Turn off the power switch.
2. Place the recording chart at a position slightly in front of the desired time (the recording chart is rotated to the left). [Fig. 1]
3. Turn on the power switch.
4. Set the time by using the fast feed button to rotate the recording chart quickly.
 - ◇ The fast feed button can be used to set the time accurately.



Replacing the recording chart

1. Turn off the power switch.
2. Slightly raise the end of the pen lifter and remove from the pen lifter stopper. Then rotate clockwise (until the pen top is on the pen lifter) as shown in Fig. 1.
 - ◇ This helps to prevent the recording chart from becoming marked when it is removed or when loading a pen cartridge.
3. Remove the chart hub cover, and then replace the recording chart.
4. Replace the chart hub cover.
5. Check that the new recording chart is inside the chart guides.
6. Set the start time of the recording.



ALARM FUNCTIONS

This unit has the alarm functions listed below.

Contact our sales representative or agent if you cannot stop the alarm. This may be due to a failure.

Alarms	Situation	Indication	Alarm buzzer	Remote alarm
High-temp. alarm	If the temperature of the upper or lower sensor for temp. display is higher than 6 °C.	Alarm indicator blinks. Displayed temp. blinks.	Intermittent tone	Alarm mode
Low-temp. alarm	If the temperature of the upper or lower sensor for temp. display is lower than 2 °C.	Alarm indicator blinks. Displayed temp. blinks.	Intermittent tone	Alarm mode
Power-failure alarm	If there is a power failure. If the power supply plug is unplugged. When the power switch is off.	Alarm indicator blinks. Temperature display is off.	Intermittent tone	Alarm mode
Door alarm	When the outer door is open.	Door check indicator lights up.	Intermittent tone with 2 minutes delay.	----

✧ The alarm mode of remote alarm terminal is cancelled by pressing the alarm buzzer stop key (BUZZER) since the remote alarm terminal is operated in conjunction with alarm buzzer. However, the alarm mode of remote alarm terminal will not be cancelled by pressing the alarm buzzer stop key (BUZZER) when the unit is under power-failure alarm.

✧ This unit is provided with an alarm buzzer recovery function. The alarm buzzer will restart after 30 minutes if the alarm mode continues even if the alarm buzzer was stopped by pressing the alarm buzzer stop key (BUZZER).

✧ The power-failure alarm continues for approximately 24 hours (when the battery is fully charged). It is necessary to operate the unit for 2 days to recharge a fully discharged battery to full level. A remote alarm remains in alarm mode even if the battery is discharged.

✧ The unit will resume its operation with the temperature setting of 4 °C after recovery from a power failure.

SELF-DIAGNOSTIC FUNCTIONS

This unit has the self-diagnostic functions listed below.

Contact our sales representative or agent if an error code (e.g. E03) is displayed resulting from the self-diagnosis.

Self-diagnostic	Situation	Indication	Alarm buzzer	Remote alarm
Sensor abnormality	If the defrost sensor is disconnected.	Alarm indicator blinks. E03 and chamber temp. are displayed alternately.	Intermittent tone	Alarm mode
	If the defrost sensor is short-circuited.	Alarm indicator blinks. E04 and chamber temp. are displayed alternately.		
	If the compressor sensor is disconnected.	Alarm indicator blinks. E05 and chamber temp. are displayed alternately.		
	If the compressor sensor is short-circuited.	Alarm indicator blinks. E06 and chamber temp. are displayed alternately.		
	If the low-temp. alarm sensor is disconnected.	Alarm indicator blinks. E13 and chamber temp. are displayed alternately.		
	If the low-temp. alarm sensor is short-circuited.	Alarm indicator blinks. E14 and chamber temp. are displayed alternately.		
	If the upper sensor for temp. display is disconnected.	Alarm indicator blinks. E15 and chamber temp. are displayed alternately.		
	If the upper sensor for temp. display is short-circuited.	Alarm indicator blinks. E16 and chamber temp. are displayed alternately.		
	If the lower sensor for temp. display is disconnected.	Alarm indicator blinks. E17 and chamber temp. are displayed alternately.		
	If the lower sensor for temp. display is short-circuited.	Alarm indicator blinks. E18 and chamber temp. are displayed alternately.		
Battery check	When about 3 years have passed with the power switch on. (time to replace the battery)	F-1 and chamber temp. are displayed alternately.	-----	-----
Fan motor check	When about 6 years have passed with the power switch on. (time to replace the fan motor)	F-2 and chamber temp. are displayed alternately.	-----	-----

✧ The alarm mode of remote alarm terminal is cancelled by pressing the alarm buzzer stop key (BUZZER) since the remote alarm terminal is operated in conjunction with alarm buzzer. However, the alarm mode of remote alarm terminal will not be cancelled by pressing the alarm buzzer stop key (BUZZER) when the unit is under power-failure alarm.

✧ This unit is provided with an alarm buzzer recovery function. The alarm buzzer will restart after 30 minutes if the alarm mode continues even if the alarm buzzer was stopped by pressing the alarm buzzer stop key (BUZZER).

✧ The battery has a limited working life. Replace the battery every 3 years. Contact our sales representative or agent for battery replacement.

✧ The fan motor has a limited working life. Replace the fan motor every 6 years. Contact our sales representative or agent for fan motor replacement.

ROUTINE MAINTENANCE

Cleaning of exterior, interior, and accessories

Use a dry cloth to wipe down the outside and inside of the unit and all accessories. If the outside panels are dirty, wipe the panels using a cloth moistened with a diluted neutral dish-washing detergent.

Wipe off condensation from the glass or exterior of the cabinet with a dry, soft cloth.

◇ 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 wiping the cabinet or accessories with a diluted detergent, be absolutely sure to wipe the surfaces with a cloth dipped in clean water to remove traces of the detergent. After this, be absolutely sure to wipe the surfaces with a dry cloth.

<Important>

■ Do not use a brush, an acid, a thinner, laundry soap, a 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.

■ In order to maintain the unit's intended level of performance, always replace accessories that have been removed for cleaning.

Checking of alarm operation

Check the alarm operation regularly (every 6 months) to ensure that the alarm is activated in case of power failure. The alarm operation can be checked by following the procedure below.

1. Press the alarm test key (ALARM TEST).

2. The alarm indicator blinks, the alarm buzzer sounds intermittently, and the remote alarm is in alarm mode. This continues for 90 seconds and then finishes automatically.

◇ During the 90 seconds, the alarm buzzer cannot be stopped by pressing the alarm buzzer stop key (BUZZER).

3. The alarm operation can be cancelled by pressing the alarm test key (ALARM TEST) again during the 90 seconds.

ROUTINE MAINTENANCE

Replacement of fluorescent lamp

Follow the procedure below when replacing a fluorescent lamp. The fluorescent lamp is located horizontally in the upper front of the chamber. [Fig. 1]

✧ Whenever replacing the fluorescent lamp, replace the glow starter at the same time. [page 27]

1. Turn off the power switch and then disconnect the power supply plug.

✧ Before turning off the power switch, turn off the light switch if the light switch is on.

2. Move the items stored in the top drawer.

3. Pull the fluorescent lamp downwards with the lamp cover to remove the fluorescent lamp from the clips (2 locations) together with the lamp cover and the wiring.

4. After removing the water-proof cover, remove the socket with the wiring on the both sides of the lamp cover.

5. Remove the fluorescent lamp from the lamp cover and insert a new fluorescent lamp in the lamp cover.

6. Replace the socket with the wiring and the water-proof cover on the both sides of the lamp cover.

7. Fix the lamp cover with the clips (2 locations).

8. Return the stored items to the top drawer.

9. Connect the power supply plug to the outlet and turn on the power switch.

10. Turn the light switch on to check that the fluorescent lamp is on.

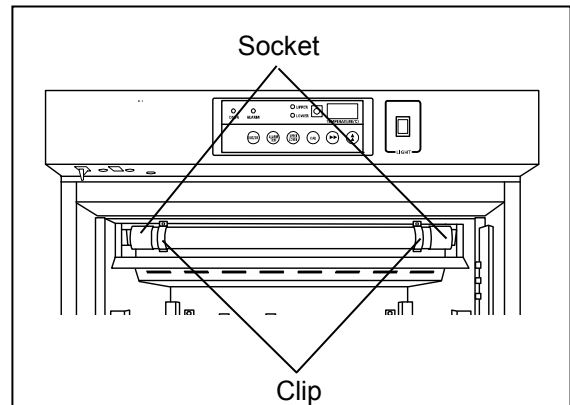


Fig. 1

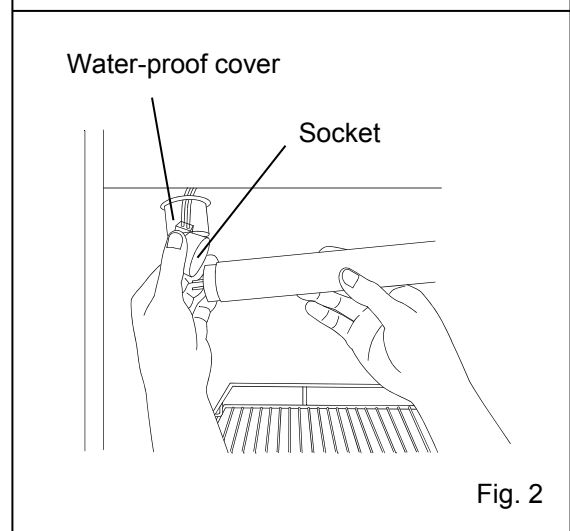


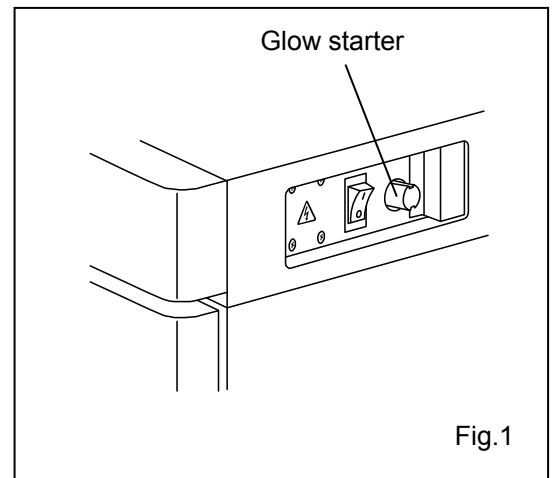
Fig. 2

ROUTINE MAINTENANCE

Replacement of glow starter

The glow starter is located on the upper right of the unit.
[Fig. 1]

1. Turn off the power switch and then disconnect the power supply plug.
 - ◇ Before turning off the power switch, turn off the light switch if the light switch is on.
2. Remove the glow starter and install a new glow starter.
(product number: FG-1P)
3. Connect the power supply plug to the outlet and turn on the power switch.
4. Turn on the light switch to check that the fluorescent lamp is on.



CALIBRATION

During continuous operation, the following service tasks must be performed:

- Perform a temperature calibration at least once a year.

For temperature calibration, contact our sales representative or agent.

REPLACEMENT OF BATTERY

Replace the battery for the power-failure alarm every 3 years (when the message "F-1" and chamber temperature are displayed alternately) to ensure the alarm will operate in the event of a power failure. Contact our sales representative or agent to arrange replacement of the battery when the message "F-1" and chamber temperature are displayed alternately.

- ◇ The alarm function (blinking of alarm indicator, sounding of alarm buzzer) will not operate when the battery for the power-failure alarm is flat.
- ◇ The alarm indicator blinks and the alarm buzzer sounds as a result of power from the battery for the power-failure alarm. The regular replacement of the battery for the power-failure alarm is important to prevent an increase in chamber temperature in the event of unexpected circumstances.

<Important>

The used battery is a recyclable precious resource. Do not dispose of the battery. Always follow the procedure for recycling.

TROUBLESHOOTING

If the unit malfunctions, check out the following before calling for service.

<Attention>

If the malfunction is not resolved after checking the following items or if the malfunction is not shown in the table below, contact our sales representative or agent.

Malfunction	Check/Remedy
Nothing operates even when the power supply plug is plugged in	<ul style="list-style-type: none"> <input type="checkbox"/> The unit is not connected to the power supply properly. <input type="checkbox"/> The capacity and voltage of the power supply is not sufficient. <input type="checkbox"/> There is a power failure. <input type="checkbox"/> The circuit breaker on the supply circuit is activated. → A breaker of 15 A or more is recommended. <input type="checkbox"/> The fuse on the supply circuit is blown.
The alarm is activated at start-up	<ul style="list-style-type: none"> ◇ The alarm mode continues until the chamber temperature reaches the set temperature. ➤ The alarm buzzer recovers after 30 minutes even if the alarm buzzer is stopped by pressing the alarm buzzer stop key (BUZZER).
The alarm is activated during operation	<ul style="list-style-type: none"> <input type="checkbox"/> The unit is not connected to the power supply properly. <input type="checkbox"/> The capacity and voltage of the power supply is not sufficient. <input type="checkbox"/> There is a power failure. <input type="checkbox"/> The circuit breaker on the supply circuit is activated. → A breaker of 15 A or more is recommended. <input type="checkbox"/> The fuse on the supply circuit is blown. <input type="checkbox"/> The outer door has been kept open for a long time. <input type="checkbox"/> The outer door is open. <input type="checkbox"/> An error code is displayed on the temperature display. [page 24] → Contact our sales representative or agent.
There is excessive noise during operation	<ul style="list-style-type: none"> <input type="checkbox"/> The floor is not sturdy. <input type="checkbox"/> The installation site is not level. <input type="checkbox"/> The blood bank refrigerator is tilted. <input type="checkbox"/> The cabinet is touching the surrounding wall.
The chamber does not get cold enough	<ul style="list-style-type: none"> <input type="checkbox"/> The outer door is frequently opened. <input type="checkbox"/> The inner door is open. <input type="checkbox"/> The unit is in direct sunlight. <input type="checkbox"/> The ventilation around the unit is blocked. <input type="checkbox"/> There is a nearby heat source. <input type="checkbox"/> The ambient temperature is too high. → The allowable ambient temperature is between 5 °C and 35 °C. <input type="checkbox"/> There are too many items stored inside the chamber. <input type="checkbox"/> The air exhaust vent is blocked by stored items. <input type="checkbox"/> The access port is not covered. → The access port should be covered with insulation and rubber caps when not in use. <input type="checkbox"/> The door gasket is damaged. → If it is damaged, contact our sales representative or agent for replacement. <input type="checkbox"/> A foreign substance is located between door gaskets.
The displayed temperature is not 4 °C	A displayed temperature between 3 °C and 5 °C (depending on the ambient temperature) is not a malfunction.

DISPOSAL OF UNIT

Recycle of battery

The unit contains a rechargeable battery. The battery is recyclable. At the end of its useful life, check with your local solid officials option or proper disposal.



Ni-MH

- Label indication is obliged to comply with Japanese battery regulation.



- Label indication is obliged to comply with Taiwanese battery regulation.

Decontamination of unit

Before disposal of unit with biological hazards, decontaminate the unit as much as possible.

DISPOSAL OF UNIT

(English)

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.

(German)

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.

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 Strafgebühren 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.

DISPOSAL OF UNIT

(French)

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.

(Spanish)

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.

Si los elimina correctamente ayudará a preservar valiosos 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

(Portuguese)

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.

(Italian)

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.

DISPOSAL OF UNIT

(Dutch)

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.

(Swedish)

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.

SPECIFICATIONS

Product name	Blood Bank Refrigerator MBR-305GR
External dimensions	W 600 mm x D 680 mm x H 1835 mm
Internal dimensions	W 520 mm x D 490 mm x H 1150 mm
Effective capacity	302 L
Interior volume	120 blood bags (400 mL)
Exterior	Painted steel
Interior	Painted steel
Outer door	Painted steel, provided with 2-layer glass window
Inner door	Acrylic resin
Insulation	Rigid polyurethane foamed-in place
Drawer	Stainless steel x 5; Allowable load: 20 kg per drawer
Access port	Inner diameter: 30 mm, Left side
Cooling method	Forced cool air circulation
Compressor	Hermetic type, Output; 150 W x 1
Evaporator	Fin and tube type
Condenser	Wire and tube type
Refrigerant	R-134a (HFC-134a)
Defrosting	Cycle defrost + forced defrost; Fully automatic
Defrost heater	50 W
Temperature controller	Electronic control system
Thermometer	Digital thermometer
Fluorescent lamp	White light (FL15SD); Glow starter: FG-1P
Alarms	High-temperature alarm, Low-temperature alarm, Power-failure alarm, Door alarm
Battery	For power-failure alarm (DC 6 V 1100 mAh, automatic recharge)
Remote alarm contact	Allowable contact capacity: DC 30 V, 2 A
Weight	147 kg
Temperature recorder	7 days type
Accessories	2 keys
Optional components	Interface board (MTR-480, MTR-L03)*

✧ Design or specifications are subject to change without notice.

✧ Refer to the updated catalogue when ordering an optional component.

* For the data acquisition system MTR-5000 user only. Contact our sales representative or agent for purchase.

PERFORMANCE

Product name	Blood Bank Refrigerator MBR-305GR
Model number	MBR-305GR-PE
Storage temperature	4 °C (distribution: ± 1.5 °C)
Usable ambient temperature	5 °C to 35 °C
Noise level	41 dB (A scale)
Maximum pressure	1850 kPa
Rated voltage	AC 220 V/230 V/240 V
Rated frequency	50 Hz
Power consumption	205 W/210 W/220 W

✧ The above data is measured based on our internal procedures.

✧ Design or specifications are subject to change without notice.

✧ The unit with CE mark complies with EU directives.

CAUTION

Please fill in this form before servicing.
Hand over this form to the service engineer to keep for his and your safety.

Safety check sheet

1. Unit contents:

- Risk of infection: Yes No
Risk of toxicity: Yes No
Risk from radioactive sources: Yes No

(List all potentially hazardous materials that have been stored in this unit.)

Notes:

2. Contamination of the unit:

Unit interior:

- No contamination: Yes No
Decontaminated: Yes No
Contaminated: Yes No

Others:

3. Instructions for safe repair/maintenance/disposal of the unit

- a) The unit is safe to work on Yes No
b) There is some danger (see below) Yes No

Procedure to be adhered to in order to reduce safety risk indicated in b) below.

Date:

Signature:

Address, Division:

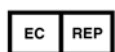
Telephone:

Product name: Blood Bank Refrigerator	Model: MBR-	Serial number:	Date of Installation:
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Please decontaminate the unit yourself before calling the service engineer.

Original Operating Instructions

< EU countries only >



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