



INSTRUCTION MANUAL

MBR-704G MBR-704GR

Blood Bank Refrigerator



MBR-704GR

Note:

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It is imperative that the user complies with this manual as it contains important safety advice.

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

Precautions are illustrated in the following way:




WARNING

Failure to observe WARNING signs could result in a hazard to personnel possibly resulting 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.

Symbol shows;

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

Be sure to keep this manual in a place accessible to users of this unit.

< Label on the unit >
















This mark is labeled on the cover in which the electrical components of high voltage are enclosed to prevent the electric shock.

The cover should be removed by a qualified engineer or a service personnel only.











PRECAUTIONS FOR SAFE OPERATION

WARNING




-  **Do not use the unit outdoors.** Current leakage or electric shock may result if the unit is exposed to rain water.
 -  **Only qualified engineers or service personnel should install the unit.** The installation by unqualified personnel may cause electric shock or fire.
 -  **Install the unit on a sturdy floor.** If the floor is not strong enough or the installation site is not adequate, this may result in injury from the unit falling or tipping over.
 -  **Never install the unit in a humid place or a place where it is likely to be splashed by water.** Deterioration of the insulation may result which could cause current leakage or electric shock.
 -  **Never install the unit in a flammable or volatile location.** This may cause explosion or fire.
 -  **Never install the unit where acid or corrosive gases are present** as current leakage or electric shock may result due to corrosion.
 -  **Use a dedicated power source** as indicated on the rating label attached to the unit. **Ensure that a suitable fuse of adequate amperage is used to allow for compressor start up.**
 -  **Remove dust from the power supply plug** before inserting in a power source. A dusty plug or improper insertion may pose a hazard.
 -  **Use a power supply outlet with ground (earth)** to prevent electric shock. If the power supply outlet is not grounded, it will be necessary to install a ground by qualified engineers.
 -  **Never ground the unit through a gas pipe, water main, telephone line or lightning rod.** Such grounding may cause electric shock in the case of an incomplete circuit.
 -  **Do not insert metal objects such as a pin or a wire into any vent, gap or any outlet** for inner air circulation. This may cause electric shock or injury by accidental contact with moving parts.
 -  **Never store volatile or flammable substances** in this unit. This may cause explosion or fire.
 -  **Never store corrosive substances** in this unit. This may lead to damage to the inner components or electric parts.
- If this unit is to be used for storing poisons, radioactive material or other harmful products, ensure that it is in a safe area.** Failure to do so may lead to an adverse effect on the health of personnel in the area and the local environment. In this case, a request for repair or maintenance will necessitate a safety check sheet for maintenance personnel.

PRECAUTIONS FOR SAFE OPERATION

WARNING
















-  **Disconnect the power supply to the unit prior to any repair or maintenance** of the unit in order to prevent electric shock or injury.
-  **Ensure you do not inhale or consume medication or aerosols** from around the unit at the time of maintenance. These may be harmful to your health.
-  **Never splash water directly onto the unit** as this may cause electric shock or short circuit.
-  **Never disassemble, repair, or modify the unit yourself.** Any such work carried out by an unauthorized person may result in fire or injury due to a malfunction.
-  **Disconnect the power supply plug before replacement of the florescent light** to prevent electric shock.
-  **Disconnect the power supply plug if there is something wrong with the unit.** Continued abnormal operation may cause electric shock or fire.
-  If the unit is to be stored unused in an unsupervised area for an extended period, **ensure that children do not have access and that doors cannot be closed completely.**
-  **The disposal of the unit should be undertaken by appropriate personnel.** Remove doors to prevent accidents such as suffocation.
-  **Prepare a safety check sheet** when you request any repair or maintenance for the safety of service personnel.
-  **Do not pull out more than 2 drawers at the same time** when storing or taking out of the stocked material. This may cause injury by falling or tipping of the unit if something heavy items are stored.

CAUTION

-  **Select a level and sturdy floor for installation.** This precaution will prevent the unit from tipping. Improper installation may result in water spillage or injury from the unit tipping over.
-  **Never install the unit in a place where the possibility exists that an object may fall on it.** There are cooling circuits and electric components in the upper part of this unit. Current leakage or electric shock may be caused if an object falls on it.
-  **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.

PRECAUTIONS FOR SAFE OPERATION

CAUTION

-  **Fix the shelves securely.** Incomplete installation may cause injury or damage.
-  **When removing the plug from the power supply outlet, grip the power supply plug,** not the cord. Pulling the cord may result in electric shock or fire by short circuit.
-  **Never damage or break the power supply plug or cord. Do not use the supply plug if its cord is loose.** This may cause fire or electric shock.
-  **Do not touch any electrical parts** such as the power supply plug or any switches with a wet hand. This may cause electric shock.
-  **Do not put a container with water or heavy articles on the unit.** Injury may be caused if the articles fall. Current leakage or electric shock may result from the introduction of spilled water into electrical components.
-  **Do not climb onto the unit.** This may cause damage to the unit and cause it to tip over.
-  **Hold the handle when closing the door.** This will reduce the likelihood of a trapped finger.
-  **Do not lean on the door.** This may cause injury if the unit tips over.
-  **Never place your hand on the glass or use excessive force on the glass.** Intentional force may break the glass resulting in injury from the broken glass.
-  **Do not touch the condenser directly** when the filter is removed for cleaning. This may cause injury due to hot surface.
-  **Disconnect the power supply plug** before moving the unit. Take care not to damage the power cord. A damaged cord may cause electric shock or fire.
-  **Dispose of any water in the evaporation tray completely before moving the unit.** Spilled or splashed water may cause current leakage or electric shock.
-  **Be careful not to tip the unit over** during movement to prevent damage or injury.
-  **Disconnect the power plug** when the unit is not used for long periods.
-  **Do not put the packing plastic bag used in the packaging within reach of children** as suffocation may result

CAUTIONS FOR USAGE

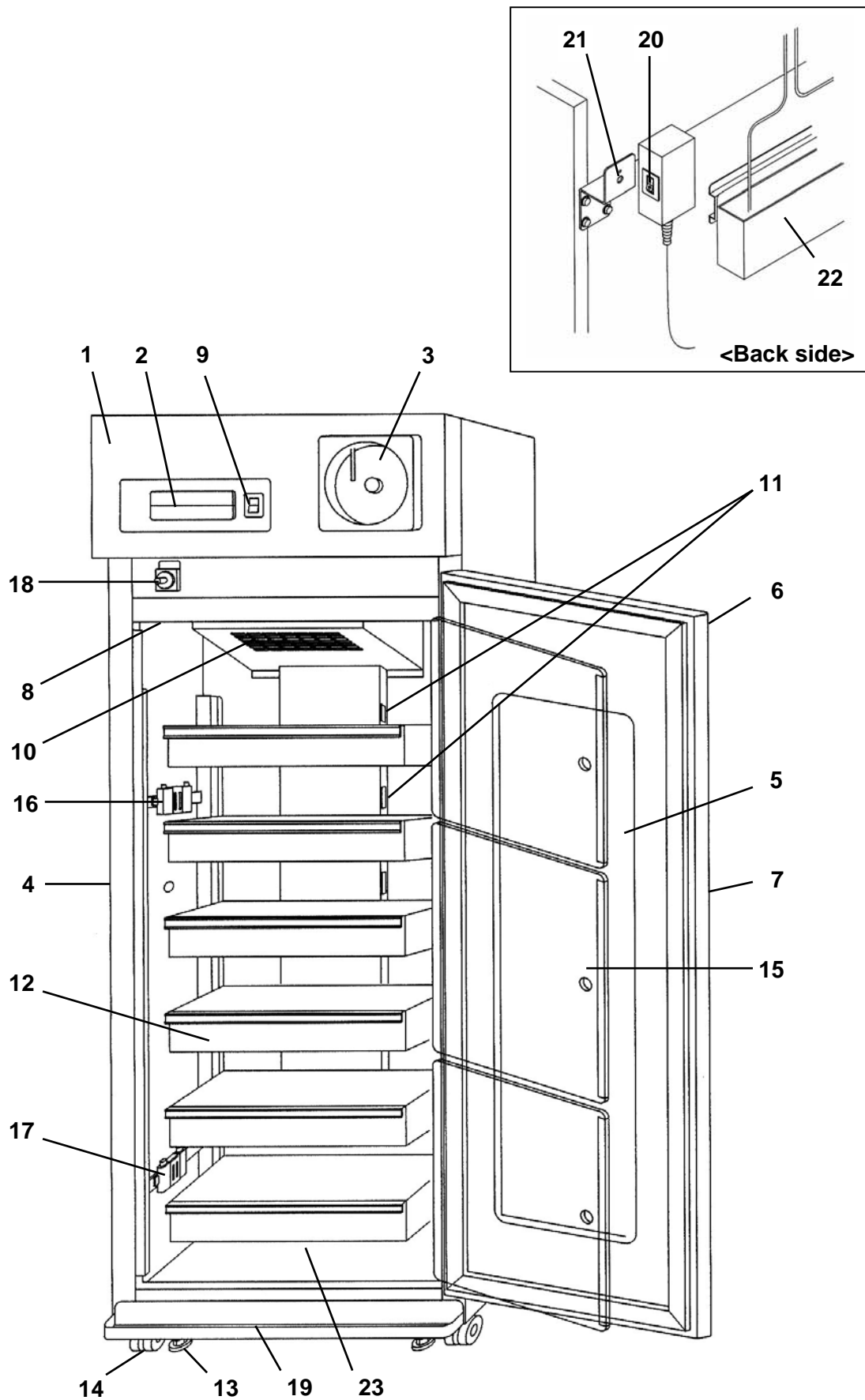
1. If the unit is unplugged or the power to the unit is interrupted, do not restart the unit for at least 5 minutes. This protects the compressor.
2. This inner cabinet is refrigerated by the forced circulation of cooled air inside the chamber. Ensure that the intake and exhaust vents are not blocked. Adequate space should be provided between the items inside the unit to allow air circulation.
3. Never store corrosive materials such as acid or alkali where the container is not completely sealed. This could possibly lead to corrosion of the evaporator resulting in refrigerant leakage and subsequent loss of cooling ability.
4. Once the chamber temperature has stabilized, put the items into the chamber in small batches to minimize the temperature increase.
5. In the case where condensation forms on the front of the glass due to high ambient humidity, wipe it off with a soft and dry cloth.
6. Do not use brushes, acids, benzene, thinners, powdered soap, polishing powders, or hot water for cleaning, as they can cause the painted surfaces and parts made of plastic and rubber to deteriorate. Be especially careful not to wipe plastic or rubber parts with volatile solvents such as benzene. Rinse off neutral detergents completely with cloth washed in clean water.
7. Fix the shelves securely. Place items on the shelves and leave a space between the walls of the cabinet and the contents to allow air circulation. Do not place items on the floor of the chamber.
8. Always close the door firmly. The door check lamp is lit when the door is open. The alarm buzzer sounds two minutes after door opening. The buzzer can be cancelled automatically when the door is closed.
9. Always open and close the door gently. Rough handling of the unit may lead to stocked items tipping over, incomplete closing of the door, or damage to the door gasket.
10. Do not put any articles on the unit. Blocking of the top will decrease the heat discharge which can cause poor cooling and failure of the unit.
11. Do not stock articles beyond the load line. Containers outside the load line disturb the air circulation in the chamber and cause poor cooling. See page 14.

ENVIRONMENTAL CONDITIONS

This equipment is designed to be safe at least under the following conditions (based on the IEC 1010-1):

1. Indoor use;
2. Altitude up to 2000 m;
3. Ambient temperature 5°C to 40°C
4. Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 40°C;
5. Mains supply voltage fluctuations not to exceed $\pm 10\%$ of the nominal voltage;
6. Other supply voltage fluctuations as stated by the manufacturer.
7. Transient overvoltages according to Installation Categories (Overvoltage Categories) II; For mains supply the minimum and normal category is II;
8. Pollution degree 2 in accordance with IEC 664.

REFRIGERATOR COMPONENTS



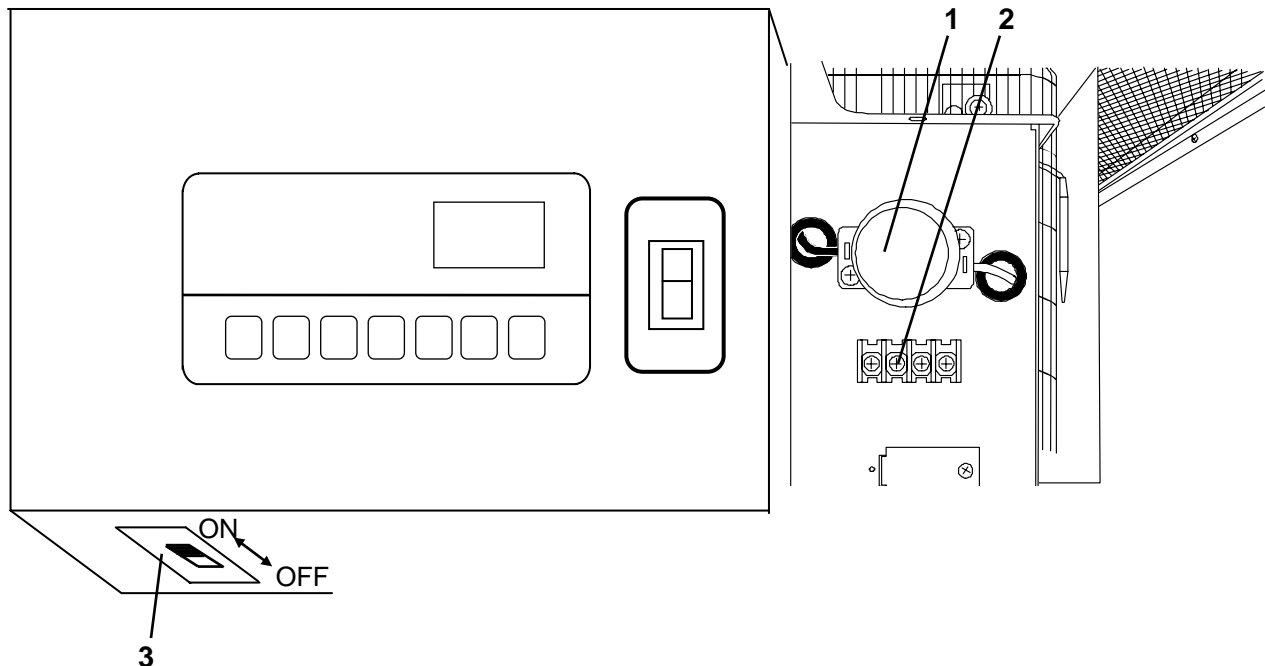
MBR-704GR

REFRIGERATOR COMPONENTS

- 1. Front cover:** Open this cover when connecting the remote alarm or replacing glow starter for fluorescent lamp.
- 2. Control panel:** Panel can be opened when upper right corner of the lower part cover is pushed. Refer to page 10.
- 3. Automatic temperature recorder:** A 7-day type recorder is provided. For proper usage of the recorder, see the instruction manual enclosed with the unit.
- 4. Access port:** This port allows temperature measurement cables to enter the chamber from outside. A total of two (2) ports are provided; left side and right side.
- 5. Glass window:** The window may have condensation in high humidity environment. Wipe off the condensation with a soft dry cloth.
- 6. Lock:** Turn the key counterclockwise through 180° to securely lock the door.
- 7. Handle:** Always hold the handle when opening/closing the door.
- 8. Fluorescent lamp:** 20 W lamp. See page 19 for replacement.
- 9. Light switch:** This switch is used for turning the fluorescent lamp off and on.
- 10. Air vent – front intake:** Do not block this vent. If this vent is blocked, temperature regulation will become unstable. Do not insert a finger or any foreign object into this vent as there is danger from the internal fan.
- 11. Air vent – rear exhaust:** Do not block this vent. If this vent is blocked, temperature regulation will become unstable. Do not place stored items in the path of the cold air.
- 12. Drawer (MBR-704GR only):** Items to be stored in the chamber must be placed on the drawers. The maximum storage weight for each drawer is 40 kg.
- Shelf (MBR-704G only):** Items to be stored in the chamber must be placed on the shelves. The maximum storage weight for each shelf is 40 kg.
Do not put stored items directly onto the interior floor of the chamber. See page 14.
- 13. Leveling foot:** Adjust the height of the leveling foot by turning the screw bolt until the unit is level.
- 14. Castors:** When installing the unit the castors can be raised from the ground by using the leveling feet above.
- 15. Inner door**
- 16. Upper monitor bottle**
- 17. Lower monitor bottle**
- 18. Door switch:** The switch detects the door condition (open or close).
- 19. Condensation tray:** The condensation on the door is accumulated in this tray. Wipe off the water occasionally.
- 20. Power switch (back side):** Switch for the refrigerator. This switch also acts as an over-current breaker (10A).
- 21. Fixtures (back side):** These keep the adequate space between the unit and wall and also can be used for fixing the unit. See page 12.
- 22. Evaporating tray (back side):** Defrost water from the evaporator accumulates on the tray and evaporates into the atmosphere. See page 18 for cleaning.
- 23. Bottom air duct (MBR-704G only):** The duct keeps temperature inside the chamber uniformly by making cooled air circulate. Put the duct at the bottom of the chamber. Do not put any articles under this duct. If this duct is blocked, temperature regulation will become unstable.

REFRIGERATOR COMPONENTS

Inside of front cover



1. Glow starter (with cover): This is for the fluorescent light. It is recommended that the glow starter is also replaced when the fluorescent light is replaced. Refer to page 19.

2. Remote alarm terminal: This is used to connect the unit to an exterior alarm to notify users of any malfunction. Refer to page 17.

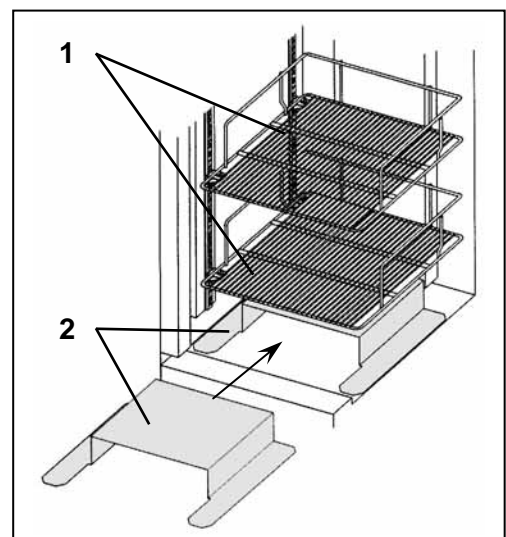
3. Battery switch: Switch for battery used for power failure alarm. Always keep "ON". Turn the switch "OFF" when the unit is in no use for a long period (more than 1 month).

Inside components of MBR-704G type

1. Shelf: Items to be stored in the chamber must be placed on the shelves. The maximum storage weight for each shelf is 40 kg.

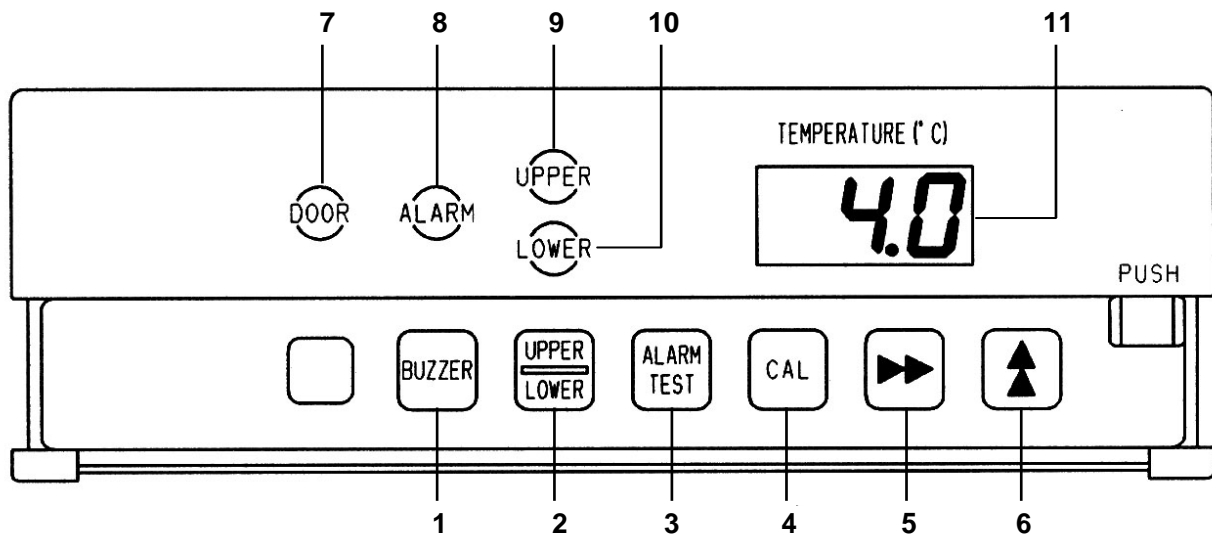
2. Bottom air duct: The duct keeps temperature inside the chamber uniformly by making cooled air circulate. Put the duct at the bottom of the chamber.

Do not put any articles under this duct. If this area is blocked, temperature regulation will become unstable.



REFRIGERATOR COMPONENTS

Control panel and keypad



- 1. Buzzer stop key (BUZZER):** To silence the audible alarm, press this key.
- 2. Temperature display key (UPPER/LOWER):** By pressing this key, the displayed temperature is changed; upper monitor bottle temperature, lower monitor bottle temperature, and average temperature of upper and lower monitor bottles are displayed in sequence.
- 3. Alarm test key (ALARM TEST):** To check the operation of alarm buzzer, lamp, and remote alarm terminal.
- 4. Calibration key (CAL):** To calibrate the temperature. Normally this key is not used.
- 5. Digit shift key (▶▶):** Pressing this key in the CAL mode will cause the changeable digits to move.
- 6. Numerical value shift key (▲):** Pressing this key in the CAL mode will cause the numerical value to change.
- 7. Door alarm lamp (DOOR):** This lamp is lit when the door is ajar or open.
- 8. Alarm lamp (ALARM):** This lamp flashes during an alarm condition.
- 9, 10. Temperature display monitor lamp (UPPER, LOWER):** Lamp 9 is lit when upper monitor bottle temperature is displayed. Lamp 10 is lit when lower monitor bottle temperature is displayed. Both 9 and 10 are lit when the average temperature is displayed.
- 11. Digital temperature indicator:** This indicator shows the upper or lower monitor bottle temperature or average temperature.

INSTALLATION

Installation site

To operate this unit properly and to obtain maximum performance, install the unit in a location with the following conditions:

1. A location not subjected to direct sunlight

Installation in a location subjected to direct sunlight may lead to inadequate cooling.

2. A location with adequate ventilation

Leave at least 10 cm around the unit for ventilation. Poor ventilation will result in a reduction of the refrigeration capacity.

3. A location away from heat generating sources

Avoid installing the unit near heat-emitting appliances such as gas ranges or stoves. Heat can cause inefficient refrigeration.

4. A location with a sturdy and level floor



WARNING

Install the unit on a sturdy floor. If the floor is not strong enough or the installation site is not adequate, this may result in injury from the unit falling or tipping over.

Select a level and sturdy floor for installation. This precaution will prevent the unit from tipping. Improper installation may result in water spillage or injury from the unit tipping over.

5. A location where objects will not fall on the unit



CAUTION

Never install the unit in a place where the possibility exists that an object may fall on it. There are cooling circuits and electric components in the upper part of this unit. Current leakage or electric shock may be caused if an object falls on it.

6. A location without flammable or corrosive gas



WARNING

Never install the unit in a flammable or volatile location. This may cause explosion or fire.

Never install the unit where acid or corrosive gases are present as current leakage or electric shock may result due to corrosion.

7. A location not prone to high humidity



WARNING

Do not use the unit outdoors. Current leakage or electric shock may result if the unit is exposed to rain water.

Never install the unit in a humid place or a place where it is likely to be splashed by water. Deterioration of the insulation may result which could cause current leakage or electric shock.

INSTALLATION

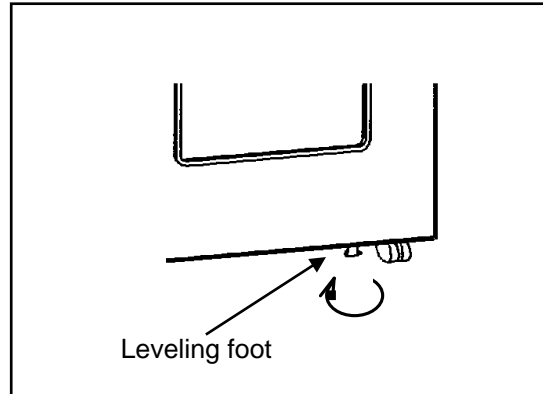
Installation

1. Remove the packaging materials and tapes

Remove all transportation packaging materials and tapes. Open the doors and ventilate the unit. If the outside panels are dirty, clean them with a neutral detergent and wipe off with a soft cloth washed in clean water.

2. Adjust the leveling feet

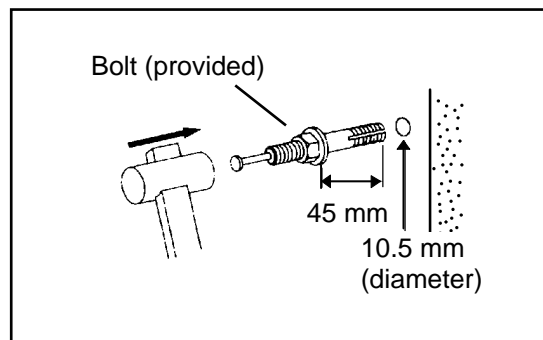
Extend the leveling feet by rotating them as shown in the figure until they make contact with the floor. Ensure the unit is level.



3. Fix the unit

Two fixtures are attached to the rear of the frame. Fix the frame to the wall by attaching a rope or chain between the wall and the fixtures.

If holes can be drilled in the wall, drill a 10.5mm diameter hole and fix the unit by using the special bolt-nut supplied. This bolt-nut can only be used on a concrete wall.



4. Ground (earth)

⚠ WARNING

Use a power supply outlet with ground (earth) to prevent electric shock. If the power supply outlet is not grounded, it is necessary to install a ground by qualified engineers.

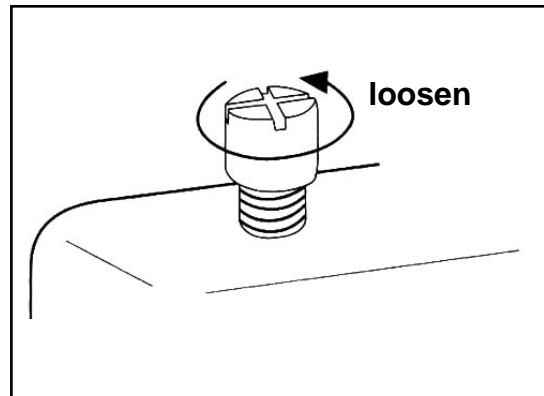
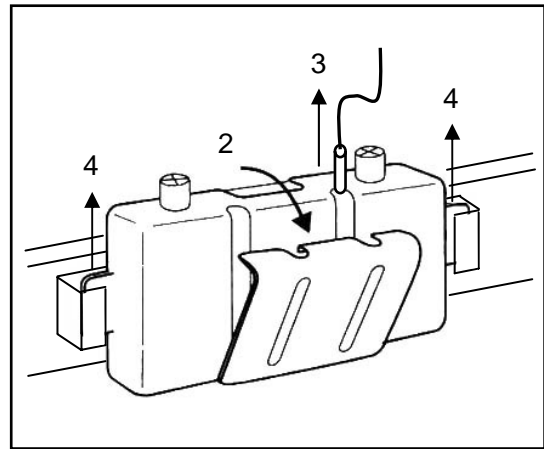
Never ground the unit through a gas pipe, water main, telephone line or lightning rod. Such grounding may cause electric shock in the case of an incomplete circuit.

INSTALLATION

Preparation of monitor bottle

Prior to the operation of the unit, fill the monitor bottles (upper and lower) with 10% glycerol (or other solution such as ethylene glycol) using the following procedure:

1. Remove the top and bottom drawer (or shelf).
2. Remove the monitor bottle cover as shown in the figure.
3. Detach the sensor from the monitor bottle.
4. Pull up the bottle to take it out.
5. Pour 200ml of 10% glycerol (or other solution) into the monitor bottle after removing the cap as shown in the figure.
6. Cap the monitor bottle and return the bottle to its original position.
7. Attach the sensor to the bottle and replace the cover on the bottle.



START-UP OF UNIT

Follow the procedures for the initial and consequent operations of the unit.

1. Connect the power cord to the dedicated outlet with appropriate rating.
2. On start-up, the alarm buzzer sometimes operates. In this case, stop the buzzer by pressing the buzzer stop key (BUZZER). The alarm will operate until the temperature monitor bottle sensor goes into the range of $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$. See Table 2 in page 17.
3. Ensure that both monitor bottles have been filled with 10% glycerol as outlined earlier in this manual.
4. The unit has been factory preset to operate at $4^{\circ}\text{C} \pm 1^{\circ}\text{C}$. There is no need to set the temperature.
5. Turn on the fluorescent light switch to check the light. After checking, turn off the switch if the light is not necessary.
6. When you are satisfied that the unit is working correctly, begin slowly placing items into the chamber to minimize the temperature rise.

Stock of containers

Always distribute items so as not to disturb the air circulation in the chamber. Disruption of the air flow can cause items to freeze or reduce the uniformity of the chamber temperature. Never put any articles on the top of the unit.

Intake air vent

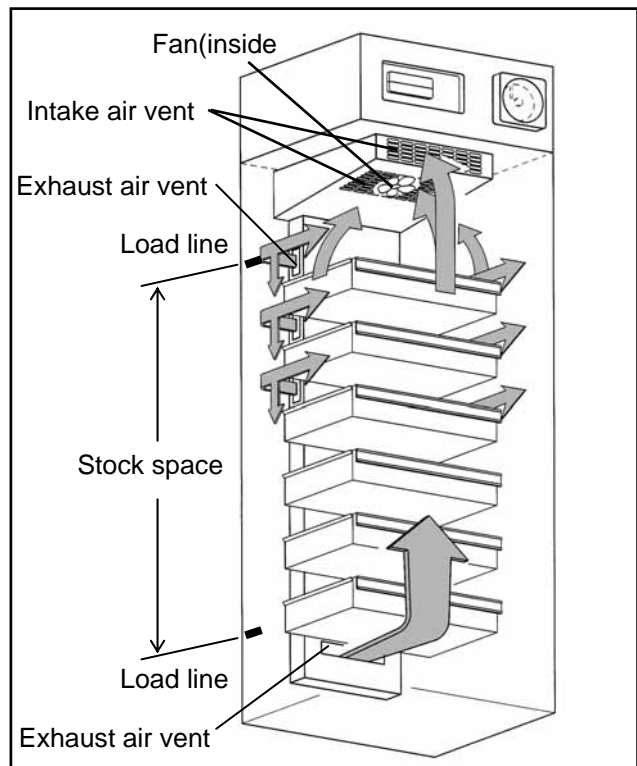
Do not block this vent with containers. If this vent becomes blocked, temperature regulation becomes unstable. Do not place paper or vinyl near the vent as they may be sucked into the fan.

Exhaust air vent

Do not block this vent with containers as this can impede air circulation. Items stored near the exhaust air vent can freeze.

Load line

In this refrigerator, storage space is limited to allow the passage of cool air around the chamber. The label "load line" is fixed to both sides of the chamber. Always stock items within this line.



CAUTION

Never store corrosive substances in this unit. This may lead to damage to the inner components or electric parts.

OPERATING INSTRUCTIONS


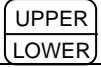

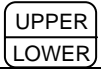


Control panel

Temperature display

The unit is set at the factory to obtain the proper temperature automatically ($4^{\circ}\text{C} \pm 1^{\circ}\text{C}$).

The high temperature alarm is preset at 6°C . The low temperature alarm is preset at 2°C .

Table 1. Temperature display : Lamp ON : Lamp OFF

	Operation	Key operated	Display		Display mode
1	Plug-in, Power ON		Average monitor bottle temperature	UPPER LOWER	Average temperature
2	Press  key.		Upper monitor bottle temperature	UPPER LOWER	Upper temperature
3	Press  key.		Lower monitor bottle temperature	UPPER LOWER	Lower temperature
4	Press  key.		Average monitor bottle temperature	UPPER LOWER	Average temperature
5	Repeat from 2				

Note:

The displayed temperature represents the temperature sensed by a thermal sensor attached to the monitor bottles mounted to the upper and lower portion of the chamber.

The displayed temperature may not always be at 4°C . The chamber probes are representative of high and low average temperatures within the chamber.

Defrost cycles

There is no need for routine defrosting of the unit as this occurs automatically as follows:

1. Cycle defrost

To keep the chamber temperature stable, the refrigeration compressor is cycled on and off. During “off” period any frost which has accumulated on the evaporator is melted by energizing a defrost heater. This will not have any discernible effect on the chamber temperature.

2. Forced defrost

When the ambient humidity is high, or a large amount of damp product is being stored inside the chamber, there is a possibility that cycle defrost may not be enough to remove all of the frost on the evaporator. In this case, a forced defrost cycle can be initiated.

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

Once the forced defrost cycle is completed, normal operation resumes.

The chamber temperature of blood bag (400mL) rises about 1 to 2°C during the defrosting.

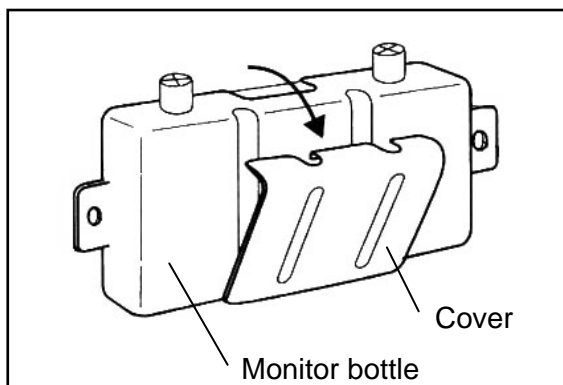
OPERATING INSTRUCTIONS

Temperature sensor calibration procedure

The temperature sensors are attached to the monitor bottles. Follow the following instructions for proper calibration (0 adjustments).

1. Remove the monitor bottle cover as shown in the figure.
2. Remove the sensor to be calibrated from the monitor bottle. Please note that refrigerator also has a sensor for the temperature recorder in the left side of the upper monitor bottle.
3. Prepare a bottle or beaker with a solution of crushed ice and cold water. Agitate the mixture thoroughly.
4. Put the sensor to be calibrated in the mixture.
5. While continuously agitating the ice water mixture, monitor the temperature indicated on the display of the sensor to be calibrated.
6. Wait for the temperature on the display to stabilize. If the display is not 0 °C, calibrate using the following procedure. If the display does indicate 0 °C, proceed to step 7.
 - 6-1. Press the CAL key for approximately 5 seconds until **C00** is displayed.
 - 6-2. Enter the code of the probe to be calibrated using the numerical shift key (**▲**).
Upper chamber temperature sensor code is **C01** .
Lower chamber temperature sensor code is **C02** .
 - 6-3. Press the CAL key. (This makes temperature display 0 °C)
This key operation is canceled with the buzzer if the sensor temperature deviates over +/- 1.5°C.
In this case, consult with Sanyo dealer or service personnel.
 - 6-4. The digital display will revert back to current chamber temperature. The calibration that was entered in the previous step should now have an effect on the temperature display.
The digital display should now show indicate $0.0 \pm 0.2^{\circ}\text{C}$, if not, repeat step 6.
7. Take the sensor out of the ice water solution and wipe with a soft cloth.
8. Attach the sensor back into the monitor bottle by reversing the procedure in step 1 and 2.

* For the span adjustment, contact your service personnel.



ALARMS & SAFETY FUNCTIONS

This unit has the alarms and safety functions shown in Table 2, and also self diagnostic functions.

Table 2 Alarms and safety functions

Alarm & Safety	Situation	Indication	Buzzer	Safety operation
High temperature alarm	If the upper or lower temperature sensor senses a temperature $\pm 6^{\circ}\text{C}$.	ALARM lamp is flashed.	Intermittent tone	Remote alarm
Low temperature alarm	If the upper or lower temperature sensor senses a temperature $\pm 2^{\circ}\text{C}$.	ALARM lamp is flashed.	Intermittent tone	Remote alarm
Over-temperature protection	If the high-temperature thermostat sensor senses a temperature approximately $> 10^{\circ}\text{C}$.	Unit should already be in alarm. No further indication required.	Unit should already be in a high temp. alarm.	Remote alarm Compressor ON. Heater OFF.
Power failure alarm	When the power to the unit is disconnected or power switch is turned off.	ALARM lamp is flashed. Temp. indication off	Intermittent tone	Remote alarm.
Door alarm	When the door is ajar or open.	Door check lamp is lit.	Intermittent tone with 2 minutes delay.	-----
Auto-return	When there is no key pressing in each setting mode for 90 seconds.	Monitor bottle temperature is displayed.	-----	Finishing of calibration mode.
Thermal sensor abnormality	If the upper temperature sensor is disconnected or short-circuited.	ALARM lamp is flashed. E1 and monitor bottle temp. are displayed alternately.	Intermittent tone	Remote alarm.
	If the lower temperature sensor is disconnected or short-circuited.	ALARM lamp is flashed. E2 and monitor bottle temp. are displayed alternately.	Intermittent tone	Remote alarm.
	If the defrost sensor is disconnected or short-circuited.	ALARM lamp is flashed. E3 and monitor bottle temp. are displayed alternately.	Intermittent tone	Remote alarm.
	If the over-temperature sensor is disconnected or short-circuited.	ALARM lamp is flashed. E4 and monitor bottle temp. are displayed alternately.	Intermittent tone	Remote alarm.

Note:

The remote alarm is silenced by pressing the buzzer stop key (BUZZER) as the remote alarm is operated in conjunction with the buzzer, except for the power failure alarm. All alarm functions will auto-reset.

The buzzer and remote contacts will re-activate if the condition which caused the alarm is not corrected within 30 minutes.

Alarm conditions will remain active for about 24 hours on a fully charged back-up battery in the event of a power failure. Two days operation is required to fully charge the battery after initial start-up if the power has been off for an extended period.

The remote alarm contacts will remain active even if the battery is discharged.

Alarm test procedure

Press ALARM TEST key. The audible and visual alarm indicators activate along with the remote alarm contacts. The alarm condition remains active for 90 seconds and then terminates automatically. Otherwise the alarm test can be terminated manually at any time during the rest by pressing the ALARM TEST key again.

Remote alarm terminal

The remote alarm terminal is located inside the front cover. The alarm is outputted from this terminal.

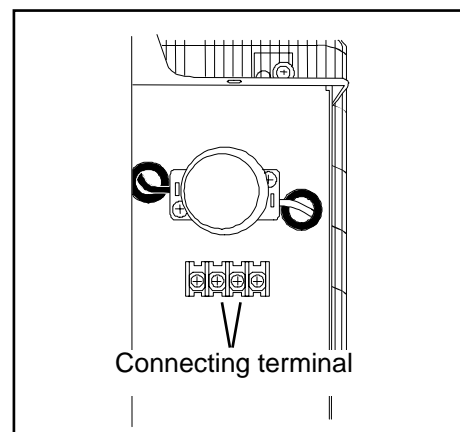
Contact capacity is DC 30V, 2 A.

Contact output: At normal condition "Open"
At abnormal condition "Close"

Note:

The alarm is actuated when the power failure or the power cord is disconnected from the outlet.

The remote alarm is silenced by pressing the buzzer stop key (BUZZER) as the remote alarm is operated in conjunction with the buzzer.



ROUTINE MAINTENANCE

⚠️ WARNING

Always disconnect the power supply to the unit prior to any repair or maintenance of the unit in order to prevent electric shock or injury.

Ensure you do not inhale or consume medication or aerosols from around the unit at the time of maintenance. These may be harmful to your health.

⚠️ CAUTION

Always wear dry gloves to protect hands at the time of maintenance. Failure to wear gloves may result in injury from edges and corners.

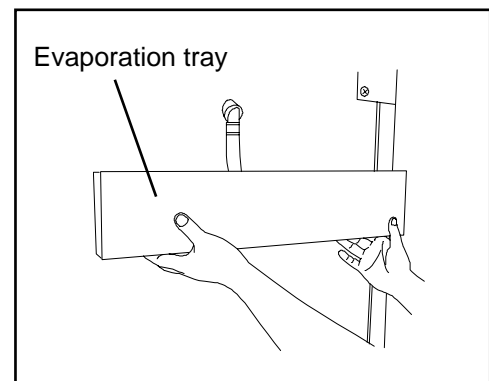
Cleaning of cabinet

1. Clean the unit once a month. Regular cleaning keeps the unit looking new.
2. Use a dry cloth to wipe off small amounts of dirt on the outside and inside of the unit and all accessories. If the unit is very dirty, use a neutral detergent.
3. After cleaning, wipe away the cleaner completely with a cloth washed in clean water.
4. Never pour water onto or into the unit. Doing so can damage the electric insulation and cause failure.
 - The compressor and other mechanical parts are completely sealed. This unit requires absolutely no lubrication.
 - Remove dust from the power supply plug periodically. A dusty plug or improper insertion may pose a hazard.

Cleaning of evaporation tray

This unit is provided with the evaporation tray on the back.

1. Pull the lower side of the tray toward you.
2. Lift the tray upwards to remove the tray from the hook.
3. Take out downwardly.
4. Wash the tray and replace.

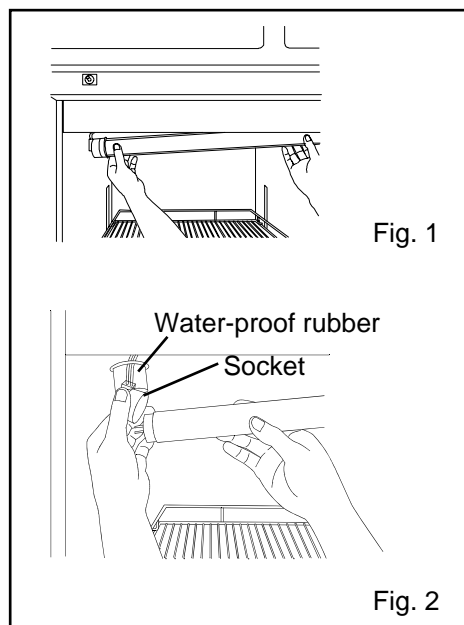


ROUTINE MAINTENANCE

Replacement of fluorescent lamp

The fluorescent lamp is placed horizontally in the upper front of the chamber. Follow the procedure below to replace the lamp.

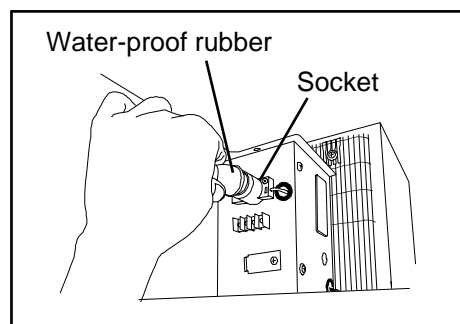
1. Turn off the fluorescent light switch and disconnect the power supply plug.
2. Hold the cover of the light and pull downward with lead wire to remove the lamp from stopper. (Fig. 1)
3. Remove the water-proof rubber on the left. (Fig. 2)
4. Remove the socket on the left. (Fig. 2)
5. Take out the fluorescent lamp gently from the protective cover.
6. After placing a new fluorescent lamp in the protective cover, replace the socket and then replace the water-proof rubber.
7. Fix the light with the stoppers.



Replacement of glow starter

A glow starter is located inside the front cover.

1. Disconnect the power supply plug.
2. Remove the water-proof rubber.
3. Remove the glow starter and replace with a new one.
4. Replace the water-proof rubber.



DISPOSAL OF UNIT

⚠ WARNING

If the unit is to be stored unused in an unsupervised area for an extended period **ensure that children do not have access and doors cannot be closed completely.**

The disposal of the unit should be accomplished by appropriate personnel. Always remove doors to prevent accidents such as suffocation.



This product has an electric battery.

Please recycle it for effective utilization of resources and protection of our environment.

Thank you for your cooperation.

Label indication is obliged to comply with Taiwanese battery regulation.

TROUBLE SHOOTING

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

If nothing operates even when switched on

1. The power is failed.
2. The circuit breaker is inactivated.
3. The unit is not connected to the power supply.

The alarm device is activated

1. The temperature in the unit does not match the set value.
2. The door was kept opened for a long time.
3. The high temperature materials were put in the unit.

In these cases, the alarm is removed automatically by running the unit for several hours.

When the unit does not get cold enough

1. A large amount of items or warm products was put in the unit.
2. The air exhaust vent is blocked up with containers.
3. The unit is in direct sunlight.
4. The door is frequently opened.
5. A heat source is nearby the unit.
6. The ambient temperature is too high.
7. The door is not securely closed.
8. The heat source is put in the unit.
9. The door seal is damaged or foreign substance is inserted between door gasket.

SPECIFICATIONS

Name	Blood Bank Refrigerator	
Model	MBR-704G	MBR-704GR
External dimensions	W770 x D830 x H1955 (mm)	
Internal dimensions	W650 x D697 x H1500 (mm)	
Effective capacity	625 L	617 L
Exterior	Painted steel	
Interior	Painted steel	
Door	Steel plate with double layer pair glass, automatic closing mechanism	
Insulation	Rigid polyurethane foamed-in place	
Shelf	Hard steel wire on polyethylene coating 6 pcs.	-----
Drawer	-----	Stainless steel, Handle with card holder 6 pcs.
Access port	Left side, right side, Inner diameter 30 mm	
Compressor	Hermetic type, Output; 220 W	
Condenser	Wire tube type	
Evaporator	Fin tube type	
Refrigerant	R-134a	
Temperature controller	Microprocessor control system	
Temperature display	Digital display	
Alarm	High temperature, Low temperature, Door, Power failure, Sensor	
Remote alarm contact	Allowable contact capacity: DC 30V, 2A	
Memory back-up	Nonvolatile static memory	
Fluorescent lamp	White light 20 W (FL20SD) x 1 (Glow starter; FG-1P)	
Accessories	Key 1 set, Bolt 2 sets	
Battery	For power failure alarm, Nickel hydrogen battery, DC 6V, 1100mAh, Automatic charge	
Weight	195 kg	210 kg

Note: The contents of this manual are subject to change without notice.

PERFORMANCE

Chamber temperature	+4 °C ± 1 °C (ambient temperature; 5 to 35 °C)						
Power source (Alternate current)	110V 60Hz	115V 60Hz	220V 60Hz	220 V 50Hz	230 V 50Hz	240 V 50Hz	220-240V, 50Hz
Rated power consumption	300W	310W	300W	290W	310W	330W	330W
Noise level	45 dB [A] (background noise; 20 dB)						
Maximum pressure	1630 kPa						

Note : The unit with CE mark complies with EC directives 89/336/EEC, 93/68/EEC and 73/23/EEC.

⚠ 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. Refrigerator contents : | Yes | No |
| 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 | Yes | No |
| No contamination | Yes | No |
| Decontaminated | Yes | No |
| Contaminated | Yes | No |
| Others: | | |

- | | | |
|---|-----|----|
| 3. Instructions for safe repair/maintenance 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 : Pharmaceutical Refrigerator	Model : MBR-704G MBR-704GR	Serial number :	Date of Installation :
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Please decontaminate the unit yourself before calling the service engineer.

7FB6P101294003
(5 April 2005)

Recycled paper **CEM**

SANYO

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Printed in Japan