



## INSTRUCTION MANUAL

# MDF-U730M

## BIOMEDICAL FREEZER





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# INTRODUCTION

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- Read this manual carefully before using the appliance and follow the instructions for safety operation.
- Sanyo never guarantee any safety if the appliance is used for any objects other than intended use or used by any procedures other than those mentioned in this manual.
- Keep this manual in an adequate place to refer to it as necessary.
- The contents of the manual will be subjected to change without notice due to the improvement of performance or functions.
- Contact Sanyo sales representative or agent if any page of the manual is lost or page order is incorrect.
- Contact Sanyo sales representative or agent if any point in this manual is unclear or if there are any inaccuracies.
- No part of this manual may be reproduced in any form without the expressed written permission of Sanyo.



# PRECAUTIONS FOR SAFE OPERATION

**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 and take an adequate precaution to prevent the unit from turning over.** 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.
-  **Always ground (earth) the unit 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.
-  **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 if the container cannot be sealed. These may cause explosion or fire.
-  **Do not insert metal objects such as a pin or a wire into any vent, gap or any outlet on the unit.** This may cause electric shock or injury by accidental contact with moving parts.
-  **Use this unit in safe area when treating the poison, harmful or radiate articles.** Improper use may cause bad effect on your health or environment.
-  **Turn off the power switch (if provided) and disconnect the power supply to the unit prior to any repair or maintenance** of the unit in order to prevent electric shock 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.



# PRECAUTIONS FOR SAFE OPERATION

## **WARNING**

-  **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 put containers with liquid on the unit** as this may cause electric shock or short circuit when the liquid is spilled.
-  **Never bind, process, or step on the power supply cord, or never damage or break the power supply plug.** A broken supply cord or plug may cause fire or electric shock.
-  **Do not use the supply cord if its plug is loose.** Such supply cord may cause fire or electric shock.
-  **Never disassemble, repair, or modify the unit yourself.** Any such work carried out by an unauthorized person may result in fire, or electric shock or injury due to a malfunction.
-  **Disconnect the power supply plug if there is something wrong with the unit.** Continued abnormal operation may cause electric shock or fire.
-  **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.
-  **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.
-  **Disconnect the power plug when the unit is not used for long periods.** Keeping the connection may cause electric shock, current leakage, or fire due to the deterioration of insulation.
-  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 accomplished by appropriate personnel.** Remove doors to prevent accidents such as suffocation.
-  **Do not put the packing plastic bag within reach of children** as suffocation may result.









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# PRECAUTIONS FOR SAFE OPERATION

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## CAUTION

-  **Use a dedicated power source** (a dedicated circuit with a breaker) as indicated on the rating label attached to the unit. A branched circuit may cause fire resulting from abnormal heating.
-  **Connect the power supply plug to the power source firmly after removing the dust on the plug.** A dusty plug or improper insertion may cause a heat or ignition.
-  **Never store corrosive substances such as acid or alkali** in this unit if the container cannot be sealed. These may cause corrosion of inner components or electric parts.
-  **Check the setting when starting up of operation after power failure or turning off of power switch.** The stored items may be damaged due to the change of setting.
-  **Be careful not to tip over the unit** during movement to prevent damage or injury.
-  **Prepare a safety check sheet** when you request any repair or maintenance for the safety of service personnel.



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# ENVIRONMENTAL CONDITIONS

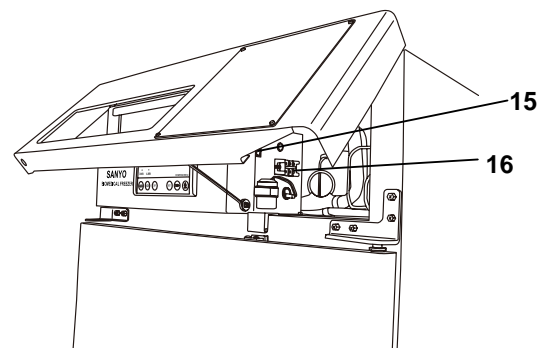
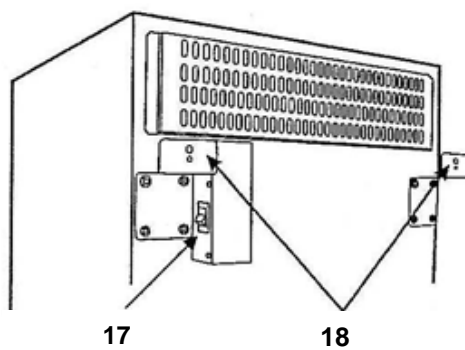
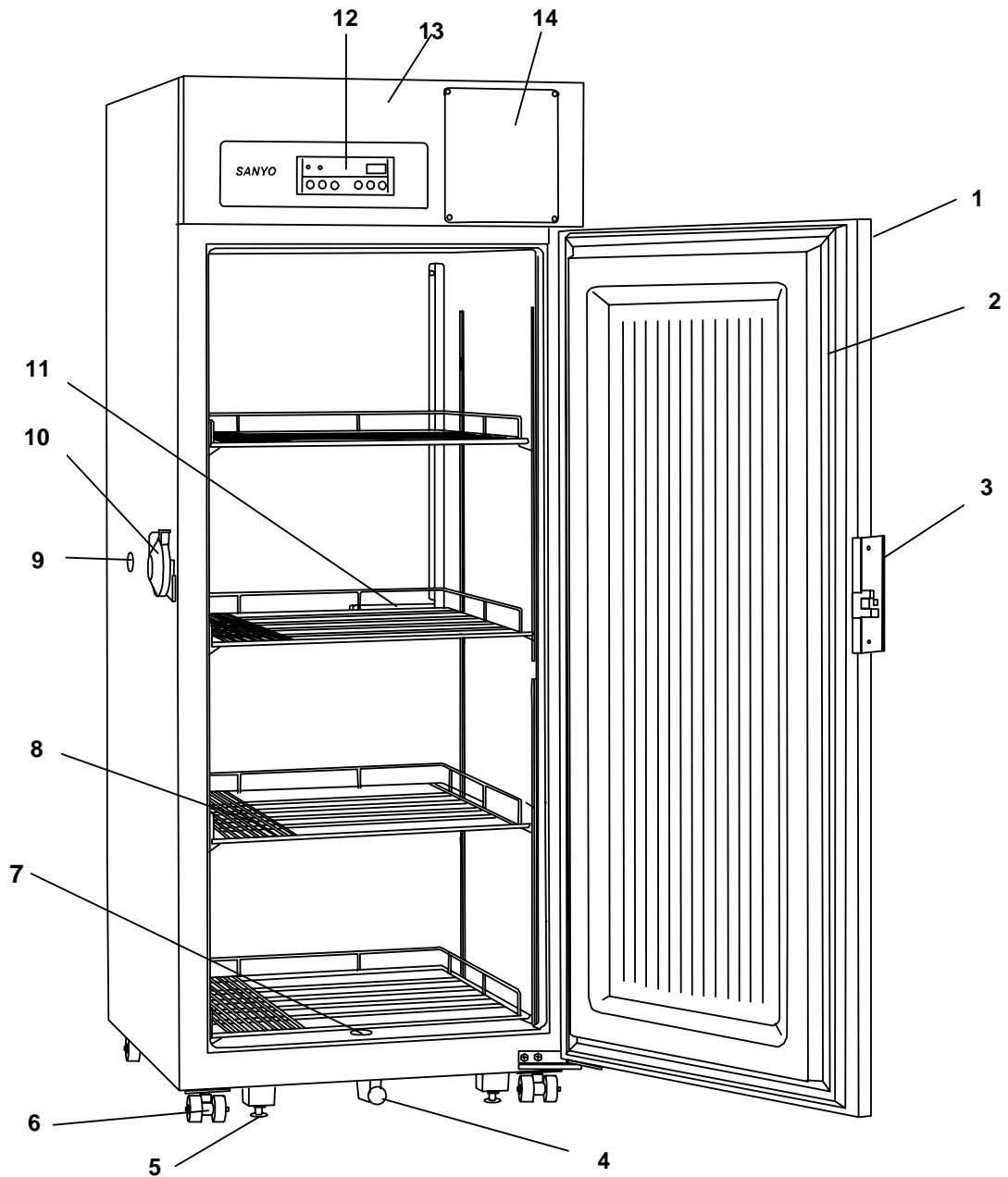
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This equipment is designed to be safe at least under the following conditions (based on the IEC-61010-1):

- Indoor use;
- Altitude up to 2000 m;
- Ambient 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 not to exceed  $\pm 10\%$  of the nominal voltage;
- Other supply voltage fluctuations as stated by the manufacturer;
- Transient overvoltages according to Installation Categories (Overvoltage Categories) II; For mains supply the minimum and normal category is II;
- Pollution degree 2 in accordance with IEC 60664.



# FREEZER COMPONENTS



<Inside of the front cover>



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# FREEZER COMPONENTS

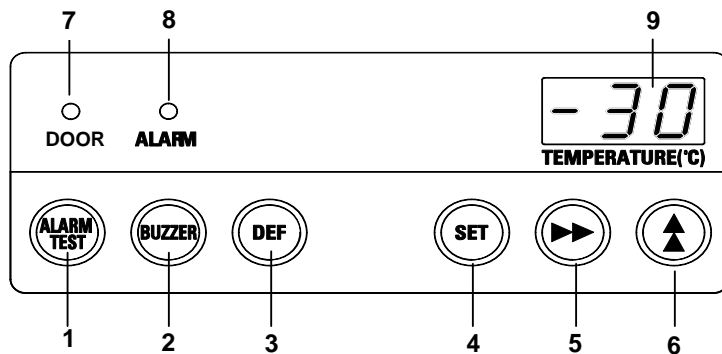
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- 1. Lock:** Turn clockwise to 180° with a key and the outer door is securely locked.
- 2. Magnetic door gasket:** This prevent the cold air from escaping. Always keep clean.
- 3. Handle:** Always grip this handle to open and close the outer door.
- 4. Drain hose:** The drain hose can be used to collect the defrosted water. See page 17 for usage.
- 5. Leveling foot:** The height of the freezer can be adjusted by this screw type foot. Keep the unit in level at the installation.
- 6. Caster:** 4 casters are provided to facilitate moving of the cabinet. For the installation, adjust the leveling foot so that the front 2 casters cannot contact with the floor.
- 7. Drain cap:** These are drain in defrosting and drain cap. See page 17 for usage.
- 8. Shelf:** Items to be stored in the chamber must be placed on the shelves. The maximum storage weight for each shelf is 50kg.
- 9. Access port:** This is used for leading the measuring cable from the freezing chamber to the outside. A total of two(2) are provided. ; left side and top of the freezer.
- 10. Door latch:** The lock the door, turn this latch downward. A padlock is also available.
- 11. Temperature sensor:** Located on the rear of the chamber.
- 12. Control panel:** The operation status is displayed on this panel. And the temperature setting is available through this panel. Refer to page 10 for details.
- 13. Front cover:** Open this cover when connecting the remote alarm.
- 14. Space for temperature recorder:** Space for an automatic temperature recorder (optional component) is available separately. See page 25 "TEMPERATURE RECORDER (OPTION)".
- 15. 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).
- 16. Remote alarm terminal:** Used to notify an alarm condition of the unit to remote location. See page 14 for details.
- 17. Power switch (back side):** This is for turning ON/OFF the power to the unit. ON – "I" OFF – "O"
- 18. Fixture (back side):** These keep the adequate apace between the unit and wall, and also can be used for fixing the unit.



# FREEZER COMPONENTS

## Control panel



**1. Alarm test key (ALARM TEST):** Buzzer will sound and remote alarm will be activated by pressing.

**2. Alarm buzzer stop key (BUZZER):** Press this key to silence the buzzer in the event that the alarm operates and buzzer sounds. See page 16 for the details.

**3. Defrost key (DEF):** Defrost will be started by pressing this key for more than 5seconds. Pressing this key again after defrosting leads resumption of the operation.

**Note:** After the defrosting, the refrigerating operation is never resumed automatically. Make sure to press back in the freezer chamber.

**4. Set key (SET):** Pressing this key activates temperature set mode and the digit which can be set is flashed. By pressing the key again after setting, the set value is accepted.

**5. Digit shift key (▶▶):** Pressing this key in set mode causes the changeable digits to move. Key lock is activated by pressing this key for more than 5 seconds in the temperature display mode. See "Key lock function" on page 13.

**6. Numerical value shift key (▲):** Pressing this key in the setting mode causes the numerical value to change. ON-OFF of key lock can be selected by pressing this key in the key lock mode.

**7. Door check lamp (DOOR):** This lamp is lit when the door is open.

**8. Alarm lamp (ALARM):** This lamp is flashed during alarm condition.

**9. Temperature display:** This indicator shows the chamber temperature, set temperature, or error code.



# INSTALLATION SITE

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

■ **A location not subjected to direct sunlight**

Do not install the unit under direct sunlight. Installation in a location subjected to direct sunlight cannot obtain the intended performance.

■ **A location with adequate ventilation**

Leave at least 10 cm around the unit for ventilation. Poor ventilation will result in a reduction of the performance and consequently the failure.

■ **A location away from heat generating sources**

Avoid installing the unit near heat-emitting appliances such as a heater or a boiler etc. Heat can decrease the intended performance of the unit.

■ **A location with little temperature change**

Install the unit under stable ambient temperature. The allowable ambient temperature is between -5 and +35°C.

■ **A location with a sturdy and level floor**

Always install the unit on a sturdy and level floor. The uneven floor or tilted installation may cause failure or injury. Install the unit in stable condition to avoid the vibration or noise. Unstable condition may cause vibration or noise.



## **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.

■ **A location not prone to high humidity**

Install the unit in the ambient of 80% R.H. or less humidity. Installation under high humidity may cause current leakage or electric shock.



## **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.

■ **A location without flammable or corrosive gas**

Never install the unit in a flammable or volatile location. This may cause explosion or fire or may result in the current leakage or electric shock by the corrosion of the electrical components.

■ **A location without the possibility of anything fall**

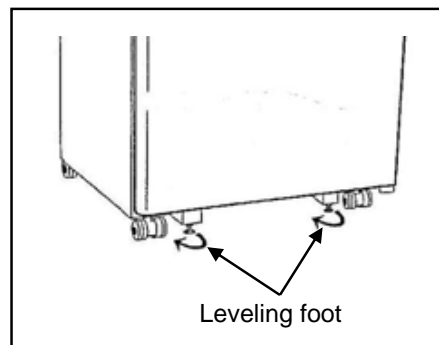
Avoid installing the unit in the location where anything can fall down onto the unit. This may cause the breakdown or failure of the unit.



# INSTALLATION

## 1. Removing 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 diluted neutral dishwashing detergent. (Undiluted detergent can damage the plastic components. For the dilution, refer to the instruction of the detergent.) After the cleaning with the diluted detergent, always wipe it off with a wet cloth. Then wipe off the panels with a dry cloth.

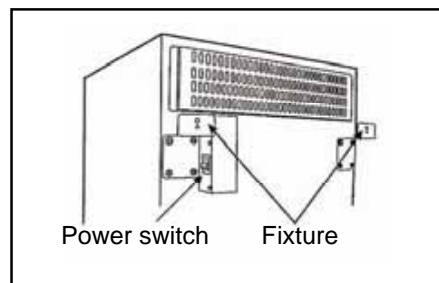


## 2. Adjusting the leveling foot

Extend the leveling feet by rotating them counterclockwise to contact them to the floor. Ensure the unit is level.

## 3. Fixing the unit

Two fixtures are attached to the rear of the frame. Fix the frame to the wall with these fixtures and rope or chain.



## 4. Ground (earth)

The ground (earth) is for preventing the electric shock in the case of the electrical insulation is somehow degraded. Always ground the unit at the time of installation.

### **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.

# START-UP OF UNIT

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

1. Connect the unit to dedicated power supply and turn on the power switch. Do not put any product in the unit at this time.
2. Set the desired temperature.
3. Confirm that the chamber temperature is at the desired temperature.
4. When you are satisfied that the unit is working correctly, begin slowly placing product into the chamber to minimize the temperature rise.

### **Operation after power failure**

The set value is memorized by nonvolatile memory. Accordingly, the freezer resumes the operation with setting before power failure.

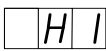
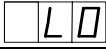

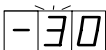

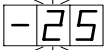


# TEMPERATURE SETTING

Table 1 shows the basic operation method. Perform key operations in the sequence indicated in the table. The example in the table is based on the assumption that the freezer temperature is -20°C.

**Note:** The unit is set at the factory that the chamber temperature -30°C.

**Table 1 Basic operation sequence (Example: Chamber temperature -25°C)**

	Description of operation	Key operated	Indication after operation
1	Connect the power source and turn on the power switch.	----	The current chamber temperature is displayed. Chamber temperature higher than 1°C to be displayed "HI" lower than -41°C to be displayed "LO".  
2	Press set key.	SET	The first digit of the temperature indicator flashes.
3	Set the temperature to -25 with the digit shift key and the numerical value shift key.		Pressing the digit shift key leads the flash of the second digit. 
			Pressing the numerical value shifts key down the figure of the current digit to 2. 
4	Press set key.	SET	The value is stored in memory and the current chamber temperature is displayed.

**Note:**

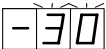

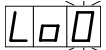



- The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation. In this case, any setting before pressing the set key (SET) is not memorized.
- The freezer temperature can be set in the range between -18 and -35°C. Remember that the guaranteed temperature with no load at an ambient temperature of 35°C is -30°C

## KEY LOCK FUNCTION

This unit is provided with the key lock function. When the key lock is ON, change of temperature setting through the key pad is not available. The key lock is set in OFF at the factory.

Display	Mode	Function
L o 0	Key lock is OFF	Enable to change of temperature setting
L o 1	Key lock is ON	Disable to change of temperature setting

**Table 2 Procedure for key lock setting (change from key lock OFF to key lock ON)**

	Description of operation	Key operated	Indication after operation
1		----	The current chamber temperature is displayed. 
2	Press digit shift key for 5 seconds.		The right digit is flashed. 
3	Press numerical value shift key and scroll the figure to 1.		When pressed, the figure of settable digit increases. 
4	Press set key.	SET	The key lock is set to ON. The current chamber temperature is displayed. 

**Note:**

The key lock only works with the chamber temperature setting and the defrost key (DEF).



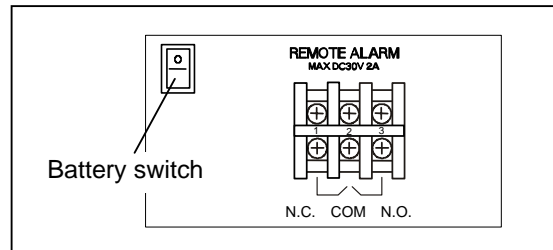
# REMOTE ALARM TERMINAL

## WARNING

Always disconnect the power supply cord before connecting an alarm device to the remote alarm terminal.

The terminal of the remote alarm is installed at the top of the unit. The alarm is outputted from this terminal between terminal 1 and terminal 2. Contact capacity is DC 30 V, 2 A.

	between COM. and N.O.	between COM. and N.C.
At normal	Open	Close
At abnormal	Close	Open



### Note:

The remote alarm is silenced by pressing the alarm buzzer stop key (BUZZER) as the remote alarm is operated in conjunction with the buzzer except for the power failure alarm and alarm test. The contact closed in the of power failure.



# ALARM TEMPERATURE SETTING

This unit is provided with both high and low temperature alarms. The temperature at which the alarm is activated may be changed.

The available set range for high temperature alarm is between +5°C and +15°C, and -5°C and -15°C for low temperature alarm against the chamber temperature.

**Note:** The temperature alarm is set at  $\pm 10^\circ\text{C}$  of the set temperature at the factory.

**Table 3. Procedure for setting high temperature alarm (Example: Chamber temperature +5°C)**

	Description of operation	Key operated	Indication after operation
1		----	The current chamber temperature is displayed.
2	Press and hold the digit shift & numerical shift key more than 5 seconds.	+	Set into alarm temperature setting mode F00 is displayed.
3	Press the numerical shift key and choice high temperature alarm.		If choose high temperature alarm  is displayed.
4	Press set key.	SET	is displayed.
5	Press the numerical shift key		Set the alarm temperature that you want. If choice 5 degree.  is displayed.
6	Press set key.	SET	Current chamber temperature is displayed.

**Table 4. Procedure for setting low temperature alarm (Example: Chamber temperature -5°C)**

	Description of operation	Key operated	Indication after operation
1		----	The current chamber temperature is displayed.
2	Press and hold the digit shift & numerical shift key more than 5 seconds.	+	Set into alarm temperature setting mode F00 is displayed.
3	Press the numerical shift key and choice low temperature alarm.		If choose low temperature alarm is  displayed.
4	Press set key.	SET	is displayed.
5	Press the numerical shift key		Set the alarm temperature that you want. If choice -5 degree.  is displayed.
6	Press set key.	SET	Current chamber temperature is displayed.



# ALARMS & SAFETY FUNCTIONS

This unit has the alarms and safety functions shown in Table 4, and also self diagnostic functions.

**Table 4 Alarms and safety functions**

Alarm & Safety	Situation	Indication	Buzzer	Safety operation
High temperature alarm	If the chamber temperature deviates by +10°C (factory set, changeable) from setting.	Alarm lamp is flashed. Temperature indicator is flashed.	Intermittent tone after a delay 15 minutes.	Remote alarm is activated after a delay of 15 minutes.
Low temperature alarm	If the chamber temperature deviates by -10°C (factory set, changeable) from setting.	Alarm lamp is flashed. Temperature indicator is flashed.	Intermittent tone after a delay 15 minutes.	Remote alarm is activated after a delay of 15 minutes.
Power failure alarm	In the case of power failure. When power switch is turned OFF. When the power to the unit is disconnected.	Alarm lamp is flashed.	Intermittent tone	Remote alarm is activated.
Door alarm	When the door is open.	Door check lamp is lit.	Intermittent tone after a delay of 2 minutes.	-----
Auto return	If a key operation is not performed for about 90 seconds in each setting mode.	Chamber temperature is displayed.	-----	Setting mode is canceled.
Key lock	When the key lock is ON (L1).	-----	-----	Key input is unable.
Thermal sensor Abnormality	If the thermal sensor goes open circuit.	Alarm lamp is flashed. E1 and LO are displayed alternately.	Intermittent tone	Remote alarm is activated. Operation is keeping continuously.
	If the thermal sensor goes short circuit.	Alarm lamp is flashed. E1 and HI are displayed alternately.	Intermittent tone	Remote alarm is activated. Operation is keeping continuously.
Compressor temp. Abnormality	In case of failure of compressor cooling fan motor. In case of abnormal high ambient temperature.	-----	Intermittent tone	Remote alarm is activated. Compressor stops running when the temperature about 95°C.

**Note:**

- The alarm can be canceled by pressing the alarm buzzer stop key (BUZZER), but the remote alarm cannot be silenced.
- After a power failure, the unit will resume operation with the set value that was in place before power failure occurred.



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# DEFROSTING

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Use the scraper provided for removing the frost if the freezer operation must be continued. Pay attention not to impact or damage the inner wall.

1. When defrosting, move all the contents of containers in the freezer to another low temperature freezer.
2. Pressing the DEF key for more than 5 seconds to stop the refrigerating operation.  
While the refrigerating operation is stopped, the current chamber temperature and dF is displayed on the control panel alternately.
3. After a several hours, check the visually that all defrost was removed completely.
4. If a defroster is finished, a drain cap at bottom inside the freezer is removed.  
Draw drain hose, and drain the water with water inside the freezer in the tray.  
Wipe the water left in the freezer, and do the cap.
5. Pressing the DEF key for more than 5 seconds, the refrigerating operation can be started.
6. Once the chamber temperature has dropped to the desired temperature, place the original contents back in the freezer chamber.

**Note:** After the defrosting, the refrigerating is never resumed automatically.

Make sure to press the defrost key (DEF) for more than 5 seconds to start operation again.

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# MAINTENANCE

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## 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 put on the dry gloves to protect the hands** at the time of maintenance. No gloves may cause cut of the finger by the edge or corner.

## Cleaning

- Clean the unit once a month. Regular cleaning keeps the unit looking new.
- Use a dry cloth to wipe off small amounts of dirt on the outside and inside of the unit and all accessories. If the outside panels are dirty, clean them with a diluted neutral dishwashing detergent. (Undiluted detergent can damage the plastic components. For the dilution, refer to the instruction of the detergent.) After the cleaning with the diluted detergent, always wipe it off with a wet cloth. Then wipe off the cabinet or accessories with a dry cloth.
- Never pour water onto or into the unit. Doing so can damage the electrical insulation and may cause electric shock or short circuit.
- The compressor and other mechanical parts are completely sealed. This unit requires absolutely no lubrication.



# REPLACEMENT OF BATTERY

## Location of a nickel-metal-hydride battery

This unit is provided a nickel-metal-hydride battery for the power failure warning device. The battery is located in the battery mounting plate inside the cover on the upper side. (Fig. 1)



The high voltage components are enclosed in the front cover. The cover should be removed by a qualified engineer or a service personnel only to prevent the electric shock.

## Removal of nickel-metal-hydride battery

1. Turn off the power switch, battery switch and disconnect the power supply plug.
2. Lift the front cover. (Fig. 2)
3. Remove 2 screws fixing the battery with a screw driver. (Fig. 3)
4. Disconnect the connector and take out the battery. (Fig. 4)
5. Follow the procedure for recycling or proper disposal.

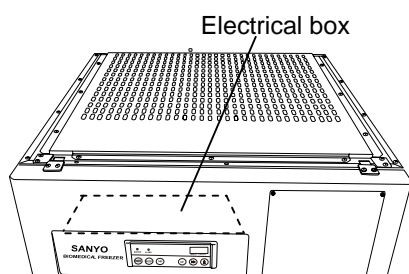


Fig. 1

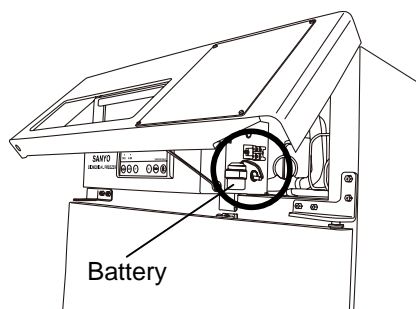


Fig. 2

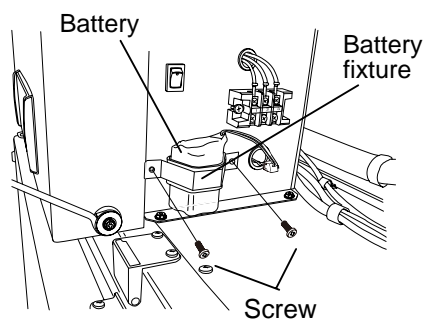


Fig. 3

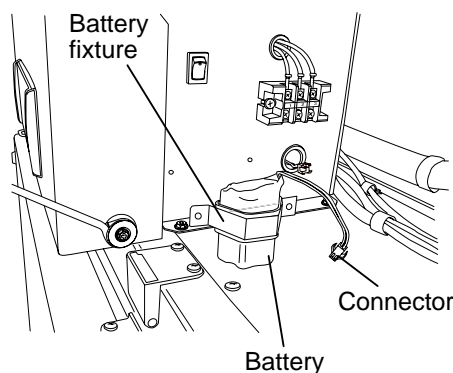


Fig. 4



# TROUBLESHOOTING

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

Malfunction	Check/Remedy
The chamber is not cooled at all	<ul style="list-style-type: none"><li>▪ The circuit breaker of power source is active.</li><li>▪ The voltage is too low? (In this case, call an electrician.)</li><li>▪ The power switch is not ON.</li><li>▪ The large amount of articles (load) is stored in the chamber at one time.</li><li>▪ The freezer is in defrost condition.</li></ul>
The cooling is poor	<ul style="list-style-type: none"><li>▪ The ambient temperature is too high.</li><li>▪ The door is not closed firmly.</li><li>▪ The large amount of frost is built on the chamber wall.</li><li>▪ The set temperature is not inputted properly.</li><li>▪ The freezer is in the direct sunlight.</li><li>▪ There is any heating source near the freezer.</li><li>▪ A rubber cap and insulation for the access port are not set correctly.</li><li>▪ You put too many unfrozen articles into the freezer compartment.</li></ul>
When the unit does not accept changes of set-point temperature	<ul style="list-style-type: none"><li>▪ The key lock is set in ON.</li></ul>
Noise	<ul style="list-style-type: none"><li>▪ The freezer is not installed on the sturdy floor.</li><li>▪ The freezer is not leveled with the leveling feet.</li><li>▪ There is anything touching the frame.</li><li>▪ The freezer is in the status immediately after start up.</li></ul> <p>The unit sometimes causes a noise when the chamber temperature is high due to the large load. The noise gets less and less accompanying with the cooling of the chamber.</p>

**Note:**

If the malfunction is not eliminated after checking the above items, or the malfunction is not shown in the above table, contact Sanyo sales representative or agent.



# 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.**

## 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 waste officials for proper disposal.



\* Label indication is obliged to comply with Taiwanese battery regulation.

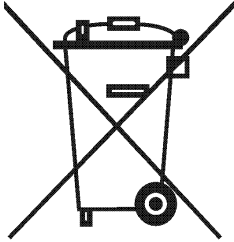


# DISPOSAL OF UNIT

**Note:**

This symbol mark and recycle system are applied only to EU countries and not applied to the countries in the other area of the world.

## Waste Electrical and Electronic Equipment (WEEE) Directive-2002/96/EC



**(English)**

Your SANYO product is designed and manufactured with high quality materials and components which can be recycled and reused.

This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste.

Please dispose of this equipment at your local community waste collection/recycling centre.

In the European Union there are separate collection systems for used electrical and electronic products.

Please help us to conserve the environment we live in!

**(German)**

Ihr SANYO Produkt wurde entworfen und hergestellt mit qualitativ hochwertigen Materialien und Komponenten, die recycelt und wiederverwendet werden können.

Dieses Symbol bedeutet, daß elektrische und elektronische Geräte am Ende ihrer Nutzungsdauer von Hausmüll getrennt entsorgt werden sollen.

Bitte entsorgen Sie dieses Gerät bei Ihrer örtlichen kommunalen Sammelstelle oder im Recycling Centre.

In der Europäischen Union gibt es unterschiedliche Sammelsysteme für Elektrik- und Elektronikgeräte.

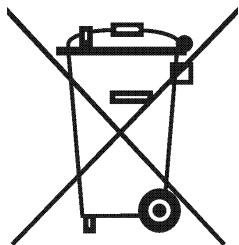
Helfen Sie uns bitte, die Umwelt zu erhalten, in der wir leben!



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# DISPOSAL OF UNIT

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## **(French)**

Votre produit Sanyo est conçu et fabriqué avec des matériels et des composants de qualité supérieure qui peuvent être recyclés et réutilisés.

Ce symbole signifie que les équipements électriques et électroniques en fin de vie doivent être éliminés séparément des ordures ménagères.

Nous vous prions donc de confier cet équipement à votre centre local de collecte/recyclage.

Dans l'Union Européenne, il existe des systèmes sélectifs de collecte pour les produits électriques et électroniques usagés.

Aidez-nous à conserver l'environnement dans lequel nous vivons !

Les machines ou appareils électriques et électroniques contiennent fréquemment des matières qui, si elles sont traitées ou éliminées de manière inappropriée, peuvent s'avérer potentiellement dangereuses pour la santé humaine et pour l'environnement.

Cependant, ces matières sont nécessaires au bon fonctionnement de votre appareil ou de votre machine. Pour cette raison, il vous est demandé de ne pas vous débarrasser de votre appareil ou machine usagé avec vos ordures ménagères.

## **(Spanish)**

Los productos SANYO están diseñados y fabricados con materiales y componentes de alta calidad, que pueden ser reciclados y reutilizados.

Este símbolo significa que el equipo eléctrico y electrónico, al final de su ciclo de vida, no se debe desechar con el resto de residuos domésticos.

Por favor, deposite su viejo "televisor" en el punto de recogida de residuos o contacte con su administración local.

En la Unión Europea existen sistemas de recogida específicos para residuos de aparatos eléctricos y electrónicos.

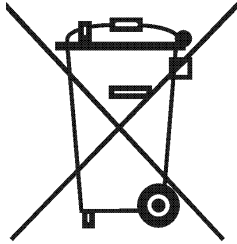
Por favor, ayúdenos a conservar el medio ambiente!



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# DISPOSAL OF UNIT

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## **(Portuguese)**

O seu produto SANYO foi concebido e produzido com materiais e componentes de alta qualidade que podem ser reciclados e reutilizados.

Este símbolo significa que o equipamento eléctrico e electrónico no final da sua vida útil deverá ser descartado separadamente do seu lixo doméstico.

Por favor, entregue este equipamento no seu ponto local de recolha/reciclagem.

Na União Europeia existem sistemas de recolha separados para produtos eléctricos e electrónicos usados.

Por favor, ajude-nos a conservar o ambiente em que vivemos!

## **(Italian)**

Il vostro prodotto SANYO è stato costruito da materiali e componenti di alta qualità, che sono riutilizzabili o riciclabili.

Prodotti elettrici ed elettronici portando questo simbolo alla fine dell'uso devono essere smaltiti separatamente dai rifiuti casalinghi.

Vi preghiamo di smaltire questo apparecchio al deposito comunale.

Nell'Unione Europea esistono sistemi di raccolta differenziata per prodotti elettrici ed elettronici.

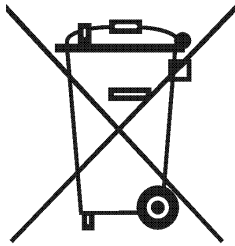
Aiutateci a conservare l'ambiente in cui viviamo!



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# DISPOSAL OF UNIT

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## **(Dutch)**

Sanyo producten zijn ontwikkeld en gefabriceerd uit eerste kwaliteit materialen, de onderdelen kunnen worden gerecycled en weer worden gebruikt.

Het symbool betekent dat de elektrische en elektronische onderdelen wanneer deze vernietigd gaan worden, dit separaat gebeurt van het normale huisafval.

Zorg ervoor dat het verwijderen van de apparatuur bij de lokaal erkende instanties gaat gebeuren.  
In de Europese Unie wordt de gebruikte elektrische en elektronische apparatuur bij de daarvoor wettelijke instanties aangeboden.

Alstublieft help allen mee om het milieu te beschermen.

## **(Swedish)**

Din SANYO produkt är designad och tillverkad av material och komponenter med hög kvalitet som kan återvinnas och återanvändas.

Denna symbol betyder att elektriska och elektroniska produkter, efter slutanvändande, skall sorteras och lämnas separat från Ditt hushållsavfall.

Vänligen, lämna denna produkt hos Din lokala mottagningstation för avfall/återvinningsstation.

Inom den Europeiska Unionen finns det separata återvinningssystem för begagnade elektriska och elektroniska produkter.

Vänligen, hjälp oss att bevara miljön vi lever i!



# TEMPERATURE RECORDER (OPTION)

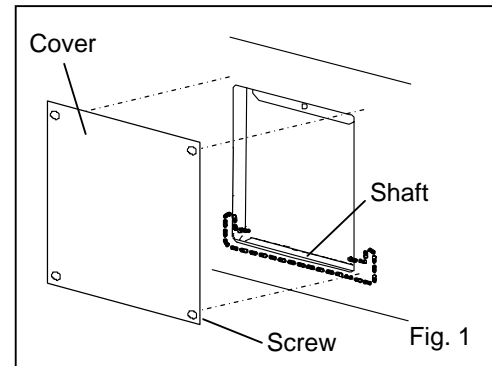
## WARNING

Always disconnect the power supply to the unit prior to attachment of a temperature recorder in order to prevent electric shock or injury.

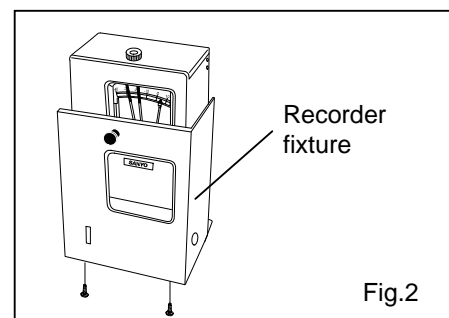
An automatic temperature recorder is available for the freezer as the optional component. The type of the recorder is MTR-G85 and MTR-4015LH. For the attachment, the mounting kit is necessary.

### <MTR-4015LH>

1. Remove the screw on the cover for the recorder space on the upper front of the freezer. Fig. 1

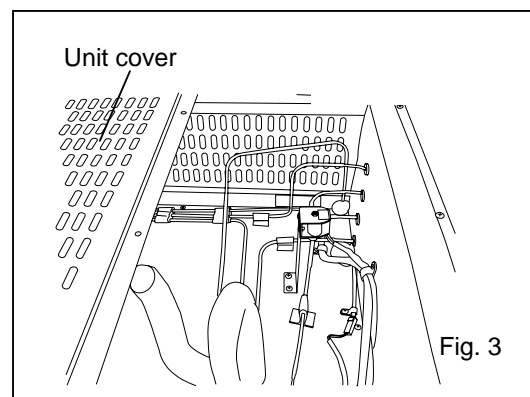


2. Set the automatic temperature recorder (MTR-4015LH) to the recorder fixture (MPR-S30:option) referring to a manual enclosed with the recorder fixture. (Fig.2)



3. Install the recorder in the recorder space.

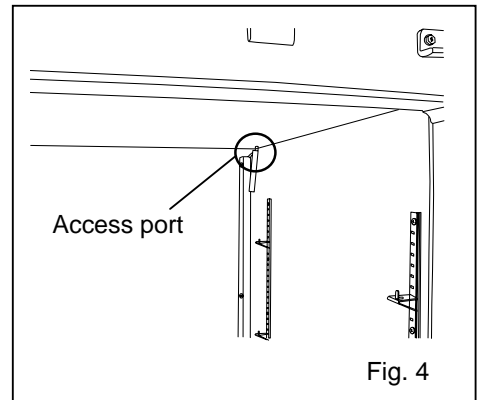
4. Remove the unit cover of the freezer. See Fig.3



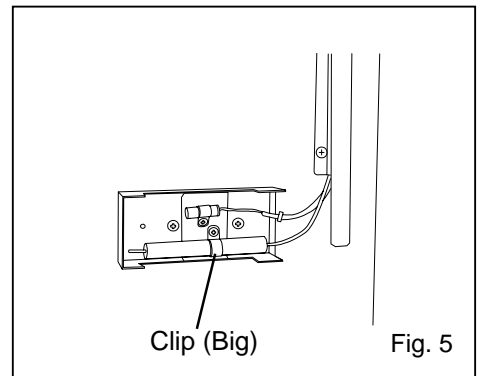


# TEMPERATURE RECORDER (OPTION)

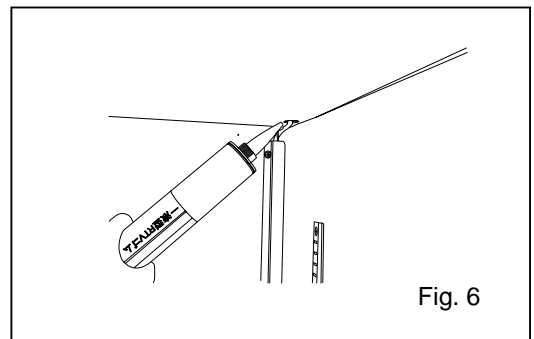
5. Remove 2 rubber caps (outside and inside) on the access port on the back of the freezer and also remove the insulation in the port. Fig. 4



6. A recorder sensor is to do fix with supplied nylon clips the inside wall by screw. See fig. 5.



7. Replace the insulation into the access port and cover the port completely with the rubber caps. Seal the access port with a silicon See fig. 6.



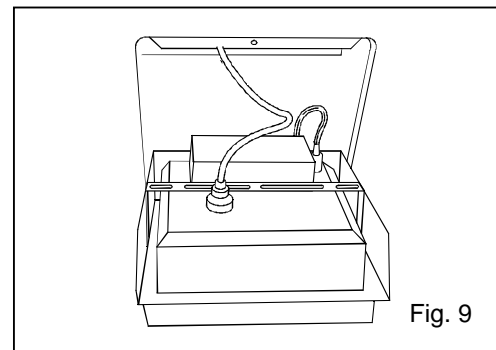
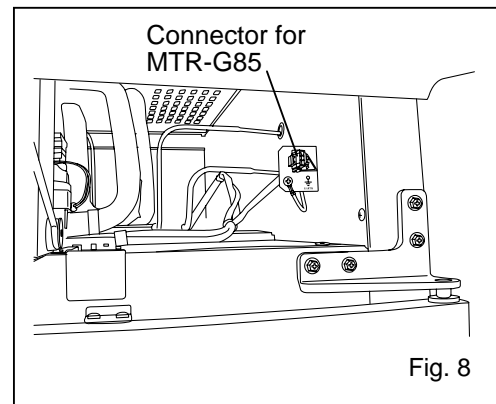
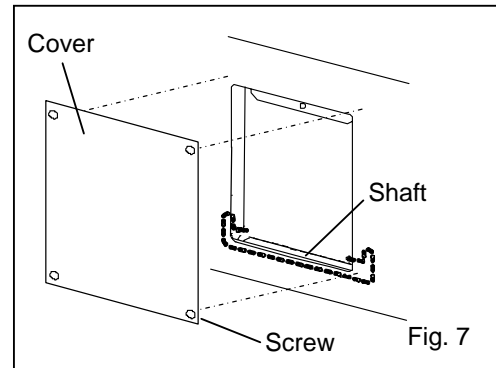
8. Operate the freezer until the chamber temperature gets to the set temperature. Check the recorded temperature and chamber temperature displayed on the control panel. Adjust the zero adjustment volume on the temperature recorder so that the recorded temperature can corresponds with the displayed temperature if they are not compliance each other



# TEMPERATURE RECORDER (OPTION)

## <MTR-G85>

1. Attach the recorder to the mounting kit (MTR-S7) by following the procedure shown in the manual enclosed with the mounting kit.
2. Remove the screw on the cover for the recorder space on the upper front of the freezer. Open the cover. Fig. 7
3. Join the wire in the unit compartment with the recorder wire by each wire connector. See Fig. 8
4. The sensor of the temperature recorder is put in the chamber through the access port in the top of the product.
5. A recorder sensor is to do fix with a supplied nylon clip the inside wall. See fig. 5.
6. A mounting kit and a temperature recorder are installed on the freezer. See fig. 9
7. Operate the freezer until the chamber temperature gets to the set temperature. Check the recorded temperature and chamber temperature displayed on the control panel. Adjust the zero adjustment volume on the temperature recorder so that the recorded temperature can corresponds with the displayed temperature if they are not compliance each other





# SPECIFICATIONS

Name	Biomedical Freezer
Model	MDF-U730M
External dimensions	W770 x D830 x H1955 (mm)
Internal dimensions	W650 x D710 x H1520 (mm)
Effective capacity	690 L
Exterior	Painted steel
Interior	Painted steel
Door	Painted steel
Lock	1
Insulation	Rigid polyurethane foamed-in place
Shelf	Polyethylene coated wire 4 pieces Size: W626 x D620 (mm) Max. load: 50 kg/shelf
Access port	Diameter 30 mm, 1 port on left side 1 port on the top of unit
Compressor	Hermetic type, 400 W
Evaporator	Tube on sheet type
Condenser	Wire and tube type
Refrigerant	R-404A
Temperature controller	Electronics controller
Temperature display	Digital display (between -41 and +1°C)
Temperature sensor	Thermistor sensor
Alarm & safety	High temp. alarm, Low temp. alarm, Power failure alarm, Door alarm, Compressor temperature alarm, Key lock, Thermal sensor abnormality
Memory backup	Nonvolatile memory
Weight	150 kg
Accessories	1 set of key, 1 scraper, 2 large & 2 small nylon clips (for temperature recorder)
Caster	4
Leveling foot	2
Optional component	Automatic temperature recorder (MTR-G85)+ Mounting kit (MPR-S7) , Automatic temperature recorder (MTR-4015LH)+Mounting kit (MPR-S30)

**Note:**

Design or specifications will be subject to change without notice.

The battery for power failure alarm is an article for consumption. It is recommended that the battery will be replaced about every 3 years.



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# PERFORMANCE

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Cooling performance	-20°C to -30°C (ambient temperature; 5°C to 35°C, no load)
Noise level	42 dB [A] (background noise; 20 dB)
Maximum pressure	2.55 MPa
Rated voltage	AC 115 V
Rated frequency	60 Hz
Rated power consumption	260 W

**Note :**

- Specifications will be subject to change without notice.
- 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. Freezer 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: Biomedical Freezer	Model: MDF-U730M	Serial number:	Date of installation:
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Please decontaminate the unit yourself before calling the service engineer.



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