

Panasonic®

Operating Instructions Ultra-Low Temperature Freezer

MDF-U76V

MDF-U76VC

MDF-U56V

MDF-U56VC



MDF-U56V

Please read these instructions carefully before using this product, and save this manual for future use.

See page 40 for all Model Nos.

CONTENTS

INTRODUCTION	P. 2
PRECAUTIONS FOR SAFE OPERATION	P. 3
ENVIRONMENTAL CONDITIONS	P. 7
FREEZER COMPONENTS	P. 8
Control panel	P.10
REMOTE ALARM TERMINAL	P. 11
AIR INTAKE PORT	P. 11
INSTALLATION SITE	P. 12
INSTALLATION	P. 13
START-UP OF UNIT	P. 14
CHAMBER TEMPERATURE SETTING	P. 15
KEY LOCK FUNCTION	P. 15
ALARM TEMPERATURE SETTING	P. 16
SETTING OF ALARM RESUME TIME	P. 17
MONITOR OF FREEZER STATUS	P. 18
SETTING OF COMPRESSOR DELAY TIME	P. 19
SETTING OF DOOR ALARM DELAY TIME	P. 20
ALARMS & SAFETY FUNCTIONS	P. 21
ROUTINE MAINTENANCE	
Cleaning of cabinet	P. 22
Cleaning of condenser filter	P. 22
Defrosting of inside wall	P. 23
Cleaning of air intake port	P. 24
TROUBLESHOOTING	P. 25
DISPOSAL OF UNIT	P. 26
Recycle of battery	P. 26
Decontamination of unit	P. 26
DISPOSAL OF BATTERY	P. 31
TEMPERATURE RECORDER (OPTION)	P. 32
Setting of MTR-G85	P. 32
Installation of MTR-G85	P. 34
BACK UP COOLING KIT (OPTION)	P. 34
SMALL INNER DOOR (OPTION)	P. 36
DRAWER RACK(OPTION)	P. 36
INTERFACE BOARD (OPTION)	P. 36
Installation of MTR-480	P. 36
INVENTORY RACK (OPTION)	P. 37
SPECIFICATIONS	P. 38
PERFORMANCE	P. 40
SAFETY CHECK SHEET	P. 41

INTRODUCTION

- Read this manual carefully before using the appliance and follow the instructions for safety operation.
- Our company 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 our sales representative or agent if any page of the manual is lost or page order is incorrect.
- Contact our 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 our company.

CAUTION

Our company guarantees the product under certain warranty conditions. Our company in no way shall be responsible for any loss of content or damage of content.

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.

Some warning and/or caution labels are attached on the unit. Following shows the description of such labels.

	This label is 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.
	This symbol means attention or refer to document.
	This symbol means earth.
	This symbol means power switch "ON".
	This symbol means power switch "OFF".

WARNING

As with any equipment that uses CO₂ gas, there is a likelihood of oxygen depletion in the vicinity of the equipment. It is important that you assess the work site to ensure there is suitable and sufficient ventilation. If restricted ventilation is suspected, then other methods of ensuring a safe environment must be considered. These may include atmosphere monitoring and warning devices.

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 are locked completely with a key.**
-  **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.

PRECAUTIONS FOR SAFE OPERATION

CAUTION

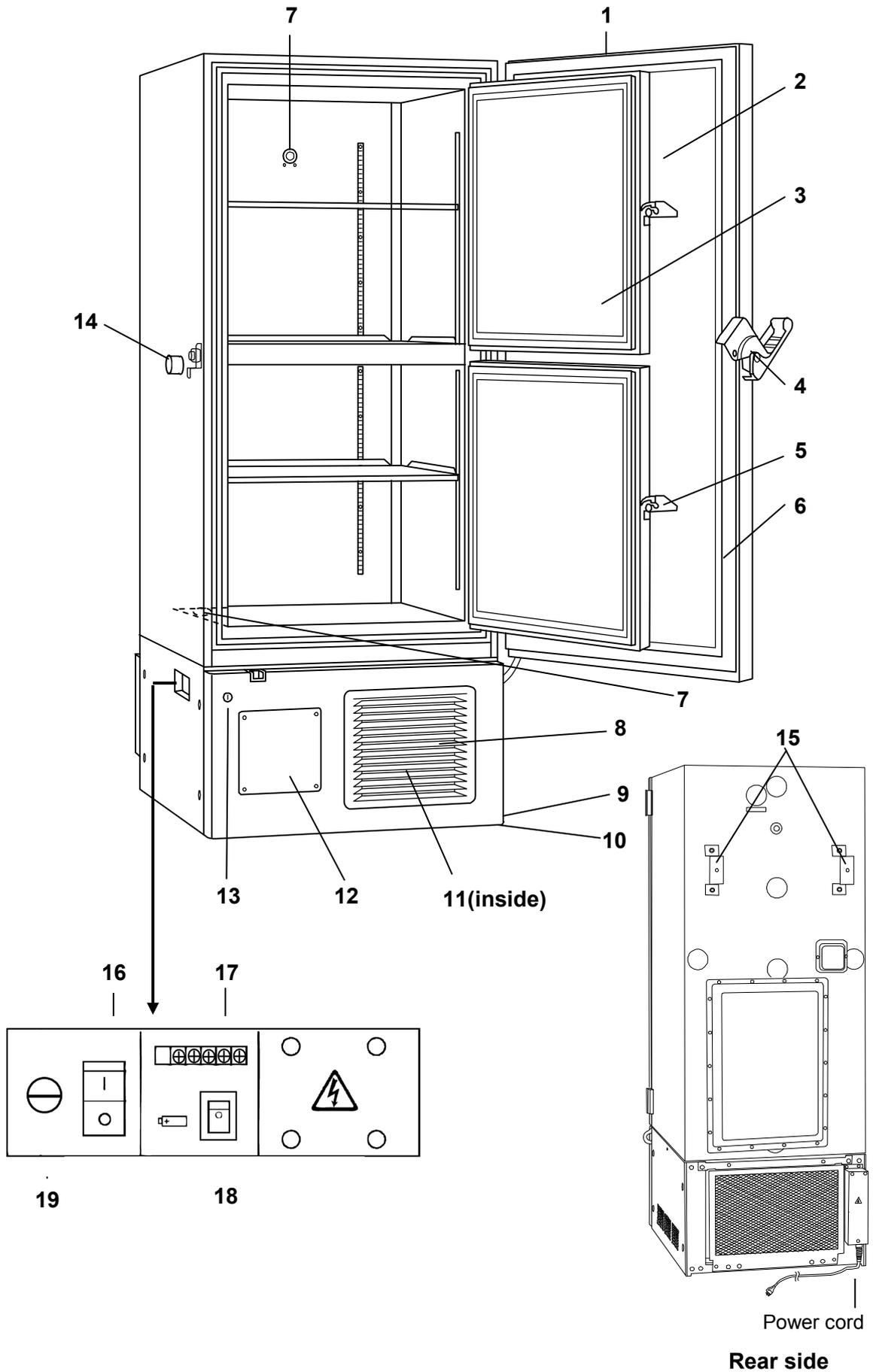
-  **This unit must be plug into a dedicated circuit protected by branch circuit breaker.**
-  **Use a dedicated power source** as indicated on the rating label attached to the unit. A multiple-tap may cause fire resulting from abnormal heating.
-  **Connect the power supply plug to the power source 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 (copy the last page)** when you request any repair or maintenance for the safety of service personnel.

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;
- 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 up to $\pm 10\%$ 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)

FREEZER COMPONENTS



FREEZER COMPONENTS

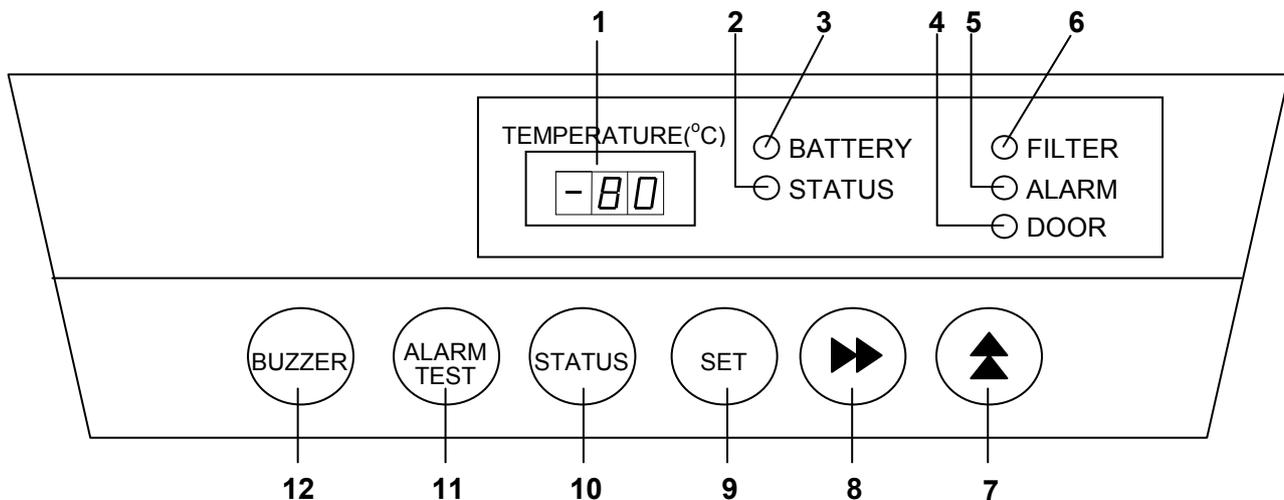
- 1. Control panel (on the upper front of the outer door):** Used for temperature setting and indication of operating status is displayed on the panel. See page 10 for details.
- 2. Outer door:** To open the door, grip the handle. On closing, lock the outer door latch completely.
- 3. Inner door:** The operation of the inner door should be quick to minimize the temperature rise in chamber. Lock the inner door latch completely when the inner door is closed. The inner door is removable for cleaning or defrosting. See page 23 "Routine maintenance".
- 4. Outer door latch:** Always lock the latch when the outer door is closed.
- 5. Inner door latch:** Always lock the inner door latch when the inner door is closed.
- 6. Magnetic door gasket:** This provides a tight door seal and prevents cold air leak. Keep clean.
- 7. Access port (rear and bottom):** This is used for leading a cable and sensor of a measuring equipment, or nozzle of back up cooling kit to chamber.
- 8. Air intake vent (grille):** Do not block this vent to keep the proper cooling performance.
- 9. Caster:** Four casters are provided to facilitate moving of the cabinet. For the installation, adjust the leveling foot so that the front two casters cannot contact with the floor.
- 10. Leveling foot:** The height of the freezer can be adjusted by this screw type foot. Keep the unit in level at the installation.
- 11. Condenser filter (behind the grille):** This filter prevents the dust from accumulating on the condenser. The dusty condenser filter may cause failure of refrigerating device. Clean the condenser filter once a month. See page 22 "Routine maintenance" for the cleaning.
- 12. Space for temperature recorder:** An automatic temperature recorder (optional component) can be attached here. See page 32 "Temperature recorder (Option)".
- 13. Key lock:** Turn clockwise to 180° with a key and the outer door is securely locked.
- 14. Air intake port:** After closing the outer door, if used to open soon. See page 11
Be sure to close the cap of the air intake port after the use.
* Replace the cap when the air intake port is not used. Improper replacement may cause rise of chamber temperature or condensation around the air intake port.
- 15. Fixture (on back side):** Two fixtures are provided as spacers between the cabinet and wall and also serve as hooks to fix the unit. See page 13 "Installation".
- 16. Power switch:** This is for turning ON/OFF the power to the unit. ON – "I" OFF – "O"
- 17. Remote alarm terminal:** This is used to notice an alarm condition of the unit to remote location. Refer to page 11 "Remote alarm terminal".
- 18. Battery switch:** This is a switch for a battery for power failure alarm. Normally, turn on this switch. Be sure to turn off this switch if the freezer is not in operating for the long period (over one month).
- 19. Fuse:** AC 250 V, 5 A is attached.

WARNING

Fix the shelf supports and shelves securely. Incomplete installation may cause injury or damage.
Never touch the storage items with wet hands. Touching with the wet hands may cause frostbite.
Replace the cap when the air intake port is not used. Improper replacement may cause rise of chamber temperature or condensation around the air intake port.

FREEZER COMPONENTS

Control panel



1. Digital temperature indicator: This indicator shows the present chamber temperature or set temperature.

2. Status monitor lamp (STATUS): This lamp lights when environmental condition or status gets worse or the unit is out of normal operation.

3. Battery check lamp (BATTERY): This lamp lights to recommend the battery replacement. This lamp blinks when a fan motor is replacement. For the replacement, consult our sales representative or agent.

4. Door check lamp (DOOR): This lamp lights when the outer door is open.

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

6. Filter check lamp (FILTER): This lamp lights and buzzer sound when the excessive dust is accumulated on the condenser filter. When this lamp lights, clean the condenser filter following the procedure on page 22.

7. Numerical value shift key (▲): Pressing this key in the setting mode causes the numerical value to shift. "ON-OFF" of key lock can be selected by pressing this key in the key lock setting mode. By pressing this key for more than 5 seconds in the temperature display mode leads setting mode for alarm temperature, alarm resume time, compressor delay time and door alarm delay time. Refer to page 15, 16, 17, 19 and 20 for details respectively.

8. Digit shift key (▶▶): Pressing this key in the setting mode causes the changeable digit to shift. Key lock setting is available by pressing this key for more than 5 seconds in the temperature display mode. Refer to page 15 for details.

9. Set key (SET): Temperature setting mode is led by pressing this key and the changeable digit is flashed. By pressing this key again, the setting is memorized. The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation.

10. Status key (STATUS): By pressing this key in the event of the status monitor lamp ON, the status code is displayed on the digital temperature indicator. This key is not effective when the freezer is running normally. See page 18 for details.

11. Alarm test key (ALARM TEST): To check the alarm system during freezer operation. Pressing this key with the battery switch ON gets the alarm lamp to flash, the remote alarm to operate, and the buzzer to sound.

12. Buzzer stop key (BUZZER): To silence the audible alarm under alarm condition, press this key. The buzzer during alarm test cannot be silenced by this key. But the remote alarm is not canceled.

REMOTE ALARM TERMINAL

The terminal of the remote alarm is installed at the lower left side of the unit. The alarm is outputted from this terminal. Contact capacity is DC 30 V, 2 A.

Contact output:

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

Note:

- The buzzer is silenced by pressing buzzer stop key (BUZZER) on the control panel during alarm condition. (A remote alarm is continuing the operation.)

The buzzer will be activated again after certain suspension if the alarm condition is continued.

- The alarm is actuated when the power supply plug is disconnected from the outlet or the power switch is OFF.

Use a twisted sealed wire for the connection.
Type UL2343, UL2448, UL2464, UL2552, UL 2623
Length: 30 m max.

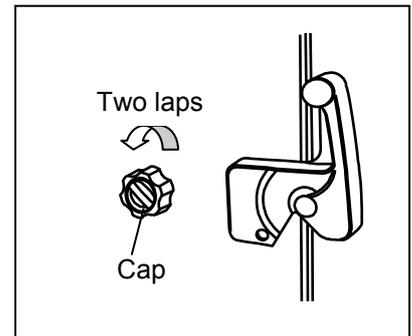
AIR INTAKE PORT

When a door is closed and opened soon, a door does not sometimes open this product.

The warm air which went into the chamber is cooled down rapidly, and this is because air inside the chamber contracted.

When a door is closed and opened soon, a door is easy to open with the following process.

1. Turn the cap of the left side counterclockwise about two laps. (That can be removed completely)
2. Put the air into the chamber from about twenty seconds, and open a door.
3. Close a cap if a door opens.



A door may not open in the above method when there are frost and ice in the air intake port. In that case, open a cap, and investigate the matter whether there is no frost inside the air intake port. Remove frost inside the air intake port in "the air intake port cleaning stick" of the accessories when there is frost. Clean a air intake port every month even when there is no frost inside the air intake port. Refer to page 24.

⚠ WARNING

For removing the frost of the air intake port, do not use a tool with sharp edge such as a knife or a screw driver.

Replace the cap when the air intake port is not used. Improper replacement may cause rise of chamber temperature or condensation around the air intake port.

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 +30°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 volatile 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.

Note:

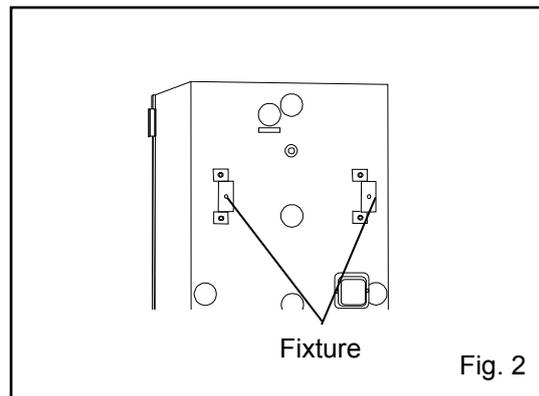
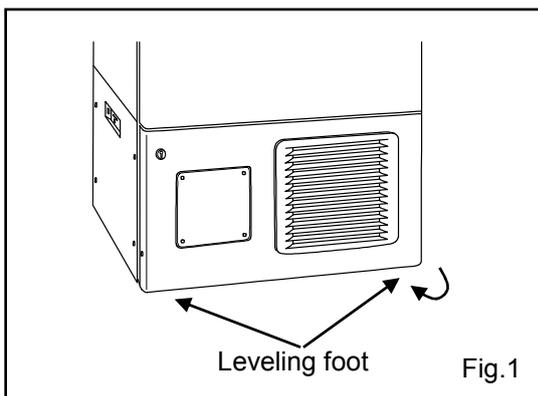
Remove the cable tie banding the power supply cord. Prolonged banding may cause the corrosion of the cord coating.

2. Adjusting the leveling foot

Extend the leveling feet by rotating them counterclockwise to contact them to the floor. Ensure the unit is level. (Fig. 1)

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. (Fig. 2)



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.

5. Installing the earth leakage breakers

This product is to connect a earth leakage breaker to the power supply side of the product.

Contact our sales representative or agent at the time of installation of the earth leakage breaker.

START-UP OF UNIT

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

1. Turn off the switch of the back up cooling kit (optional component) if it is installed.
2. Connect the power supply cord to the dedicated outlet having appropriate rating with the chamber empty, and turn on the power switch on the freezer.
3. Turn on the battery switch.
4. Set the desired chamber temperature. See page 15 for the chamber temperature setting.
5. Check that the chamber temperature reaches the desired temperature.
6. Turn on the switch of back up cooling kit (optional component) if it is installed.
7. Make sure that the alarm lamp blinks and the buzzer sounds by pressing the alarm test key (ALARM TEST). The remote alarm is also operated. E09 is displayed on the digital temperature indicator if the battery switch is OFF. Make sure to turn on the battery switch.
8. After confirming the above, you can put articles into the chamber in a small batch to prevent the temperature rise.

CAUTION

Do not put too many warm articles in the chamber. The temperature rise may cause the damage to the articles in the chamber.

WARNING

Fix the shelf supports and shelves securely. Incomplete installation may cause injury or damage.

Operation after power failure

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

When the freezer is recovered from power failure with the chamber temperature higher than the preset temperature, then the high temperature alarm is activated and the buzzer sounds and the remote alarm is also activated. Push the buzzer stop key (BUZZER) to silence buzzer and take appropriate actions if needed.

WARNING

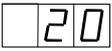
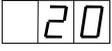
When this product operates at the first start-up or after no use for long period, the built-in battery capacity may be lowered or completely zero because of discharge of the battery. After installation the product, the freezer should operate for more than 3 days (72 hours) to charge the battery.

CHAMBER TEMPERATURE SETTING

Table 1 shows the basic procedure for setting the chamber temperature. Perform key operations in the sequence indicated in the table. The example in the table is based on the assumption that the desired temperature is -75°C .

Note: The unit is set at the factory that the chamber temperature -80°C .

Table 1. Basic operation sequence (Example: Chamber temperature -75°C)

	Description of operation	Key operated	Indication after operation
1	Turn the power switch ON.	----	The current chamber temperature is displayed. 
2	Press set key.	SET	The second digit is flashed. 
3	Set to -75 with the numerical value shift key and digit shift key.		When pressed, the figure of settable digit changes.
			When pressed, the settable digit is shifted. 
4	Press set key.	SET	Set temperature is memorized and the current chamber temperature is displayed. 

Note:

- Although the value of the chamber temperature setting can range from -50°C to -90°C , the guaranteed temperature when there is no load is -86°C when the ambient temperature is 30°C .
- 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 set key (SET) is not memorized.

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 0	Key lock is OFF	Enable to change of temperature setting
L 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 first digit is flashed. 
3	Press numerical value shift key and scroll the figure to 1.		When pressed, the figure of settable digit changes. 
4	Press set key.	SET	The key lock is set to ON. The current chamber temperature is displayed. 

- The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation.

ALARM TEMPERATURE SETTING

This unit is provided with the high and low temperature alarm and the temperature at which the alarm is activated is changeable.

The following procedure shows the setting of alarm temperature according to the condition below:

High temperature alarm: activates at the temperature 5°C higher than the set temperature

Low temperature alarm: activates at the temperature 5°C lower than the set temperature

Note:

The alarm temperature is set at the factory 10°C higher and lower than the set temperature.

The available range of alarm temperature is between 5°C and 40°C higher or lower than the set temperature.

Table 3. Procedure for setting high temperature alarm

	Description of operation	Key operated	Indication after operation
1		----	The current chamber temperature is displayed.
2	Press numerical value shift key for about 5 seconds.		The first digit is flashed.
3	Press numerical value shift key and scroll the figure to 1.		The first digit is flashed.
4	Press set key.	SET	The first digit is flashed.
5	Scroll the figure to 005 by using digit shift key and numerical value shift key		When pressed, the figure of settable digit changes.
			When pressed, the changeable digit moves.
6	Press set key.	SET	Alarm temperature is memorized and the current chamber temperature is displayed.

Table 4. Procedure for setting low temperature alarm

	Description of operation	Key operated	Indication after operation
1		----	The current chamber temperature is displayed.
2	Press numerical value shift key for about 5 seconds.		The first digit is flashed.
3	Press numerical value shift key and scroll the figure to 2..		The first digit is flashed.
4	Press set key.	SET	The first digit is flashed.
5	Scroll the figure to -05 by using digit shift key and numerical value shift key		When pressed, the figure of settable digit changes.
			When pressed, the changeable digit moves.
6	Press set key.	SET	Alarm temperature is memorized and the current chamber temperature is displayed.

• The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation.

SETTING OF ALARM RESUME TIME

The alarm buzzer is silenced by pressing alarm buzzer stop key (BUZZER) on the control panel during alarm condition. (A remote alarm is continuing the operation.).

The buzzer will be activated again after certain suspension if the alarm condition is continued. The suspension time can be set by following the procedure shown in the Table 5 below.

The example in the table is based on the assumption that the desired duration is 20 minutes.

Note: The duration is set in 30 minutes at the factory.

Table 5. Setting procedure for alarm resuming time (change from 30 minutes to 20 minutes)

	Description of operation	Key operated	Indication after operation
1		----	The current chamber temperature is displayed.
2	Press digit shift key for 5 seconds.		The first digit is flashed.
3	Set the figure to F25 with the digit shift key and numerical value shift key.		The settable digit is shifted.
			When pressed, the figure of settable digit changes.
4	Press set key.	SET	The current resume time is displayed. The second digit is flashed.
5	Set the figure to 020 with the numerical value shift key.		When pressed, the figure of settable digit changes.
6	Press set key.	SET	The setting is memorized and the current chamber temperature is displayed.

- The settable alarm resume time is 10, 20, 30, 40, 50, or 60 minutes (The setting is 010, 020, 030, 040, 050, or 060). The buzzer would not resume if the resume time is set in 000.
- It is recommended to set the alarm resume time when the freezer is not under alarm condition. The setting during alarm condition is effective on the next alarm condition.
- The setting cannot be changed during power failure.
- The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation.

MONITOR OF FREEZER STATUS

The freezer has a function to monitor the running status of the unit as shown in table 6 below. This is to notice the running status getting worse (not failure).

1. The status monitor lamp is lit when one of the running status shown in table 6 is detected.
2. The S code (--X, X: 1 to 3) is displayed on the temperature indicator by pressing status key (STATUS) when the status monitor is lit.
3. Pressing the status key (STATUS) again returns to current chamber temperature on the temperature indicator. (The indication returns to the chamber temperature display automatically when no key is operated for 90 seconds.)

Table 6. Monitor of running status

Kind of function	Status	Indication	If this status continues	Remedy
Notice of abnormal ambient temperature	When the ambient temp. is over approx. 35°C or lower than about 0°C.	status lamp lights. "--1" is displayed.	Decrease of cooling performance or durability of refrigerating circuit.	Recheck air-conditioning of installed site.
Notice of low voltage	When the power source voltage is less than approx. 195 V when the rated voltage is between 220 and 240 V.	status lamp lights. "--2" is displayed.	Abnormal heat at power supply outlet or degrade of starting performance of refrigerating circuit	Use dedicated power source.
Notice of overload condition	When the running rate of refrigerating Circuit is higher than usual.	status lamp lights. "--3" is displayed.	Decrease of cooling performance or durability of refrigerating circuit.	1. This is likely to happen when a large amount of materials is stored. 2. Check ambient temp., voltage, and sealing of outer/inner door.

Note:

- The S code displayed on the temperature indicator is changed every few seconds if two or three status shown in the above table are detected at the same time. (--1 ⇒ --2 ⇒ --3 ⇒ --1 repeated)
- The monitoring function does not trigger a buzzer or conduct a safety operation.
- In the case of multiple indication of S code, follow the remedy for each status.
- The status monitor lamp (STATUS) may be lit under normal running condition when the small inner door (MDF-5ID or MDF-7ID) is installed because of less cooling performance. In this case, adjust the air conditioning so that the ambient temperature is around 23°C, or set the chamber temperature 10°C higher than the current setting.

SETTING OF COMPRESSOR DELAY TIME

The delay time of high and low stage side compressor can be changed to reduce the load on the power line and to facilitate the start-up (reset) of the freezer after power failure.

The example in the table 7 is based on the assumption that the delay time is changed to 4 minutes. (The delay time is set in 3 minutes at the factory.)

Note:

- The delay time should be the same for high stage side and low stage side compressors.
- The setting range for delay time is between 3 and 15 minutes. The cool down of chamber temperature may be slow when the setting of delay time is over 5 minutes, depending on the installation environment. There is no need of changing the delay time when the capacity of power source is adequate.

Table 7. Setting procedure for delay time (change from 3 minutes to 4 minutes)

	Description of operation	Key operated	Indication after operation
1		----	The current chamber temperature is displayed.
2	Press numerical value shift key for 5 seconds.		The first digit is flashed.
3	Set the figure to F05 with the numerical value shift key.		When pressed, the figure of settable digit changes.
4	Press set key.	SET	The current delay time is displayed. The first digit is flashed.
5	Set the figure to 004 with the numerical value shift key.		When pressed, the figure of the first digit changes.
6	Press set key.	SET	The delay time is memorized and the current chamber temperature is displayed.

- The compressor starts to operate with the delay time set by the above procedure at the time of power on or after power failure. However, the start up of the low stage side compressor is affected by the chamber temperature and the cascade condenser temperature. The delay time varies depending on how they meet the start up conditions. It is more than four minutes in case of the above example.
- The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation.

SETTING OF DOOR ALARM DELAY TIME

The buzzer of door alarm is activated with 2 minutes delay when the outer door is open. The delay time is changeable.

Follow the procedure in table 8 below to change the setting of delay time. The procedure assumes that the delay time is changed from 2 minutes to 3 minutes.

(The delay time is set in 2 minutes at the factory.)

Table 8. Setting procedure for delay time (change from 2 minutes to 3 minutes)

	Description of operation	Key operated	Indication after operation
1		----	The current chamber temperature is displayed.
2	Press numerical value shift key for 5 seconds.		The first digit is flashed.
3	Set the figure to F04 with the numerical value shift key.		When pressed, the figure of settable digit changes.
4	Press set key.	SET	The current delay time is displayed. The first digit is flashed.
5	Set the figure to 003 with the numerical value shift key.		When pressed, the figure of the first digit changes.
6	Press set key.	SET	The delay time is memorized and the current chamber temperature is displayed.

Note:

- The setting range for delay time is between 1 and 15 minutes.
- The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation.

ALARMS & SAFETY FUNCTIONS

This unit has the alarms and safety functions shown in Table 9, and also self diagnostic functions.

Table 9. Alarms and safety functions

Alarm & Safety	Situation	Indication	Buzzer	Safety operation
High temperature alarm	If the chamber temperature is higher than the temperature at which the high temperature alarm is activated.	Alarm lamp is flashed. Digital temperature indicator is flashed.	Intermittent tone with about 15 minutes delay.	Remote alarm with about 15 minutes delay.
Low temperature alarm	If the chamber temperature is lower than the temperature at which the low temperature alarm is activated.			
Power failure alarm	When the power to the unit is disconnected.	Alarm lamp is flashed.	Intermittent tone	Remote alarm.
Door alarm	When the door is open.	Door check lamp lights.	Intermittent tone with about 2 minutes delay	-----
Filter alarm	When the condenser filter is clogged.	Filter check lamp lights.	Intermittent tone	-----
Battery check	When about 3 years has passed with power switch ON.	Battery check lamp lights.	-----	-----
Fan motor check	When about 6 years has passed with power switch ON.	Battery check lamp flashed.	-----	-----
Auto-return	When there is no key pressing in each setting mode for 90 seconds.	Chamber temperature is displayed.	-----	Finishing of each setting mode.
Key lock	When the key lock is ON.	-----	-----	Change of setting is disable.
Sensor abnormality	If the thermal sensor is disconnected.	Alarm lamp is flashed. E01 and chamber temp. are displayed alternately.	Intermittent tone	Remote alarm. Unit keeps continuous running.
	If the thermal sensor is short-circuited.	Alarm lamp is flashed. E02 and chamber temp. are displayed alternately.	Intermittent tone	Remote alarm. Unit keeps continuous running.
	If the cascade sensor is disconnected.	Alarm lamp is flashed. E03 and chamber temp. are displayed alternately.	Intermittent tone	Remote alarm.
	If the cascade sensor is short circuited.	Alarm lamp is flashed. E04 and chamber temp. are displayed alternately.	Intermittent tone	Remote alarm.
	If the filter sensor is disconnected.	Alarm lamp is flashed. E05 and chamber temp. are displayed alternately.	Intermittent tone	Remote alarm.
	If the filter sensor is short-circuited.	Alarm lamp is flashed. E06 and chamber temp. are displayed alternately.	Intermittent tone	Remote alarm.
	If the ambient temperature sensor is disconnected.	Alarm lamp is flashed. E07 and chamber temp. are displayed alternately.	Intermittent tone	Remote alarm.
	If the ambient temperature sensor is short-circuited.	Alarm lamp is flashed. E08 and chamber temp. are displayed alternately.	Intermittent tone	Remote alarm.
Battery switch check	When the battery switch is OFF during alarm test.	Alarm lamp is flashed. E09 is flashed.	-----	-----
Condenser temp. abnormality	In the event of failure of fan motor for cooling the compressor	E10 and chamber temp. are displayed alternately.	Intermittent tone	Remote alarm. Compressor of high stage side stops.

Note:

- When the operation is started in high ambient temperature, the filter check lamp is sometimes flashed. In this case, the lamp is off automatically when the chamber temperature is getting lower.
- The freezer resumes the operation after power failure with the temperature setting before power failure as the chamber temperature setting and alarm temperature setting are memorized in the nonvolatile memory.
- The battery for power failure alarm is an article for consumption. It is recommended that the battery will be replaced about every three years. Contact our sales representative or agent at the time of replacement of the battery.
- Fan motors are expendable supplies. Replace them for about every six years. Contact our sales representative or agent at the time of replacement of the fan motors.
- The chamber temperature is displayed for five seconds by pressing buzzer stop key (BUZZER) during power failure alarm. Then the buzzer is silenced. The alarm lamp keeps flashing.

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.

Cleaning of cabinet

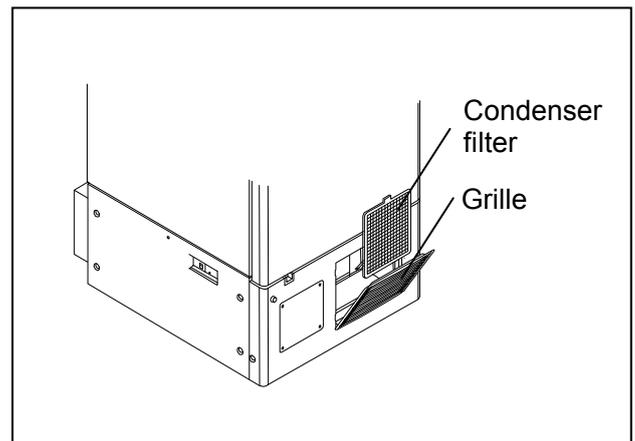
- Clean the unit once a month. Regular cleaning keeps the unit looking new.
- Use a dry cloth to wipe off small amounts of dirt on the outside and inside of the unit and all accessories. If the outside panels are dirty, clean them with a diluted neutral dishwashing detergent. (Undiluted detergent can 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 electric insulation and cause failure.
- The compressor and other mechanical part are completely sealed. This unit requires absolutely no lubrication.
- Check the back up cooling kit by pressing test switch once a month if it is installed.
- Remove the frost or ice on the chamber wall and clean the condenser filter once a month.

Cleaning of condenser filter

This unit is provided with the filter check lamp on the control panel. Clean the condenser filter when this lamp lights and buzzer sound. Clean the condenser filter once a month even if the filter check lamp is not on since a clogged filter may cause shorter compressor life as well as the poor cooling.

Clean the condenser filter by the procedure below.

1. Open the grille by pulling it to you as shown in the figure.
2. Take out the condenser filter.
3. Wash the condenser filter with water.
4. Replace the condenser filter and the grille.
5. Check that the filter check lamp is off in the event the filter check lamp was ON.



⚠ WARNING

Do not touch the condenser directly when the filter is removed for cleaning. This may cause injury by hot surface.

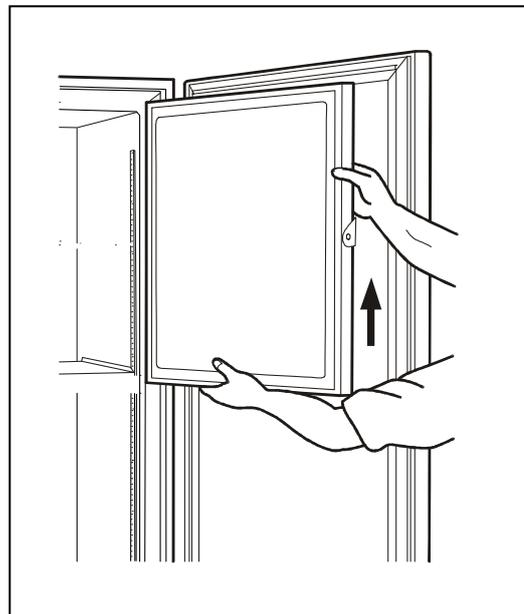
ROUTINE MAINTENANCE

Defrosting of inside wall

The frost is built at the upper portion of the chamber and inner door. The excessive frost possibly make some gap between the cabinet and magnetic door gasket, which may cause poor cooling. Remove the frost on the inner door with a scraper enclosed with the unit. Following shows the procedure for removing the chamber frost.

Note: For removing the frost, do not use a tool with sharp edge such as a knife or a screw driver.

1. Turn off the back up cooling kit if applicable.
2. Take out and transfer all the contents to another freezer or a container which is refrigerated by liquid carbon dioxide or dry ice.
3. Turn off the power switch of the freezer.
4. Open the outer door and inner door. Remove the inner door by lifting up as shown in the figure.
5. Leave the freezer as it is.
6. The water accumulated on the bottom of the chamber should be wiped up with a dry cloth.
7. After cleaning the chamber and inner door, replace the inner door and start up the unit according to the procedure on page 14.
8. Put back the articles into the sufficiently cooled freezer compartment.
9. Turn on the back up cooling kit if it is provided.



WARNING

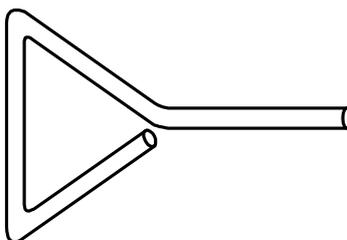
For removing the frost of the access port, do not use a tool with sharp edge such as a knife or a screw driver.

ROUTINE MAINTENANCE

Cleaning of air intake port

The cap of the left side is turned counterclockwise (Counterclockwise direction), and this product is removed, and the outer air is adopted into the chamber, and it opens a outer door. Therefore, frost is easy to be settled around the air intake port inside the chamber. Clean it in the case shown below.

Condition	Check / Remedy
When frost and ice can be seen in the port of the air intake port.	The pipe of the air intake port is thrust with a stick for air intake port cleaning of the accessories, and frost is taken.
An outside door does not open even if the cap of the air intake port is opened.	The pipe of the air intake port is thrust with a stick for air intake port cleaning of the accessories, and frost is taken.
Frost and ice can be seen in the chamber.	Frost inside the chamber and ice are taken with Scraper of the accessories.



Stick for air intake port cleaning (Accessory)



WARNING

For removing the frost of the air intake port, do not use a tool with sharp edge such as a knife or a screw driver.

TROUBLE SHOOTING

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"> ▪ The circuit breaker of power source is active. ▪ The voltage is too low (In this case, call an electrician). ▪ The power is not supplied. ▪ The breaker is free. ▪ The large amount of articles (load) is stored in the chamber at one time.
The cooling is poor	<ul style="list-style-type: none"> ▪ The ambient temperature is too high. ▪ The latch of inner door is not closed completely. The outer door is not closed firmly. (The frost or ice between the cabinet and door gasket possibly prevents door seal.) ▪ The air intake vent is blocked. ▪ The condenser filter is clogged. Always clean the condenser filter when the filter check lamp is lit. ▪ The outer door is not shut tightly. ▪ The inner door is not installed correctly. ▪ The set temperature in the controller is not set properly. ▪ The freezer is in the direct sunlight. ▪ There is any heating source near the freezer. ▪ A rubber cap and insulation are not set correctly on the access port. ▪ You put too many unfrozen articles into the chamber.
Alarm test key cannot actuate the alarm	<ul style="list-style-type: none"> ▪ The alarm is activated only when the power switch is ON. ▪ When only the buzzer or only the alarm is actuated by the alarm test key, the unactuated part is out of order, and must be replaced.

Note:

If the malfunction is not eliminated after checking the above items, or the malfunction is not shown in the above table, contact our 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 that doors are locked completely with a key.**

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.

Decontamination of unit

Before disposing a ultra low temperature freezer with biohazardous danger, decontaminate the ultra low temperature freezer to the extent possible by the user.

DISPOSAL OF UNIT

(English)

FOR EU USERS

The symbol mark and recycling systems described below apply to EU countries and do not apply to countries in other areas of the world.

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

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

Note:

If a chemical symbol is printed beneath the symbol mark, this chemical symbol means that the battery or accumulator contains a heavy metal at a certain concentration. This will be indicated as follows: Hg: mercury, Cd: cadmium, Pb: lead

In the European Union there are separate collection systems for used electrical and electronic equipment, batteries and accumulators.

Please, dispose of them correctly at your local community waste collection/recycling centre.

Please, help us to conserve the environment we live in!

(German)

Für EU-Staaten

Das Symbol und das erwähnte Wiederverwertungssystem gelten nur für die Länder der EU und nicht für andere Länder oder Gebiete in der Welt.

Die Produkte von Panasonic werden aus hochwertigen Materialien und Komponenten gefertigt, die sich wieder verwenden lassen.

Das Symbol bedeutet, dass elektrische oder elektronische Geräte, Batterien und Akkus am Ende ihrer Lebensdauer nicht im Haushaltsmüll entsorgt werden dürfen.

Hinweis:

Ein chemisches Zeichen unter dem Symbol bedeutet, dass die Batterie bzw. der Akku Schwermetalle in gewissen Konzentrationen enthält. Die Metalle werden wie folgt bezeichnet: Hg: Quecksilber, Cd: Kadmium, Pb: Blei

In der Europäischen Union gibt es separate Sammelstellen für elektrische und elektronische Geräte, Batterien und Akkus.

Entsorgen Sie solche Geräte bitte richtig in der kommunalen Sammelstelle bzw. im Recyclingzentrum.

Helfen Sie mit, die Umwelt in der wir leben, zu schützen.



DISPOSAL OF UNIT

(French)

POUR LES UTILISATEURS DE UE

Le symbole et les systèmes de recyclage évoqués ci-dessous s'appliquent uniquement aux pays de UE.

Votre produit Panasonic est conçu et fabriqué avec des composants et des matériaux de hautes qualités qui peuvent être recyclés et/ou réutilisés.

Le symbole signifie que les équipements électriques et électroniques, les batteries et les accumulateurs ne doivent pas être mis au rebut avec les déchets domestiques à l'issue de leur durée de vie.

Remarque:

Si un symbole chimique est imprimé sous le symbole, le symbole chimique indique que la batterie ou l'accumulateur contient une certaine concentration de métaux lourds. Les métaux sont indiqués de la manière suivante: Hg: mercure, Cd: cadmium, Pb: plomb.

Il existe différents systèmes de collecte pour les équipements électriques et électroniques, les batteries et les accumulateurs usagés au sein de l'Union européenne.

Veuillez mettre les équipements au rebut de manière correcte, auprès de votre centre de recyclage/de collecte des déchets local.

Aidez-nous à préserver 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)

PARA USUARIOS DE LA UNION EUROPEA

El símbolo y los sistemas de reciclado descritos a continuación se aplican para países de la Unión Europea y no se aplica para países en otras áreas del mundo.

Su producto Panasonic fue diseñado y fabricado con materiales de alta calidad y componentes que pueden ser reciclados y/o vueltos a usar.

El símbolo significa que los equipos eléctricos y electrónicos, baterías y acumuladores, al final de su vida útil, debe ser desechados separadamente de sus residuos domiciliarios.

Nota:

Si hay un símbolo químico impreso debajo del símbolo, este símbolo químico significa que la batería o acumulador contiene una cierta concentración de un metal pesado. Esto es indicado de la siguiente manera: Hg: mercurio, Cd: cadmio, Pb: plomo

En la Unión Europea hay sistemas de recolección separados para equipos eléctricos y electrónicos, baterías y acumuladores usados.

Por favor, disponga de ellos correctamente en el centro de recolección de residuos/reciclado de la comunidad de su localidad.

Por favor, ayúdenos a proteger el medio ambiente en que vivimos!



DISPOSAL OF UNIT

(Portuguese)

PARA UTILIZADORES DA UE

O símbolo e os sistemas de reciclagem descritos abaixo aplicam-se aos países da UE e não se aplicam aos países noutras áreas do mundo.

O seu produto Panasonic foi concebido e fabricado com materiais e componentes de elevada qualidade que podem ser reciclados e/ou reutilizados.

O símbolo significa que o equipamento eléctrico e electrónico, baterias e acumuladores, em final de vida, não devem ser deitados fora juntamente com o lixo doméstico.

Atenção:

Se estiver impresso um símbolo químico debaixo do símbolo de , este símbolo químico significa que a bateria ou acumulador contém um metal pesado numa determinada concentração. Estará indicado da seguinte forma: Hg: mercúrio, Cd: cádmio, Pb: chumbo

Na União Europeia existem sistemas de recolha separados para equipamento eléctrico e electrónico, baterias e acumuladores.

Por favor, entregue-os no seu centro de reciclagem/recolha de lixo local.

Por favor, ajude-nos a conservar o ambiente!

(Italian)

PER UTENTI UE

Il simbolo e i sistemi di riciclaggio descritti di seguito si applicano esclusivamente ai paesi dell'UE.

Questo prodotto Panasonic è stato progettato e realizzato con materiali e componenti di elevata qualità che possono essere riciclati e/o riutilizzati.

Il simbolo di riciclaggio mostrato di seguito indica che i dispositivi elettrici ed elettronici, le batterie e gli accumulatori, una volta esauriti, devono essere smaltiti separatamente rispetto ai rifiuti domestici.

Nota:

Se sotto il simbolo di riciclaggio appare un simbolo chimico, esso sta ad indicare che la batteria o l'accumulatore contengono metalli pesanti a determinate concentrazioni. Questo viene specificato come segue: Hg: mercurio, Cd: cadmio, Pb: piombo.

Nell'Unione europea esistono diversi sistemi per la raccolta dei rifiuti speciali quali i dispositivi elettrici ed elettronici, le batterie e gli accumulatori.

Si raccomanda di provvedere allo smaltimento di tali rifiuti secondo quanto previsto dalle normative vigenti in materia.

Aiutaci a conservare l'ambiente!



DISPOSAL OF UNIT

(Dutch)

VOOR GEBRUIKERS IN DE EU

Het symbool en de recycleersystemen die hieronder beschreven worden, zijn van toepassing op de landen in de EU en zijn niet van toepassing op landen in andere delen van de wereld.

Uw Panasonic product is ontworpen en gemaakt met materialen en onderdelen van hoge kwaliteit, die gerecycleerd en opnieuw gebruikt kunnen worden.

Het symbool betekent dat elektrische en elektronische apparatuur, batterijen en accu's aan het eind van hun leven apart van uw huisafval weggegooid moeten worden.

Let op:

Indien een chemisch symbool afgedrukt staat onder het symbool, betekent dit chemisch symbool dat de batterij of accu een zwaar metaal met een bepaalde concentratie bevat. Dit wordt als volgt aangegeven: Hg: kwik, Cd: cadmium, Pb: lood

In de Europese Unie zijn afzonderlijke inzamelingssystemen voor gebruikte elektrische en elektronische apparatuur, batterijen en accu's.

Wilt u deze op de juiste manier weggoeien bij uw plaatselijk afvalinzameling-/recyclingcentrum in uw buurt?

Help ons het milieu waarin wij leven in stand te houden!

(Swedish)

FÖR ANVÄNDARE INOM EU

Den symbolmärkning och de återvinningssystem som beskrivs här nedan gäller länder inom EU och gäller inte länder i någon annan del av världen.

Din Panasonic-produkt har konstruerats och tillverkats med delar och material av hög kvalitet, som kan återvinnas och/eller återanvändas.

Symbolmärkningen innebär att elektrisk och elektronisk utrustning, batterier och ackumulatorer, vid slutet av deras livslängd, inte får slängas som hushållsavfall utan skall slängas separat.

Observera:

Om en kemisk symbol finns tryckt under denna symbolmärkning, betyder denna kemiska symbol att batteriet eller ackumulatören innehåller en tungmetall med en viss koncentration. Detta indikeras på följande sätt: Hg: kvicksilver, Cd: kadmium, Pb: bly

I den Europeiska Unionen finns det separata uppsamlingssystem för använd elektrisk och elektronisk utrustning, batterier och ackumulatorer.

Gör dig av med sådana saker på rätt sätt på den speciella lokala platsen för återsamling/återanvändning.

Hjälp oss att bevara den miljö vi lever i!



DISPOSAL OF BATTERY

Location of a nickel-metal-hydride battery

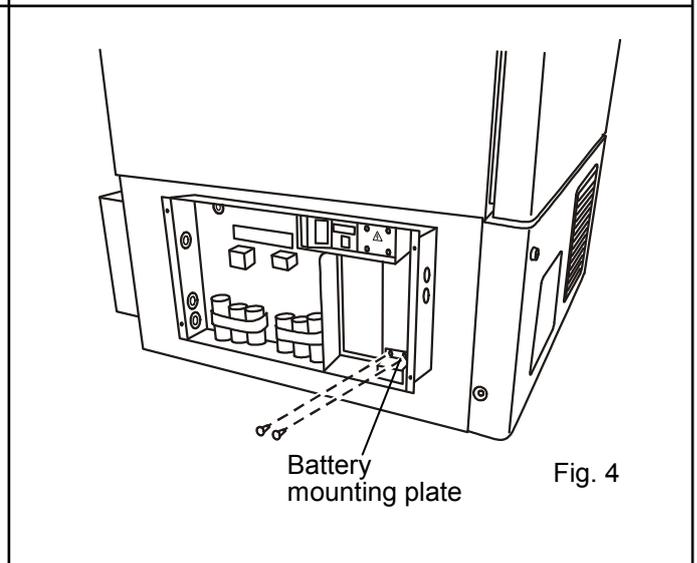
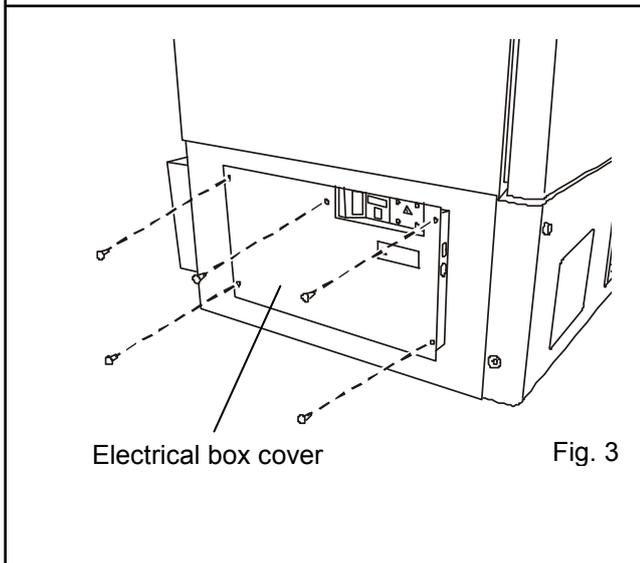
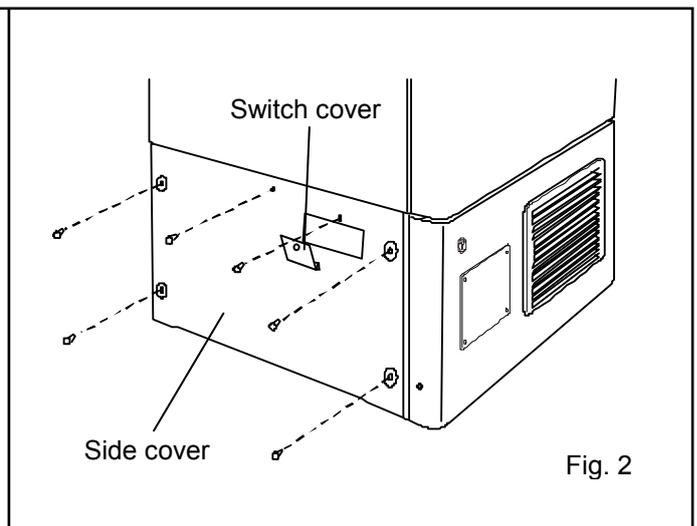
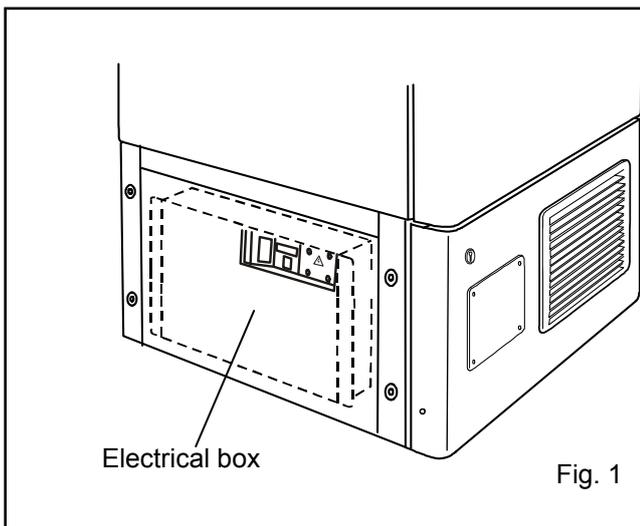
This unit is provided a nickel-metal-hydride battery for the power failure warning device. The battery is located in the electrical box inside the cover on the lower left side. (Fig. 1)



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

Disposal of nickel-metal-hydride battery

1. Turn off the power switch and disconnect the power supply plug.
2. As shown in the Fig. 2, remove six screws fixing the side cover and switch cover with a screw driver and remove the side cover.
3. Remove five screws fixing the electrical box cover with a screw driver. (Fig. 3)
4. Disconnect the battery connector and remove two screws fixing the battery mounting plate. (Fig. 4)
5. Take out the battery.
6. Follow the procedure for recycling or proper disposal.



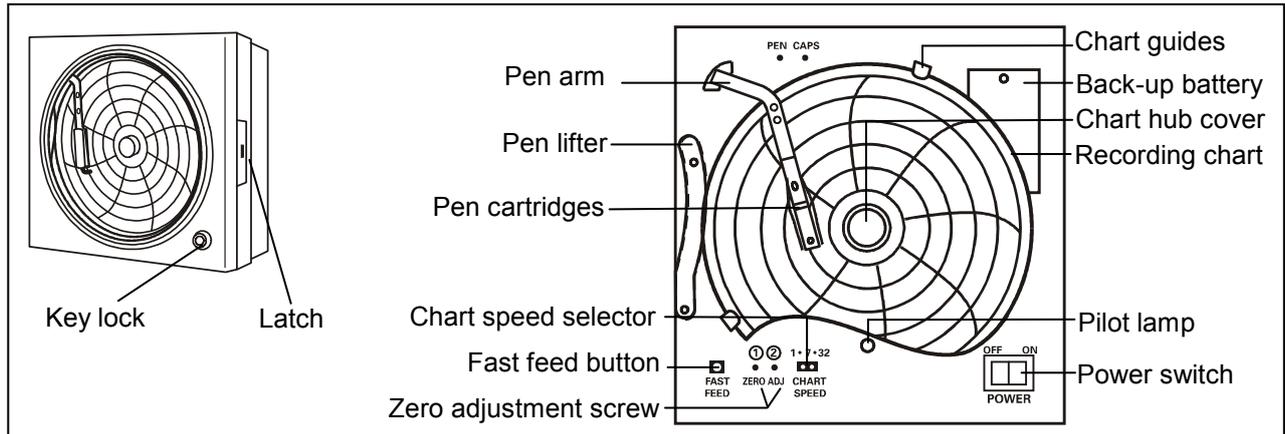
TEMPERATURE RECORDER (OPTION)

⚠ WARNING

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

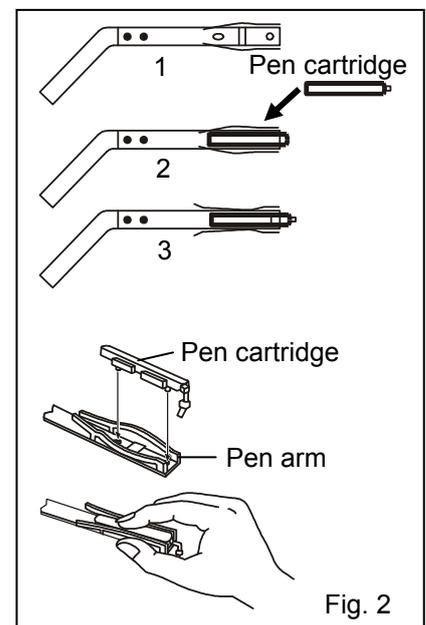
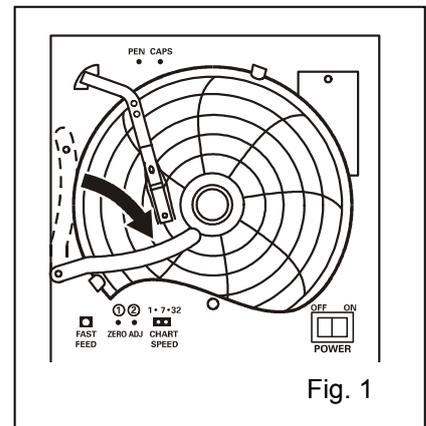
A temperature recorder is available for the freezer as an optional component. The type of the temperature recorder is MTR-G85. Contact our sales representative or agent for the installation of a temperature recorder.

Setting of MTR-G85



Loading the pen cartridge:

1. Slightly raise the end of the pen lifter and remove from the pen lifter stopper. Then rotate clockwise as shown in Fig. 1.
2. 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.
3. Press both sides of the pen arm as indicated by the arrows to open the head clamp at A and B. (See to Fig. 2 illustration 1)
4. Position the pen cartridge so that the guide pins fit into the guide holes on the pen arm. (See to Fig. 2 illustration 2)
5. Press the two sides of the head clamp as indicated by the arrows to secure the pen cartridge. (See to Fig. 2 illustration 3) From the side view, the cartridge should fit perfectly on the arm. Confirm that the pen arm is attached to both sides of the pen cartridge.
6. After loading the pen cartridge, return the pen lifter to the original position. Confirm that the pen lifter has securely entered the pen lifter stopper.



TEMPERATURE RECORDER (OPTION)

Starting recording and setting the time:

Turn the power switch ON. The pen will move inward on the circular recording chart and stop temporarily at the 0% position (equivalent to the 40°C line). Then the pen will move to the position which indicates the measured temperature.

Time setting Method:

Place the recording chart at a position slightly in front of the desired time (the chart is rotated to the left). Set the time by using the fast feed button to quickly rotate the chart.

The fast feed button can be used to accurately set the time.

NOTE: There is a difference of approximately 2 mm between the red pen and blue pen during recording. The time difference between the red pen and blue pen changes according to their position on the scale. It is roughly two hours for 0% position of chart center and roughly one hour for 100% position (when the recording chart speed is set to seven days).

When the recording chart speed is set to 32 days:

The center of the recording chart is divided into 32 equal sections. The lines extending from these lines serve as the 32-day time scale.

Stopping recording:

1. Turn OFF the power switch.
2. When recording is stopped for a prescribed period, place the caps back on the pen cartridges to prevent the ink from evaporating.

Replacing the recording chart:

1. Slightly raise the end of the pen lifter and remove from the pen lifter stopper. Rotate the tip of the pen clockwise until it rests on top of the pen lifter.
2. Remove the chart hub cover, and then replace the recording chart.
3. Place the chart hub cover. Remove and dispose of the piece of paper. Confirm that the new recording chart is inside of the chart guides.
4. Set the correct time.

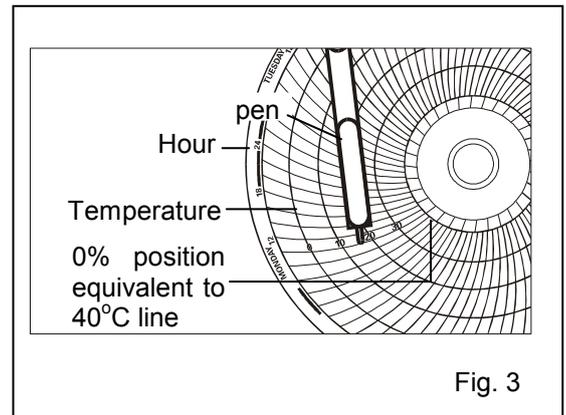


Fig. 3

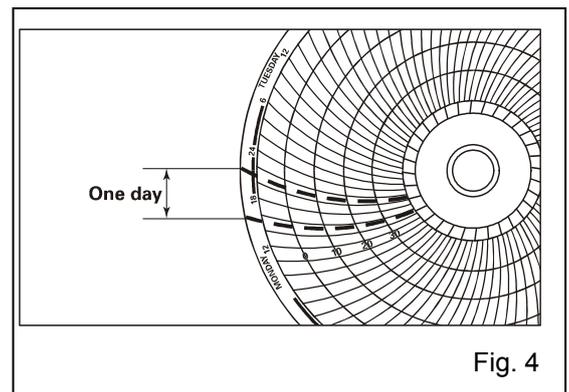


Fig. 4

TEMPERATURE RECORDER (OPTION)

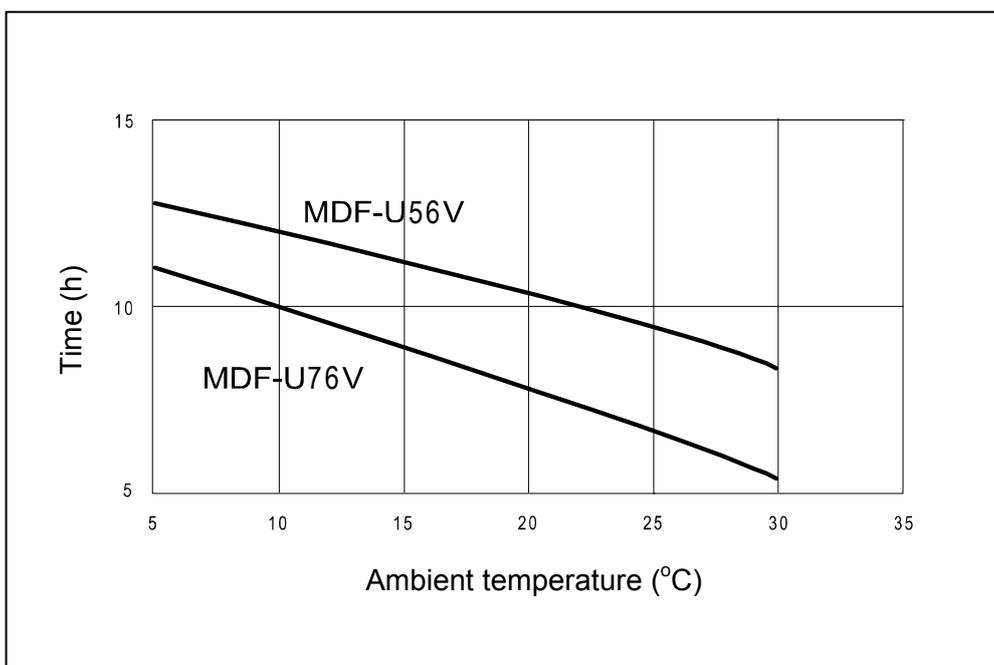
Installation of MTR-G85

A temperature recorder is available for the freezer as the optional component. The type of the recorder is MTR-G85.

Contact our sales representative or agent for the installation of a temperature recorder.

BACK UP COOLING KIT (OPTION)

Chamber temperature is the time when -70°C can be holding for Liquid CO_2 back up cooling kit. Keep a liquefied CO_2 gas cylinder at less than 31°C .



- The above data is the experiment value which uses liquid CO_2 gas 30L. (no-load)

BACK UP COOLING KIT (OPTION)

WARNING

As with any equipment that uses CO₂ or N₂ gas, there is a likelihood of oxygen depletion in the vicinity of the equipment. It is important that you assess the work site to ensure there is suitable and sufficient ventilation. If restricted ventilation is suspected, then other methods of ensuring a safe environment must be considered. These may include atmosphere monitoring and warning devices.

This freezer can be provided with a back up cooling kit (CVK-UB2 CVK-UB2(I) / CVK-UBN2) which is available as an optional component. For the installation, refer to the instruction manual enclosed with the system.

Contact our sales representative or agent for the installation of a temperature recorder.

1. Switch of back up cooling kit (BACKUP)

When turning on the system, the back-up standby lamp is brightened. This means that the system is ready. To stop the operation of the system, turn off this switch.

2. Test switch (TEST)

This switch is for checking the operation of back up cooling kit. Pressing this switch is resulted in the release of liquid carbon dioxide without system operation.

3. Temperature setting knob (TEMP. SET)

With this knob, set the temperature at which the system is operated. The effective set temperature range is between -50°C and -70°C.

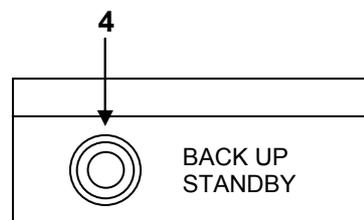
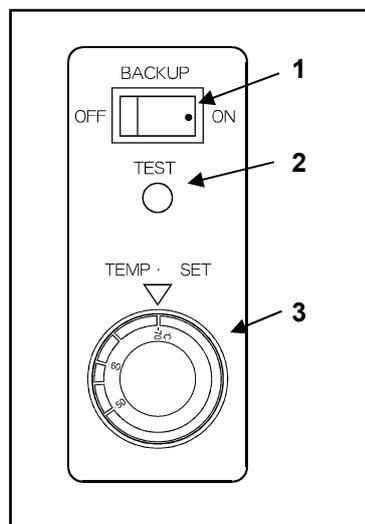
Note:

Do not set the temperature setting knob to the temperature lower than -70°C to avoid the early consumption of CO₂ or N₂ gas resulting from continuous injection.

Do not set it up in less than -70°C.

4. Back-up standby lamp (BACK UP STANDBY)

This lamp is on/off conjunction with the operation of switch of back up cooling kit.



Door switch box

SMALL INNER DOOR (OPTION)

There is an small inner door (MDF-7ID1 or MDF-5ID1) of the shelf width of the chamber in this product by the option. The user divided into every shelf of the chamber is to change a standard small inner door to MDF-7ID1 (for MDF-U76V and MDF-U76VC) or MDF-5ID1 (for MDF-U56V and MDF-U56VC). Refer to an attached installation manual for the installation of MDF-7ID1/MDF-5ID1 in the small inner door.

Note:

Be careful because this manual (Page 40"PERFORMANCE") can cool down a cooling performance more than mention when the put an small inner door (MDF-7ID1 or MDF-5ID1).

Cooling performance : -82°C at the center of the chamber (ambient temperature; 30°C, no load)

Set it up by more than +5°C to the lowest set temperature when the use in a long time.

AN optional inventory rack IR-224U cannot be used when an small inner door is installed.

DRAWER RACK(OPTION)

There is a drawer rack (MDF-50R) for the chamber bottom side in MDF-U56V/MDF-U56VC by the option. Install MDF-50R under the chamber when it use a drawer rack in the chamber. Refer to the manual of MDF-50R for the installation.

INTERFACE BOARD (OPTION)

Installation of MTR-480/MTR-L03

Contact our sales representative or agent for the attachment of a interface board. :

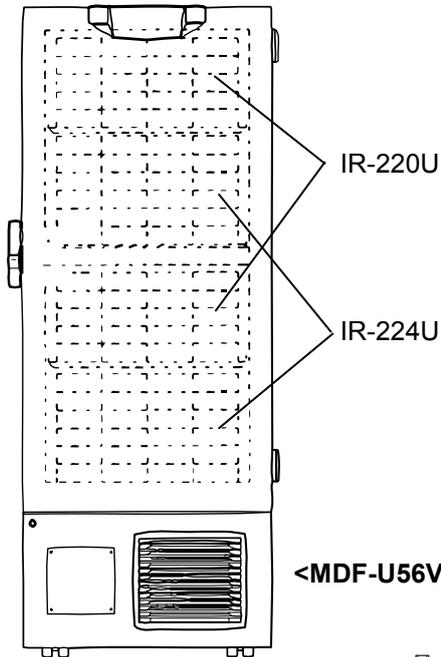
Note:

* When a data transmitting function to the personal computer is done, an interface board MTR-480 (option goods) and communication cable of 9 pin Dsub cross type for RS232C are necessary.

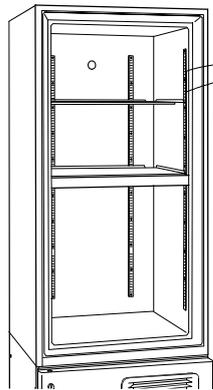
* The connecting cable between the PC and MTR-L03 terminal is not enclosed. Provide a cross type cable of less than 100 m length having a pin plug.

INVENTORY RACK (OPTION)

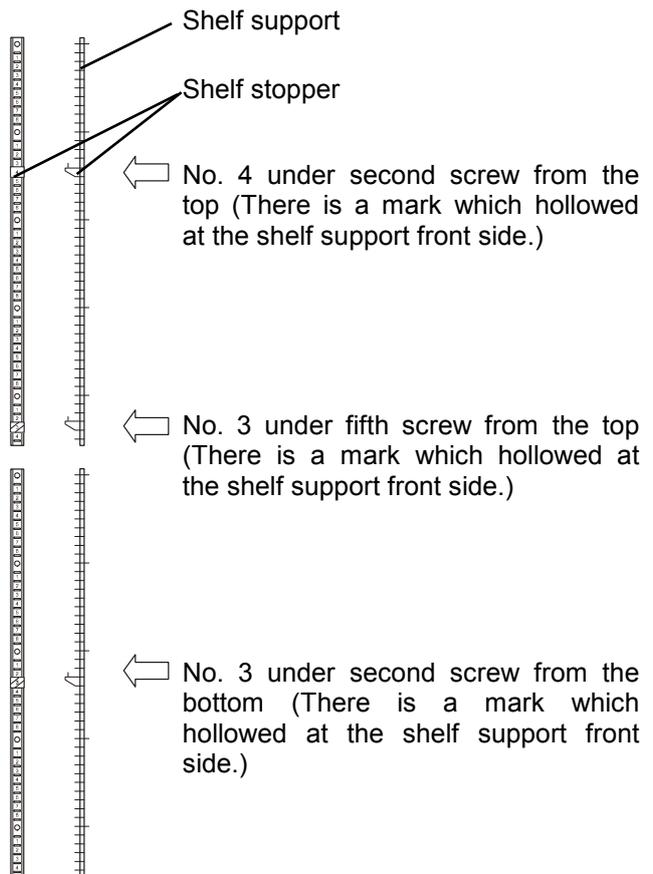
The optional inventory racks (IR-220U, IR-224U) are useful to store the precious materials in the chamber effectively. When the racks are used, it is necessary to adjust the height of the shelves. Set the shelf support as shown in the figure below.



NOTE :
Only inventory rack IR-220U can be applied when the small inner door (MDF-7ID1 or MDF-5ID1) is installed.



<MDF-U56V/MDF-U56VC>



⚠ WARNING

Fix the shelf supports and shelves securely. And store the inventory racks securely. Incomplete installation may cause injury or damage.

SPECIFICATIONS

Product name	Ultra-Low Temperature Freezer MDF-U76V	Ultra-Low Temperature Freezer MDF-U76VC
External dimensions	W1010 mm x D870 mm x H1990 mm	
Internal dimensions	W870 mm x D600 mm x H1400 mm	
Effective capacity	728 L	
Exterior	Painted steel	
Interior	Painted steel	
Outer door	Painted steel	
Inner door	ABS resin panel with stainless frame, 2 doors	
Shelf	Stainless steel, 3 shelves (adjustable) Inner dimension; W848 mm x D533 mm, Load; 50 kg/shelf	
Access port	17 mm diameter, 2 locations (back, bottom x 1)	
Insulation	Vacuum insulation panel + Rigid polyurethane foamed-in place	
Compressor	High stage side; Hermetic type, Output; 750 W Low stage side; Hermetic type, Output; 1100 W	
Evaporator	Tube on sheet type	
Condenser	High stage side; Fin and tube type, Low stage side; Shell and tube type	
Refrigerant	High stage side; R-404A, Low stage side; R-508B	
Temperature controller	Microcomputer control system	
Temperature display	Digital display	
Thermal sensor	Platinum resistance (Pt 1000 Ω)	
Alarm	High temp. alarm, Low temp. alarm, Power failure alarm Door alarm, Filter alarm	
Remote alarm contact	Allowable contact capacity: DC 30 V, 2 A	
Battery	Nickel-metal-hydride battery, DC 6 V, 1100 mAh, Auto-recharge (5HR-AAC)	
Accessories	1 set of key, 1 scraper, 1 stick for air intake port cleaner	
Weight	360 kg	365 kg
Voltage booster	None	Built-in
Optional component	Temperature recorder (MTR-G85)*, Small inner door (MDF-7ID1), Interface board (MTR-480, MTR-L03), Data acquisition system (MTR-5000), Inventory rack (IR-220U, IR-224U), Back up cooling kit (CVK-UB2/CVK-UB2(I)): LCO ₂ , (CVK-UBN2): LN ₂	

Note:

- Design or specifications will be subject to change without notice.
- Refer to the updated catalog when ordering an optional component.

*: Power source of the temperature recorder shall be 220 V.

- When a data transmitting function to the personal computer is done, an interface board MTR-480 (option) and communication cable of 9 pin Dsub cross type for RS232C are necessary.

- The connecting cable between the PC and MTR-L03 terminal is not enclosed. Provide a cross type cable of less than 100 m length having a pin plug.

SPECIFICATIONS

Product name	Ultra-Low Temperature Freezer MDF-U56V	Ultra-Low Temperature Freezer MDF-U56VC
External dimensions	W770 mm x D870 mm x H1990 mm	
Internal dimensions	W630 mm x D600 mm x H1400 mm	
Effective capacity	526 L	
Exterior	Painted steel	
Interior	Painted steel	
Outer door	Painted steel	
Inner door	ABS resin panel with stainless frame, 2 doors	
Shelf	Stainless steel, 3 shelves (adjustable) Inner dimension; W608 mm x D535 mm, Load; 50 kg/shelf	
Access port	17 mm diameter, 2 locations (back, bottom x 1)	
Insulation	Vacuum insulation panel + Rigid polyurethane foamed-in place	
Compressor	High stage side; Hermetic rotary type, Output; 450 W Low stage side; Hermetic type, Output; 750 W	
Evaporator	Tube on sheet type	
Condenser	High stage side; Fin and tube type, Low stage side; Shell and tube type	
Refrigerant	High stage side; R-404A, Low stage side; R-508B	
Temperature controller	Microcomputer control system	
Temperature display	Digital display	
Thermal sensor	Platinum resistance (Pt 1000 Ω)	
Alarm	High temp. alarm, Low temp. alarm, Power failure alarm Door alarm, Filter alarm	
Remote alarm contact	Allowable contact capacity: DC 30 V, 2 A	
Battery	Nickel-metal-hydride battery, DC 6 V, 1100 mAh, Auto-recharge (5HR-AAC)	
Accessories	1 set of key, 1 scraper, 1 stick for air intake port cleaner	
Weight	300 kg	305 kg
Voltage booster	None	Built-in
Optional component	Temperature recorder (MTR-G85)*, Small inner door (MDF-5ID1), Drawer rack (MDF-50R) Interface board (MTR-480, MTR-L03), Data acquisition system (MTR-5000), Inventory rack (IR-220U, IR-224U), Back up cooling kit (CVK-UB2/CVK-UB2(I)): LCO ₂ , (CVK-UBN2): LN ₂	

Note:

- Design or specifications will be subject to change without notice.
- Refer to the updated catalog when ordering an optional component.
- *: Power source of the temperature recorder shall be 220 V.
- When a data transmitting function to the personal computer is done, an interface board MTR-480 (option) and communication cable of 9 pin Dsub cross type for RS232C are necessary.
- The connecting cable between the PC and MTR-L03 terminal is not enclosed. Provide a cross type cable of less than 100 m length having a pin plug.

PERFORMANCE

Product name	Ultra-Low Temperature Freezer MDF-U76V/ MDF-U76VC
Model No.	MDF-U76V-PA MDF-U76VC-PA
Cooling performance	-86°C at the center of the chamber (ambient temperature; 30°C, no load)*
Temperature control range	-50°C to -86°C (ambient temperature; 30°C, no load)
Power voltage	AC 220 V
Rated frequency	60 Hz
Rated power consumption	980 W
Noise level	49dB [A] (background noise; 20 dB)
Maximum pressure	2600 kPa

Product name	Ultra-Low Temperature Freezer MDF-U56V/ MDF-U56VC
Model No.	MDF-U56V-PA MDF-U56VC-PA
Cooling performance	-86°C at the center of the chamber (ambient temperature; 30°C, no load)*
Temperature control range	-50°C to -86°C (ambient temperature; 30°C, no load)
Power voltage	AC 220 V
Rated frequency	60 Hz
Rated power consumption	740 W
Noise level	49 dB [A] (background noise; 20 dB)
Maximum pressure	2400 kPa

Note : *: Maximum cooling performance.

The chamber temperature can be reached at -86°C at ambient temperature 30°C with no load.

⚠ 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: Ultra-low temperature Freezer	Model: MDF-	Serial number:	Date of installation:
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Please decontaminate the unit yourself before calling the service engineer.

Panasonic Healthcare Company of North America

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