

Incubator for Platelet Concentration
Chromato-chamber

DRL-4BP

Japanese Medical Device Manufacturer Certification Number :
21900BZX00009000

Instruction Manual

 Daido Industries INC.

1-6-45 Kusune, Higashi Osaka,
Osaka, 577-0006 Japan

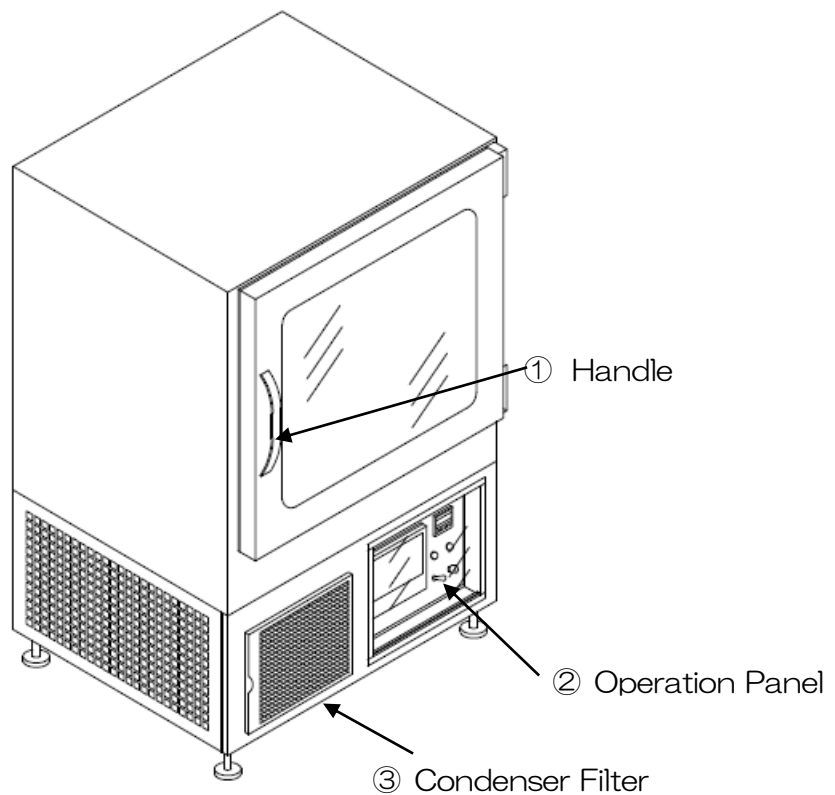
1. Introduction

- [1] Read this manual carefully before using the equipment and the instruction for safety operation.
- [2] Daido never guarantee any safety if the equipment is used for any objects other than intended use or used by any procedures other than those mentioned in this manual
- [3] Keep this manual in an adequate place to refer to in as necessary
- [4] The contents of the manual will be subjected to change without notice due to the improvement of performance or functions.

2. Description

This equipment is produced under Japanese Pharmaceutical Affairs Law, and developed for keeping Blood Platelet Concentration under $22^{\circ}\text{C} \pm 2^{\circ}\text{C}$. The temperature control is by refrigerant unit and heater.

3. Components



① Handle

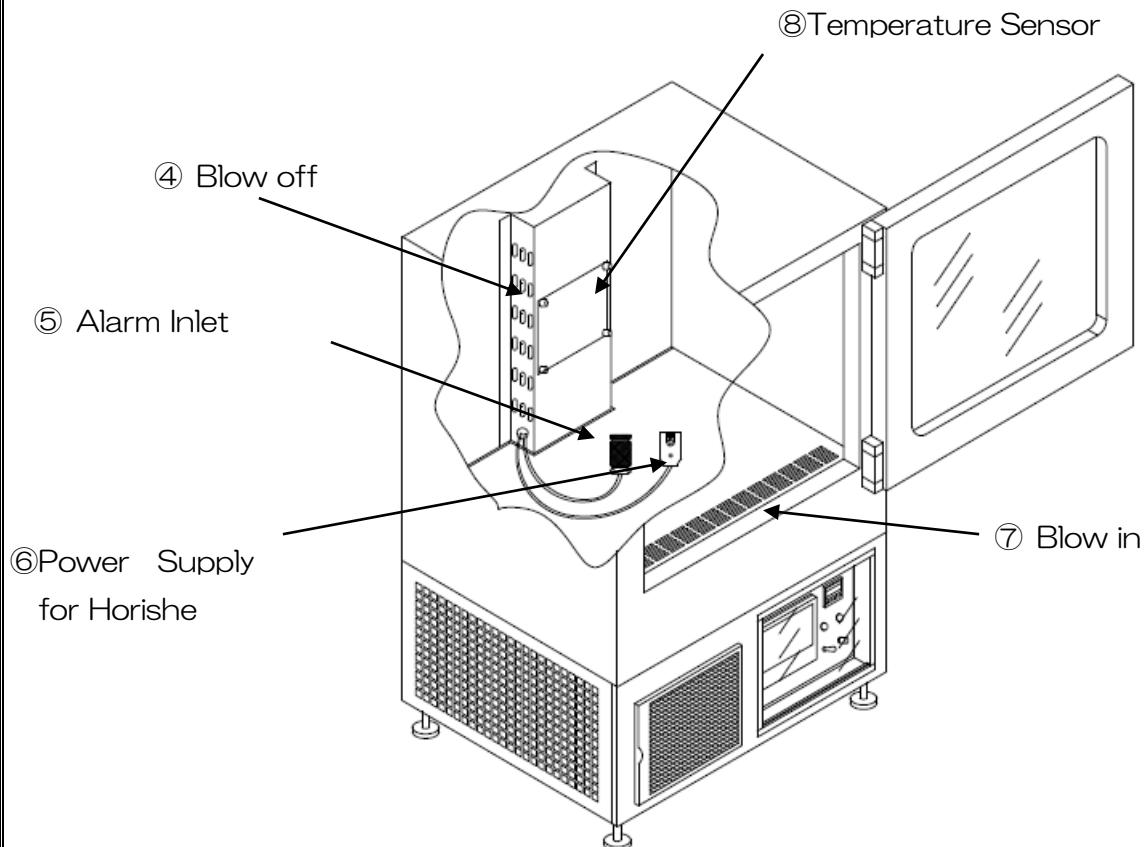
Always hold the handle when you opening/closing the door

② Operation Panel

The temperature and running status are displayed in this panel. Refer to chapter 4 for detail.

③ Condenser Filter

Clean up this filter once a month. If the filter clogs with dust, it will be cause of trouble.



④ Blow off

.The temperature controlled air blow off

⑤ Alarm inlet.

Input from slide alarm from horishe

⑥ Power Supply for Horishe.

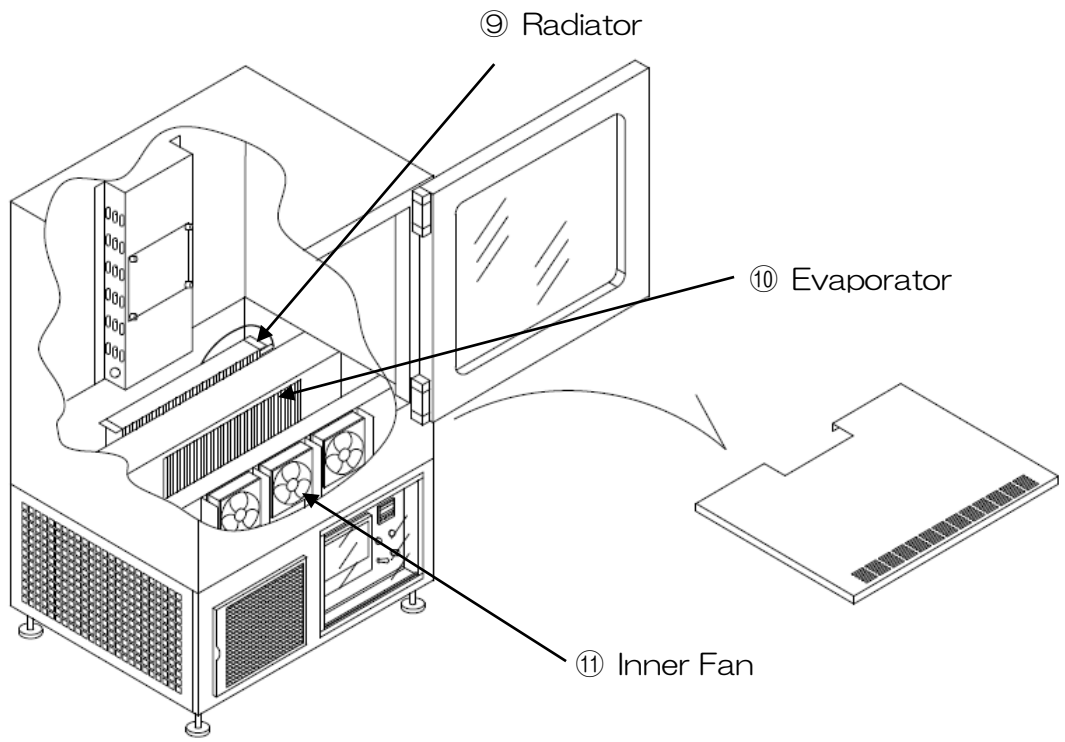
Supply power for Horishe.

⑦ Blow in

Blow in inner air. Do NOT block this parts.

⑧ Temperature Sensor

There are sensors in this cover.



⑨ Radiator

Warm inner air. Cation to burning during maintenance

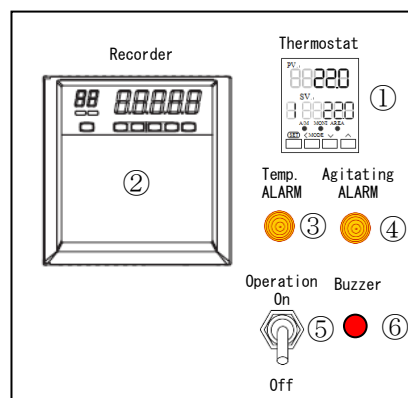
⑩ Evaporator

Cool inner air to control.

⑪ Inner Fan

It makes wind to keep constant temperature. If the fans are stopped by something trouble, the temperature distribution will get worse.

4. Operation Panel



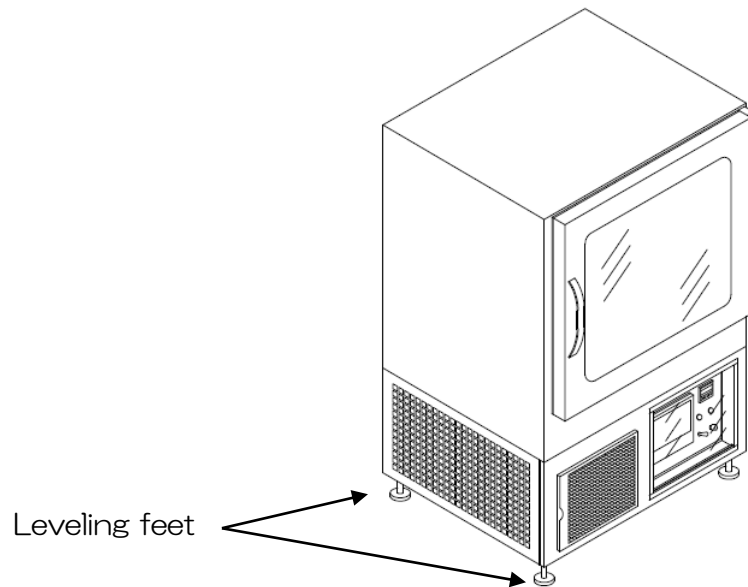
- ① Thermostat with alarm
The thermostat controls the blowing the air to the chamber.
This thermostat can detect a temperature alarm condition
- ② Recorder with alarm
This recorder record the temperature in the chamber and it can detect a temperature alarm condition
- ③ Temperature Alarm lamp (Orange)
The lamp lights during a temperature alarm condition.
- ④ Agitating Alarm lamp (Orange)
The lamp lights during a agitating alarm condition from agitator.
- ⑤ Operation Switch
The upper is “On” operation and the lower is “Off” operation.
- ⑥ Buzzer switch
You can stop buzzer if you push this button.
If you stop buzzer, buzzer will restart again until getting rid off cause.

5. Installation

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
Installation in a location subjected to direct sunlight may lead to inadequate cooling.
- A location with adequate ventilation
Leave at least 10cm around the unit for ventilation. Poor ventilation will result in a reduction of the refrigeration capacity.
- A location away from heater generating sources
Avoid installing the unit near heat-emitting appliance such as gas ranges or stoves. Heat can cause inefficient refrigeration.
- A location with a sturdy and level floor
- A location where objects will not fall on the unit

- A location not prone to high humidity
 - A location without flammable or corrosive gas
- 1) Remove all transportation packing materials and tapes.
 - 2) Adjust the leveling feet by rotating them until they make contact with the floor. Ensure the unit level.



- 3) Use a power supply plug with ground (earth) to prevent electric shock

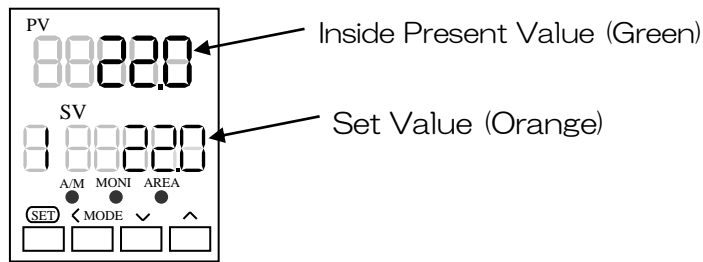
6. Before Commencing Operation

- 1) Insert a plug in an outlet with the ground. Then the recorder① and thermostat ② indicate inside temperature.

1 Phase 220V 10A single power outlet


Refrigerant circuit and Alarm circuit has each circuit breaker.

- 2) Confirm the setting temperature before using. The set value(SV) is set 22. 0°C at first.



- 3) Connect an alarm output if you have concentrated alarm system.
The output is non voltage make contact

7. Operating Instructions

1. 2 Check the recorder ①. If recording doesn't start,  push button
2. Turn the Operation switch ⑤ on. Then the compressor and heater start working.
3. Push the Buzzer ⑥ once.
 - * The temperature alarm works immediately after plug-in or recovering from power failure because inside temperature is out of normal range.

《Attention》

This equipment can compulsorily work for 30 min at from the start, but the refrigerator stops when the inside temperature becomes beyond the limit of setting temperature ($\pm 3.5^{\circ}\text{C}$). Therefore, the Operation switch ⑤ is stopped once, and started after stopping for 30 sec.

8. OFF

1. Turn the a Operation switch ⑤ off.
2. Pull a plug in an outlet.

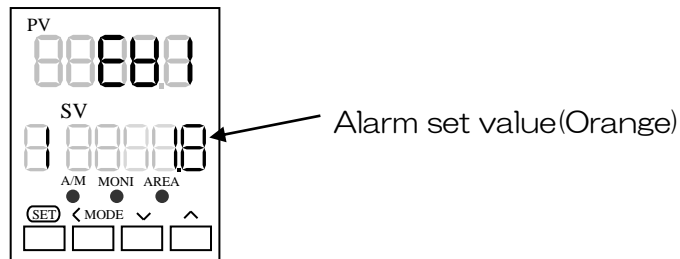
9. Alarm & Safety Functions

- 1) Temperature Alarm
The temperature alarm is constructed by 2 independent systems.

The one is thermostat and the other is recorder. The setting temperature of alarm is 23.8 °C and 20.2 °C. When the inside temperature is out of the normal range, the temperature alarm lamp ③ lights and alarm buzzer goes off.

◆Confirming the alarm set value of THERMOSTAT

You can confirm the alarm set value by indicating “EV1”. You push “set” buttons for more than 3 seconds. The displayed EV1 is 1.8, this mean the alarm works $22.0 \pm 1.8^{\circ}\text{C}$.




- * The temperature alarm sounds again if the trouble is not solved within 30 min.
- * The thermal alarm does not sound from main part and outside as power failure.

◆Confirming the alarm set value of RECORDER



1. Press the **MENU** button for more than 3 seconds, you can see setting mode
2. Press the Δ or ∇ button to select **ALARM**, and press the \leftarrow button.



3. Press the Δ or ∇ button to select **CH1**, and press the \leftarrow button.
4. Press the Δ or ∇ button to select **L1** as High temperature alarm set value
5. Press the Δ or ∇ button to select **ON**, and after that press the Δ or ∇ button to select **H**

6. High temperature alarm set value "23.8" will be displayed.
7. Continue to press  button until **OK** is displayed.



8. Same as 3, you select **CH1** and press  the button
9. Press the Δ or ∇ button to select **L2** as Low temperature alarm set value
10. Press the Δ or ∇ button to select **ON**, and after that press the Δ or ∇ button to select **L**
11. High temperature alarm set value "20.2" will be displayed.
12. Continue to  press button until **OK** is displayed.



13. After the display return to **ALARM**, press  button for more than 3 seconds.

2) Power failure alarm

The buzzer does not go off from this equipment during power failure only the alarm output. The outside alarm stops as recovering power.

※ The alarm output goes off when the Circuit Breaker is off.

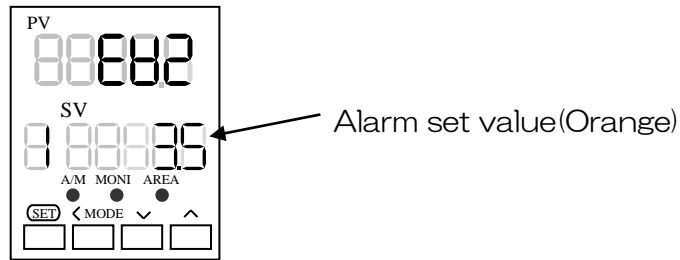
3) Alarm output

The temperature alarm, slide alarm and power failure alarm work when the Circuit Breaker is on, then output is a non-voltage make contact.

4) Forced termination

The safety device which compulsorily enable to stop the compressor or heater when the inside temperature reached to 25.5°C or 18.5°C.

After you see "EV1", you push "SET" button once, then you can see "EV2" The displayed EV2 is 3.5, this mean the forced termination works $22.0 \pm 3.5^\circ\text{C}$.



5) Slide(Agitating) Alarm

The slide alarm and temperature alarm from an agitator (HORISHE DHB-32B) tell when the agitator connects to this equipment.

Attention: The alarm does not sound when the circuit breaker is turned off besides power failure alarm.

1 0.Safety Breaker

When the unit has overload, Power switch ⑥ will be turned off to stop power supply. After investigating the causes of trouble, turn the Power switch ⑥ on.

1 1 . Temperature accuracy

The maximum error is added to accuracy of sensor and digital thermostat or recorder. And indicated temperature is within the maximum error.

[Temperature controller]

sensor: resistance Pt100Ω A

Setting temperature: +22°C

Sensor accuracy : $\pm (0.15+0.002 \times | + 22 |) \div \pm 0.194$

Digital thermostat accuracy : ± 0.2

$\therefore \pm (0.194+0.2) = \pm 0.394^{\circ}\text{C} \div \pm 0.4^{\circ}\text{C}$

[Digital Recorder]

sensor: resistance Pt100Ω A class 1

Setting temperature: +22°C

Sensor accuracy : $\pm (0.15+0.002 \times | +22 |) = \pm 0.194$

Digital thermostat accuracy : $\pm (0.15/100 \times 22 + 0.3) \doteq \pm 0.333$

$\therefore \pm (0.194 + 0.333) = \pm 0.527^{\circ}\text{C} \doteq \pm 0.6^{\circ}\text{C}$

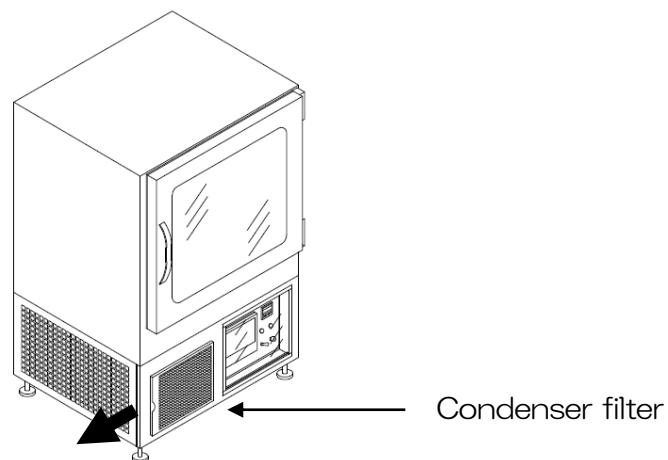
1 2. Routine Maintenance

[1] Cleaning of Chromato-chamber

- 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 of unit and all accessories. If some of them are dirty, use a cloth containing diluted neutral dishwashing detergent. When a diluted neutral dishwashing detergent is used, wipe the unit or accessories with a dry cloth to eliminate the moisture.
- 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 refrigerant parts are sealed. This unit requires absolutely no lubrication.
- Remove dust from the power supply plug periodically. A dusty plug or improper insertion may pose a hazard.

[2] Cleaning of condenser filter

This unit is provided with the condenser filter at the side of body. Clean the filter once a month even since a clogged filter may cause shorter compressor life as well as the poor cooling. Clean the filter by procedure below.

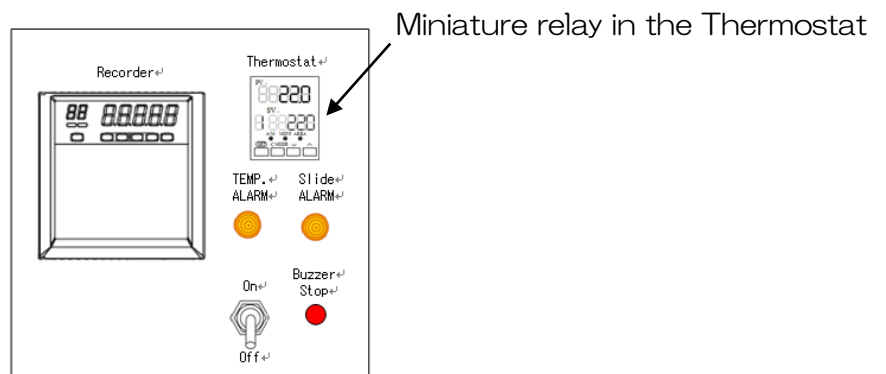
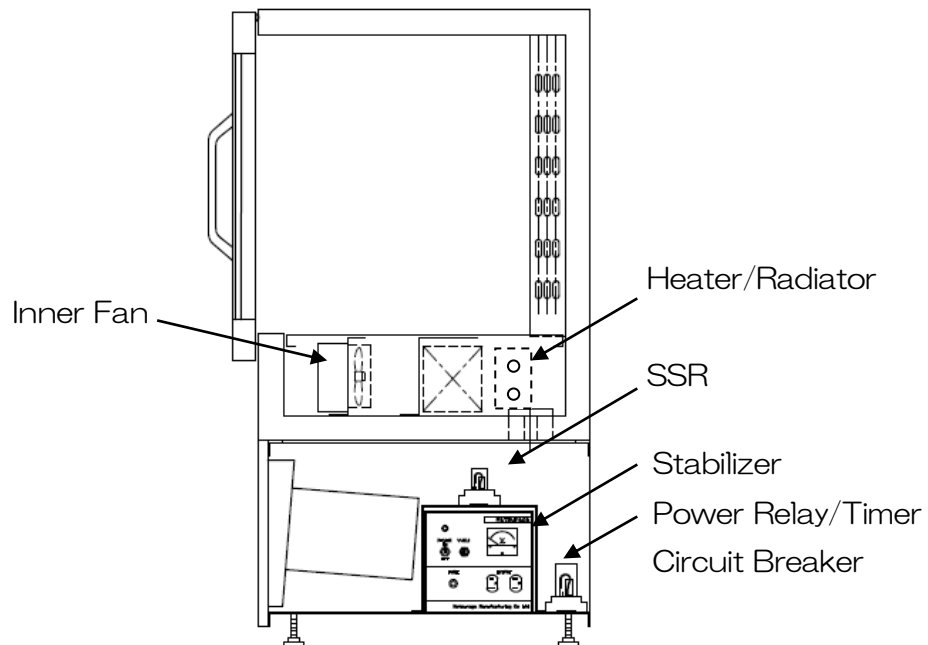


- 1) Turn off the power switch
- 2) Take out the condenser filter as shown in the picture
- 3) Wash the filter with water and dry it naturally.
- 4) Replace the filter

13. Technical Maintenance

Technical maintenance should be done by the international local distributor.

[1] Mechanical components



- [2] Periodic Maintenance by the distributor
 - 1) Replace the miniature relay in the thermostat once a year.
 - 2) Remove the dust in the evaporating dish.
 - 3) Remove the dust around drain hole.
 - 4) Check the operating condition of compressor and the other refrigerant components.
 - 5) Check the inner fans.

14. Caution

- [1] Use a dedicated power source with a circuit breaker as indicated on the rating label attached to the unit. A branched circuit may cause fire resulting from abnormal heating.
- [2] Connect the power supply plug to the power source firmly after removing the dust on the plug
- [3] Never store corrosive substance such as acid or alkali and explosive substance like gasoline or alcohol.
- [4] Please check the evaporating dish once a month. If the hot gas pipe is covered with dust, you may smell something burnt.
- [5] Please reduce to open and close the door.
- [6] Don't put anything which block inner air flow
- [7] Please clean the condenser filter once a month
- [8] Please inspect the equipment, the alarm and the temperature once a month.

15. Environmental Conditions

This equipment is designed to be safe at least under the following conditions

- [1] Indoor use
- [2] Altitude up to 2000m
- [3] Ambient temperature 5°C to 40°C
- [4] Maximum relative humidity 80% for temperature up to 31°C
decreasing linearly to 50% relative humidity
- [5] Main supply voltage fluctuations not to exceed $\pm 10\%$ of the nominal voltage

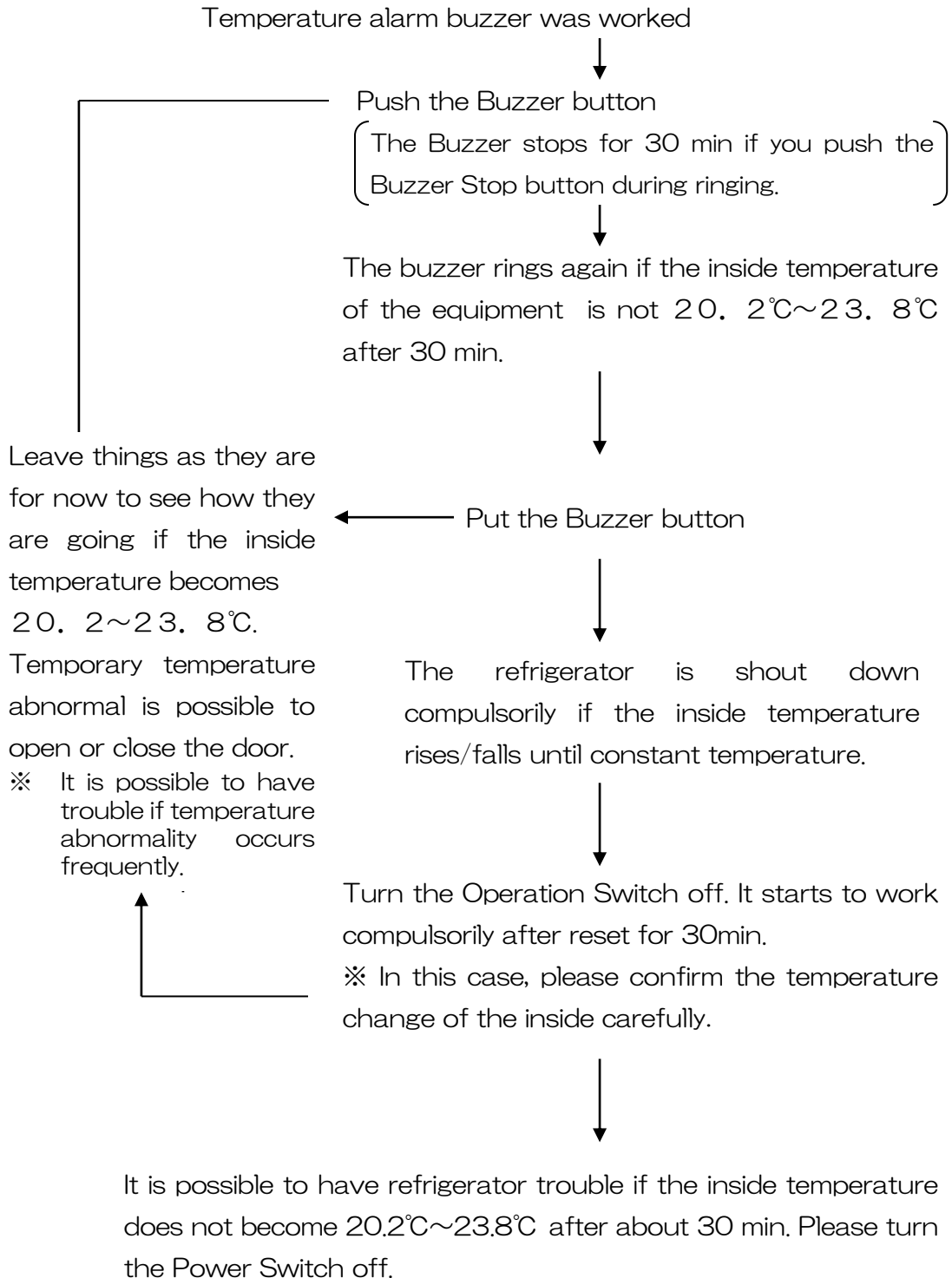
1 6. Specification

- Outside dimension : W700×D610×H1085 (mm)
- Electricity : 1phase 220V 10A single power circuit
- Interior and Exterior : stainless steel SUS304
- Shelf : stainless steel SUS304
- Door : double glass
- Compressor : 1 phase 100V 130W
- Refrigerant : R134a (HFC)
- Fan : 1 phase 100V 40W 3Fans
- Thermostat : a digital thermostat
a sensor : resistance Pt100Ω A class
- Alarm control : a digital thermostat
a sensor : resistance Pt100Ω A class
- Recorder : a digital temperature indicated 100mm chart recorder
a sensor : resistance Pt100Ω A class
- Weight : about 140kg
- Outlet for Agitator : 1 phase 100V
- Alarm : 2 independent digital Temperature alarm
setting temperature High temperature alarm : +23.8°C
Low temperature alarm : +20.2°C
Power Failure alarm, Agitating alarm (when agitator is used)
- Alarm output : non voltage make contact
- Protect circuit : Refrigerator or heater compulsorily shut down

20. Trouble shooting

Effect	Cause and Cope
The display doesn't indicate correctly even though you turn the Operation switch on.	<ol style="list-style-type: none"> 1) The circuit breaker is inactivated. Turn the circuit breaker on after removing the cause of trouble. 2) The unit is not connected to the power supply. 3) The thermostats may be influenced by electric noise. Please turn the breaker off and on after a while.
Not be cooled.	<ol style="list-style-type: none"> 1) The temperature in the unit does not match the set value(Start up) 2) The door was kept opened for long time. 3) The high temperature materials were put in the unit. 4) The door is frequently opened. 5) Check the condenser filter which of wind blows from. Clean the filter up after put a plug out if there are dust and trash. 6) Check something obstacles prevent the ventilation from drawing into condenser. 7) Check something obstacles prevent exhaust heat from releasing. 8) The door seal or magnet is damaged
Over Cooling	Consumption of SSR. Please contact to the distributor
Not able to control	Consumption of miniature relay in the thermostat

◇ Correspondence of Temperature abnormal alarm ◇



○Please contact with your salesperson if it does not work normally after taking appropriate measures.

○Please move the stored blood bag etc. in the equipment.