



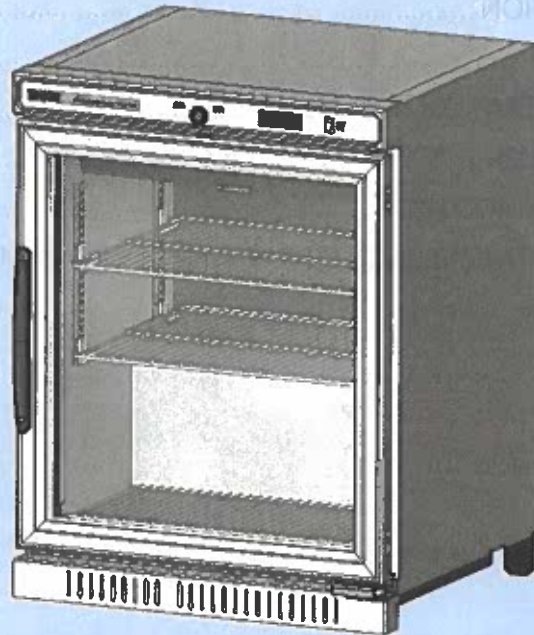
PHCbi

Laboratory Grade Refrigerator Installation and Operation Manual

Please read this manual completely before attempting to install or operate this equipment.

LABORATORY GRADE REFRIGERATOR
HIGH PERFORMANCE

TSU-4RW-N6



WARNING : This product can expose you to chemicals including Bisphenol A(BPA) and Di(2-ethylhexyl)phthalate(DEHP) and Cobalt sulfate heptahydrate, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov



AVERTISSEMENT :

Cancer ET Troubles de l'appareil reproducteur - www.P65Warnings.ca.gov

CONTENTS

| | PAGE |
|---|------|
| NOTICE | 3 |
| FOR HYDROCARBON REFRIGERATION UNITS | 4-5 |
| IMPORTANT SAFETY INFORMATION | |
| - SAFETY PRECAUTIONS | 6 |
| - INSTALLATION & USAGE | 7-8 |
| - PROPER DISPOSAL OF OLD APPLIANCE | 9 |
| - BEFORE YOU CALL FOR SERVICE | 9 |
| SPECIFICATIONS | 10 |
| SERIAL NUMBER | 10 |
| NOTICE TO CUSTOMER | 10 |
| INSTALLATION | 11 |
| CLEANING | 12 |
| BASIC OPERATION | 13 |
| CONTROLLER DISPLAY | 14 |
| TROUBLE SHOOTING | 15 |
| REFER TO THE WEBSITE FOR WARRANTY INFORMATION | 16 |

NOTICE

- This equipment is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge unless they have been given supervision or instructions concerning the use of this equipment and the hazards involved by a person responsible for their safety.
- The special instructions for those persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, are not included in this manual and are not required.
- Children shall not play with the appliance.
- Cleaning and user maintenance shall not be made by children without supervision.

This manual uses the following safety symbols. These safety symbols with the words of **DANGER**, **WARNING** or **CAUTION** alert users of the potential hazards that could cause injury or even death.



Indicates hazards of death or serious injury, if the instructions are not followed.



Indicates dangers of death or serious injury, if the instructions are not followed.









Indicates risks of personal injury or material damage, if the instructions are not followed.

FOR HYDROCARBON REFRIGERATION UNITS

WARNING

This unit uses R-290 (propane), or R-600a (isobutane) as a refrigerant. These hydrocarbon refrigerants are highly environmentally compatible but also are flammable and combustible. Please read this manual thoroughly before installing and operating the unit. Please take cautious measures to avoid risk of fire or explosion.

PLEASE REFER TO LABEL ON REAR OF CABINET TO CHECK REFRIGERATION TYPE AND VOLUME.

| | |
|---|--|
|  | <p>DANGER - Risk of fire or explosion. Flammable refrigerant used. Do not use mechanical devices to defrost refrigerator. Do not puncture refrigerant tubing.</p> |
|  | <p>DANGER - Risk of fire or explosion. Flammable refrigerant used. To be repaired only by trained service personnel. Do not puncture refrigerant tubing.</p> |
|  | <p>CAUTION - Risk of fire or explosion. Dispose of properly in accordance with federal or local regulations. Flammable refrigerant used.</p> |
|  | <p>CAUTION - Risk of fire or explosion. Flammable refrigerant used. Consult repair manual/owner's guide before attempting to service this product. All safety precautions must be followed</p> |
|  | <p>CAUTION - Risk of fire or explosion due to puncture of refrigerant tubing; follow handling instructions carefully. Flammable refrigerant used.</p> |
|  | <p>WARNING</p> <ul style="list-style-type: none"> - Keep ventilation opening in the appliance enclosure or in the built-in structure, clear of obstruction. - Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer. - Do not damage the refrigerant circuit. - Do not use electrical appliances inside the storage compartments of the appliance, unless they are of a type recommended by the manufacturer. |

FOR HYDROCARBON REFRIGERATION UNITS

WARNING

- Handle the unit with care in order to avoid any serious damages to the refrigeration system.
- The refrigerant tubing, condenser, evaporator coils are easily prone to damage while handling, moving, installing, and cleaning the unit, which may lead to fire or even explosion.
- Refrigerant squirting out of the pipes could ignite or cause an eye injury. If a leak is detected, avoid any open flames or potential sources of ignition and air out the room in which the appliance is standing for several minutes.
- In order to avoid the creation of a flammable gas-air mixture in case of a leak in the refrigerating circuit, the size of the room in which the appliance is placed depends on the amount of refrigerant used. The room must be 35.31ft^3 (1m^3) in size for every 0.28oz (8g) of R-600a refrigerant inside the appliance. The amount of refrigerant in your particular appliance is shown on the label on rear of cabinet.



This appliance contains a small amount of propane (R-290) or isobutane (R-600a) refrigerant, a natural gas with high environmental compatibility, but it is also combustible. When transporting and installing the appliance, care should be taken to ensure that no part of the refrigerating circuit are damaged.

- Never start up an appliance showing any signs of damage. When in doubt, contact a qualified service professional.
- In case of any hazardous activities such as fire or explosion, move the unit away from any source of ignition to a well ventilated area.
- Further service and repair must be done by a qualified technician who is familiar with the safety standards, and also has thorough understanding and knowledge of the flammable refrigerants.
- Any and all technicians handling these units must be equipped with proper personal protection and equipment and follow applicable safety measures and precaution to avoid risk of fire or explosion.

IMPORTANT SAFETY INFORMATION

SAFETY PRECAUTIONS

To avoid any risk of fire, explosion, electric shock, personal injury, material damage or incorrect use of the appliance, be sure to observe the following safety precautions. (After reading these owner's manual instructions, please keep the manual booklet in a safe place for reference. Remember to hand it over to any subsequent owners)

WARNING

- The unit must be installed and located in accordance with the manufacturer's installation instructions.
- Installation work must be performed in accordance with the National Electric Code by qualified and authorized personnel only.
- Repairs and replacement work must be performed by a qualified and authorized service professionals only using genuine replacement parts.
- Do not use an extension cord or an adapter plug. Because of the potential safety hazards under certain conditions, we strongly disrecommend any use of an extension cord or an adapter plug.
- Do not, under any circumstances, cut or remove the ground prong from the power cord. For personal safety, this appliance must be properly grounded.
- Do not store volatile and flammable substances in the refrigerator. The storage of benzene, thinner, alcohol, ether, LP gas, or other explosive substances may cause an explosion.
- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this appliance as well as any other appliances.
- The appliance is not intended for use by children without supervision.
- Do not allow children to climb, stand, or hang on the refrigerator doors or shelves in the refrigerators. They could damage the refrigerator and seriously injure themselves.
- To prevent suffocation and entrapment hazards of children, remove the doors and seals from the refrigerator before disposing of it or discontinuing its use.

IMPORTANT SAFETY INFORMATION

INSTALLATION & USAGE

WARNING

- Do not install the unit in a damp place where it could be splashed with water. Incorrect insulation of the electrical parts may cause fire or electric shock.
- Do not plug several appliances into the same sockets. This could cause overheating and risk start of a fire.
- Keep the power plug away from the rear of the cabinet. A damaged power plug may cause fire due to overheating.
- Do not spray water directly to the interior or exterior of the appliance. There is a risk of fire or electric shock.
- Do not place any containers filled with water on top of the appliance. If the water spills onto any electrical parts, it may lead to fire or electric shock.
- Do not attempt to repair, disassemble or alter the appliance. It may cause fire or abnormal operations which may lead to injury.
- Unplug the refrigerator before making repairs, or cleaning.
- Plug into a grounded 3-prong outlet. Do not remove the ground prong.

CAUTION

- Do not store too much product in the appliance. When you open the door, an item may fall out and cause personal injury or material damage.
- Do not disconnect the power cord by pulling on it. This may disconnect a wire and cause a short circuit.

IMPORTANT SAFETY INFORMATION

INSTALLATION & USAGE

CAUTION

- There is a risk of death from suffocation if a child puts the packing materials on his or her head.
- Do not let children hang on the door.
- Remove any foreign matter from the power plug pins. Otherwise, there is a risk of fire.
- Do not insert your hand into the bottom area of appliance. Any sharp edges may cause personal injury.
- After unplugging the appliance, wait at least five minutes before plugging it back in. Abnormal operation of the refrigerator may cause material damage.
- If the appliance is not used for a long period of time, unplug it from the power supply. Any deterioration in the insulation may cause fire.
- Do not let children touch or play with the control panel on the front of the appliance.
 - Do not allow children to play with this appliance.
 - Do not stand or lean on the base panel, pull-out parts, or doors.
 - Repairs and maintenance of the appliance should only be performed by a qualified technician. Incorrect repairs done by an unqualified person may be a potential source of danger that could have critical consequences for the user of the appliance.

IMPORTANT SAFETY INFORMATION

PROPER DISPOSAL OF OLD APPLIANCE

For environmental purpose, refrigeration appliances must be disposed of properly. This applies to your old appliance, and at the end of its service life, for your new appliance as well.

WARNING

Before disposing of old appliances, make them inoperable. Remove plug from mains, sever the power cable, and remove or destroy any snap or latch closures.

This eliminates the danger of any children locking themselves into the appliance (danger of suffocation) or placing themselves into other life-threatening situations.

- The appliance may not be disposed of with domestic waste or bulky refuse.
- The refrigerant circuit, especially the heat exchanger at the back of the appliance, may not be damaged.
- Information concerning collection schedules or locations can be obtained from the local disposal authorities.

CAUTION

The refrigeration used in refrigerator/freezer and the gases in the insulation material requires special disposal procedures. Ensure that none of the pipes on the back of the appliance are damaged prior to disposal.

BEFORE YOU CALL FOR SERVICE

Before contacting our Service Department, review the detailed troubleshooting tips in the Owner's manual.

1. Try to remedy the problem. Please read the "Troubleshooting Guide" section first and you may not need to call for service.
2. Restart the appliance to check whether the fault repeats. If the malfunction persists, switch off the appliance and try again after an hour.
3. If the malfunction still persists, then contact our Customer Service, specifying:
 - The nature of the problem,
 - The appliance model number and serial number
 - Your full address, telephone number and area code.
 - PHCbi Technical Support : 1-800-858-8442.

SPECIFICATIONS

Refrigerators

| Model | Rating Temp. | Operating Temp. | Equipment Class | V/Hz | Refrigerant | AMPS |
|------------|-----------------------|--------------------------|------------------|---------------------|-------------------------|-------|
| TSU-4RW-N6 | 5±1 °C (41±1.8 °F) | 2~8 °C (35.6~46.4 °F) | High Performance | (110-120) V~, 60 Hz | R-600a / 1.06 oz (30 g) | 1.1 A |

SERIAL NUMBER

The serial number can be found on the data label located on the rear of the unit. Please retain the unit serial number for service purposes.

NOTICE TO CUSTOMER

Loss or spoilage of products in your refrigerator/freezer is not covered by warranty. In addition to following recommended installation procedures, you must run the refrigerator 24 hours prior to usage.

INSTALLATION

- 1. LOCATION** - Allow adequate space and install the refrigerator on a firm, and level floor. If the appliance is not level, there may be unusual noises and poor cooling performance.
- 2. GOOD AIR CIRCULATION** - Be sure to avoid any partition and object which may stop the air flow and that air space is allowed to flow the rear and/or sides of the unit between the refrigerator and the back wall. Insufficient space causes the noise of vibration, inefficient refrigeration, damage to the refrigeration system, and the waste of electricity. (Turbo Air recommends that the rear of the unit should be no less than 5 inches from the wall)
- 3. PLACE ON STRONG FLOOR** - Be sure that the floor of which the unit is to be installed is strong enough to support the total weight of the cabinet and any other contents, before starting the installation.
- 4. DO NOT PLACE NEAR HEAT** - Be sure to avoid hot corners and other locations such as near heat producing sources such as space heaters. High ambient temperature will make much lower cooling efficiency.
- 5. INDOOR USAGE ONLY** - Be sure to install this unit indoor only. It should prohibit getting wet from the rain.
Do not install the refrigerator in locations where the temperature is over 100°F (38°C) or below 50°F (10°C).
- 6. LEVELING** - Be sure that the unit levels from the front to the back and side to side.
- 7. UNIT SHOULD BE ON DEDICATED OUTLET** - Plug the refrigerator into a wall socket exclusively for this appliance. Do not run on extension cord.
- 8. THE ELECTRICAL PLUG MUST BE ACCESSIBLE WITHOUT MOVING THE UNIT.**
- 9. IF A STORAGE IS IN POSITION, A MAXIMUM OF ONE SHELF MAY BE LOADED LESS THAN 33lb (15kg), BUT DO NOT ALLOW LOADS TO OVERHANG FROM THE FRONT AND REAR EDGES OF SHELVES.**

CLEANING

Before cleaning, unplug the unit and disconnect the power.

Wipe and clean the inside and outside of appliance with a damp cloth.

1. CLEANING THE INTERIOR AND EXTERIOR

- The interior and exterior of the unit can be cleaned using warm water with soap.
- Do not use an abrasive cleaner because it will scratch the surface.

2. CLEANING THE CONDENSER COIL

- To maintain proper refrigeration performance, the Condenser coil must be free of dust, dirt, and grime. This will require periodic cleaning. Condenser coil should be cleaned at least every three months (90 days) or as needed.
- To clean the condenser, unplug the power cord. Condenser can be cleaned with vacuum, brush.

3. CLEAN THE DRAIN PAN

- Periodically, empty the drain pan which is located under the unit.
- When reinstalling the drain pan, make sure the drain hose is placed back into the pan.

4. CHECK AFTER CLEANING

- 1) Check the unit again for safety.
- 2) Plug unit back in and turn on power switch.
- 3) Check that the unit is operating properly.



CAUTION

1. POWER CORD

- Be sure the power cord is connected to the proper voltage.
- A protected circuit of the correct voltage and amperage must be run for connection of the line cord.
- Turn 'off' the power switch before disconnecting the power cord, whenever performing maintenance functions or cleaning the refrigerated cabinet.
- Compressor warranties are void if compressor burns out due to low voltage.

2. RESTARTING

- If disconnected, wait 5 minutes before restarting.

3. POSITIONING DRINKS

- Do not obstruct the air inlet which is located at the back inside of the unit.

4. To prevent a child from being entrapped, keep out of reach of children and not in the vicinity of the refrigerator.

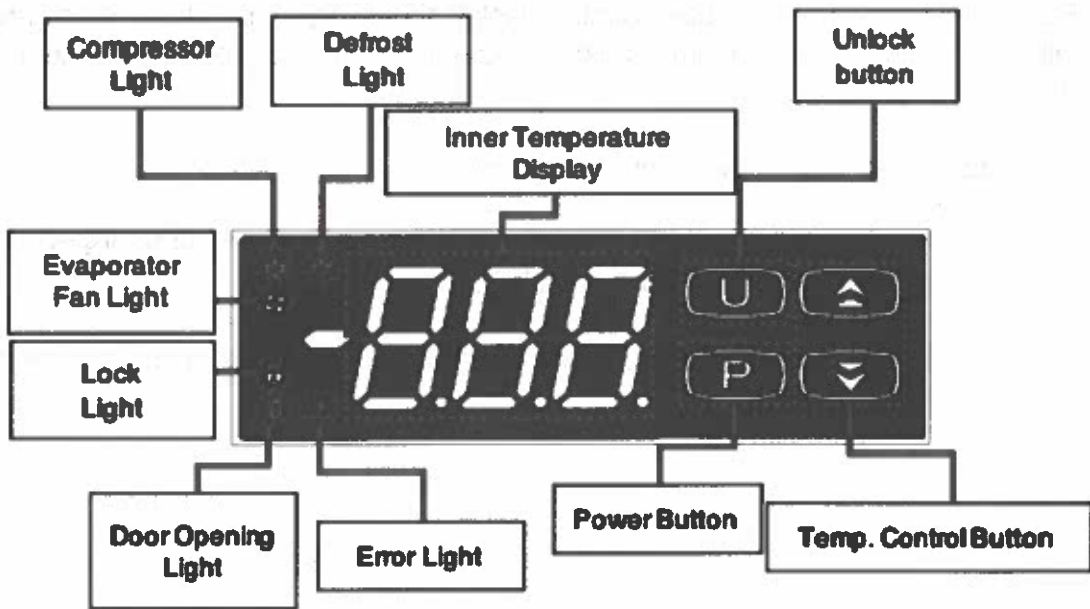
5. Never repair or disassemble or amend the cabinet on your own.

- There is a risk of person injury or damage to the refrigerator.
- It is recommended that any service be carried out by a qualified person.

BASIC OPERATION

1. Plug unit into the correct outlet. digital display should light up if these steps are followed correctly. Flip the lamp switch on (the lamp switch is located on the top decorator's right of the unit).
2. The default temperature ("Set point") is set to 5°C
3. The compressor is set to automatically cycle based on the cabinet temperature, and is controlled by the main PCB("Controller").
4. The defrost cycle is set to automatically cycle and is controlled by the controller, as well as the door switch

CONTROLLER DISPLAY



※ Power Button

- ① Press the power button for more than 2 seconds.

※ Lock Button

- ① When power is applied, it will be unlocked for 1 minute.
- ② If there is no button operation, it will be locked automatically after 1 minute.
- ③ When locked, press button for 2 seconds or more to unlock.
- ④ Press the button in the unlocked state to lock.
- ⑤ The button can not be operated in the locked state.

※ Temp. Control Button

(* Please keep the factory default except in special cases.)

- ① Press ∇ or Δ button to enter temperature setting mode.
- ② You can change the setting value with ∇ , Δ button.
- ③ It is automatically released when there is no KEY operation for 5 seconds.

TROUBLE SHOOTING

| SYMPTOMS | CAUSES | SOLUTIONS |
|--|--|--|
| Cooler is freezing product. | <ul style="list-style-type: none"> • Thermostat set too cold. | <ul style="list-style-type: none"> • Turn the thermostat setting to a higher temperature position. |
| The unit does not refrigerate at all. | <ul style="list-style-type: none"> • There is a power connection failure problem. | <ul style="list-style-type: none"> • Check the power cord and plug in correctly. |
| The unit does not refrigerate well. | <ul style="list-style-type: none"> • The unit is in sunlight or near a heating device. • The unit contains warm product or too much product. • The unit door is opened too frequently or left open long. • The temp. dial is not on the correct position. • The condenser is clogged. | <ul style="list-style-type: none"> • Check the installation place. • Check the condition of stored food. • Check the position of the temp control dial. |
| There is a loud noise. | <ul style="list-style-type: none"> • The floor is too weak or the leveling feet is set incorrectly. • The back-side of the unit is too close to the wall. | <ul style="list-style-type: none"> • Check the installation. |
| There are dew-drops on the unit exterior. | <ul style="list-style-type: none"> • High-moisture air can produce dewdrops during rainy season. | <ul style="list-style-type: none"> • Wipe with a dry cloth. |
| There are dew-drops on the unit interior. | <ul style="list-style-type: none"> • The door is opened too frequently or left open long. • Damp product is stored. | <ul style="list-style-type: none"> • Keep the door closed to remove dewdrops. |
| The door does not close tightly. | <ul style="list-style-type: none"> • The door is bent. • Unit not level. • The door gasket has come out. | <ul style="list-style-type: none"> • Level the unit again. • Reposition the gasket. |

The following points are not malfunctions:

- A water-flowing sound can be heard when the compressor stops. This is the sound of REFRIGERANT flowing.
- The compressor does not run during the defrost cycle.

Note: Formation of condensation on and around the edge of the door and the front side of the cabinet is normal. Gurgling noises inside the refrigerating circuit are normal.

Refer to the website for Warranty Information

- Web : www.phchd.com/us/biomedical

PHCbi

1300 Michael Drive, Suite A, Wood Dale, IL 60191

www.phchd.com/us/biomedical