



HOSHIZAKI

Instruction Manual

HX Series
Refrigerated Medical Equipment

Models
Upright A

WARNING

Only qualified service technicians should install and service the appliance. To obtain the name and phone number of your local Hoshizaki Certified Service Representative, visit www.hoshizakiamerica.com. No installation, operation, or maintenance should be undertaken until the technician has thoroughly read this Instruction Manual. No service should be undertaken until the technician has thoroughly read the service manual available at www.hoshizakiamerica.com. Likewise, the owner/manager should not proceed to operate the appliance until the installer has instructed them on its proper operation. Failure to install, operate, and maintain the appliance in accordance with this manual will adversely affect safety, performance, component life, and warranty coverage. Proper installation is the responsibility of the installer. Product failure or property damage due to improper installation is not covered under warranty.

Hoshizaki provides this manual primarily to assist qualified service technicians in the installation, operation, maintenance, and service of the appliance.

HOSHIZAKI AMERICA, INC.

NOTE: To expedite assistance, all correspondence/communication **MUST** include the

following information:

- Model Number _____
- Serial Number _____
- Complete and detailed explanation of the problem.

IMPORTANT

This manual should be read carefully before the appliance is installed and operated. Read the warnings and guidelines contained in this manual carefully as they provide essential information for the continued safe use and maintenance of the appliance. Retain this manual for any further reference that may be necessary.

CONTENTS

Important Safety Information	4
I. Specifications.....	10
A. Construction	10
B. Electrical and Refrigerant Data	11
II. Installation Instructions	12
A. Location	12
B. Checks Before Installation.....	14
C. Setup.....	15
D. Electrical Connection	18
E. Final Checklist	19
III. Operating Instructions.....	20
A. Important Notes About Usage	20
B. Startup	22
C. Controls and Adjustments	25
1. Cabinet Temperature Setpoint.....	25
2. Cabinet Temperature Differential and Range	25
3. Adjusting Temperature Setpoint	26
4. Cabinet Temperature Display Scale.....	27
D. Display Module Icons	28
E. Defrost.....	29
F. Product Storage	31
G. Alarm Safeties.....	32
H. Safety Devices	33
I. Cooling Performance	33
J. Cabinet Condensation	33
IV. Cleaning and Maintenance Instructions.....	34
A. Cleaning	34
B. Maintenance.....	35
V. Preparing the Appliance for Periods of Non-Use	36
VI. Decommissioning and Disposal	37
VII. RTD1 Sensor Temperature Calibration and Certification Sheet	38
1. RTD1 Sensor Calibration	38
2. RTD1 Sensor Certification Sheet	40

Important Safety Information

Throughout this manual, notices appear to bring your attention to situations which could result in death, serious injury, damage to the appliance, or damage to property.

	R-290 Class A3 Flammable Refrigerant Used
⚠ DANGER	Indicates a hazardous situation that, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
NOTICE	Indicates a situation that, if not avoided, could result in damage to the appliance or property.
IMPORTANT	Indicates important information about the use and care of the appliance.
⚠ DANGER	
<u>Risk of Fire or Explosion</u> <u>Flammable Refrigerant Used</u> • Only qualified service technicians should install and service the appliance. • No installation, operation, or maintenance should be undertaken until the technician has thoroughly read this Instruction Manual. All safety precautions must be followed. • No service should be undertaken until the technician has thoroughly read the Service Manual available at www.hoshizakiamerica.com. All safety precautions must be followed. • This appliance to be installed in accordance with the Safety Standard for Refrigeration Systems ANSI/ASHRAE 15. • Follow handling instructions carefully in compliance with national regulations. • Do not use mechanical devices or other means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. • Do not puncture refrigerant tubing. Risk of fire or explosion due to puncture of refrigerant tubing; follow handling instructions carefully. • Servicing shall be done by trained service personnel with certified competence in handling flammable refrigerants to minimize the risk of possible ignition due to incorrect parts or improper service. • Component parts shall be replaced with like components. so as to minimize the risk of possible ignition due to incorrect parts. • Dispose of properly in accordance with federal or local regulations. • Do not pierce or burn. • Be aware that refrigerants may not contain an odor. • Do not damage the refrigeration circuit. • See nameplate for R-290 refrigerant charge: • If greater than 114 g (4 oz.), do not install in public corridor or lobby. • If greater than 152 g (5.3 oz.), do not install within 6 m (20 ft) of open flame.	

⚠ DANGER continued

- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance, or an operating electric heater).
- Do not place any potential ignition sources in or near the appliance.
- Keep clear of obstruction all ventilation openings in the appliance enclosure or in the structure for building-in.
- No potential sources of ignition are to be used in the searching for or detection of refrigerant leaks.
- Do not use electrical appliances inside the appliance unless they are of the type recommended by the manufacturer.
- Do not store explosive substances such as aerosol cans with a flammable propellant in this appliance.
- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.
- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

WARNING

- The appliance should be destined only to the use for which it has been expressly conceived. Any other use should be considered improper and therefore dangerous. The manufacturer cannot be held responsible for injury or damage resulting from improper, incorrect, and unreasonable use. Failure to install, operate, and maintain the appliance in accordance with this manual will adversely affect safety, performance, component life, and warranty coverage and may result in costly water damage.

To reduce the risk of death, electric shock, serious injury, or fire, follow basic precautions including the following:

- This appliance is not intended for use above 2,000 m (6,561 ft). Installation above 2,000 m (6,561 ft) may adversely affect safety, performance, and component life.
 - Wear appropriate personal protective equipment (PPE) when servicing the appliance.
 - The appliance must be installed in accordance with applicable national, state, and local codes and regulations.
 - The appliance requires an independent power supply of proper capacity. See the nameplate for electrical specifications. Failure to use an independent power supply of proper capacity can result in a tripped breaker, blown fuse, damage to existing wiring, or component failure. This could lead to heat generation or fire.
 - Do not block access to the power supply cord or electrical outlet when positioning.
- **THE APPLIANCE MUST BE GROUNDED.** The appliance is equipped with a hospital-grade NEMA 5-15 three-prong grounding plug  (green dot) to reduce the risk of potential shock hazards. It must be plugged into a properly grounded, independent 3-prong wall outlet. If the outlet is a 2-prong outlet, it is your personal responsibility to have a qualified electrician replace it with a properly grounded, independent 3-prong wall outlet. Do not remove the ground prong from the power cord and do not use an adapter plug. Failure to follow these instructions may result in death, electric shock, or fire.
 - To reduce the risk of electric shock, do not touch the power switch or plug with damp hands.
 - To reduce the risk of electric shock, make sure the power switch is in the "OFF" position before plugging in or unplugging the appliance.
 - Unplug the appliance before servicing.
 - Do not use an appliance with a damaged power cord. The power cord should not be altered, jerked, bundled, weighed down, pinched, or tangled. Such actions could result in electric shock or fire. To unplug the appliance, be sure to pull the plug, not the cord, and do not jerk the cord.
 - Do not use an extension cord.
 - If the supply cord is damaged, it must be replaced by the manufacturer, its service agent, or similarly qualified persons in order to avoid a hazard. Upon replacement, the GREEN ground wire in the power cord must be connected to the designated grounding screw.
 - Do not make any alterations to the appliance. Alterations could result in electric shock, injury, fire, or damage to the appliance.
 - Appliance is heavy. Use care when lifting or positioning. Work in pairs when needed to prevent injury or damage.

⚠ WARNING continued

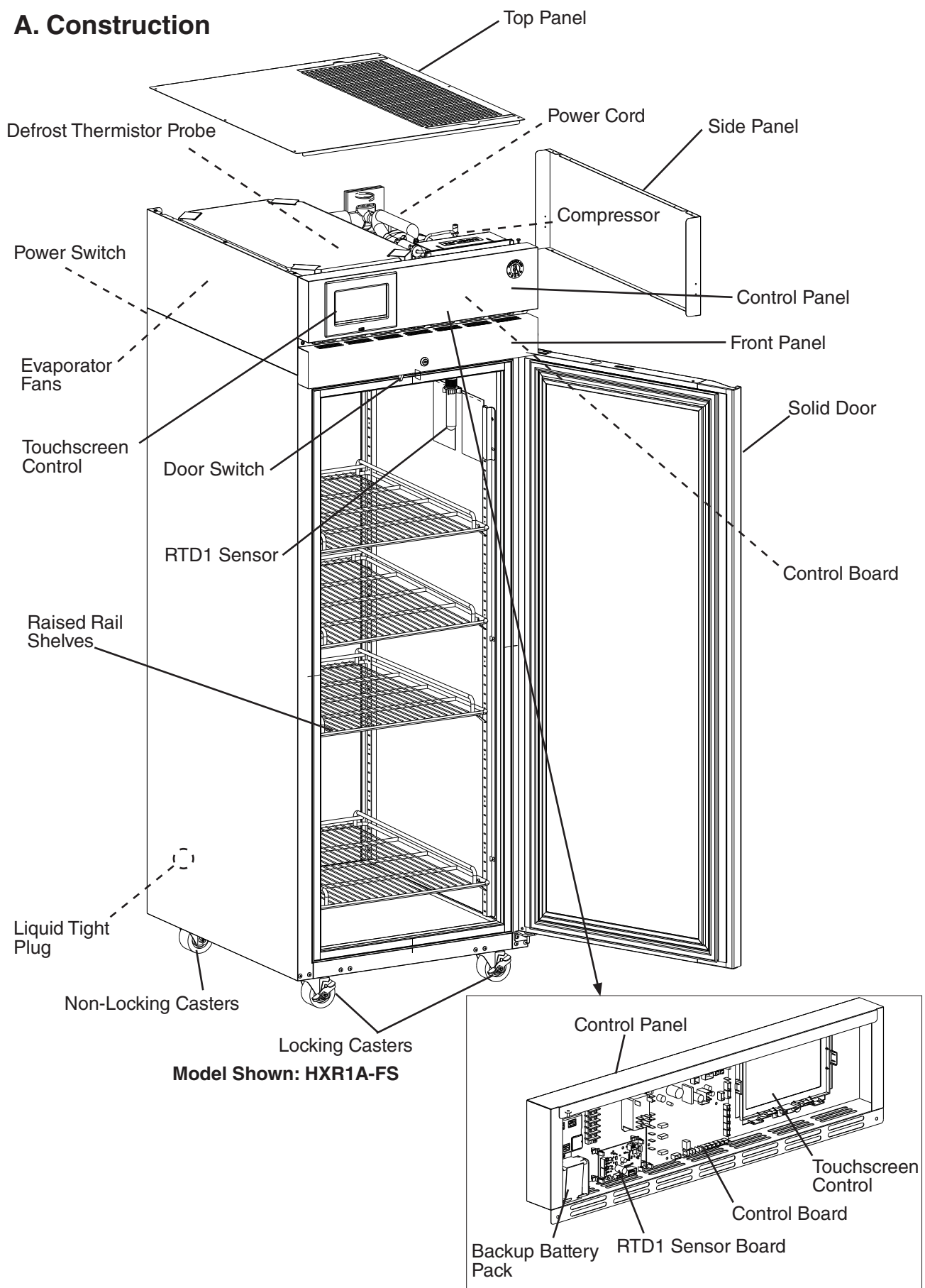
- The appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Do not splash, pour, or spray water directly onto or into the appliance. This might cause short circuit, electric shock, corrosion, or failure.
- Children should be supervised to ensure that they do not play with the appliance.
- Do not climb, stand, or hang on the appliance or allow children or animals to do so. Serious injury could occur or the appliance could be damaged.
- Be careful not to pinch fingers when opening and closing the door. Be careful when opening and closing the door when children are in the area.
- Open and close the doors with care. Opening the doors too quickly or forcefully may cause injury or damage to the appliance or surrounding equipment.
- Do not use combustible spray or place volatile or flammable substances in or near the appliance. They might catch fire.
- Do not throw anything onto the shelves or load any single shelf with more than 120 lb. (54.5 kg) of product. They might fall off and cause injury.
- This appliance is designed to CDC/VFC guidelines for purpose-built refrigerated storage equipment. Employ sanitary methods.
- Do not store items above the "Load Limit" label.
- Do not store items near air outlets. Otherwise, items may freeze up and crack or break contamination of other stored items.
- Do not place any product on the floor of the cabinet. All product must be placed on properly installed shelves.
- Items to be placed between the raised rails of the shelves. Do not allow items to be placed outside of the shelf raised rails.
- Do not block air inlets or outlets, otherwise cooling performance may be reduced.
- Do not tightly pack the cabinet. Allow some space between items to ensure good air flow.
- Do not put warm or hot products in the cabinet. Let them cool first, or they will raise the cabinet temperature and could deteriorate other items in the cabinet or overload the appliance.
- Medical storage and product handling must comply with applicable codes and regulations.
- All products should be stored in sealed containers. Otherwise product may dry up, or increase the likelihood of cross-contamination.
- Do not place more than 20 lb. (9 kg) on the top panel. Items must be stable and secure to prevent items from falling off of the appliance.
- Care should be used when placing items on top of the appliance. Do not store liquid containers or items that could fall through the louvers on top of the appliance. This could cause electric shock or fire.

NOTICE

- Install the appliance in a location that stays above freezing. Normal operating ambient temperature must be within 45°F to 80°F (7°C to 27°C).
- Do not leave the appliance on during extended periods of non-use, extended absences, or in sub-freezing temperatures. To properly prepare the appliance for these occasions, follow the instructions in "V. Preparing the Appliance for Periods of Non-Use."
- Do not place objects on top of the appliance.
- Protect the floor when moving the appliance to prevent damage to the floor.
- Do not allow the appliance to bear any outside weight.
- Keep ventilation openings, in the appliance enclosure or in the built-in structure, clear of obstruction.
- Do not allow the appliance to bear any outside weight.
- To prevent deformation or cracks, do not spray insecticide onto the plastic parts or let them come into contact with oil.
- To avoid damage to the gasket, use only the door handle when opening and closing.

I. Specifications

A. Construction



B. Electrical and Refrigerant Data

The nameplate provides electrical and refrigerant data and Year of Manufacture (YOM). The nameplate is located on the rear panel. For certification marks, see the nameplate.

We reserve the right to make changes in specifications and design without prior notice.

Model Number	HXR1A-FS/FG/FGE	HXR2A-FS/FG/FGE
AC SUPPLY VOLTAGE	~115/60/1	~115/60/1
AMPERES	5	8
DESIGN PRESSURE kPa (PSI)	HI-2482 (360) LO-1310 (190)	HI-2482 (360) LO-1310 (190)
REFRIGERANT g (oz.)	R-290 130 (4.6)	R-290 140 (4.9)
INSULATION BLOWING GAS	HFO 1233zd(E)	HFO 1233zd(E)
MINIMUM ROOM FLOOR AREA m ² (ft ²)	6.2 (67)	6.7 (72.1)
VOLUME (AHAM) m ³ (ft ³)	0.65 (23.1)	1.43 (50.4)
USABLE VOLUME (AHAM) m ³ (ft ³)	0.36 (12.7)	0.72 (25.4)

Model Number	HXF1A-FS/FG/FGE	HXF2A-FS/FG/FGE
AC SUPPLY VOLTAGE	~115/60/1	~115/60/1
AMPERES	9	9.5
DESIGN PRESSURE kPa (PSI)	HI-2482 (360) LO-1310 (190)	HI-2482 (360) LO-1310 (190)
REFRIGERANT g (oz.)	R-290 115 (4.1)	R-290 120 (4.2)
INSULATION BLOWING GAS	HFO 1233zd(E)	HFO 1233zd(E)
MINIMUM ROOM FLOOR AREA m ² (ft ²)	5.5 (59.2)	5.7 (61.8)
VOLUME (AHAM) m ³ (ft ³)	0.65 (23.1)	1.43 (50.4)
USABLE VOLUME (AHAM) m ³ (ft ³)	0.36 (12.7)	0.72 (25.4)

Note: Normal operating ambient temperature for refrigerated medical equipment refrigerators and freezers must be within 45°F to 80°F (7°C to 27°C).

Operation of the appliance, for extended periods, outside of these normal temperature ranges may affect appliance performance.

Additional Data Items:

Overvoltage Category	Category II
Pollution Degree	2
RF Emissions	Group 1 - Class A
EMC Environment	Basic

II. Installation Instructions

A. Location

This appliance is approved for indoor use.

This appliance uses an A3 flammable refrigerant. For refrigerant charge and minimum room floor area, see the table below.

⚠ DANGER		
	R-290 Class A3 Flammable Refrigerant Used	
Model	R-290 Refrigerant Charge g (oz.)	Minimum Room Floor Area (operating or storage) Superficie Minimale du Local (service ou stockage) m² (ft²); m² (pi²)
HXR1A-FS/FG/FGE	130 (4.6)	6.2 (67)
HXF1A-FS/FG/FGE	115 (4.1)	5.5 (59.2)
HXR2A-FS/FG/FGE	140 (4.9)	6.7 (72.1)
HXF2A-FS/FG/FGE	120 (4.2)	5.7 (61.8)
 ≥ Area m² (ft²) (see "Minimum Room Floor Area" above) ≥ Superficie m² (pi²) (voir « Superficie Minimale du Local » ci-dessus)		
R-290 Refrigerant Charge: • If greater than 114 g (4 oz.), do not install in public corridor or lobby. • If greater than 152 g (5.3 oz.), do not install within 6 m (20 ft) of open flame. Charge de réfrigérant R-290: • Si elle est supérieure à 114 g (4 oz.), ne pas l'installer dans un couloir public ou un hall d'entrée. • Si elle est supérieure à 152 g (5.3 oz.), ne pas l'installer à moins de 6 m (20 pi) d'une flamme nue.		
This appliance is not intended for use above 2,000 m (6,561 ft). Installation above 2,000 m (6,561 ft) may adversely affect safety, performance, and component life.		

⚠ WARNING

- This appliance must be installed in accordance with all applicable national, state, and local regulations.
- This appliance is intended for use in laboratories and medical facilities in commercial, industrial, or institutional occupancies as defined in the Safety Standard for Refrigeration Systems, ASHRAE 15.
- Appliance is heavy. Use care when lifting or positioning. Work in pairs when needed to prevent injury or damage.
- Do not tilt the appliance more than 45°.
- Do not block access to the power cord electrical outlet when positioning.

NOTICE

- This appliance is not intended for outdoor use.
 - Normal operating ambient temperature and humidity:
 - Temperature: 45°F to 80°F (7°C to 27°C)
 - Humidity: 20 to 60%
- Operation of the appliance, for extended periods, outside of this normal temperature range may affect appliance performance.

For best operating results:

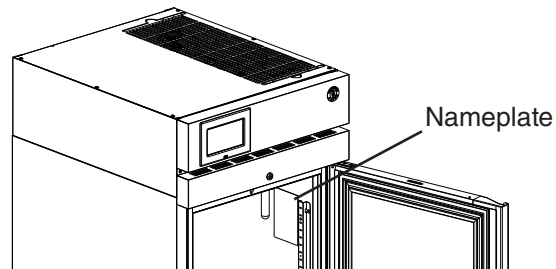
- The appliance should not be located next to high heat producing equipment.
- The location should provide a firm and level foundation for the appliance.
- The appliance should not be located in a corrosive environment.
- The door of the appliance should not be blocked or prevented from opening.
- The appliance must be located in a position where the power cord is easily accessible for unplugging the appliance from the electrical outlet.
- Minimum Clearance:

Models	Side	Top	Rear
All Reach-In Refrigerators and 1-Section Freezers	0" (0 cm)	0" (0 cm)	3" (8 cm)
2-Section Freezers	0" (0 cm)	10" (25 cm)	3" (8 cm)

B. Checks Before Installation

⚠ WARNING

Refer to the nameplate for electrical specifications. The nameplate is located on the right side wall of the cabinet interior. For more electrical connection details, see "II.D. Electrical Connection." We reserve the right to make specification and design changes without prior notice.



Model Shown: HXR1A-FS

- Visually inspect the exterior of the shipping package and immediately report any damage to the carrier. Upon opening the package, any concealed damage should also be immediately reported to the carrier.
- Remove the shipping carton, tape, and packing material. Remove the protective plastic film from the exterior panels on all models and from the interior door panels on solid door models. If the appliance is exposed to the sun or to heat, remove the film after the appliance cools.
- Remove all accessory containers before discarding the packing materials. Dispose of all packing materials in a proper and environmentally responsible manner.
- Check for missing or damaged accessories.

C. Setup

1. Caster or Optional 6 in. Leg Installation and Leveling the Appliance

a) Caster or Optional 6 in. Leg Installation

- 1) Move as close to the final location as possible.
- 2) Remove the 2 bolts securing the appliance to the pallet, then remove the appliance from the pallet. Block the appliance securely at a height of 8" (20 cm) off the floor. Do not lay the appliance down. **NOTICE! Do not allow the door(s) to bear the weight of the appliance.**
- a) **Casters:** Attach and tighten the casters to the bottom of the appliance. Locking casters should be attached to the front of the appliance. See Fig. 1.
NOTICE! Ensure casters are completely threaded into appliance and tight.

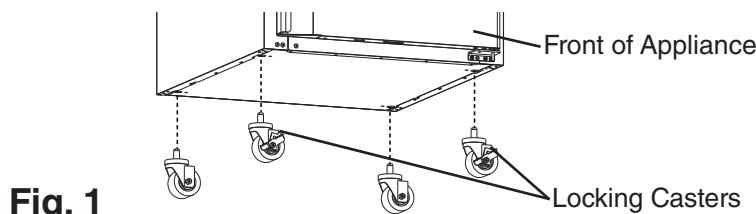


Fig. 1

- b) **Legs:** Optional 6 in. legs available. Attach and tighten the optional adjustable 6 in. legs to the bottom of the appliance.

⚠ WARNING

When using legs, avoid sliding the appliance across the floor after legs are installed.

b) Leveling the Appliance

After installing the casters or optional 6 in. legs, lower the appliance to the floor and check the level of the appliance.

- a) **Casters:** If the appliance is out of level, follow the instructions and steps found in HS-3590 provided in the accessories bag. Otherwise, continue to the next section.
NOTICE! Make sure the casters are tight and no slack is left between the casters, shim plates, and appliance.
- b) **Legs:** If the appliance is out of level, turn the bottom portion of the leg for height adjustment. Otherwise, continue to the next section. **NOTICE! Make sure the legs are tight and no slack is left between the leg and appliance.**

2. Install the Shelves

Shelf support clips are provided in the accessory pack.

- 1) Place the shelf support clips into the pilasters (4 shelf support clips per shelf). Indexing holes are provided on the pilasters in evenly spaced intervals to assist in positioning the support clips at the same height. See Fig. 2.
- 2) With the raised rail on top, place the shelves in position on the shelf support clips.

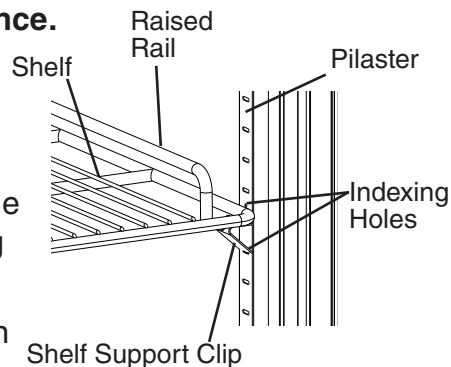


Fig. 2

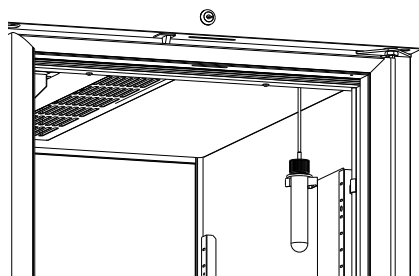
3. Check the Refrigeration Circuit

- 1) Visually check that the refrigerant lines do not rub or touch other lines or surfaces and that the condenser fan blade turns freely.
- 2) Check that the compressor is snug on all mounting pads.

4. Check the RTD1 (saturated cabinet resistance temperature detector) Sensor Housing

The control board monitors the RTD1 sensor temperature through the RTD1 sensor board for more accurate and finite cabinet temperature control. Note: The RTD1 sensor does not directly control component operation.

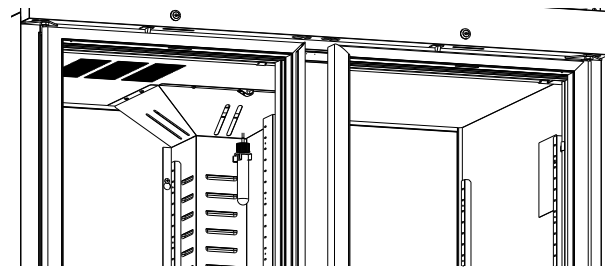
- 1) Visually check that the glycol solution has not leaked from the RTD1 sensor housing. See Fig. 3.
- 2) Confirm that the RTD1 sensor housing is securely mounted in its location.



RTD1 Sensor Housing

Model Shown: HXR1A-FG

Fig. 3



RTD1 Sensor Housing

Model Shown: HXR2A-FG

5. Backup Battery Connection

8 AA batteries may be installed to provide continuous recording of data during power outage. They are not required for normal operation.

- 1) Remove the control panel, then being careful not to pull the wires, rotate the control panel up on top of the top panel. See Fig. 4.
- 2) Remove the backup battery pack. See Fig. 5.
- 3) Install 8 AA batteries (not supplied with the appliance) into the backup battery pack.
- 4) Replace the battery backup pack and control panel in their correct positions.

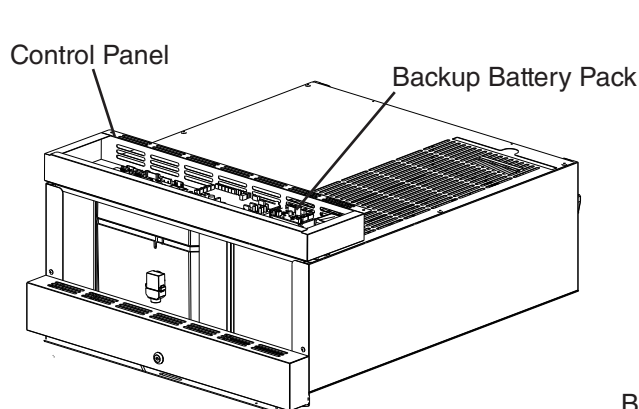


Fig. 4

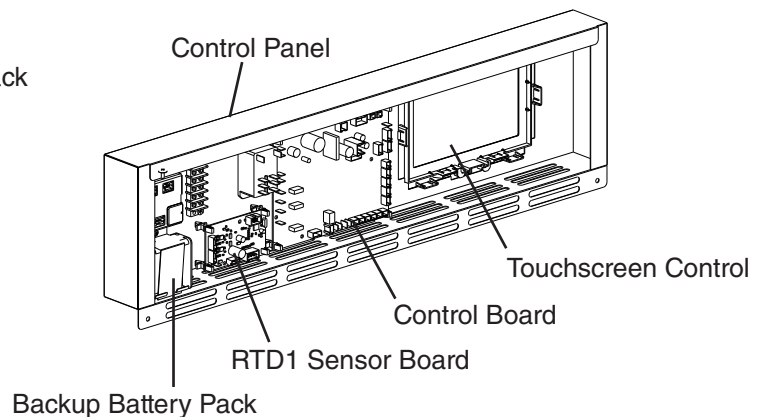


Fig. 5

6. Field Installed Monitoring Devices (if applicable)

This appliance is designed to allow for external on-site monitoring devices.

These monitoring devices may be installed through the liquid tight bushings shown in Fig. 6. **IMPORTANT! Field monitors must be placed on a shelf between the raised rails.**

- 1) Using a sharp object smaller in diameter than the monitoring device. Pierce the front liquid tight bushing, then the rear liquid tight bushing.
- 2) Route the monitoring device through the liquid tight bushings. Note: Liquid tight bushings provide closure around the monitoring device to insulate the holes. Food grade silicone or refrigeration putty (not provided) may be used to fill any additional openings around the cable.
- 3) Third party temperature probes must be mounted between the raised rails on the shelves.

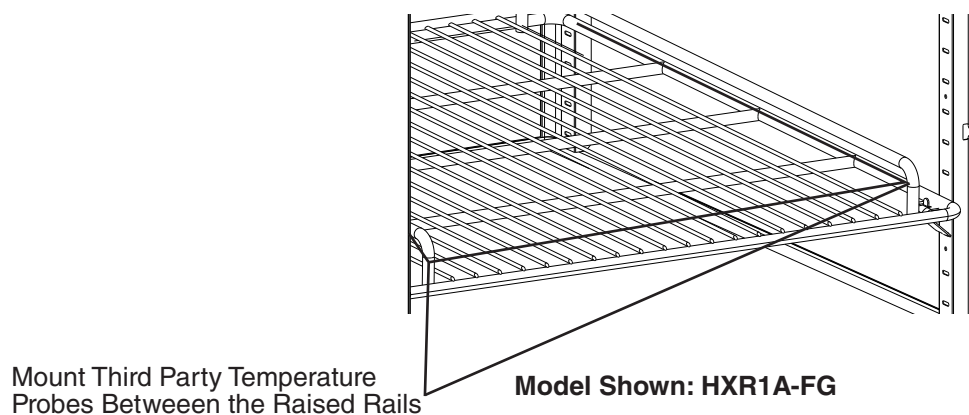
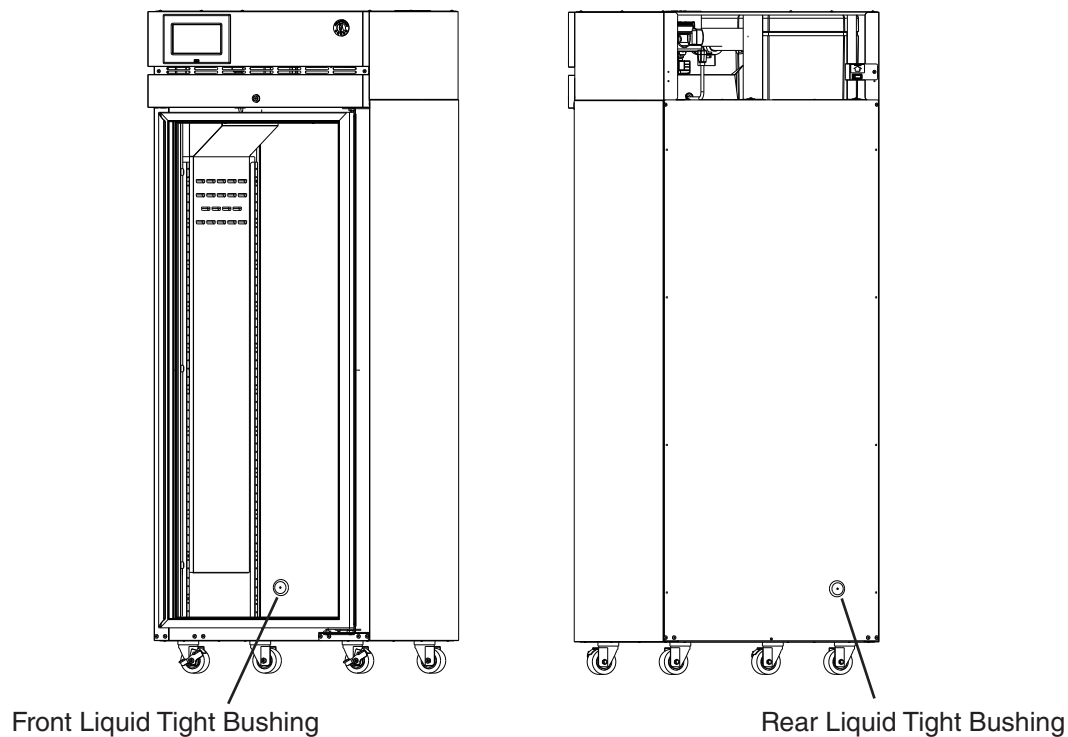


Fig. 6

D. Electrical Connection

WARNING

- Electrical connection must meet national, state, and local electrical code requirements. Failure to meet these code requirements could result in death, electric shock, serious injury, fire, or severe damage to equipment.
 - This appliance requires an independent power supply of proper capacity. See the nameplate for electrical specifications. Failure to use an independent power supply of proper capacity can result in a tripped breaker, blown fuse, damage to existing wiring, or component failure. This could lead to heat generation or fire.
 - **115VAC Models: THIS APPLIANCE MUST BE GROUNDED:** This appliance is equipped with a hospital-grade NEMA 5-15 three-prong grounding plug  to reduce the risk of potential shock hazards. It must be plugged into a properly grounded, independent 3-prong wall outlet. If the outlet is a 2-prong outlet, it is your personal responsibility to have a qualified electrician replace it with a properly grounded, independent 3-prong wall outlet. Do not remove the ground prong from the plug and do not use an adapter plug. Failure to follow these instructions may result in death, electric shock, or fire.
 - Do not use an extension cord.
 - To reduce the risk of electric shock, do not touch the power switch or plug with damp hands. Make sure the power switch is in the "OFF" position before plugging in or unplugging the appliance.
 - Do not use an appliance with a damaged power cord. The power cord should not be altered, jerked, bundled, weighed down, pinched, or tangled. Such actions could result in electric shock or fire. To unplug the appliance, be sure to pull the plug, not the cord, and do not jerk the cord. If the plug or power cord is damaged, contact your local Hoshizaki service representative or local Hoshizaki distributor immediately and ask for repairs.
 - If the power cord is damaged, it must be replaced by the manufacturer, its service agent, or similarly qualified persons in order to avoid a hazard.
 - The GREEN ground wire in the factory-installed wire harness is connected to the appliance. If it becomes necessary to remove or replace the power cord, be sure to connect the power cord's ground wire to the GREEN designated grounding screw.
- Usually an electrical permit and services of a licensed electrician are required.
 - The maximum allowable voltage variation is ± 6 percent of the nameplate rating.

E. Final Checklist

- 1) Is the appliance level?
- 2) Have the front casters been locked?
- 3) Is the appliance in a site where the ambient temperature is as specified below all year around?
– All Models 45°F to 80°F (7°C to 27°C)

- 4) Have the minimum clearance requirements specified below been met?

Models	Side	Top	Rear
Reach-In Refrigerators and Freezers (Except 2-Section Freezers)	0" (0 cm)	0" (0 cm)	3" (8 cm)
2-Section Freezers	0" (0 cm)	10" (25 cm)	3" (8 cm)

- 5) Have the shipping carton, tape, and packing material been removed from the appliance? Has the protective plastic film been removed from the exterior panels on all models and from the interior door panels on solid door models?
- 6) Have the appliance and accessories been checked for shipping damage?
- 7) Has the power supply voltage been checked or tested against the nameplate rating? Is the power supply a properly grounded, independent wall outlet? Does the electrical connection meet all national, state, and local code and regulation requirements.
- 8) Have the refrigerant lines been checked to make sure they do not rub or touch other lines or surfaces? Has the condenser fan blade been checked to make sure it turns freely? Is the compressor securely attached?
- 9) Have the shelves been properly installed with the raised rails on top?
- 10) If a 3rd party monitoring device is installed on the shelves, is it properly mounted between the raised rails on the shelves?
- 11) Has the end user been given the instruction manual, and instructed on how to operate the appliance and the importance of the recommended periodic maintenance?
- 12) Has the end user been given the name and telephone number of an authorized service agent?
- 13) Has the warranty card been filled out and forwarded to the factory for warranty registration?
- 14) Has the RTD1 sensor calibration certificate sheet located in the accessory bag, been located and properly secured for future access?

III. Operating Instructions



R-290 Class A3 Flammable Refrigerant Used

DANGER

- Be sure to follow all Important Safety Information located at the beginning of this manual.
- Failure to install, operate, and maintain the appliance in accordance with this manual will adversely affect safety, performance, component life, and warranty coverage and may result in costly water damage.
- Keep clear of obstruction all ventilation openings in the appliance enclosure or in the structure for building-in.

A. Important Notes About Usage

WARNING

- Only qualified service technicians should install and service the appliance.
- Wear appropriate personal protective equipment (PPE) when servicing the appliance.
- Failure to install, operate, and maintain the appliance in accordance with this manual may adversely affect safety, performance, component life, and warranty coverage.
- To reduce the risk of electric shock, do not touch the power switch or plug with damp hands.
- Do not splash, pour, or spray water directly onto or into the appliance. This might cause short circuit, electric shock, corrosion, or failure.
- The appliance 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 instruction concerning use of the appliance by a person responsible for their safety.
- Children should be properly supervised around the appliance.
- Do not climb, stand, or hang on the appliance or doors or allow children or animals to do so. Do not climb into the appliance or allow children or animals to do so. Death or serious injury could occur or the appliance could be damaged.
- Be careful not to pinch fingers when opening and closing the doors. Be careful when opening and closing the doors when children are in the area.

** WARNING continued**

- Open and close the doors with care. Opening the doors too quickly or forcefully may cause injury or damage to the appliance or surrounding equipment.
- Do not use combustible spray or place volatile or flammable substances in or near the appliance. They might catch fire.
- Keep the area around the appliance clean. Dirt, dust, or insects in the appliance could cause harm to individuals or damage to the equipment.
- Do not throw anything onto the shelves or load any single shelf with more than 120 lb. (54.5 kg) of product. They might fall off and cause injury.
- Do not place more than 20 lb. (9 kg) on the top panel. Items must be stable and secure to prevent items from falling off of the appliance.
- Care should be used when placing items on top of the appliance. Do not store liquid containers or items that could fall through the louvers on top of the appliance. This could cause electric shock or fire.

B. Startup

RTD1 sensor calibration may be required. The RTD1 sensor is calibrated at the factory at time of production. Due to delays between manufacturing date and install date, a re-calibration may be required. Check the RTD1 Sensor Temperature Calibration Certificate located in the accessory bag for this appliance's certification date. If a certification certificate cannot be located, contact Hoshizaki America for calibration data. If re-calibration and certification is required, see "VII. RTD1 Sensor Temperature Calibration and Certification Sheet." Daily temperature readings are recorded from the RTD1 sensor for managing cabinet temperature requirements.

⚠ WARNING

- All parts are factory-adjusted. Improper adjustments may adversely affect safety, performance, component life, and warranty coverage.
- To reduce the risk of electric shock, do not touch the power switch or plug with damp hands.

IMPORTANT

At startup, there is a slight delay before the compressor starts.

- 1) Confirm the power switch is in the "OFF" position. See Fig. 7. Plug the appliance into the electrical outlet. Move the power switch to the "ON" position.

IMPORTANT! Mullion, perimeter, and drain heaters energize once appliance is plugged into the electrical outlet and remain energized even while the power switch is in the "OFF" position. Appliance must be unplugged from the electrical outlet to de-energize the heaters. Evaporator fan motors energize once the power switch is moved to the "ON" position and remain energized until the door is opened, defrost initiates, or the power switch is moved to the "OFF" position.

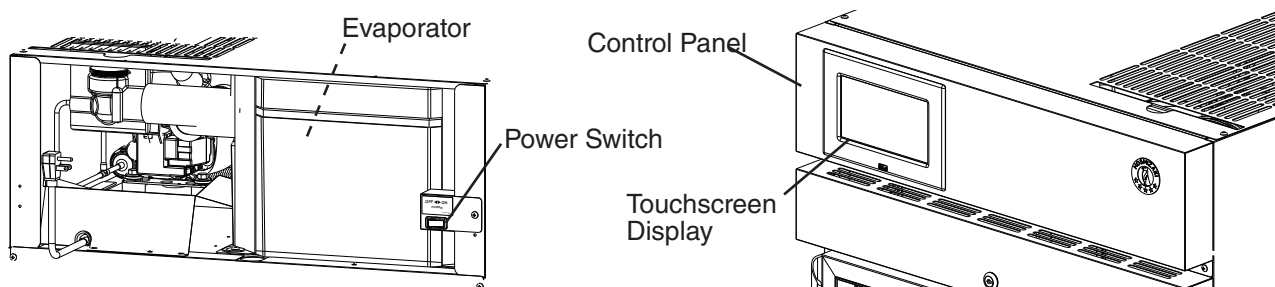
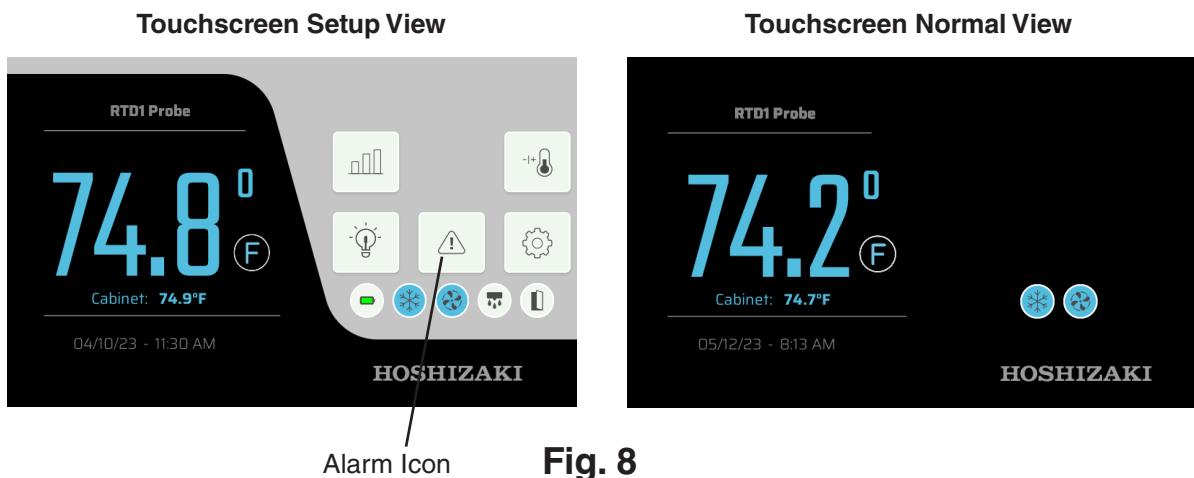


Fig. 7

- 2) Once the touchscreen setup view is visible, optional settings may be selected for changes. See "III.C. Controls and Adjustments" for optional changes. If no changes are needed, after 1 min., the touchscreen returns to normal view. See Fig. 8.
Allow the appliance to cool down prior to loading it with products.
Note: If an alarm is present (alarm icon lit), the touchscreen remains in setup view until the alarm is cleared.

IMPORTANT
This appliance has been designed and preset to maintain temperatures that comply with the NSF-456 Vaccine Storage standard. Modification to these preset values will place the appliance in a non-compliance state with NSF-456 requirements.

Adjust the date or time as follows:



- 3) If the settings icon is not visible, press and release the center of the RTD1 sensor temperature display. See Fig. 9.
- 4) Once visible, press the settings icon, then press the "Date/Time Settings" icon.

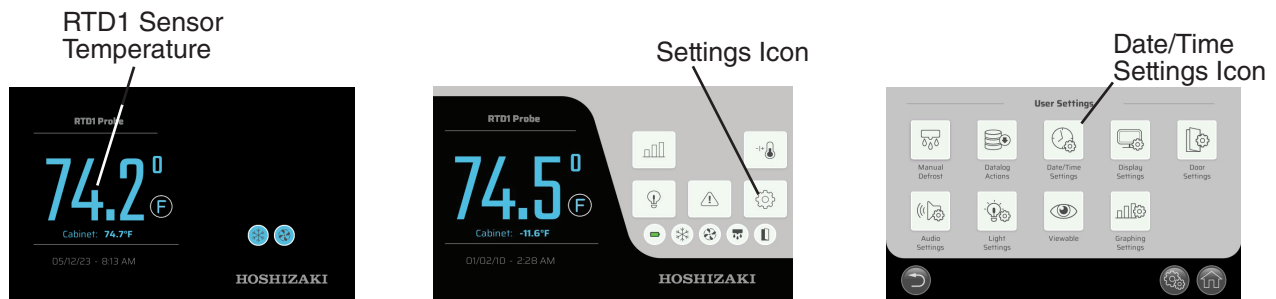


Fig. 9

- 5) Press the desired cell to be changed. See Fig. 10.
- 6) Use the keypad or scroll using the up and down arrows to input the desired setting.
- 7) Press the checkmark icon to save the new setting.
- 8) Press the home icon to return to the touchscreen setup view. See Fig. 11.
The touchscreen setup view returns to touchscreen normal view after 1 min.
See Fig. 12. Note: If an alarm is present (alarm icon lit), the touchscreen remains in setup view until the alarm is cleared.

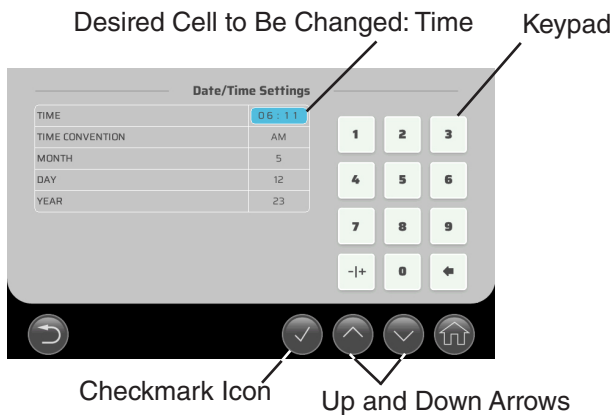


Fig. 10

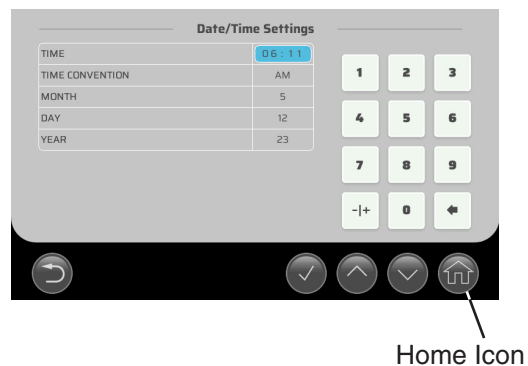


Fig. 11

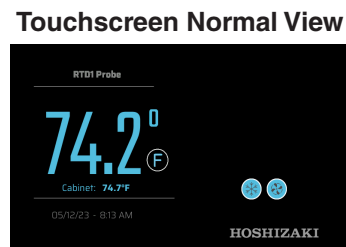
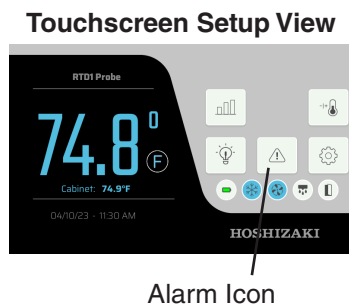


Fig. 12

C. Controls and Adjustments

From the touchscreen setup view, operational icons and settings icons are shown. Collecting data or making changes may be made by selecting the appropriate icon from the touchscreen setup view. See Fig. 13.

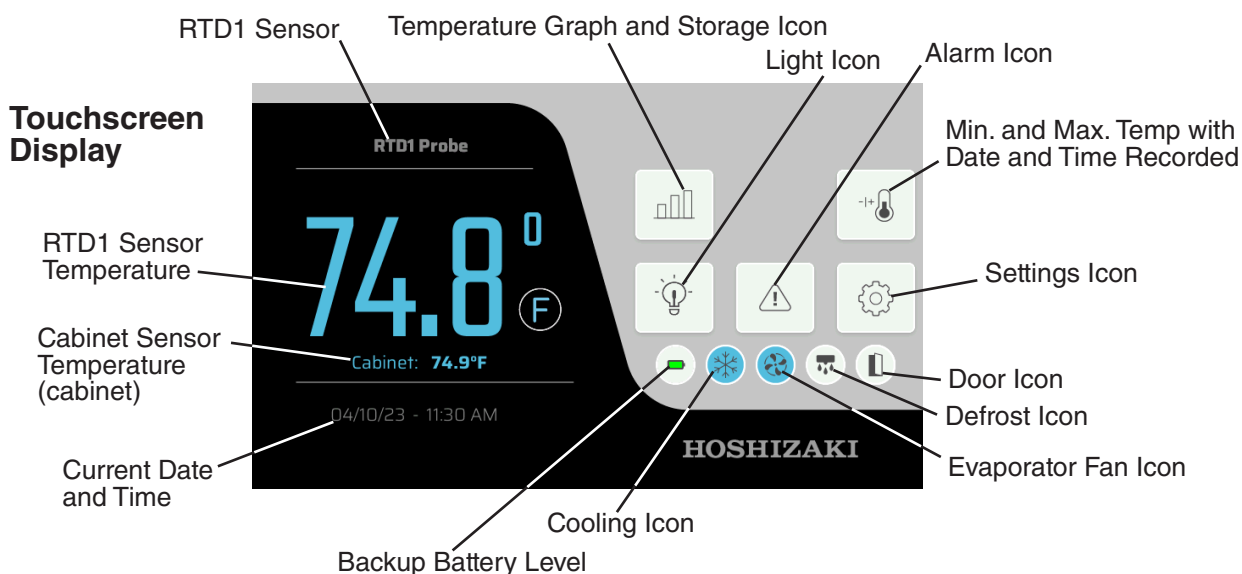


Fig. 13

1. Cabinet Temperature Setpoint

The cabinet temperature setpoint is the value for the average cabinet temperature as monitored by the RTD1 sensor and RTD1 sensor board. Note: The cabinet temperature is controlled by the cabinet sensor; the RTD1 sensor does not control component operation.

See the table below for default settings.

Model	Default Temperature Setting	Temperature Differential
HXR1A	41.0°F (5°C)	±2.0°F (±1.1°C)
HXR2A	41.0°F (5°C)	±2.4°F (±1.3°C)
HXF1A HXF2A	-6°F (-21.1°C)	±2.4°F (±1.3°C)

2. Cabinet Temperature Differential and Range

HXR1A: The cabinet temperature differential for the compressor to turn on and off is ±2.0°F (±1.1°C) of the cabinet temperature setpoint. For example; HXR1A refrigerator temperature setpoint of 41.0°F (5°C), the compressor comes on at 43°F (6.1°C), and the compressor goes off at 39°F (3.9°C).

HXR2A, HXF1A, and HXF2A: The cabinet temperature differential for the compressor to turn on and off is ±2.4°F (±1.3°C) of the cabinet temperature setpoint. For example; for a HXF1A freezer temperature setpoint of -6°F (-21.1°C), the compressor comes on at -3.6°F (-19.8°C), and the compressor goes off at -8.4°F (-22.4°C).

- For refrigerators, the temperature setpoint is adjustable between 30.0°F and 50.0°F (-1.1°C and 10.0°C).
- For freezers, the temperature setpoint is adjustable between -10.0°F and +10.0°F (-23.3°C and -12.2°C).

3. Adjusting Temperature Setpoint

If necessary, adjust the cabinet temperature setpoint as follows:

IMPORTANT! Any modification to these preset values will place the appliance in a non-compliance state with NSF-456 requirements.

- 1) Press and release the center of the RTD1 sensor temperature display. The touchscreen setup view is shown. See Fig. 14.
- 2) Press and release the center of the RTD1 sensor temperature display again. The temperature setting table is shown. See Fig. 15.

RTD1 Sensor Temperature

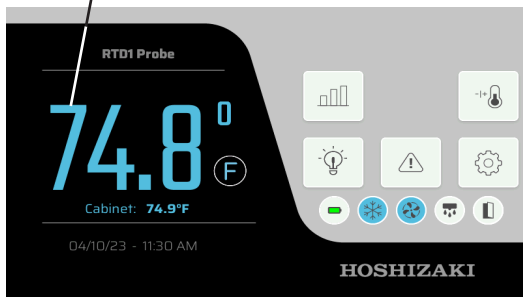


Fig. 14

Temperature Setting Table

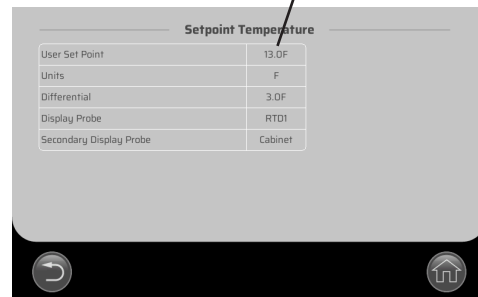


Fig. 15

- 3) Press the User Set Point temperature cell. See Fig. 16.
- 4) Use the keypad or scroll using the up and down arrows to input the desired setting.
- 5) Press the checkmark icon to save the new cabinet temperature setpoint.
- 6) Press the home icon to return to the touchscreen setup view. See Fig. 17. The touchscreen setup view returns to touchscreen normal view after 1 min. See Fig. 18. Note: If an alarm is present (alarm icon lit) touchscreen remains in setup view until alarm is cleared.

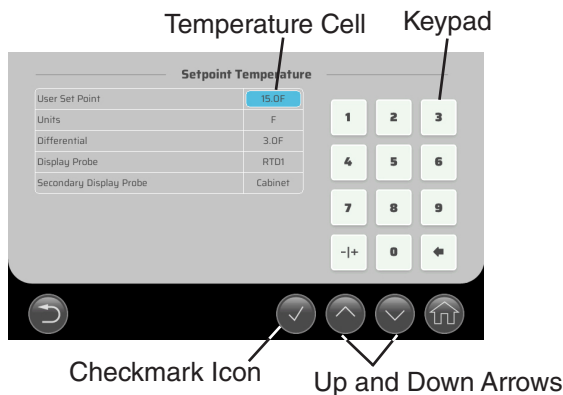


Fig. 16

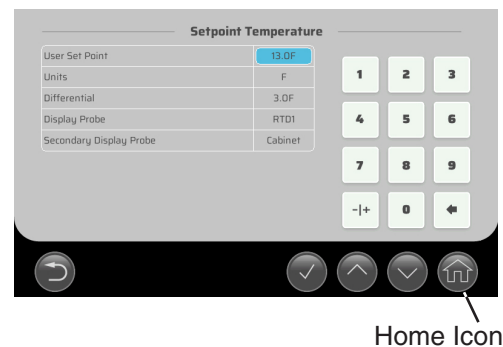
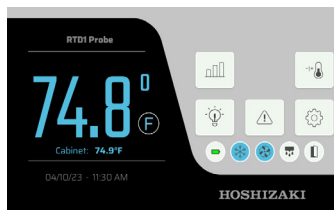


Fig. 17

Touchscreen Setup View



Touchscreen Normal View

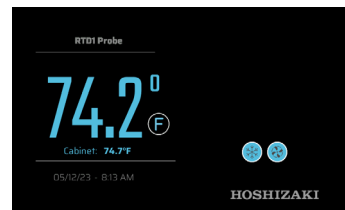


Fig. 18

NOTICE! Do not adjust the temperature setpoint more than 2°F (1.1°C) at a time. Allow the temperature to stabilize for a minimum of 8 hours before making further temperature setpoint adjustments.

4. Cabinet Temperature Display Scale

The default cabinet temperature display scale is Fahrenheit °F, but can be changed to Celsius °C.

To change the cabinet RTD1 sensor temperature display scale:

- 1) Press and release the center of the RTD1 probe temperature display. The touchscreen setup view is shown. See Fig. 19.
- 2) Press and release the center of the RTD1 probe temperature display again. The temperature setting table is shown. See Fig. 20.

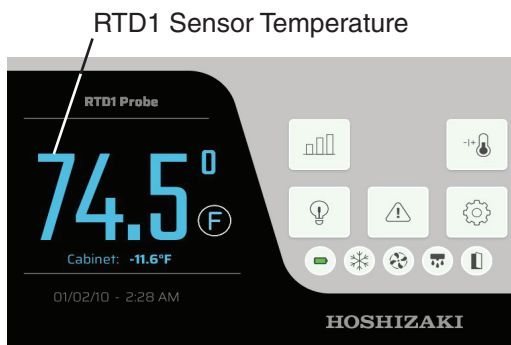


Fig. 19

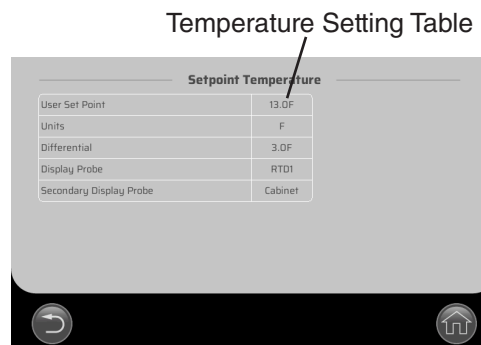


Fig. 20

- 3) Press the Units F or C cell in the Units row. See Fig. 21.
- 4) Press the up arrow icon for Celsius C or Fahrenheit F.
- 5) Press the checkmark icon to save the new cabinet temperature display scale.
- 6) Press the home icon to return to the touchscreen setup view. See Fig. 22.
The touchscreen setup view returns to touchscreen normal view after 1 min.
See Fig. 23. Note: If an alarm is present (alarm icon lit) touchscreen remains in setup view until alarm is cleared.

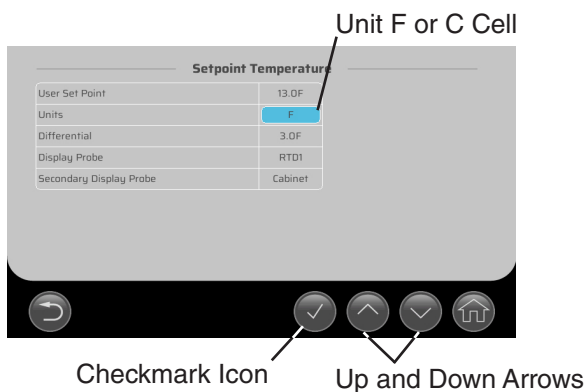


Fig. 21

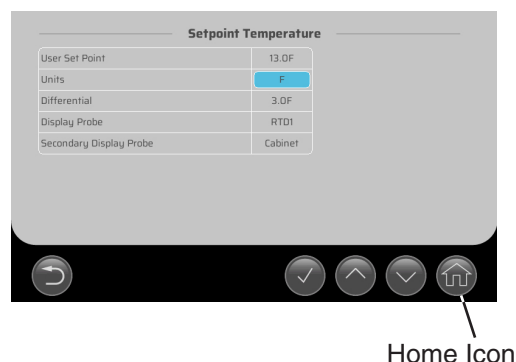


Fig. 22

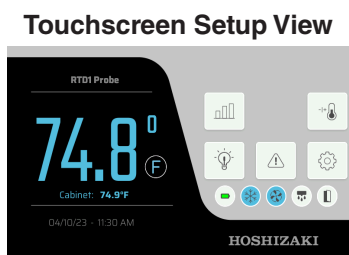
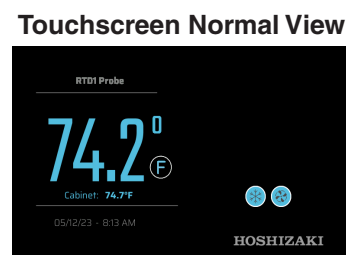


Fig. 23



D. Display Module Icons

Control module icons inform you of energized components and if the appliance is in alarm. See Fig. 24.

Control Module Icons	
Icon	Meaning
	Door Door open or closed.
	Compressor Compressor running. Cooling cycle.
	Evaporator Fan Motor Evaporator fan motor is running. Evaporator fan motor de-energizes when door is open.
	Defrost Appliance is in defrost cycle. See "III.E. Defrost" for details.
	Alarm Triangle Symbol Shaded (yellow highlight). Appliance is in alarm. See "III.H. Alarm Safeties" for details.
	Light Light on or off.
	Product Graph Icon System operation graph.
	Settings Icon User settings access.
	Min. and Max. Temperature Display Reset Icon Press to reset min. and max. temperature display. Note: To see the min. max. temperatures, press the alarm icon to open the temperature display table.

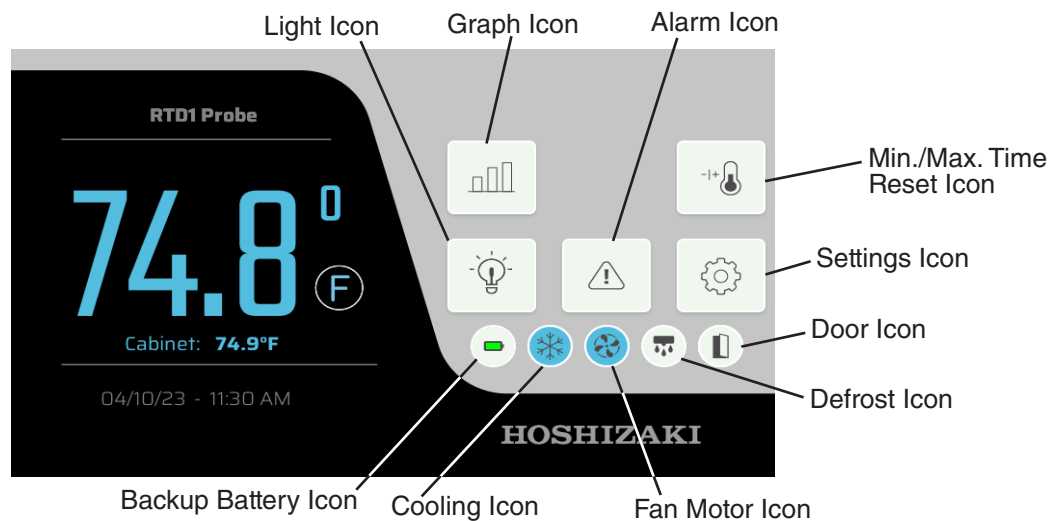


Fig. 24

E. Defrost

DANGER

Risk of Fire or Explosion. Flammable Refrigerant Used.

- Do not use mechanical devices to defrost.
- Do not puncture refrigerant tubing. Risk of fire or explosion due to puncture of refrigerant tubing; follow handling instructions carefully.

1. Refrigerators

Refrigerators use a time-initiated, off-cycle defrost. Defrost occurs when either the 2-hr. cumulative compressor run timer terminates or the 2-hr. continuous compressor run timer terminates. When either the 2-hr. cumulative compressor run timer or the 2-hr. continuous compressor run timer terminates, defrost begins. The 1-hr. maximum defrost timer starts. If energized, the compressor de-energizes and the evaporator fan motor continues. The defrost icon is displayed during defrost. After the defrost thermistor warms to 44°F (6.6°C) or 1 hr. maximum defrost timer terminates, defrost terminates. The defrost icon turns off and the compressor energizes. Note: If the defrost thermistor is above 50°F (10°C) the evaporator fan motor de-energizes until the defrost thermistor drops to 49°F (9°C).

2. Freezers

FREEZER DATA PENDING

3. Manual Defrost Initiation

1) Press the settings icon. See Fig. 25. User Settings display appears.

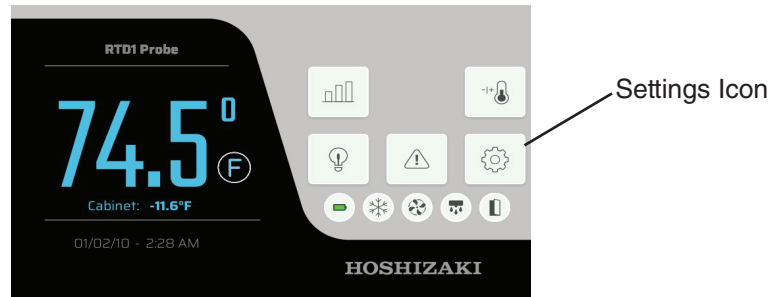


Fig. 25

2) Press the Manual Defrost icon. See Fig. 26. Defrost icon turns orange and defrost initiates.

3) Press the Home icon in the lower right hand corner of the display module.

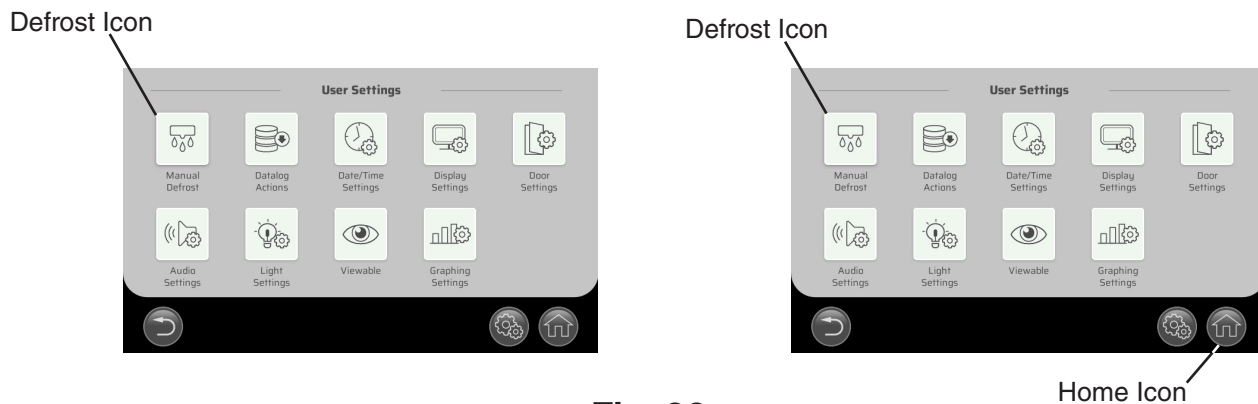


Fig. 26

4) Defrost engaged and defrost icon illuminated. See Fig. 27.

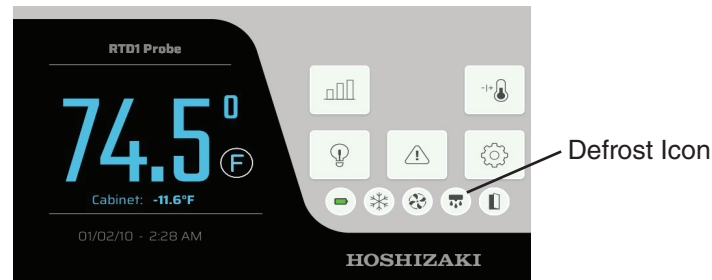


Fig. 27

F. Product Storage

WARNING

- This appliance is designed to CDC/VFC guidelines for purpose-built refrigerated storage equipment. Employ sanitary methods.
- All items must be stored on the shelves within the raised rails.
- Do not block the cabinet air inlet or outlet, or the space outside the shelves, otherwise cooling performance may be reduced.
- Do not tightly pack the cabinet, refer to load limit label. Do not place items above the "Load Limit" label. Allow some usable space between items to ensure acceptable temperature range and air flow. Also allow usable space between items and interior surfaces.
- Do not place any product on the floor of the cabinet. All product must be placed on properly installed shelves.
- Do not put warm or hot items in the cabinet. Let them cool first, or they will raise the cabinet temperature and could deteriorate other items in the cabinet or overload the appliance.
- All items should be stored in sealed containers. Otherwise items may dry up, cause frost to develop, result in poor appliance performance, or increase the likelihood of cross-contamination. Certain product ingredients, if not stored in sealed containers, may accelerate corrosion of the evaporator, resulting in failure.
- Do not store items near the air outlet. They might freeze up and crack or break causing a risk of injury or contamination of other items.

IMPORTANT

This appliance has been designed and preset to maintain temperatures that comply with the NSF-456 Vaccine Storage standard. Any modification to these preset values will place the appliance in a non-compliance state with NSF-456 requirements.

G. Alarm Safeties

Alarm signals are designed to protect the appliance and product. These alarms give information or warnings in the event the appliance is operating out of acceptable parameters. Alarm status can be viewed by pressing the alarm icon. See Fig. 28.

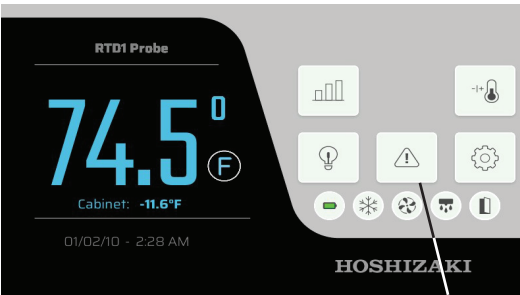
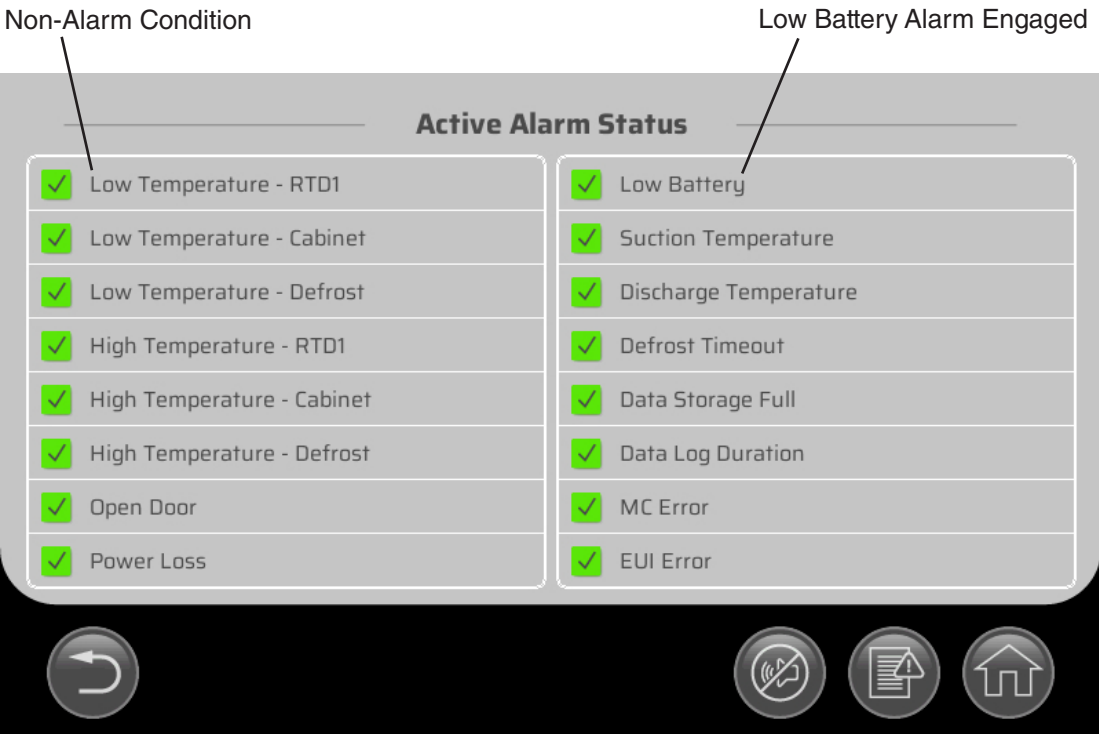


Fig. 28

Normal operation is shown with a green "Checkmark." See Fig. 29.
A fault issue is shown with a yellow "Exclamation Mark" and a red "X" on the right hand side. To reset, press and hold the red "X" until the "Exclamation Mark" returns to the "Checkmark".



Probe Sensor	Temperature Sensor
Probe 1	RTD1 Sensor
Probe 2	Cabinet Thermistor
Probe 3	Defrost Thermistor

Fig. 29

H. Safety Devices

1. Compressor External or Internal Overload

If combined temperature/amperage value is above the limit specified by the compressor manufacturer, the compressor overload operates independently to turn off the compressor. The compressor overload de-energizes the compressor until the temperature/amperage value returns to an acceptable level.

2. Short-Cycle Protection

There is a 2-minute minimum off-time and on-time for the compressor.

Note: Time may vary with compressor overload or high-pressure switch activation.

3. High-Pressure Switch

If pressure on the high-side of the appliance exceeds Hoshizaki specifications, the high-pressure switch activates and interrupts the compressor circuit, de-energizing the compressor until the pressure returns to an acceptable level.

I. Cooling Performance

Be sure the appliance is properly installed and located for optimum cooling performance. If cooling performance is not at its optimum level, check the following items:

- Door(s) opened too often.
- Door(s) left open. Close.
- Dirty air filter and/or condenser. Clean.
- Cabinet too tightly packed or cabinet air inlet/outlet blocked. Allow some space between items to ensure good air flow.
- Warm or hot items inside. Take them out until they cool down.
- Ambient temperature too high. Avoid installation near high heat producing equipment or exposure to direct sunlight.
- Appliance in defrost cycle. The cabinet temperature may rise temporarily during the defrost cycle, but this will not affect the product inside.
- 3rd party field installed monitoring device cable access not properly sealed at rear of appliance.

J. Cabinet Condensation

In the event condensation develops on the cabinet exterior, check the following items:

- Door(s) left open. Close.
- Ambient humidity too high. In high humidity areas it may be necessary to wipe off the cabinet exterior occasionally.

IV. Cleaning and Maintenance Instructions

A. Cleaning

WARNING

- Before cleaning the appliance, move all product into another clean refrigerator or freezer.
- Before cleaning the appliance, move the power switch to the "OFF" position. Unplug the appliance to prevent electric shock by unexpected entrance of water into the appliance or injury by moving parts. To reduce the risk of electric shock, do not touch the power switch or plug with damp hands.
- Do not splash water directly onto the appliance. This might cause short circuit, electric shock, corrosion, or failure.
- Carefully follow instructions provided with cleaning and sanitizing products.

NOTICE

- To prevent damage to the plastic surfaces, do not use the following: hot water, thinner, benzene, alcohol, petroleum, soap powder, polishing powder, alkaline cleaner, acid, scouring pad.
- To prevent corrosion and damage to stainless steel surfaces, use only products formulated for use on stainless steel appliances. Do not use steel wool, abrasive products, or products containing sodium hypochlorite (chlorine bleach).
- Use a clean cloth for cleaning.

1. Exterior

Wipe the exterior occasionally with a clean, soft cloth. Use a damp cloth containing a neutral cleaner to wipe off oil or dirt buildup. Clean any rust colored spots using a non-abrasive cleanser.

2. Cabinet Interior

Spills should be wiped up promptly to avoid unpleasant odors. The cabinet interior should be cleaned periodically with a mild soap or detergent and warm water. **NOTICE! Do not use hot water to clean the cabinet interior.**

3. Door Gaskets

Door gaskets should be cleaned regularly with mild soap and warm water to remove dirt and grease.

4. Shelves

Remove and clean regularly.

5. Glass Door

Wipe occasionally with a clean, soft cloth. Use a damp cloth containing a neutral cleaner to wipe off oil or dirt buildup.

6. Touchscreen

Use a clean cotton cloth to wipe the touchscreen clean.

B. Maintenance

The appliance must be maintained in accordance with the instruction manual. Consult with your local Hoshizaki Certified Service Representative about maintenance service. Failure to maintain the appliance in accordance with this manual may adversely affect safety, performance, component life, and warranty coverage.

⚠ WARNING

- Only qualified service technicians should service the appliance.
- Before performing maintenance or troubleshooting, move all product into another clean refrigerator or freezer.
- Move the power switch to the "OFF" position. Unplug the appliance before performing maintenance or troubleshooting to prevent electric shock or injury by moving parts. To reduce the risk of electric shock, do not touch the power switch or plug with damp hands.

1. Air Filter

Check the air filter at least twice a month. When clogged, use warm water and a neutral cleaner to wash the filter.

2. Condenser

The condenser must be cleaned at least once a year. More frequent cleaning may be required in some conditions. Use a brush or vacuum cleaner to clean the condenser as required.

3. Condensate Wick

The condensate wick must be cleaned at least once a year. More frequent cleaning may be required in some conditions to maintain proper flow. Follow the steps below.

- 1) Move the power switch to the "OFF" position.
Unplug the appliance from the electrical outlet.
WARNING! To reduce the risk of electric shock, do not touch the power switch or plug with damp hands.
- 2) Remove the wick from the retainers. See Fig. 30.
- 3) Clean or replace the wick. **NOTICE! If the wick is clogged/deteriorating, replace.**
- 4) Replace the wick in its correct position.
NOTICE! Be sure the wick is positioned into the condensate pan.
- 5) Plug the appliance back in. Move the power switch to the "ON" position.

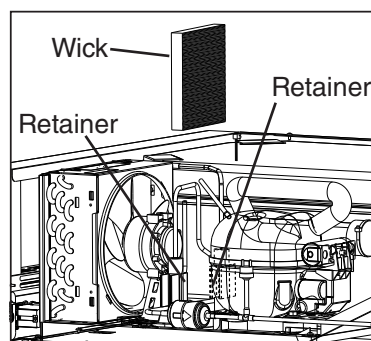
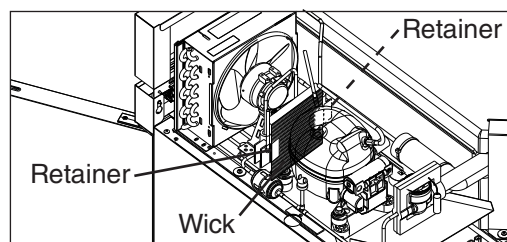


Fig. 30

4. Power Supply Connection

If the power cord is damaged, it must be replaced by the manufacturer, its service agent, or similarly qualified persons in order to avoid a hazard.

All other maintenance or service on this appliance should be performed in accordance with the Hoshizaki Service Manual by a qualified service technician.

V. Preparing the Appliance for Periods of Non-Use

When shutting down the appliance for periods of non-use, follow the instructions below.

⚠ WARNING

- Prevent the doors from closing to reduce the risk of children getting trapped.
- To reduce the risk of electric shock, do not touch the power switch or plug with damp hands.

NOTICE

Clean the appliance. See "IV.A. Cleaning" for details.

- 1) Before shutting down the appliance, move the stored items into another refrigerator or freezer.
- 2) Move the power switch to the "OFF" position, then unplug the appliance from the electrical outlet. See Fig. 31.

IMPORTANT! Perimeter, mullion, and drain heaters (drain heater on freezer models only), energize once appliance is plugged into the electrical outlet and remain energized even while the power switch is in the "OFF" position. Unplug the appliance from the electrical outlet to de-energize the heaters.

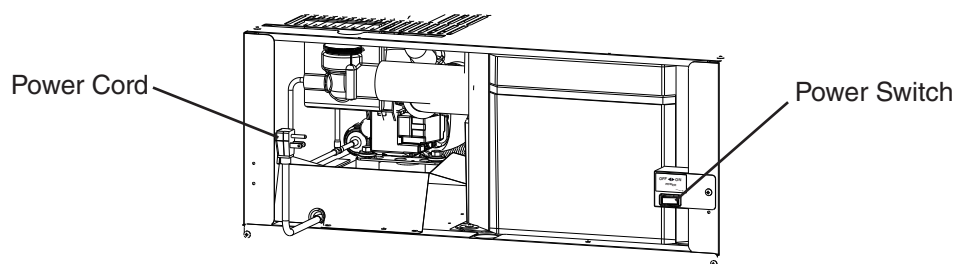


Fig. 31

VI. Decommissioning and Disposal



R-290 Class A3 Flammable Refrigerant Used

DANGER

Risk of Fire or Explosion. Flammable Refrigerant Used.

- Only qualified service technicians should install and service the appliance.
- Follow handling instructions carefully in compliance with U.S. government regulations.
- Dispose of properly in accordance with federal or local regulations.
- Do not puncture refrigerant tubing. Risk of fire or explosion due to puncture of refrigerant tubing; follow handling instructions carefully.
- Be sure to follow the full Decommissioning and Disposal information located in the Service Manual for this model.

WARNING

Remove the door to reduce the risk of children getting trapped. Leave the shelves in place so that children may not easily climb inside.

VII. RTD1 Sensor Temperature Calibration and Certification Sheet

For this appliance to conform with the NSF-456 vaccine storage standard, the RTD1 sensor must be calibrated from the factory at time of construction and re-calibrated based on the re-calibration due date. Hoshizaki America has calibrated and recorded the calibration data during manufacturing and the calibration certification is available in the accessory bag of this appliance. The factory calibration date is effective for 2 years from time of manufacturing date. Re-calibration is required at the end of the 2 years from the manufacturing date, then every year thereafter to conform with the NSF-456 certification. The end user is responsible for all re-calibration updates. Upon the required calibration due date, follow the calibration instructions below. After re-calibrating, update and record the data on the RTD1 sensor certification sheet provided in this manual. Make copies of the certification sheet for future re-calibration updates. If assistance is needed during re-calibration, contact Hoshizaki America Technical Support.

1. RTD1 Sensor Calibration

Certify the RTD1 Sensor for NIST.

The touchscreen display must be showing the cabinet temperature in the Celsius °C temperature scale during re-calibration procedures. See "III.C.4. Cabinet Temperature Display Scale" to adjust from the Fahrenheit scale °F to the Celsius °C scale. Once in the Celsius °C scale, follow the steps below.

- 1) Remove the RTD1 sensor tube.
- 2) If not already plugged into the electrical outlet, plug the appliance into the electrical outlet.
- 3) Move the power switch to the "ON" position.
- 4) Prepare an ice bath (ice melting point test). Select a container large enough to hold the RTD1 sensor tube, ice, and water. Fill the container with ice. Next, fill the container to an 80% level with distilled or deionized water.
- 5) Place and secure the RTD1 sensor tube into the center of the container. Be sure the RTD1 sensor tube cannot touch the sides.
- 6) Place a small final layer of ice over the RTD1 sensor tube and container of ice to create a thermal barrier.
- 7) Allow the display to come to equilibrium with a realization temperature of the ice melting point (0.0°C). If the display shows 0.0°C or a value within the $\pm 0.5^{\circ}\text{C}$ tolerance level, proceed to step 8. Otherwise, follow the procedure below to calibrate the RTD1 sensor.
 - a) Press the touchscreen to view the setup menu.
 - b) Press the gear motor icon on the right side of the display.
 - c) Press the double gear icon in the lower right corner.
 - d) Enter the pass code 9999 then press the check mark icon.
 - e) Press the "Probe Calibration" icon.
 - f) Press the P4-RTD #1 "OFF SET" temperature cell (number).
Number highlights in blue.
 - g) Press the up or down arrow to adjust to the correct offset needed to achieve 0.00°C
 - h) Press the check mark on the bottom row.
 - i) Press the Home icon in the lower right hand corner. Calibration is complete.
 - j) Continue to step 8.

- 8) Move the power switch to the "OFF" position.
- 9) Remove the RTD1 sensor from the ice bath. Wipe the RTD1 sensor off with a dry towel. Replace and secure the RTD1 sensor in its correct position.
- 10) Record the service company, date, time, and recorded value during calibration on the certification sheet provided with this appliance.
- 11) Return to "III.B Startup."

2. RTD1 Sensor Certification Sheet

HOSHIZAKI AMERICA

NSF-456 Temperature Calibration Certification

Model Number: _____

Serial Number: _____

Factory Calibration Date: _____

Re-Calibration Due Date: _____

Please note that after the factory calibration is complete, the RTD1 sensor must be re-calibrated every year thereafter.

0°C reading required ($\pm 0.5^{\circ}\text{C}$) for re-calibration annual certification

Sensor	Cal .Date	Next Cal.	Calibration Touchscreen Display Reading			Tolerance ($\pm 0.5^{\circ}\text{C}$)
			Ice Bath Temperature ($^{\circ}\text{C}$)	Offset $^{\circ}\text{C}$ From 0°C	Adjusted Temperature ($^{\circ}\text{C}$)	Re-Calibrated Pass (Y/N)
RTD1 Sensor						

Calibrated by: _____

Method: Ice Bath - See Instruction Manual for Details

Calibration of the RTD1 sensor is traceable to NIST (National Institute of Standards and Technology).