

Hoshizaki America, Inc.

Commercial Series Refrigerated Kitchen Equipment

Model
Reach-In



“A Superior Degree
of Reliability”

www.hoshizaki.com

INSTRUCTION MANUAL



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IMPORTANT

Only qualified service technicians should install, service, and maintain the unit. No installation, service, or maintenance should be undertaken until the technician has thoroughly read this Instruction Manual. Likewise, the owner/manager should not proceed to operate the unit until the installer has instructed them on its proper operation. Failure to install, operate, and maintain the equipment in accordance with this manual may adversely affect safety, performance, component life, and warranty coverage.

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

Should the reader have any questions or concerns which have not been satisfactorily addressed, please call, write, or send an e-mail message to the Hoshizaki Technical Support Department for assistance.

HOSHIZAKI AMERICA, INC.
618 Highway 74 South
Peachtree City, GA 30269

Attn: Hoshizaki Technical Support Department

Phone: 1-800-233-1940 Technical Support
(770) 487-2331

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(770) 487-3360

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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 unit is installed and operated. Only qualified service technicians should install, service, and maintain the unit. Read the warnings contained in this booklet carefully as they give important information regarding safety. Please retain this booklet for any further reference that may be necessary.

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Important Safety Information

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

⚠ WARNING Indicates a hazardous situation which could result in death or serious injury.

CAUTION Indicates a situation which could result in damage to the unit.

IMPORTANT Indicates important information about the use and care of the unit.

⚠ WARNING

This unit 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 eventual damage caused by improper, incorrect, and unreasonable use.

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

- This unit requires an independent power supply. See the nameplate for proper voltage and breaker/fuse size. Failure to use a proper breaker or fuse can result in a tripped breaker, blown fuse, or damage to existing wiring. This could lead to heat generation or fire.
- **THIS UNIT MUST BE GROUNDED.** This unit is equipped with a 3-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 power cord and do not use an adapter plug.
- Do not use an extension cord.
- Make sure the power switch is in the "OFF" position before plugging in or unplugging the unit to reduce the risk of electric shock.
- Do not use a unit 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 unit, be sure to pull the plug, not the cord, and do not jerk the cord.
- To reduce the risk of electric shock, do not touch the plug or power switch with damp hands.
- This unit should be disassembled or repaired only by qualified service personnel to reduce the risk of electric shock, injury, or fire.
- Do not make any alterations to the unit. Alterations could result in electric shock, injury, fire, or damage to the unit.

I. Installation Instructions

⚠ WARNING

1. This unit must be installed in accordance with all applicable national, state, and local regulations.
2. Unit is heavy. Use care when lifting or positioning. Work in pairs when needed to prevent injury or damage. Do not tilt the unit more than 45°.

A. Location

⚠ WARNING

This unit is not intended for outdoor use. Normal operating ambient temperature should be within 45°F to 100°F (7°C to 38°C). Operation of the unit, for extended periods, outside of this normal temperature range may affect unit performance.

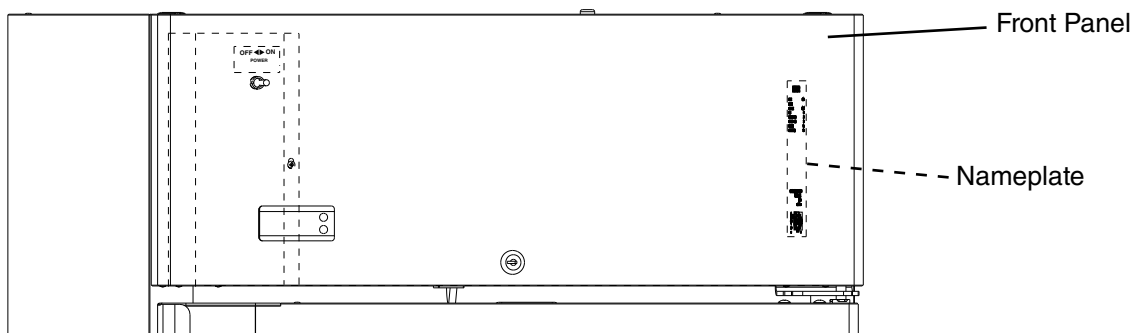
For best operating results:

- The unit should not be located next to ovens, grills, or other high heat producing equipment.
- The location should provide a firm and level foundation for the unit.
- The unit should not be located in a corrosive environment.
- The unit should be a minimum of 4" (11 cm) from side walls. More clearance may be necessary depending on the door combination of the unit.
- A minimum of 10" (25 cm) overhead clearance should be provided for proper ventilation.

B. Checks Before Installation

⚠ WARNING

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



- 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. Also remove the protective plastic film from both the exterior panels and the interior door panel. If the unit is exposed to the sun or to heat, remove the film after the unit 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. Remove the Unit from the Pallet

- 1) Move as close to the final location as possible.
- 2) Remove the pallet end board. See Fig. 1.
- 3) Remove the 2 bolts securing the unit to the pallet.
- 4) Secure the door so that it will not swing open during removal from the pallet.
- 5) While supporting the unit to keep it from tipping, slide the unit off of the pallet and lower the casters to the floor.

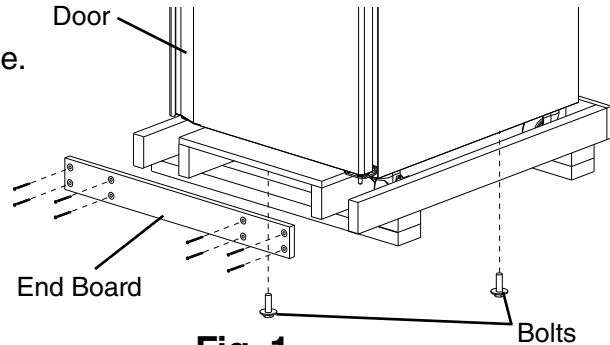


Fig. 1

2. Install the Optional Overflow Pan (if applicable)

An optional overflow pan kit, HS-3521, is available for the unlikely event that water cannot evaporate from the condensate pan at a high enough rate. To install the optional overflow pan, follow the directions below.

- 1) Attach the overflow pan brackets by engaging the tabs on the brackets through the holes in the bottom of the unit and securing with the 4 mounting screws provided. See Fig. 2.
- 2) Slide the plastic overflow pan into place under the bushing on the bottom of the cabinet.

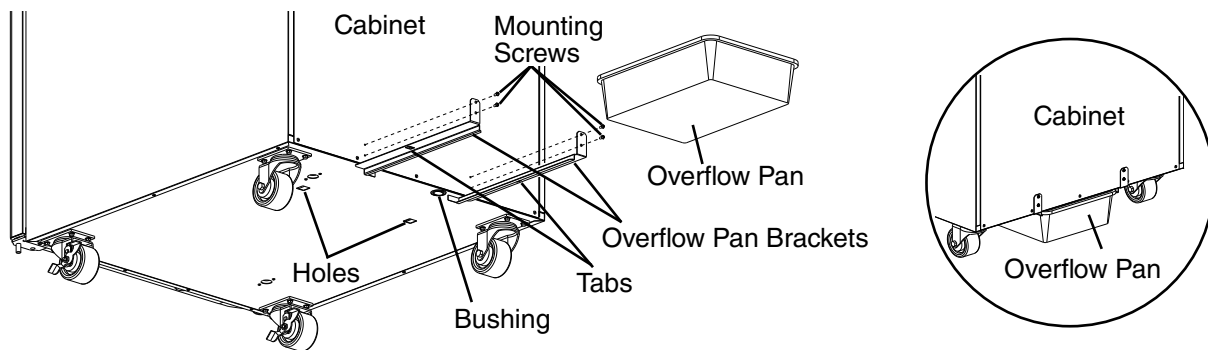


Fig. 2

3. Check the Refrigeration Circuit

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

4. Position the Unit and Lock the Front Casters

The front casters on the unit are lockable. After positioning the unit in its final location, lock the front casters.

5. 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 you in positioning the support clips at the same height. See Fig. 3.
2. Place the shelves in position on the shelf support clips.

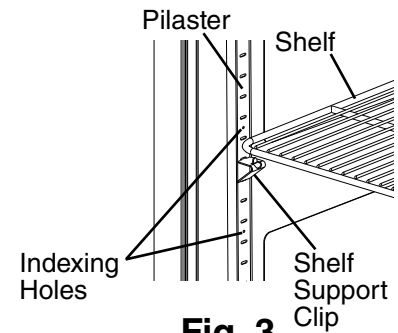


Fig. 3

D. Electrical Connection

⚠ WARNING

1. 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.
2. This unit requires an independent power supply. See the nameplate for proper voltage and breaker/fuse size. Failure to use a proper breaker or fuse can result in a tripped breaker, blown fuse, or damage to existing wiring. This could lead to heat generation or fire.
3. **THIS UNIT MUST BE GROUNDED:** This unit is equipped with a 3-prong grounding plug to reduce the risk of potential shock hazards. It must be plugged into a properly grounded, independent 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.
4. Do not use an extension cord.
5. Make sure the power switch is in the "OFF" position before plugging in or unplugging the unit to reduce the risk of electric shock.
6. Do not use a unit 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 unit, be sure to pull the plug, not the cord, and do not jerk the cord.
7. To reduce the risk of electric shock, do not touch the plug or power switch with damp hands.
8. The GREEN ground wire in the factory-installed power cord is connected to a screw in the control box. If it becomes necessary to remove or replace the power cord, be sure to connect the power cord's ground wire.

- Usually an electrical permit and services of a licensed electrician are required.
- The maximum allowable voltage variation is ± 10 percent of the nameplate rating.
- This unit should be disassembled or repaired only by a qualified service technician to reduce the risk of electric shock or fire.

E. Door Reversal

This unit is provided with a cabinet design which, after being delivered to the installation location, permits changing of the door swing from left to right or right to left. To change the door swing, an HS kit from your local Hoshizaki distributor is required. See the table below. **CAUTION! Improper installation of the HS kit may result in the doors not closing completely and/or the gaskets not sealing correctly.** For further details, contact your local Hoshizaki distributor or Hoshizaki Technical Support at 1-800-233-1940.

Convert	HS Kit Number
Right Hinge to Left Hinge	HS-3725
Left Hinge to Right Hinge	HS-3726

F. Final Checklist

- 1) Have the front casters been locked?
- 2) Is the unit in a site where the ambient temperature is within 45°F to 100°F (7°C to 38°C) all year around?
- 3) Is there at least 4" (11 cm) clearance from side walls and 10" (25 cm) overhead clearance for proper ventilation?
- 4) Have the shipping carton, tape, and packing material been removed from the unit? Has the protective plastic film been removed from both the exterior panels and the interior door panel?
- 5) Have the unit and accessories been checked for shipping damage?
- 6) Has the power supply voltage been checked or tested against the nameplate rating? Is the power supply a properly grounded, independent 3-prong wall outlet? Does the electrical connection meet all national, state, and local code and regulation requirements.
- 7) Has the optional overflow pan (if applicable) been properly installed?
- 8) Have the refrigerant lines been checked to make sure they do not rub or touch other lines or surfaces? Have the fan blades been checked to make sure they turn freely? Are the compressor hold-down bolts snug?
- 9) Have the shelves been properly installed?
- 10) Has the end user been given the instruction manual, and instructed on how to operate the unit and the importance of the recommended periodic maintenance?
- 11) Has the end user been given the name and telephone number of an authorized service agent?
- 12) Has the warranty card been filled out and forwarded to the factory for warranty registration?

II. Operating Instructions

A. Operation

IMPORTANT

1. Do not leave the doors open.
2. Open and close the doors with care. Doors opened too quickly or forcefully may cause injury or damage to the unit or surrounding equipment.
3. To prevent deformation or cracks, do not spray insecticide onto the plastic parts or let them come into contact with oil.
4. To avoid damage to the gasket, use only the door handle (do not grab the top of the door directly) when opening and closing.

⚠ WARNING

1. To reduce the risk of electric shock, do not touch the plug or power switch with damp hands.
2. Do not hang on or push down on the doors. The doors might be damaged, fall off, or the unit could tip over, causing injury.
3. Do not store any volatile or flammable substances, such as benzene, ether, alcohol, adhesives, or LPG in the unit. They are potential sources of explosion or fire.
4. 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.
5. Do not store food or food containers near the air outlet. They might freeze up and crack or break causing a risk of injury or contamination of other food.
6. Do not use combustible spray or place volatile and flammable substances near the unit. They might catch fire.
7. Do not place anything on top of the unit. Foreign objects or moisture could enter the unit and result in electric shock or fire. Blockage of airflow could also negatively affect performance and damage the equipment.

B. Startup

⚠ WARNING

All parts are factory-adjusted. Improper adjustments may adversely affect safety, performance, component life, and warranty coverage.

IMPORTANT

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

- 1) Reach over the front panel to access the power switch—located on the front of the control box. See Fig. 4. Make sure the power switch is in the "OFF" position.
- 2) Plug the unit into the electrical outlet.

- 3) Move the power switch to the "ON" position to start the cool-down process.
- 4) Allow the unit to cool down prior to loading it with food products.

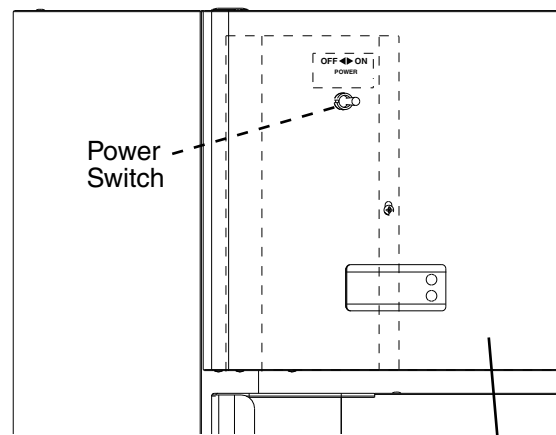


Fig. 4 Front Panel

C. Cabinet Temperature

1. Temperature Display

- The cabinet temperature is displayed on the control panel. See Fig. 5. The display default is °F, but it can be changed to read °C. To change, see "II.C.3. Changing the Temperature Display Scale (°F or °C)".
- The cabinet temperature is updated every 20 seconds.

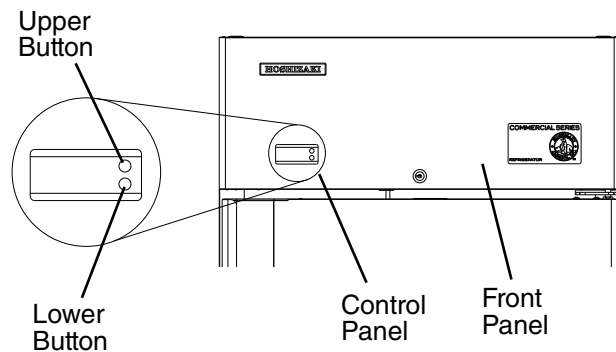


Fig. 5

2. Adjusting the Temperature Setpoint

The temperature setpoint is the value for the average cabinet temperature. The temperature differential for the compressor to turn on and off is $\pm 3^{\circ}\text{F}$ ($\pm 1.7^{\circ}\text{C}$) of the temperature setpoint for refrigerators and $+2^{\circ}\text{F}/-3^{\circ}\text{F}$ ($+1.1^{\circ}\text{C}/-1.7^{\circ}\text{C}$) of the temperature setpoint for freezers. For example, for a refrigerator temperature setpoint of 36°F (2°C), the compressor comes on at 39°F (3.7°C), and the compressor goes off at 33°F (0.3°C). If necessary, adjust the temperature setpoint temperature as follows:

- 1) To change the temperature setpoint, press and hold the upper or lower button briefly and then release. The current temperature setpoint flashes. Press the upper or lower button until the desired value is displayed. After a few seconds, the display returns to the current cabinet temperature and the temperature setpoint is saved.
 - For refrigerators, the temperature setpoint is adjustable between 33°F and 52°F (-1°C and 11°C). The factory default is 36°F (2°C).
 - For freezers, the temperature setpoint is adjustable between -16°F and $+12^{\circ}\text{F}$ (-27°C and -11°C). The factory default is -4°F (-20°C).

3. Changing the Temperature Display Scale (°F or °C)

To change the temperature display scale, press and hold the upper button for 5 seconds. The current setting is displayed. Press the upper button to change the scale. After a few seconds, the display returns to the current cabinet temperature and the setting is saved. The factory default is °F.

D. Defrost

1. Refrigerators

Refrigerators use a temperature-initiated defrost. When the defrost thermistor cools to 8.6°F (-13°C), defrost begins. When the defrost thermistor warms to 40°F (4.4°C), defrost terminates. Cabinet temperature is not displayed during defrost; "dEF" is displayed in its place. Refrigerators have a minimum defrost interval of 2 hours. The minimum defrost time is 20 minutes and the maximum defrost time is 1 hour.

2. Freezers

Freezers use a temperature/time-initiated defrost. Note that the defrost is a heated defrost, and therefore will have a tendency to raise the cabinet temperature. Once the defrost thermistor cools to 32°F (0°C), the 4-hour cumulative compressor run timer starts. When the 4-hour cumulative compressor run timer terminates, defrost begins. Cabinet temperature is not displayed during defrost; "dEF" is displayed in its place. When the defrost thermistor warms to 59°F (15°C), defrost terminates. A 3-minute compressor delay timer starts, an 8-minute evaporator fan motor delay timer starts, and a 13-minute temperature display delay timer starts. As the delay timers terminate, the related components energize. Freezers have a minimum defrost interval of 4 hours. The minimum defrost time is 5 minutes and the maximum defrost time is 1 hour.

3. Manual Defrost

To initiate a manual defrost, press and hold the lower button for 5 seconds. "dEF" appears in the display and defrost begins.

Note: On freezers, when manual defrost terminates, a 3-minute evaporator fan motor delay timer starts. This differs from the temperature/time-initiated defrost which has an 8-minute evaporator fan motor delay timer.

E. Food Storage

- This unit is designed only for temporary storage of food. Employ sanitary methods. Use for any other purposes (for example, storage of chemicals or medical supplies such as vaccine and serum) could cause deterioration of stored items.
- Do not block the cabinet air inlet or outlet, otherwise cooling performance may be reduced.
- Do not tightly pack the cabinet with food. Allow some space between items/containers to ensure good air flow. Also allow space between food product and interior surfaces.
- Do not put warm or hot foods in the cabinet. Let them cool first, or they will raise the cabinet temperature and could deteriorate other foods in the cabinet or overload the unit.
- All foods should be wrapped in plastic film or packed in a container. Otherwise foods may dry up, pass their smells onto other foods, cause frost to develop, result in poor unit performance, or increase the likelihood of cross-contamination. Certain dressings and food ingredients, if not stored in containers, may accelerate corrosion of the evaporator, resulting in failure.

F. Perimeter Frame Heater

CR2A-FS/HS, CF1A-FS/HS, and CF2A-FS/HS units are equipped with a perimeter frame heater. This helps prevent the formation of condensate on the front frame.

G. Safety Devices

- CR1A-FS/HS refrigerator: external compressor overload.
- CR2A-FS/HS refrigerator and CF2A-FS/HS freezer: external compressor overload and high-pressure switch.
- CF1A-FS/HS freezer: internal compressor overload and high-pressure switch.

1. Compressor External and Internal Overloads

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 unit 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.

H. Alarm Safeties

Alarm signals are designed to protect the unit and food product. These alarms give information or warnings in the event the unit is operating out of acceptable parameters. Should one of the alarms occur, follow the instructions in the table below to address the alarm. The alarm code flashes once every second with audible alarm.

Alarm Signals		
Alarm Code	Problem	Corrective Action/Reset Details
E1	Cabinet Thermistor Malfunction Alarm	Call a qualified service technician.
	Cabinet thermistor has failed.	E1 flashes with audible alarm every second. To silence audible alarm, press the upper button. Unit cycles 5 min. on, 5 min. off.
E2	Defrost Thermistor Malfunction Alarm	Call a qualified service technician.
	Defrost thermistor has failed.	E2 flashes with audible alarm every second. To silence audible alarm, press the upper button. Unit cycles on and off with cabinet thermistor.
UHi	High Voltage Alarm (135VAC±5% or more)	Call a qualified service technician.
ULo	Low Voltage Alarm (96VAC±5% or less)	The compressor de-energizes if voltage protection operates. The voltage safeties automatically reset when voltage is corrected.

Alarm Signals		
Alarm Code	Problem	Corrective Action/Reset Details
E13	Communication Error Alarm Communication between the control module and the display module has been interrupted or disconnected.	Call a qualified service technician. Unit cycles 5 min. on, 5 min. off until communication is restored.
" _ _ _ "	Compressor Off	Unit (compressor) off. Press and hold the upper and lower buttons until the temperature appears on the display.

I. Cooling Performance

Be sure the unit 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.
- Too tightly packed with food or cabinet air inlet/outlet blocked. Allow some space between items/containers to ensure good air flow.
- Warm or hot foods inside. Take them out until they cool down more.
- Ambient temperature too high. Avoid installation near high heat producing equipment or exposure to direct sunlight.
- Temperature setpoint too high. Readjust it to a lower temperature.
- Unit in defrost process. The cabinet temperature may rise temporarily during the defrost cycle, but this will not affect the food inside.

J. Cabinet Condensation

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

- Door left open, close.
- Ambient humidity too high. In high humidity areas it may be necessary to wipe off the cabinet frame occasionally.

III. Cleaning and Maintenance Instructions

A. Cleaning

⚠ WARNING

1. Before cleaning the unit, move the power switch to the "OFF" position and unplug the unit to prevent electric shock by unexpected entrance of water into the unit or injury by moving parts.
2. Before cleaning the unit, move all foods into another clean refrigerator or freezer.
3. Do not splash water directly onto the unit. This might cause short circuit, electric shock, corrosion, or failure.
4. Before using a sanitizer such as inert soap and sodium hypochlorite (chlorine bleach), thoroughly read the manufacturer's instructions on its proper usage.

IMPORTANT

1. To prevent damage to the plastic surfaces, do not use the following: thinner, benzene, alcohol, petroleum, soap powder, polishing powder, alkaline cleaner, acid, scouring pad and especially those strong cleaners for use on a ventilating fan or a cooking range. Also, to prevent corrosion, do not use sodium hypochlorite (chlorine bleach) on the stainless steel surfaces.
2. 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.

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.

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.

B. Maintenance

1. Condenser

Check the condenser once a year and use a brush or vacuum cleaner to clean the condenser as required.

2. Power Supply Connection

If the plug or power cord is damaged, contact your local Hoshizaki service representative or local Hoshizaki distributor immediately and ask for repairs.

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

C. Shutdown and Long Storage

WARNING

1. When preparing the unit for long storage, prevent the doors from closing to reduce the risk of children getting trapped.
2. To reduce the risk of electric shock, do not touch the attachment plug or power switch with damp hands.
3. To unplug the unit, be sure to pull the plug and do not jerk the power cord. It could be damaged and cause fire or electric shock.
4. When shutting down the unit for more than one week, move the power switch to the "OFF" position and unplug the unit.
5. Do not plug in/unplug the unit to start/stop operation. Make sure the power switch is in the "OFF" position before plugging in or unplugging the unit to reduce the risk of electric shock.

- 1) Before shutting down the unit, move the stored food into another refrigerator.
- 2) Reach over the front panel and move the power switch to the "OFF" position. The unit will shut down.
- 3) Unplug the unit.

IMPORTANT

When preparing the unit for long storage, clean the cabinet interior, door gaskets, and shelves. See "III.A. Cleaning" for details.

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