

# HOSHIZAKI

# Instruction Manual

Modular Cubelet Serenity Series

Models FS-1501MLJ-C with SRC-14J



hoshizakiamerica.com

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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 or service should be undertaken until the technician has thoroughly read this Instruction Manual. 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 and may result in costly water damage. 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, maintenance, and service of the appliance.

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

Phone: 1-800-233-1940; (770) 487-2331 Fax: 1-800-843-1056; (770) 487-3360

E-mail: techsupport@hoshizaki.com

# HOSHIZAKI AMERICA, INC.

618 Highway 74 South Peachtree City, GA 30269 Attn: Hoshizaki Technical Support Department

**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.

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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, damage to the appliance, or damage to property.

WARNING Indicates a hazardous situation which could result in death or serious injury.
 NOTICE Indicates a situation which could result in damage to the appliance or property.

# *IMPORTANT* Indicates important information about the use, installation, and care of the appliance.

# 

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:** 

- Only qualified service technicians should install and service the appliance.
- The appliance must be installed in accordance with applicable national, state, and local codes and regulations.
- To reduce the risk of electric shock, do not touch the icemaker power switch or plug with damp hands. Make sure the icemaker power switch is in the "OFF" position before plugging in or unplugging the icemaker.
- **Before Servicing: FS:** Move the icemaker's power switch to the "OFF" position. Unplug the icemaker from the electrical outlet. **SRC:** Turn off the power supply to the remote condensing unit. Place the disconnect (if applicable) in the off position. Lockout/Tagout to prevent the power supply from being turned back on inadvertently.
- Do not make any alterations to the icemaker or condensing unit. Alterations could result in electric shock, injury, fire, or damage to the appliance.

# <u>FS</u>

- The icemaker 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.
- **THE ICEMAKER MUST BE GROUNDED.** The icemaker is equipped with a 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 power cord and do not use an adapter plug. Failure to properly ground the icemaker could result in death or serious injury.

# **WARNING**, continued

#### FS continued

- Do not use an extension cord.
- Do not use an icemaker 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 icemaker, be sure to pull the plug, not the cord, and do not jerk the cord.
- Do not place fingers or any other objects into the ice discharge opening.

# <u>SRC</u>

- Electrical connection must be hard-wired to the remote condensing unit and 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 damage.
- The remote condensing unit 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.
- **THE REMOTE CONDENSING UNIT MUST BE GROUNDED.** Failure to properly ground the remote condensing unit could result in death or serious injury.

# NOTICE

- Follow the instructions in this manual carefully to reduce the risk of costly water damage.
- In areas where water damage is a concern, install in a contained area with a floor drain.
- Install the icemaker in a location that stays above freezing. Normal operating ambient temperature must be within 45°F to 100°F (7°C to 38°C).
- Do not leave the icemaker on during extended periods of non-use, extended absences, or in sub-freezing temperatures. To properly prepare the icemaker for these occasions, follow the instructions in "IV. Preparing the Appliance for Periods of Non-Use."
- Keep ventilation openings, in the appliance enclosure or in the built-in structure, clear of obstruction.
- Do not place objects on top of the appliance.
- The dispenser unit/ice storage bin is for ice use only. Do not store anything else in the dispenser unit/ice storage bin.

# I. Specifications

# A. Electrical and Refrigerant Data

# IMPORTANT

Icemaker and remote condensing unit power supplies are separate.

The rating label (Icemaker) and nameplate (Icemaker and Remote Condensing Unit) provide electrical and refrigerant data. For certification marks, see the nameplate. We reserve the right to make changes in specifications and design without prior notice.

#### 1. Icemaker

Model Number	FS-1501MLJ-C
AC Supply Voltage	115/60/1
Amperes	5.6A
Design Pressure	HI-467PSI LO-230PSI
Total Refrigerant	404A
Charge	3.5 OZ.
	Total Refrigerant Charge
	with Hoshizaki Remote
	Condensing Unit
	SRC-14J: 11 LB. 0 OZ.

#### 2. Remote Condensing Unit

Model Number	SRC-14J
AC Supply Voltage	208-230/60/1 (3 Wire with
	Neutral for 115V)
Compressor	208-230V 6.9RLA 56LRA
Fan Motor	115V 1.45FLA 65W (EACH)
Other	120V 0.2A
Maximum Fuse Size	20 AMPS
Max. HACR Breaker	20 AMPS
(USA Only)	
Max. Circuit Breaker	20 AMPS
(Canada Only)	
Minimum Circuit	20 AMPS
Ampacity	
Design Pressure	HI-467PSI LO-230PSI
Refrigerant	404A
	10 LB. 12.8 OZ.
	Total Refrigerant Charge
	with Hoshizaki Icemaker
	FS-1501MLJ-C:
	11 LB. 0 OZ.

# **B.** Dimensions/Connections

#### 1. FS-1501MLJ-C

Units: mm [in.]



# NOTICE

- Allow 6" (15-cm) clearance at rear and sides for proper air circulation and ease of maintenance and/or service should they be required. Allow 24" (61-cm) clearance at top to allow for removal of the auger.
- The ice storage bin opening must accommodate the bottom opening as in the illustration.





# NOTICE

Allow 24" (61-cm) clearance at front and rear for proper air circulation and ease of maintenance and/or service should they be required.

	SRC-14J Heat of Rejection	
	AT 90°F (32°C)	
Icemaker Model	WT 70°F (21°C)	
FS-1501MLJ-C	15,300 BTU/hr	

# **II. Installation and Operating Instructions**

# **WARNING**

- Installation of appliance must be performed by properly trained and EPA-certified service personnel.
- The appliance must be installed in accordance with applicable national, state, and local codes and regulations.
- 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.
- CHOKING HAZARD: Ensure all components, fasteners, and thumbscrews are securely in place after installation. Make sure that none have fallen into the dispenser unit/ice storage bin.

# A. Location

### 1. Icemaker

# NOTICE

- The icemaker is not intended for outdoor use. Normal operating ambient temperature must be within 45°F to 100°F (7°C to 38°C); Normal operating water temperature must be within 45°F to 90°F (7°C to 32°C). Operation of the icemaker, for extended periods, outside of these normal temperature ranges may affect icemaker performance.
- The icemaker will not work at sub-freezing temperatures. To prevent damage to the water supply line, drain the icemaker if the air temperature is going to go below 32°F (0°C). See "IV. Preparing the Appliance for Periods of Non-Use."
- The icemaker should not be located next to ovens, grills, or other high heat producing equipment.
- Allow 6" (15 cm) clearance at rear and sides for proper air circulation and ease of maintenance and/or service should they be required. Allow 24" (61 cm) clearance at top to allow for removal of the auger.
- The location must provide a firm and level foundation for the appliance.

#### 2. Remote Condensing Unit

# NOTICE

- The remote condensing unit is intended for outdoor use. Normal operating ambient temperature must be within -4°F to 122°F (-20°C to 50°C). Operation of the remote condensing unit, for extended periods, outside of this normal temperature range may affect icemaker performance.
- The maximum line set length is 55' (17 m). No refrigerant charge adjustment is necessary.
- The maximum vertical distance between the remote condensing unit and icemaker is 33' (10 m) above or 10' (3 m) below the icemaker. These distances are measured fitting to fitting. See Fig. 1.
- If the vertical distance between the remote condensing unit and the icemaker is greater than 20' (6 m) (not to exceed 33' (10 m)), an "S" oil-trap (5/8" OD copper tubing) must be installed in the suction line. The "S" oil-trap must be located halfway between the icemaker and remote condensing unit. This ensures sufficient oil return to the compressor.

The remote condensing unit must be positioned in a permanent site under the following guidelines:

- A firm and flat site.
- A dry and well ventilated area with 24" (61 cm) clearance in both front and rear for proper air circulation and ease of maintenance and/or service should they be required. See Fig. 2.



# **B. Checks Before Installation**

- Visually inspect the exterior of the shipping containers and immediately report any damage to the carrier. Upon opening the containers, any concealed damage should also be immediately reported to the carrier.
- Remove the shipping carton, tape, and packing material. If any are left in the icemaker or remote condensing unit, they will not work properly.

#### 1. Icemaker

- See the nameplate on the rear panel. Check that your voltage supplied corresponds with the voltage specified on the nameplate.
- Remove the panels to prevent damage when installing the icemaker. See "II.C. How to Remove Panels."
- Remove the package containing the accessories.
- Remove the protective plastic film from the panels. If the icemaker is exposed to the sun or to heat, remove the film after the icemaker cools.
- Check that the refrigerant lines do not rub or touch lines or other surfaces.
- The icemaker can be installed on a dispenser unit or ice storage bin as listed below:

Hoshizaki Icemaker	Dispenser Unit or Ice Storage Bin Wid	
FS-1501MLJ-C	30" wide or wider	

For further options, contact your local Hoshizaki distributor.

• NOTICE! The icemaker must be connected to the appropriate Hoshizaki Remote Condensing Unit listed below. Connection to another remote condensing unit will void the warranty.

Hoshizaki Icemaker	Hoshizaki Remote Condensing Unit
FS-1501MLJ-C	SRC-14J

#### 2. Remote Condensing Unit

- See the nameplate on the remote condensing unit. Check that your voltage supplied corresponds with the voltage specified on the nameplate.
- Remove the panels to prevent damage when installing the remote condensing unit. See "II.C. How to Remove Panels."
- Remove the package containing the accessories.
- Check that the refrigerant lines do not rub or touch lines or other surfaces, and that the fan blade(s) turn freely.
- Check that the compressor is snug on all mounting pads.

# C. How to Remove Panels

#### 1. Icemaker

- Front Panel: Remove the screw. Lift up and towards you.
- Top Panel: Lift up at front slightly, push rearward and lift off.
- Left Side Panel and Right Side Panel: Remove the screw. Slide forward slightly and lift off.





#### 2. Remote Condensing Unit

- Top Panel: Remove the screws and lift off.
- Louver Panel: Remove the screws and lift off.
- Left Side Panel and Right Side Panel: Remove the screws and lift off.
- Control Box Cover: Remove the screws and lift off.



Fig. 4

# D. Installation of the Icemaker

#### 1. Dispenser Unit/Ice Storage Bin and Icemaker Setup

# **A** WARNING

The installer must ensure the dispenser unit/ice storage bin is compatible with the icemaker, and the dispenser unit/ice storage bin and icemaker are properly attached and secured.

- 1a) **Dispensing Unit:** Follow dispenser unit's setup procedure.
- 1b) **Ice Storage Bin:** Unpack the ice storage bin, and attach the 4 adjustable legs provided (bin accessory) to the bottom of the ice storage bin.
- 2) Position the dispenser unit/ice storage bin in its permanent location.
- 3) If required, install an adapter kit or top kit. Contact your local Hoshizaki distributor for recommendations.
- 4) Level the dispenser unit/ice storage bin in both the left-to-right and front-to-rear directions. If using an ice storage bin, adjust the ice storage bin legs to level.
- 5) Place the icemaker on top of the dispenser unit/ice storage bin.
- 6) Follow the dispenser unit/ice storage bin, adapter kit, or top kit instructions for securing the icemaker. If no instructions are available, secure the icemaker using the mounting brackets provided. Secure the mounting brackets to the icemaker with the 5×12 machine bolts provided. See Fig. 5. Secure the mounting brackets to the dispenser unit with the self-tapping bolts provided. NOTICE! Use care to avoid damage to dispenser unit/ice storage bin components when attaching the mounting brackets.



Fig. 5

#### 2. Icemaker Electrical Connection

# **IMPORTANT**

Icemaker and remote condensing unit power supplies are separate.

# **A** 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 damage.
- The icemaker 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.
- THE ICEMAKER MUST BE GROUNDED. The icemaker is equipped with a 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 power cord and do not use an adapter plug. Failure to properly ground the icemaker could result in death or serious injury.
- Do not use an extension cord.
- To reduce the risk of electric shock, do not touch the icemaker power switch or plug with damp hands. Make sure the icemaker power switch is in the "OFF" position before plugging in or unplugging the icemaker.
- Do not use an icemaker 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 icemaker, be sure to pull the plug, not the cord, and do not jerk the cord.
- The GREEN ground wire in the factory-installed power cord is connected to the icemaker. 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.

#### 3. Water Supply and Drain Connections See Fig. 6

# **WARNING**

Water supply and drain connections must be installed in accordance with applicable national, state, and local regulations.

# NOTICE

- Normal operating water temperature should be within 45°F to 90°F (7°C to 32°C). Operation of the appliance, for extended periods, outside of this normal temperature range may affect performance.
- To prevent damage to the appliance, do not operate the appliance when the water supply is off, or if the pressure is below 10 PSIG. Do not run the appliance until the proper water pressure is reached.
- A plumbing permit and services of a licensed plumber may be required in some areas.
- External filters, strainers, or softeners may be required depending on water quality. Contact your local Hoshizaki Certified Service Representative or local Hoshizaki distributor for recommendations.
- Water supply pressure must be a minimum of 10 PSIG and a maximum of 113 PSIG. If the pressure exceeds 113 PSIG, the use of a pressure reducing valve is required.
- The icemaker drain line and dispenser unit/ice storage bin drain line must be run separately.
- Drain lines must have 1/4" fall per foot (2 cm per 1 m) on horizontal runs to get a good flow. A vented tee connection is also required for proper flow.
- Drain lines should not be piped directly to the sewer system. An air gap of a minimum of 2 vertical inches (5 cm) should be between the end of the drain pipe from the icemaker and dispenser unit/ice storage bin and the floor drain.

#### Icemaker

Icemaker Water Supply Inlet	Minimum Icemaker Water Supply Line Size	Icemaker Drain Outlet	Minimum Icemaker Drain Line Size
1/2" Female Pipe	1/4" Nominal ID	3/4" Female Pipe	3/4" Nominal
Thread (FPT) Copper Water Tubing or		Thread (FPT)	ID Hard Pipe or
	Equivalent		Equivalent

- An icemaker water supply line shut-off valve and drain valve must be installed.
- Be sure there is sufficient extra water supply line and drain line for the appliance to be pulled out for service.



# E. Installation of the Remote Condensing Unit

# **WARNING**

Installation must be performed by properly trained and EPA-certified service personnel.

#### 1. Remote Condensing Unit Setup

- Secure the legs to the remote condensing unit with the 8 bolts and nuts provided. See Fig. 7.
- 2) The legs have 8 mounting holes. Secure the legs to the permanent site with 8 bolts (not included).



#### 2. Line Set Size and Refrigerant Charge

#### NOTICE

- The icemaker, line set, and remote condensing unit must contain the same type of refrigerant. Mixing of refrigerants will result in improper operation and possible damage to the refrigeration system.
- The maximum line set length is 55' (17 m). No refrigerant charge adjustment is necessary.
- The maximum vertical distance between the remote condensing unit and icemaker is 33' (10 m) above or 10' (3 m) below the icemaker. These distances are measured fitting to fitting. See Fig. 8.
- If the vertical distance between the remote condensing unit and the icemaker is greater than 20' (6 m) (not to exceed 33' (10 m)), an "S" oil-trap (5/8" OD copper tubing) must be installed in the suction line. The "S" oil-trap must be located halfway between the icemaker and remote condensing unit. This ensures sufficient oil return to the compressor.

Line Set Size and Refrigerant Charge					
Hoshizaki Icemaker	Hoshizaki Remote Condensing Unit	Line Set Maximum 55' (17 m)			
		Liquid Line	Suction Line	Factory Line Set Lengths	Charge Adjustment
FS-1501MLJ-C	SRC-14J	3/8" OD	5/8" OD	20' (6 m), 35' (11 m), 55' (17 m)	Not Applicable: Factory Charge is Sufficient to Maximum Line Set Length of 55' (17 m)

#### 3. Line Set Installation

# 

- R-404A itself is not flammable at atmospheric pressure and temperatures up to 176°F (80°C).
- R-404A itself is not explosive or poisonous. However, when exposed to high temperatures (open flames), R-404A can be decomposed to form hydrofluoric acid and carbonyl fluoride both of which are hazardous.
- Do not use silver alloy or copper alloy containing arsenic.
- Do not open any service valve until the line set installation is complete and leak tested.
- Ensure that there are no unnecessary traps and no kinks in the line set.
- Do not coil extra line set.
- Use an electronic leak detector or soap bubbles to check for leaks. Add a trace of refrigerant to the line set tubing through the service valve access ports (if using an electronic leak detector), and then raise the pressure using nitrogen gas (140 PSIG). Do not use R-404A as a mixture with pressurized air for leak testing.
- Route the factory line set or appropriate size copper tubing. When field fabricating, insulate the copper tubes separately. Leave a service loop behind the icemaker to allow the icemaker to be pulled out for service. See Fig. 8. Note: The service loop is not considered an oil trap.
- 2) Remove any extra line set length.
- 3) *NOTICE!* Before brazing, remove the Schrader valve cores from the service valve access ports. When brazing, protect the service valve by using a wet cloth to prevent the service valve from overheating.
- 4) Braze the line set to the icemaker service valves first, then to the remote condensing unit service valves.
- 5) Allow the service valves to cool, then replace the Schrader valve cores.
- 6) Use an electronic leak detector or soap bubbles to check for leaks. Add a trace of refrigerant to the line set tubing through the service valve access ports (if using an electronic leak detector), and then raise the pressure using nitrogen gas (140 PSIG). WARNING! Do not use R-404A as a mixture with pressurized air for leak testing.
- 7) Attach the gauge manifold hoses to the service valve access ports and evacuate the line set tubing. Allow the vacuum pump to pull down to a 29.9" Hg vacuum. Evacuating period depends on pump capacity. Next, charge each line set tube with R-404A vapor to a pressure of 15 to 30 PSIG.
- 8) Close both gauge manifold valves. Disconnect the gauge manifold hoses.
- 9) Replace the service valve access port caps and tighten.
- 10) Open the icemaker service valves first, then open the remote condensing unit service valves.
- 11) Replace the service valve caps and tighten.
- 12) Insulate all exposed tubing and fittings.

Hoshizaki Technical Support is available at 1-800-233-1940 for recommendations



# Fig. 8

#### 4. Remote Condensing Unit Electrical Connection

#### **IMPORTANT**

Icemaker and remote condensing unit power supplies are separate.

# **WARNING**

- Remote condensing unit electrical connection must be hard-wired and 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 damage.
- The remote condensing unit 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.
- **THE REMOTE CONDENSING UNIT MUST BE GROUNDED.** Failure to properly ground the remote condensing unit could result in death or serious injury.
- Remote condensing unit electrical connection must be made in accordance with the instructions on the "WARNING" tag provided with the pig tail leads in the remote condensing unit's power supply junction box. See Fig. 9.

# NOTICE

The remote condensing unit should have power for a minimum of 4 hours prior to startup to prevent compressor damage.

- Usually an electrical permit and services of a licensed electrician are required.
- The maximum allowable voltage variation is ±10 percent of the nameplate rating.
- The white lead must be connected to the neutral conductor of the power source. *NOTICE!* Miswiring may result in damage to the appliance.
- The opening for the power supply connection is 7/8" DIA to fit a 1/2" trade size conduit.



# F. Final Checklist

#### 1. Pre-Startup

- 1) Is the icemaker level?
- 2) Is the icemaker in a site where the ambient temperature is within 45°F to 100°F (7°C to 38°C) and the water temperature within 45°F to 90°F (7°C to 32°C) all year around?
- 3) Is there at least 6" (15 cm) clearance at rear and sides of the icemaker for proper air circulation and ease of maintenance and service? Is there at least 24" (61 cm) clearance at the top of the icemaker to allow for removal of the auger?
- 4) Is the remote condensing unit in a site where the ambient temperature is within -4°F to 122°F (-20°C to 50°C) all year around?
- 5) Is there at least 24" (61 cm) clearance around the remote condensing unit for proper air circulation and ease of maintenance and service?
- 6) Have the shipping carton, tape, and packing material been removed from the icemaker and remote condensing unit?
- 7) Have all electrical and water connections been made? Do electrical and water connections meet applicable national, state, and local code and regulation requirements?
- 8) Has the power supply voltage been checked or tested against the nameplate rating? Has a proper ground been installed to the icemaker?
- 9) Has the remote condensing unit power supply voltage been checked or tested against the nameplate rating? Has a proper ground been installed to the remote condensing unit?
- 10) Has the electrical power supply been on to the remote condensing unit for a minimum of 4 hours?
- 11) Are the water supply and drain lines sized as specified? Are the water supply line shut-off valve and drain valve installed? Has the water supply pressure been checked to ensure a minimum of 10 PSIG and a maximum of 113 PSIG?
- 12) Is the compressor snug on all mounting pads? Have the refrigerant lines been checked to make sure they do not rub or touch other lines or surfaces? Has the fan blade been checked to make sure it turns freely?
- 13) Is the line set free of leaks and kinks? If needed, has an "S" oil-trap been installed?
- 14) Continue to "II.G. Startup".

#### 2. Post-Startup

- 1) Has bin control 1 (Ultrasonic) been set to the proper setting for the application?
- 2) Has bin control 1 (Ultrasonic) operation been confirmed?
- 3) Has bin control 2 (Mechanical Backup) operation been confirmed?
- 4) Are all components, fasteners, and thumbscrews securely in place?
- 5) 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?
- 6) Has the end user been given the contact information of an authorized service agent?
- 7) Has the warranty registration been completed and submitted to the factory?

# G. Startup

#### 1. Bin Control Setting

An ultrasonic sensor is used as the bin control to control the level of ice in the dispenser unit/ice storage bin. The bin control setting must be set to match the application to avoid possible icemaker movement, water leakage, or ice overflow.

# 

- Improper adjustment may adversely affect safety, performance, component life, and warranty coverage.
- On dispenser unit applications, do not increase ice level above the recommended setting listed below. Higher ice levels could result in icemaker movement, water leakage, or ice overflow.

# NOTICE

Do not allow top kits or top kit risers (if applicable) to interfere with the bin control lens sensing area or the icemaker will not operate properly.

 Move the power switch to the "OFF" position. Make sure the power supply is off to the icemaker and condensing unit. Remove the front panel to access the control box assembly. Remove the control box cover to access the control board. See Fig. 10 and Fig. 11.



2) Confirm the correct control board bin control setting required for your application and adjust according to the following table. See Fig. 12.

#### For Non-Hoshizaki Dispenser Units

Bin Control Ice Level Settings		
Shutdown Distance From Bin Control Lens		
Bin Control Setting	(Restart is 4 in. (102 mm) below shutdown distance)	
1	127 mm ( 5" )	
(Factory Default)	Do not adjust dispensers to this setting.	
2	178 mm ( 7" )	
3	254 mm (10")	
4	356 mm (14")	
5	457 mm (18")	

# **WARNING**

Confirm that the final ice level location does not allow for icemaker movement, water leakage, or ice overflow.

# NOTICE

The ice level must be lower than the top of the dispenser unit. Also, be sure the top kit or top kit riser (if applicable) are clear from the bin control lens sensing area.



#### 2. Bin Control Check

An ultrasonic sensor is used as the primary bin control to control the level of ice in the dispenser unit/ice storage bin. A mechanical bin control is used as a backup bin control.

#### a) Bin Control 1 (Ultrasonic)

# **A**WARNING

- All parts are factory-adjusted. Improper adjustments may adversely affect safety. performance, component life, and warranty coverage.
- Make sure the icemaker has been installed as outlined in this manual and that the water supply is on.
- Improper adjustment may adversely affect safety, performance, component life, and warranty coverage.

# NOTICE

- If the appliance is turned off, wait for at least 3 minutes before restarting the icemaker to prevent damage to the compressor.
- At startup, confirm that all internal and external connections are free of leaks.
- Do not allow top kits or top kit risers (if applicable) to interfere with the bin control lens sensing area or the icemaker will not operate properly.

#### Additional Notice for Remote Models

- The appliance must have power for a minimum of 4 hours prior to startup to prevent compressor damage.
- 1) If not already removed, remove the front panel, left side panel, and control box cover.
- 2) Make sure the power switch is in the "OFF" position and that the power suppy is off.
- 3) Confirm that control board S2 dip switch 1, 2, and 3 are in the proper position for your application.
- 4) Move the control switch to the "ICE" position, then move the power switch to the "ON" position. Turn on the power supply, and allow the icemaker to operate.



5) Confirm the control board orange "BIN FULL" LED

- 7) Make sure the "GM" LED is on. See Fig. 13. There is a delay of at least 30 sec. before the "GM" LED turns on after power-up. After "GM" LED turns on, press the "Service" button on the control board to bypass the 5-minute compressor delay.
  WARNING! Risk of electric shock. Care should be taken not to touch live terminals. Confirm the "COMP" LED turns on.
- 8) "GM" LED and "COMP" LED are on. Place an object 5" to 7" (127 to 178 mm) away from the bin control lens at the bottom of the icemaker. See Fig. 14. If the bottom of the icemaker is not accessible in your application, remove the thumbscrew securing the bin control sensor housing to the base, then remove the bin control sensor housing. See Fig. 15.





- 9) "BIN FULL" LED turns on. 30 sec. later, the "COMP" LED turns off. 5 min. later, "GM" LED turns off. Remove the object from the bin control lens. Approximately 30 sec. later, orange "BIN FULL" LED will be off. 5 min. later, the "GM" LED will turn on.
- 10) If you removed the Bin Control Sensor from the base, replace it back in its correct position and secure with thumbscrew.
- 11) Replace the left side panel in its correct position.
- 12) Move the power switch and control switches to their "OFF" position, then turn off power supply. Proceed to "II.K.2. Mechanical Backup Bin Control Check."
- 13) Continue to "II.G.2.b) Bin Control 2 (Mechanical Backup)".

#### b) Bin Control 2 (Mechanical Backup)

- 1) Make sure the power switch is in the "OFF" position and that the icemaker is unplugged from the electrical outlet.
- 2) If not already removed, remove the front panel, top panel, and control box cover.
- 3) Remove the spout spring from the spout. See Fig. 16.
- 4) Plug in the icemaker. Make sure the control switch is in the "ICE" position, then move the power switch to the "ON" position.
- 5) 30 seconds after the upper float switch closes, the control board "GM" LED turns on. After "GM" LED turns on, press the "SERVICE" button on the control board to bypass the 5-minute compressor delay. **WARNING! Risk of electric shock. Care should be taken not to touch live terminals.**



6) "GM" LED and "COMP" LED are on. Open the spout cover slightly. See Fig. 17.
"GM" LED and "COMP" LED turn off within 10 seconds and the control board sounds a 9 beep alarm. Close the spout cover.



- 7) Move the power switch to the "OFF" position, then unplug the appliance from the electrical outlet. Note: The control board alarm resets when power is turned off.
- 8) Replace the spout spring in its correct position.
- 9) Replace the control box cover and top panel in their correct positions.
- 10) Plug in the icemaker. Make sure the control switch is in the "ICE" position, then move the power switch to the "ON" position to start the automatic icemaking process.
- 11) Replace the front panel in its correct position.

## H. Operation Notes

The appliance utilizes a pump-down solenoid valve in the icemaker and a control low-pressure switch in the remote condensing unit to control operation of the magnetic contactor in the remote condensing unit. This eliminates the need for an electrical connection between the icemaker and remote condensing unit.

Control Low-Pressure Switch Settings: Cut-Out: 9 PSIG. Differential: 20 PSIG. Cut-In: 29 PSIG.

# I. Alarm Safeties

Should an alarm occur, follow the instructions in the table below to address the alarm. If an alarm continues to occur, contact an authorized service agent.

In case of alarm, the built-in safeties shut down the unit, the orange "ALARM" LED turns on, and audible alarms sound as listed below.

No. of Beeps (every 5 sec.)	Type of Alarm	Reset Options	
1	Low Water Safety UFS open>90 sec. after WV energized.	Automatic reset once water supply is restored and UFS closes.	
2	<b>Control Switch</b> In "DRAIN" position longer than 15 min.	Automatic reset once the control switch is moved to the "ICE" position.	
3	High-Pressure Switch First and second activation in 1 hr.	Automatic reset once pressure drops below the high pressure threshold and the high pressure switch closes.	
4	High-Pressure Switch Third activation in 1 hr.	Call for service. To avoid possible catastrophic failure, it is recommended to leave the icemaker off until this alarm is resolved. Manual reset. Turn power off and on again.	
5	<b>Freeze Timer</b> WV off > 30 min. since last WV activation.	Call for service. Manual reset. Turn power off and on again. Check for FS stuck (up), WV leaking by, TXV defective, LLV not opening, low charge, HM not bypassing, or inefficient Comp.	
6	Low Voltage 92VAC±5% or less	Green "POWER" LED turns off if voltage protection operates.	
7	High Voltage 147VAC±5% or more	Control voltage safeties automatically reset when voltage is corrected.	
8	a) Gear Motor Fuse or Protector Open CCR contacts fail to close. Used on all models.	Turn power off. Check for GM fuse or protector open. Replace fuse or let protector cool and reset. If persistent trips occur, call for service.	
	<ul> <li>b) Evaporator Thermistor</li> <li>At GM startup Evaporator</li> <li>thermistor &lt; -4°F (-20°C).</li> <li>Used on cubelet (-C)(-SC)(-CB)</li> <li>models only.</li> </ul>	Turn power off. Call for service. To avoid possible catastrophic failure, it is recommended to leave the icemaker off until this alarm is resolved. Manual reset. Turn power off and on again.	
9	Bin Control 2 (Mechanical) Open Circuit Control Board K8 (#3 and #4) Not used on DCM or	Manual reset. Turn power off and on again. <b>Modular Flaker and Cubelet (-C)(-SC)(-CB)</b> <b>Models:</b> Control Board S2 Dip Switch #7 must be ON.	
	self-contained models.	DCM and Self-Contained Models: Control Board S2 Dip Switch #7 must be OFF.	
10	Evaporator Thermistor Evaporator thermistor reaches -22°F (-30°C) for 3 consecutive cycles. Used on cubelet (-C)(-SC)(-CB) models only.	Turn power off. Call for service. To avoid possible catastrophic failure, it is recommended to leave the icemaker off until this alarm is resolved. Manual reset. Turn power off and on again.	

Legend: CCR–compressor control relay; FS–float switch; GM–gear motor; HM–headmaster (C.P.R.); LLV–liquid line valve; SLV–suction line valve; TXV–thermostatic expansion valve; UFS–upper float switch; WV–inlet water valve

Dip switches are factory set and must be adjusted per the unit's service manual or Hoshizaki Technical Support recommendation.

# III. Maintenance

The appliance must be maintained in accordance with the instruction manual and labels provided. Consult with your local Hoshizaki Certified Service Representative about maintenance service. To obtain the name and phone number of your local Hoshizaki Certified Service Representative, visit www.hoshizakiamerica.com.

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- Only qualified service technicians should service the appliance.
- To reduce the risk of electric shock, do not touch the icemaker power switch or plug with damp hands. Make sure the icemaker power switch is in the "OFF" position before plugging in or unplugging the icemaker.
- **Before Servicing: FS:** Move the icemaker's power switch to the "OFF" position. Unplug the icemaker from the electrical outlet. **SRC:** Turn off the power supply to the remote condensing unit. Place the disconnect (if applicable) in the off position. Lockout/Tagout to prevent the power supply from being turned back on inadvertently.
- CHOKING HAZARD: Ensure all components, fasteners, and thumbscrews are securely in place after any maintenance is done to the unit. Make sure that none have fallen into the storage bin.



# A. Maintenance Schedule

The maintenance schedule below is a guideline. More frequent maintenance may be required depending on water quality, the appliance's environment, and local sanitation regulations.

Maintenance Schedule				
Frequency	Area	Task		
Daily	Scoop	Clean the ice scoop using a neutral cleaner. Rinse thoroughly after cleaning.		
Monthly	External Water Filters	Check for proper pressure and change if necessary.		
	Icemaker Exterior	Wipe down with clean, soft cloth. Use a damp cloth containing a neutral cleaner to wipe off oil or dirt build up. Clean any chlorine staining (rust colored spots) using a non-abrasive cleaner.		
	Bin Control Lens	Wipe down the bin control lens, (located on the bottom of the icemaker) with a neutral cleaner. Rinse thoroughly after cleaning.		
	Underside of Icemaker and Top Kits; Bin Door and Snout (if applicable)	Wipe down with clean cloth and warm water.		
Every 6 Months	Icemaker and Dispenser Unit/Ice Storage Bin	Clean and sanitize per the cleaning and sanitizing instructions provided in this manual.		
	Evaporator Condensate Drain Pan and Gear Motor Drain Pan	Wipe down with clean cloth and warm water. Slowly pour one cup of sanitizing solution (prepare as outlined in the sanitizing instructions in this manual) into the evaporator condensate drain pan. Be careful not to overflow the pan. The solution will flow down to the gear motor drain pan and out the drain line to sanitize these areas. Repeat with a cup of clean water to rinse.		
	Icemaker and Dispenser Unit/Ice Storage Bin Drains	Check to make sure they are clear.		
	Extruding Head Seal Bolts	<ul> <li>Inspect for leakage around seal bolts. Tighten (see torque values below) or replace as necessary. Seal bolts must be replaced once removed because seal material is one-time use only. If new seal bolts do not have preapplied threadlocker, apply Loctite 243 or equivalent threadlocker to seal bolt threads.</li> <li><i>Torque for FS-1501 and Larger:</i> 25.8 ft-lb/35 N·m Tighten 2 times. Allow at least 5 sec in between each tightening.</li> </ul>		
Yearly	Inlet Water Valve and Drain Valve	Close the water supply line shut-off valve and drain the water system. Clean the inlet water valve screen and clean and inspect the drain valve.		
	Water Hoses	Inspect the water hoses and clean/replace if necessary.		
	Condenser	Inspect. Clean if necessary by using a brush or vacuum cleaner.		
	Icemaker	Inspect for oil spots, loose components, fasteners, and wires.		
	Upper Bearing (extruding head)	Check for wear using .02" round stock or pin gauge. Replace both upper bearing and lower bearing if wear exceeds factory recommendations. See the Service Manual for details.		
After 3 Years, then Yearly	Upper Bearing (extruding head); Lower Bearing and O-Ring (lower housing); Mechanical Seal; Evaporator	Inspect. Replace both upper bearing and lower bearing if wear exceeds factory recommendations. Replace the mechanical seal if the seal's contact surfaces are worn, cracked, or scratched.		
	Cylinder; Auger			

# **B.** Cleaning and Sanitizing Instructions

The appliance must be cleaned and sanitized at least twice a year. More frequent cleaning and sanitizing may be required in some conditions.

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- To prevent injury to individuals and damage to the appliance, do not use ammonia type cleaners.
- Carefully follow any instructions provided with the cleaning and sanitizing solutions.
- Always wear liquid-proof gloves and goggles to prevent the cleaning and sanitizing solutions from coming into contact with skin or eyes.
- After cleaning and sanitizing, do not use ice made from the cleaning and sanitizing solutions. Be careful not to leave any solution on the parts or in the dispenser unit/ice storage bin.

#### 1. Cleaning Solution

Dilute 9.6 fl. oz. (0.29 l) of Hoshizaki "Scale Away" with 1.6 gal. (6.0 l) of warm water. This is a minimum amount. Make more solution if necessary. *IMPORTANT!* For safety and maximum effectiveness, use the solution immediately after dilution.

#### 2. Cleaning Procedure

- 1) Close the icemaker water supply line shut-off valve.
- 2) After the gear motor starts, remove the front panel. Move the power switch to the "OFF" position. Move the control switch to the "DRAIN" position, then move the power switch back to the "ON" position. Replace the front panel in its correct position.
- 3) Allow the water system to drain completely.
- 4) Remove the front and top panels. Move the power switch to the "OFF" position, then unplug the icemaker from the electrical outlet.
- 5) Remove all of the ice from the dispenser unit/ice storage bin. **WARNING! If on a** dispenser unit, turn off the dispenser unit power supply after dispensing the ice.
- 6) Remove the spout spring, then open the spout cover. See Fig. 14.
- 7) Pour the cleaning solution over the extruding head until the evaporator assembly and the reservoir are full and the solution starts to run through the overflow hose on the reservoir.

Note: If there is excess scale on the extruding head, fill the evaporator assembly and reservoir as described above, then use a clamp on the reservoir hose between the reservoir and evaporator assembly to block flow. Pour additional cleaning solution over the extruding head until the evaporator assembly is completely full.

- 8) Close the spout cover and replace the spout spring in its correct position.
- 9) Allow the icemaker to sit for 10 minutes before operation. If you placed a clamp on the reservoir hose in step 7, remove it before operation.

- 10) In bad or severe water conditions, clean the float switch as described below. Otherwise, continue to step 11.
  - a. Remove the float switch from the reservoir cover.
  - b. Wipe down the float switch with the cleaning solution.
  - c. Rinse the float switch thoroughly with clean water.
  - d. Replace the float switch in its correct position.
- 11) Wipe down the bin control lens, (located on the bottom of the icemaker) with the cleaning solution. Next, rinse the cleaning solution off of the bin control lens with a clean, damp cloth.
  - Note: If the bottom of the icemaker is not accessible in your application, remove the thumbscrew securing the bin control housing, then remove the housing from the base. After cleaning and rinsing the lens, replace the housing in its correct position and secure it with the thumbscrew.
- 12) Replace the top panel in its correct position. Move the control switch to the "ICE" position, plug the appliance back into the electrical outlet, then move the power switch to the "ON" position. Replace the front panel in its correct position and allow the appliance to make ice using the solution until the icemaker stops making ice.
- 13) Remove the front panel. Move the power switch to the "OFF" position, then move the control switch to the "DRAIN" position. Move the power switch back to the "ON" position, then replace the front panel in its correct position.
- 14) Allow the water system to drain completely.
- 15) Remove the front panel. Move the power switch to the "OFF" position, then move the control switch to the "ICE" position. Move the power switch to the "ON" position, then replace the front panel in its correct position.
- 16) Open the icemaker water supply line shut-off valve to supply water to the reservoir.
- 17) After the gear motor starts, remove the front panel. Move the power switch to the "OFF" position. Move the control switch to the "DRAIN" position, then move the power switch back to the "ON" position. Replace the front panel in its correct position.
- 18) Allow the water system to drain completely. Note: If you do not sanitize the unit, go to step 14 in "III.B.5. Sanitizing Procedure - Final."
- 19) Remove the front panel. Move the power switch to the "OFF" position, then unplug the icemaker from the electrical outlet. Close the water supply line shut-off valve.

#### 3. Sanitizing Solution

Dilute 2.5 fl. oz. (74 ml or 5 tbs) of a 7.5% sodium hypochlorite solution (chlorine bleach) with 5 gal. (19 l) of warm water. This is a minimum amount. Make more solution if necessary. *IMPORTANT!* For safety and maximum effectiveness, use the solution immediately after dilution.

#### 4. Sanitizing Procedure - Initial

- 1) Make sure the power switch is in the "OFF" position, the icemaker is unplugged from the electrical outlet, and the water supply line shut-off valve is closed. Remove the top panel.
- 2) Remove the spout spring, then open the spout cover. See Fig. 14. Next, remove the proximity switch from the spout assembly, then remove the spout and chute assembly, and spout packing from the icemaker.
- 3) Pour the sanitizing solution over the extruding head until the evaporator assembly and the reservoir are full and the solution starts to run through the overflow hose on the reservoir.
- 4) Remove the spout and chute insulation straps, then remove the spout and chute insulation and set aside.
- 5) Soak the spout assembly, chute, and spout packing in the sanitizing solution for 10 minutes then wipe them down. Next, wipe down the chute packing at the base of the icemaker.
- 6) Rinse the parts thoroughly with clean water.
- 7) Replace the spout packing, chute, spout assembly, insulation, and insulation straps in their correct positions. Next, open the spout cover and replace the proximity switch in its correct position, then close the spout cover and replace the spout spring in its correct position. *IMPORTANT!* Be sure the insulation is placed back in its correct position and secured with the insulation straps.
- 8) Move the control switch to the "ICE" position, then plug the icemaker back in to the electrical outlet. Move the power switch to the "ON" position. Replace the panels in their correct positions, then make ice using the solution until the icemaker stops making ice.
- 9) Remove the front panel. Move the power switch to the "OFF" position, then move the control switch to the "DRAIN" position. Move the power switch to the "ON" position, then replace the front panel in its correct position.
- 10) Allow the water system to drain completely.
- 11) Remove the front panel. Move the power switch to the "OFF" position, then unplug the icemaker from the electrical outlet.

#### 5. Sanitizing Procedure - Final

- Dilute 2.5 fl. oz. (74 ml or 5 tbs) of a 7.5% sodium hypochlorite solution (chlorine bleach) with 5 gal. (19 l) of warm water. This is a minimum amount. Make more solution if necessary. *IMPORTANT!* For safety and maximum effectiveness, use the solution immediately after dilution.
- 2) Make sure the power switch is in the "OFF" position, the icemaker is unplugged from the electrical outlet, and the water supply line shut-off valve is closed. Remove the top panel.
- 3) Remove the spout spring and open the spout cover.
- 4) Pour the sanitizing solution over the extruding head until the evaporator assembly and the reservoir are full and the solution starts to run through the overflow hose on the reservoir.
- 5) Close the spout cover, then replace the spout spring in its correct position.
- 6) Allow the icemaker to sit for 10 minutes before operation.
- 7) Move the control switch to the "ICE" position, then plug the icemaker back in to the electrical outlet. Move the power switch to the "ON" position. Replace the panels in their correct positions, then make ice using the solution until the icemaker stops making ice.
- 8) Remove the front panel. Move the power switch to the "OFF" position. Move the control switch to the "DRAIN" position, then move the power switch to the "ON" position, then replace the front panel in its correct position.
- 9) Allow the water system to drain completely.
- 10) Remove the front panel. Move the power switch to the "OFF" position. Move the control switch to the "ICE" position, then move the power switch to the "ON" position, then replace the front panel in its correct position.
- 11) Open the icemaker water supply line shut-off valve to supply water to the reservoir.
- 12) After the gear motor starts, remove the front panel. Move the power switch to the "OFF" position. Move the control switch to the "DRAIN" position, then move the power switch to the "ON" position. Replace the front panel in its correct position.
- 13) Allow the water system to drain completely.
- 14) Remove the front panel. Move the power switch to the "OFF" position, then move the control switch to the "ICE" position. Move the power switch to the "ON" position, then replace the front panel in its correct position.
- 15) Allow the icemaker to run for 30 minutes, then remove the front panel. Move the power switch to the "OFF" position, then unplug the icemaker from the electrical outlet.
- 16) Pour warm water into the dispenser unit/ice storage bin and melt any remaining ice. Clean the dispenser unit/ice storage bin liner using a neutral cleaner. Rinse thoroughly after cleaning.
- 17) Plug the icemaker back in to the electrical outlet. Make sure the control switch is in the "ICE" position, then move the power switch to the "ON" position to start the automatic icemaking process.
- 18) Replace the front panel.

# **IV. Preparing the Appliance for Periods of Non-Use**

#### NOTICE

When storing the icemaker for an extended time or in sub-freezing temperatures, follow the instructions below to prevent damage.

When the icemaker is not used for two or three days under normal conditions, it is sufficient to only move the power switch to the "OFF" position. When storing the appliance for extended time or in sub-freezing temperatures, follow the instructions below.

#### 1. Remove the water from the icemaker water supply line:

- 1) Remove the front panel.
- 2) Move the power switch to the "OFF" position.
- 3) Close the icemaker water supply line shut-off valve, then open the icemaker water supply line drain valve.
- 4) Allow the line to drain by gravity.
- 5) Attach a compressed air or carbon dioxide supply to the icemaker water supply line drain valve.
- 6) Move the control switch to the "ICE" position, then move the power switch to the "ON" position.
- 7) Blow the icemaker water line out using the compressed air or carbon dioxide supply.
- 8) Close the icemaker water supply line drain valve.

#### 2. Drain the evaporator:

- 1) Move the power switch to the "OFF" position. Move the control switch to the "DRAIN" position, then move the power switch back to the "ON" position. Replace the front panel in its correct position.
- 2) Allow the water system to drain for 5 minutes.
- 3) Remove the front panel, then move the power switch to the "OFF" position.
- 4) Remove the evaporator drain line hose from the evaporator and attach a compressed air or carbon dioxide supply to the hose.
- 5) Move the power switch to the "ON" position. Blow out the evaporator drain line using the compressed air or carbon dioxide supply until water stops coming out.
- 6) Move the power switch to the "OFF" position, then reconnect the evaporator drain line hose.
- 7) Move the control switch to the "ICE" position. Replace the front panel in its correct position, then unplug the unit from the electrical outlet.
- 8) Remove all ice from the dispenser unit/ice storage bin. Clean the dispenser unit/ice storage bin liner using a neutral cleaner. Rinse thoroughly after cleaning.

#### 3. Turn off the power supply to the remote condensing unit:

- 1) Turn off the power supply to the remote condensing unit.
- 2) When restarting, follow the instructions in "II.G. Startup." The remote condensing unit should have power for a minimum of 4 hours prior to startup to prevent compressor damage.

# V. Disposal

The icemaker and remote condensing unit contain refrigerant and must be disposed of in accordance with applicable national, state, and local codes and regulations. Refrigerant must be recovered by properly certified service personnel.

#### HOSHIZAKI AMERICA, INC.