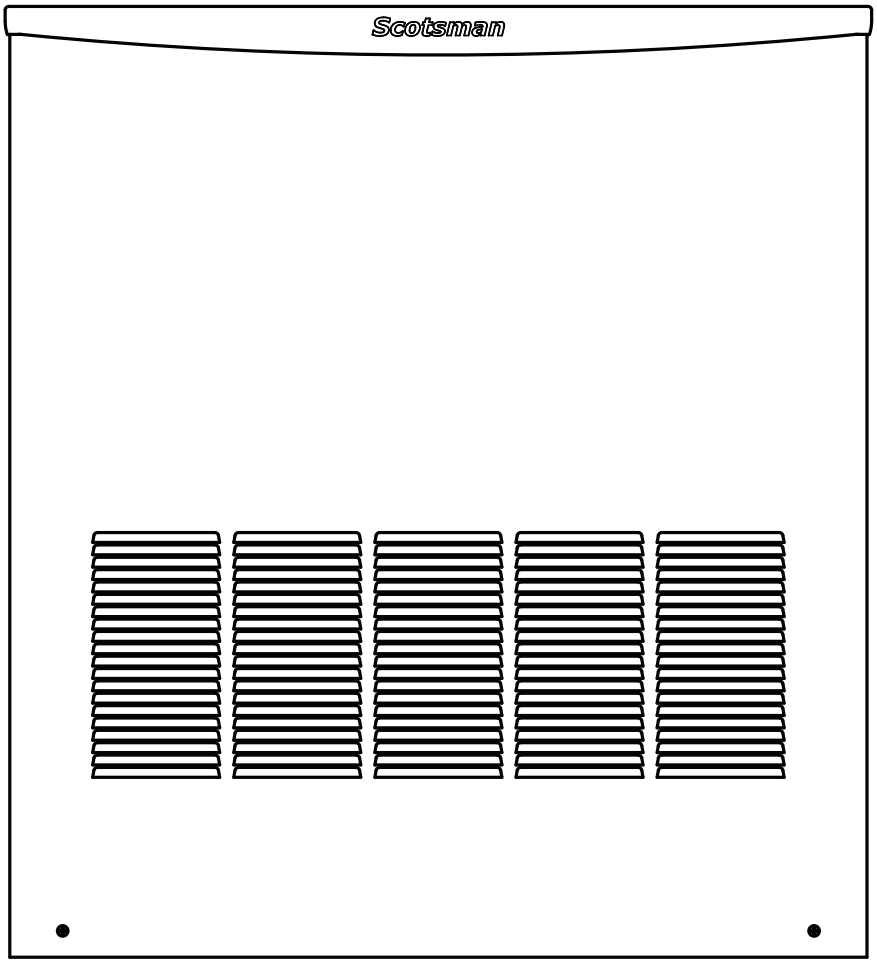
Scotsman®
Ice Systems

User Manual for
model BC0530



BC0530 User Manual

Introduction

To the owner or user: this manual is intended to provide you and the maintenance or service technician with the information needed to install, startup, clean, maintain and repair this product. Observe any caution or warning notices. They are important and provide notice of potential hazards.

Keep this manual for future reference.

If additional technical information is needed, go to Scotsman's website, www.scotsman-ice.com.

Note: This is a commercial product. If service is needed on a unit in a residence, warranty may be limited. Use a commercial service company. Locate one from the Scotsman website: www.Scotsman-ice.com

Scotsman Ice Systems are designed and manufactured with the highest regard for safety and performance. They meet or exceed UL563, verified by a nationally recognized safety authority such as UL or ETL.

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WARNING

CAUTION

Observe the Caution and Warning notices. They are indicators of important safety information. Keep this manual for future reference.

WARNING: Cancer and Reproductive Harm
www.P65Warnings.ca.gov

Specifications

This ice maker is designed to be installed indoors, in a controlled environment. Although it can operate in a wide range of air and water temperatures, it will provide the best performance if not subject to extremes.

Air Temperature Limitations

- Maximum: 90° F or 32° C
- Minimum: 50° F or 10° C

Ambient temperatures less than 15°C (60°F) may cause erratic bin level control operation.

Ambient temperatures higher than the maximum specification will result in reduced capacities and high system pressures.

Water Temperature Limitations

- Maximum: 90° F or 32° C
- Minimum: 45° F or 7° C

Water Pressure, Potable

- Maximum: 80 PSI or 5.5 BAR
- Minimum: 30 PSI or 2 BAR

Potable Water Inlet Flow Rate

- 2.5 gpm

Voltage 115 volt models

- Maximum 126 VAC
- Minimum 104 VAC

Operating the machine outside of any of the above limitations is considered abuse and any resulting damage is not covered by warranty and could cause a complete loss of warranty coverage.

Warranty Information

The warranty statement for this product is provided separately from this manual. Refer to it for applicable coverage.

In general, warranty covers defects in material or workmanship. It does not cover maintenance, corrections to installations, or situations when the machine is operated in circumstances that exceed the limitations printed above.

Product Information:

The BC is available in a single cube size. The ice size cannot be changed significantly. It is a modular cuber and the ice is stored in separate insulated bin with ice level automatically maintained by the control system.

A back flow preventer may be required by local plumbing codes.

Air flow is in the back and out the front and sides.

For available options and kits, see sales literature.

Storage Bins

The ice machine will likely be too deep to fit properly on a typical ice storage bin. Scotsman B530 bins will require attachment bracket that is included with the ice machine.

Dispensers

The BC0530 is NOT COMPATIBLE with any dispenser. Do not attempt stacking onto a dispenser or using the ice in a dispenser..

Model	Electrical (Volts/Hz/Phase)	Condenser	Cube Size	Maximum Fuse Size or Breaker (Amps)	Minimum Circuit Ampacity	Power Cord Termination
BC0530A-1A	115/60/1	Air	Large	25	19.6	Not supplied

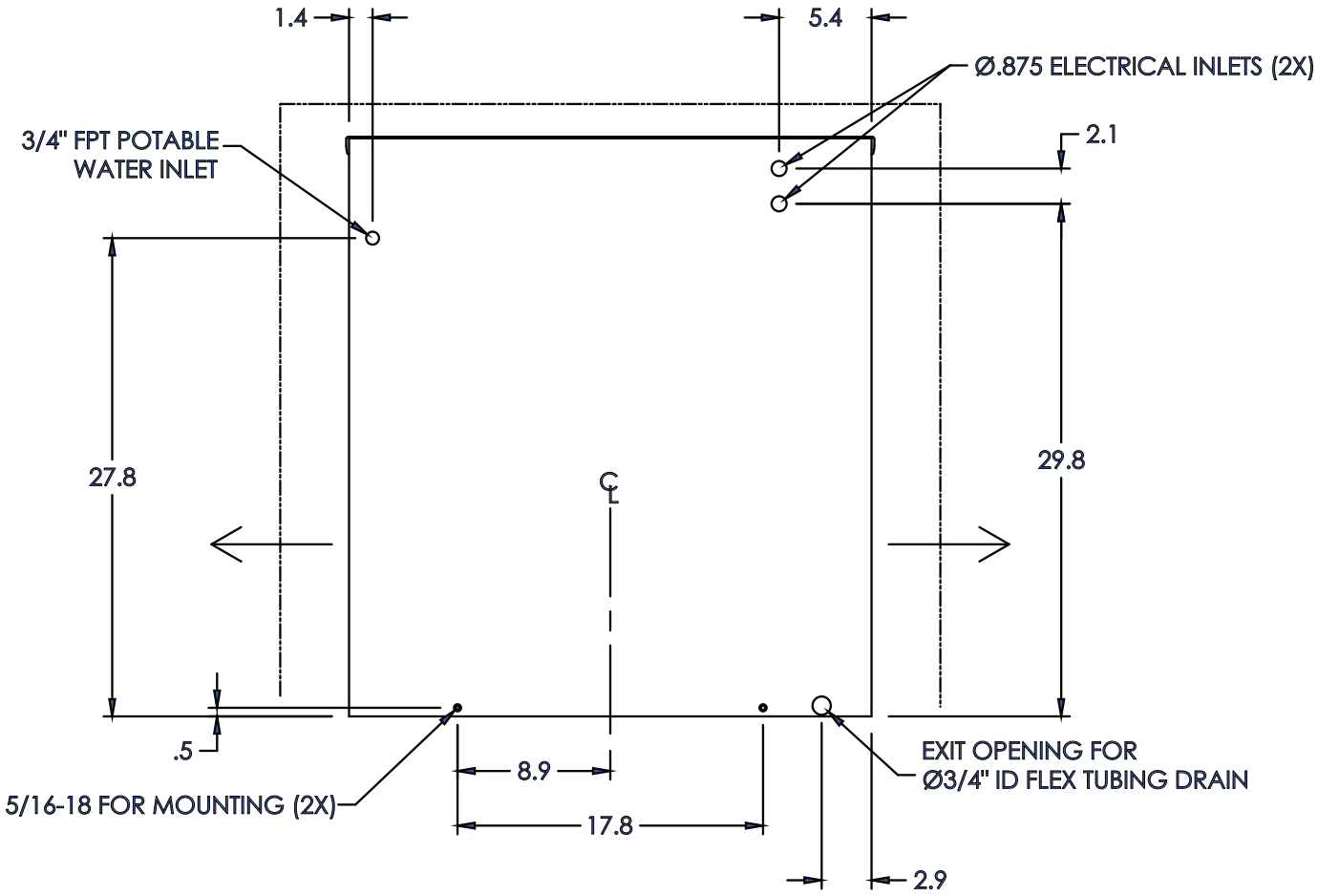
Always refer to the dataplate for electrical information.

EQUIPMENT CLEARANCE REQUIREMENTS

Clearance must be provided for ventilation and maintenance access. Ventilation is especially important for models with air cooled condensers. Failure to provide adequate clearance may result in reduced capacities and high system pressures. The minimum clearances for proper ventilation and access are:

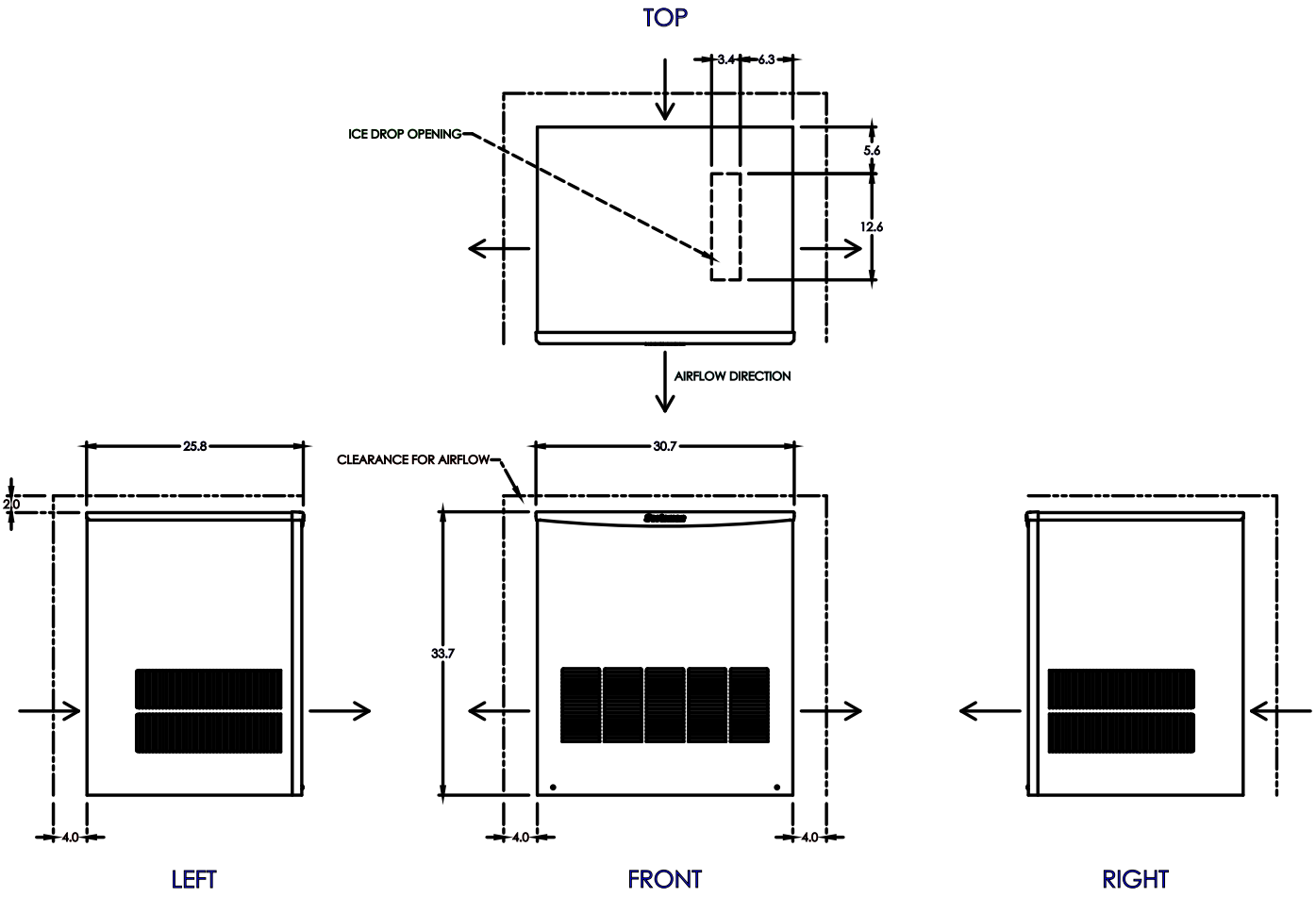
Model	Left Side	Right Side	Rear	Top
BC0530A-1A	4”	4”	4”	1”

Back View



Note: Model and serial dataplate on the back.

Plan and Cabinet Drawings



Note: Do NOT install on a bin where the ice drop opening is blocked.

Placement and Guidelines

The location of the equipment should be selected with care. Consideration should be given to allow adequate space for air cooled models to breathe.

The ice machine is not designed for outdoor use. It must be installed indoors, in a controlled environment. The air and water temperatures must not exceed rated limits.

Scotsman assumes no liability or responsibility of any kind from products manufactured by Scotsman that have been altered in any way, including the use of any part and/or other components not specifically approved by Scotsman.

Scotsman reserves the right to make design changes and/or improvements at any time.

Specifications and design are subject to change without notice.

Delivery:

Check for freight damage before proceeding with the equipment installation. Be sure to inspect the equipment carefully for any damage that may not be evident on the outside of the carton. Contact the freight carrier immediately to report any damage and file a claim.

Safety:

- Do not operate equipment that has been damaged.
- Refer all maintenance to qualified personnel.
- Never operate the ice maker with any covers, panels or other parts removed or not properly secured.
- Instruct all personnel in the proper use of the equipment.
- Clean up any spillage immediately.

CAUTION

Failure to comply with all installation guidelines may cause personal injury, equipment or property damage and may void the product warranty.

Note: Important Installation Advice

- Always install the ice maker on a stable and level surface.
- Always secure the ice maker to the ice storage means.
- Do not install the equipment in wet areas.
- Do not locate the equipment near any heat source, in direct sunlight, in hot ambient areas, or without proper clearance for ventilation. Placing equipment in these locations will result in reduced capacities, high system pressures and may cause equipment failure.

Drains

Separate drains must be provided for the ice maker and ice bin. The size of the drain tubing must never be reduced along its length.

Make sure that the building drain system can accommodate all the drain water from the ice machine operation.

Individual drains must never be directly connected to a common manifold, drain or standpipe. If individual drains are to be discharged into a common manifold, drain or standpipe, a minimum 38mm (1.5”) air gap must be provided at each connection. This is to prevent any backflow or back-siphonage of drain water into the ice maker or ice bin.

Installation: Assembly

Remove the ice machine front-cover panel, top-cover panel and side-cover panels from the ice machine frame.

The ice storage bin surface must be level. Use minimum 150 mm (6”) ice storage bin leg adjusters, or seal the bin directly to the floor using shims as required. Use an NSF certified sealant to seal the bin to the floor. If there are gaps larger than 3 mm (1/8”) install a cove molding around the bottom of the bin.

Note: The ice drop opening and the probe opening must NOT be blocked by the storage bin walls.

Carefully lift the ice machine and position it on the ice storage bin.

CAUTION The ice machine is heavy! Use of a mechanical lift may be required.

Attach the ice machine to the ice storage bin. The ice machine is supplied with an attachment bracket to fit Scotsman B330 and B530 ice storage bins.

Make all plumbing and electrical connections to the ice machine and ice storage bin. See the next page.

Installation: Water

Drain lines must be installed with a minimum drop of 2.5 cm per meter run (.3 inch drop per foot run).

Ice machine and bin drains may be insulated to prevent condensation.

Follow all local and national codes.

Connect Drain

Adapt as needed and connect to the 3/4” ID flex drain out the back of the unit. Do not use flexible tubing beyond this connection, use only rigid tubing.

Potable Water Supply

There are no specific requirements for water treatment provided that the water is potable, not laden with sediment and does not exhibit residual chlorine level greater than 0.2 ppm. The use of water treatment, however, may increase the intervals between cleaning operations.

Do not connect the ice machine to a hot water supply line. Insulate the water line from sources of heat or to prevent condensation.

Note: Water temperatures higher than the recommended maximum will cause reduced capacity.

High residual chlorine (more than 0.2 Ppm) can cause corrosion of ice maker components. High chlorine levels must be reduced, in the ice maker water supply, to protect the equipment and preserve the product warranty. Please contact your local water conditioning expert for recommendations, about your specific water supply, or consult the factory.

A minimum 0.2 MPa (30 psig) dynamic water supply pressure is required for proper operation of the ice maker water valve. Minimum water pressure 0.2 MPa (30 psig) Maximum water pressure 0.6 MPa (100 psig). If a water pressure regulator is used, the recommended setting is 0.2 MPa to 0.3 MPa (30 to 50 psig) dynamic.

Connect Water Supply

NOTE - Purge all water supply lines before connecting them to the ice machine.

Adapt as needed using field supplied fittings and connect to the 3/4” FPT fitting on the back of the unit. Minimum tubing size to use is 3/8” OD.

Installation: Electrical

All units are intended to be installed with a permanent connection to the field electrical supply. Drop cord connections should never be used with this equipment.

Always be sure the power supply is the same as the ice machine specification. See the ice machine electrical plate.

Branch circuit protection

Proper protection must be provided by the use of fuses or hacr type circuit breakers. Each ice maker must be connected to a separate protected circuit with no other loads. A fused disconnect provided by the installer and installed adjacent to each ice maker is recommended and may be required by local codes.

Minimum ampacity does not indicate typical running current value. Refer to the equipment electrical plate. Use the minimum ampacity value for sizing branch circuit conductors up to 8 meters (26 feet) in length. For conductor length over 8 meters, increase the wire gauge as required.

Normal protector size is based on rated voltage and operation at lower than extreme temperature limits. Branch circuit conductors may be sized to allow increasing the protector value up to the specified maximum. This may avoid nuisance protector opening under harsh operating conditions.

Follow all local and national codes.

Connect Electrical Supply Wires

The unit has lead wires that are available at the back of the cabinet.

Connect the correct size wires for the load to those wires.

Installation Check List

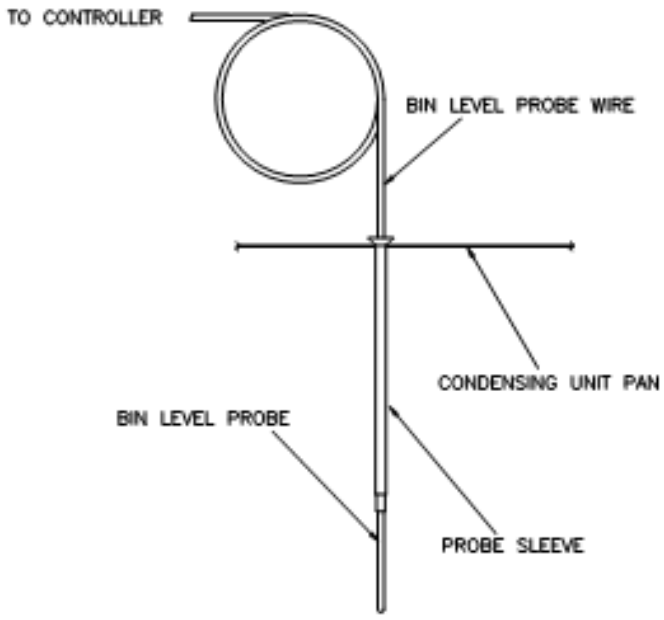
- ◊ Is the ice maker and bin assembly level?
- ◊ Is there proper clearance around the machine for air circulation?
- ◊ Have all electrical, water and sewer connections been made?
- ◊ Has the supply voltage been tested with the ice ma+er on a dedicated, protected circuit?
- ◊ Is the machine installed where ambient air temperatures will range from 45 to 90F (7 to 32C)?
- ◊ Is the machine installed where incoming water temperatures will range from 45 to 90F (7 to 32C)?
- ◊ Does the water supply provide a minimum 20 psig dynamic to maximum 100 psig static pressure?
- ◊ Are there separate drain lines for the ice maker and bin?
- ◊ Are the ice makers and bin drains vented?
- ◊ Is the bin thermo probe run correctly, secured, tested and positioned in the bin at the right level?
- ◊ Are the electrical lines free from contact with refrigerant lines and moving parts?
- ◊ Are the drain pan and ice chute positioned properly and is the packing tape removed?
- ◊ Have you cleaned and sanitized the ice maker and bin?
- ◊ Is the mode selector switch set to the ice position?
- ◊ Are the cabinet panels secured?
- ◊ Has the owner been instructed regarding cleaning, maintenance and the manual?
- ◊ Has the owner completed the registration card?
- ◊ Have you left the installation and operation manual?

Initial Start Up

Remove front and right side panels.

Remove all shipping materials from the ice machine including the water plate shipping strap. See the photo.

Install the bin level probe into the ice storage bin. See the illustration.

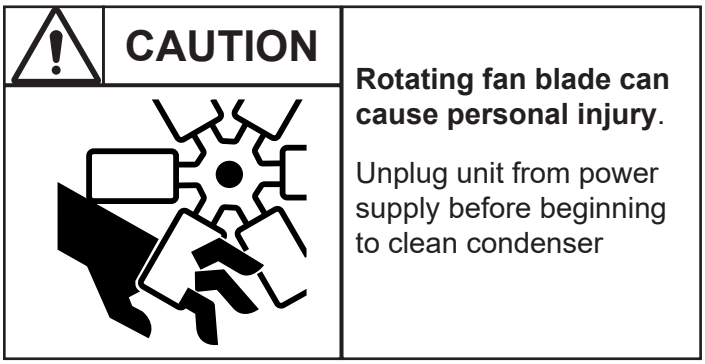


Be sure that the on-off switch is in the “OFF” position and the make ice-clean selector switch is in the “CLEAN” position.

1. Turn on the water supply and the electrical power and check all supply lines for leaks.
2. Move the on-off switch to the “ON” position and observe the water flowing from the distributor tube, filling the water tank. Also observe that the water pump is circulating water through the system. The water fill is complete when the water level in the probe tube reaches the high-level probe. Observe that the water valve is de-energized at this time and there are no water leaks from the hoses or water tank into the drain pan.
3. Pull down on the right side of the water plate, stretching the springs until the actuator motor rotates the cam arms counter-clockwise. Observe that the cam arms continue to turn, opening the water plate fully, dumping the water in the tank. At this point, the cam arm rotation will reverse and close the water plate. The cam arm rotation will stop when the water plate is fully closed and the water fill process will repeat.
4. Move the ice-clean switch to the “ICE” position and observe that the compressor and the fan motor (air cooled only) begin to run. The refrigeration system operation should be checked and adjusted during the first few cycles.
5. Test the bin level control operation by holding ice against the probe. The ice maker should shut off the within 30 seconds of contact between the ice and the probe tube.
6. **All adjustments and Service should be referred to a qualified technician who has the proper Service Manual.**
7. Make sure that the drain pan, ice deflectors and stacking chute (stacked ice machines only) are properly installed. Replace and secure all the cabinet panels.
8. Discard all the ice from the start-up cycles, then clean and sanitize the ice storage bin according to the instructions provided with the bin.

Condenser Cleaning

The air cooled condenser will need regular maintenance. All air used to cool the ice machine flows through it, and eventually it will become restricted. That restriction to air flow reduces ice making capacity.



1. Remove front panel and switch the machine off.
2. Obtain access to the back of the machine. This might require the unit to be pulled out slightly.
3. Brush the surface dirt off the condenser. Do NOT use a tool that could damage the fins of the condenser.
4. Vacuum the back of the condenser and / or blow from the inside to release any dirt. Imbedded grease will require the use of coil cleaner.
5. If the fan blade is also grease covered, it must be cleaned too.
6. Restart the unit and return the panels to their normal positions.

Cleaning Water System

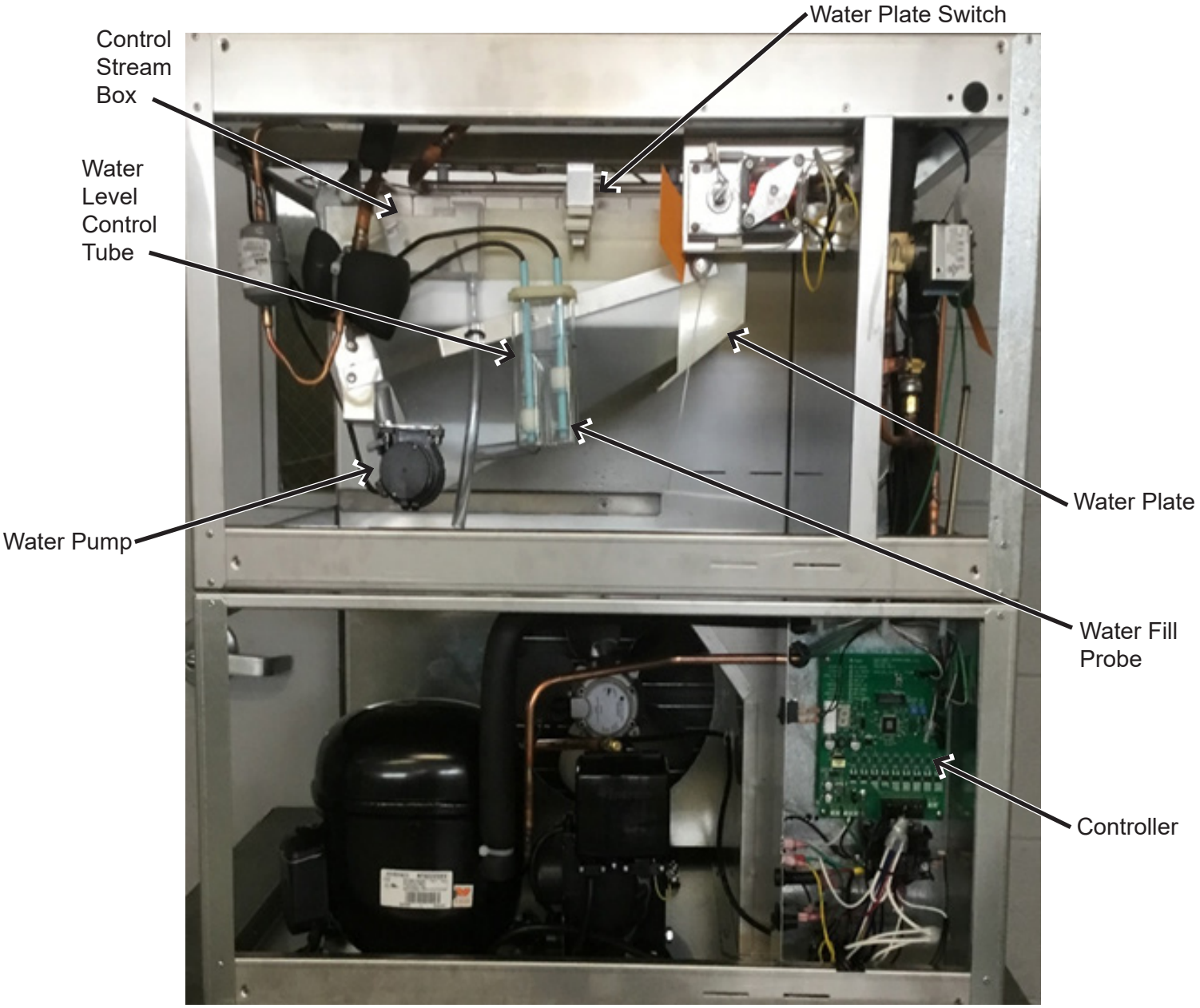
Note: Use a clean plastic bottle fitted with a stopper or cap that has a pouring tube and a vent to facilitate mixing and pouring of the specified solutions.

1. Mix 3 oz. of Scotsman Clear 1 Scale Remover in a gallon of warm water.

⚠CAUTION	Ice machine scale remover contains acids. Acids can cause burns. If concentrated cleaner comes in contact with skin, flush with water. If swallowed, do NOT induce vomiting. Give large amounts of water or milk. Call Physician immediately. Keep out of the reach of children.
	

2. If the ice machine is operating, wait until the ice falls out of the evaporator, then move the Ice-Clean Switch to the “Clean” position.
3. Empty the storage bin and turn off any other ice machines on the same bin.
4. After the water fill is complete, turn off the ice machine.
5. Separate the probe cap from the water level control tube.
6. Hold the water level control tube upright, so that it does not overflow.
7. Pour about half of the cleaning solution into the top of the water level control tube.
8. Return the probes and cap to the water level control tube.
9. Pour the remaining cleaning solution into the control stream box.
10. Turn on the ice machine and allow the solution to circulate for 15 minutes then pull down on the right side of the water plate. This will cause it to open and dump the cleaning solution and then refill with water. Repeat the dump process three times to be sure all the cleaning solution is rinsed out of the machine.
11. Mix a sanitizing solution containing 0.5 ounce (15 ML) 5-1/4% sodium hypochlorite (household bleach or equivalent) and 1 quart (3.8 Liter) clean water.
12. Using the same process as in steps #5-8, pour half of the sanitizing solution into water level probe tube and the other half into the control stream box.
13. Allow the solution to circulate for 15 minutes. Pull down on the right side of the water plate, to cause it to open and dump the sanitizing solution and then refill with water. Repeat this process two times to be sure all the cleaning solution is rinsed out of the machine. If necessary, adjust the water level probes to the proper levels.
14. While the cleaning and sanitizing solutions are circulating, clean and rinse all accessible parts and surfaces of the ice machine with clean towels and . Mix a cleaning solution containing 8 tablespoons (1/2 cup) (96g) baking soda and 1 Gal. (3.8 Liter) of warm water and a sanitizing solution containing 1 teaspoon (5 ML) 5-1/4% sodium hypochlorite and two quarts (1.9 Liter) of clean water.
15. After cleaning has been completed, move the Ice-Clean Switch to the “Ice” position. Check the operation of the machine, particularly the water level and subsequent ice cube formation. Adjust the water level probes if needed.

Component Location



Help

Before calling for service, check here for your issue.

Problem: No ice, the machine is silent.

- Be sure the unit has power.
- Remove the front panel and check that the On/ Off switch is in the On or Ice position.
- The bin probe has triggered a false bin full. Warm it up by holding it, if the machine does not start, call for service.
- There is no water to the machine, restore water supply. If a non-blinking 6 is showing in the code display, push the reset button.
- Fuse on controller may be open. Call for service.

Problem: No ice, the machine is appears to be operating.

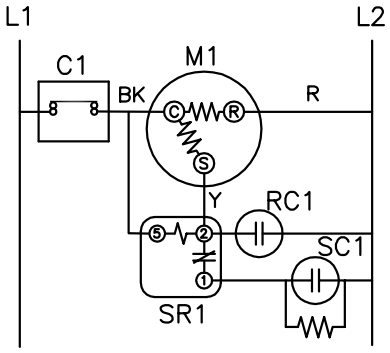
- Check for air flowing in and out off air cooled models. If none, call for service.

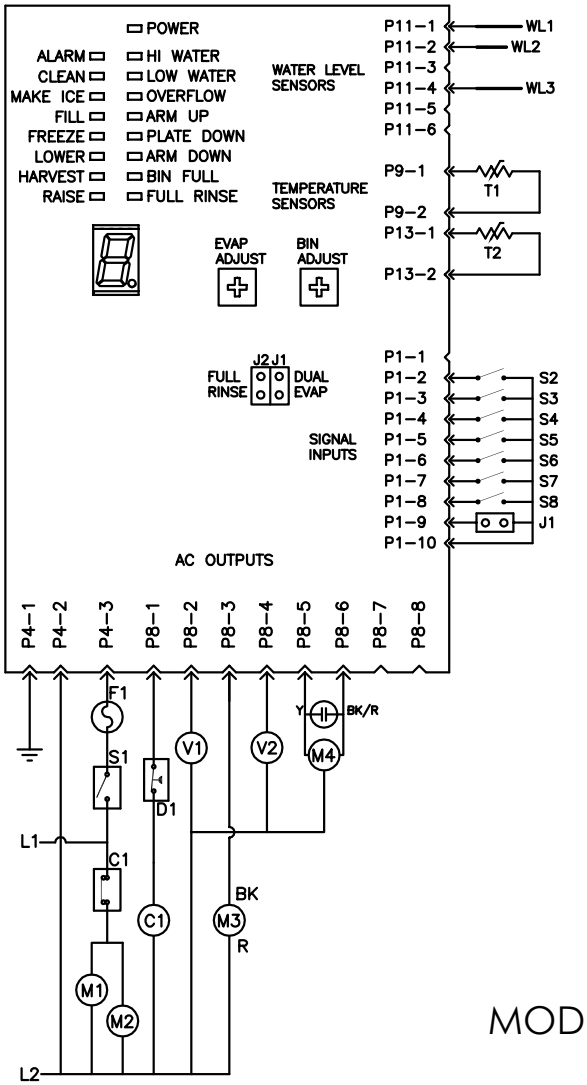
Problem: Ice is either too thick or too thin.

- If there is a one quarter inch diameter dimple in the cube, that is normal. Do nothing.
- The ice size may need to be adjusted by a technician. Call for service.
- The ice size sensor may have failed. Call for service.

Wiring Diagram

ITEM	DESCRIPTION
C1	CONTACTOR
D1	HIGH PRESSURE CUT-OFF
F1	4A FASTBLOW FUSE
M1	COMPRESSOR
M2	CONDENSER FAN MOTOR (AIR COOLED)
M3	WATER PUMP
M4	ACTUATOR MOTOR
PS1	POWER SUPPLY
RC1	RUN CAPACITOR
S1	ON-OFF SWITCH
S2	ARMS UP SWITCH
S3	PLATE UP SWITCH
S4	ARMS DOWN SWITCH
S5	ICE-CLEAN SWITCH
SC1	START CAPACITOR
SR1	START RELAY
T1	EVAPORATOR THERMISTOR
T2	BIN THERMISTOR
V1	WATER VALVE
V2	DEFROST VALVE
V3	LIQUID LINE VALVE
WL1	WATER LEVEL PROBE-REFERENCE
WL2	WATER LEVEL SENSOR-HIGH
WL3	WATER LEVEL SENSOR-LOW





THE ELECTRONIC CONTROL WILL MONITOR FOR THE FOLLOWING CONDITIONS AND PREVENT THE ICE MACHINE FROM OPERATING AS REQUIRED TO PREVENT DAMAGE.

LED 2
WATER PLATE HAS RE-OPENED 13 CONSECUTIVE TIMES WITHOUT STARTING A FREEZE CYCLE.

LED 3
FREEZE CYCLE EXCEEDS 35 MINUTES. FLASHES AFTER 3 CONSECUTIVE 35-MINUTE CYCLES.

LED 4
FREEZE CYCLE SHORTER THAN 5 MINUTES. FLASHES AFTER 3 CONSECUTIVE ATTEMPTS AND CIRCULATES WATER. SOLID AFTER 6 CONSECUTIVE ATTEMPTS.

LED 6
FILL CYCLE EXCEEDS 3 MINUTES 3 CONSECUTIVE TIMES.

LED 7
CAM SWITCH FAULT-BOTH ARM-UP AND ARM-DOWN SWITCHES ARE ENGAGED AT THE SAME TIME.

LED 8
FULL RINSE ENABLED (NO JUMPER ON J2)

LED 9
BIN FULL-BIN PROBE'S TEMPERATURE IS LESS THAN THE BIN ADJUST'S SETPOINT

MODEL BC0530A-1A

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