



Manitowoc®



SM Model Ice Machines

Installation Use and Care Manual

Thank you for selecting a Manitowoc Ice Machine, the dependability leader in ice making equipment and related products. With proper installation, care and maintenance, your new Manitowoc Ice Machine will provide you with many years of reliable and economical performance.

This manual is updated as new information and models are released. Visit our website for the latest manual.
www.manitowocice.com

Part Number 000001590
09/2008

Safety Notices

As you work on this Ice Machine, be sure to pay close attention to the safety notices in this manual. Disregarding the notices may lead to serious injury and/or damage to the ice machine.

Throughout this manual, you will see the following types of safety notices:



Warning

PERSONAL INJURY POTENTIAL

Do not operate equipment that has been misused, abused, neglected, damaged, or altered/modified from that of original manufactured specifications.



Warning

Text in a Warning box alerts you to a potential personal injury situation. Be sure to read the Warning statement before proceeding, and work carefully.



Caution

Text in a Caution box alerts you to a situation in which you could damage the ice machine. Be sure to read the Caution statement before proceeding, and work carefully.

Procedural Notices

As you work on this Ice Machine, be sure to read the procedural notices in this manual. These notices supply helpful information which may assist you as you work.

Throughout this manual, you will see the following types of procedural notices:

Important

Text in an Important box provides you with information that may help you perform a procedure more efficiently. Disregarding this information will not cause damage or injury, but it may slow you down as you work.

NOTE: Text set off as a Note provides you with simple, but useful, extra information about the procedure you are performing.

Read These Before Proceeding:



Caution

Proper installation, care and maintenance are essential for maximum ice production and trouble-free operation of your ice machine.

Read and understand this manual. It contains valuable care and maintenance information. If you encounter problems not covered by this manual, do not proceed, contact Manitowoc Foodservice. We will be happy to provide assistance.

Important

Routine adjustments and maintenance procedures outlined in this manual are not covered by the warranty.

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Section 1 General Information

Model Numbers

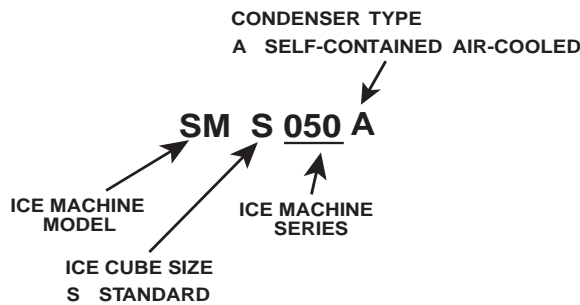
This manual covers the following models:

Self-Contained Air-Cooled
SMS050A

Warning
PERSONAL INJURY POTENTIAL

Do not operate equipment that has been misused, abused, neglected, damaged, or altered/modified from that of original manufactured specifications.

How to Read a Model Number



Accessories

Contact your Manitowoc distributor for these optional accessories:

LEGS

Four inch adjustable legs are available.

DRAIN PUMP

Pumps waste water from ice machine to drain.

MANITOWOC CLEANER AND SANITIZER

Manitowoc Ice Machine Cleaner and Sanitizer are available in convenient 16 oz. (473 ml) bottles. These are the only cleaner and sanitizer approved for use with Manitowoc products.

Cleaner Part Number	Sanitizer Part Number
16 ounce bottle - 000000084	16 ounce bottle - 94-0565-3

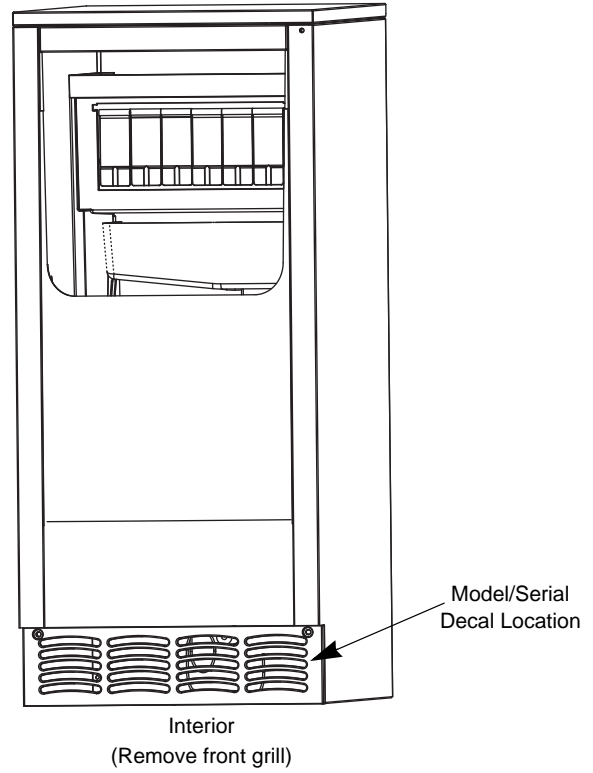
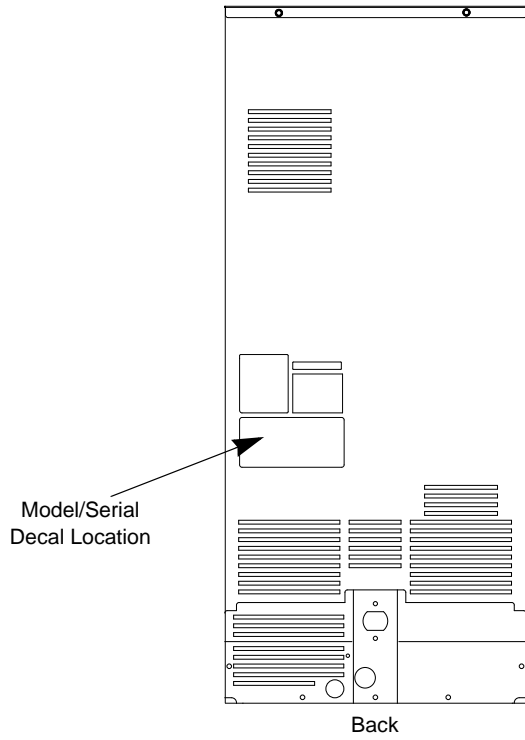
ARCTIC PURE WATER FILTER SYSTEM

Engineered specifically for Manitowoc ice machines, This water filter is an efficient, dependable, and affordable method of inhibiting scale formation, filtering sediment, and removing chlorine taste and odor. The water filter is K00374.

Model/Serial Number Location

These numbers are required when requesting information from your local Manitowoc distributor, or Manitowoc Foodservice.

The model and serial number are listed on the MODEL/SERIAL NUMBER DECAL affixed to the ice machine.



Model/Serial Number Location

Owner Warranty Registration Card

GENERAL

The packet containing this manual also includes warranty information. Warranty coverage begins the day your new ice machine is installed.

Important

Complete and mail the OWNER WARRANTY REGISTRATION CARD as soon as possible to validate the installation date.

If you do not return your OWNER WARRANTY REGISTRATION CARD, Manitowoc will use the date of sale to the Manitowoc Distributor as the first day of warranty coverage for your new ice machine.

Commercial Warranty Coverage

GENERAL

The following Warranty outline is provided for your convenience. For a detailed explanation, read the warranty bond shipped with each product.

Contact your local Manitowoc Distributor, Manitowoc Foodservice or visit our website at www.manitowocice.com if you need further warranty information.

PARTS

Manitowoc warrants the ice machine against defects in materials and workmanship, under normal use and service for three (3) years from the date of original installation.

LABOR

Labor required to repair or replace defective components is covered for three (3) years from the date of original installation.

EXCLUSIONS

The following items are **not** included in the ice machine's warranty coverage:

1. **Normal maintenance, adjustments and cleaning.**
2. Repairs due to **unauthorized modifications** to the ice machine or **use of non-standard parts** without prior written approval from Manitowoc Foodservice.
3. Damage caused by **improper installation** of the ice machine, electrical supply, water supply or drainage, or damage caused by floods, storms, or other acts of God.
4. **Premium labor rates** due to holidays, **overtime**, etc.; travel time; flat rate service call charges; mileage and miscellaneous tools and material charges not listed on the payment schedule. Additional labor charges **resulting from the inaccessibility of equipment** are also excluded.
5. Parts or assemblies subjected to **misuse, abuse, neglect or accidents.**
6. **Damage or problems** caused by installation, cleaning and/or maintenance **procedures inconsistent with the technical instructions provided in this manual.**

AUTHORIZED WARRANTY SERVICE

To comply with the provisions of the warranty, a **refrigeration service company qualified and authorized by a Manitowoc distributor, or a Contracted Service Representative must perform the warranty repair.**

NOTE: If the dealer you purchased the ice machine from is not authorized to perform warranty service, contact your Manitowoc distributor or Manitowoc Foodservice for the name of the nearest authorized service representative.

Service Calls

Normal maintenance, adjustments and cleaning as outlined in this manual are not covered by the warranty. If you have followed the procedures listed on page 5-1 of this manual, and the ice machine still does not perform properly, call your authorized service company.

Residential Ice Machine Limited Warranty

WHAT DOES THIS LIMITED WARRANTY COVER?

Subject to the exclusions and limitations below, Manitowoc Foodservice (“Manitowoc”) warrants to the original consumer that any new ice machine manufactured by Manitowoc (the “Product”) shall be free of defects in material or workmanship for the warranty period outlined below under normal use and maintenance, and upon proper installation and start-up in accordance with the instruction manual supplied with the Product.

HOW LONG DOES THIS LIMITED WARRANTY LAST?

<u>Product Covered</u>	<u>Warranty Period</u>
Ice Machine	Twelve (12) months from the sale date

WHO IS COVERED BY THIS LIMITED WARRANTY?

This limited warranty only applies to the original consumer of the Product and is not transferable.

WHAT ARE MANITOWOC ICE’S OBLIGATIONS UNDER THIS LIMITED WARRANTY?

If a defect arises and Manitowoc receives a valid warranty claim prior to the expiration of the warranty period, Manitowoc shall, at its option: (1) repair the Product at Manitowoc’s cost, including standard straight time labor charges, (2) replace the Product with one that is new or at least as functionally equivalent as the original, or (3) refund the purchase price for the Product. Replacement parts are warranted for 90 days or the balance of the original warranty period, whichever is longer. The foregoing constitutes Manitowoc’s sole obligation and the consumer’s exclusive remedy for any breach of this limited warranty. Manitowoc’s liability under this limited warranty is limited to the purchase price of Product. Additional expenses including, without limitation, service travel time, overtime or premium labor charges, accessing or removing the Product, or shipping are the responsibility of the consumer.

HOW TO OBTAIN WARRANTY SERVICE

To obtain warranty service or information regarding your Product, please contact us at:
Manitowoc Foodservice
2110 So. 26th St.
P.O. Box 1720,
Manitowoc, WI 54221-1720
Telephone: 920-682-0161 Fax: 920-683-7585
www.manitowocice.com

WHAT IS NOT COVERED?

This limited warranty does not cover, and you are solely responsible for the costs of: (1) periodic or routine maintenance, (2) repair or replacement of the Product or parts due to normal wear and tear, (3) defects or damage to the Product or parts resulting from misuse, abuse, neglect, or accidents, (4) defects or damage to the Product or parts resulting from improper or unauthorized alterations, modifications, or changes; and (5) defects or damage to any Product that has not been installed and/or maintained in accordance with the instruction manual or technical instructions provided by Manitowoc. To the extent that warranty exclusions are not permitted under some state laws, these exclusions may not apply to you.

EXCEPT AS STATED IN THE FOLLOWING SENTENCE, THIS LIMITED WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY OF MANITOWOC WITH REGARD TO THE PRODUCT. ALL IMPLIED WARRANTIES ARE STRICTLY LIMITED TO THE DURATION OF THE LIMITED WARRANTY APPLICABLE TO THE PRODUCTS AS STATED ABOVE, INCLUDING BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

IN NO EVENT SHALL MANITOWOC OR ANY OF ITS AFFILIATES BE LIABLE TO THE CONSUMER OR ANY OTHER PERSON FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND (INCLUDING, WITHOUT LIMITATION, LOSS PROFITS, REVENUE OR BUSINESS) ARISING FROM OR IN ANY MANNER CONNECTED WITH THE PRODUCT, ANY BREACH OF THIS LIMITED WARRANTY, OR ANY OTHER CAUSE WHATSOEVER, WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY OF LIABILITY. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

HOW STATE LAW APPLIES

This limited warranty gives you specific legal rights, and you may also have rights that vary from state to state or from one jurisdiction to another.

REGISTRATION CARD

To secure prompt and continuing warranty service, this warranty registration card must be completed and sent to Manitowoc within thirty (30) days from the sale date. Complete the registration card and send it to Manitowoc.

Section 2

Installation Instructions

Installation Prerequisites

- Must have open site (gravity) drain available or purchase optional drain pump (see Water Supply and Drain Requirements).
- Must have a grounded, polarized electrical power supply on a dedicated electrical circuit (only appliance on circuit). If GFCI (ground fault circuit interrupter) is required by your local electrical code, it must be breaker type, not outlet type (see Electrical Service).
- Must have cold water supply line available at Ice Machine (see Water Supply and Drain Requirements).
- Clearance and air temperatures must be met (see Location of Ice Machine).
- If built into a cabinet, ice machine must be removable for yearly cleaning procedure (see Interior Cleaning and Sanitizing in section 3).

General

Call Manitowoc Foodservice at (800) 235-9698 for the name of a local company capable of installation and start-up services.

Warning

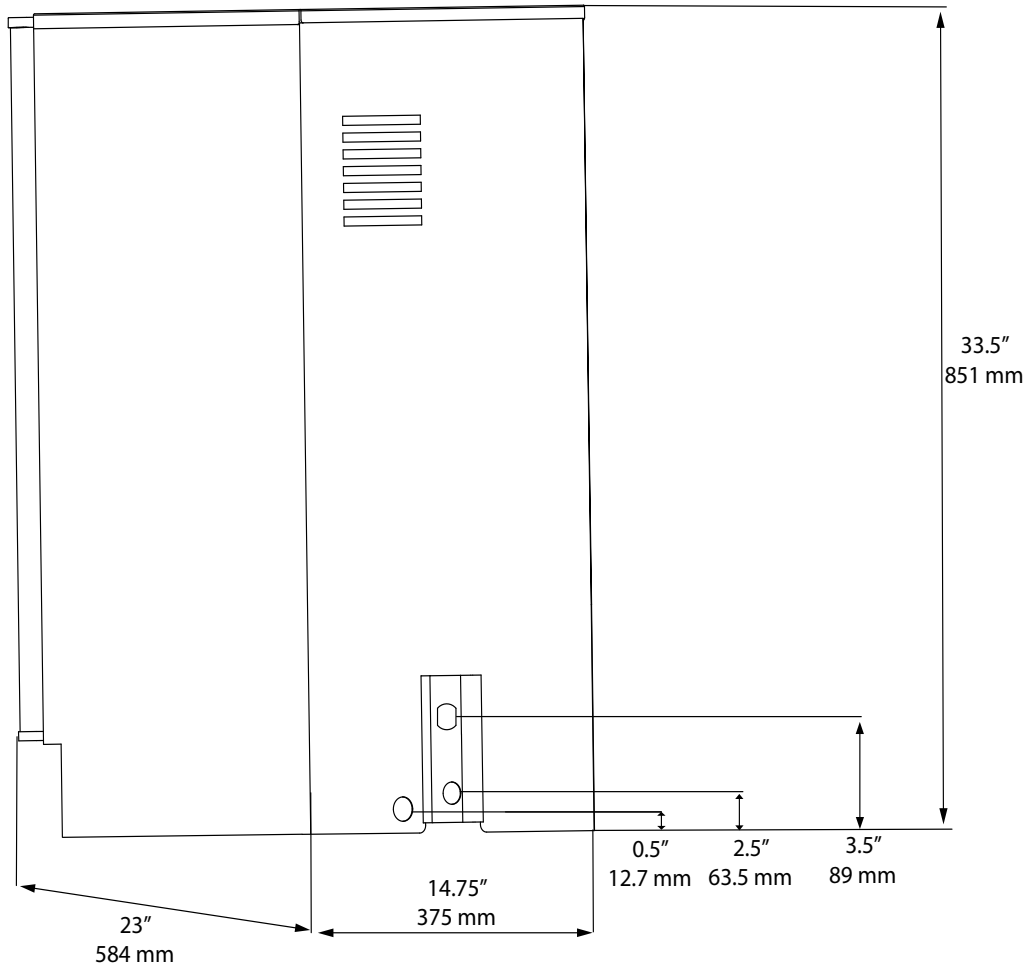
Proper installation requires connection to the water supply, a drain and a dedicated electrical circuit. These connections are the responsibilities of the owner/operator. Improper connections can result in personal injury, substantial property damage and erratic machine operation. If you are unsure of your ability to safely connect the ice machine, consult qualified professionals or contact Manitowoc Foodservice.

Important

Failure to follow these installation guidelines may affect warranty coverage.

Ice Machine Dimensions

AIR-COOLED ICE MACHINES



MINIMUM CUT-OUT FOR BUILT-IN INSTALLATIONS/

Height	Width	Depth

Location of Ice Machine

The location selected for the ice machine must meet the following criteria. If any of these criteria are not met, select another location.

- The ice machine may be built into a cabinet, however the location must allow removal of the ice machine for cleaning and servicing. Service diagnostics are performed from the top of the ice machine. Refer to Minimum Cut-Out for Built-In Installations on page 2-2.
- The location must be free of airborne and other contaminants.
- The air temperature must be at least 50°F (10°C), but must not exceed 110°F (43°C).
- The location must not be near heat-generating equipment.
- The location must not obstruct air flow through the condenser (airflow is in and out the front of the ice machine).
- The location must allow enough clearance for water, drain and electrical connections at the rear of the ice machine.
- The ice machine may be installed outside.

CLEARANCES

Top/Sides	5" (12.7 cm)*
Back	5" (12.7 cm)
Front	24" (60.9 cm)

*The ice machine may be built into a cabinet. There is no minimum clearance requirement for the top or sides of the ice machine. The listed values are recommended for efficient operation and servicing only.

 **Caution**

The ice machine must be protected if it will be subjected to ambient temperatures below 32°F (0°C). Component failure caused by exposure to freezing temperatures is not covered by the warranty. See "Removal from Service/Winterization".

Electrical Service

GENERAL


 **Warning**

All wiring must conform to local, state and national codes.

Prepare electrical circuit before installation of your ice machine. Installation requires a grounded (three-prong), polarized receptacle with a separate fuse/circuit breaker in an electrical service box.

VOLTAGE

The maximum allowable voltage variation is $\pm 10\%$ of the rated voltage at ice machine start-up (when the electrical load is highest).

 **Warning**

The ice machine must be grounded in accordance with national and local electrical codes.

All electrical work, including wire routing and grounding, must conform to local, state and national electrical codes. The following precautions must be observed:

- The ice machine must be grounded.
- A separate fuse/circuit breaker must be provided for each ice machine.
- The maximum allowable voltage variation is $\pm 10\%$ of the rated voltage at ice machine start-up (when the electrical load is highest).
- Check all green ground screws in the control box and verify they are tight before starting the ice machine.
- Manitowoc's recommended minimum wire size is #14 for less than 100' or #12 for more than 100' to 200' (solid copper conductor only). The recommended breaker is 15 amp. Local or state electrical code, length of run or materials used, can increase the minimum wire gauge required. A qualified electrician must determine the proper wire size, although #14 is the minimum size allowed.

Important

Observe correct polarity of incoming line voltage.

Incorrect polarity can lead to erratic ice machine operation and a safety issue.

MINIMUM CIRCUIT AMPACITY

The minimum circuit ampacity is used to help select the wire size of the electrical supply. (Minimum circuit ampacity is not the ice machine's running amp load.)

ELECTRICAL REQUIREMENTS

Refer to Ice Machine Model/Serial Plate for voltage/ amperage specifications.

MAXIMUM BREAKER SIZE & MINIMUM CIRCUIT AMPERAGE CHART

Model	Voltage Phase Cycle	Air-Cooled	
		Maximum Fuse/ Circuit Breaker	Minimum Circuit Amps
SM50A	115/1/60	15	4.1

GFCI REQUIREMENTS

If GFCI (ground fault circuit interrupter) is required by local electrical code, it must be breaker type.

Water Supply and Drain Requirements

WATER SUPPLY

Prepare water supply line and drain before installation of your ice machine. Installation requires a 1/4" ID copper cold water line and compression fitting (not supplied). The ice machine is supplied with a drain hose for gravity draining. The optional drain pump must be purchased if a gravity drain is not possible. Both drain methods require routing to an open site drain. Do not connect directly to drain line as bacteria from drain line may contaminate the ice machine.

The included water filter is designed to inhibit scale formation, filter sediment, and remove chlorine odor and taste. The life expectancy of the water filter is 6 months during normal usage. The ice machine control board will monitor water usage and indicate when replacement is required.

WATER INLET LINES

Follow these guidelines to install water inlet lines:

- Do not connect the ice machine to a hot water supply. Be sure all hot water restrictors installed for other equipment are working. (Check valves on sink faucets, dishwashers, etc.)
- If water pressure exceeds the maximum recommended pressure (80 psi - 55 bar), obtain a water pressure regulator from your Manitowoc distributor.
- Install a water shut-off valve for the ice making water lines.
- Insulate the water inlet line to prevent condensation.


DRAIN CONNECTIONS

Follow these guidelines when installing drain lines to prevent drain water from flowing back into the ice machine and storage bin:

- Drain lines must have a 1.5 inch drop per 5 feet of run (2.5 cm per meter), and must not create traps.
- The floor drain must be large enough to accommodate drainage from all drains.
- Drain pump discharge line must terminate at an open site drain.
- Maximum rise - 12 feet (3.7 m)
- Maximum run - 100 feet (30.5 m)

Approx. Height of Ice Machine Drain	
Standard Installation	3" (76 mm)
Installation with Leg Option	7" (179 mm)

WATER SUPPLY AND DRAIN LINE SIZING/CONNECTIONS

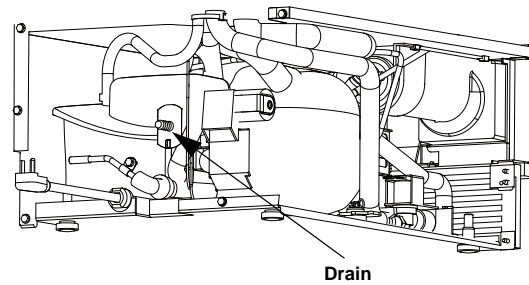
 Caution Plumbing must conform to state and local codes.

Location	Water Temperature	Water Pressure	Ice Machine Fitting	Tubing Size Up to Ice Machine Fitting
Ice Making Water Inlet	35°F (1.6°C) Min. 90°F (32.2°C) Max.	20 psi (137.9 kPA) Min. 80 psi (551.5 kPA) Max.	1/4" (.64 cm) ID Copper Tubing	1/4" (.64 cm) minimum inside diameter
Ice Making Bin Drain	---	---	3/4" (1.9 cm) Hose Barb	3/4" (1.9 cm) minimum inside diameter
Drain Pump	---	---	3/8" (.96 cm) Hose	3/8" (.96 cm) ID minimum

NOTE: If air temperature is less than 60°F (15.5°C), water temperature must be equal to or greater than 50°F (10°C).

Step-by-Step Installation Procedure

1. Prepare the site by following the instructions under Electrical Service and Water Supply and Drain Requirements.
2. Remove ice machine from carton.
3. Inspect for damage.
4. Remove literature/warranty packet and drain hose from inside the ice machine.
5. Adjust leg levelers (or install optional legs). Refer to Leveling the Ice Machine on page 2-6 and Leg Option on page 2-7.
6. Reverse door if desired. See Reversing Door Swing on page 2-8.
7. For a gravity drain, install drain hose to drain on back of ice machine and route to open site drain. For optional drain pump method, see Drain Pump Option on page 2-7. Refer to Water Supply and Drain Requirements on page 2-4.



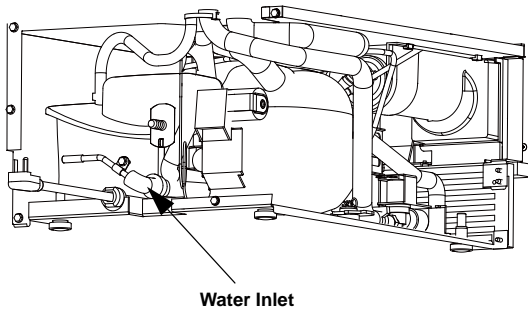
10. Connect electrical plug to grounded (three-prong), polarized outlet. See Electrical Service on page 2-3.

⚠ Warning

The ice machine must be grounded in accordance with national and local electrical codes. Do not use an extension cord or adapter.

⚠ Warning

Improper water supply and drain connections can result in personal injury and substantial property damage. These connections are the responsibility of the owner/operator.



8. Use compression fitting to connect the Water Inlet on back of ice machine to the prepared 1/4" ID cold water line. Refer to Water Supply and Drain Requirements on page 2-4.
9. Open the shut-off valve on the water line.

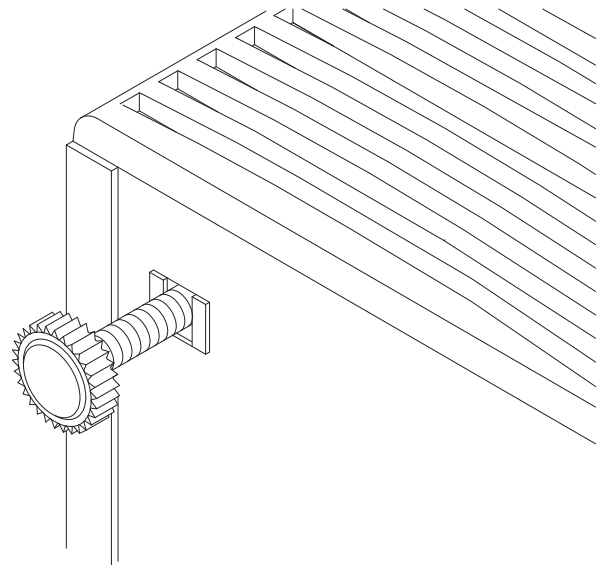
⚠ Caution

Check all visible connections for water leakage.

11. Place ice machine back in position and check leveling again. Make any necessary adjustments.
12. Prepare sanitizer solution and sanitize the ice machine according to In Place Cleaning/Sanitizing Procedure steps 5 and 6 on page 4-2.
13. Put one gallon of cold water into a container that will easily pour under the lifted water shutters. Refer to page 3-1 to identify water shutters. Open shutters and add one gallon of cold water.
14. Press Power button.
15. At initial start-up, ice machine will need approximately 30 minutes to freeze ice and up to 5 minutes to harvest the ice.

Leveling the Ice Machine

1. Adjust the levelers close to desired height.
2. Move the bin into its final position.
3. Level the ice machine to assure that the bin door closes and seals properly. Use a level on top of the bin. Turn the base of each foot as necessary to level the bin.



Adjusting Leg Leveler

Drain Pump Option

Warning

Disconnect power to ice machine before proceeding.

1. Remove top cover screws and slide cover off. Remove back panel screws and lift panel off.
2. Assemble the outlet tube and vent tube to the drain pump.
3. Plug the drain pump's wire assembly into the ice machine's wire assembly. Slide drain pump into cavity.
4. Swap out existing Bin Drain Tube for Bin Drain Tube packaged with drain pump.
5. Route the vent tube and outlet tube.
6. Reassemble ice machine.

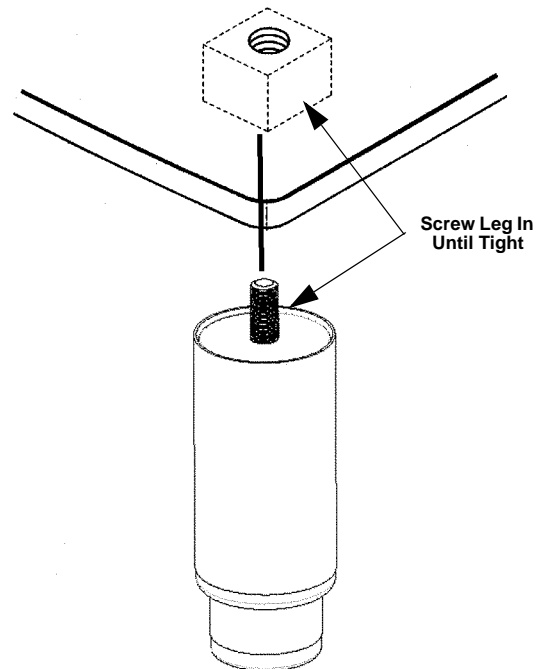
NOTE: See instructions packaged with drain pump for details. Drain pump available for purchase at www.compact-ice.com.

Caution

Upon activation, be sure to check all connections for water leakage.

Leg Option

1. Remove the leg levelers from the bottom of the ice machine.
2. Screw the legs into the bottom of the ice machine.
3. Screw the foot of each leg in as far as possible.
4. Move the ice machine to its final position.
5. Level the ice machine to assure that the bin door closes and seals properly. Use a level on top of the bin. Turn the base of each foot as necessary to level the bin.



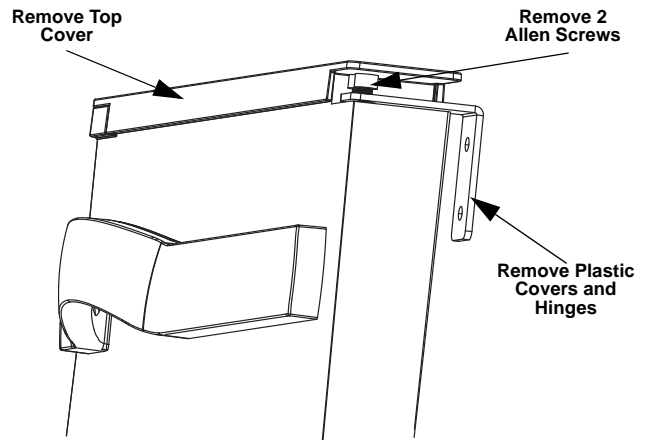
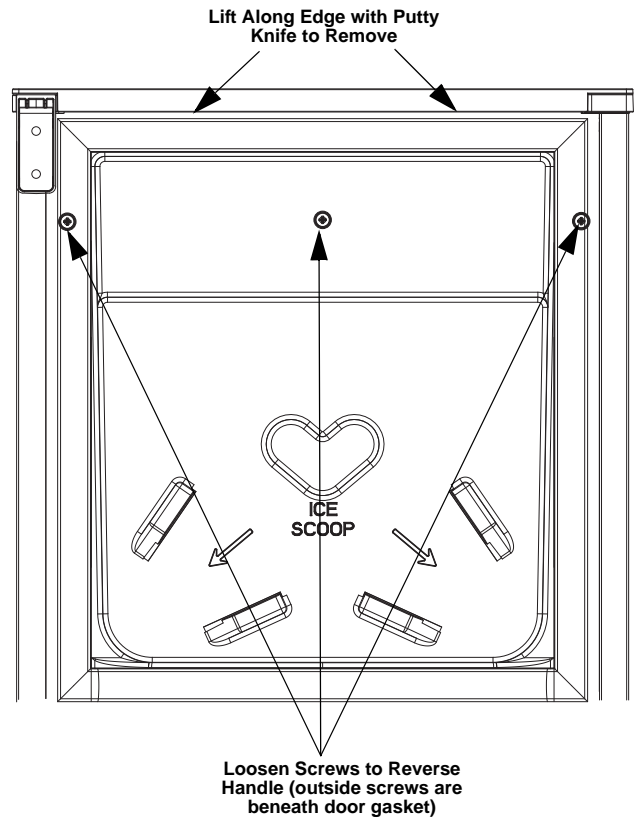
Adjusting Leg

Reversing Door Swing

1. Remove top cover from the door - Use a putty knife to lift the inside edge of the top door cover out and up to disengage from the door panel. Repeat on bottom cover.
2. Release door from top hinge - Remove two allen screws from the top of the door and lift door panel off of two bottom allen screws.

NOTE: There are nylon washers for each bottom allen screw and one plastic bushing for the outside screw, do not misplace these parts they help the door swing smoothly.

3. Remove plastic covers from top and bottom hinges and remove screws securing the hinges. Reinstall screws in holes after hinges are removed.
4. Remove existing screws from cabinet to reinstall hinges on opposite side.
5. Install top and bottom hinges in new location.
6. Install the bottom allen screws, nylon washers, and plastic screw cover (to the outside screw).
7. Before installing the door, there is another plastic bushing for the top outside allen screw, remove from top of the door and reinstall on opposite side.
8. Place door on the two bottom screws.
9. Secure top of door with allen screws removed in step 2.
10. Reinstall top and bottom covers on door. Insert front pins first then snap into place.
11. Reverse door handle - Loosen 3 screws from inside door panel until the handle disengages. Flip door handle 180 degrees and tighten screws.



Installation Check List

- | | | | |
|--------------------------|---|--------------------------|---|
| <input type="checkbox"/> | Is the Ice Machine level? | <input type="checkbox"/> | Is the ice machine drain line routed to an open site drain? |
| <input type="checkbox"/> | Has all of the internal packing been removed? | <input type="checkbox"/> | Are all electrical leads free from contact with refrigeration lines and moving equipment? |
| <input type="checkbox"/> | Have all of the electrical and water connections been made? | <input type="checkbox"/> | Has the owner/operator been instructed regarding maintenance and the use of Manitowoc Cleaner and Sanitizer? |
| <input type="checkbox"/> | Has the supply voltage been tested and checked against the rating on the nameplate? | <input type="checkbox"/> | Has the OWNER WARRANTY REGISTRATION CARD been completed? |
| <input type="checkbox"/> | Is there proper clearance around the ice machine for air circulation? | <input type="checkbox"/> | Has the ice machine and bin been sanitized? |
| <input type="checkbox"/> | Is the ice machine grounded and polarity correct? | <input type="checkbox"/> | When installed is the drain pump functioning correctly energizes, de-energizes and safety switch stops the ice machine? |
| <input type="checkbox"/> | Has the ice machine been installed where ambient temperatures will remain in the range of 50° - 110°F (10° - 43.3°C)? | <input type="checkbox"/> | GFCI Required - Is it a breaker type and not a receptacle type? |
| <input type="checkbox"/> | Has the ice machine been installed where the incoming water temperature will remain in the range of 35° - 90°F (1.6° - 32.2°C)? | <input type="checkbox"/> | Is the ice machine plugged into a properly grounded, polarized receptacle? |
| | | <input type="checkbox"/> | Have the water and drain connections been examined for leaks? |

NOTE: If air temperature is less than 60°F (15.5°C), water temperature must be equal to or greater than 50°F (10°C).

Before Starting the Ice Machine

Sanitize the ice machine.

All Manitowoc ice machines are factory-operated and adjusted before shipment. Normally, new installations do not require any adjustment.

To ensure proper operation, follow the Operational Checks in Section 3 of this manual. Starting the ice machine and completing the Operational Checks are the responsibilities of the owner/operator.

Adjustments and maintenance procedures outlined in this manual are not covered by the warranty.



Warning

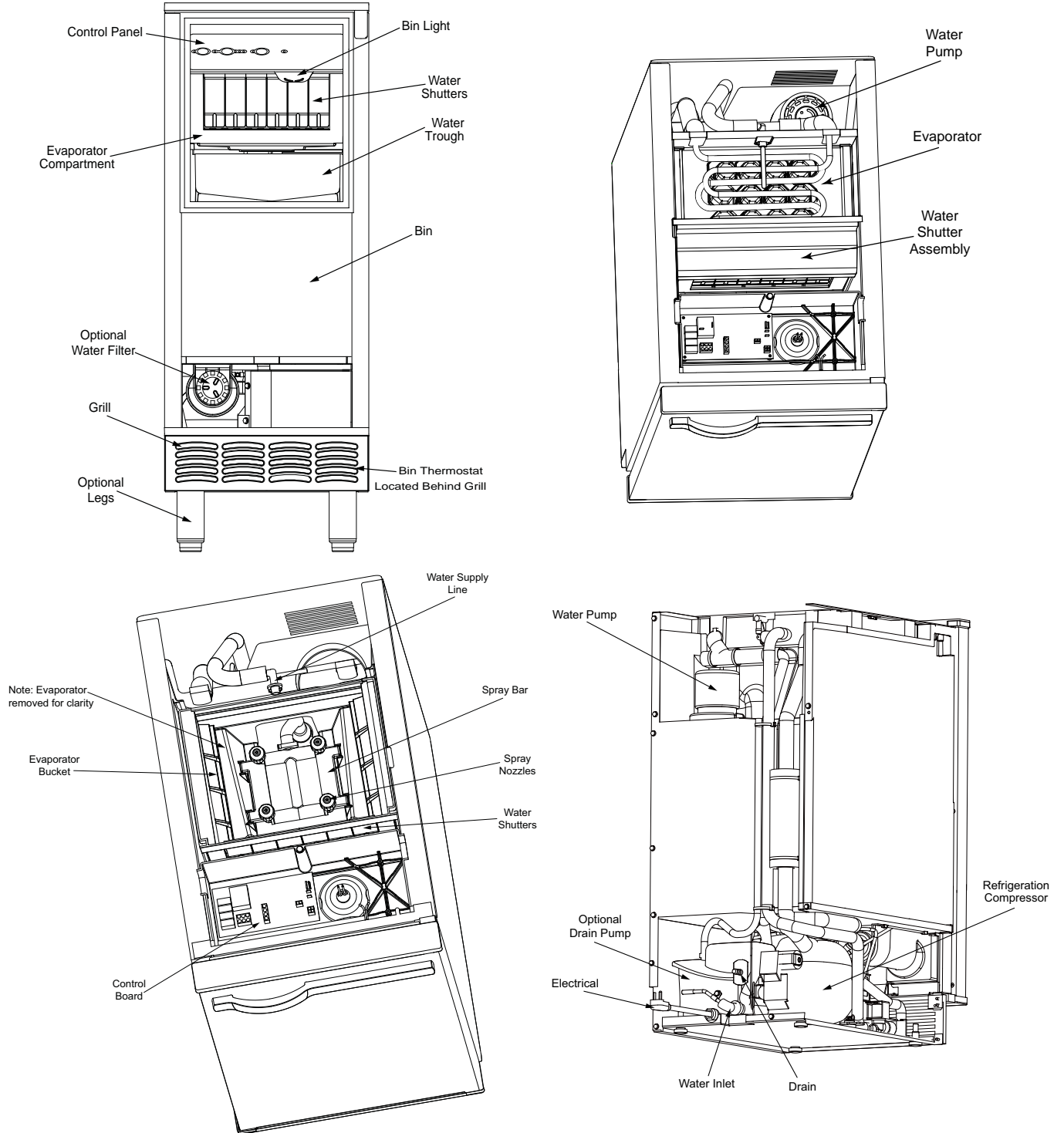
Potential Personal Injury Situation

Do not operate equipment that has been misused, abused, neglected, damaged, or altered/modified from that of original manufactured specifications.

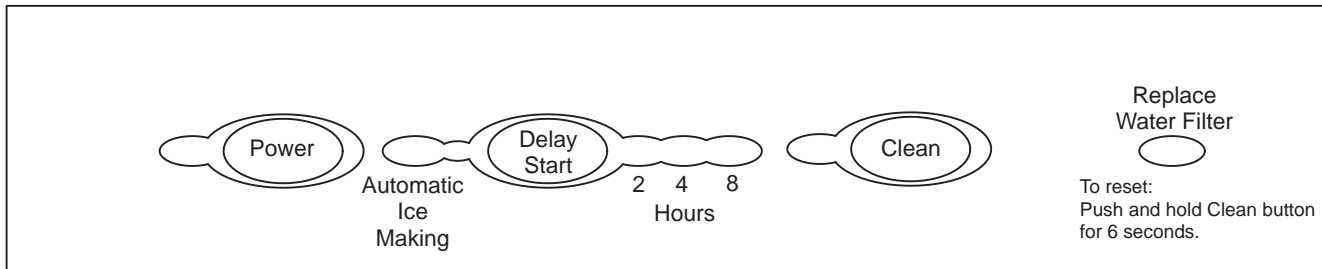
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Section 3 Ice Machine Operation

Component Identification



Control Panel



FUNCTIONS

Power Button (Green)

Pressing the "Power" button once will energize the ice machine and green Power light. Pressing the "Power" button a second time will de-energize the ice machine.

Automatic Ice Making Light (Blue)

This light is energized when the ice machine is in the ice making position. The light is off when the ice machine is in the clean cycle.

Delay Start

Pressing the "Delay Start" button will initiate a delay cycle. The ice machine will not run until the delay time expires.

- Pressing the button once will energize the 2 hour light and initiate a two hour delay period.
- Pressing the button a second time will energize the 4 hour light and initiate a four hour delay period.
- Pressing the button a third time will energize the 8 hour light and initiate an eight hour delay period.
- Pressing the button a fourth time will cancel the delay cycle.

Clean (Green)

Pressing the "Clean" button will initiate a clean cycle and de-energize the "Automatic Ice Making" light. The clean light will flash during the clean cycle to indicate the proper time to add ice machine cleaner or sanitizer.

Replace Filter (Red)

When the ice machine completes 8000 freeze/harvest cycles the light will energize to indicate the filter needs replacement. Depressing the "Clean" button for 6 seconds will reset the counter and de-energize the light.

SAFETY TIMERS

The control board has the following non-adjustable safety timers:

- Initial cycle is 5 minutes longer than subsequent cycles.
- The ice machine is locked into the freeze cycle for 10 minutes (15 minutes initial cycle) before a harvest cycle can be initiated.
- The maximum freeze time is 120 minutes at which time the control board automatically initiates a harvest cycle (step 4).
- The maximum harvest time is 5 minutes at which time the control board automatically start a freeze cycle.

Sequence of Operation

Depending on ambient conditions and cold water supply temperature, the ice making process will take approximately 30 minutes.

1. Initial Start-Up or Start-Up After Automatic Shut-Off — Water Fill

Before the compressor starts, the water inlet valve will energize to purge old water from the system for about 3 minutes.

2. Refrigeration System Start-Up

The compressor starts after the Water Fill cycle and remains on throughout the Freeze and Harvest cycles. The condenser fan motor starts and runs throughout the Freeze cycle.

3. Freeze

The water pump sprays water into the inverted cups. The water freezes layer by layer, until an ice cube forms in each cup. The control system will adjust the length of the Freeze cycle to conditions.

4. Harvest

The water pump shuts off and the water inlet valve starts up to assist harvest and refill the water sump. The evaporator is warmed, allowing the cubes to release from the evaporator and drop into the storage bin. The control system will adjust the length of the Harvest cycle to conditions and regulate whether the condenser fan will run.

At the end of the Harvest cycle, the ice machine will start another Freeze cycle (Step 3).

5. Automatic Shut-Off

The level of ice in the storage bin controls the ice machine shut-off. When the bin is full, ice will contact the bin thermostat bulb holder. The bin thermostat bulb cools, which stops the ice machine. The ice machine remains off until ice no longer contacts the bin thermostat bulb holder and the thermostat bulb warms up. The increase in temperature will restart the ice machine (step 1).

Operational Checks

GENERAL

Manitowoc ice machines are factory-operated and adjusted before shipment. Normally, new installations do not require any adjustment.

To ensure proper operation, always follow the Operational Checks:

- when starting the ice machine for the first time
- after a prolonged out of service period
- after cleaning and sanitizing

NOTE: Routine adjustments and maintenance procedures are not covered by the warranty.

WATER LEVEL

The ice machine maintains the correct water level. The water level is not adjustable.

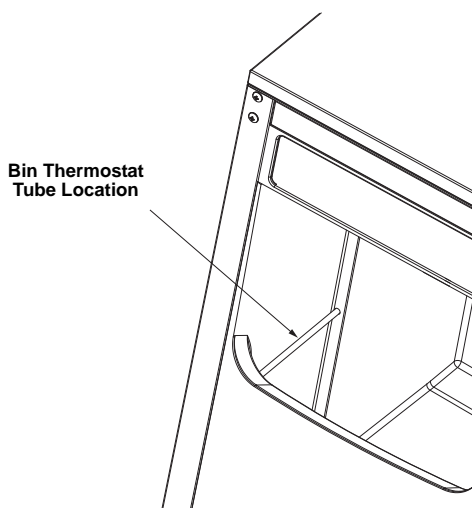
BIN THERMOSTAT ADJUSTMENT

The bin thermostat stops the ice machine when the bin is full. Turn the thermostat to the left to decrease the level of ice in bin or to the right to increase the level of ice in bin.

TESTING AND ADJUSTING THE BIN THERMOSTAT

The bin thermostat stops the ice machine when the bin is full. It is preset for normal ambient temperatures and adjustments are usually not required.

The thermostat is functioning correctly if, when three ice cubes are placed on the thermostat tube for 5 minutes, the ice machine stops. The ice machine should restart 5 minutes after the cubes are removed.



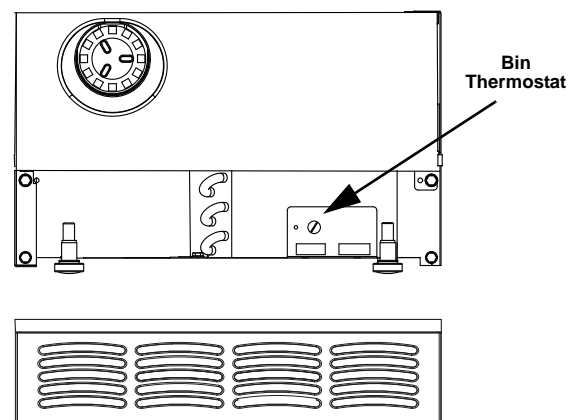
If the ice machine stops before the bin is full or runs after the bin is full, ambient temperatures are probably high or low and the bin thermostat can be adjusted as follows:

Warning

HAZARDOUS MOVING PARTS

Power is supplied to ice machine during this procedure. Avoid contact with the fan blade and the electrical connections.

1. To access the thermostat, remove the two screws attaching the front grill and remove the grill.



2. Turn the thermostat to the left to decrease the level of ice before automatic shut-off. Turn to the right to increase the level of ice before automatic shut-off.
3. Reassemble the plastic panel and grill.

CUBE WEIGHT ADJUSTMENT

The cube weight can be increased from the factory setting by adjusting the finish time.

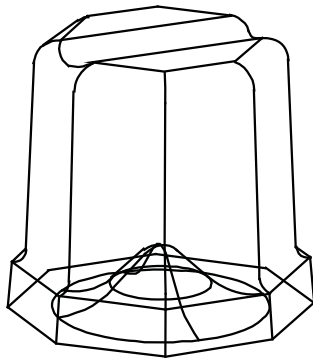
Additional finishing time check:

1. Press and hold the power button for 5 seconds.
2. Count the flashes on the Automatic Ice Making light.
The light will flash once for each additional minute of freeze cycle time.

Adjusting Finishing Time

Adjust in 1 minute increments and allow the ice machine to run several freeze/harvest cycles, then inspect the ice cubes. If a heavier cube weight is desired add another minute of freeze time and repeat the process.

1. Press and hold the power button.
2. Press and release the clean button once for each additional minute of freeze cycle time desired.
3. Five minutes is the maximum additional freeze time that can be added. Pressing the clean button 6 times will reset the finishing time to zero additional minutes.



Cube weight increases or decreases depending on the amount of dimple in the cube

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Section 4 Maintenance

General

You are responsible for maintaining the ice machine in accordance with the instructions in this manual. Maintenance procedures are not covered by the warranty.

 **Warning**

If you do not understand the procedures or the safety precautions that must be followed, call your local Manitowoc service representative to perform the maintenance procedures for you.

We recommend that you perform the following maintenance procedures a minimum of once every six months to ensure reliable, trouble-free operation and maximum ice production.

Basic hygiene and maintenance of your Ice Machine, will increase its reliability, increase performance, and help save on water and power consumption. Ice production will be maintained and unwanted repairs due to maintenance issues will be minimized.

Maintenance	Weekly	Semi Annual	Annual	After prolonged shutdown	At Start-up
Clean cabinet exterior	X			X	X
Sanitize Ice Bin		X		X	X
Clean Evaporator		X	X	X	
Sanitize Evaporator		X	X	X	X
Clean Condenser Coil		X	X	X	
Change the Water Filter		X	X	X	
Check Ice Quality	X		X	X	X

Interior Cleaning and Sanitizing

GENERAL

Perform an In Place Cleaning/Sanitizing procedure monthly and a Cleaning/Sanitizing procedure every 12 months for efficient operation. If the ice machine requires more frequent cleaning and sanitizing, consult a qualified service company to test the water quality and recommend appropriate water treatment. An extremely dirty ice machine must be taken apart for cleaning and sanitizing.

 **Caution**

Damage to the ice machine evaporator caused by incorrect chemical usage is not covered by the warranty. Use Manitowoc Ice Machine Cleaner (part number 000000084) and Sanitizer (part number 94-0565-3) only.

IN PLACE CLEANING/SANITIZING PROCEDURE

This procedure allows monthly in place cleaning of all surfaces that come in contact with the water system. The ice machine requires disassembly and cleaning/sanitizing a minimum of once every 12 months. The quality of your potable water supply may require more frequent cleaning intervals.

Use ice machine cleaner to remove lime scale or other mineral deposits. Ice machine sanitizer disinfects and removes algae and slime.

NOTE: All ice must be removed from the bin.

 **Warning**

Follow all labels and warnings on cleaner and sanitizer bottles.

Step 1 Prepare 4 oz (1/2 cup) of undiluted Manitowoc Ice Machine Cleaner (part number 000000084 only) in a container that will fit easily under the lifted water shutters. Refer to page 3-1 to identify the water shutters.

Model	Amount of Cleaner
SM50	4 oz. (120 ml)

Step 2 Press the clean switch. The ice machine will initiate a 2 minute harvest to remove any remaining ice from the evaporator.

Step 3 Remove all ice from the bin.

Step 4 Wait 3 minutes until the Clean light flashes, then add the prepared Manitowoc Cleaner by lifting the water shutters and pouring directly into the spray area.

Step 5 The ice machine will automatically time out a ten minute cleaning cycle, followed by eight rinse cycles, and stop. The Clean light will turn off to indicate the clean cycle is complete. This entire cycle lasts approximately 30 minutes.

Step 6 Prepare 1/2 oz (1 tablespoon) of undiluted Manitowoc Ice Machine Sanitizer (part number 94-0565-3 only) in a container that will fit into the same area.

Model	Amount of Sanitizer
SM50	1/2 oz. (15 ml)

Step 7 Press the Clean switch. Wait 3 minutes until the Clean light flashes, then add the prepared Manitowoc Sanitizer by lifting the water shutters and pouring directly into the spray area. The ice machine will automatically time out a ten minute sanitizing cycle, followed by eight rinse cycles, and stop. The Clean light will turn off to indicate the sanitizing cycle is complete. This entire cycle lasts approximately 30 minutes.

NOTE: The ice machine will automatically continue from the previous point before the clean cycle was initiated.

- A. If the ice machine was in the ice making cycle, the control board will start ice making again.
- B. If the ice machine was in the off cycle, the control board will turn off.

Step 8 Mix a solution of 1/4 oz. (7.4 ml) of sanitizer and 1/2 gallon (1.9 L) of water. Use a spray bottle, sponge or cloth to sanitize the bin. Rinsing is not required.

CLEANING PROCEDURE

Ice machine cleaner is used to remove lime scale and other mineral deposits. Ice machine sanitizer disinfects and removes algae and slime.

NOTE: All ice must be removed from the bin.

Step 1 Prepare 4 oz (1/2 cup) of undiluted Manitowoc Ice Machine Cleaner (part number 000000084 only) in a container that will fit easily under the lifted water shutters. Refer to page 3-1 to identify the water shutters.


Model	Amount of Cleaner
SM50	4 oz. (120 ml)

Step 2 Press the Clean switch. The ice machine will initiate a 2 minute harvest to remove any remaining ice from the evaporator.


Step 3 Remove all ice from the bin.

Step 4 Wait 3 minutes until the Clean light flashes, then add the prepared Manitowoc Cleaner by lifting the water shutters and pouring directly into the spray area. The ice machine will automatically time out a ten minute cleaning cycle, followed by eight rinse cycles, and stop. The Clean light will turn off to indicate the clean cycle is complete. This entire cycle lasts approximately 30 minutes.

Step 5 When the cleaning process stops, disconnect power and remove all parts as described in Removal of Parts for Cleaning and Sanitizing.

 Warning Follow all labels and warnings on cleaner and sanitizer bottles.
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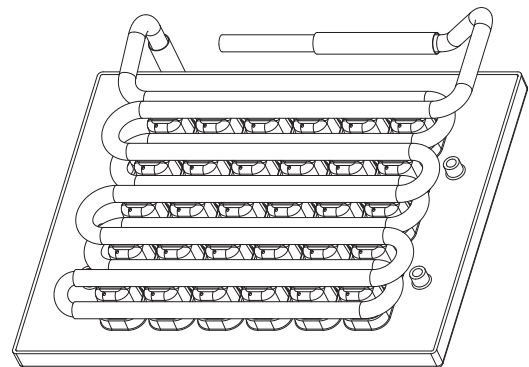
Step 6 Mix 16 oz (2 cups) cleaner with 2 gal of warm water.

 Caution Do not mix Cleaner and Sanitizer solutions together. It is a violation of Federal law to use these solutions in a manner inconsistent with their labeling.
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Model	Cleaner Amount	Water Amount
SM50	16 oz. (473 ml)	2 gal (8L)

Step 7 Take all removed components to a sink for cleaning. Use 1/2 of the cleaner/water mixture to clean all components. The cleaner solution will foam when it contacts lime scale and mineral deposits; once the foaming stops, use a soft-bristle nylon brush, sponge or cloth (NOT a wire brush) to carefully clean the parts. Disassemble the spray bar, remove nozzles and inserts and soak for 5 minutes. For heavily scaled parts, soak in solution for 15 – 20 minutes. Rinse all components with clean water.

Step 8 While components are soaking, use the other 1/2 of the cleaner/water solution and a nylon brush or cloth to clean inside of ice bin. Clean inside of door, door gasket, bin, top of evaporator and evaporator bucket. Rinse all areas thoroughly with clean water.



Clean Top of Evaporator

Step 9 Mix 1 oz (2 tablespoons) sanitizer with 2 gal of warm water.

Model	Sanitizer Amount	Water Amount
SM50	1 oz. (30 ml)	2 gal (8L)

Step 10 Use 1/2 of the sanitizer/water mixture to sanitize all removed components. Use a cloth or sponge to liberally apply the solution to all surfaces of the removed parts or soak the removed parts in the sanitizer/solution. Rinsing is not required.

Step 11 Use the other 1/2 of the sanitizer/water solution and a sponge or cloth to sanitize the inside of ice bin. Sanitize inside of door, door gasket, bin, top of evaporator and evaporator bucket. Rinsing is not required.

Step 12 Replace all removed components.

Step 13 Prepare 1/2 oz (1 tablespoon) of undiluted Manitowoc Sanitizer.

Step 14 Reapply power to the ice machine, then press the Clean switch.


Step 15 Wait 3 minutes until the Clean light flashes, then add the prepared Manitowoc Sanitizer by lifting the water shutters and pouring directly into the spray area. The ice machine will automatically time out a ten minute sanitizing cycle, followed by eight rinse cycles, and stop. The Clean light will turn off to indicate the sanitizing cycle is complete. This entire cycle lasts approximately 30 minutes.

NOTE: The ice machine will automatically continue from the previous point before the clean cycle was initiated.

- A. If the ice machine was in the ice making cycle, the control board will start ice making again.
- B. If the ice machine was in the off cycle, the control board will turn off.


REMOVAL OF PARTS FOR CLEANING/SANITIZING

1. Turn off the electrical and water supply to the ice machine.

 **Warning**

Disconnect electric power to the ice machine before proceeding.

2. Remove all ice from the bin.
3. Remove the components that must be cleaned and sanitized. See the following pages for removal procedures for these parts.


 **Warning**

Wear rubber gloves and safety goggles (and/or face shield) when handling Ice Machine Cleaner or Sanitizer.


4. Soak the removed part(s) in a properly mixed solution of cleaner.

Solution Type	Water	Mixed With
Cleaner	1 gal. (4 l)	8 oz (240 ml) cleaner
Sanitizer	2 gal. (8 l)	1 oz (30 ml) sanitizer

5. The cleaner will foam; once the foaming stops use a soft-bristle nylon brush, sponge or cloth (NOT a wire brush) to carefully clean the parts.

 **Caution**

Do not mix Cleaner and Sanitizer solutions together. It is a violation of Federal law to use these solutions in a manner inconsistent with their labeling.

 **Caution**

Do not immerse the water pump motor in the cleaning or sanitizing solution.

6. Thoroughly rinse all the parts with clear water.
7. Soak the removed parts in a properly mixed solution of sanitizer for 5 minutes.
8. Use a soft-bristle nylon brush, sponge or cloth (NOT a wire brush) to carefully sanitize the parts.
9. Use the sanitizing solution and a sponge or cloth to sanitize (wipe) the interior of the ice machine and bin.
10. Rinsing is not required when using Manitowoc Sanitizer.
11. Install the removed parts.
12. Turn on the water and electrical supply.

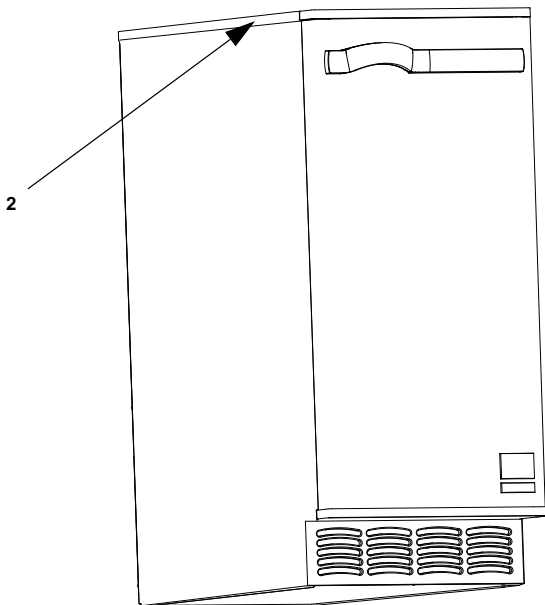
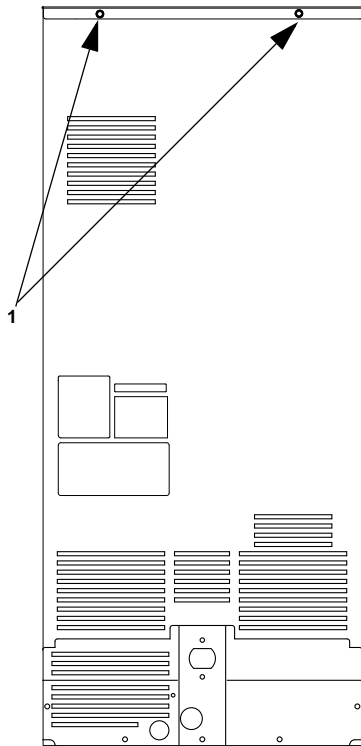
Top Cover

1. Remove two back screws.

Warning

Disconnect the electrical power to the ice machine at the electrical disconnect before proceeding.

2. Slide back and lift cover off.



Water Shutters

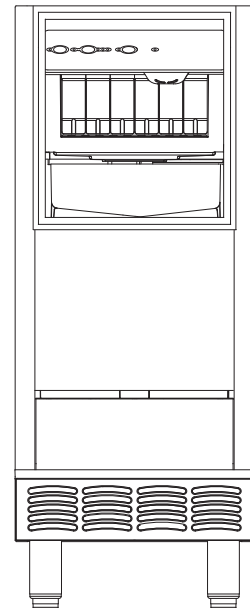
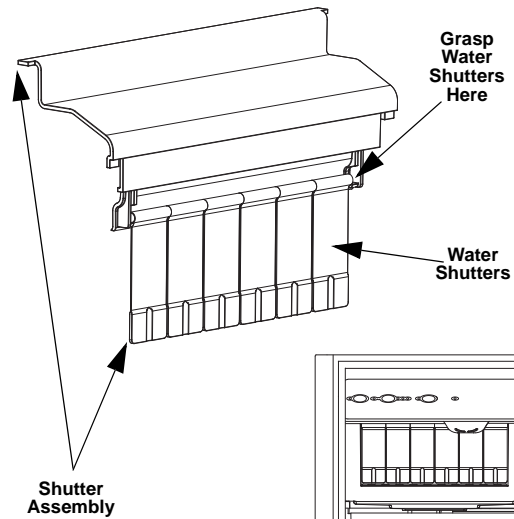
The water shutter is designed to keep the spraying water from escaping the evaporator compartment.

To remove just the water shutters:

1. Grasp one end of the water shutter and lift up.
2. Pivot water shutter and disengage remaining end.
3. To re-install into ice machine, grasp one end of the water shutters, install one end, pivot the opposite end and pull down into position. Make sure tabs are secure in grooves.

To remove water shutter assembly:

1. Slide evaporator bucket forward 1/2" (13 mm).
2. Lift shutter assembly straight up.



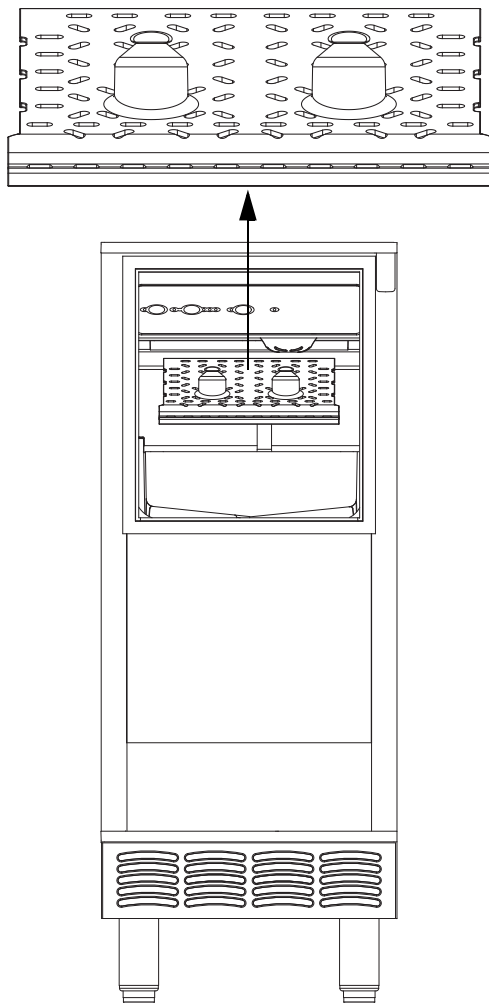
Warning

Removing the water shutters while the water pump is running will allow water to spray from ice machine. Disconnect the electrical power to the ice machine at the electric service switch box and turn off the water supply.

Ice Chute

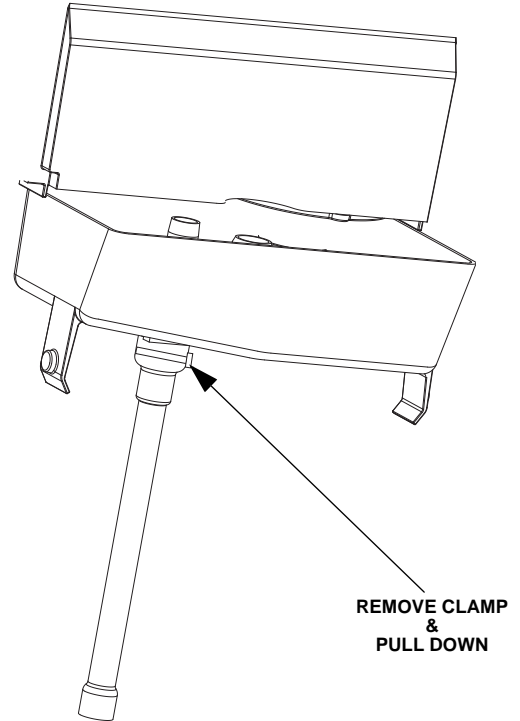
The ice chute is positioned over the spray nozzles and allows the ice to easily fall into the bin. It must be firmly positioned over the spray bar, with the front edge inside the water trough. Spray nozzles must be align with the spray holes or spray water will fall into the bin.

1. Grab protruding spray hole on one end and lift up and remove.
2. To re-install ice chute, grasp protruding spray hole and position over Water Distribution Assembly. Make sure rear supports are over spray bar, and front edge is inside of water trough.



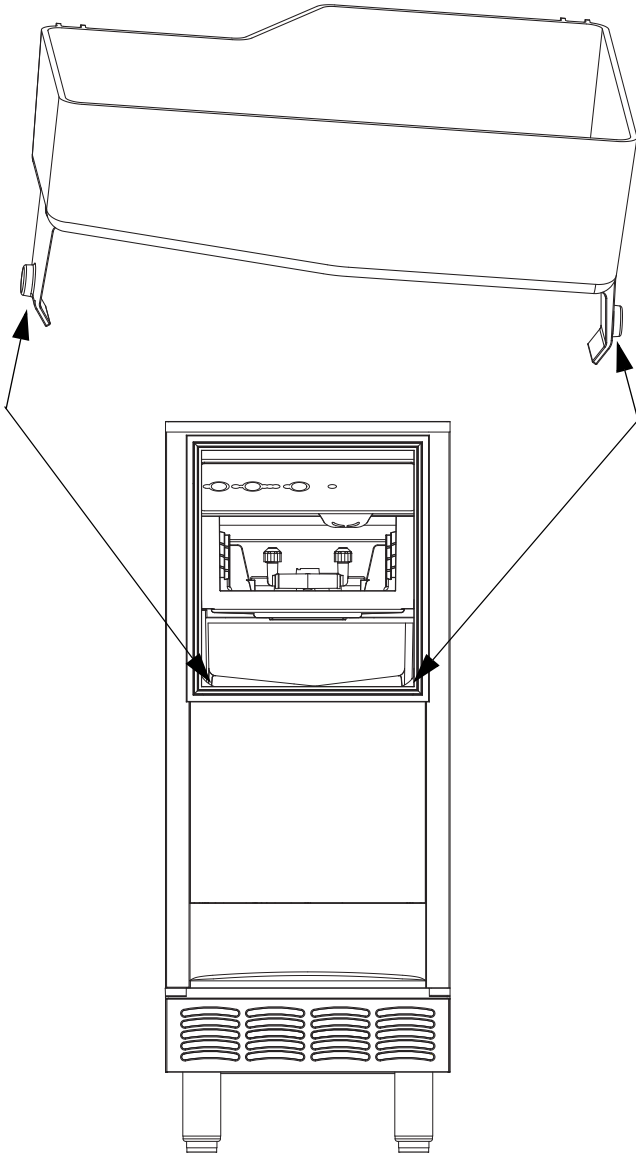
Sump Drain Overflow Tube

1. Remove clamp.
2. Pull down to remove overflow tube and tubing as an assembly. The sump trough water will drain into the bin.
3. Remove overflow tube from vinyl tubing by pulling.



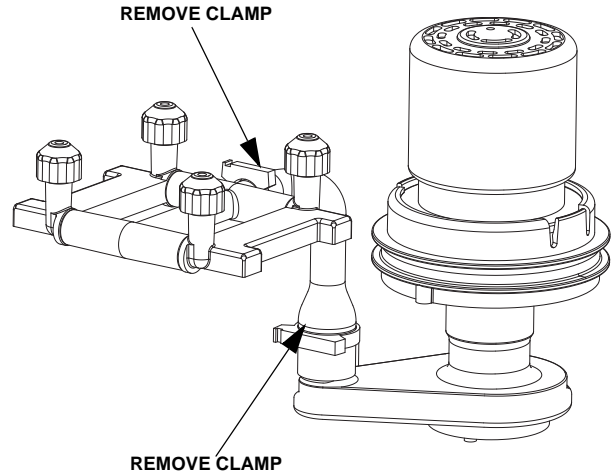
Water Trough

1. Depress tabs on right and left side of the water trough.
2. Allow front of water trough to drop as you pull forward to disengage the rear pins.

**Water Trough Removal****Spray Bar, Water Pump and Hose****⚠ Warning**

Disconnect the electric power to the ice machine at the electric service switch box and turn off the water supply before proceeding.

1. Remove spray bar clamp and spray bar.
2. Grasp pump and pull straight down until water pump disengages and electrical connector is visible.
3. Disconnect the electrical connector.
4. Remove the water pump from ice machine.
5. Remove clamp from hose to remove from pump.
6. Do not soak the water pump in cleaner or sanitizer. Wipe the pump and ice machine base clean.

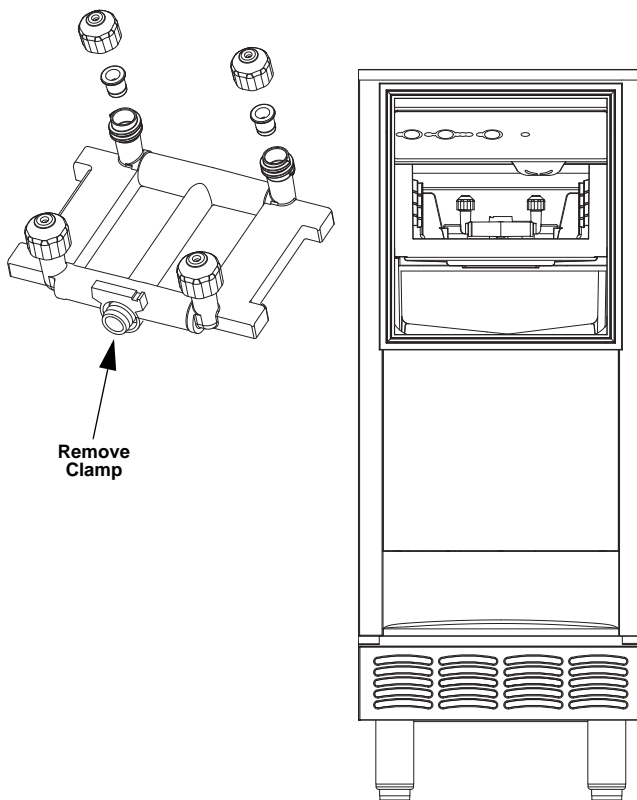


Spray Bar Disassembly

The spray bar supplies water to the individual ice-making cups. Water from the water pump sprays through the nozzles, located on the upper portion of the tubes.

1. Grasp one end of the spray bar, lift up and remove from seat formed in evaporator bucket.
2. Remove clamp on water inlet tubing by grasping both ears on clip and separating.
3. Apply food grade lubricant to ease re-assembly of spray bar components when necessary.
4. To re-install spray bar, position water inlet tubing on inlet ports, and squeeze clips until tight.
5. Reposition assembly on water trough seat.

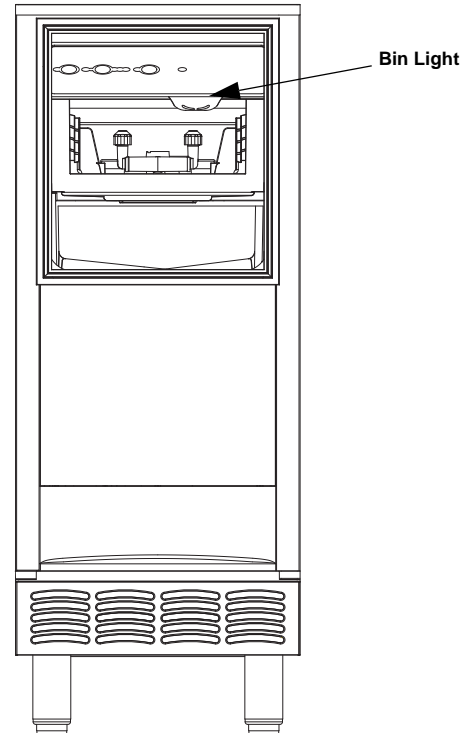
Nozzles and inserts can be removed for cleaning by unscrewing nozzles. Inserts are located inside the spray bar ports. The spray bar also disassembles for easy cleaning.



Spray Bar Removal

Bin Light

If the ice machine is shut down for a long period of time the bin light cover must be cleaned and sanitized. The light is provided for your convenience. If you experience operational problems with the light a replacement appliance bulb can be obtained from your local hardware store.

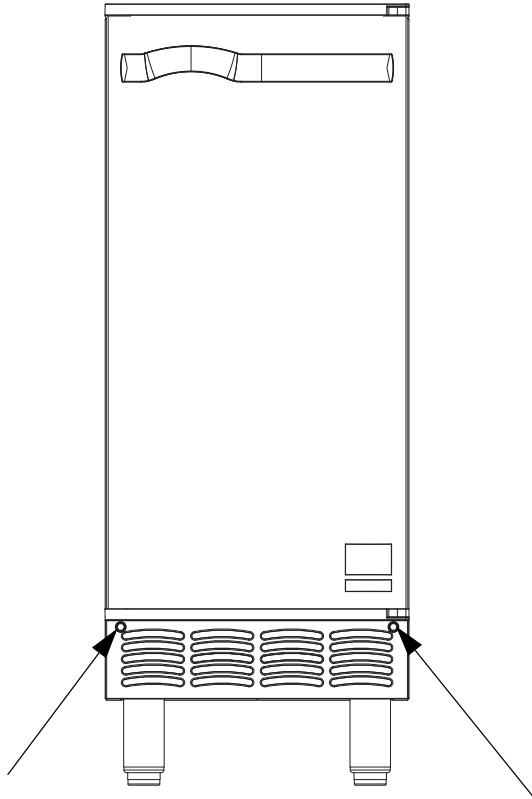


Front Grill

Warning

Disconnect the electric power to the ice machine at the electric service switch box and turn off the water supply before proceeding.

1. Remove two screws.
2. Tilt top forward and lift.

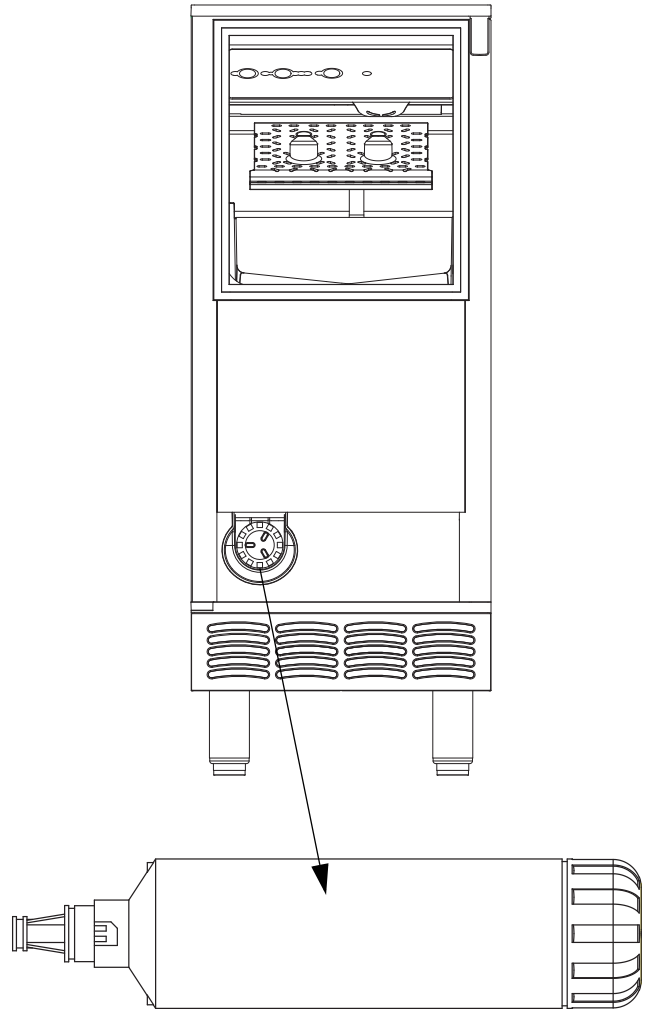


Front Grill Removal

Water Filter

To replace the water filter incoming water does not need to be turned off.

1. Turn the filter 1/4 turn counter clockwise and it will pop out.
2. Reverse the process to re-install.



Water Filter Replacement

Exterior Cleaning

Clean the area around the ice machine as often as necessary to maintain cleanliness and efficient operation. Use cleaners designed for use with stainless steel products.

Sponge any dust and dirt off the outside of the ice machine with mild soap and water. Wipe dry with a clean, soft cloth.

Heavy stains should be removed with stainless steel wool. Never use plain steel wool or abrasive pads. They will scratch the panels.

Cleaning the Condenser

GENERAL

Warning

Disconnect electric power to the ice machine at the electric service switches before cleaning the condenser.

A dirty condenser restricts airflow, resulting in excessively high operating temperatures. This reduces ice production and shortens component life. Clean the condenser at least every six months. Follow the steps below.

1. Remove Front Grill by removing two screws. Clean Grill openings before replacing.
2. Clean the outside of the condenser with a soft brush or a vacuum with a brush attachment. Clean from top to bottom, not side to side. Be careful not to bend the condenser fins.
3. Shine a flashlight through the condenser to check for dirt between the fins. If dirt remains:
 - A. Compressed air can be blown through the condenser fins. This procedure will raise considerable dust and is best performed outside. Be careful not to bend the fan blades.
 - B. If dirt or grease remains between the fins or the condenser fins are bent or flattened, consult your service representative.

Removal from Service/ Long Term Storage/ Winterization

GENERAL

Special precautions must be taken if the ice machine is to be removed from service for an extended period of time or exposed to ambient temperatures of 32°F (0°C) or below.

Caution

If water is allowed to remain in the ice machine in freezing temperatures, severe damage to some components could result. Damage of this nature is not covered by the warranty.

Follow the procedure below.

SELF-CONTAINED AIR-COOLED ICE MACHINES

1. Perform a cleaning and sanitizing procedure to prevent mildew growth.
2. Disconnect the electric power at the circuit breaker or the electric service switch.
3. Turn off the water supply.
4. Remove the water from the water trough.
5. Disconnect and drain the incoming ice-making water line at the rear of the ice machine.
6. Disconnect vinyl hose from water pump and allow to drain.
7. Make sure water is not trapped in any of the water or drain lines. Compressed air can be used to blow out the lines.
8. Use a spray bottle and a solution of sanitizer/water (0.50 oz/ 1 gal) and spray all interior surfaces. **Do not rinse**, allow to air dry.
9. Block the door partially open to provide air exchange and prevent mildew growth.

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Section 5 Before Calling For Service

Checklist

If a problem arises during operation of your ice machine, follow the checklist below before calling for service. Routine adjustments and maintenance procedures are not covered by the warranty.

Problem	Possible Cause	To Correct
Ice machine will not run	No electrical power to the ice machine	Replace the fuse/reset the breaker/turn on the main switch or plug in ice machine.
	Power switch has not been depressed	Refer to section 3 and energize the ice machine
	Bin thermostat incorrectly adjusted	Adjust bin thermostat, refer to section 3
	Drain pump safety switch is open	Verify line is not kinked or crimped then call for service
Ice machine runs and no ice is produced	No water to ice machine	Correct water supply
	Incorrect incoming water pressure	Water pressure must be 20-80 psi (1.4 bar - 5.5 bar)
	Spray nozzles blocked with mineral buildup	Clean and sanitize the ice machine, refer to section 4
	Ambient temperature is too high or low	Ambient temperature must be between 50° F and 110°F (10°C and 43 °C)
Freeze cycle is long - Low ice production	Water temperature is too high	Connect to a cold water supply, verify check valves in faucets and other equipment are functioning correctly
	Dirty condenser	Clean condenser see section 4
	High air temperature entering condenser	Air temperature must not exceed 110°F (43°C)
	Water inlet valve filter screen is dirty	Remove the water inlet valve and clean the filter screen (See Section 4)
	Water inlet valve stuck open or leaking	Turn off ice machine, if water continues to enter ice machine the water inlet valve must be replaced - call for service
	Water inlet valve is not working	Water inlet valve must be replaced, call for service
	Refrigeration problem	Call for service
Ice quality is poor - cubes are shallow, incomplete or white	Ice machine is dirty	Clean and sanitize the ice machine, see section 4
	Water filtration is poor	Replace the filter
	Water softener is working improperly (if applicable)	Repair the water softener
	Poor incoming water quality	Contact a qualified service company to test the quality of the incoming water and make appropriate filter recommendations
	Water inlet valve filter screen is dirty	Remove the water inlet valve and clean the filter screen (See Section 4)

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