

SM Model Ice Machines

Installation, Operation and Maintenance Manual



Original Document

 **Caution**

Read this instruction before operating this equipment.

Safety Notices

Safety Notices

Read these precautions to prevent personal injury:

- Read this manual thoroughly before operating, installing or performing maintenance on the equipment. Failure to follow instructions in this manual can cause property damage, injury or death.
- Routine adjustments and maintenance procedures outlined in this manual are not covered by the warranty.
- Proper installation, care and maintenance are essential for maximum performance and trouble-free operation of your equipment.
Visit our website www.manitowocice.com for manual updates, translations, or contact information for service agents in your area.
- This equipment contains high voltage electricity and refrigerant charge. Installation and repairs are to be performed by properly trained technicians aware of the dangers of dealing with high voltage electricity and refrigerant under pressure. The technician must also be certified in proper refrigerant handling and servicing procedures. All lockout and tag out procedures must be followed when working on this equipment.
- This equipment is intended for indoor use only. Do not install or operate this equipment in outdoor areas.

DEFINITIONS

DANGER

Indicates a hazardous situation that, if not avoided, will result in death or serious injury. This applies to the most extreme situations.

Warning

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

Caution

Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

Notice

Indicates information considered important, but not hazard-related (e.g. messages relating to property damage).

NOTE: Indicates useful, extra information about the procedure you are performing.

Warning

Follow these precautions to prevent personal injury during installation of this equipment:

- Installation must comply with all applicable equipment fire and health codes with the authority having jurisdiction.
- To avoid instability the installation area must be capable of supporting the combined weight of the equipment and product. Additionally the equipment must be level side to side and front to back.
- ice machine, contact the bin manufacturer to assure their ice deflector is compatible.
- Before lifting and installing, use appropriate safety equipment during installation and servicing. Two or more people are required to lift or move this appliance to prevent tipping and/or injury.
- Do not damage the refrigeration circuit when installing, maintaining or servicing the unit.
- Connect to a potable water supply only.

Warning

Follow these electrical requirements during installation of this equipment.

- All field wiring must conform to all applicable codes of the authority having jurisdiction. It is the responsibility of the end user to provide the disconnect means to satisfy local codes. Refer to rating plate for proper voltage.
- This appliance must be grounded.
- This equipment must be positioned so that the plug is accessible unless other means for disconnection from the power supply (e.g., circuit breaker or disconnect switch) is provided.
- Check all wiring connections, including factory terminals, before operation. Connections can become loose during shipment and installation.

Warning

This product is hermetically sealed and contains fluorinated greenhouse gas R404A.

⚠ Warning

Follow these precautions to prevent personal injury while operating or maintaining this equipment:

- Read this manual thoroughly before operating, installing or performing maintenance on the equipment. Failure to follow instructions in this manual can cause property damage, injury or death.
- Crush/Pinch Hazard. Keep hands clear of moving components. Components can move without warning unless power is disconnected and all potential energy is removed.
- Moisture collecting on the floor will create a slippery surface. Clean up any water on the floor immediately to prevent a slip hazard.
- Objects placed or dropped in the bin can affect human health and safety. Locate and remove any objects immediately.
- Never use sharp objects or tools to remove ice or frost. Do not use mechanical devices or other means to accelerate the defrosting process.
- When using cleaning fluids or chemicals, rubber gloves and eye protection (and/or face shield) must be worn.

⚠ Warning

Follow these refrigeration system requirements during installation, use or repair of this equipment.

- This equipment contains high voltage electricity and refrigerant charge. Installation and repairs are to be performed by properly trained technicians aware of the dangers of dealing with high voltage electricity and refrigerant under pressure. The technician must also be certified in proper refrigerant handling and servicing procedures. All lockout and tag out procedures must be followed when working on this equipment.
- Do not damage the refrigeration circuit when installing, maintaining or servicing the unit. Never use sharp objects or tools to remove ice or frost. Do not use mechanical devices or other means to accelerate the defrosting process.
- All replacement parts must be like components obtained from the equipment manufacturers authorized replacement part network.

⚠ DANGER

Follow these precautions to prevent personal injury during use and maintenance of this equipment:

- It is the responsibility of the equipment owner to perform a Personal Protective Equipment Hazard Assessment to ensure adequate protection during maintenance procedures.
- Do Not Store Or Use Gasoline Or Other Flammable Vapors Or Liquids In The Vicinity Of This Or Any Other Appliance. Never use flammable oil soaked cloths or combustible cleaning solutions for cleaning.
- All covers and access panels must be in place and properly secured when operating this equipment.
- Risk of fire/shock. All minimum clearances must be maintained. Do not obstruct vents or openings.
- Failure to disconnect power at the main power supply disconnect could result in serious injury or death. The power switch DOES NOT disconnect all incoming power.
- All utility connections and fixtures must be maintained in accordance with the authority having jurisdiction.
- Turn off and lockout all utilities (gas, electric, water) according to approved practices during maintenance or servicing.
- Units with two power cords must be plugged into individual branch circuits. During movement, cleaning or repair it is necessary to unplug both power cords.
- Never use a high-pressure water jet for cleaning on the interior or exterior of this unit. Do not use power cleaning equipment, steel wool, scrapers or wire brushes on stainless steel or painted surfaces.
- Two or more people are required to move this equipment to prevent tipping.
- The on-site supervisor is responsible for ensuring that operators are made aware of the inherent dangers of operating this equipment.
- Do not operate any appliance with a damaged cord or plug. All repairs must be performed by a qualified service company.

⚠ DANGER

Do not operate equipment that has been misused, abused, neglected, damaged, or altered/modified from that of original manufactured specifications. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision concerning use of the appliance by a person responsible for their safety. Do not allow children to play with, clean or maintain this appliance without proper supervision.

Table of Contents

Safety Notices

Safety Notices	3
Definitions	3

Section 1

General Information

Model Numbers	7
How to Read a Model Number	7
Accessories.....	7
Model/Serial Number Location	7
Warranty	8
Warranty Registration	8

Section 2

Installation

Installation Prerequisites	9
Ice Machine Dimensions	9
Minimum Cut-Out For Built-In Installations	9
Ice Machine Location	10
Clearances	10
Leveling the Ice machine	10
Leg Option	10
Electrical Service	11
Voltage	11
Minimum Circuit Ampacity	11
Electric Requirements	11
Water Supply and Drain Requirements	12
Water Supply.....	12
Water Inlet Lines	12
Drain Connections.....	12
Water Supply And Drain Line Sizing/Connections.....	12
Step-by-Step Installation Procedure	13
Leveling The Ice Machine.....	14
Leg Option.....	14
Drain Pump Option	14
Reversing Door Swing.....	15
Installation Checklist	16

**Section 3
Operation**

Component Identification..... 17
Control Panel..... 18
 Functions..... 18
 Safety Timers..... 18
Sequence of Operation 19
Operational Checks 19
 Water Level 19
 Bin Thermostat Adjustment 19
 Testing And Adjusting The Bin Thermostat 20
Cube Weight Adjustment..... 20
 Additional Finishing Time Check: 20
 Adjusting Finishing Time 20

**Section 4
Maintenance**

Interior Cleaning and Sanitizing 21
 General..... 21
Cleaning and Sanitizing Procedures 21
In Place Cleaning/Sanitizing Procedure..... 22
Cleaning Procedure 23
Removal of Parts for Cleaning/Sanitizing 24
 Top Cover 24
 Water Shutters 25
 Ice chute..... 25
 Sump Drain Overflow tube..... 26
 Water Trough 26
 Spray Bar, Water Pump and Hose..... 26
 Spray Bar Disassembly 26
 Bin Light 27
 Front Grill 27
 Water Filter 27
 Ice Machine Inspection 28
 Exterior Cleaning 28
 Cleaning the Condenser 28
Removal from Service/Long Term Storage/Winterization..... 28

**Section 5
Troubleshooting**

Checklist..... 29
Safety Limit Feature..... 30

Section 1

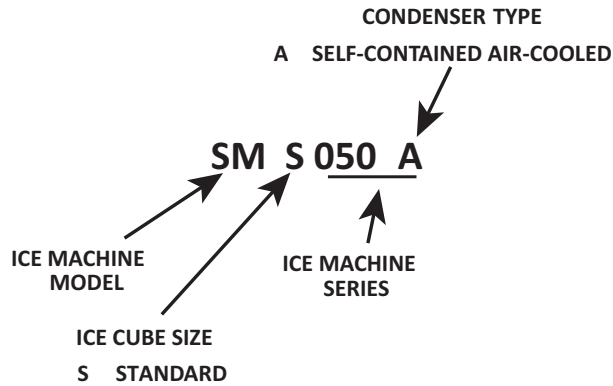
General Information

Model Numbers

This manual covers the following models:

Self Contained Air-Cooled
SMS050A

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.

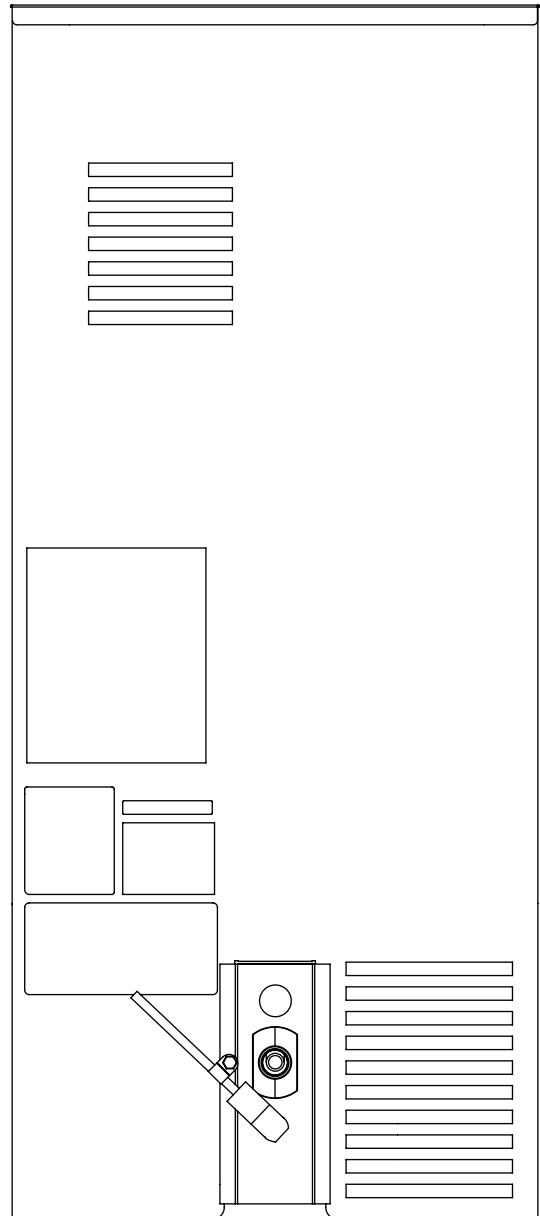
ARCTIC PURE WATER FILTER SYSTEM

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 Ice.

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



Warranty

For warranty information visit:

www.manitowocice.com/Service/Warranty

- Warranty Coverage Information
- Warranty Registration
- Warranty Verification

Warranty coverage begins the day the ice machine is installed.

WARRANTY REGISTRATION

Completing the warranty registration process is a quick and easy way to protect your investment.

Scan the QR code with your smart device or enter the link in a web browser to complete your warranty registration.



WWW.MANITOWOCICE.COM/SERVICE/WARRANTY#WARRANTY-REGISTRATION

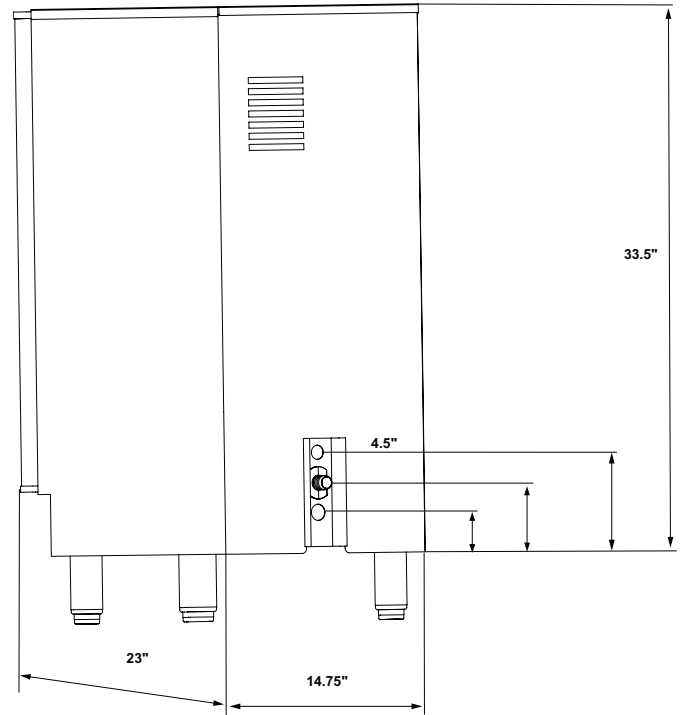
Registering your product insures warranty coverage and streamlines the process if any warranty work is required.

Section 2 Installation

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).

Ice Machine Dimensions



Minimum Cut-Out For Built-In Installations

Height	Width	Depth
35" (89 cm)	15" (38 cm)	26" (65 cm)

Ice Machine Location

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 9.
- 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.

⚠ 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.

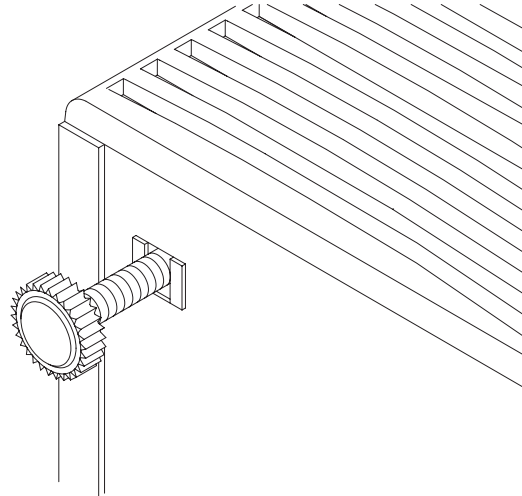
Clearances

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.

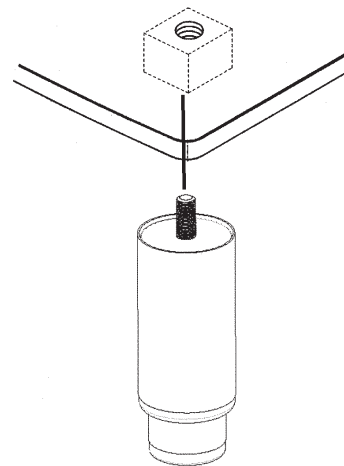
Leveling the Ice machine

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.



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.



Electrical Service

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).

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.
- 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.)

ELECTRIC 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 Ampacity
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:

- Plumbing must conform to state and local codes.
- 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)

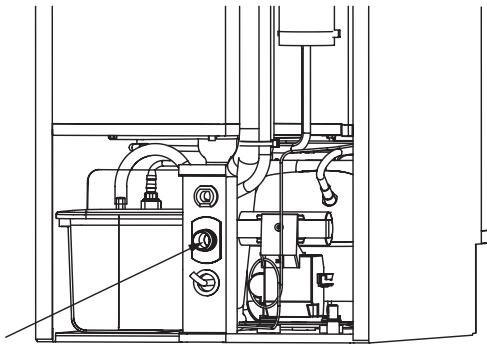
Approximate Height of Ice Machine Drain	
Leg Levelers	3" (76 mm)
Installation with Leg Option	7" (179 mm)

WATER SUPPLY AND DRAIN LINE SIZING/CONNECTIONS

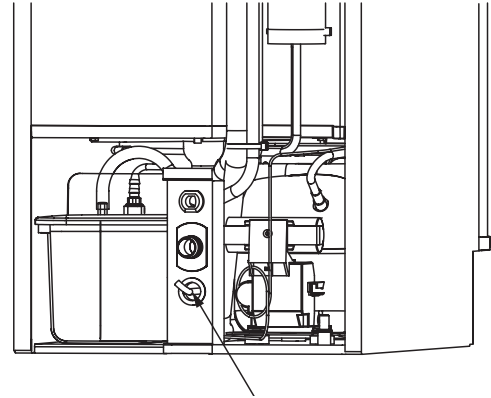
Location	Water Temperature	Water Pressure	Ice Machine Fitting	Tubing Size Up To Ice Machine Fitting
Ice Making Water Inlet	35°F (1.6°C) Min. 90°F (32.2°C) Max.	Minimum 20 psi (137.9 kPa) Maximum 80 psi (551.5 kPa)	1/4" (6 mm) OD Copper Tubing	1/4" (6 mm) Minimum Outside Diameter
Ice Making Bin Drain	---	---	3/4" (19 mm) Hose Barb	3/4" (19 mm) Minimum Inside Diameter
Drain Pump	---	---	3/8" (9 mm) Hose	3/8" (9 mm) Minimum Inside Diameter

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 10
6. Reverse door if desired. See "Reversing Door Swing" on page 15.



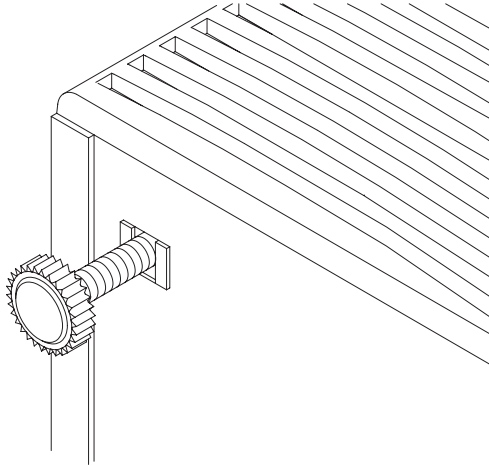
7. For a gravity drain, install drain hose to drain on back of ice machine and route to open site drain. For optional drain pump method, see "Drain Pump Option" on page 14.



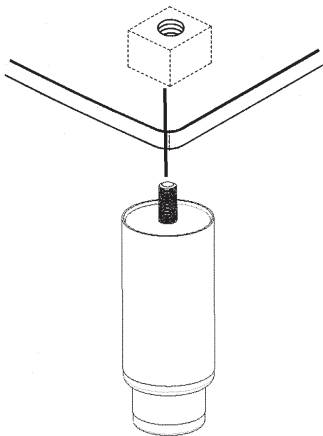
8. Use compression fitting to connect the Water Inlet on back of ice machine to the prepared 1/4" ID cold water line. Refer to "Water Supply and Drain Requirements" on page 12
9. Open the shut-off valve on the water line.
10. Connect electrical plug to grounded (three-prong), polarized outlet. See "Electrical Service" on page 11
11. Place ice machine back in position and check leveling again. Make any necessary adjustments.
12. Prepare cleaner and sanitizer solution and clean and sanitize the ice machine according to steps 1 through 7 "In Place Cleaning/Sanitizing Procedure" on page 22.
13. Put one gallon of cold water into a container that will easily pour under the lifted water shutters. Refer to "Component Identification" on page 17 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.

**LEG OPTION**

1. Remove leg levelers from the bottom of the ice machine.
2. Screw legs into the bottom of the ice machine.
3. Screw the foot of each leg in as far as possible.
4. Move ice machine to 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.

**DRAIN PUMP OPTION**

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.

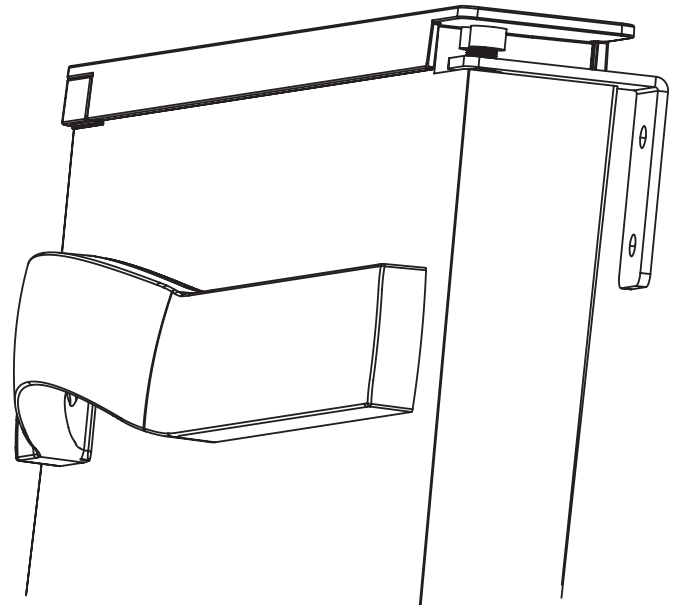
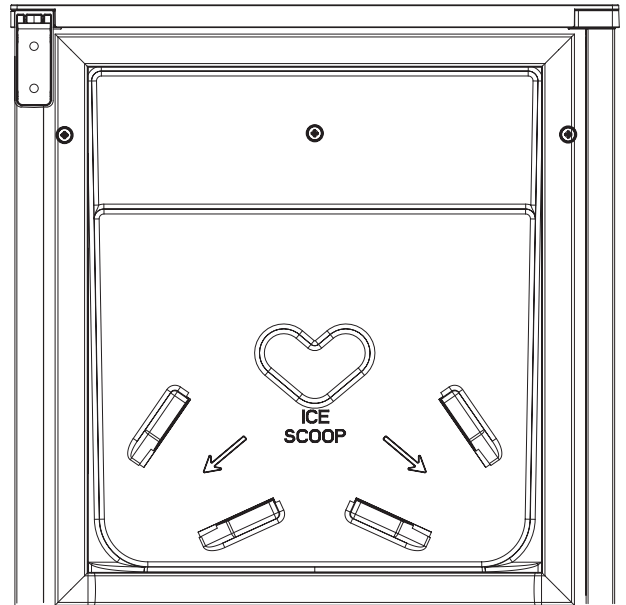
Upon activation, be sure to check all connections for water leakage.

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 Checklist

	Is the Ice Machine level?
	Has all of the internal packing been removed?
	Have all of the electrical and water connections been made?
	Has the supply voltage been tested and checked against the rating on the nameplate?
	Is there proper clearance around the ice machine for air circulation?
	Is the ice machine grounded and polarity correct?
	Has the ice machine been installed where ambient temperatures will remain in the range of 50° - 110°F (10° - 43.3°C)?
	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)?
	Is the ice machine drain line routed to an open site drain?
	Are all electrical leads free from contact with refrigeration lines and moving equipment?
	Has the owner/operator been instructed regarding maintenance and the use of Manitowoc Cleaner and Sanitizer?
	Has the warranty registration information been completed online at www.manitowocice.com/Service/Warranty#Warranty-Registration ?
	Has the ice machine and bin been sanitized?
	When installed is the drain pump functioning correctly energizes, de-energizes and safety switch stops the ice machine?
	GFCI Required - Is it a breaker type and not a receptacle type?
	Is the ice machine plugged into a properly grounded, polarized receptacle?
	Have the water and drain connections been examined for leaks?
	Has the ice machine been cleaned and sanitized?

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

The ice machine must be sanitized before making ice.

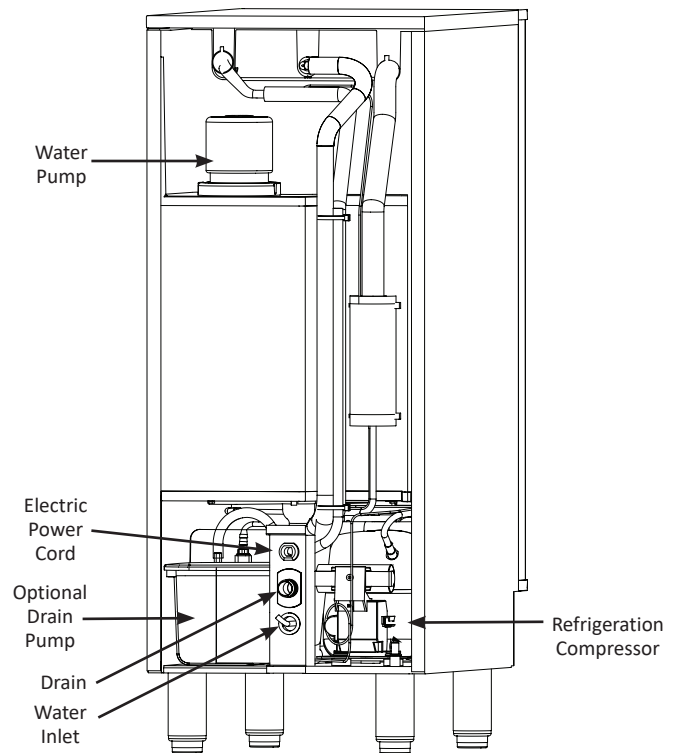
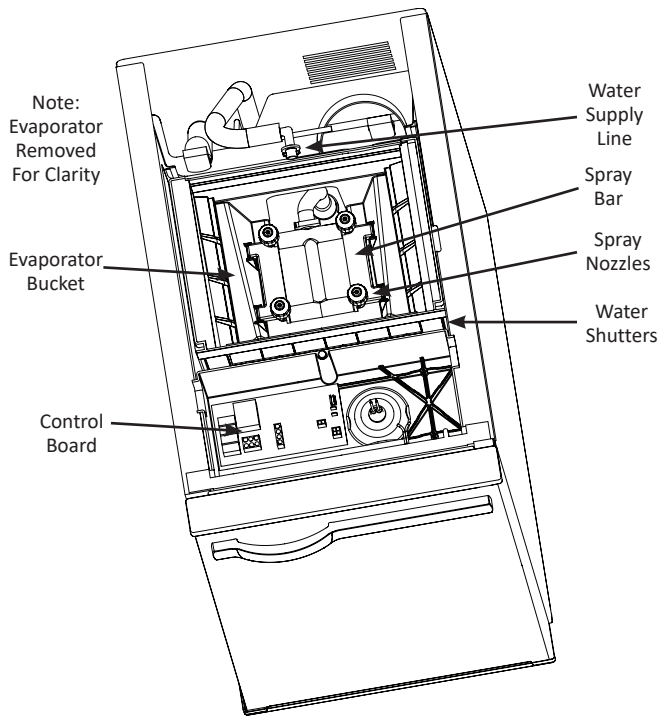
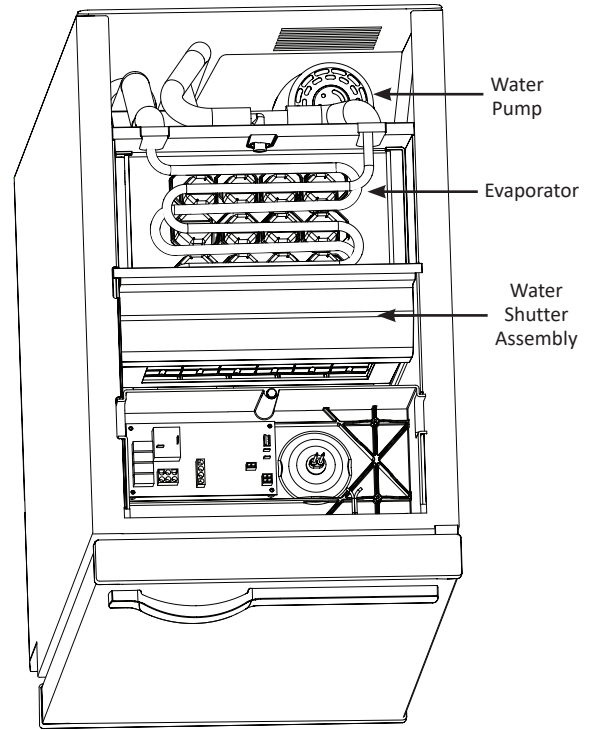
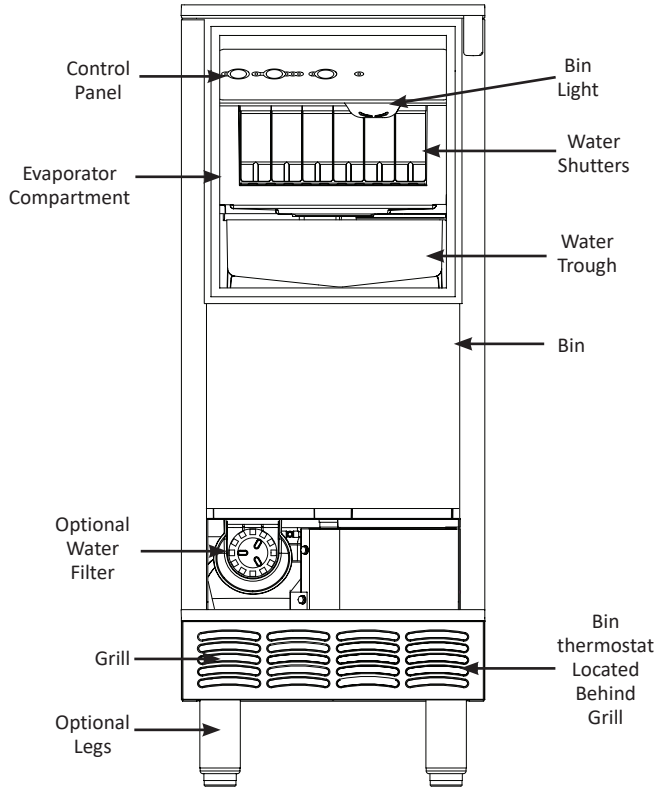
All Manitowoc ice machines are factory-operated and adjusted before shipment. Normally, new installations do not require any adjustment.

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.

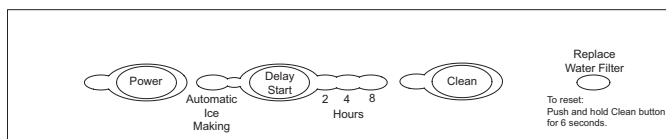
Adjustments and maintenance procedures outlined in this manual are not covered by the warranty.

Section 3 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.

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.

REPEAT DELAY PERIOD EVERY 24 HOURS

1. Press power button to stop the ice machine.
2. Press the delay button - The power LED will energize and the 2 hour delay LED will blink 3 seconds on and 1/2 second off to indicate a 2 hour delay is in effect every 24 hours.
3. Pressing the delay button again will energize the 4 hour light and initiate a four hour delay period every 24 hours.
4. Pressing the delay button again will energize the 8 hour light and initiate an eight hour delay period every 24 hours.
5. Pressing the delay button again will cancel the 24 hour repeat delay. Start with step 1 to reenter 24 hour delay setup.

EXAMPLE

Setting a daily 4 hour delay from 1 pm to 5 pm.

At 1 pm perform steps 1 through 3 above. The 4 hour delay light will blink every 3 seconds to indicate it is in a delay period. After 5 pm the ice machine will fill the bin as needed. At 1 pm on all following days the ice machine will initiate a delay period at 1 pm and flash the 4 hour delay LED.

Canceling a 24 hour delay period

- Press the power button while a delay period is active.
- Follow “Repeat Delay Period every 24 Hours” to step 5.
- Disconnect/reconnect the main power supply.

Sequence of Operation

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

Step 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.

Step 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.

Step 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.

Step 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

Step 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)

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 starts a freeze cycle.

Operational Checks

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

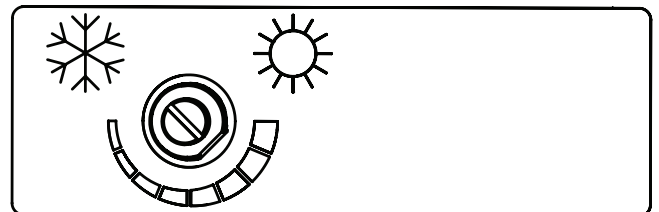
NOTE: Routine adjustments and maintenance procedures are not covered by the warranty.

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 counterclockwise to decrease the level of ice in bin or clockwise to increase the level of ice in bin.



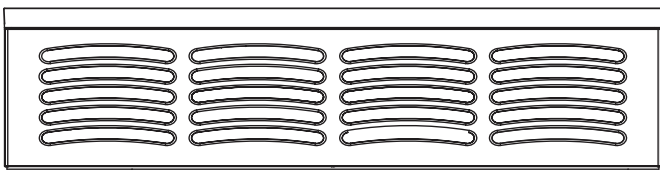
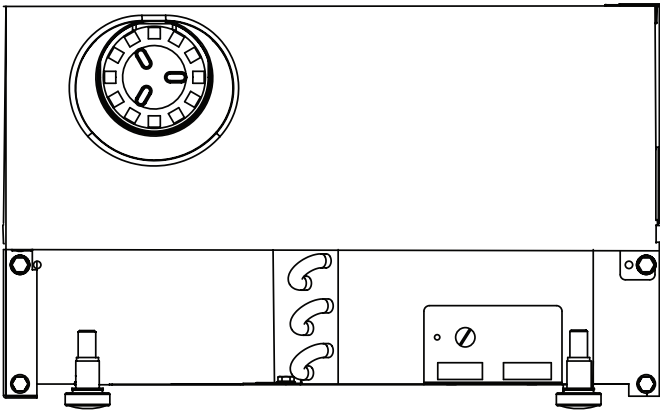
TESTING AND ADJUSTING THE BIN THERMOSTAT

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:

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.

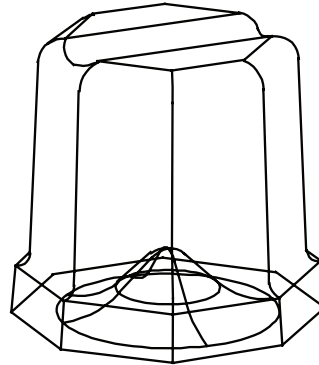
ADDITIONAL FINISHING TIME CHECK:

Press and hold the power button for 5 seconds. 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

Section 4 Maintenance

Interior Cleaning and Sanitizing

GENERAL

Clean and sanitize the ice machine every six 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.

The ice machine must be taken apart for cleaning and sanitizing.

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

Caution

Use only Manitowoc approved Ice Machine Cleaner and Sanitizer. Using a non Manitowoc cleaner or sanitizer may result in bodily harm and/or cause damage to the ice machine that is not covered under the warranty. Do not use cleaner or sanitizer quantities that exceed the amounts listed in this manual. Do not use these solutions in a manner inconsistent with their labeling. Read and understand all labels printed on bottles before use.

Cleaning and Sanitizing Procedures

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

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 9405653) only.

Maintenance Procedure	Weekly	Semi Annual	Annual	After Prolong Shutdown
Clean Cabinet exterior	X	X	X	X
Sanitize Ice Bin		X	X	X
Clean Evaporator		X	X	X
Sanitize Evaporator		X	X	X
Clean Condenser Coil		X	X	X
Change Water Filter		X	X	X
Check Ice Quality	X	X	X	X

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.

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 “Component Identification” on page 17 to identify the water shutters.

Model	Amount of Cleaner
SM50	4 ounces (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 9405653 only) in a container that will fit into the same area.

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

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 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 "Component Identification" on page 17 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.

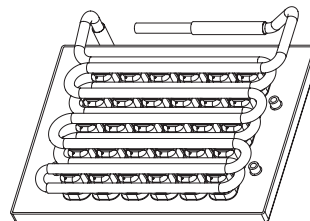
Step 5 When the cleaning process stops, disconnect power and remove all parts as described in Removal of Parts for Cleaning and Sanitizing.

Step 6 Mix 16 oz (2 cups) cleaner with 2 gal of warm water.

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.

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 The Top Of The Evaporator With A Brush

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

Model	Sanitizer Amount	Water Amount
Sm50	1 oz (30ml)	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. 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.

Step 15 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 with any of the following procedures.

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.

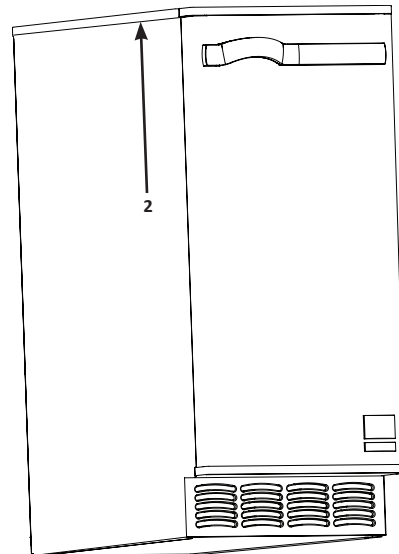
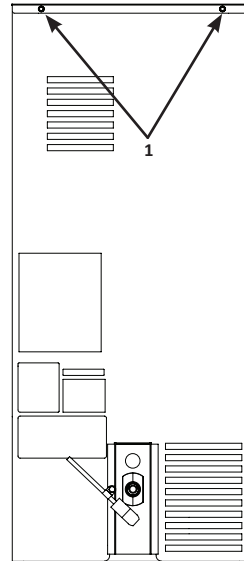
⚠ Caution

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. Disconnect power to the ice machine.
2. Remove two back screws.
3. Slide top cover backward slightly 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:

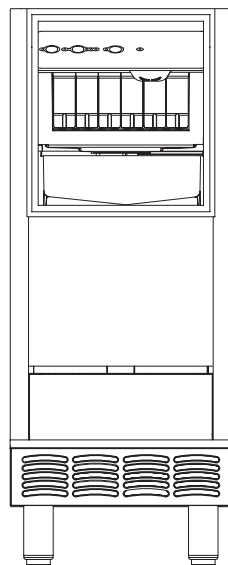
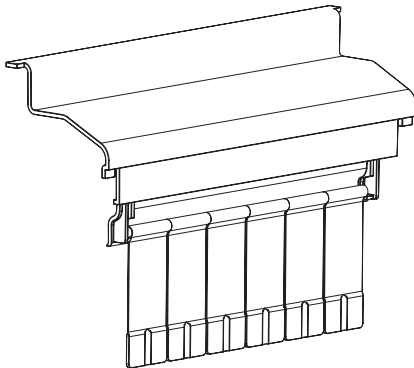
1. Grasp one end of the water shutter and lift up.
2. Pivot water shutter and disengage remaining end.
3. To re-install into ice machine, grasp one end of the water shutters, install one end, pivot the opposite end and pull down into position. Make sure tabs are secure in grooves.

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

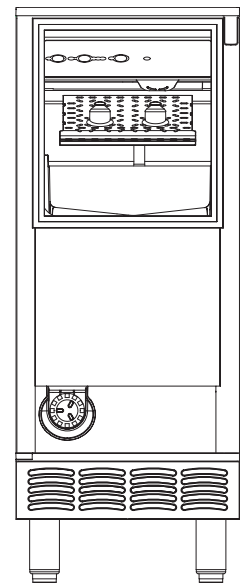
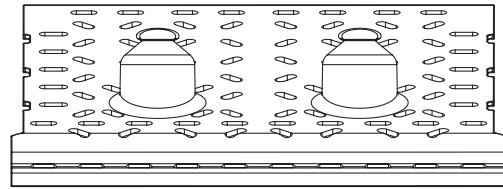


ICE CHUTE

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 align with the spray holes or spray water will fall into the bin.

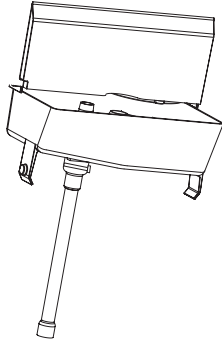
1. Grab protruding spray hole on one end and lift up and remove.
2. To re-install ice chute, grasp protruding spray hole and position over Water Distribution Assembly.

Make sure rear supports are over spray bar, and front edge is inside of water trough.

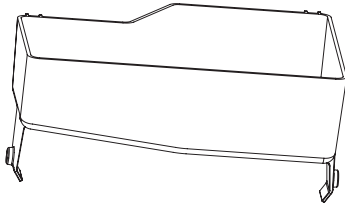


SUMP DRAIN OVERFLOW TUBE

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**

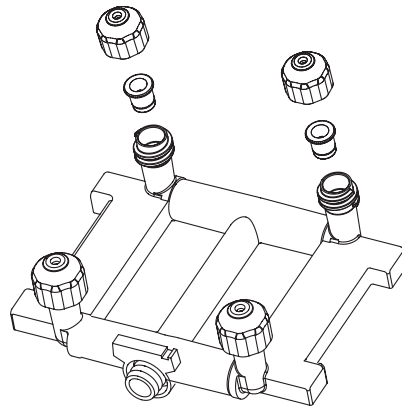
1. Depress tabs on right and left side of the water trough.
2. Allow front of water trough to drop as you pull forward to disengage the rear pins.

**SPRAY BAR DISASSEMBLY**

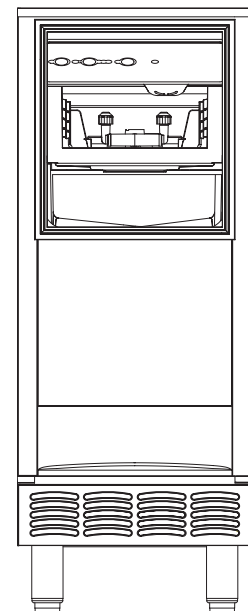
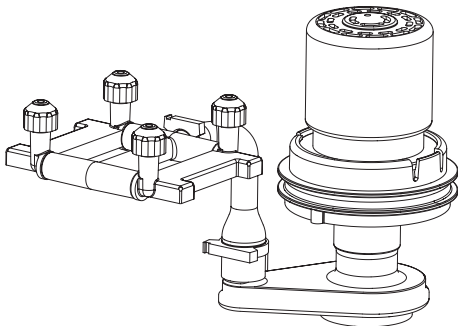
The spray bar supplies water to the individual ice making cups. Water from the water pump sprays through the nozzles, located on the upper portion of the tubes.

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.

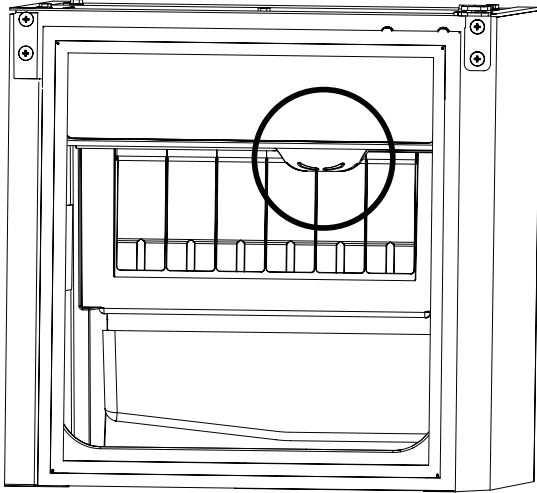
**SPRAY BAR, WATER PUMP AND HOSE**

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.

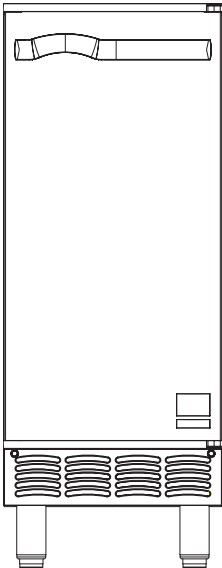


BIN LIGHT

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.

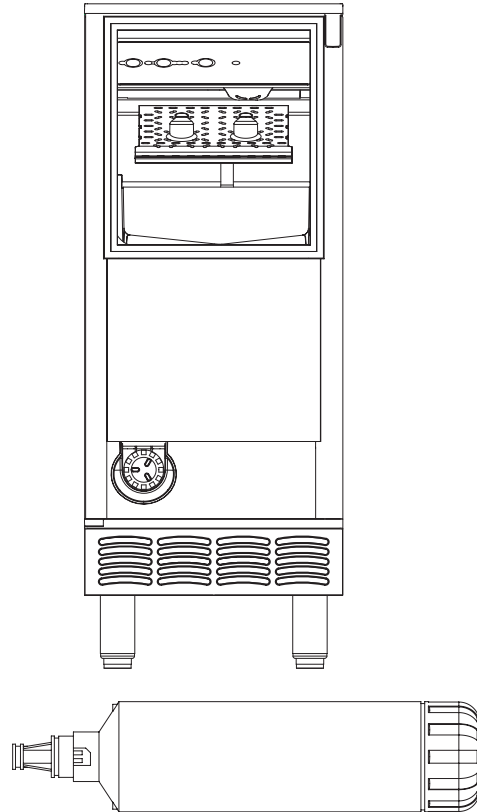
**FRONT GRILL**

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

**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.



ICE MACHINE INSPECTION

Check all water fittings and lines for leaks. Also, make sure the refrigeration tubing is not rubbing or vibrating against other tubing, panels, etc.

Do not put anything (boxes, etc.) in front of the ice machine. There must be adequate airflow through and around the ice machine to maximize ice production and ensure long component life.

EXTERIOR CLEANING

Clean the area around the ice machine as often as necessary to maintain cleanliness and efficient operation.

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

Clean up any fallen ice or water spills as they occur.

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.
- Shine a flashlight through the condenser to check for dirt between the fins.
- 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.
- 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

Step 1 Perform a cleaning and sanitizing procedure to prevent mildew growth.

Step 2 Disconnect the electric power at the circuit breaker or the electric service switch.

Step 3 Turn off the water supply.

Step 4 Remove the water from the water trough.

Step 5 Disconnect and drain the incoming ice-making water line at the rear of the ice machine.

Step 6 Disconnect vinyl hose from water pump and allow to drain.

Step 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.

Step 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.

Step 9 Block the door partially open to provide air exchange and prevent mildew growth.

Section 5 Troubleshooting

Checklist

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

Problem	Possible Cause	To Correct
Ice machine does not operate.	No electrical power to the ice machine.	Replace the fuse/reset the breaker/turn on the main switch/plug power cord into receptacle.
	Ice machine needs to be turned on.	Press the On/Off button to start ice making.
	Damper in open position (down).	Damper must be in upright position and capable of swinging freely.
Ice machine stops, and can be restarted by turning the ice machine OFF and then ON.	Safety limit feature stopping the ice machine.	Refer to "Safety Limit Feature" on the next page.
Ice sheet is thick.	Water trough level is too high.	Adjust ice thickness float.
	Power button was turned off/on during freeze cycle and ice remained on evaporator.	Allow ice to thaw and release from evaporator, then restart.
	Ice damper was opened then closed in the harvest cycle before the ice released.	Allow ice to thaw and release from evaporator, then restart.
	Long harvest cycles with repeated safety limit indication.	Call for service.
Ice machine does not release ice or is slow to harvest.	Ice machine is dirty.	Clean and sanitize the ice machine.
	Ice machine is not level.	Level the ice machine.
	Low air temperature around ice machine (air-cooled models).	Air temperature must be at least 40°F (4°C).
	Water regulating valve leaks in harvest mode (water-cooled models).	Replace water regulating valve.
Ice machine does not cycle into harvest mode.	The six-minute freeze time lock-in has not expired yet.	Wait for freeze lock-in to expire.
	Harvest float switch is dirty.	Clean and sanitize the ice machine.
	Harvest float switch wire is disconnected.	Connect the wire.
	Harvest float switch is out of adjustment.	Adjust the harvest float switch.
Ice quality is poor (soft or not clear).	Uneven ice fill (thin at top of evaporator).	See "Shallow or Incomplete Cubes" below.
	Poor incoming water quality.	Contact a qualified service company to test the quality of the incoming water and make appropriate filter recommendations.
	Water filtration is poor.	Replace the filter.
	Ice machine is dirty.	Clean and sanitize the ice machine.
Ice machine produces shallow or incomplete cubes, or the ice fill pattern on the evaporator is incomplete.	Water softener is working improperly (if applicable).	Repair the water softener.
	Ice thickness switch is out of adjustment.	Adjust the ice thickness switch.
	Water trough level is too high or too low.	Check the water level.
	Water filtration is poor.	Replace the filter.
	Hot incoming water.	Connect the ice machine to a cold water supply.
	Incorrect incoming water pressure.	Water pressure must be 20 – 80 psi (137.9 – 551.5 kPa)
Ice machine is not level.	Level the ice machine.	

Problem	Possible Cause	To Correct
Low ice capacity.	The condenser is dirty.	Clean the condenser.
	High air temperature around ice machine (air-cooled models).	Air temperature must not exceed 110°F (43°C).
	Inadequate clearance around the ice machine.	Provide adequate clearance.
	Objects stacked around ice machine, blocking airflow to condenser (air-cooled models)	Remove items blocking airflow.
	Hot incoming water.	Connect the ice machine to a cold water supply.
	Incorrect incoming water pressure. Water pressure is too low or water filter is restricted.	Water pressure must be 20 – 80 psi (137.9 – 551.5 kPa). Refer to section 2 for plumbing requirements. Replace water filter.

Safety Limit Feature

In addition to the standard safety controls, such as the high pressure cutout, your Manitowoc ice machine features built-in safety limits, which will stop the ice machine if conditions arise which could cause a major component failure.

Before calling for service, re-start the ice machine using the following procedure:

1. Press the On/Off button and turn off the ice machine, then press the On/Off button again to start the ice machine.
 - A. If the safety limit feature has stopped the ice machine, it will restart after a short delay. Proceed to step 2.
 - B. If the ice machine does not restart, see “Ice machine does not operate” on the previous page.
2. Allow the ice machine to run to determine if the condition is recurring.
 - A. If the ice machine stops again, the condition has recurred. Call for service.
 - B. If the ice machine continues to run, the condition has corrected itself. Allow the ice machine to continue running.



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