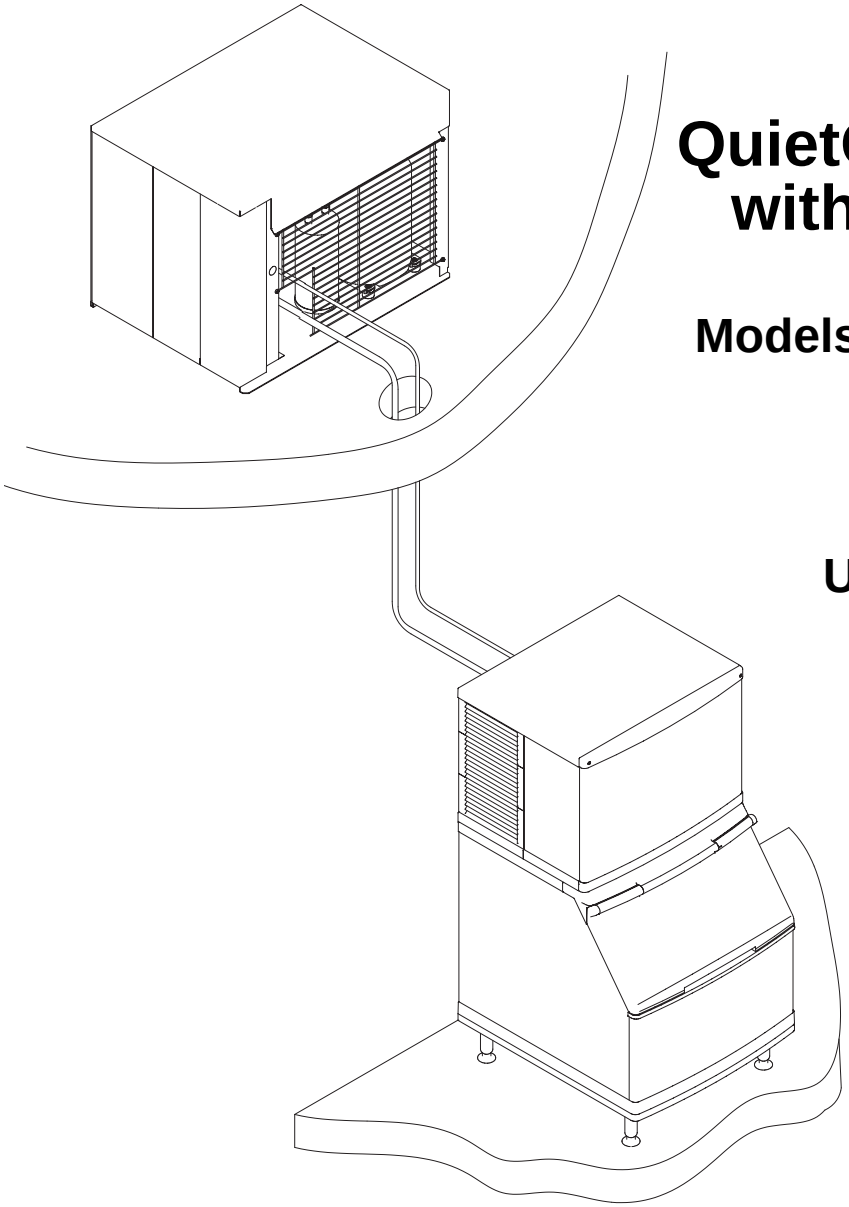
Manitowoc®



Q Model
QuietQube® Ice Machines with CVD® Technology

Models Q0600C/Q0800C/Q1000C

Installation and Owner/Operator 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.

Part Number 80-1175-3
6/2003

Safety Notices

As you work on a QuietQube®-Series 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

PERSONNEL 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 a QuietQube®-Series 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.

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General Information

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Before Calling For Service

Section 1
General Information

Model Numbers

This manual covers the following models:

Ice Machine Head Section	CVD® Condensing Unit*
QD0672C QY0674C	CVD675
QD0872C QY0874C	CVD875
QD1072C QY1074C	CVD1075

For 3 phase electrical option: add the number “3” to the end of model number (CVD10753).

Important

The ice machine sequence of operation for QuietQube® ice machines will differ. Verify the correct sequence of operation is followed for the model you are working on.

⚠ Warning

PERSONNEL INJURY POTENTIAL

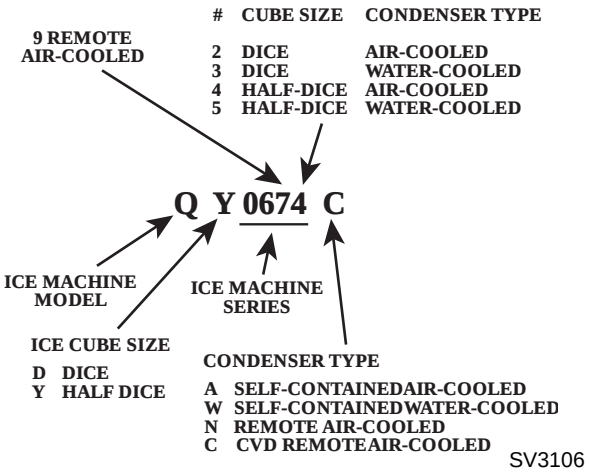
Do not operate equipment that has been misused, abused, neglected, damaged, or altered/modified from that of original manufactured specifications.

⚠ Warning

When installing with non-Manitowoc ice storage systems or Manitowoc F style bins. Manitowoc QuietQube® ice machines require the ice storage bin, to incorporate an ice deflector.

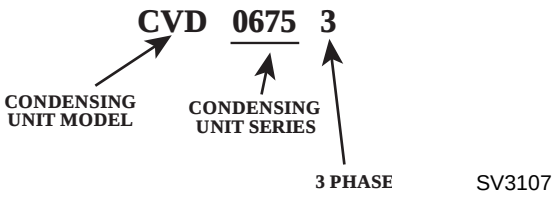
Prior to using a non-Manitowoc ice storage system with Manitowoc ice machines, contact the manufacturer to assure their ice deflector is compatible with Manitowoc ice machines.

How to Read a Model Number



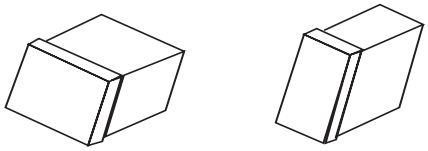
SV3106

Remote Condensing Unit



SV3107

Ice Cube Sizes



SV3105

Dice
7/8" x 7/8" x 7/8"
2.22 x 2.22 x 2.22 cm

Half Dice
3/8" x 1-1/8" x 7/8"
0.95 x 2.86 x 2.22 cm

Accessories

Contact your Manitowoc distributor for these optional accessories:

BIN CASTER

Replaces standard legs.

STACKING KIT

As your business grows and your ice needs increase, Manitowoc stack-on capability can double your daily ice production without using additional floor space.

ICE BAGGER

Maximize profits from bagged ice sales with this convenient accessory. This sturdy unit rests on the bin door frame, and adapts for left or right side filling.

ICE DEFLECTOR

⚠ Warning

Manitowoc QuietQube® ice machines require the ice storage (bin, dispenser, etc.) to incorporate an ice deflector.

The Q0600C/Q0800C/Q1000C series ice machines require adding Manitowoc Ice Deflector Kit K00170 when installing with non-Manitowoc ice storage systems.

Prior to using a non-Manitowoc ice storage system with Manitowoc ice machines, contact the manufacturer to assure their ice deflector is compatible with Manitowoc ice machines.

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.

MANITOWOC CLEANER AND SANITIZER

Manitowoc Ice Machine Cleaner and Sanitizer are available in convenient 16 oz. (473 ml) and 1 gal (3.78 l) bottles. These are the only cleaner and sanitizer approved for use with Manitowoc products.

Cleaner Part Number		Sanitizer Part Number	
16 0z.	94-0456-3	16 0z.	94-0565-3
1 Gallon	94-0580-3	1 Gallon	94-0581-3

DISPENSER

A counter-top dispenser is ideal for cafeterias and many types of self-service facilities. Manitowoc auto-fill, floor-standing ice dispensers meet the strict sanitary requirements of the food service, lodging and health care industries.

AUCS® AUTOMATIC CLEANING SYSTEM

This accessory reduces equipment cleaning expense. The AuCS® accessory monitors ice making cycles and initiates cleaning procedures automatically.

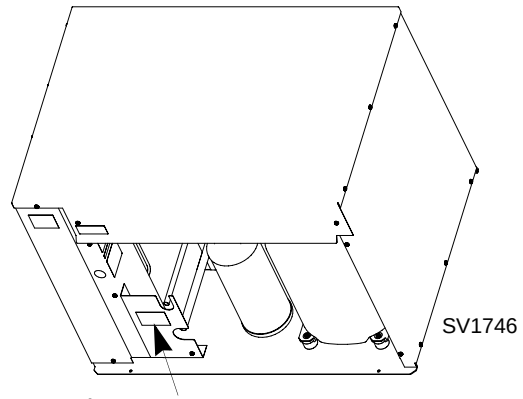
Model/Serial Number Location

Record the model and serial number of your ice machine and bin or dispenser in the space provided below.

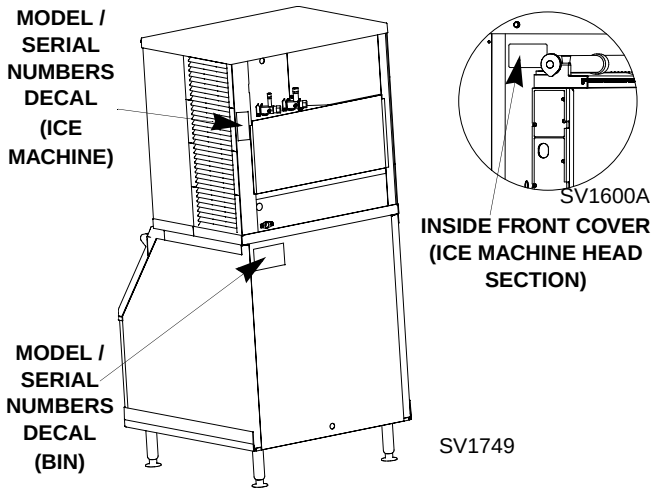
These numbers are required when requesting information from your local Manitowoc distributor, service representative, or Manitowoc Ice, Inc.

The model and serial number are listed on the OWNER WARRANTY REGISTRATION CARD. They are also listed on the MODEL/SERIAL NUMBER DECAL affixed to the ice machine head section and condensing unit. Both model/serial numbers must be referenced to obtain warranty or service information.

Condensing Unit



Q0600C/Q0800C/Q1000C



Model/Serial Number Location

	Ice Machine	Bin or Dispenser	CVD Condensing Unit	AuCS Accessory
Model Number				
Serial Number				

Owner Warranty Registration Card

GENERAL

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

Important

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

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

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 or Manitowoc Ice, Inc. if you need further warranty information.

Important

This product is intended exclusively for commercial application. No warranty is extended for personal, family, or household purposes.

PARTS

1. 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.
2. The evaporator and compressor are covered by an additional two (2) year (five years total) warranty beginning on the date of the original installation.

LABOR

1. Labor required to repair or replace defective components is covered for three (3) years from the date of original installation.
2. The evaporator is covered by an additional two (2) year (five years total) labor warranty beginning on the date of the original installation.

EXCLUSIONS

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

1. **Normal maintenance**, adjustments and cleaning as outlined in this manual.
2. Repairs due to unauthorized modifications to the ice machine or use of non-standard parts without prior written approval from Manitowoc Ice, Inc.
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.
7. This product is intended exclusively for commercial application. No warranty is extended for personal, family, or household purposes.

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 Ice, Inc. 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 in this manual, and the ice machine still does not perform properly, call your Local Distributor or the Service Department at Manitowoc Ice, Inc.

Section 2
Installation Instructions

General

These instructions are provided to assist the qualified installer. Check your local Yellow Pages for the name of the nearest Manitowoc distributor, or call Manitowoc Ice, Inc. for information regarding installation and start-up services.

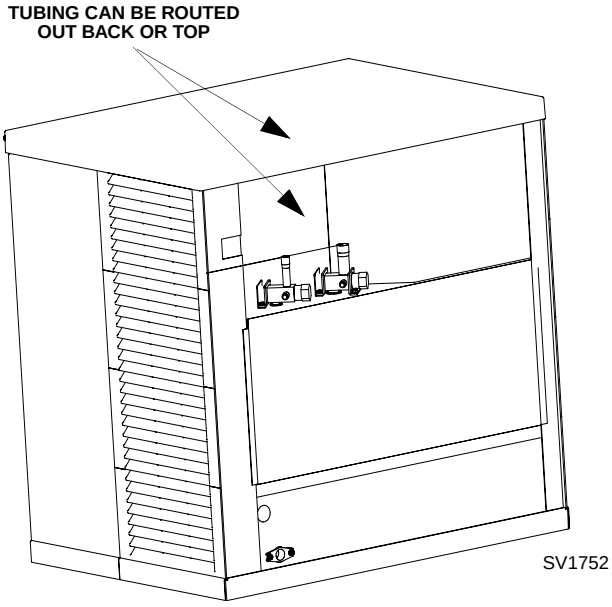
Important

Failure to follow these installation guidelines may affect warranty coverage.

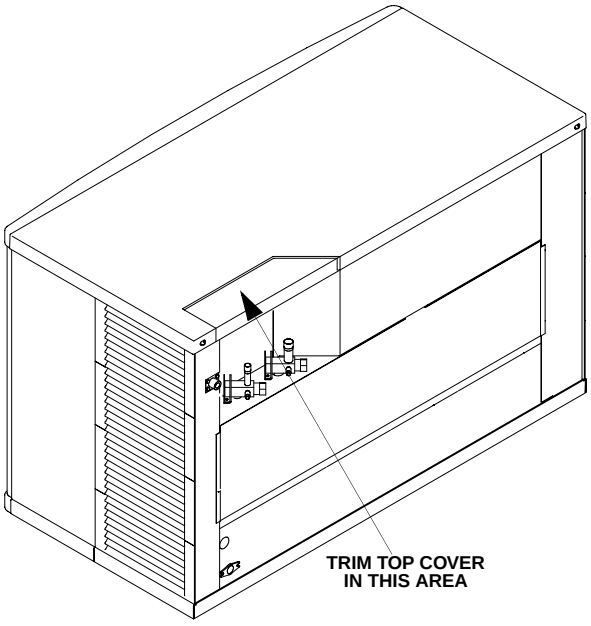
Ice Machine Installation Options

The ice machine head can be installed with the electrical inlet, water supply inlet and refrigeration tubing entering from the back or top of the ice machine.

The ice machine water drain must exit the back of the ice machine.



SV1752



SV1763

Cut the top cover for top routing of electrical inlet, water supply inlet or refrigeration lines.

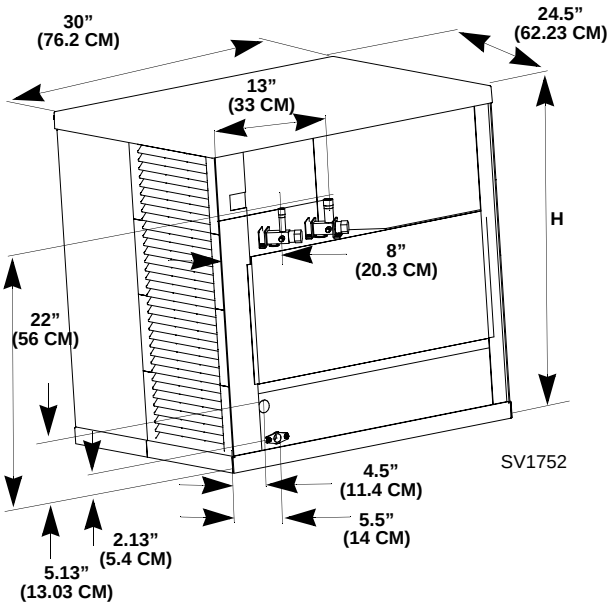
1. Prior to cutting, mount top cover onto ice machine.
2. Use ice machine back panel recessed area as a template to mark the underside of the top cover. Do not cut up to or past this line!
3. Using a tin snips, cut top cover as needed:
   A. Do not cut out entire area! Cut up to 1/8 inch to marked line.
   B. Cut out only what is needed. (If routing only refrigeration lines out the top, cut just enough to route these lines.)

Ice Machine Dimensions

Q0600C/Q0800C/Q1000C ICE MACHINES

Important

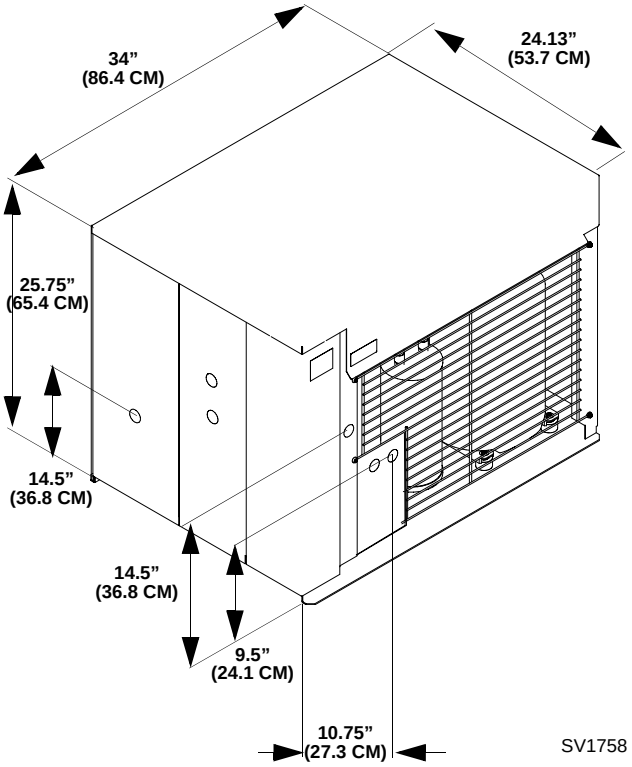
Failure to follow these installation guidelines may affect warranty coverage.



Ice Machine	Dimension H
Q0670C	21.5 in (54.6 cm)
Q0870C	26.5 in (67.3 cm)
Q1070C	29.5 in (74.9 cm)

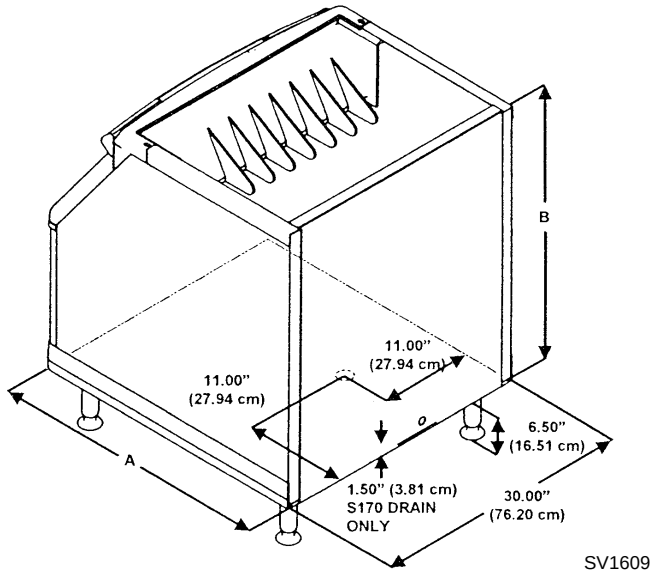
CVD Condensing Unit Dimensions

CVD0675/CVD0875/CVD1075



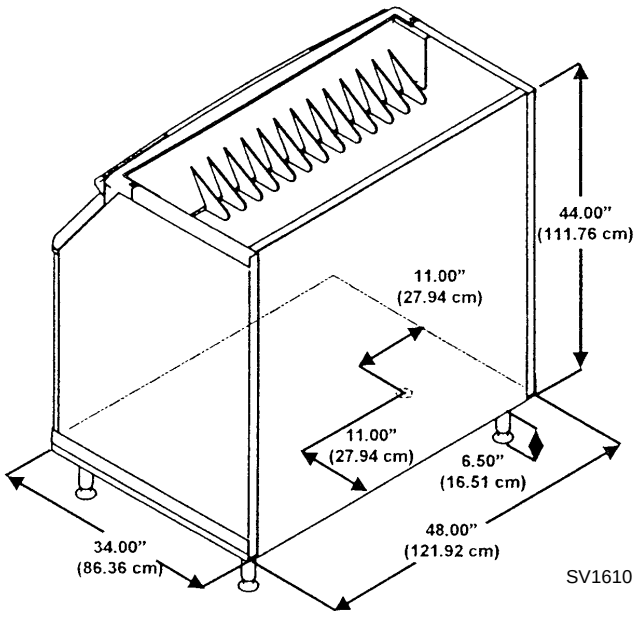
Ice Storage Bin Dimensions

S170/S400/S570 ICE STORAGE BIN



Bin Model	Dimension A	Dimension B
S170	29.5 in (74.9 cm)	19.1 in (48.5 cm)
S400	34.0 in (86.3 cm)	32.0 in (81.3 cm)
S570	34.0 in (86.3 cm)	44.0 in (111.7 cm)

S970 ICE STORAGE BINS



⚠ Warning

Manitowoc QuietQube ice machines require the ice storage (bin, dispenser, etc.) to incorporate an ice deflector.

The Q0600C/Q0800C/Q1000C series ice machines require adding Manitowoc Ice Deflector Kit K00170 when installing with non-Manitowoc ice storage systems.

Prior to using a non-Manitowoc ice storage system with other Manitowoc ice machines, contact the manufacturer to assure their ice deflector is compatible with Manitowoc ice machines.

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 location must be free of airborne and other contaminants.
- The air temperature must be at least 35°F (1.6°C), but must not exceed 110°F (43.4°C).
- The location must not be near heat-generating equipment or in direct sunlight.
- The location must not obstruct airflow through or around the ice machine. See below for clearance requirements.

Ice Machine Head Section Clearance Requirements

Top/Sides 5” (127 mm) is recommended for efficient operation and servicing. There is no minimum clearance required.

Back 1” (25.4 mm) required when routing electrical inlet, water inlet and refrigeration tubing out of the top of the unit.

5” (127 mm) required when routing all connections out the back.

> **⚠ Caution**
>
> The ice machine head section must be protected if it will be subjected to temperatures below 32°F (0°C). Failure caused by exposure to freezing temperatures is not covered by the warranty. See “Removal from Service/Winterization”.

Stacking Two Ice Machines on a Single Storage Bin

A stacking kit is required for stacking two ice machines. Installation instructions are supplied with the stacking kit.

Location of CVD Condensing Unit

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

- The air temperature must be at least -20°F (-28.9°C) but must not exceed 130°F (54.4°C).
- The location must not allow exhaust fan heat and/or grease to enter the condenser.
- The location must not obstruct airflow through or around the condensing unit. See below for clearance requirements.

Condensing Unit Clearance Requirements

Top/Sides

There is no minimum clearance required, although 6” (152 mm) is recommended for efficient operation and servicing only.,

Front/Back

48” (122 cm)

Condensing Unit Heat of Rejection

Series Condensing Unit	Heat of Rejection*	
	Air Conditioning**	Peak
CVD675	9,000	13,900
CVD875	12,400	19,500
CVD1075	16,000	24,700

*B.T.U./Hour

**Because the heat of rejection varies during the ice making cycle, the figure shown is an average.

Ice machines, like other refrigeration equipment, reject heat through the condenser. It is helpful to know the amount of heat rejected by the ice machine when sizing air conditioning equipment where self-contained air-cooled ice machines are installed.

This information is also necessary when evaluating the benefits of using water-cooled or CVD® Condensing Units to reduce air conditioning loads. The amount of heat added to an air-conditioned environment by a QuietQube® ice machine head section is negligible.

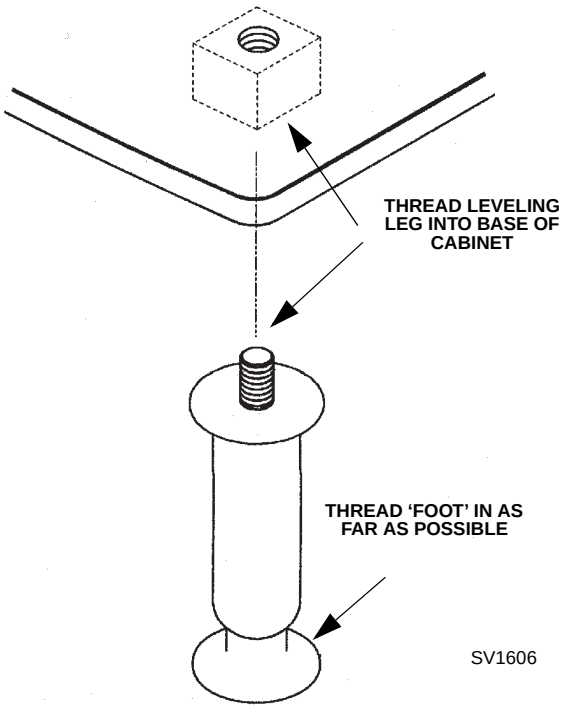
Leveling the Ice Storage Bin

1. Screw the leveling legs onto the bottom of the bin.
2. Screw the foot of each leg in as far as possible.

> **⚠ Caution**
> The legs must be screwed in tightly to prevent them from bending.

3. Move the bin into its final position.
4. Level the bin to assure that the bin door closes and seals properly. Use a level on top of the bin. Turn each foot as necessary to level the bin.

NOTE: An optional caster assembly is available for use in place of the legs. Installation instructions are supplied with the casters.

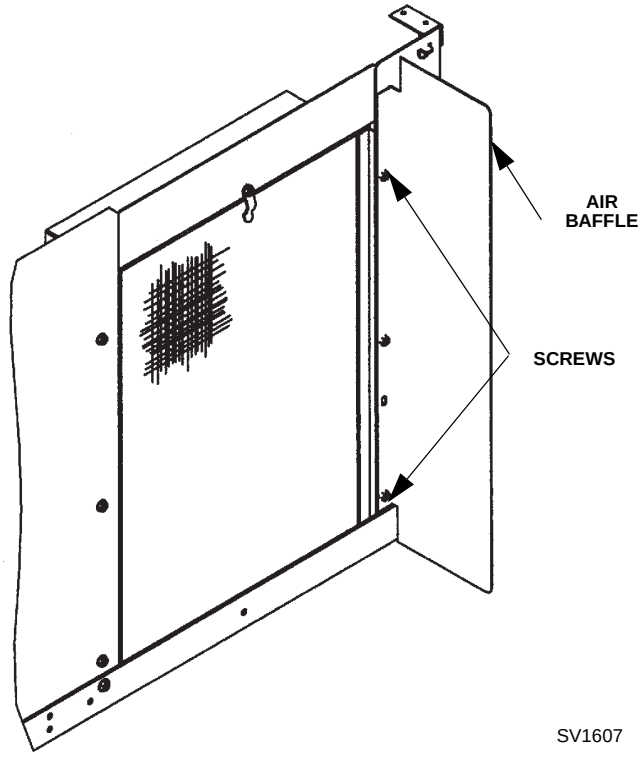


Leveling Leg and Foot

Air-Cooled Baffle

The air-cooled baffle prevents condenser air from recirculating. To install:

1. Remove the back panel screws next to the condenser.
2. Align the mounting holes in the air baffle with the screw holes and reinstall the screws.



Air Baffle

Electrical Service

GENERAL

> **⚠ Warning**
> All wiring must conform to local, state and national codes.

VOLTAGE

For both the Ice Machine Head Section and the CVD® Condensing Unit, the maximum allowable voltage variation is ±10% of the rated voltage at ice machine start-up (when the electrical load is highest).

> **⚠ Warning**
> The ice machine and condensing unit must be grounded in accordance with national and local electrical codes.

FUSE/CIRCUIT BREAKER

The ice machine head section and condensing unit are wired independently from each other.

Ice Machine Head Section

The ice machine head section does not require a dedicated circuit breaker.

CVD® Condensing Unit

A separate fuse/circuit breaker must be provided for each condensing unit. Circuit breakers must be H.A.C.R. rated (does not apply in Canada).

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.) The wire size (or gauge) is also dependent upon location, materials used, length of run, etc., so it must be determined by a qualified electrician.

Electrical Requirements

QuietQube® Ice Machine Head Section

Ice Machine	Voltage Phase Cycle	Maximum Fuse/ Circuit Breaker	Total Amps
Q0670C	115/1/60	15 amp	1.1
	208-230/1/60	15 amp	0.6
	230/1/50	15 amp	0.6
Q0870C	115/1/60	15 amp	1.1
	208-230/1/60	15 amp	0.6
	230/1/50	15 amp	0.6
Q1070C	115/1/60	15 amp	1.1
	208-230/1/60	15 amp	0.6
	230/1/50	15 amp	0.6

Important

The QuietQube® Ice Machine Head Section and CVD Condensing Unit are wired independently from each other.

CVD® Condensing Unit

Condensing Unit	Voltage Phase Cycle	Maximum Fuse/Circuit Breaker	Minimum Circuit Amps
CVD0675	208-230/1/60	15 amp	9.6
	208-230/3/60	15 amp	7.3
	230/1/50	15 amp	9.0
CVD0875	208-230/1/60	20 amp	11.7
	208-230/3/60	15 amp	8.2
	230/1/50	20 amp	11.3
CVD1075	208-230/1/60	25 amp	15.6
	208-230/3/60	20 amp	10.6
	230/1/50	25 amp	13.8

QuietQube® Ice Machine Head Section Electrical Wiring Connections

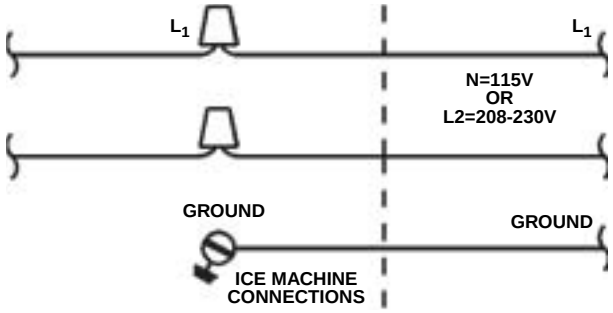
⚠ Warning

These diagrams are not intended to show proper wire routing, wire sizing, disconnects, etc., only the correct wire connections.

All electrical work, including wire routing and grounding, must conform to local, state and national electrical codes.

Though wire nuts are shown in the drawings, the ice machine field wiring connections may use either wire nuts or screw terminals.

QUIETQUBE® ICE MACHINE HEAD SECTION 115/1/60



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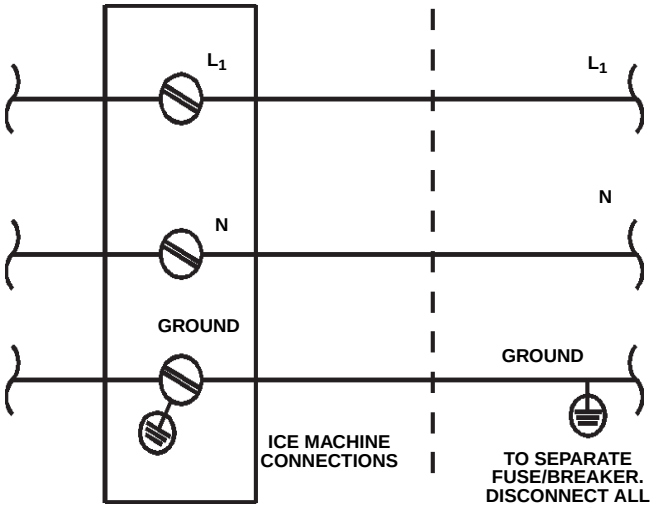
QUIETQUBE® ICE MACHINE HEAD SECTION 230/1/50



SV1191

For United Kingdom Only

As the colours of the wires in the mains lead of the appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The wire which is coloured green and yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth ground symbol ⏚ or coloured green or green and yellow.
- The wire coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
- The wire coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

Condensing Unit Wiring Connections

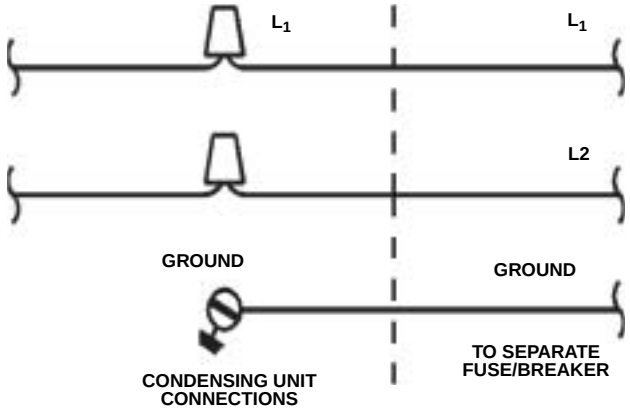
⚠ Warning

These diagrams are not intended to show proper wire routing, wire sizing, disconnects, etc., only the correct wire connections.

All electrical work, including wire routing and grounding, must conform to local, state and national electrical codes.

Though wire nuts are shown in the drawings, the ice machine field wiring connections may use either wire nuts or screw terminals.

CVD CONDENSING UNIT 208-230/1/60



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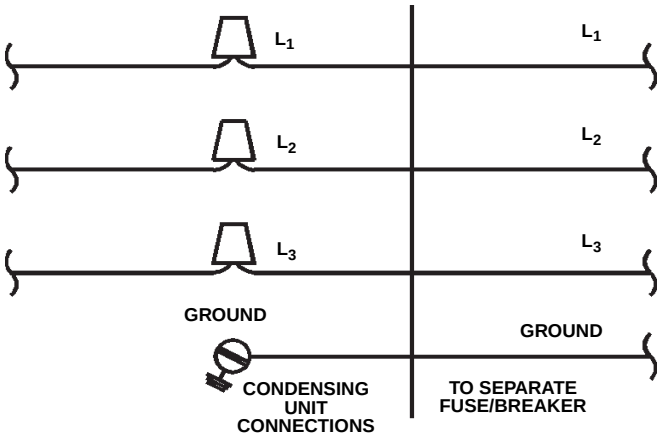
CVD CONDENSING UNIT 208-230/3/60



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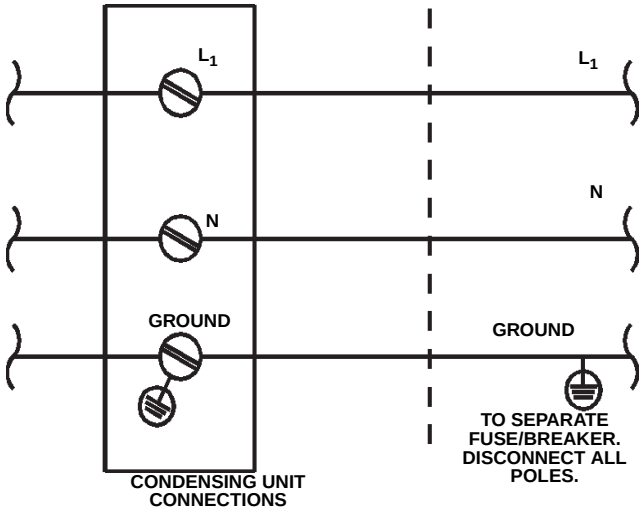
CVD CONDENSING UNIT 230/1/50



SV1191

Ice Machine Head Section Water Supply and Drains

POTABLE WATER SUPPLY

Local water conditions may require treatment of the water to inhibit scale formation, filter sediment, and remove chlorine odor and taste.

Important

If you are installing a Manitowoc water filter system, refer to the Installation Instructions supplied with the filter system for ice making water inlet connections.

POTABLE 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 of 80 psig (551.5 kPA), obtain a water pressure regulator from your Manitowoc distributor.
- Install a water shut-off valve for ice making potable water.
- Insulate water inlet lines to prevent condensation.

DRAIN CONNECTIONS

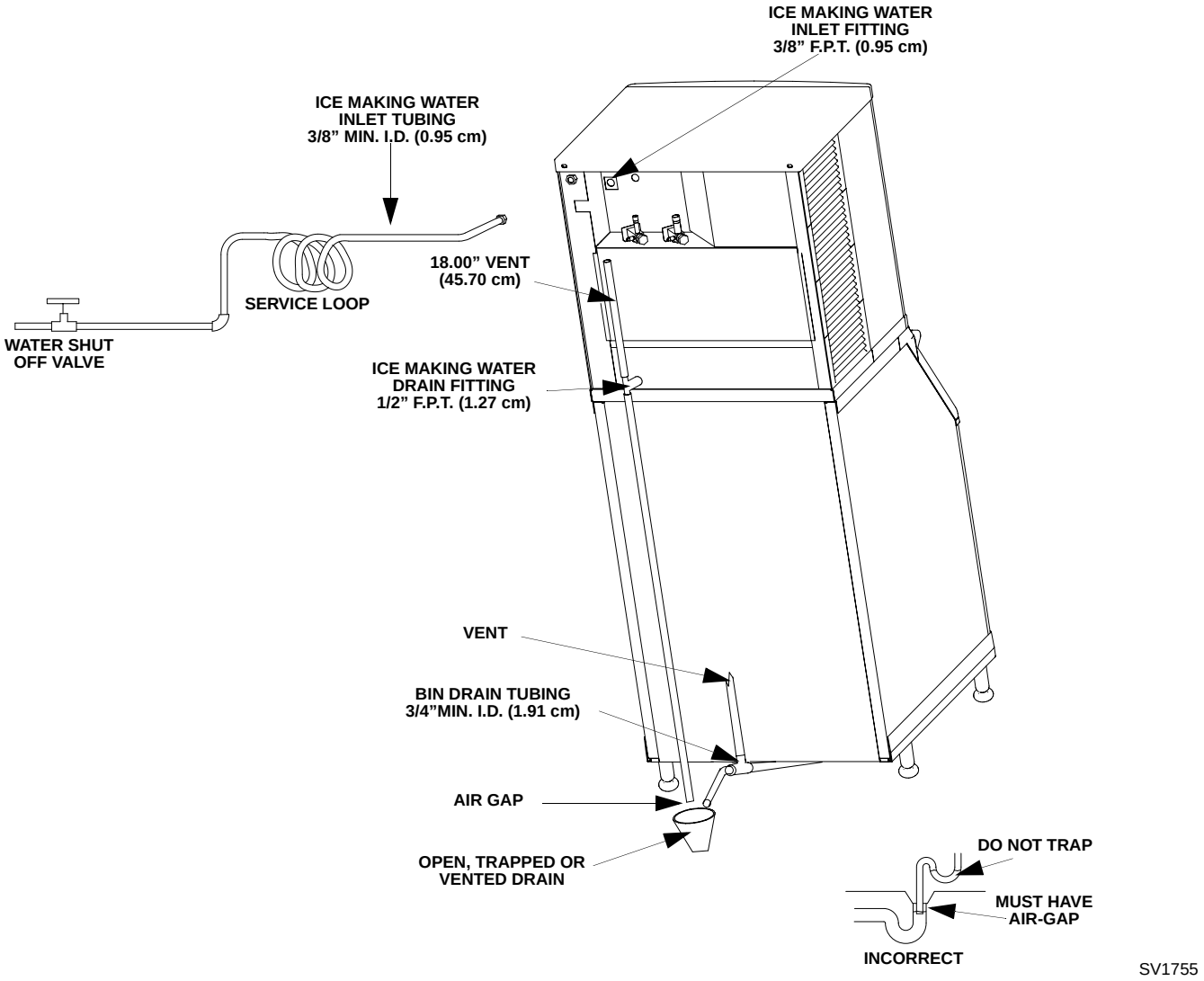
Follow these guidelines when installing drain lines to prevent drain water from flowing back into the ice machine and storage bin:

- 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.
- Run separate bin and ice machine drain lines. Insulate them to prevent condensation.
- Vent the bin and ice machine drain to the atmosphere. The ice machine drain requires an 18” vent.
- Drains must have a union or other suitable means to allow in place disconnection from the ice machine when servicing is required.

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	33°F (0.6°C) Min. 90°F (32.2°C) Max.	20 psi (137.9 kPA) Min. 80 psi (551.5 kPA) Max.	3/8" Female Pipe Thread	3/8" (9.5 mm) min. inside diameter
Ice Making Water Drain	---	---	1/2" Female Pipe Thread	1/2" (12.7 mm) min. inside diameter
Bin Drain	---	---	3/4" Female Pipe Thread	3/4" (19.1 mm) min. inside diameter



Typical Water Supply Drain Installation

Refrigeration System Installation

QuietQube® Ice Machine	Remote Single Circuit Condenser	Line Set*
Q0670C Q0870C	CVD675 CVD875	RC-21 RC-31 RC-51
Q1070C	CVD1075	RC-20 RC-30 RC-50

*Line Set	Suction Line	Liquid Line	Insulation Thickness
RC 20/30/50	3/4 inch (19.1 mm)	1/2 inch (12.7 mm)	1/2”(13mm) Suction Line
RC 21/31/51	5/8 inch (15.9 mm)	3/8 inch (9.5 mm)	1/4” (7mm) Liquid Line

USAGE WITH NON-MANITOWOC CONDENSING UNITS

Manitowoc CVD® Condensing Units are specifically designed for usage with a QuietQube® Ice Machine Head Section. Standard condensing units and Non-Manitowoc condensing units will not operate a QuietQube® Ice Machine Head Section.

⚠ Caution

The 60-month compressor warranty (including the 36-month labor replacement warranty) will not apply if the Manitowoc Ice Machine and Manitowoc CVD Condensing Unit are not installed according to specifications. This warranty also will not apply if the refrigeration system is modified with a condenser, heat reclaim device, or other parts or assemblies not manufactured by Manitowoc Ice, Inc.

Factory Equipment Refrigeration Amounts

ICE MACHINE HEAD SECTION

Each ice machine head section ships from the factory with a R-404A refrigerant charge appropriate for the entire system operation. The serial tag on the ice machine indicates the refrigerant charge. The refrigerant charge is sufficient to operate the ice machine in ambient temperatures between -20°F (-28.9°C) and 130°F (54.4°C). With line set lengths of up to 100 feet (30.5 m).

⚠ Warning

Potential Personal Injury Situation

The ice machine head section contains the refrigerant charge. Installation and brazing of the line sets must be performed by a properly trained and EPA certified refrigeration technician aware of the **dangers of dealing with refrigerant** charged equipment.

⚠ Caution

Never add more than nameplate charge to the refrigeration system for any application.

CVD® CONDENSING UNIT

Each condensing unit ships from the factory pressurized with 50/50 nitrogen helium mixture that must be removed during the installation process (approximately 20 psig).

REFRIGERATION LINE SETS/TRAP KIT

Refrigeration Rated Tubing and Trap Kits are shipped capped with atmospheric pressure.

⚠ Warning

Installation of a QuietQube® Condensing Unit may require the use of special equipment for placement. Trained and qualified personnel are required for proper rigging and lifting.

Refrigeration Line Set Installation

GENERAL

Refrigeration line set installations consist of vertical and horizontal line set distances between the ice machine and the condensing unit. The following guidelines, drawings and calculation methods must be followed to assure proper oil return and CVD® condensing unit/ice machine operation.

The refrigeration line set installer must be USA Government-Environmental Protection Agency (EPA) certified in proper refrigerant handling and servicing procedures.

⚠ Warning

The ice machine head section contains refrigerant charge. The ice machine head section contains three (3) refrigeration valves that **must remain closed** until proper installation of the line sets is completed.

⚠ Warning

Disconnect electrical power to the ice machine head section and CVD® condensing unit before proceeding.

Step 1 Verify Ice Machine and CVD® Condensing Unit Locations Are Within Guidelines.

Prior to installation of the ice machine head section and CVD® condensing unit be sure that the distance between then is within the line set routing guidelines outlined in this manual.

Roof/Wall Penetration

If required, cut a 3-inch (76.2 mm) circular hole in the wall or roof for routing of refrigeration tubing. A qualified person must perform all roof penetrations.

Step 2 Route Refrigeration Tubing

Properly route refrigeration tubing between the ice machine head section and the CVD® condensing unit.

A. LINE SET LENGTH

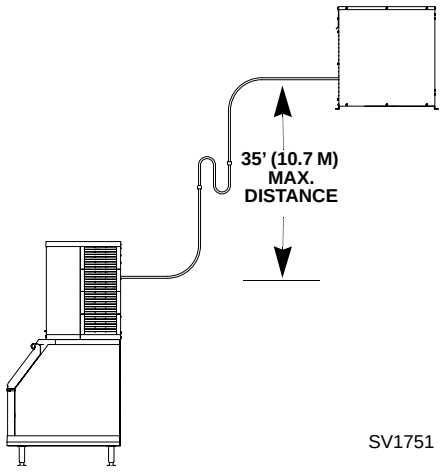
100 feet (30.5 m) Length: The maximum measured length the line set can be.

The receiver is designed to hold a charge sufficient to operate the ice machine in ambient temperatures between -20°F (-28.9°C) and 130°F (54.4°C), with line set lengths of up to 100 feet (30.5 m).

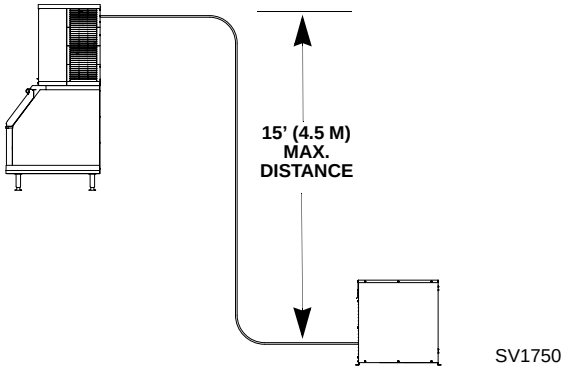
Important

QuietQube® ice machines will not function with line sets greater than 100 feet (30.5 m). Do not attempt to go beyond this distance and add refrigerant charge to compensate!

B. LINE SET RISE OR DROP



35 feet (10.7 m) Rise: The maximum distance the CVD® condensing unit can be above the ice machine.



15 feet (4.5 m) Drop: The maximum distance the CVD® condensing unit can be below the ice machine.

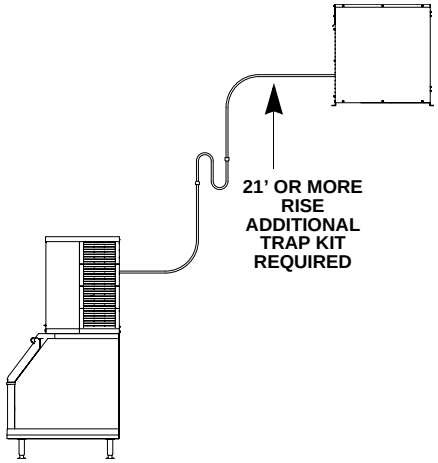
C. SUCTION LINE OIL TRAPS

⚠ Caution

Do not form unwanted traps in refrigeration lines. Never coil excess refrigeration tubing.

0 to 20 feet (0 to 6.1 m) Rise: The ice machine head section has one oil trap built in which allows for a maximum condenser rise of 20 feet (6.1 m) without additional traps in the suction line.

21 to 35 feet (6.4 to 10.7 m) Rise: The suction line requires an additional Oil Trap ("S" type) to be installed. Install the trap as close as possible to midpoint between the ice machine head section and CVD condensing unit. S-Trap Kits are available from Manitowoc (refer to chart).



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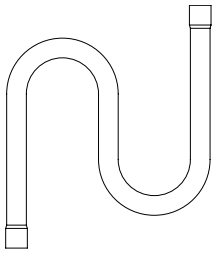

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Manitowoc S-Trap Kit

Model	S-Trap Kit Number	Tubing Size
Q0600C Q0800C	K00172	5/8 inch (15.9 mm)
Q1000C	K00166	3/4 inch (19.1 mm)

Service Loop

A service loop in the line set permits easy access to the ice machine for cleaning and service.

- **The supplied service loop is an installation requirement. Excess tubing length must be sufficient to allow 180° rotation of the ice machine.**
- A service loop is not considered an oil trap.
- The service loop is not included when calculating length, rise or drop of the tubing run.
- Do not use hard rigid copper for the service loop.

⚠ Caution

If a line set has a rise followed by a drop, another rise cannot be made. Likewise, if a line set has a drop followed by a rise, another drop cannot be made.

Step 3 Lengthening or Reducing Line Set Lengths

⚠ Caution

Do not form unwanted traps in refrigeration lines. Never coil excess refrigeration tubing.

When the line set required shortening or lengthening, do so before connecting the line set to the ice machine head section or the CVD condensing unit.

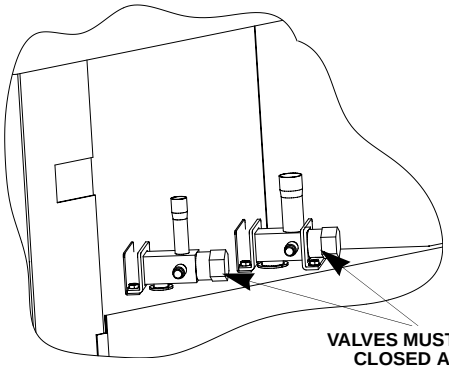
Step 4 Connecting the line set.

To prevent oxidation of the copper, purge line set and condensing unit with dry nitrogen while brazing.

Connect The Line Set To The Ice Machine Head Section

> **⚠ Warning**
> The ice machine head section contains refrigerant charge. The ice machine head section contains three (3) refrigeration valves that **must remain closed** until proper installation of the line sets is completed.

The line set shut off valves at the back of the ice machine must remain closed and be protected from heat during the brazing process. Wrap the valves in a wet rag or other type of heat sink prior to brazing. Cool braze joint with water immediately after brazing to prevent heat migration to the valve.



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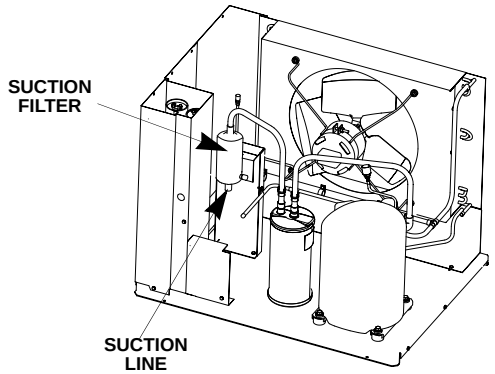
> **⚠ Warning**
> The condensing unit ships from the factory pressurized with a 50/50 mixture of nitrogen/helium. Bleed off pressure from both suction and liquid line access ports prior to cutting into refrigeration lines.

Connect The Line Set To The CVD Condensing Unit

> **⚠ Warning**
> The condensing unit ships from the factory pressurized with a 50/50 mixture of nitrogen/helium. Bleed off pressure from both suction and liquid line access ports prior to cutting into refrigeration lines.

The compressor oil rapidly absorbs moisture. **Be prepared** to complete line set installation and start your evacuation process in order to minimize the time the compressor is exposed to the atmosphere. (Maximum amount of time the system can be exposed to the atmosphere is 15 minutes). The line set can be routed for entry through the front or left side of the condensing unit.

- Remove knockout for preferred location.
- Insert supplied plastic bushings in knockout holes to prevent tubing from contacting sheet metal.
- Use the supplied 90° elbows to route tubing.
- Cut the tubing ends of the suction and liquid lines and braze the line sets to the condensing unit.



MINIMIZE THE TIME THE REFRIGERATION SYSTEM IS EXPOSED TO THE ATMOSPHERE (15 MINUTES MAXIMUM)

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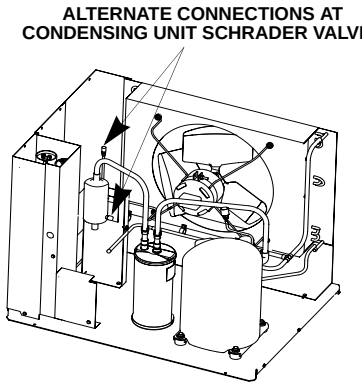
Step 5 Pressure Test and Evacuate The Line Set and CVD Condensing Unit

Schrader valve core removal tools that allow for removal and installation of the valve cores without removing manifold gauge set hoses are recommended to decrease the evacuation time.

Leave the line set shut off valves closed (front seated). Pressure test the line sets and CVD condensing unit with 150 psig of dry nitrogen. Add nitrogen at the line set shut off valves located at the back of the ice machine. Complete the pressure test, verify no leaks are present and remove the nitrogen from the system before connecting the vacuum pump. Connect a vacuum pump to both of the line set shut off valves located at the back of the ice machine head section. Evacuate to 250 microns (or less). To completely evacuate the CVD condensing unit, continue the evacuation for 30 minutes after reaching the 500 micron point.



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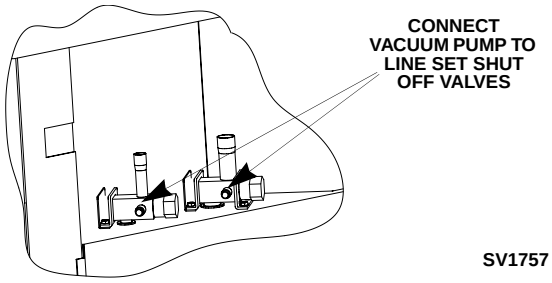
If required, the line set and condensing unit can be evacuated from the schrader valves located in the CVD condensing unit. Schrader valve core removal tools (that allow for putting the cores back in without removing vacuum pump hoses) must be used if evacuating from the condensing unit side.

Isolate the vacuum pump from the line set shut off valves and/or condensing unit access ports prior to proceeding. Open refrigeration system shut off valves.

The suction line, liquid line and receiver service valves are closed during shipment and installation.



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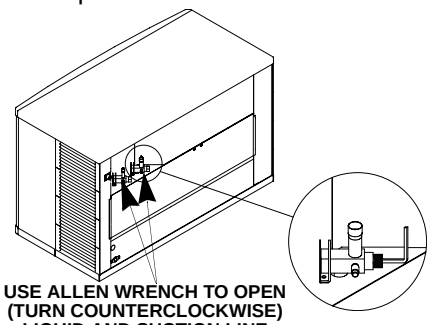
Step 6 Open The Valves Prior To Starting The Ice Machine.

A. Slowly backseat (open-turn counterclockwise) the suction line shut off valve.

B. Slowly backseat (open-turn counterclockwise) the liquid line shut off valve.

C. Slowly backseat (open-turn counterclockwise) the receiver service valve.

NOTE: You will not hear refrigerant flow when the valves are opened. Refrigerant will not flow until the toggle switch is placed in the ice position and the liquid line solenoid valve opens.



OPEN SUCTION AND LIQUID LINE SHUT OFF VALVES

⚠ Caution

After opening suction, discharge and receiver service valves, refrigerant pressure will not be detected until the toggle switch is placed in the ice position and the cool vapor solenoid valve energizes.

Important

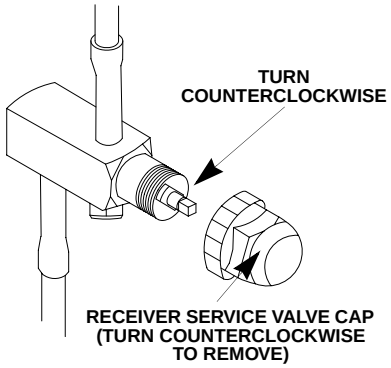
All refrigeration valve caps must be reinstalled to prevent future refrigeration leaks.

Verify O-ring in schrader valve caps are intact and reinstall on shut off valves to prevent refrigerant leakage. Replace shut off valve access caps and torque to the following specifications.

Torque Value's

Stem	18-20 ft. lbs.
Caps	12-15 ft. lbs.
Schrader Core	1.5-3 in. lbs.

Replace cap on receiver service valve and tighten.



Open Receiver Service Valve

There is a liquid line solenoid valve at the outlet of the receiver; refrigerant will not flow to the condensing unit until the ice machine head section is started. Connect power to both the ice machine head section and the CVD condensing unit. Place the ICE/OFF/CLEAN toggle switch into the ICE position, this will allow refrigerant to enter the line set and condensing unit.

Step 7 Leak Check The Refrigeration System

Leak check the new line set connections at the ice machine head section, condensing unit and S trap as well as all factory joints throughout the entire system. Disconnect power to the CVD condensing unit. Place the ICE/OFF/CLEAN toggle switch into the ICE position. This allows the low side and high side pressures to equalize. Place the ICE/OFF/CLEAN toggle switch in the OFF position. Connect power to the CVD condensing unit and allow system to pump down.

Step 8 Insulation Requirements

To prevent condensation the entire suction line including the shut-off valve must be insulated. All insulation must be airtight and sealed at both ends.

The following insulation requirements prevent condensation at 90°F (32.2°C) ambient 90% Relative Humidity. If higher humidity is expected, increase insulation thickness.

The entire suction line set, including the suction service valve located on the back of the ice machine requires:

Suction Line	Liquid Line	Min. Insulation Thickness
3/4 inch (19.1 mm)	1/2 inch (12.7 mm)	1/2”(13mm) Suction Line 1/4” (7mm) Liquid Line
5/8 inch (15.9 mm)	3/8 inch (9.5 mm)	
7/8 inch (22.2 mm)	5/8 inch (15.9 mm)	3/4” (19mm) Suction Line 1/4” (7mm) Liquid Line

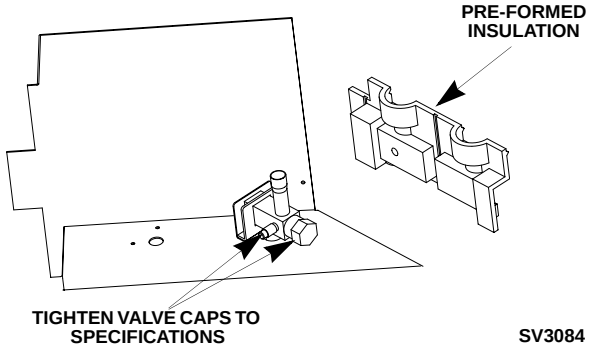
Important

To prevent condensation the entire suction line including the shut off valve must be insulated. All insulation must be airtight and sealed at both ends. The minimum requirements are for conditions at or below 90% humidity and 90°F (32.2°C) ambient. When higher humidity will be experienced, insulation wall thickness will need to be increased.

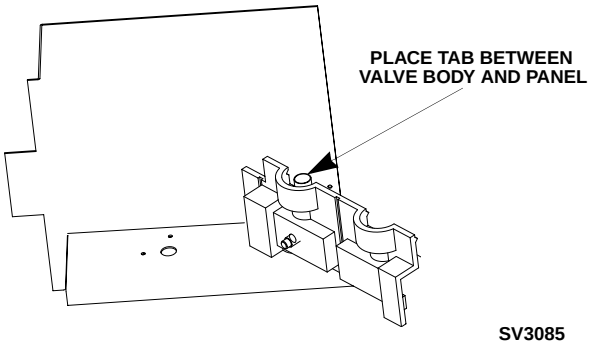
Suction Shut Off Valve Insulation

The pre-formed suction shut-off valve insulation is located in the plastic bag taped to the water curtain.

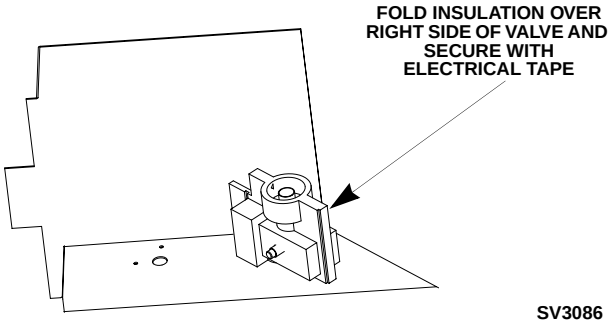
A. Verify valve and schrader caps are tightened to specifications (see Step 6).

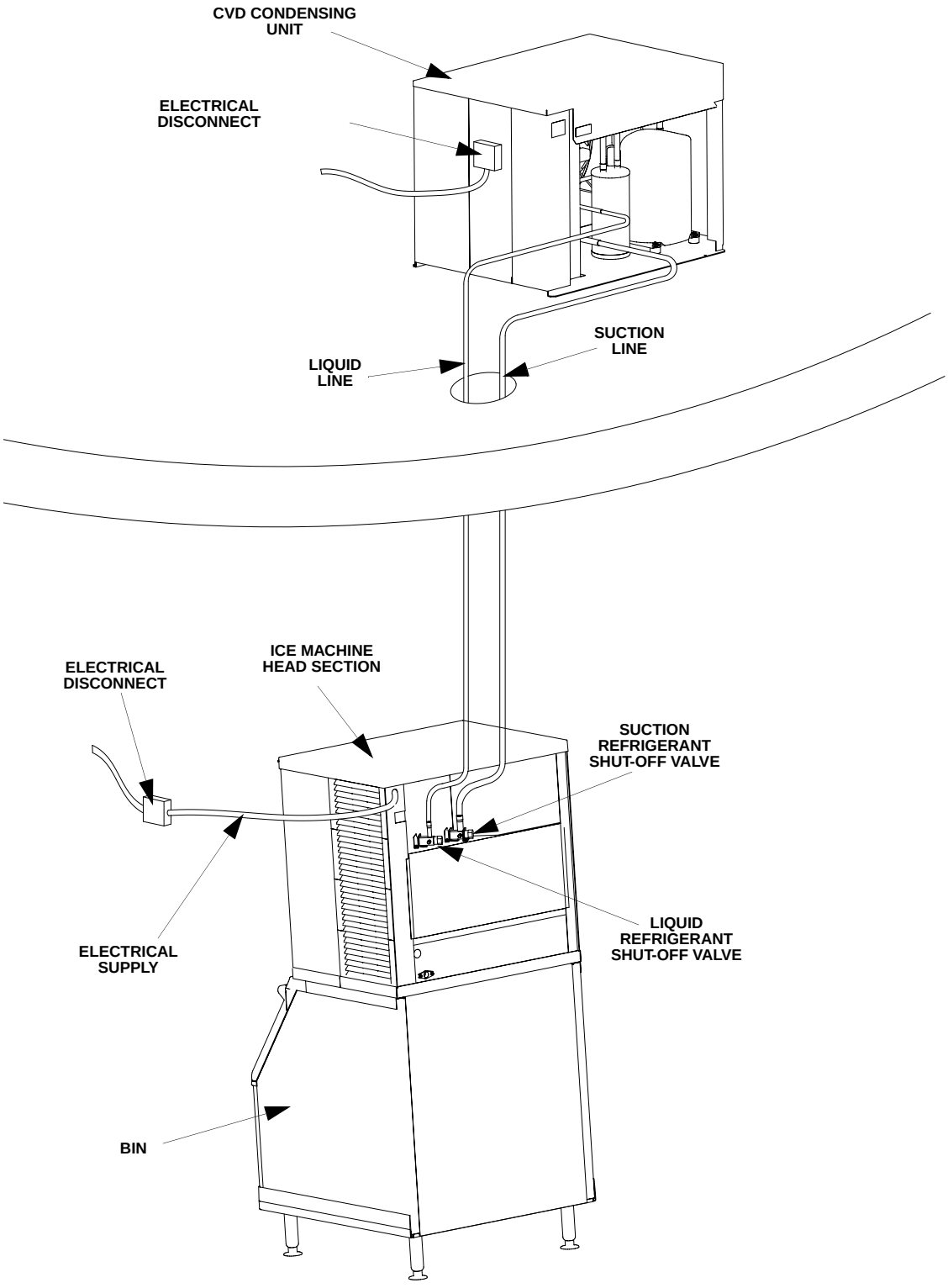


B. Place insulation over schrader valve cap and left side of valve. Position the tab between the mounting bracket and rear panel.



C. Fold insulation and hold against right hand side of valve while securing with electrical tape. Seal the line set insulation to the shut off valve insulation with electrical tape.





Typical QuietQube® System Installation

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?
- ☐ Has the ice machine been installed where ambient temperatures will remain in the range of 35° - 110°F (1.7° - 43.3°C)?
- ☐ Has the ice machine been installed where the incoming water temperature will remain in the range of 33° - 90°F (0.6° - 32.2°C)?
- ☐ Are the ice machine and bin drains separately vented?
- ☐ 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 card been sent to the factory?
- ☐ Has the ice machine and bin been sanitized?
- ☐ Has the sump trough plug been installed?
- ☐ Has the ice machine receiver service valve been opened?
- ☐ Does the condenser fan motor(s) operate properly after start-up?
- ☐ Have all the refrigeration fittings and joints been leak checked?
- ☐ Is the line set routed properly?
- ☐ Is a refrigeration oil trap (S-trap) installed if the condenser is installed 21 to 35 feet (6.1 to 10.7m) above the ice machine head?
- ☐ Has the CVD® condensing unit been installed to prevent any roofing damage?
- ☐ Have the refrigeration lines been insulated and secured properly to prevent vibration?
- ☐ Has the remote condensing unit been located where ambient temperatures will remain in the range of -20° to 130°F (-28.9° to 54.4°C)?
- ☐ Are the plastic bushings installed on the CVD® condensing unit to prevent refrigeration tubing from contacting the sheet metal panel?

Before Starting 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.

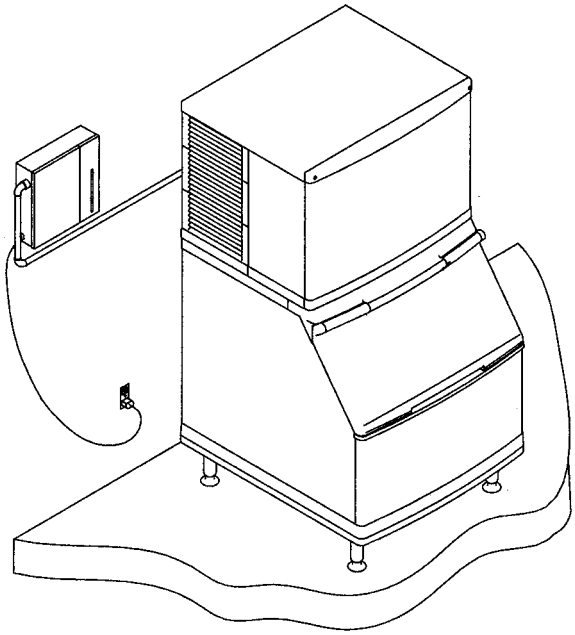
⚠ Warning

Potential Personal Injury Situation

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

AuCS® Automatic Cleaning System

This optional accessory monitors ice making cycles and initiates cleaning procedures automatically. The AuCS® accessory can be set to automatically clean or sanitize the ice machine every 2, 4 or 12 weeks. Refer to the AuCS® Installation and Owner/Operator Use and Care Guide for details.



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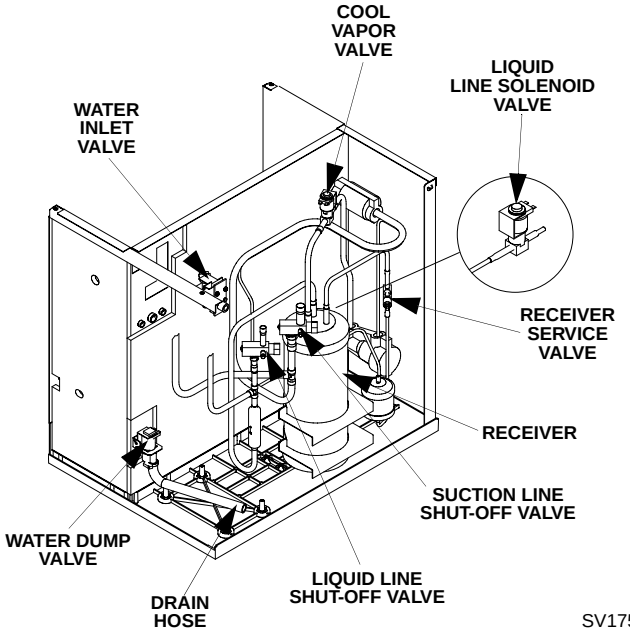
Section 3
Ice Machine Operation

Component Identification

ICE MACHINE HEAD SECTION

Q0600C/Q0800C/Q1000C



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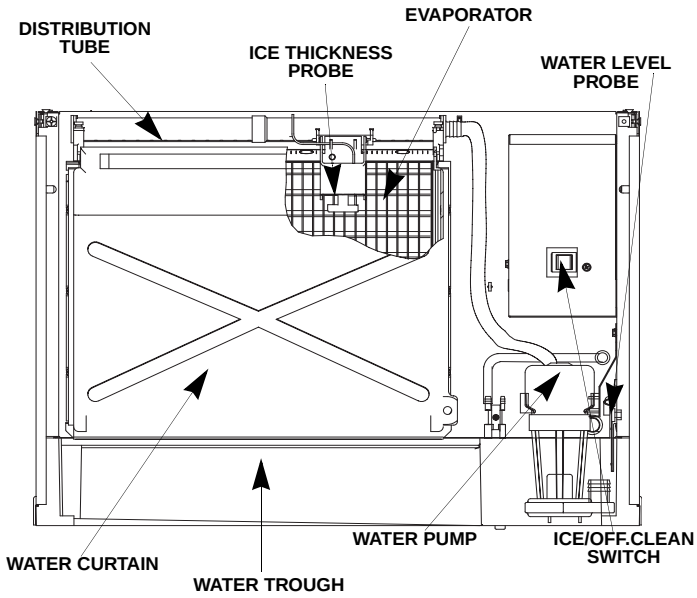

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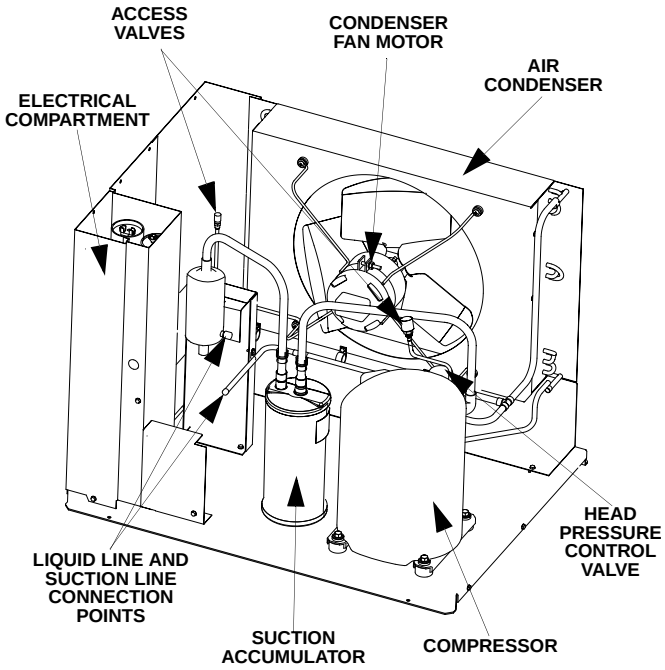
CONDENSING UNIT

CVD0675/CVD0875/CVD1075



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Ice Making Sequence of Operation

INITIAL START-UP OR START-UP AFTER AUTOMATIC SHUT-OFF

1. Water Purge

Before the compressor starts, the water pump and water dump solenoid are energized for 45 seconds, to completely purge the ice machine of old water. This feature ensures that the ice making cycle starts with fresh water.

The cool vapor solenoid is also energized during water purge, although it stays on for an additional 5 seconds (50 seconds total on time) during the initial refrigeration system start-up.

2. Refrigeration System Start-Up

Ice Machine Head Section: The liquid line solenoid valve starts after the 45 second water purge, and it remains on throughout the entire Freeze and Harvest Sequences. The cool vapor solenoid valve remains on for 5 seconds during initial compressor start-up and then shuts off.

The water fill valve is energized at the same time as the liquid line solenoid valve.

CVD Condensing Unit: When the refrigerant pressure is high enough to close the low-pressure control, (after cool vapor valve energizes in step 1) the contactor coil is energized and the compressor starts. The compressor and fan cycling control* are supplies with power throughout the entire Freeze and Harvest Sequences. When the refrigerant pressure is high enough to close the fan cycling pressure control the condenser fan motor starts.

* The Q0600C ice machine does not use a fan cycling control. The compressor and the condenser fan motor are wired through the contactor. Any time the contactor coil is energized, these components are supplied with power.

FREEZE SEQUENCE

3. Prechill

The compressor is on for 30 seconds prior to water flow, to prechill the evaporator. The water fill valve remains on until the water level probe is satisfied.

4. Freeze

The water pump restarts after the 30 second prechill. An even flow of water is directed across the evaporator and into each cube cell, where it freezes. The water fill valve will cycle on and then off one more time to refill the water trough.

When sufficient ice has formed, the water flow (not the ice) contacts the ice thickness probe. After approximately 7 seconds of continual water contact, the harvest sequence is initiated. The ice machine cannot initiate a harvest sequence until a 6 minute freeze lock has been surpassed.

Continued on next page …

HARVEST SEQUENCE

5. Water Purge

The water pump continues to run, and the water dump valve energizes for 45 seconds to purge the water in the sump trough. The water fill valve energizes (turns on) for the last 15 seconds of the 45-second water purge.

After the 45 second water purge, the water fill valve, water pump and dump valve de-energize. (Refer to “Water Purge Adjustment” for details.)

The cool vapor solenoid valve also opens at the beginning of the water purge to divert refrigerant gas into the evaporator.

When the refrigerant pressure is low enough to open the fan cycling pressure control* the condenser fan motor stops.

* The Q0600C ice machine does not use a fan cycle control, therefore the condenser fan motor will continue to run in the harvest cycle.

6. Harvest

The cool vapor solenoid valve remains open and the refrigerant gas warms the evaporator causing the cubes to slide, as a sheet, off the evaporator and into the storage bin. The sliding sheet of cubes swings the water curtain out, opening the bin switch.

The momentary opening and re-closing of the bin switch terminates the harvest sequence and returns the ice machine to the freeze sequence (steps 3-4).

AUTOMATIC SHUT-OFF

7. Automatic Shut-Off

Ice Machine Section: When the storage bin is full at the end of a harvest sequence, the sheet of cubes fails to clear the water curtain and will hold it open. After the water curtain is held open for 7 seconds, the ice machine shuts off. The ice machine remains off for 3 minutes before it can automatically restart.

CVD Condensing Unit: The liquid line solenoid valve closes, allowing the refrigeration system to pump down. when the refrigerant pressure is low enough to open the fan cycling pressure control* the condenser fan motor stops. When the refrigerant pressure is low enough to open the low pressure control, the contactor coil is de-energized and the compressor stops.

The ice machine remains off until enough ice has been removed from the storage bin to allow the ice to fall clear of the water curtain. As the water curtain swings back to the operating position, the bin switch re-closes and the ice machine restarts (steps 1 - 2), provided the 3 minute delay period is complete.

* The Q0600C ice machine does not use a fan cycle control, therefore the condenser fan motor will energize and de-energize with the compressor.

Operational Checks

GENERAL

Manitowoc ice machines are factory-operated and adjusted before shipment. Normally, a newly installed ice machine does not require any adjustment.

To ensure proper operation, always follow the Operational Checks:

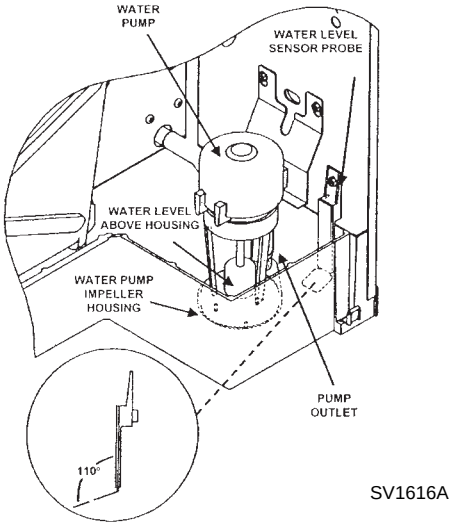
- when starting the ice machine for the first time
- after a prolonged out of service period
- after cleaning and sanitizing

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

WATER LEVEL

The water level sensor is set to maintain the proper water level above the water pump housing. The water level is not adjustable.

If the water level is incorrect, check the water level probe for damage (probe bent, etc.). Repair or replace the probe as necessary.



Water Level Probe

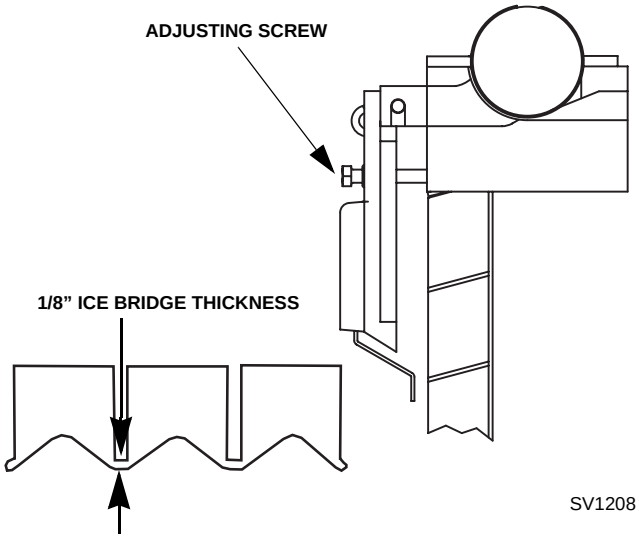
ICE THICKNESS CHECK

After a harvest cycle, inspect the ice cubes in the ice storage bin. The ice thickness probe is factory-set to maintain the ice bridge thickness at 1/8" (3.2 mm).

NOTE: Make sure the water curtain is in place when performing this check. It prevents water from splashing out of the water trough.

1. Inspect the bridge connecting the cubes. It should be about 1/8" (3.2 mm) thick.
2. If adjustment is necessary, turn the ice thickness probe adjustment screw clockwise to increase bridge thickness, counterclockwise to decrease bridge thickness.

NOTE: Turning the adjustment 1/3 of a turn will change the ice thickness about 1/16" (1.5 mm).



Ice Thickness Check

3. Make sure the ice thickness probe wire and the bracket do not restrict movement of the probe.

HARVEST SEQUENCE WATER PURGE

The harvest sequence water purge adjustment may only be used when the ice machine is hooked up to special water systems, such as a de-ionized water treatment system.

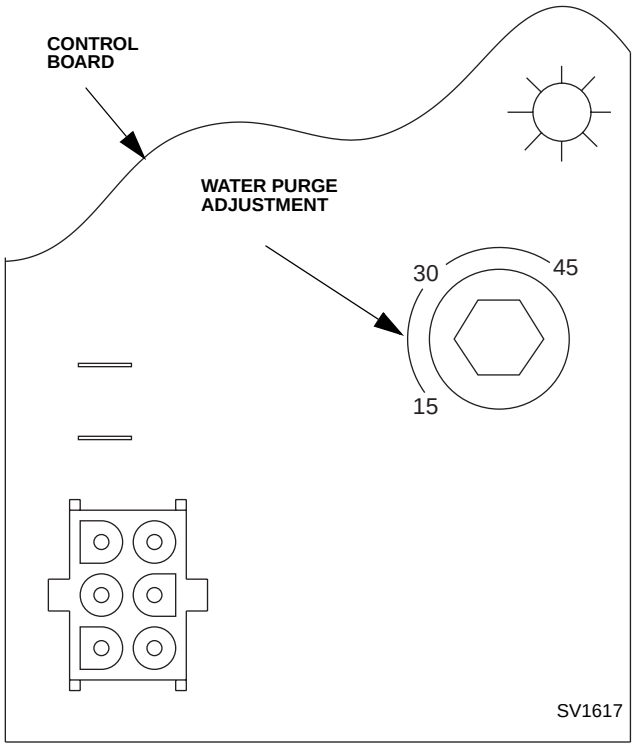
Important

The harvest sequence water purge is factory-set at 45 seconds. A shorter purge setting (with standard water supplies such as city water) is not recommended. This can increase water system cleaning and sanitizing requirements.

- The harvest sequence water purge may be set to 15, 30, or 45 seconds.
- During the harvest sequence water purge, the water fill valve energizes and de-energizes by time. The water purge must be at the factory setting of 45 seconds for the water fill valve to energize during the last 15 seconds of the water purge. If it is set to less than 45 seconds, the water fill valve will not energize during the water purge.

⚠ Warning

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



Water Purge Adjustment

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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 every six months to ensure reliable, trouble-free operation and maximum ice production.

Ice Machine Inspection

⚠ Warning

Disconnect electric power to the ice machine and the CVD condensing unit at the electric service switch before cleaning the condenser.

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.) on the sides or back 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.

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

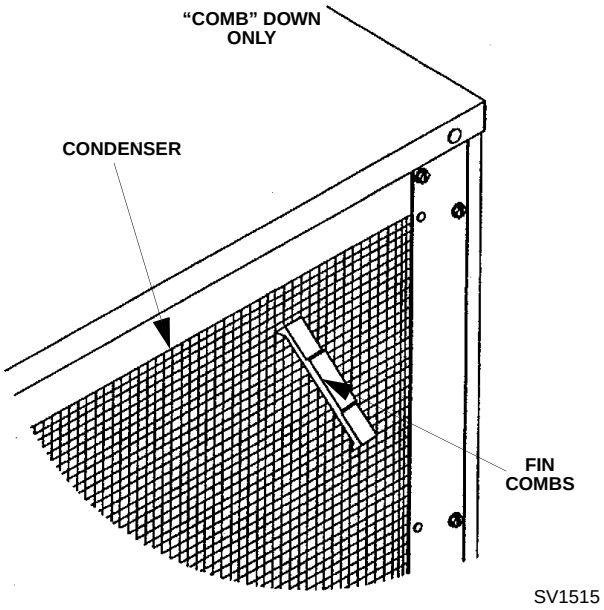
Disconnect electric power to the ice machine head section and the CVD condensing unit at the electric service switches before cleaning the condenser.

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.

⚠ Warning

The condenser fins are sharp. Use care when cleaning them.

1. Clean the outside of the condenser with a soft brush or a vacuum with a brush attachment. Be careful not to bend the condenser fins.
2. Shine a flashlight through the condenser to check for dirt between the fins. If dirt remains:
   A. Blow compressed air through the condenser fins from the inside. Be careful not to bend the fan blades.
   B. Use a commercial condenser coil cleaner. Follow the directions and cautions supplied with the cleaner.
3. Straighten any bent condenser fins with a fin comb.



Straighten Bent Condenser Fins

4. Carefully wipe off the fan blades and motor with a soft cloth. Do not bend the fan blades. If the fan blades are excessively dirty, wash with warm, soapy water and rinse thoroughly.

⚠ Caution

If you are cleaning the condenser fan blades with water, cover the fan motor to prevent water damage.

Interior Cleaning and Sanitizing

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 or installation of AuCS® accessory (Automatic Cleaning System). If required, an extremely dirty ice machine may be taken apart for cleaning and sanitizing.

⚠ Caution

Use only Manitowoc approved Ice Machine Cleaner (part number 94-0546-3) and Sanitizer (part number 94-0565-3). It is a violation of Federal law to use these solutions in a manner inconsistent with their labeling. Read and understand all labels printed on bottles before use.

⚠ 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.

⚠ Warning

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

MANITOWOC'S PATENTED CLEANING OR SANITIZING TECHNOLOGY

Manitowoc Ice Machines include technology that allows the initiation and completion of a cleaning or sanitizing cycle at the flip of a switch. This cycle will permit cleaning or sanitizing of all surfaces that come in contact with the water distribution system. Periodic maintenance must be performed that includes sanitizing the bin (or dispenser) and adjacent surface areas, which cannot be contacted by the water distribution system.

This technology will also allow initiation and completion of a clean or sanitize cycle, after which the ice machine automatically starts ice making again.

Refer to the cleaning or sanitizing procedure for complete details.

The AuCS Accessory can be set to automatically start and finish a clean or sanitize cycle every 2, 4, or 12 weeks. This accessory monitors ice-making cycles and initiates a cleaning or sanitizing cycle automatically. Refer to Automatic Cleaning System (AuCS) Accessory for further details.

ALPHASAN®

The goal of AlphaSan is to keep the plastic surfaces of an ice machine cleaner, by reducing or delaying the formation of biofilm. The active ingredient in AlphaSan is the element silver in the form of silver ions (Ag+). AlphaSan slowly releases silver ions via an ion exchange mechanism. When AlphaSan is compounded directly into a plastic part, a controlled release of silver ions from the surface is regulated to maintain an effective concentration at or near the surface of the plastic ice machine part.

AlphaSan's unique ability to effectively control the release of silver not only protects against undesired discoloration of the plastic, but also will last the life of the plastic part. Although AlphaSan helps prevent biofilm build up it does not eliminate the need for periodic cleaning and maintenance. AlphaSan has no adverse effect on the taste of the ice or beverage.

CLEANING PROCEDURE

Ice machine cleaner is used to remove lime scale or other mineral deposits. It is not used to remove algae or slime. Refer to the "Sanitizing Procedure" for removal of algae and slime. To initiate a cleaning cycle using Manitowoc's Patented Cleaning Technology use the following procedure.

Step 1 Set the toggle switch to the OFF position after ice falls from the evaporator at the end of a Harvest cycle. Or, set the switch to the OFF position and allow the ice to melt off the evaporator.

⚠ Caution

Never use anything to force ice from the evaporator. Damage may result.

Step 2 To start cleaning, place the toggle switch in the CLEAN position. The water will flow through the water dump valve and down the drain. The Clean light will turn on to indicate the ice machine is in the Cleaning mode.

Step 3 Wait about one minute or until water starts to flow over the evaporator.

Step 4 Add the proper amount of Manitowoc Ice Machine Cleaner to the water trough.

QuietQube® Model	Amount of Cleaner
Q0600C Q0800C	5 ounces (150 ml)
Q1000C	9 ounces (270 ml)

Step 5 The ice machine will automatically time out a ten minute cleaning cycle, followed by six rinse cycles, and stop. The Clean light will turn off to indicate the clean mode is completed. This entire cycle lasts approximately 25 minutes.

NOTE: Periodic cleaning must be performed on adjacent surface areas not contacted by the water distribution system.

Step 6 When the cleaning process stops, move the toggle switch to OFF position. Refer to "Sanitizing Procedure" on the next page.

Step 7

A. The ice machine may be set to start and finish a cleaning procedure then automatically start ice making again.

B. You must wait about one minute into the cleaning cycle (until water starts to flow over the evaporator) then move the switch from CLEAN to ICE position.

C. When the cleaning cycle is completed, the CLEAN light will turn off and an ice making sequence will start automatically.

Important

After the toggle switch is moved to the ICE position, opening the curtain (bin switch) will interrupt the cleaning sequence. The sequence will resume from the point of interruption when the curtain (bin switch) closes.

SANITIZING PROCEDURE

Use sanitizer to remove algae or slime. Do not use it to remove lime scale or other mineral deposits. To initiate a sanitizing cycle using Manitowoc's Patented Cleaning/ Sanitizing Technology use the following procedure.

Step 1 Set the toggle switch to the OFF position after ice falls from the evaporator at the end of a Harvest cycle. Or, set the switch to the OFF position and allow the ice to melt off the evaporator.

> **⚠ Caution**
> Never use anything to force ice from the evaporator. Damage may result.

Step 2 To start a sanitizing cycle, place the toggle switch in the CLEAN position. The water will flow through the water dump valve and down the drain. The Clean light will turn on to indicate the ice machine is in the Sanitizing mode.

Step 3 Wait about one minute or until water starts to flow over the evaporator.

Step 4 Add the proper amount of Manitowoc Ice Machine Sanitizer to the water trough.

QuietQube® Model	Amount of Sanitizer
Q0600C Q0800C Q1000C	3 ounces (90 ml)

Step 5 The ice machine will automatically time out a ten minute sanitizing cycle, followed by six rinse cycles, and stop. The Clean light will turn off to indicate the sanitizing mode is completed. This entire cycle lasts approximately 25 minutes.

NOTE: Periodic cleaning must be performed on adjacent surface areas not contacted by the water distribution system. If the bin requires sanitizing, remove all the ice and sanitize it with a solution of 1-ounce (30 ml) of sanitizer with up to 4 gallons (15 L) of water.

Step 6 When the sanitizing process stops, move the toggle switch to ICE position to start ice making again.

Step 7

A. The ice machine may be set to start and finish a sanitizing procedure then automatically start ice making again.

B. You must wait about one minute into the sanitizing cycle (until water starts to flow over the evaporator) then move the switch from CLEAN to ICE position.

C. When the sanitizing cycle is completed, the clean light will turn off and an ice making sequence will start automatically.

> **Important**
> After the toggle switch is moved to the ICE position, opening the curtain (bin switch) will interrupt the sanitizing sequence. The sequence will resume from the point of interruption when the curtain (bin switch) closes.

PROCEDURE TO CANCEL A CLEANING OR SANITIZING CYCLE AFTER IT HAS STARTED

If less than 45 seconds into cycle:

Move the toggle switch to the OFF position. The cycle is canceled.

If more than 45 seconds into cycle:

Step 1 Move toggle switch to OFF position.

Step 2 Move toggle switch to ICE position.

Step 3 Move toggle switch to OFF position. The cycle is canceled.

AUTOMATIC CLEANING SYSTEM (AuCS®)

This accessory monitors ice making cycles and initiates cleaning (or sanitizing) procedures automatically. The AuCS® Accessory can be set to automatically clean or sanitize the ice machine every 2, 4, or 12 weeks. Periodic maintenance must be performed that includes cleaning of sanitizing the bin (or dispenser) and adjacent surface areas, which cannot be contacted by the water distribution system.

⚠ Caution

Refer to the AuCS® Accessory Installation - Use and Care Manual for complete details on the installation, operation, maintenance and cautionary statements of this accessory.

Automatic Operation

The following occurs when the toggle switch is in the ICE position:

- The ice machine control board counts the number of ice harvest cycles.
- The AuCS® accessory interrupts the ice making mode and starts the cleaning (or sanitizing) mode when the harvest count equals the “Frequency of Cleaning” setting of the AuCS®.
- When the automatic cleaning (or sanitizing) cycle is complete (approximately 25 minutes), ice making resumes automatically, and the “Harvest Count” is reset to zero.

Important

Opening the curtain switch will interrupt the cleaning or sanitizing sequence. The sequence will resume from the point of interruption when the curtain re-closes.

Manual Start Operation

Step 1 Set the toggle switch to the OFF position after ice falls from the evaporator at the end of a Harvest cycle. Or, set the switch to the OFF position and allow the ice to melt off the evaporator.

⚠ Caution

Never use anything to force ice from the evaporator. Damage may result.

Step 2 To start the automatic cleaning system, move the toggle switch to the CLEAN position. The water will flow through the water dump valve and down the drain. The Clean light will turn on to indicate the ice machine is in the Self Cleaning mode. The AuCS® then automatically adds cleaner or sanitizer to the ice machine.

Step 3 The ice machine will automatically time out a ten minute cleaning or sanitizing cycle, followed by six rinse cycles, de-energize the Clean light and stop. This entire cycle lasts approximately 25 minutes.

Step 4 After the cleaning or sanitizing cycle stops, move the toggle switch to ICE position.

Step 5

A. The ice machine may be set to start and finish a cleaning or sanitizing cycle, then automatically start ice making again.

B. You must wait about one minute into the cleaning cycle (until water starts to flow over the evaporator), then move the toggle switch from CLEAN to ICE position.

C. When the cleaning or sanitizing cycle is completed, the clean light will turn off and an ice making sequence will start automatically.

REMOVAL OF PARTS FOR CLEANING/SANITIZING

⚠ Warning
Disconnect electric power to the ice machine at the electric switch box before proceeding.

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

⚠ 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.

1. Turn off the water supply to the ice machine at the water service valve.
2. Remove the water curtain and the components you want to clean or sanitize. See the following pages for removal procedures for these parts.
3. Soak the removed part(s) in a properly mixed solution.

Solution Type	Water	Mixed With
Cleaner	1 gal. (4 l)	16 oz (500 ml) cleaner
Sanitizer	4 gal. (15 l)	1 oz (30 ml) sanitizer

4. Use a soft-bristle brush or sponge (NOT a wire brush) to carefully clean the parts.

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

5. Use the solution and a brush to clean the top, sides, and bottom evaporator extrusions; the inside of the ice machine panels; and the entire inside of the bin.
6. Thoroughly rinse all of the parts and surfaces with clean water.
7. Install the removed parts.

NOTE: Incomplete rinsing of the ice thickness probe or water level probe may leave a residue. This could cause the ice machine to malfunction. For best results, brush or wipe the probes off while rinsing it. Thoroughly dry the probes before installing them.

8. Turn on the water and electrical supply.
9. Verify the ice thickness probe is properly adjusted.

Water Dump Valve

The water dump valve normally does not require removal for cleaning. To determine if removal is necessary:

1. Locate the water dump valve.
2. Set the toggle switch to ICE.
3. While the ice machine is in the freeze mode, check the dump valve's clear plastic outlet drain hose for leakage.
   - If the dump valve is leaking, remove, disassemble and clean it.
   - If the dump valve is not leaking, do not remove it. Instead, follow the "Cleaning Procedure".

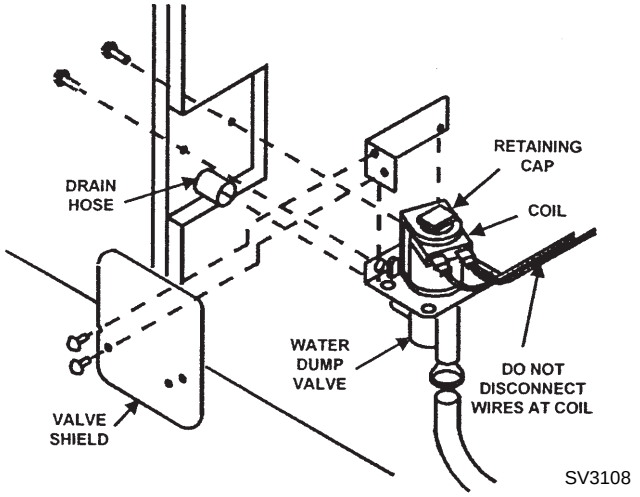
Follow the procedure below to remove the dump valve.

⚠ Warning

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

1. If so equipped, remove the water dump valve shield from its mounting bracket.
2. Lift and slide the coil retainer cap from the top of the coil.
3. Note the position of the coil assembly on the valve for assembly later. Leaving the wires attached, lift the coil assembly off the valve body and the enclosing tube.
4. Press down on the plastic nut on the enclosing tube and rotate it 1/4 turn. Remove the enclosing tube, plunger, and plastic gasket from the valve body.

NOTE: At this point, the water dump valve can easily be cleaned. If complete removal is desired, continue with step 5.



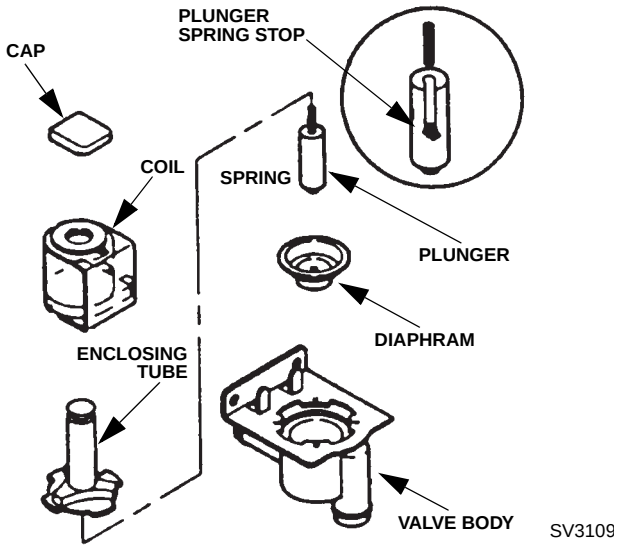
Dump Valve Removal

Important

The plunger and the inside of the enclosing tube must be completely dry before assembly.

NOTE: During cleaning, do not stretch, damage or remove the spring from the plunger. If it is removed, slide the spring's flared end into the plunger's slotted top opening until the spring contacts the plunger spring stop.

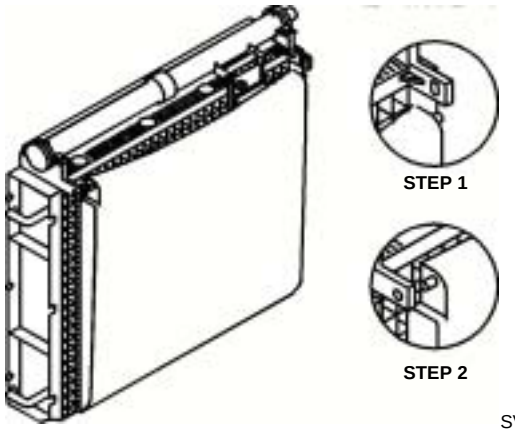
5. Remove the valve body.
6. Remove the tubing from the dump valve by twisting the clamps off.
7. Remove the two screws securing the dump valve and the mounting bracket.



Dump Valve Disassembly

Water Curtain

1. Gently flex the curtain in the center and remove it from the right side.

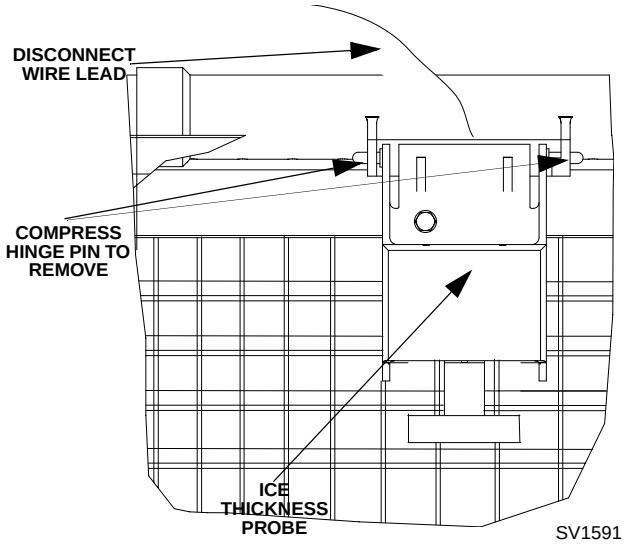


Water Curtain Removal

2. Slide the left pin out.

Ice Thickness Probe

1. Compress the side of the ice thickness probe near the top hinge pin and remove it from the bracket.



Ice Thickness Probe Removal

NOTE: At this point, the ice thickness probe can easily be cleaned. If complete removal is desired, continue with step 2 below.

⚠ Warning

Disconnect the electric power to the ice machine at the electric service switch box.

2. Disconnect the wire lead from the control board inside the electrical control box.

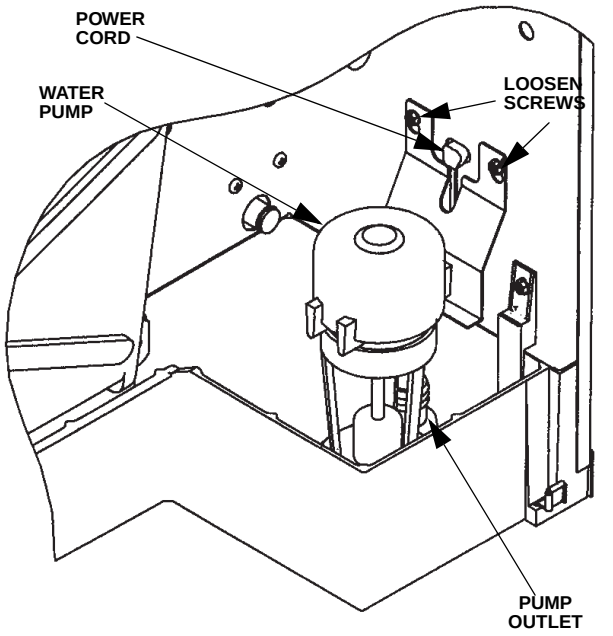
Ice Thickness Probe Cleaning

1. Mix a solution of Manitowoc ice machine cleaner and water (2 ounces of cleaner to 16 ounces of water) in a container.
2. Soak ice thickness probe in container of cleaner/water solution while disassembling and cleaning water circuit components (soak ice thickness probe for 10 minutes or longer).
3. Clean all ice thickness probe surfaces including all plastic parts (do not use abrasives). Verify the ice thickness probe cavity is clean. Thoroughly rinse ice thickness probe (including cavity) with clean water, then dry completely. **Incomplete rinsing and drying of the ice thickness probe can cause premature harvest.**
4. Reinstall ice thickness probe, then sanitize all ice machine and bin/dispenser interior surfaces.

Water Pump

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

1. Disconnect the water pump power cord.



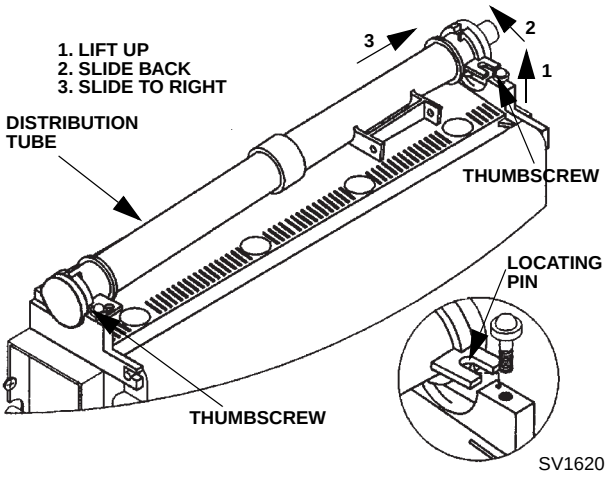
Water Pump Removal

2. Disconnect the hose from the pump outlet.
3. Loosen the screws securing the pump mounting bracket to the bulkhead.
4. Lift the pump and bracket assembly off the screws.

Water Distribution Tube

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

1. Remove the clamp from the vinyl water hose on the right side of the distribution tube.



Water Distribution Tube Removal

2. Loosen the two thumbscrews which secure the distribution tube.
3. Lift the right side of the distribution tube up, and then rotate it backward and to the right until the left side of the distribution tube disengages the thumbscrew.

⚠ Caution
Do not force this removal. Be sure the locating tab is clear before rotating the distribution tube back.

4. Pull the vinyl hose off the distribution tube.
5. Disassemble for cleaning.
   A. Twist both of the inner tube ends until the tabs line up with the keyways.
   B. Pull the inner tube ends outward.

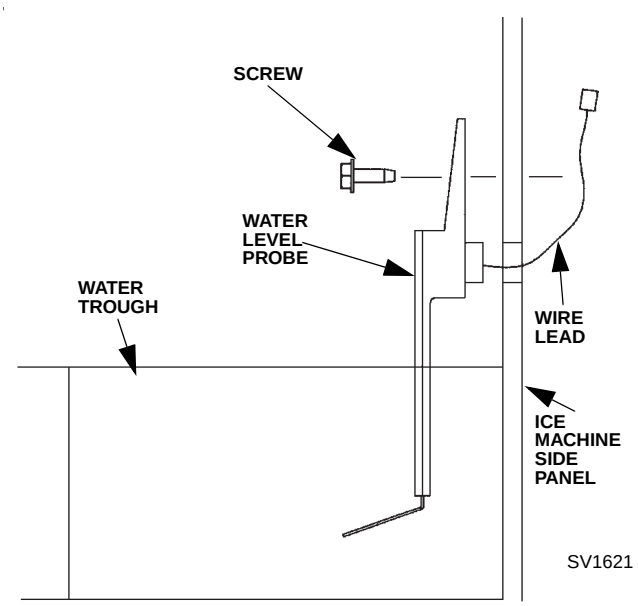
Water Level Probe

1. Loosen the screw that holds the water level probe in place. The probe can easily be cleaned at this point without proceeding to step 2.

⚠ Warning

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

2. If complete removal is required, disconnect the wire lead from the control board inside the electrical control box.



Water Level Probe Removal

Water Inlet Valve

The water inlet valve normally does not require removal for cleaning. Follow the instructions below to determine if removal is necessary.

1. Set the ICE/OFF/CLEAN switch to OFF. Locate the water inlet valve (in the water area of the ice machine). It pours water into the water trough.
2. When the ice machine is off, the water inlet valve must completely stop water flow into the machine. Watch for water flow. If water flows, remove, disassemble and clean the valve.
3. When the ice machine is on, the water inlet valve must allow the proper water flow through it. Set the toggle switch to ON. Watch for water flow into the ice machine. If the water flow is slow or only trickles into the ice machine, remove, disassemble, and clean the valve.

Follow the procedure below to remove the water inlet valve.

⚠ Warning

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

Removal

1. Remove the valve shield if necessary.
2. Remove the filter access screws that hold the valve in place.

NOTE: The water inlet valve can be disassembled and cleaned without disconnecting the incoming water supply line to the ice machine, when a shut off valve is installed before the water inlet valve.

3. Remove, clean, and install the filter screen.

Removal from Service/Winterization

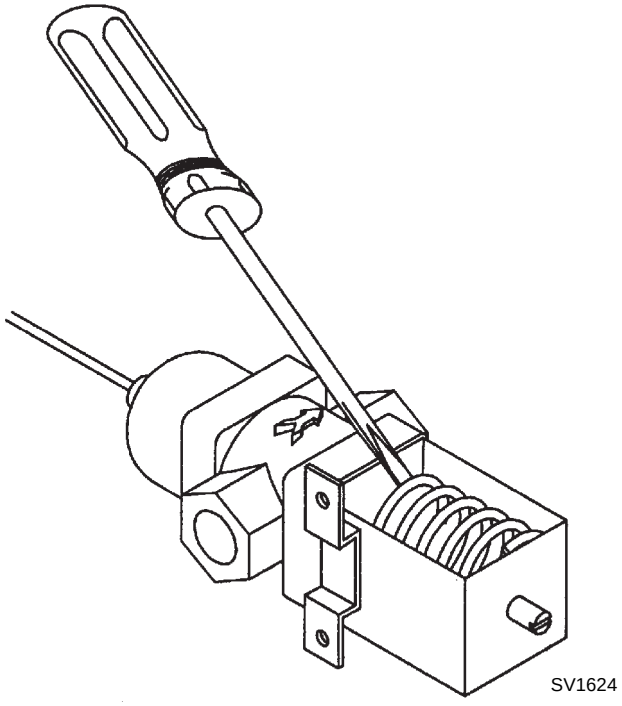
GENERAL

Special precautions must be taken if the ice machine head section 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 applicable procedure below.

1. Place the ice machine toggle switch into the OFF position.
2. Turn off the water supply.
3. Remove the water from the water trough.
4. Disconnect and drain the incoming ice-making water line at the rear of the ice machine.
5. Blow compressed air in both the incoming water and the drain openings in the rear of the ice machine until no more water comes out of the inlet water lines or the drain.
6. Place the toggle switch in the ICE position, then wait 45 seconds for the water fill solenoid valve to energize. Blow compressed air through the incoming water supply in the rear of the ice machine until no more water comes out of the inlet water line.
7. Make sure water is not trapped in any of the water lines, drain lines, distribution tubes, etc.



Pry Open the Water Regulating Valve

8. Hold the valve open and blow compressed air through the condenser until no water remains.

AUCS® ACCESSORY

Refer to the AuCS® Accessory manual for winterization of the AuCS® Accessory.

Section 5
Before Calling For Service

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 and/or condensing unit.	Replace the fuse/reset the breaker/turn on the main switch.
	High pressure cutout tripping.	Clean condenser coil. (See Section 4)
	ICE/OFF/CLEAN toggle switch set improperly.	Move the toggle switch to the ICE position.
	Water curtain stuck open.	Water curtain must be installed and swinging freely. (See Section 4)
	Remote receiver service valve and/or Liquid/suction line shut off valves are closed.	Open the valve(s). (See Section 2)
Ice machine stops, and can be restarted by moving the toggle switch to OFF and back to ICE.	Safety limit feature stopping the ice machine.	Refer to “Safety Limit Feature” on the next page.
Ice machine does not release ice or is slow to harvest.	Ice machine is dirty.	Clean and sanitize the ice machine. (See Section 4)
	Ice machine is not level.	Level the ice machine. (See Section 2)
	Low air temperature around ice machine head section.	Air temperature must be at least 35°F (1.6°C).
	Fan cycling control does not de-energize condenser fan motor.	Verify pressure is below cut-out setpoint, replace fan cycling control.
Ice machine does not cycle into harvest mode.	The six-minute freeze time lock-in has not expired yet.	Wait for the freeze lock-in to expire.
	Ice thickness probe is dirty.	Clean and sanitize the ice machine. (See Section 4)
	Ice thickness probe is disconnected.	Connect the wire.
	Ice thickness probe is out of adjustment.	Adjust the ice thickness probe. (See Section 3)
	Uneven ice fill (thin at the top of evaporator).	Verify sufficient water level in sump trough. Contact a qualified service company to check refrigeration system.
Ice quality is poor (soft or not clear).	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. (See Section 4)
	Water dump valve is not working.	Disassemble and clean the water dump valve. (See Section 4)
	Water softener is working improperly (if applicable).	Repair the water softener.

Problem	Possible Cause	To Correct
Ice machine produces shallow or incomplete cubes, or the ice fill pattern on the evaporator is incomplete.	Ice thickness probe is out of adjustment.	Adjust the ice thickness probe. (See Section 4)
	Water trough level is too high or too low.	Check the water level probe for damage. (See Section 3)
	Water inlet valve filter screen is dirty.	Remove the water inlet valve and clean the filter screen. (See Section 4)
	Water filtration is poor.	Replace is filter.
	Hot incoming water.	Connect the ice machine to a cold water supply. (See Section 2)
	Water inlet valve is not working.	Remove the water inlet valve and clean it. (See Section 4)
	Incorrect incoming water pressure.	Water pressure must be 20-80 psi (137.9 - 551.5 kPA)
	Ice machine head section is not level.	Level the ice machine head section. (See Section 2)
Low ice capacity.	Water inlet valve filter screen is dirty.	Remove the water inlet valve and clean the filter screen. (See Section 4)
	Incoming water supply is shut off.	Open the water service valve.
	Water inlet valve stuck open or leaking.	Remove the water inlet valve and clean it. (See Section 4)
	The condenser is dirty.	Clean the condenser. (See Section 4)
	High air temperature around condenser unit.	Air temperature must not exceed 130°F (43.3°C)

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. Move the ICE/OFF/CLEAN switch to OFF and then back to ICE.
   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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