

# S Model Ice Beverage & QuietQube Ice Machines

## **Installation Operation and Maintenance Manual**



**Original Document** 

Read this instruction before operating this equipment



## **Table of Contents**

Section 1 General Information	
	Model Numbers         4           Ice Deflector         4           Bin Installation         4           Dispenser Installation         4
Section 2 Installation	
	Location Requirements
	Minimum/Maximum Temperatures 5
	Ice Machine Clearance Requirements
	Condensing Unit Clearance Requirements
	Installation Requirements
	Water Supply and Drains 6
	Potable Water Requirements
	Drain Connections
	Water Supply and Drain Line Sizing/Connections
	Cooling Tower Applications
	Electrical Service
	General
	Fuse/Circuit Breaker
	Minimum Circuit Ampacity
	Ground Fault Circuit Interrupter
	Electrical Requirements
	CVD Condensing Units
	QuietQube® Ice Machine Head Section
	Refrigeration System Installation
	Refrigeration Line Set Installation
	Electronic Bin Thermostat Instructions IB600C/IB800C/IB1000C Only 15
Section 3 Operation	
	Ice Making Sequence of Operation
	Safety limits
	Operational Checks
	La Titaliana Obada

## **Table of Contents** (continued)

## Section 4 Maintenance

	Cleaning and Sanitizing	18
	Cleaning/Sanitizing Procedure Differences	
	Exterior Cleaning	
	Cleaning / Sanitizing Procedure	
	Cleaning Procedure	
	Sanitizing Procedure	
	Procedure to Clean Heavily Scaled Ice Machines	
	Cleaning Procedure	
	Sanitizing Procedure	
	Parts Removal for Cleaning/Sanitizing	
	Door Removal	
	Exterior Cleaning	
	Cleaning the Condenser	
	Removal from Service/Winterization	
Section 5		
Customer Support		
	Before Calling for Service Checklist	29
	Safety Limit Feature	30
	Commercial Ice Machine Warranty	
	Residential Ice Machine Limited Warranty	

# Section 1 General Information

#### **Model Numbers**

This manual covers the following models:

Ice Machine Head Section	CVD® Condensing Unit
SD0682C - SY0684C	CVD0675 - CVD0685
IB0684YC - IB0682DC	
SD0872C - SY0874C	CVD0885
IB0824YC - IB0822DC	
SD1072C - SY1074C	CVD1085
IB1024YC - IB1022DC	CVD1185
SD1272C - SY1274C	CVD1285
SD1472C - SY1474C	CVD1485 - CVD1486
SD1872C - SY1874C	CVD1885
SD2172C - SY2174C	CVD2075 - CVD2085
SD3072C - SY3074C	CVD3085
SDF3000C - SYF3000C	CVDF3000

## **A** Warning

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.

## **A** Warning

S1470C/S1870C/S2170C ice machines are not approved for use on Manitowoc B570 bins.

## **A** Warning

S3000C/SF3000C ice machines are not approved for use on Manitowoc B970 or D970 bins.

## **A** Warning

30" large capacity bins must be attached to the wall with the bracket provided with the bin.

#### ICE DEFLECTOR

An ice deflector is required when the ice machine is installed on a bin. An ice deflector is not required when the ice machine is installed on a dispenser.

## **A** Warning

Manitowoc ice machines require a deflector when installed on an ice storage bin.

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.

#### **BIN INSTALLATION**

- All ice machines installed on a bin require an ice deflector.
- Manitowoc bins have a deflector installed and require no modifications when used with a forward facing evaporator.
- Ice machines with multiple evaporators require a deflector kit.

#### **DISPENSER INSTALLATION**

- Ice Beverage ice machines require an adapter for all installations.
- No adapter is needed for machines that match the size of the dispenser unless required by the dispenser manufacturer.
- No deflector is required unless specified by the dispenser manufacturer.
- A bin thermostat to control ice level is recommended.

## **A** Warning

Children must be supervised to ensure they do not play with the ice machine, bin or dispenser.

# Section 2 Installation

## Warning PERSONAL INJURY POTENTIAL

Remove all ice machine panels before lifting and installing.

#### **Location Requirements**

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 location must not be near heat-generating equipment or in direct sunlight.
- The location must be capable of supporting the weight of the ice machine and a full bin of ice.
- The location must allow enough clearance for water, drain and electrical connections in the rear of the ice machine.
- The location must not obstruct airflow through or around the ice machine.
- The location must not allow exhaust fan heat and/or grease to enter the condenser.
- The location must allow electrical, water, drain and refrigeration tubing to enter the ice machine from the back.
- Local water conditions may require treatment of the water to inhibit scale formation, filter sediment, and remove chlorine odor and taste.

These ice machines are intended for use in household and similar applications such as:

- Staff kitchen areas in shops, offices and other work environments.
- Clients in hotels, motels, farmhouses, bed and breakfast and other residential type environments.
- Catering and similar non-retail applications.

#### MINIMUM/MAXIMUM TEMPERATURES

Model	Minimum Air Temperature	Maximum Air Temperature
All Ice Machine Head	35°F	110°F
Sections	2°C	43°C
CVD0675 - CVD0685 CVD1185 - CVD2075 CVD2085 - CVD3085 CVDF3000	-20°F -29°C	120°F 49°C
CVD0885 - CVD1085 CVD1285 - CVD1485 CVD1885	-20°F -29°C	130°F 54°C
CVD1486	35°F 2°C	110°F 43°C

#### ICE MACHINE CLEARANCE REQUIREMENTS

Model	Тор	Back	Sides	
S0600C - S0800C				
S1000C - S1200C	5"	*3" - 5"	5"	
S1470C - S1870C	13 cm	*8 - 13 cm	13 cm	
S2170C				
IB0600C - IB0800C	2"	5"	8"	
IB1000C	5 cm	13 cm	20 cm	
S3000C - SF3000C	8"	24"	**8"	
330000 - 3130000	20 cm	61 cm	**20 cm	
* Routing utilities out top - Routing utilities out back				
** 24" (61 cm) is	s recommende	ed on all side	s	

#### CONDENSING UNIT CLEARANCE REQUIREMENTS

Model	Top/Sides	Back	Front	
CVD0675 - CVD0685				
CVD0885 - CVD1085	*6"	48"	48"	
CVD1185 - CVD1285	*15 cm	122 cm	122 cm	
CVD1885 - CVD2085				
CVD1285 - CVD1485	*6"	48"	24"	
CVD1203 - CVD1403	*15 cm	122 cm	61 cm	
CVD1486	*5"	12"	12"	
CVD1400	*13 cm	30 cm	30 cm	
CVD3085 - CVDF3000	*6"	24"	24"	
CVD3003 - CVDF3000	*15 cm	122 cm	122 cm	
* 24" (61 cm) is recommended on top/sides				

Installation Section 2

#### **Installation Requirements**

- The ice machine top panel can be trimmed with an aviator snips to allow the line set, water line and electrical connections to exit the top. Only cut out what is needed, the back panel recess sheet metal must support the top panel.
- · The ice machine and bin must be level.
- Vent the ice machine and bin drains separately.
- Bin drain termination must have an air gap.
- The water inlet and electrical connection must contain a service loop to allow future access.
- The drain line must contain a union or other suitable means of disconnection at the ice machine.
- The ice machine and bin must be sanitized after installation.
- Routine adjustments and maintenance procedures outlined in this manual are not covered by the warranty.

## Water Supply and Drains POTABLE WATER REQUIREMENTS

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

Follow these guidelines to install water inlet lines:

- · Plumbing must conform to 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 of 80 psig (552 kPa), obtain a water pressure regulator from your Manitowoc distributor.
- Install a water shut-off valve and union for potable water and water cooled condenser lines.
- Insulate water inlet lines to prevent condensation.

## **A** Warning

Connect to a potable water supply only.

#### **DRAIN CONNECTIONS**

- 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. Do not vent the condenser drain on watercooled models.
- Drains must have a union or other suitable means to allow in place disconnection from the ice machine when servicing is required.
- Base drain Use 1/2" CPVC tubing and silicone sealant to connect to this optional drain.
- S3000C/SF3000C requires base drain connection (1" FPT).

Section 2 Installation

#### WATER SUPPLY AND DRAIN LINE SIZING/CONNECTIONS

#### 

Plumbing must conform to state and local codes.

Location	Water Temperature	Water Pressure Min/Max	Ice Machine Fitting	Minimum Tubing Size Up to Ice Machine Fitting
Ice Making	35°F (2°C) Min.	20 / 80 psi	3/8" FPT	3/8" (10 mm) ID
Water Inlet	90°F (32°C) Max.	140 / 550 kPa	S3000C/SF3000C 1/2" FPT	S3000C/SF3000C 1/2" (13 mm) ID
		Standard		
	35°F (2°C) Min.	20 / 150 psi	1/2" FPT	1/2" (13 mm) ID
Water Cooled	90°F (32°C) Max.	140 / 1030 kPa		
Condenser		High Pressure Option		
		20 / 350 psi		
		140 / 2410 kPa		
Ice Making			1/2" FPT	1/2" (13 mm) ID
Water Drain			S3000C/SF3000C 1" FPT	S3000C/SF3000C 1" (25 mm) ID
Base Drain			S3000C/SF3000C 1" FPT	S3000C/SF3000C 1" (25 mm) ID
Bin Drain			3/4" FPT	3/4" (19 mm) ID
Large Capacity Bin Drain			1" FPT	1" (25 mm) ID
FPT = Fen	nale Pipe thread	ID = Inside Diameter	Min = Minimum	Max= Maximum

#### **COOLING TOWER APPLICATIONS**

#### (Water-Cooled Models Only)

A water cooling tower installation does not require modification of the ice machine. The water regulator valve for the condenser continues to control the refrigeration discharge pressure.

It is necessary to know the amount of heat rejection, and the pressure drop through the condenser and water valves (inlet and outlet) when using a cooling tower on an ice machine.

- Water entering the condenser must not exceed 90°F (32°C).
- Water flow through the condenser must not exceed 5 gallons (19 liters) per minute.

- Allow for a pressure drop of 8 psi (1030 kPa) between the condenser water inlet and the outlet of the ice machine.
- Water exiting the condenser must not exceed 110°F (43°C).
- · Do not connect to the potable water filter system.
- Contact your distributor if your water pressure is greater than 150 psig (1030 kPa). A special order condensing unit is available that allows water pressure up to 350 psig (2410 kPa).

#### **Important**

The Commonwealth of Massachusetts requires that all water-cooled models must be connected only to a closed loop, cooling tower system.

Installation Section 2

## Electrical Service GENERAL

## **A** Warning

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

### **A** Warning

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

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

- · The ice machine must be grounded.
- A separate fuse/circuit breaker must be provided for each condensing unit.
- A qualified electrician must determine proper wire size dependent upon location, materials used and length of run (minimum circuit ampacity can be used to help select the wire size).
- The maximum allowable voltage variation is +/-10 of the rated voltage at compressor 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.
- Verify polarity is correct. Incorrect polarity can lead to erratic ice machine operation and a safety issue. This is especially critical on 230 volt / 50 cycle ice machines.

#### **Important**

Observe correct polarity of incoming line voltage.

#### **FUSE/CIRCUIT BREAKER**

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

A dedicated circuit and a separate fuse/circuit breaker are required for each ice machine and condensing unit.

#### 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. Manitowoc Ice requires minimum #8 AWG for S2170C condensing unit applications.

#### **GROUND FAULT CIRCUIT INTERRUPTER**

We do not recommend the use of a GFCI/GFI circuit protection with our equipment. If a GFCI/GFI is required by code use a GFCI/GFI breaker rather than outlet which is more prone to intermittent nuisance trips than panel circuit breakers.

#### For United Kingdom Only

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

- The wire which is colored 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 colored green or green and yellow.
- The wire colored <u>blue</u> must be connected to the terminal which is marked with the letter N or colored black.
- The wire colored <u>brown</u> must be connected to the terminal which is marked with the letter L or colored red.

Section 2 Installation

#### **Electrical Requirements**

Local or state electrical code, length of wire run or materials used, can increase the minimum wire or breaker size requirement. A qualified electrician must determine the wire and breaker size, although the minimum wire size must meet or exceed the specifications in these charts. Refer to the condensing unit serial plate to verify electrical data.

#### **Important**

Due to continuous improvements, this information is for reference only. Please refer to the condensing unit serial number tag to verify electrical data. Serial tag information overrides information listed on this page.

### **A** Warning

CVD2085 ONLY

Connect power supply wiring directly to L1 & L2 on the contactor. Torque screws to the torque value specification on the contactor label. Follow all local, state and national electrical codes.

#### **CVD CONDENSING UNITS**

Condensing Unit	Voltage/Phase/Cycle	Maximum Fuse/	Minimum Circuit	Minimum Wire Size Required
Condensing only	voltage/i ilase/oycle	Circuit Breaker	Amps	by Manitowoc
	208-230/1/60	15 amp	11.0	#12 Solid Copper Conductor
CVD0685	208-230/3/60	15 amp	7.5	#12 Solid Copper Conductor
	230/1/50	15 amp	NA	#12 Solid Copper Conductor
	208-230/1/60	20 amp	11.8	#10 Solid Copper Conductor
CVD0885	208-230/3/60	15 amp	9.1	#12 Solid Copper Conductor
	230/1/50	20 amp	10.0	#10 Solid Copper Conductor
	208-230/1/60	20 amp	12.5	#10 Solid Copper Conductor
CVD1085	208-230/3/60	15 amp	9.4	#12 Solid Copper Conductor
	230/1/50	20 amp	10.9	#10 Solid Copper Conductor
	208-230/1/60	25 amp	15.7	#10 Solid Copper Conductor
CVD1185	208-230/3/60	15 amp	10.8	#12 Solid Copper Conductor
	230/1/50	20 amp	11.2	#10 Solid Copper Conductor
	208-230/1/60	35 amp	25.0	#8 Solid Copper Conductor
CVD1285	208-230/3/60	20 amp	20.0	#10 Solid Copper Conductor
	230/1/50	35 amp	25.0	#8 Solid Copper Conductor
	208-230/1/60	20 amp	20.0	#10 Solid Copper Conductor
CVD1485	208-230/3/60	15 amp	15.0	#12 Solid Copper Conductor
	230/1/50	30 amp	20.0	#10 Solid Copper Conductor
	208-230/1/60	20 amp	20.0	#10 Solid Copper Conductor
CVD1486	208-230/3/60	15 amp	15.0	#12 Solid Copper Conductor
	230/1/50	20 amp	20.0	#10 Solid Copper Conductor
	208-230/1/60	40 amp	25.0	#8 Solid Copper Conductor
CVD1885	208-230/3/60	25 amp	20.0	#10 Solid Copper Conductor
	230/1/50	30 amp	20.0	#40 Solid Copper Conductor
CVD2005*	208-230/1/60	40 amp	30.0	#6 Solid Copper Conductor
CVD2085*	208-230/3/60	20 amp	20.0	#8 Solid Copper Conductor
CVD3085*	208-230/3/60	35 amp	30.0	#8 Solid Copper Conductor
CADSOOS	380-415/3/50	15 amp	15.0	#12 Solid Copper Conductor
CVDF3000*	208-230/3/60	35 amp	30.0	#8 Solid Copper Conductor

<sup>\*</sup> Verify the direction of the rotation is correct on the 3ph scroll compressor. The ice machine will have high suction pressure, low discharge pressure and will be noticeably loud. Reverse two incoming power leads to reverse rotation.

Installation Section 2

## $\textsc{Quietqube}_{\ensuremath{\mathbb{B}}}$ ice machine head section

Ice Machine	Voltage Phase Cycle	Maximum Fuse/Circuit Breaker	Minimum Circuit Amps	Total Circuit Amps	**Minimum Wire Size Required by Manitowoc	Minimum Breaker Size Required by Manitowoc		
S0600C	115/1/60	15 amp	1.1	N/A	#14 Solid Copper	15 amp		
300000	230/1/50	15 amp	0.6	IN/A	Conductor	15 amp		
S0800C	115/1/60	15 amp	1.1	N/A	#14 Solid Copper	15 amp		
300000	230/1/50	15 amp	1.5	IN/A	Conductor	15 amp		
IB0600C	115/1/60	15 amp		1.4	#14 Solid Copper	15 amp		
IB0800C	230/1/50	15 amp	N/A	0.8	Conductor	•		
IB1000C	230/1/30	15 amp		0.6	Conductor	15 amp		
S1000C	115/1/60	15 amp	2.5	N/A	#14 Solid Copper	15 amp		
310000	230/1/50	15 amp	1.5	IN/A	Conductor	15 amp		
S1200C	115/1/60	15 amp	2.5	NI/A	#14 Solid Copper	15 amp		
31200C	230/1/50	15 amp	1.5	N/A	N/A	IN/A	Conductor	15 amp
S1400C	115/1/60	15 amp	1.1		#44 Q 11 L Q	15 amp		
S1800C	208-230/1/60	15 amp	0.6	N/A	#14 Solid Copper Conductor	15 amp		
S2100C	230/1/50	15 amp	0.6		Conductor	15 amp		
S3000C	115/1/60	15 amp	2.0	N/A	#14 Solid Copper	1E amn		
330000	230/1/50	15 amp	2.0	IN/A	Conductor	15 amp		
SF3000C	115/1/60	15 amp	2.0	N/A	#14 Solid Copper Conductor	15 amp		

10

Section 2 Installation

#### **Refrigeration System Installation**

QuietQube® Ice Machine	Remote Single Circuit Condenser	Line Set*
S0600C IB600C	CVD685	RC-21
S0800C IB800C	CVD885	RC-31 RC-51
S1000C	CVD1085	
IB1000C	CVD1185	
S1200C	CVD1285	RC-20
S1470C	CVD1485 CVD1486	RC-30 RC-50
S1870C	CVD1885	
S2170C	CVD2085	RC-23 RC-33 RC-53
S3000C SF3000C	CVD3085 CVDF3000	RC-24 RC-34 RC-54

*Line Set	Suction Line	Liquid Line	Minimum Insulation Thickness
RC 21/31/51	5/8 inch (16 mm)	3/8 inch (10 mm)	1/2" (13mm) Suction Line 1/4" (7mm) Liquid Line
RC 20/30/50	3/4 inch (19 mm)	1/2 inch (13 mm)	1/2"(13mm) Suction Line 1/4" (7mm) Liquid Line
RC 23/33/53	3/4 inch (19 mm)	5/8 inch (16 mm)	1/2"(13mm) Suction Line 1/4" (7mm) Liquid Line
RC 24/34/54	Two Lines - 3/4 inch (19 mm)	One Line - 5/8 inch (16 mm)	3/4"(19mm) Suction Line 1/4" (7mm) Liquid Line

#### **Important**

Manitowoc remote systems are only approved and warranted as a complete new package. Warranty on the refrigeration system will be void if a new ice machine head section is connected to pre-existing (used) tubing or condensing units or vice versa.

## ♠ Caution

The refrigeration system 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 Machine Refrigerant 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 at all ambients with lineset lengths up to 100 feet (30 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.

## **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. Holes are provided on the corners of the condensing unit to allow the use of lifting shackles.

Installation Section 2

#### REFRIGERATION LINE SET INSTALLATION

The following requirements assure proper oil return. The refrigeration line set installer must be certified/licensed in refrigerant handling and servicing.

## **A** Warning

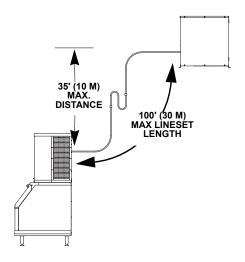
The ice machine head section contains refrigerant charge. The ice machine head section contains refrigeration valves that **must remain closed** until proper installation of the line sets is completed.

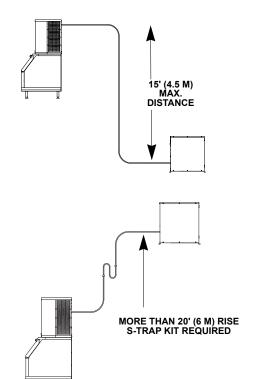
## **A** Warning

Electrical power to the ice machine head section and CVD® condensing unit must be disconnected before proceeding.

#### Step 1 Lineset Requirements

- Maximum lineset length is 100' (30 m).
- Maximum rise is 35' (10 m).
- Maximum drop is 15' (4.5 m).
- A suction line oil trap is required when rise is more than 20' (6 m).
- Maximum lineset exposed on rooftop is 25% of total line set length.
- Only one trap is allowed in the lineset.
- Shorten the lineset as required, do not coil lineset.
- · A qualified person must perform all roof penetrations





#### **Manitowoc S-Trap Kit**

Model	S-Trap Kit Number	Tubing Size	
\$0600C IB600C \$0800C IB800C \$1000C	K00172	5/8 inch (15.9 mm)	
IB1000C S1200C S1470C S1870C S2170C S3000C* SF3000C*	K00166	3/4 inch (19.1 mm)	
*S3000C/SF3000C - requires two S-Trap kits, one for each suction line.			

#### Step 2 Secure Condenser

Through holes are provided to secure the condenser to a curb, rack, or wooden timber.

#### Step 3 Route Refrigeration Tubing

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

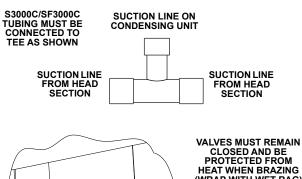
The line set can be routed for entry through the top or rear of the ice machine head section.

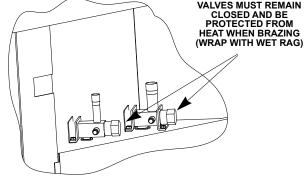
- Top routing requires the cover to be trimmed.
- Rear routing may require the use of 90° elbows.

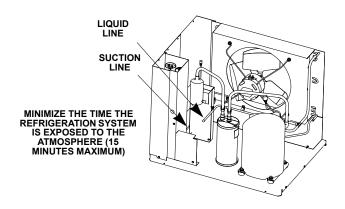
Section 2 Installation

#### Step 4 Connect the line set

- Maximum amount of time the refrigeration system can be exposed to the atmosphere is 15 minutes
- Purge line set with dry nitrogen while brazing.
- Line set shut off valves on the ice machine must remain closed and be protected from heat during brazing.
- The condensing unit ships with a 50/50 mixture of nitrogen/helium.
- S3000C/SF3000C has 2 suction lines and requires installation of a tee at the condensing unit.

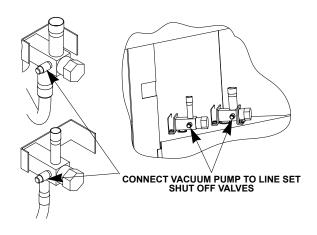


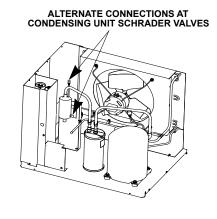




## Step 5 Pressure Test and Evacuate Line Set and CVD Condensing Unit

- Lineset shutoff valves must remain closed until pressure testing and evacuation are complete.
- 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.
- Pressure test @ 150 psi (1000 kPa) for a minimum of 15 minutes.
- Minimum evacuation level is 500 microns.





Installation Section 2

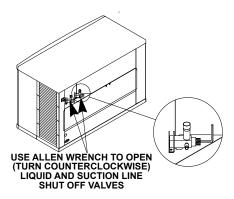
### Step 6 Open Lineset and Receiver Valves

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 solenoid valve opens.

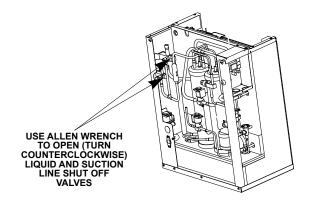
- All valve caps must be reinstalled, tightened and leak checked to assure no refrigerant leakage exists.
- Counterclockwise opens all valves:
  - A. Refer to chart and open the suction and liquid line shut off valves the correct number of 360° turns

Valve Tubing Size	Number of Turns To Open
3/8"	6
1/2" 5/8" 3/4"	10
7/8"	14

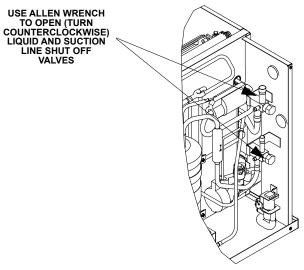
B. Open the receiver service valve until backseated (two valves on the S3000C/SF3000C).



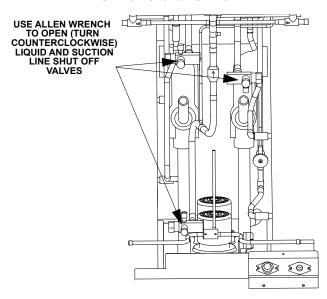
S0600C/S0800C/S1000C/S1200C



IB0600C/IB0800C/IB1000C



S1470C/S1870C/S2170C



S3000C/SF3000C

#### 

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 solenoid valves energize.

Section 2 Installation

#### Step 7 Leak Check The Refrigeration System

- A. Connect power to the ice machine head section -Do not connect power to the CVD condensing unit.
- B. Place the ICE/OFF/CLEAN toggle switch in the ICE position for 60 seconds to equalize pressures, then move to OFF position.
- Disconnect power to the ice machine head section.
- D. Leak check lineset connections, S trap and all factory joints in head section and condensing unit
- E. Connect power to the CVD condensing unit and allow system to pump down.

### Step 8 Insulation Requirements

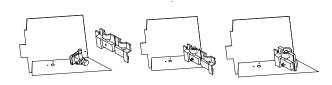
- To prevent condensation the entire suction line including the shut-off valve must be insulated.
- All insulation must be airtight and sealed at both ends.

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

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

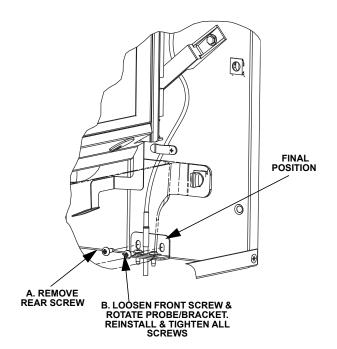
#### **Suction Shut Off Valve Insulation**

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



## ELECTRONIC BIN THERMOSTAT INSTRUCTIONS IB600C/IB800C/IB1000C ONLY

- The bin thermostat probe must be rotated down to enable ice contact and proper operation.
- Verify probe wire does not interfere with the water curtain.
- The control is preset and does not require programming.



# Section 3 Operation

## Ice Making Sequence of Operation

#### **Water Purge Cycle**

The ice machine purges any remaining water from the water trough down the drain.

#### Freeze Cycle

Water flows across the evaporator and the refrigeration system chills the evaporator. Ice builds on the evaporator until water contacts the ice thickness probe.

#### **Harvest Cycle**

Any remaining water is purged down the drain as refrigerant gas warms the evaporator. When the evaporator warms, the sheet of cubes slides off the evaporator and into the storage bin. If all cubes fall clear of the water curtain (or ice damper) the ice machine starts another freeze cycle.

#### Off Cycle

If the water curtain or ice damper are held open by ice cubes the ice machine shuts off. When the water curtain or ice damper closes the ice machine starts a new cycle at the water purge.

#### **Control Board Timers**

The control board has the following non-adjustable timers:

- The ice machine is locked into the freeze cycle for 6 minutes before a harvest cycle can be initiated.
   Freeze lock is bypassed after moving the toggle switch from OFF to ICE position for the first cycle only.
- The maximum freeze time is 60 minutes at which time the control board automatically initiates a harvest sequence.
- The maximum harvest time is 3.5 minutes for single evaporators and 7 minutes for multiple evaporator model. The control board automatically initiates a freeze sequence when these times are exceeded.

#### SAFETY LIMITS

Safety limits are stored and indicated by the control board after three cycles. The number of cycles required to stop the ice machine varies for each safety limit.

- Safety Limit 1 all models If the freeze time reaches 60 minutes, the control board automatically initiates a harvest cycle. If 6 consecutive 60-minute freeze cycles occur, the ice machine stops.
- Safety Limit 2 single & twin evaporator models If the harvest time reaches 3.5 minutes, the control board automatically returns the ice machine to the freeze cycle. If 500 consecutive 3.5 minute harvest cycles occur, the ice machine stops.
- Safety Limit 2 S3000C/SF3000C If the harvest time reaches 7 minutes, the control board automatically returns the ice machine to the freeze cycle. If 500 consecutive 7 minute harvest cycles occur, the ice machine stops.
- Safety Limit 3 S3000C/SF3000C If the low refrigerant pressure control opens, the ice machine shuts off and starts a 5 minute delay period. If 3 consecutive low pressure events occur the ice machine stops and flashes the harvest light.

Use the following procedures to determine if the control board contains a safety limit indication.

- 1. Move the toggle switch to OFF.
- Move the toggle switch back to ICE. Watch the safety limit lights/harvest light on the control board. If a safety limit has been recorded, the corresponding light will blink once, twice or three times to indicate which safety limit stopped the ice machine.

Section 3 Operation

## **Operational Checks**

#### **GENERAL**

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

To ensure proper operation, always follow the Operational Checks:

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

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

#### **Important**

Scroll refrigeration compressors must be operated for a minimum break in period of 24 hours before full ice production will be reached.

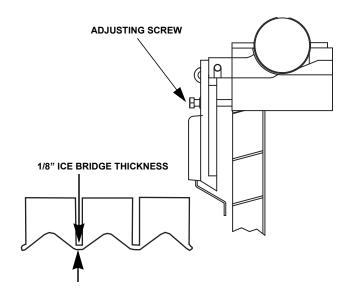
#### ICE THICKNESS CHECK

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 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 mm) thick.
- 2. If adjustment is necessary, turn the ice thickness probe adjustment screw clockwise to increase bridge thickness, counterclockwise to decrease bridge thickness. Set at 1/4" gap between ice machine and evaporator as starting point, then adjust to achieve a 1/8" 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.

# Section 4 Maintenance

## Descaling and Sanitizing 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.

Descale and sanitize the ice machine every six months for efficient operation. If the ice machine requires more frequent descaling 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.

Manitowoc Ice Machine Cleaner and Sanitizer are the only products approved for use in Manitowoc ice machines.

### **∴** Caution

Use only Manitowoc approved Ice Machine Cleaner/Descaler and Sanitizer for this application (Manitowoc Cleaner part number 94-0546-3 and Manitowoc 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/Descaler and Sanitizer solutions together. It is a violation of Federal law to use these solutions in a manner inconsistent with their labeling.

## **A** Warning

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

#### **CLEANING/SANITIZING PROCEDURE**

This procedure must be performed a minimum of once every six months.

- The ice machine and bin must be disassembled cleaned and sanitized.
- All ice produced during the cleaning and sanitizing procedures must be discarded.
- Removes mineral deposits from areas or surfaces that are in direct contact with water.

#### REMEDIAL CLEANING PROCEDURE

Perform this procedure if you have some or all of these symptoms.

- · Ice machine stops on Safety Shutdown.
- · Your water has a high concentration of minerals.
- The ice machine has not been on a regular maintenance schedule.

#### **DETAILED DESCALING/SANITIZING PROCEDURE**

This procedure must be performed a minimum of once every six months.

- The ice machine and bin must be disassembled descaled and sanitized.
- All ice produced during the descaling and sanitizing procedures must be discarded.

#### **EXTERIOR CLEANING**

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

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

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

Section 4 Maintenance

#### **Remedial Cleaning Procedure**

#### **∴** Caution

Use only Manitowoc approved Ice Machine Cleaner/Descaler and Sanitizer for this application (Manitowoc Cleaner/Descaler part number 94-0546-3 and Manitowoc 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.

#### REMEDIAL DESCALING/SANITIZING PROCEDURE

#### ♠ 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.

## **A** Warning

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

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

**Step 1** Remove front door and top cover. This will allow easiest access for adding cleaning and sanitizing solutions.

**Step 2** 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 3 Remove all ice from the bin/dispenser.

**Step 4** Place the toggle switch in the CLEAN position. The water will flow through the water dump valve and down the drain. Wait until the water trough refills and water flows over the evaporator, then add the proper amount of ice machine cleaner.

Model	Amount of Cleaner/Descaler
S0600C / S0800C	F 011000 (150 ml)
S1000C / S1200C	5 ounces (150 ml)
S1470C / S1870C / S2170C	9 ounces (265 ml)
S3300 / ST3000	16 ounces (475 ml)

**Step 5** Wait until the clean cycle is complete (approximately \*35 minutes). Then place the toggle switch in the OFF position and disconnect power to the ice machine (and dispenser when used).

NOTE: \*S3300/ST3000 Only - 80 minutes.

## **A** Warning

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

Step 6 Remove parts for cleaning.

Please refer to the proper parts removal for your ice machine. Continue with step 7 when the parts have been removed.

Single Evaporator Ice Machines - Page 24

Multiple Evaporator Ice Machines - Page 25

Maintenance Section 4

**Step 7** Mix a solution of cleaner/descaler and warm water. Depending upon the amount of mineral buildup, a larger quantity of solution may be required. Use the ratio in the table below to mix enough solution to thoroughly clean all parts.

Solution Type	Water	Mixed With
Cleaner	1 gal. (4 L)	16 oz (500 ml) cleaner

**Step 8** Use 1/2 of the descaler/water mixture to descale all components. The descaler 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. Soak parts for 5 minutes (15 - 20 minutes for heavily scaled parts). Rinse all components with clean water.

**Step 9** While components are soaking, use 1/2 of the descaler/water solution to clean all foodzone surfaces of the ice machine and bin (or dispenser). Use a nylon brush or cloth to thoroughly descale the following ice machine areas:

- Side walls
- Base (area above water trough)
- Evaporator plastic parts including top, bottom, and sides
- · Bin or dispenser

Rinse all areas thoroughly with clean water.

#### **SANITIZING PROCEDURE**

**Step 10** Mix a solution of sanitizer and warm water.

Solution Type	Water	Mixed With
Sanitizer	6 gal. (23 L)	4 oz (120 ml) sanitizer

**Step 11** Use 1/2 of the sanitizer/water solution to sanitize all removed components. Use a spray bottle to liberally apply the solution to all surfaces of the removed parts or soak the removed parts in the sanitizer/water solution. Do not rinse parts after sanitizing.

**Step 12** Use 1/2 of the sanitizer/water solution to sanitize all foodzone surfaces of the ice machine and bin (or dispenser). Use a spray bottle to liberally apply the solution. When sanitizing, pay particular attention to the following areas:

- Side walls
- · Base (area above water trough)
- Evaporator plastic parts including top, bottom and sides
- · Bin or dispenser

Do not rinse the sanitized areas.

**Step 13** Replace all removed components.

Step 14 Wait 30 minutes.

**Step 15** Reapply power to the ice machine and place the toggle switch in the CLEAN position.

**Step 16** Wait until the water trough refills and water flows over the evaporator (approximately 3 minutes). Add the proper amount of Manitowoc Ice Machine Sanitizer to the water trough by pouring between the water curtain and evaporator.

Model	Amount of Sanitizer
S0600C / S0800C	3 ounces (90 ml)
S1000C / S1200C	3 ounces (90 mi)
S1470C / S1870C / S2170C	12 ounces (355 ml)
S3300C / ST3000C	25 ounces (740 ml)

**Step 17** Move the toggle switch to the ICE position and replace the front panel. The ice machine will automatically start ice making after the sanitize cycle is complete (approximately 35 minutes, S3300C/ST3000C 80 minutes).

Section 4 Maintenance

### **Detailed Descaling and Sanitizing Procedure**

Ice machines that are heavily scaled or have not been cleaned on a regular basis will need to run this procedure.

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.

#### 

Use only Manitowoc approved Ice Machine Cleaner/Descaler and Sanitizer for this application (Manitowoc Cleaner part number 94-0546-3 and Manitowoc 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

#### **CLEANING PROCEDURE**

#### 

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

## **A** Warning

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

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

**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** Remove top cover. This will allow easiest access for adding descaling and sanitizing solutions.

Step 3 Remove all ice from the bin.

**Step 4** Place the toggle switch in the CLEAN position. The water will flow through the water dump valve and down the drain. Wait until the water trough refills and water flows over the evaporator, then add the proper amount of ice machine cleaner.

Model	Amount of Cleaner/Descaler
S0600C / S0800C	
S1000C / S1200C	5 ounces (150 ml)
IB600C / IB800C / IB1000C	
S1470C / S1870C / S2170C	9 ounces (265 ml)
S3300C / ST3000C	16 ounces (475 ml)

**Step 5** Wait until the clean cycle is complete (approximately \*35 minutes). Then place the toggle switch in the OFF position and disconnect power to the ice machine (and dispenser when used).

NOTE: \*S3300C/ST3000C Only - 80 minutes.

### **A** Warning

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

**Step 6** Remove parts for cleaning.

Please refer to the proper parts removal for your ice machine.

Single Evaporator Ice Machines - Page 24

Multiple Evaporator Ice Machines - Page 25

Maintenance Section 4

**Step 7** Mix a solution of descaler and warm water. Depending upon the amount of mineral buildup, a larger quantity of solution may be required. Use the ratio in the table below to mix enough solution to thoroughly clean all parts.

Solution Type	Water	Mixed With
Descaler	1 gal. (4 L)	16 oz (500 ml)
		cleaner/descaler

**Step 8** Use 1/2 of the descaler/water mixture to descale all components. The descaler 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. Soak parts for 5 minutes (15 - 20 minutes for heavily scaled parts). Rinse all components with clean water.

**Step 9** While components are soaking, use 1/2 of the descaler/water solution to descale all foodzone surfaces of the ice machine and bin (or dispenser). Use a nylon brush or cloth to thoroughly clean the following ice machine areas:

- · Side walls
- Base (area above water trough)
- Evaporator plastic parts including top, bottom, and sides
- Bin or dispenser

Rinse all areas thoroughly with clean water.

#### **SANITIZING PROCEDURE**

**Step 10** Mix a solution of sanitizer and warm water.

Solution Type	Water	Mixed With
Sanitizer	6 gal. (23 L)	4 oz (120 ml) sanitizer

**Step 11** Use 1/2 of the sanitizer/water solution 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/water solution. Do not rinse parts after sanitizing.

**Step 12** Use 1/2 of the sanitizer/water solution to sanitize all foodzone surfaces of the ice machine and bin (or dispenser). Use a cloth or sponge to liberally apply the solution. When sanitizing, pay particular attention to the following areas:

- Side walls
- Base (area above water trough)
- Evaporator plastic parts including top, bottom and sides
- · Bin or dispenser

Do not rinse the sanitized areas.

**Step 13** Replace all removed components.

**Step 14** Reapply power to the ice machine and place the toggle switch in the CLEAN position.

**Step 15** Wait about two minutes or until water starts to flow over the evaporator. Add the proper amount of Manitowoc Ice Machine Sanitizer to the water trough by pouring between the water curtain and evaporator.

Model	Amount of Sanitizer
S0600C / S0800C	3 aunaca (00 ml)
S1000C / S1200C	3 ounces (90 ml)
S1470C / S1870C / S2170C	6 ounces (180 ml)
S3300C / ST3000C	25 ounces (740 ml)

**Step 16** The ice machine will stop after the sanitize cycle (approximately \*35 minutes). Place the toggle switch in the OFF position and disconnect power to the ice machine.

\*S3300/ST3000 Only - 80 minutes.

## **Warning**

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

Section 4 Maintenance

**Step 17** Refer to step 6 and disassemble components. After dissembling proceed to step 18.

**Step 18** Mix a solution of sanitizer and warm water.

Solution Type	Water	Mixed With
Sanitizer	6 gal. (23 L)	4 oz (120 ml) sanitizer

**Step 19** Use 1/2 of the sanitizer/water solution 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/water solution. Do not rinse parts after sanitizing.

**Step 20** Use 1/2 of the sanitizer/water solution to sanitize all foodzone surfaces of the ice machine and bin (or dispenser). Use a cloth or sponge to liberally apply the solution. When sanitizing, pay particular attention to the following areas:

- · Side walls
- Base (area above water trough)
- Evaporator plastic parts including top, bottom and sides
- · Bin or dispenser

Do not rinse the sanitized areas.

**Step 21** Install the removed parts, restore power and place the toggle switch in the ICE position.

Maintenance Section 4

#### Parts Removal for Cleaning/Sanitizing

#### **Single Evaporator Ice Machines**

#### A. Remove the water curtain

- Gently flex the curtain in the center and remove it from the right side.
- Slide the left pin out.

#### B. Remove the ice thickness probe

- Compress the hinge pin on the top of the ice thickness probe.
- Pivot the ice thickness probe to disengage one pin then the other. The ice thickness probe can be cleaned at this point without complete removal. If complete removal is desired, disconnect the ice thickness control wiring from the control board.

## C. Remove the evaporator tray or water diverter from the bottom of the evaporator

- · Loosen thumbscrew on left side of tray.
- Allow left side of tray to drop as you pull the tray to the left side. Continue until the outlet tube disengages from the right side.

#### D. Remove the water trough

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

#### E. Remove the water level probe

 Pull the water level probe straight down to disengage.

- Lower the water level probe until the wiring connector is visible.
- Disconnect the wire lead from the water level probe.
- Remove the water level probe from the ice machine.

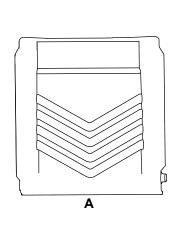
#### F. Remove the water pump

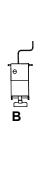
- Grasp pump and pull straight down on pump assembly until water pump disengages and electrical connector is visible.
- · Disconnect the electrical connector.
- · Remove the water pump assembly from ice machine.
- Do not soak the water pump motor in cleaner or sanitizer solution.

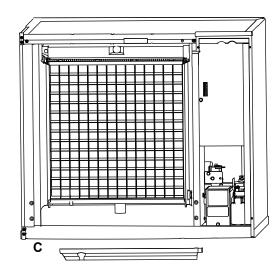
#### G. Remove the water distribution tube

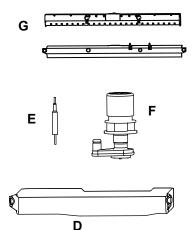
NOTE: Distribution tube thumbscrews are retained to prevent loss. Loosen thumbscrews but do not pull thumbscrews out of distribution tube.

- Loosen the two outer screws (do not remove screws completely they are retained to prevent loss) and pull forward on the distribution tube to release from slip joint.
- Disassemble distribution tube by loosening the two
   (2) middle thumbscrews and dividing the distribution tube into two pieces.









#### **Multiple Evaporator Ice Machines**

#### A. Remove front evaporator shield

- · Remove four quarter turn connectors.
- · Remove splash shield.

#### B. Remove left and right evaporator top covers

- Remove two thumbscrews from the front of each evaporator top cover.
- Lift front of cover, pull forward to remove.

#### C. Remove splash shields

NOTE: Each evaporator has a splash shield that must be removed - total of four splash shields.

- · Grasp the top center of splash shields.
- Lift up and then out.

#### D. Remove ice thickness probe

- Compress the hinge pin on the top of the ice thickness probe.
- Pivot the ice thickness probe to disengage one pin then the other. The ice thickness probe can be cleaned at this point without complete removal. If complete removal is desired, disconnect the ice thickness control wiring from the control board.

#### E. Remove the water pump assembly

- Disconnect the vinyl distribution tube from both water pumps.
- Disconnect the water pump and water level probe electrical connections.
- After the wires are disconnected remove the two thumbscrews and lift the water pump assembly out of the ice machine.

- Remove the thumbscrews securing the water pumps (2 each pump) and remove water pumps. Do not immerse the water pump motor in cleaner or sanitizer solutions.
- Remove the water level probe from the assembly housing.

#### F. Remove the water trough

Pull forward on the water trough to remove.

#### G. Remove distribution tubes

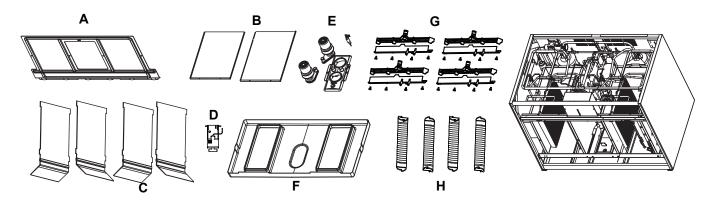
NOTE: Each evaporator has a distribution that must be removed - total of four distribution tubes.

- Distribution tube thumbscrews are retained to prevent loss. Loosen thumbscrews but do not pull thumbscrews out of distribution tube.
- Loosen the two outer screws and pull forward on the distribution tube to release from slip joint.
- Disassemble distribution tube by loosening the two (2) middle thumbscrews and dividing the distribution tube into two pieces.

#### H. Remove ice dampers

NOTE: Each evaporator has an ice damper that must be removed - total of four ice dampers.

- Grasp ice damper and apply pressure toward the back mounting bracket.
- Apply pressure to the front mounting bracket with thumb.
- Pull ice damper downward when the front ice damper pin disengages.



Maintenance Section 4

#### **Exterior Cleaning**

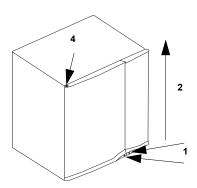
Clean the area around the ice machine as often as necessary to maintain cleanliness and efficient operation. Use cleaners designed for use with stainless steel products.

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

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

#### **Door Removal**

- Use a fillips screwdriver to loosen the two screws securing the left and right doors. Do not remove they are secured to prevent loss.
- 2. 30 Inch and 48 Inch Models: To remove right front door lift up and remove (22 inch ice machines have a single door, lift to remove entire door).



**Door Removal** 

- 3. Open left front door to 45 degrees.
- 4. Support with right hand, depress top pin, tilt top of door forward and lift out of bottom pin to remove.

## Cleaning the Condenser GENERAL

## 📤 Warning

Disconnect electric power to the ice machine head section and the remote 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.

### **Warning**

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

- Shine a flashlight through the condenser to check for dirt between the fins.
- Blow compressed air or rinse with water from the inside out (opposite direction of airflow).
- If dirt still remains call a service agent to clean the condenser.

#### Removal from Service/Winterization

- 1. Clean and sanitize the ice machine.
- 2. Move the ICE/OFF/CLEAN switch to OFF.
- 3. Turn off the water supply, disconnect and drain the incoming ice-making water line at the rear of the ice machine and drain the water trough.
- 4. Energize the ice machine, wait one minute for the water inlet valve to open and blow compressed air in both the incoming water and the drain openings in the rear of the ice machine to remove all water.
- Move ICE/OFF/CLEAN switch to OFF and disconnect the electric power at the circuit breaker or the electric service switch.
- 6. Fill spray bottle with sanitizer and spray all interior food zone surfaces. Do not rinse and allow to air dry.
- 7. Replace all panels.

# Section 5 Customer Support

## **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	Move the toggle switch to the ICE position.
	improperly.	Move the toggie switch to the TOE position.
	Water curtain stuck open.	Water curtain or ice damper 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)
	IB Only - Dispenser level thermostat open.	Adjust thermostat to maintain correct dispenser level.
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.
	CVD1486 - Water regulating valve incorrectly adjusted or will not close.	Check for water at condenser water drain outlet. Contact a qualified service company to adjust/replace valve.
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.

Customer Support Section 5

Problem	Possible Cause	To Correct	
Ice machine produces shallow or incomplete cubes, or the ice fill pattern on	Ice thickness probe is out of adjustment.	Adjust the ice thickness probe. (See Section 3)	
the evaporator is incomplete.	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 the filter.	
	Hot incoming water.	Connect the ice machine to a cold water supply. (See Section 2)	
	Water inlet valve is not working.	Clean or replace the water inlet valve. (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.	Replace the water inlet valve.	
	The condenser is dirty.	Clean the condenser. (See Section 4)	
	High air temperature entering condenser.	Air temperature must not exceed 130°F (54°C)	
		CVD685/CVD1185/CVD2085/CVD3085 - 120°F (49°C)	
	The harvest assist oir compresser is not	CVD1486 - 110°F (43°C) Call for service.	
	The harvest assist air compressor is not functioning.	Call for Service.	

#### **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:

- 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 repeats.
  - A. If the ice machine stops again, the condition has repeated. Call for service.
  - B. If the ice machine continues to run, the condition has corrected itself. Allow the ice machine to continue running.

#### **Commercial Ice Machine Warranty**

Manitowoc Ice, Inc. (hereinafter referred to as the "COMPANY") warrants for a period of thirty-six months from the installation date (except as limited below) that new ice machines manufactured by the COMPANY shall be free of defects in material or workmanship under normal and proper use and maintenance as specified by the COMPANY and upon proper installation and start-up in accordance with the instruction manual supplied with the ice machine. The COMPANY'S warranty hereunder with respect to the compressor shall apply for an additional twenty-four months, excluding all labor charges, and with respect to the evaporator for an additional twenty-four months, including labor charges.

The obligation of the COMPANY under this warranty is limited to the repair or replacement of parts, components, or assemblies that in the opinion of the COMPANY are defective. This warranty is further limited to the cost of parts, components or assemblies and standard straight time labor charges at the servicing location.

Time and hourly rate schedules, as published from time to time by the COMPANY, apply to all service procedures. Additional expenses including without limitation, travel time, overtime premium, material cost, accessing or removal of the ice machine, or shipping are the responsibility of the owner, along with all maintenance, adjustments, cleaning, and ice purchases. Labor covered under this warranty must be performed by a COMPANY Contracted Service Representative or a refrigeration service agency as qualified and authorized by the COMPANY'S local Distributor. The COMPANY'S liability under this warranty shall in no event be greater than the actual purchase price paid by customer for the ice machine.

The foregoing warranty shall not apply to (1) any part or assembly that has been altered, modified, or changed; (2) any part or assembly that has been subjected to misuse, abuse, neglect, or accidents; (3) any ice machine that has been installed and/or maintained inconsistent with the technical instructions provided by the COMPANY; or (4) any ice machine initially installed more than five years from the serial number production date. This warranty shall not apply if the Ice Machine's refrigeration system is modified with a condenser, heat reclaim device, or parts and assemblies other than those manufactured by the COMPANY, unless the COMPANY approves these modifications for specific locations in writing.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OR GUARANTEES OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. In no event shall the COMPANY be liable for any special, indirect, incidental or consequential damages. Upon the expiration of the warranty period, the COMPANY'S liability under this warranty shall terminate. The foregoing warranty shall constitute the sole liability of the COMPANY and the exclusive remedy of the customer or user.

To secure prompt and continuing warranty service, the warranty registration card must be completed and sent to the COMPANY within five (5) days from the installation date.

Complete the following and retain for your record:

Distributor/Dealer		
Model Number	Serial Number	
Installation Date		

#### MANITOWOC ICE, INC.

2110 So. 26th St., P.O. Box 1720, Manitowoc, WI 54221-1720

Telephone: 920-682-0161 • Fax: 920-683-7585

Web Site - www.manitowocice.com Form 80-0373-3 Rev. 01/02

Customer Support Section 5

### **Residential Ice Machine Limited Warranty**

#### WHAT DOES THIS LIMITED WARRANTY COVER?

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

#### HOW LONG DOES THIS LIMITED WARRANTY LAST?

**Product Covered** 

**Warranty Period** 

Ice Machine

Twelve (12) months from the sale date

#### WHO IS COVERED BY THIS LIMITED WARRANTY?

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

## WHAT ARE MANITOWOC ICE'S OBLIGATIONS UNDER THIS LIMITED WARRANTY?

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

#### **HOW TO OBTAIN WARRANTY SERVICE**

To obtain warranty service or information regarding your Product, please contact us at:

MANITOWOC FOODSERVICE

2110 So. 26th St. P.O. Box 1720,

Manitowoc, WI 54221-1720

Telephone: 920-682-0161 Fax: 920-683-7585

www.manitowocice.com

#### WHAT IS NOT COVERED?

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

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

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

IN NO EVENT SHALL MANITOWOC OR ANY OF ITS AFFILIATES BE LIABLE TO THE CONSUMER OR ANY OTHER PERSON FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND (INCLUDING, WITHOUT LIMITATION, LOSS PROFITS, REVENUE OR BUSINESS) ARISING FROM OR IN ANY MANNER CONNECTED WITH THE PRODUCT, ANY BREACH OF THIS LIMITED WARRANTY, OR ANY OTHER CAUSE WHATSOEVER, WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY OF LIABILITY.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

#### **HOW STATE LAW APPLIES**

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

#### **REGISTRATION CARD**

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



Manitowoc Ice 2110 South 26th Street Manitowoc, WI 54220

800-545-5720 www.manitowocice.com



Welbilt offers fully-integrated kitchen systems and our products are backed by KitchenCare® aftermarket parts and service. Welbilt's portfolio of award-winning brands includes Cleveland™, Convotherm®, Crem®, Delfield®, fitkitchen®, Frymaster®, Garland®, Kolpak®, Lincoln®, Manitowoc®, Merco®, Merrychef® and Multiplex®.

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