S Model Ice Machines

Installation, Use & Care Manual

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

America's #1 Selling Ice Machine
Part Number 000000966 10/09
Safety Notices

As you work on Manitowoc equipment, 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 equipment.

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

⚠️ 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 equipment. Be sure to read the Caution statement before proceeding, and work carefully.

Procedural Notices

As you work on Manitowoc equipment, 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.

Read These Before Proceeding:

⚠️ Caution
Proper installation, care and maintenance are essential for maximum performance and trouble-free operation of your Manitowoc equipment. Read and understand this manual. It contains valuable care and maintenance information. If you encounter problems not covered by this manual, do not proceed, contact Manitowoc Foodservice Group. We will be happy to provide assistance.

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

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

NOTE: SAVE THESE INSTRUCTIONS.

We reserve the right to make product improvements at any time. Specifications and design are subject to change without notice.
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</tr>
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</table>

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This manual covers the following models:

<table>
<thead>
<tr>
<th>Self-Contained Air-Cooled</th>
<th>Self-Contained Water-Cooled</th>
<th>Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD0302A</td>
<td>SD0303W</td>
<td></td>
</tr>
<tr>
<td>SY0304A</td>
<td>SY0305W</td>
<td></td>
</tr>
<tr>
<td>SD0322A</td>
<td>SD0323W</td>
<td></td>
</tr>
<tr>
<td>SY0324A</td>
<td>SY0325W</td>
<td></td>
</tr>
<tr>
<td>SR0420A</td>
<td>SR0421W</td>
<td></td>
</tr>
<tr>
<td>SD0422A</td>
<td>SD0423W</td>
<td></td>
</tr>
<tr>
<td>SY0424A</td>
<td>SY0425W</td>
<td></td>
</tr>
<tr>
<td>SD0452A</td>
<td>SD0453W</td>
<td></td>
</tr>
<tr>
<td>SY0454A</td>
<td>SY0455W</td>
<td></td>
</tr>
<tr>
<td>SR0500A</td>
<td>SR0501W</td>
<td>SR0590N</td>
</tr>
<tr>
<td>SD0502A</td>
<td>SD0503W</td>
<td>SD0592N</td>
</tr>
<tr>
<td>SY0504A</td>
<td>SY0505W</td>
<td>SY0594N</td>
</tr>
<tr>
<td>SD0602A</td>
<td>SD0603W</td>
<td>SD0692N</td>
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<td>SY0604A</td>
<td>SY0605W</td>
<td>SY0694N</td>
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<td>SR0850A</td>
<td>SR0851W</td>
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</tr>
<tr>
<td>SD1002A</td>
<td>SD1003W</td>
<td>SD1092N</td>
</tr>
<tr>
<td>SY1004A</td>
<td>SY1005W</td>
<td>SY1094N</td>
</tr>
<tr>
<td>SD1202A</td>
<td>SD1203W</td>
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<td>SY1204A</td>
<td>SY1205W</td>
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</tr>
<tr>
<td>SD1402A</td>
<td>SD1403W</td>
<td>SD1492N</td>
</tr>
<tr>
<td>SY1404A</td>
<td>SY1405W</td>
<td>SY1494N</td>
</tr>
<tr>
<td>SR1600A</td>
<td>SR1601W</td>
<td>SR1690N</td>
</tr>
<tr>
<td>SD1602A</td>
<td>SD1603W</td>
<td>SD1692N</td>
</tr>
<tr>
<td>SY1604A</td>
<td>SY1605W</td>
<td>SY1694N</td>
</tr>
<tr>
<td>SR1800A</td>
<td>SR1801W</td>
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<td>SD3303WHP</td>
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<tr>
<td>----</td>
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<td></td>
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<tr>
<td>----</td>
<td>SY3305WHP</td>
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</tr>
<tr>
<td>----</td>
<td>SD3303WM</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Model numbers ending in HP indicate High Pressure water regulating valve. Standard pressure = 150 psi (10.34 bar) High pressure = 350 psi (24.13 bar)

### Warning

**PERSONAL INJURY POTENTIAL**

Remove all ice machine panels before lifting and installing.

---

### How to Read a Model Number

<table>
<thead>
<tr>
<th># CUBE SIZE</th>
<th>CONDENSER TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>REGULAR AIR-COOLED</td>
</tr>
<tr>
<td>1</td>
<td>REGULAR WATER-COOLED</td>
</tr>
<tr>
<td>2</td>
<td>DICE AIR-COOLED</td>
</tr>
<tr>
<td>3</td>
<td>DICE WATER-COOLED</td>
</tr>
<tr>
<td>4</td>
<td>HALF-DICE AIR-COOLED</td>
</tr>
<tr>
<td>5</td>
<td>HALF-DICE WATER-COOLED</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICE MACHINE MODEL</th>
<th>CONDENSER TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>SELF-CONTAINED AIR-COOLED</td>
</tr>
<tr>
<td>W</td>
<td>SELF-CONTAINED WATER-COOLED</td>
</tr>
<tr>
<td>N</td>
<td>REMOTE AIR-COOLED</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICE MACHINE SERIES</th>
<th>ADDITIONAL SPECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>3 PHASE</td>
</tr>
<tr>
<td>D</td>
<td>MARINE UNIT</td>
</tr>
<tr>
<td>Y</td>
<td>HIGH PRESSURE</td>
</tr>
<tr>
<td></td>
<td>WATER VALVE</td>
</tr>
<tr>
<td></td>
<td>SI AUCS-SI INCLUDED</td>
</tr>
</tbody>
</table>

**NOTE:** When referring to information in this manual refer to the Ice Machine Model (letter) and the first number of the Series followed by zeros. Example: If your model is SY1094NSI refer to S1000 throughout the manual.

### Ice Cube Sizes

- **Regular**: 1-1/8" x 1-1/8" x 7/8" (2.86 x 2.86 x 2.22 cm)
- **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)

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### Warning

**PERSONAL INJURY POTENTIAL**

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.

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**PERSONAL INJURY POTENTIAL**

Remove all ice machine panels before lifting and installing.
Accessories

Contact your Manitowoc distributor for these optional accessories:

**BIN CASTER**
Replaces standard legs.

**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.

**GUARDIAN SACHET PACKETS**
Guardian sachet packets release chlorine dioxide on a controlled basis to inhibit the growth of bacteria and slime.

Guardian sachet packets are available through your local Manitowoc Ice Machine dealer. Not available for S3300 machines.

**ARCTIC PURE WATER FILTER SYSTEM**
Engineered specifically for Manitowoc ice machines, this water filter is an efficient, dependable, and affordable method of inhibiting scale formation, filtering sediment, and removing chlorine taste and odor.

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

<table>
<thead>
<tr>
<th>Cleaner Part Number</th>
<th>Sanitizer Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 ounce Bottle - 94-0546-3</td>
<td>16 ounce Bottle - 94-0565-3</td>
</tr>
<tr>
<td>AuCS®-SO - 94-0546-3</td>
<td>AuCS®-SO - 94-0565-3</td>
</tr>
<tr>
<td>AuCS®-SI - 40-1326-3</td>
<td>AuCS®-SI - 40-1327-3</td>
</tr>
</tbody>
</table>

**AUCS® AUTOMATIC CLEANING SYSTEM**
This accessory reduces equipment cleaning expense. The AuCS® accessory monitors ice making cycles and initiates cleaning procedures automatically. Not available for S3300 machines.

**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.

⚠️ Warning
All Manitowoc ice machines require the ice storage system (bin, dispenser, etc.) to incorporate an ice deflector.

48” wide S Model ice machines require adding Manitowoc Ice Deflector Kit K00349 when installing with non-Manitowoc ice storage systems.

30” wide S Model ice machines require adding Manitowoc Ice Deflector Kit K00347 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.
Model/Serial Number Location

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

The model and serial number are listed on the MODEL/SERIAL NUMBER DECAL affixed to the ice machine, remote condenser and storage bin.

Model/Serial Number Location
Owner Warranty Registration Card

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

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

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

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

1. Normal maintenance, adjustments and cleaning.
2. Repairs due to unauthorized modifications to the ice machine or use of non-standard parts without prior written approval from Manitowoc 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.

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 on page 5-1 of this manual, and the ice machine still does not perform properly, call your authorized service company.
Residential Ice Machine Limited Warranty

WHAT DOES THIS LIMITED WARRANTY COVER?
Subject to the exclusions and limitations below, Manitowoc Ice, Inc. (“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?

<table>
<thead>
<tr>
<th>Product Covered</th>
<th>Warranty Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice Machine</td>
<td>Twelve (12) months from the sale date</td>
</tr>
</tbody>
</table>

WHO IS COVERED BY THIS LIMITED WARRANTY?
This limited warranty only applies to the original consumer of the Product and is not transferable.

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

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

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

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

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

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

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

REGISTRATION CARD
To secure prompt and continuing warranty service, this warranty registration card must be completed and sent to Manitowoc within thirty (30) days from the sale date. Complete the registration card and send it to Manitowoc.
Section 2
Installation Instructions

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 Foodservice for information regarding start-up services.

Ice Machine Dimensions
S320/S420 AIR AND WATER-COOLED ICE MACHINES

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Dimension W</th>
<th>Dimension D</th>
<th>Dimension H</th>
</tr>
</thead>
<tbody>
<tr>
<td>S320</td>
<td>22 in. (55.9 cm)</td>
<td>24.5 in. (62.2 cm)</td>
<td>21.5 in (54.6 cm)</td>
</tr>
<tr>
<td>S420</td>
<td>22 in. (55.9 cm)</td>
<td>24.5 in. (62.2 cm)</td>
<td>21.5 in (54.6 cm)</td>
</tr>
</tbody>
</table>
S600 AIR AND WATER-COOLED ICE MACHINES

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Dimension A</th>
<th>Dimension B</th>
<th>Dimension W</th>
<th>Dimension D</th>
<th>Dimension H</th>
</tr>
</thead>
<tbody>
<tr>
<td>S600</td>
<td>11.5 in (29.2 cm)</td>
<td>9.0 in (22.9 cm)</td>
<td>30 in. (76.2 cm)</td>
<td>24.50 in. (62.2 cm)</td>
<td>21.5 in (54.6 cm)</td>
</tr>
</tbody>
</table>

S600 REMOTE ICE MACHINES

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Dimension A</th>
<th>Dimension B</th>
<th>Dimension W</th>
<th>Dimension D</th>
<th>Dimension H</th>
</tr>
</thead>
<tbody>
<tr>
<td>S600</td>
<td>11.5 in (29.2 cm)</td>
<td>9.0 in (22.9 cm)</td>
<td>30 in. (76.2 cm)</td>
<td>24.50 in. (62.2 cm)</td>
<td>21.5 in (54.6 cm)</td>
</tr>
</tbody>
</table>
S300/S450/S500/S850/S1000/S1200 AIR AND WATER-COOLED ICE MACHINES

Width, Depth, and Height Dimensions

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Dimension W</th>
<th>Dimension D</th>
<th>Dimension H</th>
</tr>
</thead>
<tbody>
<tr>
<td>S300</td>
<td>30 in. (76.2 cm)</td>
<td>24.50 in. (62.2 cm)</td>
<td>16.5 in (41.9 cm)</td>
</tr>
<tr>
<td>S450</td>
<td>30 in. (76.2 cm)</td>
<td>24.50 in. (62.2 cm)</td>
<td>21.5 in (54.6 cm)</td>
</tr>
<tr>
<td>S500</td>
<td>30 in. (76.2 cm)</td>
<td>24.50 in. (62.2 cm)</td>
<td>21.5 in (54.6 cm)</td>
</tr>
<tr>
<td>S850</td>
<td>30 in. (76.2 cm)</td>
<td>24.50 in. (62.2 cm)</td>
<td>26.5 in (67.3 cm)</td>
</tr>
<tr>
<td>S1000</td>
<td>30 in. (76.2 cm)</td>
<td>24.50 in. (62.2 cm)</td>
<td>26.5 in (67.3 cm)</td>
</tr>
<tr>
<td>S1200</td>
<td>30 in. (76.2 cm)</td>
<td>24.50 in. (62.2 cm)</td>
<td>29.5 in (74.9 cm)</td>
</tr>
</tbody>
</table>

Electrical and AuCS Dimensions

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Electrical</th>
<th>AuCS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dimension A</td>
<td>Dimension B</td>
</tr>
<tr>
<td>S300</td>
<td>14.00 in (35.6 cm)</td>
<td>NA</td>
</tr>
<tr>
<td>S450</td>
<td>19.25 in (48.9 cm)</td>
<td>17.5 in (44.45 cm)</td>
</tr>
<tr>
<td>S500</td>
<td>19.25 in (48.9 cm)</td>
<td>17.5 in (44.45 cm)</td>
</tr>
<tr>
<td>S850</td>
<td>23.82 in (60.5 cm)</td>
<td>22.32 in (56.69 cm)</td>
</tr>
<tr>
<td>S1000</td>
<td>23.82 in (60.5 cm)</td>
<td>22.32 in (56.69 cm)</td>
</tr>
<tr>
<td>S1200</td>
<td>27.0 in (68.6 cm)</td>
<td>25.25 in (64.1 cm)</td>
</tr>
</tbody>
</table>
## S500/S850/S1000 REMOTE ICE MACHINES

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Dimension A</th>
<th>Dimension B</th>
<th>Dimension W</th>
<th>Dimension D</th>
<th>Dimension H</th>
</tr>
</thead>
<tbody>
<tr>
<td>S300</td>
<td>14.00 in (35.6 cm)</td>
<td>NA</td>
<td>30 in. (76.2 cm)</td>
<td>24.50 in. (62.2 cm)</td>
<td>16.5 in (41.9 cm)</td>
</tr>
<tr>
<td>S450</td>
<td>19.25 in (48.9 cm)</td>
<td>17.5 in (44.45 cm)</td>
<td>30 in. (76.2 cm)</td>
<td>24.50 in. (62.2 cm)</td>
<td>21.5 in (54.6 cm)</td>
</tr>
<tr>
<td>S500</td>
<td>19.25 in (48.9 cm)</td>
<td>17.5 in (44.45 cm)</td>
<td>30 in. (76.2 cm)</td>
<td>24.50 in. (62.2 cm)</td>
<td>21.5 in (54.6 cm)</td>
</tr>
<tr>
<td>S850</td>
<td>23.82 in (60.5 cm)</td>
<td>22.32 in (56.69 cm)</td>
<td>30 in. (76.2 cm)</td>
<td>24.50 in. (62.2 cm)</td>
<td>26.5 in (67.3 cm)</td>
</tr>
<tr>
<td>S1000</td>
<td>23.82 in (60.5 cm)</td>
<td>22.32 in (56.69 cm)</td>
<td>30 in. (76.2 cm)</td>
<td>24.50 in. (62.2 cm)</td>
<td>26.5 in (67.3 cm)</td>
</tr>
</tbody>
</table>
S1400 / S1600 / S1800 AIR AND WATER-COOLED ICE MACHINES

Width, Depth, and Height Dimensions

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Dimension W</th>
<th>Dimension D</th>
<th>Dimension H</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1400</td>
<td>48 in. (121.9 cm)</td>
<td>24.5 in. (62.2 cm)</td>
<td>29.5 in (74.9 cm)</td>
</tr>
<tr>
<td>S1600</td>
<td>48 in. (121.9 cm)</td>
<td>24.5 in. (62.2 cm)</td>
<td>29.5 in (74.9 cm)</td>
</tr>
<tr>
<td>S1800</td>
<td>48 in. (121.9 cm)</td>
<td>24.5 in. (62.2 cm)</td>
<td>29.5 in (74.9 cm)</td>
</tr>
</tbody>
</table>

Electrical and AuCS Dimensions

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Electrical</th>
<th>AuCS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dimension A</td>
<td>Dimension B</td>
</tr>
<tr>
<td>S1400</td>
<td>22.75 in (57.8 cm)</td>
<td>22.25 in (56.5 cm)</td>
</tr>
<tr>
<td>S1600</td>
<td>22.75 in (57.8 cm)</td>
<td>22.25 in (56.5 cm)</td>
</tr>
<tr>
<td>S1800</td>
<td>22.75 in (57.8 cm)</td>
<td>22.25 in (56.5 cm)</td>
</tr>
</tbody>
</table>

S1400 / S1600 / S1800 REMOTE ICE MACHINES

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Dimension A</th>
<th>Dimension B</th>
<th>Dimension W</th>
<th>Dimension D</th>
<th>Dimension H</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1400</td>
<td>22.75 in (57.8 cm)</td>
<td>22.25 in (56.5 cm)</td>
<td>48 in. (121.9 cm)</td>
<td>24.5 in. (62.2 cm)</td>
<td>29.5 in (74.9 cm)</td>
</tr>
<tr>
<td>S1600</td>
<td>22.75 in (57.8 cm)</td>
<td>22.25 in (56.5 cm)</td>
<td>48 in. (121.9 cm)</td>
<td>24.5 in. (62.2 cm)</td>
<td>29.5 in (74.9 cm)</td>
</tr>
<tr>
<td>S1800</td>
<td>22.75 in (57.8 cm)</td>
<td>22.25 in (56.5 cm)</td>
<td>48 in. (121.9 cm)</td>
<td>24.5 in. (62.2 cm)</td>
<td>29.5 in (74.9 cm)</td>
</tr>
</tbody>
</table>
S3300 WATER-COOLED MODEL

Remote Condenser Dimensions

JC0495/JC0895/JC1395
## Ice Storage Bin Dimensions

### 22 INCH (56 CM) ICE STORAGE BINS

<table>
<thead>
<tr>
<th>Bin Model</th>
<th>Dimension A</th>
<th>Dimension B</th>
</tr>
</thead>
<tbody>
<tr>
<td>B320</td>
<td>34.0 in (86.3 cm)</td>
<td>32.0 in (81.3 cm)</td>
</tr>
<tr>
<td>B420</td>
<td>34.0 in (86.3 cm)</td>
<td>44.0 in (111.7 cm)</td>
</tr>
</tbody>
</table>

### 48 INCH (122 CM) ICE STORAGE BINS

### 30 INCH (76 CM) ICE STORAGE BINS

<table>
<thead>
<tr>
<th>Bin Model</th>
<th>Dimension A</th>
<th>Dimension B</th>
</tr>
</thead>
<tbody>
<tr>
<td>B170</td>
<td>29.5 in (74.9 cm)</td>
<td>19.1 in (48.5 cm)</td>
</tr>
<tr>
<td>B400</td>
<td>34.0 in (86.3 cm)</td>
<td>32.0 in (81.3 cm)</td>
</tr>
<tr>
<td>B570</td>
<td>34.0 in (86.3 cm)</td>
<td>44.0 in (111.7 cm)</td>
</tr>
</tbody>
</table>
Large Capacity Ice Storage Bin Dimensions

30 INCH (76 CM)

<table>
<thead>
<tr>
<th>Bin Model</th>
<th>Dimension A (Width)</th>
<th>Dimension B (Height)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B750</td>
<td>30 in. (76.2 cm.)</td>
<td>58 in. (147.3 cm.)</td>
</tr>
</tbody>
</table>

The bin drain is exactly in the center of the bin.

48 INCH (122 CM) & 60 INCH (152 CM)

<table>
<thead>
<tr>
<th>Bin Model</th>
<th>Dimension A (Width)</th>
<th>Dimension B (Height)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1100/B1100-00</td>
<td>48.0 in. (121.9 cm.)</td>
<td>55.0 in. (139.7 cm.)</td>
</tr>
<tr>
<td>B1400/B1400-00</td>
<td>60.0 in. (152.4 cm.)</td>
<td>55.0 in. (139.7 cm.)</td>
</tr>
</tbody>
</table>

The bin drain is exactly in the center of the bin.

⚠️ Warning

All Manitowoc ice machines require the ice storage system (bin, dispenser, etc.) to incorporate an ice deflector. The S600, S850, S1000 ice machines require adding Manitowoc Ice Deflector Kit K00347 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.

⚠️ Caution

30" large capacity ice storage bins must be attached to the wall with the bracket provided with the bin.
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).
- Remote air cooled - The air temperature must be at least -20°F (-29°C), but must not exceed 120°F (49°C).
- The location must not be near heat-generating equipment or in direct sunlight and must be protected from weather.
- The location must not obstruct air flow through or around the ice machine. Refer to the chart below for clearance requirements.

<table>
<thead>
<tr>
<th>Series Ice Machine</th>
<th>Heat of Rejection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Air Conditioning</td>
</tr>
<tr>
<td>S300</td>
<td>5000</td>
</tr>
<tr>
<td>S320</td>
<td>3800</td>
</tr>
<tr>
<td>S420</td>
<td>5900</td>
</tr>
<tr>
<td>S450</td>
<td>5900</td>
</tr>
<tr>
<td>S500</td>
<td>6100</td>
</tr>
<tr>
<td>S600</td>
<td>9000</td>
</tr>
<tr>
<td>S850</td>
<td>13000</td>
</tr>
<tr>
<td>S1000</td>
<td>17700</td>
</tr>
<tr>
<td>S1200</td>
<td>20700</td>
</tr>
<tr>
<td>S1400</td>
<td>23500</td>
</tr>
<tr>
<td>S1600</td>
<td>21000</td>
</tr>
<tr>
<td>S1800</td>
<td>30000</td>
</tr>
<tr>
<td>S3300</td>
<td>45000</td>
</tr>
</tbody>
</table>

*There is no minimum clearance required for water-cooled or remote ice machines. This value is recommended for efficient operation and servicing only.

**S3300 - 24" on all sides is recommended to allow access without moving the bin/ice machine.

Caution
The ice machine 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”.

Ice Machine Heat of Rejection

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 remote condensers to reduce air conditioning loads. The amount of heat added to an air conditioned environment by an ice machine using a water-cooled or remote condenser is negligible.

Knowing the amount of heat rejected is also important when sizing a cooling tower for a water-cooled condenser. Use the peak figure for sizing the cooling tower.
Removing Drain Plug and Leveling the Ice Storage Bin

1. Remove threaded plug from drain fitting.
2. Screw the leveling legs onto the bottom of the bin.
3. Screw the foot of each leg in as far as possible.
4. Move the bin into its final position.
5. Level the bin to assure that the bin door closes and seals properly. Use a level on top of the bin. Turn the base of each foot as necessary to level the bin.
6. Inspect bin gasket prior to ice machine installation. (Manitowoc bins come with a closed cell foam gasket installed along the top surface of the bin.)
7. Remove all panels from ice machine before lifting. Remove both front panels, top cover, left and right side panels.
8. Install ice machine on bin.

<table>
<thead>
<tr>
<th>Caution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The legs must be screwed in tightly to prevent them from bending.</td>
</tr>
</tbody>
</table>

Air-Cooled Baffle

SELF-CONTAINED AIR-COOLED ONLY

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.
Electrical Service

GENERAL

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

VOLTAGE
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 must be grounded in accordance with national and local electrical codes.

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

- The ice machine must be grounded.
- A separate fuse/circuit breaker must be provided for each ice machine.
- 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 ice machine start-up (when the electrical load is highest).
- Check all green ground screws in the control box and verify they are tight before starting the ice machine.

Important
Observe correct polarity of incoming line voltage.

Incorrect polarity can lead to erratic ice machine operation and a safety issue. This is especially critical on 230 volt / 50 cycle ice machines.

Fuse/Circuit Breaker
A separate fuse/circuit breaker must be provided for each ice machine. 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
Refer to Ice Machine Model/Serial Plate for voltage/amperage specifications.

GROUND FAULT CIRCUIT INTERRUPTER
Ground Fault Circuit Interrupter (GFCI/GFI) protection is a system that shuts down the electric circuit (opens it) when it senses an unexpected loss of power, presumably to ground. Manitowoc Ice does not recommend the use of a GFCI/GFI circuit protection with our equipment. If code requires the use of a GFCI/GFI then you must follow the local code. The circuit must be dedicated, sized properly and there must be a panel GFCI/GFI breaker. We do not recommend GFCI/GFI outlets as they are known for more intermittent nuisance trips than panel breakers.

MINIMUM POWER CORD SPECIFICATIONS

<table>
<thead>
<tr>
<th>Maximum Breaker Size</th>
<th>Minimum Wire Size</th>
<th>Maximum Length of Power Cord</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 amp</td>
<td>14 gauge</td>
<td>6 feet (1.83 m)</td>
</tr>
<tr>
<td>20 amp</td>
<td>12 gauge</td>
<td>6 feet (1.83 m)</td>
</tr>
<tr>
<td>30 amp</td>
<td>10 gauge</td>
<td>6 feet (1.83 m)</td>
</tr>
<tr>
<td>40 amp</td>
<td>8 gauge</td>
<td>6 feet (1.83 m)</td>
</tr>
</tbody>
</table>

If a power cord is used the wire size to the receptacle is dependant upon location, materials used, length of run, etc., so it must be determined by a qualified electrician. Local, state or national requirements will supersede our minimum requirements.
### MAXIMUM BREAKER SIZE & MINIMUM CIRCUIT AMPERAGE CHART

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

**Important**
S3300 Only - Verify the direction of rotation correct is correct on the 3ph scroll compressor. The ice machine will have high suction pressure, low discharge pressure and will be noticeably loud. Reverse any two incoming power leads to reverse rotation.

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Voltage Phase Cycle</th>
<th>Air-Cooled</th>
<th>Water Cooled</th>
<th>Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td>S300</td>
<td>115/1/60</td>
<td>25</td>
<td>15.6</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>230/1/50</td>
<td>15</td>
<td>7.4</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>230/1/60</td>
<td>15</td>
<td>6.7</td>
<td>15</td>
</tr>
<tr>
<td>S320</td>
<td>115/1/60</td>
<td>15</td>
<td>11.3</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>208-230/1/60</td>
<td>15</td>
<td>6.0</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>230/1/50</td>
<td>15</td>
<td>6.0</td>
<td>15</td>
</tr>
<tr>
<td>S420/S450</td>
<td>115/1/60</td>
<td>20</td>
<td>14.2</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>208-230/1/60</td>
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<td>6.1</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>230/1/50</td>
<td>15</td>
<td>7.1</td>
<td>15</td>
</tr>
<tr>
<td>S500</td>
<td>115/1/60</td>
<td>15</td>
<td>6.7</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>208-230/1/60</td>
<td>15</td>
<td>6.1</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>230/1/50</td>
<td>15</td>
<td>7.1</td>
<td>15</td>
</tr>
<tr>
<td>S600</td>
<td>208-230/1/60</td>
<td>15</td>
<td>8.3</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>230/1/50</td>
<td>15</td>
<td>6.7</td>
<td>15</td>
</tr>
<tr>
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<td>208-230/1/60</td>
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<td>11.9</td>
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<tr>
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<td>208-230/3/60</td>
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<td>9.2</td>
<td>15</td>
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<td></td>
<td>230/1/50</td>
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<td>10.8</td>
<td>20</td>
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<tr>
<td>S1000</td>
<td>208-230/1/60</td>
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<td>17.3</td>
<td>30</td>
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<td>208-230/3/60</td>
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<td>10.6</td>
<td>15</td>
</tr>
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<td>230/1/50</td>
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<td>12.7</td>
<td>20</td>
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<td></td>
<td>460/3/60</td>
<td>N/A</td>
<td>N/A</td>
<td>15</td>
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<tr>
<td>S1200</td>
<td>208-230/1/60</td>
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<td>25.0</td>
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<tr>
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<td>208-230/3/60</td>
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<td>16.0</td>
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<td>230/1/50</td>
<td>30</td>
<td>20.0</td>
<td>30</td>
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<td>18.3</td>
<td>30</td>
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<tr>
<td></td>
<td>208-230/3/60</td>
<td>20</td>
<td>13.2</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>230/1/50</td>
<td>30</td>
<td>15.1</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>440-480/3/60</td>
<td>N/A</td>
<td>N/A</td>
<td>15</td>
</tr>
<tr>
<td>S1600</td>
<td>208-230/1/60</td>
<td>30</td>
<td>19.8</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>208-230/3/60</td>
<td>20</td>
<td>13.5</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>230/1/50</td>
<td>30</td>
<td>16.7</td>
<td>30</td>
</tr>
<tr>
<td>S1800</td>
<td>208-230/1/60</td>
<td>40</td>
<td>23.8</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>208-230/3/60</td>
<td>25</td>
<td>15.4</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>230/1/50</td>
<td>40</td>
<td>21.9</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>440-480/3/60</td>
<td>N/A</td>
<td>N/A</td>
<td>15</td>
</tr>
<tr>
<td>S3300</td>
<td>208-230/1/60</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>208-230/3/60</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>230/1/50</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>440-480/3/60</td>
<td>N/A</td>
<td>N/A</td>
<td>15</td>
</tr>
</tbody>
</table>
Self-Contained 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.

---

### SELF CONTAINED ICE MACHINE

**115/1/60 OR 208-230/1/60**

![Diagram of 115/1/60 or 208-230/1/60 connection]

### SELF CONTAINED ICE MACHINE

**208-230/3/60 OR 440-480/3/60**

![Diagram of 208-230/3/60 or 440-480/3/60 connection]

### SELF CONTAINED ICE MACHINE

**230/1/50**

![Diagram of 230/1/50 connection]

---

**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 grounding, or colored green or green and yellow.
- The wire colored **blue** must be connected to the terminal which is marked with the letter N or colored black.
- The wire colored **brown** must be connected to the terminal which is marked with the letter L or colored red.
Remote 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.

**Important**

F2 wire is located in the compressor compartment behind the control box. The wire is labeled F2 and capped with a wire nut.

REMOTE ICE MACHINE
WITH SINGLE CIRCUIT MODEL CONDENSER
115/1/60 OR 208-230/1/60

REMOTE ICE MACHINE
WITH SINGLE CIRCUIT MODEL CONDENSER
208-230/3/60 OR 440-480/3/60

REMOTE ICE MACHINE
WITH SINGLE CIRCUIT MODEL CONDENSER
230/1/50
Water Supply and Drain Requirements

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 Arctic Pure water filter system, refer to the Installation Instructions supplied with the filter system for ice making water inlet connections.

WATER INLET LINES
Follow these guidelines to install water inlet lines:
- Do not connect the ice machine to a hot water supply. Be sure all hot water restrictors installed for other equipment are working. (Check valves on sink faucets, dishwashers, etc.)
- If water pressure exceeds the maximum recommended pressure (80 psi), obtain a water pressure regulator from your Manitowoc distributor.
- Contact your distributor if your water pressure is greater than 150 psig (10.34 bar). A special order condensing unit is available that allows water pressure up to 350 psig (24.13 bar).
- Install a water shut-off valve for both the ice making and condenser water lines.
- Insulate water inlet lines to prevent condensation.

**Caution**
Do not apply heat to water valve inlet fitting. This will damage plastic water inlet connection.

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. Do not vent the condenser drain on water-cooled models.
- S3300 requires base drain connection (1” FPT).

Cooling Tower Applications
(Water-Cooled Models)
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 (32.2°C).
- Water flow through the condenser must not exceed 5 gallons (19 liters) per minute.
- Allow for a pressure drop of 7 psi (0.5 bar) between the condenser water inlet and the outlet of the ice machine.
- Water exiting the condenser must not exceed 110°F (43.3°C).

S3300 CONDENSER WATER PRESSURE
Water pressure at the condenser cannot exceed 150 psig (10.34 bar) with the standard water-regulating valve. Contact your distributor if your water pressure is greater than 150 psig (10.34 bar). A special order condensing unit is available that allows water pressure up to 350 psig (24.13 bar).

**IMPORTANT**
The Commonwealth of Massachusetts requires that all water-cooled models must be connected only to a closed loop, cooling tower system.
WATER SUPPLY AND DRAIN LINE SIZING/CONNECTIONS

⚠️ Caution
Plumbing must conform to state and local codes.

<table>
<thead>
<tr>
<th>Location</th>
<th>Water Temperature</th>
<th>Water Pressure</th>
<th>Ice Machine Fitting</th>
<th>Tubing Size Up to Ice Machine Fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice Making Water Inlet</td>
<td>35°F (1.6°C) Min.</td>
<td>20 psi (1.4 bar) Min.</td>
<td>3/8&quot; Female Pipe Thread 1/2&quot; FPT S3300 Only</td>
<td>3/8&quot; (.95 cm) min inside diameter 1/2&quot; (1.27 cm) S3300 Only</td>
</tr>
<tr>
<td></td>
<td>90°F (32.2°C) Max.</td>
<td>80 psi (5.52 bar) Max.</td>
<td>1/2&quot; Female Pipe Thread 1&quot; FPT S3300 Only</td>
<td>1/2&quot; (1.27 cm) min inside diameter 1&quot; (2.54 cm) S3300 Only</td>
</tr>
<tr>
<td>Ice Making Water Drain</td>
<td>---</td>
<td>---</td>
<td>1/2&quot; Female Pipe Thread 1&quot; FPT Base Drain S3300 Only</td>
<td>---</td>
</tr>
<tr>
<td>Condenser Water Inlet</td>
<td>90°F (32.2°C) Max.</td>
<td>20 psi (1.4 bar) Min.</td>
<td>3/8&quot; Female Pipe Thread 1&quot; Female Pipe Thread S3300 Only</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150 psi (10.34 bar) Max.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 psi (1.4 bar) Min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>350 psi (24.1 bar) Max.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condenser Water Drain</td>
<td>---</td>
<td>---</td>
<td>1/2&quot; Female Pipe Thread 1&quot; FPT S3300 Only</td>
<td>1/2&quot; (1.27 cm) min inside diameter 1&quot; (2.54 cm) S3300 Only</td>
</tr>
<tr>
<td>Bin Drain</td>
<td>---</td>
<td>---</td>
<td>3/4&quot; Female Pipe Thread 1/4&quot; (1.91 cm) minimum inside diameter</td>
<td>---</td>
</tr>
<tr>
<td>Large Capacity Bin Drain</td>
<td>---</td>
<td>---</td>
<td>1&quot; Male Pipe Thread 1&quot; (2.54 mm) min. inside diameter</td>
<td>---</td>
</tr>
</tbody>
</table>

Refer to “Ice Machine Dimensions” at the beginning of Section 2 for the exact locations of inlets and drains for the model you are working on.

![Typical Water Supply Drain Installation](image)
Remote Condenser/Line Set Installation

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Remote Single Circuit Condenser</th>
<th>Line Set*</th>
</tr>
</thead>
<tbody>
<tr>
<td>S500</td>
<td>JC0495</td>
<td>RT-20-R404A RT-35-R404A RT-50-R404A</td>
</tr>
<tr>
<td>S600/S800/S1000</td>
<td>JC0895</td>
<td>RT-20-R404A RT-35-R404A RT-50-R404A</td>
</tr>
<tr>
<td>S1400/S1600/ S1800</td>
<td>JC1395</td>
<td>RL-20-R404A RL-35-R404A RL-50-R404A</td>
</tr>
</tbody>
</table>

*Line Set | Discharge Line | Liquid Line
RT  | 1/2" (1.27 cm) | 5/16" (.79 cm)
RL  | 1/2" (1.27 cm) | 3/8" (.95 cm)

Air Temperature Around the Condenser

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20°F (-29°C)</td>
<td>120°F (49°C)</td>
</tr>
</tbody>
</table>

**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 remote condensers.

**REMOTE ICE MACHINES**

**REFRIGERANT CHARGE**

Each remote ice machine ships from the factory with a refrigerant charge appropriate for installation with line sets of up to 50’ (15.25 m). The serial tag on the ice machine indicates the refrigerant charge.

Additional refrigerant may be required for installations using line sets between 50’ and 100’ (15.25-30.5 m) long. If additional refrigerant is required, refer to the chart below for the correct amount to be added.

**Important EPA CERTIFIED TECHNICIANS**

If remote line set length is between 50’ and 100’ (15.25-30.5 m), add additional refrigerant to the nameplate charge. Refer to the Installation Instructions in Installation Use and Care Manual for the model being worked on.

Tubing length: ______________________________
Refrigerant added to nameplate: ________________
New total refrigerant charge: ___________________

**Typical Additional Refrigerant Label**

**Warning**

Potential Personal Injury Situation
The ice machine contains refrigerant charge. Installation 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.
GENERAL
Condensers must be mounted horizontally with the fan motor on top with nothing obstructing it. There must be at least a 16” clearance from the bottom for air intake. The front coupling panel & one other panel (back or side) must also be unobstructed.
Remote condenser installations consist of vertical and horizontal line sets between the ice machine and the condenser. When combined, they must fit within approved specifications. The following guidelines, drawings and calculation methods must be followed to verify a proper remote condenser installation.

Caution
The 60 month compressor warranty (including the 36 month labor replacement warranty) will not apply if the remote ice machine is 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 unless specifically approved in writing by Manitoc Ice.

Routing Line Sets
CALCULATING REMOTE CONDENSER INSTALLATION DISTANCES

Line Set Length
The maximum length is 100' (30.5 m).
The ice machine compressor must have the proper oil return. The receiver is designed to hold a charge sufficient to operate the ice machine in ambient temperatures between -20°F (-29°C) and 120°F (49°C), with line set lengths of up to 100' (30.5 m).

Line Set Rise/Drop
The maximum rise is 35' (10.7 m).
The maximum drop is 15' (4.5 m).

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.

Calculated Line Set Distance
The maximum calculated distance is 150' (45.7 m).
Line set rises, drops, horizontal runs (or combinations of these) in excess of the stated maximums will exceed compressor start-up and design limits. This will cause poor oil return to the compressor.

Maximum Line Set Distance Formula

Step 1. Measured Rise (35' [10.7 m] Maximum) _______ x 1.7 = _______ Calculated Rise
Step 2. Measured Drop (15' [4.5 m] Maximum) _______ x 6.6 = _______ Calculated Drop
Step 3. Measured Horizontal Distance (100' [30.5 m] Maximum) _______ Horizontal Distance
Step 4. Total Calculated Distance 150' (45.7 m) _______ Total Calculated Distance

Make the following calculations to make sure the line set layout is within specifications.
1. Insert the measured rise into the formula below. Multiply by 1.7 to get the calculated rise. (Example: A condenser located 10 feet above the ice machine has a calculated rise of 17 feet.00)
2. Insert the measured drop into the formula below. Multiply by 6.6 to get the calculated drop. (Example: A condenser located 10 feet below the ice machine has a calculated drop of 66 feet.)
3. Insert the measured horizontal distance into the formula below. No calculation is necessary.
4. Add together the calculated rise, calculated drop, and horizontal distance to get the total calculated distance. If this total exceeds 150' (45.7 m), move the condenser to a new location and perform the calculations again.

Combination of a Rise and a Horizontal Run
Combination of a Drop and a Horizontal Run
Combination of a Rise, a Drop and a Horizontal Run
LENGTHENING OR REDUCING LINE SET LENGTHS

In most cases, by routing the line set properly, shortening will not be necessary. When shortening or lengthening is required, do so before connecting the line set to the ice machine or the remote condenser. This prevents the loss of refrigerant in the ice machine or condenser.

The quick connect fittings on the line sets are equipped with Schraeder valves. Use these valves to recover any vapor charge from the line set. When lengthening or shortening lines follow good refrigeration practices, purge with nitrogen and insulate all tubing. Do not change the tube sizes. Evacuate the lines and place about 5 oz (143g) of vapor refrigerant charge in each line.

CONNECTING A LINE SET

1. Remove the dust caps from the line set, condenser and ice machine.
2. Apply refrigeration oil to the threads on the quick disconnect couplers before connecting them to the condenser.
3. Carefully thread the female fitting to the condenser or ice machine by hand.
4. Tighten the couplings with a wrench until they bottom out.
5. Turn an additional 1/4 turn to ensure proper brass-to-brass seating. Torque to the following specifications:

<table>
<thead>
<tr>
<th>Liquid Line</th>
<th>Discharge Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-12 ft lb.</td>
<td>35-45 ft lb.</td>
</tr>
<tr>
<td>(13.5-16.2 N·m)</td>
<td>(47.5-61.0 N·m)</td>
</tr>
</tbody>
</table>

6. Check all fittings and valve caps for leaks.
7. Make sure Schraeder cores are seated and Schraeder caps are on and tight.

REMOTE RECEIVER SERVICE VALVE

The receiver service valve is closed during shipment. Open the valve prior to starting the ice machine.

1. Remove the top and left side panels.
2. Remove the receiver service valve cap.
3. Backseat (open) the valve.
4. Reinstall the cap and panels.

Backseating the Receiver Service Valve
Remote Ice Machine Usage with Non-Manitowoc Multi-Circuit Condensers

**WARRANTY**

The sixty (60) month compressor warranty, including thirty six (36) month labor replacement warranty, **shall not apply** when the remote ice machine is not installed within the remote specifications. The foregoing warranty shall not apply to any ice machine installed and/or maintained inconsistent with the technical instructions provided by Manitowoc Ice, Inc. Performance may vary from Sales specifications. S-Model ARI certified standard ratings only apply when used with a Manitowoc remote condenser.

If the design of the condenser meets the specifications, Manitowoc’s **only** approval is for full warranty coverage to be extended to the Manitowoc manufactured part of the system. Since Manitowoc does **not** test the condenser in conjunction with the ice machine, Manitowoc will not endorse, recommend, or approve the condenser, and will not be responsible for its performance or reliability.

**HEAD PRESSURE CONTROL VALVE**

Any remote condenser connected to a Manitowoc S-Model Ice Machine must have a head pressure control valve (available from Manitowoc Distributors) installed on the condenser package. Manitowoc will not accept substitute “off the shelf” head pressure control valves.

**FAN MOTOR**

The condenser fan must be **on** during the complete ice machine freeze cycle (do not cycle on fan cycle control). The ice maker has a condenser fan motor circuit for use with a Manitowoc condenser. It is recommended that this circuit be used to control the condenser fan(s) on the multi-circuit condenser to assure it is on at the proper time. **Do not exceed the rated amps for the fan motor circuit listed on the ice machine’s serial tag.**

**INTERNAL CONDENSER VOLUME**

The multi-circuit condenser internal volume must not be less than or exceed that used by Manitowoc (see chart on next page). **Do not exceed internal volume and try to add charge to compensate, as compressor failure will result.**

**CONDENSER ΔT**

ΔT is the difference in temperature between the condensing refrigerant and entering air. The ΔT should be 15 to 20°F (-9.4 to -6.6°C) at the beginning of the freeze cycle (peak load conditions) and drop down to 12 to 17°F (-11.1 to -8.3°C) during the last 75% of the freeze cycle (average load conditions).

**REFRIGERANT CHARGE**

Remote ice machines have the serial plate refrigerant charge (total system charge) located in the ice maker section. (Remote condensers and line sets are supplied with only a vapor charge.)

**QUICK CONNECT FITTINGS**

The ice machine and line sets come with quick connect fittings. It is recommended that matching quick connects (available through Manitowoc Distributors) be installed in the multi-circuit condenser, and that a vapor “holding” charge (5 oz.) of proper refrigerant be added to the condenser prior to connection of the ice machine or line set to the condenser.
## NON-MANITOWOC MULTI-CIRCUIT CONDENSER SIZING CHART

<table>
<thead>
<tr>
<th>Ice Machine Model</th>
<th>Refrigerant</th>
<th>Heat of Rejection</th>
<th>Internal Condenser Volume (cu ft)</th>
<th>Design Pressure</th>
<th>Quick Connect Stubs-Male Ends</th>
<th>Head Pressure Control Valve</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type</td>
<td>Charge</td>
<td>Average Btu/hr</td>
<td>Peak Btu/hr</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>S500</td>
<td>R-404A</td>
<td>6 lbs.</td>
<td>6,100</td>
<td>6,900</td>
<td>0.020</td>
<td>0.035</td>
</tr>
<tr>
<td>S600</td>
<td>R-404A</td>
<td>6.5 lbs.</td>
<td>9,000</td>
<td>13,900</td>
<td>0.045</td>
<td>0.060</td>
</tr>
<tr>
<td>S850</td>
<td>R-404A</td>
<td>8.5 lbs.</td>
<td>13,000</td>
<td>16,000</td>
<td>0.045</td>
<td>0.060</td>
</tr>
<tr>
<td>S1000</td>
<td>R-404A</td>
<td>8.5 lbs.</td>
<td>17,700</td>
<td>21,000</td>
<td>0.045</td>
<td>0.060</td>
</tr>
<tr>
<td>S1400</td>
<td>R-404A</td>
<td>11 lbs.</td>
<td>20,700</td>
<td>24,500</td>
<td>0.085</td>
<td>0.105</td>
</tr>
<tr>
<td>S1600</td>
<td>R-404A</td>
<td>11.5 lbs</td>
<td>21,000</td>
<td>31,000</td>
<td>0.085</td>
<td>0.105</td>
</tr>
<tr>
<td>S1800</td>
<td>R-404A</td>
<td>12.5 lbs</td>
<td>30,000</td>
<td>35,000</td>
<td>0.085</td>
<td>0.105</td>
</tr>
</tbody>
</table>

![Typical Single Circuit Remote Condenser Installation](image-url)
INSTALLATION CHECK LIST

☐ Is the Ice Machine level?

☐ Has all of the internal packing been removed?

☐ Have all of the electrical and water connections been made?

☐ Has the supply voltage been tested and checked against the rating on the nameplate?

☐ Is there proper clearance around the ice machine for air circulation?

☐ Is the ice machine grounded and polarity correct?

☐ Has the ice machine been installed where ambient temperatures will remain in the range of 35° - 110°F (1.6° - 43.3°C)?

☐ Has the ice machine been installed where the incoming water temperature will remain in the range of 35° - 90°F (1.6° - 32.2°C)?

☐ Is there a separate drain for the water-cooled condenser?

☐ Is there a separate drain for the bin?

☐ Are the ice machine and bin drains 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 owner/operator completed the warranty registration card?

☐ Has the ice machine and bin been sanitized?

☐ Is the toggle switch set to ice? (The toggle switch is located directly behind the front panel).

☐ Is the ice thickness control set correctly? (Refer to Operational Checks to check/set the correct ice bridge thickness).

☐ S3300 Only - Is the compressor direction of rotation correct? The ice machine will have high suction pressure, low discharge pressure and will be noticeably loud. Reverse any two incoming power leads to reverse rotation.

ADDITIONAL CHECKS FOR REMOTE MODELS

☐ Has the receiver service valve been opened?

☐ Does the remote condenser fan operate properly after start-up?

☐ Has the remote condenser been located where ambient temperatures will remain in the range of -20° - 120°F (-29 - 49°C).

☐ Is the line set routed properly?

☐ Are both refrigeration lines to remote condenser run so they do not lay in water and are properly insulated?
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, Use and Care Manual for details.
Section 3
Ice Machine Operation

Component Identification

S MODEL SINGLE EVAPORATOR MODELS

Ice Thickness Probe
Dump Valve
Bin Switch

Water Distribution Tube
Water Inlet Location
Water Inlet Valve
(Located in Refrigeration Compartment)

Water Pump
Water Level Probe

S MODEL MULTIPLE EVAPORATOR MODELS

Evaporators
Ice Dampers
Water Trough

Control Box
Water Pumps
Water Level Probe
Sequence Of Operation

NOTE: The toggle switch must be in the ice position and the water curtain/ice dampers must be in place on the evaporator before the ice machine will start.

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

1. Water Purge
Before the refrigerant compressor starts, the water pump and water dump solenoid energize to purge the ice machine of old water. This feature ensures that the ice making cycle starts with fresh water.

Single evaporator models energize the harvest valve(s) and air compressor (when used) at the end of the water purge and they remain energized during refrigeration startup.

2. Refrigeration System Start-Up
The compressor, condenser fan motor and water fill valve energize and 5 seconds later the harvest valve(s) and air compressor(s) de-energize.

The fan motor is wired through a fan cycle pressure control and will cycle on and off when the room temperatures is below 70 F (21 C).

FREEZE SEQUENCE

3. Prechill
The compressor lowers the temperature of the evaporator(s) before the water pump is energized. The water fill valve will remain energized until water contacts the water level probe.

4. Freeze
The water pump(s) energizes and water flows over the evaporator. After water contacts the water level probe the water fill valve de-energizes. The water fill valve will cycle on and off one more time.

The freeze cycle continues until the six minute freeze lock expires and enough ice has formed to allow water to contact the ice thickness probe. After approximately 10 seconds of continual water contact, the harvest sequence is initiated.

NOTE: Freeze lock is bypassed after moving the toggle switch from OFF to ICE position for the first cycle only.

HARVEST SEQUENCE

5. Water Purge
The air compressor (when used) and the harvest valve(s) open at the beginning of the water purge to divert hot refrigerant gas into the evaporator.

The water pump continues to run, and the water dump valve energizes to purge the water in the water trough.

Single evaporator models energize the water fill valve for the last 15 seconds of the water purge cycle.

6. Harvest
The air compressor (when used) remains energized and the harvest valve(s) remains open. The refrigerant gas warms the evaporator causing the cubes to slide, as a sheet, off the evaporator and into the storage bin.

Single evaporator models - The sliding sheet of cubes opens the water curtain and bin switch.

The momentary opening and re-closing of the bin switch terminates the harvest sequence and return to the freeze sequence (Step 3 - 4.)

Multiple evaporator models - The sliding sheet of cubes opens the ice damper and bin switch. The momentary opening and re-closing of the bin switch de-energized the harvest valve for the evaporator. When all of the bin switches have opened and closed the ice machine will terminate the harvest sequence and return to the freeze sequence (Step 3 - 4.)

AUTOMATIC SHUT-OFF

7. Automatic Shut-Off
When the storage bin is full at the end of a harvest sequence, the sheet of cubes fails to clear the water curtain/ice damper and will hold it open. After the water curtain/ice damper is held open for 30 seconds, the ice machine shuts off. The ice machine remains off for 3 minutes before it can automatically restart.

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 or all of the ice dampers. As the water curtain/ice dampers swing back to the closed position, the bin switch re-closes and the ice machine restarts (steps 1 - 2), provided the 3 minute delay period is complete.
### SEQUENCE OF OPERATION CHART SINGLE EVAPORATOR

<table>
<thead>
<tr>
<th>Ice Making Sequence Of Operation</th>
<th>Water Pump</th>
<th>Harvest Valve(s)</th>
<th>Air Compressor(s)</th>
<th>Water Inlet Valve</th>
<th>Dump Valve</th>
<th>Refrigeration Compressor &amp; Condenser Fan Motor</th>
<th>Length Of Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>START-UP 1</strong>&lt;br&gt;1. Water Purge</td>
<td>On</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>45 Seconds</td>
</tr>
<tr>
<td>2. Refrigeration System Start-Up</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>On</td>
<td>5 Seconds</td>
</tr>
<tr>
<td><strong>FREEZE SEQUENCE</strong>&lt;br&gt;3. Pre-Chill</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>On</td>
<td>Initial Start-Up is 60 Seconds 30 Seconds thereafter</td>
</tr>
<tr>
<td>4. Freeze</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>Cycles Off then On/Off, one more time</td>
<td>Off</td>
<td>On</td>
<td>Until 10 sec. water contact with ice thickness probe</td>
</tr>
<tr>
<td>6. Harvest</td>
<td>Off</td>
<td>On</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Bin switch activation</td>
</tr>
<tr>
<td>7. AUTOMATIC SHUT-OFF</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Until bin switch re-closes &amp; 3 min. delay expires</td>
</tr>
</tbody>
</table>

### SEQUENCE OF OPERATION CHART MULTIPLE EVAPORATORS

<table>
<thead>
<tr>
<th>Ice Making Sequence Of Operation</th>
<th>Water Pump</th>
<th>Harvest Valve(s)</th>
<th>Air Compressor(s)</th>
<th>Water Inlet Valve</th>
<th>Dump Valve</th>
<th>Refrigeration Compressor</th>
<th>Length Of Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>START-UP 1</strong>&lt;br&gt;1. Water Purge</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>45 Seconds</td>
</tr>
<tr>
<td>2. Refrigeration System Start-Up</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>On</td>
<td>5 Seconds</td>
</tr>
<tr>
<td><strong>FREEZE SEQUENCE</strong>&lt;br&gt;3. Pre-Chill</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>On</td>
<td>Until 10 sec. water contact with ice thickness probe</td>
</tr>
<tr>
<td>4. Freeze</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>Cycles Off then On/Off, one more time</td>
<td>Off</td>
<td>On</td>
<td>30 Seconds</td>
</tr>
<tr>
<td><strong>HARVEST SEQUENCE</strong>&lt;br&gt;5. Water Purge</td>
<td>On</td>
<td>On</td>
<td>On</td>
<td>Off</td>
<td>On</td>
<td>On</td>
<td>45 Seconds</td>
</tr>
<tr>
<td>6. Harvest</td>
<td>Off</td>
<td>On</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>Bin switch activation</td>
</tr>
<tr>
<td>7. AUTOMATIC SHUT-OFF</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Until bin switch re-closes &amp; 3 min. delay expires</td>
</tr>
</tbody>
</table>
SAFETY TIMERS

The control board has the following non-adjustable safety 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 (steps 5 & 6).
- 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 (steps 3 & 4) 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 - 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 evaporator models - If the harvest time reaches 3.5 minutes, the control board automatically returns the ice machine to the freeze cycle. If three 500 consecutive 3.5 minute harvest cycles occur, the ice machine stops.
- Safety Limit 2 multiple evaporator models - 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 multiple evaporator models - 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 safety/harvest light.

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

1. Move the toggle switch to OFF.
2. Move the toggle switch back to ICE. Watch the safety limit lights 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.

WARM WATER RINSE CYCLE

Single evaporator models only - Closing the back of the evaporator allows ice to build up on the rear of the evaporator and the plastic evaporator frame parts. After 200 freeze/harvest cycles have been completed the control board will initiate a warm water rinse.

After the 200th harvest cycle ends:

- The Clean and Harvest LED’s energize to indicate the ice machine is in a warm water rinse.
- The compressor and harvest valve remain energized.
- The water pump energizes.
- The water inlet valve energizes until water contacts the water level probe.
- The compressor and harvest valve warm the water for 5 minutes, then de-energize.
- The water pump remains energized for an additional 5 minutes (10 minute total on time) then de-energizes.

NOTE: The warm water rinse cycle can be terminated by moving the toggle switch to the OFF position, then back to ICE.
Operational Checks

GENERAL

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

To ensure proper operation, always follow the Operational Checks:

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

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

WATER LEVEL

The 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.). Clean the water level probe with ice machine cleaner, rinse thoroughly and re-check operation. Repair or replace the probe as necessary.

ICE THICKNESS CHECK

The ice thickness probe is factory-set to maintain the ice bridge thickness at 1/8" (.32 cm).

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" (.32 cm) 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).

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 be used when the ice machine is hooked up to special water systems, such as a de-ionized water treatment system.

- The harvest sequence water purge is factory set. Repositioning the jumper will set the harvest water purge to 0 seconds. This setting does not affect the SeCs or AuCs (cleaning) sequences.

- 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 electric power to the ice machine at the electrical disconnect before proceeding.

**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.

Water Purge Adjustment

For your safety and to eliminate errors, we recommend that a qualified service technician make the harvest water purge adjustment.
Cleaning 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.

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. 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.

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.

Caution
Use only Manitowoc approved Ice Machine Cleaner 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 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 Cleaning Technology

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

Depending on local water conditions Manitowoc recommends initiating preventative maintenance cleaning procedures between the 6 month cleanings. This preventive maintenance removes mineral build-up from the evaporator, which results in peak efficiency and lower operating costs.

This technology allows initiation and completion of a clean cycle, after which the ice machine automatically starts ice making again.

Manitowoc recommends disassembling, cleaning and sanitizing the ice machine and dispenser every six months.

This Manitowoc Ice Machine has two separate cleaning procedures.

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

Heavily Scaled 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.
Cleaning / Sanitizing Procedure

GENERAL
Clean and sanitize the ice machine every six months for efficient operation. If the ice machine requires more frequent cleaning and sanitizing, consult a qualified service company to test the water quality and recommend appropriate water treatment. The ice machine must be taken apart for cleaning and sanitizing.

⚠️ Caution
Use only Manitowoc approved Ice Machine Cleaner 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

⚠️ 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.

Ice machine cleaner 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.

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.

<table>
<thead>
<tr>
<th>Model</th>
<th>Amount of Cleaner</th>
</tr>
</thead>
<tbody>
<tr>
<td>S300/S320/S420</td>
<td>3 ounces (90 ml)</td>
</tr>
<tr>
<td>S450/S500/S600/S850/S1000/S1200</td>
<td>5 ounces (150 ml)</td>
</tr>
<tr>
<td>S1400/S1600/S1800</td>
<td>9 ounces (265 ml)</td>
</tr>
<tr>
<td>S3300</td>
<td>16 ounces (475 ml)</td>
</tr>
</tbody>
</table>

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 Only - 80 minutes..

⚠️ 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.

Singe Evaporator Ice Machines - page 4-2 & 4-3.
Multiple Evaporator Ice Machines - page 4-4 & 4-5.
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 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.

NOTE: Proceed to page 4-6, Step 7.
Multiple Evaporator Ice Machines

A. Remove Splash Shields.
   - Grasp the top center of splash shields.
   - Lift up and then out.

B. 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.

C. Remove the water trough shield.
   - Grasp the water trough shield in the center and the left end.
   - Flex the water trough shield in the center and pull the left end forward until clear of the side wall. Repeat for the right end.
   - Pull water trough shield forward to remove.

D. Remove the water trough.
   - Depress the two tabs on the top of the water trough.
   - Turn left and right ice dampers down to clear water trough.
   - Pull forward on the water trough to remove.

NOTE: Proceed to page 4-6, Step 7.
Step 7  Mix a solution of cleaner 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.

<table>
<thead>
<tr>
<th>Solution Type</th>
<th>Water</th>
<th>Mixed With</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaner</td>
<td>1 gal. (4 l)</td>
<td>16 oz (500 ml) cleaner</td>
</tr>
</tbody>
</table>

Step 8  Use 1/2 of the cleaner/water mixture to clean all components. The cleaner solution will foam when it contacts lime scale and mineral deposits; once the foaming stops use a soft-bristle nylon brush, sponge or cloth (NOT a wire brush) to carefully clean the parts. 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 cleaner/water solution to clean 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.

<table>
<thead>
<tr>
<th>Solution Type</th>
<th>Water</th>
<th>Mixed With</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitizer</td>
<td>6 gal. (23 l)</td>
<td>4 oz (120 ml) sanitizer</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Model</th>
<th>Amount of Sanitizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>S300/S320/S420</td>
<td>3 ounces (90 ml)</td>
</tr>
<tr>
<td>S450/S500/S600/S850/S1000/S1200</td>
<td>3 ounces (90 ml)</td>
</tr>
<tr>
<td>S1400/S1600/S1800</td>
<td>6 ounces (180 ml)</td>
</tr>
<tr>
<td>S3300</td>
<td>25 ounces (740 ml)</td>
</tr>
</tbody>
</table>

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, S3300 - 80 minutes).
Procedure to Clean Heavily Scaled Ice Machines

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

GENERAL

Clean and sanitize the ice machine every six months for efficient operation. If the ice machine requires more frequent cleaning and sanitizing, consult a qualified service company to test the water quality and recommend appropriate water treatment. The ice machine must be taken apart for cleaning and sanitizing.

CLEANING 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.

Step 2 Remove top cover. This will allow easiest access for adding cleaning 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.

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 Only - 80 minutes..

Step 6 Remove parts for cleaning.

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

Singe Evaporator Ice Machines - page 4-8 & 4-9.
Multiple Evaporator Ice Machines - page 4-10 & 4-11.
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 water 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.
   • 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.

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

D. 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.

E. 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.

F. Remove the evaporator tray from the bottom of the evaporator. (when used)
   • 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.
   • Proceed to page 4-12, Step 7.
Multiple Evaporator Ice Machines

A. Remove panels
   • Remove both front panels
   • Remove top panel

B. Remove front evaporator shield.
   • Remove four quarter turn connectors
   • Remove splash shield

C. 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.

D. Remove Splash Shields.
   • Grasp the top center of splash shields.
   • Lift up and then out.

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

E. 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.

F. Remove 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.

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

G. Remove 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.

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

H. 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.

I. Remove the water trough.
   • Pull forward on the water trough to remove.

NOTE: Proceed to page 4-12, Step 7.
**Step 7** Mix a solution of cleaner 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.

<table>
<thead>
<tr>
<th>Solution Type</th>
<th>Water</th>
<th>Mixed With</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaner</td>
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</tbody>
</table>

**Step 8** Use 1/2 of the cleaner/water mixture to clean all components. The cleaner solution will foam when it contacts lime scale and mineral deposits; once the foaming stops use a soft-bristle nylon brush, sponge or cloth (NOT a wire brush) to carefully clean the parts. 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 cleaner/water solution to clean 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.

<table>
<thead>
<tr>
<th>Solution Type</th>
<th>Water</th>
<th>Mixed With</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitizer</td>
<td>6 gal. (23 l)</td>
<td>4 oz (120 ml) sanitizer</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Model</th>
<th>Amount of Sanitizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>S300/S320/S420</td>
<td>3 ounces (90 ml)</td>
</tr>
<tr>
<td>S450/S500/S600/S850/ S1000/S1200</td>
<td>3 ounces (90 ml)</td>
</tr>
<tr>
<td>S1400/S1600/S1800</td>
<td>6 ounces (180 ml)</td>
</tr>
<tr>
<td>S3300</td>
<td>25 ounces (740 ml)</td>
</tr>
</tbody>
</table>
Section 4  Maintenance

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 Only - 80 minutes.

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

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

Step 18  Mix a solution of sanitizer and warm water.

<table>
<thead>
<tr>
<th>Solution Type</th>
<th>Water</th>
<th>Mixed With</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitizer</td>
<td>6 gal. (23 l)</td>
<td>4 oz (120 ml) sanitizer</td>
</tr>
</tbody>
</table>

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.
Additional Component Removal

The following components may be removed for easier access in some installations or they may need to be removed and cleaned to correct an operational problem.

Door Removal

1. Use a phillips 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).

Water Inlet Valve

The water inlet valve normally does not require removal for cleaning. Refer to Section 5 for a list of causes for “No Water Entering Water Trough” or “Water Overflows Water Trough.

1. When the ice machine is off, the water inlet valve must completely stop water flow into the machine.

2. 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, refer to Section 5.

Follow the procedure below to remove the water inlet valve.

1. Remove the 1/4” hex head screws.

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

---

Warning

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

1. Remove the 1/4” hex head screws.

2. Remove, clean, and install the filter screen.
Water Dump Valve

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

1. Set the toggle switch to ICE.
2. Verify the water trough fills with water at the beginning of the freeze cycle.
3. While the ice machine is in the freeze mode, check the water trough to determine if the dump valve is leaking. If there is no or little water in the water trough (during the freeze cycle) the dump valve is leaking.
   A. If the dump valve is leaking, remove, disassemble and clean it.
   B. If the dump valve is not leaking, do not remove it. Instead, follow the “Ice Machine 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. Leaving the wires attached, twist coil and rotate it counter-clockwise 1/4 turn.
2. Lift the coil assembly off the valve body.
3. Remove the spring, plunger, and nylon 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 4.

NOTE: During cleaning, do not stretch or damage the spring.

4. Remove the tubing from the dump valve by twisting the clamps off.
5. Twist the valve body to remove from mounting bracket.
Ice Machine Inspection
Check all water fittings and lines for leaks. Also, make sure the refrigeration tubing is not rubbing or vibrating against other tubing, panels, etc.

Do not put anything (boxes, etc.) 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. Use cleaners designed for use with stainless steel products.

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

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

Cleaning the Condenser
GENERAL

⚠️ Warning
Disconnect electric power to the ice machine 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. Follow the steps below.

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

1. The washable aluminum filter on self-contained ice machines is designed to catch dust, dirt, lint, and grease. Clean the filter with a mild soap and water.
2. 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.
3. 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.
4. Straighten any bent condenser fins with a fin comb.

5. 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 and disconnect electrical power.

**Water-Cooled Condenser and Water Regulating Valve**

Symptoms of restrictions in the condenser water circuit include:
- Low ice production
- High water consumption
- High operating temperatures
- High operating pressures

If the ice machine is experiencing any of these symptoms, the water-cooled condenser and water regulating valve may require cleaning due to scale build-up.

Because the cleaning procedures require special pumps and cleaning solutions, qualified maintenance or service personnel must perform them.

**AlphaSan**

The goal of AlphaSan is to keep the plastic surfaces of an ice machine cleaner, by reducing or delaying the formation of bio-film. 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 bio-film 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.
Guardian

Slime is a leading cause of ice machine breakdowns and biological growth is a health concern. The Guardian system releases chlorine dioxide on a controlled basis to inhibit the growth of bacteria and fungi that form slime and cause malodors in the food zone of ice machines.

The Guardian will not control mineral or other water borne buildup. Your water quality will determine the length of time before mineral buildup affects ice machine performance. Mineral buildup must be removed as often as necessary to ensure trouble-free operation of the ice machine.

The Guardian sachet holder is included with the sachet packets. Refer to installation/replacement procedure to install/change sachet holder/packet.

Guardian Location

GUARDIAN SACHET REPLACEMENT FREQUENCY

Sachet packet(s) require replacement every thirty (30) days or whenever they come in direct contact with water. Refer to chart below for requirements.

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Sachet Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>S300/S320/S420/S450/S500/S600</td>
<td>1</td>
</tr>
<tr>
<td>S850/S1000/S1200/S1400/S1600/S1800</td>
<td>1 or 2*</td>
</tr>
</tbody>
</table>

*Although one sachet is recommended, extreme conditions may necessitate using two sachet packets.

Guardian sachet packets are available through your local Manitowoc ice machine dealer.

SACHET INSTALLATION/REPLACEMENT

PROCEDURE

1. Loosen the left screw and open the left front door. The right front panel does not need to be removed.

2. Inside the front panel there are two thumbscrew holes covered by stickers, pierce the sticker with a screwdriver.

3. Attach the sachet holder to the front panel by inserting the thumbscrews through the holes in the sachet holder and tighten the thumbscrews.

4. Remove the new sachet packet from foil package and install into holder. Removing the foil package allows moisture in the air to activate the sachet contents.

5. Close the left front door and tighten the screw.

6. Discard the used sachet packet in the trash.

CLEAN UP PROCEDURE FOR DAMAGED SACHET PACKET

1. Remove all ice from bin/dispenser and discard.

2. Initiate a cleaning and sanitizing sequence on the ice machine (see next pages).

3. Clean the bin/dispenser. Flush the drain thoroughly to prevent future drain blockage.

4. Sanitize the bin/dispenser.

5. Install a replacement sachet packet and reinstall all panels.
Removal from Service/Winterization

GENERAL

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

**Caution**

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

Follow the applicable procedure below.

**SELF-CONTAINED AIR-COOLED ICE MACHINES**

1. Disconnect the electric power at the circuit breaker or the electric service switch.
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. Energize the ice machine and wait one minute for the water inlet valve to open.
6. 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.
7. Make sure water is not trapped in any of the water lines, drain lines, distribution tubes, etc.

**WATER-COOLED ICE MACHINES**

1. Perform steps 1-6 under “Self-Contained Air-Cooled Ice Machines.”
2. Disconnect the incoming water and drain lines from the water-cooled condenser.
3. Insert a large screwdriver between the bottom spring coils of the water regulating valve. Pry upward to open the valve.

**REMOTE ICE MACHINES**

1. Move the ICE/OFF/CLEAN switch to OFF.
2. “Frontseat” (shut off) the receiver service valves. Hang a tag on the switch as a reminder to open the valves before restarting.
3. Perform steps 1-6 under “Self-Contained Air-Cooled Ice Machines.”

**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.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>To Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice machine does not operate.</td>
<td>No electrical power to the ice machine and/or condensing unit.</td>
<td>Replace the fuse/reset the breaker/turn on the main switch.</td>
</tr>
<tr>
<td></td>
<td>High pressure cutout tripping.</td>
<td>Clean condenser coil. (See Section 4)</td>
</tr>
<tr>
<td></td>
<td>ICE/OFF/CLEAN toggle switch set improperly.</td>
<td>Move the toggle switch to the ICE position.</td>
</tr>
<tr>
<td></td>
<td>Water curtain stuck open.</td>
<td>Water curtain must be installed and swinging freely. (See Section 4)</td>
</tr>
<tr>
<td></td>
<td>Remote receiver service valve and/or Liquid/suction line shut off valves are closed.</td>
<td>Open the valve(s). (See Section 2)</td>
</tr>
<tr>
<td>Ice machine stops, and can be restarted by moving the toggle switch to OFF and back to ICE.</td>
<td>Safety limit feature stopping the ice machine.</td>
<td>Refer to “Safety Limit Feature” on the next page.</td>
</tr>
<tr>
<td>Ice machine does not release ice or is slow to harvest.</td>
<td>Ice machine is dirty.</td>
<td>Clean and sanitize the ice machine. (See Section 4)</td>
</tr>
<tr>
<td></td>
<td>Ice machine is not level.</td>
<td>Level the ice machine. (See Section 2)</td>
</tr>
<tr>
<td></td>
<td>Low air temperature around ice machine head section.</td>
<td>Air temperature must be at least 35°F (1.6°C).</td>
</tr>
<tr>
<td></td>
<td>Fan cycling control does not de-energize condenser fan motor.</td>
<td>Verify pressure is below cut-out setpoint, replace fan cycling control.</td>
</tr>
<tr>
<td>Ice machine does not cycle into harvest mode.</td>
<td>The six-minute freeze time lock-in has not expired yet.</td>
<td>Wait for the freeze lock-in to expire.</td>
</tr>
<tr>
<td></td>
<td>Ice thickness probe is dirty.</td>
<td>Clean and sanitize the ice machine. (See Section 4)</td>
</tr>
<tr>
<td></td>
<td>Ice thickness probe is disconnected.</td>
<td>Connect the wire.</td>
</tr>
<tr>
<td></td>
<td>Ice thickness probe is out of adjustment.</td>
<td>Adjust the ice thickness probe. (See Section 3)</td>
</tr>
<tr>
<td></td>
<td>Uneven ice fill (thin at the top of evaporator).</td>
<td>Verify sufficient water level in sump trough. Contact a qualified service company to check refrigeration system.</td>
</tr>
<tr>
<td>Ice quality is poor (soft or not clear).</td>
<td>Poor incoming water quality.</td>
<td>Contact a qualified service company to test the quality of the incoming water and make appropriate filter recommendations.</td>
</tr>
<tr>
<td></td>
<td>Water filtration is poor.</td>
<td>Replace the filter.</td>
</tr>
<tr>
<td></td>
<td>Ice machine is dirty.</td>
<td>Clean and sanitize the ice machine. (See Section 4)</td>
</tr>
<tr>
<td></td>
<td>Water dump valve is not working.</td>
<td>Disassemble and clean the water dump valve. (See Section 4)</td>
</tr>
<tr>
<td></td>
<td>Water softener is working improperly (if applicable).</td>
<td>Repair the water softener.</td>
</tr>
</tbody>
</table>
Before Calling For Service Section 5

5-2

Part Number 000000966 10/09

### 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:

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>To Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice machine produces shallow or incomplete cubes, or the ice fill pattern on the evaporator is incomplete.</td>
<td>Ice thickness probe is out of adjustment.</td>
<td>Adjust the ice thickness probe. (See Section 4)</td>
</tr>
<tr>
<td></td>
<td>Water trough level is too low.</td>
<td>Check the water level probe for damage. (See Section 3)</td>
</tr>
<tr>
<td></td>
<td>Water inlet valve filter screen is dirty.</td>
<td>Remove the water inlet valve and clean the filter screen. (See Section 4)</td>
</tr>
<tr>
<td></td>
<td>Water filtration is poor.</td>
<td>Replace the filter.</td>
</tr>
<tr>
<td></td>
<td>Hot incoming water.</td>
<td>Connect the ice machine to a cold water supply. (See Section 2)</td>
</tr>
<tr>
<td></td>
<td>Water inlet valve is not working.</td>
<td>Replace the water inlet valve.</td>
</tr>
<tr>
<td></td>
<td>Incorrect incoming water pressure.</td>
<td>Water pressure must be 20-80 psi (1.4 bar - 5.5 bar)</td>
</tr>
<tr>
<td></td>
<td>Ice machine is not level.</td>
<td>Level the ice machine. (See Section 2)</td>
</tr>
<tr>
<td>Low ice capacity.</td>
<td>Water inlet valve filter screen is dirty.</td>
<td>Remove the water inlet valve and clean the filter screen. (See Section 4)</td>
</tr>
<tr>
<td></td>
<td>Incoming water supply is shut off.</td>
<td>Open the water service valve.</td>
</tr>
<tr>
<td></td>
<td>Water inlet valve stuck open or leaking.</td>
<td>Place toggle switch in OFF position, if water continues to enter water trough replace the water inlet valve.</td>
</tr>
<tr>
<td></td>
<td>The condenser is dirty.</td>
<td>Clean the condenser. (See Section 4)</td>
</tr>
<tr>
<td></td>
<td>High air temperature entering condenser.</td>
<td>Air temperature must not exceed 120°F (39°C)</td>
</tr>
<tr>
<td></td>
<td>The harvest assist air compressor is not functioning.</td>
<td>Call for service.</td>
</tr>
</tbody>
</table>

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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