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

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

www.manitowocice.com
Safety Notices

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

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

⚠️ Warning

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

⚠️ Warning

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

⚠️ Caution

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

Procedural Notices

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

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

⚠️ Caution

Proper installation, care and maintenance are essential for maximum ice production and trouble-free operation of your Manitowoc Ice Machine. Read and understand this manual. It contains valuable care and maintenance information. If you encounter problems not covered by this manual, do not proceed, contact Manitowoc Ice, Inc. We will be happy to provide assistance.

⚠️ Important

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

We hereby declare that our products, ice machines and Multiplex refrigeration equipment comply with all the essential requirements of the listed EC - directives.

Manufacturer:
Manitowoc Ice, Inc.
2110 S. 26th Street, P.O. Box 1720
Manitowoc, Wisconsin 54221-1720 USA

European Distributor:

Representative Of Manitowoc Ice, Inc.:

[Signature]

Model and Serial No.

Applied Standards:


Applied EC Directives:

Low Voltage 73/23/EEC as amended by 93/68/EEC
Machinery 89/392/EEC as amended by 95/15/EC and 92/43/EEC
Pressure Equipment 97/23/EC

[Signature]

[Signature]

03/05/03

03/05/03
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Model Numbers
This manual covers the following models:

<table>
<thead>
<tr>
<th>Self-Contained</th>
<th>Self-Contained</th>
<th>Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-Cooled</td>
<td>Water-Cooled</td>
<td></td>
</tr>
<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>SD0592N</td>
</tr>
<tr>
<td>SD0502A</td>
<td>SD0503W</td>
<td>SY0594N</td>
</tr>
<tr>
<td>SY0504A</td>
<td>SY0505W</td>
<td></td>
</tr>
<tr>
<td>SD0602A</td>
<td>SD0603W</td>
<td>SD0692N</td>
</tr>
<tr>
<td>SY0604A</td>
<td>SY0605W</td>
<td>SY0694N</td>
</tr>
<tr>
<td>SR0850A</td>
<td>SR0851W</td>
<td>SR0890N</td>
</tr>
<tr>
<td>SD0852A</td>
<td>SD0853W</td>
<td>SD0892N</td>
</tr>
<tr>
<td>SY0854A</td>
<td>SY0855W</td>
<td>SY0894N</td>
</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>
<td>----</td>
</tr>
<tr>
<td>SY1204A</td>
<td>SY1205W</td>
<td></td>
</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>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>
<td>SR1890N</td>
</tr>
<tr>
<td>SD1802A</td>
<td>SD1803W</td>
<td>SD1892N</td>
</tr>
<tr>
<td>SY1804A</td>
<td>SY1805W</td>
<td>SY1894N</td>
</tr>
</tbody>
</table>

NOTE: Model numbers ending in 3 indicate a 3-phase unit. Example: SY1004A3

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

### Warning
PERSONAL INJURY POTENTIAL
Remove all ice machine panels before lifting and installing.

How to Read a Model Number

- **ICE MACHINE MODEL**
- **ICE CUBE SIZE**
- **CONDENSER TYPE**

<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>

**ICE CUBE SIZES**

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

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

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

**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.

**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.
Model/Serial Number Location

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

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

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

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

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

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

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

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

PARTS
1. Manitowoc warrants the ice machine against defects in materials and workmanship, under normal use and service for three (3) years from the date of original installation.
2. The evaporator and compressor are covered by an additional two (2) year (five years total) warranty beginning on the date of the original installation.

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

Warranty Coverage

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

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

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

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

This product is intended exclusively for commercial application. No warranty is extended for personal, family, or household purposes.
Section 2
Installation Instructions

General
These instructions are provided to assist the qualified installer. Check your local Yellow Pages for the name of the nearest Manitowoc distributor, or call Manitowoc Ice, Inc. for information regarding 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>
### 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 (74.9cm)</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

Ice Storage Bin Dimensions

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>

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>
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</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>
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</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>
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Electrical and AuCS Dimensions

<table>
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<th>Electrical</th>
<th>AuCS</th>
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</thead>
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<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>
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</tr>
<tr>
<td>S1800</td>
<td>22.75 in (57.8 cm)</td>
<td>22.25 in (56.5 cm)</td>
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</tbody>
</table>

S1400 / S1800 REMOTE ICE MACHINES

<table>
<thead>
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<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>
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<tr>
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<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>
Ice Storage Bin Dimensions
48 INCH (130 CM) ICE STORAGE BINS

Remote Condenser Dimensions
JC0495/JC0895/JC1395
Section 2  Installation Instructions

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>Ice Machine</th>
<th>Heat of Rejection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series</td>
<td>B.T.U./Hour</td>
</tr>
<tr>
<td>S300/S320/S450/S500/S600/S850/S1000</td>
<td>3800</td>
</tr>
<tr>
<td>S420</td>
<td>7000</td>
</tr>
<tr>
<td>S450</td>
<td>7000</td>
</tr>
<tr>
<td>S500</td>
<td>7000</td>
</tr>
<tr>
<td>S600</td>
<td>9000</td>
</tr>
<tr>
<td>S850</td>
<td>12000</td>
</tr>
<tr>
<td>S1000</td>
<td>16000</td>
</tr>
<tr>
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<td>Not Available at Time of Printing</td>
</tr>
<tr>
<td>S1400</td>
<td>19000</td>
</tr>
<tr>
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</tr>
<tr>
<td>S1800</td>
<td>24000</td>
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</table>

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.

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>S300/S320/S450/S500/S600/S850/S1000</td>
<td>6000</td>
</tr>
<tr>
<td>S420</td>
<td>9600</td>
</tr>
<tr>
<td>S450</td>
<td>9600</td>
</tr>
<tr>
<td>S500</td>
<td>9600</td>
</tr>
<tr>
<td>S600</td>
<td>13900</td>
</tr>
<tr>
<td>S850</td>
<td>18000</td>
</tr>
<tr>
<td>S1000</td>
<td>22000</td>
</tr>
<tr>
<td>S1200</td>
<td>Not Available at Time of Printing</td>
</tr>
<tr>
<td>S1400</td>
<td>28000</td>
</tr>
<tr>
<td>S1600</td>
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</tr>
<tr>
<td>S1800</td>
<td>36000</td>
</tr>
</tbody>
</table>

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

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

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”.

Part Number 80-1620-3
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.

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

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.
## MAXIMUM BREAKER SIZE & MINIMUM CIRCUIT AMPERAGE CHART

(* indicates preliminary data)

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Voltage Phase Cycle</th>
<th>Air-Cooled</th>
<th></th>
<th>Water Cooled</th>
<th></th>
<th>Remote</th>
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</tr>
<tr>
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</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

![Diagram of 208-230/3/60 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 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 380-415/3/50**

---

**REMOTE ICE MACHINE**
**WITH SINGLE CIRCUIT MODEL CONDENSER**
**230/1/50**

---

**NOTE:** FAN MOTOR IS 208-230V

---

**NOTE:** FAN MOTOR IS 220-240V

---

**NOTE:** FAN MOTOR IS 220-240V (220-240). DISCONNECT ALL POLES.
Section 2

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.
- 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 valve body.

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.

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 (48 kPA) between the condenser water inlet and the outlet of the ice machine.
- Water exiting the condenser must not exceed 110°F (43.3°C).
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. 90°F (32.2°C) Max.</td>
<td>20 psi (137.9 kPA) Min. 80 psi (551.5 kPA) Max.</td>
<td>3/8&quot; Female Pipe Thread</td>
<td>3/8&quot; (.95 cm) minimum inside diameter</td>
</tr>
<tr>
<td>Ice Making Water Drain</td>
<td>---</td>
<td>---</td>
<td>1/2&quot; Female Pipe Thread</td>
<td>1/2&quot; (1.27 cm) minimum inside diameter</td>
</tr>
<tr>
<td>Condenser Water Inlet</td>
<td>40°F (4.4°C) Min. 90°F (32.2°C) Max.</td>
<td>20 psi (137.9 kPA) Min. 150 psi (1034.2 kPA) Max.</td>
<td>3/8&quot; Female Pipe Thread</td>
<td>3/8&quot; Female Pipe Thread</td>
</tr>
<tr>
<td>Condenser Water Drain</td>
<td>---</td>
<td>---</td>
<td>1/2&quot; Female Pipe Thread</td>
<td>1/2&quot; (1.27 cm) minimum inside diameter</td>
</tr>
<tr>
<td>Bin Drain</td>
<td>---</td>
<td>---</td>
<td>3/4&quot; Female Pipe Thread</td>
<td>3/4&quot; (1.91 cm) minimum inside diameter</td>
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</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
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</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RT-35-R404A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RT-50-R404A</td>
</tr>
<tr>
<td>S600/S800/S1000</td>
<td>JC0895</td>
<td>RT-20-R404A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RT-35-R404A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RT-50-R404A</td>
</tr>
<tr>
<td>S1400/S1600/S1800</td>
<td>JC1395</td>
<td>RL-20-R404A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RL-35-R404A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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>

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.

<table>
<thead>
<tr>
<th>Ice Machine</th>
<th>Nameplate Charge (Charge Shipped in Ice Machine)</th>
<th>Refrigerant to be Added for 50’-100’ Line Sets</th>
<th>Maximum System Charge (Never Exceed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S500</td>
<td>6 lb. (96 oz.)</td>
<td>1.5 lb. (24 oz.)</td>
<td>7.5 lb. (120 oz.)</td>
</tr>
<tr>
<td>S600</td>
<td>6.5 lb. (104 oz)</td>
<td>1.5 lb. (24 oz.)</td>
<td>8 lb. (128 oz.)</td>
</tr>
<tr>
<td>S850</td>
<td>8.5 lb. (136 oz.)</td>
<td>2 lb. (32 oz.)</td>
<td>10.5 lb. (168 oz.)</td>
</tr>
<tr>
<td>S1000</td>
<td>8.5 lb. (136 oz.)</td>
<td>2 lb. (32 oz.)</td>
<td>10.5 lb. (168 oz.)</td>
</tr>
<tr>
<td>S1400</td>
<td>11 lb. (176 oz.)</td>
<td>2 lb. (32 oz.)</td>
<td>14 lb. (224 oz.)</td>
</tr>
<tr>
<td>S1600</td>
<td>Not Available at Time of Printing, Please Refer to Nameplate on Ice Machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1800</td>
<td>12.5 lb. (200 oz.)</td>
<td>2 lb. (32 oz.)</td>
<td>14.5 lb. (232 oz.)</td>
</tr>
</tbody>
</table>

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.
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, Inc., unless specifically approved in writing by Manitowoc Ice, Inc.

GUIDELINES FOR ROUTING LINE SETS
First, cut a 2.5” (6.35 cm) circular hole in the wall or roof for tubing routing. The line set end with the 90° bend will connect to the ice machine. The straight end will connect to the remote condenser.
Follow these guidelines when routing the refrigerant lines. This will help insure proper performance and service accessibility.

1. Optional - Make the service loop in the line sets (as shown below). This permits easy access to the ice machine for cleaning and service. Do not use hard rigid copper at this location.
2. Required - Do not form traps in the refrigeration lines (except the service loop). Refrigerant oil must be free to drain toward the ice machine or the condenser. Route excess tubing in a supported downward horizontal spiral (as shown below). Do not coil tubing vertically.
3. Required - Keep outdoor refrigerant line runs as short as possible.
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) \[\text{Measured Rise} \times 1.7 = \text{Calculated Rise}\]
Step 2. Measured Drop (15’ [4.5 m] Maximum) \[\text{Measured Drop} \times 6.6 = \text{Calculated Drop}\]
Step 3. Measured Horizontal Distance (100’ [30.5 m] Maximum) \[\text{Measured Horizontal Distance}\]
Step 4. Total Calculated Distance 150’ (45.7 m) \[\text{Total Calculated Distance}\]

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.)

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.
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. (13.5-16.2 N•m)</td>
<td>35-45 ft lb. (47.5-61.0 N•m)</td>
</tr>
</tbody>
</table>

6. Check all fittings and valve caps for leaks.
7. Make sure Schraeders 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 #836809-3 (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 $\Delta T$
$\Delta T$ is the difference in temperature between the condensing refrigerant and entering air. The $\Delta T$ 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>Charge</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>Average Btu/hr</td>
<td>Peak Btu/hr</td>
<td>Min</td>
<td>Max</td>
<td>Discharge</td>
<td>Liquid</td>
</tr>
<tr>
<td>S500</td>
<td>R-404A</td>
<td>6 lbs.</td>
<td>7,000</td>
<td>9,600</td>
<td>0.020</td>
<td>0.035</td>
<td></td>
</tr>
<tr>
<td>S600</td>
<td>R-404A</td>
<td>8.5 lbs.</td>
<td>9,000</td>
<td>13,900</td>
<td>0.045</td>
<td>0.060</td>
<td></td>
</tr>
<tr>
<td>S850</td>
<td>R-404A</td>
<td>8.5 lbs.</td>
<td>12,000</td>
<td>18,000</td>
<td>0.045</td>
<td>0.060</td>
<td></td>
</tr>
<tr>
<td>S1000</td>
<td>R-404A</td>
<td>8.5 lbs.</td>
<td>16,000</td>
<td>22,000</td>
<td>0.045</td>
<td>0.060</td>
<td></td>
</tr>
<tr>
<td>S1400</td>
<td>R-404A</td>
<td>11 lbs.</td>
<td>19,000</td>
<td>28,000</td>
<td>0.085</td>
<td>0.105</td>
<td></td>
</tr>
<tr>
<td>S1600</td>
<td>R-404A</td>
<td>Not Available at Time of Printing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1800</td>
<td>R-404A</td>
<td>12.5 lbs.</td>
<td>24,000</td>
<td>36,000</td>
<td>0.085</td>
<td>0.105</td>
<td></td>
</tr>
</tbody>
</table>

### Typical Single Circuit Remote Condenser Installation

- **SINGLE CIRCUIT REMOTE CONDENSER**
- **DISCHARGE LINE**
- **LIQUID LINE**
- **ELECTRICAL DISCONNECT**
- **TO CIRCUIT BREAKER PANEL**

**ICE MACHINE**

**ELECTRICAL SUPPLY**

**BIN**

**DISCHARGE REFRIGERANT LINE**

**LIQUID REFRIGERANT LINE**

**36.00” (91.44 cm) DROP**

**SV1615**
## Installation Check List

<table>
<thead>
<tr>
<th>Task</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the Ice Machine level?</td>
<td></td>
</tr>
<tr>
<td>Has all of the internal packing been removed?</td>
<td></td>
</tr>
<tr>
<td>Have all of the electrical and water connections been made?</td>
<td></td>
</tr>
<tr>
<td>Has the supply voltage been tested and checked against the rating on the nameplate?</td>
<td></td>
</tr>
<tr>
<td>Is there proper clearance around the ice machine for air circulation?</td>
<td></td>
</tr>
<tr>
<td>Has the ice machine been installed where ambient temperatures will remain in the range of 35° - 110°F (1.6° - 43.3°C)?</td>
<td></td>
</tr>
<tr>
<td>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)?</td>
<td></td>
</tr>
<tr>
<td>Is there a separate drain for the water-cooled condenser?</td>
<td></td>
</tr>
<tr>
<td>Is there a separate drain for the bin?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional Checks for Remote Models</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the receiver service valve been opened?</td>
<td></td>
</tr>
<tr>
<td>Does the remote condenser fan operate properly after start-up?</td>
<td></td>
</tr>
<tr>
<td>Has the remote condenser been located where ambient temperatures will remain in the range of -20° - 120°F (-29 - 49°C).</td>
<td></td>
</tr>
<tr>
<td>Is the line set routed properly?</td>
<td></td>
</tr>
<tr>
<td>Are both refrigeration lines to remote condenser run so they do not lay in water and are properly insulated?</td>
<td></td>
</tr>
</tbody>
</table>
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

Water Distribution Tube

Toggle Switch

Dump Valve

Check Valve

Water Curtain

Ice Thickness Probe

Bin Switch

Water Level Probe

Water Pump

Water Inlet Location

Water Inlet Valve

(Located in Refrigeration Compartment)
Sequence Of Operation

NOTE: The toggle switch must be in the ice position and the water curtain 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 compressor starts, the water pump and water dump solenoid are energized for 45 seconds, to completely purge the ice machine of old water. This feature ensures that the ice making cycle starts with fresh water.

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

When Used - The air compressor energizes for the last 10 seconds of the cycle.

2. Refrigeration System Start-Up

The compressor starts after the 45 second water purge, and it remains on throughout the entire Freeze and Harvest Sequences. The water fill valve is energized at the same time as the compressor. The harvest valve(s) remains on for 5 seconds during initial compressor start-up and then shuts off.

At the same time the compressor starts, the condenser fan motor (air-cooled models) is supplied with power throughout the entire Freeze and Harvest Sequences. The fan motor is wired through a fan cycle pressure control, therefore it may cycle on and off. (The compressor and condenser fan motor are wired through the contactor. As a result, anytime the contactor coil is energized, the compressor and fan motor are supplied with power.)

FREEZE SEQUENCE

3. Prechill

The compressor is on for 30 seconds (60 seconds initial cycle) prior to water flow, to prechill the evaporator. The water fill valve remains on until the water level probe is satisfied.

4. Freeze

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

When sufficient ice has formed, the water flow (not the ice) contacts the ice thickness probe. After approximately 10 seconds of continual water contact, the harvest sequence is initiated. The ice machine cannot initiate a harvest sequence until a 6 minute freeze lock has been surpassed.

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 harvest valve(s) opens 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 for 45 seconds to purge the water in the sump trough. The water fill valve energizes (turns on) and de-energizes (turns off) strictly by time. The water fill valve energizes for the last 15 seconds of the 45-second water purge.

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

6. Harvest

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

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

When Used - The air compressor energizes after 35 seconds and remains energized throughout the entire harvest cycle. The air compressor will automatically energize for 60 seconds when the harvest cycle time exceeded 75 seconds in the previous cycle.

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 and will hold it open. After the water curtain 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. As the water curtain swings back to the operating position, the bin switch re-closes and the ice machine restarts (steps 1 - 2), provided the 3 minute delay period is complete.

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 at which time the control board automatically initiates a freeze sequence (steps 3 & 4).

WARM WATER RINSE CYCLE

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 complete 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.

⚠️ 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.

- The harvest sequence water purge is factory set for 45 seconds. Repositioning the jumper will set the harvest water purge to 0 seconds. This setting does not affect the SeCs or AuGs (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.

Water Purge Adjustment

For your safety and to eliminate errors, we recommend that a qualified service technician make the harvest water purge adjustment.
Section 4
Maintenance

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

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

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

Ice Machine Inspection

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

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

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

Exterior Cleaning

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

Continued on Next Page...
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.

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.

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.
Interior Cleaning and Sanitizing

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

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

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 or other mineral deposits. It is not used to remove algae or slime. Refer to the section on Sanitizing for removal of algae and slime.

Step 1 Remove top cover. This will allow easiest access for pouring cleaner.

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

Step 4 Wait about two minutes or until water starts to flow over the evaporator.

Step 5 Add the proper amount of Manitowoc Ice Machine Cleaner to the water trough by pouring between water curtain and evaporator.

<table>
<thead>
<tr>
<th>Model</th>
<th>Amount of Cleaner</th>
</tr>
</thead>
<tbody>
<tr>
<td>S300/S320/S420</td>
<td>3 ounces (88 ml)</td>
</tr>
<tr>
<td>S450/S500/S600/S850/S1000/S1200</td>
<td>5 ounces (148 ml)</td>
</tr>
<tr>
<td>S1400/S1600/S1800</td>
<td>9 ounces (266 ml)</td>
</tr>
</tbody>
</table>

Step 6 The ice machine will automatically time out a ten minute cleaning cycle, followed by six rinse cycles, and stop. The Clean light will turn off to indicate the Cleaning cycle is completed. This entire cycle lasts approximately 30 minutes.

Step 7 When the cleaning process stops, move the toggle switch to OFF position. Refer to “Sanitizing Procedure” on the next page.

Step 8
A. The ice machine may be set to start and finish a self-cleaning procedure then automatically start ice making again.
B. You must wait about one minute into the cleaning cycle (until water starts to flow over the evaporator) then move the switch from CLEAN to ICE position.
C. When the self-cleaning cycle is completed, an ice making sequence will start automatically.

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

Use sanitizer to remove algae or slime. Do not use it to remove lime scale or other mineral deposits.

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

![Caution]

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

![Warning]

Disconnect electric power to the ice machine (and dispenser if applicable) at the electric switch box before proceeding.

**Step 2**  Refer to Removal of Parts For Cleaning/Sanitizing and remove ice machine parts.

**Step 3**  Mix a solution of water and sanitizer.

<table>
<thead>
<tr>
<th>Solution Type</th>
<th>Water</th>
<th>Mixed With</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitizer</td>
<td>4 gal. (15 l)</td>
<td>3 oz (90 ml) sanitizer</td>
</tr>
</tbody>
</table>

**Step 4**  Use the sanitizing solution and a sponge or cloth to sanitize (wipe) all parts and interior surfaces of the ice machine. Sanitize the following areas:

A. Side walls
B. Base (area above water trough)
C. Evaporator plastic parts
D. Bin or dispenser

**Step 5**  Rinse all sanitized areas with clear water.

**Step 6**  Install the removed parts, restore power and place toggle switch in the clean position. The water will flow through the water dump valve and down the drain. The Clean light will turn on to indicate the ice machine is in the Cleaning mode.

**Step 7**  Wait about two minutes or until water starts to flow over the evaporator.

**Step 8**  Add the proper amount of Manitowoc Ice Machine Sanitizer to the water trough by pouring between 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 (88 ml)</td>
</tr>
<tr>
<td>S450/S500/S600/S850/S1000/S1200</td>
<td>5 ounces (148 ml)</td>
</tr>
<tr>
<td>S1400/S1600/S1800</td>
<td>9 ounces (266 ml)</td>
</tr>
</tbody>
</table>

**Step 9**  The ice machine will automatically time out a ten minute sanitizing cycle, followed by six rinse cycles, and stop. The Clean light will turn off to indicate the Cleaning cycle is completed. This entire cycle lasts approximately 30 minutes.

When the sanitizing process stops, move the toggle switch to ICE position.
REMOVAL OF PARTS FOR CLEANING/SANITIZING

1. Turn off the electrical and water supply to the ice machine (and dispenser when applicable).

   **Warning**
   Disconnect electric power to the ice machine (and dispenser if applicable) at the electric switch box before proceeding.

2. Remove all ice from the bin.

3. Remove the water curtain and the components you want to clean or sanitize. See the following pages for removal procedures for these parts.

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

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

   **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.

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

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

6. Use the sanitizing solution and a sponge or cloth to sanitize (wipe) the interior of the ice machine and the entire inside of the bin/dispenser.

7. Thoroughly rinse all of the parts and surfaces with clear water.

8. Install the removed parts.

9. Turn on the water and electrical supply.

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

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

---

### Solution Types

<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>
<tr>
<td>Sanitizer</td>
<td>4 gal. (15 L)</td>
<td>3 oz (90 ml) sanitizer</td>
</tr>
</tbody>
</table>
Section 4  Maintenance

1. Water Curtain
   A. Gently flex the curtain in the center and remove it from the right side.
   B. Slide the left pin out.

2. Ice Thickness Probe
   A. Compress the hinge pin on the top of the ice thickness probe.
   B. 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. Follow Step C for complete removal.
   C. Disconnect the ice thickness control wiring from the control board.

**Warning**
Disconnect the electric power to the ice machine at the electric service switch box.
3. Water Distribution Tube

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

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

**Water Distribution Tube Removal**
A. Remove outer half of distribution tube by loosening the four (4) thumbscrews (o-rings retain thumbscrews to distribution tube).
B. Pull inner half of water distribution tube forward to release slip joint from water pump tubing connection.

4. Water Trough

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

**Warning**
Removing the distribution tube while the water pump is running will allow water to spray from ice machine. Disconnect the electrical power to the ice machine and dispenser at the electric service switch box and turn off the water supply.
Water Level Probe

1. Remove the water trough.

2. The water level probe normally does not require removal for cleaning. The probe can be wiped and cleaned in place or proceed to step 3.

3. Pull the water level probe straight down to disengage.

4. Lower the water level probe until the wiring connector is visible. Disconnect the wire lead from the water level probe.

5. Remove the water level probe from the ice machine.

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

Water Pump

1. Empty the water trough.
   A. Move the toggle switch from OFF to ICE.
   B. Wait 45 seconds.
   C. Place toggle switch in OFF position.

2. Remove the water trough.

3. The water pump normally does not require removal for cleaning. The water pump base can be wiped and cleaned in place or proceed to step 4.

4. Grasp pump and pull straight down on pump assembly until water pump disengages and electrical connector is visible.

5. Disconnect the electrical connector.

6. Remove the water pump assembly from ice machine.

7. Do not soak the water pump in cleaner or sanitizer. Wipe the pump and ice machine base clean.
Water Dump Valve

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

1. Locate the water dump valve.
2. Set the toggle switch to ICE.
3. While the ice machine is in the freeze mode, check the dump valve’s clear plastic outlet drain hose for leakage.
   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. If so equipped, remove the water dump valve shield from its mounting bracket.
2. Lift and slide the coil retainer cap from the top of the coil.
3. Note the position of the coil assembly on the valve for assembly later. Leaving the wires attached, lift the coil assembly off the valve body and the enclosing tube.
4. Press down on the plastic nut on the enclosing tube and rotate it 1/4 turn. Remove the enclosing tube, plunger, and plastic gasket from the valve body.

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

**Important**

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

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

5. Remove the valve body.
6. Remove the tubing from the dump valve by twisting the clamps off.
7. Remove the two screws securing the dump valve and the mounting bracket.
Evaporator Tray Removal
1. Remove the water trough.
2. Remove thumbscrew on left side of tray.
3. 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.

Drain Line Check Valve
The drain line check valve normally does not require removal for cleaning. Water loss from the sump trough will indicate removal and cleaning are required.

1. Remove check valve and tube assembly.
   A. Tip assembly to right until tubing disengages.
   B. Lift up on assembly to remove.
2. Remove insulation from check valve assembly.
3. Remove vinyl tubing from top of check valve.
4. Soak in cleaner solution 10 minutes, and then flush with water to remove debris.
**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.

```
**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.

**Removing the Front Panels**

NOTE: The front panels do not normally have to be removed. If needed perform the following procedure.

1. Loosen screws. Do not remove they are retained by o-rings to prevent loss.

2. **30 Inch and 48 Inch Models Only**: To remove right front door lift up and remove (22 inch machines have a single door, proceed to step 3).

**Door Removal**

3. Open left front door to 45 degrees.
4. Support with left hand, depress top pin, tilt top of door forward and lift out of bottom pin to remove.
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. Blow compressed air in both the incoming water and the drain openings in the rear of the ice machine until no more water comes out of the inlet water lines or the drain.
6. 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>
### Safety Limit Feature

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

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

1. Move the ICE/OFF/CLEAN switch to OFF and then back to ICE.
   - A. If the safety limit feature has stopped the ice machine, it will restart after a short delay. Proceed to step 2.
   - B. If the ice machine does not restart, see “Ice machine does not operate” on the previous page.

2. Allow the ice machine to run to determine if the condition is recurring.
   - A. If the ice machine stops again, the condition has recurred. Call for service.
   - B. If the ice machine continues to run, the condition has corrected itself. Allow the ice machine to continue running.

<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>Water trough level is too low.</td>
<td>Check the water level probe for damage.</td>
<td></td>
</tr>
<tr>
<td>Water inlet valve filter screen is dirty.</td>
<td>Remove the water inlet valve and clean the filter screen. (See Section 4)</td>
<td></td>
</tr>
<tr>
<td>Water filtration is poor.</td>
<td>Replace the filter.</td>
<td></td>
</tr>
<tr>
<td>Hot incoming water.</td>
<td>Connect the ice machine to a cold water supply.</td>
<td></td>
</tr>
<tr>
<td>Water inlet valve is not working.</td>
<td>Replace the water inlet valve.</td>
<td></td>
</tr>
<tr>
<td>Incorrect incoming water pressure.</td>
<td>Water pressure must be 20-80 psi (1.4 bar - 5.5 bar)</td>
<td></td>
</tr>
<tr>
<td>Ice machine is not level.</td>
<td>Level the ice machine.</td>
<td></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>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>
<td></td>
</tr>
<tr>
<td>The condenser is dirty.</td>
<td>Clean the condenser.</td>
<td></td>
</tr>
<tr>
<td>High air temperature entering condenser.</td>
<td>Air temperature must not exceed 120°F (39°C)</td>
<td></td>
</tr>
</tbody>
</table>