Clean and Sanitize Manitowoc Series Q, R, and S Ice Machines

Tank Farm Maintenance Procedure

USQ #Routine Maintenance

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
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<tr>
<td>B-3</td>
<td>04/17/2018</td>
<td>Maintenance Request</td>
<td>Add information to Table for Step 5.1.10, and Step 5.2.41</td>
</tr>
<tr>
<td>B-2</td>
<td>04/14/2016</td>
<td>Maintenance Request</td>
<td>Deleted warning for repetitive information. Moved caution to general information. Made changes to section 5.3 to get rid of excessive information, reword steps, Add a few Notes and fix small errors.</td>
</tr>
<tr>
<td>B-1</td>
<td>03/10/2016</td>
<td>Maintenance Request</td>
<td>Added section 5.3 to include cleaning and sanitizing instruction for R-Series Ice Machines and added figures 5 through 8.</td>
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<tr>
<td>B-0</td>
<td>09/03/2015</td>
<td>Periodic Review</td>
<td>No Changes Made</td>
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<tr>
<td>A-1</td>
<td>11/14/2014</td>
<td>CHAMPS Removal</td>
<td>Removed reference to CHAMPS, updated records statements and removed next periodic review date.</td>
</tr>
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Clean and Sanitize Manitowoc Series Q, R, and S Ice Machines

5.5 Acceptance Criteria

Figure 1 – S- Series Parts Removal for Cleaning/Sanitizing

Figure 2 – Q-Series Water Curtain Thickness Probe and Tube Removal

Figure 3 – Q-Series Parts Removal for Cleaning/Sanitizing

Figure 4 – Q-Series Water Pump and Level Probe Removal

Figure 5 – R Series Component Disassembly for Cleaning/Sanitizing

Figure 6 – R Series Component Disassembly for Cleaning/Sanitizing

Figure 7 – R Series Component Disassembly for Cleaning/Sanitizing

Figure 8 – R Series Component Disassembly for Cleaning/Sanitizing
1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides direction to Clean and Sanitize Manitowoc Series Q, R and S Ice Machines.

1.2 Scope

This procedure applies to Cleaning and Sanitizing Manitowoc Series Q, R and S Ice Machines.

2.0 INFORMATION

2.1 General Information

2.1.1 Ice machine Cleaner is used to remove lime scale and mineral deposits.

2.1.2 Ice machine Sanitizer disinfects and removes algae and slime.

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

2.1.4 Use only Manitowoc approved Ice Machine Cleaner (part number 000000084) and Sanitizer (part number 94-0565-3).

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

WARNING - Sanitizer and Cleaner are corrosives and cause severe irritation and burns to skin and eyes.

WARNING - Condenser fins are sharp and can cause cuts during cleaning activities.

WARNING - Improper mixing of Cleaner and water can cause an exothermic reaction.

3.1.1 Personnel shall review and be familiar with GHS-SDS and/or MSDS for the Cleaner and Sanitizer being used and understand the hazards associated with them.

3.2 Equipment Safety

CAUTION - Equipment damage may result if ice is forced from evaporator.
3.3 Radiation and Contamination Control

Work in radiological areas will be screened using the Radiological Risk Screening Form (A-6003-910) per Radiological Risk Screening procedure TFC-ESHQ-RP_RWP-C-01.

4.0 PREREQUISITES

4.1 Special Tools, Equipment and Supplies

The following supplies may be needed to perform this procedure:

- Manitowoc approved Ice Machine Cleaner P/N 94-0546-3
- GHS-SDS and/or MSDS # 035717B (Ice Machine Cleaner M.I.I)
- Manitowoc approved Ice Machine Sanitizer P/N 94-0565-3
- GHS-SDS and/or MSDS # 070955 (Ice Machine Sanitizer)
- Clean Rags
- Manitowoc S1400 Use and Care Manual P/N 80-1631-3
- Manitowoc Q model Use and Care Manual P/N 000001114
- Potable (drinking) water
- Wet/Dry Vacuum cleaner with brush attachment
- Graduated container to measure up to 16 ounces
- 5 Gallon bucket
- 1 Gallon bucket
- PPE requirements:
  - Chemical resistant gloves: Gauntlet-type (Rubber, Nitrile, Neoprene)
  - Splash proof, chemical resistant safety goggles and face shield
- Portable eyewash with drench hose OR Safety eyewash location identified
- Other tools, equipment and supplies as identified by Shift Manager/OE/FWS/User.
Clean and Sanitize Manitowoc Series Q, R, and S Ice Machines

5.0 PROEDURE

5.1 S-Series - Manitowoc Ice Machine Cleaning and Sanitizing

Preparation and Condenser Cleaning

**CAUTION**

Equipment damage may result if ice is forced from evaporator

5.1.1 AFTER ice falls from the evaporator at the end of harvest cycle, SET switch (toggle) to the OFF position

**OR**

SET switch to the OFF position and allow the ice to melt off the evaporator.

5.1.2 REMOVE all ice from the holding bin.

5.1.3 SHUT-OFF electrical power to ice machine by unplugging power cord.

5.1.4 REMOVE compressor compartment access panel.

**WARNING**

Condenser fins are sharp and can cause cuts during cleaning activities.

5.1.5 DON leather gloves to prevent cuts from condenser fins during cleaning activities.

5.1.6 USE vacuum cleaner with brush attachment to clean outside of condenser.

5.1.6.1 CLEAN from top to bottom; not side to side.

5.1.6.2 USE caution not to bend the fan blades.

5.1.6.3 REMOVE top cover to allow easy access for adding cleaning or sanitizing solutions.

5.1.7 ENERGIZE the ice machine by plugging in the power cord.

5.1.8 PLACE the toggle switch in the CLEAN position.
5.1 S-Series - Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)

**WARNING**
Sanitizer and Cleaner are corrosives and cause severe irritation and burns to skin and eyes.

5.1.9 **DON** rubber gloves and safety goggles/face shield to prevent severe eye and/or skin injury.

5.1.10 **WAIT** until water trough refills and water flows over the evaporator **THEN**

**SLOWLY ADD** the proper amount of Cleaner per the following table:

<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</td>
<td>5 Ounces (150 ml)</td>
</tr>
<tr>
<td>S1000/S1200</td>
<td></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>

5.1.11 **WAIT** until the Clean Cycle is complete (approximately 30 minutes) **THEN**

**PLACE** toggle switch in the OFF position.

5.1.12 **DISCONNECT** power to the ice machine by removing power cord.

**Parts Removal for Cleaning and Sanitizing** (see Figure 1)

5.1.13 **REMOVE** the water curtain (A) as follows:

5.1.13.1 **GENTLY** flex the curtain in the center and remove it from the right side **AND**

**SLIDE** the left pin out.

5.1.14 **REMOVE** the ice thickness probe (B) as follows:

5.1.14.1 **COMPRESS** the hinge pin on the top of the ice thickness probe.

5.1.14.2 **PIVOT** ice thickness probe to disengage one pin then the other (probe can be cleaned at this point without complete removal).
5.1 S-Series - Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)

5.1.15 REMOVE the water trough (C) as follows:

5.1.15.1 DEPRESS tabs on right and left side of the water trough.

5.1.15.2 ALLOW front of water trough to drop as you pull forward to disengage the rear pins.

Cleaning Ice Machine

**WARNING**

Improper mixing sequence of Cleaner and water can cause an exothermic reaction.

5.1.16 SLOWLY POUR the Cleaner into lukewarm water using the ratio in the following table AND

PREPARE 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 Gallon (4L)</td>
<td>16 oz. (500 ML) Cleaner</td>
</tr>
</tbody>
</table>

NOTE - Cleaner solution will foam when it contacts lime scale and mineral deposits.

5.1.17 USE one half (½) of the cleaner/water mixture to clean all components AND

ONCE the foaming discontinues, USE a soft-bristle nylon brush, sponge or cloth to clean the parts.

NOTE - To expedite the procedure, steps 5.1.18 through 5.1.20 may be performed during the equipment soak.

5.1.18 ALLOW parts to soak for 5 minutes (15 to 20 minutes for heavily scaled parts) THEN

RINSE all components with clean water.

5.1.19 WHILE components are soaking, USE one half (½) of the cleaner/water solution to clean all food zone surfaces of the ice machine and bin.
5.1 S-Series - Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)

5.1.20 USE a nylon brush or cloth to fully 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 Ice Machine

NOTE - There is no unstable reaction when mixing water and Sanitizing product together.
- To minimize chemical waste, solution mixture may be cut in half.

5.1.21 MIX a solution of sanitizer and warm water to ratio in the following table:

<table>
<thead>
<tr>
<th>SOLUTION TYPE</th>
<th>WATER</th>
<th>MIXED WITH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitizer</td>
<td>6 Gallon (23 L)</td>
<td>4 oz. (120 ML) Sanitizer</td>
</tr>
</tbody>
</table>

5.1.22 USE one half ($\frac{1}{2}$) of the sanitizer/water solution to sanitize all removed components by using a cloth, sponge or spray bottle to apply the solution to all surfaces of the removed parts,

OR

SOAK the removed parts in the sanitizer/water solution.

5.1.23 DO NOT rinse parts after sanitizing.

5.1.24 USE one half ($\frac{1}{2}$) of the sanitizer/water solution to sanitize all food zone surfaces of the ice machine and bin (or dispenser).

5.1.25 USE a spray bottle, cloth or sponge to liberally apply the solution AND

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.
5.1 S-Series - Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)

5.1.26 DO NOT rinse sanitized areas.

5.1.27 REPLACE all removed components AND WAIT thirty (30) minutes.

5.1.28 RESTORE electrical power to the ice machine AND PLACE the toggle switch in the CLEAN position.

5.1.29 WAIT until the water trough refills and water flows over the evaporator (approximately 3 minutes).

5.1.30 ADD the proper amount of ice machine Sanitizer to the water trough (per the following Table) by pouring between the Water Curtain/splash shields 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</td>
<td>3 Ounces (90 ml)</td>
</tr>
<tr>
<td>S1000/S1200</td>
<td></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>

NOTE - The ice machine will automatically start ice making after the sanitize cycle is complete (approximately 35 minutes, S3300 – 80 minutes).

5.1.31 MOVE the toggle switch to the ICE position AND REPLACE the front panel.
5.2 Q-Series - Manitowoc Ice Machine Cleaning and Sanitizing

Preparation and Condenser Cleaning

CAUTION
Equipment damage may result if ice is forced from evaporator

5.2.1 AFTER ice falls from the evaporator at the end of harvest cycle, SET switch (toggle) to the OFF position

OR

SET switch to the OFF position and allow the ice to melt off the evaporator.

5.2.2 REMOVE all ice from the holding bin.

5.2.3 SHUT-OFF electrical power to ice machine by unplugging power cord.

5.2.4 REMOVE compressor compartment access panel.

WARNING
Condenser fins are sharp and can cause cuts during cleaning activities.

5.2.5 DON leather gloves to prevent cuts from condenser fins during cleaning activities.

5.2.6 USE vacuum cleaner with brush attachment to clean outside of condenser.

5.2.6.1 CLEAN from top to bottom; not side to side.

5.2.6.2 USE caution not to bend the fan blades.

5.2.6.3 REMOVE top cover to allow easy access for adding cleaning and sanitizing solutions.

5.2.7 ENERGIZE the ice machine by plugging in the power cord.

5.2.8 PLACE the toggle switch in the CLEAN position.
5.2 Q-Series - Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)

**WARNING**
Sanitizer and Cleaner are corrosives and cause severe irritation and burns to skin and eyes.

5.2.9 **DON** rubber gloves and safety goggles/face shield to prevent severe eye and/or skin injury.

5.2.10 **WAIT** until water trough refills and water flows over the evaporator **THEN**

**ADD** the proper amount of Ice Machine Cleaner per the following table:

<table>
<thead>
<tr>
<th>MODEL</th>
<th>AMOUNT OF CLEANER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q130</td>
<td>1 Ounce (30 ml)</td>
</tr>
<tr>
<td>Q170/Q210/Q270</td>
<td>2 Ounces (60 ml)</td>
</tr>
<tr>
<td>Q200/Q280/Q322/Q370</td>
<td>3 Ounces (90 ml)</td>
</tr>
<tr>
<td>Q422/Q450/Q600/Q800</td>
<td>5 Ounces (150 ml)</td>
</tr>
<tr>
<td>Q1000/Q1300/Q1400/Q1800</td>
<td>9 Ounces (265 ml)</td>
</tr>
</tbody>
</table>

5.2.11 **WAIT** until the Clean Cycle is complete (approximately 30 minutes) **THEN**

**PLACE** toggle switch in the OFF position.

5.2.12 **DISCONNECT** power to the ice machine by removing power cord.

**Parts Removal for Cleaning and Sanitizing**

5.2.13 **REMOVE** Water Curtain as follows:

5.2.13.1 **GENTLY FLEX** the curtain in the center **AND**

**REMOVE** it from the right side (see Figure 2).

5.2.13.2 **SLIDE** the left pin out.
5.2 Q-Series - Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)

5.2.14 REMOVE the Ice Thickness Probe as follows:

5.2.14.1 COMPRESS hinge pin on the top of the ice thickness probe.

5.2.14.2 PIVOT the ice thickness probe to disengage one pin then the other (ice probe can be cleaned/sanitized at this point without disconnecting wiring).

5.2.15 REMOVE the Water Distribution Tube as follows:

5.2.15.1 DISCONNECT the water hose from the distribution tube.

5.2.15.2 LOOSEN the two thumbscrews which secure the distribution tube (see Figure 2).

5.2.15.3 LIFT right side of distribution tube up off the locating pin THEN

SLIDE it back and to the right.

5.2.15.4 DISASSEMBLE for cleaning/sanitizing by twisting both of the inner tube ends until the tabs line up with the keyways.

5.2.15.5 PULL the inner tube ends outward.

5.2.16 REMOVE the white vinyl water distribution tubing as follows:

5.2.16.1 DISCONNECT the hose from water pump outlet.

5.2.16.2 DISCONNECT the hose from the dump valve (the tubing is pressure fit) AND

PULL tubing into evaporator compartment.

5.2.17 REMOVE water pump as follows:

5.2.17.1 LOOSEN the screws securing the pump mounting bracket to the bulkhead (see Figure 4).

5.2.17.2 LIFT the pump and bracket assembly off the screws.
5.2 Q-Series - Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)

5.2.18 REMOVE water level probe as follows:

5.2.18.1 LOOSEN the screw that holds the water level probe in place (the probe can be cleaned at this point without going to Step 5.2.18.2.

5.2.18.2 IF complete removal is required, DISCONNECT the wire lead from the control board inside the electrical control box.

Cleaning Ice Machine

WARNING
Improper mixing sequence of Cleaner and water can cause an exothermic reaction.

5.2.19 SLOWLY POUR the Cleaner into lukewarm water using the ratio in the following table AND PREPARE 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 Gallon (4 L)</td>
<td>16 oz. (500 ml) Cleaner</td>
</tr>
</tbody>
</table>

NOTE - Cleaner solution will foam when it contacts lime scale and mineral deposits.

5.2.20 USE one half (½) of the cleaner/water mixture to clean all components.

5.2.21 ONCE the foaming stops; USE a soft-bristle nylon brush, sponge or cloth to carefully clean the parts.

NOTE - To expedite the procedure, Steps 5.2.22 through 5.2.24 may be performed during the equipment soak.

5.2.22 ALLOW parts to soak for 5 minutes (15 -20 minutes for heavily scaled parts) THEN

RINSE all components with clean water.

5.2.23 WHILE components are soaking, USE one half (½) of the cleaner/water solution to clean all food-zone surfaces of the ice machine and bin
Clean and Sanitize Manitowoc Series Q, R, and S Ice Machines

5.2 Q-Series - Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)

5.2.24 USE a nylon brush or cloth to clean the following ice machine areas:
- Side Walls
- Base (bottom of the water trough)
- Interior of the water trough
- Evaporator cells and evaporator plastic parts, including top, bottom, and sides
- Bin or dispenser
- Ice machine top cover.

5.2.25 REMOVE water trough drain plug AND RINSE all areas thoroughly with clean water.

5.2.26 REINSTALL water trough drain plug.

5.2.27 CLEAN top, bottom and sides of evaporator using cleaner/water solution.

5.2.28 WIPE bottom lip of evaporator with a sponge or cloth soaked in cleaner solution.

Sanitizing Ice Machine

NOTE - There is no unstable reaction when mixing water and Sanitizing product together.
- To minimize chemical waste, solution mixture may be cut in half.

5.2.29 MIX a solution of sanitizer and warm water to the ratio given in the following Table:

<table>
<thead>
<tr>
<th>SOLUTION TYPE</th>
<th>WATER</th>
<th>MIXED WITH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitizer</td>
<td>6 Gallon (231 L)</td>
<td>4 oz. (120 ml) Sanitizer</td>
</tr>
</tbody>
</table>

5.2.30 USE one half (1/2) of the sanitizer/water solution to sanitize all removed components.

5.2.31 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.
5.2 Q-Series - Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)

5.2.32 **DO NOT** rinse parts after sanitizing.

5.2.33 **USE** one half ($\frac{1}{2}$) of the sanitizer/water solution to sanitize all food-zone surfaces of the ice machine and bin.

5.2.34 **USE** a cloth or sponge to liberally apply the solution.

5.2.35 **WHEN** sanitizing, **PAY** particular attention to the following areas:
- Side Walls
- Base (bottom of the water trough)
- Interior of the water trough
- Evaporator cells and evaporator plastic parts, including top, bottom, and sides
- Bin or dispenser
- Ice machine top cover.

5.2.36 **DO NOT** rinse sanitized areas.

5.2.37 **REMOVE** the water trough drain plug and wipe with solution.

5.2.38 **WHEN** the sanitizer solution has drained from the trough, **RE-INSTALL** the water trough drain plug.

5.2.39 **REPLACED** all removed components.

5.2.40 **REAPPLY** power to the ice machine **AND**

**PLACE** the toggle switch in the CLEAN position.
5.2 **Q-Series - Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)**

5.2.41 **WAIT** about 2 minutes or until water starts to flow over the evaporator **AND** **ADD** the proper amount of Ice Machine Sanitizer (per the following Table) by pouring between the water curtain and evaporator.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>AMOUNT OF SANITIZER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q130</td>
<td>1.6 Ounces (48 ml)</td>
</tr>
<tr>
<td>Q170/Q210</td>
<td>2.2 Ounces (66 ml)</td>
</tr>
<tr>
<td>Q270</td>
<td>1.9 Ounces (57 ml)</td>
</tr>
<tr>
<td>Q200/Q280/Q322/Q370/Q422/Q450/Q600/Q800/Q1000</td>
<td>3 Ounces (90 ml)</td>
</tr>
<tr>
<td>Q1300/Q1400/Q1800</td>
<td>8.75 Ounces (258 ml)</td>
</tr>
</tbody>
</table>

**NOTE** - The ice machine will automatically time out a ten minute sanitizing cycle followed by six rinse cycles and then stop. This entire cycle last approximately 25 minutes.

5.2.42 **AFTER** the sanitize cycle (approximately 25 minutes) the ice machine will **stop THEN** **PLACE** toggle switch to the ice position to start ice making again.

**NOTE** - The ice machine may be set to start and finish a sanitizing procedure, then automatically start ice making again.

5.2.43 **IF** the ice maker starts a sanitizing procedure, wait for the water to start to **flowing over the evaporator THEN** **MOVE** the switch from CLEAN to ICE position.

5.2.44 **WHEN** the sanitizing cycle is completed, **CONFIRM** an ice making sequence starts automatically.
5.3 **R-Series Manitowoc Ice Machine Cleaning and Sanitizing**

NOTE - Refer to the following Figures for Component Disassembly for Removing/Cleaning/Sanitizing all R-Series parts listed. Figure 5, Figure 6, Figure 7 and Figure 8.

**Preventative Maintenance Cleaning**

5.3.1 **MOVE** the toggle switch to the CLEAN position.

**WARNING**
Sanitizer and Cleaner are corrosives and cause severe irritation and burns to skin and eyes.

5.3.2 **REMOVE** the top panel and translucent plastic ice chute cover AND **WAIT** about one minute.

5.3.3 **ADD** the proper amount of Manitowoc Ice Machine Cleaner.

<table>
<thead>
<tr>
<th>Model</th>
<th>Amount of Cleaner</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNS12, RNS20</td>
<td>2 ounce (60 ml)</td>
</tr>
</tbody>
</table>

5.3.4 **MOVE** the toggle switch from CLEAN to ICE 60 seconds after the clean cycle has begun to allow the ice machine to automatically start making ice once the cleaning cycle is complete.

5.3.5 **RINSE** the cleaner from the top of the evaporator with 2 ounces (60 ml) of clear water AND **RE-INSTALL** cover.

5.3.6 **WAIT** 30 minutes for the ice machine to run a series of wash and rinse cycles.
Clean and Sanitize Manitowoc Series Q, R, and S Ice Machines

5.3 R-Series Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)

Clean heavily scaled Flake/Nugget Ice Machines

5.3.7 REMOVE panels AND

MOVE the toggle switch to the OFF position.

5.3.8 REMOVE all ice from the bin.

5.3.9 TURN OFF the water supply to the ice machine.

5.3.10 MOVE toggle switch to the CLEAN position.

5.3.11 WAIT approximately 30 seconds (or until the evaporator is drained) AND

MOVE the toggle switch in the OFF position.

**WARNING**

Sanitizer and Cleaner are corrosives and cause severe irritation and burns to skin and eyes.

5.3.12 ADD the correct amount of cleaner.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>AMOUNT OF CLEANER</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNS12, RNS20</td>
<td>12 ounce (355 ml)</td>
</tr>
</tbody>
</table>

5.3.13 TURN on the water supply to the ice machine.

5.3.14 LEAVE the cleaner/water solution in the evaporator for a minimum of 4 hours.

5.3.15 MOVE the toggle switch to the ICE position.

NOTE - After a 15 minute delay period expires the compressor will energize and produce ice with the cleaning solution.

5.3.16 MOVE the toggle switch to the OFF position, THEN

FOLLOW the standard Sanitizing steps 5.3.33 through 5.3.42.
5.3 R-Series Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)

Cleaning

5.3.17 REMOVE panels AND MOVE the toggle switch to the OFF position.

5.3.18 TURN off the water supply to the ice machine.

5.3.19 REMOVE all ice from the bin.

5.3.20 PLACE the toggle switch in the CLEAN position.

5.3.21 WAIT approximately 30 seconds (or until the evaporator is drained) AND MOVE the toggle switch to the OFF position.

**WARNING**

Sanitizer and Cleaner are corrosives and cause severe irritation and burns to skin and eyes.

5.3.22 PREMIX the correct solution of cleaner and cool water.

<table>
<thead>
<tr>
<th>Model</th>
<th>Amount of Cleaner Part Number 000000084</th>
<th>Amount of Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNS12, RNS20</td>
<td>2 ounces (60 ml)</td>
<td>32 ounces (1 liter)</td>
</tr>
</tbody>
</table>

5.3.23 REMOVE the top cover from the ice chute AND POUR the cleaner/water solution into the evaporator.

5.3.24 ADD the entire amount of premixed solution (Excess solution will exit through the overflow tube in the water reservoir).

5.3.25 REPLACE the ice chute cover AND ALLOW the ice machine to stand for 30 minutes.

5.3.26 TURN ON the water supply to the ice machine

5.3.27 MOVE the toggle switch to the ICE position.
5.3 R-Series Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)

NOTE - After a 15 minute delay period expires the compressor will energize and produce ice with the cleaning solution.

5.3.28 ALLOW the cycle to run for 15 minutes.
5.3.29 MOVE the toggle switch to the OFF position AND CONTINUE to Sanitizing step 5.3.30.

Sanitizing

5.3.30 TURN OFF the water supply to the ice machine.
5.3.31 MOVE the toggle switch to the CLEAN position.
5.3.32 WAIT approximately 30 seconds (or until the evaporator is drained) AND MOVE the toggle switch in the OFF position.

WARNING
Sanitizer and Cleaner are corrosives and cause severe irritation and burns to skin and eyes.

5.3.33 ADD the correct amount of sanitizer and cool water.

<table>
<thead>
<tr>
<th>Model</th>
<th>Amount of Sanitizer</th>
<th>Amount of Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNS12, RNS20</td>
<td>2 ounces (60 ml)</td>
<td>3 gallons (11 liters)</td>
</tr>
</tbody>
</table>

5.3.34 REMOVE the top cover from the ice chute AND POUR the sanitizer/water solution into the evaporator.

5.3.35 ADD the entire amount of premixed solution (excess solution will exit through the overflow tube in the water reservoir).

5.3.36 REPLACE the ice chute cover and allow the ice machine to stand for 30 minutes.

5.3.37 TURN ON the water supply to the ice machine.
5.3 R-Series Manitowoc Ice Machine Cleaning and Sanitizing (Cont.)

5.3.38 MOVE the toggle switch to the ICE position.

NOTE - After a 15 minute delay period expires the compressor will energize and produce ice with the sanitizing solution.

5.3.39 ALLOW the cycle to run for 15 minutes.

5.3.40 DISCARD all ice produced during the sanitizing process.

NOTE - During the cleaning cycle the ice machine will run a series of clean and rinse cycles that lasts approximately 30 minutes.

5.3.41 MOVE the toggle switch to the CLEAN position.

5.3.42 MOVE the toggle switch from CLEAN to ICE 60 seconds after the clean cycle has begun to allow the ice machine to automatically start making ice once the cleaning cycle is complete.
5.4 Restoration

5.4.1 IF any problems were encountered with cleaning process, **INFORM** FWS.

5.4.2 **CHECK** equipment system restoration by observing indications are consistent with normal operations.

5.4.3 **DISPOSE** of any remaining solutions generated for cleaning and/or sanitizing Series Q, R, or S ice making units (per the following steps) in accordance with Work Package:
- Steps 5.1.16 and 5.1.21 for S-Series ice making units
  - OR
  - Steps 5.2.19 and 5.2.29 for Q-Series ice making units.
  - OR
  - Steps 5.3.33 and 5.3.41 for R-Series ice making units.

5.4.4 **DISPOSE** of rags as directed per Work Package.

5.5 Acceptance Criteria

Acceptance Criteria has been met when Steps in this procedure have been satisfactorily completed.

5.6 Review

5.6.1 **INFORM** FWS cleaning and sanitizing process is complete.

5.6.2 **FWS REVIEW AND CONFIRM** the following:
- Ice Maker is generating ice satisfactorily
- Work requests needed as a result of this procedure are identified and generated
- Work request number(s) of any work documents generated as a result of this procedure, are recorded in the Work Record/Remarks section of Work Package.
5.7 Records

The performance of this procedure generates no records. However, PM Data Sheets associated with the procedure, are records and are maintained in the work package as record material.

The record custodian identified in the Company Level, Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
Figure 1 – S- Series Parts Removal for Cleaning/Sanitizing

A. Water Curtain.
B. Ice Thickness Probe.
C. Water Trough.
Figure 2 – Q-Series Water Curtain Thickness Probe and Tube Removal

A. Remove the water curtain.

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

B. Remove the ice thickness probe.

1. Compress the hinge pin on the top of the ice thickness probe.
2. Pivot ice thickness probe to disengage one pin, then the other. Ice thickness probe can be cleaned and sanitized at this point without complete removal. For complete removal, disconnect probe wiring from control board.


Figure 3 – Q-Series Parts Removal for Cleaning/Sanitizing

C. Remove the water distribution tube.

D. Tube disassemble for cleaning/sanitizing.

1. Loosen the two thumbscrews which secure the distribution tube.
2. Lift the right side of the distribution tube up off the locating pin, then slide it back and to the right.

1. Twist both of the inner tube ends until the tab lines up with the keyways.
2. Pull the inner tube ends outward.
Figure 4 – Q-Series Water Pump and Level Probe Removal

E. Remove the water pump

1. Disconnect the water pump power cord.

2. Loosen the screw securing the pump mounting bracket to the bulkhead.

3. Lift the pump and bracket assembly off the screws.

F. Remove the water level probe

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

2. If complete removal is required, disconnect the wire lead from control board inside electrical control box.
Figure 5 – R Series Component Disassembly for Cleaning/Sanitizing

Component Disassembly for Cleaning/Sanitizing
The ice machine must be disassembled cleaned and sanitized every six months.

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

1. Turn off water supply to ice machine.

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

2. Place toggle switch in the CLEAN position for 30 seconds to drain water from reservoir, then move toggle switch to OFF position.
3. Run dispenser to transfer all ice from the bin to a container.

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

4. Disconnect electrical power to the ice machine.
5. Remove top cover.
   A. Remove two thumbscrews.
   B. Lift up on top cover to remove.

6. Remove front cover.
   A. Lift up on front cover.
   B. Pull forward to disengage keyhole slots.

7. Remove ice chute cover.
   A. Turn the two thumbscrews 1/4 turn.
   B. Lift to remove cover.
Figure 6 – R Series Component Disassembly for Cleaning/Sanitizing

8. Lift out ice damper.

9. Lift out ice strainer ramp.

10. Turn ice wiper counterclockwise to remove.

11. Loosen ice chute hose clamp.

12. Disconnect ice chute drain.

13. Lift up on ice chute to remove. The ice chute must be removed before the bin cover can be removed.

14. The ice chute can be cleaned in place. If complete removal is desired use a phillips screwdriver to remove the Hall Effect Switch assembly from the ice chute.
Figure 7 – R Series Component Disassembly for Cleaning/Sanitizing

15. Remove three thumbscrews, then remove bin cover.

16. Remove agitator bar and ice breaker on RNS020.
   NOTE: Bar must be reassembled by inserting front edge into the paddle wheel, then lowering the back edge (rounded 90 angle) to prevent water leakage into the compressor compartment.

17. Remove ice deflector.
   A. Remove the two thumbscrews.
   B. Lift the ice deflector out.

18. Remove ice dispensing wheel by lifting straight out.

19. Remove the water reservoir cover.
   A. Push up on cover to snap off.

20. 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>

21. Use 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.

**Caution**
Do not pour cleaner or sanitizer solutions into the bin. The solution will leak out of the front of the bin and into the compressor compartment.
Figure 8 – R Series Component Disassembly for Cleaning/Sanitizing

22. While components are soaking clean all foodzone surfaces of the bin. Rinse all areas thoroughly with clean water.

23. 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>

24. 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.

25. Use 1/2 of the sanitizer/water solution to sanitize the dispenser bin, water trough and delivery spout. Use a cloth or sponge to liberally apply the solution. Do not rinse the sanitized areas.

26. Reinstall the removed parts, restore water and power supply and test run the ice machine.

NOTE: Disconnecting and reconnecting the power supply activates a 15 minute time delay. This delay period cannot be overridden. The delay period will start when power is restored and the ice machine starts after the 15 minute delay period expires.

Cleaning the Condenser

⚠️ Warning

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

Air-Cooled 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.

⚠️ Caution

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

1. The washable filter is designed to catch dust, dirt, lint and grease. This helps keep the condenser clean. Clean the filter with a mild soap and water solution.

2. Clean the outside of the condenser with a soft brush or a vacuum with a brush attachment. Clean from top to bottom, not side to side. 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. 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.