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# De-scaling and Sanitizing Procedures

**Subject: S Model Air-cooled, Water-cooled, Remote Air-cooled Ice Machines**

**S0300/S0320/S0420/S0450/S0500/S0600/**

**S0850/S1000/S1200/S1400/S1600/S1800**

**⚠Caution**

Do not mix de-scaler and sanitizer solutions together. It is a violation of Federal law to use these solutions in a manner inconsistent with their labeling.

**⚠Caution**

Use only Manitowoc approved Ice Machine De-scaler and Sanitizer for this application (Manitowoc De-scaler part number 9405463 and Manitowoc Sanitizer part number 9405653). 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.

**⚠Warning**

Wear rubber gloves and safety goggles (and/or face shield) when handling ice machine de-scaler or sanitizer.

## 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.

Sanitizing for Exterior, Remedial, and Detailed procedures can be performed independently and more frequently than de-scaling when needed.

De-scale and sanitize the ice machine every six months for efficient operation. If the ice machine requires more frequent de-scaling 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 de-scaling and sanitizing.

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

Using non-Manitowoc de-scalers, sanitizers, cleaners or solutions may result in bodily harm and/or cause damage to the ice machine that is not covered under the warranty.

### Ice Machine Inspection

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

Keep area around the ice machine clear. There must be adequate airflow through and around the ice machine to maximize ice production and ensure long component life.

### Detailed De-scaling/Sanitizing Procedure

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

- The ice machine and bin must be disassembled, de-scaled, and sanitized.
- All ice produced during the de-scaling and sanitizing procedures must be discarded.

### Remedial De-scaling Procedure

- This procedure de-scales all components in the water flow path, and is used between the bi-yearly detailed de-scaling and sanitizing procedure.

### Exterior Cleaning

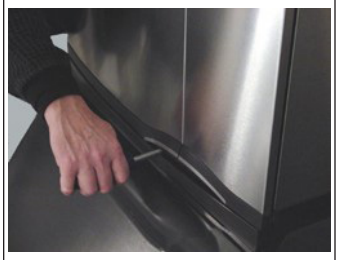
Clean the area around the ice machine as often as necessary to maintain cleanliness and efficient operation.

The exterior panels have a clear coating that is stain resistant and easy to clean. Products containing abrasives will damage the coating and scratch the panels.

Wipe surfaces with a damp cloth rinsed in water to remove dust and dirt from the outside of the ice machine. If a greasy residue persists, use a damp cloth rinsed in a mild dish soap and water solution. Wipe dry with a clean, soft cloth.

- Never use steel wool or abrasive pads for cleaning.
- Never use chlorinated, citrus based or abrasive cleaners on exterior panels and plastic trim pieces.

## Detailed De-scaling and Sanitizing Procedure



**1. Remove top cover and front panel.**

Remove top cover and front panel. This will allow easiest access for adding de-scaling and sanitizing solutions.




**2. Place toggle switch to OFF position.**

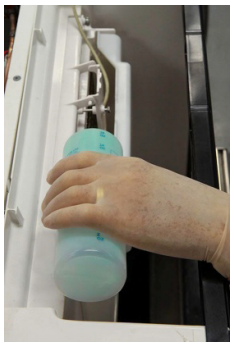
Set the toggle switch to the OFF position at the end of a harvest cycle (when ice falls from the evaporator). Or, set the switch to the OFF position and allow the ice to melt off the evaporator.



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




**4. Place the toggle switch in the CLEAN position.**



**5. Add Manitowoc Ice Machine De-Scaler to the water trough.**

Wait approximately 2 minutes or until water starts to flow over the evaporator. Add the proper amount of de-scaler (see table below) to the water trough by pouring between the water curtain/ splash shield, and evaporator. The bottle is marked with 2 oz graduations. The ice machine will stop after the clean cycle (approximately 35 minutes).

| Model | Amount of De-scaler (9405463) |
|---|---|
| S300/S320/S420 | 3 oz (90 ml) |
| S450/S500/S600/S850/ S1000/S1200 | 5 oz (150 ml) |
| S1400/S1600/S1800 | 9 oz (265 ml) |




**6. Wait until the clean cycle is complete and disconnect power.**

Clean cycle is approximately 35 minutes.

Place the toggle switch in the OFF position and disconnect power to the ice machine (and dispenser when used).

**7. Disassemble parts for de-scaling/ sanitizing.**



**A. Remove the water curtain.**

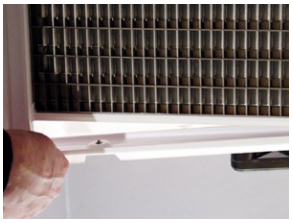
Gently flex the curtain in the center and remove one side then the other.



**B. Remove the ice thickness probe.**

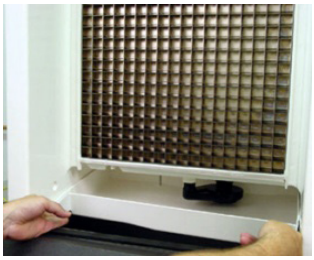
Compress the hinge pin on the top of the ice thickness probe. Pivot the ice thickness probe to disengage one pin then the other. The ice thickness probe can be de-scaled at this point without complete removal.

If complete removal is needed due to heave scale, Pull water level probe down until electrical connection is visible. Disconnect electrical connection.



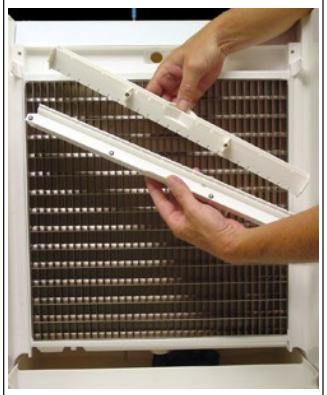
**C. Remove the evaporator tray/water diverter.**

Evaporator tray/water diverter is located below evaporator. Loosen thumbscrew on left side of tray. Allow left side of tray to drop as you pull the tray to the left side. Continue until the outlet tube disengages from the right side.



**D. Remove the water trough.**

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



**E. Remove the water distribution tube.**

Loosen thumbscrews but do not pull thumbscrews out of distribution tube. Loosen the 2 outer screws and pull forward on the distribution tube to release from slip joint. Disassemble distribution tube by loosening the 2 middle thumbscrews and dividing the distribution tube into 2 pieces.

**Thumb screws are retained in unit to prevent loss.**



**F. Remove the water level probe.**

Pull the water level probe straight down to disengage. Lower the water level probe until the wiring connector is visible. Disconnect the wire lead from the water level probe. Remove the water level probe from the ice machine.



**G. Remove the water pump.**

Note position of water pump outlet, and then disconnect vinyl hose from the pump outlet. Rotate the thumbscrew that secures the pump to the bulkhead 1/4 turn clockwise. Rotate the water pump assembly 1/4 turn counterclockwise. Lower the pump assembly into the evaporator compartment. Disconnect the water pump electrical connection. Remove water pump assembly from ice machine.

**Do not soak the water pump motor in de-scaler or sanitizer solution.**



**⚠Caution**

Do not soak the water pump motor in rinse water or de-scaler/sanitizer solution. Be sure to only rinse/soak the water pump impeller and impeller housing. Do not immerse above the red line on the graphic.

**Notice**

Manitowoc Ice Machine De-Scaler is used to remove lime scale and mineral deposits. Manitowoc Ice Machine Sanitizer disinfects, and removes algae and slime.

Ice machine de-scaler should be used every six months, although in cases of extremely hard water conditions it may be necessary to use de-scaler more often. For the water hardness range allowed for clean water standards, it should not be necessary to use de-scaler more frequently than every two months. De-scaler is only required when there is visible lime scale buildup on the evaporator or other parts. Use of an approved filtration system with a polyphosphate scale inhibitor is highly recommended for all ice machine installations and will significantly reduce the need for de-scaler application in hard water applications.

| Solution Type | Amount of Clean Warm Water | Amount of Solution |
|---|---|---|
| De-scaler (9405463) | 1 gal (3.80 L) | 16 oz (475 ml) |
| Sanitizer (9405653 | 6 gal (22.70 L) | 4 oz (120 ml) |




**⚠ Caution**

Do not mix de-scaler 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 de-scaler or sanitizer.

**DETAILED DE-SCALING PROCEDURE**



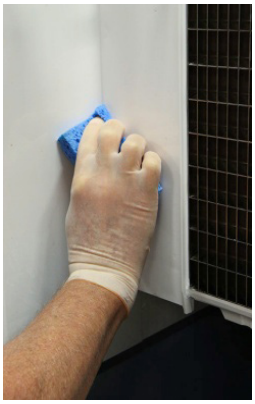
**8. Mix a solution of de-scaler and clean warm water.**

Mix 16 oz (475 ml) Manitowoc ice machine de-scaler with 1 gal (3.80 L) of clean water. Depending upon the amount of mineral buildup, a larger quantity of solution may be required.



**9. Use 1/2 of the de-scaler/ water mixture to de-scale all components.**

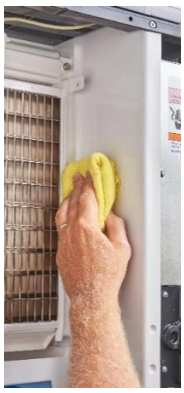
Soak parts for 5 minutes (15 - 20 minutes for heavily scaled parts). The de-scaler solution will foam when it contacts lime scale and mineral deposits; once the foaming stops use a soft-bristle nylon brush, sponge or cloth (NOT a wire brush) to carefully de-scale the parts. Rinse all components with clean water.



**10. Use 1/2 of the de-scaler/ water solution to de-scale all foodzone surfaces the ice machine and bin.**

Use a nylon brush or cloth to thoroughly de-scale the following ice machine areas:

a. Side walls
b. Base (area above water trough)
c. Evaporator plastic parts - including top, bottom, and sides
d. Bin or dispenser



**11. Rinse all areas thoroughly with clean water.**

## DETAILED SANITIZING PROCEDURE



**12. Mix a solution of sanitizer and clean warm water.**

Mix 4 oz (120 ml) sanitizer with 6 gal (22.70 L) of clean warm water.



**13. 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.

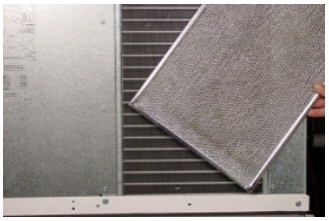


**14. Use 1/2 of the sanitizer/ water solution to sanitize all foodzone surfaces the ice machine and bin.**

Use a nylon brush or cloth to thoroughly de-scale the following ice machine areas:

a. Side walls
b. Base (area above water trough)
c. Evaporator plastic parts - including top, bottom, and sides
d. Bin or dispenser

**Do not rinse sanitized parts.**

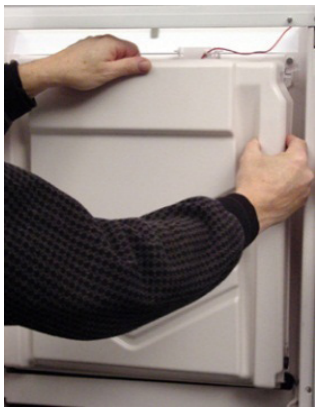


**15. Clean condenser air filter.**

While clean cycle is running. (air-cooled models only) clean the condenser air filter. Lift out condenser filter(s) on the rear of the machine, flush with water to clean, and reinstall.

**⚠ Warning**

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



**16. Replace all removed components.**




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



**18. Add Manitowoc Ice Machine Sanitizer to the water trough.**

Wait approximately 2 minutes or until water starts to flow over the evaporator. Add the proper amount of sanitizer (see table below) to the water tough by pouring between the water curtain and evaporator. The bottle is marked with 2 oz graduations. The ice machine will stop after the clean cycle (approximately 35 minutes).

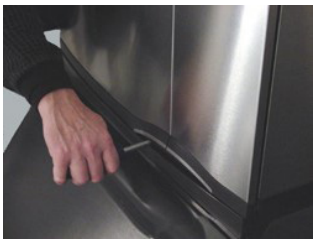
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|---|---|
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| S450/S500/S600/S850/ S1000/S1200 | 3 oz (90 ml) |
| S1400/S1600/S1800 | 6 oz (180 ml) |



**19. Replace all removed components.**




**20. Reapply power to the ice machine and place the toggle switch in the ICE position.**



**21. Reinstall front panels and tighten screws.**

## Remedial De-scaling and Sanitizing Procedure

This procedure de-scales/sanitizes all components in the water flow path, and is used to de-scale/sanitize the ice machine between the bi-yearly detailed de-scaling and sanitizing procedure.

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**1. Remove front panel and top cover.**

This will allow the easiest access for adding de-scaler and sanitizer.




**2. Place toggle switch to OFF position.**

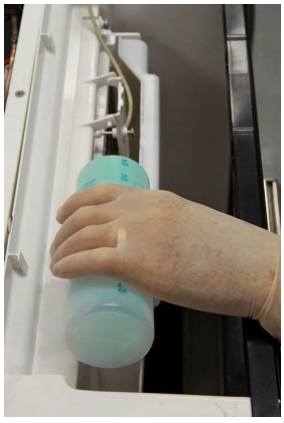
Set the toggle switch to the OFF position after ice falls from the evaporator at the end of a Harvest cycle. Or, set the switch to the OFF position and allow the ice to melt off the evaporator.

**Notice**

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



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



**4. Place the toggle switch in the CLEAN position.**

The water will flow through the water dump valve and down the drain. Wait until the water trough refills and water flows over the evaporator, then add the proper amount of ice machine de-scaler or sanitizer.



**5. Wait until the clean cycle is complete (approximately 35 minutes).**




**6. Move the toggle switch to the ICE position and replace the front panel.**

The ice machine will automatically start making ice after the cycle is complete.