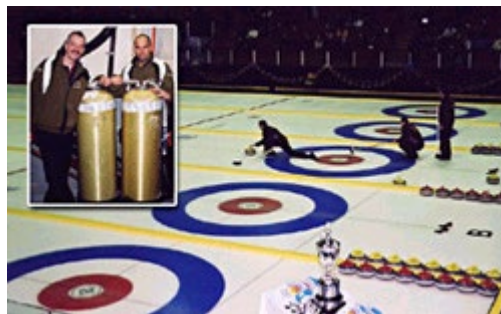
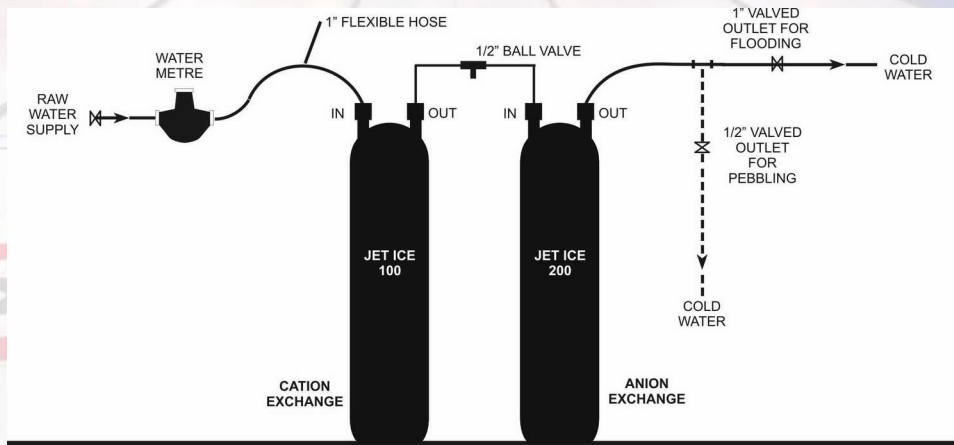


## RENTAL CURLING UNIT

### INSTALLATION AND OPERATING GUIDELINES



Updated :October 16, 2003

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## INTRODUCTION

### WATER TREATMENT SYSTEMS

When you want to provide the best sheet of curling ice possible, choose Jet Ice water treatment systems to ensure consistent ice from end to end. Jet Ice water systems are affordable, even for the smallest clubs, and can be customized to meet the dynamics of your specific requirements.

### RENTAL SYSTEMS

Our standard Curling Rental System includes: Resin exchange tanks, water meter, hoses, shut-off valves. The portable rental system is easily connected to your incoming water supply. This system can be customized to :

- Increase capacity where water quality is particularly poor, utilizing a double tank system
- Increase capacity by removing high levels of specific contaminants such as calcium or carbonates
- Include carbon block filters to ensure the removal of excess chlorine and organics water for many years to come.

To determine in advance the duration of the system before having to regenerate, we ask for a sample of your water (about a cup) in a plastic bottle. This will be analyzed for its mineral content. This free analysis is done by Jet Ice, and enables us to forecast how much water can be treated before the inner resins become depleted. Water with a low level of minerals may require regeneration every second year contrary to heavily mineral loaded water, which will need regeneration every year. The analysis report provides a water "budget" to go by when demineralising. The water meter included in the system will help keeping track of that allocated quantity.

Despite the deionization process, it is possible that the water pH remains lower than the recommended range. A low pH is indicative of high organic matter content which DI alone cannot eliminate. In that situation, the purchase of a carbon filter becomes necessary. The filter we recommend is a no. 20 with 1 inch inlet and outlet. It is comprised of a 5 micron carbon brick. The filter itself is good for one year, at the end of which it must be replaced.

### WATER HEATER

Once water is demineralised, one must avoid running it through a metal lined water heater and/or piping. The metal thirsty de-ionised water will be strongly attracted to any metal it contact and reverse the treatment effect. A hot water heater should be lined with porcelain.

**DI PORTABLE KITS**

\*\*\* PACKAGE LISTING \*\*\*

The Jet Ice De-Ionisation Portable rental kit is delivered with the following components. Check with associated letter on diagram.

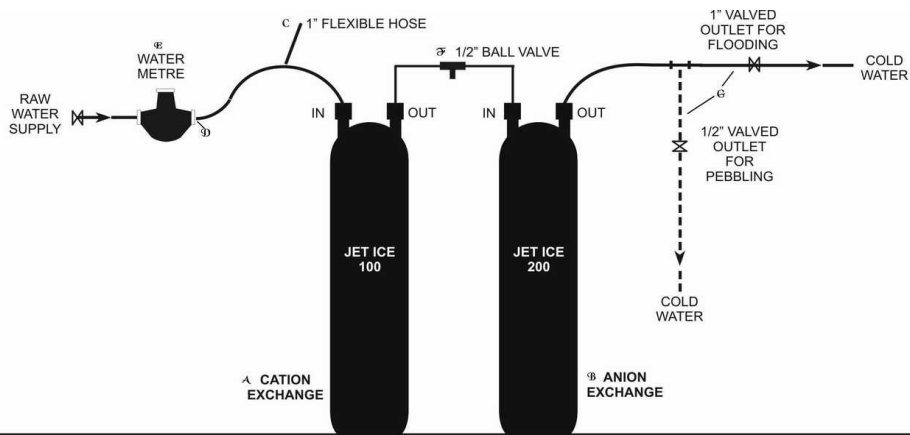
- 1 x 100 Cation Exchange Column ..... A
- 1 x 200 Anion Exchange Column ..... B
- 10 Ft (approx.) Clear flex 1" hose to be cut and fitted along the DI line ..... C
- 12 x Gear Clamps ..... D
- 1 x Water Meter with hose barb fitting ..... E
- 1 x 1/2" Test Port (T-shaped w. lateral ball valve) ..... F
- 1 x T-Valve w. 1" & 1/2" outlets ..... G
- 1 x Vial pH 1-14 Litmus strips (first year rental only)
- 1 x These Operating Guidelines

\*\*\* FACILITY SET-UP REQUIREMENTS \*\*\*  
(Not supplied in the kit)

- 1" copper line (preferably with ball valve) for incoming raw water supply
- Flooding 1" hose (if necessary, with fitting for 1" outlet)

Optional

- Hot Water Heater
- 1/2" hose (any length)
- Air pressure pump for emptying prior to return shipping



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**RENTAL CURLING UNIT (Top of tanks are marked I & O for in and out)**

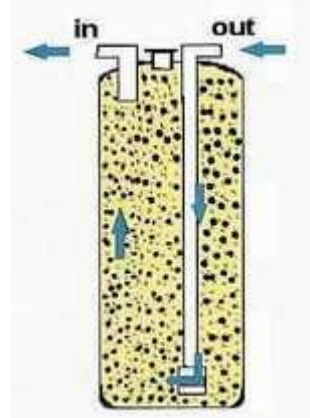
The Jet Ice Rental Curling Unit is easily hooked up to your incoming water supply and does not require the services of a licensed plumber. We ensure all necessary fittings are supplied to facilitate hook-up of the system.

## INSTALLATION

### A. INITIAL D-I TANK RINSE

Upon receiving, the set of tanks will need to be filled with water to ensure the removal of as much air possible. This will then maximise the contact area between water and resin.

- Remove the rubber caps from tank connecting ports. Save them for the emptying procedure prior to returning for regeneration.
- Take each individual tank and push water backward through it. Connect water line to (O) outlet of tank. Turn the water on slowly and let it run until the water comes out of the inlet (I). To minimise water spillage on the floor, you may want to connect a hose the inlet port and bring it to the drain. Let it run for 30 seconds. Repeat this procedure on the second tank.
- Once both tanks are filled with water, connect the water lines and tanks in proper sequence.



Water Direction for Initial Rinse

### B. SEQUENCE OF CONNECTIONS

The clear flex hose will most likely need to be cut in 5 pieces of variable lengths. Determine how it will be positioned starting from the city line, and ending at the T-Valve for flooding and pebbling hoses. Use the gear clamps to connect the sections in the following sequence:

- Hose part #1 : From end of facility copper line or ball valve to water metre
- Hose part #2 : From water metre to Jet ice Column 100 Inlet
- Hose part #3 : From Column 100 Outlet to Jet Ice T-shaped test port
- Hose part #4 : Form test port to Jet Ice Column 200 Inlet
- Hose part #5 : From Column 200 Outlet to T-valve w. 1" & ½"

### C. SYSTEM START-UP RINSE

- Rinse tanks down with a maximum flow rate of 6 - 7 g.p.m
- Use pH 1-14 Litmus strips to evaluate pH levels in each column. The convenient test port between tanks allows for testing pH on 100 column.  
pH value guidelines are : Water from 100 column | 2.5 - 3.5  
Water from 200 column | 5.0 - 6.5
- If pH value from 200 column is higher than 6.5, continue rinse down and pH value will come down to operating range.

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#### D. ICE BUILD-UP

- If the base is levelled, 1000 gallons of water will be required to build up one inch of ice per curling alley.
- Use the water meter to « budget » treated water during ice build-up and maintenance for the rest of the season.
- If the tap water is heavily mineralised, the treatment capacity will be reduced. If there is a sand base, it is better to saturate the sand with raw water to preserve the treated water for ice making on top of the sand base. Once the water has frozen at the sand base surface, scrape off the mineral residue that will have migrated at the surface. Then proceed on building with de-ionized water..

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#### DAILY OPERATING GUIDELINES

- Mark down the starting number of gallons on your water meter and keep a log of your activities pertaining to water treatment. Copy the log sheet provided on page 5 of these guidelines. Keep the copies in a binder. This will be your logbook.
- Water quality fluctuates. The capacity of your system is totally dependent on raw water quality.
- To estimate the approximate amount of water your DI system will treat, have a sample of raw water analysed by Jet Ice. A small quantity (500-ml) in a plastic vial is sufficient. The sample should be delivered via your Jet Ice distributor within 48 hours of withdrawal from city line. This is free of charge and provides an estimated capacity of gallons that could be treated before regeneration is required. A city water lab analysis accompanying the wet sample will also help in determining water treatment capacity.
- Test pH levels on each column regularly to monitor water quality and resin capacity.
- During the evening and if tanks are sitting idle, shut pressure off before tanks. This assures that if any failure of plastic hose or of tanks occurs, minimal water will be lost.
- If the DI system sits idle for more than 36 hours, the water in the tanks becomes stagnant. Rinse for 5 minutes, check pH values and continue using water.
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#### END OF SEASON, D-I RESIN DEPLETION GUIDELINES

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1. If tanks are sitting idle or over the summer months, release pressure from tanks. Upon startup, rinse tanks and check pH values. The system is ready to run.
2. When tanks are exhausted, in most cases, pH value of 100 column will rise. You will notice a change in your final effluent and it is time for regeneration. Depending on your raw water make-up, your 200 column may exhaust first. If this takes place, the pH value of the 200 tanks will drop below 4.5 - 5.0. If this happens, change your tanks immediately.
3. When your tanks are exhausted, the water should be drained prior to returning. This reduces shipping weight and the possibility of freezing.



Compressed Air Flow

**Option A - If you have a pressure pump**

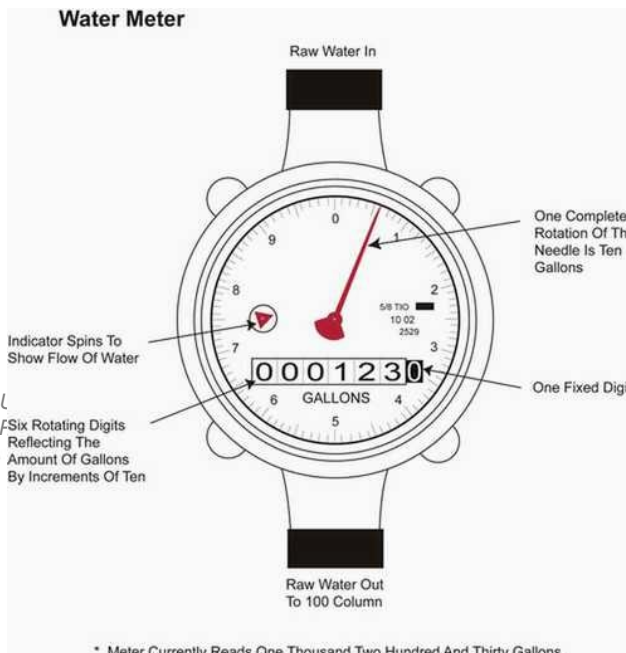
With tanks standing up, apply compressed air to inlet (I) connection. This will push water out the outlet connection (O) and down the drain. Apply air hose and hold it there until only air comes out.

**Option B - If compressed air is not available**

If compressed air is not available, don't attempt to empty them by tilting them on their sides. With tanks remaining upright, reposition saved rubber caps. They will be shipped back with water inside.

4. Arrange delivery back to the distributor. If your intentions are to renew the rental contract, keep all plumbing supplies at your facility.

**WATER METER OPERATING GUIDELINES**



- The water meter is never reset to zero. So, the first reading at the time of installation should be registered as the starting figure of water treatment.
- The dial face is comprised of an analog, single handle display, with a rotary digital counter at the bottom.

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\* Meter Currently Reads One Thousand Two Hundred And Thirty Gallons

- The 6th rotary digit on the right represents the tens of gallons. The 5th represents the hundreds, and so forth.
  - A seventh digit at far right is permanently set at zero. This count is assumed by the red handle, which shows the individual gallons treated up to 10. Once 10 gallons have been treated, the handle is at zero, and the 6th rotary digit moves up one figure.
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**TERMS AND CONDITIONS**

1. The Annual Exchange Charge is to cover all parts, labour and overhaul charges save and except the regeneration of tanks, the supply or replacement of operating supplies (such as chemicals etc.), labour or material made necessary by electrical power failure, fire, theft, water, abuse or other casualties. All service required by reasons other than failure of the equipment to operate will be billed by Jet Ice at its regular rates. It is understood that Jet Ice does not assume liability for any accidents to or caused by the equipment. It is further agreed that any repairs or adjustments made by any person other than Jet Ice's authorized representative will be a breach of this Agreement and relieve Jet Ice from its responsibility under this Agreement and entitle Jet Ice to re-take possession of the equipment.
2. This Agreement does not cover service necessitated by malfunction of parts or attachments not made or supplied by Jet Ice. Jet Ice's liability is limited to keeping the equipment in good working order and Jet Ice shall not be liable for any damages whatsoever, including consequential damages.
3. Effective on any anniversary date of this Agreement Jet Ice shall have the right to alter the terms and conditions of this Agreement by giving written notice to the Customer at least forty-five days before the anniversary date. If the Customer shall not be willing to accept the new terms and conditions the Customer shall have the right to cancel this Agreement by notifying Jet Ice in writing at least thirty (30) days before the anniversary date and the Customer shall at its own expense return the Equipment to Jet Ice; otherwise the Customer shall be deemed to have accepted the new terms and conditions.
4. The Customer acknowledges that ownership and title to the Equipment and any Equipment supplied by Jet Ice in exchange therefor shall be and remain vested in Jet Ice. The Customer shall have no right, title or interest in the Equipment or the exchanged Equipment other than, conditional upon the Customer's compliance with the fulfilment of the terms and conditions of this Agreement, the right to use the Equipment for the term hereof. Such right to use the Equipment shall be exercised only by the Customer. Jet Ice may require plates or markings to be affixed to or placed on the Equipment indicating that Jet Ice is the owner.
5. The Equipment shall at all times during the term of this Agreement be personal or moveable property, regardless of the manner in which it may be attached to any real estate. The Customer shall install the Equipment in a manner that will permit its removal without material injury to the place of installation.
6. The Equipment shall be maintained and used at the Premises and not elsewhere without the prior written consent of Jet Ice, which consent may be arbitrarily withheld. The Customer shall, at its own cost and expense, cause the Equipment to be maintained and operated prudently at all times and, in compliance with the operating guidelines of Jet Ice and the terms and conditions of this Agreement and all applicable laws and regulations by competent and qualified personnel only and for business purposes only.
7. The Customer is responsible for providing at its own cost and expense space and environmental conditions for each item of Equipment in accordance with the operating guidelines and specifications of Jet Ice.
8. The Customer assumes the entire risk of loss or damage to the Equipment from any cause. No loss or damage to the Equipment or any part of it, shall affect the obligations of the Customer. The Customer shall insure the Equipment against normal perils and hazard (including so-called extended coverage), theft and such other risks of loss as are customarily insured by all risks policies in an amount not less than the full replacement value of the Equipment with loss payable to Jet Ice. The Customer further agrees to give to Jet Ice prompt notice of any damage to or loss of the Equipment or any part of it.
9. The Customer shall keep the Equipment free of levies, liens and encumbrances.
10. In the event that the Customer breaches any covenant or condition contained in this Agreement or fails to pay any amounts payable herein when due and payable or if the Customer is insolvent or unable to pay its debts generally as they become due, or if the Equipment is, in the opinion of Jet Ice, in danger of being confiscated or attached, Jet Ice may, at its option, terminate this agreement by written notice to the Customer whereupon the Customer shall return the Equipment to Jet Ice and shall also be liable to Jet Ice for the payment of any amounts due and payable and for all damages which Jet Ice may sustain by reason of the Customer's breach including, without limitation, all legal and other professional fees and other expenses incurred by Jet Ice in attempting to enforce this Agreement or to recover damages for breach.
11. This Agreement shall be construed and enforced in accordance with the laws of the Province of Ontario.

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12. The Customer shall not assign this Agreement or any part of it without, obtaining the prior written consent of Jet Ice, which consent may be unreasonably withheld. Jet Ice shall, at its election, have the right to assign this Agreement or any part of it to any person, firm or corporation and may employ or retain anyone as a subcontractor or otherwise, to perform any part of its obligation under this Agreement.

13. If any part of this Agreement is held or rendered invalid or illegal, the remainder of this Agreement continues to apply.