



HOSHIZAKI CARE TECH-TIPS

Danny Moore
Editor

Hoshizaki America, Inc.
618 Hwy. 74 South
Peachtree City, GA 30269
Care Facsimile: (800) 843-1056

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Cuber Freeze Ups

Without a doubt, one of the most frequent service problems with Ice Machines is Freeze Ups. Contrary to popular belief, there is no such creature as an unexplained or Ghost Freeze Up. Freeze Ups are always caused by one or a combination of specific reasons.

The greatest reason by far, is a dirty evaporator. This dirt can be lime scale, calcium, iron or any number of minerals which have collected on the evaporator over a period of time. This mineral build-up insulates the evaporator surface and impedes heat transfer which causes ice to remain on the plate for the next freeze cycle. This ice grows during each cycle, then forms a huge ice ball called a Freeze-Up.

Hoshizaki utilizes a hot gas defrost with water assist. The water plays a major part in helping to transfer the heat evenly to the evaporator plate. For this reason, low water flow into the unit can cause a Freeze-Up. Combine this with a dirty evaporator and Freeze Ups are possible.

If you have a Freeze Up, the best course of action is to clean the evaporator and check the water flow (proper filter and line size, clean filter, and clean inlet water valve screen) first following the procedures outlined on the inside front cover of the unit.

Another frequent cause for Freeze Up is the

thermostatic bin control. If the bin control fails in the closed position, is out of position so that ice does not touch the thermostatic bulb or, is not mounted securely or properly, ice will back up into the evaporator and cause a Freeze Up.

An inlet water valve leaking by will add water to a freeze cycle and cause cubes to bridge downward. Also a float switch sticking closed will cause long cycles, and ice bridging. This ice bridges in long strips and may stick to the evaporator plate to cause a Freeze Up.

Lastly, a problem with the refrigeration circuit, could be your culprit. A component failure such as a hot gas valve stuck closed, a TXV leaking by during harvest, or a charge problem could reduce the amount of heat during harvest and cause ice to stick on the plate.

As you can see, these are several possibilities as to what causes a Freeze Up. It could be a combination of any of the above. Nine times out of ten, simply cleaning the unit and/or correcting the water flow will resolve your Freeze Up problem. The other items should be checked after you have eliminated low water flow and a dirty evaporator.

With the unit operating, place ice on the bin control bulb to assure that the unit shuts down

within to 10 seconds. With the unit in the freeze cycle, check the water valve to assure that no water is leaking by. Also check to

assure that the float switch opens when the water level drops. To check the refrigeration circuit, check the operating pressures, and watch a normal harvest to assure that all ice is removed from the plate with 60 to 90 seconds of harvest remaining.

The information provided here should help out in pin pointing the reason for a Freeze Up. Remember, there is definitely a valid reason for every Freeze Up. All you have to do is find it.

Controller Board History

Hoshizaki utilizes an electronic controller board as the brain of the KM series unit. Since the first KM unit was produced in 1986, we have made 3 revisions in the controller board to increase safeties or increase adjustment flexibility to improve water usage. The first controller board was limited in safeties and used a variable resistor to adjust the defrost completion timer. We call this the “A” style board. In late 1987, a revision was made to add a 60 minute freeze cycle backup timer and the high temperature safety. The defrost completion timer adjustment was changed to two dip switches for more consistent adjustment. This board is the “B” style board. The “A” and “B” style boards were used on KM-451/601/631/1201 units.

The KM-452/632 and all “M” and “S” series units utilized a newer “C” style control board. This board provided a 1 minute fill cycle, low water safety, and a 10/20 second pump out cycle. The sequence varied slightly from the “A” or “B” board units because of the addition of the 1 minute fill cycle. In mid 1991, the Alpine board was used. This provided more flexibility in the

adjustments which results in additional water savings.

Now don't get excited, the “A” and “C” boards are no longer available. This leaves us with two replacement boards, the “B” and Alpine style boards. “B” boards will replace an “A” and are used on units which have a single outlet pump motor housing and NO pump out check valve. Remember early units did not have a pump out cycle. The Alpine board will replace a “C” style board and is used on units with a dual outlet pump motor and a pump out check valve. The “B” board is a drop in replacement. The Alpine board is a universal replacement for “C” boards or original Alpine boards. A small jumper must be clipped when replacing the original Alpine board. Instructions are included with the universal Alpine board.

Flaker Production Check

Checking the production on a Flaker is a simple process. To check the production you will need a bucket or pan to catch the ice in and a set of scales to weigh the ice. After the unit has operated for 10 to 20 minutes, catch the ice production for 10 full minutes. Weigh the ice to establish the batch weight. Multiply the batch weight by 144 for the total production in 24 hours. Some prefer to catch the ice for 20 minutes and multiply the weight by 72 for a more realistic production check. It is true that a longer catch is more accurate, however, it doubles your test time and may only show a 1 to 2% difference in production. Performing a production check is an excellent way to prove proper Flaker operation.

Think About It...

It has been said that “Success is being able to pay someone to mow the lawn while you play golf for exercise”.

Coming Next Month...

1. Cuber Production Check, Why and How.
2. Checking a Thermostatic Bin Control.
3. Flaker Operational Sequence.

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