



## HOSHIZAKI CARE TECH-TIPS

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Danny Moore  
Editor

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

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### ***Cuber Production Check***

Spring has sprung and hot weather is on the way. Higher temperatures outside means more ice usage inside. A properly sized unit will provide adequate capacity in these peak periods of use. However, this is not always the case.

In the peak summer time, ambient conditions and inlet water temperatures are at their highest and unfortunately, the ice machine output will be at its lowest. This usually results in a customer complaint if the unit was not sized properly for peak periods.

At this time the unit should be checked thoroughly for proper operation. Be sure to check that the evaporator, condenser, air filter, water filter and water valve are clean before conducting a production check. Also utilize the 10 minute checkout procedure to assure proper operation.

The steps for a cuber production check are as follows:  
1) Time a complete cycle from the beginning of one freeze cycle to the beginning of the next freeze cycle. 2) Catch all of the ice from this freeze cycle and weigh the total batch. 3) Divide the total minutes in a 24 hour day (1440) minutes) by the complete cycle time in minutes to obtain the number of cycles per day. 4) Multiply the number of cycles per day by the cycle batch weight for the cuber production per 24 hours.

Once you calculate the production, check the incoming water temperature, and ambient condensing temperature of the cuber and cross reference the Data

Specification Chart in the unit Service Manual to see if the calculation falls within 10% of the specification.

If not within specifications, additional trouble shooting is required to find out why.

For the most accurate production check, a normal freeze cycle should be checked. If the evaporator compartment has been opened for service or if the unit has been cut off for a long period of time, the first freeze cycle will be longer than normal. Timing this cycle can result in an inaccurate production check. To avoid this, start the unit and allow it to operate for 10 minutes in the freeze cycle, unplug the float switch lead and cause the unit to cycle into harvest mode. Start timing as soon as the next freeze begins. Also remember that the evaporator compartment must be closed during the production check. Removing the front cover to check the ice buildup during a production check will allow heat into the evaporator and will effect the total cycle time and actual production.

A complete inspection and production check on a KM Cuber can easily be completed in approximately 1 hour. This is an effective tool to help you prove to the customer that the unit is indeed performing according to specifications.

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***THERMOSTATIC BIN CONTROL CHECK OUT*** Hoshizaki cubers utilize and adjustable thermostatic bin control. The bin control is factory set

to shut down ice production within 6 to 10 seconds after ice contacts the thermostatic capillary bulb. This capillary bulb is mounted on either a drop down bin control bracket which is located in the bin or on the inside wall of the ice drop zone.

The thermostatic bin control is a simple pressure operated switch which closes when the temperature of the capillary bulb rises above 45°F and opens when ice contacts the bulb causing the temperature to drop below 45°F. To check the thermostatic bin control utilize a volt/ohm meter. If the bin control is not installed in a unit, you can bench check it with the ohm meter. Place ice on the bulb and check the terminals for an open circuit or “maximum” resistance. Warm the bulb with your hand and check the terminals for a closed circuit or “zero” resistance. If the bin control is installed in the unit, with proper voltage applied to the machine, switch the toggle switch to the ice making position. Warm the bulb with your hand to assure the switch is closed and check across the terminals and from each terminal to ground for 115VAC. A good control will read “zero” VAC across the terminals and 115VAC from each terminal to ground. If you read zero VAC across the terminal and do not read 115 VAC from each terminal to ground, the bin control contacts are open and the control is defective or the bulb temperature is below 45°F.

A defective bin control can have sticking contacts (opened or closed), or has lost the bulb charge which will keep the contacts open and not allow the unit to start up. If the contacts stick closed . the unit will not shut down when ice contacts the bulb which will cause ice to back up into the ice drop zone and possibly cause a freeze up situation.

The bin control bulb must be mounted properly to contact the ice pyramid in the storage bin. The bulb mounting bracket is ABS plastic and is included with the KM replacement bin control. This bracket was redesigned in 1991 and will replace the original stainless bin control bracket.

The bin control should be checked at start up, when the installation is complete, to make sure it operates properly. A properly. A properly adjusted bin control will shut down the unit within 6 to 10 seconds after ice

is placed on the bulb. An adjustment may be needed if the unit is installed in a high altitude area. Be sure to warm the bulb with your hand to make sure the unit starts back up properly.

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### ***FLAKER SEQUENCE OF OPERATION***

(New flaker with periodic flush)

The Hoshizaki Flaker utilized a solid state sequence timer board to switch the components on and off as needed. The sequence is as follows: With proper voltage and water supplied to the Flaker and the flush and ice switch is in the ice position, power is supplied to the inlet water valve. The unit will not start unless the reservoir is full and both floats on the dual float switch are closed (in the up position). The operation is then turned over to the bin control. If the bin control is closed and calling for ice, the gear motor and condenser fan motor and condenser fan motor are energized. One minute later, the compressor starts. As the refrigeration system cools the water in the evaporator, ice will form within 2 to 5 minutes. This depends on the inlet water temperature and ambient conditions. Ice production will continue until the bin control is satisfied (opens). The shut down process is very simple. On the F-650, F-1000 and F-2000 units, the entire unit shuts down within 6 seconds after the bin control switch opens. On the F-250 and F-450, 90 seconds after the bin control switch opens, the compressor stops, one minute later the gear motor and condenser fan motor stop.

This sequence of operation is accomplished through a series of timers within the solid state timer board.

Beginning with the F-450 and larger flakers, a periodic flush cycle is included. A 12 hour timer will cycle the unit down and open the flush valve which allows the complete water system to drain down. The unit will remain off for 15 minutes which allows any ice remaining in the evaporator to melt and flush the evaporator to melt and flush the evaporator walls and mechanical seal out. The inlet water valve is not energized during this flush period.

This flush period is unique to Hoshizaki Flakers and will provide cleaner operation and longer bearing life.

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### ***Coming Next Month...***

1. Cuber Thermistor Operation and Checkout...
2. Flaker Safeties...
3. Hoshizaki Bins...

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