



HOSHIZAKI TECHNICAL SUPPORT TECH -TIPS

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DETAILED KM CLEANING By: Miguel Maldonado

In this article we are going to cover the details of thoroughly cleaning a Hoshizaki ice machine. We find a great deal of warranty claims being submitted for parts that have failed due to lime or calcium scale build up. This is a result of machines not being cleaned at all or not being cleaned thoroughly. The cleaning instructions are posted on the inside of the front panel of the unit, in the instruction manual provided with the unit generic instructions can be found in our Pocket Guide (Tech.-Spec.'s). Hoshizaki recommends that the machine is cleaned and sanitized at least once a year. In areas where water is undesirable, more cleaning will be required and external water treatment may be necessary.

The first thing you need to do is remove all the ice from the bin. This will prevent any of the cleaning solution from contaminating the ice. Next, turn the water off and drain the water sump tank. Depending on the model of the unit there are several ways to accomplish this. On most small KM's, there is a drain or suction hose that you can pull off and let the water drain inside the bin. In some models the overflow pipe can also be removed to allow the sump to drain, turning the pipe CCW will allow it to be removed. On the stackable KM's, there is a plug in the middle of the ice drop zone, toward the front of the unit, which can be removed to empty the sump. KML units have an automatic drain switch, which will allow the technician to simply use the units water pump to drain the sump. A drain plug is also included on the KML models so that the entire reservoir can be drained.

Now you're ready to clean the Evaporator. Because, of Hoshizaki's unique stainless steel evaporator any commercial ice machine cleaner can be used, a nickel

safe type cleaner is not required. Hoshizaki recommends LIME -A- AWAY or Hoshizaki Scale Away which is available through your local distributor. Mix you're cleaning solution with warm water in a bucket, follow the instructions on the rear of the front panel for the correct mixture ratio. Pour the solution inside the sump and move the toggle switch to the wash position. The KM units also have an additional cleaning valve that should be moved to the open or clean position. This will allow the cleaning solution to flow in between the evaporator plates as well as over the ice making side of the plate. It normally is only necessary to leave this valve open for about 5 minutes at the beginning of the cleaning cycle. It is important to return the valve to the closed position for the unit to make ice, the compressor will not operate unless this valve is completely closed. The KML units will not have the manually operated cleaning valve, instead it has a solenoid valve that automatically energizes when the second toggle switch is moved to the wash position. The KML units have two toggle switches, one is marked **(Service, Off, and Ice)** and the other **(Drain, Circulate, and Wash.)** The first switch, when placed in the Service position, will allow you to disengage the compressor and engage the second toggle switch. With this switch you can drain the unit or circulate the cleaning solution.

The solution should be circulated until the unit is clean. This may require a substantial amount of time depending on how dirty the unit is. There may be times that a more thorough cleaning may be required. This may be necessary when units are in bad water conditions or when the units have not been maintained correctly. There are a couple of ideas that may help in these tougher situations. The first is to move the spray

tubes out about 1/2" this will allow the cleaning solution to run down the fins of the evaporator and assist in the cleaning Hoshizaki also has an evaporator brush (Part number 900019) that can be ordered through you're local Distributor. This brush is a hard nylon bristle brush and fits tightly down the channels on the evaporator. This can be beneficial in removing scale that is the result of years of poor or no maintenance.

Now empty the sump by one of the methods mentioned above. With the sump empty remove the check valve, spray tube and float switch along with the rubber connector. These components should be taken apart and soaked in ice machine cleaner to allow the acid to break down any particle build up. While these components are soaking, remove the inlet water valve strainer and clean it. It is also a good idea to take the water valve apart and insure that the diaphragm is free of scale and the diaphragm's weep hole is clear.

Now that your ice machine is clean the unit should be sanitized. The de-scaling chemicals will not clear the algae and bacteria that can develop on the ice machine. You should run the sanitizing chemical through the unit in the same manner that the cleaner was circulated. Be sure that the cleaner and sanitizer are **not** mixed. Doing so could be harmful.

Remember maintaining your customers unit will increase the life of the machine and decrease service calls. It is the responsibility of the owner to maintain his or her equipment properly. Components that have failed due to scale build up or a lack of preventative maintenance are not considered warranty issues

WARRANTY PARTS RETURN (FLOAT SWITCH)

This month, as part of our continuing series of articles concerning warranty parts returns, we will discuss the KM float switch.

The float switch is a very simple component. It uses a magnet attached to a Styrofoam float to open and close an electrical switch. It has two basic functions, the first and its main function is to initiate the harvest cycle, the second is to offer a low or "no" water

safety. The switch simply opens or closes depending on the water level in the machine.

This part is located directly in the ice making water therefore it is susceptible to scale build up. In fact of the KM float switches that are returned under warranty approximately 84% check good and all that is needed is a good cleaning.

The float switch is composed of three or four basic parts depending on the model, the body (which includes the switch), the float, the retaining pin and for most models the rubber float switch connector.

The operation of the float switch can be checked by draining the sump tank and removing the float body from the rubber float switch connector (The KML units do not use a float switch connector). Then attach an ohmmeter to the float switch leads and check for continuity. If the float is in the up position the switch should read closed. When the float is in the down position it should read open. The float can be moved up and down with your finger, however a better way is to move the float and float body up and down in a container of water. This gives the float a more realistic movement and a more accurate test. For more detailed instructions on the float switch operation and cleaning see Tech-Tip Vols. 135,136 and 153.

The float switch and rubber connector should be thoroughly cleaned and the float switch tested before replacement. The switching mechanism of the float is encased in plastic, so it is not affected by scale build up. In most cases a float switch failure is a result of scale build up on the float, inside the body or on the float shaft. Float switches that fail due to scale build up or other preventative maintenance related issues are not considered warranty issues and should be billed to the customer.

COMING NEXT MONTH...

1. Detailed Flaker cleaning.
2. Warranty parts return (Bin stat)

HOSHIZAKI TECHNICAL SUPPORT

TECH -TIPS

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BIN CLEANING AND MAINTENANCE

In Tech Tip volumes 186 and 187 we discussed the importance and the details of cleaning both the KM-cuber series as well as the F-series Flakers. Along with the ice machine, it is important not to forget the ice storage bin. After all, it would not do us a lot of good to have a clean and sanitized ice machine and allow the ice to be stored in a less than sanitary bin. Since the bin has no actual mechanical parts there is no real "maintenance" to perform on the bin however, bin cleaning and sanitizing are an important part of the total ice system cleanliness.

Bin cleaning can be divided into two different areas inside the bin and outside. The cleaning for these areas should be handled in two different ways. First we will discuss cleaning the interior.

The best time to clean the interior of the bin is when the ice machine is cleaned. Since the bin should be empty at this time per our normal cleaning recommendations. If the bin is not empty then the ice must be removed and either bagged and stored in the walk-in cooler or disposed of properly.

As with the ice machines the cleaning and sanitizing of the bin is a two-part process. The unit should first be de-limed using a de-scaler such as Lime-A-Way or Scale-A-Way. To clean the interior, mix a solution of water and de-scaler together following the manufactures recommendations from the bottle (Usually 5-6 ounces per gallon). Hoshizaki's recommendations can be found in the Tech Spec Pocket Guide, the cleaning instructions on the front panel of the ice machine or in the Instruction Manual. You will find it helpful to use a spray bottle to apply

this cleaner to the inside of the bin. It is best to remove the baffle from the interior of the bin by removing its thumbscrews. Then using either a clean cloth or a nylon brush scrub the entire interior of the bin as well as the baffle and soak the scoop until all scale deposits are removed. After the scale has been removed flush the bin, baffle, scoop and cleaning utensils thoroughly with fresh water until all traces of the de-scaler has been removed.

Next, the unit should be sanitized. This is done following the same method as used above however, this time you will use a sanitizing solution of Sodium Hypochlorite (Chlorine Bleach) and water. Mix the sanitizing solution of 1/2 oz of chlorine bleach to 1 gallon of water. Apply this solution with another spray bottle and with a clean rag wipe down the entire interior surface of the bin as well as the baffle, thumb screws and scoop. Thoroughly flush the interior of the bin as well as the other parts that were sanitized again more with fresh water until all traces of the sanitizer is removed.

Note: It is important not to mix the de-limer and the sanitizing solution. When mixed these chemicals can create gases that may be harmful if inhaled.

Now to the exterior of the bin although this part of the bin does not normally come in contact with the ice it is important to keep it clean. This will prolong its appearance and prevent any sort of damage from rust colored stain or corrosion caused by high levels of chlorine either in the

incoming water supply or cleaning agents which may be used in close proximity to the ice machine. The customer should be instructed on the need to clean the exterior surfaces of the bin and the icemaker on a regular basis. This cleaning can be done as often as every day but should be done at least once a week. This cleaning can be done by simply using a clean soft cloth and a neutral cleaner, such as a mild soap solution or a commercial cleaner such as 409 and wiping the entire exterior surface clean. Cleaning the exterior will reduce the effects of lingering chlorine gases that can damage the stainless steel surface of the unit and bin.

Cleaning instructions for bins that already have some rust colored stain and corrosion damage due to heavy concentrations of Chlorine in the water will be discussed in a future volume of Tech Tips. If you have any questions concerning this matter please do not hesitate to contact the Technical Support Department at 1-800-233-1940.

DB SERIES HOTEL/MOTEL DISPENSERS

Hoshizaki manufactures two models of hotel/motel type dispensing bins. The DB-130H is 22 inches wide with approximately 130 pounds of ice storage. The DB-130H will work with any of the 22-inch wide KM series icemakers. The DB-200H is 30 inches wide and stores approximately 200 pounds of ice. The DB-200H will also accept any of the 22-inch wide KM series icemakers with the use of top kits. However, since this unit is 30 inches wide it is ideal for the KML series. The shorter height of the KML allows this combination to fit into areas where a normal KM and DB combination is too tall.

The spout assembly of the DB as well as the entire mechanical operation of the DB series is very simple. When the dispense button is pushed a solenoid energizes, opening the spout, the gearmotor turns, rotating the agitator and dispensing the ice. There is a spout shutter and a safety switch located on the right side of the spout assembly that will prevent someone from reaching into the bin from the spout opening. If this occurs the switch will open and stop the dispensing process. This will prevent a hand from coming into contact with the solid stainless steel auger and powerful gear motor.

To access the drive mechanism of the DB series remove the left side panel of a DB-130H and the right side panel of a DB-200H. There you will find the solenoid that operates the shutter assembly, capacitor for the gearmotor and the chain sprocket drive. The gear motor is located underneath the storage bin assembly. Preventive maintenance in this area is limited to a couple of drops of oil annually and checking chain tension. The chain tension should be approximately 3/8" to 1/2" of deflection.

The DB auger is constructed of solid stainless steel rods. The curled portion of the auger will pull the ice towards the center of the storage bin and the "T" shaped breaker bars will break up any ice that may have bridged together and dispense it through the spout. This unit has no periodic agitation. Since the unit will be dispensing KM ice, bridging is not a major issue. If ice does bridge together in the storage bin, the strength of the gearmotor and agitator will break the ice up and dispense it through the spout.

Sometimes the end user would like to restrict the use of their ice machine to their customer's only. There are three types of accessories that can be used to accomplish this. First are the Key Mech. and Card Mech. which when installed take the place of the push button assembly. When installed you must have a room key to activate dispensing. The other option is a Coin Mech. This device mounts on the side of the DB unit and requires the customer to deposit coins or tokens to receive ice from the bin. All of these mechanisms are sold as accessories to the DB and can be purchased through your local distributor.

COMING NEXT MONTH...

1. KM 20 minute harvest lockout (2 Beeps)



HOSHIZAKI CARE TECH-TIPS

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Open Thermistor??

Sorry, we failed to include the symptoms of an open thermistor in last month's article about thermistor operation.

The symptom of an open thermistor will be long harvest (15 minutes for "C" boards, 20 minutes for Alpine boards). The reason for this is if the control board does not receive the resistance signal of 3.9 K-ohms, a back-up harvest timer takes over and completes the harvest automatically. This will definitely cut production, however the unit will operate on the back-up timer until the thermistor can be replaced.

KM Water System and Cleaning

Before we discuss cleaning the KM series units, let's discuss some differences between Hoshizaki and our competitors. First, the reservoir of the KM series units is larger than any other ice machine on the market. This allows for a larger ice drop weight which relates to longer cycles/fewer cycles per day. Second, the water flows down across the flat surface of the evaporator. This allows pure water to freeze first on the evaporator and eliminates trapping of minerals in the cube during the freeze, providing crystal clear, hard, crescent cubes. Lastly, the sequence of operation allows cleaning of the reservoir twice during each harvest cycle through the pump out and flush period. Obviously, this will keep the water system cleaner for a longer period.

Now let's talk scale. Remember that water conditions vary across the country. In some areas you will find a lime or calcium build-up on evaporators as a white or

yellow, hard crust. It can be transparent when wet. In other areas of the country, you will find a red, rust colored, stain which is caused by iron in the water. That's right, iron, not rust or chlorine stain as you have heard from our competitors. You may also find gel or slime that will be pink, green, black or brown. This is caused by air-borne bacterial and may be found around the ice drop zone. Normally this type of scale does not enter the KM evaporator section because there is no outside airflow into the sealed evaporator compartment.

On any ice machine, when scale accumulates it will insulate the evaporator which impedes heat transfer. This could cause longer freeze cycles or poor harvest which melts ice away or causes cubes to stick and refreeze, resulting in a possible freeze-up. This scale must be removed using an acid based cleaner which is recommended for ice machine applications.

Hoshizaki recommends Lime-A-Way or Hoshizaki brand ice machine cleaner. Any other brand cleaner which is recommended for ice machines can be used due to the durability of the stainless steel evaporator. Nickel safe cleaners, which must be used on plated type evaporators, can be used on Hoshizaki, however they contain a weaker acidic solution and may require longer cleaning times or less dilution with water.

The cleaning instructions are located inside the front panel on every unit, as well as, in the customer's Instruction Manual. Be sure to follow the dilution instructions when mixing the cleaning solution and use warm water. Remove the top panel and insulation to access the evaporator for inspection. Drain the

reservoir. Pour the cleaning solution and turn the machine to the wash position. The pump will circulate the cleaner across the outside of the evaporator and back to the reservoir. Turn the wash handle to the vertical position to allow cleaner to circulate down the inside of the evaporator. After 5 minutes turn the wash handle back to the horizontal position to allow all the cleaner down the outside surface where the scaling is greatest. When the flat surface of the plate is clean, slide the water distributors out approximately 3/8 inch to allow the cleaner to pass down the evaporator ribs or fins. Once the evaporator is clean, drain the system and rinse thoroughly. Some prefer to use a brush through the tip of the evaporator to speed the cleaning process. A nylon or teflon bristle 1 1/2 in. round brush works fine for this. (Sparta brush #413 or 41.) Sanitizing is recommended especially in areas with air-borne bacteria slime. Follow the same procedure using an ice machine sanitizer or 5.25% sodium hypochlorite. Be sure to flush the system thoroughly using clean water before making the first batch of ice. Cleaning and sanitizing time will depend on the amount and type of scale.

Hoshizaki recommends annual cleaning, however, more frequent cleaning may be required depending on local water conditions. A good filter system that is properly maintained will also extend the time between cleanings.

Flaker/DCM Water System & Cleaning

The Flaker and DCM water system is very simple and easy to maintain. An inlet water valve supplies water to a small capacity reservoir. The inlet water valve is controlled by a dual float switch which is mounted in the reservoir. A tube connects the reservoir to the stainless steel evaporator cylinder. A drain hose exits the evaporator and is either capped off, connected to a hand valve or attached to the flush valve solenoid.

The symptoms of a dirty evaporator are as follows: 1. Poor ice production; 2. Poor ice quality-soft, mushy or wet ice; 3. Noisy extrusion; and 4. Ice bridging in the bin.

If these are your symptoms, its time to clean the complete water system, following the instructions on the front panel.

Mix your cleaning solution with warm water in a separate container, turn the incoming water supply off and drain the reservoir. Lift the reservoir cap and turn it to the side so that you can pour in the cleaning solution. Fill the reservoir until it overflows the standpipe, replace the cap and let the unit set for 15 to 20 minutes. The acid cleaner will begin to loosen the scale. Take a bucket and place it under the ice drop area, turn on the unit and make ice with the cleaner. As ice is extruded out, the cleaner will clean the extruding head and top of the evaporator cylinder. Allow the unit to operate until it shuts off on low water safety. The noise you hear from the extruding head is normal.

Be sure to catch all the ice that is made with the cleaner and discard it. When the unit shuts down, inspect the reservoir. If it is clean, the evaporator is clean. If not, pour in more solution and clean again. Flush the system thoroughly and repeat the procedure using sanitizer. After sanitizing, flush the system again, turn on the water supply and start up the unit. Discard the first 10 minutes of ice production to assure clean ice for your customer.

You will notice a definite difference in the quality and quantity of ice after cleaning.

Hoshizaki Refrigeration Driers

A liquid line drier is standard on all model Hoshizaki ice machines. Until recently we have utilized a bullet type OEM drier. We are converting to Sporlan driers. You will find the new Sporlan drier on all KM-500 models and select KM-1600/2000 models. We will convert to Sporlan on all models except the KM-250 in the coming months.

You must keep in mind, that if you are repairing a unit under warranty, you are expected to use the correct standard Hoshizaki OEM part. You should always order a Hoshizaki drier with any refrigeration component replacement part order. However, in the case of a refrigerant leak repair without other component replacement, we will accept the use of a properly sized non OEM drier.

Coming Next Month...

1. TXV Diagnosis
2. KM Pump Assembly
3. Service Seminar Results

