



HOSHIZAKI CARE TECH-TIPS

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PROTECTION AGAINST VOLTAGE FLUCTUATIONS

The Hoshizaki KM cuber has built-in voltage protection. This serves to protect the unit against a voltage surge or a brown-out situation.

On early model KM's using a "C" control board, high voltage protection was accomplished by the use of a voltage protect relay. Models which have a voltage protect relay have high voltage protection only. The relay has a 230 volt coil in parallel with the 115 volt bin control, power circuit. It's contacts supply power to the low voltage control transformer.

If a voltage of 150 volts or more is supplied to this 115 volt circuit,(voltage spike / surge, or a high leg supply), the relay coil will energize and open the control transformer circuit. This will remove control voltage from the board and shut down the unit. When the voltage returns to normal, the relay de- energizes. This closes the relay contacts to the transformer circuit. When control voltage is restored to the board the unit automatically restarts.

All "Alpine " control board units have high and low voltage protection built into the board. They have a control transformer which will handle a wider supply voltage range. As you know, a transformer has a specific ratio of input to output. When the input changes, the output changes proportionately.

The control board basically monitors the incoming control voltage. If the control voltage falls in the established high or low range, the board does not

supply power to the other components to protect them from damage. When the supply voltage is

restored to the normal range, the correct control voltage allows the control board to automatically restart the unit.

It is important to note that this built-in voltage protection has it's limits. If you are in a location which is known to have severe voltage problems, additional voltage protection should be installed.

FLAKER TIMER BOARD

The solid state timer board used in Hoshizaki Flakers is a simple electronic sequence timer. In order for the board to sequence, certain circuits must be closed. While the wiring varies slightly between models, the basic circuits are the same.

In order to diagnose a bad timer board, it is necessary to check these circuits to assure they are operating properly. If you are trouble-shooting a timer, the first thing you should check is the in coming control voltage. All Hoshizaki flakers have a 24 volt control transformer. The output of this transformer is protected by a 1 amp buss type fuse. Control voltage comes in the timer on pins 1 & 2. If you do not have 24 volts at pins 1 & 2, check the transformer and fuse.

Now check for 24 volts across pins 7 & 8. If voltage is present, the timer board has cycled up which indicates there is not a problem in the timer board. The problem is in the gear motor relay circuit. remember that there is

a time delay from the time you turn the unit on to the time it cycles up completely. this time will be from 1 ~ 2.5 minutes, depending on the model of flaker.

In order for the flaker to start up, the reservoir must be full and both float switches must be closed. This closes the control circuit to pins 3 & 4. Do not confuse these pins with the line voltage terminals marked 3 & 4 on the compressor relay located on the board. You can check this circuit with a volt meter across the pins or by placing a jumper across them. If the unit cycles up with the jumper in place, the board is good and your problem is in the water relay control circuit.

Next, you should check the bin control circuit at pins 5 & 6. Check for a closed circuit with a volt meter or place a jumper across them. If the unit cycles up with the jumper in place, the board is good and the bin control circuit is the problem.

The last circuit check is across pins 10 & 11. These pins connect to the gear motor protect relay and will shut down the unit if the gear motor fails. Check for a closed circuit with a volt meter or place a jumper across them. If the unit cycles up with the jumper in place, the board is good and the gear motor protect circuit is suspect.

Now that you know that these circuits work together to allow the timer to sequence up, it should be easier to diagnose a bad timer board.

SERVICE Q & A

Question: The evaporator section is frozen solid. Once I thaw it, what do I check?

Answer: ***By Duncan Sheridan*** You will find that the main reason for a freeze up is either a dirty evaporator or low water flow. After de-frosting the evaporators check to see if they are dirty i.e.: lime-scale mineral deposits. Turn the machine on and after the compressor starts, shut off the incoming water and allow the plates to dry. After an approximate run time of 2-4 minutes, switch the unit off and inspect the evaporator plates.

You will find that salt from a water softener can form an invisible coating on the plates. Care should be taken to purge a water softener when charging it to eliminate this possibility. If scale or a salt coating is present, clean the water system with Hoshizaki Scale- Away as required. Follow the instructions provided on the cleaning label on the inside of the front cover of the machine.

Verify that the incoming water flow rate is 3GPM for KM 250-800 machines, 5GPM for KM-1200-2400 machines. One technique to check this, is to time the fill cycle when the sump tank is empty and see if the tank overflows in 60 ~ 90 seconds or less. If you find the water flow is reduced, check the external water filters and replace as needed.

Inspect the water inlet solenoid valve and clean the inlet screen if necessary. Confirm that the water line size is of adequate size, (3/8" o.d. for KM-250~800 models and 1/2" o.d. for KM-1200~2400 models).

After determining the water flow is OK, check the bin control by placing ice on the bulb. The machine should shut off in 6-10 seconds. If not, adjust it for proper operation or replace it as needed. If your machine is an "S" model installed on a non- Hoshizaki bin, make sure you have a bin extension bracket installed. Hoshizaki part number 3A0408-01 is an additional stainless steel extension bracket that is to be attached to the existing white A.B.S. plastic bulb bracket. This bracket lowers the ice level inside the bin to where the last ice drop is able to clear the chute area into the bin, eliminating ice back-up.

Other areas to check are, is the ice still dropping into the bin when the unit cycles into the freeze mode? If so check for cold incoming water temp or low hot gas flow. Does the inlet water solenoid valve close completely during the freeze cycle? If not check the water valve diaphragm and clean or replace diaphragm or valve as needed. Further testing could include checking the hot gas valve inlet and outlet temperature during harvest making sure the valve is functioning. Also inspect the water pump to be sure it is always running during the complete freeze cycle. Make sure the float switch is operating correctly and that it is clean. We

have a freeze-up check list available, if you need one or have any questions contact the Care Department.

COMING NEXT MONTH...

1. Cleaning KM Float Switch
2. Alpine Board Dips 7 & 8
3. Service Q & A

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