HOSHIZAKI TECHNICAL SUPPORT
TECH -TIPS

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NEW DCM CONTROL BOARD

A new timer board has been developed for the DCM-500/750 model dispensers using R-404A refrigerant. Control Products manufactures this board and the part number is 2A1592-01. It is distinguishable by size and color. The new board is smaller than the previous DCM-450/700 board and is green in color.

The DCM board is not a controller like the KM board but includes a series of sequence timers. It contains new features, which allows for fewer parts in the control box.

A solid state timer on the board replaces the 12-hour mechanical flush timer. The DCM is automatically shut down every 12 hours for a periodic 20-minute flush. To override the solid state flush timer while servicing the unit, shut the power OFF and ON. This will end the 20-minute flush and allow the next flush to occur in 11 hours and 40 minutes.

The variable resister, which adjusts the dispensing time, is also included on the new board. This resister was previously located on the outside of the control box. It is still adjusted in seconds of dispense time. The mechanical relays have been changed to more reliable solid state relays. LED's are also included to show that a relay is energized during operation.

The new board is not designed as a direct replacement for older model DCM's. Our engineering department is currently developing a changeover kit so that the original board can be substituted to the new board. This kit will not be available until the current stock of original boards is depleted. We will keep you advised as to the status of the changeover kit.

ICE MACHINE COMPRESSORS

By: Paul Arbic

"You seen one compressor you've seen em all." The subject of compressor replacement comes up frequently from the field. Our position at Hoshizaki is simply to direct service technicians to use OEM compressors on any given replacement application. Though many hermetic compressors may look alike, it is what you can't see that makes a difference in our equipment.

An ice machine is a precision piece of refrigeration equipment. Each component serves a unique function in the process of freezing water into useable ice cubes. The compressor is the HEART of the refrigeration system. It pumps hot discharge gas through the refrigerant circuit, and in the process is exposed to high heat combined with extreme mechanical forces. It is the thermodynamic engine that powers our machines.

The original production KM Cubers used Toshiba and Mitsubishi medium temperature range compressors for R-502 refrigerant. These machines soon evolved into the production units of the late 1980's and early 1990's. With this refinement came the use of domestic compressors built by Copeland. These refrigeration type compressors are capable of handling the higher compression ratios and an expanded refrigerant

operating temperature range associated with ice production and hot gas defrost.
With the advent of a halt to CFC refrigerant production, we reconfigured our cubers and flakers for use with R-22. These are the E-Series machines we produced through the mid 1990's. Copeland compressors were used for these applications. They were a Heat Pump grade design with larger bearing surfaces and enhancements that would permit the handling of liquid refrigerant and higher compression ratios. They are approved for use in an extended medium temperature range operation envelope with lower evaporator temperatures.

Our new F-Series KM Cubers and Flakers use compressors specifically designed for the R-404A refrigerant now being used in production machines. These compressors designated by Copeland as "RS and CS," are designed to handle the extended evaporator temperature envelope of –25 to 30 degrees F. A number of durability enhancements are incorporated into their design. Following is a list of some of these features as specified by Copeland Engineering.

- Adhesive coated gaskets
- Pinned wrist pin
- Drilled (oil passage) connecting rod
- IPR (pressure relief) valves, all models
- Smaller bores – Longer strokes
- Scalloped rod bearings (better lubrication)
- Enhanced bearing surfaces

Though the design items we have discussed apply directly to our ice machine compressors, it is not necessary to know or even understand their function. What is important is for us to realize that we don't put just any old compressor in these machines. This is why we always recommend the use of an OEM compressor for any particular replacement application. Additionally the service technician can know that the job is done, and they won't have to return to repeat the repair due to an error in judgement.

One last note, Hoshizaki does not publish horsepower ratings for our compressors. Why? HP ratings are nominal at best. When you ask for a 2.5 HP compressor, you will likely be asked for more information. When installed in an ice machine, a standard 2.5 HP refrigeration compressor may make ice however, it's life will be cut short after a few cycles of operation. Your best bet…stick with the recommended OEM replacement compressor.

SERVICE Q & A:

Question: I recently received an "E" board replacement with 10 dip-switches. What are the extra 2 dip-switches for?

Answer: Recently, the "E" control board was revised to include 2 additional dip-switches. Switches 9 & 10 were added to allow for adjustment of the maximum freeze cycle timer included in the KM control board. This timer is a back up safety to insure that the unit does not stick in the freeze cycle.

The adjustment of the 60 minute maximum freeze timer was necessary due to the longer freeze cycle experienced in extremely hot climates. Our initial testing showed that some KM models installed in areas with 120ºF air and 100ºF water temperatures and using R-404A refrigerant could experience freeze times longer that 60 minutes. This caused nuisance trips of the 3-beep maximum freeze time safety. This safety will trip if 2 consecutive 60 minute freeze times occur.

The additional dip-switches allow flexibility in this maximum timer setting while still providing a valuable safety. Turning both switches OFF provides the standard 60-minute time. This is the default setting for any KM models using R-22 or R-502 refrigeration. With 9 OFF & 10 ON, the maximum freeze time is 50 minutes. This setting is used on smaller R-404A models. 9 ON & 10 OFF provides a 70-minute maximum freeze timer. The last setting of 9 & 10 ON, is for 50 hz. models. In this setting, 50 hz. machines will have a 75-minute timer and 60 hz. models will have 60-minutes.

For R-404A models, use the factory setting. All other models use the default 60-minute setting.

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