



HOSHIZAKI CARE TECH-TIPS

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Volume 109
September 21, 1994

Replacement Refrigerants

The purpose of this article is to advise you of the direction Hoshizaki America, Inc. is pursuing in regards to replacement or retro-fit refrigerants for existing field equipment.

At present Hoshizaki America, Inc. is not ready to approve a retro-fit refrigerant or the field conversion of equipment. Hoshizaki America does not advocate the wholesale conversion of CFC refrigerants to HCFC or HFC refrigerants. A good philosophy is: IF IT ISN'T BROKE, DON'T FIX IT!! There is no reason to change over a sealed refrigeration system that is operating properly!

R-12 refrigerant was utilized in all IM cubers and in small Flakers and DCM products produced before mid 1994.

Both Copeland and Dupont reports indicate that Suva MP-39 is the refrigerant of choice for conversion of an R-12 ice machine application.

Copeland Publication Form No. 93-02-R2 and Dupont Publication H-42446-2 cover general change over guidelines for R-12 to MP-39 applications.

It is important to note that you must use alkylbenzene oil if a system is converted to MP-39. Copeland recommends at least a 50% mixture of alkylbenzene with mineral oil. Dupont states to replace the entire compressor oil charge with the same amount of alkylbenzene oil.

Polyester lubricants are not recommended because of possible adverse effects on the OEM drier and other refrigeration components in the system.

You will find the MP-39 refrigerant charge to be less than the original R-12 charge and a slight difference in operating pressures. The suction pressure will run within 1 psi or so of R-12 and the head pressure will run 10 to 20 psi higher than R-12. The exact charge and performance data are not available at this time. It may also be necessary to make a slight adjustment of the expansion valve, however, final testing with MP-39 is not complete.

Early KM cubers, larger flakers and the DCM-700 use R-502 refrigerant. The refrigerant of choice for a R-502 conversion will be HP-80. According to Copeland, HP-80 does a better job of carrying refrigerant oil through the system than some of the other alternatives. Oil recommendations with HP-80 of alkylbenzene with mineral oil is recommended. You will find change over guidelines for R-502 to Suva HP-80 in Copeland Publication Form No. 93-05 and Dupont Publication No. 45947-2.

System charge again will be less than the original R-502 charge. Copeland recommends starting the system with a HP-80 charge equal to 80% of the original charge and add a small amount if needed to bring pressures within range.

The capacity using the existing controls and the suction pressure will be close to that of R-502. The head pressure will run higher in comparison to R-502.

As with MP-39 the exact specifics are not available at this time because testing is not complete. Considering all the aspects of converting a system over, the cost of refrigerants, new oils and additional labor, do not make it cost effective at this time.

Hoshizaki will provide thorough instructions and parameters for conversion of existing units when testing is completed and cost justifies the change-over. Conversion of a unit to an alternative refrigerant at this time will seriously effect the warranty status of the equipment.

We will keep you advised of change over status and instructions as they are made available to us.

Seasonal Adjustments

Remember the old days, when you had to make a visit to your ice machine customers at least twice a year to fine-tune the machine. If you didn't make those seasonal adjustments, you were guaranteed a freeze-up in the winter or a complaint of low production in the summer. Well thanks to the advent of electronic controls, those seasonal adjustments are all but forgotten. Seasonal adjustments and adjustments at start-up have been designed out of Hoshizaki ice machines. You can pipe it up, plug it in and walk away without making several adjustments to fine-tune the system.

Yes, we do have the ability to make adjustments to the KM bin control and control board timers. These adjustments however, give you the flexibility to compensate for the dirty water conditions or high altitude installation sites you encounter. These adjustments are available if you choose, but are not necessary to make the machine operate. If you adjust the defrost or pump-out timer to clean the system more, it's set for the lifetime of the equipment.

The bin control adjustments needs to be made only if the altitude of the installation is over 1000 ft. above sea level. It is factory set for most applications. Of course you should always check a thermostatic bin control for proper operation before you leave the installation site. If it doesn't cut off within to 10 seconds of placing ice on the thermostatic bulb, you should turn the control towards warmer and check again.

I am sure those of you who have performed start-ups on Hoshizaki equipment recognize the big benefit of no adjustments. This is simply another quality feature of Hoshizaki ice systems.

Thermo-Disc Use and Function

By Rodd Burger

Hoshizaki now uses two new thermo-disc bi-metal switches in the KM series R-22 models. One as a safety and one to control the liquid by-pass valve.

The first switch is installed on the KM-2400SRB3, KM-500MRE and KM-500MWE. The switch part number is 440664-01 and is wired in series as a safety with the high pressure switch. This switch will open when the discharge line exceeds 266°F, stopping power to the transformer and shutting the unit down. The switch will close and the unit will re-start when the discharge line goes below 239°F. This will protect the compressor from damage due to excessive heat if the system charge is low or if the condenser is dirty. The problem which caused the discharge line to exceed 266°F will more than likely reoccur and require a service call.

The second switch is used on the KM-1600 R-22 machines. It is also mounted on the discharge line but serves as a control switch instead of a safety. When the temperature of the discharge line exceeds 221°F in the freeze cycle this switch will open, energizing the by-pass valve and allowing liquid refrigerant to be injected in the suction line through a capillary tube. This will aid in the cooling of the compressor. When the discharge line drops below 200°F the switch will close, de-energizing the by-pass valve, stopping the flow of refrigerant. This provides automatic control of the liquid injection cooling

as needed. The part number of this switch is 445595-01. It is important to note that you should not jumper the thermo-disc in either application and leave the unit operating. The switch should only be jumpered momentarily for diagnostic purposes.

Coming Next Month...

1. Ice Machine/Critical Charge...
2. Diagnosing Hot Gas Valves...
3. Pre Chiller. Pro's and Cons...

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