



HOSHIZAKI CARE TECH-TIPS

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REMOVING MOISTURE

In our last issue, we discussed the effects of moisture in a refrigeration system. If moisture is present, it must be removed. In order to remove the moisture, a high vacuum pump is used to reduce the system pressure and the boiling point of the water.

Contrary to popular belief, a vacuum pump does not suck water from a sealed system. It simply lowers the internal system pressure so that moisture and other contaminants can be removed

The boiling point of water under atmospheric pressure (14.7 P.S.I. or 29.92 inch column of mercury "Hg") is 212° F. This would be the same as an open system. When the pressure inside a sealed system is reduced, the boiling point of water is also reduced allowing the water to vaporize. The boiling point of water at 1500 microns is around 9° F. This means that moisture will boil much faster under a vacuum, thus speeding the clean-up process.

Once vaporized, the moisture is pulled out along with any other gases that are present. The deeper a vacuum is pulled, the lower the boiling point will be.

The typical procedure for evacuating a system contaminated with moisture is the triple evacuation method. To perform this procedure, you evacuate the system down to around 1500 microns two times. Break the vacuum each time with clean dry nitrogen. The third evacuation would be pulled down 500 microns or as low as your pump will allow. Break this vacuum with virgin refrigerant.

The evacuation time will depend on several factors. The size and type of vacuum pump, amount of moisture, ambient temperatures, and any restrictions to the vacuum process.

A good quality two stage vacuum pump is best suited for pulling the deep vacuum necessary to remove moisture. The vacuum pump must be properly maintained and filled with clean fresh vacuum pump oil. Any restrictions such as valve core stems and small diameter hoses should be eliminated before beginning evacuation. You should pull the vacuum from all available service ports. If a liquid line valve is present, energize the coil to open the valve during evacuation.

If you have an extremely wet system, it may be necessary to cut the system open and purge it with high pressure nitrogen. This will blow out water that might be standing in the tubing. Also you can apply a heat lamp to the evaporator and condenser coils. This additional heat will help to boil off any excess water trapped in the coils. Apply this heat under controlled conditions and take care so as not to apply excessive heat that could damage the A.B.S. in the evaporator compartment.

The idea here is to remove all moisture and non-condensable from the system. You should always install the appropriate dryer and achieve the deepest vacuum possible before charging the system with the correct amount of virgin refrigerant in accordance with the nameplate rating.

DISPENSER GEAR MOTORS

Tech-Tips issue 121 referenced a recent change in the dispensing motor for the DB Hotel/Motel dispenser and the new DM counter top dispenser.

Along with the gear motor change is a change in the wiring diagram. This was necessary since the new motor has a different wiring color code and requires a different run capacitor.

It is also important to note that it is possible to reverse the rotation of this dispenser motor by a change in the wiring connections. The DB-130 application turns "CCW" from the shaft end. The DB-200 and DM-180 motor turns "CW" from the shaft end. These motors are wired with a plug disconnect. If the plug must be replaced, be sure to follow the wiring diagram closely.

A "PSC" motor is used for this application. If the capacitor fails, the motor will not turn under the load. It will likely hum as it tries to start and finally shut off on the internal thermal protector. If the motor is hot to the touch and the windings are open, allow it to cool and check again. If the windings check good, a bad capacitor is possible.

SEALING PROCESS TUBES

Every unit produced by Hoshizaki is run tested on the assembly line before it is packed up for shipment. This includes the remote condenser units.

The remotes are operated on a special remote condenser system that is cooled by water. Connection to the remote is made through process tubes which are teed in on the discharge and liquid lines. Special quick connect fittings slide over the 3/8" process tube to seal against leaks and allow refrigerant flow.

Once the remote system is run tested, evacuated, and charged, the process tube must be pinched off and sealed. Originally, the ends of the tube were sealed using a process which involved four separate steps, a torch, and silfos solder. We have now changed to a one step process utilizing an ultrasonic sealer to pinch off and weld the end of the tubes. Since this system

welds the tubing internally, no solder is used. The weld occurs approximately 1/4" back from the end and leaves a visible crack across the tip. The results is a flattened, leak free end on the process tube. A final leak check is conducted on the process tubes before the unit is packed for shipment.

NEW PRODUCTS

I would like to update you on some changes in our DM-180 dispenser. Hoshizaki has added an additional model with a cold plate, no beverage valves, and a universal valve mounting bracket. The DM-180AX will accept the following beverage valves: Wilshire FFV, Lanser LEV, Cornelius SF1(with special valve block), and Flomatic 424 (with special valve block).

A Flomatic 202 water valve can be installed on the DM-180A to provide for water dispensing. An installation kit containing a pre-drilled mounting panel is being developed for this valve and will be available soon. A flow rate restrictor has been added to cut down on the dispense rate. This restrictor can be replaced by a full flow bracket which is shipped in the accessory bag. This provides an adjustable flow rate. You will also find that the cold plate connections have been turned down to allow for tighter installations.

Hoshizaki has also introduced a two door reach-in refrigerator to our product line which uses R-22 refrigerant. The RH2 offers a ducted cold air distribution system. An electronic controller monitors the box temperature, and provides an internal temperature display as well as high & low temperature alarms. A warning light alerts the customer when the air filter needs cleaning.

The unit has off cycle defrost if needed every 6 hours and has an additional back-up defrost thermostat. Mullion heaters are foamed into the door perimeter and are controlled by an energy saver switch. An automatic condensate disposal system eliminates excessive condensate build-up in high humidity areas.

Call your local distributor and ask for more information on these new products.

COMING NEXT MONTH...

1. 1996 Service Seminar Update
2. Water Softner Applications
3. Copeland Compressors

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