



# HOSHIZAKI TECHNICAL SUPPORT TECH-TIPS

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## **REFRIGERANT RECOVERY**

Let's face it, refrigerant recovery is a time consuming process. It takes time to pull the refrigerant out of a system, especially under cooler ambient conditions. Here are some helpful hints that may speed up the job.

Everyone knows that the total gas charge recovers much faster in liquid form. There are some excellent recovery units that allow you to pump liquid refrigerant. If you don't have one, the time you save on the job recovering refrigerant could help you to afford one. If you have a vapor only recovery unit, use larger hoses, pull from as many ports as possible, and exercise patience.

In order to pull liquid refrigerant from a system you must have access to the liquid line. Most manufacturers of refrigeration equipment; including Hoshizaki, do not provide an access port on the liquid line. The reason is that large volumes of liquid refrigerant can be lost through gauge manifolds and hoses. It is recommended to add a bolt on type line tap to the liquid line, down stream of the receiver, for liquid recovery. Once the recovery is completed, you should remove the bolt on tap and solder in a high quality access fitting for future use.

Using a pressure differential between the system and recovery unit, commonly called the push-pull method, also improves recovery time. An increase of the high side pressure will help to force liquid towards the recovery system. Mask the condenser with the unit running to increase high side pressures. Be careful to avoid excessive pressures. You can also evacuate an

empty recovery cylinder to a deep vacuum prior to recovery to increase initial refrigerant flow.

A cool refrigerant recovery tank will have a lower pressure and allow for quicker refrigerant transfer. The tank can be cooled with an ice bath or by using the circulation method. In this method, a tank with at least 5 lbs. of liquid refrigerant is connected to a recovery unit. The recovery unit pulls vapor from the tank and returns it to the liquid side. The liquid valve of the tank is throttled so that there is a pressure difference between the output and input. This allows the flash of the refrigerant gas to cool the tank.

Keep these shortcuts in mind the next time you service a sealed system, especially one that has a considerable amount of refrigerant charge.

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## **LOW PROFILE KM**

Hoshizaki America, Inc. is introducing a new series of KM cuber. This series is designed for low ceiling applications and other areas where height is restricted.

The new model is the KML (low profile) unit. It is 22 inches tall and 30 inches wide. The KML-400 is a 115 volt unit that produces up to 415 pounds of crescent cube ice in 24 hours. The KML-200, also a 115 volt unit, will produce up to 230 pounds of ice in 24 hours.

The KML series has the same basic sequence of operation as the standard KM units. The Alpine control board is used and the flexible adjustments for pump-out and cleaning remain the same. There are however, a few noticeable changes as outlined here.

The spring operated pump-out check valve has been replaced by the drain solenoid valve. This solenoid is used for pump-out and to automatically drain the unit for service. The manual cleaning valve is replaced with the water bypass solenoid valve. A new service switch and relay has been added to the controls. The service switch has DRAIN - CIRCULATE - WASH positions. The normal control switch positions have been changed to ICE - OFF - SERVICE. The service switch is energized when the control switch is placed in the service position.

With the control switch in the service position, power is supplied to the pump motor and to the common terminal on the service switch. When the service switch is placed in the wash position, the water bypass valve is energized to allow cleaning solution to pass through the center of the evaporator plate as well as over the freezing surface.

In the circulate position, the water bypass valve is de-energized and cleaning solution will circulate over the freezing surface only.

In the drain position, the water drain valve is energized allowing the pump to force water down the drain to empty the reservoir.

The pump does not reverse during pump-out cycle on the KML models. A efficient single winding pump motor is used. The relay operates during the pump- out to open the water drain valve and supply power to the pump motor for either 10 or 20 seconds.

These changes were made to improve the serviceability and dependability of this new product. Look for these new KML units in the field soon.

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### ***SERVICE Q & A***

Question: I just installed a new control board in a KM unit and when I supply power to the unit, the compressor runs all the time. Is this bad control board?

Answer: ***by Danny Moore***

A new control board failing out of the package is a very unusual occurrence. When this question is posed, the first thing our Technical Adviser will ask

is : Was the continuous running compressor your original problem?

If it was, chances are, the control board was not the culprit. It is likely stuck contacts in the magnetic contactor. Replace the contactor and try your original control board again. Save the new board for another day.

If it was not the original complaint, the control board may require a modification to work in your specific application. Installation instructions are supplied with the control board. If all else fails, read them.

The Hoshizaki control board part number 2U0139-01 is designed as a universal replacement for "C" and original Alpine control boards. It will work in any KM unit that starts in the one minute fill cycle and has the pump-out feature. These have been produced since mid 1988.

In applications where the unit came from the factory with an original Alpine control board, the black jumper marked JPB R065 (located between X3 and X4) must be cut. If it is not cut, 115 volts will be applied directly to the contactor coil through R065. This will cause the compressor to run anytime power is supplied, whether the control switch is on or not.

The black jumper across R065 makes this control board a direct drop-in for a "C" style control board. You simply install the board, adjust the dip switches, start-up, and check out the unit.

Here is an easy way to determine whether to cut the jumper or not. Inspect the wiring color code on the K1 ten pin connector which will be connected to this replacement board. If there is a white wire on this connector, DO NOT CUT the jumper. You have a "C" board application and the board drops in. It is always better to check this before you cut the jumper. The short wires are difficult to reconnect.

Additional information on a similar service question concerning a continuous running compressor can be found in Tech Tips Volume 140.

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***COMING NEXT MONTH...***

1. Replacement Compressors
2. DCM-450 Bypass Cooling

3. Service Q & A                      Volume 144 Page 2