# HOSHIZAKI TECHNICAL SUPPORT
# TECH -TIPS

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***REMOTE CONNECTIONS FOR R-404A***

Over the course of the next year, Hoshizaki will be converting the entire product line to R-404A refrigerant. This conversion will require some changes in the refrigeration system.

The compressor discharge temperature of R-404A is lower than that of R-22 so the liquid bypass valve, capillary, and extra controls and safeties will be eliminated. We will go back to the basic refrigeration system similar to that used on the original R-502 models. This will simplify diagnosis of refrigeration system failures.

You are probably aware that all Hoshizaki remote systems use Aeroquip quick connect couplings. The ice machine head and remote condenser have male connectors. The pre-charged remote line sets have female connectors. The two connectors are different sizes so that the liquid line cannot be connected to the discharge line and visa-versa. The liquid line connection is a # 6 Aeroquip and the discharge line is a # 10 Aeroquip.

These connections will remain the same on the new R-404A "**F**" generation units. A change in connector sizes would have helped to distinguish the new refrigerants however, it was not possible because Aeroquip no longer produces a mid size quick connector. The unit labeling will change to highlight R-404A refrigerant. An orange R-404A designation label will replace the current green R-22 label beside the connectors on both the unit and remote condenser. Also, a piece of orange tape will be installed across the line set couplings on the assembly line. The tape will be marked "R-404A only". You must remove this tape on order to make the remote line set connections.

The R-404A change over period will take several months while the remaining inventory of R-22 equipment is sold and installed. When installing a remote system during this period, it will be very important to check each component to assure that they all contain the same refrigerant. Unit components using different refrigerants cannot be interchanged. Prior to installing the remote application check the model numbers on the unit and condenser to make sure they are both either "E" generation or "F" generation. The generation designation is the third letter in the model number after the production. Example: KM-1200SR**F** .

Also, check the line set to assure that it contains R-404A as designated by the line set model number "R404-2068". The two lines in the carton will be wrapped with "R-404A only" tape. We have tried to make it mistake proof.

It is important to note that R-404A is an HFC refrigerant and will use polyol ester oil. This refrigerant and oil cannot be mixed with other refrigerants and oils. A small amount of R-22 or mineral oil can contaminate the entire refrigeration system. If R-22 and R-404A components are mixed, the refrigerant will be

contaminated requiring an extensive system evacuation and flush.

To eliminate installation problems, be on the look out for the R-404A models. Also double check each component prior to making the refrigeration line connections.

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***F-1000 GEAR MOTOR CHANGE***

A recent change has been made to the F-1000 flaker gear part number 4A0987-01. This is the black gear motor manufactured by Von Wiese. Our Engineering Department has changed the design specifications to improve the tolerances and increase the bearing strength in the upper motor bearing and the center gear bearing. A new gear motor was released in early January. The new part number is 4A0987-02.

The replacement assembly part number for the original gear motor is SA0017. This assembly was subbed to the new assembly part number SA-0023 as soon as parts were available, which was around mid January.

The new assembly number SA0023 is a direct replacement for the SA0017. The assembly contains capacitor # 4A0894-01, protector # 440972-02, gear motor # 4A0897-02, and barrier # 3A0137-01.

If you are replacing the original 4A0897-01 gear motor with this new SA0023 assembly, you must use all of the new components provided with it. These new parts were incorporated in the assembly line production of the F-1000 in mid January also.

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***SERVICE Q & A***

Question; What do I check if I am servicing a unit with an "E" control board installed and it is beeping 3 beeps every 3 seconds.

Answer by: ***Danny Moore*** An alarm code of 3 beeps every 3 seconds means that the control board has shut down on the 60 minute freeze cycle back up timer.

The "E" control board has a 60 minute timer that starts at the beginning of the freeze cycle. If the float switch fails to open and start the next harvest within 60 minutes, the board will automatically start the harvest cycle. If this occurs in two consecutive cycles, the control board will shut the unit down on the manual reset, freeze cycle back- up timer. The yellow fault LED marked "60 min." will illuminate. This safety is designed to help prevent a freeze up of the evaporator.

Once you have identified the 60 minute alarm, there are several things to check. Reset the alarm by depressing the white reset button to the right of the fault LED's. This must be done with the power "ON". Now check the float switch to see if it is stuck in the up position. A stuck float can occur if scale is present on the reed switch shaft inside the housing. To check it, drain the water reservoir, unplug the black float switch connector (K5) from the control board and check it with an ohm meter for a closed switch (zero ohms). If the float switch is sticking, clean it with ice machine cleaner or replace it as necessary.

An inlet water valve which is slowly leaking by during the freeze cycle can cause a 60 minute alarm. If the inlet water valve is stuck wide open, it is unlikely that any ice will form on the evaporator. Check for a slow leak by allowing the unit to cycle into the freeze cycle and disconnecting the hose at the outlet of the water valve. If water leaks by during the freeze cycle, the water valve diaphragm is likely damaged or the small diaphragm bleed port is clogged with scale. Clean the bleed port or replace the diaphragm or entire water valve as necessary.

Another possibility is a refrigeration system problem. You should use normal refrigeration diagnosis procedures to check for one of these problems. If the thermostatic expansion valve is not feeding properly or the refrigerant charge is low, the evaporator will not form ice as it should and a long freeze cycle will occur. This could also be the result of the hot gas valve not closing completely during the freeze cycle or if the compressor valves are weak or inefficient. An inefficient compressor however, will usually show up first on the KM model through a longer than normal harvest cycle. This is because of cooler than normal discharge gas. Use proper refrigeration practices to repair a refrigeration system problem.

While these are not the only reasons for a 60 minute freeze cycle, they are the most common and should be checked to resolve a 3 beep/yellow fault LED alarm.

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

1. F-2000MLE EPR Valve
2. Tips For Charging An R-404A System
3. Service Q & A