



HOSHIZAKI TECHNICAL SUPPORT

TECH -TIPS

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REACH-IN CONTROL BOARD FUNCTIONS

All SSB reach-in models use a new control board manufactured by Control Products Inc. of Minneapolis MN. The complete control assembly consists of three components. They are the control board # 2A0882-01, the display module # 2A0883-01, and the interconnecting ribbon # 4A1106-02. This newly designed control will not retrofit to the first-generation SSA model reach-ins. It provides control, safety, and diagnostic functions for the second-generation SSB reach-in models.

One major benefit of the new control is that it can be used in either a refrigerator or freezer application with the adjustment of the board dipswitches. Obviously, changing the dipswitches will not make a refrigerator unit into a freezer however this does allow one control board to operate in either application. This feature results in fewer service parts and a generic wiring application.

The function of the control board is to maintain the desired cabinet temperature and provide the necessary defrost function. A four-digit display shows the cabinet temperature, unit status, and alarm codes if an alarm condition exists. The box temperature can be displayed in either °F or °C.

Two input thermistors are located in the evaporator compartment. The cabinet temperature is controlled by the K4 cabinet temperature thermistor. K4 changes the resistance input to the board to either start up or shut down refrigeration as needed. This maintains the cabinet temperature within the preset range. The

cabinet temperature can be adjusted at the display pad, through a guarded access menu. K4 also operates a high and low

cabinet temperature alarm. An E1 alarm, (3 beeps / 10 sec.) represents a high temperature condition. This means that the cabinet temperature has been 10/25°F (ref/frz) > set point for more than 2/4 hours. An E2 alarm, (4 beeps / 10 sec.) represents a low temperature of 8°F < set point for more than 1 hour. E1 & E2 must be manually reset after the cabinet temperature returns to normal.

The K3 defrost control thermistor constantly monitors the evaporator coil temperature to provide defrost control. Defrost occurs as needed or “on demand” on the refrigerator application and is temperature initiated (13°F) and temperature terminated (40°F). The display reads cabinet temperature during a refrigerator defrost.

The freezer defrost is time initiated and can be programmed to occur 1, 2, 4, 6, or 8 times in 24 hours. The factory setting is 4 per day and can be changed through the guarded access menu. The board does not contain a 24-hour clock however, the time for defrost can be set as follows: Turn the power switch “OFF” & “ON” X hours prior to the desired defrost time. (X hours = 24 ÷ #dEF/day) Example: desired defrost time is 3PM / setting 4/day. 24 ÷ 4 = 6: turn unit “OFF”&“ON” at 9AM for a defrost at 3PM and each 6 hours thereafter.

The display module reads “dEF” during freezer defrost. Electric heaters are used to remove frost from

the evaporator coil. The electric defrost is time initiated and temperature terminated. Once the defrost is terminated, K3 also signals to restart the evaporator fan at 25°F. This provides a delayed fan restart until the evaporator cools sufficiently. The display maintains “dEF” until K3 senses a coil temperature that is 15°F above the cabinet temperature set point then returns to temperature.

The freezer defrost is backed up by two safeties. The first is a 60 minute maximum defrost timer that shuts the electric heaters off after one hour and displays an E3 alarm (5 beeps / 10 sec.). A bimetal switch located at the top of the evaporator coil provides an additional temperature safety. If the top of the evaporator reaches 74°F, the control board shuts down the heaters. The control board remains in defrost without the heaters and after one hour an E3 alarm occurs. This alarm must then be manually reset on the board and the defrost system should be checked to locate the problem.

The new control provides additional status, safety, and alarm codes including several important features. When the door is open, “door” is displayed. If it is open more than 3 minutes, an audible alarm (2 beeps / 10 sec.) will occur. This alarm and display will reset automatically when the door is closed. When the condenser air filter is dirty or the condenser airflow is restricted, a “CF” code is displayed and an audible alarm (1 beep / 10 sec.) occurs. To reset this alarm you must press the reset button beside the display. If the air filter is not cleaned, the “CF” alarm will occur again in 2 hours.

The board also monitors the input voltage and will shut down the compressor if a high or low voltage situation occurs. An E6 code (8 beeps / 10 sec.) represents high voltage. An E7 code (9 beeps / 10 sec.) represents low voltage. The control board automatically restarts the compressor when the voltage returns to normal.

Two additional diagnostic codes are included. If the K4 cabinet thermistor fails, E8 will occur with a continuous buzzer. If the K3 defrost thermistor fails, E9 occurs with a continuous buzzer. These alarms will

reset after the thermistor is replaced. Pressing the reset silences the buzzer for 5 minutes.

Finally, a diagnostic menu is available through the display board. It will assist the technician in diagnosing a problem. Details for this diagnostic menu as well as a thorough explanation of all control board features are covered in the SSB reach-in service manual.

FLAKER GEAR MOTOR PROTECTION

Recent investigation of our flaker gear motor overload protector has resulted in a change in the style of protection used. Previously, the gear motor reset has been a manual push button reset (current type) overload. It was found that this overload would not react quickly in a low voltage situation. Consequently, operating in a low voltage condition could result in unnecessary stress to the gear motor assembly.

Testing has proven that a slow blow buss type fuse offers better gear motor protection throughout the operating range. Effective February 1999, some replacement gear motors were shipped with a Gear Motor Protector Replacement Kit. This kit provides the parts and instructions to replace the original push button protector with a fuse assembly. Two spare fuses are included in the kit and should be attached to the bottom of the control box for use in case of an overload condition.

The new fuse overload is included on production units and with service replacements parts for the following models. DCM-500B_F, F-1000M_E, F-300B_F, F-450M-F, F-500B_F, F-800M_F, F-1000M_F.

SERVICE TIP

Reach-ins, like ice machines, require a separate power supply. Hoshizaki reach-ins are supplied with a power cord connection. Standard 115 volt / 15 amp plugs are used on all available models with one exception. The power cord supplied with the RF2-SSB model is rated for 20 amps and has a different plug. The power supply and receptacle for this model should be rated at 20 amps using this plug configuration.



20 Amp / 115 Volt

Be sure to advise customers and installers that this type of plug receptacle is needed.

COMING NEXT MONTH...

1. Freezer Operation
2. "E" Control Board Revision
3. Service Q & A

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