



# PARTS & SERVICE MANUAL

MHC-22-GEN Holding Cabinet

Model 86002

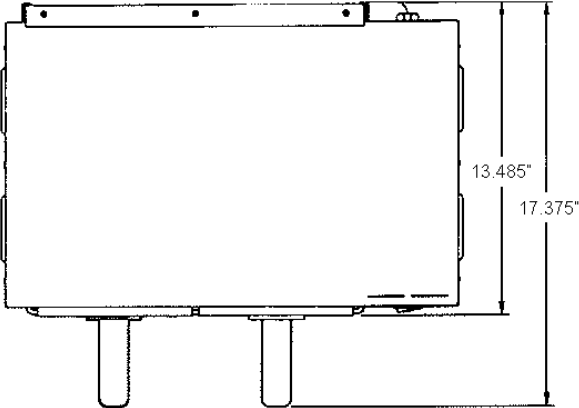
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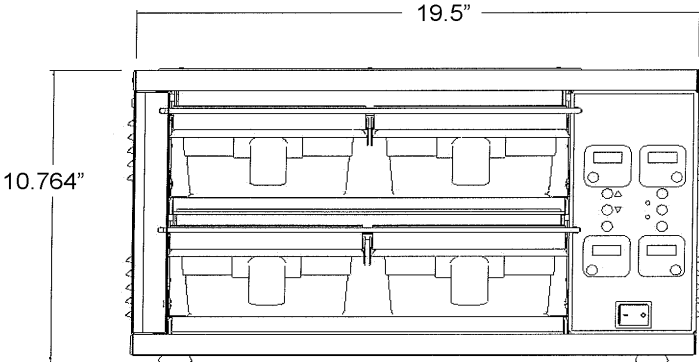
P/N: L340137  
REV: 2.19.09

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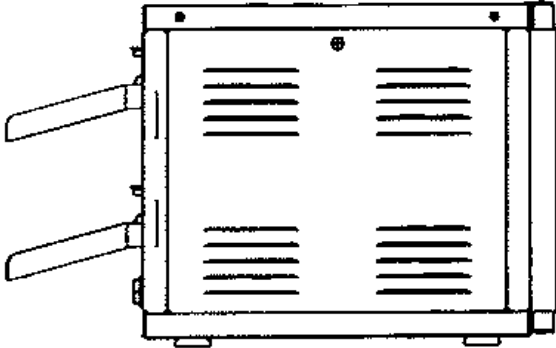
# SPECIFICATIONS



TOP VIEW



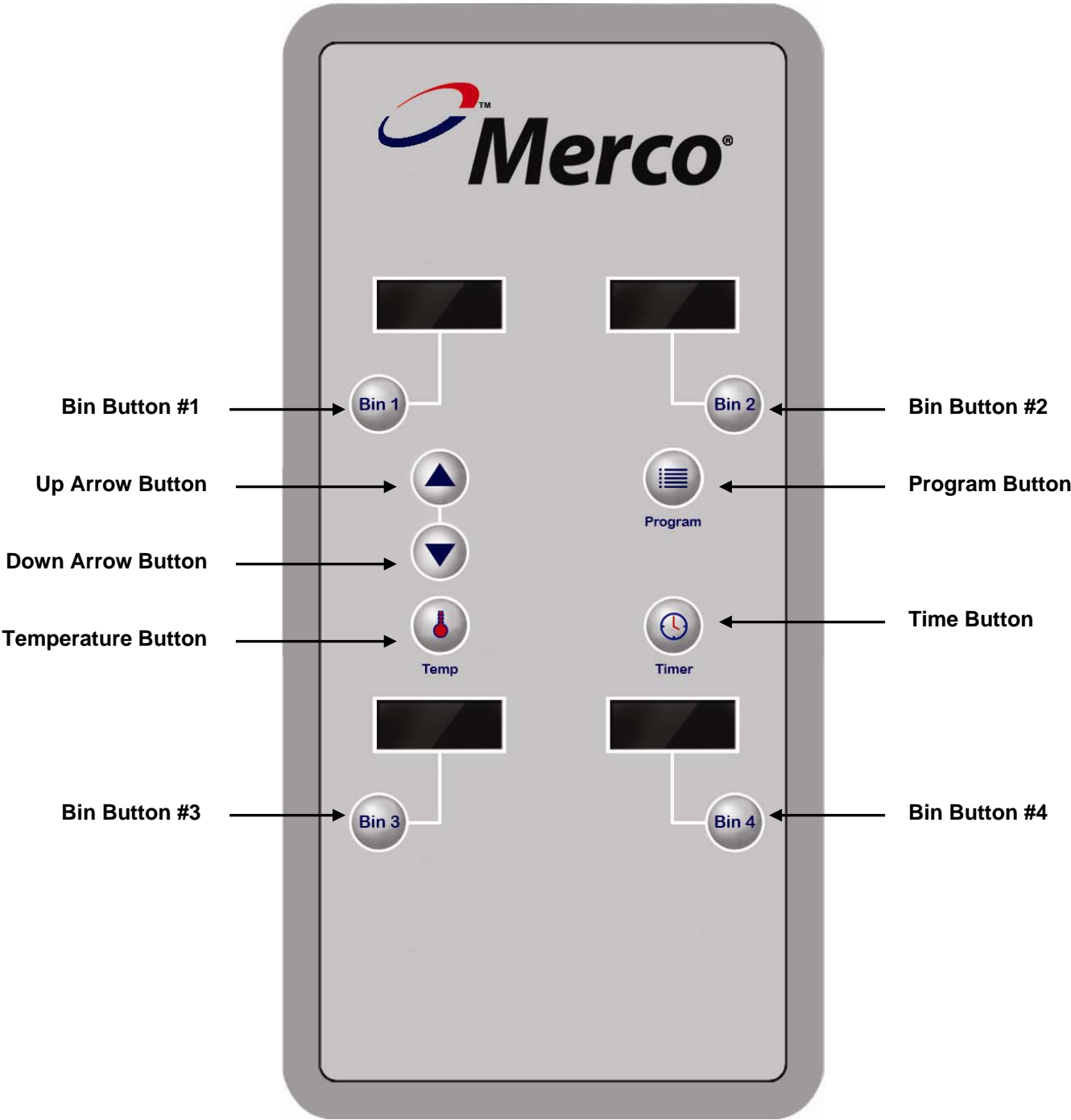
FRONT VIEW



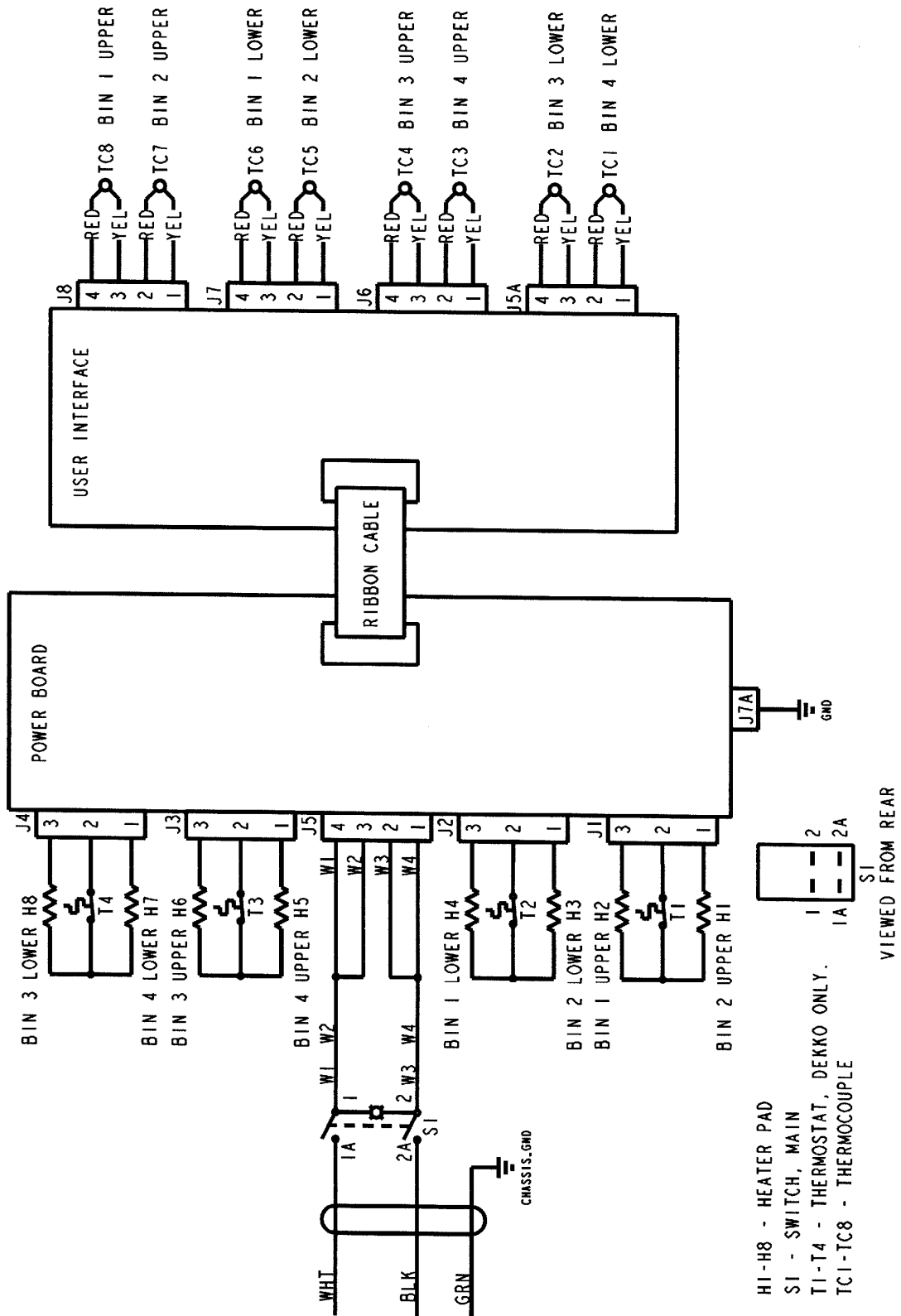
SIDE VIEW

Model #	Voltage	Amps	Watts	Hz.	Net Wt. lbs./kg	Plug
86002	120	10.4	1250	60	30/14	6' Nema 5-15P

**MHC-22-GEN CONTROL PANEL  
MODEL 86002**



# WIRING DIAGRAM



10001064 D

## SEQUENCE OF OPERATION

Power Supply	Electrical power is supplied to the unit by a 3 conductor service for single phase. 120VAC Black conductor is hot. White conductor is neutral. Green and yellow conductor is ground. Power is permanently supplied to the main power switch.
Heating Circuit	Closing the main power switch supplies voltage to the power board and user interface. Temperature is set through the user interface which then intermittently supplies 120VAC to the heater plates. Temperature is then controlled by the thermocouples sending a reference signal back to the user interface.

## TROUBLESHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSE	EVALUATION
Holding Cabinet will not heat	Incoming Power Supply	Verify power cord is secured firmly in receptacle. Measure the incoming voltage. Check circuit breakers. Reset if required. Call power company if needed.
	Power Switch	Check continuity between switch terminals. Replace switch as needed.
Unit doesn't reach desired temperature	Thermocouple	Check for continuity in circuit.
	Heat Element	Compare cavity temperature with display reading. Insert temperature probe into center of cavity. Acceptable temperature variation is +/- 20° from display reading. Check for loose connection. Check the Amp draw on each element for proper load. Check page 2 for rating information. If the amp draw is high or low, check the individual elements for opens, shorts and proper resistance. WITH POWER OFF: To check resistance of the elements, remove all leads from the elements and use a digital multimeter. The element resistance should be as follows: 120V – 87 ohms Replace heating element (shelf) as needed.
		Check thermostat (common wire). Please note that if thermostat is bad, both circuits will be bad.
Temperature is too high	Thermocouple	Check for incorrectly wired thermocouple. Thermocouple wire polarities are reversed.
	Heat Element	Compare cavity temperature with display reading. Insert temperature probe into center of cavity. Acceptable temperature variation is +/- 20° from display reading. Check for loose connection. Check the Amp draw on each element for proper load. Check page 2 for rating information. If the amp draw is high or low, check the individual elements for opens, shorts and proper resistance. WITH POWER OFF: To check resistance of the elements, remove all leads from the elements and use a digital multimeter. The element resistance should be as follows: 120V – 87 ohms Replace heating element (shelf) as needed.

## TROUBLESHOOTING GUIDE (CONT'D)

Display reads unusual characters		Make sure wires are connected properly (grounded).
		If wires are grounded properly, new control board is needed.
On/Off switch doesn't light (but unit works properly)	Power Switch	Check wiring to switch.

## HEAT SHELF – REPLACEMENT

1. Disconnect power.
2. Take out screws holding "L Brackets" in cavity.
3. Disconnect thermocouple and all power connections to board. Mark all wires for reassembly.
4. Take out power board.
5. Take out shelf mounting screws from both sides.
6. Remove shelves and feed wiring out of unit.



### WARNING:

Be careful to avoid tearing the aluminum foil while working with wire connections.

7. Reassemble in reverse order.

## USER INTERFACE (U.I.) BOARD – REPLACEMENT

1. Remove four (4) screws.
2. Disconnect thermocouples.
3. Disconnect ribbon cable.
4. Remove board.
5. Reassemble in reverse order.

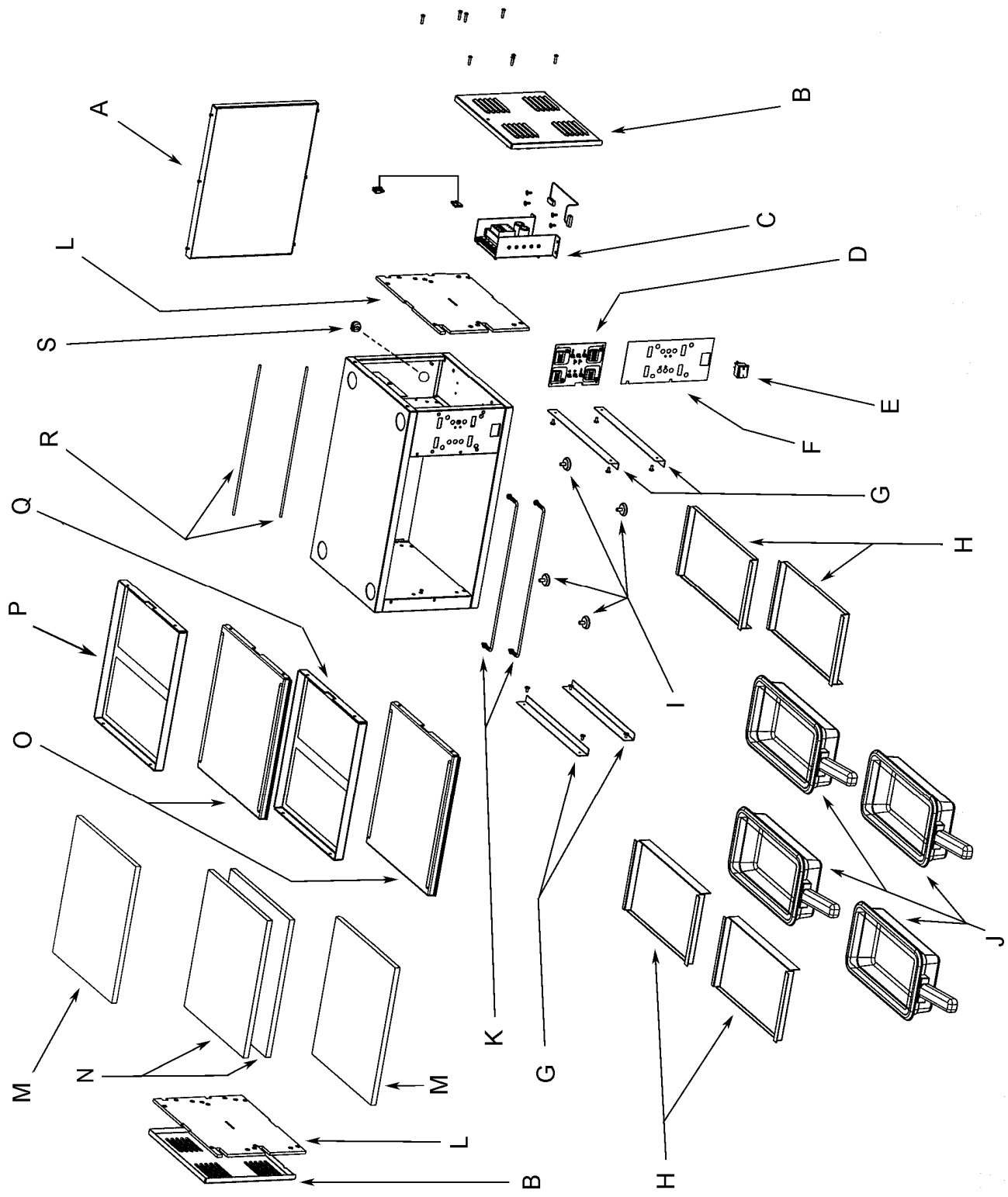


When replacing U.I. board, be sure ribbon cable is connected so that blue wire is facing towards interior of unit.

## PARTS BREAKDOWN

LABEL	PART NUMBER	PART DESCRIPTION
A	340040	Back Panel Assembly
B	340041	Side Panel
C	340042	Power Board Assembly
D	340043	Controller, User Interface
E	340038	Switch, Rocker, Lighted
F	10000949	Overlay, Control Panel
G	340045	Bracket, Heater Side
H	340046	Tray Seal
I	340011	Leg
J	340015	Tray, Plastic
K	340025	Tray Cover, Front Retention Rod, Assembly
L	10000968	Side Insulation
M	340048	Top / Bottom Insulation
N	10000966	Heater Insulation
O	10000946-02	Lower Shelf Assembly**
P	340051	Upper-Upper Shelf Assembly**
Q	340052	Lower-Upper Shelf Assembly**
R	340053	Rod, Rear Tray Seal Retainer
S	000171	Strain Relief
Not Shown	340054	Power Cord, NEMA 5-15P
Not Shown	340055	Ribbon Cable (Power Board to Interface)
Not Shown	340056	Cable (On / Off Switch to Power Board)
Not Shown	340017	Retention Rod Spring
Not Shown	340014	Retention Rod Spring Clip

**GENERAL VIEW**



## DIAGNOSTIC MODE

- ▶ Press and hold down the “Temperature” button until you hear a short, double-beep sound. In this mode all displays indicate temperatures for either the upper or lower heaters for each bin. Pressing the “Up” and “Down” arrow buttons will select the upper and lower heaters respectively.

In this mode, pressing the “Time” button will also display the PWM output power duty cycle. This is shown as a percent for the corresponding heater.

The thermocouple calibration system can only be accessed from within the diagnostic mode.

### ▶ THERMOCOUPLE CALIBRATION SYSTEM

Make sure heater zone to be calibrated is at temperature and stable. Measure actual temperature and proceed with following procedure.

Enter “Diagnostic Mode” by pressing and holding down the “Temperature” button. After a second or so, the actual temperatures as measured by holding cabinet are displayed.

Use “Up” or “Down” buttons to select either the upper or lower heating zone for each bin.

Press “Bin” select button to select bin containing heating zone to be calibrated.

Note: Bin display will alternate between showing temperature and calibration offset. As the calibration offset is changed the temperature displayed will reflect this.

Use the “Up” and “Down” buttons to make the displayed temperature match the actual temperature as independently measured.

To apply the temperature calibration correctly, press and hold the “Temperature” button down. While pressing the “Temperature” button, press “Program” button (for 1 second) until the unit beeps.

Once program is completed the temperature correction is applied and the heater zone will adjust its temperature. The user interface returns to the actual temperature display.

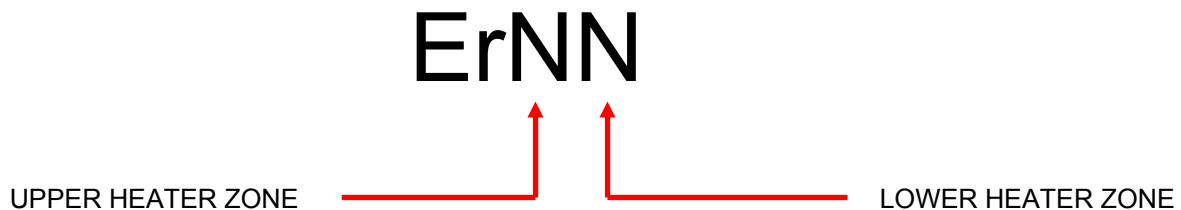
Once a bin is selected for programming, if no keys are entered for 10 seconds the calibration mode is terminated and the display returns to actual temperature display mode.

### ▶ THERMOCOUPLE FAULT DETECTION

The thermocouple (TC) fault detection logic is disabled for 10 minutes following initial power application. This allows time for all heating zones to develop enough heat to not trigger a shorted thermocouple fault.

## ► THERMOCOUPLE FAULT DETECTION (CONT'D)

If a fault is detected in any bin, the display for that bin will show “ErNN” where “NN” is a numeric error code. This two digit error code uses the first digit for the upper heater zone. If a short is detected, the digit will be a “1”, if an open is detected a “2” will be displayed. If the heater zone is operating properly, a “0” will be displayed.



### Some Examples:

Er01	Indicates	Upper heater zone is good. Lower heater zone TC short detected.
Er02	Indicates	Upper heater zone is good. Lower heater zone TC open detected.
Er10	Indicates	Upper heater zone TC short detected. Lower heater zone is good.
Er20	Indicates	Upper heater zone TC open detected. Lower heater zone is good.
Er22	Indicates	Upper and Lower heater zone TC's detected open.
Cold	Indicates	Temperature of heater zone is below set point.
Hot	Indicates	Temperature of heater zone is above set point.

Once an error is indicated for a heater zone the affected heater is shut off.

The only way to clear an error indication is by cycling the power off then on again.

► To reset the holding bin controller to the factory configuration, hold down the upper-left “Bin” button while powering on the controller. Release the “Bin” button as soon as the displays illuminate. This resets the following settings:

- All product names
- Upper and lower temperature for each product
- “Expiration” and “Cook More” time for each product

*NOTE: For additional information concerning Menu and Product programming, please refer to Merco Holding Cabinet Installation & Operation Manual.*

