GARLAND®

Service Manual
for

moisture+™

Model MPOE5L

Users are cautioned that maintenance and repairs must be performed by a Garland authorized service agent using genuine Garland replacement parts. Garland will have no obligation with respect to any product that has been improperly installed, adjusted, operated or not maintained in accordance with national and local codes or installation instructions provided with the product, or any product that has its serial number defaced, obliterated or removed, or which has been modified or repaired using unauthorized parts or by unauthorized service agents. For a list of authorized service agents, please refer to the Garland web site at http://www.garland-group.com. The information contained herein, (including design and parts specifications), may be superseded and is subject to change without notice.

Continuous product improvement is a Garland policy, therefore design and specifications are subject to change without notice.

GARLAND®

Model MPOE5L

Specification:

Garland Moisture+ Half Size Oven is a multi-function electric oven with electronic programmable control and precise, programmable moisture injection. Stainless steel interior and exterior construction. Wet-clean, on-board spray system with quick connect hose. New cool-touch exterior design with oven top for use as a work surface. Single units are mounted to shelf. Double stack units are mounted on legs unless ordered otherwise.

Moisture+ features innovative, automatic introduction of moisture into the baking/roasting process, producing higher yields and improved taste, texture, and eye appeal.

Standard Features:

- Solid state digital control with 150°F to 500°F temperature range. 17-product buttons factory pre-programmed to Tim Horton's specifications with the availability to change and add menu items as needed. Smart kitchen capable, along with card reader support for simplified menu upgrades. Features programmable moisture injection, a 32-character display, and a 40-item product library
- Moisture injection for superior cooking results
- Stainless steel oven cavity measures 15-1/2" (394mm)W x 19" (483mm)H x 21" (534mm)D
- (4) stainless steel, removable oven racks and (2) 4-position stainless steel rack guides
- Stainless steel baffle is removable for cleaning
- 1/3 hp, 2-speed motor with thermal hi-limit and centrifugal switch protection
- 7.5kW elements and enhanced insulation package provide quick recovery and even bake
- Single oven door with wide-view window and top-to-bottom handle with roller latches
- Swing-open style door glass for easy cleaning
- Wet-clean, on board spray hose system
- Halogen Illumination, 100 watts total
- Interior water drain
- 8' SOOW power supply cord with 250V, 3-phase, 30A NEMA 15-30P plug.
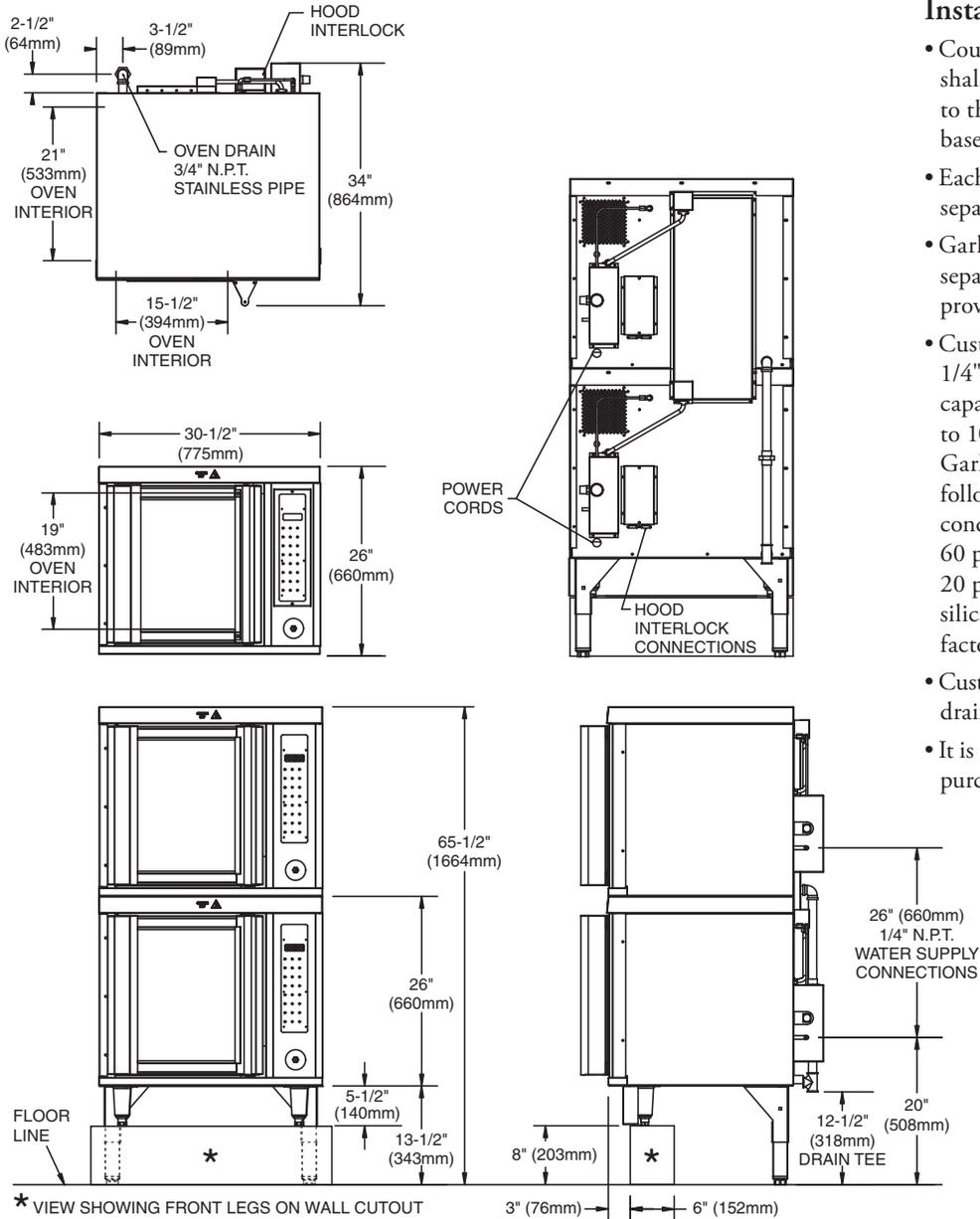- NSF-approved legs supplied with dbl-stack models; (2) 14"/356mm rear and (2) 5.5"/140mm front

Optional Features:
❏ Double-stack kit
❏ Three-phase, 208 or 240 volt

TABLE OF CONTENTS

DIMENSIONS AND SPECIFICATIONS

Installation Notes:

- Counter-mounted equipment shall be designed to be sealed to the counter, table, raised base, or shelf.

- Each oven deck requires a separate electrical connection.

- Garland recommends a separate 30 amp circuit be provided for each oven.

- Customer must provide a 1/4" NPT water connection capable of 20 psig (minimum), to 100 psig (maximum).• Garland recommends the following minimum water conditions:
  60 ppm coral dissolved solids, 20 ppm alkalinity, 13 ppm silica, 30 ppm chloride, pH factor greater than 7.5.

- Customer must provide a floor drain or similar device.

- It is the responsibility of the purchaser to install and maintain the water supply to the moisture+ oven. Failure to provide satisfactory water quality to operate the oven properly can cause damage to integral components and void the warranty.

This oven must be installed to comply with applicable federal, state, or local plumbing codes.

Total kW	Total kW Per Line						Nominal Amperes Per Line					
208/240	208V 3 Ph			240V 3 Ph			208V 3 Ph			240V 3 Ph		
8.0	X-Y	Y-Z	X-Z	X-Y	Y-Z	X-Z	L1	L2	L3	L1	L2	L3
	2.6	2.6	2.6	2.6	2.6	2.6	22.2	22.2	22.2	19.3	19.3	19.3

Electrical specifications are per-oven, and include motor requirements.

Clearances						Shipping Weight
Entry		Installation		Service		
Crated	Uncrated	Sides	Rear	Right Side	Rear	
36" (914mm)	31" (787mm)	1" (25mm)	1" (25mm)	20" (25mm)	20" (25mm)	380lbs. (173kg)

WIRING DIAGRAMS

WIRING DIAGRAMS

Hood Interlock

Within diagram title block:

*** CAD PRODUCED DRAWING - DO NOT REVISE MANUALLY ***

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0	-	RELEASED ITEM/S	1	03-044	9/11 02	JB	TG
REV	SYM	CHANGE DESCRIPTION		ECO	DATE	DR	APP

GARLAND A WELBILT Company FREELAND PENNSYLVANIA 18224

SCALE FACTOR 1 SIZE B

TOLERANCE (EXCEPT AS NOTED)
FRACTIONAL ±1/64   DECIMAL ±.005   ANGULAR ±1°

DESCRIPTION	DATE	DR. BY	DR. CK.	APP.
208/240V HOOD INTERLOCK MCO-E-25 DIAGRAM	9/11/03	JB	BG	TG
	MODEL(S) MCO-E-25		FILE NAME 18078S65-R00	

Control Panel Wiring Harness Pin -Outs

Control Panel Relay Board
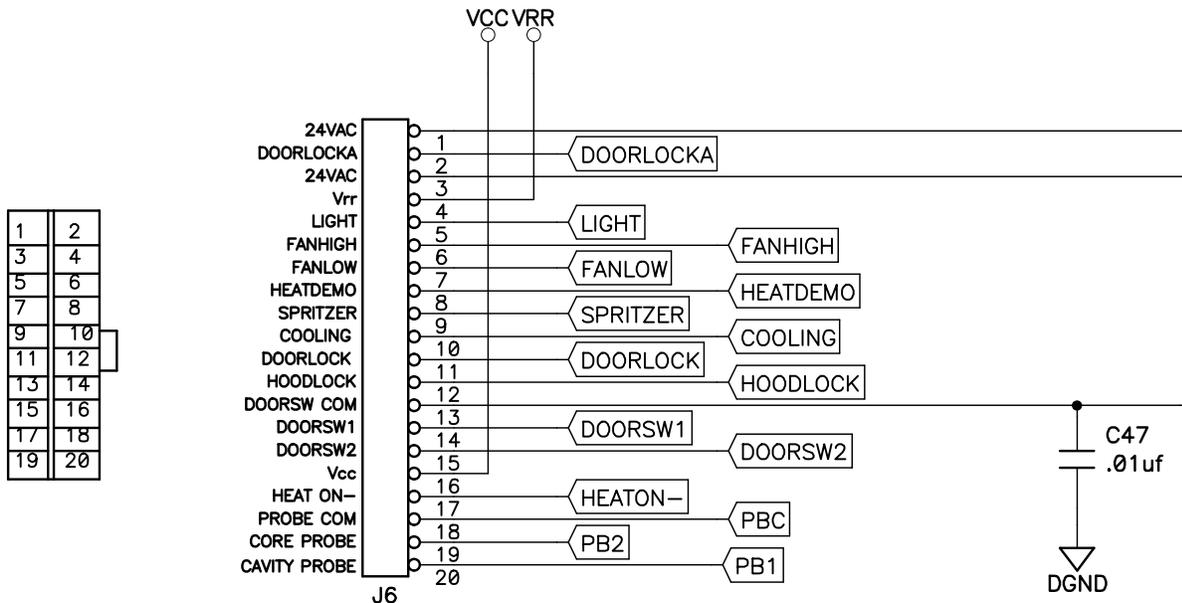
INSTALLATION

Proper placement of the oven will ensure operator convenience and satisfactory performance. Adequate clearance must be provided for cleaning, servicing, and proper operation. (Refer to chart on page 4. for minimum clearances.)

Electrical Connection

Before attempting the electrical connection, the rating plate should be checked to confirm that the oven's electrical characteristics and the electrical supply are compatible. The plate is located on the inside surface of the control panel/body side.

- Attach the appropriate plug to the end of the cord supplied with the oven.

- Visually inspect all electrical connections. A wiring diagram is affixed to the inside surface of the control panel/body side section.

Installation of the wiring must be made in accordance with local codes, and the National Electrical Code, ASNI/NFPA 70-1990, or in Canada, the Canadian Electrical Code in regards to:

1. Switch panel size
2. Overload protection
3. Wire type
4. Wire size
5. Temperature limitations of wires
6. Method of connection, (conduit, cable, etc.)

WATER CONNECTION

It is the responsibility of the purchaser to install and maintain the water supply to the moisture+ oven. Failure to provide satisfactory water quality to operate the oven properly can cause damage to integral components and void your warranty. This oven must be installed to comply with the applicable federal, state, or local plumbing codes.
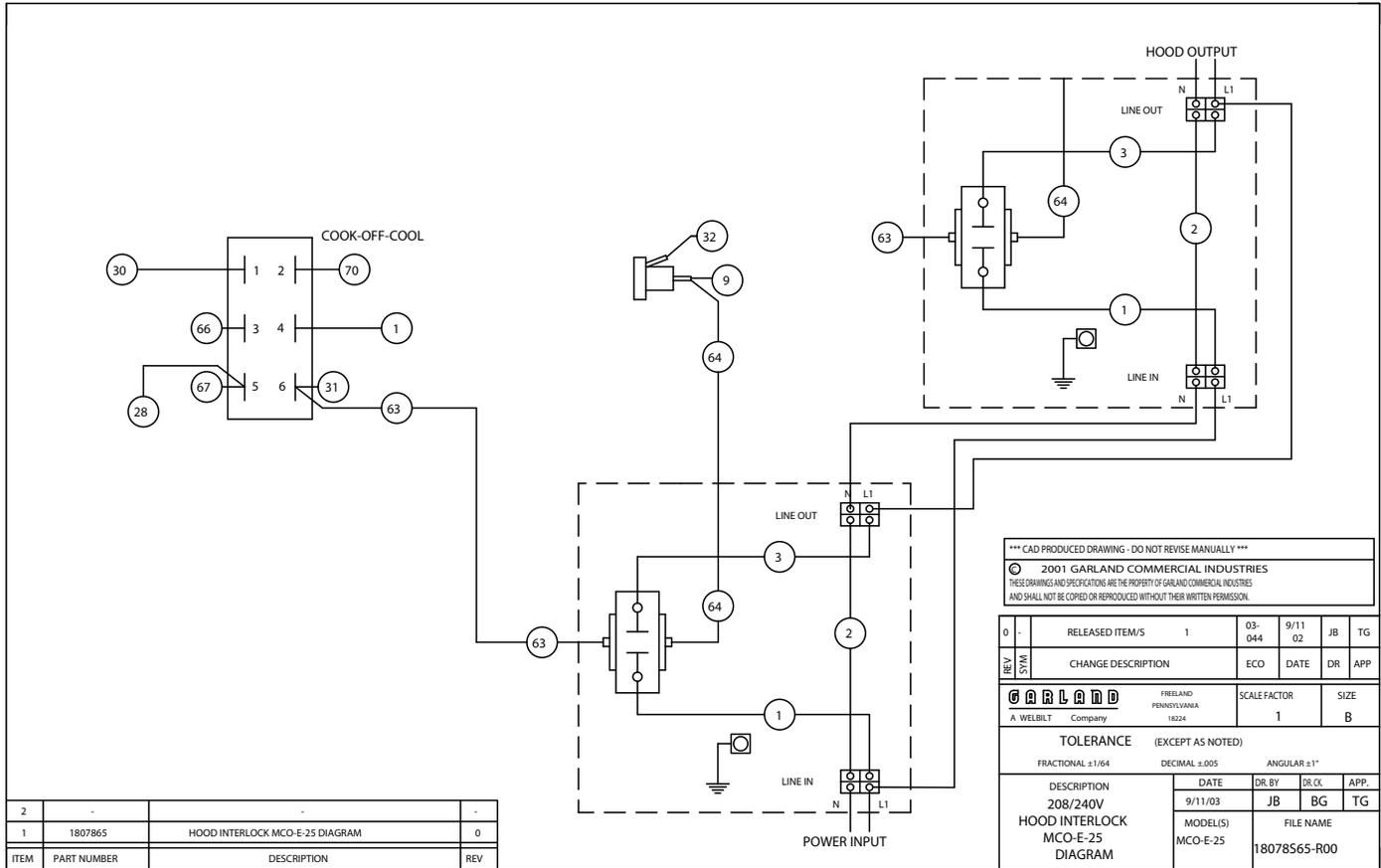
Water supply connection to the moisture+ is made via a 1/4" NPTF fitting at the rear of the oven. The ability to move the oven for service and cleaning may be a consideration when choosing the type of connection and supply line to be attached at this fitting.

The moisture+ water delivery system includes a water pressure regulator that has been pre-set to operate at 10 psi. The water supply must maintain at least 20 psi and a flow rate of three gallons per minute for proper operation of the oven's moisture injection system.

Water Quality

Garland recommends that the supply water be filtered before it enters the oven's water delivery system. This will extend the life of the oven and its water delivery system components by minimizing particles in typical tap water sources that cause scaling and buildup of mineral deposits.

It is recommended that your supply water not exceed any of the following parameters: 60 PPM total dissolved solids; 20 ppm alkalinity; 13 ppm silica; 30 ppm chloride; PH factor of 7.5.

Consult a local water treatment specialist for recommendations regarding your water supply system and its use with this oven. The use of highly mineralized, ('hard'), water could negatively affect the quality of products prepared using the oven. The potability of supply water does not guarantee its suitability for use with the moisture+.

Drain

Your moisture+ oven has a gravity drain in the left rear corner of the oven cavity. The drain pipe that exits the rear of the oven must be directed downward toward the floor, and should run directly to an open floor drain. Avoid using flexible hose that could sag or kink, allowing water to accumulate. The drain must be vented. This connection must be at least 3/4" NPT, and configured in accordance with local codes.
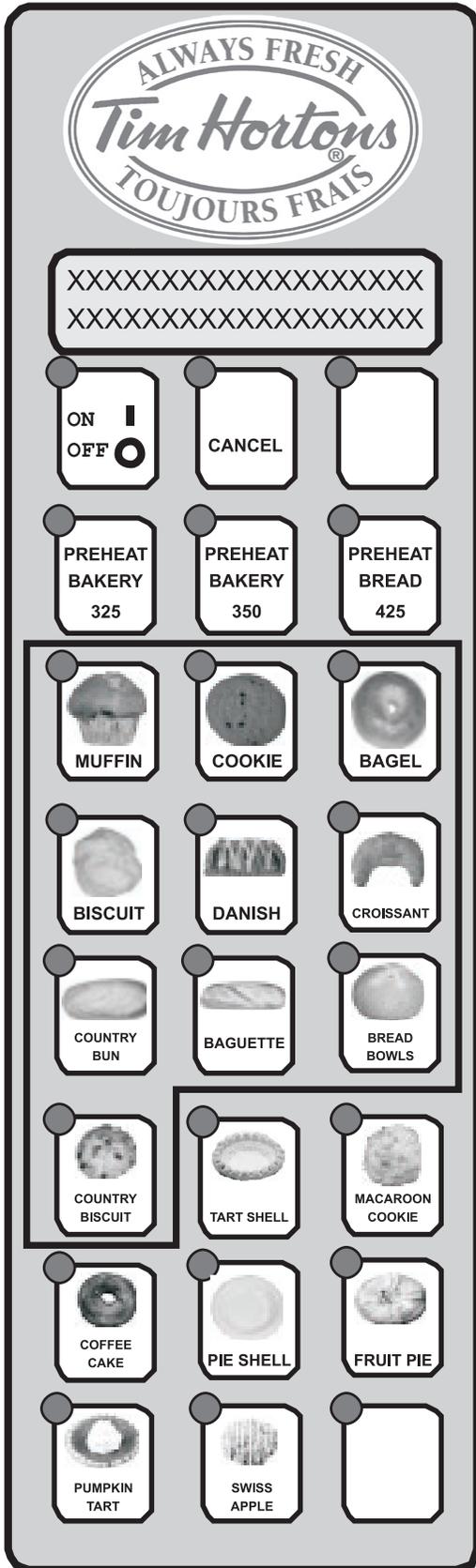
Description of Controls

Display

The display shows information about the control and its current operation mode i.e.: product name, time, program mode, etc.

On/Off Button

The On/Off Button is used to toggle the oven on/off.

Upper Right Blank/Temp Button

This button has several functions:

1. Pressing the temp button will display the actual and set temperatures of the oven. The temperatures will be displayed for three, (3) seconds.

2. Holding the temp button for three, (3) seconds will toggle the control between °F and °C or °C and °F. The control will beep three, (3), times when the temperature units have changed.

3. In Programming, this Blank Button functions as the YES button and is used to toggle values, i.e. fan high/low.

4. In Diagnostics Mode, this Blank Button is used to scroll through the different tests.
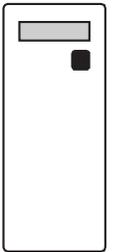
Lower Right Blank/Program Button

This button has two functions:

1. Press and hold the PROG button to enter the programming features of the control. Press and hold for three, (3), seconds.

   Enter the required code:

   4-2-7-5: To enter Recipe Programming

   4-2-7-6: To enter System Programming

   3-4-2-4: To enter Diagnostics Mode

2. While in programming, this Blank Button will function as the Enter Button.
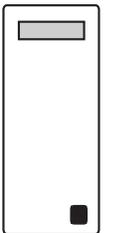
Product Buttons (1 – 17)

The product buttons are used to select pre-programmed recipes for each product. (Programming is available for all product buttons.)

Number Buttons 1 – 0:

The first ten Product Buttons, outlined on the previous page, are used to enter programming values, i.e. code, set temperature, etc. They correspond to the numbers 1 – 0 as show to the right.

1	2	3
4	5	6
7	8	9
0		

Cancel Button

The Cancel Button has several functions:

1. Press the Cancel Button to cancel the current menu selection (if multiple cook cycles are in progress, the last cycle started will be the first one canceled.)
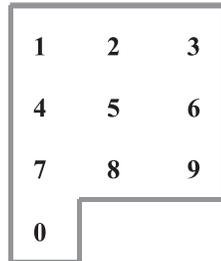
2. In idle mode, press the Cancel Button to turn the oven light on/off.

3. Press the Cancel Button to stop the alarm from beeping and the display from flashing when a cook cycle ends.

4. Press the Cancel Button to exit Recipe Programming, System Programming, and Diagnostics Mode.

Preheat Buttons

Preheat Bakery 325, Preheat Bakery 350, and Preheat Bread 425 are used to preheat the oven to the different temperatures required for the various items:

- Preheat Bakery 325: 325°F, high fan speed
- Preheat Bakery 350: 350°F, high fan speed
- Preheat Bread 425: 425°F, high fan speed

*NOTE: Preheat Bread has additional functions:

1. In Programming, Preheat Bread 425 scrolls through available values (i.e. high/low fan speed) and is used as the NO button.

2. In Diagnostics Mode, the Preheat Bread 425 button is used to scroll through the list of tests.
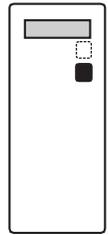
LED's

- When the desired Preheat Button is pressed the corresponding LED will illuminate. The LED's of the menu items that match the chosen preheat temperature will also light.

- While cooking, the LED of the selected item will blink to show the user which item is being cooked. If multiple cook cycles are started, the LED of the product that will finish first will flash faster than the LED's of the other products. The LED's of other items with the same recipes other than time, i.e. same temperature, fan speed, and moisture, will also light to show the user which items can be additionally cooked in the oven.

- When a product cooking times out, the corresponding LED will flash rapidly to alert the user of which item to remove. Opening and closing the door will begin the counter of the next product to be removed.
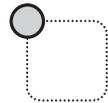
Control Operation

Startup and Normal Operation

- Pressing the On/Off button will power up the control and the oven will begin heating to Preheat

  The user can select Preheat Bakery 350 or Preheat Bread 425 to heat the oven to the respective settings. The display will show "Preheat Bakery 1", "Preheat Bakery 2", or "Preheat Bread".

  > • **NOTE:** *No other buttons are active at this point.*

- When the oven temperature is within the ready band (+/-50°F), the oven will display "Heat Soak" and begin a ten-minute countdown timer to stabilize the oven (Provided the oven temperature was at or below 100°F at startup).

- After the ten minute heat soak, the oven will display "Select Bakery 1" (Preheat Bakery 325), "Select Bakery 2" (Preheat Bakery 350), or "Select Bread" (Preheat Bread 425).

- LED's will light for items that can be selected for cooking.

- Pressing a product button (provided the LED is illuminated) once will begin the countdown cycle for the programmed time.

  > • **NOTE**: *Any item that can also be cooked will have its LED illuminated*

During the Cooking Cycle:

1. The display will show the product and the count down time remaining.

2. The LED of the selected item will flash and the oven light will turn on.

3. Up to three, (3), more product buttons can be selected for cooking as long as their LED's are lit. The count down time of the product that will be done first will be displayed and the corresponding LED will flash rapidly. The LED's of the other products cooking will flash slowly.

4. The external display will show the count down time of the item to be done first, then will switch to the next item to be done and so on.

   > • **NOTE**: *To cancel a cook cycle, Press the Cancel button. If more than one cook cycle is active, pressing Cancel will end the last cycle started.*

5. When the cooking time expires, the name of the product that finished along with "DONE" will show on the display. Also, the corresponding LED will flash and the alarm will sound. Open and close the door, or press Cancel to clear the prompt. (If more than one cook cycle is active, the finished product's LED will flash faster than the other LED's.)

Shutdown (Auto Cool Down)

- With the oven on, pressing the On/Off button will initiate a shutdown of the oven.

- If the oven temperature is less than 150°F, "OFF" will be displayed for 30 seconds and then the control will go blank.

- If the oven temperature is more than 150°F, auto cool down mode will begin. Open the door slightly, only the fan will run at high speed to cool the oven. "Auto Cool Down" will show on the display.

- If the door is open too much, "Close Door Slightly" will be displayed. Close the door until "Auto Cool Down" is displayed.

- If the door is not open enough, "Open Door Slightly" will be displayed. Open the door until "Auto Cool Down" is displayed.

- Once the oven temperature falls below 150°F, the fan will stop and the oven will display "OFF" for 30 seconds and then turn blank.

Control Programming

Recipe Programming

- **NOTE***: In programming product buttons (1-17), each button can have different steps called Profiles. Each profile can change the fan speed, cook temperature, cook time, alarm, time mode, and moisture for a product. If more than one profile is programmed for a product, the product cannot be combined with other products.*
- *In order to start additional cook cycles; the recipes of the products must be exactly the same except for cook time.*

1. To program recipes for the product buttons (1-17), press and hold the Program button for three, (3) seconds. When prompted, enter the code: *4-2-7-5* using buttons 1 – 0. Press the "ENTER" (lower right blank) button.

```
     ENTER CODE
       ****
```

2. The display will prompt for a programmable button, 1-17. Press the desired button. The LED for the selected button will light. Press "ENTER" (lower right blank).

```
    PRESS KEY TO
      PROGRAM
```

3. The display will show the message "Profile 1" in the lower left corner and prompt for the Fan Speed on the top line. Use the "YES" (upper right blank) and "NO" (Preheat Bread 425) buttons to toggle fan high and low. After selecting a fan speed, press the "ENTER" (lower right blank).

```
 HIGH          PROGRAM
 PROF1       FAN SPEED
```

4. The display will then prompt for the Cook Temperature. Enter the temperature using buttons 1 – 0 and press the "ENTER" (lower right blank) button.

```
 350SET        PROGRAM
 PROF1        COOK TEMP
```

5. Next, the display will prompt for the Cook Time. Enter the cooking time using buttons 1 – 0 and press the "ENTER" (lower right blank) button.

```
 00:02:30      PROGRAM
 PROF1        COOK TIME
```

6. Next, the display will ask for Alarm Time (to rotate items). Enter the time using buttons 1 – 0 and press "ENTER" (lower right blank). (Enter the time at which the rotation needs to be done NOT how long into the cook it needs to be done, i.e. 2:00 cook time, alarm time 1:30. Alarm will sound when timer reaches 1:30 on the display (not 0:30).)

```
 00:00:00      PROGRAM
 PROF1          ALARM
```

7. The display will ask for the Time Mode. Use "YES" (upper right blank) and "NO" (Preheat Bread 425) to toggle time mode between flex and straight time. Press the "ENTER" (lower right blank) button.

```
 FLEX          PROGRAM
 PROF1        TIME MODE
```

8. The display will ask if Moisture is desired. Press the "YES" (upper right blank) and "NO" (Preheat Bread 425) buttons to set moisture from NONE-LEVEL 9. Press the "ENTER" (lower right blank).

```
 NONE          PROGRAM
 PROF1         MOISTURE
```

Moisture Level	Duration
NONE	0 PULSES
LEVEL 1	1 PULSE EVERY 5 SECONDS
LEVEL 2	1 PULSE EVERY 10 SECONDS
LEVEL 3	1 PULSE EVERY 15 SECONDS
LEVEL 4	1 PULSE EVERY 20 SECONDS
LEVEL 5	1 PULSE EVERY 25 SECONDS
LEVEL 6	1 PULSE EVERY 30 SECONDS
LEVEL 7	1 PULSE EVERY 35 SECONDS
LEVEL 8	1 PULSE EVERY 40 SECONDS
LEVEL 9	1 PULSE EVERY 45 SECONDS

9. The display will then ask if you would like to continue programming for this product. Press the "YES" (upper right blank) button to program additional profiles (profile 2-6). Press the "NO" (Preheat Bread 425) button to exit programming for this product.

```
CONTINUE Y/N
```

• **NOTE**: *If programming additional profiles, repeat steps 3-9 for each profile (Prof2 - Prof6).*

10. The Display will ask for the **Product Name** (selectable from a library of 40 names). Press the "YES" (upper right blank) and "NO" (Preheat Bread 425) buttons to scroll through the available names and press "ENTER" (lower right blank) to accept the desired name. The product LED will go out.

• **NOTE**: *Upon pressing "ENTER" (lower right blank) to accept the product name, you will return to recipe programming*

```
PRESS KEY TO
PROGRAM
```

System Programming

• **NOTE**: *System Programming can only be entered when the control is in the idle or off state (System Programming cannot be entered when the timer is counting down)*

1. To enter System Programming, press and hold the Program (lower-right blank) button for three, (3), seconds. When prompted, enter the code: *4-2-7-6* using the buttons 1 – 0. Press "ENTER" (lower right blank).

```
ENTER CODE
****
```

2. After entering the code and pressing "ENTER," the control **Flash Number** will be displayed. Press "ENTER" (lower right blank) to continue.

```
FLASH NUMBER
XXX-XXXXX-XX-X
```

3. Next, the **Software Number** will be displayed. Press "ENTER" (lower right blank) to continue.

```
SOFTWARE NUMBER
XXX-XXXXX-XX-X
```

4. Next, the control Download Number will be displayed. Press "ENTER" (lower right blank) to continue.

```
SOFTWARE NUMBER
XXX-XXXXX-XX-X
```

5. The display will now show the SCK Address. Use the buttons 1 – 0 to enter the desired address. When finished, press "ENTER" (lower right blank) to continue.

```
SCK ADDRESS
XX
```

6. The display will now show Ignition Test. This is primarily used in manufacturing only. Press "ENTER" (lower right blank) to continue.

7. Lastly, the control will perform a Display Test. The entire display and all of the control LED's will flash. If any part of the display or any of the LED's do not light, there is a problem with the control board. Press "ENTER" (lower right blank) to continue.

```
DISPLAY TEST
```

8. You will now return to the control Flash Number. Press "CANCEL" to exit System Programming.

```
FLASH NUMBER
XXX-XXXXX-XX-X
```

OPERATING INSTRUCTIONS continued...

Diagnostics Mode

• To enter Diagnostics Mode, press and hold the Program (lower right blank) button for three, (3), seconds. When prompted, enter the code: *3-4-2-4* using the buttons 1 – 0. Press "ENTER" (lower right blank).

```
        ENTER CODE
          ****
```

• After entering the code and pressing "ENTER," the Moisture Plus Part Number will be displayed briefly and then the display will change to Diagnostics Test – Buttonpad Test. Use the "YES" (upper right blank) and "NO" (Preheat Bread 425) buttons to scroll through the available diagnostic tests. Press "ENTER" to begin the desired test.

```
      MOISTURE PLUS
    P/NXXXXXXX  REV X
```

Buttonpad Test

```
    DIAGNOSITC TESTS
       KEYPAD TEST
```

1. The display will show "Press the On/Off Button". Upon pressing the On/Off button, the LED for the ON/OFF button will light briefly and then go out to show that the button works.

```
        PRESS THE
       ON/OFF KEY
```

2. The display will then prompt the user to press the "TEMP" button (upper right blank). After the user presses the "TEMP" (upper right blank) button, the corresponding LED will light to show the button works. The control will then continue to prompt the user to press the remaining control buttons. If the LED of the button pressed does not light, a buttonpad problem exists. After completing the Buttonpad Test, you will return to Diagnostics Mode. (Press "CANCEL" at any time during the test to return to Diagnostics Mode.)

Door Switch Test

```
   DIAGNOSTIC TESTS
   DOOR SWITCH TEST
```

1. After selecting Door Switch Test and pressing the "ENTER" (lower right blank) button, the display will show the position of each of the two switches. Open and close the door slowly to verify the operation of the door switches.

```
 DOOR SW1          OPEN
 DOOR SW2          OPEN
```

Proper Door Switch Activation:

• Starting with the door closed, the switches should read:

```
 DOOR SW1          OPEN
 DOOR SW2          OPEN
```

• Slowly begin to open the door. Door switch 1 should be the first to change states:

```
 DOOR SW1        CLOSED
 DOOR SW2          OPEN
```

• Next, door switch 2 should change state to:

```
 DOOR SW1        CLOSED
 DOOR SW2        CLOSED
```

• If the switches do not operate as stated above, there is a problem with the door switches.

• Press "CANCEL" to exit the Door Switch Test and return to Diagnostic Mode.

Fan Speed Test

```
DIAGNOSTIC TESTS
 FAN SPEED TEST
```

1. After selecting Fan Speed Test and pressing "ENTER" (lower right blank), the control will turn the oven fan on LOW speed for ten seconds. Verify that the fan is indeed running on low speed. The control will show:

```
FAN SPEED
  LOW
```

2. After a short while, the control will turn the fan on HIGH speed for ten seconds. Verify that the fan is indeed on high.

```
FAN SPEED
  HIGH
```

3. After a few seconds, the test will complete. Press "CANCEL" to return to Diagnostics Mode.

```
FAN TEST
COMPLETE
```

Heat Test

```
DIAGNOSTIC TESTS
   HEAT TEST
```

1. After selecting Heat Test and pressing "ENTER" (lower right blank), the control will show the actual temperature of the oven and will turn the heaters on. Verify that the actual temperature increases during the test.

```
HEAT TEST
ACT TEMP XXXF
```

2. After a short while, the test will complete. Press "CANCEL" to return to Diagnostics Mode.

```
DIAGNOSTIC TESTS
   HEAT TEST
```

Moisture Test

```
DIAGNOSTIC TESTS
 MOISTURE TEST
```

1. After selecting Moisture Test and pressing "ENTER", the control will show the moisture status as OFF for ten seconds.

```
MOISTURE IS
    OFF
```

2. The control will then turn moisture on for ten seconds, verify that the moisture has actually turned on within the oven by looking through the glass door.

```
MOISTURE IS
    ON
```

3. After a few seconds, the Moisture Test will complete. Press "CANCEL" to return to Diagnostics Mode.

Temperature Calibration

```
DIAGNOSTIC TESTS
   TEMP CAL
```

1. After selecting Temperature Calibration and pressing "ENTER", the display will show the Actual Temperature inside the oven. Verify the cavity temperature using a pyrometer.

```
TEMP CAL
ACT TEMP XXXF
```

• **NOTE**: *If the oven temperature is below 200°F, Temperature Calibration will not be active and the display will show Low Temp.*

```
TEMP CAL
LOW TEMP
```

2. Press and hold the "TEMP" (upper right blank) button for three, (3), seconds. The display will show the Actual Temperature on the first line and Set Temperature on the second line. If the Actual

Temperature does not correspond to the pyrometer, enter the value on the pyrometer using buttons 1 – 0. The value will be input as Set Temp.

```
ACT TEMP XXXF
SET TEMP XXXF
```

3. Press "ENTER" (lower right blank) to accept the changes. The Actual Temperature will change to equal the value input for Set Temperature. Press Cancel to exit Temperature Calibration.

- After the desired Tests are complete, press "CANCEL" to exit Diagnostics Mode.

Control Safety Features

The control has several built in safety features to protect both the user and the oven itself.

- If the actual temperature inside the oven exceeds the set temperature by 50°F, the display will show "HI TEMP" and the alarm will sound. The fan will continue to run, however, **power to the heaters will be cut.**

```
HI TEMP
```

- **If the actual temperature sensed inside the oven exceeds 575°F, the control will change to "HELP" and the alarm will sound continuously. All control operations will shut down except the alarm.**

```
HELP
```

- **NOTE***: The control will need a complete power down and restart (unplug/plug in oven) before any control functions will become operational. If the problem persists, contact a service technician.**

- **In the event of a temperature probe failure, the control will become inoperative and the display will show "PROBE ERROR". Once the problem is corrected, the control must be cycled On/Off (using the ON/OFF button) in order to become operative again.**

```
PROBE ERROR
```

Installing a New Pecipe Program

Using the CARD Reader

1. Remove the two screws securing the controller button pad to the front panel using a Phillips head screw driver, and drop the button pad to access the CARD reader.

2. Press and hold the programming button (bottom right button), until the controller display reads "enter code".

3. Insert the CARD into the reader with gold side up.

4. The LED on the reader will illuminate yellow for five seconds then red during the coding.

5. When the LED changes color to green, remove the card.

6. Program is complete. Close the panel and exit the program mode by hitting the cancel button.

7. Power down the oven and re-start.

CALIBRATION

Tools: Digital thermometer w/probe; oven mitt.

See also, *Temperature Calibration* on page 15.

1. Clamp the probe in the center of the middle rack.

   · Pass the probe wire out of the oven between the door and the door seal and close the door.

   · Plug the probe wire into the thermometer.

2. Press the oven On/Off button.

3. Press the "Preheat 2 (Preheat Bakery 2)" button to heat the oven to 350°F. Allow the oven to preheat for approximately 30 minutes before calibrating.

NOTE: W*hen checking resistance on the cavity probe, disconnect the probe wires from the relay board, terminals T9 & T10. The wires from the relay board to the probe must be in series with the probe.*

Temperature Conversion & Resistance Equivalency

DEG.F	DEG.C	OHMS
20	-6.7	974.57
30	-1.1	995.77
40	4.4	1016.9
50	10	1038
60	15.6	1059.1
70	21.1	1080.2
80	26.7	1101.2
90	32.2	1122.1
100	37.8	1143.1
120	48.9	1184.8
140	60	1226.4
160	71.1	1267.9
180	82.2	1309.2
200	93.3	1350.4
220	104.1	1391.4
240	115.5	1432.2
260	126.6	1473
280	137.7	1513.5
300	148.8	1554
320	160	1594.2
340	171.1	1634.4
360	182.2	1674.3
380	193.3	1714.2
400	204.4	1753.8
420	215.5	1793.3
440	226.6	1832.7
460	237.7	1871.9
480	248.8	1911
500	260	1950
520	271.1	1988.7
540	282.2	2027.4
560	293.3	2065.9
575	310.6	2094.6
580	304.4	2104.2
600	315.5	2142.4

TESTING & TROUBLESHOOTING

Trouble Shooting Guide

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Fan Will not Run	• No power to unit • No power to motor • Micro switch not OPENING	• Turn power on • Check fuses • Check connections
Key Pad Buttons Not Responding	• Defective key pad • Loose ribbon connection at key pad	• Use key pad diagnostics / pin outs test points • Check connection
PROBE ERROR in display	• Faulty Probe • Loose probe connection	• Replace probe • Check connections
HI TEMP In display	• Oven at too high a temp for product	• Allow oven to cool
HELP In display	• Faulty Probe • Motor centrifugal switch stuck • Contactor stuck	• Replace probe • Check centrifugal switch • Check contactor
Unit will not shut off	• Unit above 150°F	• Put unit into cool down, open door slightly
No HIGH speed But LOW speed works	• Bad key pad • Bad K2 relay on board • Bad motor	• Use diagnostic KEY PAD TEST • Check for voltage out of K2 relay • Check motor
No LOW speed But HIGH speed works	• Bad key pad • Bad K3 relay on board • Bad motor	• Use diagnostic KEY PAD TEST • Check for voltage out of K3 relay • Check motor
Display is BLANK NO POWER	• Blown fuse(s) • Bad transformer • Bad harness connection	• Check F1 & F2 fuses • Check for 24VAC out of TR2 transformer • Check connections
Unit will not heat	• No power out of K4 relay • Blow fuse • Hi Limit open • Coil on contactor • Motor centrifugal not closing	• Check for power out of K4 relay • Check F1 fuse • Check HI LIMIT in flue box • Check for voltage at contactor coil • Check motor centrifugal switch
Motor stops, then after a period of time comes back on	• Thermal Trip on motor	• Inspect rear clearance • Motor air intake is clear of lint/debris • Replace motor

TESTING & TROUBLESHOOTING

Button Pad / Ribbon Connector Test Points

11 10 9 8 7 6 5 4 3 2 1
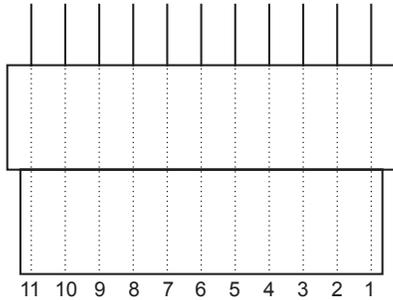
KEY #	ICON	RIBBON TEST POINTS
20	HIDDEN KEY # 1	1 & 4
19	CANCEL	2 & 4
18	ON /OFF	3 & 4
23	PREHEAT 3	1 & 5
22	PREHEAT 2	2 & 5
21	PRE HEAT 1	3 & 5
3	BAGELS	1 & 6
2	COOKIES	2 & 6
1	MUFFINS	3 & 6
6	CROISEANT	1 & 7
5	DANISH	2 & 7
4	TEA BISCUITS	3 & 7
9	BREAD BOWLS	1 & 8
8	BAGUETTES	2 & 8
7	COUNRTY BUNS	3 & 8
11	MACAROON COOKIES	1 & 9
10	TART SHELL	2 & 9
0	COUNRTY BISCUITS	3 & 9
14	FRUIT PIE	1 & 10
13	PIE SHELL	2 & 10
12	COFFEE CAKE	3 & 10
17	HIDDEN KEY # 2	1 & 11
16	SWISS APPLE	2 & 11
15	PUMPKIN TART	3 & 11

Relay Board Component Identification

RELAY	RELAY OUTPUT
K1	LIGHT
K2	FAN HIGH
K3	FAN LOW
K4	HEAT DEMAND
K5	SPRITZER
K6	COOLING FAN
K7	DOOR LOCK (not used)
K8	HOOD LOCK
K9	DOOR LOCK (not used)
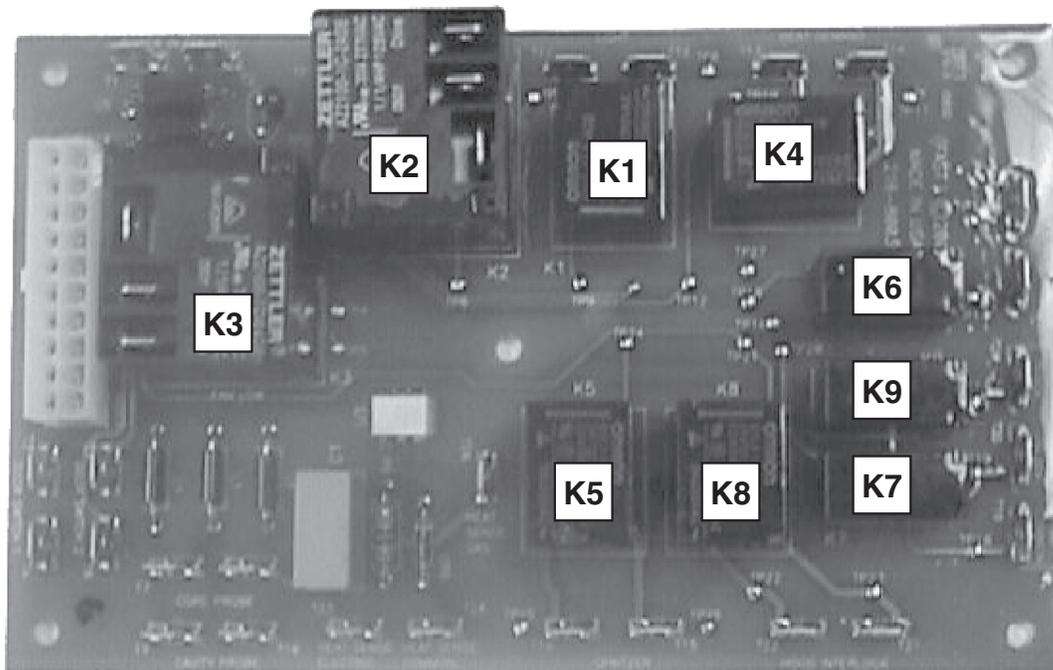
TESTING & TROUBLESHOOTING

Component Readings

TR1 TRANSFORMER	
Primary	Secondary
approx. 73 Ω	approx. 1.3 Ω
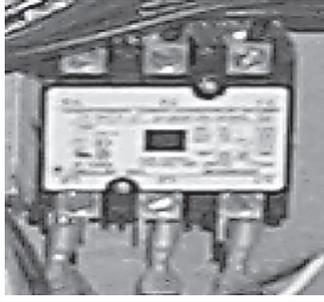
K5 CONTACTOR
Coil
approx. 640 Ω
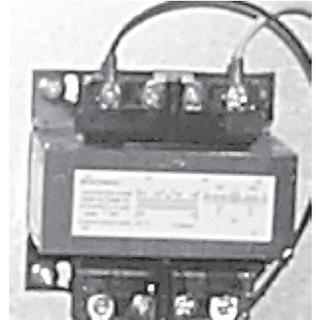
TR2 TRANSFORMER	
Primary	Secondary
approx. 1.3 Ω	approx. 72 Ω
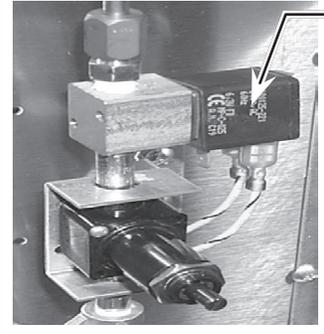
S11 SOLONOID
Coil
approx. 22 Ω

Oven Door Service / Removal

1. Disconnect power to unit.

2. Gain access to the RH oven panel. Disconnect the two wires going to the oven cavity lights at the splice connections. Wires # 9 and # 14.

3. Open the oven door and locate the COUNTER SUNK SCREW located on the oven cavity frame, upper LH side of cavity frame.
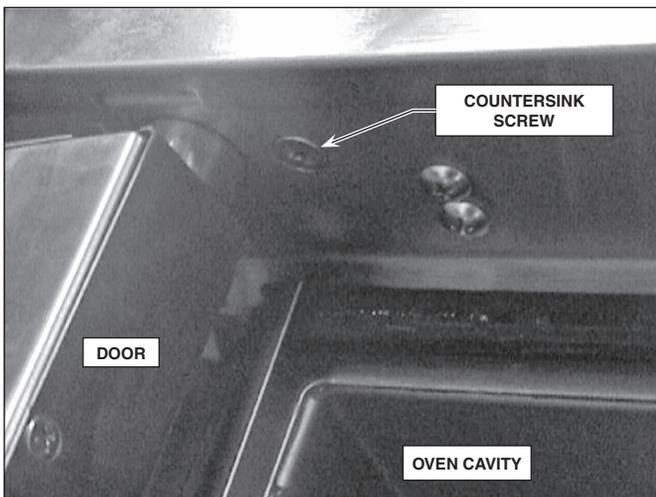
4. Start to remove this screw. ENSURE THAT THE DOOR IS SUPPORTED.

5. Once the screw has been removed, the upper section of the door can be tilted to the LEFT. Continue to support the door.

6. The upper door bearing retainer will come out with the top of the door.

7. Once the top of the door has cleared the cavity frame, pull up on the door to release the lower door post from the bearing.

8. While supporting the door, carefully pull the wires for the lights up through the hole.

External Door Glass Frame Service/Removal

1. Open the oven door.

2. Unscrew the upper and lower finger bolts located on the RIGHT side of the external glass frame.

3. Remove the lower finger bolt located at the bottom LEFT side of the oven door.

4. Supporting the external glass frame, remove the upper thumb screw located on the top RIGHT side of the oven door.

5. External glass frame will now come away from the oven door.

Oven Door Light Service / Removal

1. Disconnect power to unit.

2. Remove the 2 screws holding the door micro switch cover. This is located on the front LH side of the oven top panel.

3. Unscrew the upper and lower finger bolts located on the RIGHT side of the external glass frame to gain access to the cover housing the oven lights.

4. Remove upper and lower screws holding the light housing cover in place.

5. Remove the required light by pulling up for upper light and pulling down for the lower light.

6. Use a clean dry cloth to hold the new light, DO NOT TOUCH NEW LIGHT WITH YOUR FINGERS.

7. Install the replacement light.

8. To re assemble, reverse above instructions. *Ensure that the cavity light wires on the RIGHT side of the oven are re-connected.*

SERVICE PROCEDURES

Door Micro Switch Service / Removal

1. Open the oven door.

2. Locate and remove the 2 machine screws located in the upper LEFT side of the cavity frame. (These screws are just RIGHT of the upper door post on the cavity door frame.)

3. Remove both screws. DO NOT TOUCH THE COUNTERSINK SCREW.

4. Remove the 2 screws holding the door micro switch cover. This is located on the front LH side of the oven top panel.

5. There will be a small bracket exposed. This bracket holds the 2 micro switches. Pull the bracket toward you.

6. Upper switch on bracket is SW2, lower switch is SW1.

7. Replace required micro switch.

8. Reinstall door switches and bracket and screws.

9. Test door switch activation / operation as indicated in DIAGNOSTIC MODE.

DOOR SWITCHES & BRACKET

DOOR SWITCH CAM

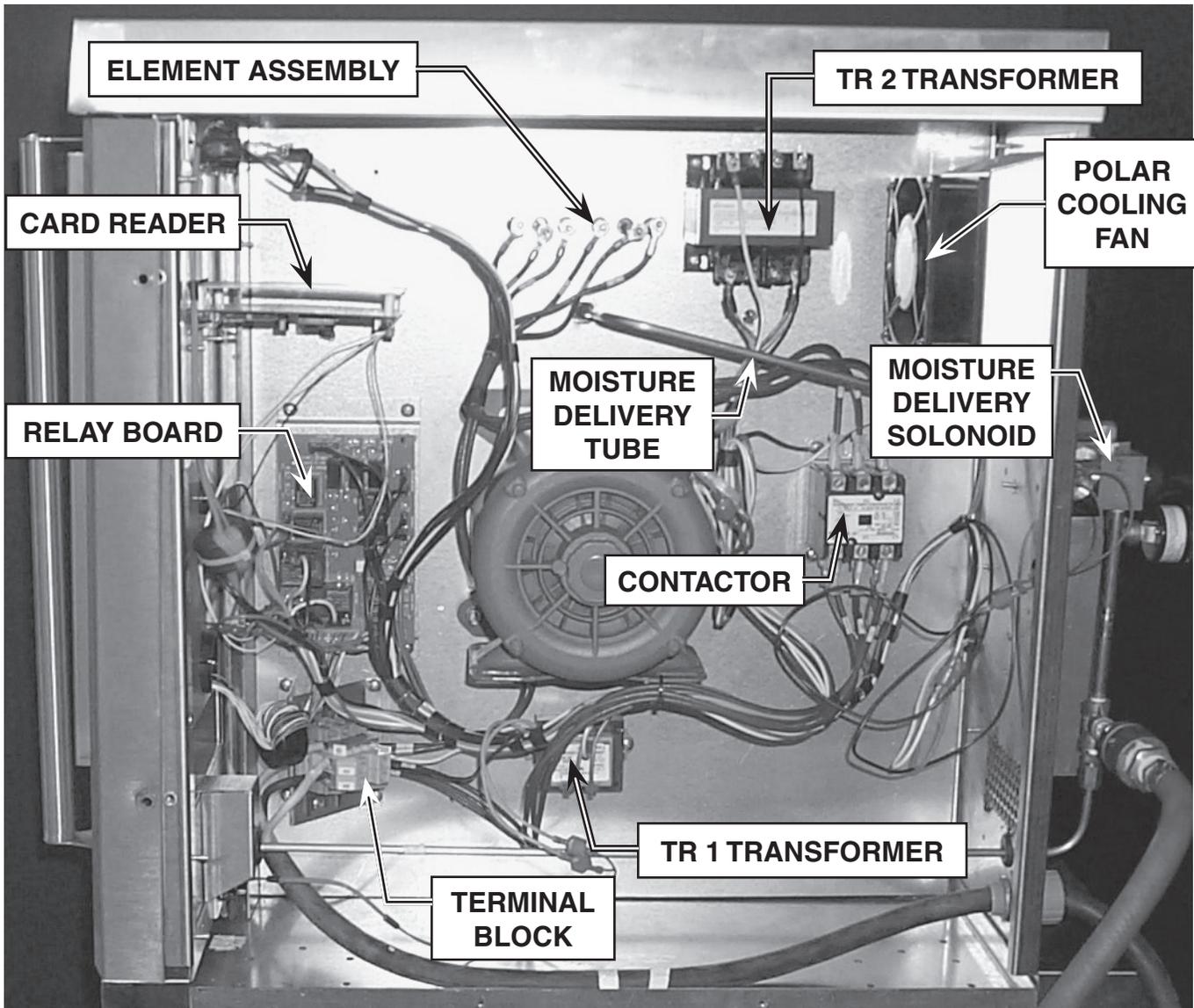SW2; UPPER DOOR SWITCH

SW1; LOWER DOOR SWITCH
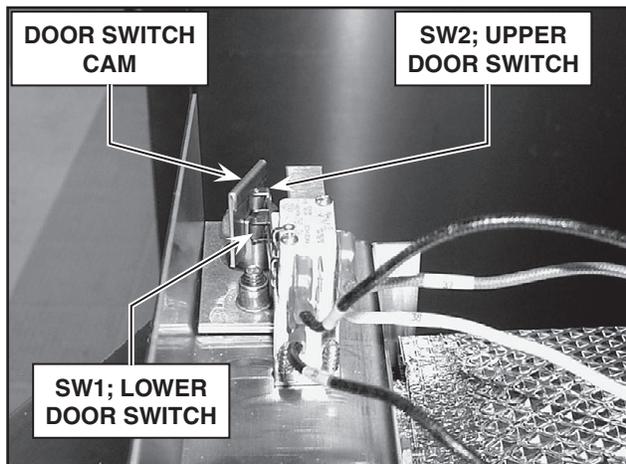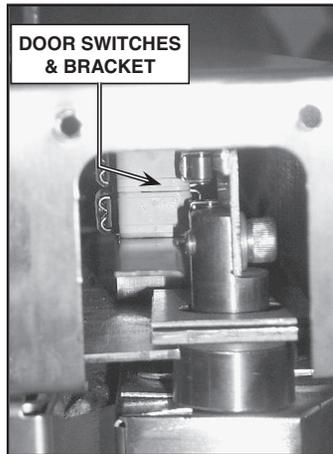
Oven Temperature Probe Service/Removal

The probe is located on the interior RIGHT rear side of the oven cavity.

1. To first gain access to the temperature probe, remove the oven racks, rack support guides and baffle plate Remove the 2 screws holding the probe in place DO NOT REMOVE THE PROBE at this point.

2. The wires for the probe are located behind the RIGHT side panel.

3. To gain access, remove the screws holding the panel in place.

4. Pull the panel towards the back of the oven to remove.

5. Cavity probe is located ABOVE and to the RIGHT of the cavity motor.

6. Disconnect the 2 BROWN probe wires at the temperature probe.

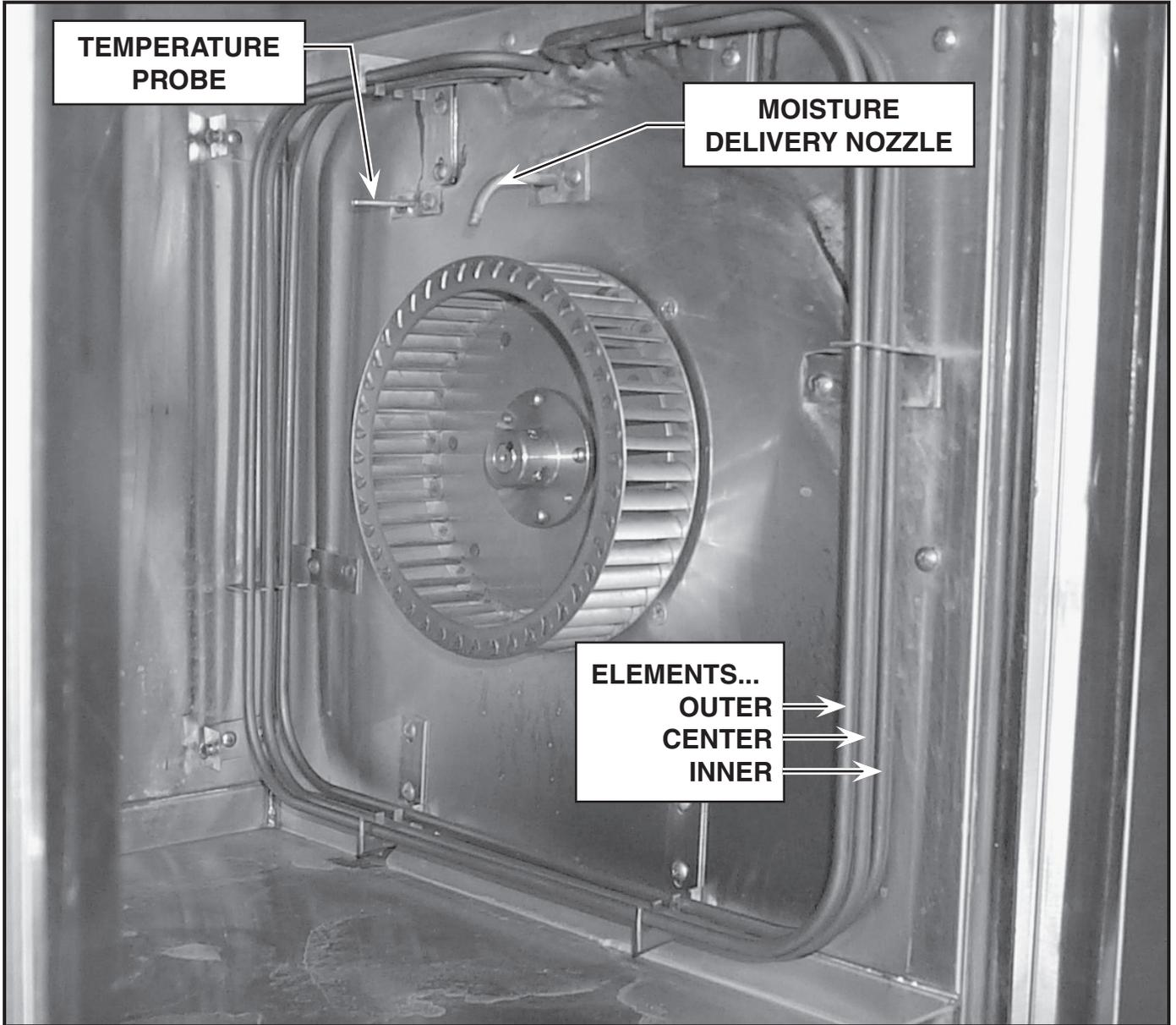7. The probe can now be removed from inside the oven.

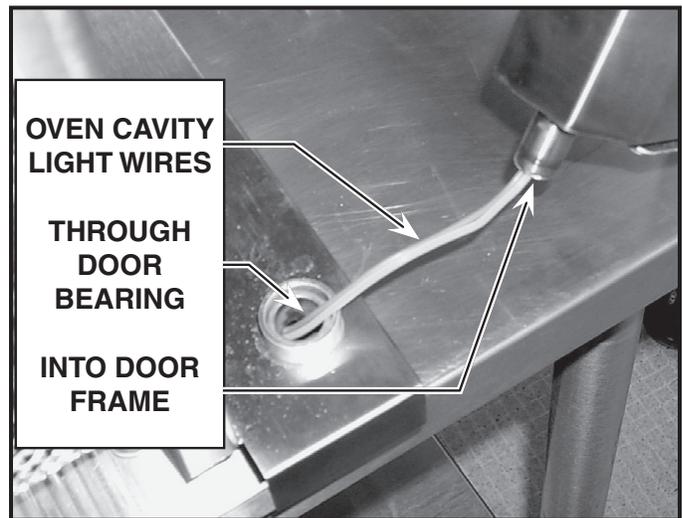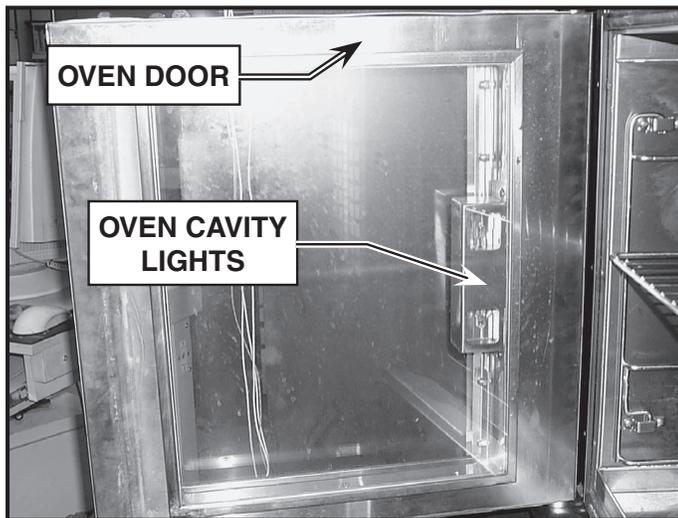# COMPONENT IDENTIFICATION
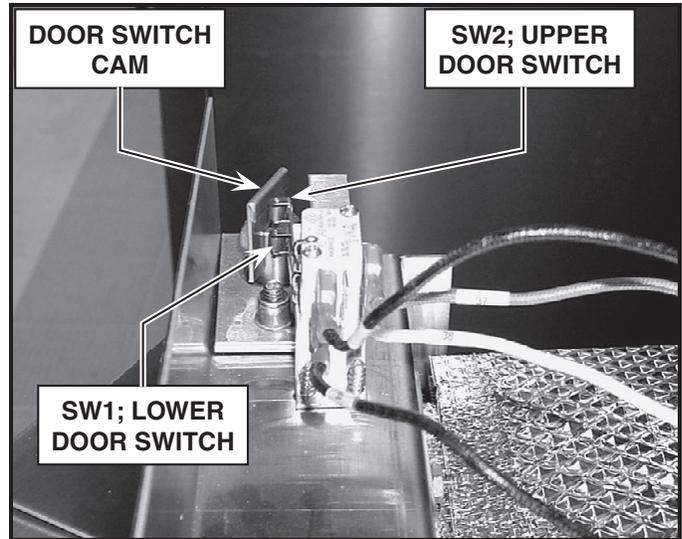
Right Side (body panel removed)

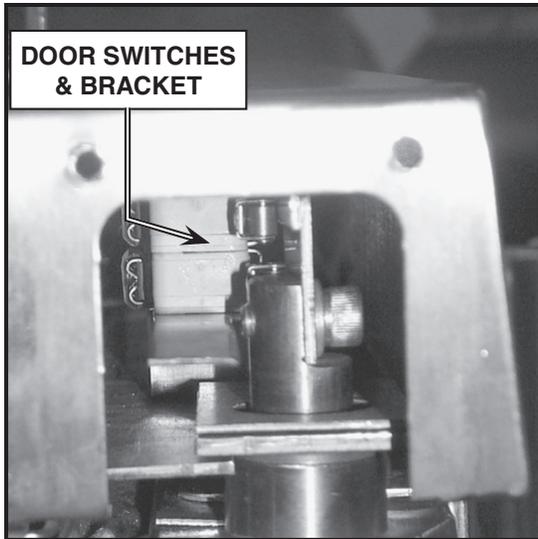ELEMENT ASSEMBLY

TR 2 TRANSFORMER

CARD READER

POLAR COOLING FAN

MOISTURE DELIVERY TUBE

MOISTURE DELIVERY SOLONOID

RELAY BOARD

CONTACTOR

TR 1 TRANSFORMER

TERMINAL BLOCK

COMPONENT IDENTIFICATION

Oven Interior

TEMPERATURE PROBE

MOISTURE DELIVERY NOZZLE

ELEMENTS...
OUTER
CENTER
INNER

Oven Door

DOOR SWITCHES & BRACKET

DOOR SWITCH CAM

SW2; UPPER DOOR SWITCH

SW1; LOWER DOOR SWITCH

OVEN DOOR

OVEN CAVITY LIGHTS

OVEN CAVITY LIGHT WIRES

THROUGH DOOR BEARING

INTO DOOR FRAME

Rear View

EXTERNAL HIGH LIMIT SWITCH (manual reset opens at 239°F)

HOOD INTERLOCK

GARLAND®