



### VC5ED FULL SIZE ELECTRIC CONVECTION OVEN

VC5ED

#### **- NOTICE -**

This Manual is prepared for the use of trained Vulcan Service Technicians and should not be used by those not properly qualified.

This manual is not intended to be all encompassing. If you have not attended a Vulcan Service School for this product, you should read, in its entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments and skills should be performed by a trained Vulcan Service Technician.

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# GENERAL

## INTRODUCTION

FEATURES				
MODEL	CAVITY DEPTH	TEMPERATURE CONTROL	DOORS (50/50)	COOK TIMER
VC5ED	26.5"	Solid State	Independent	Digital
<b>NOTE:</b> Stainless steel doors with window (standard).				

## OPERATION

Refer to Installation & Operation manual for procedures related to Installation, Operation and Cleaning. <https://my.vulcanfeg.com/resourcecenter/vulcanwolfberkel/default.aspx>

## CLEANING

Refer to Installation & Operation manual for procedures related to Installation, Operation and

Cleaning. <https://my.vulcanfeg.com/resourcecenter/vulcanwolfberkel/default.aspx>

## LUBRICATION

- Cavity blower motor has sealed bearings and requires no additional lubrication.
- HUSKEY™ TF-1000 grease or equivalent high temperature non-stick grease.

## SPECIFICATIONS

AMPERAGE - 3 PHASE/ 60HZ							
MODEL	TOTAL POWER (KW)	PER LINE <sup>1</sup>			RECOMMENDED CIRCUIT PROTECTION <sup>2</sup>		
		208V	240V	480V	208V	240V	480V
VC5ED	12.5	35	33	15	45	40	20
NOTES:	<sup>1</sup> Amperage values in the table are nominal. Tolerance is +5/-10%.						
	<sup>2</sup> Complied in accordance with National Electric Code, ANSI/NFPA 70, latest edition						

AMPERAGE - 1 PHASE/ 60HZ							
MODEL	TOTAL POWER (KW)	PER LINE <sup>1</sup>			RECOMMENDED CIRCUIT PROTECTION <sup>2</sup>		
		208V	240V	480V	208V	240V	480V
VC5ED	12.5	60	52	26	80	70	35
NOTES:	<sup>1</sup> Amperage values in the table are nominal. Tolerance is +5/-10%.						
	<sup>2</sup> Complied in accordance with National Electric Code, ANSI/NFPA 70, latest edition.						

SPECIFICATION SHEET

## TOOLS

Standard

1. Standard set of hand tools.
2. VOM with minimum of NFPA-70E CATIII 600V, UL/CSA/TUV listed. Sensitivity of at least 20,000 ohms per volt. Meter leads must also be rated at CAT III 600V.
3. Clamp on type amp meter with minimum of NFPA-70E CAT III 600V,UL/CSA/TUV listed.
4. Temperature tester (thermocouple type).
5. ESD (Electrostatic discharge) Protection Kit.

**Special**

1. Gear Puller to remove blower.
2. RTV sealant, 736 DOW silicone high temp (P/N 542133) or equivalent.

# REMOVAL AND REPLACEMENT OF PARTS

## COVERS AND PANELS



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

### Bottom Front Cover

1. Remove four screws, two from each side of bottom cover, then remove cover from oven.

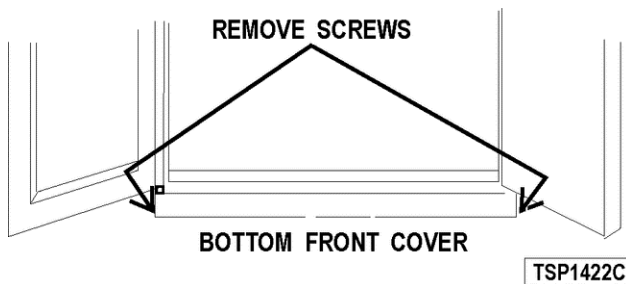


Fig. 1

2. Reverse procedure to install. Verify bottom cover is seated under front plate.

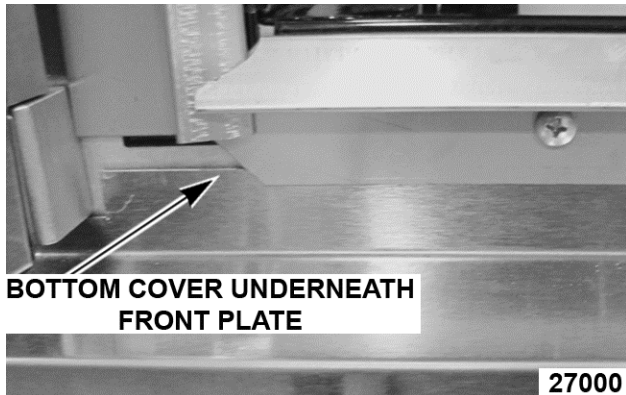


Fig. 2

### Right Side - Front Panel



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Loosen two screws near front of oven, which secure bottom front cover.
2. Loosen screws on left side of front panel and top cover screw.

3. Remove screws along right side and bottom of front panel.

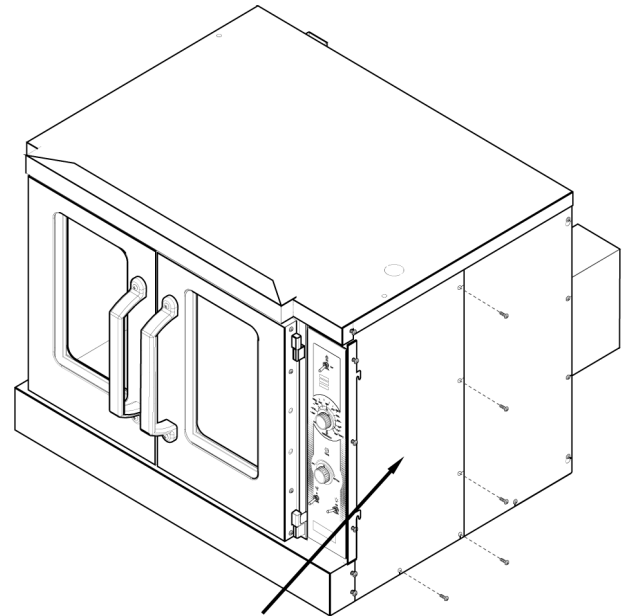


Fig. 3

4. Slide right side front panel out.
5. Reverse procedure to install.

### Right Side - Rear Panel



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove two middle screws along right side of rear panel.
2. Remove screws along left side of rear panel.
3. Remove bottom screws on rear panel.
4. Loosen top and bottom screw along right side of rear panel.

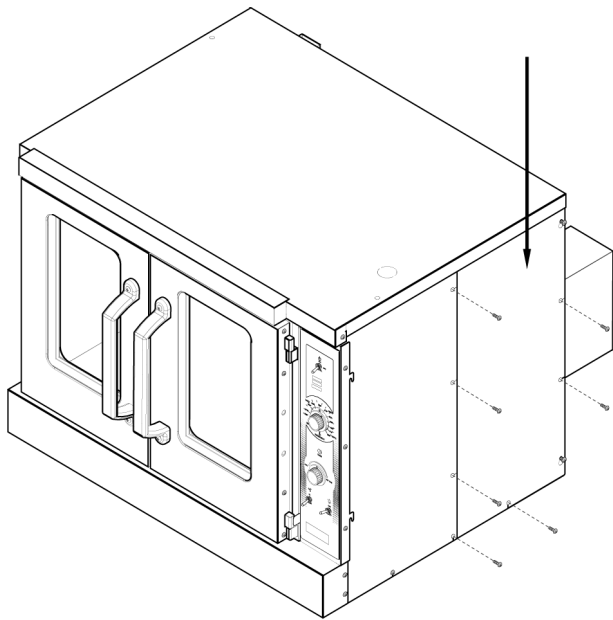


Fig. 4

AI4059

- Slide right side rear panel up and to the right to remove.
- Reverse procedure to install.

#### Left Side Panel

- Remove screws along right side, middle left side, and bottom.
- Loosen screws on top and bottom on left side of panel.
- Loosen two screws near front of oven, which secure bottom front cover.

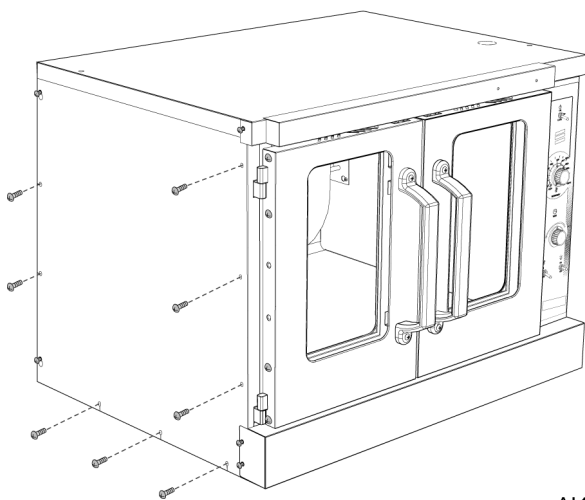


Fig. 5

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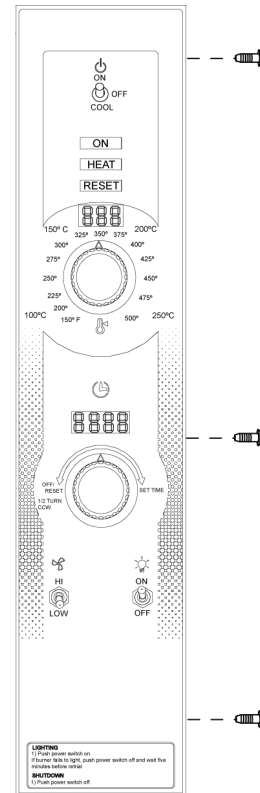
- Lift up and pull away to remove.
- Reverse procedure to install.

#### Control Panel



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

- Remove three screws on right side which secure control panel, then lift up and pull away.



AI4427

Fig. 6

- Disconnect temperature probe leads from solid-state temperature control.
- Unplug wire harness connector to control panel components.
- Unplug Ground wire from control panel.
- Reverse procedure to install.

#### FAN COVER



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

- Remove racks.

- Lift fan cover up and out of oven.

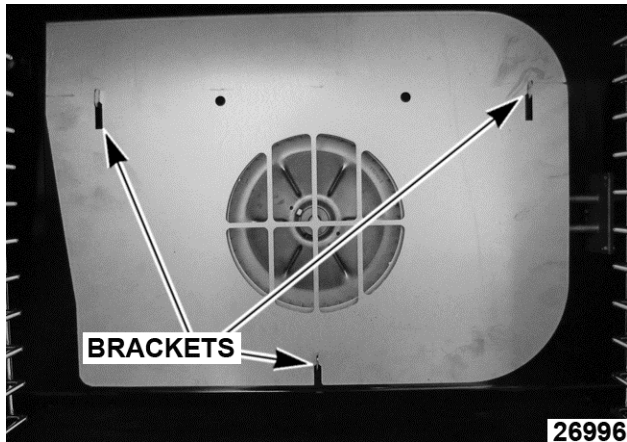


Fig. 7

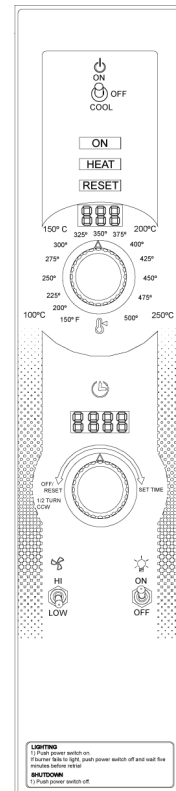
- Reverse procedure to install.

## CONTROL PANEL COMPONENTS



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

- Remove CONTROL PANEL.
- Remove component being replaced.
- Reverse procedure to install replacement component.
- Check oven for proper operation.



AI4055

Fig. 8

**NOTE:** Panel with standard controls shown.

## COMPONENT PANEL COMPONENTS



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

- Remove RIGHT SIDE PANEL.

**NOTE:** If right side panel is not accessible, this component can be service by removing CONTROL PANEL.

- Disconnect wire leads to component being replaced.
- Remove component.
- Reverse procedure to install component.
- Check oven for proper operation.

## TEMPERATURE PROBE

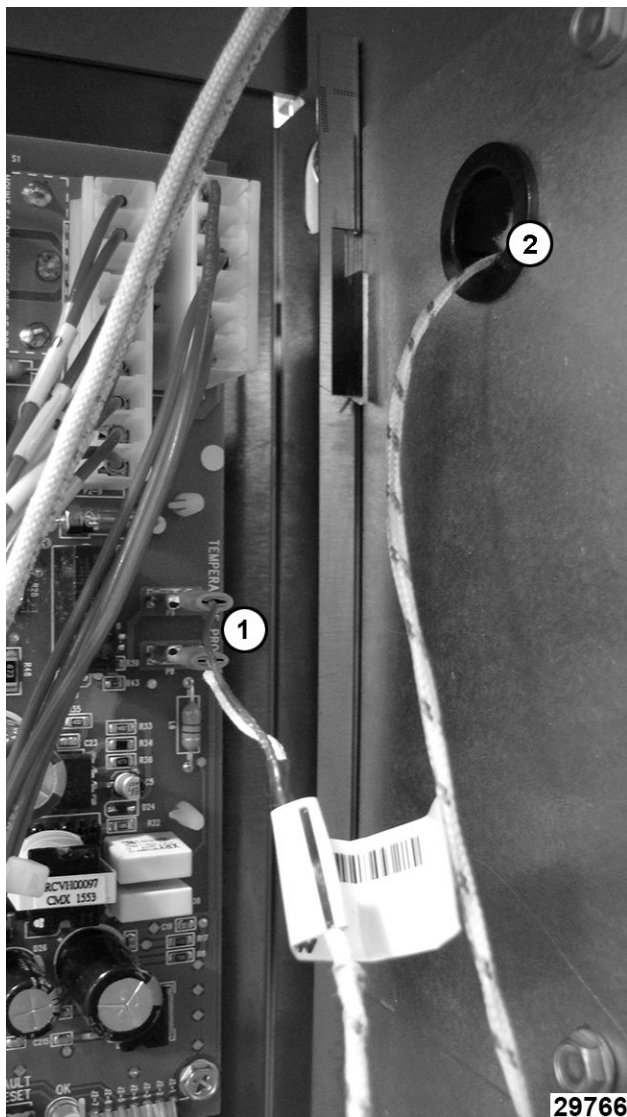


**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove RIGHT SIDE PANEL.

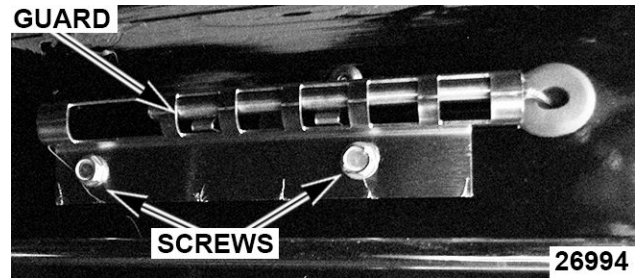
**NOTE:** If right side - front panel is not accessible, this component can be serviced by removing CONTROL PANEL.

2. Disconnect the probe leads (1, Fig. 9) from the solid state temperature control.



**Fig. 9**

3. Remove the racks from inside cavity.
4. Remove the probe guard.



**Fig. 10**

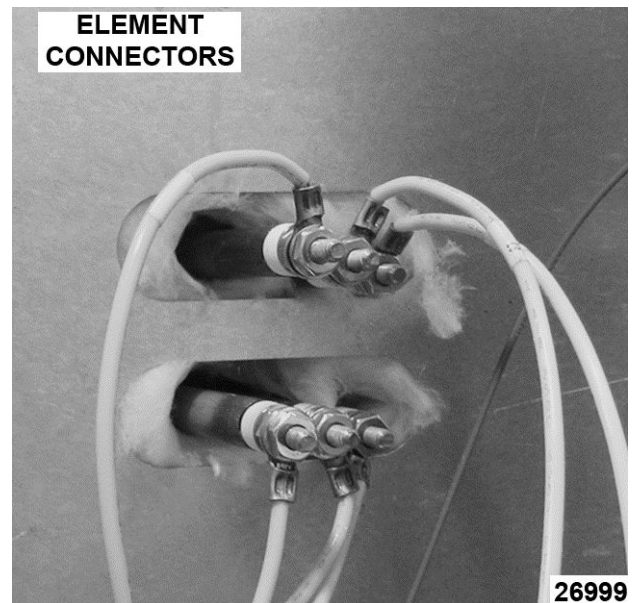
5. Remove probe by pushing it through the oven wall opening (2, Fig. 9) in control panel area.
6. Reverse the procedure to install the replacement probe.
7. Adjust the temperature control. Refer to: SOLID STATE TEMPERATURE CONTROL TEST.

## HEATING ELEMENTS



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove RIGHT SIDE - REAR PANEL.
2. Disconnect element wire connectors.



**Fig. 11**

3. Remove racks from cavity.
4. Remove FAN COVER.  
Loosen element screws on side wall.
5. Remove screws on back wall holding brackets.



6. Pull elements forward, then away from right wall.

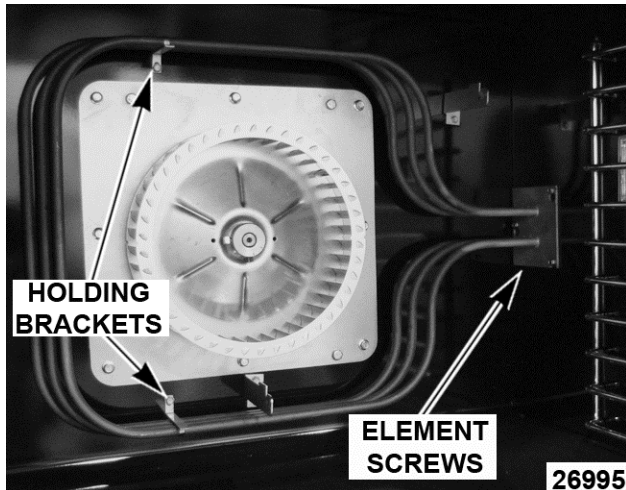


Fig. 12

7. Reverse the procedure to install the replacement heating element.

## BLOWER AND MOTOR



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Take out the racks and rack supports.
2. Lift off FAN COVER.
3. If replacing:
  - A. **Blower Only** - Loosen bolts on blower hub and using a bearing puller, remove blower from motor shaft.
    - 1) Reverse procedure to install and perform BLOWER ADJUSTMENT.
  - B. **Motor** - perform step 3A and continue procedure.
4. Remove bolts that secure the motor mounting plate to the rear wall.

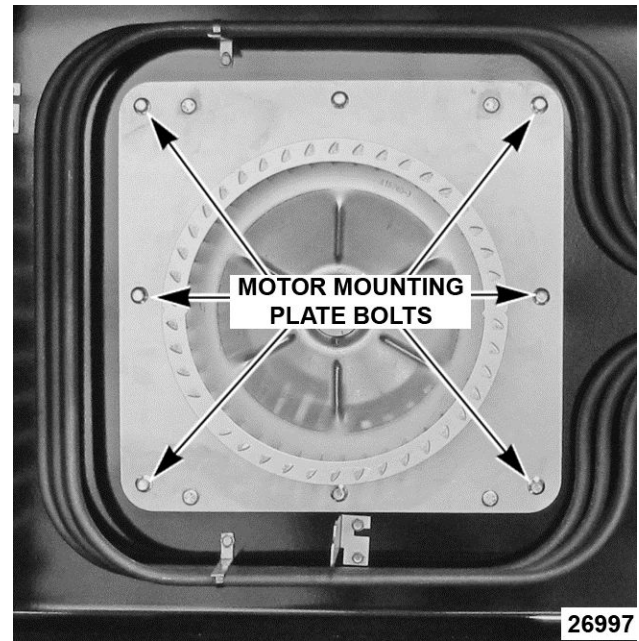


Fig. 13

5. Place a piece of cardboard on the bottom of the oven cavity to protect its surface from any damage during motor assembly removal.
6. Pull the motor assembly into the oven cavity and place it on the cardboard.
7. Remove the junction box cover from the motor, disconnect lead wires and remove the conduit.
8. Remove motor mounting bolts and flat washers then lift the motor from the mounting plate.
9. Position the replacement motor on the motor mounting plate and install mounting bolts and washers. Hand tighten mounting bolts only.

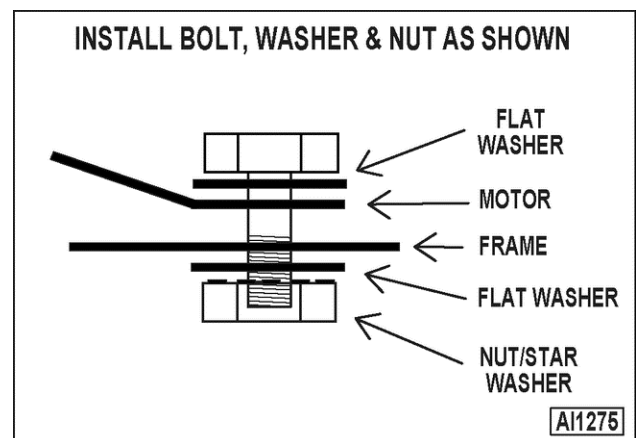
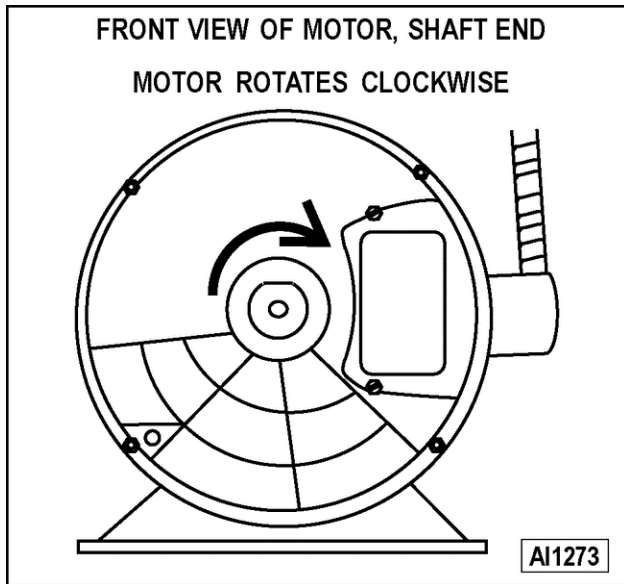


Fig. 14

10. Reconnect lead wires at the motor, replace conduit and junction box cover.

**NOTE:** Check data plate on motor for wiring schematic. The motor must rotate **clockwise** when viewed from the shaft end.



**Fig. 15**

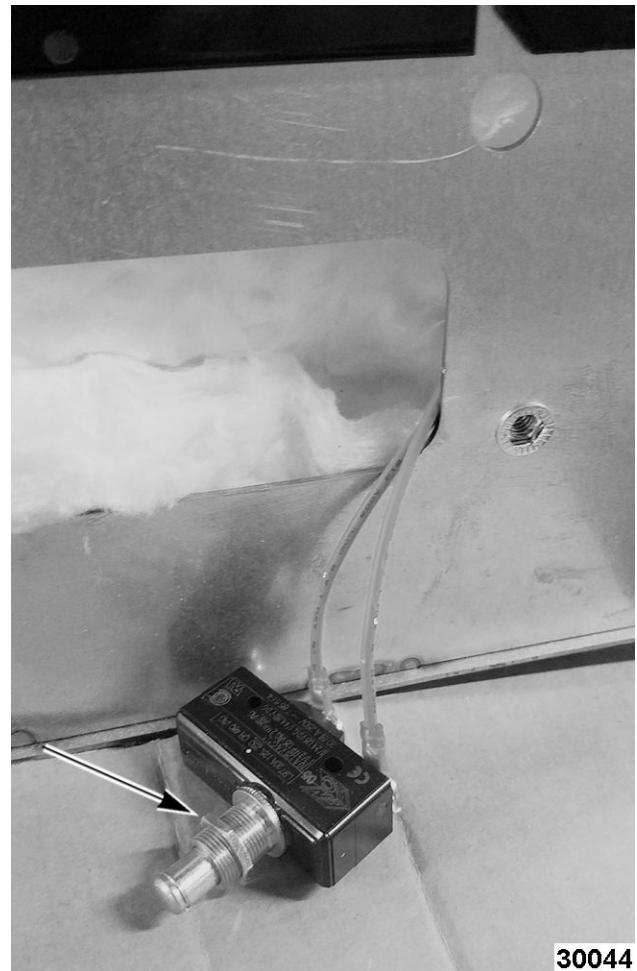
11. Slide blower onto motor shaft until hub is flush with end of shaft then tighten bolts.
12. Adjust motor position until blower is parallel to motor mounting plate, Refer to: BLOWER ADJUSTMENT.
13. Position motor mounting plate on the rear wall and secure with screws and washers.
14. Replace the baffle panel.
15. Remove cardboard from the bottom of the oven cavity.
16. Check oven for proper operation then replace rack guides and racks.

## DOOR SWITCH



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove BOTTOM FRONT COVER.
2. Unscrew nut (Fig. 16) holding door switch.
3. Pull door switch and washer out through bottom panel opening.



**Fig. 16**

4. Disconnect lead wires to door switch.
5. Reverse procedure to install replacement switch.

## ROLLER LATCH ASSEMBLY (INDEPENDENT DOORS)



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove the screws that attach roller latch assembly to door.

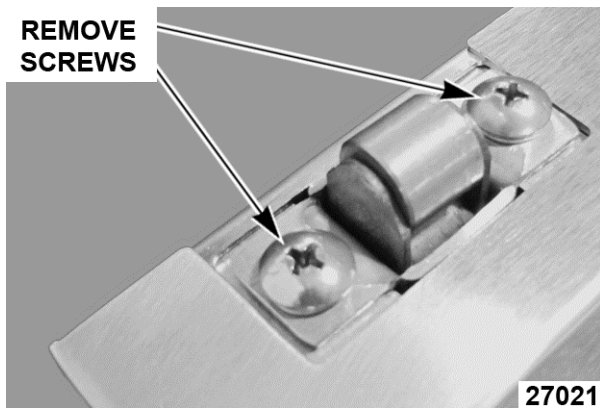


Fig. 17

2. Reverse procedure to install.

## DOOR REMOVAL

1. Open door to a 90° angle.
2. Lift door up off hinges to remove.



Fig. 18

3. Reverse the procedure to install the replacement door and check oven for proper operation.

## HIGH LIMIT THERMOSTAT



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Take out racks from the oven.

2. Remove the high limit thermostat cover/mounting plate from inside the oven cavity at the top.

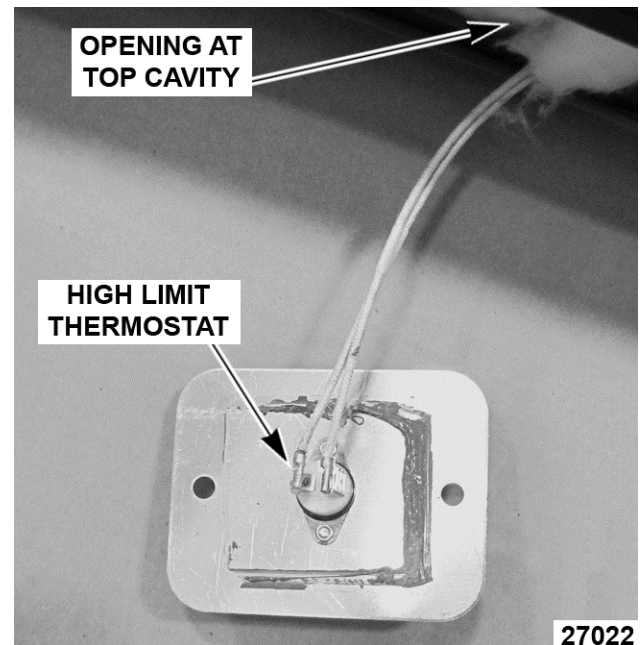


Fig. 19

3. Disconnect lead wires from high limit thermostat.

**NOTE:** Remove the old RTV sealer from the cover and mating surfaces inside the oven cavity and apply new high temperature RTV sealer before installing.

4. Reverse procedure to install.

## INTERIOR LIGHTS



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

**NOTICE** Do not touch the Halogen lamp with bare hands. If lamp is exposed to oil from the skin, the life will be reduced. Ensure lamp is free from oil and dirt before replacing.

### Bulb Replacement

1. Pull lamp cover off.
2. Grasp lamp using a clean cloth and remove from lamp assembly.

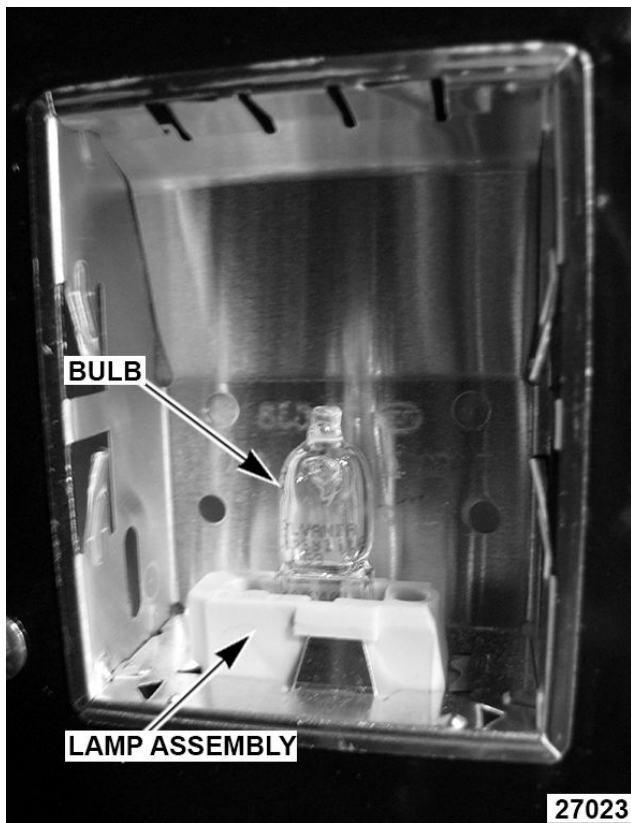


Fig. 20

3. Reverse procedure to install new bulb.

#### Lamp Assembly Replacement

1. Remove racks in cavity.
2. Pull lamp cover off.
3. Remove RIGHT SIDE REAR PANEL.

Insert screw driver and push lamp assembly out into cavity.

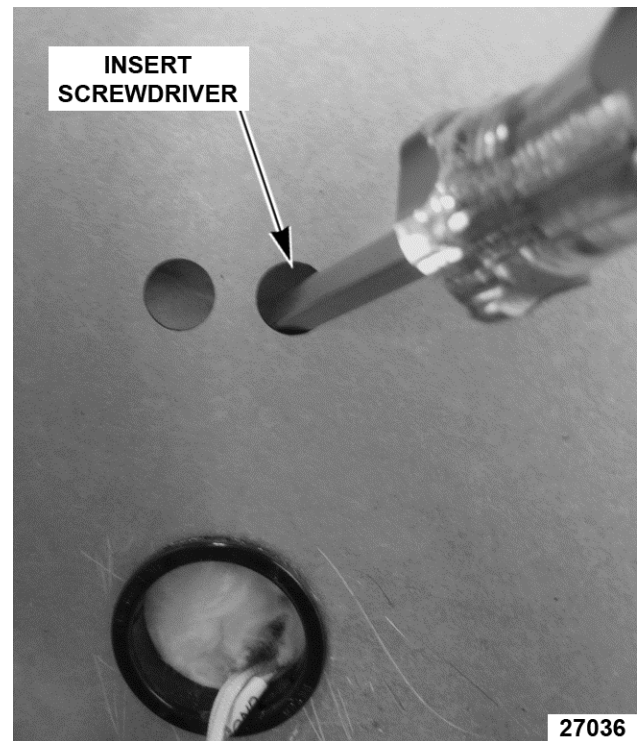


Fig. 21

4. Disconnect wires.
5. Reverse procedure to install new lamp assembly.

### COOLING FAN



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove RIGHT SIDE FRONT PANEL.

**NOTE:** If right side - front panel is not accessible, this component can be serviced by removing the CONTROL PANEL.

2. Remove wire nuts from fan wire connections.

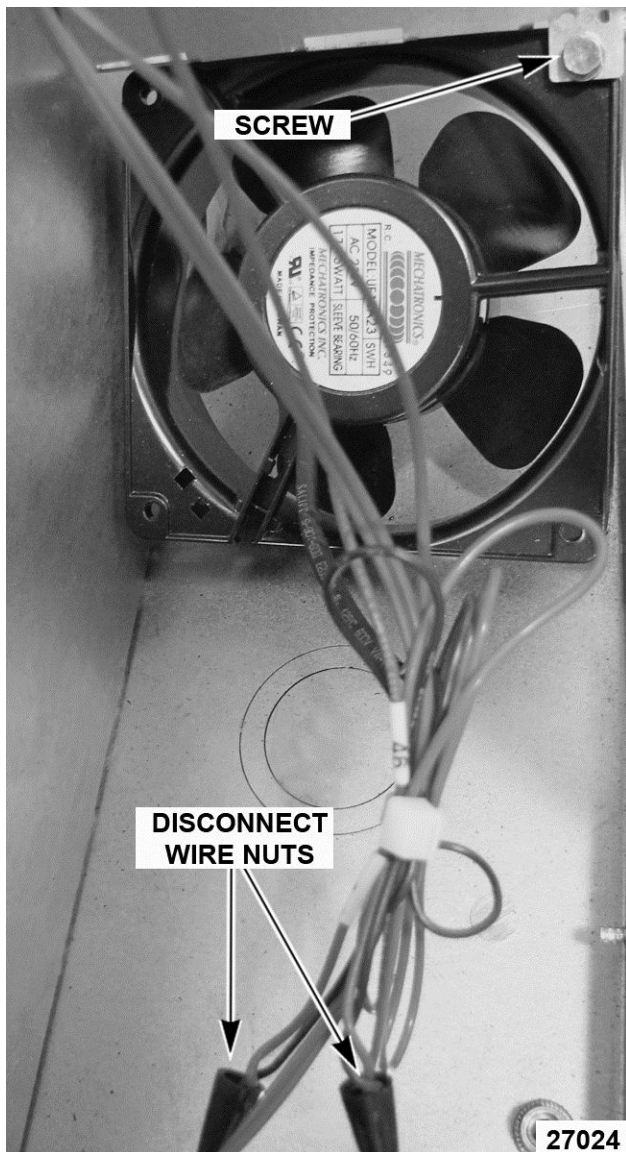


Fig. 22

3. Loosen the tab screw holding the fan to the component panel. Rotate the tab so that the fan will clear and remove the fan.
4. Reverse the procedure to install the replacement fan and check for proper operation.

**NOTE:** The fan must be installed so air is pulled from outside the rear of the oven and blown into the control area. The arrow on the fan body indicates "air flow" direction and should be pointing toward the controls.

# SERVICE PROCEDURES AND ADJUSTMENTS

## TEMPERATURE CONTROL CALIBRATION



**WARNING** Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times and follow Arc Flash procedures. If test points are not easily accessible, disconnect power and follow Lockout/Tagout procedures, attach test equipment and reapply power to test.

**NOTE:** The temperature control module has a programmable offset that can be applied to the set temperature. This can be adjusted in 5 degree increments up to 20 degrees in either direction.

1. Place a thermocouple in geometric center of oven cavity.
2. Remove RIGHT SIDE FRONT PANEL to view back of temperature control board.
3. Turn oven on and set to 350° Fahrenheit.
4. Watch the red fault indicator. If light comes on see TEMPERATURE CONTROL BOARD FAULT INDICATOR for troubleshooting tips. If light stays off go to next step.
5. Allow oven to stabilize (typically 3 cycles)
6. Record temperature when heat light goes off and comes on for at least 2 cycles.
7. Calculate differential by subtracting temperature when lamp goes out from temperature when lamp comes on.

### Differential = (Heat Lamp OFF - Heat Lamp ON)

- If differential is less than 20 degrees, temperature control circuit is functioning properly. If it is more than 20 degrees, turn off oven and replace TEMPERATURE PROBE.
- Repeat CALIBRATION steps. Calculate average temperature (Heat Lamp OFF temperature + Heat Lamp ON temperature divided by 2).

### Average = (Heat Lamp OFF + Heat lamp on divided by 2)

- If Average is less than 10° Fahrenheit from dial setting, thermostat is properly calibrated.

- If it is more than 10° Fahrenheit, then complete following steps.
  1. Remove temperature control knob.



Fig. 23

2. Press and hold both + (plus) and the – (minus) buttons for 3 seconds.

**NOTE:** Power light will start blinking and display will show current offset.

3. Push “+” or “-” button to increase or decrease offset.

**NOTE:** Each press will change offset by 5 degrees.

**NOTE:** After 5 seconds of no activity controller will automatically exit calibration mode.

## SOLID STATE TEMPERATURE CONTROL TEST



**⚠ WARNING** Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times and follow Arc Flash procedures. If test points are not easily accessible, disconnect power and follow Lockout/Tagout procedures, attach test equipment and reapply power to test.

1. Remove RIGHT SIDE FRONT PANEL.

**NOTE:** If right side panel is not accessible, this component can be serviced by removing CONTROL PANEL.

2. Place a thermocouple in the geometric center of oven cavity.

**NOTE:** Oven temperature must be below 450°F.

3. Set the temperature control to the maximum setting.
4. The green indicator light will flash once every 3 seconds if the board is receiving power. If it is off the problem is not with the Temperature Control Board. Refer to "TROUBLESHOOTING".
5. If the red fault indicator comes on count the number of times it flashes and check TEMPERATURE CONTROL BOARD FAULT INDICATOR table to identify fault code.

## TEMPERATURE CONTROL BOARD FAULT INDICATOR



**⚠ WARNING** Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times and follow Arc Flash procedures. If test points are not easily accessible, disconnect power and follow Lockout/Tagout procedures, attach test equipment and reapply power to test.

Code	Description	Action
1	Open Probe	Verify probe is plugged in. Replace <u>TEMPERATURE PROBE</u> .
2	Shorted Probe	Replace <u>TEMPERATURE PROBE</u> .
3	No Heat	Run <u>TEMPERATURE PROBE TEST</u> .
4	PCB Overheat	Verify cooling fan works. Clean air intake at back of oven.
5	No Output	Replace temperature control PCB. Refer to: <u>CONTROL PANEL COMPONENTS</u>
6	Output Shorted	Replace temperature control PCB. Refer to: <u>CONTROL PANEL COMPONENTS</u>

## TEMPERATURE PROBE TEST



**⚠ WARNING** Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times and follow Arc Flash procedures. If test points are not easily accessible, disconnect power and follow Lockout/Tagout procedures, attach test equipment and reapply power to test.

**Temperature to Resistance Chart**

Degrees (Fahrenheit)	Resistance
77°	90k - 100k
200°	8354
250°	3794
300°	1903
250°	1032
400°	609
450°	374
500°	241

- Place a shielded thermocouple in center of oven cavity.
- Turn oven on and set to 350° Fahrenheit.
- Remove temperature control knob.
- Hold down "-" (minus) button for 3 seconds to enter diagnostic mode.

**NOTE:** Display should now show oven temperature reported by probe.

- Allow temperature to stabilize (typically 3 cycles).
  - If thermocouple temperature is within 5° Fahrenheit of display temperature, probe is functioning properly.
  - If temperature difference between thermocouple and display is greater than 5 degrees but less than 20° Fahrenheit, refer to: TEMPERATURE CONTROL CALIBRATION to calibrate.
  - If temperature difference is greater than 20° Fahrenheit turn off oven, replace TEMPERATURE PROBE, then repeat TEMPERATURE PROBE TEST.

## HEATING ELEMENT TEST



**⚠ WARNING** Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times and follow Arc Flash procedures. If test points are not easily accessible, disconnect power and follow Lockout/Tagout procedures, attach test equipment and reapply power to test.

- Turn the power switch ON and set the oven temperature control to the highest setting.
- Measure the voltage at the heating element terminals and verify it against the data plate voltage.
  - If voltage is incorrect, find the source of the problem.
  - If voltage is correct, check current draw (amps) through the heating element lead wires.

**NOTE:** This method is preferred over a resistance check when a clamp on type amp meter is available.

- If current draw is correct then heating element is functioning properly. See HEATING ELEMENT VALUES table.
- If current draw is not correct, turn the power switch OFF and disconnect the electrical supply to the oven.
  - Replace heating element, then proceed to step 3.
- If unable to check current draw, a resistance check may indicate a malfunctioning element.
  - Turn the power switch OFF and disconnect the electrical supply to the oven.
  - Remove the lead wires from the heating element and check resistance (ohms). See HEATING ELEMENT VALUES table.
- Check for proper operation.



HEATING ELEMENT VALUES				
VOLT.	KW PER ELEMENT	AMPS PER ELEMENT		OHMS PER ELEMENT
		1 PH	3 PH	
208	4	19	19	10
240	4	16.5	16.5	14.5
480	4	8	8	57
<b>NOTES:</b>	1. Values in the table are nominal. Tolerance is +5/-10%.			
	2. Voltage values are @ 60HZ.			
	3. Resistance values (ohms) are @ room temperature.			

## BLOWER ADJUSTMENT



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

- Loosen the motor mounting bolts.
- Adjust the motor position until the blower is parallel to and 1/4 inch away from the motor mounting plate at the top, bottom, left and right of the blower.
  - If the blower is square then tighten motor mounting bolts and proceed to STEP 4.
  - If the blower is not square continue adjusting until proper spacing is achieved then tighten motor mounting bolts.

**NOTE:** If necessary, place shims between motor and frame.

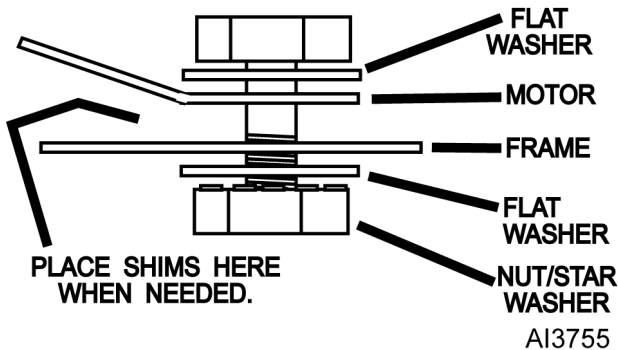


Fig. 24

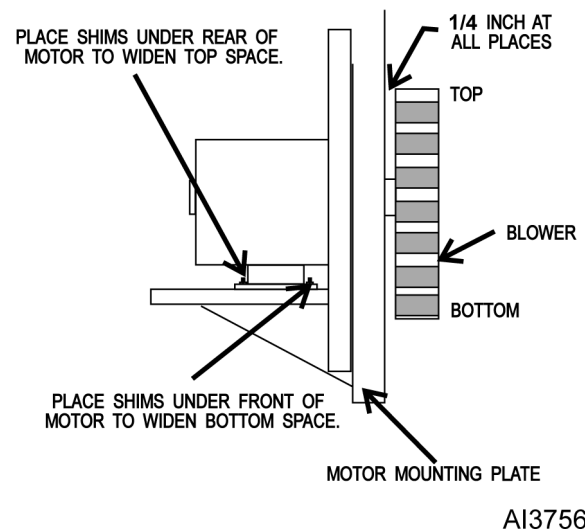


Fig. 25

- Reverse the procedure to install.

## DOOR STRIKE ADJUSTMENT (INDEPENDENT DOORS)

- Open the doors and inspect door strike for proper shape.
  - Bend strike plate.

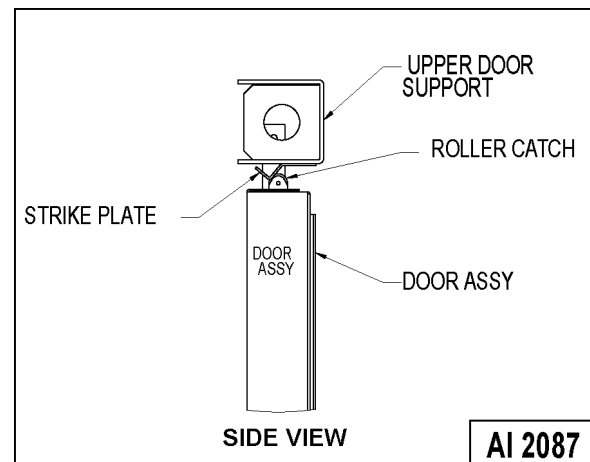


Fig. 26

- Open and close the doors several times while observing the roller latch and strike plate operation.
  - Replace ROLLER LATCH ASSEMBLY (INDEPENDENT DOORS) if malfunctioning.
- Each oven door should open with a force of 8 to 25 pounds when pulled at the handle. The adjustments must allow the doors to remain closed during normal operation and allow opening without exertion by the user.

# ELECTRICAL OPERATION

## COMPONENT FUNCTION

<b>Power Switch (S1) . . . .</b>	Determines the mode of operation; ON, OFF, or COOL down.
<b>Oven Light Switch (S3) . . . . .</b>	Controls the oven cavity lights.
<b>Fan Speed Switch (S2) . . . . .</b>	Controls blower motor speed between High and Low settings.
<b>Alarm/Buzzer . . . . .</b>	Signals the end of a "Cook" cycle when cooking time expires.
<b>Cook Timer . . . . .</b>	Counts the "Cook" time of the product and signals the buzzer at the end of the cycle.
<b>Door Switch . . . . .</b>	Allows the oven to operate when the doors are closed but stops the oven from operating when the doors are opened.
<b>Blower Motor . . . . .</b>	Operates the oven cavity blower (convection fan).
<b>Transformer . . . . .</b>	Provides 240VAC power to the oven control circuit and blower motor (480VAC models only).
<b>Solid State Temperature Control . . . . .</b>	Monitors temperature sensor and regulates the oven cavity temperature by controlling 1CON to energize the heating elements when the control calls for heat.
<b>High Limit Thermostat . . . . .</b>	Protects the oven from temperatures above 550°F by removing power from the heating circuit. Auto resets at 500°F.
<b>1CON . . . . .</b>	Provides power to heating elements when energized. 1C is energized by the temperature control when a call for heat is made.
<b>Power ON Light . . . . .</b>	Lit whenever the power switch (S1) is turned to ON or Cool Down mode.
<b>Heat Light . . . . .</b>	Lit whenever temperature control is calling for heat.
<b>Temperature Probe . . . . .</b>	Senses the oven temperature for the solid state temperature. The probe is an RTD (resistance temperature detector) of the Thermistor type. As temperature increases the resistance value decreases.
<b>Cooling Fan . . . . .</b>	Circulates cooler air from outside the oven to cool components in the control area.
<b>Fuses . . . . .</b>	Protect control circuit.

## COMPONENT LOCATION

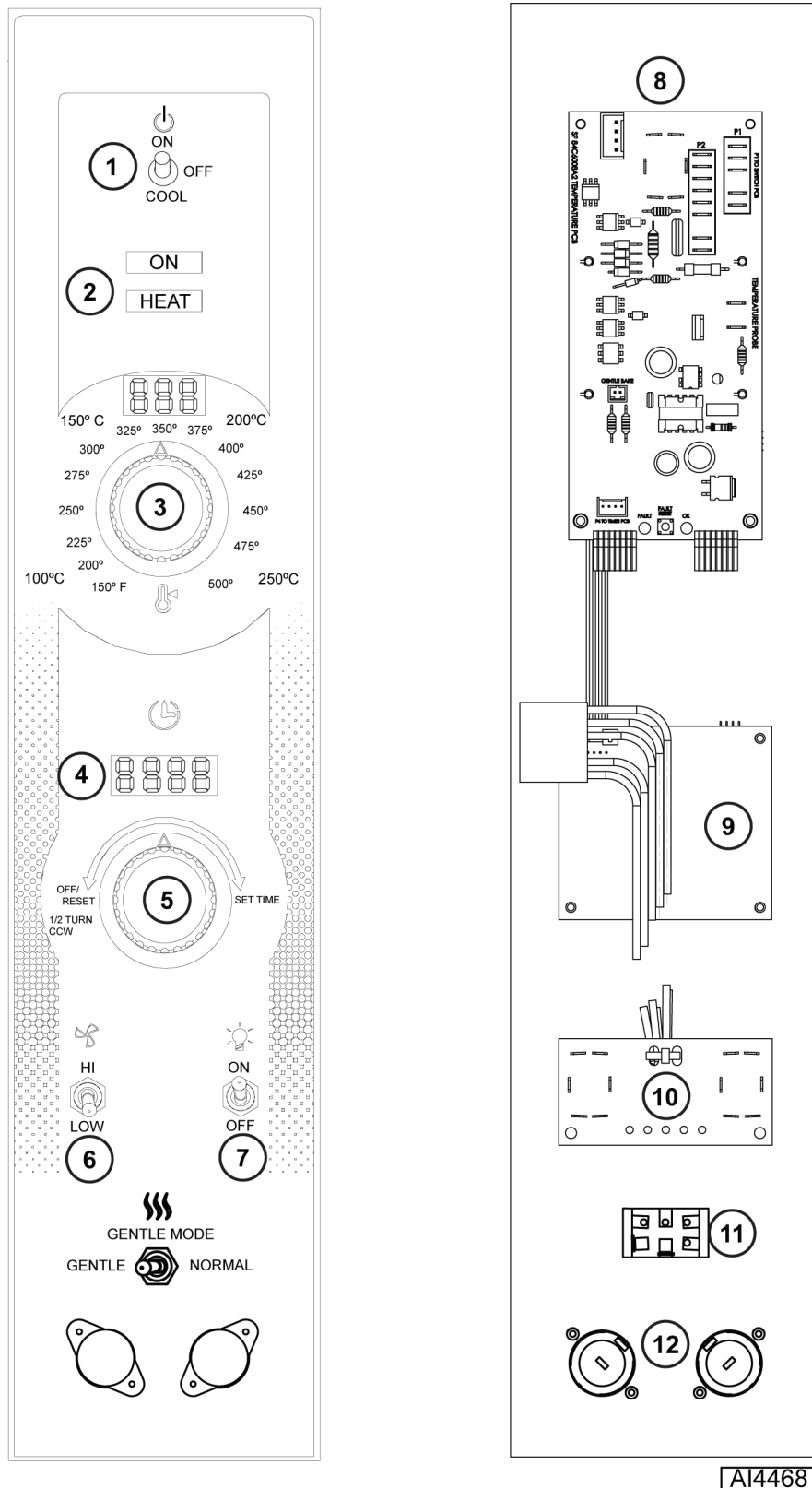


Fig. 27

<b>CONTROL PANEL</b>	
1	ON/ OFF / COOL Switch
2	ON / HEAT / RESET Lights
3	Temperature Dial
4	Digital Time Readout
5	Timer
6	HI / LOW Fan Setting
7	Light ON / OFF Switch
8	Temperature Control Board
9	Timer Board
10	Light and Fan Speed Switch Board
11	Gentle Bake Switch
12	Fuses

**CONTROL PANEL DIGITAL TEMPERATURE READOUT**

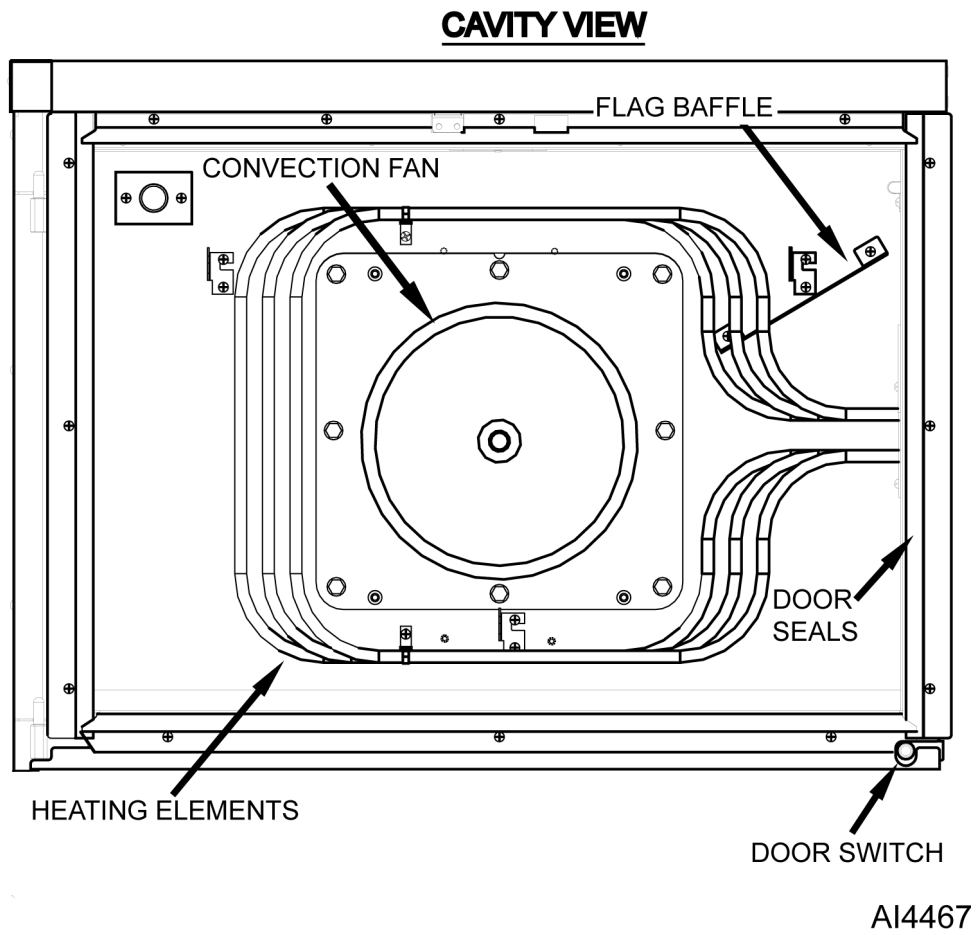


Fig. 28

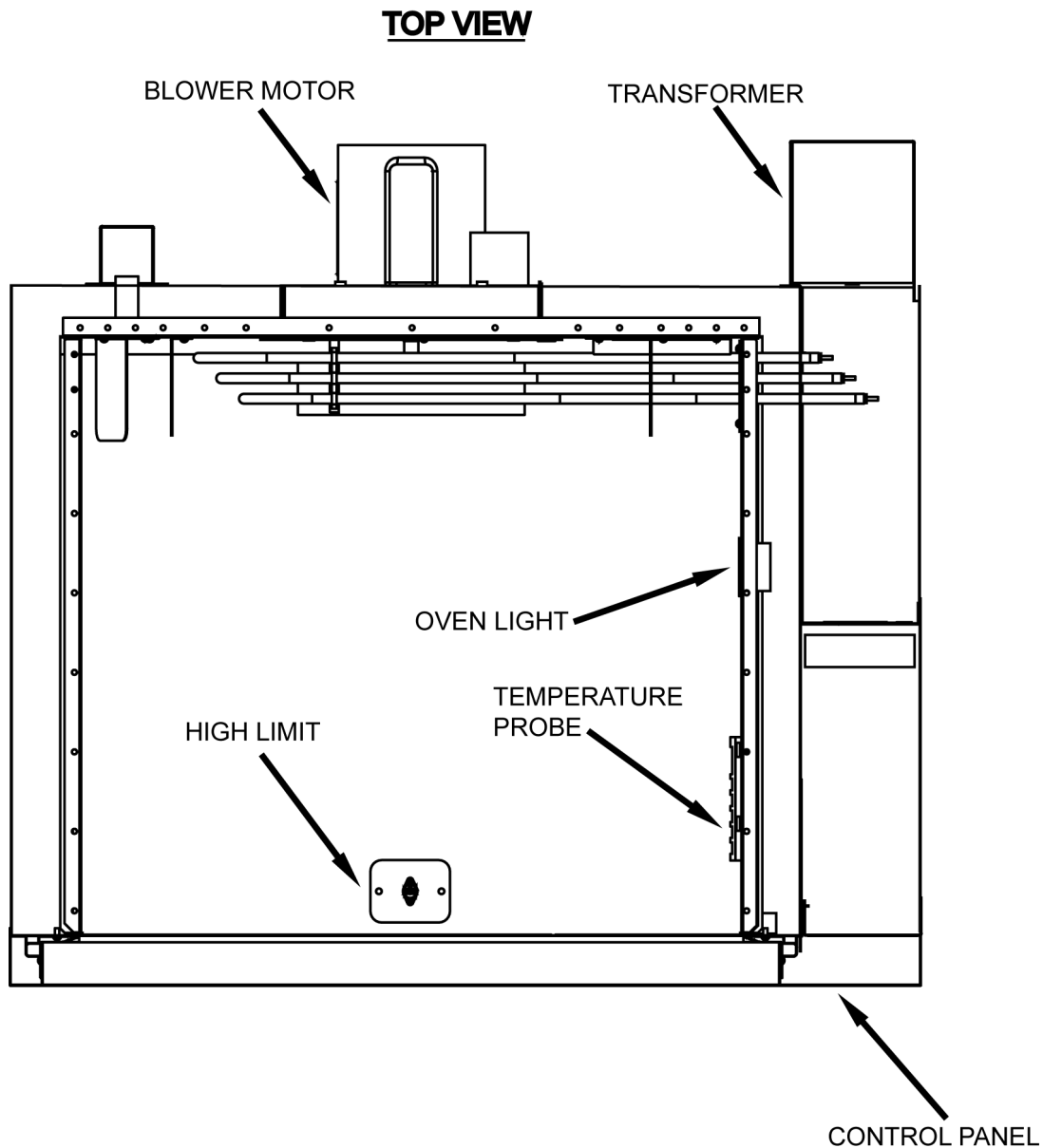
**CONTROL PANEL DIGITAL TIME READOUT**



Fig. 29



**Fig. 30**



AI3781

Fig. 31

## SEQUENCE OF OPERATION

### Cook Cycle

1. Conditions.
  - A. Oven connected to correct voltage and is properly grounded.
  - B. Power switch (S1) OFF.
  - C. Temperature dial set to lowest temperature (fully counterclockwise).
  - D. High limit thermostat CLOSED.
2. Power switch (S1) turned ON.
  - A. Power ON light (Amber) comes ON.
  - B. Solid state temperature control energized.
    - 1) Heating elements powered and heating starts.
    - 2) 1C coil energized.
    - 3) Heat light (Clear) comes on.
  - E. Oven doors closed (door switch contacts CLOSED).
  - F. Oven cavity temperature below 140°F.



C. Blower motor energized.

**NOTE:** Motor speed (Hi/Low) depends on position of fan speed switch (S2).

D. Component cooling fan energized.

E. Power to oven cavity light switch (S3) wire #1. Turns cavity lights ON/OFF; does not affect "Cook" cycle.

3. Set temperature dial to desired "Cook" temperature.

4. Oven reaches set temperature.

A. Temperature control de-energizes internal relay and the normally open (N.O.) contacts OPEN.

1) Heat light goes out.

2) 1C coil de-energized.

a. Power removed from heating elements and heating stops.

5. The oven will continue to cycle on the temperature control until the doors are opened or power switch (S1) is turned to the OFF or COOL down position.

#### **Timer Cycle, Cooking**

**NOTE:** The "Cook" timer operates independently of the heating cycle. Additional time can be set or the timer can be turned OFF throughout the cooking cycle.

1. With the power switch turned ON, power is supplied to "Cook" timer terminal 1.

2. Set "Cook" timer to desired time.

A. Contacts 1 & 3 close, timer motor is energized and timing "down" begins.

3. Time expires on "Cook" timer.

A. Contacts 1 & 3 open, timer motor is de-energized and timing stops.

B. Contacts 1 & 4 close.

1) Buzzer energized and sounds.

**NOTE:** The buzzer continues to sound until the timer dial is set to the OFF position or additional time is set.

#### **Cool Down Cycle**

1. Conditions.

A. Oven is ON.

B. Oven cavity temperature needs to be lowered.

C. Doors are open (door switch contacts OPEN).

D. Fan speed switch (S2) set to "Hi".

2. Power Switch (S1) turned to COOL DOWN.

A. Power ON light (Amber) goes out.

B. Convection fan motor energized.

3. If doors are CLOSED (door switch contacts CLOSED):

A. Power ON light (Amber) comes ON.

B. Component cooling fan energized.

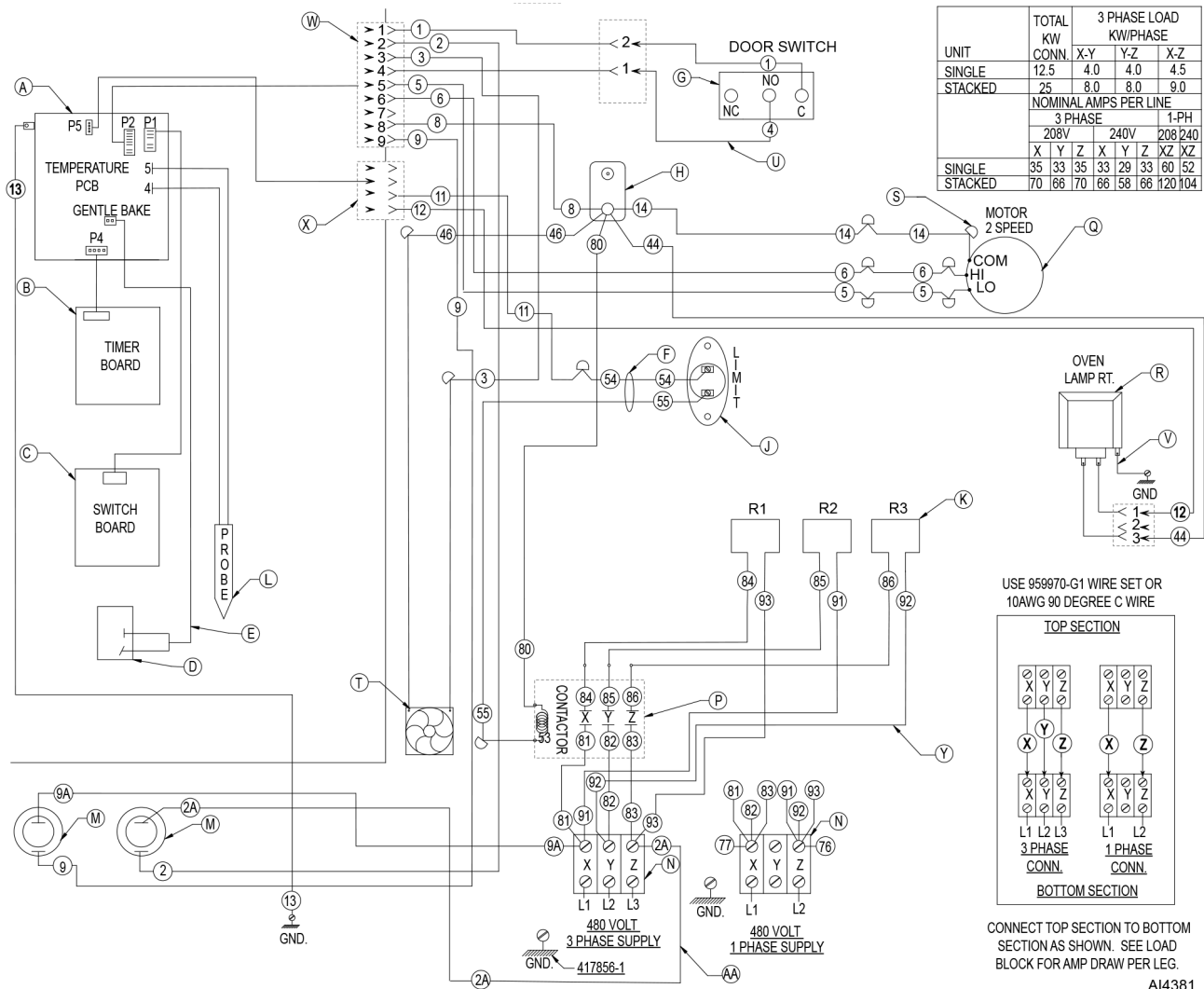
C. Power is supplied to:

1) "Cook" timer terminal 1. If a time is dialed, timer will operate and buzzer will sound when timer reaches zero.

2) Oven cavity light switch (S3) wire #1. Turns cavity lights ON/OFF; does not affect Cool down cycle.

4. The oven will remain in this condition until the power switch (S1).

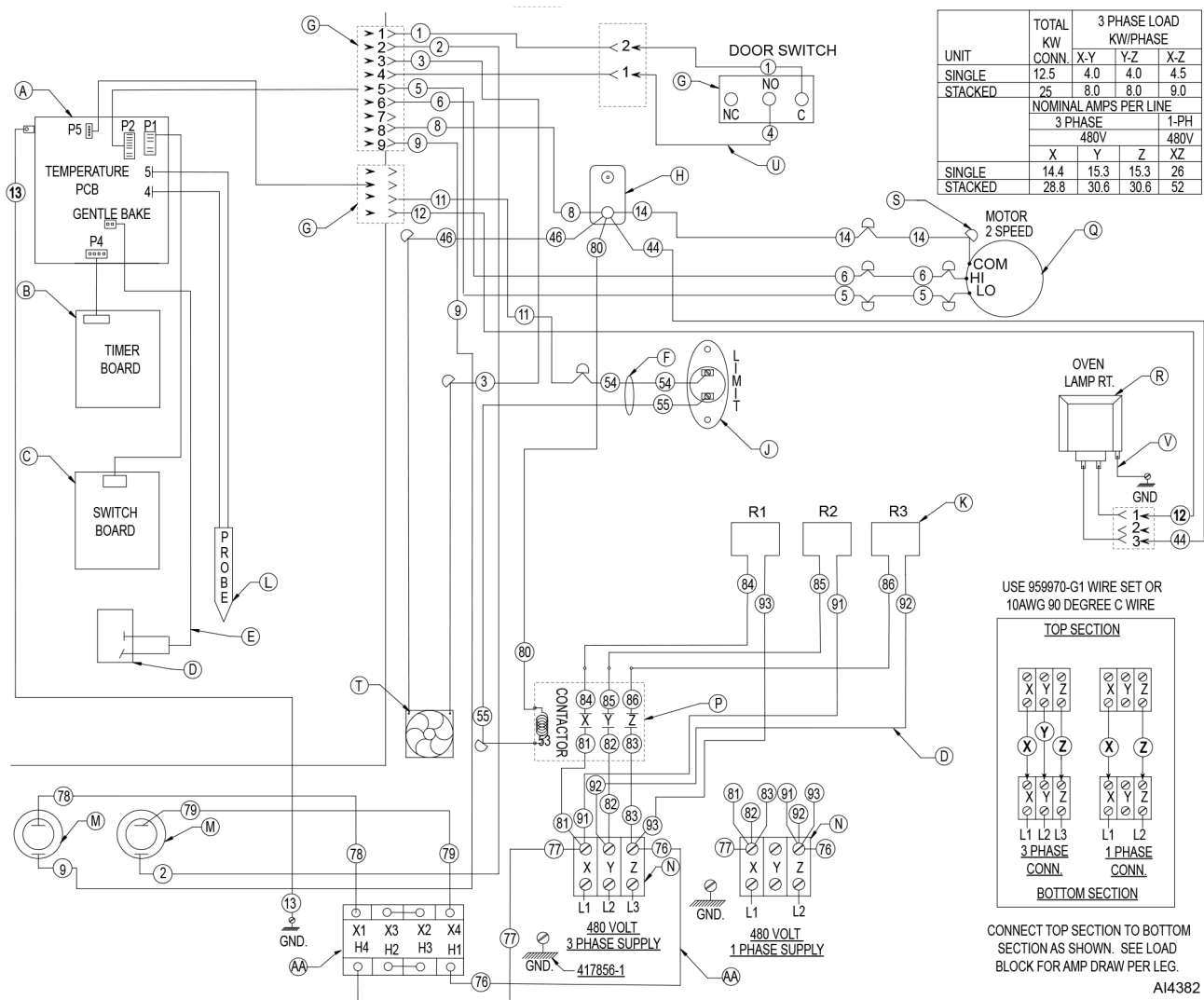
## WIRING DIAGRAMS



**208-240V Wiring Diagram**

VC5ED 208-240V Wiring Diagram	
A	ASSY, TEMP, CONTROL BOARD - TEMP
B	ASSY, TIMER BOARD
C	ASSY, SWITCH BOARD
D	SWITCH, TOGGLE S.P.S.T
E	LCOE GENTLE BAKE WIRE HARNESS
F	WIRE SET, LIMIT SWITCH
G	LCOG DOOR SWITCH, 2HP
H	BLOCK, PORCELAIN ASSEMBLY
J	LIMIT CONTROL 550F
K	LCOE ELEMENT ASSY, 12KW
L	PROBE, THERMISTOR

<b>VC5ED 208-240V Wiring Diagram</b>	
M	FUSE & HOLDER 15A
N	TERMINAL BLOCK 3 POL
P	CONTACTOR 40A 3 POLE
Q	MOTOR 1/3 HP. 2 SPEED G.E.
R	LCOE OVEN LAMP, 40W, 230V
S	WIRE NUT BLUE
T	FAN, COOLING
U	LCOE DOOR SWITCH HARNESS
V	LCOE LIGHT GND WIRE
W	LCOE ACTUATOR HARNESS ASSY
X	LCOE SENSING HARNESS ASSY
Y	LCOE WIRE SET, SF
Z	TRANSFORMER, 480V TO 240V
AA	LCOE 480V WIRE SET



480 VAC Wiring Diagram

VC5ED 208-240V Wiring Diagram	
A	ASSY, TEMP, CONTROL BOARD - TEMP
B	ASSY, TIMER BOARD
C	ASSY, SWITCH BOARD
D	SWITCH, TOGGLE S.P.S.T
E	LCOE GENTLE BAKE WIRE HARNESS
F	WIRE SET, LIMIT SWITCH
G	LCOG DOOR SWITCH, 2HP
H	BLOCK, PORCELAIN ASSEMBLY
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<b>VC5ED 208-240V Wiring Diagram</b>	
P	CONTACTOR 40A 3 POLE
Q	MOTOR 1/3 HP. 2 SPEED G.E.
R	LCOE OVEN LAMP, 40W, 230V
S	WIRE NUT BLUE
T	FAN, COOLING
U	LCOE DOOR SWITCH HARNESS
V	LCOE LIGHT GND WIRE
W	LCOE ACTUATOR HARNESS ASSY
X	LCOE SENSING HARNESS ASSY
Y	LCOE WIRE SET, SF

# TROUBLESHOOTING



**⚠ WARNING** Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times and follow Arc Flash procedures. If test points are not easily accessible, disconnect power and follow Lockout/Tagout procedures, attach test equipment and reapply power to test.

## VC5ED

SYMPTOMS	POSSIBLE CAUSES
Blower motor doesn't run with power switch in "ON" or "COOL DOWN" or position.	<ol style="list-style-type: none"> <li>1. Line voltage incorrect.</li> <li>2. Fuse.</li> <li>3. Power switch (S1) malfunction.</li> <li>4. Fan speed switch (S2) malfunction.</li> <li>5. Interconnecting wiring malfunction.</li> <li>6. Motor inoperative.</li> </ol>
Blower motor doesn't run with power switch "ON", but oven heats.	<ol style="list-style-type: none"> <li>1. Door switch malfunction.</li> <li>2. Fan speed switch (S2) malfunction.</li> <li>3. Interconnecting wiring malfunction.</li> <li>4. Motor inoperative.</li> </ol>
Blower motor doesn't run in "Cool Down", but runs OK in "ON" position.	<ol style="list-style-type: none"> <li>1. Power switch (S1) malfunction.</li> <li>2. Interconnecting wiring malfunction.</li> </ol>
Excessive Heat in oven.	<ol style="list-style-type: none"> <li>1. Temperature probe malfunction.</li> <li>2. Temperature control not calibrated.</li> <li>3. Contactor malfunction.</li> <li>4. Heating element(s) malfunction.</li> </ol>
Low heat in oven.	<ol style="list-style-type: none"> <li>1. Line voltage incorrect.</li> <li>2. High limit thermostat OPEN.</li> <li>3. Contactor malfunction.</li> <li>4. Heating element(s) malfunction.</li> <li>5. Temperature probe malfunction.</li> <li>6. Temperature calibration.</li> </ol>
Timer inoperative or not functioning properly.	<ol style="list-style-type: none"> <li>1. Interconnecting wiring malfunction.</li> <li>2. Timer malfunction.</li> </ol>
Component cooling Fan does not run.	<ol style="list-style-type: none"> <li>1. Interconnecting wiring malfunction.</li> <li>2. Fan motor inoperable.</li> </ol>

SYMPTOMS	POSSIBLE CAUSES
Uneven Cooking.	<ol style="list-style-type: none"> <li>1. Fan cover not properly seated on hooks.</li> <li>2. Convection Fan motor speed/direction.</li> <li>3. Air flow baffles (Flag, Cavity or Vertical) missing or damaged.</li> <li>4. Line voltage incorrect.</li> <li>5. High limit thermostat malfunction.</li> <li>6. Contactor malfunction.</li> <li>7. Heating element(s) malfunction.</li> <li>8. Doors out of adjustment.</li> <li>9. Door roller out of adjustment or broken.</li> <li>10. Door seals damaged.</li> </ol>
Intermittent operation problems.	<ol style="list-style-type: none"> <li>1. Cooling fan malfunction.</li> <li>2. Wiring connections loose.</li> <li>3. High ambient temperatures.</li> </ol>
Oven will not turn on.	<ol style="list-style-type: none"> <li>1. Line voltage incorrect.</li> <li>2. Control circuit fuses OPEN.</li> <li>3. Power switch (S1) inoperative.</li> <li>4. Transformer inoperative (480V only).</li> </ol>
No heat, convection fan motor runs.	<ol style="list-style-type: none"> <li>1. High limit thermostat OPEN.</li> <li>2. Temperature probe malfunction.</li> <li>3. Heating element malfunction.</li> <li>4. Contactor malfunction.</li> <li>5. Temperature control malfunction.</li> </ol>
No power to temperature control.	<ol style="list-style-type: none"> <li>1. Power switch (S1) in "Cool Down".</li> <li>2. Door switch malfunction.</li> </ol>
Door does not seal or shut properly	<ol style="list-style-type: none"> <li>1. Doors out of adjustment.</li> <li>2. Door catch roller out of adjustment or broken (independent doors).</li> <li>3. Door seals damaged.</li> </ol>
Wrong temperature on display.	<ol style="list-style-type: none"> <li>1. Temp board diagnostic buttons are stuck down. Loosen two bottom screws attaching temp board to control panel.</li> </ol>