Operating and Maintenance Instructions

JELENKO

ACCU-THERM

Accu-Therm
150A and 150D
250A and 250D
# TABLE OF CONTENTS

SPECIFICATIONS ......................................................... 2  
INSTALLATION ........................................................... 2  
LOADING OF CASTING RINGS ............................................. 2  
FRONT PANEL CONTROLS ................................................ 6  
REAR PANEL CONTROLS ............................................... 6  
OPERATION ............................................................... 7  
CALIBRATION ............................................................. 8  
SYMPTOM AND CAUSE TABLE .......................................... 9  
ACCU-THERM 150 SERIES:  
  REPLACEMENT OF EXPOSED-ELEMENT HEATING PLATES .......... 13  
  REPLACEMENT OF THERMOCOUPLE ................................. 13-14  
ACCU-THERM 250 SERIES:  
  REPLACEMENT OF EXPOSED-ELEMENT HEATING PLATES .......... 14  
  REPLACEMENT OF THERMOCOUPLE ................................. 14-15  
ACCU-THERM 150 and 250 SERIES:  
  REPLACEMENT OF DOOR INSULATION .............................. 15  
  REPLACEMENT OF DOOR SPRINGS ................................. 15  
  REPLACEMENT OF ANALOG PYROMETER (150A AND 250A ONLY) .. 16  
  REPLACEMENT OF DIGITAL PYROMETER (150D AND 250D ONLY) .. 16  
  REPLACEMENT OF CONTROL CIRCUIT BOARD ...................... 16-17  
  REPLACEMENT OF POWER SUPPLY CIRCUIT BOARD ............... 17  
PARTS LIST ........................................................................ 18-19  
SERVICE INFORMATION .................................................. 20
SPECIFICATIONS

ACCU-THERM 150A and 150D

MAXIMUM TEMPERATURE: 2000°F (1093°C)

OVERALL DIMENSIONS: 10 3/4” wide X 13 7/8” deep X 18 3/4” high
(27.3 cm wide X 35.2 cm deep X 47.6 cm high)

HEATING CHAMBER: 5 1/2” wide X 5 1/4” deep X 5 1/8” high
(14.0 cm wide X 13.3 cm deep X 13.0 cm high)

CAPACITY: 16 Inlay Rings; 4 medium or 1 large Flask

ELECTRICAL: 100 V 50/60 Hz - 900 Watts
115 V 50/60 Hz - 1150 Watts
230 V 50/60 Hz - 1150 Watts

NET WEIGHT (Unpackaged): 31.5 Lbs. (14.2 Kg)

FINISH: Black texture enamel over stainless steel

ACCU-THERM 250A and 250D

MAXIMUM TEMPERATURE: 2000°F (1093°C)

OVERALL DIMENSIONS: 14 1/2” wide X 14 3/8” deep X 18 3/4” high
(36.8 cm wide X 36.5 cm deep X 47.6 cm high)

HEATING CHAMBER: 9 1/8” wide X 5 1/4” deep X 5 1/8” high
(23.2 cm wide X 13.3 cm deep X 13.0 cm high)

CAPACITY: 28 Inlay Rings; 6 medium or 3 large Flasks

ELECTRICAL: 100 V 50/60 Hz - 1300 Watts
115 V 50/60 Hz - 1600 Watts
230 V 50/60 Hz - 1600 Watts

NET WEIGHT (Unpackaged): 40.2 Lbs. (18.1 Kg)

FINISH: Black texture enamel over stainless steel

The Accu-Therm is an advanced solid-state burnout furnace specifically designed to meet the needs of the dental laboratory. With proper use and maintenance, the furnace should provide years of reliable service. Thoroughly read the following pages describing installation, controls, operating instructions, and calibration to obtain optimum results from the furnace.

INSTALLATION

1. Remove all packaging material from the furnace and furnace chamber.

2. Place the furnace in position allowing a minimum of three inches of air space on all sides.

3. Open the furnace door by grasping the handle and pulling forward.

4. Install the ceramic tray or trays into furnace chamber. The tray serves to collect wax residue and foreign material, and prevents their soaking into the floor of the furnace.

5. Close the furnace door. The furnace is now ready for operation.

LOADING OF CASTING RINGS

Casting Rings must be positioned so that they do not touch the exposed heating plate wire.
ACCU-THERM 150A

1. Power Switch
2. Press to Set Control
3. Temperature Set with Outer Locking Ring
4. Heater on Lamp
5. Heat Rate Control
6. Calibration Potentiometer
7. Pyrometer
8. Soak Timer
9. Set/Reset Switch
10. Set Lamp
11. Run Lamp
12. Ready Lamp
13. Door Interlock Switch
1. Power Switch
2. Press to Set Control
3. Temperature Set with Outer Locking Ring
4. Heater on Lamp
5. Heat Rate Control
6. Calibration Potentiometer
7. Pyrometer
8. Soak Timer
9. Set/Reset Switch
10. Set Lamp
11. Run Lamp
12. Ready Lamp
13. Door Interlock Switch
14. Align Potentiometer
15. Buzzer Switch
16. Fuse
FRONT PANEL CONTROLS

POWER SWITCH (1): Turns the furnace power on or off. When the Power Switch is “on” an internal lamp will light.

PRESS TO SET (2): When this switch is depressed the Pyrometer will indicate the set temperature. In the normal position (not depressed) the Pyrometer will indicate the actual furnace temperature.

TEMPERATURE SET (3): Control (Potentiometer) to set the desired furnace temperature used in conjunction with the Press to Set Switch. To Operate: depress the Press to Set Switch and adjust the Temperature Set Control to the desired temperature. The control includes an outer locking ring to prevent accidental movement of the set temperature. This ring must be turned to the right to lock the set temperature.

HEATER ON LAMP (4): Lamp lights when power is applied to the heating elements in the furnace.

HEAT RATE (5): Control to vary the rate of temperature rise. It allows the operator to select one of eight different heat rates from slow to fast for his individual requirements. For normal operation set the control on the fifth mark clockwise from the slow position. Remember heat rate will vary with the number and size of rings in the Heating Chamber and input line voltage.

CALIBRATE (6): This control permits setting the Pyrometer to indicate accurate furnace temperature using known references such as Tempil Pellets. Unscrew the black dust cap to make calibration adjustments. This control has been factory set.

PYROMETER (7): A two-function meter which indicates both the Furnace Chamber temperature and the temperature set point.

SOAK TIMER (8): A 0 to 4 hour Timer which alerts the operator by energizing or turning on a Buzzer, and/or indicating lamps that the furnace has maintained the set temperature for the preselected time period. The Timer may be preset for the heat soak time desired, but does not start to run until the furnace has reached the preset temperature.

SET/RESET (9): Switch used to control the operation of the Timer. The Timer must always be set with this switch in the reset position, and the actual furnace temperature below the set temperature. This sequence is necessary for proper operation. Buzzer may be silenced at the end of the preselected time period by placing this switch in the Reset position. The Furnace will continue to cycle at the set temperature.

SET LAMP (10): Lamp illuminates when the Timer has been set to the desired heat soak time, and the Set/Reset Switch has been placed in the set position.

RUN LAMP (11): Lamp illuminates when the furnace has reached the set temperature and the Timer is in the process of cycling from its preselected time to “0” hours. The Run Lamp remains illuminated during this period.

READY LAMP (12): Lamp illuminates when the furnace has maintained the desired temperature for the preselected time period. The Run Lamp goes out at this time. At this point, the rings are ready for casting.

DOOR INTERLOCK SWITCH (13): Switch which removes electrical power from heating elements when the furnace door is opened. (See Note No. 4, listed under “Operation.”)

REAR PANEL CONTROLS

ALIGN (14): This control (Potentiometer) electrically sets the point at which the power to the heating elements decreases to zero, thereby determining how closely the actual furnace temperature coincides with the preselected set temperature. For a very accurate furnace temperature it may be adjusted so that the “Heater On” lamp turns off when the actual furnace temperature registered on the Pyrometer is a few degrees below the desired set temperature. Unscrew the black dust cap to make adjustment. This control has been factory set.

BUZZER (15): Switch which determines whether or not the Buzzer will sound when the Ready Lamp illuminates. If the Buzzer is not desired, place this switch in the “off” position.

FUSE (16): Safety device designed to prevent damage to the equipment in the event of a short circuit. Do not defeat its purpose; always reinstall the correct value fuse.
OPERATION

1. Press Power Switch to "on." The Lamp in the Power Switch will light. The Pyrometer will indicate the actual furnace temperature.

2. Press P.T.S. (Press to Set) switch. Pyrometer will now indicate set temperature.

3. Check to insure the outer locking ring on the Temperature Set control is not in the locked position. Adjust the Temperature Set control to the desired burnout temperature. Always allow a few seconds after adjustment for the Pyrometer readout to stabilize. Carefully tighten outer locking ring. Although adjustments of less than 5°F are difficult, they can be obtained.

4. Release the P.T.S. switch. Pyrometer will again indicate actual furnace temperature. Notice the furnace incorporates a "Heater On" indicator.

5. Set the Heat Rate Control to the desired rate of temperature rise.

6. With the Set/Reset Switch in the reset position, set Timer for the desired heat soak time at the set temperature. Place Set/Reset Switch from Reset to Set. The Set Indicator Lamp will light. The furnace temperature will increase to the set temperature. When the set temperature is reached, the Run Indicator Lamp will light and the "Heater On" Lamp will turn off. The furnace will now cycle on and off at the set temperature. The "Heater On" Lamp will follow this cycle. The Timer will now run down from the set time to "0" hours. At the end of this heat soak time, the Run Lamp will go out, the Ready Lamp and Buzzer (see Note No. 1) will come on indicating the rings are ready for casting.

7. Place Set/Reset Switch to Reset. Buzzer will turn off. Furnace will continue to cycle at the set temperature until the power switch is pressed to off or the Temperature Set Control is reset to a temperature lower than the actual furnace temperature.

NOTE No. 1

If a buzzer tone is not desired, disable Buzzer by setting the Buzzer Switch to "off" on the rear of the back panel. Set, Run and Ready Indicator Lamps will continue to function as described previously.

NOTE No. 2

Your individual procedure may require a furnace to cycle at a set temperature for long periods of time without indicating time signals or Buzzer. To accomplish this simply set the Timer to "0" hours and the Set/Reset Switch to Reset. Set, Run and Ready Indicator Lamps and Buzzer will not function in this mode of operation.

NOTE No. 3

If a buzzer signal is desired when the furnace reaches the preset temperature, set the Timer to "0" and set up as described in Step 6.

NOTE No. 4

IMPORTANT: Your Accu-Therm Furnace is equipped with a special Door Interlock Switch which removes electrical power from the heating elements when the furnace door is opened. This feature is built into the furnace to ensure the safety of the operator.

The operation of this switch may be checked by opening the furnace door, and observing the "Heater On" lamp turning off. Should opening the furnace door not turn the "Heater On" lamp off, the Door Interlock Switch should be readjusted or replaced. Failure to do so will result in the heating plates being energized while the door is open, which represents a potential shock hazard. As part of your normal maintenance this switch should be replaced once every 5 years.
CALIBRATION

Each of these furnaces is equipped with a THERMOCOUPLE consisting of a pair of dissimilar wires welded together at the couple tip, which projects into the Furnace Chamber. These wires may become contaminated from gases released in the Furnace Chamber and from continued high temperatures. As a result, their characteristics change with time, and calibration should be spot-checked about once a month.

The Jelenko Tempil Pellet should be used for calibration. This Tempil Pellet compounded from metal oxide will fuse and begin to flow when its melting temperature is reached. It is customary to calibrate with a Tempil which melts at 1300°F (704°C) since burnout is ordinarily performed at, or close to, this temperature. For accurate results, the following procedure is recommended:

1. Place an empty small flask (inlay casting ring) approximately in the center of the Furnace Chamber. The Furnace Chamber should be between room temperature and 500°F.

2. Set a small thin metal tray or plate on top of the flask and place a 1300°F (704°C) Tempil Pellet on it, in the center of the tray.

3. Close the door of the furnace and press the Power Switch to “on.”

4. Press the Press to Set Switch.

5. Adjust the Temperature Set Control to 1000°F (538°C).

6. Release the Press to Set Switch.

7. Set the Heat Rate Control to an approximate midrange setting (4th or 5th mark above the slow position).

8. After the furnace temperature as indicated on the Pyrometer has risen to 1000°F (538°C) heat soak for about 3 to 5 minutes.

9. Press the Press to Set Switch.

10. Adjust the Temperature Set Control to 1500°F (816°C).

11. Release the Press to Set Switch.

12. Unscrew the black dust cap over the Calibrate Potentiometer screw.

13. When the furnace temperature as indicated on the Pyrometer attains 1200°F (649°C) begin to check for the melt every 25°F. When checking, open the Furnace Door just enough to determine by a quick glance if the Tempil Pellet has begun to liquefy around the edges. Keep the Furnace Door closed as much as possible during this observation period to prevent heat loss.

14. When the 1300°F (704°C) Tempil Pellet BEGINS to melt or liquefy around the edges, immediately turn the slotted Calibrate Potentiometer screw until the Pyrometer indicates 1300°F (704°C).

15. Replace black dust cap over Calibrate Potentiometer screw.
## SYMPTOM AND CAUSE TABLE

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>CAUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER SWITCH &quot;ON&quot;; POWER SWITCH LAMP &quot;NOT ON&quot;; FURNACE DOES NOT HEAT</td>
<td>NO POWER AT WALL OUTLET</td>
</tr>
<tr>
<td></td>
<td>DEFECTIVE FUSE</td>
</tr>
<tr>
<td></td>
<td>DEFECTIVE POWER SWITCH</td>
</tr>
<tr>
<td></td>
<td>DEFFECTIVE DOOR NOT COMPLETELY CLOSED OR DEFECTIVE DOOR INTERLOCK</td>
</tr>
<tr>
<td></td>
<td>DEFECTIVE SOLID STATE RELAY</td>
</tr>
<tr>
<td></td>
<td>DEFECTIVE CONTROL CIRCUIT</td>
</tr>
<tr>
<td></td>
<td>BOARD</td>
</tr>
<tr>
<td></td>
<td>DEFECTIVE HEATING PLATES</td>
</tr>
<tr>
<td></td>
<td>DEFECTIVE THERMOCOUPLE</td>
</tr>
<tr>
<td></td>
<td>ADJUST ALIGN CONTROL AT REAR OF FURNACE</td>
</tr>
<tr>
<td></td>
<td>LOOSE CONNECTIONS AT PYROMETER</td>
</tr>
<tr>
<td></td>
<td>DEFECTIVE PRESS TO SET SWITCH OR TEMPERATURE SET POTENTIOMETER</td>
</tr>
<tr>
<td></td>
<td>DEFECTIVE TIMER</td>
</tr>
<tr>
<td></td>
<td>BUZZER SWITCH ON REAR PANEL IN &quot;OFF&quot; POSITION OR DEFECTIVE BUZZER</td>
</tr>
<tr>
<td>POWER SWITCH LAMP &quot;ON&quot;; HEATER &quot;ON&quot;; LAMP &quot;OFF&quot;, PYROMETER TEMPERATURE BELOW SET TEMPERATURE; FURNACE DOES NOT HEAT</td>
<td>1</td>
</tr>
<tr>
<td>POWER SWITCH &quot;ON&quot;; POWER SWITCH LAMP &quot;ON&quot;; &quot;HEATER LAMP ON&quot;; FURNACE DOES NOT HEAT</td>
<td>2</td>
</tr>
<tr>
<td>POWER SWITCH ON; PRESS TO SET SWITCH DEPRESSED; TURNING TEMPERATURE SET DOES NOT ADVANCE PYROMETER READING</td>
<td>3</td>
</tr>
<tr>
<td>FURNACE DOES NOT SHUT OFF AT SET TEMPERATURE (EXCEEDS SET TEMPERATURE BY MORE THAN 200 F.)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>AVERAGE FURNACE TEMPERATURE DOES NOT COINCIDE WITH SET TEMPERATURE</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>PYROMETER DEFECTS TO FULL SCALE (2000 F) (DIGITAL MODELS ONLY DISPLAY FIRST DIGIT)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>FURNACE AT SET TEMPERATURE, RUN LAMP &quot;ON&quot; TIMER DOES NOT FUNCTION CORRECTLY</td>
<td>1</td>
</tr>
<tr>
<td>TIMER AT &quot;O&quot; HRS., READY LAMP ON, BUZZER DOES NOT SOUND</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

The symptom and cause table matches the potential problems with their most probable causes in numerical order.
ACCU-THERM 150
(UPPER REAR PANEL REMOVED)

A. Rear Insulating Panel
B. Jumper Lead
C. Ceramic Terminal Block
D. Power Terminal
E. Heater (Power) Leads
F. Heating Plate Wire
G. Ceramic Insulating Bushing
H. Thermocouple Clamp
I. Thermocouple

ACCU-THERM 250 (115V)
(UPPER REAR PANEL REMOVED)

A. Rear Insulating Panel
B. Jumper Lead
C. Ceramic Terminal Block
D. Power Terminal
E. Heater (Power) Leads
F. Heating Plate Wire
G. Ceramic Insulating Bushing
H. Thermocouple Clamp
I. Thermocouple

ACCU-THERM 250 (230V)
(UPPER REAR PANEL REMOVED)

A. Rear Insulating Panel
B. Jumper Lead
C. Ceramic Terminal Block
D. Power Terminal
E. Heater (Power) Leads
F. Heating Plate Wire
G. Ceramic Insulating Bushing
H. Thermocouple Clamp
I. Thermocouple
ACCU-THERM 250A*
(FRONT PANEL REMOVED)

ACCU-THERM 250D**
(FRONT PANEL REMOVED)

J. Main Harness Connector
K. Plastic Standoff
L. Front Panel Assembly
M. Pyrometer Plug

M1. Pyrometer Terminals
N. Circuit Board Plug (1) of (2)
O. Control Circuit Board
P. Interlock Switch Assembly

*Parts Layout For 150A Similar, But More Condensed.
**Parts Layout For 150D Similar, But More Condensed.
ACCU-THERM 250D*
(LOWER REAR PANEL REMOVED)

J. Terminal Block
K. Solid State Relay
L. Circuit Board Plug (1) of (2)
M. Power Supply Circuit Board
N. Lower Rear Panel
O. Buzzer
P. Power Transformer
Q. Thermocouple Leads (note (+) connection)

*Parts Layout Similar For All Other Models
ACCU-THERM 150 SERIES

REPLACEMENT OF EXPOSED-ELEMENT HEATING PLATES

1. Press the POWER SWITCH to the “Off” position.

2. Unplug the POWER CORD from your electrical outlet.

3. With the back of the Furnace facing you, loosen and remove the eight screws along the edge of the UPPER REAR PANEL and remove the UPPER REAR PANEL.

4. On the ceramic terminal block, loosen and remove the nuts which hold the HEATING PLATE wires to the POWER TERMINALS AND STRAIGHTEN THE FOUR HEATER LEADS.

5. With the front of the furnace facing you, open the FURNACE DOOR and note the two CERAMIC FRONT SECTIONS at the opening to the FURNACE CHAMBER. Remove these ceramic sections by lifting upward and pulling out at the bottom. The FURNACE DOOR must be held partially open to remove these CERAMIC FRONT SECTIONS, as they will not come out easily with the door fully opened. The right half of this ceramic section must be removed first, then the left half may be removed.

6. Remove the floor plate, then carefully slide the HEATING PLATES found along the sides of the HEATING CHAMBER out the front of the Furnace.

7. Check condition of Filler Strip Insulation located in the space to the left and right of the Ceramic Front sections. Replace if required.

8. Check condition of the Floor Plate which provides insulation and serves as a spacer between the bottom ends of the Heating Plates. Replace if required.

9. Check condition of Back Plate at the rear of the Heating Chamber. It is held in position by the Heating Plates. Replace if required.

10. To install the new EXPOSED-ELEMENT HEATING PLATES reverse the above procedure. Push Insulating Bushings back into place on the Rear Insulating Panel. When reconnecting HEATING PLATE LEADS at rear of Furnace, be sure all connections are made tightly. Be certain that there is a CERAMIC INSULATING BEAD covering the Thermocouple wires where they cross the Heating Plate wires.

ACCU-THERM 150 SERIES

REPLACEMENT OF THE THERMOCOUPLLE

1. Press the POWER SWITCH to the “Off” position.

2. Unplug the Power Cord from your electrical outlet.

3. With the back of the Furnace facing you, loosen and remove the six screws along the edge of the LOWER REAR PANEL and remove the LOWER REAR PANEL.

4. Locate the two THERMOCOUPLE LEADS which are connected to the PC BOARD and remove them from their TERMINAL CONNECTIONS.

5. With the back of the Furnace facing you, loosen and remove the eight screws along the edge of the UPPER REAR PANEL and remove the UPPER REAR PANEL.

6. Locate the THERMOCOUPLE CLAMP which holds the THERMOCOUPLE to the rear of the furnace and remove it by removing the nut which holds it in place. Loosen and remove the nut which secures the Heating Plate Wire that passes over the THERMOCOUPLE. This wire must be removed and straightened prior to removal of the Thermocouple.

7. Carefully slide the THERMOCOUPLE out from the rear of the furnace and remove the two loose Thermocouple wires from the base of the unit.
8. Bend the new Thermocouple wires at a 90° angle, approximately 3 3/8” from the exposed tip of the Thermocouple. Be certain that there is a CERAMIC INSULATING BEAD covering the Thermocouple wires where they cross the Heating Plate Wire.

9. Feed the two Thermocouple wires through the hole at the top of the unit base and insert the new Thermocouple into the hole at the rear of the furnace.

10. Reinstall the THERMOCOUPLE CLAMP which holds the THERMOCOUPLE to the rear of the furnace, making sure that the short length of insulating tubing is under the clamp.

11. Reconnect the THERMOCOUPLE WIRES to the PC BOARD TERMINALS. Connect the positive Thermocouple wire to the positive terminal on the PC Board, and the negative wire to the negative terminal. Replacement Thermocouples are supplied with the positive wire tagged (+) and the insulation on the wires color-coded. The red wire is positive and the black is negative. In the event the (+) marker is lost or missing from the Thermocouple wire, the polarity of the Thermocouple may be determined by color or in the following manner. Hold a magnet to each of the wires; the wire which is attracted to the magnet is negative.

12. Reconnect the Heating Plate wire which was removed in Step 6 of these instructions.

**ACCU-THERM 250 SERIES**

**REPLACEMENT OF EXPOSED-ELEMENT HEATING PLATES**

1. Press the POWER SWITCH to the “Off” position.

2. Unplug the POWER CORD from your electrical outlet.

3. With the back of the Furnace facing you, loosen and remove the ten screws along the edge of the UPPER REAR PANEL and remove the UPPER REAR PANEL.

4. On the Ceramic Terminal Block, loosen and remove the nuts which hold the HEATING PLATE wires to the POWER TERMINALS and straighten the eight heater leads.

5. With the front of the furnace facing you, open the FURNACE DOOR and note the two CERAMIC FRONT SECTIONS at the opening to the FURNACE CHAMBER. Remove these ceramic sections by lifting upward and pulling out at the bottom. The FURNACE DOOR must be held partially open to remove these CERAMIC FRONT SECTIONS, as they will not come out easily with the door fully opened. The right half of this ceramic section must be removed first, then the left half may be removed.

6. Remove the floor plate, then carefully slide the two side heating plates out the front of the Furnace. At this time the two rear Heating Plates (Elements not exposed to Heating Chamber) may be removed, also from the front of the Furnace.

7. Check condition of Filler Strip Insulation located in the space to the left and right of the Ceramic Front Sections. Replace if required.

8. Check condition of the Floor Plate which provides insulation and serves as a spacer between the bottom ends of the Heating Plates. Replace if required.

9. To install the new EXPOSED-ELEMENT HEATING PLATES reverse the above procedure, keeping in mind that the rear Heating Plates must be installed first, with the flat ceramic side facing the inside of the Furnace Chamber. Push Insulating Bushings back into place on the Rear Insulating Panel. When reconnecting Heating Plate leads at the rear of the Furnace, be sure all connections are made tightly. Be certain that there is a CERAMIC INSULATING BEAD covering the Thermocouple wires where they pass Heating Plate wires.

**REPLACEMENT OF THE THERMOCOUPLE**

1. Press the POWER SWITCH to the “Off” position.

2. Unplug the Power Cord from your electrical outlet.
3. With the back of the Furnace facing you, loosen and remove the six screws along the edge of the LOWER REAR PANEL and remove the LOWER REAR PANEL.

4. Locate the two THERMOCOUPLE LEADS which are connected to the PC BOARD and remove them from their TERMINAL CONNECTIONS.

5. With the back of the Furnace facing you, loosen and remove the ten screws along the edge of the UPPER REAR PANEL and remove the UPPER REAR PANEL.

6. Locate the THERMOCOUPLE CLAMP which holds the THERMOCOUPLE to the rear of the Furnace and remove it by removing the nut which holds it in place. Loosen and remove the nut which secures the Heating Plate Wire that passes over the THERMOCOUPLE. This Wire must be removed and straightened prior to removal of the Thermocouple.

7. Carefully slide the THERMOCOUPLE out from the rear of the Furnace and remove the two loose Thermocouple wires from the base of the unit.

8. Bend the new THERMOCOUPLE wires at a 90° angle, approximately 3 3/8” from the exposed tip of the THERMOCOUPLE. Be certain that there is a CERAMIC INSULATING BEAD covering the THERMOCOUPLE wires where they cross the Heating Plate wire.

9. Feed the two THERMOCOUPLE wires through the hole at the top of the unit base and insert the new THERMOCOUPLE into the hole at the rear of the Furnace.

10. Reinstall the THERMOCOUPLE CLAMP which holds the THERMOCOUPLE to the rear of the Furnace, making sure that the short length of the insulating tubing is under the clamp.

11. Reconnect the THERMOCOUPLE WIRES to the PC BOARD TERMINALS. Connect the positive Thermocouple wire to the positive terminal on the PC Board, and the negative wire to the negative terminal. Replacement Thermocouples are supplied with the positive wire tagged (+) and the insulation on the wires color-coded. The red wire is positive and the black is negative. In the event the (+) marker is lost or missing from the Thermocouple wire, the polarity of the Thermocouple may be determined by color or in the following manner. Hold a magnet to each of the wires; the wire which is attracted to the magnet is negative.

12. Reconnect the Heating Plate wire which was removed in Step 6 of these instructions.

**ACCU-THERM 150 and 250 SERIES**

**REPLACEMENT OF DOOR INSULATION**

1. With the Furnace cool, open the door.

2. Locate and remove the two screws closest to the door hinges which hold the retainer strip in place - remove this retainer strip.

3. The one piece door insulation may now be removed by slightly lifting and sliding toward the rear of the Furnace.

4. To reinstall the new door insulation, reverse the above procedure.

**REPLACEMENT OF THE DOOR SPRINGS**

1. Remove the door insulation as outlined in “Replacement of Door Insulation.”

2. Unhook each spring from the hook which holds it in place and remove both the hook and spring.

3. To reinstall the new springs and hooks reverse the above procedure.
REPLACEMENT OF THE ANALOG PYROMETER (150A and 250A only)

1. Press the POWER SWITCH to the “Off” position.

2. Unplug the Power Cord from your electrical outlet.

3. With the front of the Furnace facing you, loosen and remove the screws along the edge of the LOWER FRONT PANEL and remove the LOWER FRONT PANEL.

4. Loosen and remove the two nuts on the lower left and right hand corners of the PYROMETER, and lift the two plastic wire clamps away from the back of the PYROMETER.

5. Loosen and remove the nuts on the PYROMETER TERMINALS at the back of the PYROMETER and remove the two wires which are attached to these terminals.

6. Loosen the screws on the Pyrometer “T” brackets located on either side of the PYROMETER, and remove the two “T” brackets. The PYROMETER will now lift off the front panel.

7. To reinstall the PYROMETER, reverse the above procedure. When reinstalling the Pyrometer “T” brackets, install them so that the screws are at a slight angle from the vertical position. Tighten the bracket screws only moderately, alternating from one side to the other until secure. Also be certain that the green wire goes back on the positive terminal of the Pyrometer (marked +).

REPLACEMENT OF THE DIGITAL PYROMETER (:50 D and 250 D only)

1. Press the POWER SWITCH to the “Off” position.

2. Unplug the Power Cord from your electrical outlet.

3. With the front of the Furnace facing you, loosen and remove the screws along the edge of the LOWER FRONT PANEL and remove the LOWER FRONT PANEL.

4. Unplug the plug on the rear of the DIGITAL PYROMETER by pulling the plug straight out.

5. Loosen and remove the two nuts on the rear of the DIGITAL PYROMETER. Remove the two lugs and the terminal strip attached to each of the two mounting studs and finally remove the mounting bar which holds the DIGITAL PYROMETER in place. The DIGITAL PYROMETER may now be slid out from the front of the Furnace.

6. To reinstall the DIGITAL PYROMETER, reverse the above procedure. Be sure that the two lugs removed in Step No. 5 are reconnected and that the mounting nuts are not overtightened.

REPLACEMENT OF THE CONTROL CIRCUIT BOARD

1. Press the POWER SWITCH to the “Off” position.

2. Unplug the Power Cord from your electrical outlet.

3. With the back of the Furnace facing you, loosen and remove the six screws along the edge of the LOWER REAR PANEL and remove the LOWER REAR PANEL.

4. Locate the two THERMOCOUPLE LEADS which are connected to the CONTROL CIRCUIT BOARD and remove them from their TERMINAL CONNECTIONS.

5. There are two CIRCUIT BOARDS in this Furnace. The CONTROL CIRCUIT BOARD is located inside the lower housing on the bottom of the Furnace. The POWER SUPPLY CIRCUIT BOARD is located on the REAR PANEL.

6. Unplug the two connectors on the CONTROL CIRCUIT BOARD by pulling them straight off.
7. The CONTROL CIRCUIT BOARD is secured by four plastic standoffs with tabs. To release the
CONTROL CIRCUIT BOARD depress each plastic tab and gently pull straight up on the CIRCUIT
BOARD. The CIRCUIT BOARD must be released from each standoff, one at a time, until all four
are disengaged.

8. To reinstall the CONTROL CIRCUIT BOARD, reverse the above procedure. When engaging
the CIRCUIT BOARD to the plastic standoffs, note that the CIRCUIT BOARD will simply “snap”
into place.

PLEASE NOTE:

When replacing the CONTROL CIRCUIT BOARD, be certain the product number on the CIRCUIT
BOARD is correct for your furnace. Units having a digital readout in degrees “C” use a dif-
ferent CONTROL CIRCUIT BOARD than other models.

REPLACEMENT OF THE POWER SUPPLY CIRCUIT BOARD

1. Press the power switch to the “Off” position.

2. Unplug the Power Cord from your electrical outlet.

3. With the back of the Furnace facing you, loosen and remove the six screws along the edge
of the LOWER REAR PANEL and remove the LOWER REAR PANEL.

4. There are two Circuit Boards in this Furnace. The CONTROL CIRCUIT BOARD is located inside
the lower housing on the bottom of the Furnace. The POWER SUPPLY CIRCUIT BOARD is located
on the REAR PANEL.

5. Unplug the two connectors on the POWER SUPPLY CIRCUIT BOARD by pulling them straight
off.

6. The POWER SUPPLY CIRCUIT BOARD is secured by four plastic standoffs with tabs. To release
the POWER SUPPLY CIRCUIT BOARD depress each plastic tab and gently pull straight up on the
CIRCUIT BOARD. The CIRCUIT BOARD must be released from each standoff, one at a time, until
all four are disengaged.

7. To reinstall the POWER SUPPLY CIRCUIT BOARD, reverse the above procedure. When engag-
ing the CIRCUIT BOARD to the plastic standoffs, note that the CIRCUIT BOARD will simply
“snap” into place.

PLEASE NOTE:

Furnaces which use a digital temperature readout have different Power Supply Circuit Boards
than those with an analog readout. Although these two PC Boards may be physically similar,
they are functionally different. When replacing the Power Supply Circuit Board, be certain the
product number on the part is correct for your furnace.
<table>
<thead>
<tr>
<th>PRODUCT NUMBER</th>
<th>PART DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>476000</td>
<td>Solid State Relay 115V &amp; 230V - All Models</td>
</tr>
<tr>
<td>476002</td>
<td>Power Supply Circuit Board - 150D &amp; 250D Only</td>
</tr>
<tr>
<td>476003</td>
<td>Power Supply Circuit Board - 150A &amp; 250A Only</td>
</tr>
<tr>
<td>476004</td>
<td>Power Transformer 100V/115V - 150D &amp; 250D Only</td>
</tr>
<tr>
<td>476005</td>
<td>Power Transformer 100V/115V - 150A &amp; 250A Only</td>
</tr>
<tr>
<td>476006</td>
<td>Power Transformer 230V - All Models</td>
</tr>
<tr>
<td>476007</td>
<td>Buzzer Switch &amp; Mounting Hardware - All Models</td>
</tr>
<tr>
<td>476008</td>
<td>Buzzer &amp; Mounting Hardware - All Models</td>
</tr>
<tr>
<td>476009</td>
<td>Fuseholder - All Models</td>
</tr>
<tr>
<td>437096</td>
<td>15A Ceramic Fuses (Pkg. of 5) - All Models</td>
</tr>
<tr>
<td>476010</td>
<td>Align Potentiometer - All Models</td>
</tr>
<tr>
<td>476011</td>
<td>Heat-Rate Switch Ass’y. - All Models - 100V/115V - 250 A &amp; D - 230V Only</td>
</tr>
<tr>
<td>476012</td>
<td>Line Cord 115V - Mod. 150A &amp; 150D Only</td>
</tr>
<tr>
<td>476013</td>
<td>Line Cord 115V - Mod. 250A &amp; 250D Only</td>
</tr>
<tr>
<td>476014</td>
<td>Line Cord 230V - 150A &amp; 150D Only</td>
</tr>
<tr>
<td>476015</td>
<td>Line Cord 230V - 250A &amp; 250D Only</td>
</tr>
<tr>
<td>476016</td>
<td>Pyrometer (Analog) - Mod. 150A &amp; 250A Only</td>
</tr>
<tr>
<td>476017</td>
<td>Pyrometer (Digital/°F) - Mod. 150D &amp; 250D Only</td>
</tr>
<tr>
<td>476018</td>
<td>Pyrometer (Digital/°C) - Mod. 150D &amp; 250D Only</td>
</tr>
<tr>
<td>476019</td>
<td>Knob for Heat-Rate Switch - All Models</td>
</tr>
<tr>
<td>476020</td>
<td>Heat-Rate Switch Ass’y. - 230V - 150A &amp; 150D Only</td>
</tr>
<tr>
<td>476021</td>
<td>Knob for Temp. Set. Potentiometer - All Models</td>
</tr>
<tr>
<td>476022</td>
<td>Knob-Lock for Temp. Set Potentiometer - All Models</td>
</tr>
<tr>
<td>476023</td>
<td>Temperature Set Potentiometer - 150A &amp; 250A Only</td>
</tr>
<tr>
<td>476024</td>
<td>Timer Knob 60 Hz - All Models</td>
</tr>
<tr>
<td>476025</td>
<td>Timer Knob 50 Hz - All Models</td>
</tr>
<tr>
<td>476026</td>
<td>Timer Assembly - All Models</td>
</tr>
<tr>
<td>476027</td>
<td>Press-To-Set Switch Ass’y. - All Models</td>
</tr>
<tr>
<td>476028</td>
<td>&quot;Heater On&quot; Lamp Ass’y. - All Models</td>
</tr>
<tr>
<td>476029</td>
<td>&quot;Set&quot; Lamp Ass’y. - All Models</td>
</tr>
<tr>
<td>476030</td>
<td>&quot;Run&quot; Lamp Ass’y. - All Models</td>
</tr>
<tr>
<td>476031</td>
<td>&quot;Ready&quot; Lamp Ass’y. - All Models</td>
</tr>
<tr>
<td>476032</td>
<td>Calibrate Potentiometer - All Models</td>
</tr>
<tr>
<td>428277</td>
<td>Dust Cap for Align &amp; Calibrate Potentiometers - All Models</td>
</tr>
<tr>
<td>476033</td>
<td>Timer Set/Reset Switch - All Models</td>
</tr>
<tr>
<td>476034</td>
<td>Power Switch 115V - All Models</td>
</tr>
<tr>
<td>476035</td>
<td>Power Switch 230V - All Models</td>
</tr>
</tbody>
</table>
476036  Door Interlock Switch Ass’y. - All Models
476037  Control Circuit Board - Model 150A & 250A/150D & 250D/°F Only
476038  Control Circuit Board - Model 150D & 250D/°C Only
476039  Plastic Bumper (Feet) - All Models
476056  Support Kit - Power Supply Circuit Board
476057  Support Kit - Control Circuit Board
476058  Door Assembly - Model 250A & 250D
476059  Door Assembly - Model 150A & 150D
476060  Door Handle - Model 250A & 250D
476061  Door Handle - Model 150A & 250D
476062  Door Spring & Hook Ass’y. - All Models
476063  Door Hinges - All Models (Set of 2)
476064  Door Insulation - Model 250A & 250D
476065  Door Insulation - Model 150A & 150D
476066  Ceramic Front Sections (Set of 2) - Model 150A & 150D
476067  Ceramic Front Sections (Set of 2) - Model 250A & 250D
476068  Heating Plates Ass’y. (Set of 2) - Model 150A & 150D/115 V Only
476069  Heating Plate Ass’y. (Set of 2) - Model 250A & 250D/Rear
476070  Heating Plate Ass’y. (Set of 2) - Model 250A & 250D/Side
476071  Ceramic Terminal Block w/Terminals - Model 150A & 150D
476072  Ceramic Terminal Block w/Terminals - Models 250A & 250D
476073  Rear Insulating Panel w/Block - Model 150A & 150D
476074  Rear Insulating Panel w/Block - Model 250A & 250D
476075  Ceramic Insulating Bushings (Pkg. of 4) - All Models
476076  Thermocouple - All Models
476077  Upper Rear Panel - Models 150A & 150D
476078  Upper Rear Panel - Models 250A & 250D
476079  Vent Hole Ring & Ceramic Vent Tube - All Models
476080  Heater (Power) Leads (Set of 2) - Models 150A & 150D
476081  Heater (Power) Leads Jumper - All Models
476082  Floor Plate, Back Plate & Filler Strip Insulation - Model 150A & 150D
476083  Floor Plate & Filler Strip Insulation - Model 250A & 250D
476084  Terminal Block (Rear Panel) - All Models
476085  Heating Plate Ass’y. (Set of 2) - Model 150A & 150D/230V Only
476086  Heater (Power) Leads (Set of 2) - Models 250A & 250D
476091  Temperature Set Potentiometer - 150D & 250D Only
476092  Tray for Heating Chamber - All Models