

# DryRod<sup>®</sup> Ovens

## Operating Instructions

### Type 40HT Electrode Rebaking Ovens

- Variable high temperature allows rebaking and reconditioning of electrodes
- Programmable controller allows for customized temperature profiles
- Digital temperature display
- Rugged steel construction provides durability in the field



Part No.	Description	Temperature Range*	Insulation	Chamber Size	Capacity (for 18" electrodes)	Weight	Dimensions
<b>Type 40HT Series Ovens</b>							
1204402	1/240V AC at 4500 watts	100° - 800°F (38° - 425°C) +/-25°F (14°C) with programmable digital controller	5" fiberglass	19.5" x 20" x 21"	400 lb (181 kg)	384 lb (174 kg)	35" x 36" x 30" (88.9 x 91.4 x 76.2 cm)
1204400	3/480V AC at 4500 watts						

\* Operation on Direct Current (DC) will damage oven and void warranty. Average stabilized temperature at 70°F ambient temperature.

### Product Description

#### **! CAUTION**

- **Disconnect power and make sure oven is cooled before opening or servicing unit.**
- **Hot Surfaces! Use extreme care to avoid possible burns or personal injury. Protective gloves and personal protective equipment are recommended.**

### Installation

This oven was crated and packaged for long-distance shipment. Exercise care in removing the oven from the wooden crate.

Lifting hooks are supplied for ease of movement into desired location.

After oven is in final location, anchor as required, open the oven door and remove packing material, manuals and loose parts.

### Wiring

Check type and voltage on nameplate.

40HT (3/480V)

40HT (1/240V)

#### For Wiring

1. Remove side electrical panel and remove knock-out in lower left corner.
2. Attach conduit or heavy gauge electrical cord and strain relief capable of handling the load of the oven.
3. From incoming power supply: For 240V attach ground to green terminal block. Attach neutral to terminal block. Attach power to terminal block. (See wiring diagram on page 6) For 480V, attach ground to green terminal block. Attach each phase to terminal blocks.

Make sure all wiring connections are tight. Attach side electrical panel removed in Step 1.

### Amp Draw

Ovens operating on 240 AC voltage draw 19 amps. Those operating on 480 AC voltage draw 10 amps.

### Grounding

The 40HT ovens have a grounding terminal block in the side control panel. The oven operates with electrical components where grounding is required for safe operation. The grounding connection should be made at the ground terminal in the oven and should be run separately to a positive ground.

### Inspection

It is essential that a general inspection of the oven be conducted at this time.

Check all components, wiring for terminal for proper tightness and door for proper adjustment.

This unit was wired and tested at the factory and need only be connected to the proper line voltage. It is strongly recommended that a fused safety disconnect switch be installed in close proximity to the oven.

### Operation

1. Start-up (switch in "OFF" position)
2. Turn on power to the oven.
3. Set temperature controller at desired temperature by pressing the UP/DOWN keys and then pressing ENTER.

### Power Supply

DryRod® ovens are designed to run on AC voltage and accept either 120 or 240 volts +/-10%. When power is supplied, the indicator light will illuminate.

DryRod ovens are supplied with a voltage selector switch to operate on either 120 or 240 AC voltage. Please be sure to set the switch to the proper voltage being used. Operation outside these voltages will impact oven temperature.

### Temperature Setting

Excess Heat: At maximum setting, the actual temperature in portions of the oven near the heating elements may reach approximately 660°F (349°C). Temperatures over 550°F (288°C) are not recommended. They may cause oven damage and/or unacceptably high exterior surface temperatures.

### Description of Controls

A. The controller in this oven is a full-indicating, PID (proportional, integral, derivative) controller using a Type J thermocouple sensor. The controller is factory set for optimum performance accuracy with a 400 lb load at maximum temperature.

B. The high-limit control is a mechanical device with on-off control action. The high-limit control will shut down the oven heat when the oven temperature reaches the high-limit set point. In order to regain power to the heating elements, the oven must cool down below the high-limit set temperature.

### Controller

If any adjustments are required, they should be done by a qualified person with the aid of the instructions contained in this manual or the Original Factory Setting Guide (available upon request from Phoenix International). All instruments are fully tested and adjusted for optimum performance prior to shipping the oven. If the settings are lost for some reason, contact Phoenix International for the PID Controller Original Factory Setting Guide.

### Fan

A fan and filter are included to assist with cooling of electrical components and the controller. This fan has an expected lifespan of 2-3 years depending on ambient usage conditions. It is suggested that the fan operation is checked every six months. If fan is not operating, replace immediately.

### Product Description

#### Heating Elements

Replacement heating elements should be the exact rating as the ones installed. Check Repair Parts Illustration for part number.

To replace heating elements:

1. Place main line safety switch "OFF".
2. Remove heating element cover.
3. Disconnect lead wires at heating elements. Re-mark if necessary, to prevent connecting new heater incorrectly.
4. Remove element rack and replace.
5. Reverse above procedure.

#### Guide to Storage

Electrodes should be stored according to electrode supplier recommendations. In the absence of storage information from your electrode manufacturer, please reference Phoenix's Guide To Electrode and Flux Stabilization for approximate temperatures, found at [www.dryrod.com/guide](http://www.dryrod.com/guide).

### Troubleshooting

#### CAUTION

- **When replacing heating elements, always replace both elements. Pairing of one new element with an old element may cause rapid failure of old element.**

#### Oven Fails To Operate: No Heat

1. If the controller does not illuminate, check power supply.
2. If power is being supplied to the oven, but not the controller, check the transformer.
3. If power is being supplied to the controller, but there is no heat, check the contactor, switch and high limit control for proper operation.
4. If proper voltage is being supplied to the oven and all other equipment is functioning properly, reset the controller and reprogram with factory settings.

5. If controller, switch and contactor operate satisfactorily, check continuity of heating elements. Failure of one element may cause slow and/or uneven heating.
6. Remove oven from power source. Replace all elements.

#### Oven Operates: Overheats

1. Check controller operation as in Step 4 (Oven Fails to Operate: No Heat).
2. Check contractor and wiring.

#### Oven Operates: Temperature Setting "OFF"

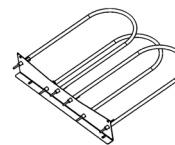
1. Check contractor and wiring.
2. Check controller operation as in Step 4 (Oven Fails to Operate: No Heat).

### Recommended Spare Parts

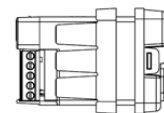
For users of large DryRod oven quantities or users not in North America:

For normal daily operation, the following spare parts and quantities are recommended to have inventoried.

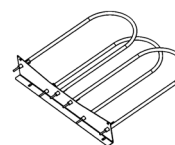
Item No.	Spare Part Description	Part No.	Recommended Quantity per 10 Ovens
1	Heating Element Kit (480V)	1250210	1
2	Heating Element Kit (240V)	1250201	1
3	Controller	1250204	1
4	Main Temperature Probe Kit	1250204	1
5	High Limit Switch	1250203	1



1



3



2



5

## Controller Programming Instructions

### NOTE

- Unit is shipped with controller programmed for single temperature (in degrees Fahrenheit) operation. Up to 8 ramp/soak control programs are able to be programmed.
- Please see included insert for ramp/soak programming details.

### Initial Setting

From the initial setting menu temperature, units, control mode and ramp/soak operations can be accessed. To access initial setting mode, press and hold the ENTER key for at least three seconds. Parameters can then be cycled through by pressing the INDEX (loop) key.

### Select Input Sensor Type

Access initial setting menu until PV line displays InPt, press DOWN arrow until J is displayed, press ENTER to accept setting. After changing input sensor type, you will be returned to the main screen.

### Select Temperature Unit

Access initial setting mode and press INDEX key until PV line displays tPUn. Press UP/DOWN arrows until desired unit is selected. Press ENTER to accept change.

### Control Mode

From initial setting mode press INDEX to CtrlL. Default from factory is ON/OFF control mode. Ramp/Soak profiles can be accessed here as well.

### Heat/Cooling Mode

Selects heating or cooling operation. Set to HEAT.

### Alarm Settings

Up to three alarms may be set for various conditions.

### SALA

System Alarm Setting selects which alarm output is used if a system alarm occurs. The system alarm would be in Input Error or Process Control Failure. This feature can be disabled by turning this parameter to off.

**The following set of functions deal with RS-485 communications and can be found in the controller operating manual. For the full controller manual please contact Phoenix International.**

### Temperature Controller

- #4 T/C INPUT, (+), TO WHITE WIRE
- #5 T/C INPUT, (-), TO RED WIRE
- #1 RELAY CONTACT 1
- #2 RELAY CONTACT 2
- #12 120-240V, N
- #11 120-240V, L

### How to Set Temperature

If temperatures are not displayed, press ENTER key. The top line displays the Process Value or the current temperature inside the oven. The bottom line displays the Set Value or the desired temperature setting. To change the Set Value, press the UP or DOWN keys until the desired temperature is displayed and press ENTER.

### Security Features

The controller has two built-in security locks to prevent unauthorized personnel from modifying parameter settings.

The LoC1 setting affects all parameters of the controller. If LoCo1 setting is enabled, the operator will have to unlock the controller to make any changes to the controller parameters.

The LoC2 setting affects all parameters with the exception of the set point. If LoC2 setting is enabled, the only parameter that the operator will be able to change is the set point. In order to change any other parameters, the operator will have to unlock the control before making a change.

To unlock the control, the operator must depress the ENTER and INDEX key simultaneously.

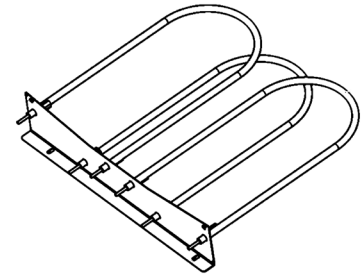
To access the Lock control setting, press the INDEX key twice from the main temperature display.

### Replacement Parts

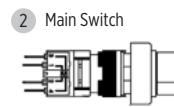
### Ordering Information

To order spare or replacement parts, visit our website: [www.dryrod.com](http://www.dryrod.com). When ordering, please confirm that you are ordering parts for the correct oven.

Item No.	Description	Qty	Part No. for Type 1/240V	Part No. for Type 3/480V
1	<b>Heating Element Kit</b>		1250210	1250201
	Elements	3		
2	<b>Main Switch</b>	1	1250212	1250212
3	<b>Shelf Kit</b>	1	1250208	1250208
4	<b>Contactor</b>	1	1250215	1250218
5	<b>Controller Kit</b>	1	1250205	1250205
6	<b>Hinge Kit (2 hinges)</b>	1	1250206	1250206
7	<b>Door Latch Kit</b>		1250207	1250207
	Door Latch and Strike	1		
	Heat Gaskets	1		
	<b>Fan and Filter Kit</b>		1250209	1250209
	Fan Assembly	1		
	Fan Filter	1		
	<b>Transformer</b>	1	1250213	1250213
	<b>Terminal Blocks (3 power, 1 ground)</b>	1	1250214	1250217
	<b>Circuit Breaker</b>	1	1250216	1250219
	<b>High Limit Switch Kit</b>	1	1250203	1250203
	<b>Main Temperature Probe Kit</b>	1	1250204	1250204



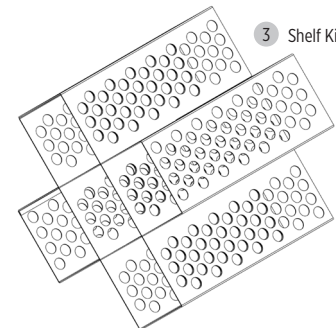
1 Heating Element Kit



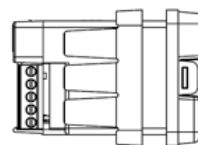
2 Main Switch



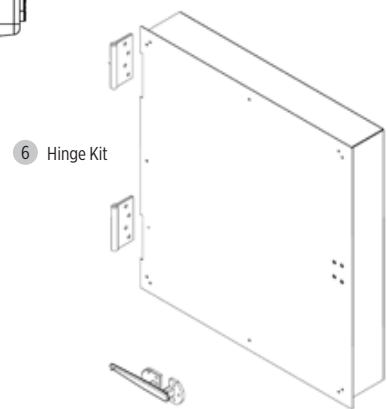
4 Contactor



3 Shelf Kit



5 Controller Kit



6 Hinge Kit

7 Door Latch Kit

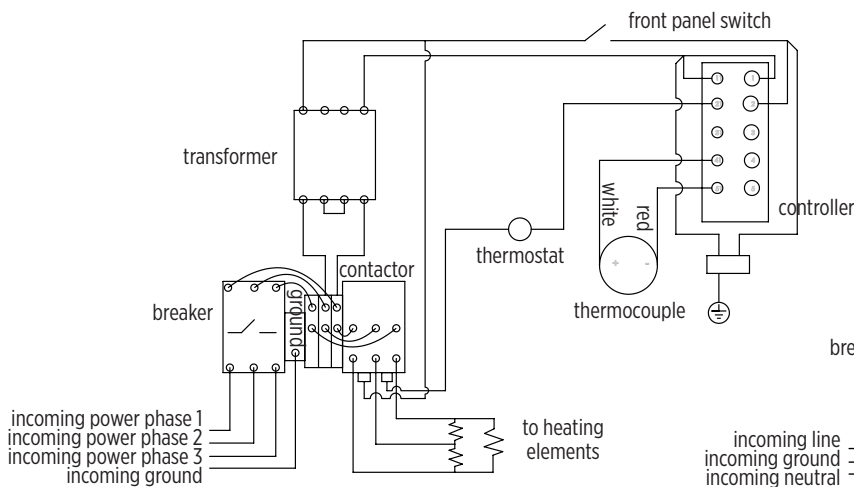
## Wiring

### CAUTION

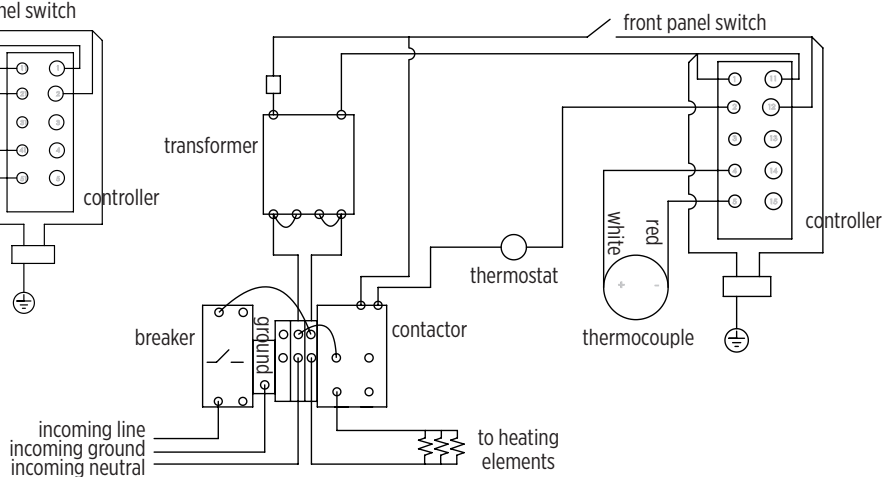
- All wiring should be done by a licensed electrician in accordance with state codes, local codes, and National Electrical Code (NEC) or International Electric Commission (IEC) standards.
- Improper installation or use may result in serious injury.
- Always remove oven from power source before troubleshooting or repairing.

Note: Jumper wires must be installed outside of insulation. Thermometer probe wire (not shown) must be installed outside of insulation.

Wiring Diagram for Type 40HT Series 480V 3 Phase



Wiring Diagram for Type 40HT Series 240V



## Guide to Electrode & Flux Stabilization

### Eliminate expensive rework and protect welding profits!

This guide explains proper storage and oven holding temperatures:

- Recondition/rebake procedures for electrode coatings exposed to moisture are included.
- Remove electrodes from cardboard containers before placing in ovens.
- Electrode coatings should not be exposed to the re-baking temperature without first being reconditioned at a lower temperature. Failure to do so may result in breakdown of electrode coatings. After re-baking, lower temperature to holding level until reissued.

Download your guide at [www.dryrod.com/guide](http://www.dryrod.com/guide).

## Warranty

Phoenix Ovens International LLC warrants its products against defects in material and workmanship. The company will, at its discretion, repair or replace any properly installed Phoenix International manufactured product which fails under normal operating conditions within one year from date of receipt. Contact the factory for return authorization before returning the product to Phoenix International freight prepaid. If our inspection confirms that the product is defective under terms of this warranty, it will be repaired/replaced and returned freight prepaid.

This warranty applies only to products sold by Phoenix International, Inc. and specifically excludes installation or de-installation labor, transportation or equipment of another manufacturer used in conjunction with Phoenix International products. No other warranty, expressed or implied, exists beyond this warranty declaration.

Phoenix constantly strives to improve its products and therefore reserves the right to change design, materials and specifications without notice.