



# Radiation Products Design, Inc.

## Item 168-001

### Operating Instructions for TLD Annealing Furnace

Furnace Serial # \_\_\_\_\_

Setpoint: 80°C, 100°C, 400°C

Please read the following directions carefully before plugging in your furnace to ensure safe and trouble free operation.

1. Power Cord - 3 Prong - operates on standard electrical outlets (115/50-60 Hz and 13 amps).  
NOTE: The furnace is grounded for protection against electrical shock. If you are using an extension cord, use only a heavy duty cord (16 ga. or heavier) rated for 15 amps. Also use the shortest possible cord.
2. Dual-Scale Pyrometer - indicates in Fahrenheit and Celsius the interior temperature as read by the thermocouple.
3. Power Switch - will remove all power from the furnace.
4. Power Indicator Light - glows amber to indicate when power is applied.
5. Power Fuse - 15 Amp. ABC Ceramic
6. Heater Indicator Light - flashes or glows red when power is applied to heater.
7. Temperature Control - Furnace temperature is indicated in Celsius on the LED display from an independent thermocouple. Input to the temperature controller is provided by a type "J" thermocouple (located in the furnace), which produces a millivolt signal representing furnace temperature. This thermocouple signal is compared to a reference signal which is adjusted by the "Set" temperature. Any resultant error is microprocessor conditioned to provide a switched DC logic signal to an optical coupled solid state relay using zero-cross-over firing pulses to a triac semi-conductor. The temperature control proportions power to the furnace heating unit with no line interference.
8. Positive Door Latch - To open, push directly in on the square rubber button, and at the same time swing door open. To close, push directly in on square rubber button while swinging door fully closed, then release pressure on button. NOTE: Before operating furnace always be sure that the door is fully closed and the latch engaged.
9. Ceramic Tray - A ceramic tray is included. It serves as protection for the fiber floor from gouging or scratching from the stainless steel tray. Place it on the furnace floor.

#### **SAFETY NOTE:**

A little care in loading and unloading your furnace will greatly increase the life of the fiber insulation. The fiber is a superior insulation, but can be damaged by hasty or careless loading and unloading. Please use the proper tools. You should have asbestos gloves to protect your hands and the proper tongs for retrieving pieces.

#### **Operating Instructions**

Turn the power switch to "ON". Press and hold the SET key to read the set temperature in Celsius. To change the set temperature, press and hold the SET key in while pressing the increase or decrease arrow keys. Release the SET key to complete the change in temperature. After an initial adjustment of the "Set" temperature, a red heater indicator lamp will illuminate, indicating power is being applied to the "Heater" in the furnace. A digital display indicates the furnace temperature. After the furnace heats up to the appropriate temperature. Turn off furnace, open furnace door, and place TLD aluminum planchet on the shelf then close door. Wait 30 seconds for the thermocouple sensor to heat up to furnace temperature then turn furnace on. Leave TLD's in furnace for about 1 hour or until temperature is reached. (Allow 20 minutes soaking time for the aluminum planchet to heat up.) Turn power off and remove planchet from furnace. Place planchet between two brass cooling plates to cool down rapidly.

**5218 Barthel Industrial Drive NE – Albertville, MN 55301**  
**Phone: 763-497-2071 or 800-497-2071 Fax: 763-497-2295**



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**MAINTENANCE:** The furnace does not require any routine preventive maintenance. If proper caution and care is taken in the loading and unloading of the furnace, the fiber insulation should be quite durable. However, if the fiber insulation in the door, or furnace interior should be accidentally damaged, we have included a small bottle of fiber hardening agent. To repair torn or gouged area:

1. Unplug furnace and allow to cool.
2. Apply liquid hardening agent generously to the damaged area with a small brush or swab.
3. Plug in furnace. Heat to 400-600°F and bake for approximately 2 hours.
4. Any other repair problem should be directed to our office by mail or telephone inquiry. Do not return your furnace for repair or service until you have contacted our office by phone or mail for return authorization.

## REPLACEMENT PARTS LIST

<u>Part No.</u>	<u>Description</u>
14-101-15	15 A 250V ABC Ceramic Fuse
14-101-90	Fuse Holder 15 amp w/notched nut
9390451	Pyrometer
9306008A	Power Switch
15-002	Power Light - amber neon 120 V.
15-003	Heater Light - red neon 120 V.
9491006	Fiber Hardening Agent
9490992A	Ceramic Tray
9491030	Thermocouple for Meter
9491039	Door Insert
9491040N	Muffle Assembly w/heating element
15-320	Thermocouple: Type "J" for Temperature Control
15-310	Watlow Temperature Controller Series 935
14-810	Potter & Brunfield Solid-State Relay

## OPTIONAL TLD EQUIPMENT

<u>Model No.</u>	<u>Description</u>
155-010	1.2 cm Dia. Polystyrene Dome TLD Chip Holder
155-020	2 cm Dia. Polystyrene Dome TLD Chip Holder
155-030	3 cm Dia. Polystyrene Dome TLD Chip Holder
155-040	4 cm Dia. Polystyrene Dome TLD Chip Holder
156-000	Black Plastic Bags for TLD's .005" Thick x 1" x 3"
158-000	Clear Plastic Bags for TLD's .0015" Thick x 1" x 3"
159-000	50 TLD Rod Annealing Planchet/Aluminum
161-000	Plastic Bag Sealer
162-000	Vacuum Tweezers system for TLD Handling
163-000	100 TLD Chip Annealing Planchet/Aluminum
163-002	Stainless Steel Handle for Annealing Planchet
164-000	Two 1" x 6" x 6" Brass Cooling Plates
165-000	Polystyrene Irradiation Phantom for 100-1/8" sq. TLD chips
167-000	Polystyrene Irradiation Phantom for 50 TLD rods
168-300	Stainless Steel Shelf for furnace
169-000	Nitrogen Gauge two Stage w/Flowmeter
169-010	Nitrogen Mechanical Timer Valve

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