



# Model AFE Digital Series Lab Ovens

With Microprocessor Control & Digital Display

## OPERATING MANUAL



### Standard Contents

- (1) AFE Series Lab Oven
- (2) Adjustable chrome wire shelf
- (4) Shelf brackets

**⚠ Not For Use With Flammable Solvents or Gases.**

SPECIFICATIONS	MODEL 10AFE	MODEL 20AFE	MODEL 30AFE	MODEL 40AFE
<b>INTERIOR DIMENSIONS</b> INCHES W x H x D (CM) W x H x D	12x8.63x10 30.5x22x25.4	13x11.63x13 33x29.5x33	18x14.63x12 45.7x37x30.5	18x19.63x14 45.7x50x35.5
<b>EXTERIOR DIMENSIONS</b> INCHES W x H x D (CM) W x H x D	14x20.5x12 35.5x52x30.5	15x24.5x15 38x61x38	20x28.5x14 52x72.4x35.5	20x33.5x16 52x85x40.63
<b>TEMPERATURE RANGE</b> Ambient + 25°F to: F / C	450°/232°	450°/232°	450°/232°	450°/232°
<b>CONTROL STABILITY</b> Typically +/- F / C	0.5°/ 1.0°	0.5°/ 1.0°	0.5°/ 1.0°	0.5°/ 1.0°
<b>STANDARD ELECTRICAL</b> VOLTS/AMPS WATTS PLUG/NEMA	120/6.6* 800 5-15P*	120/8.8* 1050 5-15P*	120/12.5* 1500 5-15P*	120/12.5* 1500 5-15P*
<b>WEIGHT (lbs)</b> SHIPPING STAND ALONE	44 38	61 54	78 70	94 85

\* Standard models voltage only, optional 220 voltage available. Check label on back of unit.

### Common Unit Construction

<b>Exterior:</b> Powder Coated Steel	<b>Interior:</b> Aluminized Steel
<b>Insulation:</b> Fiberglass	<b>Motor:</b> Sleeve Bearing, Thermally Protected
<b>Thermo-control:</b> PID Microprocessor	<b>Heater:</b> Resistive-Tubular Incoloy

**Safety Precautions** ⚠️ **Read Operating Instructions Thoroughly Prior to Operation**

⚠️ The AFE Series lab ovens are not designed for use with any flammable solvents or gases or for materials that may contain flammable solvents or gases. Use only a grounded outlet that is rated for your model's electrical requirement. Oven exterior walls and doors may become hot to the touch when operating at higher set temperatures. Do not leave the oven unattended during operation, especially when processing materials that have flash point temperatures lower than the model oven's maximum operating range. Do not modify the oven or control parameters to operate the oven above the stated maximum operating temperature.

**Set-up**

Position unit in its ultimate operating location. Keep a minimum of 2" of airspace around the unit and a minimum of 10" above the unit. Important: The exhaust ports should NOT be used as chamber access for temperature-measuring probes. Insertion of any such probe or device may damage or unbalance the circulating fan blade at the top of the oven chamber.

Install adjustable shelf by placing the ends of the wire shelf bracket into the corresponding holes located on the inner sides of the oven at the desired height. Push the ends of the bracket into the holes until the first bends in the bracket are against the wall, then rotate the bracket down. Place the shelf on the brackets. (FIG 1)

Plug the unit into a grounded outlet for your unit's rated voltage.

**General Operation**

The unit is ready for your immediate use. All control parameters, calibration and tuning has been done at the factory, no adjustments are necessary.

Push the illuminated power button. The fan motor will start. All LED's on the temperature control will light up immediately and display the current chamber temperature and the set temperature.

Set temperature is constantly displayed in the lower right-hand corner of the display. To change the set temperature, simply press either the up arrow key or the down arrow key, until desired set temperature is reached (FIG 2). The temperature control is set at the factory to read in 1/10 degree F or Fahrenheit units.

To change temperature units or display resolution, see Menu Level Functions (page 3).

Once the unit nears the desired temperature allow the unit to cycle for 20 minutes at set point before temperature becomes fully stable. NOTE: Upon each initial powering-up, the control may typically overshoot the set temp by 3 or 4 degrees especially if the temperature set point is close to the operating ambient temperature. After equilibrium is achieved the control will hold set temperature within 1 unit degree.

**Chamber Loading**

Article processing times and temperature uniformity are largely dependent on load density and positioning. Load the oven so that air circulation within the oven is not impaired. Here are some general guidelines:

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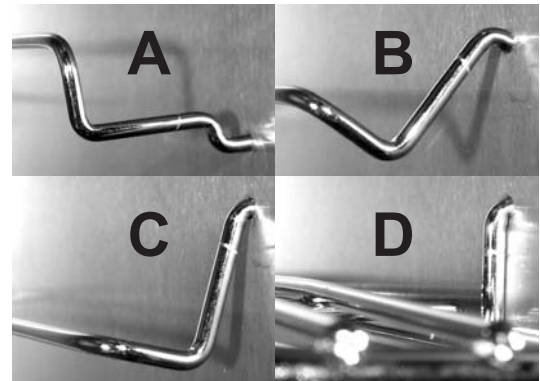
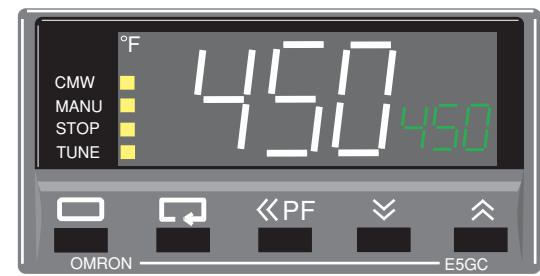


FIG. 1






-  Enter/Exit Menu
  -  Menu Scroll
  -  Increase/Decrease Setpoint
- (PRESS)

FIG. 2



Quincy Lab, Inc.

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## OPERATING MANUAL INSERT

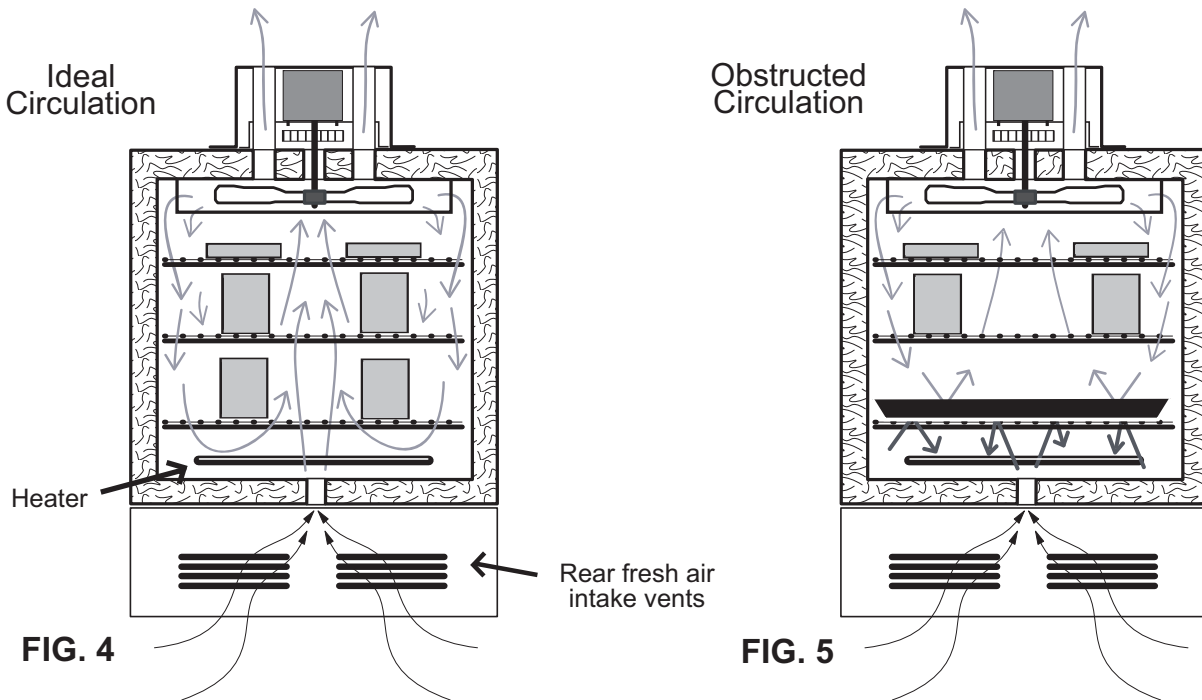
### Chamber Loading

Article or media processing times and temperature uniformity are largely dependent on load density and positioning. Load oven so that air circulation within the oven is not impaired. Here are some general guidelines:

Leave a space between multiple articles on a shelf.

Position articles on shelves as shown in **(FIG 4)**, for best results avoid placing articles or media against or within an inch of the walls, especially on the lower shelf, allowing unrestricted air flow around articles and contributing to even and consistent heating.

Use of large solid trays, or foil on shelves severely limits the oven's ability to distribute heat evenly and uniformly. **(FIG 5)** Since not enough heat rises within the chamber, thermometer readings give false indication that temperature setting is too low. Higher temperature adjustments made as a result of these readings could overheat the lower-placed articles or media.



Do not overload the unit with large (in quantity OR size), or high-density loads. This will show by non-uniform processing and long or impossible "heat-through" times. To help determine a large load's suitability, compare the time it takes for the temperature to recover to the original empty chamber set temperature once load is placed. To reduce recovery time, reduce load accordingly. Also, large loads such as a beaker containing 2 liters of solution, may require an elevated set temperature for the solution to reach and maintain a lower target temperature.

Care should also be taken to avoid placing items on the top-most shelf too close to the holes in the fan plenum. This will restrict the flow of air passing through the plenum and reduce the amount of pre-heated air being circulated through the entire chamber and cause longer than normal heat-through times and inconsistent or unstable oven temperatures.





For best processing performance for a single item, adjust one shelf so that the article is centered in the oven chamber.

**NOTE:** The unit's minimum operating temperature is largely determined by ambient temperature. The unit can operate 25 degrees F (approximately 14 degrees C) above room temperature but temperature stability may be degraded. Temperature stability improves appreciably for settings that exceed ambient by 30 degrees F or better. As a general rule, the lower the ambient temperature, the lower the maximum adjustable operating temperature.



## Menu Level Functions Guide

To access menu for common menu functions, please refer to **Menu Guide** below: Menu setting changes are quick and easy with the our new 5-button digital microprocessor. Through the use of these controls you can: set the operating temperature, lock the set-temperature, select either degrees F or C, calibrate your unit to your independent device, select a different thermocouple type, and auto-tune your oven to your specific application.







### Digital Controller Function Buttons

				
Enter / Exit MENU	MENU Scroll	Changes digit cursor on set temperature	Decrease	Increase




#### To set setpoint temperature

		Up and down arrow keys (shown left) are used to increase or decrease set-point control temperature as desired by user
Decrease	Increase	






#### To adjust control to read in C or F temperature units

			
Hold 3 sec.	View	Hit ONCE	Use   to choose F or C Default set to F



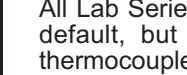


#### To lock setpoint temperature

		
Hold together 3 seconds		Lock setpoint by changing to '3' Default set to 0





#### To calibrate control to independent probe/sensor

			To calibrate oven, add (or subtract) the temperature differential, to the existing IN value shown at prompt
Hit ONCE	Hit ONCE	Use   keys to enter temperature shift in degrees	

#### To change thermocouple type

			All Lab Series Ovens are factory equipped with a standard "J-type" thermocouple as the default, but you may change from this type of thermocouple to either a different thermocouple, RTD, or infrared sensor, depending on your particular application. Due to the four-digit LED limit of the display, when changing to some of the alternate device types, you may lose the decimal feature allowing you to view temperatures in tenths of a degree.
Hold 3 sec.	Use   keys to change type Default set to "J"		

#### To Auto-tune oven

		All ovens are Auto-tuned at the factory using the 'At-1' option for faster response time. You may, however, want to Auto-tune your oven to your specific application. To do this, once at the 'At' prompt (at left), use arrow keys to initiate either Auto-tune option: 'At-1' (for 40% Auto-tune), or 'At-2' (for 100% Autotune). The 40% Auto-tune (At-1), will stabilize the oven temperature quicker and with less 'overshoot' than the 100%, but will be somewhat less precise. The 100% Auto-tune (At-2), will take longer to stabilize oven temperature but will be more precise, and take a little longer to complete the Auto-tune process.
Hit ONCE	Use   keys to change setting Default set to 40%	

## Control Self Diagnostics Control prompts will only display when a fault or alarm condition exists.

### ALARM Codes "S.ERR" & "- - - -"

**Indicates Input Error**  
Check to make sure Thermocouple wiring is connected securely

### ALARM Code "E333"

**Indicates Internal Circuit Error**  
Turn Controller OFF and On. If problem remains, replace Controller

### ALARM Code "E111"

**Indicates Internal Memory Error**  
Turn Controller OFF and On. If problem remains, replace Controller

## Common Replacement Components

All replacement components are readily available and are easily replaced in the field.

COMPONENT	MODEL	VOLTAGE	PART #	COMPONENT	MODEL	VOLTAGE	PART #
Motor	All	115 Volt	205-2030	Digital Controller	All	All	401-1230
Motor	All	230 Volt	205-2031	Relay	All	All	401-1233
Rocker Switch	All	115 Volt 230 Volt	201-2213 201-2213-1	Fuse (10 amp)	10, 20	All	Q-1191
Thermocouple	All	All	701-6253	Fuse (15 amp)	30, 40	All	Q-1190
Friction Catch (set)	All	All	101-2221	Fuse Holder (red)	All	All	Q-1198
6' Cord & Plug	20, 30, 40	115 Volt 230 Volt	101-1403 101-1403-1	Wire Shelf	10	All	101-1000
6' Cord & Plug	10	115 Volt 230 Volt	101-1603 101-1603-1	Shelf Supports (2)	10	All	101-1001
Fan Blade	10	All	205-1018	Wire Shelf	20	All	201-2000
Fan Blade	20, 30	All	205-2018	Wire Shelf	30	All	101-3000
Fan Blade	40	All	205-3018	Wire Shelf	40	All	201-4000
Fan Blade 3" Heat Sink	All	All	205-4018	Shelf Supports (2)	20, 30, 40	All	101-3001

## Periodic Oven Maintenance

The AFE Series Lab Ovens are designed to be virtually maintenance free. But operational safety requires periodic cleaning and chamber temperature accuracy verification. Periodically check the rear air intake vents for dirt or dust build-up. Keep the intake & exit ports clear of obstruction and clean of dust and dirt. Once a year, check the actual oven chamber temperature against a known accurate temperature measurement device. Maintain temperature accuracy to within 5 degrees F of the control setting. Calibrate the control as necessary. To clean exterior and interior surfaces, use a damp cloth or with an all-purpose cleaner. Avoid commercially available oven cleaners.

## Technical Support

If you have any questions or need technical assistance, please contact Quincy Lab Tech Support at:

Email: [information@quincylab.com](mailto:information@quincylab.com)  
Voice: 800-482-HEAT (4328)  
Fax: 773-622-2282

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## Limited Warranty

Quincy Lab, Inc. warrants to the original purchaser that this product will be free from defects in material and workmanship under normal use throughout the warranty period. The standard warranty period for this instrument is eighteen months from date of shipment. The instrument warranty is supplemented with a three year warranty on the heating element. Please refer to your invoice or shipping documents to determine the active warranty period. This warranty covers parts & labor (labor at factory only) and shipping cost for replacement parts.

