

# Bench Series Ovens Operating Manual

## ER Models 21 /31 /51



### Standard Contents

- (1) Bench ER Series Oven
- (2) Adjustable nickel-plated shelf
- (4) Shelf brackets

### Approvals:

UL / cUL, United States/Canadian for laboratory equipment.

**Compliance:** UL Standard 61010-1  
IEC 61010-1.



**NOT FOR USE WITH FLAMMABLE LIQUIDS OR GASES**



<u>SPECIFICATIONS</u>	MODEL 21-250ER	MODEL 21-350ER	MODEL 31-250ER	MODEL 31-350ER	MODEL 51-550ER
<b>INTERIOR DIMENSIONS</b> INCHES W x H x D (CM) W x H x D	25.5x19.7x24 64x49.5x60	25.5x19.7x24 64x49.5x60	25.5x29.7x24 64x75.5x60	25.5x29.7x24 64x75.5x60	25.5x19.7x22.5 64x49.5x57
<b>EXTERIOR DIMENSIONS</b> INCHES W x H x D (CM) W x H x D	33x24x35.5 83x60x90	33x24x35.5 83x60x90	33x34x35.5 83x86x90	33x34x35.5 83x86x90	33x24x35.5 83x60x90
<b>TEMPERATURE RANGE</b> Ambient + 25F to	300°F/150°C	450°F/232°C	300°F/150°C	450°F/232°C	550°F/287°C
<b>CONTROL STABILITY</b> @ 100C @ 200C	+/- 0.2° C NA	+/- 0.3° C +/- 0.5° C	+/- 0.5° C +/- 0.5° C	+/- 0.5° C +/- 0.5° C	+/- 0.5° C +/- 0.5° C
<b>STANDARD ELECTRICAL</b> VOLTS/AMPS WATTS PLUG/NEMA	120/8.75* 1050 5-15P*	120/16* 1920 5-20P*	120/16* 1920 5-15P*	120/16* 1920 5-20P*	230/12.5 2850 6-20P
* Standard models voltage only, optional 230 voltage available. Check label on back of unit.					
<b>WEIGHT</b> SHIPPING STAND ALONE	185 165	185 165	225 200	225 200	195 170

### Common Unit Construction

<b>Exterior:</b>	Powder Coated Steel	<b>Interior:</b>	Aluminized Steel (SS optional)
<b>Insulation:</b>	Fiberglass	<b>Motor:</b>	Sealed Ball Bearing
<b>Thermo-control:</b>	Digital Microprocessor	<b>Heater:</b>	Resistive - Tubular Incoloy

**IMPORTANT**

Refers to an important note in the usage of the unit.

**WARNING**

Warns of a possible electrical shock

**WARNING**

Warns of a possible risk of fire

**CAUTION**

Cautions of HOT exterior surface during operation.

**WARNING**

Warns of possible injury or muscle strains, use assistance when moving or lifting.

**Safety Precautions** **Read Operating Instructions Thoroughly Prior to Operation****Read Operating Instructions thoroughly prior to operation and observe the following safety precautions:**

- Use only a grounded outlet that is rated for your model's electrical requirement.
- Do not modify the oven or factory control settings to operate the oven above the stated maximum operating temperature.
- Exterior surfaces on the Bench Oven models may become hot to the touch when operating at higher set temperatures.
- Do not leave the oven unattended during operation.
- Conduct periodic maintenance as required.

**WARNING:** Do not place volatile or combustible materials into Bench Ovens.**CAUTION:** This unit is not intended for use with any flammable liquids or vapors, or with chemicals that produce toxic gases.**Set-Up & Installation**

- Locate and place the oven on a suitable, clean, and solid surface.
- Maintain a minimum of 6 inches of air space between the rear electrical cover and any building or vertical surface. (FIG. 1)
- Do not cover or restrict airflow at the rear air intake ports, this will cause the motor to overheat, shortening the motor's life and increase risk of fire.
- Heated exhaust air is expelled through the two small ports located just above the rear electrical cover. (FIG. 2) Keep materials or building surfaces that may be susceptible to this heated exhaust air clear from the rear area.
- Maintain a minimum of 5 feet of unobstructed space above the oven to allow exhaust air to convect up and away from the air intake ports.
- Keep 3" of air space at the oven sides (3" from the control panel cover).

For units with optional Exhaust Chamber Adapter, see page 8.

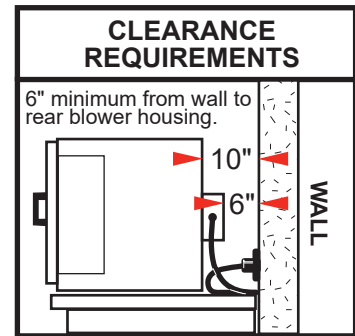


FIG. 1

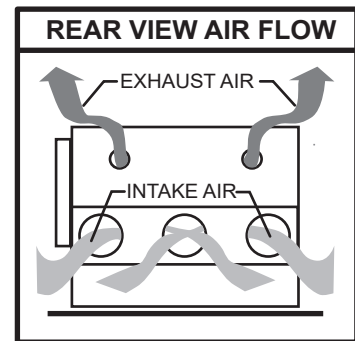


FIG. 2

**Electrical**

Plug the unit into a grounded outlet for your unit's rated voltage. Isolate each model to a separate, appropriately rated circuit or breaker.

Below are NEMA plug configurations that are supplied with the various Bench Series ovens. These configurations will also help to identify the oven's electrical rating or power requirements.

**See the electrical label on the right rear side of the electrical cover to verify your unit's power requirements.**

## General Operation

All control parameters and other control variables have already been factory set for your model's temperature range and capacity to provide heating and performance characteristics for a broad range of applications. **Your Bench Series ER oven is ready for operation.**

### NORMAL START-UP SEQUENCE

- 1 Turn the power / fan switch to the UP position (ON).
- 2 Turn heater switch to the UP position (HEAT).
- 3 Adjust Digital Controller Set-point Temperature.

**⚠** Typically, once the oven reaches the set-point temperature, it will need to cycle at the set temperature for a minimum of 20 minutes before it will achieve equilibrium and becomes stable (see stability specs. on page 1).

### POWER SWITCH

When the power switch is turned to the ON position (FIG. 3), the blower will begin to circulate chamber air and the temperature controller will power ON. At this point, the oven will not start to heat until the heater switch is turned to ON.

### HEATER SWITCH

When the heater switch is in the HEAT (up) position (FIG. 4), the unit's heat elements will activate and begin heating the oven.

When the heater switch is in the OFF (down) or fan/cool position, it allows for convenient ambient air drying of articles or to more slowly & evenly cool heated articles without having to lower or change the temperature setting.

The heater switch in the off or cool position also allows the oven to cool before turning the fan off when using the oven at higher temperature settings. This helps to both cool the motor (prolonging its life) and remove any moisture-laden air before it condenses in the chamber, which will help prevent premature corrosion over time.

### ADJUSTING DIGITAL CONTROLLER UPON START-UP

Upon start-up, all Quincy Lab Bench Ovens will display the current chamber temperature (white LEDs) and begin the heating process to the factory default temperature **set-point** (green LEDs). **The initial temperature set-point varies depending on your oven's model.** (FIG. 5)

The controller will also display the current **temperature unit** on the upper right-hand corner of the controller and the **RUN and OUT** lights will be lit.

*The default temperature unit has been set to read degrees Fahrenheit (°F), to change the operating temperature unit see page 6.*

**⚠** If the controller does NOT show the **RUN** light upon startup, press the **P** button (5 times) to see **RUN** and press **▲** once to enable parameter to **YES**. To return, press **P** once or give the controller 10 sec. to return on its own.  
see **THE RUN FUNCTION** on page 6 for more information.

### SET-POINT TEMPERATURE CHANGE

As the controller begins to heat to the set-point (green LEDs), you can quickly change the temperature by pressing the UP or DOWN arrow key on the controller.

TO INCREASE TEMPERATURE SET-POINT



Press and/or hold the UP arrow key.

TO DECREASE TEMPERATURE SET-POINT



Press and/or hold the DOWN arrow key.

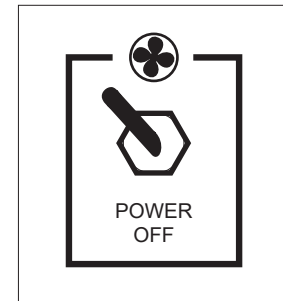


FIG. 3

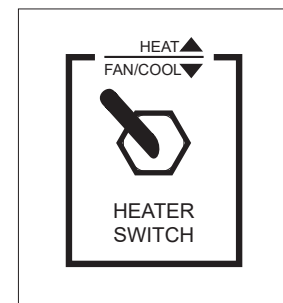


FIG. 4

### DIGITAL MICROPROCESSOR Temperature Controller



Temperature Setpoint

Chamber Temperature

FIG. 5

**⚠** **RUN** and **OUT** lights ON indicates normal heating process.  
**⚠** The **OUT** light will flash intermittently after achieving set-point.

## Shelf Installation and Use

Install adjustable shelf by first placing the shelf bracket rivets into the corresponding keyhole supports located on each inner side of the oven.

Orient the bracket in the "down" or "L" position. This position guides the shelf in and out and protects the sidewall from being scratched. The bracket may also be placed in the "up" or "⌋" position if slightly more interior clearance is needed. Place the shelf on the brackets as shown. (FIG. 6)

- ⚠ Each shelf will support a distributed load of 100 lbs. maximum. Do not exceed a combined total of 300 lbs. within the oven at one time. Avoid placing articles on the oven floor. Instead, use a shelf at the lowest adjustable position.
- ⚠ Care should be taken when removing articles from the oven. Don't pull the shelf out when removing heavy loads. **The shelf is not secured and loads can tip and fall forward.**



FIG. 6

SPACE LEFT INTENTIONALLY BLANK

## Chamber Loading and Oven Performance

When loading the oven, place items in the oven in such a way that air circulation within the oven is not impaired. Note the airflow from the top section view (FIG. 7). Heated air flows from back to front along the side walls, moves horizontally toward the chamber center and then back toward the recirculating blower.

Placing an article against the side walls or rear blower return vent opening will greatly affect unit performance i.e. chamber uniformity, run-up & recovery, maximum operating temperature, and energy use efficiency. Here are some guidelines that are critical to optimum oven performance and better/faster work-load processing.

### OPTIMAL CHAMBER LOADING

- Leave a space between articles on a shelf.
- For best processing performance for a single item, adjust one shelf so that the article is centered in the oven.
- Avoid placing articles on the oven floor. Instead use a shelf at the lowest adjustable position.
- Do not place articles against the inner sidewalls or the slotted vents in rear air plenum. (This will obstruct airflow and degrade uniformity).
- Do not overload the unit with large or high-density loads. (This will show by non-uniform processing and/or long heat-through or processing times).

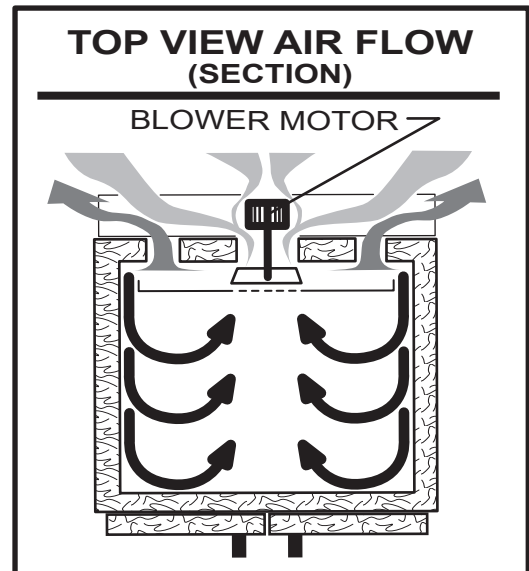
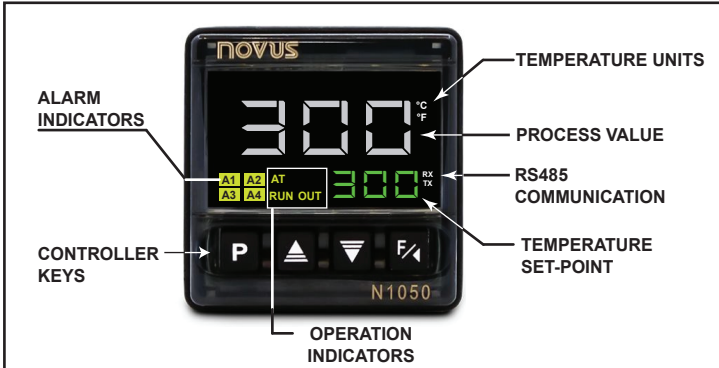


FIG. 7

# Controller Functions

Your oven's controller parameter values have been set at the factory to work with your model accordingly and is ready for immediate use. Once the oven's power switch and fan switch are turned to ON, your oven will begin to heat to the pre-set temperature setpoint shown on the controller's lower right hand corner.



## CONTROLLER KEY DESCRIPTION

- P** Menu/Advance - Use to advance to successive parameter or menu
- ▲** Increase - Use key to increase the parameters value.
- ▼** Decrease - Use key to decrease the parameters value.
- F** Special Function - Use key to advance and return.

## MENU OVERVIEW

As illustrated below, there are a total of 7 menus called cycles. The first 3 **MENUs** (*Operation Cycle, Program Cycle and Timer Cycle*) contain the basic parameters for general operation of the oven. The remaining 4 menus are operational parameters that are **only** accessible with the factory passcode of 1111.

## NAVIGATING THE MENUS

To access each menu, **press and hold** the **P** on your controller. This will allow you to advance from one menu to another.

Once you have reached the desired menu, simply let go of the **P** button and the controller will stop and display the first parameter of the menu you're in.

## INDICATORS AND ALARMS

### OPERATION INDICATORS

#### AT Indicator

ON- Indicates that an auto-tuning is in process. (See Auto Tuning the oven for more information).

#### RUN

ON - Control is enable to run. (RUN = 3E5) or, FLASHING - Indicates a program has stopped.

#### OUT

ON- Indicates normal activation of outputs. FLASHING - Indicates normal operation

### TEMPERATURE SET-POINT

**Number** - Indicates temperature 'set' on the controller.

### PROCESS VALUE

**Number** - Indicates chamber temperature on the controller.

### ALARM INDICATORS

#### A1 and A2

ON - Indicates the occurrence of an alarm condition.

#### A3 and A4

ON- It signals the condition of timer T1 and T2.

### TEMPERATURE UNIT

°C or °F

ON- Identifies the set temperature unit the oven is using.

### COMMUNICATION INDICATORS

#### Tx / RX Indicator

FLASHING - When the controller exchanges data with the RS-485 communication network.

**⚠** *Grayed-out parameters should NOT be changed. Any changes made to these parameter may affect the ovens's performance.*

MENU 1  
Default menu on the controller.

Press and hold **P** to access and advance in menu's

Press **P** to advance in menu's parameters

(MENU 1) OPERATION CYCLE	(MENU 2) PROGRAM CYCLE	(MENU 3) TIMER CYCLE	(MENU 4) TUNING CYCLE	(MENU 5) ALARMS CYCLE	(MENU 6) INPUT CYCLE	(MENU 7) CALIBRATION CYCLE
PV SP	Pr.b	t.St	PASS (*)	PASS (*)	PASS (*)	PASS (*)
unIt	Pr.R	t.dIr	Atun	Fu.R1	tYPE	CRlb
Atun	Pr.n	t.bb	Pb	Fu.R2	FLtP	in.LC
OFFS	P.tol	t1	HYS	SP.R1	dP.Po	in.HC
PCr	P.SP0	t1.E	IR	SP.R2	SP.LL	RESt
RUN	P.SP4	t.End	dt	bL.R1	SP.HL	PAS.C
	P.t1	t2	Ct	bL.R2	Lbd	Pr.t
	P.t4	t.RUN	RCt	HY.R1	IE.o	PCr.E
	P.E1		SF.St	HY.R2	bAud	RUN.E
	P.E4		out1	FLSH	Pr.tY	SnH
	LP		out2		Addr	SnL

GENERAL OPERATION MENU

PASSWORD PROTECTED MENUS

RS-485 parameters on oven's with communication package

## OPERATION CYCLE (MENU 1)

### SET-POINT CHANGE

To change the temperature set-point of your oven, use the indicated arrow keys to increase or decrease temperature.



Press to Increase



Press to Decrease

Set-point is indicated by the green colored numbers.

### TEMPERATURE UNITS

To change the oven's operational units to read either degree Celsius or degrees Fahrenheit you will need to:



Press once to see UNIT



Press Up or Down to select



Press 5 time to return to main menu

### TEMPERATURE OFFSET / CALIBRATION

Your oven has been calibrated at our factory using a NIST-certified temperature instrument.

Over time a temperature adjustment (offset) may be necessary to maintain the oven's controller temperature reading consistent with the oven's interior temperature.

To execute an OFFSET you will need to:

- 1 Place a trusted, preferably certified digital temperature probe at the center of the oven's chamber.
- 2 Record the temperature reading at controller and at the center of your oven's chamber.
- 3 Access the `OFFS` parameter and input the temperature difference from your controller to your digital probe.



Press 3 times to see OFFS



Press up or down to input difference



Press 3 times to return.

### RUNNING A PROGRAM

This parameter allows you to select a Ramp and Soak program 1-5. (See *Ramp and Soak Programming pg 7 for more information*). To start a preset program, you need do the following:



Press 4 times to see PRG



Press up or down to select program



Press 2 times to return

### RUN FUNCTION

The RUN function allows the the user to enable and disable the device heat operation.

**⚠ This function acts as general key for the oven.**

#### When RUN = YES

The controller is enabled to operate and start the heating process.

#### When RUN = NO

The controller is disabled and will NOT start the oven's heating process.

To enable or disable the RUN function do the following:



Press 5 times



Press up or down to select



Press 1 time to return.

### AUTO-TUNING THE OVEN

Your oven's controller has been tuned from our factory to achieve set-point temperatures at a faster rate. However, you can auto-tune your oven's controller to work best with your application and set-points. The two auto-tuning available options are:

#### FAST Tuning

This option prioritizes speed over accuracy, allowing you to reach set-point temperatures faster.

#### FULL Tuning

This tuning option gives priority to accuracy over speed.

To execute an auto-tuning you will need to:

- 1 Select the desired set-point temperature to tune the unit.
- 2 Enable auto-tuning at the parameter `Atun`, and select one of the tuning options, `FAST` or `FULL`



Press 2 times to see Atun



Press down to select option



Press 4 times to return.

**⚠ The TUNE light will remain lit throughout the entire tuning phase.**

**⚠ The auto-tuning process must be fully completed before using the controller.**

## RAMP AND SOAK PROGRAMMING (MENU 2)

The Ramp and Soak Controller provides the opportunity to control applications needing set-point changes overtime. Examples of this are RAMP changes where a gradual rate of temperature change can be set. These can be separated by SOAK periods during which the process is held at a constant value. Each individual time interval in the program or SEGMENT, together with its associated moving setpoint value can be stored as a unique PROGRAM, as represented by the diagram below (FIG. 9).

### HOW TO CREATE A RAMP AND SOAK PROGRAM

1. Press and Hold **P** to see **P . . .** (Program time base, FIG. 8)

Select between **HH:MM (hours:minutes)** or **MM:SS (Minutes:Seconds)**

2. Press **P** once to advance to **P . . .** (Function Resume Program)

Select one of the options which defines the behavior of the controller when it resumes from power interruption.

**PROG** - Returns at the beginning of the program  
**P.SEG** - Returns at the beginning of the segment  
**T.SEG** - Returns at the exact point where it stopped  
**OFF** - Returns with the controller disabled (RUN = No)

3. Press **P** once to advance to **P . . . N** (Number of program to edit)

Select the program number (1 thru 5) to be edited/viewed.

Once you select a program number to edit, the parameters that follow refer to the selected program.

4. Press **P** once to advance to **P . . .** (Maximum deviation from SP)

Input the maximum allowable deviation from PV with respect to SP (set-point). If exceeded, the program is suspended (the internal timer freezes) until PV (process value) is within the allowable deviation value.

#### Programming Set-points and time segments

5. Press **P** once to advance to **P . . .** (Program SP 0 to 4)  
 Set the SP temperature of the program. P.SP0 is the

6. Press **P** once to advance to **P . . .** (Program Segment Time)  
 Set the duration time of the segment in the program being edited.

7. Press **P** once to advance to **P . . .** (Program Event)  
 Set this parameter to OFF. The alarm settings cannot be modified

Repeat Steps 5-7 for each additional segment on the same program.

8. Press **P** once to advance to **└ P** (Link Programs)  
 Select a program number to be linked to another after the initial program ends.

It is possible to create large, more complex program with up to 20 segments. Thus, at the end of the execution of a linked program, the controller immediately starts executing the next selected program number (FIG. 10).

### HOW TO START A PROGRAM

- Press **P** (4 times) to see **P R . . .** (Program)
- Press **▲** or **▼** and select the program number to run.
- Press **P** to advance to **RUN** and using the **▲** select **YES**.
- Press **P** to return to main menu.

PRESS TO ADVANCE IN THE PROGRAMMING MENU.



USE KEYS TO MAKE A SELECTION.

PRESS TO RETURN TO PREVIOUS PROGRAMMING PARAMETER

FIG. 8

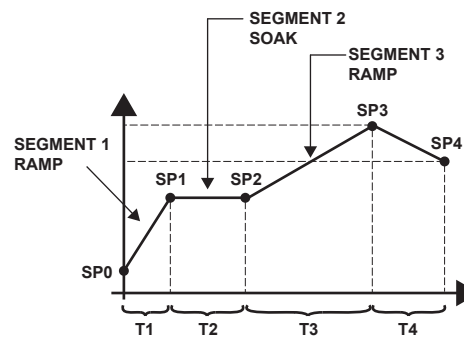
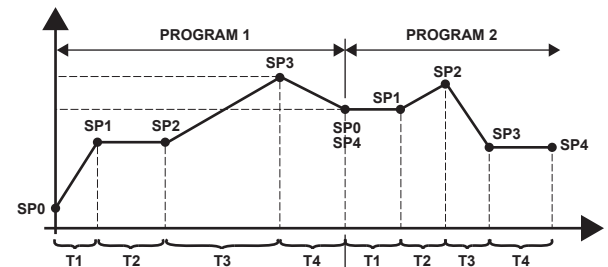


FIG. 9

Example of ramp and soak program



Example of linked programs

FIG. 10

**⚠** Once the program is defined and executed, the controller automatically generates set-points according to the program.



## Basic Count Down Timer Function (Menu 3)

Your oven's controller is equipped with a timer feature that allows you to use a count down timer by manual activation.



For additional timer options see **Timer** on pg2 of the QR-code pdf.

### Setting the count down timer

#### Step 1

Press and hold **P** until you see **t.5t.r** and press **F** to select **F**

⚠ As you are pressing and holding **P** you may go pass **t.5t.r**, if this happens, simply continue to press and hold **P** until parameter **t.5t.r** is reached.



#### Time Start Mode (t.5t.r)

The (F) value allows the timer to be manually activated by pressing **F** once steps are completed.

⚠ There are other timer options available, but only **F** will work as a count down timer.

(Press **P** to advance to Step 2)

#### Step 2

Press **F** to select **d.r**



#### Time Count Direction (t.d.r)

This tells the controller to count in a down direction.

Press **P** to advance to Step 3 or **F** to return to previous

#### Step 3

Using the **▲** or **▼** keys and select a desired time base to apply to the timer.



#### Time Base Setting (t.t.t)

Access this parameter and choose the desired timer base setting.

HH:MM - Time intervals are displayed in hours and minutes.

MM:SS - Time intervals are displayed in minutes and seconds.

Press **P** to advance to Step 4 or **F** to return to previous

#### Step 4

Using the **▲** or **▼** keys and select a desired time.



#### Time Interval Adjustment (t.1)

Access this parameter and input the desired timer value using the UP or DOWN arrow keys.

Press **P** to advance to Step 5 or **F** to return to previous

#### Step 5

Set the following (3) parameters as follows and press **P** to advance:

t.tE

Set this parameter to NO. Continue to next timer parameter.

t.End

Set this parameter to **o.F.F.**. Continue with the next timer parameter.

t.z

Set this parameter to **o.o.o.o.**. Continue with the next timer parameter.

Press **P** to advance to Step 6 or **F** to return to previous

#### Step 6

Using the **▲** or **▼** key select what happens at the end of the timer.



#### t.RUN → Behavior at end of timer

This parameter allows the unit to continue or stop with the heating operation after the timer option is finished. Choose one of the following:

- o.r** - Temperature controller continues to operate.
- o.F.F** - End controller heating operation at the end of the timer.

⚠ If the **o.F.F** option is selected, at the end of the timer the RUN function will need to be enable to YES for oven to heat again. See **RUN FUNCTION** on page 6.

(Press **P** once more to complete set-up and return to temperature display)

### Starting the timer

Once timer is set, you can start, pause, and stop/cancel the timer count by doing the following:

**Start** - Press **F** once.

**Pause** - Press **F** once.

**Stop / Cancel** - Press **F** for 3 seconds.

⚠ When the timer has activated, the indicator (A3) will flash continuously.

⚠ When the timer is interrupted the indicator (A3 or A4) will flash quickly.

## Control Calibration to Match Independent Device

Your oven's controller offset value has been input at the factory to match your oven's true chamber temperature when measured at the center of the oven using an NIST (National Institute of Standard and Technology) traceable temperature box (FIG.11). Over time this offset value may need to be adjusted. If an offset needs to be performed in the field, place a temperature probe at the center of the oven and adjust as needed.



OFFSET VALUE

FIG. 11

#### ACCESS THE OFFSET PARAMETER BY:

**P** **▲** **▼** **F** Press 3 times to see **o.F.F.S**

**P** **▲** **▼** **F** Press up or down to input difference

**P** **▲** **▼** **F** Press 3 times to return.

#### ⚠ IMPORTANT

- Calibrating the actual chamber temperature to the temperature displayed on the controller should only be done if the chamber's temperature, as measured by a known accurate device, is off by more than the stated tolerance of your Bench Oven.
- The most accurate calibration possible for any digital unit is at the center of the chamber (with the chamber empty). Therefore, calibrate the control to the center of the chamber using an accurate temperature measuring device.

#### CALIBRATION EXAMPLE:

In the example shown in (FIG.12), the digital controller process value reads 150°F (white LEDs) and the independent temperature probe placed at the center of the oven shows a reading of 155°F. *Note the difference of 5 degrees F between the temperatures.* On the controller's **o.F.F.S** parameter, for this example, we add the 5°F difference to the offset value already present. This value change will adjust the process value on the controller to match the chamber temperature of 155°F.

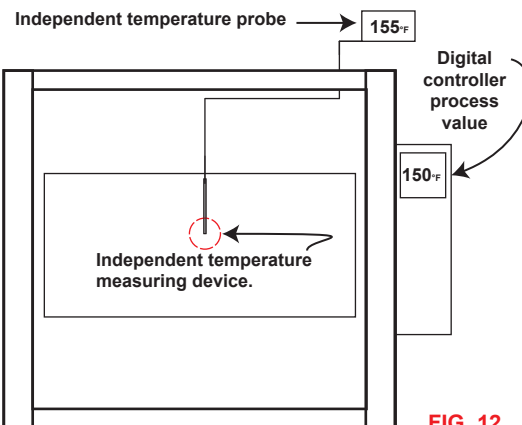


FIG. 12

⚠ Once a temperature adjustment has been made, allow the oven some time to stabilize before making any subsequent adjustments.

⚠ The temperature difference between the controller and your independent probe can be a positive or negative number.



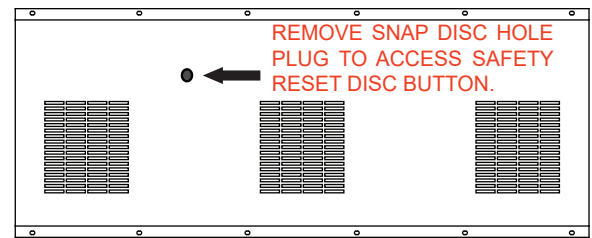
## Safety Alarm Reset

### THERMO SAFETY ALARM

The unit incorporates a thermo safety shut-off. In the event of electronic failure, an internal "snap disc" will cut off power to the unit until it is manually reset. To reset oven, unplug the unit, locate 'SNAP DISC HOLE PLUG' in the back of the unit (FIG. 13) . Remove plug and with a **NON- METAL** rod press on the button to reset.

#### **WARNING:**

**RISK OF ELECTRICAL SHOCK. DISCONNECT UNIT FROM POWER SOURCE BEFORE REMOVING COVER. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY OR DEATH.**



UNITS REAR ELECTRICAL COVER

FIG. 13

## Connecting to the Exhaust Chamber Adapter (Optional)

The optional exhaust chamber adapter is used to vent oven chamber fumes and heated moisture-laden air to a building's exterior for the purposes of minimizing excess heat, humidity or unpleasant but otherwise harmless fumes within an interior working environment.



The exhaust chamber system as a whole is not designed for use to remove harmful or flammable gases or vapors since the oven itself is not rated for use with such materials

It is recommended that the attached exhaust chamber and piping be checked once a year for any obstruction from dust, dirt, or material process "plaque" build-up from processing certain materials. Check with the manufacturer of the materials used in your process if heating the material may produce a bi-product or out gassing that may build up on the interior surface of the oven, exhaust chamber or piping and present a fire hazard over time.

**!** Contact an HVAC engineer for assistance with installation or questions regarding proper venting requirements in your specific building or location, and if any local or national fire or safety codes may apply for your application or process.

### CONNECTING TO THE EXHAUST ADAPTER

■ Connect the exhaust chamber adapter with standard 3 inch diameter single or double-wall steel or galvanized pipe.

■ A minimum of 4 inches of clearance should be maintained between the connected pipe and any building surface or material (FIG. 14).

■ For best performance, run a short pipe horizontally (3 feet max.) directly through an exterior wall.

For vertical runs the exhaust pipe should not have more than one (1) 90 degree elbow, a maximum horizontal run of 3', and a maximum of 15' vertically. Exceeding these recommendations may cause improper ventilation.

Poor exhaust quality would be indicated by an excess of fumes and or vapor from around the door gasket versus what would normally be present if no exhaust venting was used.

Piping run lengths can be extended beyond recommended maximums where a connection to an existing ventilation or exhaust system provide a larger pipe diameter and/or a mechanically powered draft that provides a negative pressure at the point of connection. Mechanically powered vent systems work best to eliminate fumes and moisture vapors, but depending on vacuum strength at the point of connection, it may slightly reduce the oven's time-to-temperature and recovery performance.

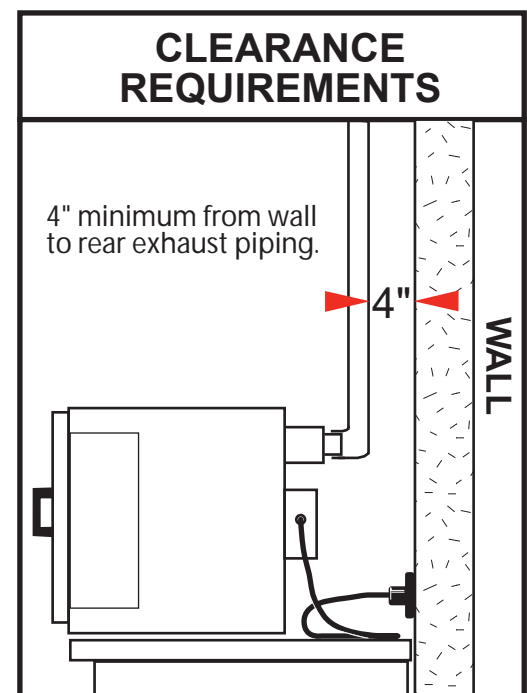


FIG. 14

## Maintenance / Control Calibration / Cleaning Procedures

**The Bench Series Ovens are designed to be virtually maintenance free.** But operational safety requires periodic cleaning and chamber temperature accuracy verification.

### CONTROL CALIBRATION

Twice a year, check the actual oven chamber temperature against a known accurate temperature measurement device. Maintain temperature accuracy to your models specified specifications. (see Control Calibration on page 7.)

### CLEANING PROCEDURE

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. This will keep the motor from overheating and reduce risk of fire. It may be necessary to remove the rear electrical cover to clean or vacuum dirt and dust from in & around the motor. Unplug the oven before removing the rear cover. To clean exterior and interior surfaces, use a damp cloth or an all-purpose cleaner. Avoid commercially available oven cleaners.

## Troubleshooting Tips / Parts & Equipment / Technical Support

PROBLEM	POSSIBLE CAUSE	WHAT TO DO BEFORE CALLING TECH. SUPPORT
Unit not turning ON when switch is in the ON position	1. No power going to the unit	1. Check if the unit tripped a GFCI outlet or fuse. Try a different power outlet connection before moving to number 2 on this list.
	2. Triggered Thermal Safety Disc	2. Reset Thermal Safety Disc in the back of the unit. (see PG 9 for more information)
	3. Disconneted / loose wires.	3. Check wire connections and make sure there are no loose or diconnected wires in the unit.
Unit's temperature varies by $\pm 15^\circ\text{F}$ or more	1. After setting a Temperature, it varies widely.	1. Check if the motor is running continuously. If the blower is working and the unit still has a wild varying temperature in any direction, or the oven continues to heat and trips the Thermal Safety Disc, the digital controller may need replacement. Contact Quincy Lab for further assistance.
Unit keeps tripping GFCI outlet	1. Bad GFCI outlet	1. Check if the unit tripped a GFCI outlet or fuse. Try a different power outlet connection before moving to number 2 on this list.
	2. Moisture on Heat Elements	2. Heating elements can retain some moisture if not used for a given period of time, or if used in a very humid environment. Plug in oven into a non GFCI outlet and allow the unit to heat for some time to remove any moisture from heat elements.
	3. Short in the unit / circuit overload	3. With the unit unplugged, check loose wires and wire terminal for possible short. Also, check the connections at the ovens' terminal block in the back for loose or disconnected wires.

### Common Replacement Components

Digital P.I.D Controller

**PART # 701-6412**

S.S. Relay

**PART # 701-6252**

Door Ball Catch

**PART # 301-2221**

Blower Motor

**PART # 301-2235 (115 VOLT)**

**PART # 301-2230 (230 VOLT)**

For a complete list of replacement components, parts, and additional equipment, visit us on the web at [www.quincylab.com](http://www.quincylab.com) or contact your dealer for availability and pricing.

### Common Additional Equipment

Additional Shelf

**PART # 301-5000**

Additional Shelf Rail

**PART # 301-5001**

**PART # 301-5001S (STAINLESS STEEL)**

Exhaust Chamber Adapter

**PART # 301-2065**

Floor Oven Stand

**PART # 301-2060**

Storage Cabinet

**PART #301-2055**

## Technical Support

Contact Quincy Lab technical support for further assistance or visit us on the web at [www.quincylab.com](http://www.quincylab.com)

**Email:** [information@quincylab.com](mailto:information@quincylab.com)

**Voice:** 800-482-4328

**Fax:** 773-622-2282

Quincy Lab, Inc.

109 Shore Dr.,

Burr Ridge, Illinois 60527

## 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 twenty four (24) 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.