Quincy Lab, Inc.

Bench Series Ovens
Models 21 / 31 / 51
Operating Manual

Standard Contents

(1) Bench Series Oven
(2) Adjustable chrome wire shelf
(4) Shelf brackets

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

SPECIFICATIONS	MODEL 21-250	MODEL 21-350	MODEL 31-350	MODEL 51-550
INTERIOR DIMENSIONS				
INCHES W x H x D	25.5x19.7x24	25.5x19.7x24	25.5x29.7x24	25.5x19.7x22.5
(CM) W x H x D	64x49.5x60	64x49.5x60	64x75.5x60	64x49.5x57
EXTERIOR DIMENSIONS				
INCHES W x H x D	33x24x35.5	33x24x35.5	33x34x35.5	33x24x35.5
(CM) W x H x D	83x60x90	83x60x90	83x86x90	83x60x90
TEMPERATURE RANGE				
Ambient + 25F to	300°F/150°C	450°F/232°C	450°F/232°C	550°F/287°C
CONTROL STABILITY				
@ 100C	+/- 2.0°C	+/- 2.0°C	+/- 2.5°C	+/- 3.0°C
@ 200C	NA	+/- 2.5°C	+/- 3.0°C	+/- 3.5°C
STANDARD ELECTRICAL				
VOLTS/AMPS	120/8.75*	120/16*	120/16*	230/12.5
WATTS	1050	1920	1920	2850
PLUG/NEMA	5-15P*	5-20P*	5-20P*	6-20P
WEIGHT				
SHIPPING	185	185	225	195
STAND ALONE	165	165	200	170

* Standard models voltage only, optional 230 voltage available. Check label on back of unit.

Common Unit Construction

Exterior: Powder Coated Steel
Insulation: Fiberglass
Thermo-control: Hydraulic
Interior: Aluminized Steel (stainless optional)
Motor: Sealed Ball Bearing
Heater: Resistive-Tubular Incoloy

Safety Precautions ⚠ Read Operating Instructions Thoroughly Prior to Operation

⚠ The Bench Series 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 - do not use with an extension cord. Oven exterior walls and doors may become hot to the touch when operating at higher set temperatures. Do not operate the oven in close proximity to any flammable solvents, gases or materials. 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 operate or modify the oven to operate without the motor or fan/blower. Conduct periodic maintenance as required.

Set-Up & Installation

Locate the oven on a suitable, clean, solid surface and maintain a minimum of 6 inches of air space between the rear electrical cover and any building or vertical surface **(FIG. 1)**. This is important as ambient air must circulate freely through the rear air intake ports for proper cooling of the blower motor. ⚠ Do not cover or restrict air flow at the rear air intake ports, this will cause the motor to over-heat, shortening the motor's life and increase risk of fire. Heated exhaust air is expelled through the two small ports located just above rear electrical cover. **(FIG. 2)** Keep materials or building surfaces that may be susceptible to this heated exhaust air clear from rear area. Maintain a minimum 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 control panel cover). For units with optional Exhaust Chamber Adapter, see page 3.

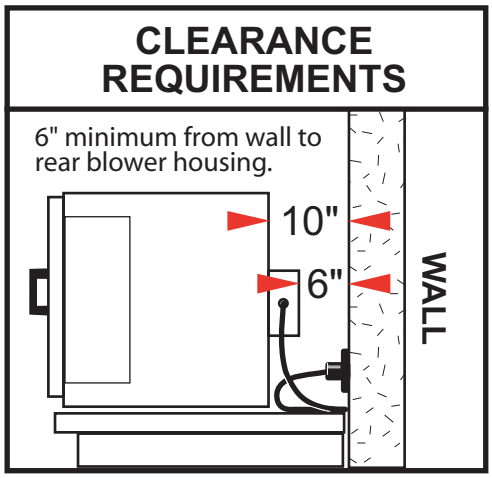

FIG. 1

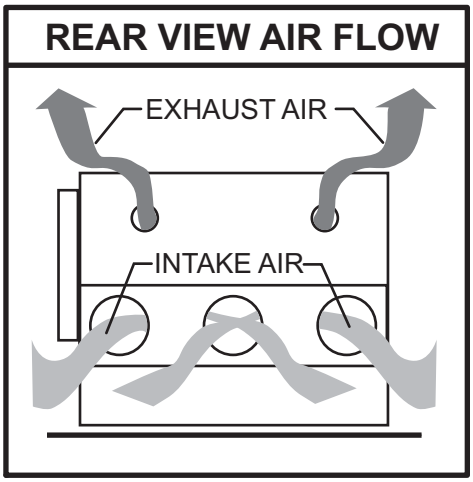

FIG. 2

Electrical

Plug the unit into a grounded outlet for your unit's rated voltage. **IMPORTANT** See electrical label at right side rear electrical cover to verify your units power requirements. Isolate each model to a separate, appropriately rated circuit or breaker. Below are the NEMA plug configurations that are supplied with the various Bench Series ovens. These configurations will also help to identify the ovens electrical rating or power requirements.

120 Volt Units

15AMP 5-15P

20AMP 5-20P

230 Volt Units

15AMP 6-15P

20AMP 6-20P

Connecting to the Exhaust Chamber Adapter (Optional)

Connect the exhaust chamber adapter with standard 3" or 4" 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.3)**

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.

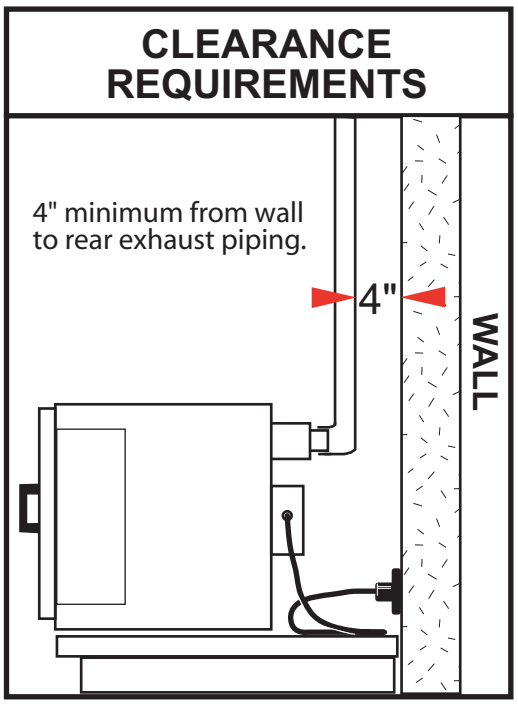

FIG. 3

⚠ Important Note about the Exhaust Chamber and Connection

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. Also, the oven being electric as opposed to gas, does not produce any harmful bi-products in the process of producing heat. 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.

⚠ Annually check exhaust piping for possible obstruction or material process build up.

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. Orientate the bracket in the "down" or "L" position. This position guides the shelf in and out and protects the side wall 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. 4)**

FIG. 4

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.

General Operation

Turn the power/recirc. fan switch to the up position. Turn heater switch to heat. Rotate the thermostat dial to the desired temperature. The heat cycle light will illuminate until the set temperature is reached. Once reached, the heat cycle light will cycle on and off with the heaters, maintaining the set temperature. Typically, the oven will need to cycle at a set temperature for a minimum of 20 minutes before it will achieve equilibrium and becomes stable (see stability specs. on page 1).

The heater switch in the off or cool position allows for convenient ambient air drying of articles or to help slowly or evenly cool heated articles without having to lower or change the temperature setting. Also, use this switch to allow 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 it's life), and remove moisture-laden air before it condenses in the chamber, which will help prevent premature corrosion over time.

Note: The temperatures printed on the dial are designed to help quickly set a temperature to within a close proximity of the indicated dial temperature. Small rotational adjustments to the dial will likely be required to set a more precise temperature setting as measured against a reading from a glass-type or door-mounted dial thermometer (optional) or other external measurement device (insert thermometer or probe in small port hole located on the top right-front corner). Also, any degree of offset observed for a given temperature setting may be different for other temperature settings on the dial. The control dial is calibrated at the factory in the middle of the model's temperature range and is therefore most accurate in these middle range temperatures (some oven model's knob/dial may have printed temperature markings that are higher than the model's actual maximum range).

Over time, continuous use at a single temperature setting may require periodic re-adjustment as the contacts wear or as ambient temperatures change seasonally or from air conditioning or heating (see also control calibration page 5).

For ease of temperature setting and pin-point temperature accuracy over the full temperature range, contact dealer or factory for a field-installable upgrade control package with digital microprocessor temperature controller with dual LED display (or see our ER models).

Chamber Loading and Oven Performance

Load the oven so that air circulation within the oven is not impaired. Note the air flow from the top section view **(FIG. 5)**. 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.

- 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 side walls or the slotted vents in rear air plenum. This will obstruct air flow 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.

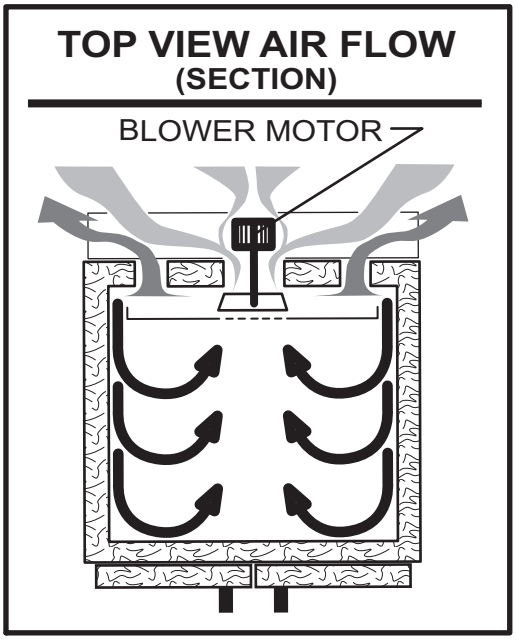

FIG. 5

Control Calibration

Calibration of the temperature knob dial is only recommended if your process requires certification or if setting is off by more than 20° F, due to contact wear from prolonged use. Calibration for this "analog" type control refers to the pointer being centered on the knob temperature marking when measured against an external temperature measurement device reading of the same temperature.
⚠ Do not use the calibration adjustment to operate oven at temperatures beyond its rated range.

1. Turn the knob dial to the desired temperature and allow the oven to settle at that temperature.

2. Pull the press-fit knob from the thermostat shaft, be careful not to change the position of the shaft.

3. Using pliers, hold the outside of the shaft, maintaining it in its original position. Using a small flat screwdriver, turn the trim screw, located recessed within the shaft center, clockwise to lower the temperature or counter-clockwise to raise the temperature. Turn the trim screw no more than 1/8 of a turn in the direction needed. Allow 15 minutes for the temperature to settle at the new setting before taking a new reading. Make subsequent adjustments as needed.

⚠ Periodic Oven Maintenance

The Bench Series 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. 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. The sealed ball bearing motor requires no lubrication. Twice a year, check the actual oven chamber temperature against a known accurate temperature measurement device. Maintain temperature accuracy to within 20 degrees F of the dial setting. Temperature drift or frequent calibration is a sign that the thermostat is failing - replace thermostat upon early observation of temperature instability. Periodically check fan for continuous operation. Maintain records of all periodic maintenance and repairs. To clean exterior and interior surfaces, use a damp cloth or an all-purpose cleaner. Avoid commercially available oven cleaners.

Replacement Components

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

COMPONENT	MODEL	PART #	COMPONENT	MODEL	VOLTAGE	PART #
Power / Heat Switch	All Models	301-2251-1	Blower Motor	All Models	120 Volt 230 Volt	301-2235 301-2230
Door Ball Catch	All Models	301-2221	Thermostat	All Models	120 or 230 Volt	101-2223B
Door Handle	All Models	301-2206	Power Light (red)	All Models	120 Volt 230 Volt	101-2202 101-2202-1
Door Gasket (Per Foot)	All Models	301-2253	Pilot Cycle Light (amber)	All Models	120 Volt 230 Volt	101-2201 101-2201-1
Thermostat Knob	All Models	301-2225	Heater	21 & 31-250	120 Volt 230 Volt	301-1210 301-1210-1
Blower/Fan Blade	All Models	301-2218	Heater	21 & 31-350	120 Volt 230 Volt	301-1212 301-1212-1
Shelf	All Models	301-5000	Heater	51-550	230 Volt	301-1213-1
Shelf Rail (Galvanize) (Stainless)	All Models	301-5001 301-5001S	Cord and Plug	21 & 31-250	120 Volt 230 Volt	101-1403 101-1403-1
Exhaust Chamber Adapter	All Models	301-2065	Cord and Plug	21 & 31-350	120 Volt 230 Volt	101-1203 101-1403-1
Floor Stand or Cabinet	Stand w/shelf Cabinet stand	301-2060 301-2055	Cord and Plug	51-550	230 Volt	101-1203-1

⚠ Disconnect Power Before Repairing or Replacing any Component

Technical Support

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

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

Quincy Lab, Inc.
1925 N Leamington Ave
Chicago, Illinois 60639

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.