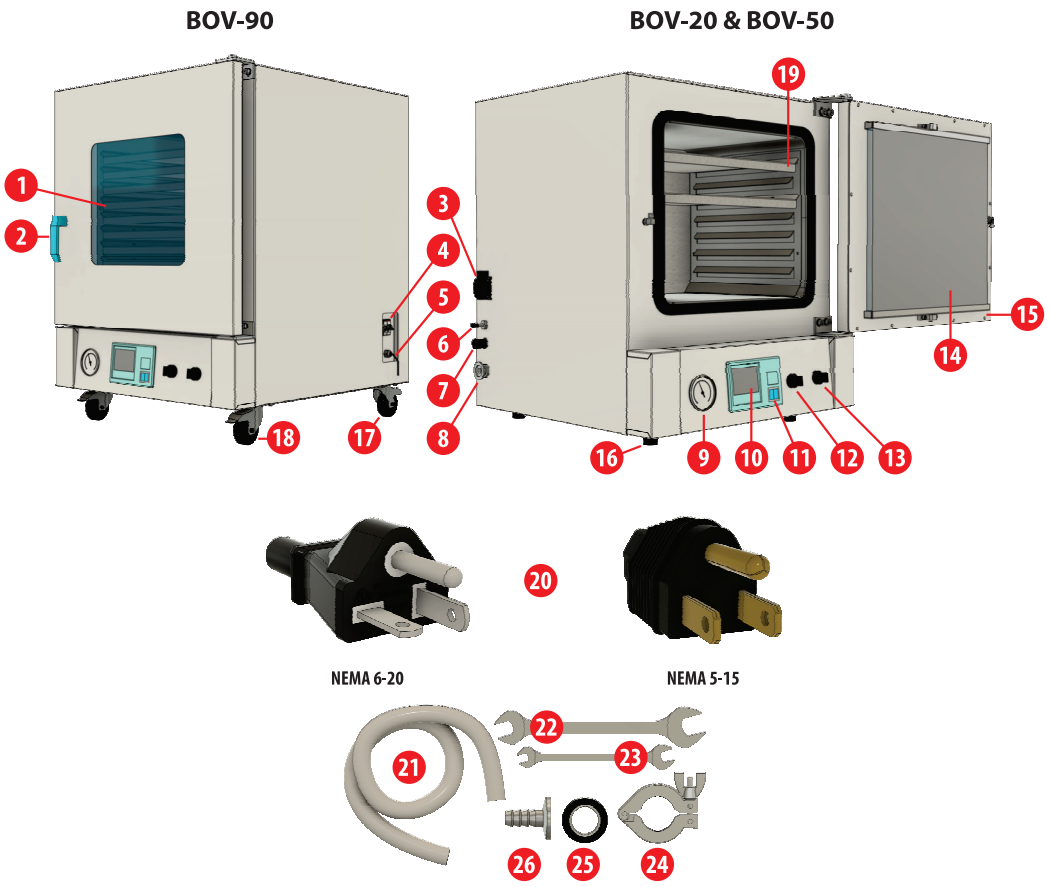
Quick Start Guide

Vacuum Ovens - BOV-20, BOV-50 & BOV-90

Oven Components



1. Observation window
2. Door lock handle
3. Vacuum pump electrical outlet - **Not available on BOV-90**
4. Circuit breaker & Power switch
5. Power cord
6. Air (inert gas) inlet (3/8" ID hose barb)
7. Vacuum release vent
8. Vacuum KF-25 flange
9. Vacuum guage
10. Controller
11. Observation light power switch
12. Purge switch
13. Pump switch
14. Articulating glass door
15. Swinging metal door
16. Feet - Non-adjustable
17. Casters - Non-locking **(BOV-90 only)**
18. Casters - Locking **(BOV-90 only)**
19. Removable/adjustable shelves
20. Electic plug
    BOV-20 & BOV-50: NEMA 5-15
    BOV-90: NEMA 6-20

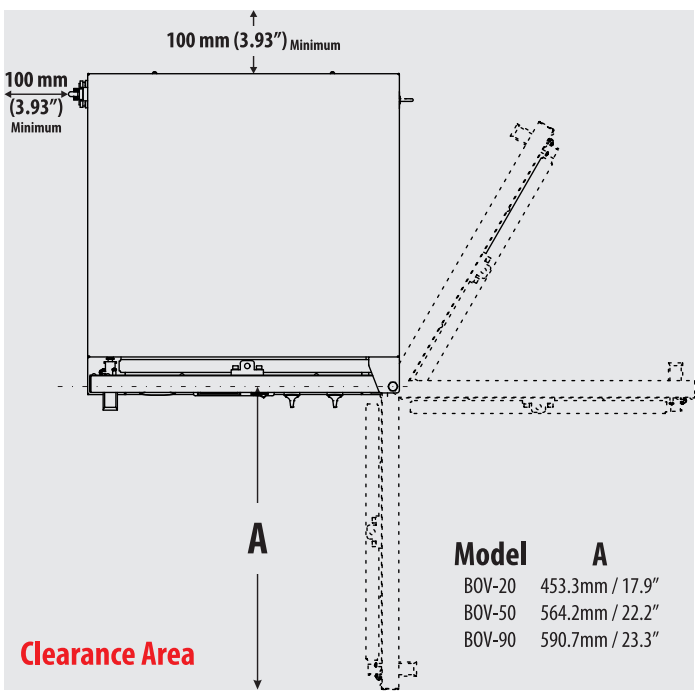
Accessories

21. 13mm ID x 29mm OD x 925mm long vacuum hose
22. 14mm x 17mm open-end spanner wrench
23. 8mm x 10mm open-end spanner wrench
24. KF-25 clamp
25. KF-25 o-ring
26. KF-25 x 16mm hose barb

Set Up

STEP 1: Remove protective covering(s).

STEP 2: Position unit for use.

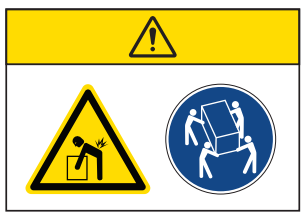


Model	A
BOV-20	453.3mm / 17.9"
BOV-50	564.2mm / 22.2"
BOV-90	590.7mm / 23.3"

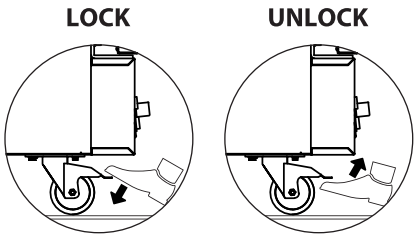
Position the vacuum oven on the floor or a work surface strong enough to carry the oven's weight.

Model	Weight
BOV-20	60 KG / 132 LBS
BOV-50	95 KG / 210 LBS
BOV-90	145 KG / 320 LBS

Additionally, the oven requires a minimum clearance area as shown in the diagram (left).

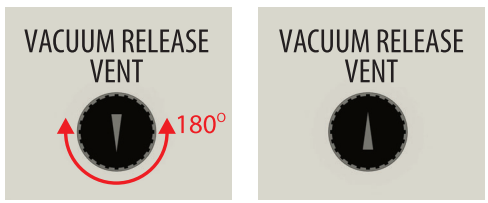


STEP 2a: Lock the front casters. **(BOV-90 only)**



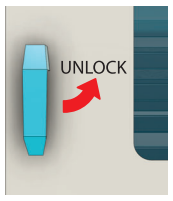
Using your foot, press down on the caster's pedal to lock the oven in place. Lift up on the bottom of the pedal to unlock the caster to reposition or move the oven.

STEP 3: Relieve oven chamber vacuum.



Rotate the vacuum release vent knob 180° to relieve the vacuum applied at the factory prior to shipping. Upon relieving the applied vacuum, close the vent.

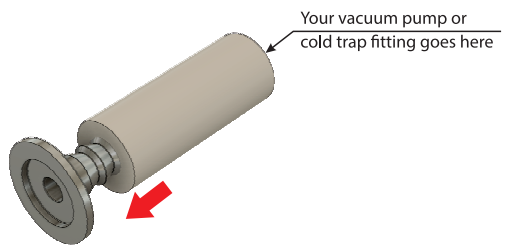
STEP 4: Unlock and open door. Remove supplied accessories.



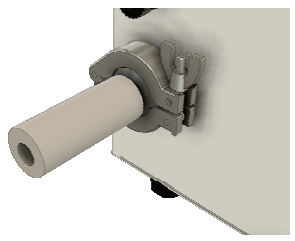
Rotate the door handle counter-clockwise 90° to unlock the door and **carefully pull the door open**. Remove the supplied accessories and shelves. Remove protective shelf covering.

If the door does not move easily, **DO NOT TUG** on the door. Doing so can damage the door seal. Use your finger or a flat blade (standard) screwdriver to flick the door seal to release the seal from the glass door.

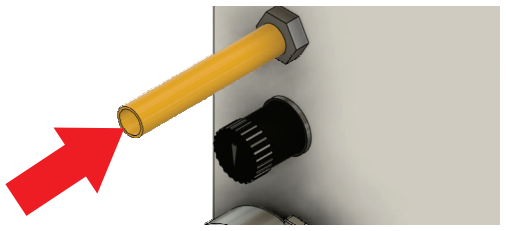
STEP 5: Push hose onto KF-25 hose barb and your vacuum pump or cold trap fitting.



STEP 6: Assemble the KF-25 hose barb, seal ring, and clamp to the oven's KF-25 flange. Attach your fitting to your vacuum pump or cold trap.

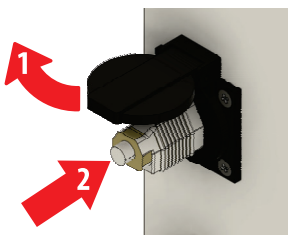


STEP 7: Attach your inert gas or air hose to the oven's air inlet hose barb.



Remove the black cap from the hose barb fitting.
Option 1: Leave the barb fitting bare
Option 2: Push a 3/8" ID hose onto barb fitting. Attach other end of hose to your inert gas or air supply, or if neccessary, attach the hose to a cold trap.

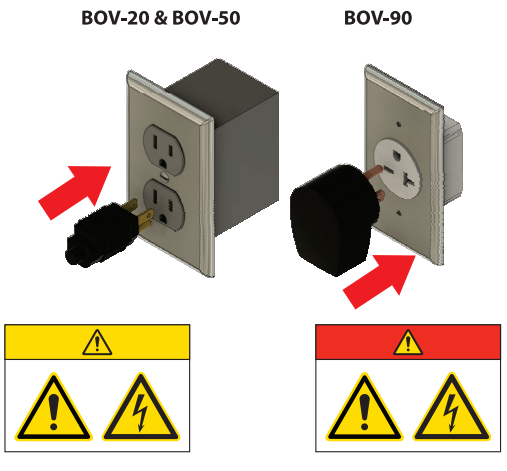
STEP 8: Plug your vacuum pump electrical cord into the outlet on the oven and turn the vacuum pump on. **(BOV-20 & BOV-50 only)** For BOV-90 plug vacuum pump into nearest electrical outlet.



Lift the outlet cover. Push the vacuum pump's power cord into the 120 VAC, 15 Amp rated receptacle. Turn the vacuum pump's power switch on.

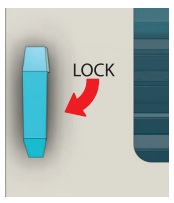
Review the vacuum pump specifications to **ensure it is a two-stage pump** and has the following flow rate capacity.
BOV-20 and BOV-50: 2 liters/second (4 CFM)
BOV-90: 4 liters/second (8 CFM)

STEP 9: Plug the oven's electrical cord into appropriate outlet.



Drawing Vacuum

STEP 1: Close and lock door.



After placing specimens on the oven shelves, close the door and turn the door handle clockwise 90°.

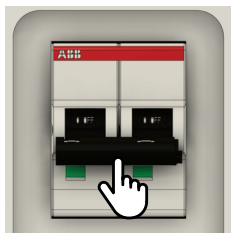
STEP 2: Ensure vacuum release vent is closed.

The vacuum release vent arrow must point between 2 and 10 o'clock for the vent to be fully closed.

Use the vent to control vacuum draw speed.

It must be fully closed to reach a -14.5 PSI / -1 bar.

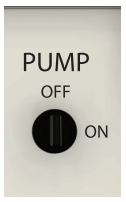
STEP 3: Turn on unit power.



Push the circuit breaker's lever up to turn on the power to the oven.

BOV-20 & BOV-50

STEP 4: Turn the PUMP switch on.



Rotate the PUMP switch clockwise 90°.

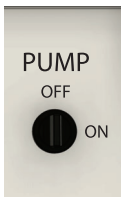
Vacuum pump will instantaneously turn on, solenoid valve will open, and vacuum will be applied to the chamber.

It will take approximately 3-4 minutes to reach -14.7 PSI / -1 bar. Use the vacuum release vent to lengthen the time to reach maximum applied vacuum.

BOV-90

STEP 4: Turn your vacuum pump on.

STEP 5: Turn the PUMP switch on.



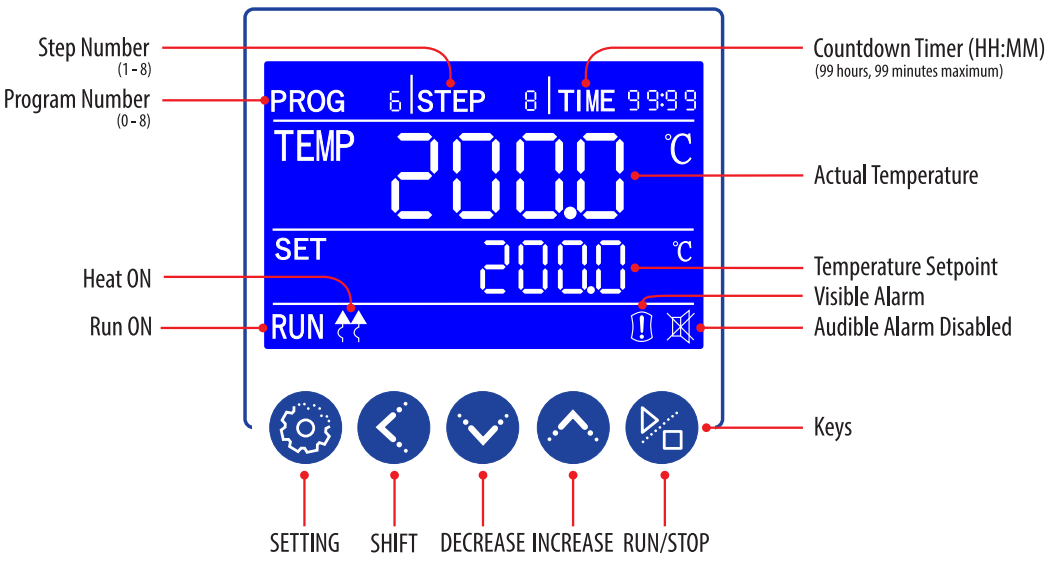
Rotate the PUMP switch clockwise 90°.

Solenoid valve will open and vacuum will be applied to the chamber.

It will take approximately 3-4 minutes to reach -14.5 PSI / -1 bar. Use the vacuum release vent to lengthen the time to reach maximum applied vacuum.

It is not required to draw a vacuum to apply heat to the specimens in the oven. However, applying a vacuum first will reduce the humidity in the oven and increase the speed to reach desired temperature.

Controller Element Overview



PROG Area: Displays the program working or setting group. Controller is capable of programming and storing up to 7 programs.

STEP Area: Displays the number of the step within a program. There are 9 steps available for each program.

TIME Area: Displays the running time or parameter value.

TEMP Area: Displays the measured (actual) temperature within the oven's chamber. Also, displays the ambient room temperature when requested.

SET Area: Displays the temperature setpoint.

RUN: Illuminates when the oven's program is working. Turns off when program is stopped.

HEAT: Arrows illuminate and blinks when the oven's heater is on. Turns off when heating elements are off.

Visible Alarm: Illuminates when the program has completed, has been stopped by user, or when an over temperature condition occurs. Additionally, when the visible alarm illuminates an audible alarm will start.

Audible Alarm Disabled: Illuminates when the user presses any key or when the unit's power is turned off.

Keys

SETTING: Starts the programming of the temperature and run time. Accepts the temperature and run time values.

SHIFT: For changing the parameter value being set and viewing ambient temperature.

DECREASE: Used for setting parameter value, modification of various values, or start/stop auto-tuning.

INCREASE: Used for setting parameter value, or press and hold for more than 2 seconds to view the remaining program time.

RUN/STOP: Press for 2 seconds to run or stop the controller.

Safety Messages

Safety Message

Be sure that you are completely familiar with the safe operation of this vacuum oven. This unit may be connected to other machinery, such as a vacuum pump. Improper use can cause serious or fatal injury.

Installation and repair procedures require specialized skills with laboratory equipment and electricity. Any person that installs or repairs this unit must have these specialized skills to ensure that this unit is safe to operate. Contact BEING Instrument, Inc. or their local authorized distributor for repairs or any questions you may have about this unit's safe installation and operation.

The precaution statements are general guidelines for the safe use and operation of this vacuum oven. It is not practical to list all unsafe conditions. Therefore, if you use a procedure that is not recommended in this quick start guide, you must determine if it is safe for the operator and all personnel in the proximity to the vacuum oven. If there is any question of the safety of a procedure, please contact BEING Instrument before starting or stopping the vacuum oven.

This equipment contains high voltages. Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt the startup procedure or troubleshoot this unit.

- Documentation must be available to anyone that operates this equipment at all times.
- Keep non-qualified personnel at a safe distance from this unit.
- Only qualified personnel familiar with the safe installation, operation, and maintenance of this unit should attempt startup or operating procedures.
- Always stop the vacuum oven before making or removing any connections.

Symbols used in this Quick Start Guide

The following signal word panels, safety symbols, and non-safety symbols are used to alert you to potential personal injury hazards or information of importance. Obey all safety messages that follow these symbols to avoid possible personal injury or death.

- **Signal word panels**

  Signal word panels are a method for calling attention to a safety messages or property damage messages and designate a degree or level of hazard seriousness. It consists of three elements: a safety alert symbol, a signal word and a contrasting rectangular background. The following signal word panels are in accordance with ANSI Z535.4-2111 (R2017) and ISO 3864 standards.

  Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

  Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.

- **Safety symbols**

  Safety symbols are graphic representations—of a hazard, a hazardous situation, a precaution to avoid a hazard, a result of not avoiding a hazard, or any combination of these messages—intended to convey a message without the use of words. The following safety symbols are used in this quick start guide.

Mandatory

General alert. Mandatory action.

2-person lift.

4-person or multi-person lift.

Warning

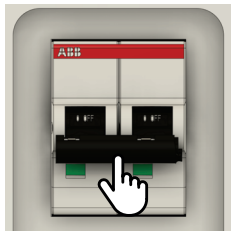
Safety Alert Symbol. General caution.

Electrical shock

Lifting hazard

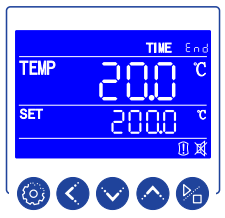
Setting Temperature & Timer

STEP 1: Turn on unit power.



Push the circuit breaker's lever up to turn on the power to the oven.

Upon turning the unit's power on, the controller will cycle through these two start-up screens.

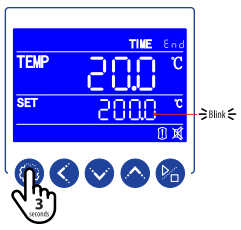


The unit is ready for use.

STEP 2: Check ambient room's temperature

If unit power is on and ambient temperature is known, start programming process at Step 3.

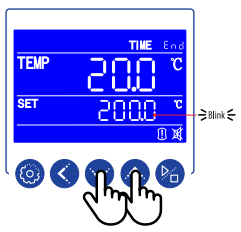
STEP 3: Push SETTING key



Pressing the SETTING key for 3 seconds, starts the programming process.

The tenths temperature value blinks.

STEP 4: Input temperature & time values

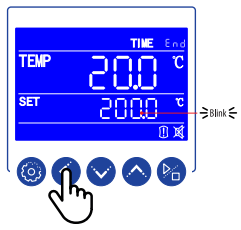


Press DECREASE or INCREASE key to set tenths value. Value will blink as it is being set.

Temperature setpoint must be.
ambient + 10°C to 200°C
ambient + 18°F to 392°F

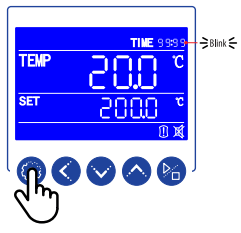
Press and release to decrease/increase one digit at a time. Press and hold to rapidly cycle through digits.

STEP 4: (cont.)

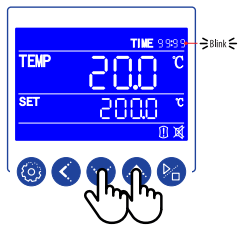


Press the SHIFT key to move to the next parameter digits. Each move will cause parameter to blink.

Use DECREASE or INCREASE key to set each temperature value.



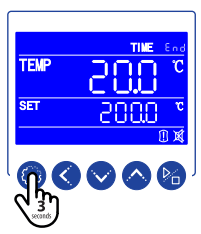
Press the SETTING key to accept temperature setpoint. "End" in TIME area will change to run time digits. First digit will blink.



Use DECREASE or INCREASE key to set each minute and hour value.

Press the SHIFT key to move to the next parameter digits.

Set time to 00:00 for the oven to run indefinitely.



Upon setting the run time, press and hold the SETTING key for 3 seconds to complete the program.

TIME area will return to "End."

If changing temperature only, press and hold setting key for 3 seconds, change temperature, press setting key, and press and hold setting key for 3 seconds.

If changing time only, press and hold setting key for 3 seconds, when temperature blinks press setting key, change time, and press and hold setting key for 3 seconds.

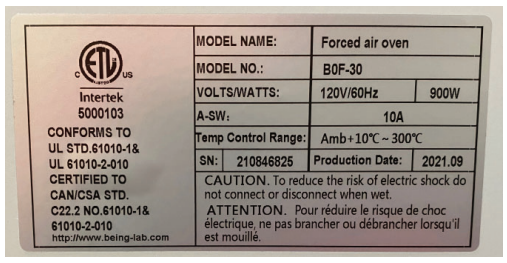
STEP 5: Press RUN key

Pressing the RUN key for 2 seconds starts the program. RUN, HEAT, and run time illuminate.

Registration Instructions

Activate TODAY! 2 YEAR WARRANTY

STEP 1: Find the product identification label.



Located above the power cord or on the shipping crate.

STEP 2: Scan the QR code or visit to https://www.beinglab-usa.com/product-registration to register your oven(s).