



Installation, Operation and Service Manual

Bluezone® PK-220 **Air Purification System**

IMPORTANT SAFEGUARDS

READ AND SAVE THESE INSTRUCTIONS

Safety

This manual contains important instructions and safety information about the Bluezone Air Purification System. Observe the following dangers, warnings, cautions and notices when installing, operating and servicing the Bluezone PK-220.



Electrical System

Energized electrical circuits present a potentially life-threatening hazard.

Ensure the unit's power cord is unplugged before performing any installation or service work.

Do Not Operate unit with a damaged cord or plug. Discard the cord and reorder a new cord from an authorized Bluezone dealer.

Follow all lockout/tagout procedures for all electrical circuits.

Refer to the product asset tag and confirm the PK-220 electrical requirements before energizing the unit.



System Operation

The appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.

Children being supervised should not play with the appliance.

For Indoor Agricultural Applications:

Do not operate the Bluezone PK-220 while fogging with chlorine bleach or other disinfectant solutions. Turn off the Bluezone Units if disinfectant fogging or cleaning is underway.

- Turn Bluezone units back on after disinfectants have dissipated.

Never hose down the Bluezone PK-220 or clean with a water jet.

Turn off Bluezone units and cover with plastic if the room is being hosed with water or steam.



System Maintenance

The Bluezone PK-220 contains 4 germicidal ultra-violet (UV-C) light bulbs; the UV light is completely contained inside the unit during operation.

The Bluezone PK-220 has multiple safety systems to ensure that you cannot view the UV bulbs while they are operating.

Do NOT attempt to override the cover switch to allow the bulbs to operate when the cover is off.

Skin or eye damage may result from directly viewing the light produced by the lamp in this apparatus. Always disconnect power before relamping or servicing.

Replace lamps using Lamp Replacement Kit Model No. 005-000008, manufactured by

Bluezone Products Inc. and sold by an Authorized Bluezone Partner.

The UV-C bulbs contain small amounts of mercury. If you break a bulb follow the clean-up instructions at the end of this manual.

Description

The Bluezone® PK-220 is an air purification device that draws in air containing viruses,

old, spores or fungus, and discharges air with a highly reduced concentration of these infectious impurities. The unit is completely self-contained. The facility, equipment, and personnel have no contact with the process that is cleaning the air.

The Bluezone unit's operation is controlled by a microprocessor-based controller that alerts the user to any system faults.

Specifications

The specifications of the Bluezone PK-220 are shown in Table 1. Please note that the 120V and 230V models of the PK-220 are different units and can only be used at the voltage listed on the asset tag.

Table 1: Bluezone PK-220 Specifications

	Imperial / US Installation	Metric / OUS Installation
Size	24 X 48 X 9 in	61 X 122 X 23 cm
Weight	38 lbs.	17 kg
Electrical Current	2A	1.1A
Input Voltage	120V	230-240V~
Power	250 Watts	250 Watts
Flow Rate	220 CFM	380 m ³ /hr
Mounting Options	Floor, wall, or drop ceiling	
Noise	High Speed: 46 dBA Low Speed: <40 dBA	High Speed: 46 dBA Low Speed: <40 dBA
Capacity	1600 sf @ 1 ACH 800 sf @ 2 ACH 550 sf @ 3 ACH	150 m ² sf @ 1 ACH 75 m ² sf @ 2 ACH 50 m ² sf @ 3 ACH
Maintenance	Bulb change once every 1-3 years*, no filters to replace *Bulb life is 8800 hours: Typical office application is 10 hours per day, 5 days per week, or >3 years between bulb change out. 24 hour/day operation requires an annual bulb change.	

Key Components

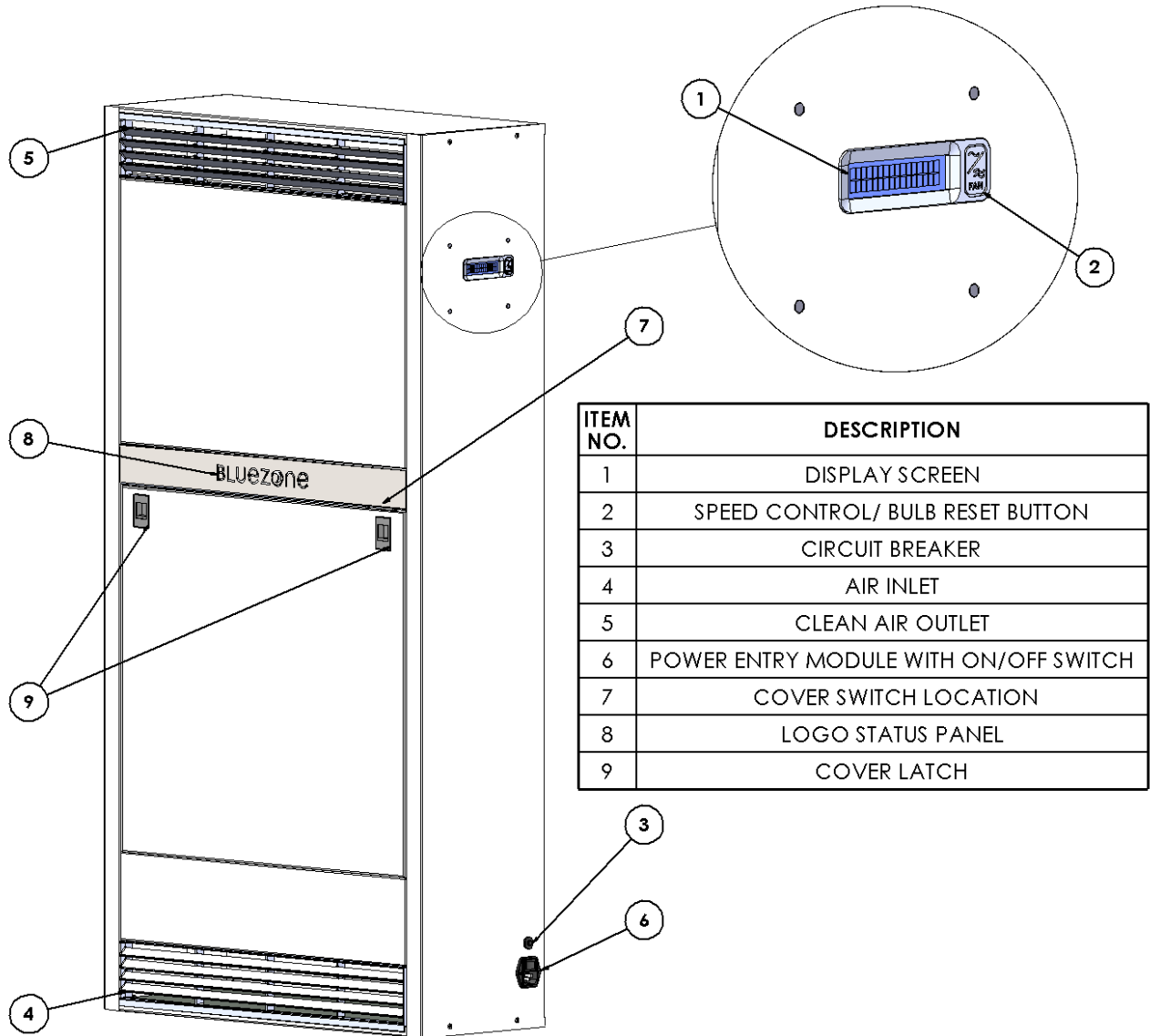


Figure 1: Bluezone PK-220 Key Components

Electrical System

A wiring diagram of the PK-220 is shown in Figure 2.

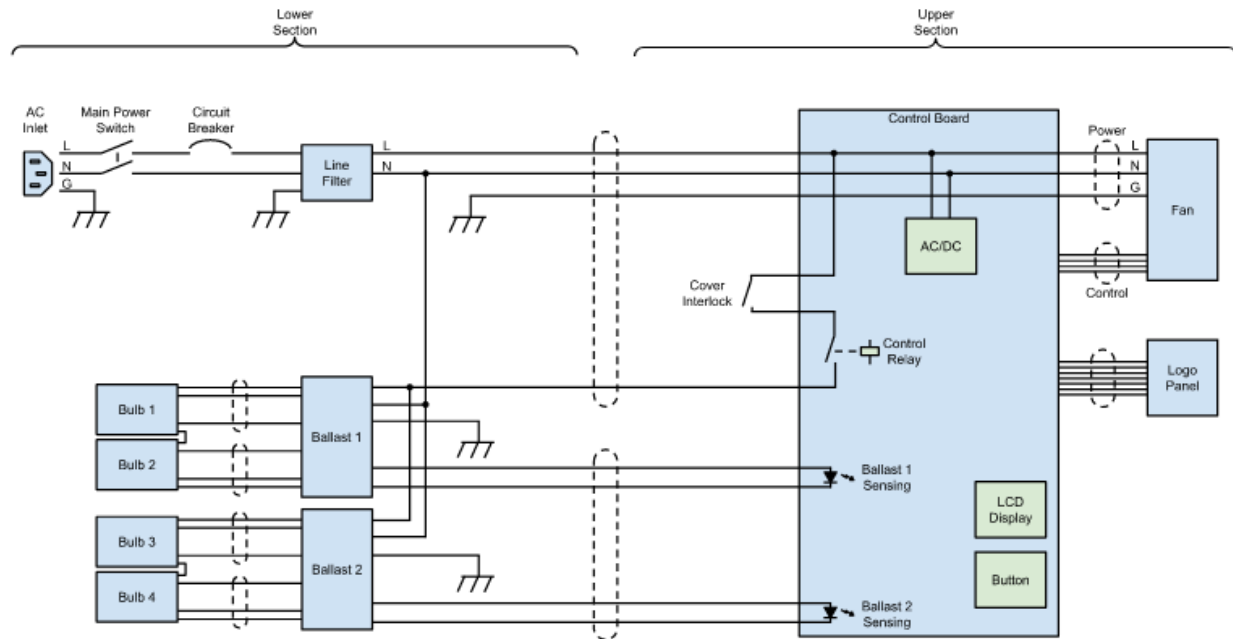


Figure 2: Wiring Diagram of the PK-220

Installation Guidelines

The Bluezone PK-220 offers variable installation options with no additional cabinetry required. Units can be mounted to the floor, mounted to the wall, or installed in 2' X 4' drop ceiling grid. A mounting cleat is provided and must be used in all floor and wall applications to prevent tip.

The number of PK-220s used in the space depends on the size of the room and the desired number of additional air changes per hour (ACH) to be provided by air cleaning.

For an additional 1 ACH, use one PK-220 for every 1600 square feet of floor space.

For an additional 2 ACH, use one PK-220 for every 800 square feet of floor space.

For an additional 3 ACH, use one PK-220 for every 550 square feet of floor space.

If multiple Bluezone PK-220 units are being installed in a room, the following are recommended guidelines for the placement of the Bluezone units:

1. Distribute the units relatively evenly throughout the space.
2. Units placed on the floor should be positioned against a wall to protect against tipping.
3. If installing in drop ceiling tiles, ensure at least one ceiling tile between the Bluezone PK-220 and either a HVAC diffuser or a light fixture.

Installation

Bluezone PK-220 can be mounted to the floor, mounted to the wall, or installed into a 2' X 4' drop ceiling opening.

Floor/Wall Mounting:

Overview

The Bluezone PK-220 unit can be mounted the floor or mounted to a wall with the cleat provided. A wall mounting bracket is integral to the unit.

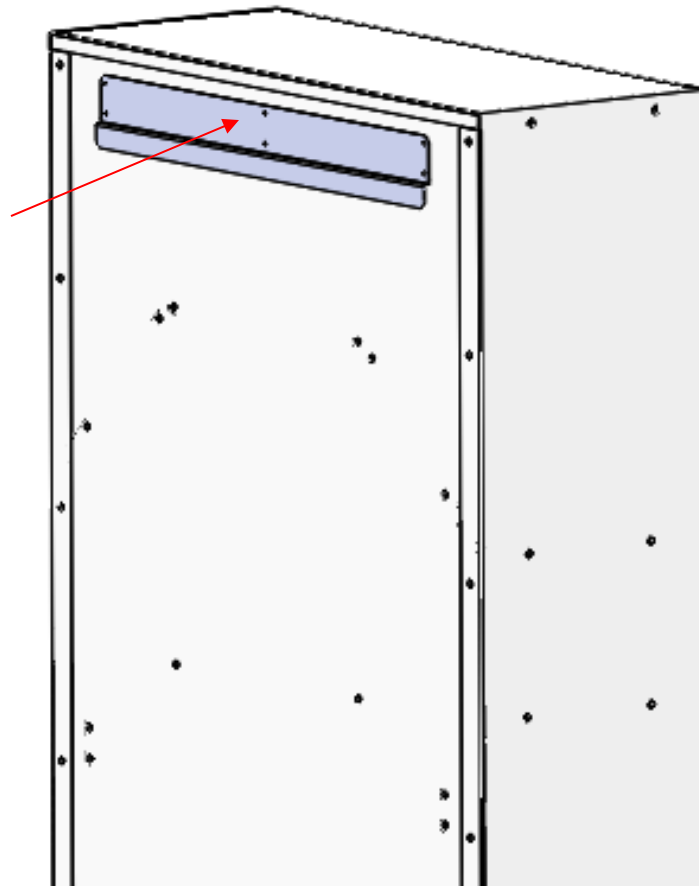


Figure 3: PK-220 Wall Mounting Bracket

Preparation

Unpack the Bluezone PK-220 and locate the included wall mounting cleat. See arrows in Figure 4 for recommended fastener install locations.

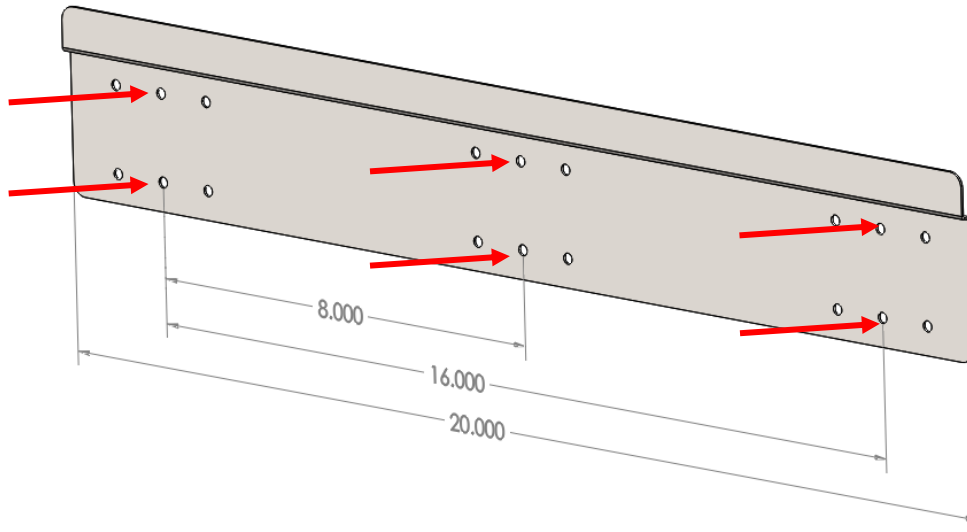


Figure 4: PK-220 Wall Mounting Cleat

Securely fasten the mounting cleat to the wall using the recommended fasteners shown in Table 2. If installing to metal or wood studs the bracket must be secured to 2 studs. It is the installers responsibility to determine fasteners. All fasteners must be rated for 120lbs or greater.

For floor placement, mount the cleat 41 ½" off the floor. The installation of the wall mounting cleat is required to prevent the PK-220 from tipping. Failure to secure the PK-220 with the mounting cleat can result in injury.

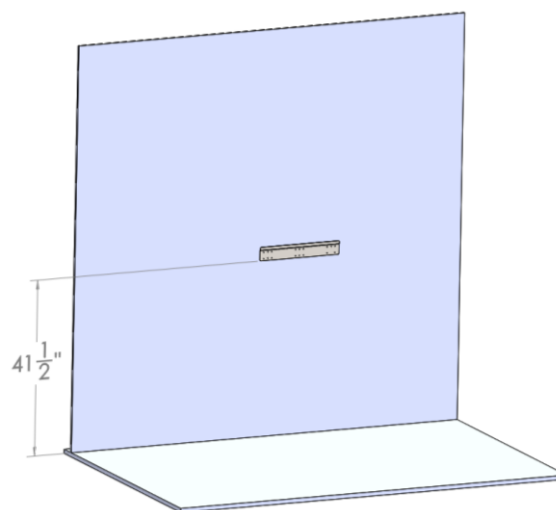


Figure 5: Cleat Mounting Height for Floor Placement of the PK-220

For wall mounting, Bluezone recommends mounting the cleat at 46" or greater off the floor for 4" or greater of clearance from the base of the PK-220 to the floor. Provide a minimum distance of 6 in from the top of cleat to the ceiling.

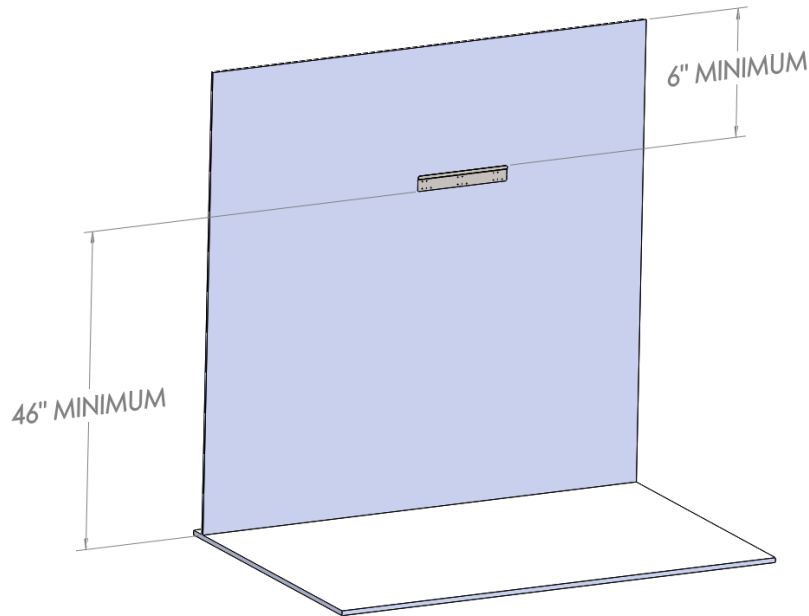


Figure 6: Cleat Mount to Wall for Wall Mounting the PK-220

Securely fasten the mounting cleat to the wall using the recommended fasteners shown in Table 2. If installing the cleat onto a stud wall (wood or metal) locate the studs and fasten directly to them. Follow anchor manufacturer specifications for selecting screws.

Table 2: Recommended Fasteners

Wall type	Fasteners Recommended
Wood studs	4X #8 cabinet screws
Metal studs	4X ¼-20 toggle-style anchors
Concrete	6X M4 expansion shield anchors with hex bolts
½" Drywall	6X toggle-style anchors

Hang the PK-220 mounting bracket on the wall mounting cleat. Adjust the Bluezone PK-220 to center it onto the mounting cleat.

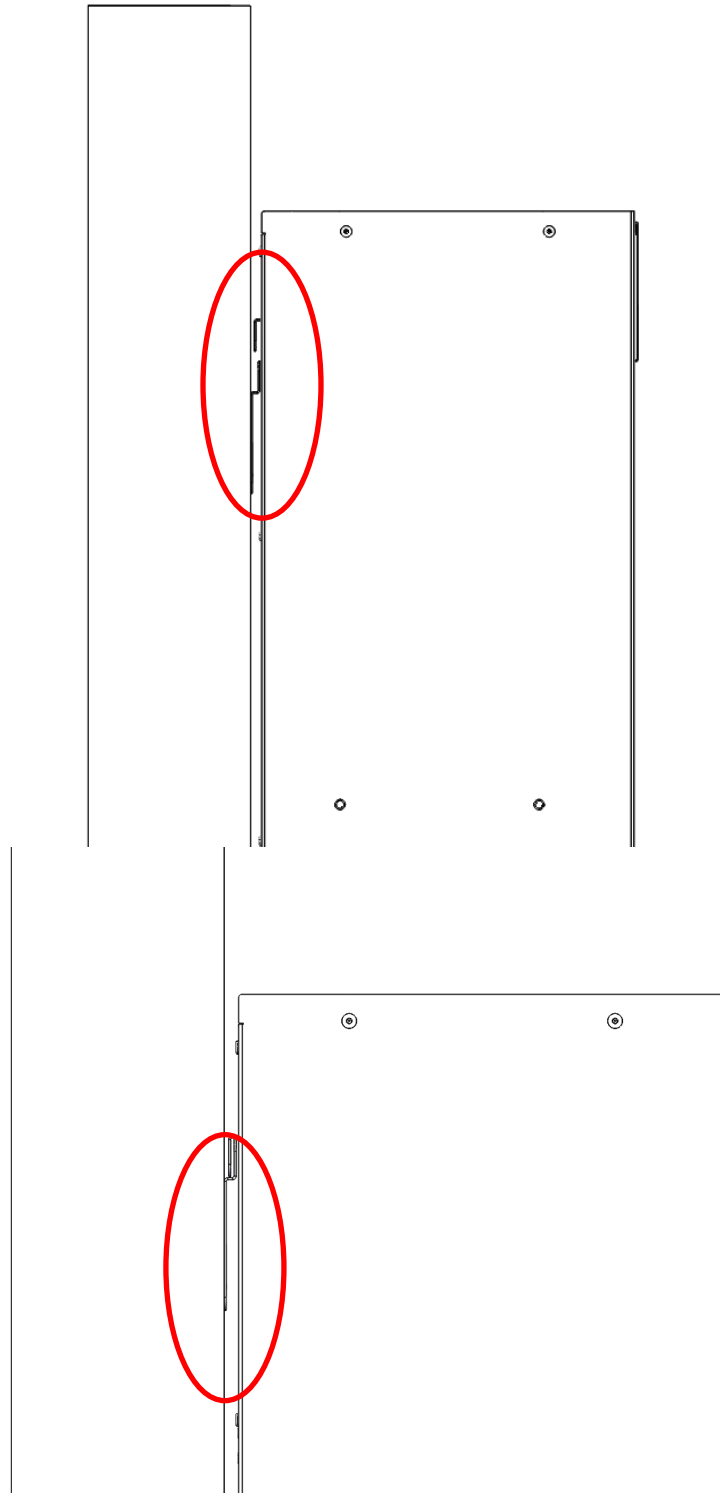


Figure 7: Hang the PK-220 Mounting Bracket on the Mounting Cleat

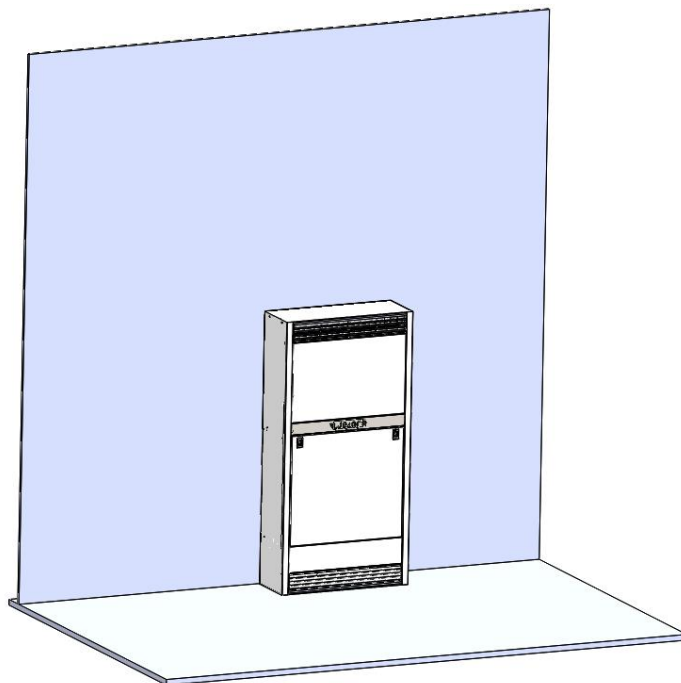


Figure 8: PK-220 Floor Mounted

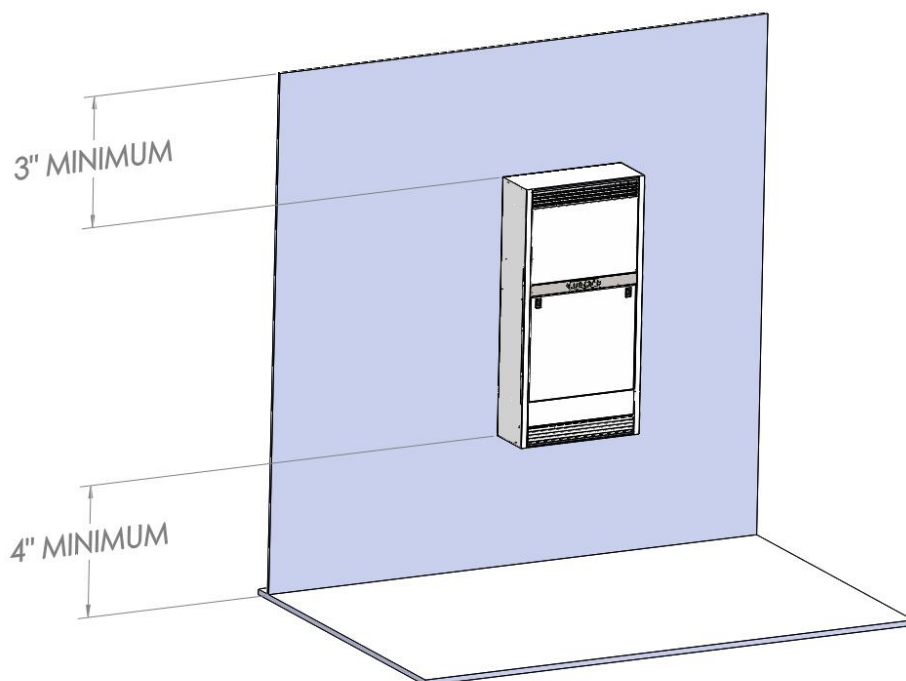


Figure 9: PK-220 Wall Mounted

Ceiling Mounting:

Overview

The PK-220 is designed with the option to be installed onto a 2' X 4' opening in the grid frame of a standard suspended ceiling with 2' X 2' or 2' X 4' tiles.

Only mount the PK-220 to a properly installed and structurally strong suspended ceiling with structural members above the ceiling tiles to attach support wires.



NOTE: It is the installer's responsibility to:

- Determine if the drop ceiling structure is capable of supporting an additional load of 50lbs.
- Assure local building, electrical and safety codes are followed related to the installation of this equipment.
- Provide electrical hookup cable as determined by an on-site electrician.
- Provide the 12-gauge hanger wire to support both the ceiling grid and the PK-220

Assembly and installation of the PK-220 is a “two-person” job to avoid injury and potential damage to the unit. The installer could consider a duct lift to raise the PK-220 unit into the ceiling opening.

Clearances

The PK-220 is inserted into the ceiling opening at an angle and then seated into the ceiling grid as shown in Figure 11 and Figure 12. Clearance of 18” above the ceiling grid is needed in order to accommodate the insertion of the unit into the ceiling.

Clearance on the sides of the unit is 12”.

Installer may use judgement to decrease clearance to 0 on one or two sides of the unit if there is additional head height to maneuver.

Installation into Ceiling Grid

1. Install the four included Z-brackets onto the PK-220 by removing the back most screws of the inlet and outlet mufflers and using them to secure the Z-brackets. Orient the Z-brackets as shown in Figure 10. The Z-brackets are for use with 12-gauge hanger wire.

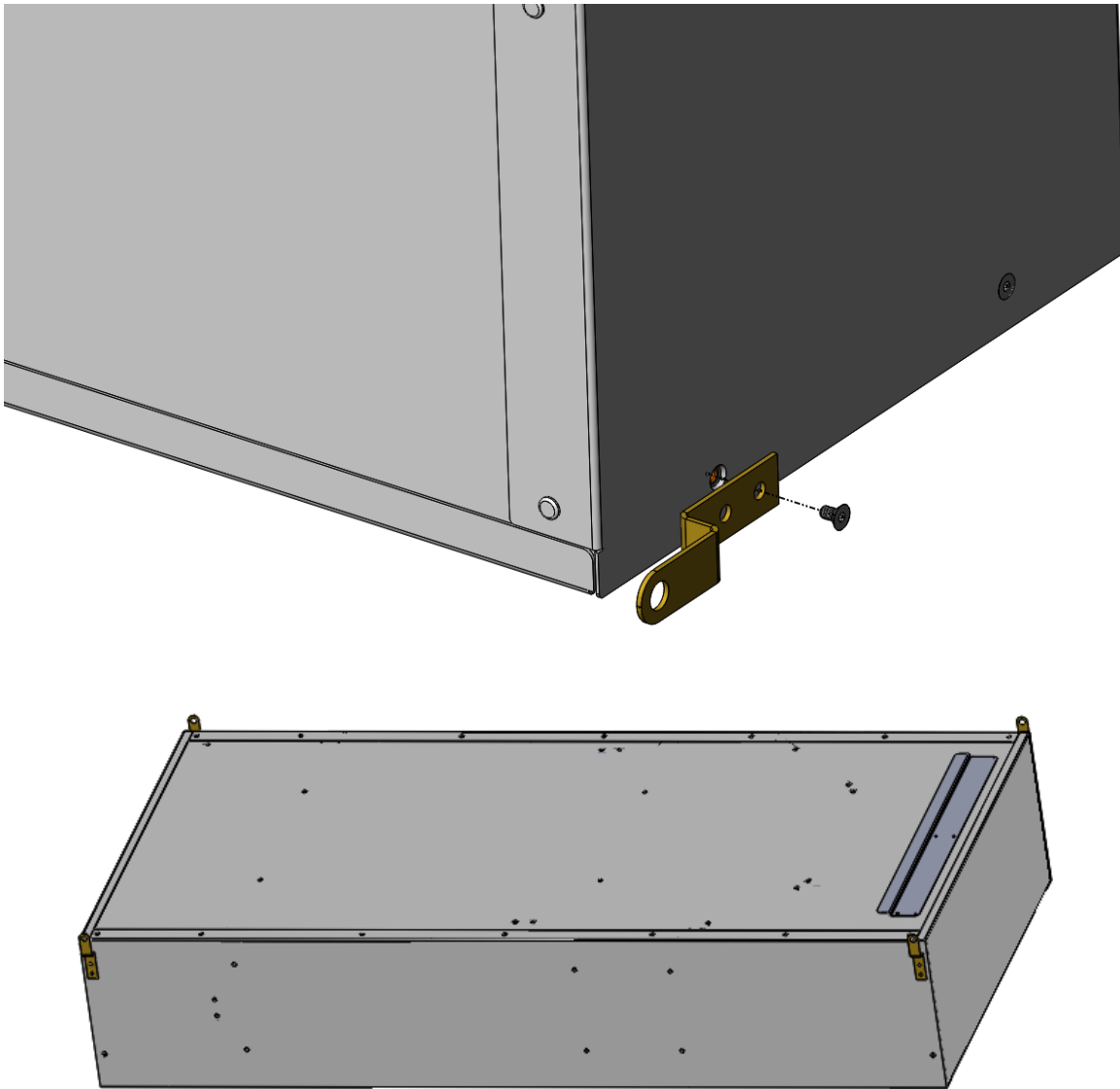


Figure 10: Secure Z-Brackets to the PK-220

2. Carefully angle and push assembly through the opening in the ceiling.



Figure 11: Insert the PK-220 Sideways and Upwards into the Ceiling Grid

3. Orient the PK-220 with louver openings facing down and rest the frame on the ledge of the ceiling grid.

18" of space above the ceiling tiles, and 12" of space on two adjacent sides are needed to maneuver the PK-220 into place

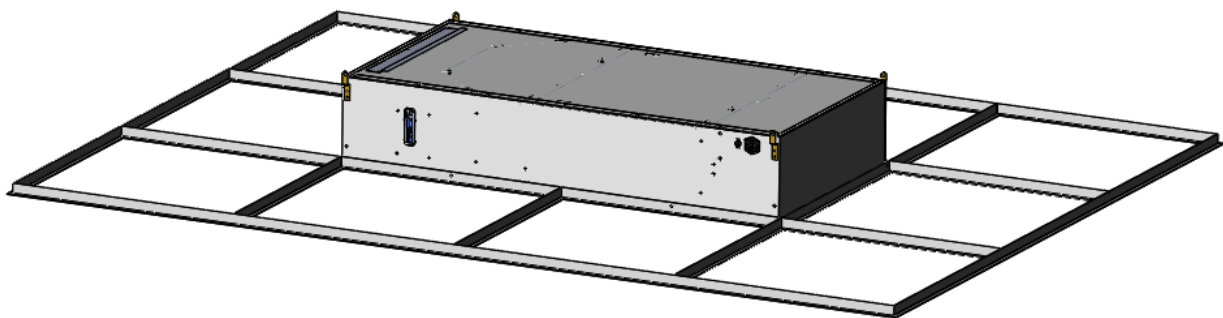


Figure 12: Turn the PK-220 so the Grilles Face Down and the PK-220 Nests into Ceiling Grid

4. Attach hanger wire to support both the ceiling grid and the PK-220 as defined by relevant building codes.

Mechanical Installation

A drawing showing nominal dimensions of the PK-220 is provided in Figure 13.

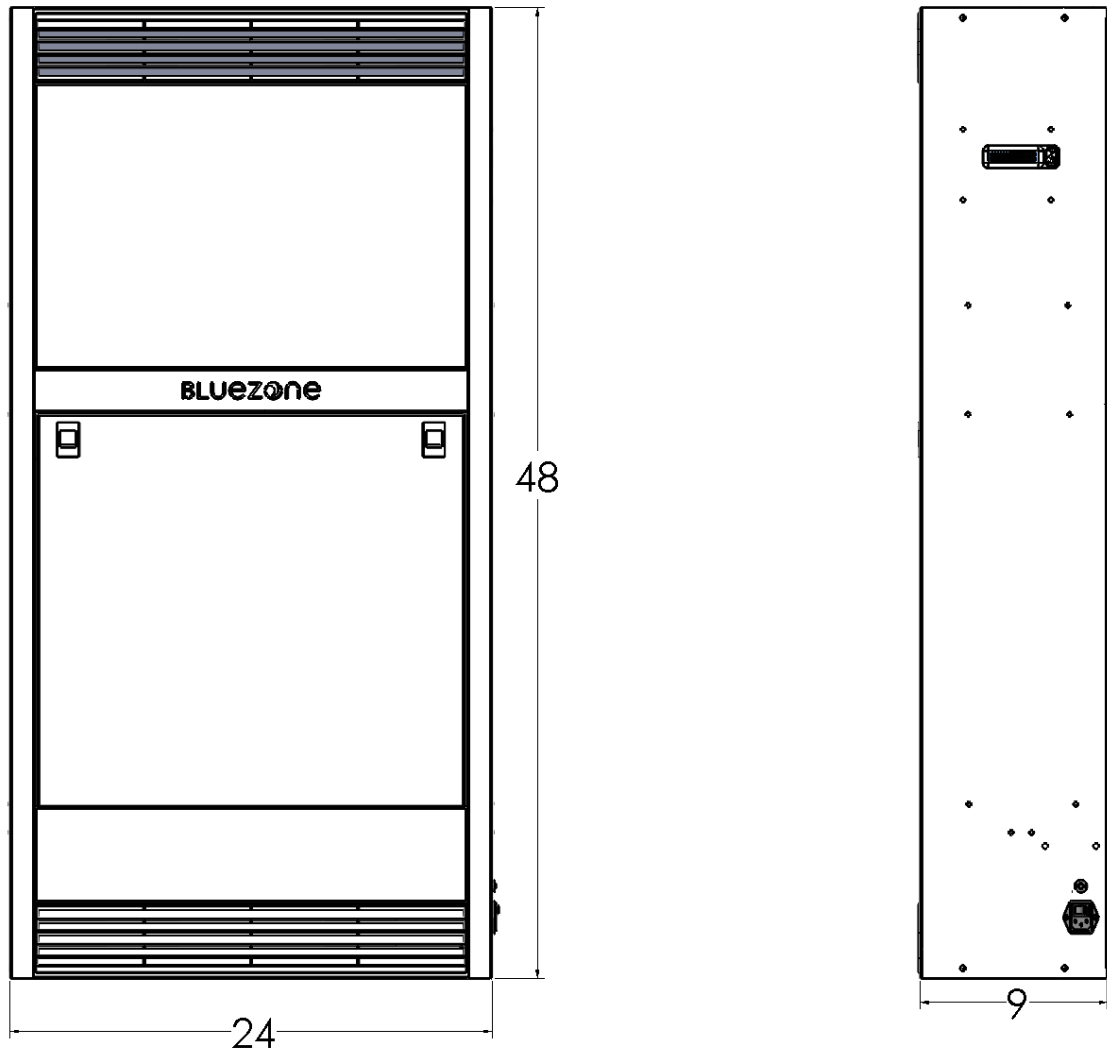


Figure 13: Bluezone PK-220 Nominal Dimensions (units in inches)

Electrical Installation

Refer to the product asset tag and confirm the PK-220 electrical requirements before energizing the unit

For wall mount or floor mount installation:

The Bluezone unit is equipped with a power entry module compatible with the separately provided 6' long, IEC C-13 power cord.

Plug the power cord into the power entry module.


Once the PK-220 is secured in the space, plug the cord into the nearest electrical outlet rated to the voltage on the unit's Model Label.

Secure the cord.



Warning The power cord is attached to the side of the unit and may be caught and pulled during activities in the space. Secure the power cord to the shelving, wall or other stable surface.

For ceiling mount:

1.  The electrical installation must be done by a licensed electrician. This installation must comply with relevant electrical codes.
2. Use a junction box for the power connection above the ceiling tiles.
3. Cut off the plug end of the cord provided to create a pig tail for wiring into the junction box.
4. Thread the pig tail end of the power cable into the junction box through the opening.

5. Connect the main service to the pig tail in the junction box as shown in Figure 14.

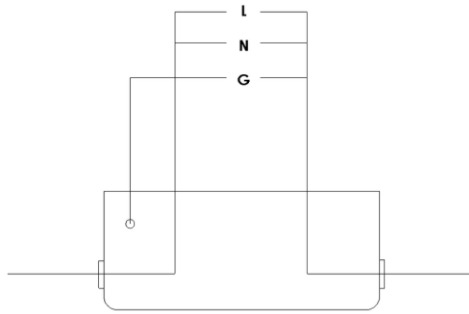


Figure 14: Main Service Connections

6. Attach cover (provided) to junction box.
7. Connect the plug end of the IEC power cable provided to the PK-220 power entry module.

Operation

Once the PK-220 is mounted and powered, it can be turned 'On' using the on/off switch.

Normal Operation

Once the Bluezone is switched "On", the Display Screen indicates "Bluezone PK-220" in white text on a blue background.

The bottom line of the display screen confirms bulb operation, a remaining bulb-life counter and fan setting.

The Bluezone Logo Status Panel on the front of the PK-220 confirms unit operation and indicate when to order/replace the bulbs.

High/Low Speed:

The Bluezone PK-220 has two fan speeds: high and low. Press the speed control button once to change fan speed. (The same button is used to reset the bulb counter when bulbs are serviced).

For more information on the use of the button for bulb-counter reset please refer to the Service Section.



Figure 15: Display Sequence in Time

Warnings, Fault Conditions and Fault Codes

If there are issues with the operation of the PK-220, the Bluezone Logo Status Panel will indicate the nature of the problem.

Operation status is indicated by the color of the Logo Status Panel defined in Table 3.

Table 3: Bluezone Operating Status

Color	Meaning
Steady Blue	Operating Properly
Flashing Blue (5 second on, 5 seconds off)	Order new bulbs immediately
Red	Bulbs have reached end of life and must be replaced. or Operating error
Off	PK-220 is off or Front Panel is open

More detailed information about operating conditions are displayed on the display panel on the side of the unit. To see this display on a ceiling mounted unit, a person must use a ladder and lift a ceiling tile beside the unit. Fault codes and detailed operating conditions shown on the display are described in Table 4.

Table 4: Display Screen Status Indicator Fault Codes

Display Text	Fault	Operation	Action to Take
Interlock Open	Front Panel Open	Unit automatically powered down.	Close Front Panel
Fan Fault	Fan not rotating	Unit automatically powered down.	Contact Bluezone
Fault: Bulbs #-#	Bulbs not operating	Unit automatically powered down.	Contact Bluezone

Troubleshooting

If the Bluezone Logo Status Panel is not illuminated, then the PK-220 is not being powered. Check the following list for possible causes and solutions:

1. Check that unit is powered.
 - a. Power “Off” unit by pressing the power switch located on the control panel.
 - b. Plug unit in.
 - c. Verify the outlet has power (if outlet is controlled by a switch, check that circuit switched on).
 - d. Turn unit “On.”
2. Make sure the cover is on and the cover latch engages the cover switch.
3. Check whether the unit’s circuit breaker has tripped.
 - a. Visually check the circuit breaker on the side of the unit. If the breaker has popped out, follow b, c, d below:
 - b. Power “Off” unit using the power switch located on the power entry module.
 - c. Reset circuit breaker by pushing the visible indicator back into the circuit breaker.
 - d. Turn unit “On” using the power switch located on the power entry module.

See Figure 16 for proper closure of the cover.



Danger

DO NOT override the cover switch when the cover is removed. UV light will be emitted. UV radiation is dangerous for both the eyes and skin. Do not operate the UV-C emitter outside the appliance.

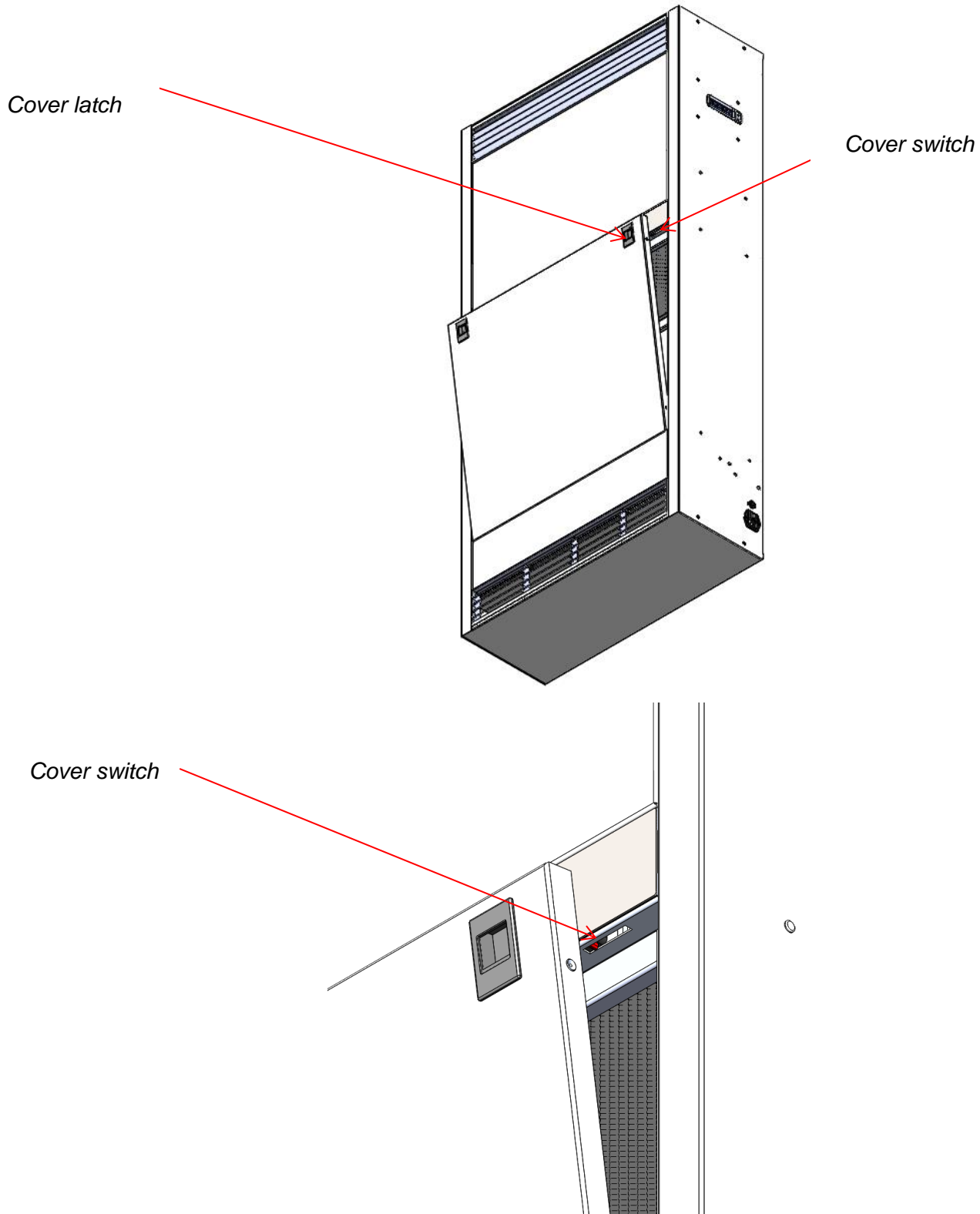


Figure 16: Bluezone PK-220 Cover Switch and Cover Latch

New Equipment Warranty

Online warranty registration form must be completed to validate your New Equipment Warranty. Please visit www.BluezoneFresh.com to complete the online warranty registration.

Bluezone Products, Inc. warrants that new equipment manufactured in Bluezone's facilities are free of defects due to poor materials or workmanship for a period of 1 year from the date of purchase.

Bluezone Products, Inc. warrants that the equipment will function properly, to our specifications and will be repaired, if necessary, at no charge for a period of 1 year (See our warranty policy for details).

All Bluezone products have been tested by independent labs and in many facilities, proving the performance as described in our literature. Our air purification equipment is a powerful tool to help purify your environment yet, we cannot guarantee that under your operating conditions and procedures, the results will be the same as experienced by other users.

If you are not satisfied with the purchase or the operation of our equipment, it can be returned if the equipment was un-used and was returned within 14 days. The customer will be charged return freight and an additional 15% restocking fee.

Bulb Disposal

Bulbs contain a small amount of mercury

Bulb handling should be similar to that used for fluorescent or compact fluorescent bulbs.

Bluezone Products, Inc. recommends that you take advantage of available local recycling options for CFLs. Lists of recycling facilities are available at: www.earth911.org.

Dispose of according to local, state or federal laws.

If you break a UV bulb, refer to Clean up Instructions at the end of this manual.

Service

BULBS NEED TO BE REPLACED AFTER 8,800 HOURS OF USE. BULB KITS MUST BE PURCHASED DIRECTLY FROM BLUEZONE PRODUCTS OR AN AUTHORIZED PARTNER AS THEY ARE PROPRIETARY BULBS.

Bulbs must be replaced at 8,800 hours of operation. The display screen reads bulb hours of operation remaining. At 1,600 hours remaining the display screen will turn yellow and read "Replace Bulbs." The bulbs should be ordered and replaced immediately. At 0 hours remaining, the display screen will turn red and the unit will automatically be powered **OFF** until bulbs are replaced.

After bulbs are replaced, the bulb counter needs to be reset. To reset the bulb counter please follow the steps below.

- 1) Press and hold the bulb counter reset button for 3 seconds. The display screen will read "Hold: reset counter" during the 3 second hold.
- 2) After holding for 3 seconds, the display screen will read "push to confirm." Release button and push to confirm reset.

A bulb replacement kit and instructions can be ordered from Bluezone Products or its Authorized Partners. The Lamp Replacement Kit for the Bluezone PK-220 is: 005-000008.

Please call 781-937-0202 or email info@bluezonefresh.com for ordering information.

IMPORTANT: Each bulb kit satisfies replacement parts for 1 unit. The four bulbs in each replacement kit cannot be replaced with bulbs purchased from anywhere, but Bluezone Products or an Authorized

Partner. Installation of the incorrect bulbs results in a voided warranty and potential harm. Purchase of bulbs from an outside vendor results in a voided warranty. Bluezone will not operate correctly with bulbs purchased from outside vendors.



Service Kit includes:

- (4) U-shaped bulbs
- (2) Nitrile gloves
- Extra fasteners

Additional tools needed:

- ¼" hex nut driver

Instructions for Bulb Replacement:

- 1) Toggle the power switch located on the unit's control panel to OFF.
 - 2)  **WARNING:** Before proceeding to the next step, unplug the unit from its power supply.
 - 3) Remove the service cover by retracting the latches and slowly pulling away from the unit, then lift the service cover upwards. See Figure 17 below.
 - 4) Place the cover on a flat surface.
 - 5) Use the gloves provided to remove and replace the bulbs. This will prevent oil on your hand from damaging the new bulbs.
 - 6) Unscrew 1/4" screws on Bulb Clips. See Figure 18 below.
 - 7) Remove the old bulbs (Note: pull on them at the ceramic base, not on the glass) by pulling upwards.
 - 8) Put aside the bulb clips for use with the new bulbs. Put the bulbs to the side for disposal. See Figure 19 and Figure 20.
 - 9) Prepare the new bulbs with the bulbs clips from step 7. Note the orientation of the tab and the hole for the 1/4" screw.
 - 10) Slide the top end of the bulb into the bulb support bracket. See Figure 21.
 - 11) Hold replacement bulbs by the ceramic end and push the pins into the slots in the receptacle. See Figure 22.
 - ⇒ They need to be pushed in until a "click" is heard and felt.
 - 12) Replace cover back onto the unit. See Figure 23.
 - 13) Dispose of used bulbs, according to standard practice for florescent bulbs.
-  **IMPORTANT**
- 14) Press and hold the bulb counter reset button for 3 seconds. The display screen will read "Hold: reset counter" during the 3 second hold.
 - 15) After holding for 3 seconds, release and press the bulb counter reset button again to finalize reset. The display screen will read "push to confirm" after the 3 second hold.
- Estimated total bulb replacement time: approximately 20 minutes per unit.

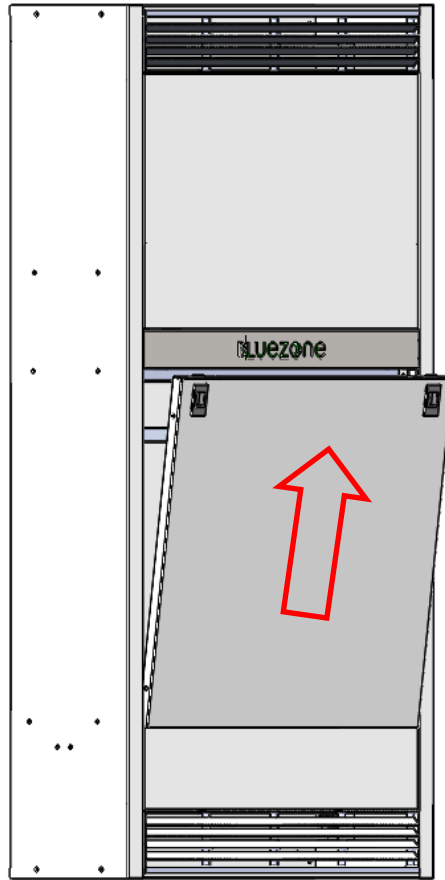


Figure 17: Remove Service Cover

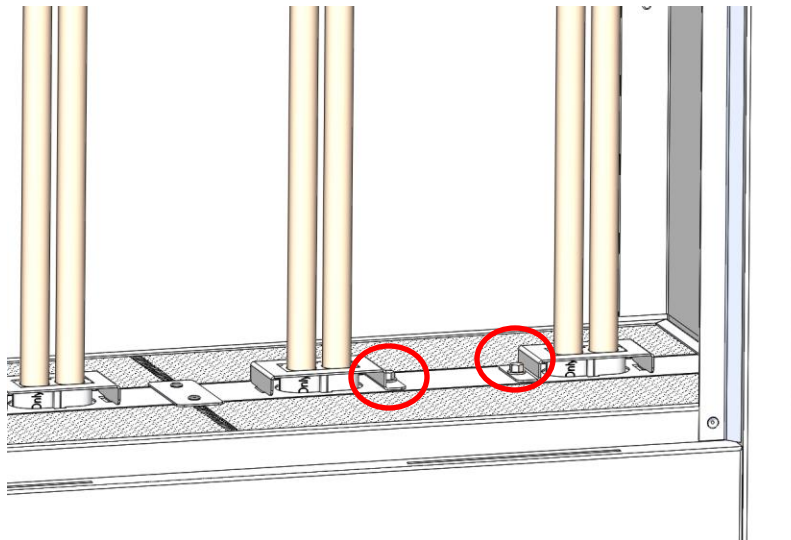


Figure 18: Remove Bulb Clip Screws

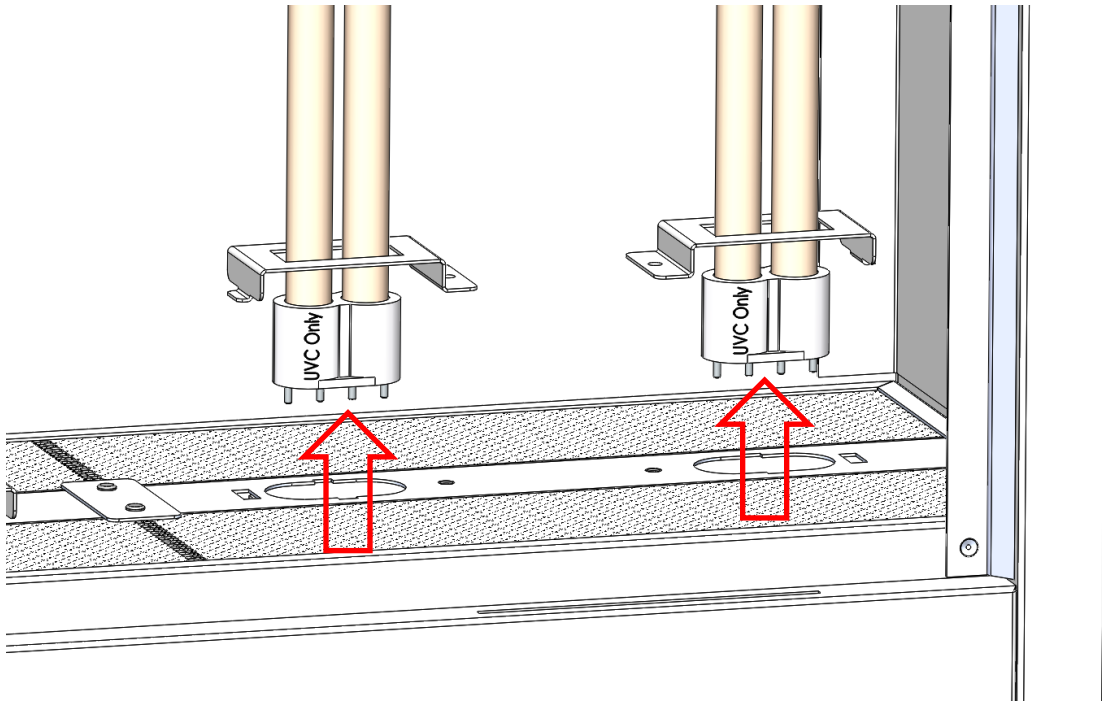


Figure 19: Remove Bulbs from Bulb Sockets and Bulb Support

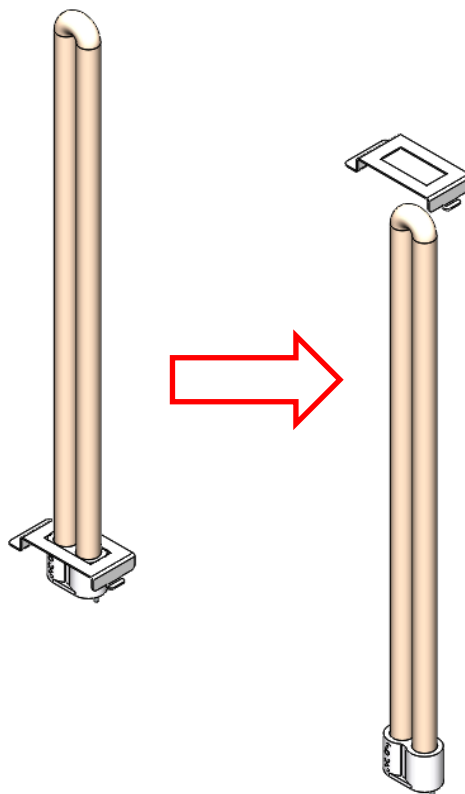


Figure 20: Remove Bulb Clips from Bulbs and Save for use with New Bulbs

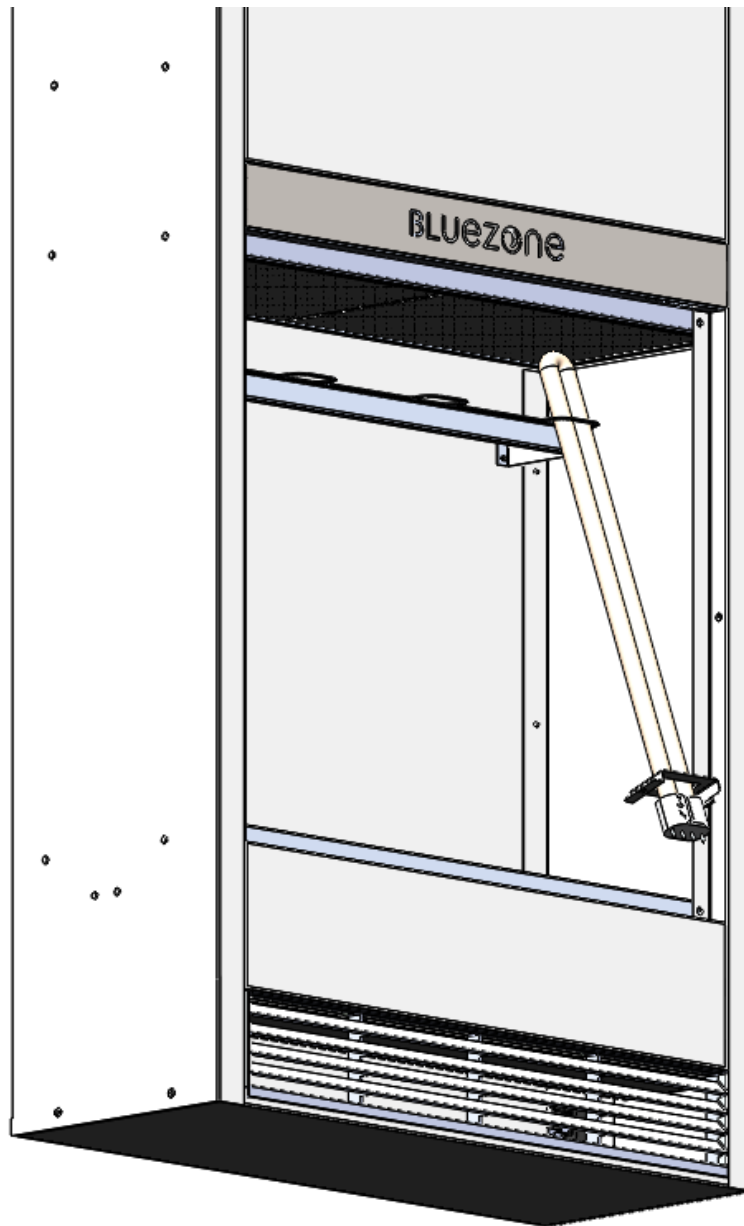


Figure 21: Slide Bulb with Bulb Clip into the Bulb Support Bracket

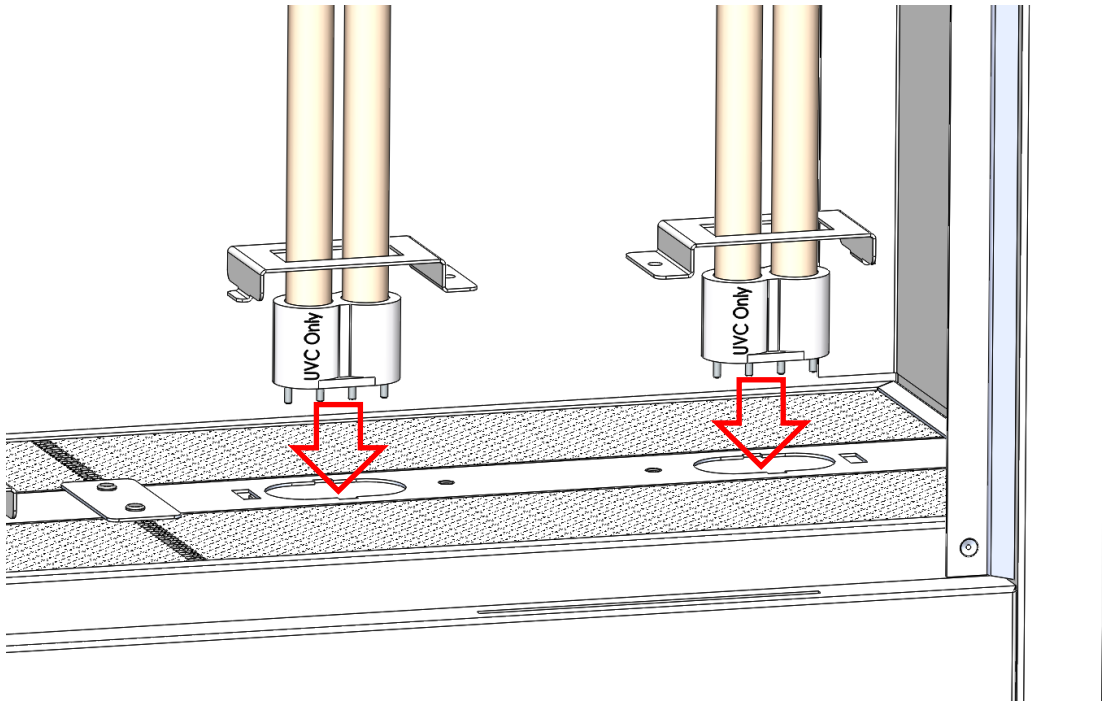


Figure 22: Install Bulbs into Sockets

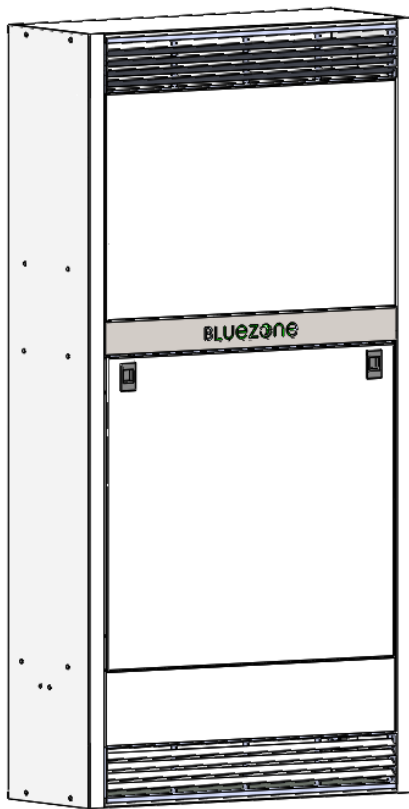


Figure 23: Install Service Cover

Instructions to Clean Up Broken UV bulb

Items Needed to Clean Up a Small Mercury Spill:

- Zip locking plastic bags (4 to 5 as needed)
- Trash bags (2 to 6 mils thick)
- Rubber, nitrile, or latex gloves
- Paper towels
- Cardboard or squeegee
- Eyedropper
- Duct tape or shaving cream, and small paint brush
- Flashlight or small task light

Mercury Spill Clean Up Instructions

Put on gloves.

If there are any broken pieces of glass or sharp objects, pick them up with care. Place all broken objects on a paper towel. Fold the paper towel and place in a zip locking bag. Secure the bag and label it as directed by your local health or fire department.

Locate visible mercury beads. Use a squeegee or cardboard to gather mercury beads into small mercury balls. Use slow sweeping motions to keep mercury from becoming uncontrollable. Take a flashlight, hold it at a low angle close to the floor in a darkened room and look for additional glistening beads of mercury that may be sticking to the surface or in small cracked areas of the surface.

Note: Mercury can move surprising distances on hard-flat surfaces, so be sure to inspect the entire room, including any cracks in the floor, when searching.

- Use the eyedropper to collect or draw up the mercury beads. Slowly and carefully squeeze mercury onto a damp paper towel. Alternatively, use two pieces of cardboard paper to roll the mercury beads onto the paper towel or into the bag. Place the paper towel in a zip locking bag and secure. Make sure to label the bag as directed by your local health or fire department.
- After you remove larger beads, use sticky tape, such as duct tape, to pick up any remaining small glass fragments (Peel the tape very slowly from the floor to keep the mercury beads stuck to the tape.) Place the paint brush or duct tape in a zip locking bag and secure. Make sure to label the bag as directed by your local health or fire department.
- Place all materials used with the cleanup, including gloves, in a trash bag. Place all mercury beads and objects into the trash bag. Place the trash bag outside in a secured area and label it as directed by your local health or fire department.
- Contact your local health department, municipal waste authority, or your local fire department to find out how to conduct proper disposal in accordance with local, state and federal laws.

Technical Support is provided by:

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support@bluezonefresh.com

