

Static Control

Sentinel BTI

Benchtop Ionizing Blower

Overview

The Sentinel BTI Benchtop Ionizer utilizes DC high voltage to generate balanced ionized airflow to eliminate static charges on surfaces. The unit can be placed at one end of the workbench, wall or shelf mounted, and directed at the target or area to be neutralized. The ionizer's neutralization time will be optimal at 12" to 48" directly in front of the unit and will increase as the distance from the unit increases.

General Guidelines

- Keep water, oil, contamination and any fluids away from the blower at all times
- Keep the unit clean inside and out for optimal performance

Caution! Disconnect the unit from power before performing any maintenance, inspection or cleaning to avoid an electrical shock hazard and to prevent damage to the unit!

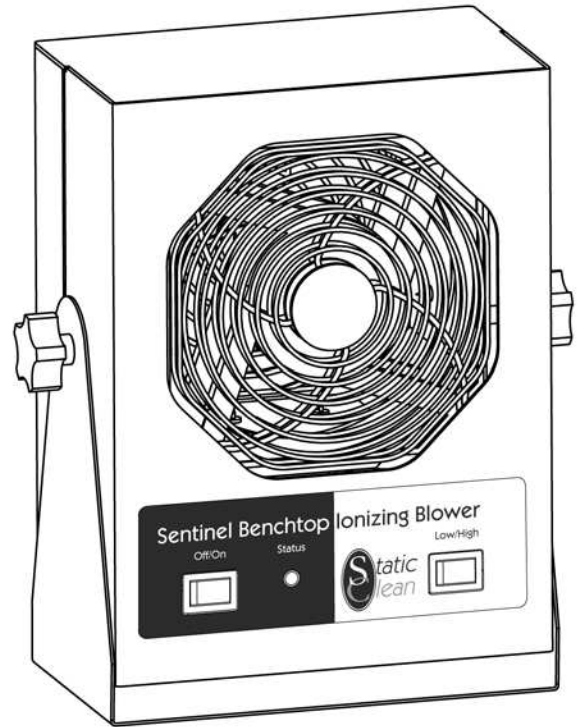
Contents

Remove the ionizer from the carton and inspect for damage. Included with the unit should be:

- (1) Sentinel BTI Benchtop Ionizer with Stand and adjustment knobs installed
- (1) Detachable IEC Power cord (US 115V or 230V, UK or Euro; must be specified at time of order)
- (1) Round foam air filter with (1) ¾" round Velcro hook dot
- This IOM-Installation, operation, and maintenance instructions sheet

Installation

Locate the ionizer 1 to 4 feet from the area or target to be neutralized for optimal performance, making sure that the airflow will not be restricted. The unit comes with a stand so that it can be positioned on the work surface, aimed at the target and locked in via adjustment knobs. It can also be wall or shelf mounted to keep valuable bench space free for other



purposes and equipment. A working electrical outlet within reach of the 6' long detachable cord that is supplied with the blower will be required. The outlet must be a properly installed and grounded 3-prong outlet with supplied voltage to match the blower being installed. If one is not present, consider relocating the blower to be within reach of an outlet or having an electrical outlet installed near the blower. Be sure the ON/OFF switch, located on the front of the unit, is in the "OFF" position. Plug the power cord into the back of the blower and then into the appropriate AC power source.

Important Note: Before powering up the unit, verify that the AC outlet is properly grounded and that the supplied line voltage matches the electrical spec on the label at the bottom of the Sentinel BTI blower. Plugging the blower into an outlet with the incorrect voltage may damage the unit and will void any warranty coverage. The unit must have a good ground to maintain proper balance.



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Operation

Set the fan speed switch on the front of the unit to the LOW or HIGH position depending on the operator comfort and desired decay time. Higher airflow will result in faster static decay rates. Position the unit so that the maximum airflow is directed at the items or area to be neutralized. Turn the unit ON.

When the unit is turned on, the "Status" LED will illuminate and remain GREEN, indicating that the unit is running normally. The audible alarm may chirp and the "Status" LED may illuminate AMBER momentarily at startup but it should return to normal/green mode in one second or less. If the unit self test circuitry detects a fault condition, the LED will illuminate and remain AMBER and an audible alarm will sound.

Refer to the Troubleshooting section of this manual in the case of a fault condition. There are no user serviceable parts in this unit. Routine cleaning is the only maintenance that the user can perform.

Balance Adjustment

The Ionizer is an auto-balancing unit. However, tuning or manual adjustment can be accomplished by inserting a small flat screwdriver or trimmer adjustment tool into the balance adjustment pot located on the rear of the unit. To increase the output of positive ions, turn the potentiometer in a clockwise direction. Conversely, to increase the output of negative ions, turn the potentiometer in a counterclockwise direction. Ideally the unit will produce equal numbers of positive and negative ions. Use a calibrated Charge Plate Monitor to verify balanced operation of the ionizer. Do not attempt balance adjustment without a Charge Plate Monitor.

Maintenance / Alarms

Under normal conditions, the ionizer will attract dirt and dust (especially on the emitter pin electrodes). To maintain optimum neutralization efficiency and operation, cleaning should be performed on a regular basis, once a month is recommended. In addition to improving decay time, cleaning also keeps the ionizer balanced without the need for adjustment.

NOTE: The AC power cord **MUST** be disconnected before the unit can be disassembled for maintenance. First, turn the unit OFF and unplug the power cord. Remove the rear cover by disengaging the 4 screws on the back. The emitter pin electrodes should be cleaned using a Q-Tip type cotton swab or a soft nylon toothbrush dampened with IPA (Isopropyl alcohol). Clean the blades of the fan and the back of the balance-sensing grill in front of the fan as much as is accessible from the back of the unit.

Use caution when cleaning inside the blower. The emitter pin electrodes are sharp.

After cleaning the emitter pin electrodes, reattach the rear cover using the 4 screws. Plug in the power cord and turn the unit back ON.

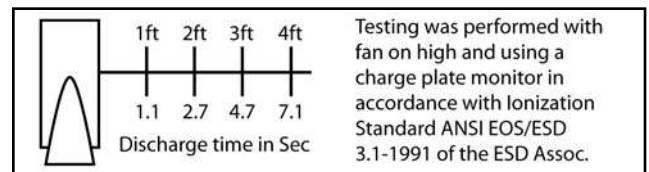
A filter has been provided for applications and/or environments outside of the Cleanroom and Medical Industries. It is strongly recommended that industrial manufacturing type users install the filter onto the back grill using the 3/4" Velcro "hook" dot (included with the blower) to keep the inside of the blower clean. This filter should be changed every 2 - 4 weeks, or as needed per a visual inspection.

Replacement emitter pin electrodes can be ordered from the factory. Eight (8) emitter pins are required per blower.

Neutralization (Decay) Times

The comparative efficiency of benchtop ionizers is determined by a standard test published by the ESD Association: Standard S3.1. Positive and negative decay times (from 1000 volts to 100 volts) are measured in tenths of a second using this standard. This test was performed with the unit positioned as shown, with the fan speed on high, and without a filter. Decay times are as shown.

NOTE: Unauthorized servicing or modifications to your ionizer will void the product warranty and may create dangerous conditions. Servicing should be performed only at the factory, or by a factory approved technician.



Troubleshooting

The internal state-of-the-art circuitry of the Sentinel BTI Blower monitors the ion balance of the air exiting the blower, maintaining optimal offset voltage (balance) to protect ESD sensitive components and products. If the circuit detects a bias in the ion balance due to dirty emitter pins or other conditions, it manipulates the output of the internal DC high voltage power supplies to compensate for the bias and correct the condition. When the blower status light is green, the system is functioning properly and sensing balanced ionization. When the status light turns amber an audible alarm sounds warning of a "fault" condition which can usually be resolved easily by the end user.

Blower

To troubleshoot a fault condition, follow these steps:

- 1) turn the switch to "off"
- 2) remove the power cord from the back of the unit
- 3) using a small, soft nylon (or similar) bristle brush, lightly dampened in IPA-isopropyl alcohol (not more than 70% solution), clean the (8) stainless steel emitter electrode pins, the fan blades and the internal sensing grill from the back side of the blower to remove any dirt or dust. A toothbrush can be used if the back cover is removed from the unit but power must be disconnected from the unit before opening up the chassis to prevent an electrical shock hazard. If available, blow out the unit with compressed air to clean it out and to dry the alcohol before powering back up.
- 4) Reconnect to power and turn the unit on.

If the alarm condition persists, adjust the balance of the blower using the small pot screw accessed through the tiny hole at the bottom left corner at the back of the blower. This should only be done by an experienced technician using proper equipment and procedures as specified in the EOS/ESD-S3.1-1991 Standard. Static Clean Intl., Inc. can calibrate and certify the blower performance for a nominal fee. If unable to correct a fault condition, the unit must be returned prepaid to the factory for evaluation, repair and/or calibration. Contact Static Clean for an RA-Return Authorization number and ship to address.

IMPORTANT NOTE: In some cases, if the balance-sensing grill inside the blower becomes contaminated, the blower may not be able to detect an out-of-balance condition and may continue to run in a "green light" status. The presence of contamination on the backside (the side nearest the fan) of the balance-sensing grill can cause the unit to overcompensate due to a false reading of the balance. Keeping the unit clean as recommended in the Maintenance section of this manual will help insure optimal performance from your Sentinel BTI Blower. A filter has been provided for applications and/or environments outside of the Cleanroom and Medical Industries. It is strongly recommended that industrial manufacturing type users install the filter onto the back grill using the 3/4" Velcro "hook" dot (included with the blower) to keep the inside of the blower clean. This filter should be changed every 2 - 4 weeks, or as needed per a visual inspection.

Contact Static Clean for service, replacement filters, parts information and pricing.

Specifications

• Air Flow	Two speed fan (250fpm; 100cfm with fan on high speed).
• Balance	±3 volt typical (Temperature range: 65°F to 80°F, R.H.: 15% to 65%)
• Ion Emission	Steady state DC with sensor feedback.
• Emitter Pin Electrodes	050" diameter 316 stainless steel; 8 required.
• High Voltage Power Supply	5.5 KV DC nominal; (1) positive HVDC + (1) negative HVDC
• Input Power	AC line power, internally selectable for 100/120 VAC, 50/60Hz, 1PH or 200/240 VAC,50/60Hz, 1PH
• Fuse	250ma slow blow; located at AC inlet inside rear cover; 2 required.
• Chassis	Powder coated aluminum or steel housing.
• Weight	7.0 pounds with cord; 7.4 pounds shipping weight with packaging
• Dimensions (with stand)	9.82" high 6.76" wide (8.08" with knobs) 3.77" deep
• Mounting	Bench top tilt adjust frame with locking knobs; can also be wall or shelf mounted
• Ozone	Less than 0.005ppm



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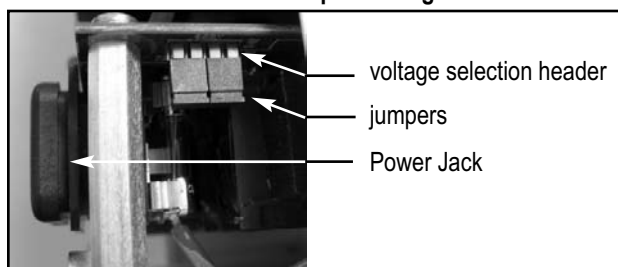
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Changing Voltage

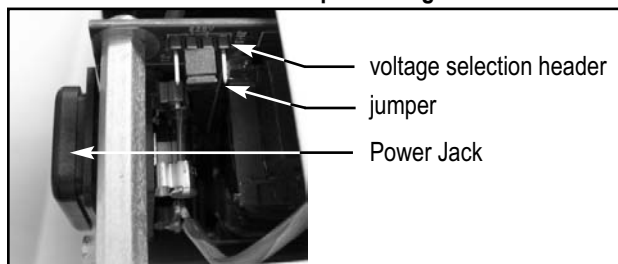
The input power voltage should be set to your specification as ordered and prior to shipping. It is marked on the box label and the spec label affixed to the bottom of the unit. The voltage can be reset to a different AC voltage by removing the back of the case. NOTE: The AC power cord MUST always be disconnected before the unit is disassembled. Reconfigure the voltage jumpers as shown in the diagram(s) below to match your AC line voltage supply.

Input voltage is selected with the two internal jumpers as shown below:

115 Volt Jumper Settings



230 Volt Jumper Settings



Limited Warranty

Static Clean expressly warrants that for a period of one (1) year from the date of purchase, the ionizer will be free of defects in material (parts) and workmanship (labor). Within the warranty period, a unit will be tested, repaired, or replaced at discretion of Static Clean, free of charge. Any unit under warranty should be shipped prepaid to the Static Clean factory. Call Customer Service at (781) 229-7799 for a Return Material Authorization (RMA) number and shipping instructions. Include a copy of your original packing slip, invoice, or other proof of purchase date.

If the unit is out of warranty, Static Clean International, Inc. will quote repair charges necessary to bring your unit up to factory standards.

Warranty Exclusions

The foregoing express warranty is made in lieu of all other product warranties, expressed and implied, including merchantability and fitness for a particular purpose that is specifically disclaimed. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean or repair products.

Limit of Liability

The user shall determine the suitability of the product for their intended use, and the user assumes all risk and liability whatsoever in connection therewith.

About Static Clean

At Static Clean International, we've been providing Static and Contamination Control Solutions to clients nationwide since 1973. We capitalize upon this wealth of experience to service our customers in a variety of ways. Whatever their needs, our comprehensive approach to controlling static / contamination translates into a much lower total cost of ownership solution for them.

Industrial/Medical/Electronics Applications

For our customers, we provide a line of Static and Contamination Control industrial products including static bars, power supplies, air guns, airknives, benchtop and overhead ionizers and WebVacs that we manufacture ourselves. These exceptional products address a host of common process problems including mis-feeds, poor lamination, jogging and stacking problems, shock to operators, jammed injection molds, particle contamination, fires and explosions.



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