



# Bench Top Ionizer Installation, Operation and Maintenance



Figure 1. Charleswater Item 92290

The 92290 is a compact and lightweight dual steady state DC auto-balancing benchtop ionizer. The unit is normally placed at one end of the workbench or area to be neutralized. It may also be wall mounted or mounted on a shelf. The ionizer's neutralization time will be best approximately 30cm to 120cm directly in front of the unit and will increase as the distance from the unit increases.

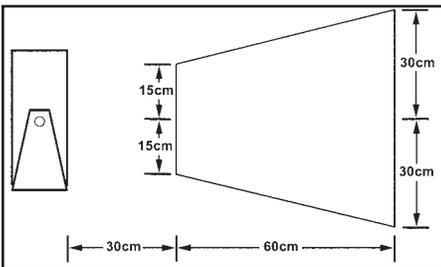


Figure 2. Area of Optimum Charge Neutralization

## Installation

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

1. Stand assembly with hardware
2. Four rubber feet
3. Emitter point cleaner

Power cords 93000 (Continental Europe Schuko, 2 pin) and 93010 (UK/Ireland/Asia, 3 pin) are available separately.

The input voltage should be set to your specification prior to shipping. It can be verified or reset by referring to the Maintenance section of these instructions.

Attach the stand to the unit by placing the plastic spacers between the unit and the stand and securing in place using the knurled knobs. If desired, attach rubber feet to each corner of the bottom of the stand. Press feet firmly in place.

Before installing the unit, verify that the AC outlet is properly connected to earth ground. The unit must have a good earth ground to maintain proper balance.

Install the unit in the desired location, making sure that the airflow will not be restricted. Be sure the ON/OFF switch, located on the rear of the unit, is in the "OFF" position. Plug the power cord into the unit and then into the appropriate AC power source. This equipment has a grounding type plug that has a third (grounding) pin. This plug will only fit into a grounding type power outlet. If the plug does not fit into the outlet, contact qualified personnel to install the proper outlet. Do not alter the plug in any way.

## Operation

Set the fan speed switch on the rear of the unit to the LOW, MED, or HI position. Higher airflow will result in faster neutralization 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 first turned on, it conducts a self-test. The audible alarm will sound and then the LED will cycle through RED, YELLOW, and then GREEN. The LED will remain GREEN during normal operation.

## Balance Adjustment

The 92290 is an auto-balancing unit. However, tuning or manual adjustment can be accomplished by inserting a small screwdriver or trimmer adjustment tool into the balance adjustment hole located on the right rear of the unit. To increase the output in a positive direction, turn the potentiometer in a clockwise direction. Conversely, to increase the output in a negative direction, turn the potentiometer in a counter clockwise direction.

## Maintenance / Alarms

**WARNING - RISK OF ELECTRIC SHOCK** - These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing of internal parts unless you are qualified to do so.

The input voltage may be verified or reset by removing the back case by disengaging the 3 screws on back. **NOTE:** The AC power cord **MUST** always be disconnected before the unit is disassembled.

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

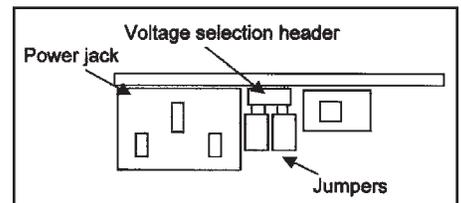


Figure 3. 110 Volt Jumper Setting

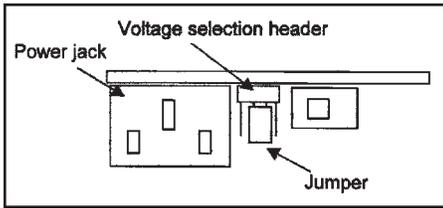


Figure 4. 220 Volt Jumper Setting

If the supply voltage drops from 110 Volts to below 85 Volts or from 220 Volts to below 170 Volts, the unit will shut down the audible alarm will beep and the LED will blink RED. The unit will automatically reset when the minimum voltage is restored.

Under normal conditions, the ionizer will attract dirt and dust (especially on the emitter electrodes). To maintain optimum neutralization efficiency and operation, cleaning should be performed on a regular basis.

If the performance of the ionizer were to degrade because of dirty or corroded points, the unit will enter a maintenance condition. When the ionizer is in a maintenance condition, the LED on the front of the unit will blink alternately YELLOW and RED; the audible alarm will sound. If the performance continues to degrade, the unit will enter shutdown mode.

When the unit enters shutdown mode, ionization will be stopped, the LED on the front of the unit will change to a steady of RED, and the audible alarm will sound continuously. If the ionizer enters shutdown mode, it must be turned OFF and then back ON to reset the unit.

NOTE: The AC power cord MUST be disconnected before the unit is disassembled for maintenance. The emitter electrodes should be cleaned using the alcohol cleaners included or a swab wet with Isopropyl alcohol. First, turn the unit OFF and unplug the power cord. Then remove the rear screen by disengaging the 4 screws on back. After cleaning the emitter electrodes, reattach the rear screen using the 4 screws. Plug in the power cord and turn the unit back ON.

The emitter electrodes should not require replacement during the life of the unit with normal handling. Replacement emitter electrodes can be ordered if necessary.

Best practice would be to verify the balance of the unit with a charge plate monitor after cleaning.

### Balance Alarm

The unit ships with the balance alarm sensitivity set to  $\pm 20$  Volts. Alarm sensitivities of  $\pm 5$  Volts,  $\pm 10$  Volts,  $\pm 15$  Volts,  $\pm 20$  Volts,  $\pm 25$  Volts, or "NO Balance Alarm" can be set using the optional Balance Alarm Programmer.

### Neutralization (Decay) Times

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

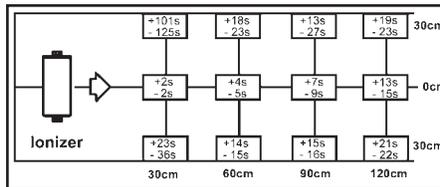


Figure 5. Decay time in seconds from 1000 volts to 100 volts on a 15cm x 15cm charged plate per ANSI EOS/ESD S3.1.

### Specifications

- **Air Flow**  
Three speed fan (125fpm -250fpm; 50-100cfm)
- **Balance**  
 $\pm 3$  volt, typical;  $\pm 5$  volts maximum. (Temperature range: 18°C to 26°C, R.H.: 15% to 65%)
- **Chassis**  
White powder coated aluminum housing
- **Dimensions (with stand)**  
24cm high x 15cm wide x 8cm deep
- **Emitter Points**  
.050" diameter pure tungsten for improved mechanical strength and ionization stability
- **Fuse**  
250ma slow blow
- **High Voltage Power Supply**  
5.5 KV DC nominal

### • Input Power

AC line power, internally selectable for 110/115 VAC-50/60Hz or 220/230 VAC-50/60Hz

### • Ion Emission

Steady state DC with sense feedback

### • Mounting

Bench top tilt adjust frame

### • Ozone

Less than 0.05ppm

### • Weight

2 Kg

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 Semtronics approved technician.

### Limited Warranty

Charleswater expressly warrants that for a period of one (1) year from the date of purchase, Charleswater Benchtop Ionizers will be free of defects in material (parts) and workmanship (labour). Within the warranty period, a unit will be tested, repaired or replaced at Charleswater's option, free of charge. Call Customer Service at 00 44 (0) 1892-665313 for a Return Material Authorisation (RMA) and proper shipping instructions and address. Include a copy of your original packing slip, invoice, or other proof of date of purchase. Any unit under warranty should be shipped prepaid to the Charleswater factory. Warranty replacements will take approximately two weeks.

If your unit is out of warranty, Charleswater will quote repair charges necessary to bring your unit up to factory standards. Call Customer Service at 00 44 (0) 1892-665313 for a Return Material Authorisation (RMA) and proper shipping instructions and address. Ship your unit freight prepaid.

### 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 WHICH ARE 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

In no event will Charleswater or any seller be responsible or liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, users shall determine the suitability of the product for their intended use, and users assume all risk and liability whatsoever in connection therewith.