Benchtop AC Ionizer
Installation, Operation, and Maintenance

Figure 1. SCS 770122 Benchtop AC Ionizer

Description

The SCS 770122 Benchtop AC Ionizer is used for neutralizing electrostatic charges on insulators and ungrounded conductors. Its discharge times (< 2 second at 12 inches) and ±15 volt offset voltage exceed the required limits of ANSI/ESD S20.20 and ESD TR53. The 770122 Benchtop AC Ionizer generates AC high voltage to produce an airflow rich in positive and negative ions. A built-in automatic emitter point cleaner periodically brushes away dust and minimizes maintenance. Membrane switches are located at the top of the ionizer to control power, fan speed, and emitter cleaning. The 770122 Benchtop AC Ionizer features a powder coated steel enclosure and stand and a 24 VDC alarm output terminal.

The Benchtop AC Ionizer and its accessories are available as the following item numbers:

Item	Description
770122	Benchtop AC Ionizer
770123	Replacement Emitter Brush

Ionizers are useful in preventing electrostatic charge generation, electrostatic discharge, electrostatic attraction, as well as preventing equipment latch-up. Per ANSI/ESD S20.20 section 6.2.3.1. Protected Areas Requirement states: “Ionization or other charge mitigating techniques shall be used at the workstation to neutralize electrostatic fields on all process essential insulators if the electrostatic field is considered a threat.” “Air ionization can neutralize the static charge on insulated and isolated objects by producing separate charges in the molecules of the gases of the surrounding air. When an electrostatic charge is present on objects in the work environment, it will be neutralized by attracting opposite polarity charges from the ionized air. Note that ionization systems should not be used as a primary means of charge control on conductors or people.” (Reference: EN 61340-5-2:1 clause 5.2.9)

“The primary method of static charge control is direct connection to ground for conductors, static dissipative materials, and personnel. A complete static control program must also deal with isolated conductors that cannot be grounded, insulating materials (e.g., most common plastics), and moving personnel who cannot use wrist or heel straps or ESD control flooring and footwear. Air ionization is not a replacement for grounding methods. It is one component of a complete static control program. Ionizers are used when it is not possible to properly ground everything and as backup to other static control methods. In clean rooms, air ionization may be one of the few methods of static control available.” [ESD Handbook ESD TR20.20 Ionization, section 5.3.6.1 Introduction and Purpose / General Information]

Packaging

1 Benchtop AC Ionizer
1 Ground Wire, 6'
1 Alarm Wire Harness, 1'
1 Power Adapter with interchangeable plugs (North America, UK/Asia, Europe)

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Features and Components

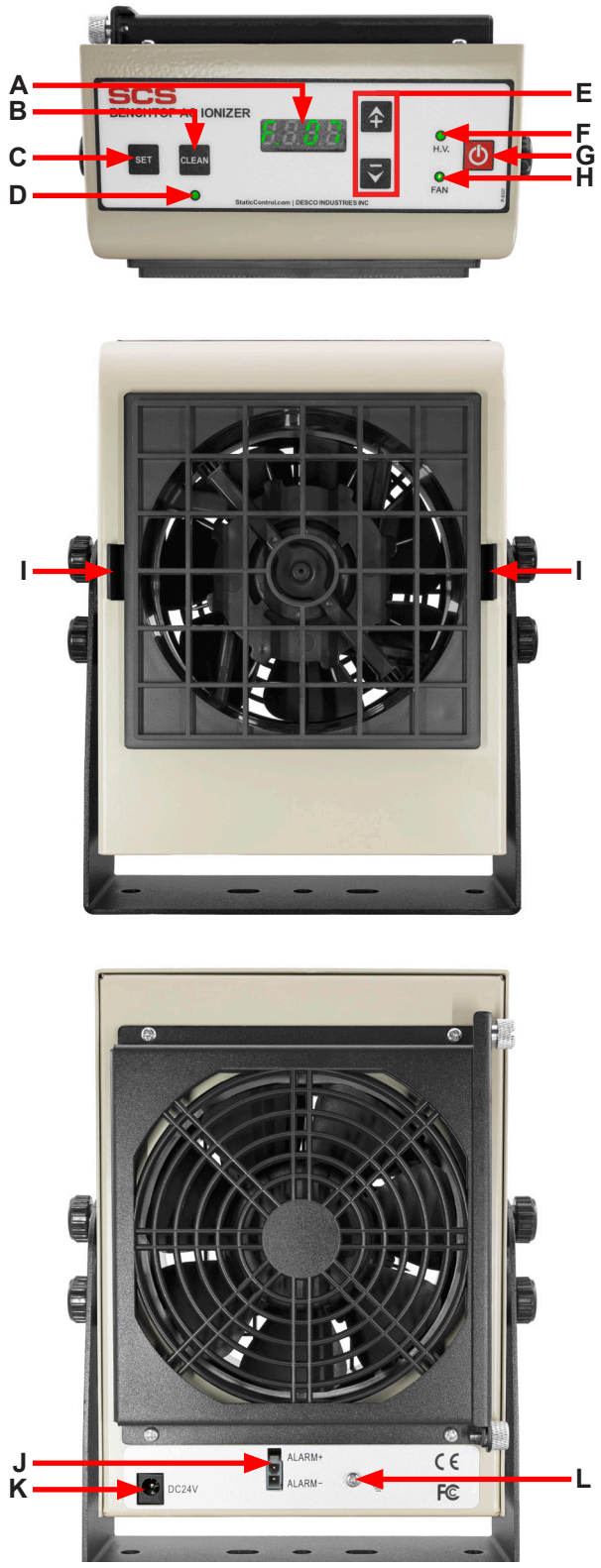

Figure 2. 770122 Benchtop AC Ionizer features and components

A. Display: Displays fan speed setting and emitter cleaning cycle.

B. Clean Button: Triggers the emitter cleaning cycle. The fan will stop, and the emitter brushes will rotate clockwise for 5 seconds and then counterclockwise for another 5 seconds. The fan will rotate after the cleaning cycle is completed.

C. Set Button: Toggles the ionizer between fan speed mode and emitter cleaning timer.

D. Clean Indicator: Illuminates when the emitter cleaner runs.

E. + and - Buttons: Toggles the fan speed setting and emitter cleaning timer.

F. H.V. Indicator: Illuminates green when the high voltage emitters are active and functioning correctly. Illuminates red when the high voltage is abnormal and the emitters require cleaning.

G. Power Button: Toggles the power to the ionizer.

H. Fan Indicator: Illuminates green when the fan is active and functioning correctly. Illuminates red when the fan behaves abnormally and a foreign object may be causing its blades to rotate freely.

I. Fan Grill Clips: Pinch both clips to detach the fan grill from the assembly, so the emitters may be accessed for hand cleaning or replacement.

J. Alarm Output Terminal: Outputs a 24 VDC signal whenever an alarm occurs on the ionizer. Use the included alarm wire harness to wire the circuit to an external device.

K. Power Jack: Connect the included power adapter to this jack.

L. Ground Screw: Bonds the ionizer to ground.

Installation

Install the included ground wire to the ground screw at the back of the ionizer. Connect the opposite end of the wire to equipment ground. Place the 770122 Benchtop AC Ionizer at a desired location where the airflow will not be restricted. Ensure a space of at least 5 inches (15 cm) at the rear and on both sides of the ionizer to provide sufficient airflow. Use the tilt lock knobs to aim the ionizer at the area to be neutralized. Connect the power adapter into the power jack at the back of the ionizer and into an appropriate AC power source.

Note that placement of the ionizer is important in determining its effectiveness. The distance from the targeted object and fan speed affect the ionizer's performance. The discharge time will increase as the distance increases or fan speed is reduced. The front of the ionizer must be placed at least 4 inches away from the items to be neutralized to prevent reverse charging from occurring.

Operation

1. Position the ionizer so that maximum airflow is directed towards the items or area to be neutralized.
2. Press the power switch to power the ionizer. The ionizer will execute a cleaning cycle. The emitter brushes will rotate clockwise for 5 seconds and then counterclockwise for another 5 seconds. The fan will power on after the cleaning cycle is completed.
3. Use the + and - buttons to set the fan speed to the desired setting. F01 is the lowest fan speed, and F07 is the highest fan speed. Higher airflow will result in faster discharge times.

Figure 3. Using the 770122 Benchtop AC Ionizer on a workbench

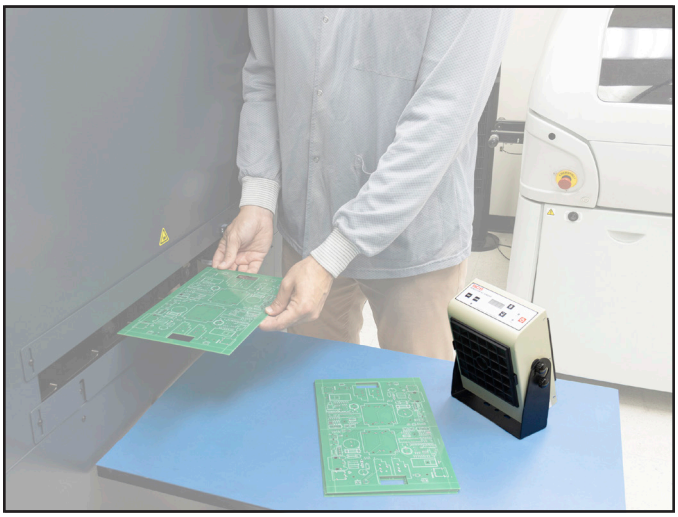

Figure 4. Using the 770122 Benchtop AC Ionizer at a machine station

Emitter Cleaning Timer

Press the Set button. H000 will appear on the display. 000 indicates the number of hours that need to be elapsed before an automatic cleaning cycle is executed. The cleaning cycle timer be configured from 001 to 999 hours. Press the Set button to toggle between the digits and press the + and - buttons to increase and decrease the values, respectively.

Locking the Control Buttons

To lock the control buttons, press and hold the Set button for 3 seconds until 3 beeps sound. To unlock the control buttons, press and hold the Set button for 3 seconds until 3 beeps sound.

Maintenance

Occasional cleaning of the case and of the ionizing electrodes are the only routine maintenance procedures required.

Cleaning the Enclosure

Wipe the enclosure with a soft cloth moistened with water. If a stronger cleaning solution is required, mild soap with water may be used. The use of any other cleaning solutions is not recommended.

Cleaning the Emitter Points

CAUTION: Disconnect the power to the ionizer whenever cleaning the emitter points.

The automated brushes will keep the emitter points clean by brushing per the hourly cycle set in the emitter cleaning timer. Particulates on the emitter point may, however, inhibit ionization to a limited degree. The emitter points are located behind the front grill. A jet of clean, compressed air can be used to remove dirt on emitter points. If a more rigorous cleaning method is needed to remove particulate, clean the points with a cotton swab dampened with isopropyl alcohol. Access to the points is available through the front grill. Squeeze the two clips at the sides of the fan grill to detach it from the assembly. Be careful not to damage the points during cleaning.

Troubleshooting

Fault	Tip
Fan does power on	Verify that the power adapter is properly connected
	Verify that the front grill is attached properly
Discharge times are poor	Clean the emitters
H.V. indicator illuminates red	Verify that no conductors are nearby the emitters
FAN indicator illuminates red	Verify that nothing is obstructing the fan blades

Calibration

The SCS 770122 Benchtop AC Ionizer is factory adjusted to provide optimum performance. Further adjustment in the field is not possible. However, the following instructions can be followed to determine whether the Ionizer is performing to specifications. The testing follows the procedure outlined in the standard for Ionization, ANSI/ESD STM3.1. Please refer to this standard for more complete information.

Frequency of recalibration should be based on the critical nature of those ESD sensitive items handled and the risk of failure for the ESD protective equipment and materials. In general, SCS recommends that calibration be performed annually.

Periodically measure the balance and neutralization times of the ionizer to verify that it is performing within specifications. These measurements should be taken using a charged plate monitor. Calibration should be performed in accordance with the ESD Association ionization standard ANSI/ESD STM3.1. With the ionizer positioned a distance of 12 inches (30 cm), the neutralization (discharge) time of ±1000V to ±100V should be less than 2 seconds, and the balance should be ±15V or better.

Neutralization (Discharge) Times

The comparative efficiency of bench top ionizers is determined by a standard test published by the ESD Association: ANSI/ESD STM3.1. Typical positive and negative decay times (±1000V to ±100V) measured using this standard are shown in Figure 5.

NOTE: All discharge times are in seconds and representative only. They are not a guarantee. The discharge times were recorded in a factory ambient environment.

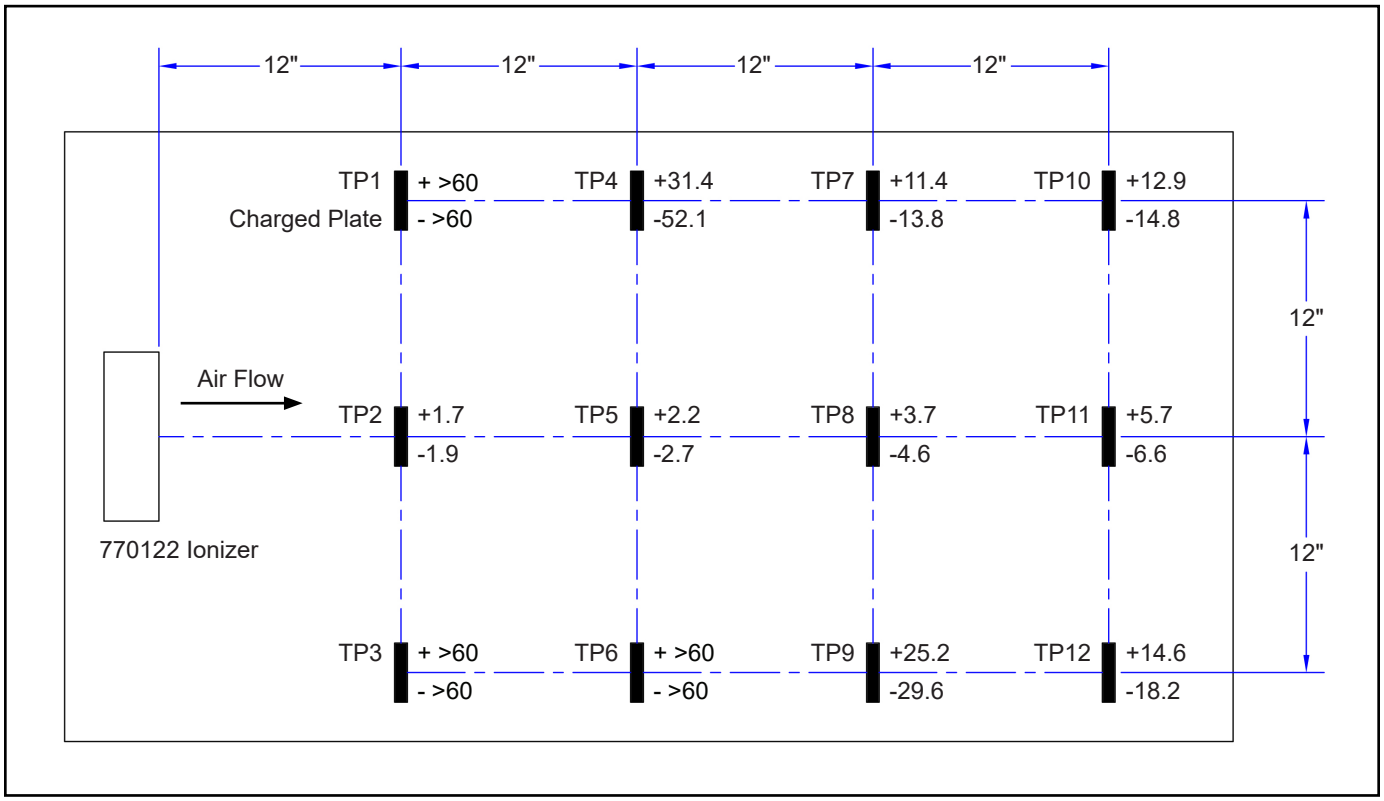

Figure 5. Neutralization (discharge) times in seconds at high fan speed

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Specifications

Input Voltage and Frequency (External Adapter)	Power Input: 100-240 VAC, 50/60 Hz Power Output: 24 VDC, 1 A Power Adapter Cable Length: 8.0' (2.5 m)
Operating Environment	32° to 104° F (0° to 40° C) 20 to 75% R.H.
Neutralization (Discharge) Time at 12"	< 2 seconds
Offset Voltage (Balance) at 12"	±15 V typical
Ion Emission	High frequency AC
Airflow	78 to 145 CFM (2.2 to 4.1 m^3/min)
Ozone	<0.04 ppm
Emitter Points	Tungsten
Dimensions (without stand)	7.5" H x 5.6" W x 3.5" D (190 mm x 143 mm x 90 mm)
Weight	3.1 lbs (1.4 kg)
Alarm Signal Output	24 VDC
Certifications	CE, UKCA
Country of Origin	China

Limited Warranty, Warranty Exclusions, Limit of Liability and RMA Request Instructions

See the SCS Warranty -
StaticControl.com/Limited-Warranty.aspx

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