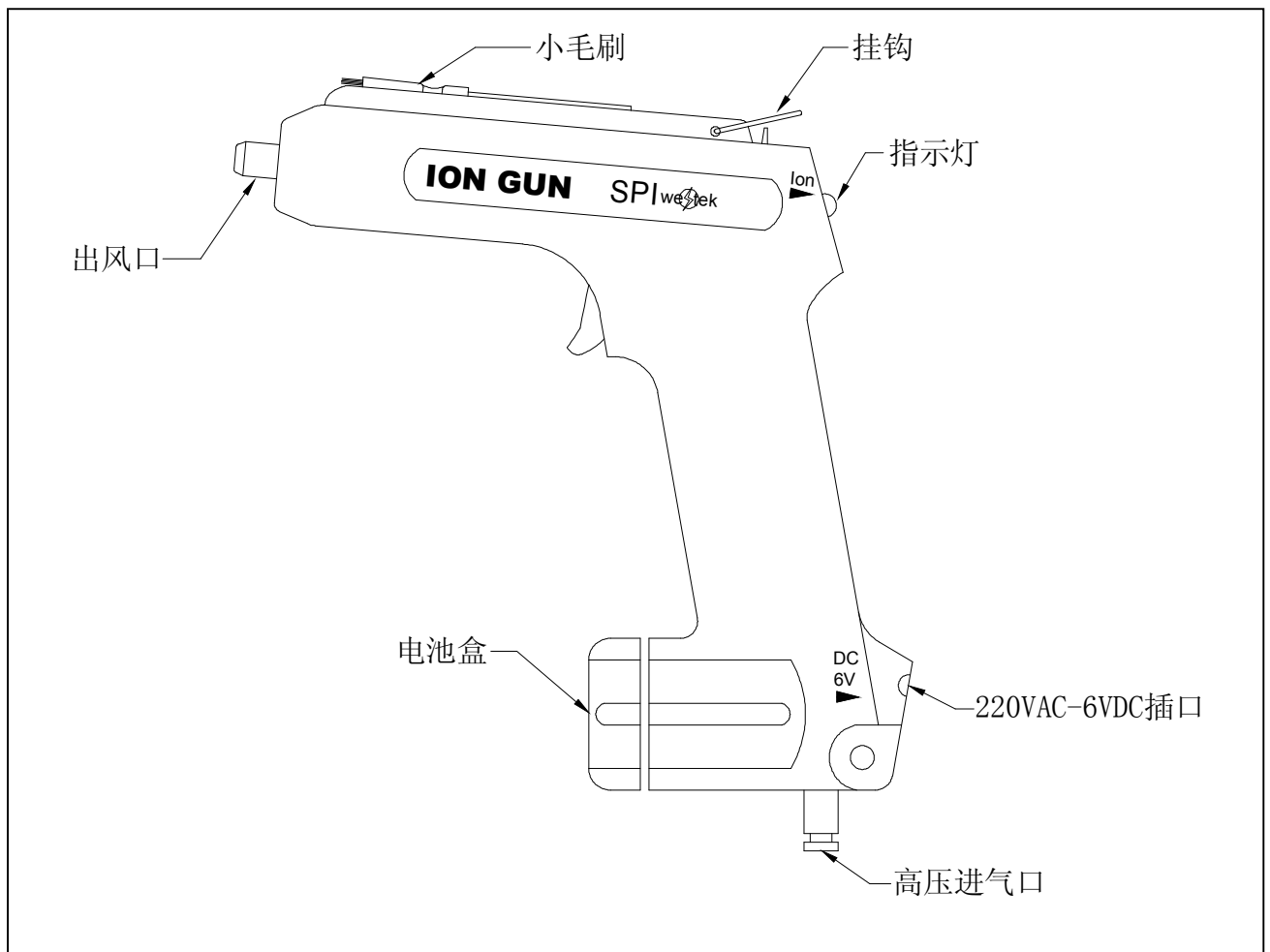




Portable Ionizing Air Gun

PIA 型离子风枪

型号: 94101



SPI WESTEK 是 DESCO 静电消除器品牌
MADE IN AMERICA

根据 ANSI/ESD S20.20 中 6.2.3.1 内容规定, 在静电绝缘物体或孤立的半导体产生静电时, 应使用电离技术产生正负离子中和静电. 采用电离中和技术对具有大电容的物体无效, 例如人体, 但在接地无法实现的情况下, 电离中和技术应该被采用.

根据 IEC 61340-5-2:1 中所规定, 对导电物体和人体, 电离中和技术不应是第一选择.

SPI 94101 型离子风枪可以将空气电离为大量正负离子, 由高压气体输送到需除静电物体表面以中和静电, 同时将表面灰尘吹除.

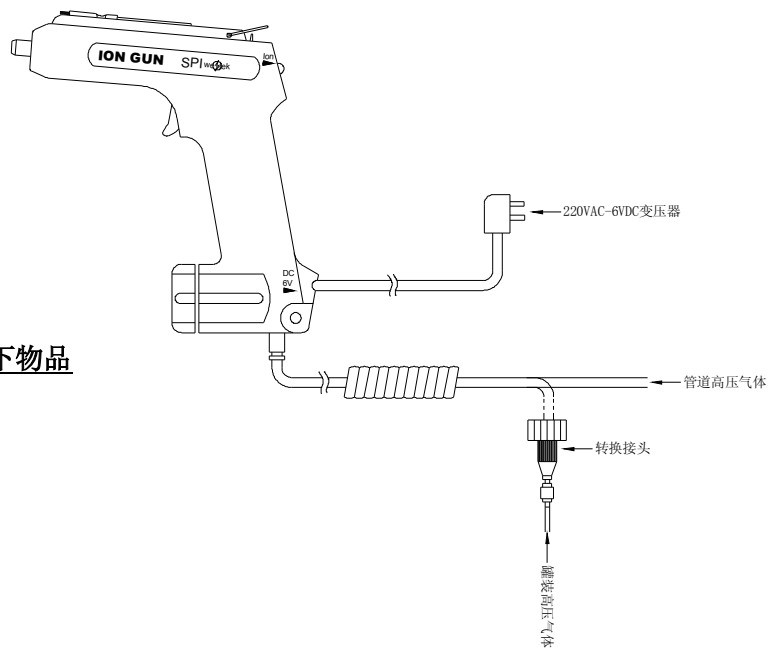
***在使用 94101 风枪前, 请阅读本手册**

警告!

- 该设备不具防水功能, 请保持干燥以免短路
- 不要剧烈震动该设备, 防止接触腐蚀性物体, 可燃气体和灰尘
- 不要对准人员脸部工作
- 不要让儿童接触该设备
- 当风嘴或枪体破损时不要继续使用
- 不要拆开枪体外壳
- 安全丢弃电池

安装

- 打开电池盒盖, 装入 4 节 AA 电池
- 将进气管插入枪柄底部的进气接口
- 当气源管口径小于配套气管时, 使用转换接头



打开包装箱后检查设备是否有损坏, 包装盒内有以下物品

- 气管: 1 个
- 毛刷: 1 个
- AA 电池: 4 节
- AC-DC 变压器: 1 个

产品使用环境

- 将变压器插入 220V AC/50Hz 电源, 变压器输出 6V DC, 2.5W
- 使用时环境最高湿度: 90%
- 操作温度: 0-50°C
- 产品储存温度: -10-50°C
- 产品储存湿度: 20-90% RH
- 输入气压: 10-65 PSI
- 产品重量: 310 克(包括电池)

安装并检查产品

- ☞ 打开电池盒盖，放入 4 节 AA 电池。把进气管插进枪柄底部的进气口。安装好后，按下 1 半扳机开关，这时有气体从枪嘴射出，LED 指示灯不亮。
- ☞ 如果没有气体从枪嘴射出，应检查气管是否连接紧密或气源是否正常。
- ☞ 接着全部按下扳机，这时产生正负离子，LED 指示灯为绿色。如果 LED 灯不亮，应检查电池是否安装正确或没电，如果电池没电，可用配套变压器充电。
- ☞ 可以连接配套变压器工作而不需电池。

产品工作原理

PIA 风枪枪嘴内装有离子放电电极，内置压电型高压产生器将 6V 直流电转换为 4KV 高频交流电并作用在离子放电电极上，产生电晕放电将空气分子电离为大量正负离子。由于采用高频交流电晕放电，所以 PIA 产生的正负离子比一般的工频交流静电消除器更多更密集，同时电晕放电电压比普通产品更低，所以产生的臭氧更少。

PIA 将输入的高压气流电离为大量正负离子，因此枪嘴内射出高压离子风，作用到物体表面时将静电中和，并将污染物吹走。

PIA 离子风枪按 ANSI EOS/ESD S3.1 标准检测，正负离子平衡度低于 $\pm 10V$ (ANSI EOS/ESD 20.20 标准为低于 $\pm 50V$)

使用配套 94049 静电探测器

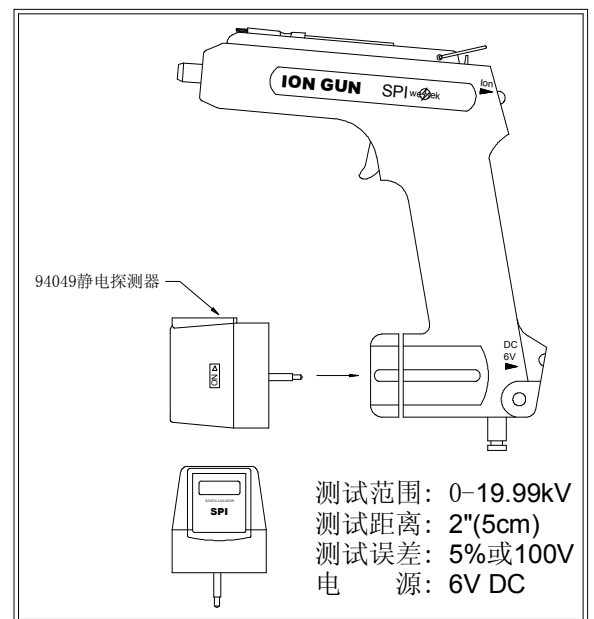
1. 把 94049 静电探测器插入 94101 风枪的电池盒的中间插孔内
2. 向上推“ON”按钮开机
3. 94049 静电探测器会自动开机清零，屏幕显示“0.00 KV”
4. 对准需检测物体，屏幕显示物体表面静电位（单位：千伏）

使用注意事项及产品维护

- ☞ 输入的高压气源需干燥和洁净，肮脏或有油水的气体会损坏该设备，一般气源需经过吸水型预过滤器过滤
- ☞ 输入气压不要超过 65PSI，输入气压过高会造成电离效果不好，同时损坏设备
- ☞ 不要在具有易燃，易爆炸物品的地方使用该设备
- ☞ 使用过程中，离子放电电极会被污染，根据 IEC61340-5-2 建议每 6 个月清洗离子放电电极，同时检测离子平衡度
- ☞ 设备散电时间和离子平衡度检测按 EOS/ESD S3.1 标准采用平板监测器校正
- ☞ 高压电晕设备会产生对人体有害的臭氧，PIA 风枪经检验产生的臭氧低于 0.05ppm (符合 OSHA 标准)

产品保修

PIA94101 风枪保修期为 1 年，由于操作不当引起的质量问题不在保修范围。



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Portable Ionizing Air Gun Operation and Maintenance



Made in America
Final Assembly
and Test



**PLEASE READ THIS MANUAL IN ITS ENTIRETY
BEFORE USING THE 94100 IONIZING AIR GUN.**

WARNING

- The Ionizing Air Gun is not water resistant, therefore, keep it away from water and mist as water will cause short circuit and insulation failures.
- Keep the air gun away from vibration, corrosive/flammable gas and dust as they can be the cause of fire, short circuits, rust, etc.
- Do not operate the Ionizing Air Gun near the face.
- Keep the Ionizing Air Gun away from children.
- DO NOT use the air gun for purposes other than its designed purpose.
- DO NOT use if the nozzle or connectors are damage
- DO NOT disassemble the air gun.
- Dispose of batteries safely.

Remove from the carton and inspect for damage. Included with the Portable Ionizing Air Gun should be:

- 1 Air Tube
- 1 Extension Brush
- 1 Quick Disconnect Adapter
- 4 AA Batteries (Rechargeable)
- 1 AC Adapter

POWER RATINGS AND ENVIRONMENTAL CONDITIONS

Rated voltage for Plug-in Power Supply(not included): Output 6VDC, 2.5W

Suitable for indoor use only

Maximum relative humidity of 90%
(noncondensing)

Operating Temperature: 0 ~ 50°C

Storage Temperature: -10 ~ 50°C

Storage Humidity: 20 ~ 90% RH

Air Pressure: 10 ~ 65 PSI-Max

Weight (with batteries installed): 0.7 pounds

INSTALLATION

Open the battery box lid with a coin and remove it. Load the 4 AA batteries, replace the battery box lid and lock in place. Connect the air tube to the Ionizing Air Gun nozzle. Insert the air tube into the connector firmly. Connect the Quick Disconnect Adapter to the air supply/source.

FUNCTION TESTS

Air Injection Test

Pushing the trigger lightly, approximately halfway, will release air from the gun nozzle. The light on the backside of the air gun should not come on. If the air does not come out vigorously with a hissing sound check for the following: 1) make sure that the air tube is attached firmly to the gun; 2) make sure the air supply connections are secure.

Ion Injection Test

Pushing the trigger all the way in will release an ionized air flow from the air gun. The light on the back should be on at this point. If the 'green' light on the backside of the air gun is not on, check for the following: 1) Are the batteries loaded properly; 2) Do the batteries have enough power. Use provided AC Adapter to recharge the batteries (unit can also be operated from 120 volt line voltage using AC Adapter without batteries).

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Operation

Be sure that you complete both function tests: Air injection and Ion Injection Test.

To remove static, you must push the trigger all the way in. Air and ions will be emitted from the gun. The green light should be on at this point.

To blow dust away, push the trigger lightly or halfway. Only the air comes from the air gun, and the green light should not come on at this point.

Use the Extension Brush to remove dust. When the extension brush is used, ion's are not emitted from the gun even though the green light is on.

Description

SPI Westek Portable Ionizing Air Gun is a ready-to-use unit for use in applications and areas where electrostatic charger can create manufacturing or handling problems. The unit quickly and effectively neutralize bulk static charges and aid in controlling contamination by dislodging dust and debris attracted by static electricity. The unit is designed for use in applications and areas where ElectroStatic Attraction contamination create manufacturing or handling problems (Ref: ESD Handbook TR 20.20 paragraph 5.3.6.5.2.4 Point of Use Ionization).

The Portable Ionizing Air Gun meets or exceeds the recommended technical requirements of ANSI/ESD S20.20 tested in accordance with ANSI/ESD S3.1.

The Portable Ionizing Air Gun is designed for point-of-use applications. Ionizers are useful in preventing electrostatic charge generation, ElectroStatic Discharge, and ElectroStatic Attraction. ANSI/ESD S20.20 Paragraph 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." Ionization is used to neutralize charges on process necessary insulators and isolated semiconductors. Some examples of process necessary insulators are: the PC board itself, plastic test stands, plastic housing where a PCB may be mounted, as well as computer monitor screens and regular cleaning wipes. Examples of floating or isolated conductors are: loaded PCB mounted in a stand where the pins are not contacting the dissipative workstation.

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: IEC 61340-5-2:1 paragraph 5.2.9).

The SPI Westek Portable Ionizing Air Gun is NIST calibrated.

NOTE: The unit is not recommended for continuous use.

Air Requirements

Always supply the Portable Ionizing Air Gun with filtered, dry noncombustible gases, such as compressed shop air. If the air is not dry, damage to the equipment may result and the warranty will be voided. Dirty air can introduce moisture and oil, contaminating the units' emitter assembly along with the materials to be cleaned or neutralized.

Filters must therefore be used at all times upstream of the air nozzle. A water trap-type pre-filter should be used in conjunction with an oil coalescing-type filter. Also drain all moisture traps regularly to prevent moisture in the line. Several drainings per day may be necessary, especially in areas of high humidity.

The Portable Ionizing Air Gun may be operated over a range of 10 PSI to 65 PSI.

The specific pressure needed will depend upon the application. Pressures exceeding 65 PSI are not recommended since these higher pressures are detrimental to effective ion production, and may damage the unit.

IMPORTANT NOTE: These air nozzles are not explosion proof. Do not use in environments where volatile materials are present.

SPI Westek solid-state electronic equipment is compact and rugged but should be treated as sensitive electronic equipment. With proper installation and a continued preventive maintenance program you will ensure the proper performance of the unit.

Theory of Operation

The emitter is located inside of the nozzle. This emitter produces large amounts of positive and negative ions, which mix with the air supply and create a highly effective neutralizing field. Any material within this field will be neutralized rapidly. The ionizing air flow removes contamination by dislodging dust and debris which is attracted to a material's surface by static charges. Once static charges are neutralized, dust particles and other forms of contamination are freed and carried away by the air stream. SPI Westek ionizers meet the ANSI/ESD S20.20 minimum recommended technical requirement range of less than ± 50 volts voltage offset tested in accordance with ANSI/ESD S3.1. The SPI Westek Portable Ionizing Air Gun provides ± 30 volt balance.

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Maintenance

"As with all ionizers, periodic maintenance will be needed to provide optimum performance." (Reference: IEC 61340-5- 2:1 paragraph 5.2.9).

The frequency of monitoring ionizers really depends on how and where they are used.

EIA-625 recommends checking ionizers every 6 months, but this may not be suitable for many programs particularly since an out of-balance may exist for months before it is checked again. ANSI/ESD S20.20 paragraph 6.1.3.1 Compliance Verification Plan Requirement states: "Test equipment shall be selected to make measurements of appropriate properties of the technical requirements that are incorporated into the ESD program plan." And paragraph 6.1.3.2. Compliance Verification Plan Guidance states: "In addition to internal audits, external audits (Organization and supplier of ESDS items) should be performed to ensure the unit, a locking screw is provided on the back of the unit to compliance with planned requirements. Verifications should include routine checks of the Technical Requirements in the Plan. The frequency of verification checks should be based on the control item usage, its durability and associated risk of failure."

Under normal conditions, the ionizer will attract dirt and dust (especially on the emitter electrodes). To maintain optimum performance, cleaning must be performed on a regular basis. The electrodes should be cleaned at least every six months. However, more frequent cleaning may be required if used in environments with more contaminants. These units need very little maintenance. In order to maintain the optimum performance of your unit, the following maintenance procedures must be performed on a regular basis. Make sure that the air supply is clean and free of contamination and moisture. Drain compressor tank and filters periodically. The filters may require draining several times daily, depending on your compressed air system.

Neutralization Efficiency (Decay Time)

The comparative neutralization efficiency of ionizers is determined by a standard test published by the ESD Association Standard 3.1.

Testing and Calibration

Ionizers are tested and calibrated using a charged plate analyzer. For proper testing we recommend using our 19450 Charged Plate Analyzer and the procedure outlined in ESD Association's Standard 3.1. This standard can be obtained directly from the ESD Association, 7902 Turin Road, Suite 4, Rome, NY 13440-2069, (315) 339-6937.

Health

There are no known health risks associated with our devices. The emitters work at about 4-6 kV and can create ozone, but there have been no significant measurement of ozone from our emitter sets, as all our existing units test well below the OSHA limit of 0.05 ppm ozone. For additional safety information, see "Dispelling an Old Myth" written by William Metz of Hewlett Packard published in Evaluation Engineering magazine, September 2001.

NOTE: Unauthorized servicing of modifications to your Portable Ionizing Air Gun will void the product warranty and may create dangerous conditions. Servicing should be performed only at the factory, or by a SPI Westek approve technician.

Limited Warranty

SPI Westek expressly warrants that for a period of one (1) year from the date of purchase, SPI Westek Portable Ionizing Air Gun will be free of defects in material (parts) and workmanship (labor). Within the warranty period, a unit will be tested, repaired or replaced at SPI Westek's option, free of charge. Call our Customer Service Department at 909-664-9986 for a Return Material Authorization (RMA) and proper shipping instructions and address. Please 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 SPI Westek factory. Warranty replacements will take approximately two weeks.

If your unit is out of warranty, call our Customer Service Department at 909-664-9986 for a Return Material Authorization (RMA) and proper shipping instructions and address. SPI Westek 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 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 SPI Westek 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.