

# Instruction Manual

## Aerostat PC™ Ionizing Air Blower

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### **IMPORTANT**

*SIMCO Industrial Static Control recommends that these instructions be read completely before installation or operation of this equipment. Failure to do so could result in personal injury and/or damage to the equipment.*

*Products contained in this manual are covered by one or more of the following U.S. patents: 3,892,614; 4,092,543; 4,188,530; 4,216,518; 4,423,462; 4,529,940; 4,665,462; 4,716,371; 4,734,580; 4,774,472; 4,872,083; 4,860,159; 5,017,876; 5,153,811, 5,008,594, 4,836,044 and corresponding foreign patents. U.S. and foreign patents pending.*



2257 North Penn Road • Hatfield, PA 19440  
Phone: 215-822-6401 • Fax: 215-822-3795  
e-mail:sales@simco.biz  
www.simco.biz

## Section 1 – Notes and Cautions

### **NOTE**

**Statements identified with a NOTE indicate precautions necessary to avoid potential equipment failure.**

### **CAUTION**

**Statements identified with a CAUTION indicate potential safety hazards.**

This equipment must be correctly installed and properly maintained. Adhere to the following cautions for safe installation and operation.

1. Read instruction manual before operating or installing device.
2. Qualified service personnel must do installation and repairs.
3. Make sure unit is grounded before operating (see Section 4 - Installation).
4. Do not insert objects through intake or outlet grille.
5. Do not operate unit in flammable or explosive atmospheres.

## Section 2 – Introduction

The Aerostat PC ionized air blower produces an air flow that is rich in positive and negative ions. Directing the air flow on an object that has a static electricity charge will neutralize the charge. If the object has a negative static charge, it will draw positive ions from the air flow. Conversely, if the object has a positive static charge, it will draw negative ions from the air flow. The air ions are attracted to the oppositely charged object and neutralize the charge on the object.

The Aerostat PC is a portable ionized air blower. It uses a small fan to produce air flow. The volume of air flow is controlled by a variable speed control which provides a wide range of air flow settings. The low wattage heating element (where applicable) can be turned on at any time for user comfort. The ionizing elements are energized with a low current, high voltage transformer. The transformer contains a current limiting resistor which enhances ionization stability and provides for safety. The high voltage AC is applied to a circular arrangement of stainless steel ion emitter points which results in an intense alternating electric field at the tip of the emitter points. It is this electric field that creates alternating polarity ions in the air

flow. To assure that the unit is working properly, the high voltage AC is monitored by an ionization indicator lamp.

The ionizer of the Aerostat PC features a patented balancing circuit. The Aerostat PC also features a patented built-in emitter point cleaner. Using the point cleaner takes only seconds. Cleaning the emitter points on a weekly basis prevents the build-up of airborne debris all electrical ionizers are prone to. This keeps your Aerostat PC working in top form for the life of the unit.

The Aerostat PC was designed for use with sensitive electronic components, where electrostatic discharge is a problem. The Aerostat PC can also be used in the industrial marketplace where static electricity causes problems such as: attraction of dirt to product, misalignment of small parts due to electrostatic “jumping” and undesirable adhesion of plastic films due to electrostatic charge.

### Features

- Small, lightweight and portable
- Rapidly neutralizes static charges
- Covers an extended distance with ionized air
- Variable speed fan with wide range of air flow

Low wattage heater for operator comfort (where applicable)  
Inherently balanced ion output  
Patented ion emitter cleaner  
Ionization indicator lamp  
Durable, electrically grounded metal enclosure

### ***Receipt of Equipment***

1. Carefully remove the equipment from the carton.
2. Inspect contents for damage that may have occurred during shipment. If any damage has occurred during shipment, the local carrier should be notified at once. A report should be forwarded to SIMCO Industrial Static Control, 2257 North Penn Road, Hatfield PA 19440, and (215) 822-6401.

3. Empty the carton to insure that small parts are not discarded.

### ***Return Shipments***

Prior to returning goods, contact a SIMCO Industrial Static Control Customer Service representative for a Return Authorization Number. This number should be included on the packing list. All correspondence should also reference the Return Authorization Number. Any item being returned should be shipped prepaid and packed to provide adequate protection.

## Section 3 – Specifications

### Aerostat PC

Plug version:	<u>North American</u>	<u>Standard Continental European</u>	<u>No Plug</u>
Line Voltage:	120 VAC, 60 Hz	230 VAC, 50 Hz	230 VAC, 50 Hz (no heater)
Current Draw:	Max. 1.7 Amp* Min. 0.1 Amp <i>*Heater on</i>	0.9 Amp* 0.05 Amp	0.1 Amp 0.05 Amp

Air Volume Output:	<u>Fan Speed</u>	<u>Flow</u>
	Low	35 CFM
	High	70 CFM

Air Velocity	<u>Fan Speed</u>	<u>1 ft.</u>	<u>2 ft.</u>	<u>3 ft.</u>	<u>4 ft.</u>
	Low	250	200	150	125
	High	500	400	300	250

*Velocity in FPM measured at center line of air stream*

Air Flow Characteristics: 1' x 5' Area Coverage

Heated Air Temperature: (where applicable)	<u>Fan Speed</u>	<u>Above Ambient</u>
	Low	25°F (14°C)
	High	11°F (6°C)

*Measured 6" in front of unit.*

Operating Temperature: 32°F (0°C) - 122°F (50°C)

Ozone Production: 0.01 ppm measured 6" in front of unit, fan low

Audible Noise:	<u>Fan Speed</u>
	Low 50 dB
	High 57 dB

*Measured 2 ft. from unit.*

Enclosure: Aluminum

Finish: Acrylic Enamel

Weight: 5.3 lbs (2.4 kg) 120 v unit  
5.7 lbs (2.6 kg) 230 v unit

Size: 5 1/2" W x 8 5/8" H x 3 1/4" D  
(14.0cm W x 22.0 cm H x 8.4 cm D)

Bench Stand Feet: Nonconductive, Nonstaining Polymer

Optional Air Filter: 30 PPI Open Cell Polyurethane Foam

Ion Balance (offset voltage): 0V ± 5

Ion Output (discharge time):

Fan Speed – High	1 ft.	2 ft.	3 ft.	4 ft.	
	5	7	9	12	6 inches
	1.5	2.5	4	6	Center Line
	5	7	9	12	6 inches

Fan Speed - Low	1 ft.	2 ft.	3 ft.	4 ft.	
	10	18	26	34	6 inches
	3	6	10	16	Center Line
	10	18	26	34	6 inches

Offset voltage and discharge time determined as per ESD Association Standard No. 3 using 6" x 6", 20 pF plate (charged plate monitor). Discharge times are in seconds from 1000 volts to 100 volts at locations shown.

**Note:** Discharge times for high speed are 10% longer for 230 V, 50 Hz.

## Section 4 – Installation

The Aerostat PC is designed for portable or permanent operation. The bench stand can be used in permanent operation by bolting it to a sturdy flat surface such as a wall or under a shelf. If the bench stand is bolted in place, use ¼ inch diameter screws or bolts to secure it.

For extremely dirty environments, an optional air filter may be installed. The air filter consists of a filter retainer (part number 4710017) and an air filter element (part number 4100810, pack of 6).

The Aerostat PC should be placed approximately 1 to 3 feet from the critical work area or objects to be neutralized. It should be positioned to cover as much of the area as possible with the ionized air stream. The air stream can be directed upward or downward by tilting the unit in its stand. Tightening the lock knobs on each side of the unit secures it in position.

The Aerostat PC, part numbers 4003367 and 4009885, requires 120 VAC 60 Hz. for proper operation. The unit must

be grounded for safe operation. Plug the unit into a standard (North American) 3-terminal grounded receptacle. If an extension cord is necessary, use only a 3-wire extension cord that provides grounding.

The Aerostat PC, part number 4003368, requires 230 VAC, 50 Hz. for proper operation. The unit must be grounded for safe operation. Plug the unit into a standard (Continental European) 3-terminal grounded receptacle. If an extension cord is necessary, use only a 3-wire extension cord that provides grounding.

The Aerostat PC, part number 4004442, requires 230 VAC 50 Hz. for proper operation. The unit must be grounded for safe operation. The unit comes with line cord, without plug. A plug must be installed on the line cord for operation. Installation of the plug must be performed by qualified personnel. The color code for wiring the plug is as follows: Brown - Line; Blue - Neutral; Green/Yellow - Ground.

## Section 5 – Operation

Activate the PC by turning the FAN SPEED knob clockwise, out of the OFF position. The IONIZATION INDICATOR will illuminate to indicate the presence of ionized air. Set the air flow as desired by adjusting the FAN SPEED knob. If warm air is available for operator comfort, set the WARM AIR switch to the ON (1) position. The direction of the air stream can be adjusted upward or downward by loosening the LOCK KNOBS, tilting the unit and retightening the knobs. To clean the ion emitter points, rotate the POINT CLEANER knob clockwise to the stop (approximately one turn) and release.

The Aerostat PC produces an ionized air stream that covers a targeted area. The time required to neutralize a static charge on an item in the air stream depends on many factors. Two important factors are; distance to ionizer and air velocity. Air ions

constantly “neutralize” each other. Positive and negative ions are electrostatically attracted to each other. When they contact, the charge transfers and the ions “recombine”. With high air velocity, the air ions travel further before they “recombine”. Setting the fan speed as high as acceptable results in more rapid neutralization. For fast neutralizing, the item should be held within 1 to 3 feet from the Aerostat. For virtually instantaneous neutralization, the item may be held as close as 6 inches.

When using the Aerostat in an electronics assembly area, the ionized air stream should cover as much of the work area as possible. Charged items introduced into the work area will be neutralized and will remain neutral while in the ionized air stream.



## Aerostat PC Overview

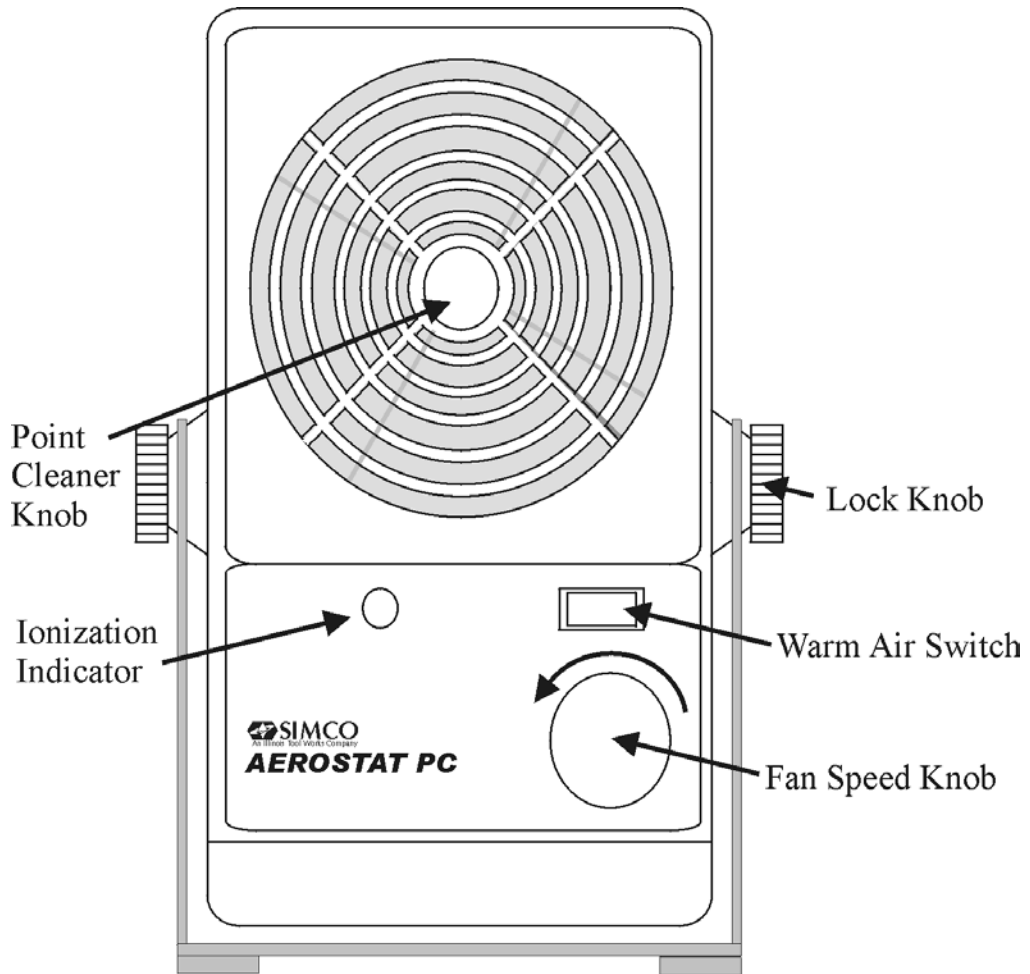


Figure 1

## Section 6 - Maintenance

The Aerostat PC has been designed with low maintenance in mind. The only regular maintenance suggested is emitter point cleaning, ion balance checking and ion output checking. Emitter point cleaning takes only seconds with the patented point cleaner. The Aerostat PC contains a patented balancing circuit that is inherently self balancing. This circuit compensates for dirt build-up on emitters, emitter point wear, line voltage fluctuations and variations in air velocity. Scheduled checking of the ion output and balance should be considered to assure quality audit requirements.

### Emitter Cleaning

To clean the ion emitter points: simply rotate the point cleaner knob located at the center of the outlet grille clockwise to the stop (approximately one turn) and release. The spring loaded point cleaning brush will return to its parking spot. Recommended frequency of cleaning is once a week.

### Air Inlet and Outlet Cleaning

The air inlet grille on the rear of the unit and the ionized air outlet should remain clean to prevent restriction of air flow. They can

be cleaned with a soft brush or vacuum.

### Air Filter Cleaning

Remove the air filter from the rear of the unit by unsnapping the filter retainer. Rinse the filter in plain water while gently squeezing. If the dirt is stubborn, wash the filter in mild soap and water then rinse. Blot the filter dry with paper towels and allow to dry. Install filter on air inlet and secure by snapping the filter retainer in place. **IMPORTANT:** If an air filter is used, clean the air filter regularly.

### Ion Output Check

To test the unit for ion output, the use of a charged plate monitor is recommended. Discharge times can be measured and checked against the Ion Output tables in Section 3, Specifications. If a charged plate monitor is not available, but a static meter such as a Simco handheld electrostatic fieldmeter is available, ion output may be checked with the following procedure. Take a piece of plastic and rub it with cloth until a static charge can be read with the static meter. Turn on the Aerostat PC. Hold the plastic one foot away from the ionized air outlet for five seconds. Remove the plastic from the

ionized air stream and measure the static charge. The plastic should be neutralized.

If no instrumentation is available, the unit's operation can be verified with the following procedure. Tear off about a 10 inch length of Scotch® brand (or equivalent) transparent tape. Approach the nonadhesive side of the tape with your free hand and note the electrostatic attraction of the tape to your hand. Pass the tape through the ionized air stream approximately 1 foot from the unit and again approach the nonadhesive side of the tape with your free hand. If the tape has been neutralized, it will not attract.

**• CAUTION**  
**ELECTRICAL SHOCK**  
**HAZARD!**  
***Do not insert objects***  
***through intake or outlet***  
***grille.***

Do not try to verify operation of the unit by drawing a spark from an ion emitter point. The design of the balancing circuit makes the "spark test" inconclusive. Sustained grounding of the ion emitters may damage the balancing circuit.

## **Ion Balance Check**

To test the unit for ion balance, the use of a charge plate monitor such as the Simco Electrostatic Analyzer is recommended. Offset voltage should be measured and checked against the Ion Balance in Section 3, *Specifications*.

Do not try to determine ion balance by holding a static meter in the ionized air stream. This will result in a meaningless reading.

## **Calibration**

The Aerostat PC's ion output is inherently balanced by design. As a result, there are no calibration adjustments. If, after checking the ion balance as outlined above, an unbalance or offset voltage exists in excess of  $\pm 5$  volts, contact SIMCO Customer Service.

## Section 7 – Replacement Parts

Item	Part Number	Description
1	REF	Chassis
2	REF	Lid
3	4104522	Fan, 120 VAC
	4104539	Fan, 230 VAC (w/heater)
	4105314	Fan, 230 VAC (w/o heater)
4	4630160	H. V. Transformer, 120 VAC
	4630161	H. V. Transformer, 230 VAC (w/heater)
	4630172	H. V. Transformer, 230 VAC (w/o heater)
5	4104523	Ionizer / Heater Assembly, 120 VAC
	4104540	Ionizer / Heater Assembly, 230 VAC
	4104578	Ionizer Assembly (no heater)
6	4104515	Outlet Grille (includes point cleaner)
7	4104512	Line Cord Assembly, 120 VAC (North American)
	4105947	Line Cord Assembly, 230 VAC (European)
	4104541	Line Cord Assembly, 230 VAC (w/o plug)
8	4104526	Fan Speed Control, 120 VAC
	4104542	Fan Speed Control, 230 VAC
9	4104514	Knob (for speed control)
10	4610783	Rocker Switch
11	4670900	Lock Knob (2 required)
12	4104524	Bench Stand
13	4710018	Inlet Grille
14	4710017	Air Filter Retainer
15	4100810	Air Filter Element (package of 6) (Optional Equipment)
16	4610782	Indicator Lamp Lens

## Replacement Parts

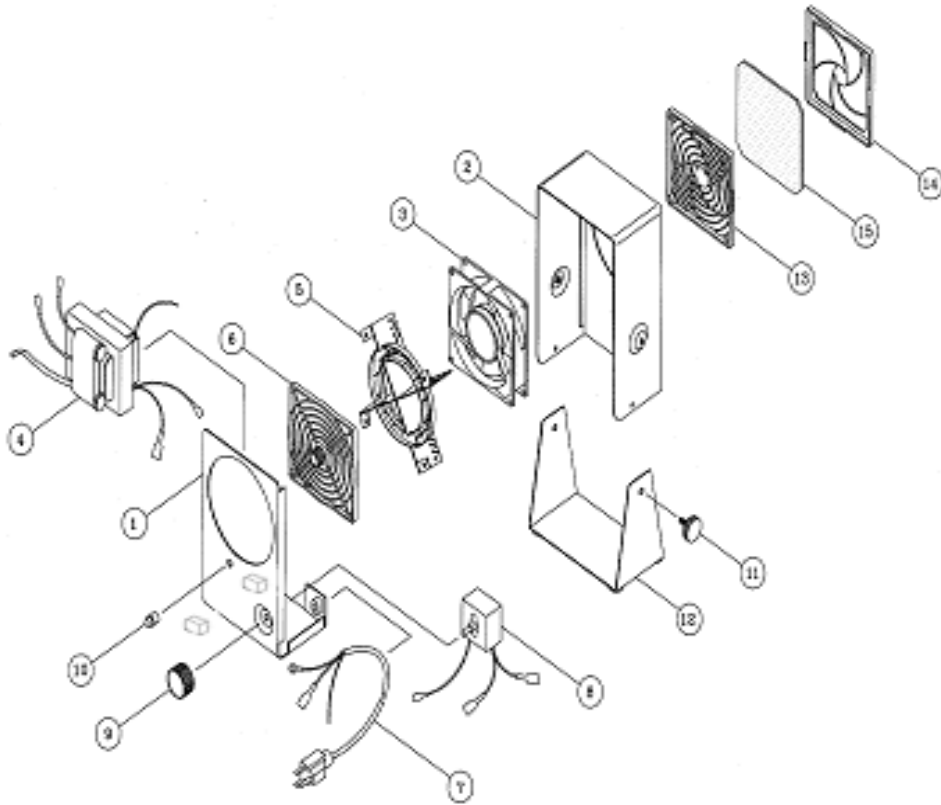


Figure 2

## Section 8 – Warranty

SIMCO products have been carefully tested at the factory and are warranted to be free from any defects in materials or workmanship. SIMCO Industrial Static Control will, under this warranty, repair or replace any equipment which proves, upon our examination, to have become defective within one year from the date of purchase.

The equipment being returned under warranty should be shipped by the purchaser to SIMCO Industrial Static Control, 2257 North Penn Road, Hatfield, PA, 19440, transportation prepaid and insured for its replacement cost. Prior to returning any goods for any reason, contact SIMCO Industrial Static Control customer service at (215) 822-6401 for an Return Authorization Number. This number must accompany all returned items.

This warranty does not apply when the equipment has been tampered with, misused, improperly installed, altered, has received damage through abuse, carelessness, accident, connected to improper line voltage, or has been serviced by anyone other than an authorized factory representative.

The warranty does not apply when SIMCO Industrial Static Control parts and equipment have been energized by other than the appropriate SIMCO Industrial Static Control power supply or generator, or when a SIMCO Industrial Static Control power supply or generator has been used to energize other than SIMCO Industrial Static Control parts and equipment. SIMCO Industrial Static Control makes no warranty, expressed or implied, nor accepts any obligation, liabilities, or responsibility in connection with the use of this product other than the repair or replacement of parts stated herein.