

Aerostat Guardian Overhead Ionizing Air Blower

User's Manual



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Introduction

Simco-Ion's Aerostat Guardian overhead ionizing air blower was designed for use with sensitive electronic components where electrostatic discharge (ESD) is a problem. The Guardian provides fast static charge decay efficiency over an entire work surface area. Equipped with task lighting, an ionization indicator light, and an integrated heater, it offers user-friendly operation while effectively protecting even the most sensitive components from ESD damage.

SECTION 1 Description

Simco-Ion's Aerostat Guardian Overhead Ionizing Air Blower provides superior static charge decay efficiency over an entire work surface area. Equipped with task lighting and an integrated heater, the Guardian offers user-friendly operation while effectively protecting sensitive components from ESD damage.

Featuring Simco-Ion's inherent balance and built-in emitter point cleaners, the Guardian is the lowest maintenance overhead ionizer available. Like Simco-Ion's other Aerostat series ionizing air blowers, the Guardian operates on AC technology to provide stable balance performance over long periods of use. It is available with airflow diffusers for superior static charge decay efficiency over a large work surface area. Without diffusers, the Guardian provides fast charge decay directly under the unit for targeted work surface coverage.

The Aerostat Guardian 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 positive static charge, it will draw negative ions from the air flow. If the object has a negative static charge, it will draw positive ions from the air flow. The ions are attracted to the oppositely charged object and neutralize the electrostatic charge on the object.

SECTION 2 Features

1. Rapidly neutralizes static charges
2. Covers an extended area with ionized air
3. Inherently balanced to 0 ± 5 V
4. Integrated heater and task lights
5. Ionization indicator light
6. AC technology for stable performance
7. Built-in emitter cleaner for easy maintenance
8. Available with airflow diffusers

SECTION 3 Specifications

Unit Part Numbers:	<u>4004063</u> <u>4005306</u> (no diffuser)	<u>4004261</u>
Line Voltage:	120 VAC, 60 Hz.	230 VAC, 50 Hz
Current Draw:	Max. 0.8 Amp (fan high, heater on, light on) Min. 0.5 Amp (fan low, Heater off, light off)	Max. 1.5 Amp Min. 0.2 Amp
Ion Balance (offset voltage):	0 V $\pm$ 5	
Air Volume Output:	<u>Fan Speed</u> Low High Flow amount equal to sum of three fans	<u>Flow</u> 150 CFM 300 CFM
Audible Noise dB(A)	Fan Speed Low: 50 dB(A) (2 ft. from unit)	Fan Speed High: 60
Air Flow Characteristics:	2' x 4' Area Coverage	
Operating Temperature:	32°F (0°C) to 122°F (50°C)	
Light Output:	1650 Lumens Total	
Replacement Lamp:	13W Twin Tube Compact Fluorescent	
Enclosure:	Aluminum	
Finish:	Powder coat	
Weight:	16 lbs (7.3 kg)	
Size:	42-3/4" W x 4" H x 6-3/4" D (108.6 cm W x 10.2 cm H x 17.1 cm D)	
Optional Air Filter:	30 PPI Open Cell Polyurethane Foam	

Ion Output (discharge time) (Units with diffusers):

<u>Fan Speed - High</u>	<u>16"</u>	<u>16"</u>	<u>16"</u>	<u>16"</u>	
	9	9	9	9	12 inches
	12	6	6	12	Center Line
	9	9	9	9	12 inches
<u>Fan Speed - Low</u>	<u>16"</u>	<u>16"</u>	<u>16"</u>	<u>16"</u>	
	30	30	30	30	12 inches
	40	20	20	40	Center Line
	30	30	30	30	12 inches

Ion Output (discharge time) (Units without diffusers):

<u>Fan Speed - High</u>	<u>16"</u>	<u>16"</u>	<u>16"</u>	<u>16"</u>	
	5	4	4	5	Center Line
<u>Fan Speed - Low</u>	<u>16"</u>	<u>16"</u>	<u>16"</u>	<u>16"</u>	
	10	8	8	10	Center Line

Unit centered over test area and mounted 18" above charge plate monitor. Offset voltage and discharge time determined as per Standard ESD-STM3.1-2000, IONIZATION using 6" x 6", 20 pF plate (charge plate monitor). Discharge times are in seconds from 1000 volts to 100 volts.

SECTION 4 Safety

1. Read all instructions before proceeding with installation or operation. Failure to follow instructions may result in damage to the ionizer and/or personal injury.
2. This unit is supplied with a 3-prong grounding plug, which must be inserted in an appropriate, properly wired, and grounded receptacle. Do not defeat the electrical ground, grounding and proper wiring are required for proper operation.
3. Keep the unit dry. Do not operate the ionizer in a flammable, volatile or explosive atmosphere.
4. Do not insert objects through the unit's intake or outlet grilles. Damage to the ionizer and/or personal injury may result.
5. Do not ground or make electrical connections of any kind to the unit's metal fan guards located on the intake and output.
6. A factory-qualified service technician must perform component service and repairs. Please contact Simco-Ion Customer Service for information.

SECTION 5 Installation

IMPORTANT: Prior to Guardian installation, the compact fluorescent bulbs must be installed. The bulbs are shipped wrapped in cushioning material inside the unit's lamp compartments. Remove both (2" x 11") lamp access panels on rear of unit with a ¼" nut driver or flat blade screwdriver. Unpack the bulbs and install by inserting the bulb into the socket and press until it "clicks" into place. Replace the lamp access panels.

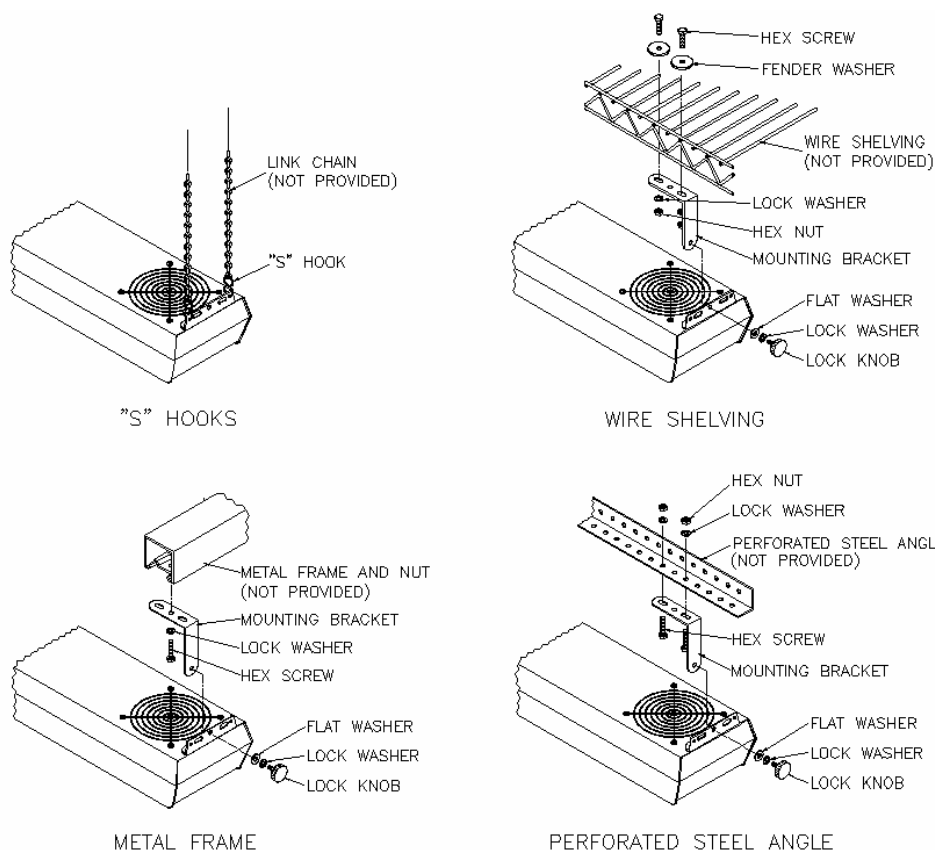
Unpacking

Carefully remove the equipment from the carton and inspect contents. Empty the carton to insure that small parts are not discarded. If any damage has occurred during shipment, notify the local carrier at once. A report should also be forwarded to Simco-Ion. See Section 9 for Return Shipment information.

Location

The Aerostat Guardian should be located 24 to 30 inches above the work surface with center fan directly above the critical area. There should be no crossflow of air between unit and the work surface. Drafts from air conditioning and heating air outlets can affect performance of this unit.

Mounting



The Aerostat Guardian unit may be mounted using adjustable mounting brackets or "S" hooks provided. The mounting brackets are designed for use on a variety of surfaces such as: perforated steel angle, Unistrut® metal framing, and on Metro® wire shelving (see diagrams on this page).

Place a lock washer and flat washer on the lock knobs and secure the unit using center holes on mounting tab. Be sure to install a fiber washer as shown in the diagrams. The "S" hooks provide for chain mounting or mounting on wire shelving. Install the overhead blower unit as shown below using outer holes on mounting tabs. Chain and mounting hardware (not supplied) must have a minimum safe working load rating of 20 lbs.

Electrical

The Aerostat Guardian, part numbers 4004063 and 4005306, requires 120 VAC 60 Hz line voltage for proper operation. The unit must be grounded for safe operation. Plug the unit into a North American type standard 3-terminal grounded receptacle that supplies the appropriate line voltage. If an extension cord is necessary, use only a 3-wire extension cord that provides grounding.

The Aerostat Guardian, part number 4004261, requires 230 VAC 50 Hz. for proper operation. The unit must be grounded for safe operation. Plug the unit into a European

type standard 3-terminal grounded receptacle that provides the appropriate mains voltage. If an extension cord is necessary, use only a 3-wire extension cord that provides grounding.

Optional Air Filter

If desired, optional air filters 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).

SECTION 6 Operation

Activate the Guardian Overhead Ionizing Air Blower by turning FAN SPEED knob clockwise, out of the OFF position. The IONIZATION INDICATOR will illuminate to indicate the presence of ionized air. Set air flow as desired by adjusting FAN SPEED knob. If warm air is desired for operator comfort, set WARM AIR switch to the ON (I) position.. If light is desired, turn on task lights by setting LIGHTS switch to the on (I) position. To clean ion emitter points, rotate the POINT CLEANER knob at each air outlet clockwise to the stop (approximately one turn) and release.

The time required to neutralize a static charge on an item in the air stream depends on fan speed. Setting a higher fan speed reduces time required to neutralize a static charge.

When using the Guardian unit in an electronics assembly area, the ionized air stream should cover as much of the work area as possible. The constant flow of ionized air will prevent items such as work surfaces, tools, materials and components from developing a static charge. Charged items introduced into a work area will be neutralized and will remain neutral while in the ionized air stream.

SECTION 7 Maintenance

The Aerostat Guardian 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 Simco-Ion's point cleaner. The Guardian contains a 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.

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

Emitter Cleaning

To clean the ion emitters, simply rotate the point cleaner knob located at center of each outlet 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 top of the unit and the ionized air outlets should remain clean to prevent restriction of air flow. They can be cleaned with a soft brush or vacuum. Clean the air inlet grille and ionized air outlets once every three months or more often if needed.

Optional Air Filter Cleaning

Remove the air filter element from the top 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. Reinstall filter on air inlet and secure by snapping the filter retainer in place.

IMPORTANT: If an air filter is used, clean the air filter once every three months or more frequently if needed.

Ion Output Check

To test the unit for ion output, the use of a charge plate monitor such as the Simco-Ion EA-4 is recommended. Discharge times can be measured and checked against the Ion Output tables in Section 3, Specifications. If a charge plate monitor is not available, but a static meter such as a Simco-Ion 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 Guardian. 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 Guardian'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 non-adhesive 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 non-adhesive side of the tape with your free hand. If the tape has been neutralized, it will not attract.

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-Ion EA-4 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.

Troubleshooting

This information provides a quick troubleshooting reference for the Guardian overhead ionizer. Should any of these possible solutions not solve the problem, contact Simco-Ion.

PROBLEM	CAUSE	SOLUTION
Unit fails to operate	Power cord not connected	Plug in to specified voltage source
Unit fails to operate	Faulty ac ground	Replace line cord
Flashing fault light	Power incorrectly supplied to unit	Cycle power to the unit using the unit's key switch
Flashing fault light	Power incorrectly supplied to unit	Ensure that properly grounded receptacle is used
Fault light on steady	Dirty or damaged emitter tips, incorrectly calibrated	Clean tips using integrated brush, replace as necessary, recalibrate
Excessively long discharge times	Dirty or damaged emitter tips, incorrectly calibrated	Clean tips using integrated brush, replace as necessary, recalibrate
Excessively long discharge times	Slow fan speed, or long working distance	Increase the fan speed , or move the unit closer to the work surface
Unit fails to hold setpoint	Dirty or damaged emitter tips	Clean tips using integrated brush, replace as necessary, recalibrate
Fan is slow	Fan speed is set slow	Adjust fan control clockwise

Calibration

The Aerostat Guardian's ion output is inherently balanced by design, so there are no calibration adjustments. If, after checking the ion balance as outlined above, an unbalance or offset voltage exists in excess of 0 ± 5 volts, contact Simco-Ion Sales Services: 510-217-0460.

Never open the case of the unit. This exposes hazardous voltages. If repairs are necessary, call Simco-Ion for a Return Authorization Number and return the unit to the factory.

Task Light Replacement

If either task light does not light, dims appreciably, or flickers, the compact fluorescent lamp should be replaced as soon as possible. Access to the lamp is provided by a removable panel on the rear of the unit. Disconnect the unit by unplugging the line cord. Remove the appropriate lamp access panel with a $\frac{1}{4}$ " nut driver and remove the lamp. Install a new lamp, replace lamp access panel, and plug the unit back in.

SECTION 8 Replacement Parts

Part Number	Description
4004063	Aerostat Guardian, 120V, 60 Hz
4104515	Outlet Grille (includes point cleaner)
4105089	Outlet Diffuser (includes point cleaner)
4610811	Fluorescent Lamp, 13 W
4610782	Ionization Indicator Lamp Lens
4710018	Inlet Grille
4670900	Lock Knob (2 required)
5050360	Mounting Kit
4710017	Air Filter Retainer*
4100810	Air Filter Element (package of 6)*

* Optional Equipment

SECTION 9 Warranty

Simco-Ion warrants its products to be free of defects in components, workmanship, or materials for a period of one year from date of purchase. This warranty does not apply to any physical or electrical damage caused by misuse, abuse or negligence (such as any modifications made to the unit or service work done by any other than Simco-Ion authorized technicians). Any unit with altered or removed serial number is ineligible for warranty.

Simco-Ion will not be liable for loss or damage due directly or indirectly to an occurrence or use for which the product is not designed or intended. In no event shall Simco-Ion be liable for incidental or consequential damages except where state laws override.

This warranty extends to the original purchaser and is not transferable. No person, agent, distributor, dealer or company is authorized to change, modify, or amend the terms of this warranty in any manner whatsoever.

All products returned must have an "RA" (Return Authorization) number regardless of warranty status. Call Simco-Ion for an assigned RA number.

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