

AI-450 Ionizing Air Blower



INSTALLATION, OPERATION, AND
MAINTENANCE INSTRUCTIONS

AI-450 was designed for use with sensitive electronic components where electrostatic discharge (ESD) is a problem. It can be applied in inspection, testing, and assembly environments. The AI-450 can also be used where static electricity causes problems such as attraction of dirt to product, misalignment of parts due to electrostatic "jumping", and undesirable adhesion of plastic films due to electrostatic charge.

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SECTION 1 Descriptions

The AI-450 ionized air blower produces an air flow that is rich in positive and negative ions. Directing the air flow on at object that has a static 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.

The AI-450 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. It is this electric field that creates alternating polarity ions in the air flow. To be sure that unit working properly, the high voltage AC is monitored by an ionization indicator lamp.

The ionizer of the AI-450 features a patented balancing circuit. The AI-450 also features a patented built-in emitter point on a weekly basis prevents the built-up of airborne debris all electrical ionizers are prone to. This keeps your AI-450 working in top form of the life of the unit.

The AI-450 was designed for use with sensitive electronic components, where electrostatic jumping and undesirable adhesion of plastic films due to electrostatic charge.

SECTION 2 Features

- Rapidly neutralizes static charges
- Covers an extended distance with ionized air
- Variable speed fan with wide range of air flow
- Low wattage heater for operation comfort

- Bench stand or optional pedestal mount with 360° adjustability
- Inherently balanced ion output
- Built-in ion emitter cleaner
- Ionization indicator lamp

SECTION 3 Specifications

PS Part Number	AI-450			
Unit Part Number	4002612		4002667	
Line Voltage Max	3.6Amp* *with Heater On		1.8Amp* *with Heater On	
Line Voltage Min	0.6Amp		0.3Amp	
Air Volume Output (Fan Setting – Low)	35CFM			
Air Volume Output (Fan Setting – High)	70CFM			
Air Velocity (Fan Speed – Low)	600FPM **1ft	300FPM **2ft	180FPM **3ft	125FPM **4ft
Air Velocity (Fan Speed – High)	1000FPM **1ft	500FPM **2ft	250FPM **3ft	200FPM **4ft
Air Velocity	3' x 6' Area Coverage			
Heated Air Temp. (where applicable) (Fan Setting – Low)	11°F (6°C)			
Heated Air Temp. (where applicable) (Fan Setting –High)	7°F (4°C)			
Operating Temp.	32°F (0°C) ~ 122°F (50°C)			
Ozone Production	0.01ppm measured 6' in front of unit, fan setting low.			
Audible Noise (Fan Setting Low)	50dB			
Audible Noise (Fan Setting High)	57dB			
Enclosure	Steel			
Finish	White Acrylic Enamel			
Weight	17.5 lbs (7.9 kg)			
Size	15- 3/8" W x 4- 1/2" H x 8- 1/8" D			
Bench Stand Feet	Nonconductive, Non Staining Polymer			
Optional Air Filter	30PPI Open Cell Polyurethane Foam			
On Balance (offset voltage):	OV 5			
On Output (discharge time): Fan Speed at High	1.5 **1ft (center) 5 (6 inches)	2.5 **2ft (center) 7 (6 inches)	4 **3ft (center) 9 (6 inches)	5 **4ft (center) 12 (6 inches)

On Output (discharge time): Fan Speed at Low	3 **1ft (center) 10 (6 inches)	6 **2ft (center) 18 (6 inches)	10 **3ft (center) 26 (6 inches)	16 **4ft (center) 34 (6 inches)
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Offset voltage and discharge time determined as per ESD Association Standard No.3 using 6"x6" 20pF 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 230V, 50Hz.

SECTION 4 Safety

4.1 Read in instruction manual before installing or operating device.

4.2 Make sure unit is grounded before operating.

4.3 Do not insert objects through intake or outlet grille.

4.4 Do not operate unit in flammable or explosive atmospheres.

4.5 Internal repairs or servicing must be done by qualified personnel.

SECTIONS 5 Installation

The AI-450 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 wall or under a shelf. If the bench stand is bolted in place, use 1/4 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 replace and an air filter elements.

The AI-450 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 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 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; Yellow-Ground.

SECTION 6 Operations

Activate the AI-450 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. For 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 AI-450 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. With high air velocity, the air ions travel further before they “recombine”. With high air velocity, the air ions travel further before the “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 ionizer. For virtually instantaneous neutralization, item may be held as close as 6 inches.

When using 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.

SECTION 7 Maintenance

The AI-450 has been designed with low maintenance in mind. The only regular maintenance suggested is emitter point cleaning takes only seconds with the patented point cleaner. The AI-450 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 audit requirements.

7.1 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.

7.2 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.

7.3 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.

7.4 Ion Output Check

To test the unit for ion output, using charged plate monitor is recommended. Discharge times can be measured and checked against the ion Output tables in Section 3 Specifications. If a charged place monitor is not available, but a static meter such as a No-STAT handheld electrostatic field-meter 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 AI-450. 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 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 non-adhesive side of the tape with your free and note the electrostatic attraction of the tape to your hand. Pass the tape through the ionized air stream approximately 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.

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

Do not try verify operation of the unit try 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.

7.5 Ion Balance Check

To test the unit for ion balance, the use of a charge plate monitor such as the No-STAT 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.

7.6 Calibration

The AI-450's ion output is inherently balanced by design. As a result, there are no calibration adjustment. If, after checking the ion balance as outlined above, an unbalance or offset voltage exists in excess of ± 10 volts, contact Customer Service.

SECTION 8 Warranty

Producer warrants its products to be free of defects in components, workmanship, or materials for a period of one year from date of purchase, abuse of negligence (such as any modifications made to the unit or service work done by any other than Producers authorized technicians). Any unit with altered or removed serial number is invalid for warranty.