

# Clean Rooms

## HepaClean 2500/3000

### Filtered Ionized Air Parts Cleaning System

The HepaClean 2500/3000 is a stainless steel closed loop parts cleaning system that employs three proven cleaning tools - static neutralization, high velocity compressed air and advanced HEPA filtration - in a single unit that occupies just over three square feet of valuable bench space. It is the only self-contained cleaning system available that allows you to clean parts in a clean room with little risk of contaminating the surrounding environment.

The HepaClean 2500/3000 is a 1.6 Cubic Foot Clean Room in a package seven cubic feet, weighing less than 100 pounds, and occupying just over three feet of valuable bench space. It is most commonly used in Medical Packaging applications and whenever there is a requirement for scrupulously clean parts. Contaminated and electrostatically charged parts placed inside the cleaning chamber are instantly and simultaneously cleaned and neutralized. The HepaClean unit is used both inside and outside certified Clean Rooms.

#### INSTALLATION

Compressed air (or nitrogen) and electricity are required to power the HepaClean cleaning chambers. The standard unit comes with a 1/4 NPTF pipe coupling enabling the user an option to plumb it permanently or to a "quick disconnect" on an air hose. Both a good pressure regulator and air filter placed ahead of the air inlet are essential to maximize the performance of the HepaClean.

From the air in-feed connection, air is directed to a stainless steel tube in the upper section of the cleaning chamber. Up to 100 psi can be safely introduced to the system; however, far less pressure is adequate for most applications. Some trial is required to determine the minimum pressure needed to clean the part adequately.

It will require less pressure to clean a part with a simple shape than a complex shape with corners and valleys where



contamination can hide. *Only clean dry compressed air (or nitrogen) should be introduced into the HepaClean chambers.*

Electrically, the unit operates on house current, nominally 115 volts 50/60 Hz. It is equipped with a molded, detachable three-pronged plug at the end of a six ft. cord. **Caution:** *Do not remove the ground prong. Insert the plug only into a receptacle with a known ground. Proper grounding of the unit is essential for the safety of the operator and performance of the equipment.*

Place the HepaClean units on a sturdy bench or table at a height most convenient for the standing or seated operator. Although the HepaClean is a stand-alone cleaning unit it should be placed in the cleanest environment possible. The "Class" of clean inside the cleaning chamber will always be cleaner than the environment surrounding it. For example, measuring the cleaning chamber of an activated HepaClean 2500/3000, installed in a Class 1000 clean room, may show a reading of less than 500.

#### Operation

There are two function switches on the cabinet: a light switch turns the light on and off and the other activates the system. The system switch has three positions: on, off, and auto.



# StaticControls

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When the system switch is in the auto position, the HepaClean 2500/3000 is activated when the operator introduces a part into the cleaning area breaking the photoelectric beam inside the cabinet. In this mode, the HepaClean turns on and off each time something enters and exits the cleaning area. Although it takes a few seconds for the HepaClean to wind up and wind down, most operators prefer working in the auto mode.

In the "on" position, the system overrides the photoelectric cell keeping the HepaClean chamber running until the switch is changed to off or to auto. Keeping the HepaClean running eliminates the on/off dwell time but it does increase the use and cost of air and electricity.

When the HepaClean 2500/3000 is activated and a part enters the cleaning chamber, a knife-like sheet of high-pressure air passes downward in front of a pair of air ionizing bars creating a static neutralizing turbulent wind to separate particulate from the part. Grasp the part firmly and hold it inside the cleaning chamber; turn the part to expose all sides to the activated ionized air. The particles are then pulled down and trapped inside the prefilter and HEPA filter resulting in a clean and "neutralized" part. Remove the part from the cleaning chamber and cover it. The time it takes to clean the part will vary according to the nature of the part contamination, as well as size and configuration. Normally, it will take just a few seconds.

### Cleaning and Maintenance

#### Filters

Turn off the power to the HepaClean 2500/3000 when cleaning the interior of the unit. Replace pre-filters every 30 days or 650 hours of operation; whichever comes first. Change the pre-filter element more frequently if contamination is seen accumulating on the pre-filter element prior to the regularly scheduled replacement.

Replace the HEPA filter every 1 to 3 years or 6200 hours of operation; whichever comes first. *Failure to properly maintain and replace the pre-filter may shorten the effective life of the HEPA filter.*

#### Static Bars

Two BR2200 Static Bars (air ionizers) are mounted at the top inside the cleaning chamber, right and left, just above the air tube. Each static bar has a series of "emitter" pins (or points) protruding from a length of black plastic extrusion encased in a rectangular aluminum extrusion. It is important to keep the emitter pins clean and sharp in order to maintain maximum efficiency. Clean the Bars monthly, when cleaning the pre-filters, or whenever contaminants are visible on the pins. Cleaning options are a soft brush, blow-off gun, vacuum, or

clean, non-particulating, damp cloth or wipe. *Do not use harsh and or abrasive chemicals. **Caution:** Make sure the unit is unplugged before cleaning the static bars.*

#### Cabinet-Interior and Exterior

Periodic cleaning of the interior and exterior cabinet walls, around the cleaning chamber, and especially the perforated stainless steel work surface on the bottom of the chamber is necessary to capture any particulate that may not yet have been trapped in the pre-filter or HepaClean filter. To clean these surfaces, use a Clean Room grade cloth dampened with 70% isopropyl alcohol and water solution or any other Clean Room acceptable mild cleaning agents.

#### Pre-filter

The pre-filter is a polymer mesh that traps large to moderate size particles dislodged from parts cleaned in the cleaning chamber. Failure to keep the pre-filter clean could result in its clogging which can reduce air flow through the HEPA filter, and cause particles to bounce back up into the cleaning chamber.

*To replace the pre-filter:* Turn the HepaClean 2500/ 3000 off. Lift the perforated stainless steel work surface exposing the pre-filter. Remove the pre-filter from the base of the unit. Properly dispose of the pre-filter. Clean the surfaces surrounding the pre-filter, especially the surface below, to remove any particles dislodged during the removal process. Use a non-particulating cloth lightly dampened with a 70% isopropyl alcohol / water or other mild cleaning solution.

Place the new filter in the base of the cleaning chamber. The metal filter support should be below the filter itself. Replace the perforated stainless steel work surface. Clean the work surface with the cloth and solutions described above.

#### HEPA Filter

The HEPA Filter is in the top, rear plenum of the HepaClean. It removes the smallest particulate from the air prior to its entry into the cleaning chamber. With proper pre-filter maintenance, the HEPA Filter will function effectively for several years but eventually, it will become contaminated and need replacement.

*To replace the HEPA Filter:* Remove the top rear panel from the HepaClean unit. Loosen the hex nuts that secure the filter in place. Carefully slide the HEPA filter out from its shelf. Properly dispose of the filter. Slide the new filter on to the shelf making certain that it is properly aligned. The arrows on the side of the filter housing should point towards the top of the HepaClean and the gasket should be down on the shelf. Secure the new filter with the hex nuts. Reattach and snugly secure the back panel.

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## Adjusting the Photoelectric cell in the cleaning chamber:

Before adjusting the cell be sure that the perforated stainless steel work surface on the floor of the cleaning chamber is clean, in place and properly seated and that the cell is facing straight downward. If not, the cell will not perform properly or may not perform at all.

To adjust the eye:

- Turn the system switch to the automatic position.
- Use a small eyeglass screwdriver to turn the sensitivity adjustment screw (on the cell) counter clockwise all the way. The green LED on the cell should not be illuminated at this time. Make sure neither your hand nor any other object is obstructing the face of the cell while you slowly turn the sensitivity adjustment screw clockwise just enough until the green LED lights up. Stop there.
- Check this adjustment by putting your hand under the cell; this should activate the system and set it up for maximum sensitivity.
- Next, adjust the time delay to a setting that would enable the operator sufficient cleaning time and shut off after a reasonable idle time. (1second to 30 seconds)

## Specs: Exterior: Cleaning Chamber:

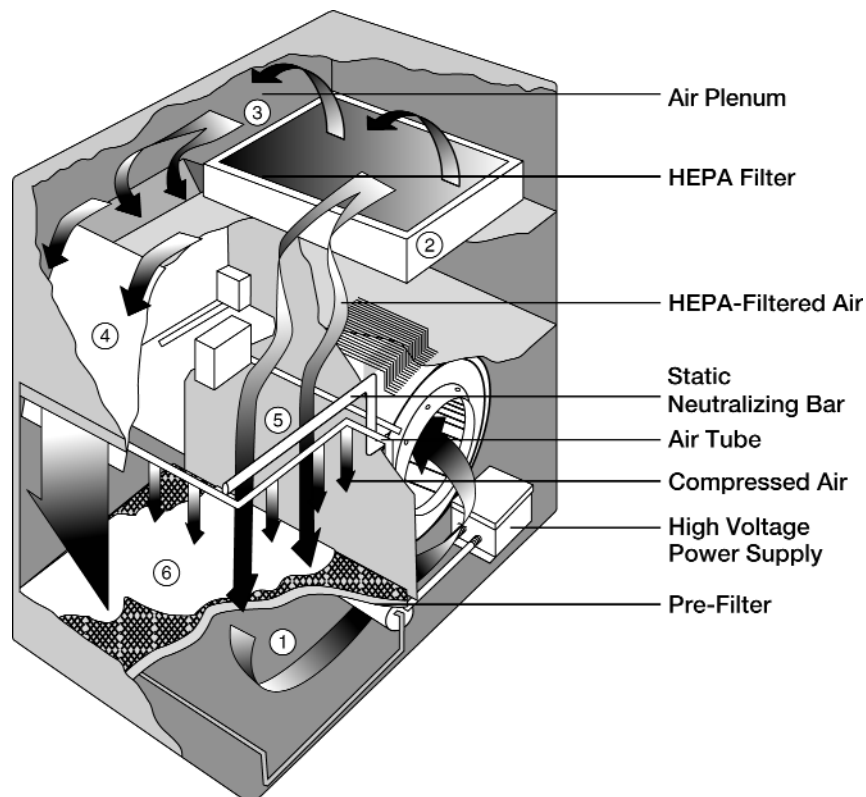
	HC2500	HC3000	HC2500	HC3000
Width:	14"	14"	13"	13"
Height:	26"	26"	10"	10"
Depth:	25"	33"	12"	20"
Weight:	100 lbs	120 lbs		
Max. Current:	3 amperes			
Input Power:	115 VAC 50/60Hz			

## Features:

- Stainless Steel Construction
- HEPA filter (99% efficient at 0.3 micron)
- Multi-layered pre-filter
- Direct drive high velocity air blower with balanced impeller for quiet operation
- Lighted rocker switch
- Fluorescent interior work light
- Perforated stainless steel work surface
- Motion sensor for automatic operation
- Solenoid valve for automatic operation
- Removeable side panels for pass through operation; can also be mullioned together

## Spare Parts:

- 7.0Kv Power Supply: p/n PSTSN70  
 HC2500 Static Bar: p/n HCCBR2500  
 HC3000 Static Bar: p/n HCCBR3000  
 Blower: p/n HCCBL115  
 Blower Capacitor: p/n HCCBLCAP  
 HC2500 pre-Filter: p/n HCFLTP2  
 HC3000 pre-Filter: p/n HCFLTP3  
 2500/3000 HEPA Filter: p/n HCFLTH  
 Photoelectric eye: p/n HCCPEYE-E  
 (for Rev. E)  
 Photoelectric eye: p/n HCCPEYE-EKIT  
 (for Rev D or earlier)  
 Fluorescent Light fixture: p/n HCCLIGHT  
 Fluorescent Light bulb: p/n HCCBULB  
 2500 Air tube assembly: p/n HCC2ATSS  
 3000 Air tube assembly: p/n HCC3ATSS  
 Mullion kit hardware: p/n HC3000MK2  
 (used to join two HC3000 units together)



# Static Controls

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#### Additional Electrostatic Products and Services

- **Instruments, Electrostatic Measuring:** Miniature Handheld and Rack Mount, mV to kV Voltmeters, Fieldmeters, Monitors and Alarm; Resistivity / Resistance Meters (104-1014); NanoAmmeters and Nanocoulombmeters; Faraday Cups and Charged Plate Analyzers.
- **Equipment, Static Neutralizing:** Ionizing Air Blowers, Shockless Air Nozzles, Air Guns, Shockless Air Knives, Shockless Rectangular (model BR2200) and Round (model BR1200) Static Bars, Grounding Bars and Passive Brushes.
- **Static Neutralizing / Vacuum:** Web Cleaners and Sheet Cleaners (Narrow and Wide).
- **Power Supplies:** 120-240VAC, 50-60hz (4 to 7.5kV) 14-110VAC/DC (1 to 20kV), Constant Voltage - Constant Current Controllers.
- **Static Generating:** Bars (4 to 120 inches); Spot Chargers.
- **Work Furniture:** Static Dissipating and Conductive Surface, Benches and Chairs.
- **Equipment, Contamination Controls:** Medical Cleaning Stations(MCS), Automated Medical Cleaning Station (MCS-AS), HepaClean 2500 & HepaClean 3000 Parts Cleaning Chambers.
- **Materials, ESD:** Flooring, Mats & Personal Grounding.
- **Material Handling:** Conductive and Static Dissipative Bins, Boxes, Trays, Bags, Carts and Trolleys.
- **Services:** Electrostatic (ESD) Audits, In-plant Surveys, Training, Consultation, and Application Engineering.

#### About *Static Clean*

At *Static Clean*, we've been providing Static and Contamination Control Solutions to clients nationwide since 1973. We capitalize upon this wealth of experience to service our customers in a variety of ways. Whatever their needs, our comprehensive approach to controlling static / contamination translates into a much lower total cost of ownership solution for them.

#### Industrial Applications

For our customers, we provide a line of Static and Contamination Control industrial products including static bars, power supplies, ionizers and WebVacs that we manufacture ourselves. These exceptional products address a host of common process problems including mis-feeds, poor lamination, jogging and stacking problems, shock to operators, jammed injection molds, particle contamination, fires and explosions.

