Clean AIR PRODUCTS

SOLUTIONS BUILT TO YOUR SPECIFICATIONS

OPERATION & MAINTENANCE INSTRUCTIONS FOR

Series 701

Air Shower

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Series 701

Air Shower

Air showers serve to protect your cleanroom environment from unwanted contamination. Clean garments become contaminated during the gowning/ungowning process, general use, and because of high traffic in the gowning area. The contamination problem is amplified when the same garment is worn several times or is taken on and off numerous times during the day.

The Series 701 air shower is a fast and effective method of removing this surface contamination, contamination that will otherwise be carried directly to your cleanroom and deposited on your product and critically clean areas by sloughing off from the surface of the garments.

The air shower is quality constructed using heavy gage painted steel (no particle board) to minimize particle generation. The units provide air flow of approximately 1900 CFM through 32 adjustable nozzles yielding a 7800 LFPM nozzle air velocity with optional 9100 nozzle velocities.

It has a knock-down design that allows ease-of-installation and flexibility in use. The unit can be shipped knocked down or completely assembled. When shipped knocked down, all parts will fit through a standard door. All service to the blower, motor and filters is done from inside the air shower. The unit also offers an optional design that allows all the installation assembly to be done from inside the air shower.

Air showers are available in a variety of sizes and shapes to provide a cleaning system to meet your specific application.

For more information including CAD Drawings, RFQ, Purchase Specifications, Exploded Views and Options simply go to: www.cleanairproducts.com and click on airshowers

General

- All metal construction
- Ships knocked down or fully assembled
- Fast, efficient cleaning, 7800 LFPM nozzle (cleaning) air velocity, with 1900 CFM air volume
- HEPA filtered with 40% pleated prefilters
- Variety of sizes, configurations and options
- Low maintenance and easily serviced.

Air showers can greatly enhance your cleanroom's performance by removing surface contamination from clothing and cleanroom garments. Gowning/changing room areas are the interface between a dirty "street clothes" environment and a clean room environment. Unfortunately, the changing or gowning process itself releases contaminants from street clothes that can settle onto the "clean" garments. Air showers blow off and remove much of this contamination preventing it from entering the clean space.

What Makes the Series 701 Air Shower Perform Better

An air shower in many ways can be compared to vacuum cleaner. They are available in a variety of sizes, capacities and features; some work very well while others just seem to make noise. To be effective they need to have high cleaning force and power to do a good cleaning.

Cleaning Force. A good vacuum cleaner has high suction and airflow to pick up dirt. A small vacuum with low suction and airflow does little more than pick up a few crumbs. The same can be said for air showers. Some air showers (those not made by Clean Air Products) that have small blower/motor, low airflow and pressure fall into this category. These under-powered air showers give air showers a bad name. **The Series 701 air shower has high velocity and large air volume for fast, efficient cleaning.**

The Clean Air Products' Series 701 air showers, as further described, offer the highest velocities combined with large airflow to provide an air shower that quickly and efficiently cleans particulates from the surface of clean room garments. The additional text describes why the Series 701 air showers are the best.

General Operation

The air shower produces high pressure air, filters this air through a HEPA/ULPA filter, then flows the air through adjustable nozzles which exit at a high velocity, so air is directed towards the individuals waiting to be cleaned. This high-velocity air removes surface particles and also "flaps" the garments to dislodge more firmly attached particles. After cleaning, the air is recirculated back to the high-pressure blower, where it is prefiltered, then HEPA/ULPA filtered and then ducted back to the adjustable high-velocity cleaning nozzles.

The air shower utilizes an adjustable microprocessor controller to allow easy "on-sight" adjustment of the cleaning cycle time and other critical process controls.

Construction Materials

The Series 701 air shower is constructed of an all-metal, painted steel shell with **no wood or plastic laminate and is entirely silicone free.** The standard shower has a 16-gage steel shell, heavy-duty glass door, and door closer. The shell and concealed air ducts are finished with a white powder coat paint which provides a strong, durable cleanroom-compatible finish. The all-steel shell design will stand up to the rigors of shipping, installation, use, and the occasional abuse of a high-traffic entry system. While we don't recommend it, you could hit the metal shell of the air shower with a hammer. It may dent or scratch the paint, but you would not break the cabinet as you would laminated types of construction.

The steel construction also reduces the chances of biological growth and contamination caused by systems using laminated particle board in the construction. Laminated particle board construction is fine for a simple table, but not for a piece of equipment that is being integrated into your cleanroom system.

NOTE: A typical laminated particle board air shower has the plastic laminate on the outside but often has interior concealed air ducts just painted over the raw particle board leaving a rough surface finish that harbors dirt and biological contamination. As the particle board ages and deteriorates, parts will flake off, becoming a source of contamination. All-metal, painted steel or stainless steel air showers are the best type of air shower to purchase.

Option: Stainless Steel Air Shower

With the stainless steel shell option, the shell of the exterior and interior air shower is stainless steel. Parts located in the blower compartment behind the interior access panel, i.e., blower, motor, filter support clamps, etc., are standard painted or plated materials and not stainless steel. Consult the factory for further details.

Option: Stainless Steel Main Electrical Control Box

The main electrical control panel mounted above one door on the exterior of the cabinet is a gray painted steel. This control panel contains the microprocessor controller, starter, thermal overloads, fuses, relays, power shut off, and other electrical components.

Option: Pharmaceutical Applications.

The Series 701 has a special set of options specifically designed for pharmaceutical and other applications where microbial contamination is a concern. Please consult the factory for details.

Shipping Knocked Down

The standard unit is shipped partially disassembled on a skid. To assemble the unit, the blower section is taken off the skid and raised into position. The two-side wall sections are then bolted from the outside onto the upper blower housing. At this point, the assembly is self-supported. The doors are attached, power is connected, and the unit is ready to run. With proper equipment and trained personnel the air shower can be assembled in as little as approximately two hours.

Assembly is fast and uncomplicated. Each unit is shipped with a detailed installation/operation/maintenance manual. We do recommend a mechanical lift(s) to assist in the assembly process.

The CAP701-4954 and CAP701-4972 air shower components, when uncrated, normally will fit through a standard 3 ft. x 7 ft. doorway. If your application requires the parts to go through a 3 ft. x 7 ft. door frame, please specify this and consult the factory for part sizes if your application. All the air shower components will go through a 6 ft. x 7 ft. double door unless noted.

NOTE: With the ceiling purge option, the upper blower cabinet is too large to fit through a 3 ft. x 7 ft. standard door.

Option: Ship Fully Assembled on its Side

The unit can be shipped fully assembled on its side and requiring only to stand the unit up. When shipping on it side, there are typically two eye bolts on the top that can be used to lift the unit. The assembled CAP701-4954 and CAP701-4972 will fit through a 6 ft. x 7 ft. double door. Tunnels can ship in sections.

Option: Assemble From Inside Unit

The unit can be manufactured to allow the installation to be performed from inside the air shower. This is ideal for locations where walls or other obstacles prevent assembly work from the outside of the unit.

Service Access

Service to the mechanical equipment, blower, motor, HEPA filter and prefilter is easily done from the inside of the air shower through a hinged access panel located in the interior ceiling of the air shower.

This is desirable because you don't have to penetrate the clean room ceiling surrounding the air shower for maintenance. Also, the area around the air shower is not accessible because of ceiling filters, lights, ducts, pipes, walls or other equipment that would make service from the exterior difficult or impossible with exterior-mounted service panels.

The unit's electrical control panel is conveniently mounted on the outside of the air shower above one of the entrance doors (see the drawing details), and is serviced from outside the air shower.

Option: The control panel can be located in other upper side positions, on a lower exterior side wall, or can be remote-mounted.

ADA Compliance

Sometimes the air showers must comply with the ADA or Americans with Disabilities Act. This act requires the inside of the air shower to be larger so that an individual in a wheel chair can turn around inside the air shower. See the CAP701-7172-ADA drawing for sizes and details. Automatic door openers are an option that also may be required. Consult your local code officials to see what is required for your application.

Doors

The doors are a heavy-duty aluminum-framed, glass-style with a full-clear safety glass viewing panel. The door assembly has a clear anodized finish on both the door and door frame. Each door is furnished with heavy-duty door hinges and a door closer.

Options:

- Door options include: double doors, power swing, stainless steel frame, power sliding and painted steel, with viewing window.

  Air showers can be furnished without a door(s) on one end so the unit can butt against an existing door. A door interlock magnet can be shipped loose for field mounting. When interfacing with an existing or sliding door, the air shower can be furnished with a dry contact to automatically open the door at the end of the cleaning/ wait cycle.
- Kick plate in lower half of glass doors, yellow safety acrylic versus clear glass, thresholds.

- Vertical and horizontal sliding doors are often used when the air shower is used for parts cleaning.

  These door configurations can have a variety of options and air shower sizes depending on the application. The air shower is typically shorter when used with carts and taller when a conveyor is being used to transfer parts to, through, and away from the air shower.

Note: When vertical sliding doors are used, the overall height of the doors can exceed the rest of the air shower because of the door lifting mechanism and travel of the door. Consult the factory for details on your specific application. Items necessary to know:

(1) Size of parts being cleaned.

(2) If conveyor is used, height of the floor to top of conveyor. This will assist us in determining door travel and overall size of the door and lifting mechanism.

Electrical Supply

The standard requirement for the air shower is a 208 V 60 Hz, three-phase, four-wire. See attached sheets for specific power requirements. Typical units are 13.6 FLA per blower section. Multiple sections would increase the total power required.

Motor starters and disconnects on main control panel are provided as standard. They are mounted above one of the doors going into the air shower as standard. Local code or installation conditions may require an additional disconnect switch.

Options:

- Units can be ordered for connection to a 480 V 60 Hz, three-phase, four-wire. A 480/120 V transformer circuit then provides power for the controls and lights. Typical units are 6.8 FLA per blower section. Multiple sections would increase the total power required.
- Units can be ordered for connection to a 575 V 60 Hz, three-phase.
- Units can be ordered for connection to a 360 V 50 Hz, three-phase, four-wire.
- Units can be ordered for connection to a 220 V 50 Hz, one-phase, four-wire.

Note: 50 Hz will reduce air shower performance. Consult factory about details on frequency drive to increase performance

Electrical Control Panel

The control panel includes the starter, thermal overloads and microprocessor controller (PLC) used for timing the cleaning cycle and controlling the interlock of the doors, along with the starting of the air shower.

Microprocessor Controller and Door Start Switch

A microprocessor controls the starting of the air shower so that the unit will only start when people are going through in one direction. On applications where there is bi-directional travel through the air shower (people using the shower to both enter and exit the cleanroom) the air shower only starts when people are going into the cleanroom, not when they are leaving.

The cleaning time sequence is field adjustable by turning a potentiometer on the face of the controller. There is one knob for adjusting the cleaning time, 0-180 seconds and a second knob for controlling the purge or "wait time" (the time after the cleaning cycle ends and the door unlock allowing exiting of the air shower). The wait time is adjustable from 0 to 15 seconds.

Note: Only units with magnetic door interlocks have the door start switch; other units have a wall start switch.

Standard Program Sequence with Door Interlock Magnets:

Traveling from gown room into the clean room.

- Gown Room Door A opens, cleanroom Door B locks (magnetic interlock).
- Door A shuts, both Door A & B lock and cleaning cycle starts.
- At the end of the cleaning cycle both doors remain locked 0 to 15 seconds (adjustable) for the purge/wait time.
- At the end of wait time, Door B unlocks (people can leave air shower) but Door A stays locked until people have left the air shower and Door B shuts.
- When Door B shuts, both Door A and B are unlocked and people can enter the air shower from either direction.

Traveling from the Cleanroom to the Gown Room:

- Door B opens, Door A locks.
- Door B shuts, Door A unlocks.
- Door A opens, Door B locks.
- People exit the shower.
- Door A shuts, both Door A and B are unlocked.

Note: It is very easy to reverse the door sequence that starts the air showers, so rather than Door A starting, the cleanroom Door B can start the air shower.

Wall Start Switch

The wall start switch is standard WITHOUT door interlock magnets. When someone enters the shower they would have to press the wall start button to activate the cleaning cycle. When the door interlock magnets are used, the unit uses the doors to start the unit.

Option: Photo electric eye to start the air shower. Typically used in long tunnel configuration when large quantities of people are using the air shower. With this application, people typically exit the room though a different door.

Lighting

The standard unit includes interior fluorescent lighting with interior wall light switch.

Exit Light Indicator Sequence

The following sequence is part of the standard microprocessor controller program but needs to be turned on when you get the air shower.

The interior fluorescent light of the air shower is normally off, indicating it is okay to enter the air shower. (It also conserves power.) When either door opens, the internal fluorescent light turns on. The light will stay on through the cleaning cycle time and purge/wait time. At the end of the wait time the interior light will flicker off then back on to indicate it is time okay to exit the shower. The light will remain on while people are in the air shower, but turns off when exit door has shut, indicating it is okay to enter the air shower.

In most applications, the people using the air shower are trained on gowning, cleanroom protocol and how to use the air shower. With the same people using the air shower every day, the automatic turning on and off of the interior light works extremely well as a reminder when to enter and when to exit the air shower.

Optional Door Interlocks

A low-voltage magnetic door interlock prevents both doors from being opened at the same time. When one door is opened, the other door's magnet is energized which prevents the door from opening. During the cleaning cycle, both doors magnets are energized (locked) to prevent anyone from entering or leaving before the cycle is completed.

When door interlocks are installed, three "emergency power off" (EPO) panic buttons are provided on the interior and both exterior ends of the of the shower. When the EPO button is pressed, the interlock magnets deactivate and both doors can be opened, because pressing the EPO button deactivates the interlock system and unlocks the doors.

When the EPO button is pressed, interlocks are deactivated and an audible alarm sounds alerting individuals to the emergency condition. A dry contact (for a remote sensor or alarm) is available to indicate that the EPO system has been activated. The alarm is turned off by a key switch on the inside wall of the air shower.

Note: With the door interlock magnets, a door start switch is used and the wall start switch is eliminated.

Blower/Motor

The blower wheel is an energy-efficient backward-curved aluminum airfoil. It is direct-drive-mounted to an efficient 5 HP, three-phase motor with sealed ball bearings for low maintenance and long life. The complete assembly is vibration-isolated from the rest of the air shower.

The blower assembly is mounted on top of the unit with the Series 701 and is serviced through an access panel on the interior of the air shower.

Filters

The system uses a high-capacity 24 in. x 24 in. x 12 in. deep HEPA wood-framed filter that has a 99.97% efficiency DOP test rating on 0.3 micron particles.

Options:

- 99.99% HEPA metal-framed filter
- 99.999% ULPA metal-framed filter

The HEPA/ULPA filter are serviced through an access panel located in the interior ceiling if the air shower.

The four 10 in. x 20 in. high-efficiency pleated prefilters are located on the lower internal side walls behind a hinged perforated grill to allow easy access. Prefilters with the raised floor option are located in the upper blower compartment or under the floor grate depending on the options ordered.

Air Nozzles

There are 32 adjustable air nozzles in each standard air shower section, 16 per side. This provides a uniform concentration of nozzles for fast, effective cleaning.

The nozzles are aluminum with a clear anodized finish. They have a 1.2 in. inside diameter, with approximately 7800 LFPM (9000 LFPM peak) nozzle velocity. (Peak velocity is the highest velocity measured at the outlet of the nozzles.) This high nozzle velocity provides more cleaning force to effectively dislodge particles and other contaminants.

Air Flow Capacity

The Series 701 provides approximately 1900 CFM total. With this high air flow volume (power), and the high nozzle velocity (force), the people inside the air shower are cleaned faster and more effectively.

Sprinkler Sleeve

The air shower comes with an internal sprinkler sleeve that allows the sprinkler pipe and head to easily be installed (by others). Consult factory for details.

Flooring Inside Air Shower

The air shower uses the existing building floor.

Optional Raised-Grated Floor Air Return

A raised floor can enhance the performance of the air shower, especially with high traffic or where critical cleaning is required.

The raised floor option has a heavy-duty floor grate made with 1/8 in. x 1 in. vertical-mounted bars which run the length of the shower and are close enough together to easily walk on. The large open area between the bars allows most of the dirt and other contamination to fall through the grating into the lower containment area. The small amount of top area of the 1/8 in. bars are "self cleaning" in that as people walk over the bars, contamination that may have settled on the top edge tends to be pushed off and falls into the lower containment plenum.

As the air comes out of the nozzles, it cleans the people inside and flows downward through the floor grate and into the return air plenum, pulling with it contamination that otherwise would settle out on a solid floor. The floor area is less turbulent than with a solid floor because of the air flowing through the grate. The top of the floor grate stay cleaner; dirt and contamination is contained in the lower plenum.

The floor grate can be easily removed to allow periodic cleaning of the lower plenum. The 6 in. lower plenum typically is mounted below the cleanroom, so the interior grated floor of the air shower is flush with the existing cleanroom floor. Consult factory for details of installation.

Optional Ceiling Air Purge

The air shower can be equipped with an internal ceiling HEPA/ULPA filter to provide a constant downward airflow.

When the ceiling purge filter is used in conjunction with the optional motor breaks, the interior of the air shower is purged of contamination prior to the cleanroom door being opened. The length of the purge/wait time is adjustable from 0 to 15 seconds. The interior light flicker option is used to indicate when the purge time is complete and the person can enter the clean room.

Note: With the ceiling purge option, the upper blower cabinet is taller that the standard blower cabinet and will not fit through a standard 36 in. door opening. Consult factory or drawings for details.

Optional Variable Frequency Drive, Nozzle Air Purge

The air shower can be equipped with a variable-frequency drive that allows the blower to run at a low speed when not in the high-velocity cleaning cycle. This low, constant air moving volume keeps the interior of the air shower cleaner by purging and cleaning the interior.

Optional Point Ionization

DC pulse-type point ionization can be mounted in the side walls of the air shower to help reduce static charges.

Optional Magnahelic Pressure Gages

The unit can be furnished with Magnahelic air pressure gages to sense the differential pressure across the HEPA filter and/or prefilter, to indicate when the filters need servicing.

A gage can also be used to measure the air pressure supplying the nozzles. The pressure supplied to the nozzles is directly proportional to the velocity of the nozzles. This pressure can then be used to indicate if there was a problem with the nozzle velocity, which is typically caused by a dirty HEPA filter or prefilter.

Air Conditioning/Cooling

The typical air shower may have an internal temperature warmer than that of the surrounding ambient; most applications have about a 10 degree temperature rise. Units with a high duty cycle can have over a 20 degree temperature rise. The typical time spent inside the air shower is approximately 10 to 15 seconds. People are in and out of the shower before it would become a problem.

When supplying air conditioning to the air shower it is recommended to use a self-contained air handler that recirculates air within the air shower. Optional self-contained A/C units can be installed on the air shower. Please contact the factory for further details on cooling.

Optional Air Shower Styles and Configurations

90-Degree Air Showers

The air shower can be provided with the doors in a 90-degree configuration for those applications that straight in will not work.

Three-Door Air Showers

This air shower has three doors. The typical configuration is one entrance door and two doors exiting to two different cleanrooms.

Multiple-Units Tunnel

Two or more air showers can be combined to form a longer unit. By adding complete sections, an efficient arrangement for the nozzles will be maintained.

These tunnels can be used for "large batch" cleaning (if a large number of people will enter and exit as a group), or for "continuous flow" cleaning (where the showering time is how long it takes to walk the length of the tunnel).

Both 90-degree and straight-through air showers can be combined to form the tunnel configuration.

NOTE: The cost for additional sections is lower than for the basic unit, because the cost of the doors and electrical control is covered by the first unit and additional units don't need these items.

Low-Profile Air Shower

The Series 701LP (low-profile) model has an overall assembled height of 95 in. The unit has the blower assembly, HEPA filter, and electrical components mounted on the side to permit the lower height. It can be assembled in a space 96 in. high, making it ideal for retrofits or areas where penetrating the ceiling is undesirable. The unit is shipped disassembled to the point that all parts will fit through a standard doorway.

Service access to the blower assembly, filters, and electrical components is through two doors on each end of the unit. This is standard.

Note: When installing the low-profile unit, it must stick through the wall so that the end access doors are available to service the blower and filters. Contact the factory for additional details.

Floor-Mount Cart/Parts-Cleaning Air Showers

Parts-cleaning air showers are available in a variety of sizes, shapes and configurations. They are available to be used with carts, conveyors, pallets and continuous-part operation. This style of air shower can use swing doors, vertical-sliding, horizontal-sliding or no doors. Please consult factory with details of your specific application, so we can configure an air shower that will meet your specific needs.

Wall-Mounted Pass Thru Air Showers

Similar to the parts-cleaning, but smaller and mounts off the floor. Consult the factory for details.

Air Showers for Decontamination of Individuals When Leaving a Controlled Space:

These air showers are similar to the standard air shower but have a few common options.

1) They typically do not have door interlocks.
2) They have wall start switches.
3) They often are not walk through, but only have one door, and the end without the door is put against an existing wall so you enter and exit through the same door.
4) Lower side-wall prefilters unless grated floor option is chosen.
5) A respirator should be used for the toxic materials being cleaned off. RESPIRATOR IS ONLY REQUIRED FOR DECONTAMINATION OF TOXIC MATERIALS.
6) Optional compressed-air fitting can also be installed to allow additional blow-off during cleaning or to blow air into the outer coverall to "blow it up" and make it easier to clean the garment.

Consult the factory for details.

Custom Features

Many other customized sizes and features can be provided. Contact the factory for more information.

Normal stock size is CAP701-4954 (single 3 ft. x 7 ft. door both ends, 54" long and 116 in. tall.)

Other Sizes

CAP701-7172-ADA
(sizes for ADA compliance)
Single 3 ft. x 7 ft. door both ends, with interior space large enough for wheel chair to turn around

CAP701-4972
Single 3 ft. x 7 ft. door both ends, 72" long

CAP701-8654
Double door both ends, 54" long

CAP701-8672
Double door both ends, 72" long

Garment Type and Cleaning Effectiveness

The cleaning effectiveness of the air shower is affected by the type of garments, the size, shape and type of contamination. Large light particles such as lint, hair, dander, and skin flakes are the easiest to remove.

Particulate contamination adheres to garments in two basic ways. Either by mechanical entrapment or by an electrical attraction.

Mechanical bonds between the garment and particulate contamination is reduced when smooth surface garments are utilized. These include "cleanroom-designed" garments and those made from synthetic materials such as Tyvex, Gortex, polyester, and nylon, to name a few . These materials are low-shedding and minimize the mechanical bond, making it easier to blow the surface contamination off the garments. Natural fibers, such as cotton, tend to shed particles and their surface finishes tend to have a higher mechanical bond with particles, making them harder to clean.

Synthetic garments can develop a static charge. This charge can "hold" a particles to a surface of a garment. To help reduce this charge, garments can be laundered with an "anti-static" agent in the final rinse. This will help reduce the level of static charge on the garments, allowing particles to be more readily removed. Some garments are available with special built-in conductive fibers that can assist in keeping the surface charge to a minimum. Consult your garment supplier for details.

Point Ionization (static neutralization) can be installed on the inside walls to dissipate some of the charge on the garments, helping to reduce the holding charge (force) of the garment, making it easier for the air to blow the particles off.

In many cleanroom applications, much of the contamination in the room is carried in on the garments of the individuals working within the room. Typically they bring it to the most critical area.

Without using an air shower, individuals are often cleaner when they leave the clean space because a large portion of the contamination they had on their garments will have fallen off within the clean space. Using an air shower is an effective way to remove much of the contamination that would otherwise come off within the clean space.

Mounting Against Wall

The air shower can be shipped fully assembled (on its side on the skid) or knocked down with the wall panels off from the upper blower cabinet, allowing the components of the air shower to fit through a 3 ft. x 7 ft. door opening when removed from the shipping skid. If components are required to fit through a 3 ft. x 7 ft. door this should be specifically requested on the quote and order.

The air shower can be installed so the entire air shower sticks through the wall, with space around the air shower. This space is filled with an optional trim angle. The shower can also butt up against a wall with an opening large enough for door and end-mounted hardware. (approximately 48 in. x 90 in.) Please request a quote with a specific job number before planning cut-outs. Different configurations and sizes may require different cut-out sizes.

When the unit is butting against the wall, the contact point between the air shower and the framed opening is typically caulked or small trim molding is applied. The exterior of the air shower would have a trim angle.

Receiving Air Shower

The skid weight for a single CAP701-4954 standard air shower is approximately 1500 lb. The size of the skid when fully assembled is about 68 in. W x 126 in. L x 60 in. H. The skid size when the unit is shipped knocked down is 68 in. W x 144 in. L x 60 in. H. This is reference size and will vary with other size units or when multiple units are shipped together.

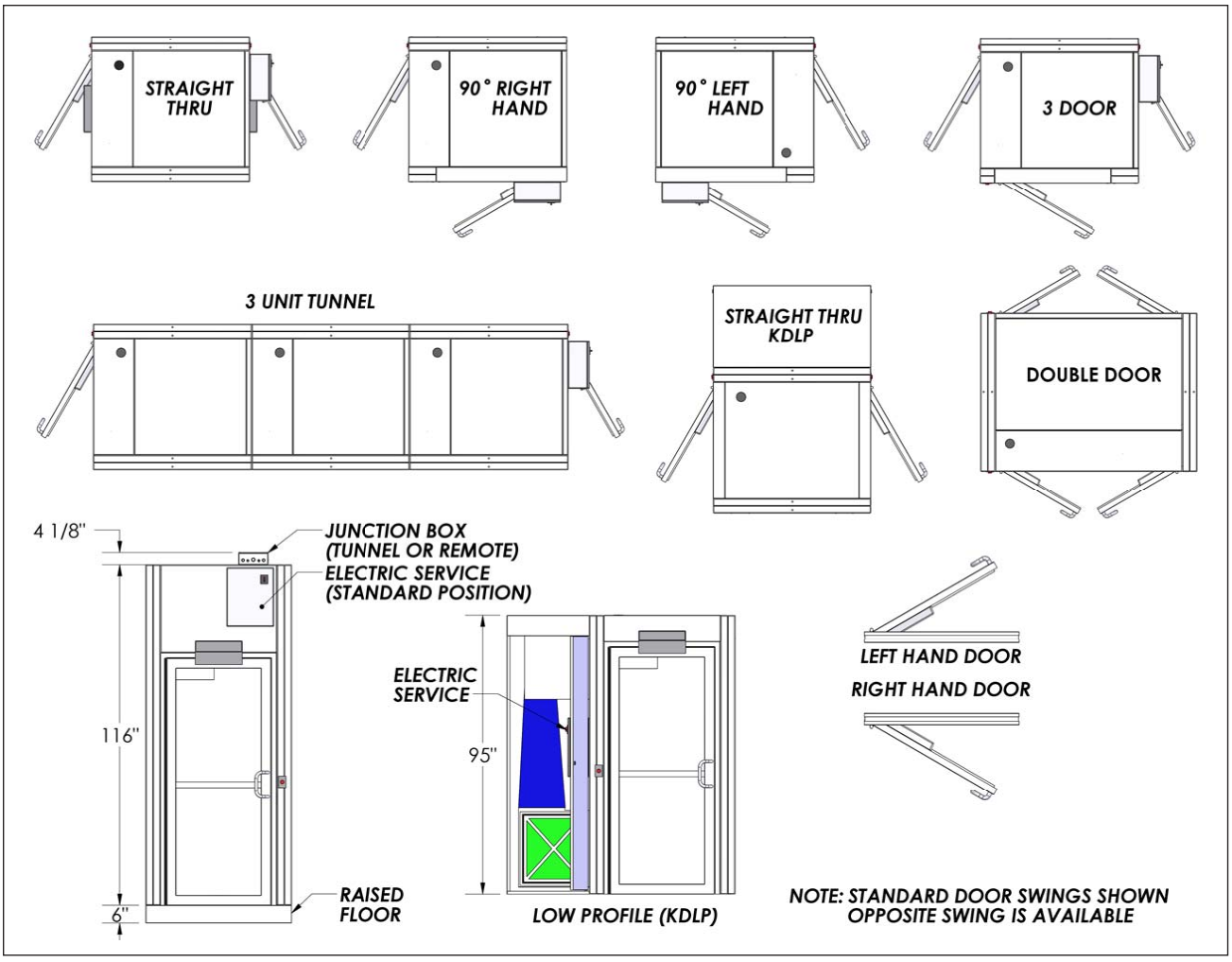
When shipped fully assembled on its side, the weight for a CAP701-4954 is approximately 1300 lb. Two eye bolts located on the top of the air shower can be used to assist in lifting. After standing up the unit, it is then moved into position and leveled using shim stock and is accorded to the floor.

When the unit is shipping knocked down, the CAP701-4954 air shower upper blower cabinet is 650 lbs.. The wall panels are 250 lbs..

NOTE: The knocked down air shower needs room on the sides of the unit during the assembly process to install the 3/8 in. mounting bolts. Once the unit is assembled, no space is required on the sides of the unit.

After the unit is assembled, moved into place and the mounting complete:

A) An electrician needs to connect power to the air shower, start the unit, and check blower rotation.
B) A sprinkler contractor needs to install the sprinkler.
C) The installer touches up the paint, adjusts doors, door closer and magnetic door interlocks, and confirms that high-velocity air is flowing out the nozzles at approximately 90 MPH. If the blower is running backwards, air will come out of nozzles but only at about 15 MPH. Blower rotation can also be confirmed by looking at the blower.
D) The inside of the air shower and floor must be cleaned.
E) Caulk and floor anchors are furnished by the installing contractor as required.



Read and Save these Instructions!

Please observe the following information related to the product:

1) Read this guide before installing and/or operating the unit.
2) Keep this guide to make references to the safety and operating instructions in the future.
3) Observe warnings associated with handling, installing, using, and maintaining the CAP701.
4) Follow all instructions for set-up, operation, and use.
5) Operate ONLY from the type of power source indicated. If you are unsure of the type of power available to you, contact your dealer or power company.
6) This unit may be equipped with a polarized alternating current (AC) plug with one blade wider than the other. This plug will only fit into the power outlet in one way for safety reasons. If the plug does not fit, call an electrician to replace the outlet. DO NOT REMOVE THE ROUND GROUNDING TERMINAL. THIS UNIT MUST BE GROUNDED FOR SAFETY REASONS AND FOR PROPER OPERATION.
7) Do not place power cords (optional) where they will have things placed on or against them, be walked upon, or be pinched, especially near the outlet, the plug, or where the power cord exits the unit.
8) Overloading outlets and/or extension cords can result in fire and/or electrical shock.
9) ONLY use parts supplied or authorized by the manufacturer. Substitutions may result in fire, electrical shock, or other safety hazards.

Safety Warnings

1) NEVER expose the assembly to moisture or rain.
2) If the unit gets wet, disconnect the power at the source and have an authorized service inspection before using it again.
3) Do not pull on the optional power cord to unplug the unit, and never handle the cord with wet hands.
4) Do not clean the unit with flammable chemicals.
5) Do not expose to explosive or hazardous vapors or materials.
6) Make sure the unit is well supported to prevent falling.
7) Do not block airflow to the unit.
8) Disconnect the power before servicing.
9) Do not operate below 0 degrees Fahrenheit or above 110 degrees Fahrenheit.
10) This unit is designed to operate in a non-hazardous (non-explosive) environment with non-condensing air.
11) NEVER put objects into the blower.
12) Do not operate without metal blower guard.
13) Review application with your safety commissioner for proper use.

Installation/Assembly of the Knock-Down Air Shower

Terms

Side Walls – are 5 inches thick and are made of (2) 2-1/2-inch thick panels that are screwed together. The outside of the panel will be blank with screw heads and (8) 7/8-inch holes. Inside of the panel are the nozzles, air return grills and rectangular supply and return air holes.

Blower Housing – is a box with open sides that contains the blower/motor assembly, the HEPA filter.

Doors – are typically glass with an aluminum frame and an aluminum door frame.

General

How the Air Shower Assembles

The side wall assemblies attach to the upper blower housing by bolting the (2) side wall panels to the upper blower housing from the outside of the unit.

Note: It is possible to assemble the unit from the inside. This procedure is not described herein (consult the factory for details as an inside assembly needs to be ordered as such so the units can be field converted.)

Note: Air showers requiring Class 10 or Class 1 nozzle must have the air showers side walls assembled in a Class 100,000 or better environment or have remote HEPA filter purge assembly blower attached during assembly. Eve with the Class 100,000 assembly environment, the sealed air vents of the air shower should be uncovered for no more than 15 minutes.

Note: In addition to the instructions below, there are 9 pages of "Air Shower General Assembly" instructions, complete with illustrations, starting on page 15 of this manual.

1. The Air Shower has an "**entrance**" door and an "**exit**" door. If the optional door interlock magnets were purchased the **entrance** door is the door that activates the cleaning cycle. Refer to your technical drawing shipped with the air shower to determine which side of the air shower the **entrance** door is located. Then orientate the Air Shower so the entrance door is the one opened first and the exit door is the door that opens into the Clean Room. If the door sequence needs to be reversed, the procedure to reverse which door starts the cleaning cycle is described in the Trouble Shooting Section on page 14.

2. Raise the blower housing using an overhead lift or fork lift.

3. Stand the side wall panels on end next to the upper blower housing. The return air grills face the floor and the nozzles face the inside of the unit.

   Note: Remove red tape from supply openings before assembling.

   Note: The panels look similar, but one is right hand and the other is left hand. To avoid assembling the panels wrong, match the sides marked "supply air" on the wall panel and blower housing.

   Caulk the vertical seams on the side walls and around door frames.

   On the outside, near the top of the wall panels, are (8) 7/8-inch diameter holes. Insert the 3/8-16 x 1 inch Allen had CAP screws through these holes and thread them into the matching holes on the upper blower housing; these bolts attach the side wall panels to the blower housing. Once the sides are bolted to the blower housing, the assembled unit can be moved into position.

The doors attach to the unit by screwing #8 self-drilling screws through 1/2-inch diameter holes on the inside of the frame and through matching 3/16-inch diameter holes on the outside.

Set the frame into the door opening. Insert a #8 screw through the 1/2-inch hole using a magnetic screw driver and screw the frame of the door to the air shower shell using matching holes in walls.

Note: Hand Tighten these screws only; they are very difficult to remove if the screw is damaged.

On the top of the door inside the aluminum extrusion is a screw. If the door does not hang square in the frame, turn this screw in or out. This will change the square of the door.

Attach the door closer parts and check that the door closed correctly.

After the electrical is attached check that the magnets hold shut. The armature plate may need to be adjusted. Typically this is done by adding or removing a spacer washer.

Note: Extreme care must be used when lifting the top cabinets with the purge blower locate on the ceiling of the air shower. The filter can easily be damaged by lifting forks.

Multiple Units

Longer air showers are made by combining single units together. Each unit will have one single electrical connection point. Flexible metal cables are run along the top of the unit connecting each unit to the main electrical.

Each section will be bolted together with two bolts on the bottom sides and two bolts on the top. One-half-inch threaded holes are located on the top of the side wall sections that can be used to attach the air showers to the building if required. Holes are available inside the return air grills for attaching the air shower side panels to the floor.

Start Up

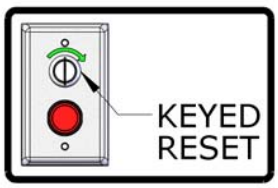
Start Up for the Series 701 Air Shower

1. Check that the unit has been wired.

2. Electrically lock out the air shower, open the interior access panel and check that the blower is hanging correctly and that the amp connector in the upper inside corner of the air shower is plugged in.
   Note: Interior access panel is heavy. Care needs to be taken when opening.

3. Rotate the blower wheel by hand. It should spin freely.

4. With the access panel still down turn the power on. The alarm will sound, this is normal. To "set" the alarm circuit turn the "keyed reset" clockwise – this is a momentary switch and will spring back to the starting position. The alarm should turn off.



5. With the access panel open, check that the light works.

6. Open and close the entrance door to start the blower. Check the rotation as the blower is slowing down. It should spin clockwise when looking at the blower wheel from the prefilter side.

   Wall start units press the start button.

If the unit does not start, check that none of the EPOs are activated (with door interlock option only). Turn the keyed reset switch to reset the air shower.

7. Lock out the air shower, replace the prefilter and close the access panel.

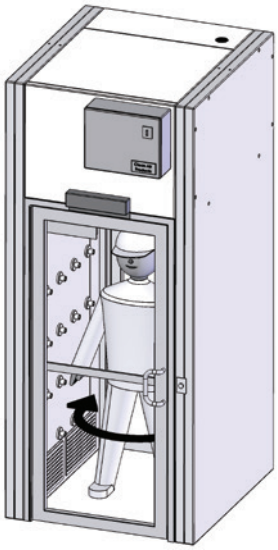
8. Check the door interlock magnets. (with door interlock option only)

   If they do not hold the door shut
   A. Check that they are working by putting a steel object against the magnet and opening the opposite door. This can be a screwdriver or wrench.
   B. If magnet works but door is not held closed, adjust the armature plate on the door.

9. Walk completely through the air shower in one direction; the unit should cycle. Walk through the unit in the other direction; the unit will not cycle. (with microprocessor option only).

10. Adjust the air shower time if required. With the microprocessor, turn the upper "pot" on the controller.

11. Wipe down the interior and exterior of the air shower with a DI water using cleanroom wipes.



Operation

Cleaning Procedure

Proper procedure should be maintained to produce the most effective cleaning. Once inside the Air Shower; start the cleaning cycle by pushing the wall start button. (Automatically activated with the interlock option) Once the high velocity air starts the person(s) should raise their arms slightly and rotate from side to side (about 45 degrees) to direct the high velocity to all areas of the clean room garments.

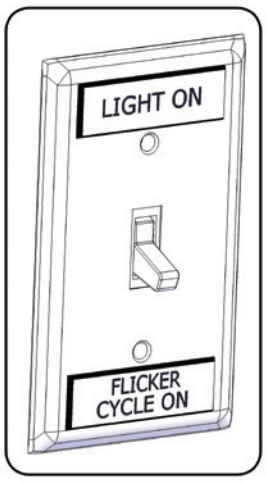
Wall start units can restart a cleaning cycle by pressing the start button again.

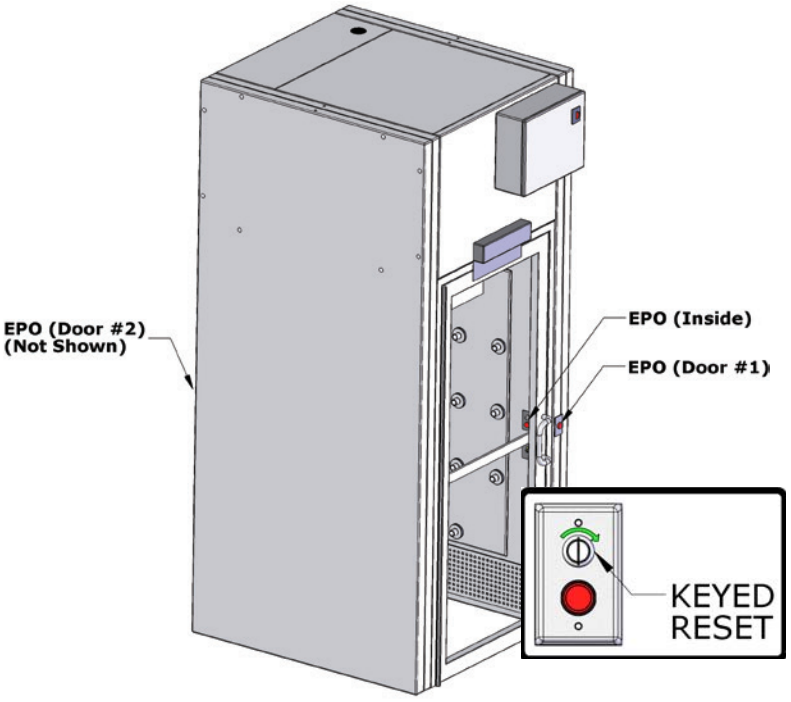
Light Switch Option

UP Position – When the light switch is in the up position the light will be on 100% of the time.

DOWN Position – When the light switch is in the DOWN position; the light is controlled by the Air Shower. When a door is opened to start a cycle the light will come on. The light will "flicker" for a second to indicate the end of the cleaning cycle and that the exit (cleanroom) door has unlocked. When the Air Shower cycle has been completed the light will turn off.

Caution: The light switch does not always disconnect power at the light fixture. Disconnect all power when servicing the light assembly





EPO System with Interlock Option (Emergency Power Off)

An Air Shower equipped with the optional interlocks has (3) EPO buttons. (1) each mounted on the outside next to each door and (1) internal to the Air Shower. Located with the internal EPO button is a keyed switch for resetting the Air Shower.

In case of an emergency pressing any of EPO buttons will disable the interlock functions and allow both doors to be opened simultaneously. An audible alarm will sound to indicate the EPO system has been activated.

The EPO system is reset by inserting the key into the reset switch and turning clockwise.

Electrical

There may be some electrical wiring that requires an on-site electrician, depending on which options were ordered.

Control Sequence

With Interlock Option

There are two control modes for the Series 701 air shower; an enter and an exit mode. The air shower will activate only in the enter mode.

In the enter mode, the operator enters the air shower through the entrance door. Once the entrance door completely closes, the air shower starts up and locks both doors. After the cleaning cycle is completed, the operator can exit the air shower through the exit door.

In the exit mode, the operator can enter through the exit door and exit through the enter door without starting the air shower.

The EPO buttons can be pushed at any time during the enter and exit modes to stop the air shower, unlock both doors, and turn on the alarm. The keyed reset switch can be turned to reset the air shower for operation.

Without Interlock Option

The wall start button needs to be pushed to start the cleaning cycle. After the cleaning cycle is completed, the operator can exit the air shower through the exit door.

Note: The air shower will run any time the wall start button is pushed. Both doors can be opened during the cleaning cycle.

Primary Purge (all air showers with interlock)

An additional purge sequence has been added to clean the air shower. To activate this purge option, the exit door needs to be opened and closed 15 times. After the door closes for the 15th time, the main blower(s) turn on to power clean the air shower for 30 minutes. This operation can be cancelled at any time by opening either the entrance door or the exit door.

Light Options

Option 1: Light switch turns light on and off.

Option 2: Light switch is deactivated. Light comes on whenever a door is opened. Light "flickers" for one second to tell the operator to exit. Light turns off when operator leaves air shower and door closes.

Note: See electrical diagram for wiring changes for each option.

Maintenance

On the inside of the unit is an access panel. Remove the screws holding the panel to the ceiling of the air shower. The panel will hinge down exposing the blower and HEPA filter. The HEPA filters need only to be changed when dirty, which is when the nozzle velocity falls below 7000 LFPM or the nozzle pressure falls below 4 inches WC.

The prefilters are located behind the perforated grills located on the wall panels inside the air shower. The prefilter should be changed on a regular schedule, once every 3 to 6 months subject to the dirt loading.

After the air shower has cycled about 200 times, check the blower wheel. The torque on the set screws should be about 21 ft.-lbs. Also, check and make sure the blower motor bolts are tight. Check the blower wheel again at 4000 cycles or in 3 months, whichever comes first, and annually thereafter.

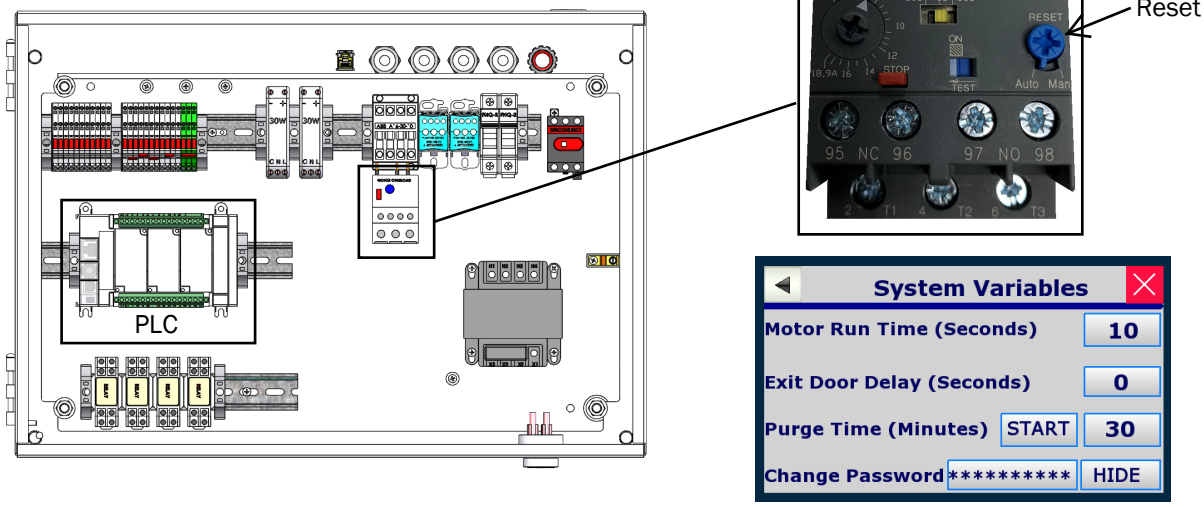
The blower has sealed ball bearings and requires no maintenance.

Troubleshooting

1. Audible Alarm — If an audible alarm is present, turn the keyed reset, the keyed rest switch is located inside the air shower near the entrance door. This is a momentary contact switch and will return to its original position.

2. Light Switch Doesn't Turn on Lights — Check the 'amp" connector inside the air shower access panel. The receptacle portion of the "amp" connector is located, as you are looking through the access panel opening, on the upper-middle portion of the wall nearest the motor assembly. The plug is located on a black vinyl cord that originates from behind the electrical panel. Lining up the grooves and turning it approximately 270 degrees seats the plug to the receptacle.

3. Blower Doesn't Run — Check the motor overload relay; it is located in the control box. If the motor overload relay is tripped; it will need to manually reset. Also, check to see if the 'Run' & 'Power' lights are lit on the PLC; as well as making sure the 'Fault' light is NOT lit. Also, check the 'System Variables' screen on the HMI operator interface to verify the 'Motor Run Time' is not set to '0 Seconds'.

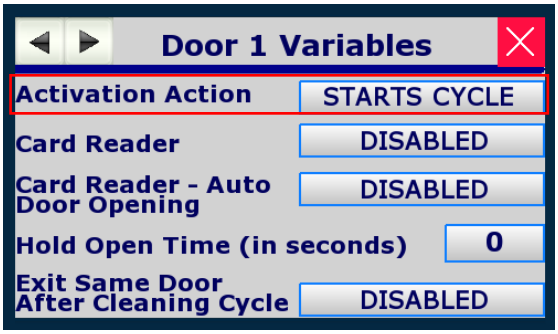


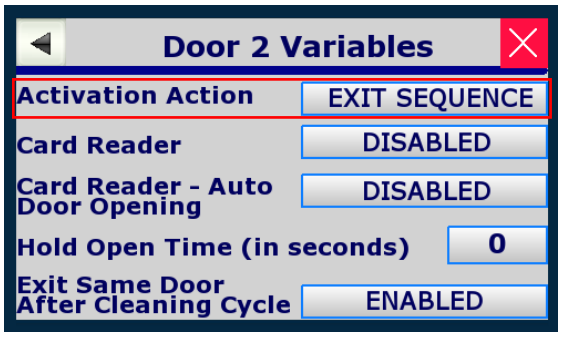
Exit Door Delay; This is a time delay from when the blower shuts off to the exit door unlocking. The range on this timer is 0 to seconds. (factory set to 0-99 seconds)

4. If no air comes out when blower runs, check rotation of the blower wheel.

5. If light doesn't work, check that the "amp" connector is plugged in.

6. The wrong door starts the cleaning cycle. Access the 'Door Variables' screen in the settings of the HMI operator interface, and reverse the logic of the 'Activation Action' on both doors.





Cleaning

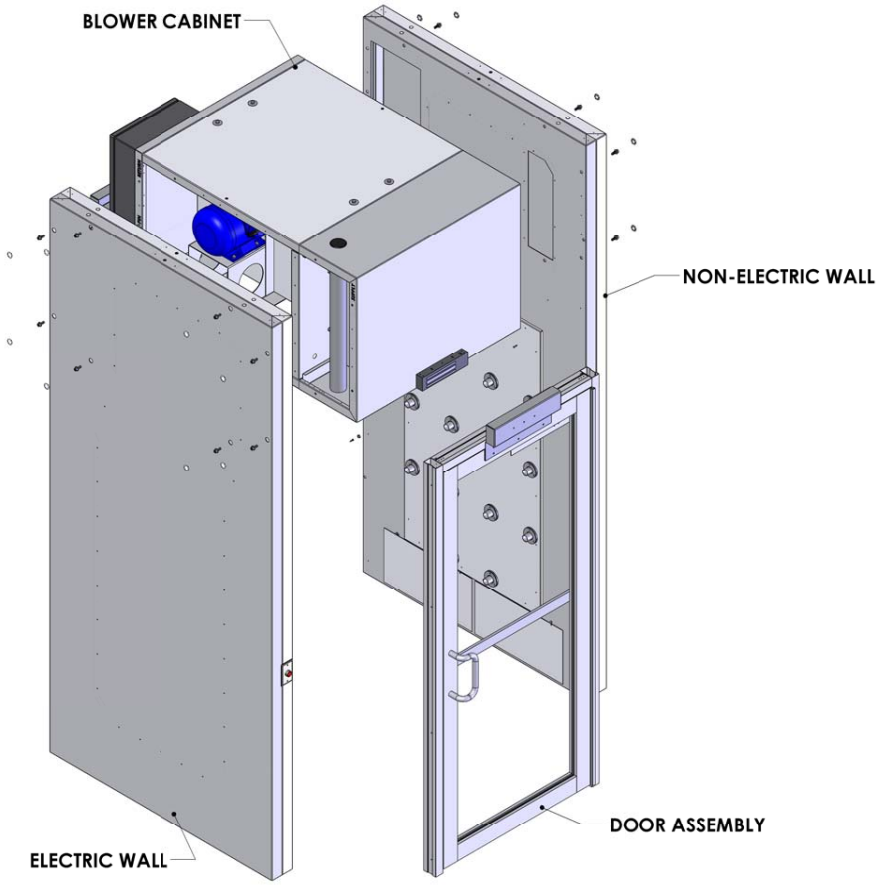
The inside of the air shower should be cleaned (wiped down) on a regular basis. Some dust and dirt will collect on the inside of the unit. This is good; it indicates that people are being cleaned off.

The push and pull bars of the door should be cleaned regularly. They tend to collect dirt that is transferred by hands. Clean the glass on the doors with a glass cleaner and the painted surfaces with a non-abrasive cleaner such as 409 Spray Cleaner.

The floor should be cleaned daily. Heavier particles, as they were removed, may have dropped out of the return air stream and settled on to the floor.

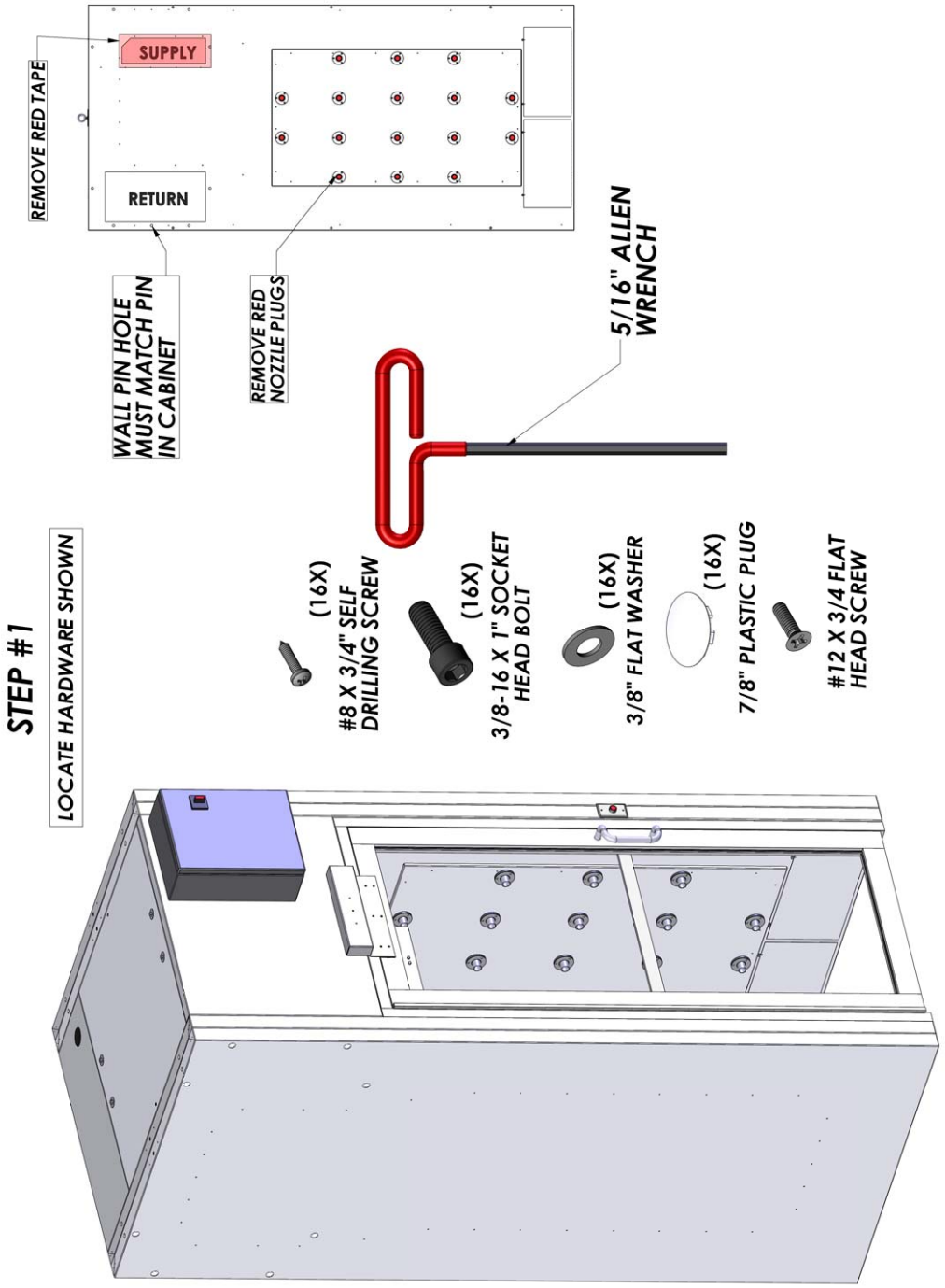
Clean Air Products
Air Shower

Quick Start Assembly Guide

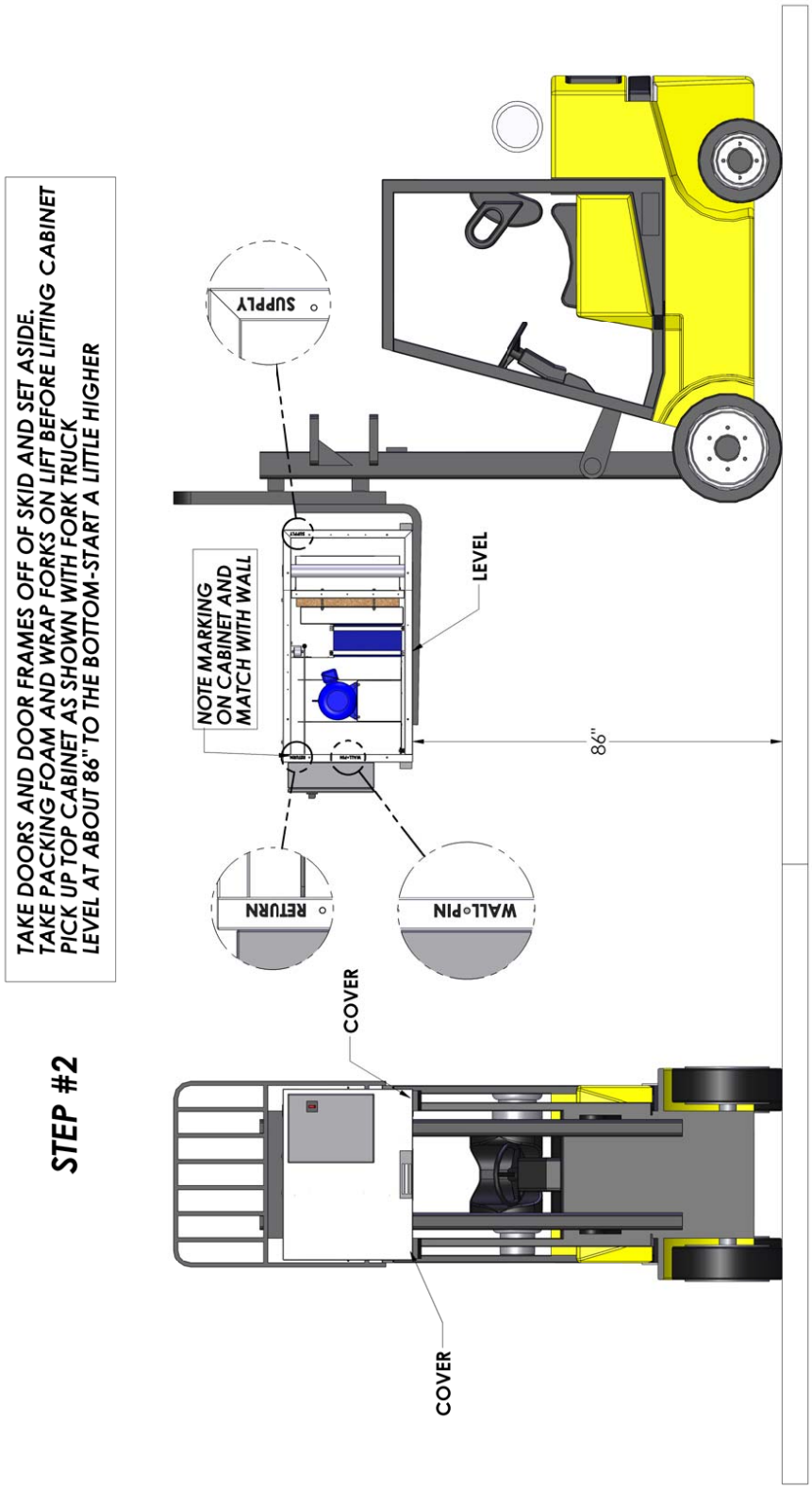


Note: Model KD-4954ST shown. Reference Approval Drawing for your exact model.

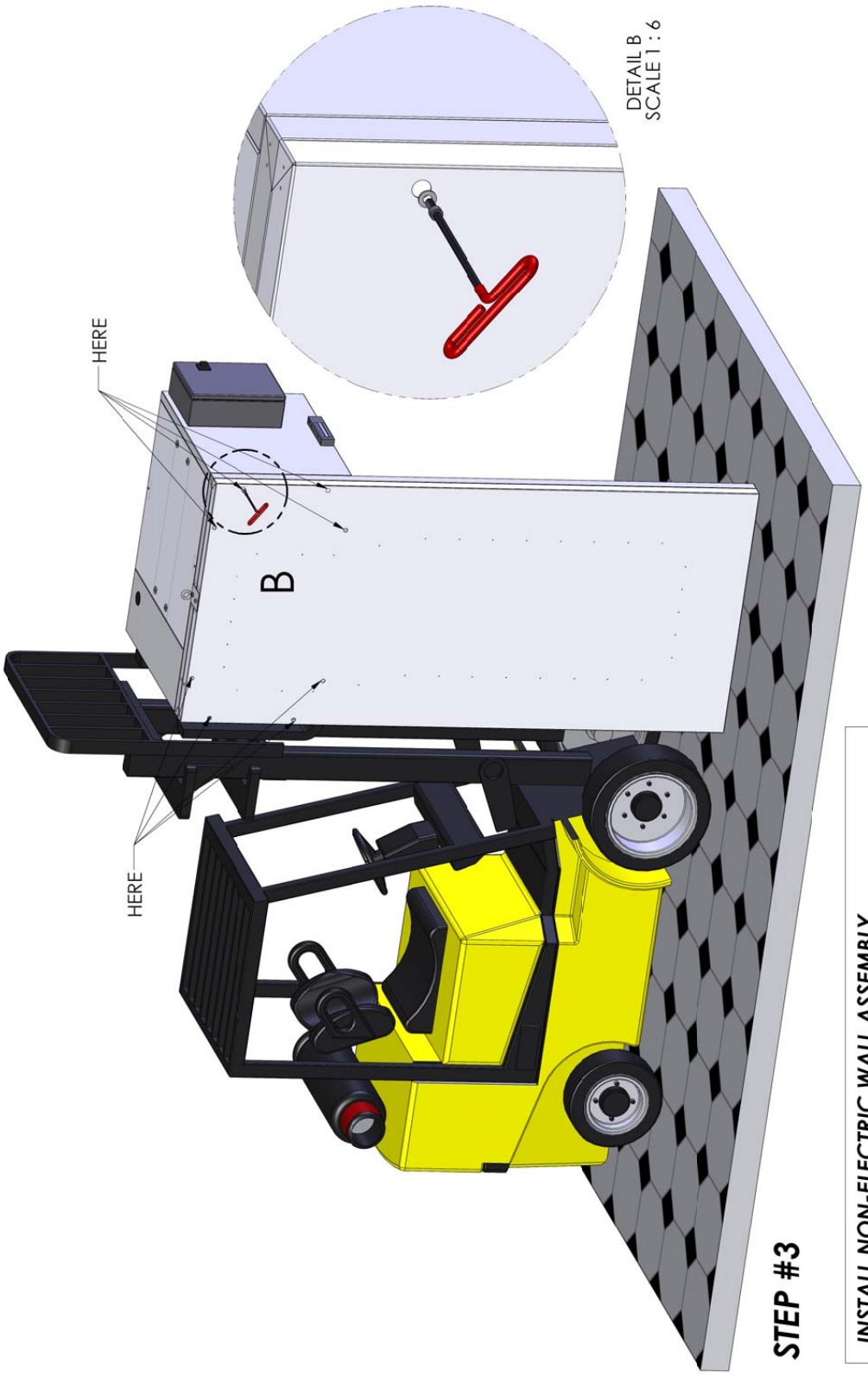
Clean Air Products' Series 701 — Air Shower General Assembly



Clean Air Products' Series 701 – Air Shower General Assembly – Step 1



Clean Air Products' Series 701 – Air Shower General Assembly – Step 2



STEP #3

INSTALL NON-ELECTRIC WALL ASSEMBLY STAND WALL UP AND POSITION TO CABINET A 3/8" PIN ON CABINET WILL LINE UP WITH HOLE IN WALL USING T-WRENCH INSTALL 8- 3/8" SOCKET HEADS WITH A FLAT WASHER- NOTE DO NOT TIGHTEN YET.

Clean Air Products' Series 701 – Air Shower General Assembly – Step 3

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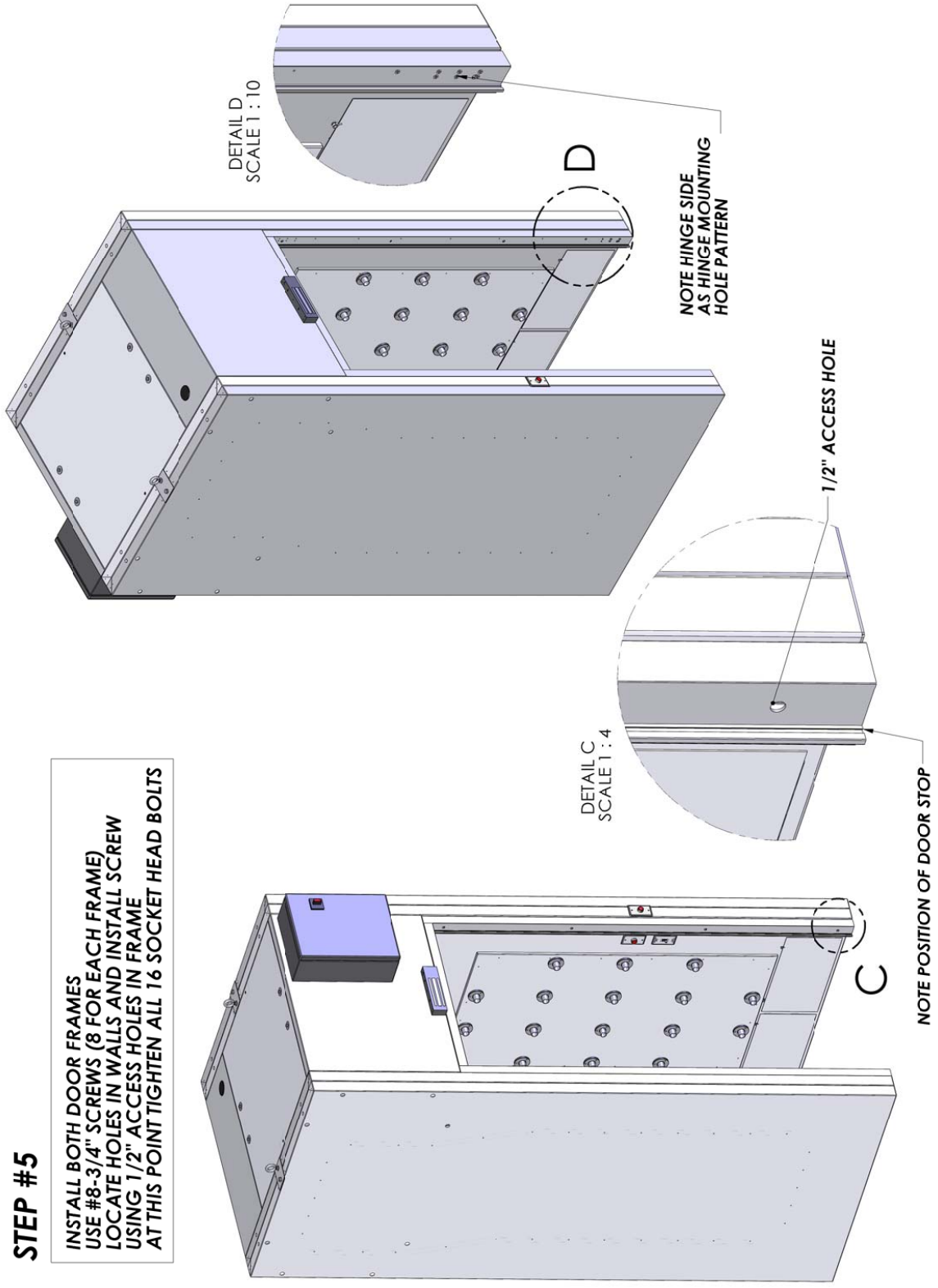
STEP #4

NEXT INSTALL THE ELECTRIC WALL
REPEAT STEP #3

Clean Air Products' Series 701 – Air Shower General Assembly – Step 4



STEP #5

INSTALL BOTH DOOR FRAMES
USE #8-3/4" SCREWS (8 FOR EACH FRAME)
LOCATE HOLES IN WALLS AND INSTALL SCREW
USING 1/2" ACCESS HOLES IN FRAME
AT THIS POINT TIGHTEN ALL 16 SOCKET HEAD BOLTS

Clean Air Products' Series 701 – Air Shower General Assembly – Step 5

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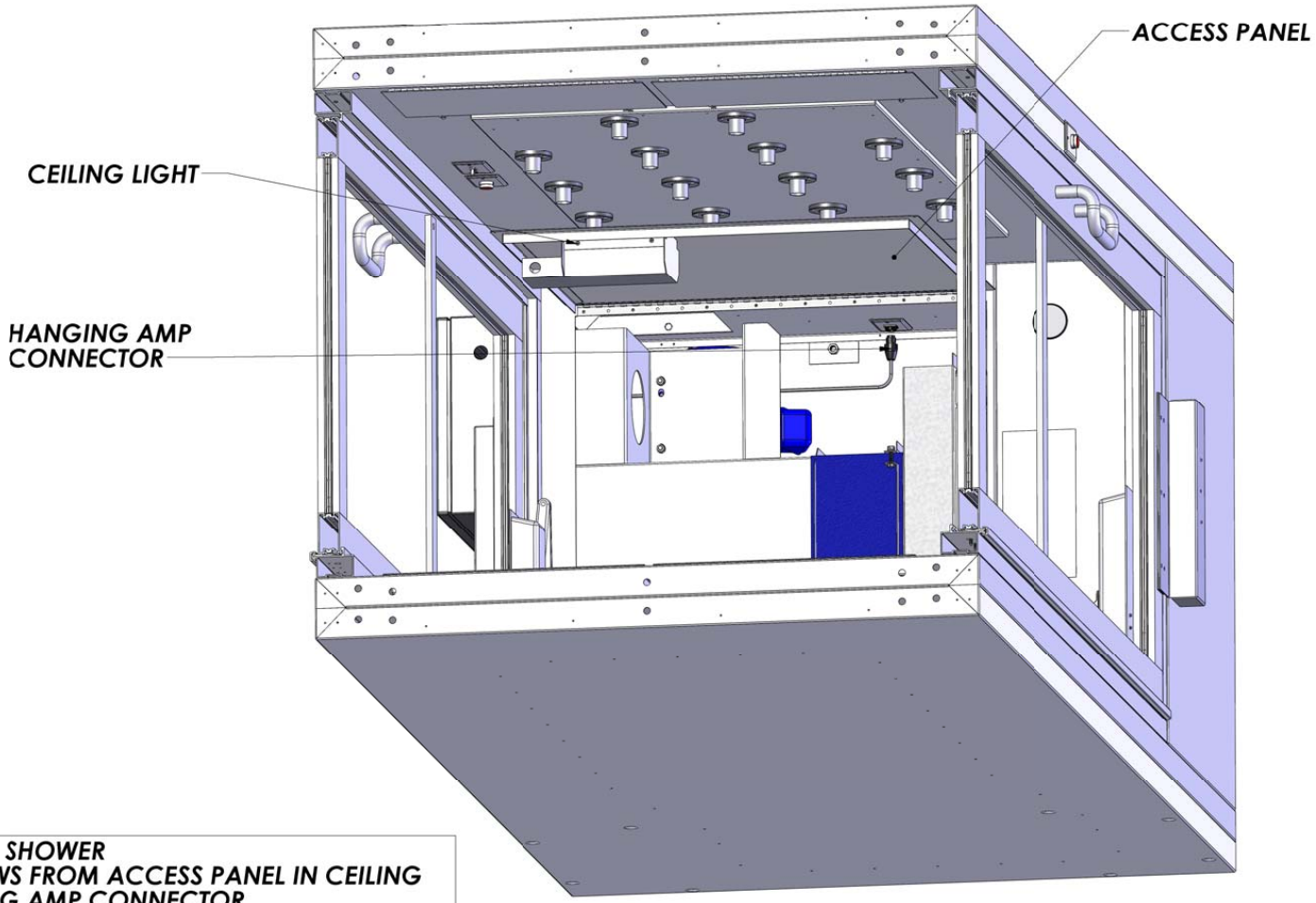
STEP #6

ATTACH BOTH DOORS USING #12 FLAT HEAD SCREWS AFTER INSTALLING THE SCREWS ATTACH DOOR CLOSER ARM AND AJUST AS NEEDED.

Clean Air Products' Series 701 – Air Shower General Assembly – Step 6



STEP #7

FROM INSIDE AIR SHOWER
REMOVE 2 SCREWS FROM ACCESS PANEL IN CEILING
LOCATE HANGING AMP CONNECTOR
PLUG IN TO AMP RECEPTACLE ON ELECTRIC WALL
CLOSE PANEL AND PUT SCREWS BACK IN TO HOLD SHUT
INSTALL COVER ON LIGHT AT THIS TIME

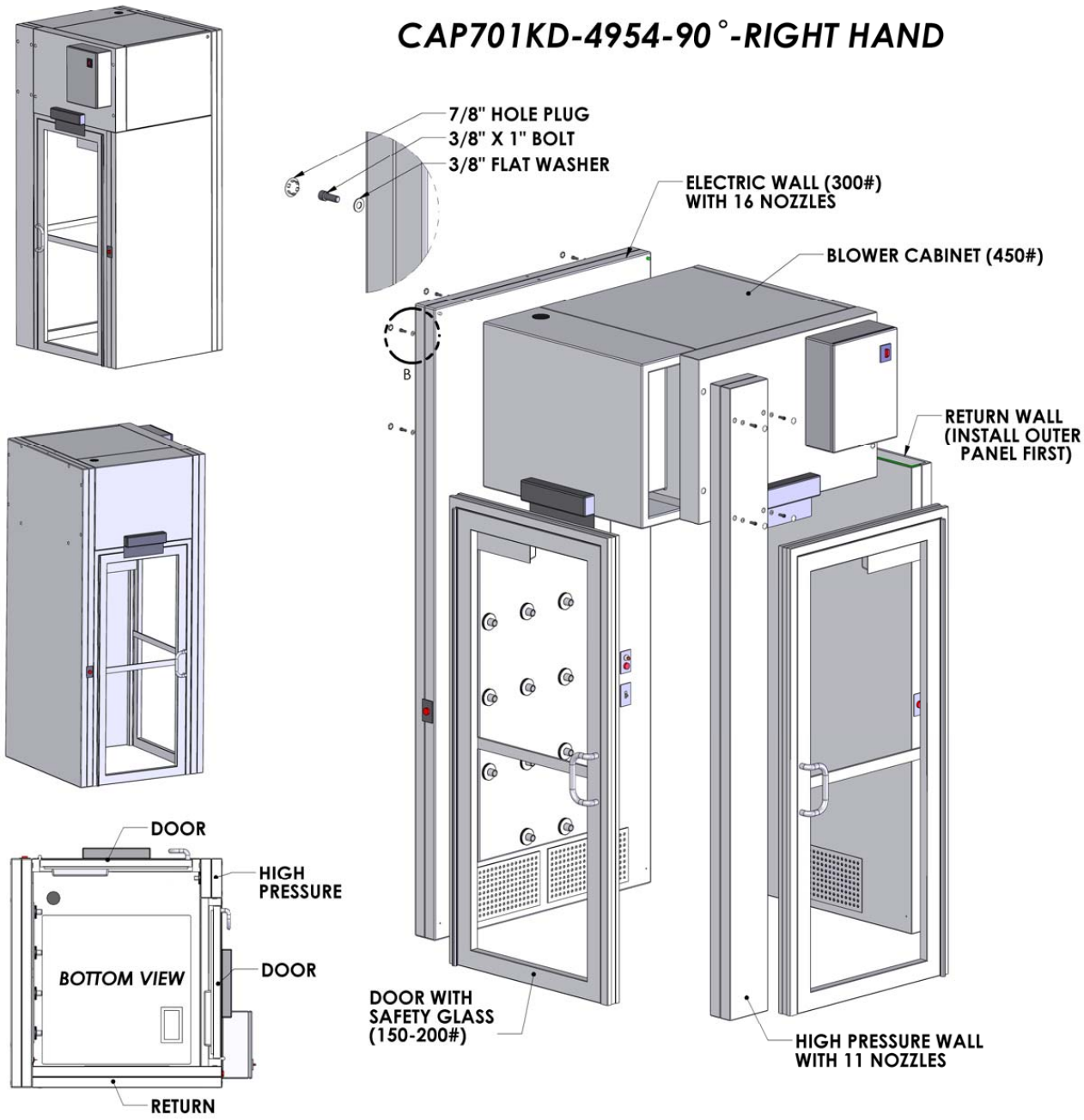
Clean Air Products' Series 701 — Air Shower General Assembly — Step 7

STEP #8

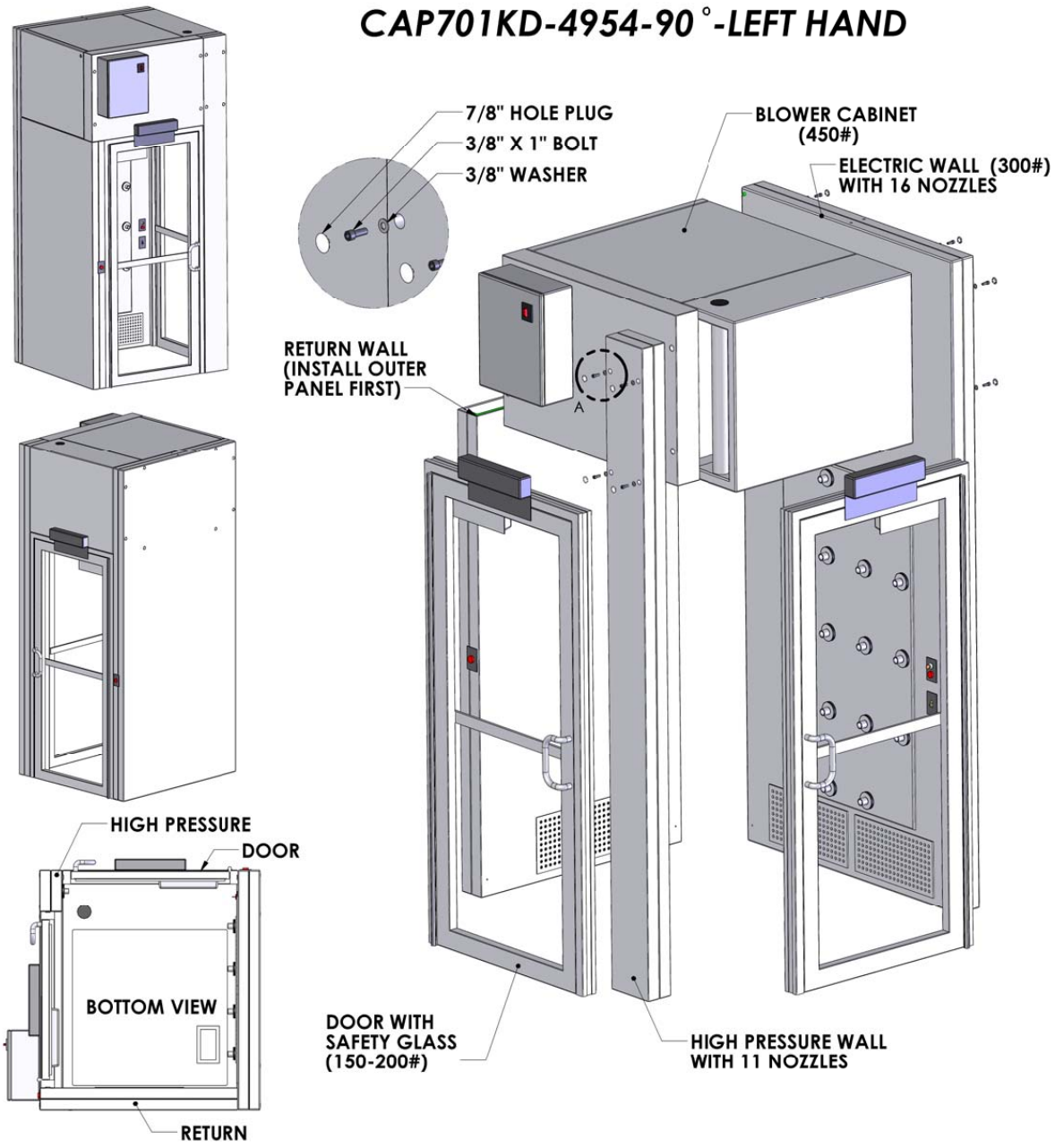
INSTALL 7/8" PLASTIC PLUGS (16X)

Clean Air Products' Series 701 – Air Shower General Assembly – Step 8

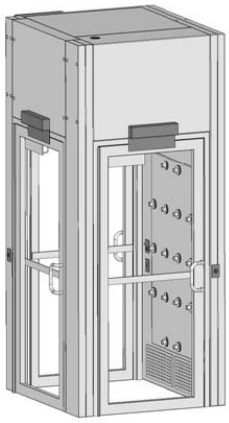
Clean Air Products' Series 701 — Installation Instruction — CAP701KD-4954-90° RH
(Some Details May Vary)

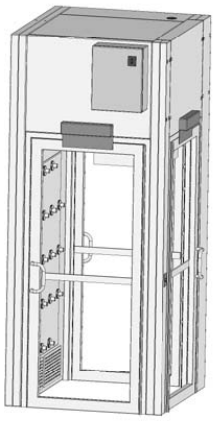


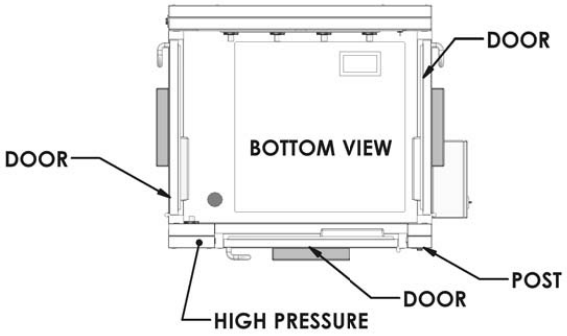
Clean Air Products' Series 701 — Installation Instruction — CAP701KD-4954-90° LH
(Some Details May Vary)



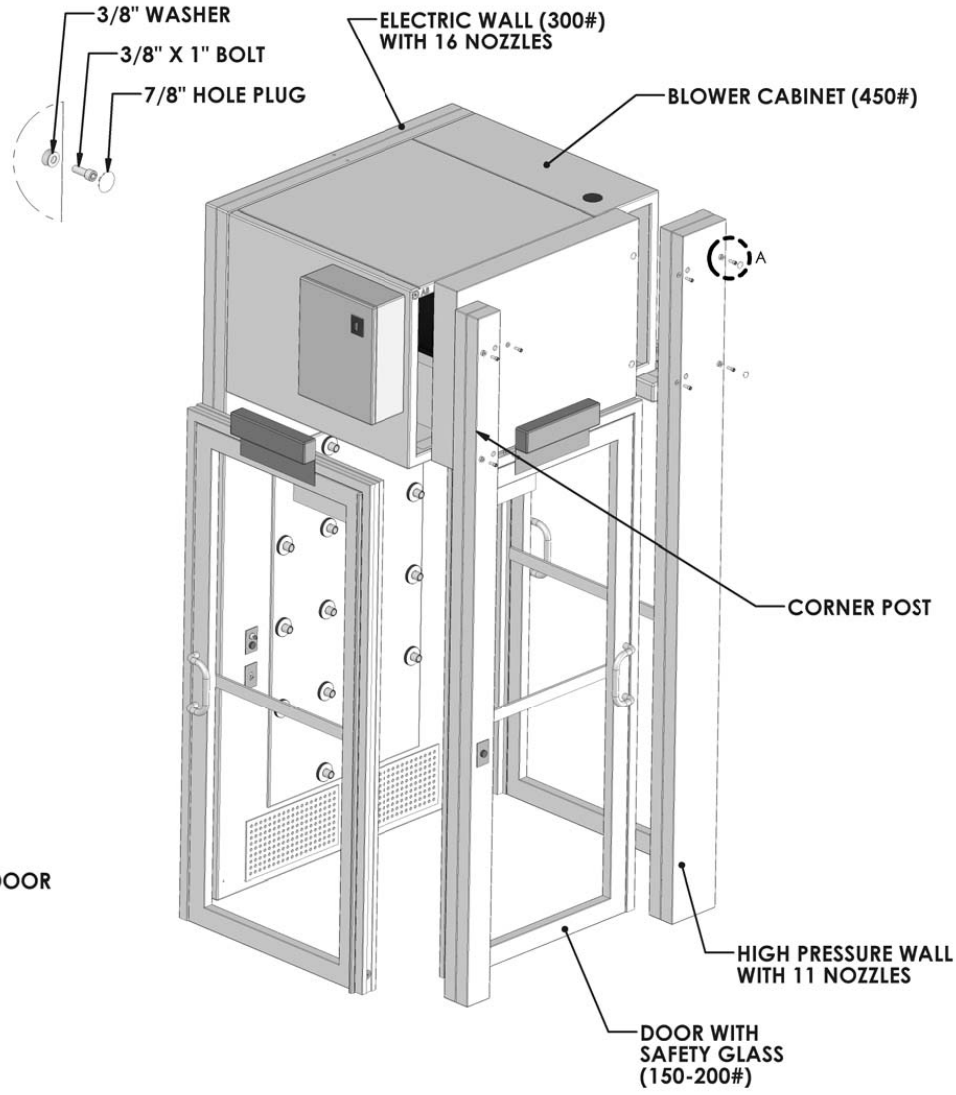
Clean Air Products' Series 701 — Installation Instruction — CAP701KD-4954-3 DOOR LH
(Some Details May Vary)



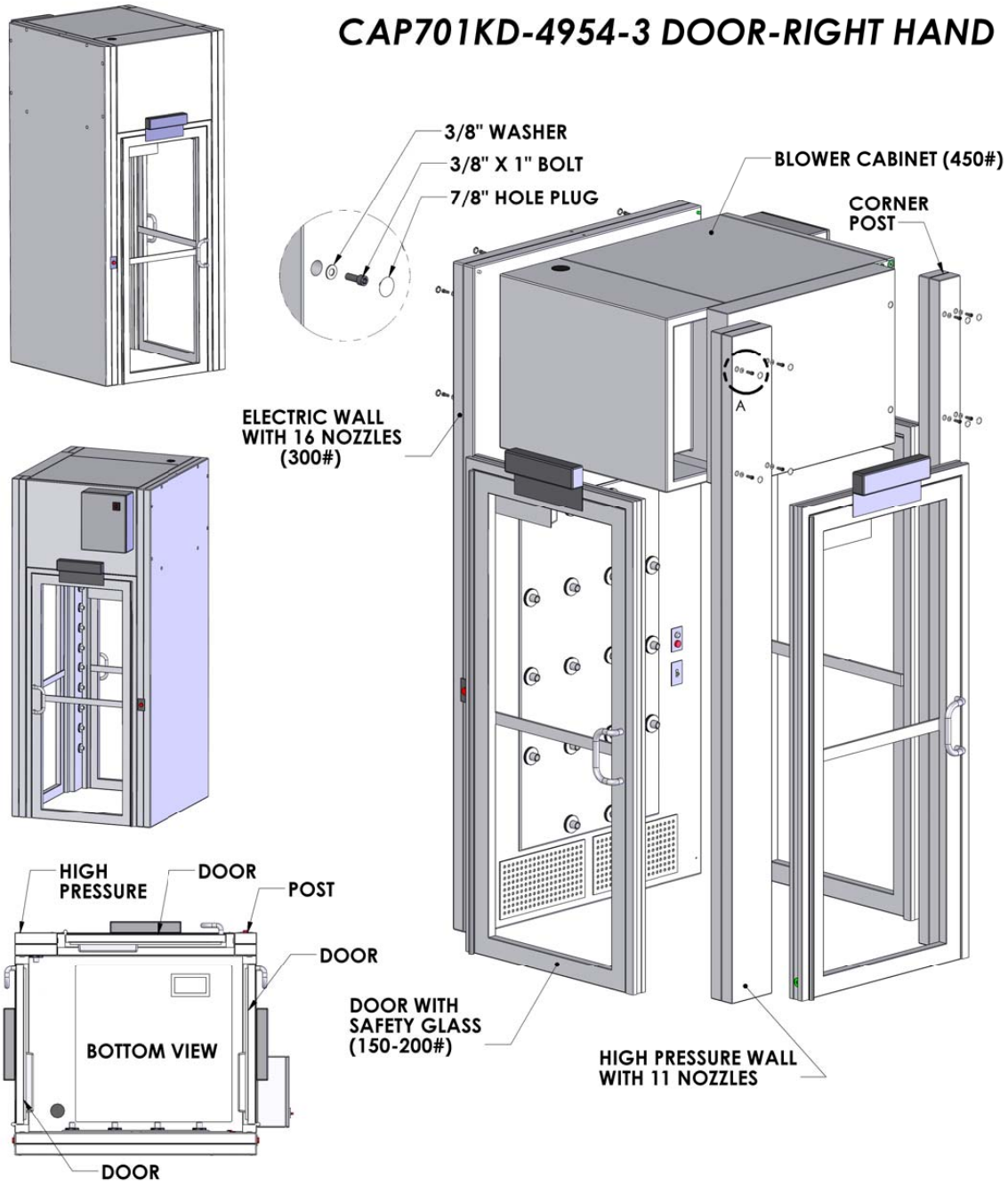




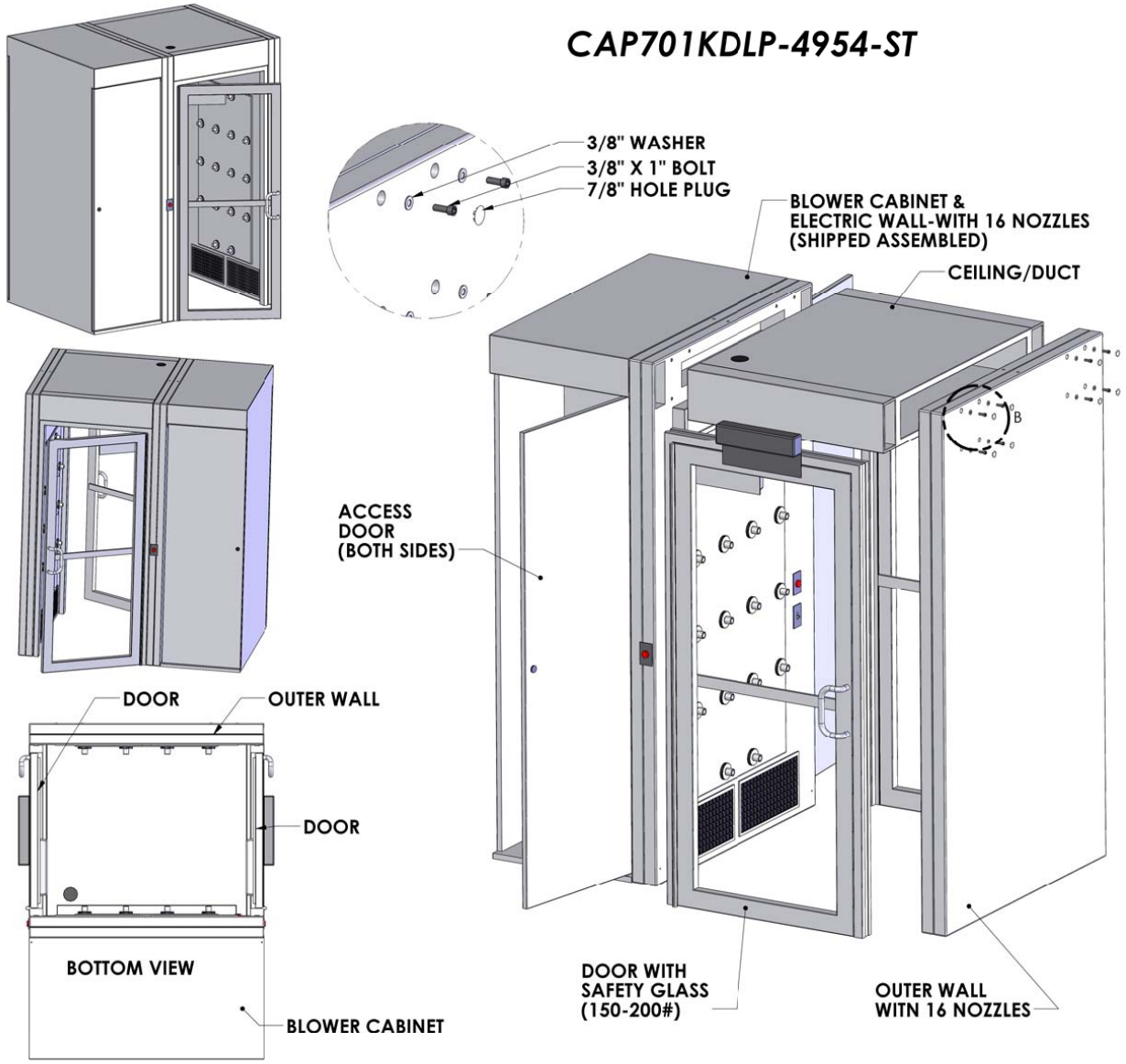
CAP701KD-4954-3 DOOR-LEFT HAND



Clean Air Products' Series 701 — Installation Instruction — CAP701KD-4954-3 DOOR RH
(Some Details May Vary)



Clean Air Products' Series 701 — Installation Instruction — CAP701KDLP-4954
(Some Details May Vary)



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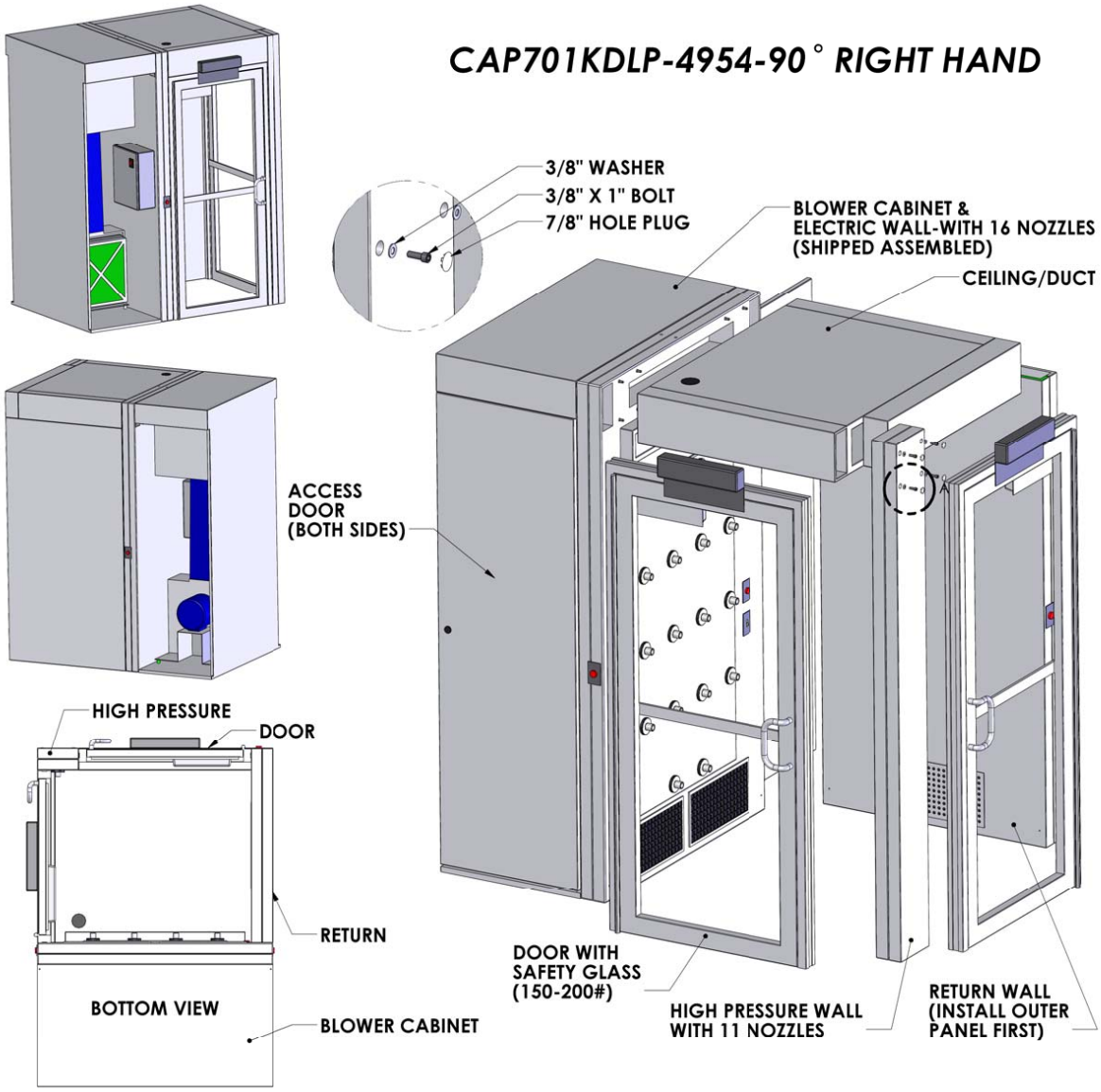
Clean Air Products' Series 701 — Installation Instruction — CAP701KDLP-4954-900 RH
(Some Details May Vary)



Specifications Sheet

Series 701 Air Shower

_____ **Model CAP701KD** _____ **Model CAP701KDLP**

Supplied as specified in Series 701 Technical Data Sheet and summarized below, with variations noted under "Options".

Electrical:

Motor..... 5 HP, 3600 RPM, 182T frame, open drip, sealed ball bearing Total # 5HP motors_____
Blower..... Non-overloading aluminum airfoil; direct drive; overhead-mounted
Power Supply..... 208, 60 Hz, 3 phase, 4 wire FLA (13.6 amps per blower section)

Construction:

Shell..... Cold-rolled steel with a white powder coat exterior and interior; inside wall panels
Doors..... Glass doors; aluminum doors and door frames; clear safety glass, closer
Door Swing..... Both doors hinge on the same side ***(No charge for door swing changes, but must be specified on order)***
Nozzles..... Anodized aluminum; adjustable: total of 32 per section Total Nozzles_____
CFM: 1900 per section Total CFM_____
Nozzle Velocity: 7800 LFPM average (9100 peak)
Filters..... HEPA: 24 in. x 24 in. x 12 in.; 99.97% filtration of 0.3-micron particles
Pre-filter: MERV 7
Cleaning Cycle..... 0 to 30 sec. Microprocessor controller with wall-mounted start switch
Door start switch with the magnetic interlocks
Service Access..... Filters, blower, motor, light: access from inside the air shower
Electrical control panel: mounted on outside of the unit, above the door
Shipment Method..... Shipped partially disassembled; when uncrated, components will fit through a standard 3 ft. 0 in. x 7 ft. 0 in. door

Options:

_____ Power supply: 480V, 60 Hz, 3 phase, 4 wire FLA (6.5 amps per blower section)
_____ Disconnect
_____ Door interlock magnets, audible alarm, (3) EP0 and door start switch
_____ ULPA filter
_____ Stainless steel construction
_____ Shipping fully assembled on its side (standard is ship knocked down) Consult factory for details
_____ Celing nozzles
_____ Raised floor
_____ Magnehelic gage

Other Options:

For more information or to download or fax this product from the web, simply go to: www.cleanairproducts.com/701

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Warranty for Cleanroom & Equipment

Clean Air Products Corporation warrants that it will repair FOB its factory or furnish without charge FOB its factory a similar part to replace any material in its equipment within one year after the date of sale if proved to the satisfaction of the company to have been defective at the time it was sold provided that all parts claimed defective shall be returned, properly identified to the company at its factory, freight charges prepaid. Factory installed equipment of accessories is warranted only to the extent guaranteed by the original equipment manufacturer, and this warranty shall not apply to any portion of the equipment modified by the user. Claims under this warranty should be directed to Clean Air Products, 8605 Wyoming Avenue North, Brooklyn Park, MN 55445, setting forth in detail the nature of the defect, the date of the initial installation, and the serial number and model number of the equipment.

HEPA filters are warranted to have their given efficiency at the time of shipping.

Parts shipped to replace warranty items shall be invoiced out with 60 day terms. Credit shall be issued when defective parts are returned to Clean Air Products' factory. (Contaminated materials shall be credited after receipt of proper disposal is sent to Clean Air Products.)

When special shipping containers are used to ship out new product, defective parts are to be returned in the same container. This shall be so stated on the Bill of Lading sent with the replacement parts.

Contaminated Parts and Equipment

Clean Air Products must be notified if defective parts, or other materials supplied to the purchaser are contaminated with hazardous chemicals or carcinogenic materials that are considered hazardous or carcinogenic by the EPA or other regulatory agencies. These parts are not to be shipped back to Clean Air Products' factory. The purchaser shall be responsible for proper disposal and all costs associated with the disposal and/or storage of the defective contaminated equipment. Prior to their disposal, Clean Air Products may require inspection of said defective materials.

The user and purchaser shall each be responsible and be back charged for cleanup and disposal of all contaminated materials shipped back to Clean Air Products' factory.

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Series 701

Air Shower

Touch Screen Operation Instructions

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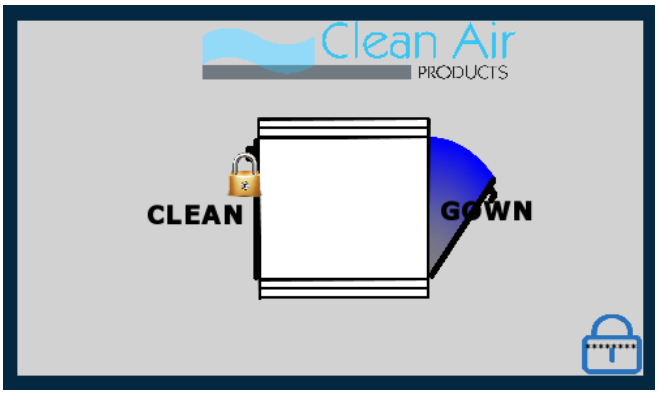
Series 701 Touch Screen Control and Monitoring

The Series 701 Air Shower Touch Screen provides current state information during normal operations as well as adjusting various control properties and some troubleshooting feedback.

Main Screen

This is the main screen is present during normal standby conditions. It will indicate door open and closed conditions for both the entrance and exit doors. The image of the Air Shower door will alternate between and open and closed image to represent the current position of the doors. It will indicate when each door is locked. A light switch indicator can be displayed to manually control the light ***(light is automatic by default)***



Normal Operations (Enter Mode)

The screens will change to indicate the current progress of the Air Shower.

An enter/exit sequence is activated by opening one of the doors. The images will display the door in an open position while at the same time indicating that the opposite door is locked.

Upon closure of the door the screen will switch either to a cleaning screen or switch to the exit screen.

If the gown room door is the first door to open and then close a cleaning (enter) cycle is started to clean the person(s) passing thru the air shower and entering into the Clean Room.

Cleaning Screen

The next screen shown is the cleaning screen. Displayed on this screen is a countdown clock to indicate the remaining time in the cleaning cycle. During this time if the interlocks are enabled both doors will remain locked. Upon completion of the countdown down to zero the screen will switch to either the Wait Screen or the exit screen.

The Wait Screen is only displayed if a wait time has been entered at the Control Screen.

Exit Screen

When the exit screen is displayed the door to the Clean Room is unlocked. The personnel are now able to open the door to the Clean Room and proceed to exit out or the Air Shower. When the door to the Clean Room is opened the screen will return to the main screen. After the Clean Room door closes the Air Shower will return to the READY state.

The Enter cycle has now been completed and is ready to start another cleaning cycle or exit cycle.

Normal Operations (Exit Mode)

The exit mode is similar to the similar to the enter mode except no cleaning cycle is started.

An exit sequence is activated by opening the Clean Room door. The images will display the door in an open position while at the same time indicating that the Gown Room door is locked.

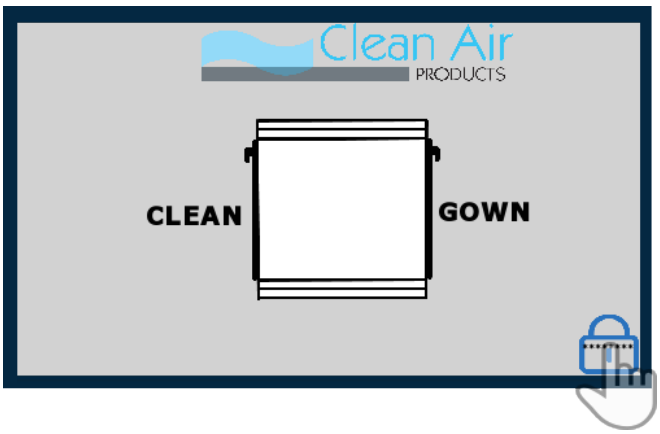
Upon closure of the door the screen will switch the exit screen.

At this time the operator is instructed to proceed out of the Air Shower through the Gown Room door. Alternatively, the operator is allowed to return back to the Clean Room.

Returning to the Clean Room does not return the Air Shower to READY state. A return to READY state is only engaged after the Gown Room door has been opened and closed.

To return the Air Shower to READY state in the advent that the operator has returned back to the Clean Room a 10 second reset timer has been added to the sequence to return the Air Shower to the READY state.

After completion of an Enter and Exit cycle the Screen will return to the READY state screen and is ready for the next use.

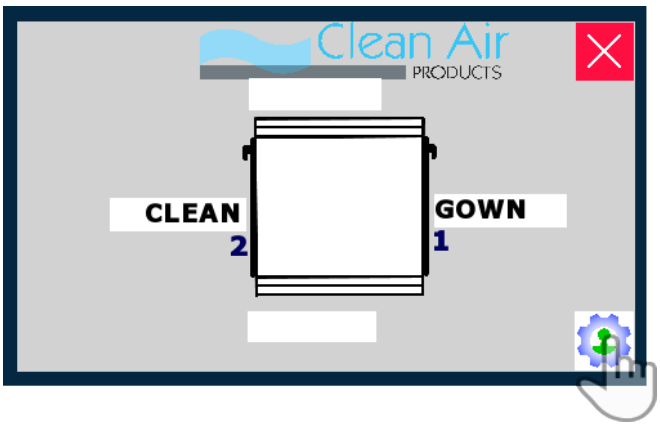


System Functions

System functions and troubleshooting screens are password protected to prevent accidental changes by everyday users. To access the password screen have the main screen displayed and press the lock icon in the lower right hand corner.

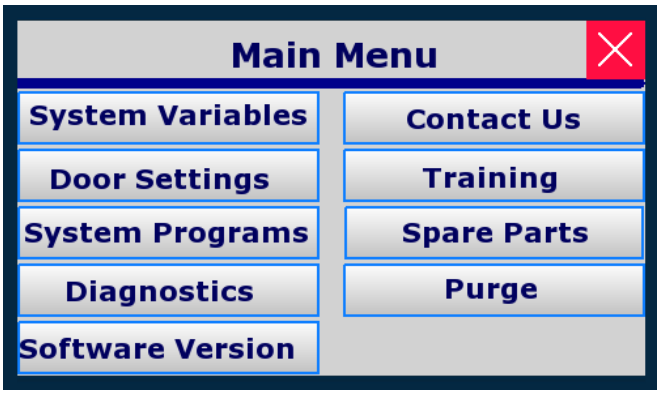
Password Keypad

Upon pressing the lock icon, the keypad will prompted. Enter the password **123**. If completed successfully the green “Settings Gear” button will appear.



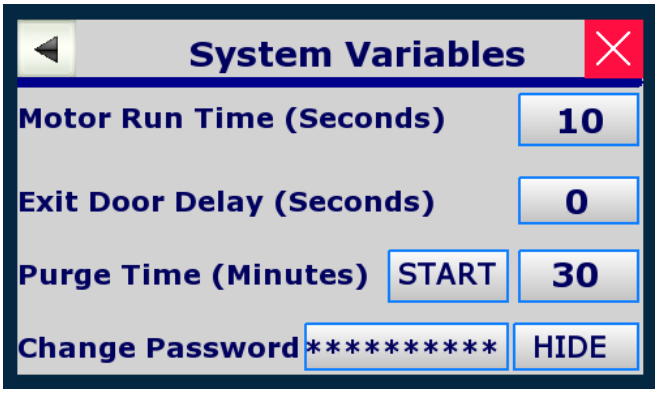
Editable Main Screen

Upon successful entering the password, the main screen becomes editable. You are able to re-name your door descriptions by pressing in the white box, and entering up to six characters with the keypad, and pressing enter. Pressing the red “X” in the upper right corner will return to the normal main screen. Also note this screen will show you which door is door 1 and door 2, etc. Pressing the Settings button in the lower right corner will bring you to the main menu screen.



Main Menu Screen

The main menu will navigate between different functions of the HMI.



System Variables

These screens are password protected and can only be accessed with the password. Pushing the 'Red X" button will return to the main screen and reset the security level.

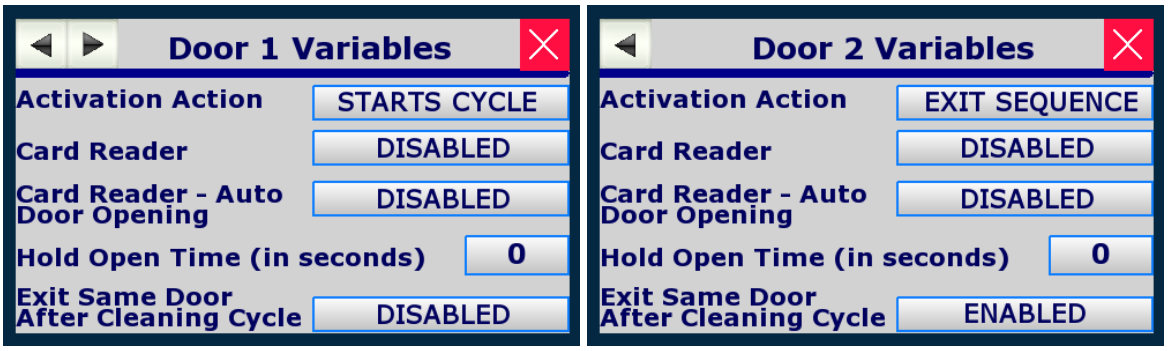
Motor Run Time (Seconds): The amount of time the blower cycle lasts when activated.

Exit Door Delay (Seconds): The amount of time from when the blower cycle is complete to when the user can exit the air shower.

Purge Time (Minutes): The amount of time the blower cycle lasts when a purge event is activated. The start button starts the purge cycle.

Change Password: User can change their user password here. Contact factory if password gets forgotten or lost.

The red "X" returns to the main screen, the back arrow returns to the main menu.



Door Variables

These screens will allow you to change variables related to the doors.

Activation Action: Starts Cycle; if selected, will initiate a blower cycle when entered from this door. Exit Sequence; if selected will not activate a blower cycle when entered from this door.

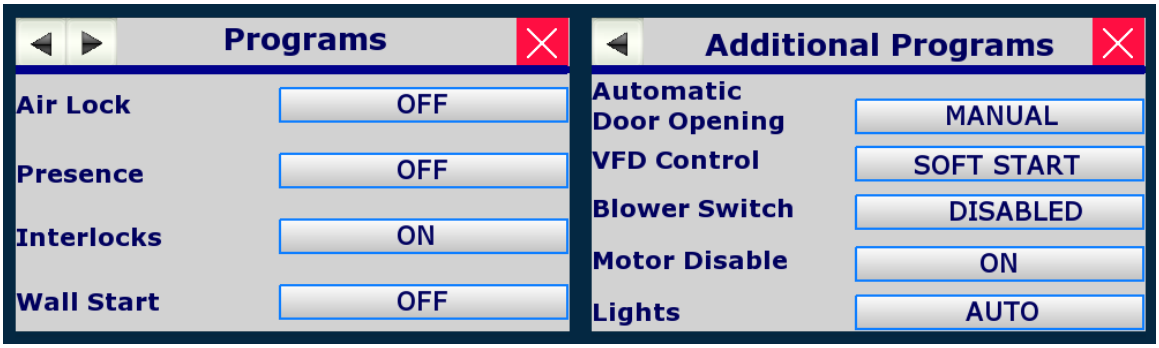
Card Reader: Enabled; when selected, will keep the respective door locked; until a card reader (provided by others) is activated. Disabled; the air shower will sequence normal and will not look for a card reader activation to properly sequence.

Card Reader – Auto Door Opening: (Only works with automatic door opener option) Enabled; If selected, an activation of the respective card reader (provided by others) will signal the door operator to open the door. Disabled; If selected an activation of the respective card reader will not signal the door operator do open the door; door opening would be a two step process.

Hold Open Time (Seconds): (Only works with automatic door opener option) The amount of time an automatic door opener is signaled to stay open.

Exit Same Door After Cleaning Cycle: Enabled; If selected, user would be able to exit the air shower the same way they came in after the cleaning cycle ends. Disabled; If selected, user would be forced to exit the air shower into the opposite side of the air shower after the cleaning cycle ends.

The red “X” returns to the main screen, the back arrow returns to the main menu.



System Programs
These screens will allow you to change variables that affect air shower sequencing, and other options.

Air Lock: OFF; If selected, will disable the air shower blower cycle sequencing and only interlock the doors. ON; If Selected, will enable the air shower blower cycle sequencing.

Presence: (Only works with optional presence detectors installed) OFF; If selected the air shower blower cycle sequence will cycle whether a person enters the air shower or not. ON; If selected, the air shower blower cycle will only cycle if the presence detector detects personnel or material in the air shower.

Interlocks: ON; If selected will activate the magnetic interlocks. Door Start; If selected will de-activate the magnetic interlocks; the blower cycle will now start when the door OPENS, the blower cycle timer will start counting when the door closes.

Wall Start: OFF; If selected will not show a 'START' button the main screen. ON; If selected will show a 'START' button on the main screen; this button will start or reset the blower cycle timer.

Automatic Door Opening: (Only works with optional Automatic Door Openers) Manual; If selected, the automatic door openers will need to activated manually by pressing physical 'Push to Open' buttons installed in the air shower. Automatic; If selected the air shower will signal the automatic door openers to open after the blower cycle and on the exit sequence. Entering the air shower would remain a manual activation.

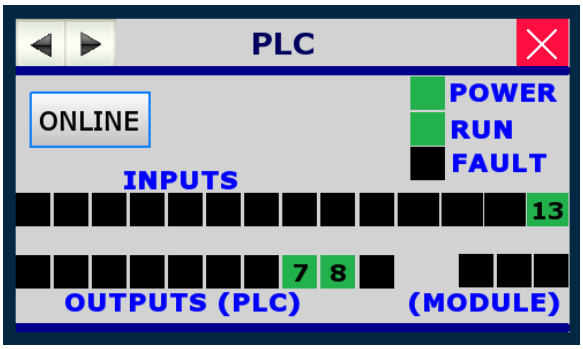
VFD Control: (Only works with optional Variable Frquency Drive installed) Soft Start; If selected the motor will off when air shower is in resting state, then will ramp up to full speed (High) when a blower cycle is activated. High/Low; If selected the motor will run at a low speed (20Hz) until a blower cycle is activated; then the motor will ramp up to full speed (High).

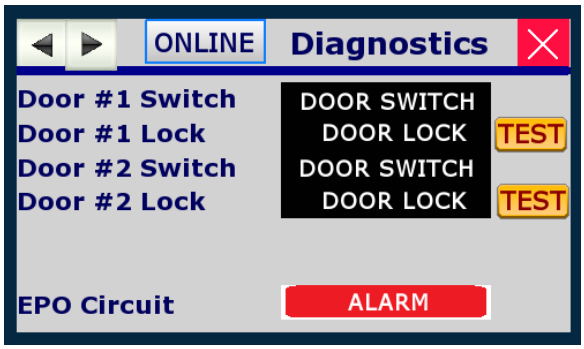
Blower Switch: Disabled; If selected the blower(s) will run normally. Enabled; If selected the blower(s) will run depending on the state of the blower switched wired to the blower switch input on the PLC. (PLC Function Only)

Motor Disable: ON; If Selected, the blowers are active. OFF; If selected the blower(s) are de-acivated. (PLC Function Only)

Lights: Auto; If selected the lights will activate with air shower sequencing only. Manual/Auto; If selected a light switch will show on the main screen to turn on the light all the time.

The red "X" returns to the main screen, the back arrow returns to the main menu.





Diagnostics

PLC Image

This screen duplicates the indicator lights that are on the PLC module in the control panel. This screen assists in troubleshooting the system. Clean Air Products can use this screen to help locate possible problems without the need to access the electrical control panel.

Diagnostics

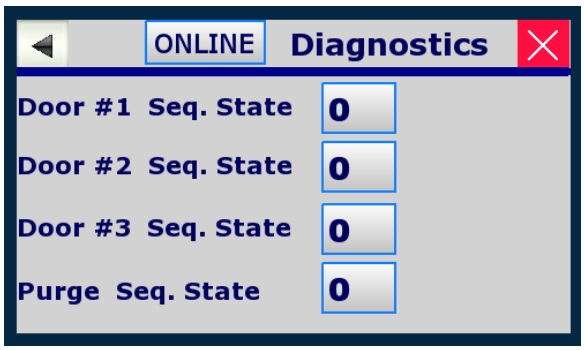
Press the “online” button. This will put the air shower in an “offline” model preventing the system from running. Push the “test” button – this will activate one the door locks. Push on the door to test the magnet function. Repeat for the other door. Press the “offline” button to put the system back into an “online” mode. The Air shower needs to be **ONLINE** to return back to run mode.

Open one of the doors. The door switch should change state indicating a good working switch. Repeat this process to test the other door.

The motor lines are connected with thermal or electronic overloads. If any of the motors trips out due to a thermal/electrical condition an Alarm light will be displayed on the MAIN screen. Once the tripped condition is cleared the light will go off.

EPO circuit – shows the status of the EPO system. If in alarm the key switch will reset this circuit.

The red “X” returns to the main screen, the back arrow returns to the main menu.



Door Sequence States

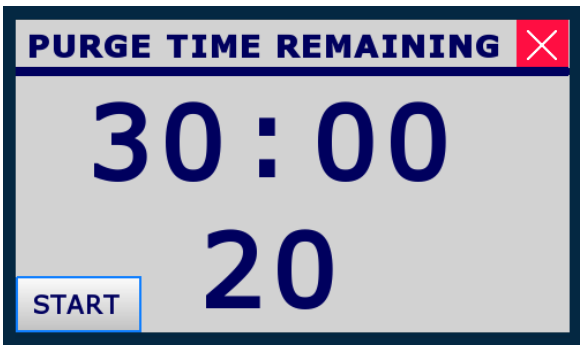
0. Resting State
10. Door is open
20. Blower cycle is running
30. Wait timer is active
40. Waiting for opposite door to open
50. Opposite door is open

Purge Sequence States

0. Resting State
10. Pre-Purge Timer is active
20. Purge Timer is active; blower is running.

In this screen user can monitor and reset the state of sequence if air shower gets out of sequence.

The red “X” returns to the main screen, the back arrow returns to the main menu.



Purge Screen
This screen is displayed when the Air Shower is in a Purge Cycle. Opening either of the doors during a Purge cycle will disable it and return the Air Shower to normal operations.

EPO Event / Alarm
An optional feature on the Air Shower is an EPO or Emergency Power Off button. These buttons disable the Air Shower functions and are reset with a key located on the wall panel inside the Air Shower. This can also be reset from the screen and password.

If an EPO button has been pressed a red reset button will be displayed on the screen. Pressing the button will bring up a secured access screen. Enter the password and then press the reset button to reset the alarm. This will perform the same function as the external key switch

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