



CAP701 KD-ST



CAP701 LP-ST



CAP701 tunnel

- Durable heavy-gauge painted steel construction
- Inspection panels for high-pressure supply ducts
- Highest velocity and air volume rate for fast, efficient cleaning
- Microprocessor controller
- Touchscreen controls
- Magnetic interlocks
- LED lighting
- Silicone-free, urethane sealant
- Standard-size HEPA filters and prefilters
- Zero leak, negative pressure reliability seal on HEPA filter gasket
- Easy service access
- Industry-leading customization options

In electronics, pharmaceuticals, biotechnology, food and new technology manufacturing, you rely on cleanrooms or controlled spaces to protect operations from the constant threat of air particulate contamination. Air showers protect a cleanroom from contamination that could be brought into the cleanroom. The clean garments worn by cleanroom personnel become contaminated during the gowning/ungowning process and must be cleaned before they enter the clean environment.

Not all air showers are made alike, and not all air showers perform alike in every situation. Only Clean Air Products CAP701 Series air showers combine high-quality all-metal construction with the highest performance, customized options and versatile configurations. The Clean Air Products design advantage makes for easy installation and maintenance of all the CAP701 models. Air showers from Clean Air Products deliver maximum efficiency and value for your cleanroom and controlled environment.

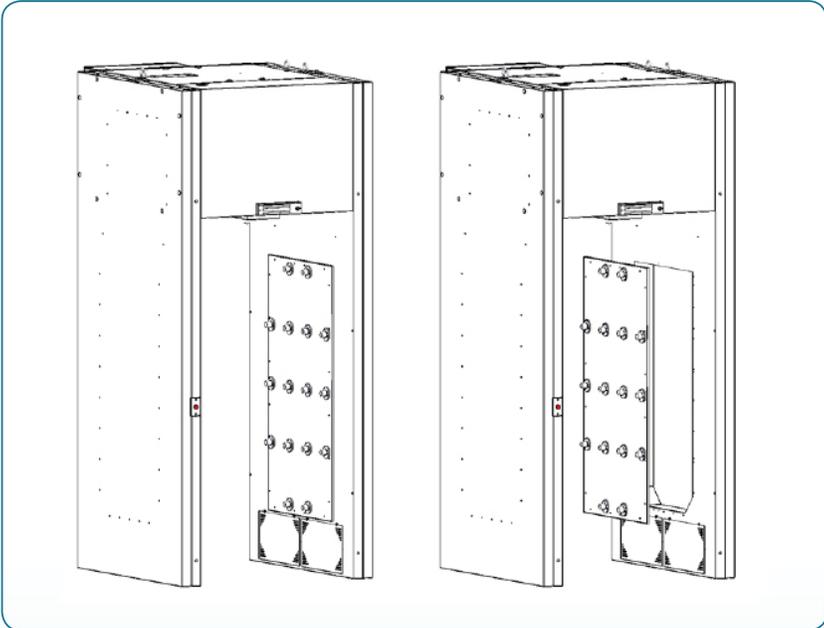
**CONSTRUCTION**

CAP701 Series air showers are constructed of all-metal, smooth-painted steel shells (no wood or plastic laminate). CAP701 air showers are 16-gauge painted steel shells with a heavy-duty glass door and door closer. Stainless steel is an option. The shell and concealed air ducts (with inspection panels) are finished with a powder-coat paint that provides a strong, durable cleanroom-compatible finish.

The all-steel shell design withstands the rigors of shipping, installation and use (and sometimes abuse) of the busiest cleanrooms. While a metal air shower may dent or scratch, it is superior to laminated particle board air showers, which are susceptible to shipping damage, joint separation, deterioration or delimitation of the particle board. The steel construction of the CAP701 Series air shower reduces the chances of biological growth and contamination caused by systems using laminated particle board in the construction.

**Inspection panels for high pressure supply ducts**

CAP701 Series air showers feature removable interior nozzle wall panels that allow for easy inspection of the high pressure supply ducts. In the unlikely event that high pressure ducts should become contaminated, they can be easily cleaned, bringing the air shower back to its original performance level and ensuring a long and useful service life.



### Microprocessor controller

An adjustable microprocessor controller allows easy “on-site” adjustment of the cleaning cycle time and other critical process controls.

### Touchscreen controller

A touchscreen LCD panel, mounted on the inner side wall of the air shower, changes system parameters and the display status, including a cleaning cycle countdown timer.

#### Additional features:

- Adjustable microprocessor settings
- Cleaning time sequence control with adjustable cleaning and wait time
- Eight programs, including a countdown timer to cue personnel when to exit the air shower, VFD option (soft start, high and low) and direction reversing toggle switch
- Diagnostic features
- Security code (to limit access to programming)

### Main electrical control box

The main electrical control panel is mounted above one door on the exterior of the air shower cabinet. It contains the microprocessor controller, starter, thermal overloads, fuses, relays, lockable disconnect power shutoff and other electrical components.

The standard electrical box measures 8.25 feet above the floor (to underside of the box), allowing it to install above a standard 8-foot drop ceiling. Alternate locations for the main electrical control box include a lower height (to fit below a 9-foot drop ceiling), mounting on the top or the side of the air shower, or remote mounting.

### Electrical supply

The electrical supply for the CAP701 is a 208 V 60 Hz, three-phase, four-wire, 13.6 FLA per blower section.

#### Variations:

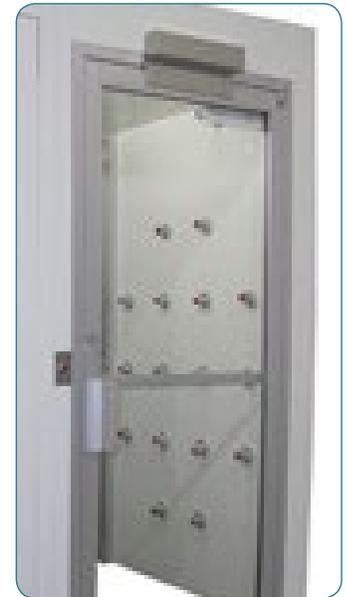
- 480 V, 60 Hz, three-phase, four-wire, 6.6 FLA per blower unit
- Export voltages are available (consult option sheet)
- Remote mount lockable fuse disconnect
- Hazardous location (consult factory for details)

### Doors

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

#### Variations:

- Double doors
- Power opener
- Power sliding doors
- Stainless steel
- Painted steel
- High speed roll-up
- Viewing window material and colors
- Thresholds and door sweeps



Most air showers use the existing floor without a threshold and no door sweep. The space under the doors allows a small amount of air to flow out of the cleanroom through the air shower. Thresholds, fixed door sweeps or automatic door bottoms can be added as required.

### Filters

**HEPA:** A standard-size 24 in. x 24 in. x 12 in. deep HEPA wood-framed filter with gasket with a 99.99% efficiency DOP test rating on 0.3 micron particles.

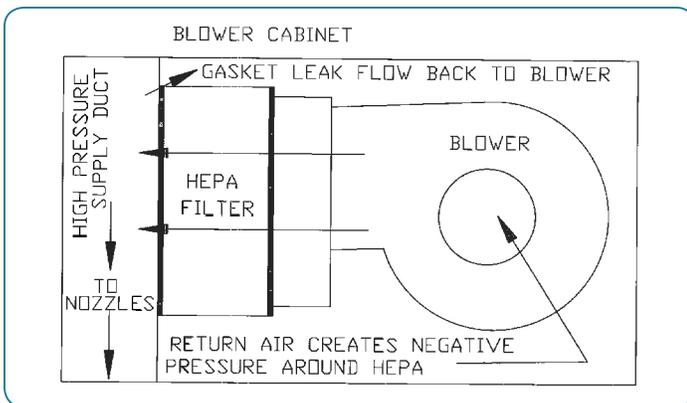
**Prefilters:** Standard-size 10 in. x 20 in. high-efficiency MERV 8 pleated prefilters are located on the lower interior side walls of the air shower behind a hinged perforated grill to allow easy service access.

#### Variations:

- Metal-framed HEPA filter

### Zero leak, negative pressure reliability seal on HEPA filter gasket

Because of the very high pressure on the HEPA filter, gasket leaks can cause contamination to enter the clean air stream. The CAP701 solves this problem by sealing the HEPA filter with both an upstream and downstream gasket. The supply blower is ducted directly to the upstream side of the HEPA filter, creating a negative pressure area around the HEPA filter and its high-pressure gaskets. In the event a gasket would leak, the leak would flow back to the blower and not contaminate the clean airstream. This makes replacing the HEPA filter easy and eliminates the “gasket leak problems” on other systems.



### Magnehelic pressure gauges

Magnehelic air pressure gauges sense the differential pressure across the HEPA filter and/or prefilter and indicate when the filters need servicing. A gauge can also measure the air pressure supplying the nozzles. Lower pressure may indicate a problem with the nozzle velocity, typically caused by a dirty HEPA filter or prefilter.

#### Options:

HEPA filter, prefilter or nozzle pressure sensing

### Blower/motor

The blower wheel is an energy-efficient backward-curved aluminum airfoil. It is direct-drive mounted to an energy-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 in a blower cabinet and is serviced through an access panel on the interior of the air shower.

#### Variations:

- Hazardous location motor (consult factory for details)

### Sprinkler sleeve

An internal sprinkler sleeve allows the sprinkler pipe and head to be easily installed on site.

### Flooring

For standard installation, CAP701 Series air showers use the existing building floor.

#### Variations:

- Raised floor design
- Thresholds

### Air flow capacity

A powerful 3-phase 5HP blower motor provides approximately 1900 CFM at 7800 LFPM (CAP701KD-ST). This high air flow volume (power), combined with the high nozzle velocity (force), quickly and efficiently cleans personnel inside the air shower.

After cleaning, the air recirculates to the high-pressure blower, where it passes through a prefilter, then a HEPA filter, and is then ducted back to the adjustable high-velocity cleaning nozzles.

### Air nozzles

Each standard air shower includes 34 adjustable, clear, anodized aluminum nozzles, 16 per side (2 nozzles in the ceiling), providing a uniform concentration of airflow for fast, effective cleaning.

#### Variations:

- Fixed nozzles, aluminum or stainless steel
- Custom nozzle patterns



### Silicone-free, urethane caulk

Many applications dislike silicone because it affects their operations. However, some industries prefer silicone caulk over urethane. Silicone caulk is listed as an upgrade on approval drawings, quotes and acknowledgments.

### Door interlocks

Magnetic door interlocks are the most common option chosen for air showers. A low-voltage magnetic door interlock prevents both doors from being opened at the same time. EPO “emergency power off” buttons, located on the interior and both ends, disconnect power to the interlock magnets, allowing both doors to be opened at the same time. An alarm warning sounds when the EPO is activated and is reset by a keyed switch inside the air shower.

### Air shower sequence (with interlock magnets)

As the gown room door (Door A) opens, the opposite door (cleanroom Door B) magnetically locks and personnel enter the air shower. Door A shuts, both doors lock and the cleaning cycle begins. At the end of the cleaning cycle, Door B unlocks and personnel exit the air shower into the cleanroom. Door A remains locked until Door B closes, at which time both doors unlock. When personnel leave the cleanroom and enter the air shower, the sequence is reversed except the air shower does not go through a cleaning cycle. Units without interlock magnets would need either a manual wall-mounted start switch or motion sensor start.

#### Variations:

- Program modification for two-way cleaning into and out of cleanroom
- Presence sensor to monitor when someone is inside the air shower
- Card reader interface. Entrance door locked all the time, unlocks after card reader swiped
- Fire alarm connection. When a fire alarm sounds, the EPO is activated, deactivating (unlocking) the interlock magnets



### LED interior lighting

Interior long-lasting and energy-efficient LED lighting automatically turns off when the air shower is not in use.

### Cleaning cycle light indicator sequence

The interior LED ceiling light indicates when it is “OK” to enter and exit the air shower (this is in addition to the touchscreen display). Personnel enter the air shower only when the light is off. As the door opens, the interior light comes on, indicating the air shower is in use. When the door closes, the air shower cleaning blower starts. When the cleaning cycle is complete, the light flickers, cuing personnel to exit the air shower. When the air shower is empty and the cleanroom door is closed, the light goes off, indicating the air shower is ready for others to enter the air shower.

#### Variations:

- Custom sequence programming
- Presence sensor to monitor when someone is inside the air shower

## THE CAP701 SERIES MOST POPULAR CONFIGURATION

The CAP701KD is the most versatile model of air shower available. Here are its MOST POPULAR features and options:

- Door interlocks
- Magnehelic gauges
- 480 V 60 Hz, three-phase, four-wire 6.0 FLA
- Ionization
- Electrical box mounted at an alternate location
- Stainless steel cabinet
- Fixed nozzles
- Raised-grate floor air return
- 72" (length) size unit
- Several units combined into a tunnel
- Fire alarm connection (unlocks the doors)
- Card reader (keeps doors locked at all times)

**Ionization**

Static charge on cleanroom garments can cause particles to stick and be harder to remove. The high-velocity air moves the particles, but some may not blow off. Adding ionization to selected nozzles will neutralize static charges on garments, which allows the high-velocity airflow to more efficiently remove particles from them. The ionization “points” are installed within the high pressure wall and are serviced by removing the side wall nozzle access panel.

**Raised-grated floor air return**

A raised floor enhances the performance of a CAP701 Series air shower, especially with high traffic or where critical cleaning is required. The units are sometimes installed into a pit so there is no “step up” to enter the air shower. The raised floor is a heavy-duty floor grate made of 1/8 in. x 1 in. vertical-mounted bars which run the length of the shower and are close enough for personnel to easily walk on. Dirt and contamination fall through the gaps between bars and are contained in the lower plenum and removed. Air circulates through prefilters located between the floor grate and plenum and then through the HEPA filter in the upper blower assembly.

*Additional options:*

- Prefilters located in the upper blower assembly
- Raised floor can be installed into the pit so that the air shower floor is flush with existing floor

**Presence sensor**

When several people enter and exit the air shower at the same time, a presence sensor can be beneficial to speed throughput and to ensure everyone is always cleaned prior to entering the cleanroom. The air shower will run the cleaning cycle anytime the dirty side (gowning room side) door shuts, *and* it detects someone inside the air shower. A situation could occur if someone does not follow the “OK to enter” indicator light sequence and enters the air shower at the same time someone leaves the air shower. This eliminates any possibility of someone bypassing the cleaning cycle prior to entering the cleanroom.

**Variable frequency drive, nozzle air purge**

With variable-frequency drive, the blower runs at a low speed when not in the high-velocity cleaning cycle. This constantly moving air keeps the interior of the air shower cleaner by constantly filtering the air.

Air shower tunnels with a motion sensor start (no entrance door) often have a VFD drive installed in the first few sections, allowing the blower to run at a low speed when not in the cleaning mode. This keeps the non-door end of the air shower clean and also helps those sections to ramp up to full speed faster as someone walks up to the air shower for cleaning.

**SPECIAL OPTIONS FOR INDUSTRY**

The configuration flexibility of CAP701 air showers makes them ideal for the specific needs of a variety of industries, including:



**Pharmaceutical package**

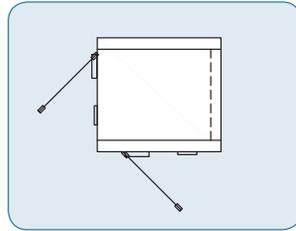
The CAP701KD-ST model has a special set of options specifically for pharmaceuticals and applications in which microbial contamination and ease of cleaning are concerns.

**Food-grade package**

The CAP701KD-ST model has a special set of options specifically for the food industry and its specific requirements.

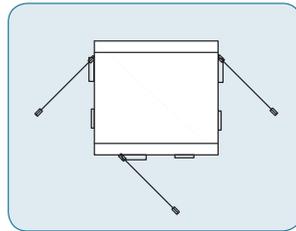
**90-degree configuration**

CAP701 air showers can be provided with the doors in a 90-degree left-hand or right-hand configuration for those applications in which straight-in air showers do not fit the available space.



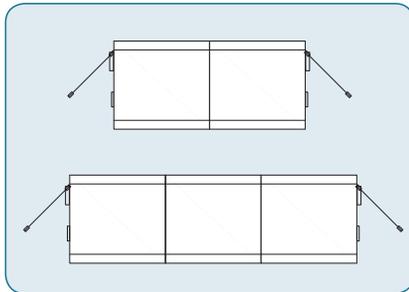
**Three-door air showers**

CAP701 air showers with three doors are used for left-hand or right-hand entrance or exit configurations. The typical configuration is one entrance door and two doors exiting to two different cleanrooms.



**Multiple-units tunnel**

Two or more CAP701 air showers can be combined to form a longer unit. Adding sections allows for additional capacity while maintaining efficient nozzle placement.



Tunnels are commonly used for “continuous flow” cleaning. Both 90-degree and straight-through air showers can be combined to form the tunnel configuration.

Tunnels with a motion sensor start are often used when several people must be cleaned in a short period of time and in a continuous flow, such as at the beginning of a shift. The cleaning cycle starts as the person approaches the air shower. The air shower will continue to run while people are passing through and shuts off after no people are detected.

*Options:*

- Motion start switch
- VFD drives (see VFD drive section)

**Floor-mount cart/parts-cleaning air showers**

Parts-cleaning air showers are available in a variety of sizes, shapes and configurations. Floor-mounted air showers are used for carts, conveyors, pallets and continuous-part operation. This style of air shower can use swing doors, vertical-sliding, horizontal-sliding or no doors.

*Options:*

- Rub rails
- Door styles

**Wall-mounted air showers**

These are similar to the parts-cleaning air showers, but smaller and mounted off the floor.

**Low-profile air shower**

The overall assembled height of the low-profile CAP701LP air shower is 95 inches. The unit’s blower assembly, HEPA filter and electrical components are mounted on the side, allowing the unit to fit under a lower ceiling. It can be assembled in a space only 96 in. high. The unit is shipped disassembled in parts that fit through a standard 3 ft. x 7 ft. doorway. It is often used for retrofits where ceilings can’t be penetrated to fit the air shower, or when overhead obstruction limits space. Consult the factory for details.

**ADA compliance**

CAP701 Series ADA compliant models are sized so that an individual in a wheelchair can turn around inside the air shower. Straight-through and 90-degree left-hand and right-hand models are available. See the CAP701-7172-ADA drawing for sizes and details. Consult your local code officials about your specific application.

*Options:*

- Power door openers

**Decontamination air showers**

See spec sheets for air showers used to remove large quantities of dust or materials from powder paint, grinding ducts and flour. Removing heavy metal hazardous contamination from garments requires a different air shower system. Please consult the factory for details.

**Ceiling air purge**

This is used for applications in which air contained in the air shower must be purged prior to opening the air shower exit door. Purged units are taller than standard units and do not fit through a 3 ft. x 7 ft. doorway. See the CAP701CP data sheet or consult the factory.

CAP701 Series air showers are shipped partially disassembled on a skid. All ducts, openings and nozzles are protectively sealed to prevent contamination. Separate parts include the upper blower section, two sides and two doors. These “knocked down” parts are sized to fit through a standard 3 ft. x 7 ft. doorway.

To assemble the air shower, the blower section is raised into position. The two side-wall sections are then bolted from the outside onto the upper blower housing and doors are attached. At this point, the assembly is self-supporting. The assembly takes two people approximately two hours to complete with proper installation equipment. It is possible to assemble the air shower from inside the air shower. Contact the factory about this optional design, and for more assembly and installation information.

#### *Options:*

- Shipped fully assembled; simply stand the air shower up. Swivel-lifting eyes provided. See fully assembled option sheet.
- Assemble completely from inside air shower. Some applications have little available room to assemble the air shower from the outside. See interior assembly option sheet.



#### **Interior service panels for all maintenance**

All motor, blower, nozzle and electrical parts of CAP701 Series air showers are accessed through interior service panels, providing the ultimate flexibility for installation and operation of your air shower. There are no worries about ducts, pipes, sprinkler lines, wall posts or other obstructions blocking the air shower’s exterior ducts or service access panels. CAP701 Series air showers can be installed through the cleanroom ceiling and the grid system can be attached to the sides of the air shower. Consult factory with special maintenance requirements.

#### **LEARN MORE**

Clean Air Products designs the CAP701 Series air showers for optimal performance, customization, configuration and maintenance. For more information on CAP701 Series air showers including CAD drawings, RFQs, purchase specifications, exploded views and options, visit:

[www.cleanairproducts.com/product-category/air-showers](http://www.cleanairproducts.com/product-category/air-showers)

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