

Applications

Vilair-AAF cleanroom air showers are self-contained chambers installed at the entrance to cleanrooms in order to minimise the amount of particulate contaminants entering the cleanroom.

Personnel move through the air shower while particulate contaminants are washed off with high velocity HEPA-filtered air jets. The air velocity of 20-22 m/s ensures an efficient scrubbing action necessary to remove particulate matter. Contaminated air is then taken in through the base of the unit, HEPA-filtered, and recirculated into the chamber.

Description

The VAS features a programmable microprocessor control, giving users a great extent of customisation. Because all processes are controlled by the microprocessor, there is a high level of precision in the operation of the VAS. Unlike conventional air showers which come with a pre-programmed mode of operation, the VAS allows users a choice of all three modes selectable by the touch of a button.

Operation modes

One-Way: Door at cleanroom interior is locked at rest; door at cleanroom exterior is unlocked. Person enters and door at cleanroom exterior locks. Air shower cycle starts. At end of cycle door at cleanroom exterior stays locked. Door at cleanroom interior unlocks. Person exits via the door at cleanroom interior. When door at cleanroom interior closes, it locks. Door at cleanroom exterior unlocks.

Two-Way: Cycle runs in both directions. Only one door at a time can be opened. Person can go in either direction and the air shower will cycle.



Two-Way One-Way: Only one door at a time can be opened. Both doors are unlocked at rest. Person enters door at cleanroom exterior. Air shower cycle starts. At end of cycle person exits via door at cleanroom interior. Alternatively, person can enter via door at cleanroom interior, proceed through unit and exit via door at cleanroom exterior without initiating the fans.

Construction

- The housing of the unit is constructed from electro-galvanised steel. Panels have an abrasion-resistant oven-baked powder-coat finish. Adjustable nozzles are stainless steel. Heavy-duty, durable aluminium framed door assemblies are fitted with safety glass windows and indicator lamps. Flooring is constructed in stainless steel.
- Industrial-grade electromagnetic interlocks have no moving parts.
- An emergency stop button mounted on both sides of the shower allows all doors to be unlocked instantly.

- A mains breaker switch mounted inside the work zone allows rapid shutdown and all doors to be unlocked instantly.
- Indicator lights mounted on both sides of the air shower unit exterior regulate traffic flow in and out of the cleanroom.
- Electronically ballasted lighting reduces energy costs. Diffusers ensure even and uniform lighting throughout the chamber.
- Direct-drive centrifugal fans are used in conjunction with stainless steel air nozzles. Together they provide high velocity air jets for an efficient garment scrubbing and cleaning action.
- Resettable circuit breaker for blower and control circuits provides increased electrical safety.

Filtration

Contaminated air is filtered through secondary filters and HEPA filters providing 99.99% efficiency in the removal of sub-micron particles. A disposable prefilter extends the life of the main filters.

Operation

Depending on the mode of operation in use, indicator lamps at the doors will be lit red or green according to accessibility based on the stage of shower. A red light will bar personnel from opening the door and entering / exiting while a green light gives clearance to enter/exit.

Besides choosing the mode of operation, users are able to set the pre-purge time, shower time and reset duration.



To enhance cleanroom integrity, there is a pre-purge period set to activate the fans when the air shower is just turned on. Users can choose to bypass the pre-purge by setting the duration to 0. The default duration is 10s while the maximum duration is 3 min.

Interlocking system prevents both doors from being opened at the same time, thus preserving cleanroom integrity.

The duration of shower is programmable from a minimum of 5s up to a maximum of 3 min. The default duration is 12s.

If the air chamber is idle it will reset to standby mode. During standby mode, blowers run at a lower speed at minimal energy while keeping the chamber clean. Ceiling lights are turned off if energy saving mode is chosen. The time that is taken to switch to standby mode is the reset duration. Users can choose a duration of 5s up to 1 min. The default period is set to 10s.

Ultra-clean environments for the
biopharma industry

Operation - continued

The VAS is also orientation-independent. Users are able to change the location of grey and clean sides without reprogramming or rewiring the doors.

The reset default option allows users to reset the shower period, pre-purge period and reset duration to default values. It also activates the energy saving mode. But for safety reasons, the mode of operation and the orientation of the air chamber are unchanged in the event of a reset or power failure.

The above options can be conveniently deployed by accessing the menu. To prevent unauthorised access, an Administrator Password and PIN can be configured to prevent unauthorised modification to operation parameters.

To enhance safety, the VAS has a function to detect illegal operation. Clear error messages will be displayed on a LCD screen should the safety or cleanliness of the air chamber be violated. The LCD screen will also display a countdown of cleaning / shower period.

Controls

Easy-to-clean soft touch control pad mounted centrally inside the air shower chamber (no relays or switches that may corrode).

Backlit LCD display reports air shower cycle progress and operational status. Clearly visible LEDs on the touch control and display pad indicate door interlock and shower sequence

24 hour clock display on the LCD. Users are also able to customise the time setting according to their time zone.

The air shower sequence may be adjusted via the soft touch control pad. Any of the 3 standard air shower sequences may be chosen. Shower duration is also easily adjusted via the control keypad using the intuitive menu interface.

A watchdog timer resets the microprocessor in case of any internal failure, thus restoring the air shower to a safe state

All doors are unlocked automatically in case of a power failure for safety reasons

A 'Service' mode can be selected, in which the fan may be operated continuously for service and air velocity checks.

An optional energy saving mode may be enabled via the keypad to automatically turn off the lights in the air shower when no personnel are inside.

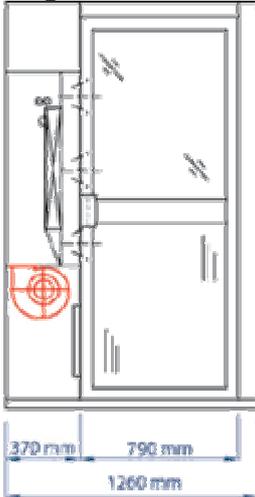
Auto reset unlocks doors in case personnel open the air shower door but do not actually enter, thus preventing accidental lock-outs.



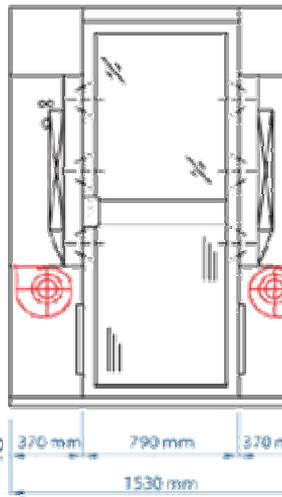
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Configurations available

**A-series
Single leaf door
Single-sided**



**B-series
Single leaf door
Double-sided**



**C-series
Double leaf door
Double-sided**

