

ASPT Inc. AIR SHOWER SPECIFICATION

1.0 PURPOSE AND SCOPE

This specification describes a factory fabricated air shower enclosure to be used for removing surface particles from personnel prior to entering a controlled environmental area. The air shower shall provide access to and from a cleanroom work area and shall be a high velocity, low air pressure system to comply with Air Force Tech Order 00-25-203 and Federal Spec 209E. Construction of all structures shall be structurally sound and esthetically pleasing.

2.0 MATERIALS

- A. All materials used to be compatible with Clean Room use.
- B. Walls will be of a hard, durable, non-particle emitting surface.

3.0 CONSTRUCTION

- A. Enclosure: Prefabricated wall and roof sections with integral air duct plenums.
 - 1. Units shall be self contained, self supporting, capable of supporting a minimum of 200 pounds per square foot with a maximum deflection of .25".
 - 2. Maintenance access shall be from the entry or exit end or the side of the mechanical section.
 - 3. Access panels shall be provided on the access sides that are selected by the customer.
 - 4. The mechanical section of the air shower shall contain blower/motor units, air nozzles, HEPA filter, and electrical controls.
 - 5. The air shower shall be constructed of one of the following materials
 - a. Melamine substrate (.625" thick) with a standard grade plastic laminate finish. **STANDARD**
 - b. Melamine substrate (.625" thick) with .025" thick aluminum sheets with a white painted finish. **OPTION**
 - c. Aluminum honeycomb panels (.5" thick) stopped into an extruded aluminum frame all with a white painted finish (no wood product). **OPTION**
 - d. Cold roll steel (no wood product) with a white powder coated finish. **OPTION**
 - e. Air nozzles shall be plastic construction, white in color, adjustable, with .875" diameter outlet
- B. Doors
 - 1. Doors shall be an aluminum frame construction with a clear anodized finish.
 - 2. Doors shall be glazed with .25" clear tempered glass
 - 3. Each door shall have a 24 VDC magnetic door lock (exception automatic door operators)
 - 4. Each door opening shall have vinyl door seals
 - 5. Manual operating doors shall have an International Door Closer surface mounted door closer #653AL.
 - 6. Automatic door operators shall be manufactured by Nabco Industries. **OPTION**
 - a. Door operators are surface mounted.
 - b. Operators are available in single swing, paired simultaneous swing, single slide, bi-parting slide and bi-fold.
 - c. Operators are 115 VAC 5 AMP and are power by the step down transformer located inside the air shower power panel.
 - d. Automatic doors can be activated by hard wired push plates, motion sensors, presence sensors or a combination of any of the three. Swing doors must have the activation device at least twelve inches away from the swing path of the door.
- C. Configurations
 - 1. SD models have two or more wall sections and have one common roof section with the mechanical located on the top of the air shower.
 - 2. TN models shall have four or more walls and shall have two or more roof sections with the mechanical located on the top of the air shower.

3. LP models shall have two wall sections or more and shall have one common roof section. The mechanical is located on the side of the air shower and the entire air shower fits under an eight foot ceiling.

4. LPT models shall have four or more walls with more than one roof section and shall have the mechanical located on the side of the air shower. The air shower shall fit under an eight foot ceiling.

4.0 MOTORS AND BLOWERS

A. Motors to be a high efficiency type, 440-480 volt/3phase/60Hz or 208-230 VAC/3 phase/60HZ and 115VAC/1 Phase/60Hz for motors 1 HP or less.

B. The nozzle blower shall be a single inlet, painted steel housing, cast aluminum paddle wheel with a direct drive open drip proof motor.

1. Size the high speed blower CFM to provide velocity of 7,500 FPM at the face of nozzle.

2. Blower fans will be capable of providing rated unit CFM from 0.6 inches to 1.2 inches static WG off the HEPA

3. Blower fans will have permanent indication of correct rotation direction attached the blower housing.

4. Motor shall be NEMA design B with class A insulation, designed to operate in 40 degree and have sealed ball bearings.

C. Air showers with a vertical laminar flow ceiling *OPTION* shall have a dual inlet direct drive blower capable of maintaining 90 feet per minute velocity across the face of the ceiling filters.

5.0 ELECTRICAL

A. Power panels shall require a single source connection to 440- 480VAC/3 phase/60Hz or 208-230 VAC/3 phase/60Hz. Lighting to be 115 VAC/single phase/60Hz and shall be powered by a step down transformer located in the air shower panel. Other power sources are available as an *OPTION*

1. Provide number of tubes to deliver 50 candles at 3 feet above floor.

2. Ballast shall be high efficiency.

3. Lamps shall be high efficiency

B. Air shower controller shall be 120 vac.

C. Each air shower is to be provided with one non-fused disconnect. Disconnect shall be mounted in the air shower power panel which is connected by 8 feet of seal tight flex for mounting to an adjacent wall when the air shower is assembled.

D. Magnetic motor starter shall be short circuit and overload protected.

E. Wiring shall comply with NEC code.

F. Programmable controller shall have DC inputs and relay outputs. Blower duration is adjusted by means of a potentiometer on the face of the plc

6.0 FILTERS

A. 99.99% efficient at .3 microns scanned HEPA filter with aluminum or steel frames. Optional filtration: ULPA 99.9995 @ .12 Micron

B. Filters and seals shall provide for:

1. Filters easily accessible thru maintenance panels or above.

2. Sufficient rigidity /bracing /clamping etc...to insure no filter or seal damage during normal shipping, handling, rigging, and installation.

C. Pre-filters shall be located in return air grilles and shall have a MERV 7 efficiency.

D. Return air grilles shall be constructed of steel with a white painted finish.

E. Return air grilles shall be located on side walls at the lowest point of the air shower wall.

F. HEPA filter plenums for high velocity blower shall be constructed of a minimum .050" aluminum.

7.0 CONFIGURATIONS

A. Blower/motor inspections and adjustments/tensioning readily performed from access provided.

B. All service connections and access (except lamps) from side access panels or above.

- C. If required, a 1-1/4" I.D. plastic sleeve will be furnished in mechanical section for sprinkler heads, (sprinkler heads and drops by others.)
- D. Dimensions to be specified by customer, and verified on A.S.P.T. drawing:
 - 1. Length to be exactly as specified (no creep).
 - 2. Exterior width to be exactly as specified.
 - 3. Height as specified.
 - 4. Blower cabinet access location as specified.

8.0 CYCLE CONTROL

- A. The exit doors of the air shower will be disabled when the entry door is open.
- B. The air shower cycle will begin upon entry to the air shower after entry door closes.
- C. All doors will be locked (disabled with auto doors) during the air shower cycle.
- D. High velocity blower will run 15 seconds (adjustable from .5 to 55 seconds)
- E. The exit door shall unlock (except with VLF option the door remains locked for an additional 5 seconds). Automatic doors open at end of cycle.
- F. Once the exit door shuts the system resets.