

**Liberty Industries, Inc.**  
**Model AS-200E Air Shower**  
**Specification**

Revised May 2004

**SCOPE**

Provide a prefabricated Modular Air Shower with straight through, left angle, right angle, or 3-way floor plan and with two (2), three (3) or four (4) doors, as shown on the drawings. Logic is specific to the customer requirements and processed through a programmable logic controller.

**PERFORMANCE**

- A) Unit shall provide approximately 7000 feet per minute continuous filtered air stream from the two (2) or three (3) sides and top, controlled by an adjustable timer and actuated when (1) of the doors is opened and closed. Air shall be re-circulated through side wall return grilles or an optional floor return grill.
- B) Air flow shall be delivered by thirty (30) ¾" (I.D.) molded ABS plastic nozzles, twelve (12) on each side and six (6) in the ceiling. Total air flow shall be 550 CFM.
- C) Air shall be filtered through a combination of replaceable pre-filters and high efficiency particulate air filters (HEPA). The pre-filter shall be 1" thick, 30% efficient and conform to ASHRAE standards and be located behind the side wall return grilles. The primary filter shall be HEPA 99.99% efficient at 0.3 microns and shall be replaceable from above the entrance/exit or sides of the unit, or on top of the unit.

**CONSTRUCTION**

- A) Shower enclosure shall be ¾" high density composition board construction, laminated with high pressure plastic laminate (painted cold rolled steel and stainless steel are available).
- B) Unit shall consist of five (5) basic sections which are totally prefabricated and pre-wired. Sections shall be walls, doors and electrical/mechanical.
- C) Electrical/mechanical section shall include superstructure, blower, motor, air filtration system, electrical fittings, and electrical control panel.
- D) All interior duct surfaces shall be sealed with a low pressure

laminate, raw edges shall be coated with a heavy duty latex paint.

- E) Air shall be supplied by a self-contained high pressure, centrifugal, direct drive blower. Radial blades shall be cast aluminum and self-cleaning. Blower housing shall be 16 gauge steel. Drive motor shall be 3 HP, fan cooled, drip proof, rated at 3500 RPM for 105EF (40EC), maximum heat rise, continuous operation with internal auto reset thermal protection.
- F) Doors and frames shall be constructed of anodized 6063-T5 aluminum alloy and have adjustable frames for correcting alignment. Doors shall be glazed with 3/16" tempered glass and have UL listed door closer with cast iron body and hardened piston.
- G) Door locks shall be pre-wired, 24 volt DC electromagnetic type capable of 800# holding force. Necessary status switches shall be included and pre-mounted. Lock shall be fail safe and de-energize upon removal of power.
- H) Lighting shall be fluorescent type providing 80 to 90 foot candles illumination.
- I) Wall section shall include pre-filter grills with horizontal louvers constructed of steel with a painted white finish, pre-filters shall be 1" thick. Units with optional floor section shall include stainless steel sliding drawers in the wall sections which contain the pre-filter.

#### **ELECTRICAL**

- A) Motor shall be:
  - 1. 208/230/460 VAC, 3 phase, 60 HZ (50 HZ optional), 9/8.2 amps running
  - 2. 460 VAC, phase, 60 HZ (50 HZ optional), 4.1 amps running
- B) Controls shall be 120 VAC, 1 phase, 60 HZ (50 HZ optional).
- C) All wiring shall conform to *Liberty Industries, Inc.* Electrical Specifications.

#### **CONTROLS**

- A) Manual Operation: (Standard on three (3) and four (4) door models, optional on two (2) door model)

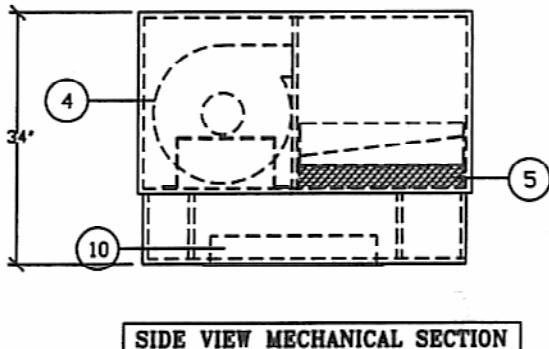
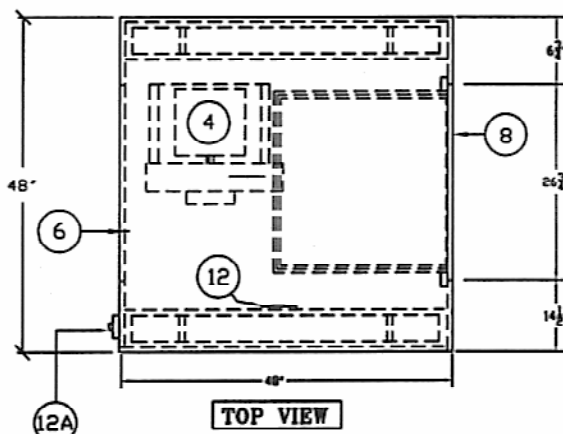
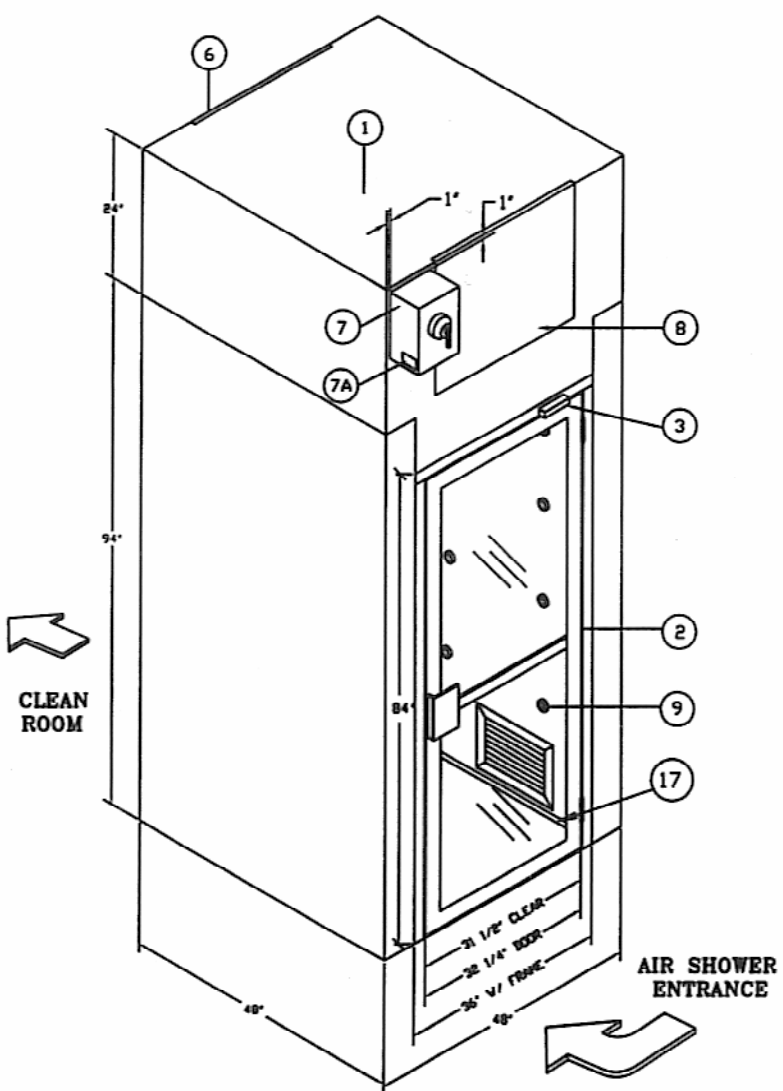
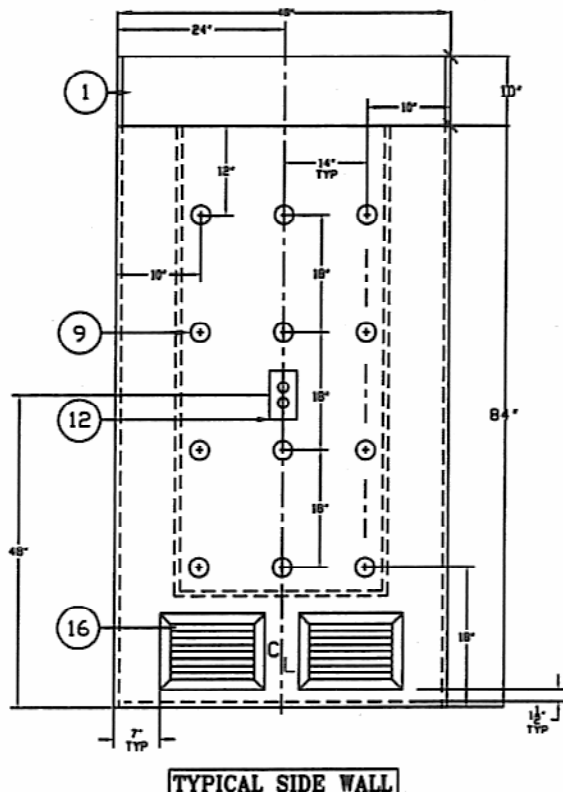
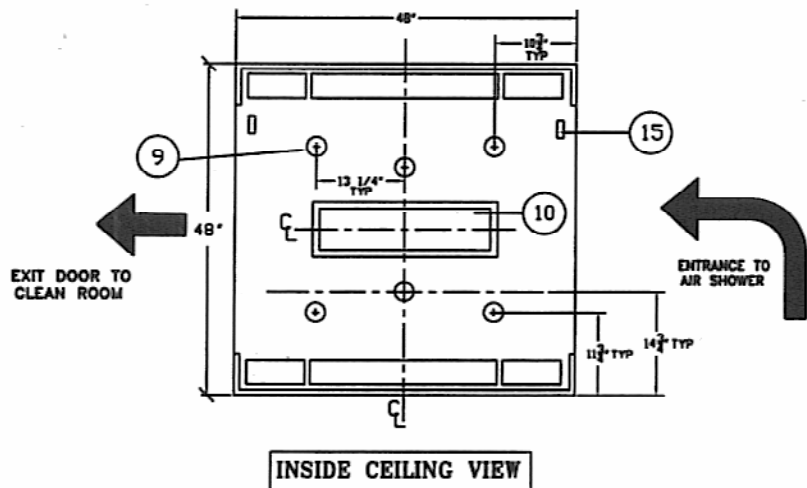
1. Start button shall lock doors and start cycle
  2. All doors unlock at the end of cycle.
- B) Automatic Operation (not available on three (3) or four (4) door models) -
1. The unit shall be activated when one (1) of the doors is opened and closed.
  2. The PLC unit shall be capable of selecting one (1) of three (3) types of operation:
    - a. One-Way Operation - exit door is locked at rest, entrance door is unlocked; person enters the air shower, the entrance door closes, locks and the air shower cycle starts; end of the cycle the entrance door stays locked and the exit door unlocks; person exits via the exit door, door closes and locks; entrance door unlocks and another cycle can be started.
    - b. Two-Way/One-Way Operation - both doors are unlocked at rest; air shower will operate in the entrance direction only; one (1) door at a time may be opened; person enters via the entrance door, both doors lock and the air shower goes through the cycle; person exits through either door; person enters via exit door, shower does not operate; person exits through either door.
    - c. Two-Way Operation - both doors are unlocked at rest; only one (1) door at a time may be opened; person enters, both doors lock and air shower goes through cycle; exit can be through either door.
  3. Unit cycle time shall be adjustable from 10 to 180 seconds.
  4. "Emergency Stop" buttons are supplied, which stop the air shower cycle, unlock both doors and sound an alarm. The buttons are located in the air shower and on the exterior cleanroom side of the air shower. The unit shall "re-set" using a key operated re-set switch.
  5. In case of power failure all doors shall unlock.
- C) Control shall be a dedicated, user friendly, programmable logic controller with provisions for remote adjustment of operating logic.

**ACCEPTABLE MANUFACTURER**

Unit shall be as manufactured by *Liberty Industries, Inc.* Model AS-200E.

#### **OPTIONAL EQUIPMENT**

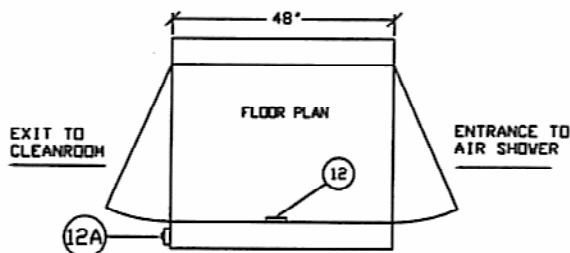
- A) Furnish a down flow purge system which provides total air delivery of filtered air in a downward direction for a pre-determined time at the end of the normal cycle or continuously.
- B) Furnish factory installed static pressure and power loss alarm system with external LED.
- C) Furnish factory installed magnehelic gauge to measure pressure drop across pre-filter.
- D) Furnish factory installed magnehelic gauge to measure pressure drop across HEPA filter.
- E) Furnish factory installed static eliminators.
- F) Furnish ULPA filter to 99.999% efficiency at 0.30 microns laser scanned.
- G) Furnish factory installed HEPA filter replacement alarm.
- H) Floor section shall include bar grating 1-3/16" on center, 1" x c" bar, 4" cross bar span, constructed of fiberglass (stainless steel, aluminum or cold rolled steel are available).
- I) External/internal blowing of HEPA filtered air through a double walled bunny suit that is inflated to flow through suit ironing out wrinkles and seams, thereby perfecting the cleaning process up to 80% to 90% efficiencies. Unit includes fail safe suit connection, purge flow, internal fluttering valve to fill suit.
- J) PLC chip to change the mode of operation.



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# INDEX

- ① — FABRICATED OF 3/4" PARTICLE BOARD
- ② — DOORS HEAVY DUTY ANODIZED ALUMINUM 36" FRAME (6063-T5), WITH FULL 3/16" SAFETY GLASS
- ③ — DOOR CLOSERS QUAN. 2
- ④ — BLOWER, ODP, 3 HP. 3450 RPM 3PH 60HZ SEE NOTE 3 FOR VOLTAGE. QUAN. 1
- ⑤ — HEPA FILTER 24" X 24" X 3" 99.99% EFF. @ 0.3 MICRON AND LARGER.
- ⑥ — BLOWER ACCESS PANEL 25"H X 32"W QUAN. 1
- ⑦ — ELECTRICAL CONTROL BOX W/PLC 12"W X 16"H X 7"D QUAN. 1
- ⑦A — LABEL WITH SERIAL NO. QUAN. 1
- ⑧ — HEPA FILTER ACCESS PANEL 26 3/4" X 25" QUAN. 1
- ⑨ — NOZZLES PLASTIC ADJUSTABLE 3/4" OPENING QTY. 30
- ⑩ — FLUORESCENT LIGHT 24" 2 TUBE, 120V, 60HZ QUAN. 1
- ⑪ — N/A
- ⑫ — CONTROL BUTTONS - EMERGENCY STOP & RESET QUAN. 1
- ⑫A — EMERGENCY STOP (CLEANROOM SIDE) QUAN. 1
- ⑬ — N/A
- ⑭ — N/A
- ⑮ — ELECTRO-MAGNETIC DOOR INTERLOCKS, WILL UNLOCK WITH POWER FAILURE. QUAN. 2
- ⑯ — WALL RETURN GRILLE ( 12' X 8' ) W/ DUSTGUARD PREFILTER QUAN. 4
- ⑰ — 1"x1"x1/8" WALL ANGLE, ALUMINUM QUAN. 2



### -NOTES-

1. PLC PROGRAM:
2. CUSTOMER - PLEASE CHECK DOOR SWINGS IN FLOOR PLAN
3. CUSTOMER - PLEASE CHECK VOLTAGE REQUIRED
 

<input type="checkbox"/>	208V	/3PH 60HZ
<input type="checkbox"/>	230V	/3PH 60HZ
<input type="checkbox"/>	460V	/3PH 60HZ
4. **MODE OF OPERATION**

AUTOMATIC OPERATION <input type="checkbox"/>		MANUAL OPERATION <input type="checkbox"/>	
<b>WARNING</b> Failure To Complete This Block Will Delay Production			
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<b>LIBERTY INDUSTRIES INC.</b> EAST BERLIN, CT 06023-1106		NTS	1
Title		Model No.	
AIRSHOWER 4' X 4' X 9' 10"H		AS 200 E	

### REVISIONS

No.	By	Date	Description
1	RET	4/23/06	CHGD. DIMENSIONS IN MECHANICAL SECTION
			CHGD. ITEM 12 & REMOVED DOOR SWEEPS



The Clean Room People  
**Liberty**  
LIBERTY INDUSTRIES INC.

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Rev.  
1  
  
Drawing No.  
**5522**