

Esco Cleanroom Airshowers

Cross-Contamination Facility
Integrated Barrier



EAS-EUS

EAS-EUS

Introduction

Esco Air Showers (EAS) is self-contained chambers strategically positioned at cleanroom entrances and other controlled environments. These chambers minimize particulate matter from infiltrating the clean space. As personnel or materials pass through, the EAS "scrubs" by high velocity HEPA-filtered air jets with velocity of minimum 18 m/s (3,543 fpm). The contaminated air is drawn from the base, filtered, and then recirculated into the chamber maintaining a clean environment.

Esco is the pioneering company for the construction of air showers with different applications on areas in the micro-electronics, semiconductors, pharmaceutical, spray painting, laboratory animal research and food markets.

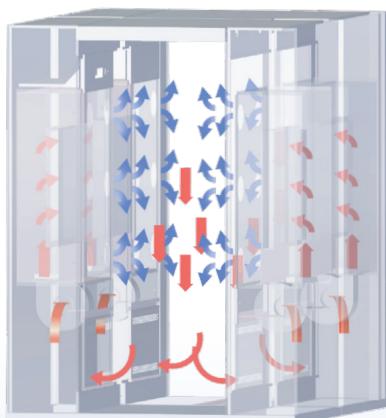
Main Features

- High velocity shower jets in excess of 18 m/s to ensure efficient scrubbing action to remove particulate matter.
- Operating modes can be programmed in the field.
- Microprocessor controller supervises all functions.
- HEPA (H14) filter (as per EN1822) and ULPA filter (as per IEST-RP-CC001.3) achieving $\geq 99.995\%$ typical efficiency at 0.3 micron particles.
- A disposable pre-filter with 90% efficiency.
- An emergency stop button is mounted on both sides of the shower.
- Indicator lights mounted on both sides of the exterior of the air shower to regulate traffic flow, in and out of the cleanroom.
- Permanently lubricated direct drive centrifugal blowers used in conjunction with stainless steel 304 air nozzles.

EAS Cleanroom Air Shower Series Comparison Chart		
Model	Airflow	Door
EAS (A-Series)	Single Sided	Single leaf
EAS (B-Series)	Double Sided	Single leaf
EAS (C-Series)	Double Sided	Double leaf

See the Specification Chart for more details.

Air Shower Filtration System



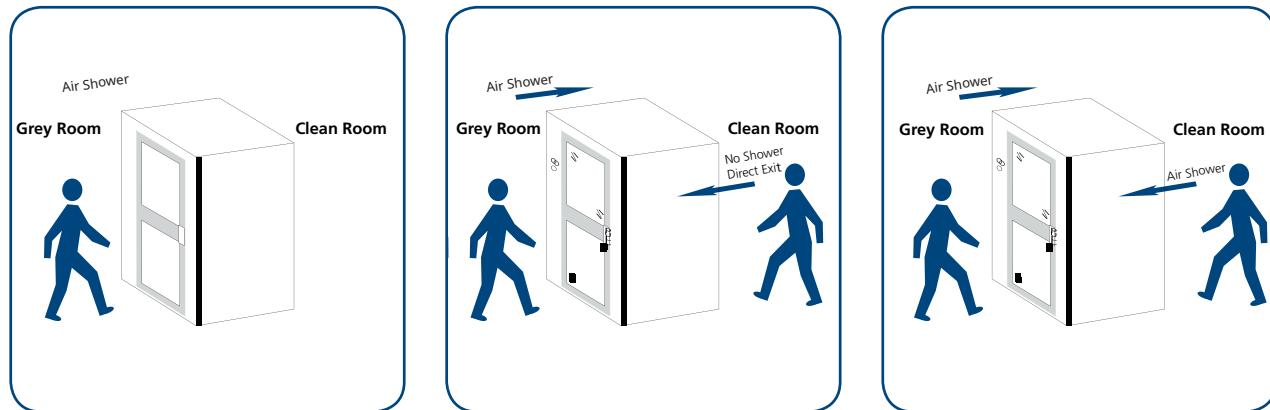
- HEPA Filter
- Blower
- Air is forced by the blower(s) through HEPA filter(s) which are 99.995% efficient against particles of 0.3 microns.
- Filtered air is ejected through nozzles at high velocities into the chamber. These turbulent air streams disperse particulate matter on all surfaces.

- HEPA-filtered air
- Unfiltered/potentially contaminated air

- Dispersed particulate matter migrate with the air stream towards the lower areas in the air shower chamber. Air enters the blower supply plenum through pre-filter(s) installed at the base of the chamber.
- The air is continuously filtered and recirculated. The air shower is a self-contained device and does not exchange air with the environment it is placed in.

Air Shower Operating Sequences

Unlike conventional air showers which are delivered with a fixed operating sequence, the Esco Air Shower's operating sequence may be selected from three pre-programmed sequences:



One-Way

Personnel may enter the controlled environment but not exit through the air shower. At the idle state, the clean side door is locked while the grey side is unlocked. This mode of operation is useful for controlling traffic patterns in and out of the controlled environment.

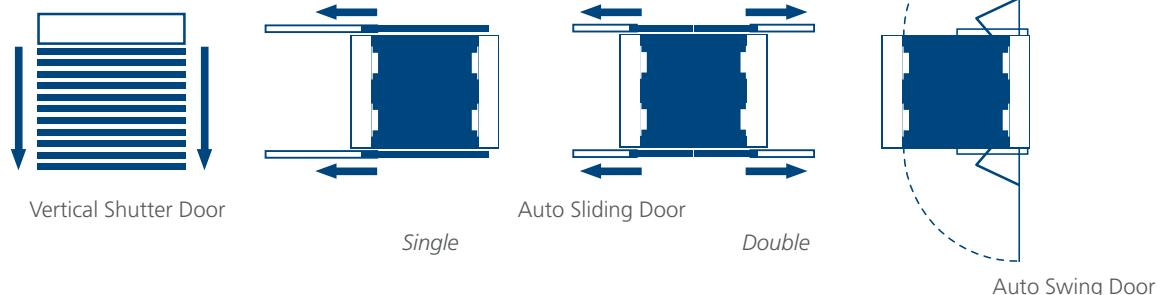
Two-Way One-Way

Personnel may enter or exit the controlled environment through the air shower. The air shower will be activated if personnel enter from grey room. The air shower program is able to detect if the person is entering or exiting the controlled environment via door sensors and a time-sequenced control.

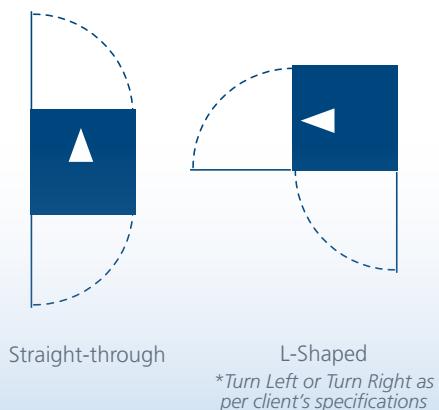
Two-Way

Personnel may enter or exit the controlled environment through the air shower. In both directions the air shower is activated. This mode of operation is useful in pharmaceutical and lab animal research applications to prevent the egress of hazardous substances and allergens from the controlled environment.

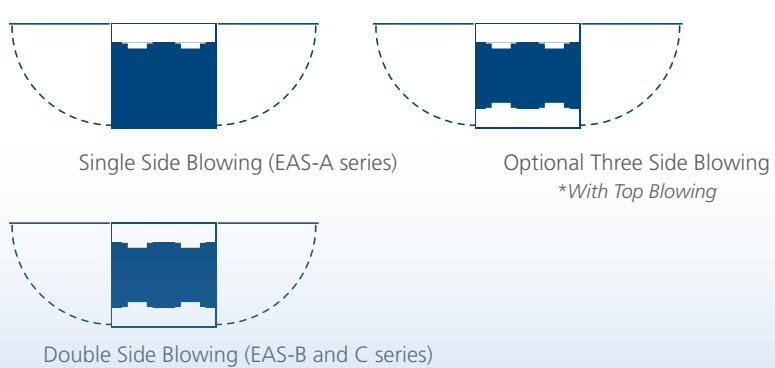
Optional EAS Shutter Doors



Optional EAS Exit Directions



EAS Blowing Type



Cleanroom Air Showers



Light Diffuser

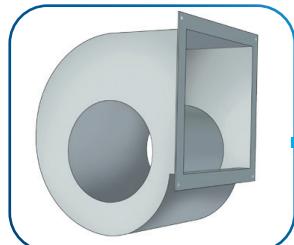
Diffusers ensure and uniform lighting throughout the chamber.



Light Indicator and Emergency Switch

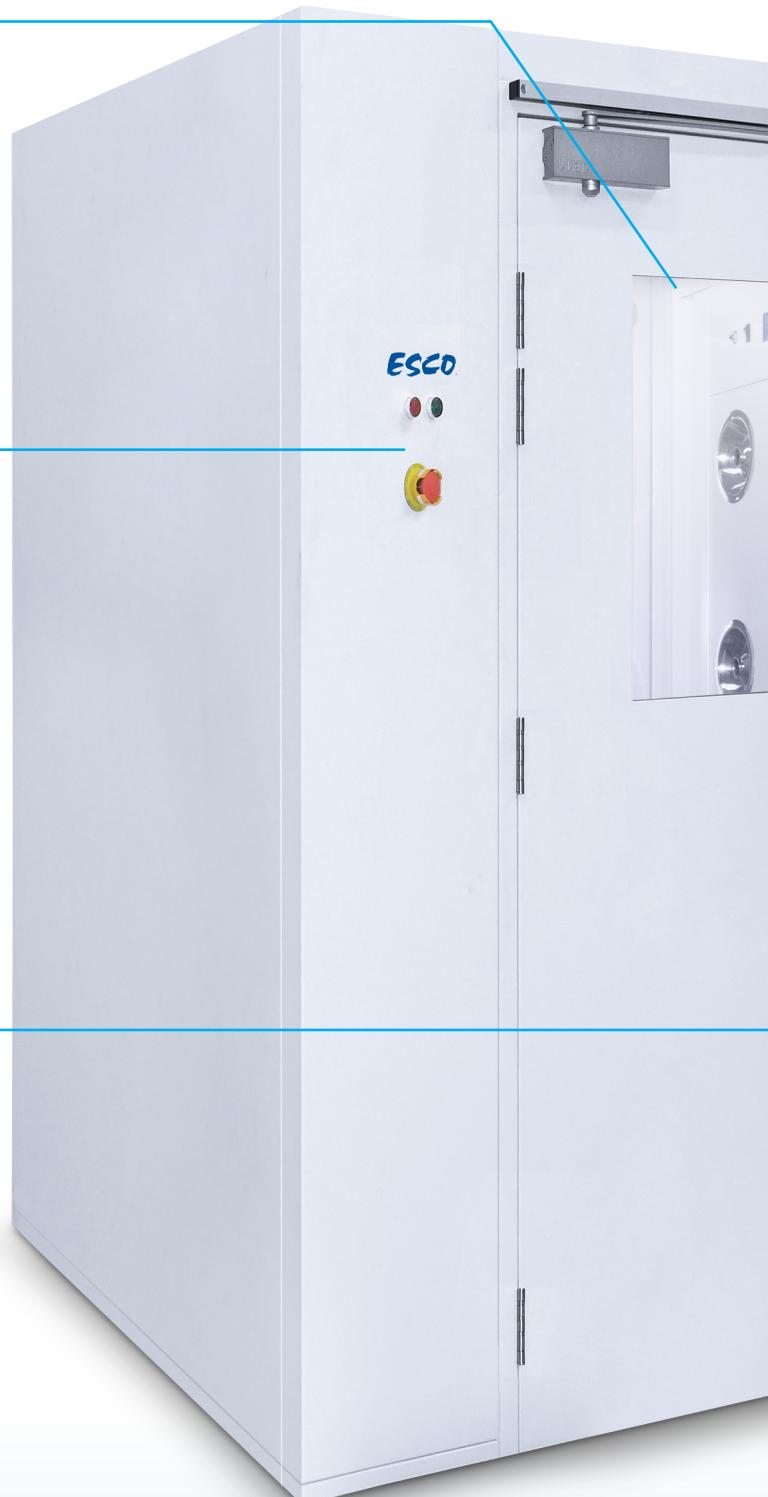
Indicator lamps indicate if doors are locked or unlocked, thereby regulating the flow of personnel in and out of the air shower.

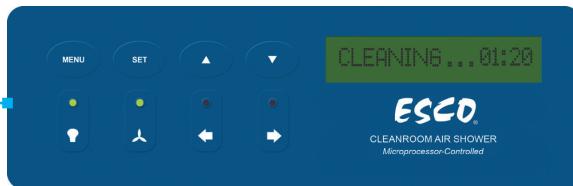
Emergency buttons mounted on both external faces of the shower unlock all doors instantly.



High Performance Blower System

German made ebm-papst® permanently lubricated centrifugal motor/blowers with external rotor designs. Motors selected for energy efficiency compact design and flat profile. Completely integrated assembly optimizes motor cooling. All rotating parts balanced for smooth, quiet, vibration-free operation.





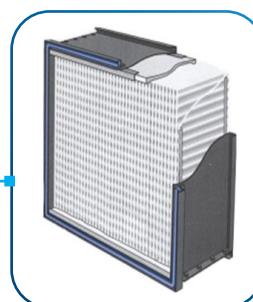
Sentinel Microprocessor Control System, Programmable

The microprocessor control detects improper operation and displays corresponding error messages should the integrity of the cleanroom be violated. The LCD displays shower duration and countdown, and reports cycle progress and operational status. A 24-hour clock displays local time.



Stainless Steel 304 Nozzles

An array of stainless steel 304 nozzles direct high-velocity jets within the chamber.



HEPA Filtration System

HEPA filter(s) provide 99.995% typical efficiency for particles size up to 0.3 microns.

Door

Electro-galvanised steel door with glass windows permitting visibility

Key Features

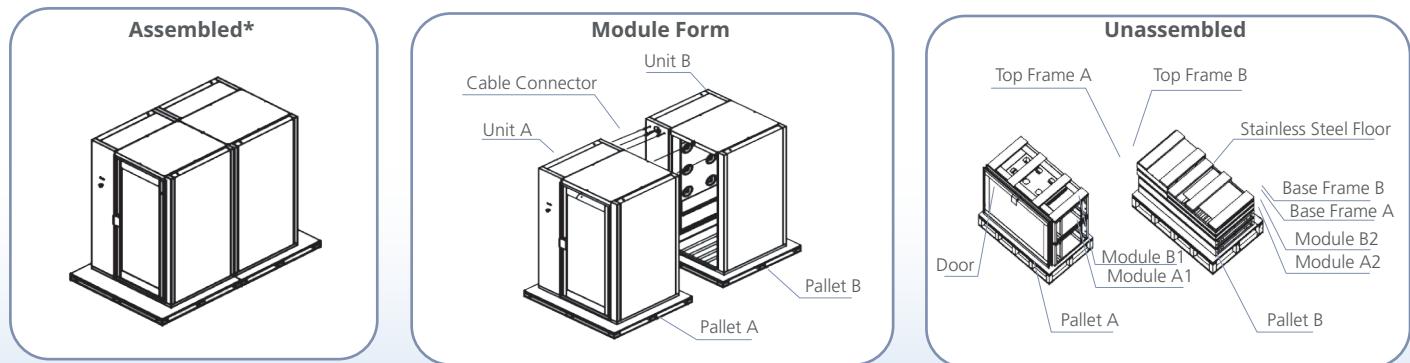
- Esco Air Shower filters meet the IEST-RP-CC001.3 recommended practice for ULPA performance (USA), and EN 1822 for H14 performance (EU).
- The automatic reset feature unlocks the doors preventing accidental lock-outs in cases when an operator opens the air shower without actually entering.
- In case of a power failure, all doors are unlocked automatically, and the settings are retained.
- A disposable pre-filter with 90% efficiency.
- The air shower is constructed with ISOCIDE antimicrobial powder coating on electro-galvanised steel sheets to minimize contamination.
- Each air shower is individually factory tested for safety and performance in accordance with international standards.
- Robust construction qualifies the air shower for the most demanding applications. The air shower is carefully assembled and readily installed and operated when shipped.
- Each unit is shipped with a documentation outlining the tests undertaken and its individual results.
- All critical electrical components are UL listed/recognized.
- The Air Shower is warranted for one year excluding consumable parts and accessories.



Experience the *swiftness* of our Fast Track units, ready for prompt shipment shortly after order placement, and available for delivery worldwide. Our current inventory of units is accessible at <https://www.escolfesciences.com/fast-track-units>, ensuring a seamless and expedited process to meet your needs.

General Specifications, Cleanroom Air Shower, Model EAS-EUS (A-Series)				
Model	EAS-1A_EUS	EAS-2A_EUS	EAS-3A_EUS	
External Dimensions (W x D x H)	1385 x 1040 x 2205 mm (54.53" x 40.94" x 86.81")	1385 x 2080 x 2205 mm (54.53" x 81.89" x 86.81")	1385 x 3120 x 2205 mm (54.53" x 122.83" x 86.81")	
Internal Work Area, Dimensions (W x D x H)	915 x 920 x 2080 mm (36.02" x 36.22" x 81.89")	915 x 1960 x 2080 mm (36.02" x 77.17" x 81.89")	915 x 3000 x 2080 mm (36.02" x 118.11" x 81.89")	
Clean Door Opening (WxH)	815 x 2030 mm (32.1" x 79.9")			
Air Change (18 – 30 m/s)	110 - 182/ Hr	105 - 175/ Hr	104 - 172/ Hr	
Initial Airflow Velocity	18-30 m/s (3,543-5,906 fpm)			
Number of Nozzles	6	12	18	
Air Shower Duration	Factory set at 12 seconds (adjustable up to 3 mins)			
Persons Per Cycle	1	2-3		
	4	8-12		
Personnel Flow (Persons / Minute)	The above figures are based on a Total Cycle Time of 16 seconds. (12 seconds of Air Shower + 4 seconds for buffer time / personnel entrance and exit)			
Filtration Efficiency	Filter: ≥99.995% at 0.3 µm Pre-Filter: Efficiency 90%			
Filtration Elements	Main Filter: HEPA 14 filter Pre-Filter: Disposable and non-washable polyester fibers			
Air Shower Construction	1.5 mm / 0.06" / 18 electro-galvanized steel / White oven-baked epoxy powder-coated finish			
Maximum Power Consumption Current	During Operation	245 W, 1.2 A, 500 BTU/ Hr	490 W, 2.4 A, 1000 BTU/ Hr	
	During Standby	113 W, 0.5 A, 231 BTU/ Hr	226 W, 1 A, 461 BTU/ Hr	
Electrical	220-240V, 6AC, 0/50Hz, 1Ø	EAS-1A8-EUS	EAS-2A8-EUS	
	110-130V, AC, 60/50Hz, 1Ø	EAS-1A9-EUS	EAS-3A9-EUS	
Gross Weight	389.1 kg (858 lbs)	658.6 kg (1452 lbs)	977.9 kg (2156 lbs)	
Shipping Dimensions, Maximum (W x D x H)	Assembled (W x D x H)	1680 x 1300 x 2400 mm (66.1" x 51.2" x 94.5")	N/A	N/A
	Module Form (W x D x H)	Pallet A	N/A	1680 x 1300 x 2400 mm (66.1" x 51.2" x 94.5")
		Pallet B	N/A	1680 x 1300 x 2400 mm (66.1" x 51.2" x 94.5")
		Pallet C	N/A	1680 x 1300 x 2400 mm (66.1" x 51.2" x 94.5")
	Unassembled (W x D x H)	Pallet A	2500 x 1500 x 1090 mm (98.4" x 59.1" x 42.9")	2500 x 1500 x 1390 mm (98.4" x 59.1" x 54.7")
		Pallet B	N/A	2500 x 1500 x 1235 mm (98.4" x 59.1" x 48.6")
Shipping Volume, Maximum	Assembled	Pallet A: 5.24 m ³ (185 ft ³)	N/A	N/A
	Module Form	N/A	Pallet A: 5.24 m ³ (185 ft ³) Pallet B: 5.24 m ³ (185 ft ³)	Pallet A: 5.24 m ³ (185 ft ³) Pallet B: 5.24 m ³ (185 ft ³) Pallet C: 5.24 m ³ (185 ft ³)
	Unassembled	Pallet A: 4.09 m ³ (144.4 ft ³)	Pallet A: 5.21 m ³ (183.9 ft ³)	Pallet A: 5.24 m ³ (185 ft ³) Pallet B: 4.63 m ³ (163.5ft ³)

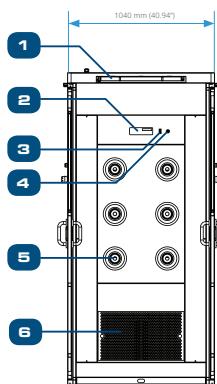
Esco Cleanroom Air Showers, Modes of Shipment, Model EAS-EUS (A-series)



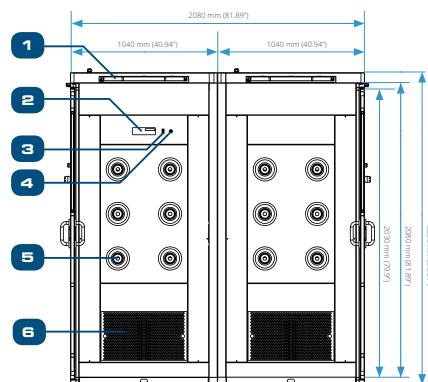
*not applicable for EAS-3A9-EUS

Model EAS-EUS (A-Series) Cleanroom Air Shower Technical Specifications

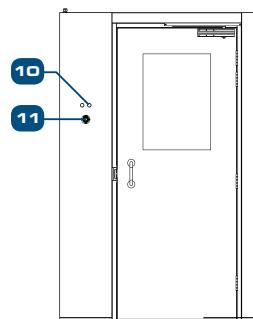
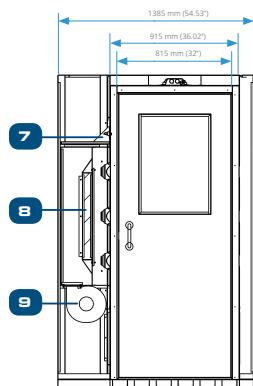
EAS-1A-EUS



EAS-2A-EUS

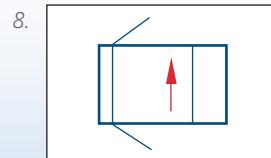
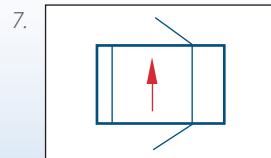
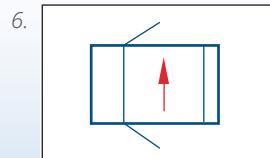
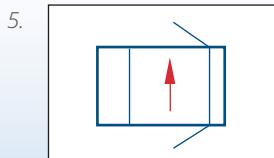
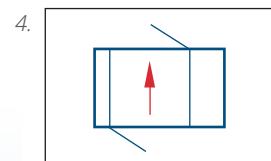
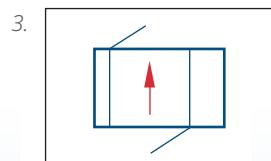
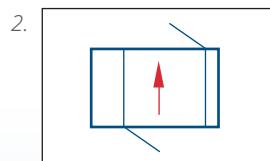
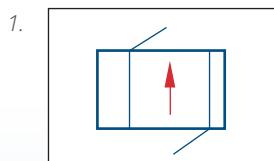


EAS-3A-EUS



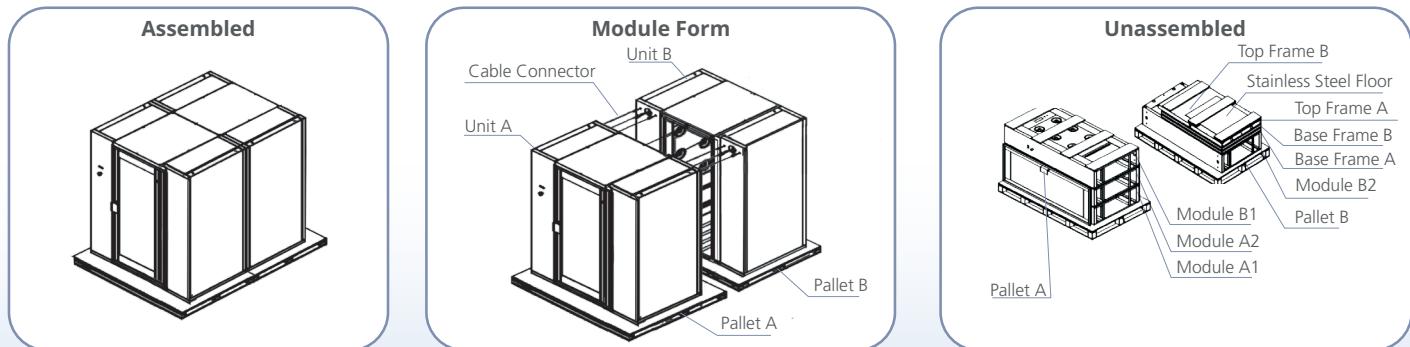
1. LED Housing
2. Esco Sentinel™ Microprocessor Controller
3. Unit Circuit Breaker Button
4. Unit On/Off Switch
5. Stainless Steel 304 Nozzles
6. G4 Prefilters (Disposable)
7. Electrical Panel
8. H14 filters
9. Blower
10. Indicator Lights (for both grey and clean sides)
11. Emergency Stop Button (for both grey and clean sides)

Model EAS-EUS (A-Series) Door Direction (Factory Configured. Choose One When Ordering.)



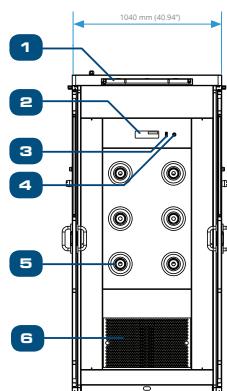
General Specifications, Cleanroom Air Shower, Model EAS-EUS (B-Series)				
Model	EAS-1B-EUS	EAS-2B-EUS	EAS-3B-EUS	
External Dimensions (W x D x H)	1655 x 1040 x 2205 mm (65.16" x 40.94" x 86.81")	1655 x 2080 x 2205 mm (65.16" x 81.89" x 86.81")	1655 x 3120 x 2205 mm (65.16" x 122.83" x 86.81")	
Internal Work Area, Dimensions (W x D x H)	915 x 920 x 2080 mm (36.02" x 36.22" x 81.89")	915 x 1960 x 2080 mm (36.02" x 77.17" x 81.89")	915 x 3000 x 2080 mm (36.02" x 118.11" x 81.89")	
Clean Door Opening (WxH)	815 x 2030 mm (32.1" x 79.9")			
Air Change (18 – 30 m/s)	219 - 364/ Hr	209 - 349/ Hr	207 - 344/ Hr	
Initial Airflow Velocity	18-30 m/s (3,543 - 5,906 fpm)			
Number of Nozzles	12	24	36	
Air Shower Duration	Factory set at 12 seconds (adjustable up to 3 mins)			
Persons Per Cycle	1	2-3		
	3	6-9		
Personnel Flow (Persons / Minute)	The above figures are based on a Total Cycle Time of 16 seconds. (12 seconds of Air Shower + 4 seconds for buffer time/personnel entrance and exit)			
Filtration Efficiency	Main Filter: ≥ 99.995% at 0.3 µm Pre-Filter: Efficiency 90%			
Filtration Elements	Main Filter: H14-HEPA filter Pre-Filter: Disposable and non-washable polyester fibers			
Air Shower Construction	1.5 mm/ 0.06"/18 electro-galvanised steel / White oven-baked epoxy antimicrobial powder-coated finish			
Maximum Power Consumption Current	During Operation	500 W, 2.3 A, 1020 BTU/Hr	1000 W, 4.6 A, 2040 BTU/Hr	
	During Standby	162 W, 0.7 A, 330 BTU/Hr	200 W, 1 A, 408 BTU/Hr	
Electrical	220-240V, AC, 60/50Hz, 1Ø	EAS-1B8-EUS	EAS-2B8-EUS	
	110-130V, AC, 60/50Hz, 1Ø	EAS-1B9-EUS	EAS-2B9-EUS	
Gross Weight	449 kg (990 lbs)	820 kg (1808 lbs)	1247.3 kg (2750 lbs)	
Shipping Dimensions, Maximum (W x D x H)	Assembled	1750 x 1250 x 2400 mm (68.9" x 49.2" x 94.5")	N/A	N/A
	Module Form (W x D x H)	Pallet A	N/A	1750 x 1250 x 2400 mm (68.9" x 49.2" x 94.5")
		Pallet B	N/A	1750 x 1250 x 2400 mm (68.9" x 49.2" x 94.5")
		Pallet C	N/A	1750 x 1250 x 2400 mm (68.9" x 49.2" x 94.5")
	Unassembled (W x D x H)	Pallet A	2500 x 1500 x 1090 mm (98.4" x 59.1" x 42.9")	2500 x 1500 x 1090 mm (98.4" x 59.1" x 42.9")
		Pallet B	N/A	2500 x 1500 x 1455 mm (98.4" x 59.1" x 57.3")
Shipping Volume, Maximum	Assembled	Pallet A: 5.25 m ³ (185.4 ft ³)	N/A	N/A
	Module Form	N/A	Pallet A: 5.25 m ³ (185.4 ft ³) Pallet B: 5.25 m ³ (185.4 ft ³)	Pallet A: 5.25 m ³ (185.4 ft ³) Pallet B: 5.25 m ³ (185.4 ft ³) Pallet C: 5.25 m ³ (185.4 ft ³)
	Unassembled	Pallet A: 4.09 m ³ (144.4 ft ³)	Pallet A: 4.09 m ³ (144.4 ft ³) Pallet B: 4.09 m ³ (144.4 ft ³)	Pallet A: 5.18 m ³ (182.9 ft ³) Pallet B: 5.46 m ³ (192.8 ft ³)

Esco Cleanroom Air Showers, Modes of Shipment, Model EAS-EUS (B series)

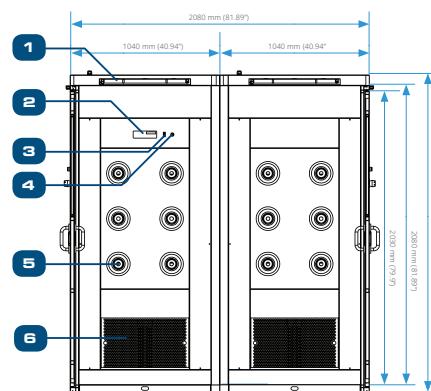


Model EAS-EUS (B-Series) Cleanroom Air Shower Technical Specifications

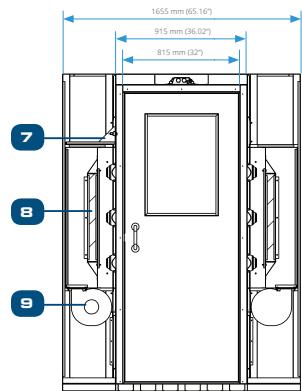
EAS-1B-EUS



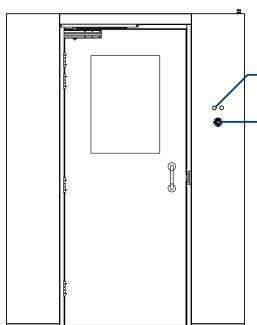
EAS-2B-EUS



EAS-3B-EUS

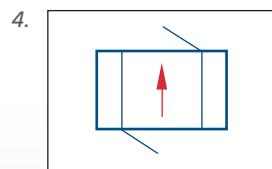
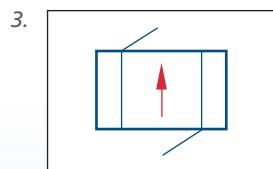
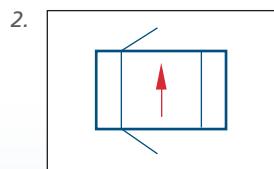
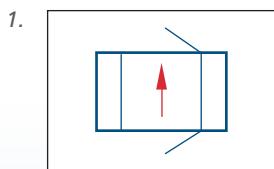


1. LED Housing
2. Esco Sentinel™ Microprocessor Controller
3. Unit Circuit Breaker Button
4. Unit On/Off Switch
5. Stainless Steel 304 Nozzles
6. G4 Prefilters (Disposable)
7. Electrical Panel
8. H14 filters
9. Blower
10. Indicator Lights (for both grey and clean sides)
11. Emergency Stop Button (for both grey and clean sides)



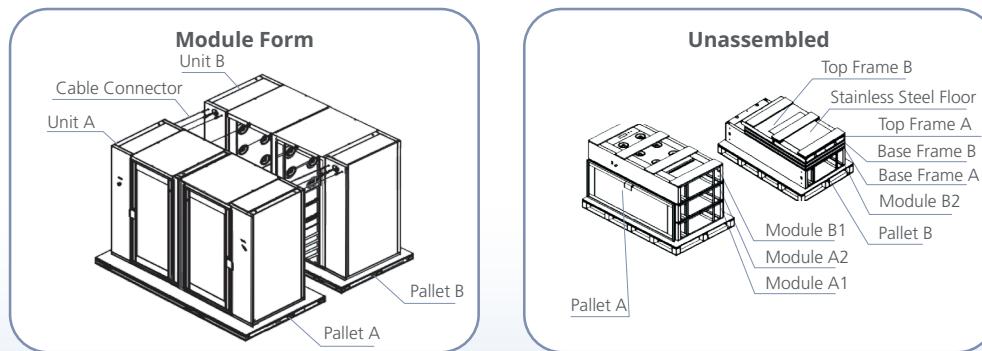
Model EAS-EUS (B-Series) Door Direction

(Factory Configured. Choose One When Ordering.)



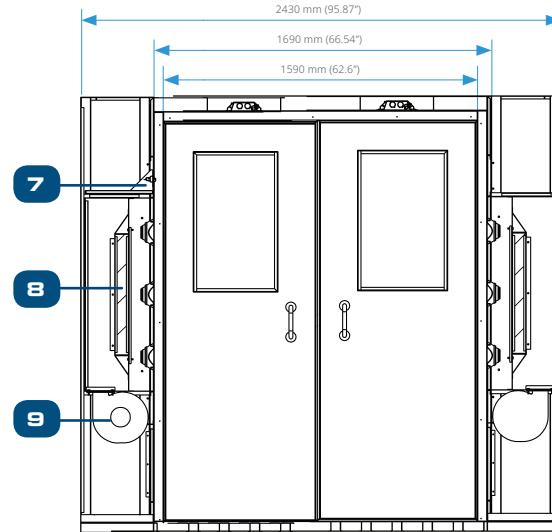
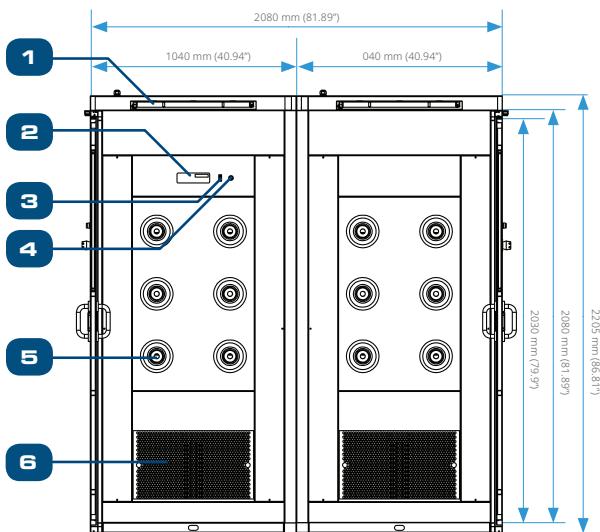
General Specifications, Cleanroom Air Shower, Model EAS-EUS (C-Series)					
Model	EAS-2C-EUS	EAS-3C-EUS			
External Dimensions (W x D x H)	2430 x 2080 x 2205 mm (95.87" x 81.89" x 86.81")		2430 x 3120 x 2205 mm (95.87" x 122.83" x 86.81")		
Internal Work Area, Dimensions (W x D x H)	1690 X 1960 X 2080 mm (66.54" x 77.17" x 81.89")		1690 X 3000 X 2080 mm (66.54" x 118.11" x 81.89")		
Clean Door Opening (WxH)	1590 x 2030 mm (62.6" x 79.9")				
Air Change (18 – 30 m/s)	113 - 188/ Hr	112 - 186/ Hr			
Initial Airflow Velocity	18-30 m/s (3,543 - 5,906 fpm)				
Number of Nozzles	24	36			
Air Shower Duration	Factory set at 12 seconds (adjustable up to 3 mins)				
Persons Per Cycle	2-3	4-6			
	6-9	10-21			
Personnel Flow (Persons / Minute)	The above figures are based on a Total Cycle Time of 16 seconds. (12 seconds of Air Shower + 4 seconds for buffer time/personnel entrance and exit)				
Filtration Efficiency	Main Filter: $\geq 99.995\%$ at 0.3 μm Pre-Filter: Efficiency 90%				
Filtration Elements	Main Filter: H14-HEPA filter Pre-Filter: Disposable and non-washable polyester fibers				
Air Shower Construction	1.5mm/0.06"/18 electro-galvanized steel/White oven-baked epoxy powder-coated				
Maximum Power Consumption Current	During Operation	1000 W, 2.3 A, 1020 BTU/ Hr	1500 W, 7 A, 3060 BTU/ Hr		
	During Standby	162 W, 0.7 A, 330 BTU/ Hr	250 W, 1.1 A, 510 BTU/ Hr		
Electrical	220-240V, AC, 60/50Hz, 1Ø	EAS-2C8-EUS	EAS-3C8-EUS		
	110-130V, AC, 60/50Hz, 1Ø	EAS-2C9-EUS	EAS-3C9-EUS		
Gross Weight	909.9 kg (2006 lbs)		1660.1 kg (3660 lbs)		
Shipping Dimensions, Maximum (W x D x H)	Assembled (W x D x H)	N/A	N/A		
	Module Form (W x D x H)	Pallet A	2600 X 1200 X 2400 mm (102.4" x 47.2" x 94.5")		
		Pallet B	2600 X 1200 X 2400 mm (102.4" x 47.2" x 94.5")		
		Pallet C	N/A		
	Unassembled (W x D x H)	Pallet A	2700 x 1570 x 1190 mm (106.3" x 61.8" x 46.9")		
		Pallet B	N/A		
Shipping Volume, Maximum	Assembled	N/A	N/A		
	Module Form	Pallet A: 7.49 m ³ (264.5 ft ³) Pallet B: 7.49 m ³ (264.5 ft ³)	Pallet A: 7.49 m ³ (264.5 ft ³) Pallet B: 7.49 m ³ (264.5 ft ³) Pallet C: 7.49 m ³ (264.5 ft ³)		
	Unassembled	Pallet A: 8.01 m ³ (282.9 ft ³) Pallet B: 5.04 m ³ (177.9 ft ³)	Pallet A: 8.01 m ³ (282.9 ft ³) Pallet B: 6.49 m ³ (229.2 ft ³)		

Esco Cleanroom Air Showers, Modes of Shipment, Model EAS-EUS (C Series)

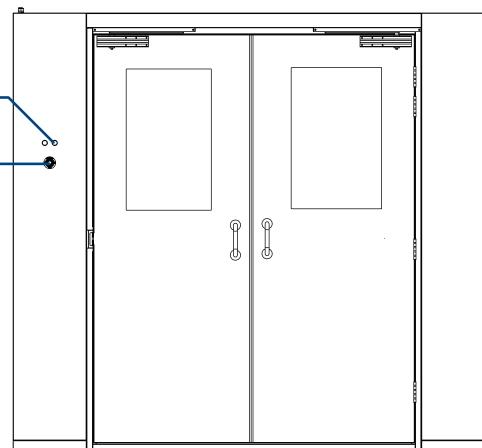
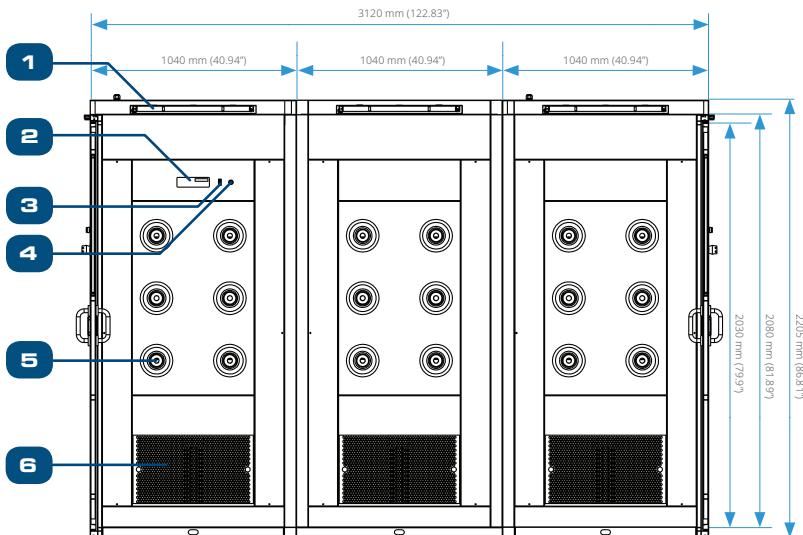


Model EAS-EUS (C-Series) Cleanroom Air Shower Technical Specifications

EAS-2C_EUS



EAS-3C_EUS



1. LED Housing
2. Esco Sentinel™ Microprocessor Controller
3. Unit Circuit Breaker Button
4. Unit On/Off Switch

5. Stainless Steel 304 Nozzles
6. G4 Prefilters (Disposable)
7. Electrical Panel
8. H14 filters

9. Blower
10. Indicator Lights (for both grey and clean sides)
11. Emergency Stop Button (for both grey and clean sides)

ESCO LIFESCIENCES GROUP NETWORK

42 Locations in 24 Countries All Over the World



Air Shower
 Aseptic Containment Isolator (ACTI)
 Ceiling Laminar Airflow Units
 Cleanroom Transfer Hatch
 Containment Barrier Isolator (CBI)
 Downflow Booth (DFB)
 Dynamic Floor Laminar Hatch
 Dynamic Pass Box
 General Processing Platform Isolator (GPPI)
 Laminar Flow Horizontal Trolley
 Laminar Flow Vertical Trolley
 Pass Box
 Ventilated Balance Enclosure (VBE)
 Weighing and Dispensing Containment Isolator (WDCI)

Since 1978, Esco has emerged as a leader in the development of controlled environment, laboratory and pharmaceutical equipment solutions. Products sold in more than 100 countries include biological safety cabinets, fume hoods, ductless fume hoods, laminar flow clean benches, animal containment workstations, cytotoxic cabinets, hospital pharmacy isolators, and PCR cabinets and instrumentation. With the most extensive product line in the industry, Esco has passed more tests, in more languages, for more certifications, throughout more countries than any biosafety cabinet manufacturer in the world. Esco remains dedicated to delivering innovative solutions for the clinical, life science, research and industrial laboratory community.



Esco Micro Pte. Ltd. (Headquarters)
 19 Changi South Street 1,
 Singapore 486779
 Tel: +65 65420833
 Email: csis.pharma@escolifesciences.com

Esco Technologies, Inc.
 2512 Metropolitan Drive, Suite 120 B
 Feasterville-Trevose, PA 19053-6738
 Tel: +1 215 322 2155
 Email: eti.pharma@escolifesciences.com

Esco GB Ltd
 Unit 2 R-evolution @ Gateway 36, Kestrel Way,
 Barnsley, S70 5SZ
 Tel: +44 (0) 1226 360 799
 Email: egb.info@escolifesciences.com

Esco Lifesciences Offices: Bangladesh | China | Denmark | Germany | Hong Kong | Indonesia | Italy | Lithuania | Malaysia | Myanmar | Philippines | Singapore | South Africa | South Korea | Taiwan | Thailand | UAE | UK | USA | Vietnam



90/2003/CE, Cleanroom, EAS, ETS, Biopharma, Letter A/2010/01/07/05
 Esco accepts no responsibility for any damage or loss in catalogues, brochures and other printed
 materials. Esco reserves the right to alter its products and specification without notice. All trademarks
 and logos in this material are the property of Esco and the respective companies.