

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 18-30 m/s (3,543 - 5,906 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.

Cleanroom Applications: As the greatest source of particulate contamination in a cleanroom is the operator, air showers serve as a critical preventive measure. As it is place between change areas and cleanroom, it reinforces the cleanroom protocol acting as a physical barrier that emphasize the importance of maintaining a controlled environment.

Pharmaceutical and Lab Animal Research Applications: Air showers maintain the cleanliness of the pharmaceutical production and laboratory animal breeding areas. It can also minimize egress of hazardous substances and allergens entering the controlled environment.

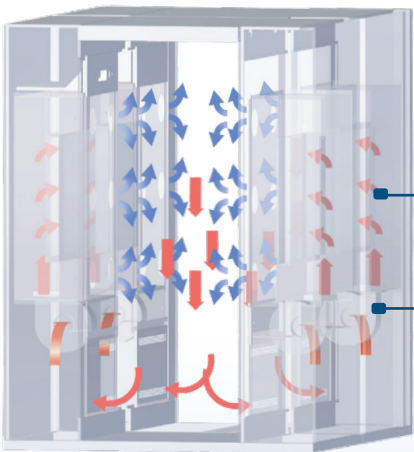
Main Features

- High velocity shower jets in excess of 20 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 >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



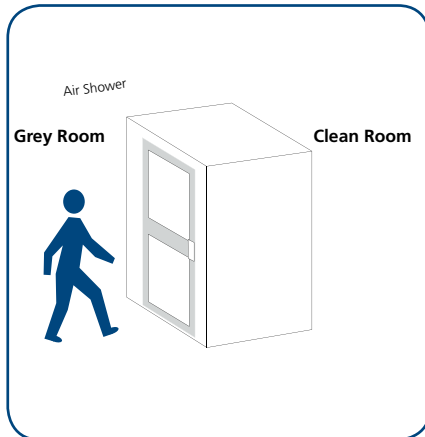
HEPA Filter
Blower

- HEPA-filtered air
- Unfiltered/potentially contaminated air

- 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.
- 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 selfcontained device and does not exchange air with the environment it is placed in.

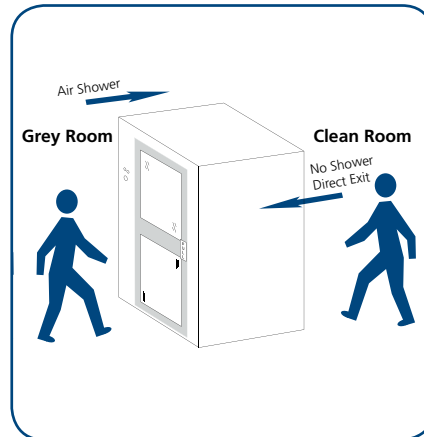
Air Shower Operating Sequences

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:



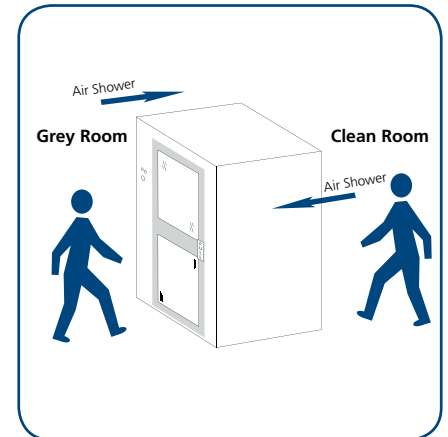
One-Way

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.



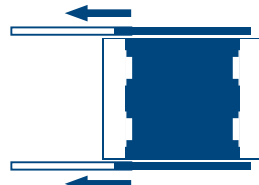
Two-Way

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



Vertical Shutter Door



Single



Double

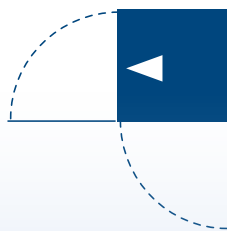


Auto Swing Door

Optional EAS Exit Directions



Straight-through



L-Shaped

*Turn Left or Turn Right as per client's specifications

EAS Blowing Type



Single Side Blowing (EAS-A series)



Double Side Blowing (EAS-B and C series)

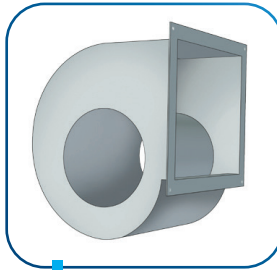


Optional Three Side Blowing
*With Top Blowing

Cleanroom Air Showers

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.



HEPA Filtration System

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



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.

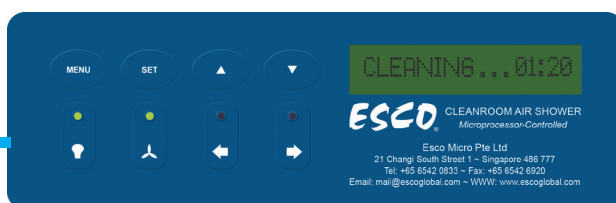
Emergency buttons mounted on both external faces of the shower unlock all doors instantly.

Door

Heavy-duty, durable aluminum framed door assemblies are constructed with glass windows permitting visibility.



Esco Cleanroom Air Shower
Model EAS-EUS



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.



Light Diffuser

Diffusers ensure and uniform lighting throughout the chamber.



Stainless Steel 304 Nozzles

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

Key Features

- Escalator 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 electrical components are UL listed / recognised.
- The Air Shower is warranted for one year excluding consumable parts and accessories.

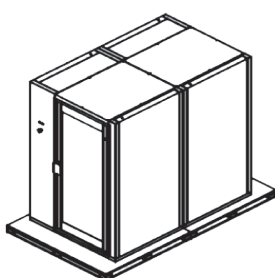
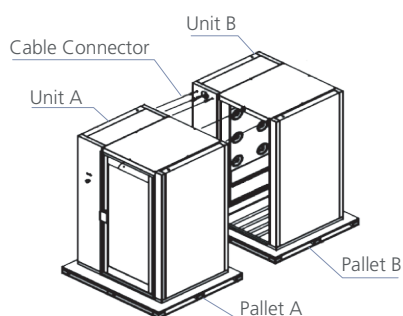
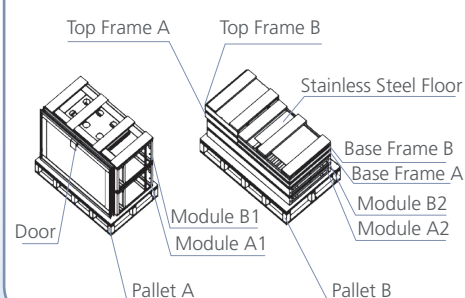


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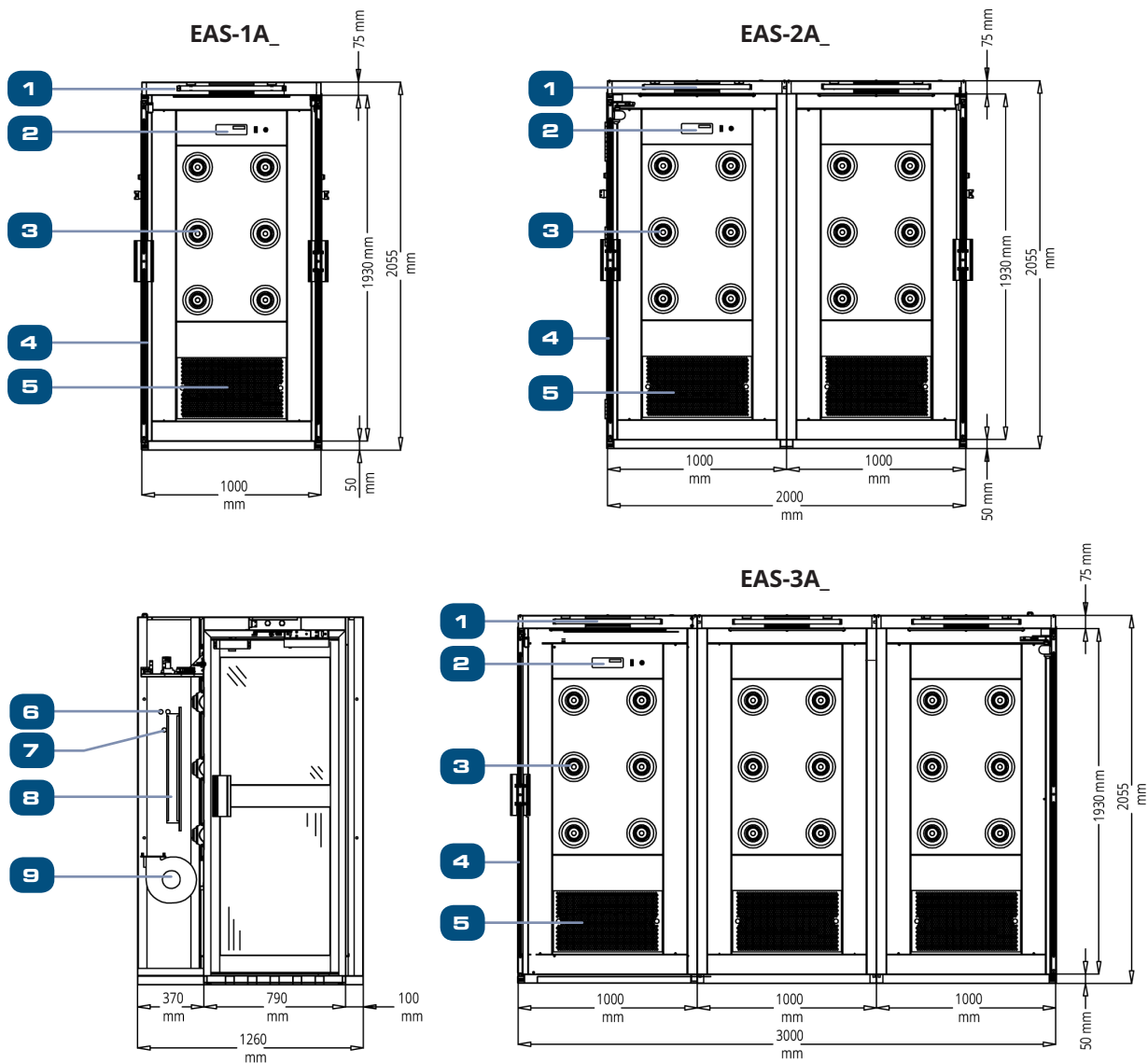
General Specifications, Cleanroom Air Shower, Model EAS (A-Series)

Note to customer: Insert electrical voltage number into last model number digit _ when ordering.

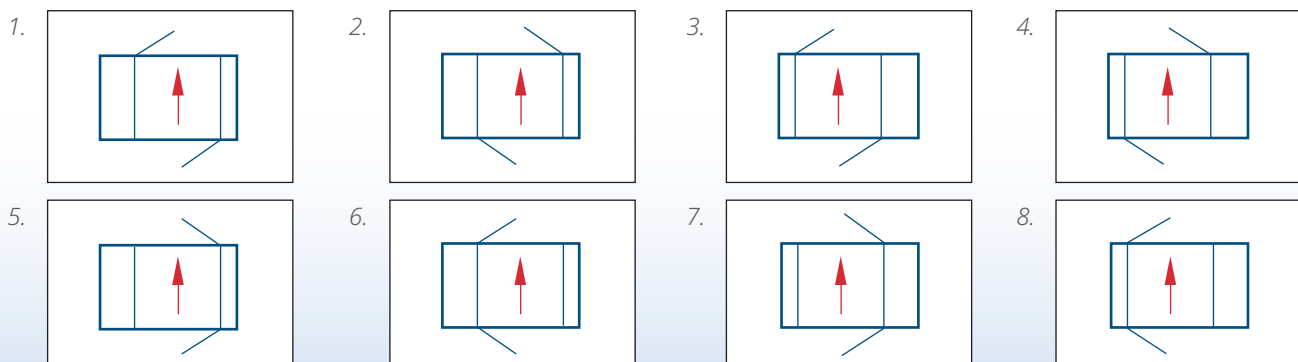
Model			EAS-1A_	EAS-2A_	EAS-3A_
External Dimensions (W x D x H)			1260 x 1000 x 2055 mm (49.7" x 39.4" x 80.9")	1260 x 2000 x 2055 mm (49.7" x 78.7" x 80.9")	1260 x 3000 x 2055 mm (49.7" x 118.1" x 80.9")
Internal Work Area, Dimensions (W x D x H)			790 x 936 x 1930 mm (31.1" x 36.8" x 76.0")	790 x 1936 x 1930 mm (31.1" x 76.2" x 76.0")	790 x 2936 x 1930 mm (31.1" x 115.6" x 76.0")
Clean Door Opening (WxH)			32" x 79.9"		
Air Change			371/ Hr	356/ Hr	351/ 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	
Personnel Flow (Persons / Minute)			4	8-12	
			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: H14-HEPA 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	735 W, 3.5 A, 1499 BTU/ Hr
	During Standby		113 W, 0.5 A, 231 BTU/ Hr	226 W, 1 A, 461 BTU/ Hr	339 W, 1.5 A, 692 BTU/ Hr
Electrical	220-240V, AC, 50Hz, 1Ø		EAS-1A1	EAS-2A1	EAS-3A1
	110-130V, AC, 60Hz, 1Ø		EAS-1A2	EAS-2A2	EAS-3A2
	220-240V, AC, 60Hz, 1Ø		EAS-1A3	EAS-2A3	EAS-3A3
	Note: Customer must provide isolator switch on site.				
Gross Weight			390 kg (858 lbs)	660 kg (1,452 lbs)	980 kg (2,156 lbs)
Shipping Dimensions, Maximum (W x D x H)	Assembled		1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")	1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")	N/A
	Module Form	Pallet A	N/A	1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")	1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")
		Pallet B	N/A	1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")	1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")
		Pallet C	N/A	N/A	1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")
	Unassembled	Pallet A	2100 x 1300 x 778 mm (82.7" x 51.2" x 30.6")	2100 x 1300 x 924 mm (82.7" x 51.2" x 36.4")	2100 x 1300 x 1296 mm (82.7" x 51.2" x 51.0")
		Pallet B	N/A	2100 x 1300 x 632 mm (82.7" x 51.2" x 24.9")	2100 x 1300 x 781 mm (82.7" x 51.2" x 30.7")
Maximum	Assembled		3.90 m3 (138 cu.ft.)	7.80 m³ (276 cu.ft.)	N/A
	Module Form		N/A	7.80 m³ (276 cu.ft.)	11.70 m³ (414 cu.ft.)
	Unassembled		2.12 m3 (75 cu.ft.)	4.24 m³ (150 cu.ft.)	5.66 m³ (200 cu.ft.)

Esco Cleanroom Air Showers, Modes of Shipment, Model EAS (A-Series)
Assembled

Module Form

Unassembled


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



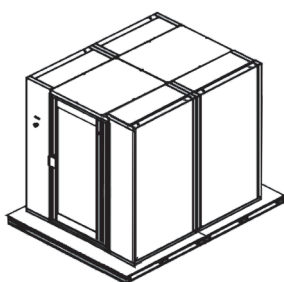
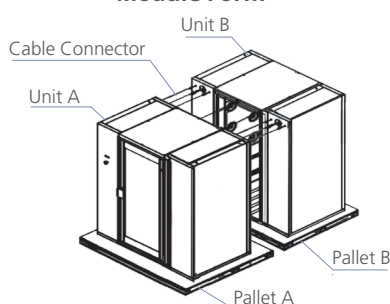
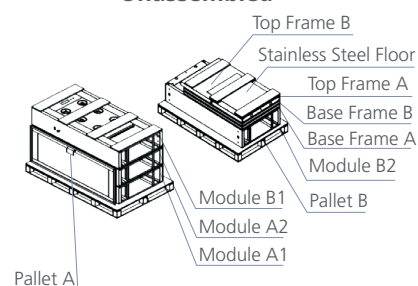
Model EAS (A-Series) Door Direction (Factory Configured. Choose One When Ordering.)



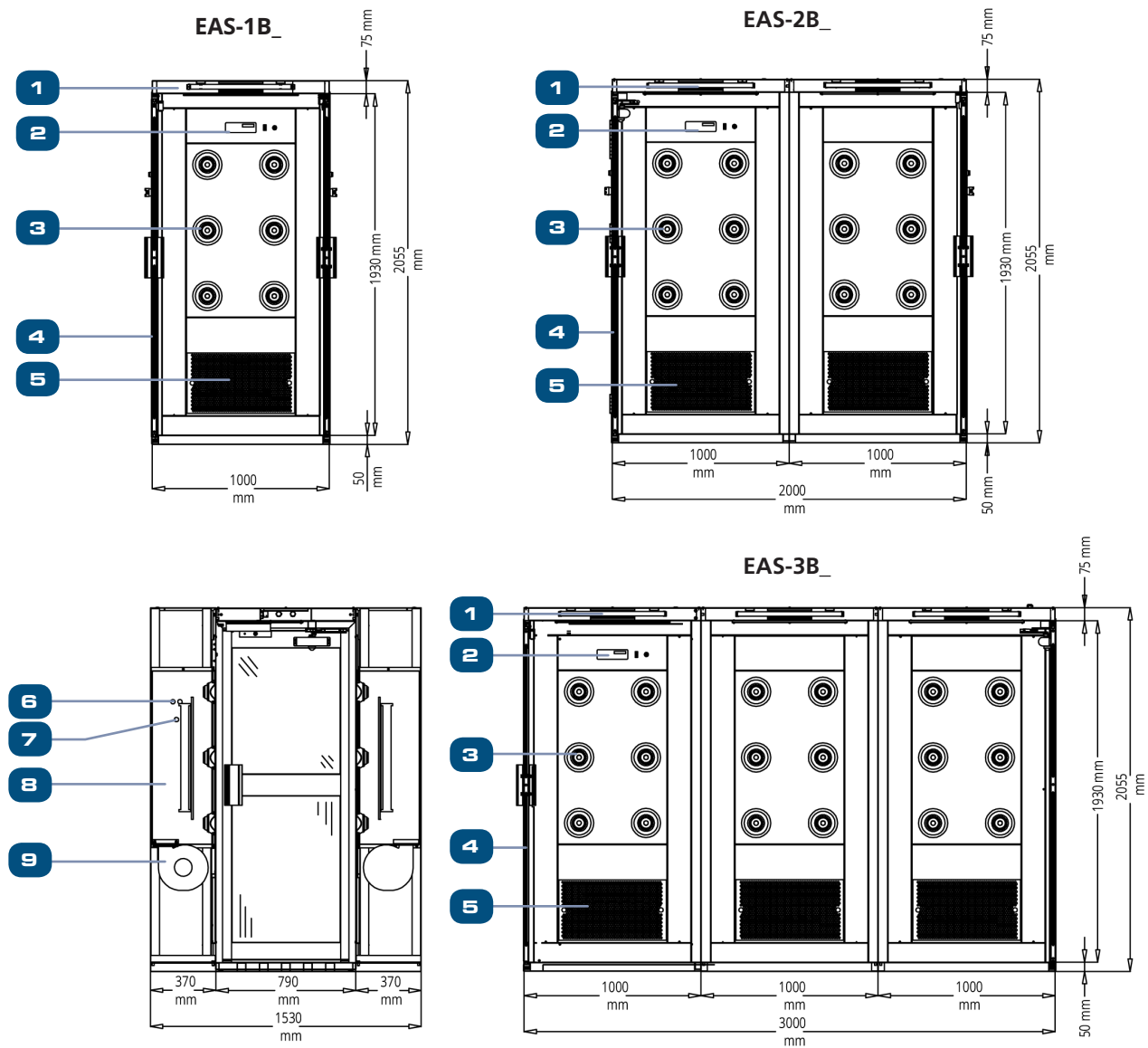
General Specifications, Cleanroom Air Shower, Model EAS (B-Series)

Note to customer: Insert the electrical voltage number into the last model number digit _ when ordering.

Model			EAS-1B_	EAS-2B_	EAS-3B_
External Dimensions (W x D x H)			1530 x 1000 x 2055 mm (60.2" x 39.4" x 80.9")	1530 x 2000 x 2055 mm (60.2" x 78.7" x 80.9")	1530 x 3000 x 2055 mm (60.2" x 118.1" x 80.9")
Internal Work Area, Dimensions (W x D x H)			790 x 936 x 1930 mm (31.1" x 36.2" x 76.0")	790 x 1936 x 1930 mm (31.1" x 76.2" x 76.0")	790 x 2936 x 1930 mm (31.1" x 115.6" x 76.0")
Air Change			743/ Hr	712/ Hr	702/ 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	
Personnel Flow (Persons / Minute)			4	8-12	
			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 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	1500 W, 7 A, 3060 BTU/ Hr
	During Standby		162 W, 0.7 A, 330 BTU/ Hr	200 W, 1 A, 408 BTU/ Hr	250 W, 1.1 A, 510 BTU/ Hr
Electrical	220-240V, AC, 50Hz, 1Ø		EAS-1B1	EAS-2B1	EAS-3B1
	110-130V, AC, 60Hz, 1Ø		EAS-1B2	EAS-2B2	EAS-3B2
	220-240V, AC, 60Hz, 1Ø		EAS-1B3	EAS-2B3	EAS-3B3
	Note: Customer must provide isolator switch on site.				
Gross Weight			450 kg (990 lbs)	820 kg (1808 lbs)	1250 kg (2750 lbs)
Shipping Dimensions, Maximum (W x D x H)	Assembled		1750 x 1250 x 2152 mm (68.9" x 49.2" x 84.7")	1750 x 2500 x 2152 mm (68.9" x 98.4" x 84.7")	N/A
	Module Form	Pallet A	N/A	1750 x 1250 x 2152 mm (68.9" x 49.2" x 84.7")	1750 x 1250 x 2152 mm (68.9" x 49.2" x 84.7")
		Pallet B	N/A	1750 x 1250 x 2152 mm (68.9" x 49.2" x 84.7")	1750 x 1250 x 2152 mm (68.9" x 49.2" x 84.7")
		Pallet C	N/A	N/A	1750 x 1250 x 2152 mm (68.9" x 49.2" x 84.7")
	Unassembled	Pallet A	2100 x 1300 x 1048 mm (82.7" x 51.2" x 41.3")	2100 x 1300 x 1296 mm (82.7" x 51.2" x 51.0")	2100 x 1300 x 1668 mm (82.7" x 51.2" x 65.7")
		Pallet B	N/A	2100 x 1300 x 800 mm (82.7" x 51.2" x 31.5")	2100 x 1300 x 1219 mm (82.7" x 51.2" x 48.0")
Shipping Volume, Maximum	Assembled		4.70 m³ (166 cu.ft.)	9.40 m³ (333 cu.ft.)	N/A
	Module Form		N/A	9.40 m³ (333 cu.ft.)	14.10 m³ (499 cu.ft.)
	Unassembled		2.83 m³ (100 cu.ft.)	5.71 m³ (202 cu.ft.)	7.87 m³ (279 cu.ft.)

Esco Cleanroom Air Showers, Modes of Shipment, Model EAS (B-Series)
Assembled

Module Form

Unassembled


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

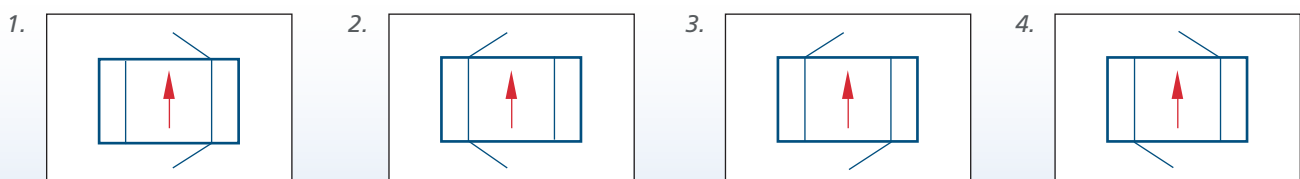


1. LED lamp
2. Sentinel microprocessor system
3. Stainless Steel 304 Nozzles

4. Door
5. Pre-filters
6. Indicator light

7. Emergency switch
8. HEPA filter
9. Blower

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



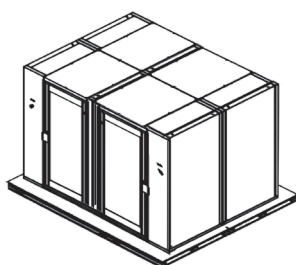
General Specifications, Cleanroom Air Shower, Model EAS (C-Series)

Note to customer: Insert the electrical voltage number into the last model number digit _ when ordering.

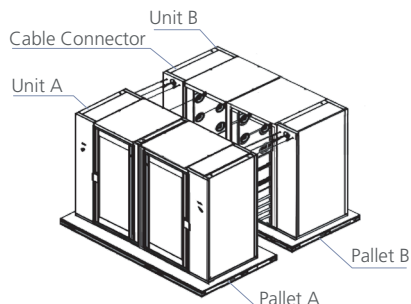
Model		EAS-2C_	EAS-3C_
External Dimensions (W x D x H)		2330 x 2000 x 2055 mm (91.7" x 78.7" x 80.9")	2330 x 3000 x 2055 mm (91.7" x 118.1" x 80.9")
Internal Work Area, Dimensions (W x D x H)		1590 x 1936 x 1930 mm (62.6" x 75.6" x 76.0")	1590 x 2936 x 1930 mm (62.6" x 115.6" x 76.0")
Air Change		354/ Hr	349/ 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
Personnel Flow (Persons / Minute)		8-12	15-23
		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-galvanized steel / White oven-baked epoxy powder-coated finish	
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, 50Hz, 1Ø	EAS-2C1	EAS-3C1
	110-130V, AC, 60Hz, 1Ø	EAS-2C2	EAS-3C2
	220-240V, AC, 60Hz, 1Ø	EAS-2C3	EAS-3C3
	Note: Customer must provide isolator switch on site.		
Gross Weight		910 kg (2006 lbs)	1660 kg (3660 lbs)
Shipping Dimensions, Maximum (W x D x H)	Assembled		2500 x 2500 x 2232 mm (98.4" x 98.4" x 87.9")
	Module Form	Pallet A	2500 x 1250 x 2232 mm (98.4" x 49.2" x 87.9")
		Pallet B	2500 x 1250 x 2232 mm (98.4" x 49.2" x 87.9")
		Pallet C	N/A
	Unassembled	Pallet A	2100 x 1300 x 1296 mm (82.7" x 51.2" x 51.0")
		Pallet B	2100 x 1300 x 800 mm (82.7" x 51.2" x 31.5")
Shipping Volume, Maximum	Assembled		13.94 m³ (493 cu.ft.)
	Module Form		13.94 m³ (493 cu.ft.)
	Unassembled		5.71 m³ (202 cu.ft.)

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

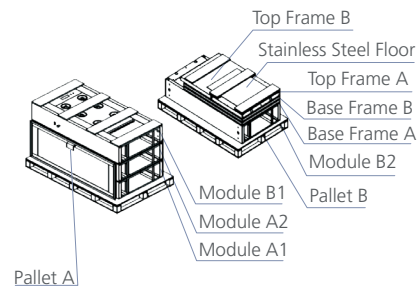
Assembled



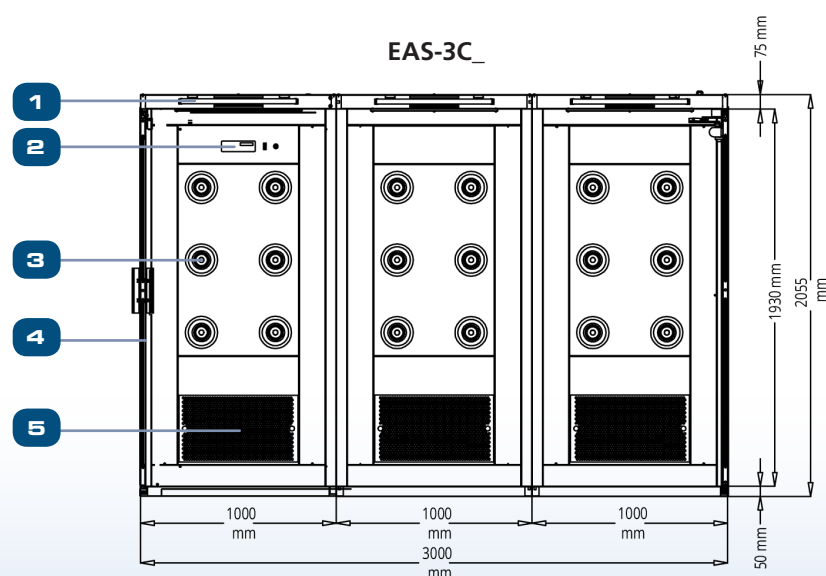
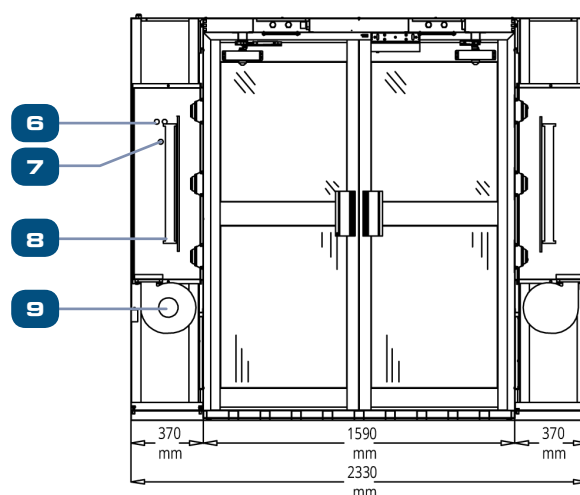
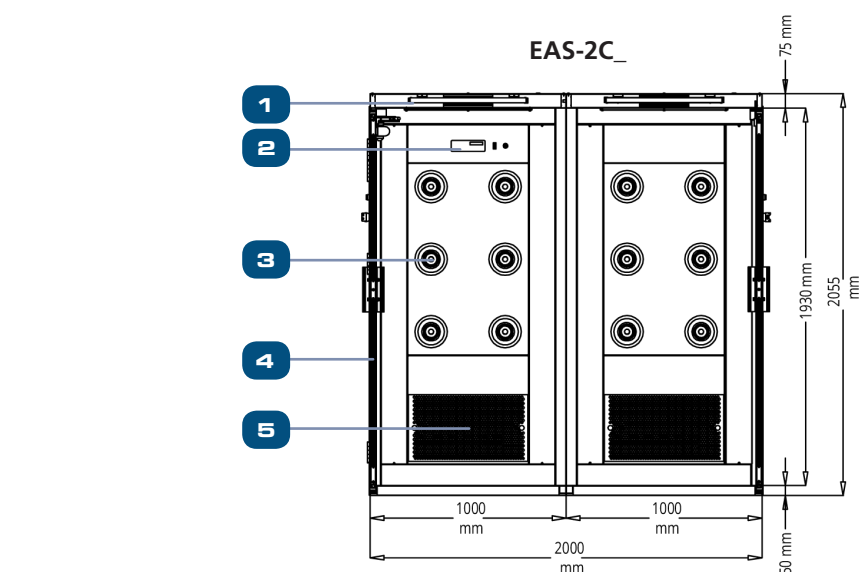
Module Form



Unassembled



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



1. LED lamp
2. Sentinel microprocessor system
3. Stainless Steel 304 Nozzles
4. Door
5. Pre-filters
6. Indicator light
7. Emergency switch
8. HEPA filter
9. Blower

ESCO LIFESCIENCES GROUP NETWORK

42 Locations in 24 Countries All Over the World



- Global Offices
- Distributors
- Factories
- R&D Centers
- Regional Distribution Centers



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
 HEALTHCARE



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