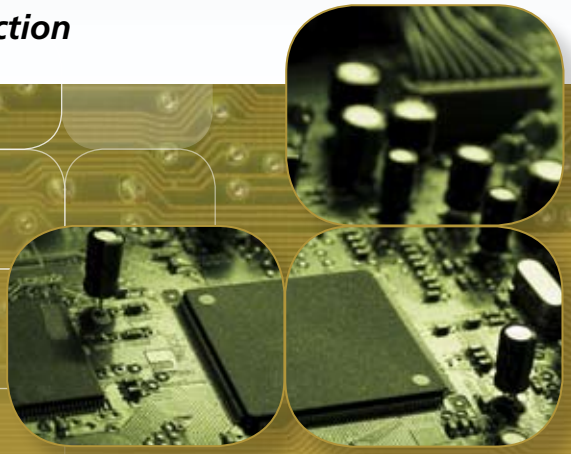
Enterprise®

Enterprise Laminar Flow Straddle Units, Model EQUI06-ESUS

Laminar Flow Straddle Units, Single and Double

The Leading Solution for Industrial Process Protection



ESCO
WORLD CLASS. WORLDWIDE.

	Cabinet Performance	Air Quality	Filtration	Electrical Safety
Standards Compliance	IEST-RP-CC002.2, Worldwide	ISO 14644.1, Class 4, Worldwide IEST-G-CC1001, Worldwide IEST-G-CC1002, Worldwide	EN-1822 (H14), Europe IEST-RP-CC001.3, Worldwide IEST-RP-CC007.1, Worldwide IEST-RP-CC034.1, Worldwide	UL 61010-1, USA CAN/CSA-22.2, No.61010-1 EN 61010-1, Europe IEC 61010-1, Worldwide

** Type-tested for cross-contamination and product protection using the microbiological testing methods adapted from this biological safety cabinet standard.*

Main Features

- Quiet, reliable, permanently lubricated direct drive centrifugal blowers.
- Long-life ULPA filter for supply airflow.
- Sterile work zone environment created for optimum product protection.
- Esco antimicrobial coating on all painted surfaces minimizes contamination.
- Available in single, double, 1.2 and 1.8 meter (4' and 6') models.
- Multiple units may be connected for production line applications.
- Units are floor mounted with stainless steel work surfaces isolated from the main frame to reduce vibration.

Esco Experience

Esco is a leader in premium laminar flow clean benches for the global industrial and life sciences market. Since 1978, Esco has installed tens of thousands of laminar flow clean benches providing reliable protection for samples and work processes for a multitude of applications.

Esco laminar flow clean benches are the premium selection for the discerning purchaser, offering a combination of value, high quality construction, low operating noise levels, and a wide product range to suit all budgets, from the industry leader.

Esco Enterprise Laminar Flow Straddle Units are designed for larger-scale process protection in industrial applications typically requiring multiple units connected in an assembly line configuration. They may be placed within an ISO Class 8 cleanroom to provide an ultra-clean environment directly at the process level, without the initial and operating costs associated with a full-sized ISO Class 3 or 4 cleanroom.

Air Cleanliness Standards
(ISO 14644-1, Air Cleanliness Particle Limits
(No. of Particles / m^3)

Particle Size (µm)	Cleanliness Class					
	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
0.1	10	100	1000	10000	100000	1000000
0.2	2	24	237	2370	23700	237000
0.3	-	10	102	1020	10200	102000
0.5	-	4	35	352	35200	35200
1.0	-	-	8	83	835	8320
5.0	-	-	-	-	29	293

Vertical Laminar Flow Straddle Units

Esco Enterprise Laminar Flow Straddle Units feature vertical laminar flow and are available in single and double sided models. Vertical laminar flow generates less turbulence around large pieces of equipment as compared to horizontal laminar flow designs.

- In vertical flow models, filtered air is passed through the main chamber of the clean bench in a vertical laminar (unidirectional) air stream before being exhausted through the front opening of the clean bench.
- Double sided units are suitable for larger-scale industrial applications. Roller or belt conveyors can be configured with the units to faciliate assembly operations.

Applications

Uses include applications where there is no generation of biohazardous materials and operator protection is not required.

- Cleanrooms, electronics assembly, semiconductors, pharmaceutical, aerospace, and medical devices industries.
- Mycology and food microbiology.
- Plant and mammalian cell culture.
- Clinical pharmacy and hospital use.
- Applications benefiting from the isolated work surface frame design which virtually eliminates vibration.

The Highest Quality Construction

All Esco products are manufactured for the most demanding cleanroom applications.

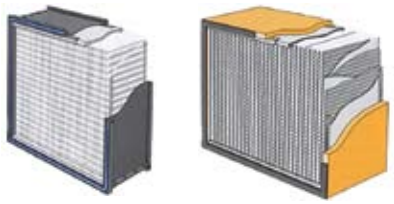
- The straddle unit work surface is constructed of stainless steel, making the work zone easy to clean. The interior surface will not chip, rust or generate particles.
- Reliable rocker switches operate the fan and lights and a Minihelic™ pressure gauge monitors straddle unit operation.
- Built-in warm white, electronically ballasted, 5000k lighting provides excellent illumination of the work zone and reduces operator fatigue. The reliable lighting system is zero-flicker and instant start.
- All components are designed for maximum chemical resistance and enhanced durability for a long service life.
- The main body of the straddle unit is constructed of industrial-grade electrogalvanized steel.
- The straddle unit is mobile on casters and may be fixed in place via the built-in leveling feet.
- All straddle unit components are clean room compatible.
- Isocide eliminates 99.9% of surface bacteria within 24 hours of exposure.
- Transparent acrylic side panels enhance visibility and create a more comfortable work environment for the operator as opposed to conventional stainless steel or painted steel sides.
- Acrylic side panels are removable when multiple units are connected.
- Acrylic is scratch and abrasion resistant, does not particulate, and decontaminates easily.

Enhanced Filtration System

The enhanced filtration system on the straddle unit is designed to provide the highest level of air quality within the work zone, meeting all relevant standards (see technical specifications for details).

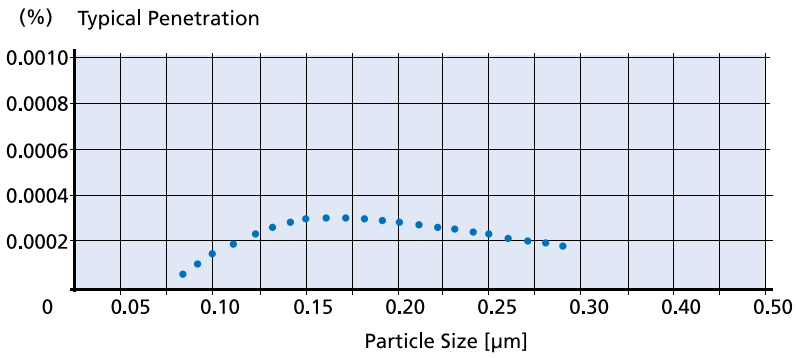
- Esco straddle units provide ISO Class 4 air cleanliness within the work zone as per ISO 14644.1, 10 times cleaner than the usual Class 5 classification on laminar flow cabinets offered by the competition.
- High quality ULPA filters utilizing an improved mini-pleated separation technique to maximizes surface area improves efficiency and extends the filter life. Filters operate at a typical efficiency of >99.999% at 0.1 to 0.3 micron sizes, providing superior product protection over conventional HEPA filters.
- An additional disposable pre-filter on all models traps large particles in the inflow air prior to reaching the main filter, protecting it against damage and prolonging its life.

Mini-pleat Separatorless Filter (left) vs. Conventional Aluminium Separator Filter (right)



Esco cabinets use Swedish Camfil Farr® mini-pleat filters without aluminum separators to increase filter efficiency, minimize the chance of leakage, and to prolong filter life. Filters include a lightweight aluminum frame for structural stability and elimination of swelling common to conventional wood frames.

Esco ULPA Filter Efficiency



● Typical Penetration

Esco straddle units use ULPA filters (per IEST-RP-CC001.3) instead of conventional HEPA filters commonly found in laminar flow cabinets.While HEPA filters offer 99.99% typical efficiency at 0.3 micron level, ULPA filters provide >99.999% typical efficiency for particle sizes of 0.1 to 0.3 micron level.

Vertical Laminar Flow Straddle Unit Airflow Diagram

- ULPA-filtered air
- Unfiltered / Potentially contaminated air
- Room air / Inflow air

- During operation, room air is drawn through the top of the straddle unit via a washable polyurethane pre-filter with 20% arrestance, trapping larger particles and increasing the life of the main filter.
- The air is then forced evenly through the ULPA filter with >99.999% efficiency, resulting in a unidirectional stream of clean air projected vertically over the internal work zone. All airborne contaminants are flushed and diluted, resulting in a particulate-free work environment.
- The purified air then leaves the storage area across the entire open front of the straddle unit.
- A nominal filter face velocity of 0.45 m/s (90 fpm) ensures that there is a sufficient number of air changes within the enclosed area of the straddle unit in order to maintain cleanliness.

Blower Efficiency

- Esco straddle units incorporate permanently lubricated direct drive centrifugal blowers.
- The energy efficient external rotor motor design reduces operating costs and has extremely low noise and vibration levels.
- Built-in solid state variable speed controllers, with integral RFI and noise filters, are superior to conventional "step" controllers and offer infinite adjustment from zero to maximum setting.

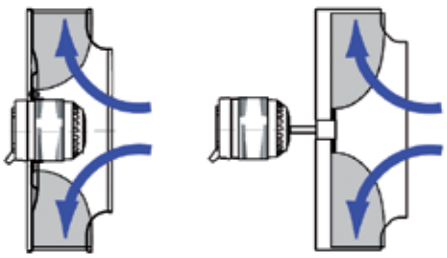
Designed and Built to Exceed Safety Criteria

All components used in Esco products meet or exceed all applicable safety requirements.

- Each straddle unit is individually factory tested for safety and performance in accordance with international standards.
- All electrical components are UL listed or UL recognized, ensuring superior electrical safety for the operator.
- All Esco straddle units meet general safety requirements set by independent testing laboratories (see technical specifications for details).

Warranty

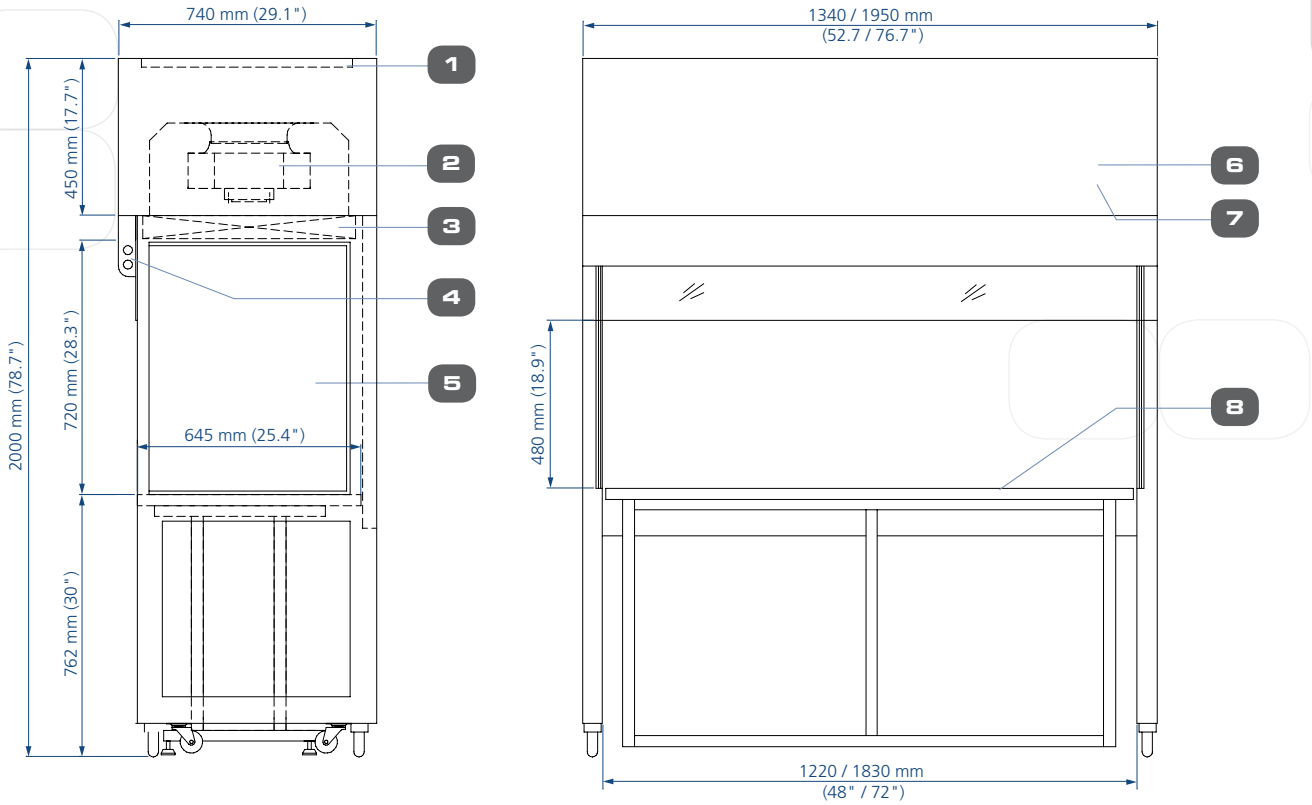
Esco Enterprise Straddle Units come with a 12 months warranty, excluding consumable parts and accessories. Contact your local representative for specific warranty details.



Esco Centrifugal Fan with External Rotor Motor (left) vs. Conventional Fan with Standard Motor (right)

- *Esco cabinets use German made **ebm-papst**® permanently lubricated, centrifugal motor/blowers with external rotor designs.*
- *Integrated blades narrow the profile and eliminate need for a motor shaft.*
- *Motors are selected for energy efficiency, compact design, and flat profile. The completely integrated assembly optimizes motor cooling.*
- *All rotating parts are unitized and balanced for smooth, quiet, vibration-free operation.*

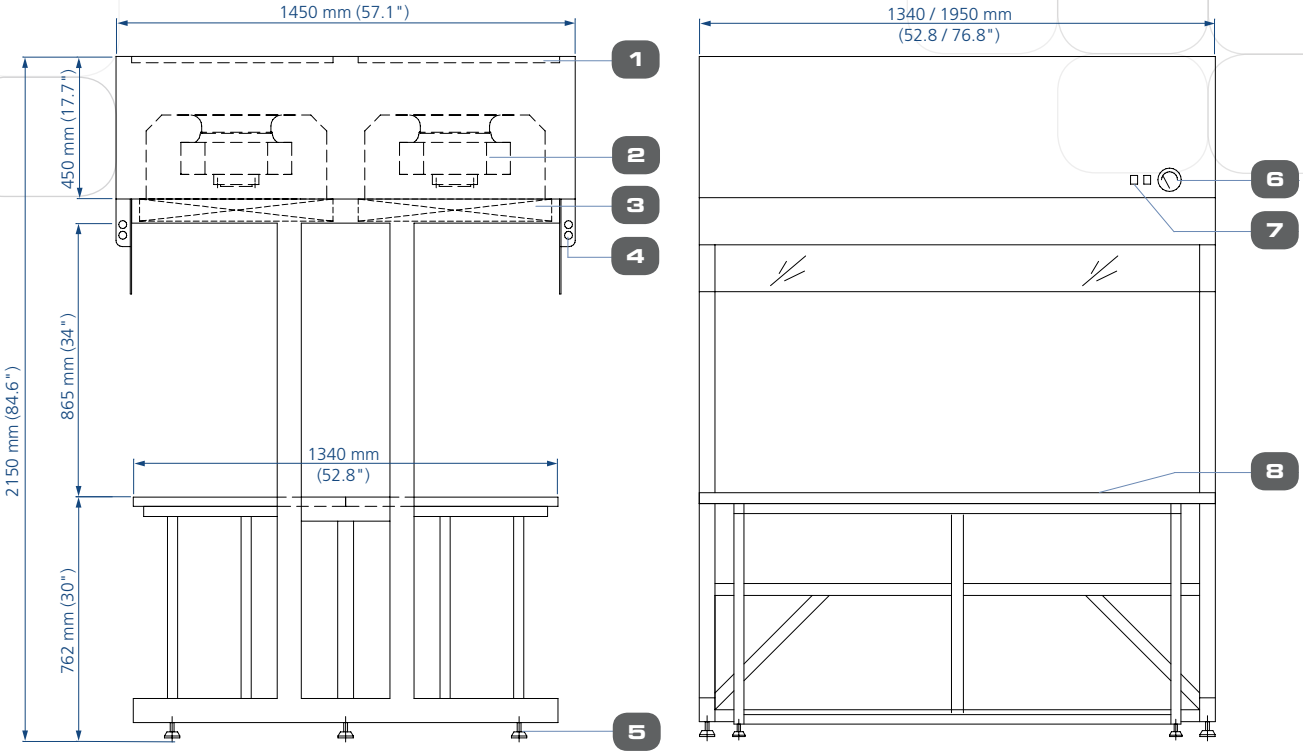
Model EQU/0_-ESUS Enterprise Laminar Flow Single Straddle Unit Technical Specifications



1. *Pre-filter*
2. *Blower*
3. *ULPA filter*
4. *Fluorescent lamp*
5. *Acrylic sides*
6. *Pressure gauge*
7. *Operating switches*
8. *Isolated stainless steel table*

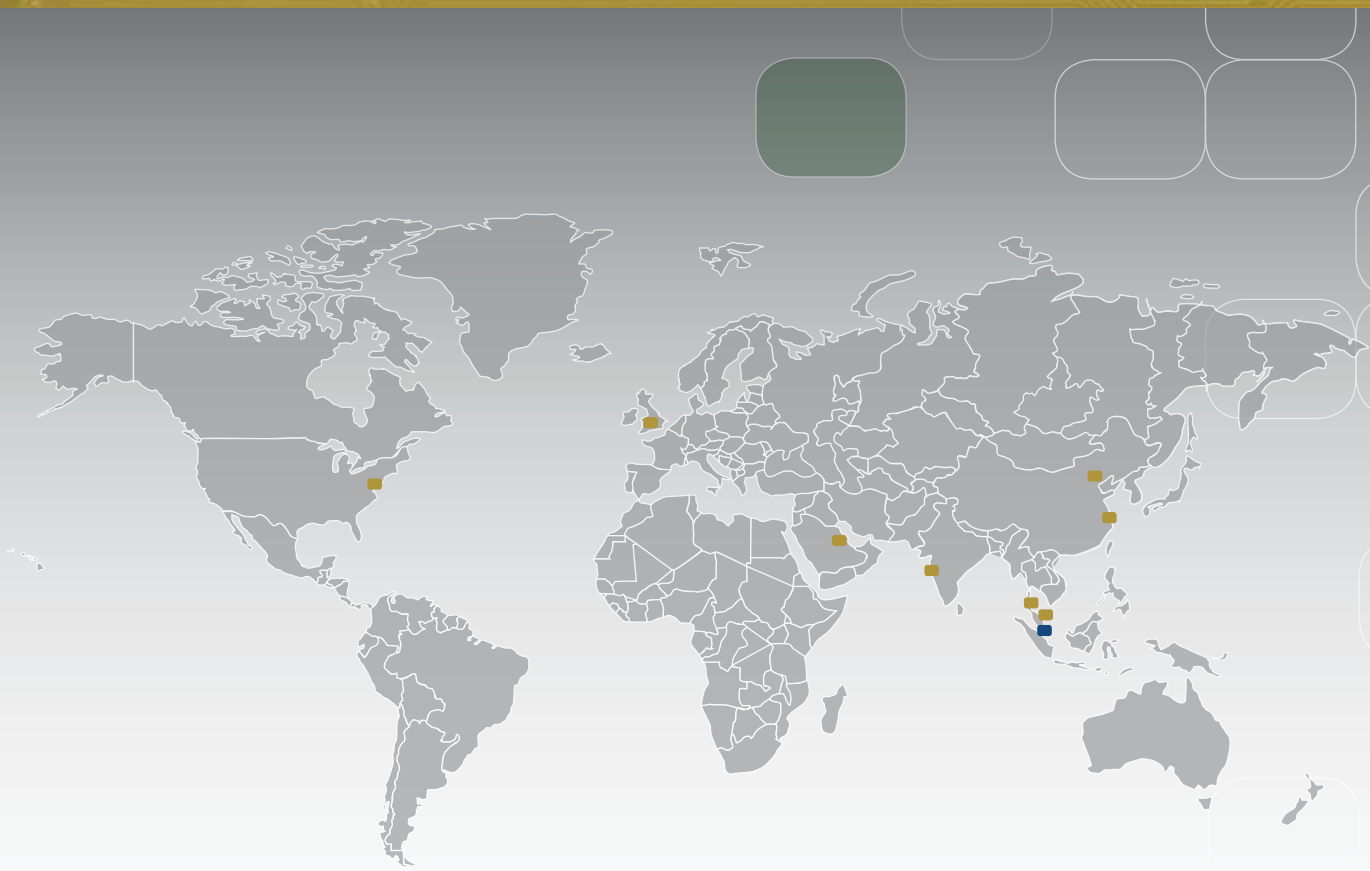
General Specifications, Enterprise Laminar Flow Single Straddle Unit			
Model		EQU/04-ESUS	EQU/06-ESUS
Nominal Size		1.2 meters (4')	1.8 meters (6')
External Dimensions (W x D x H)		1340 x 740 x 2000 mm (52.7" x 29.1" x 78.7")	1950 x 740 x 2000 mm (76.7" x 29.1" x 78.7")
Internal Work Area, Dimensions (W x D x H)		1220 x 645 x 720 mm (48" x 25.4" x 28.3")	1830 x 645 x 720 mm (72" x 25.4" x 28.3")
Usable Work Zone		1220 x 645	1830 x 645
Initial Airflow Velocity		Average of 0.45 m/s or 90 fpm (+/- 20%)	
Air Volume		1205 m^3/h	1810 m^3/h
Pre-Filter		Washable non-woven polyester fibers with 90% arrestance and 20% efficiency	
HEPA Filter Typical Efficiency		99.99% at partical size 0.3 µm	
Sound Emission Per IEST-RP-CC002.2		62 dBA	63.5 dBA
Fluorescent Lamp Intensity At Zero Ambient		1000 Lux	
Cabinet Construction	Main Body	1.5 mm (0.06") electro-galvanised steel with white oven-baked epoxy powder-coated finish.	
	Work Zone	1.2mm (0.05") 18 gauge stainless steel grade 304	
Net Weight		220 kg (484 lbs)	300 kg (660 lbs)
Shipping Weight		270 kg (594 lbs)	360 kg (792 lbs)
Shipping Dimensions, Maximum (W x D x H)		1500 x 900 x 2200 mm (59" x 35.4" x 86.6")	2100 x 900 x 2200 mm (82.6" x 35.4" x 86.6")
Electrical	220-240V, AC, 50Hz, 1ø	EQU/04-ESUS	EQU/06-ESUS
	Cabinet Power/ Amp	380 W/ 2 A	680 W/ 4 A
	BTU/ Hr	775	1387

Model EQU/0_-ESUD Enterprise Laminar Flow Double Straddle Unit Technical Specifications



1. *Pre-filter*
2. *Blower*
3. *ULPA filter*
4. *Fluorescent lamp*
5. *Leveling feet*
6. *Pressure gauge*
7. *Operating switches*
8. *Isolated stainless steel table*

General Specifications, Enterprise Laminar Flow Double Straddle Unit			
Model		EQU/04-ESUD	EQU/06-ESUD
Nominal Size		1.2 meters (4')	1.8 meters (6')
External Dimensions (W x D x H)		1340 x 1450 x 2150 mm (52.7" x 57.1" x 84.6")	1950 x 1450 x 2150 mm (76.7" x 57.1" x 84.6")
Internal Work Area, Dimensions (W x D x H)		1340 x 1340 x 865 mm (52.8" x 52.8" x 34")	1950 x 1340 x 865 mm (76.8" x 52.8" x 34")
Usable Work Zone		1340 x 1340	1950 x 1340
Initial Airflow Velocity		Average of 0.45 m/s or 90 fpm (+/- 20%)	
Air Volume		2410 m^3/h	3620 m^3/h
Pre-Filter		Washable non-woven polyester fibers with 90% arrestance and 20% efficiency	
HEPA Filter Typical Efficiency		99.99% at partical size 0.3 µm	
Sound Emission Per IEST-RP-CC002.2		63.5 dBA	65 dBA
Fluorescent Lamp Intensity At Zero Ambient		1000 Lux	
Cabinet Construction	Main Body	1.5 mm (0.06") electro-galvanised steel with white oven-baked epoxy powder-coated finish.	
	Work Zone	1.2mm (0.05") 18 gauge stainless steel grade 304	
Net Weight		420 kg (924 lbs)	600 kg (1320 lbs)
Shipping Weight		500 kg (1100 lbs)	700 kg (1540 lbs)
Shipping Dimensions, Maximum (W x D x H)		1500 x 1600 x 2200 mm (59" x 63" x 86.6")	2100 x 1600 x 2200 mm (82.6" x 63" x 86.6")
Electrical	220-240V, AC, 50Hz, 1ø	EQU/04-ESUD	EQU/06-ESUD
	Cabinet Power/ Amp	680 W/ 4A	1220 W/ 8A
	BTU/ Hr	1387	2489



Esco Containment, Clean Air and Laboratory Equipment Products

Biological Safety Cabinets, Class II, III
Fume Hoods, Conventional, High Performance, Ductless Carbon Filtered
Laminar Flow Cabinets, Horizontal, Vertical, PCR
Animal Containment Workstations
Hospital Pharmacy Isolators, Cytotoxic Safety Cabinets
Specialty Workstations: *In-Vitro* Fertilization, Powder Weighing
PCR Thermal Cyclers, Conventional, Real-Time
Cleanroom Fan Filter Units, Modular Rooms, Air Showers, Pass Thrus

Since 1978, Esco has emerged as a leader in the development of controlled environment, laboratory and cleanroom 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. www.escoglobal.com.

NSF / ANSI 49 Biological Safety Cabinets • Animal Containment Workstations • Fume Hoods • Clean Benches

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