



Airstream® Horizontal Laminar Flow  
Model: LHG-4DS-F\_

# Airstream®

**Horizontal Laminar Flow Cabinets**  
Ideal for Plant Tissue Culture





## Welcome to Esco

*Esco's Vision is to provide enabling technologies for scientific discoveries to make human lives healthier and safer.*

The Esco Lifesciences Group is committed to deliver innovative solutions for the clinical, life sciences, research, industrial, laboratory, pharmaceutical, and IVF community. With the most extensive product line in the industry, Esco have passed a number of international standards and certifications. Esco represents innovation and forward-thinking designs, that are of the highest standard quality since 1978.

**Availability and Accessibility.** Esco has headquarters in Singapore, Indonesia, and Philippines, with manufacturing facilities are located in Asia and Europe. Research and Development (R&D) is conducted worldwide spanning the US, Europe and Asia. Sales, services and marketing subsidiaries are located in 42 major markets including US, UK, Japan, China and India. Esco regional distribution centers are located in Singapore, Malaysia, Thailand, Vietnam, Myanmar, Indonesia, Philippines, Bangladesh, Hong Kong, Taiwan, South Korea, China, Japan, India, UAE, Central and South Africa, Denmark, Germany, Italy, Lithuania, Russia, United Kingdom, and USA. Because of our worldwide presence, you can be sure that Esco is within your reach.

**High Quality, Reliable, and Dependable.** Esco products are of high quality, reliable, and dependable; assuring customers of research accuracy. Cross functional teams from Esco Production, R&D, Quality Assurance, and Senior Management, are regularly assembled to review and implement areas for improvement.

**Esco Cares for Your Safety.** Esco focuses on providing safety not just for your samples but also for you and the environment.

**Esco Cares for Your Comfort.** Building ergonomic designs and reducing noise levels of the units ensures comfort for our users.

**Esco Cares for the Environment.** One in every four of Esco's employees is involved in R&D and a number of them evaluate new components and/or designs to produce energy efficient equipment. Being GREEN is more than just modifying parts used to produce a new energy efficient technology, it is also embodied in the every aspect of the company.

**Customer Service and Support.** Our service does not stop once purchase has been done. Esco gives on-time customer service and offers end-user seminars, service training, preventive maintenance, and provides educational materials and informative videos.

As Esco takes the opportunity to respond to the world's needs, we aim not only to contribute in the advancement of scientific discoveries but also in making the world a safer, healthier, and better place to live in.

# Airstream®

Laminar Flow Cabinets

# Products and Application

## Laboratory Equipment

### Sample Handling and Preparation

- Class I Biological Safety Cabinets
- Class II Biological Safety Cabinets
- Class II Type A2 Biological Safety Cabinets
- Class II Type B1 Biological Safety Cabinets
- Class II Type B2 Biological Safety Cabinets
- Class III Biological Safety Cabinets
- Horizontal Laminar Flow Cabinets
- Vertical Laminar Flow Cabinets
- Laboratory Animal Research Workstations
- Laboratory Centrifuges

### Sample Cultivation

- CO<sub>2</sub> Incubators, Direct Heat Air-Jacketed
- CO<sub>2</sub> Incubators with Cooling System
- CO<sub>2</sub> Incubators with High Heat Sterilization
- Laboratory Shakers

### Amplification and Detection

- Conventional Thermal Cyclers
- Microplate Shakers
- PCR Cabinets

### Sample Storage & Sample Protection Solutions

- Ultra-low Temperature Freezers
- Lab Refrigerators and Freezers
- Sample Database Management Software
- Intelligent Remote Monitoring Application Protocol
- Remote Monitoring, Datalogging, Programming Software
- Wireless Monitoring System

### Chemical Research

- Ducted Fume Hoods
- Ductless Fume Hoods
- Filtered Storage Cabinets
- Powder Weighing Balance Enclosure
- Exhaust Blowers
- Fume Hood Airflow Monitor

### General Equipment

#### Laboratory Thermostatic Products

- Forced Convection Laboratory Oven
- Forced Convection Laboratory Incubator
- Natural Convection Laboratory Incubator
- Refrigerated Laboratory Incubator

## Medical / IVF Equipment

### Controlled Embryo Handling

- Esco Multi-Zone ART Workstation
- Esco Multi-Zone ART Workstation Class II
- AVT Anti-Vibration Table
- Semi-Closed Environment (SCE) IVF

### Safe Embryo Culture

- MIRI® Multiroom Incubator
- MIRI® II Multiroom Incubator
- Mini MIRI® Humidified Incubator
- Mini MIRI® Dry Incubator
- CelCulture® CO<sub>2</sub> Incubator

### Innovative Time-Lapse Imaging

- MIRI® Time-Lapse Incubator

### Accurate Quality Control

- MIRI® GA Gas and Temperature Validation Unit

### Unique Consumables

- CultureCoin®

## Healthcare

### Esco Pharma Products

#### Airflow Containment

- BioBooth™
- Ceiling Laminar Airflow (CLAF)
- Cytoculture® Cytotoxic Safety Cabinet
- Pharmacon™ Downflow Booth
- Esco Garment Storage Cabinet
- Esco Glassware Hoods
- Laminar Flow Horizontal/Vertical Trolley (LFH/VT)
- Laminar Flow Straddle Units
- Evidence Drying Cabinet

#### Isolation Containment

- Advanced Processing Platform Isolator (APPI)
- Aseptic Containment Isolator (ACTI)
- Blood Cell Labelling Isolator
- Streamline® Closed Restricted Access Barrier System (SLC-RABS)
- Containment Barrier Isolator (CBI)
  - CBI-Unidirectional (CBI-U)
  - CBI-Turbulent (CBI-T)
  - CBI-Class III Biosafety Cabinet (CBI-III)
  - CBI-Convertible Class III/Class I Biosafety Cabinet (CBI-H)
- Isoclean® Healthcare Platform Isolator (HPI)
  - HPI-G3-Without Filter Below Work Zone
  - HPI-G3-With Filter Below Work Zone
  - HPI-Inflatable Seal (HPI-IS)
- General Processing Platform Isolator
  - GPPI-Inflatable Seal (GPPI-IS)
  - GPPI-Static Seal (GPPI-SS)
- Streamline® Compounding Isolator
  - SCI - Isolator Configuration
  - SCI - Class III Biosafety Cabinet (SCI-III)
- Technetium Dispensing Isolator
- Turbulent Flow Aseptic Isolator (TFAI)
- Weighing and Dispensing Containment Isolator (WDCI)

#### Cross Contamination Facility Integrated Barrier

- BioPass™ Pass Through
- Cleanroom Air Showers
- Dynamic Pass Boxes/ Dynamic Floor Laminar Hatches
- Infinity® Air Shower Pass Box
- Esco Sputum Booth
- Infinity® Pass Boxes
- Infinity® Cleanroom Transfer Hatch
- Soft Capsule® Soft Wall Cleanroom

#### Ventilation Containment

- Ventilated Balance Enclosure

### Esco VacciXcell Products

#### Bioreactors and Fermenters

- CelXrocker™
- CelCradle™
- CelShaker™
- CelCradle™ X
- CelCradle Semi-Automated Harvesting System™ (CCX-SAH)
- BioXcell™
- StirCradle™
- StirCradle™ PRO
- TideXcell™
- TideXcell™ Harvesting System (TXLHS)
- VXL™ Hybrid Bioreactor

#### Cell Culture Monitoring, Media and Consumables

- Super Plus™
- Plus™ Vero
- Plus™ MDCK
- Plus™ MDCK II
- BioNOC™ II macrocarriers
- GlucCell™ Glucose Monitoring System
- CVD Kit

#### Filling Line Equipment

- Filling Line Isolators
- cRabs (close restricted access barriers)
- oRabs (open restricted access barriers)

#### Integrated Solutions

- Cell Processing Isolator
- Cell Processing Center

### Esco TaPestle Rx Products

#### Pharmacy Compounding Solutions

- Compounding Pharmacy Isolators (SCI, HPI, CBI, GPPI)
- Safety Cabinets and Enclosures (CYT, Class II BSC, VBE, LFC)
- Aseptic Filling Systems

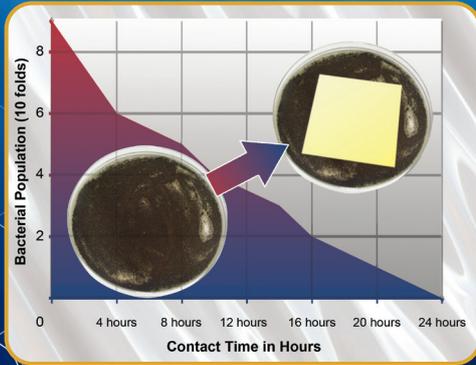
#### Radiopharmacy Equipment Solutions

- Radioisotope Fume Hood
- Lead-lined Biosafety Cabinet
- Technetium Dispensing Isolator
- Blood Cell Labeling Isolator
- GMP-compliant Radioisotope Dispensing Isolator



### Simple Switches Controller

- Easy-to-use and robust
- Pressure gauge to indicate filter load



### Isocide™ Antimicrobial Coating

- Silver-ion impregnated powder coat
- Inhibits microbial growth to improve safety



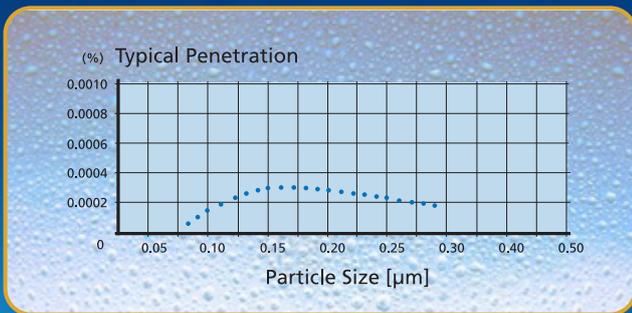
### Glass Enclosed Work Zone

- Comfortable unobstructed view
- No electrical outlets, service fixtures and IV bar holes, or gaps, to facilitate easy cleaning and prevent harboring contamination



### Single Piece Tray

- Easy-to-clean
- Optional hole for glass bead sterilizer



### ULPA Filter

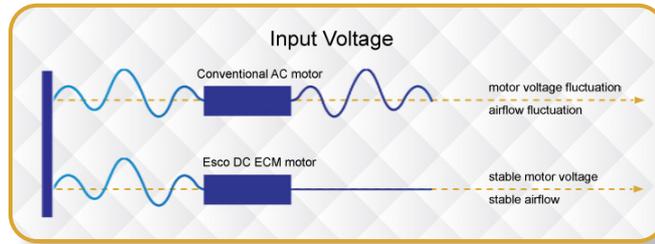
- 10x filtration efficiency than of HEPA filter, creates an ISO Class 3 work-zone instead of the industry standard ISO Class 5
- 10x cleaner work-zone than cabinets with HEPA filter



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## Energy-efficient DC ECM Blower

- 70% Energy savings from AC motor
- Stable airflow, despite building voltage fluctuations
- Night Setback to further reduce power consumption by 60%



## Designed to be the Ultimate Green and Serene

Plant Tissue Culture is one of the most promising branches of plant science, occupying key positions in plant biotechnology, plant breeding, and plant propagation. Plant tissue culture, by definition, is the application of various techniques for the aseptic culture of plant cells, tissues, organs, and their components under known physical and chemical conditions *in vitro*.

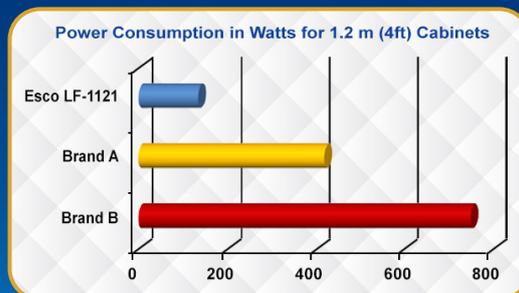
The remarkable success of the applications of plant tissue culture in plant biotechnology and plant science has led it to its significant roles in agriculture, forestry, and horticulture. Several of its applications include large-scale micro-propagation, somatic embryogenesis and synthetic seed technology, genetic engineering of plants by gene transfer technology, and commercial production of plants.

Among the many concerns in plant tissue culture, the sensitivity of its samples to any source of contamination highly influences its success. A single bacterial cell or fungal spore can be fatal to a small plant piece since it can easily contaminate the growth media. It is essential to maintain a sterile environment as much as possible to avoid the contamination of samples, and this can be provided by the use of a laminar flow cabinet.

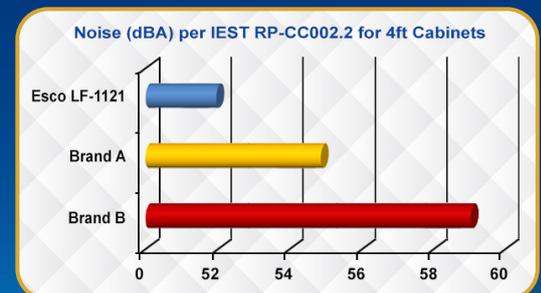
### The Role of Esco in Plant Tissue Culture

Since 1978, Esco has installed tens of thousands of laminar flow cabinets for the global life sciences market, providing reliable protection for samples and work processes of multitude of applications. Esco laminar flow cabinets are the premium selection for the discerning researchers, offering a combination of value, high quality construction, low operating noise levels and a wide product range.

Introducing Airstream® Horizontal Laminar Flow Cabinets, designed specifically for plant tissue culture. It offers a combination of smooth and easily cleanable work zone, easy-to-use features, superior filtration efficiency, and energy-efficient technology as part of Esco's advocacy to produce environment-friendly laboratory equipment. Experience quality protection. Experience innovation.

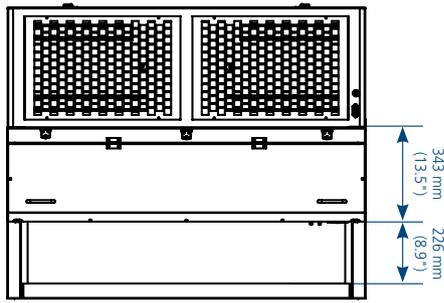


**Green - Very Low Energy Consumption**

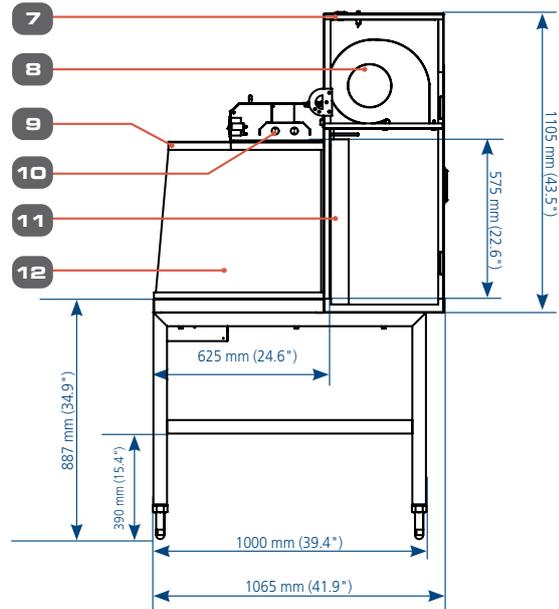
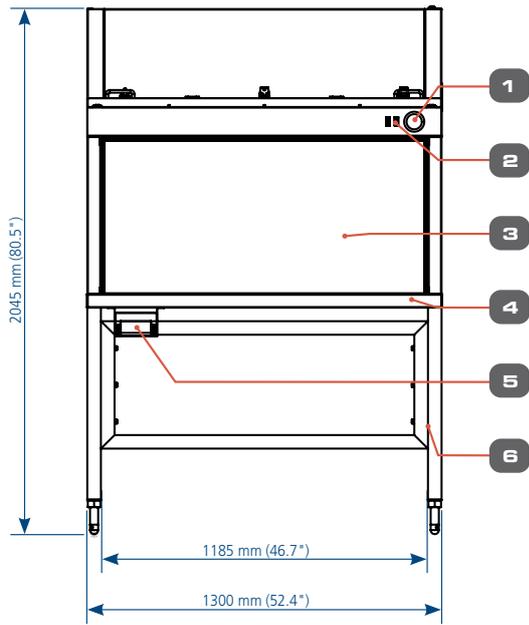


**Serene - One of the World's Quietest Laminar Flow Cabinet**

# HORIZONTAL LAMINAR FLOW CABINET ENGINEERING DRAWING



- 1. Pressure Gauge
- 2. Operating Switches
- 3. Stainless Steel Diffuser
- 4. Stainless Steel Work Tray
- 5. Stainless Steel Tray
- 6. Support Stand
- 7. Pre-filter
- 8. DC-ECM Blower
- 9. Tempered Glass Ceiling
- 10. LED lamp
- 11. ULPA Filter
- 12. Tempered Glass Side Panel



## Guide to Models, Horizontal Laminar Flow Cabinet

LHG - DS - F

1st Placeholder Product Line		2nd Placeholder Flow		3rd Placeholder Side Wall		4th Placeholder Width		5th Placeholder Internal Width		6th Placeholder Control		7th Placeholder Window		8th Placeholder Electrical	
Laminar Flow	L	Horizontal	H	Glass	G	4 feet	4	3 ft. width, Glass ceiling construction	D	Simple Switches	S	Fixed	F	230 VAC, 50/60 Hz	8
															115 VAC, 50/60 Hz

Example Code: LHG-4DS-F8

Specifications: Laminar Flow Cabinet, Horizontal Flow, Glass sided walls, 4 ft. width, Simple Switches controller, Fixed window, and 230 VAC, 50/60 Hz

## TECHNICAL SPECIFICATIONS

Model	230 VAC 50/60 Hz	LHG-4DS-F8 (2120725)
	120 VAC 50/60 Hz	LHG-4DS-F9 (2120726)
Nominal Size	1.2 meter (4')	
External Dimensions (W x D x H)	1300 x 1065 x 1105 mm (51.2" x 41.9" x 43.5")	
Gross Internal Dimensions (W x D x H)	1185 x 625 x 575 mm (52.8" x 24.5" x 22.6")	
Usable Work Area	0.74 m <sup>2</sup> (7.96 ft <sup>2</sup> )	
Airflow	0.45 m/s (90 fpm)	
ULPA Filter Typical Efficiency	>99.999% at 0.1 to 0.3 micron, ULPA as per IEST-RP-CC001.3 USA >99.999% at MPPS, H14 as per EN 1822 EU	
Sound Emission per IEST-RP-CC002.2 / NSF 49	52 dBA	
LED Lamp Intensity (lux)	>1800 lux (>167 foot candles)	
Cabinet Construction	Main body	1.2 mm (0.05") /18 gauge EG Steel With Isocide™ Oven-Baked Epoxy-Polyester Powder Coating
	Work Zone	Tray: 1.2 mm (0.08") / 18 gauge, SS 304, 4B Finish
	Side Walls	8 mm (0.3") UV Absorbing Tempered Glass
Electrical 230 VAC, 50/60 Hz	Cabinet Full Load Amps (FLA)	6
	Heat Load (BTU / Hr)	460
	Nominal Power Consumption	135 W
Electrical 120 VAC, 50/60 Hz	Cabinet Full Load Amps (FLA)	3.5
	Heat Load (BTU / Hr)	444
	Nominal Power Consumption	130 W
Net Weight *	200 Kg (441 lbs)	
Shipping Weight *	250 Kg (551 lbs)	
Shipping Dimensions, Maximum (W x D x H)*	1550 x 1300 x 1300 mm (45.3" x 51.2" x 51.2")	
Shipping Volume, Maximum *	2.3 m <sup>3</sup> (81.2 ft <sup>3</sup> )	

\*In an open field condition

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# ESCO

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