Introduction

Esco is the world leader in premium laminar flow clean benches for the global life sciences market. Since 1978, Esco has installed tens of thousands of laminar flow cabinets 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 researcher, 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.

Designed and Built for Enhanced Usability

Esco laminar flow clean benches incorporate a number of features to ensure operator comfort and enhanced productivity.

- The clean bench work surface is constructed of stainless steel, making the work zone easy to clean. The interior surface will not chip, rust or generate particles.
- The spillage-retention work top design with a recessed central area ensures that all liquid spills are contained (not applicable for AVC-6D_).
- The ergonomically designed work surface with a curved front edge is designed for maximum operator comfort.
- 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.

User-Friendly Control System

The Esco Sentinel™ microprocessor-based control system supervises all cabinet functions. The controls are easily configurable to meet user requirements and come equipped with a number of enhanced features.

- Accurate true airflow velocity sensing technology, measures all critical cabinet airflow parameters allowing superior monitoring. Temperature compensated sensors ensure increased accuracy.
- Built-in solid state variable speed controller is superior to conventional “step” controllers and offer infinite adjustment from zero to maximum setting.
- Audible and visual alarms ensure product protection by alerting the user in the event of low airflow.
- A bright, easy-to-read, LED display provides continuous monitoring of clean bench airflow.
- The intelligent blower system automatically adjusts to maintain airflow as the filter becomes loaded with particulates, eliminating the need for constant adjustment and ensuring optimum performance and product protection.

Enhanced Filtration System

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

- All Esco laminar flow clean benches provide ISO Class 3 air cleanliness within the work zone as per ISO 14644.1, significantly cleaner than the usual Class 5 classification on cabinets offered by the competition.
- High quality ULPA filters, utilizing an improved mini-pleat separation technique to maximize surface area (improving efficiency and extending the life of the filter), operate at a typical efficiency of >99.999% at 0.1 to 0.3 micron sizes, providing superior 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.
- Esco’s vertical flow clean benches incorporate Auto-Purge™ slots at the back of the work zone which eliminate turbulence and enhance product protection.
The Highest Quality Cabinet Construction
All Esco products are manufactured for the most demanding laboratory applications.

- All components are designed for maximum chemical resistance and enhanced durability for a long service life.
- The main body of the clean bench is constructed of industrial-grade electro-galvanized steel.
- All cabinet components are clean room compatible.
- Isocide eliminates 99.9% of surface bacteria within 24 hours of exposure.
- Transparent tempered glass side panels enhance visibility and create a more comfortable work environment for the operator as opposed to conventional stainless steel or painted steel sides.
- Tempered glass is scratch and abrasion resistant, does not particulate, and decontaminates easily.

Blower Efficiency
- Esco laminar flow clean benches incorporate permanently lubricated direct drive centrifugal blowers.
- The energy efficient external rotor motor design reduces operating costs and has extremely low noise and vibration.

- The intelligent blower system maintains airflow as the filter becomes loaded, ensuring optimum efficiency and product protection.

Designed and Built to Exceed Safety Criteria
All components used in Esco products meet or exceed all applicable safety requirements.

- Each cabinet is individually factory tested for safety and performance in accordance with international standards.
- Most of electrical components are UL listed or UL recognized, ensuring superior electrical safety for the operator.
- All Esco laminar flow clean benches meet general safety requirements set by independent testing laboratories (see technical specifications for details).
- Esco AVC models have been type-tested to the EN 12469:2000 for cross-contamination and product protection using microbiological testing methods.

Warranty
All Esco Airstream vertical and horizontal flow clean benches come with an extended 3 year warranty, excluding consumable parts and accessories. Contact your local representative for specific warranty details.

Accessories and Options
Esco offers a variety of options and accessories to meet local applications. Contact Esco or your local Sales Representative for ordering information.

- Support stands
- Electrical outlet, ground fault
- Petcock (air, gas, vacuum)
- Germicidal UV lamp
- Transparent front cover
- PVC armrest
- Height-adjustable lab chair
- Ergonomic foot rest
- IV Bar, with hooks

Sentinel Delta Microprocessor Control System

Vertical Laminar Flow Clean Bench

- A nominal filter face velocity of 0.45 m/s or 90 fpm ensures that there is a sufficient number of air changes within the enclosed area of the cabinet in order to maintain cleanliness.
- The purified air travels across the working zone of the cabinet in a vertical, unidirectional stream and leaves the main work chamber across the entire open front of the cabinet and through Auto-Purge™ slots at the back wall of the work zone. Auto-Purge™ slots are designed to eliminate air turbulence and the possibility of dead-air corners in the work zone.

<table>
<thead>
<tr>
<th>Standards Compliance</th>
<th>Cabinet Performance</th>
<th>Air Quality</th>
<th>Filtration</th>
<th>Electrical Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 12469</td>
<td>ISO 14644.1 Class 3, Worldwide</td>
<td>EN-1822 (H14), Europe</td>
<td>IEC 61010-1, Worldwide</td>
<td></td>
</tr>
<tr>
<td></td>
<td>JIS 89920 Class 3, Japan</td>
<td>IEST-RP-CC007.1, Worldwide</td>
<td>UL 61010-1, USA</td>
<td></td>
</tr>
</tbody>
</table>

Type-tested for cross-contamination and product protection using the microbiological testing methods adapted from this biological safety cabinet standard.
### General Specifications, Airstream Vertical Laminar Flow Clean Benches

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

<table>
<thead>
<tr>
<th>Model</th>
<th>AVC-2D_</th>
<th>AVC-3D_</th>
<th>AVC-4D_</th>
<th>AVC-5D_</th>
<th>AVC-6D_</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Size</td>
<td>0.6 meters (2')</td>
<td>0.9 meters (3')</td>
<td>1.2 meters (4')</td>
<td>1.5 meters (5')</td>
<td>1.8 meters (6')</td>
</tr>
<tr>
<td>External Dimensions (W x D x H)</td>
<td>Without Base Stand</td>
<td>730 x 764 x 1280 mm</td>
<td>1035 x 764 x 1280 mm</td>
<td>1340 x 764 x 1280 mm</td>
<td>1645 x 764 x 1280 mm</td>
</tr>
<tr>
<td></td>
<td>With Optional Base Stand, 711 mm (28&quot;) type</td>
<td>730 x 764 x 1991 mm</td>
<td>1035 x 764 x 1991 mm</td>
<td>1340 x 764 x 1991 mm</td>
<td>1645 x 764 x 1991 mm</td>
</tr>
<tr>
<td>Internal Work Area, Dimensions (W x D x H)</td>
<td>660 x 700 x 720 mm</td>
<td>965 x 700 x 720 mm</td>
<td>1270 x 700 x 720 mm</td>
<td>1575 x 700 x 720 mm</td>
<td>1880 x 700 x 720 mm</td>
</tr>
<tr>
<td>1.2 mm (0.05&quot;)</td>
<td>26 x 27.5 x 28.3&quot;</td>
<td>38 x 27.5 x 28.3&quot;</td>
<td>50 x 27.5 x 28.3&quot;</td>
<td>62 x 27.5 x 28.3&quot;</td>
<td>74 x 27.5 x 28.3&quot;</td>
</tr>
<tr>
<td>Average Airflow Velocity</td>
<td>0.45 m/s (90 fpm)</td>
<td>0.5 m/s (100 fpm)</td>
<td>0.55 m/s (110 fpm)</td>
<td>0.6 m/s (120 fpm)</td>
<td>0.65 m/s (130 fpm)</td>
</tr>
<tr>
<td>Air Volume</td>
<td>603 m³/h (+/-67 m³/h)</td>
<td>903 m³/h (+/-100 m³/h)</td>
<td>1204 m³/h (+/-134 m³/h)</td>
<td>1506 m³/h (+/-167 m³/h)</td>
<td>1806 m³/h (+/-200 m³/h)</td>
</tr>
<tr>
<td>ULPA Filter Typical Efficiency</td>
<td>&gt;99.999% at particle size between 0.1 to 0.3 µm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sound Emission Per IEST-RP-CC002.2*</td>
<td>&lt;55.5 dBA</td>
<td>&lt;56.5 dBA</td>
<td>&lt;57.5 dBA</td>
<td>&lt;58 dBA</td>
<td>&lt;58.5 dBA</td>
</tr>
<tr>
<td>Fluorescent Lamp Intensity At Zero Ambient</td>
<td>&gt;900 Lux (&gt;83.6 foot candles)</td>
<td>&gt;1075 Lux (&gt;100 foot candles)</td>
<td>&gt;1260 Lux (&gt;117 foot candles)</td>
<td>&gt;1000 Lux (&gt;93 foot candles)</td>
<td>&gt;1100 Lux (&gt;102 foot candles)</td>
</tr>
<tr>
<td>Clean bench Construction</td>
<td>Main Body</td>
<td>1.2 mm (0.05&quot;)</td>
<td>18 gauge electro-galvanised steel with white oven-baked epoxy powder-coated finish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Zone</td>
<td>1.2 mm (0.05&quot;)</td>
<td>18 gauge stainless steel, grade 304, with 4B finish</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UV absorbing tempered glass, 5 mm (0.2&quot;)</td>
<td>Colorless and transparent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical**</td>
<td>Model</td>
<td>Voltage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVC-2D1, AVC-3D1, AVC-4D1, AVC-5D1 &amp; AVC-6D1</td>
<td>220-240V, AC, 50Hz, 1Ø</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVC-2D2, AVC-3D2, AVC-4D2, AVC-5D2 &amp; AVC-6D2</td>
<td>110-120V, AC, 60Hz, 1Ø</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Weight***</td>
<td>106 kg (234 lbs)</td>
<td>127 kg (280 lbs)</td>
<td>152 kg (335 lbs)</td>
<td>171 kg (414 lbs)</td>
<td>225 kg (496 lbs)</td>
</tr>
<tr>
<td>Shipping Weight***</td>
<td>162 kg (357 lbs)</td>
<td>171 kg (377 lbs)</td>
<td>205 kg (452 lbs)</td>
<td>232 kg (538 lbs)</td>
<td>282 kg (622 lbs)</td>
</tr>
<tr>
<td>Shipping Dimensions, Maximum (W x D x H)***</td>
<td>860 x 860 x 1490 mm</td>
<td>1130 x 860 x 1490 mm</td>
<td>1430 x 860 x 1490 mm</td>
<td>1740 x 860 x 1490 mm</td>
<td>2050 x 860 x 1490 mm</td>
</tr>
<tr>
<td>33.8&quot; x 33.8&quot; x 58.6&quot;</td>
<td>44.5&quot; x 33.8&quot; x 58.6&quot;</td>
<td>56.3&quot; x 33.8&quot; x 58.6&quot;</td>
<td>68.5&quot; x 33.8&quot; x 58.6&quot;</td>
<td>80.7&quot; x 33.8&quot; x 58.6&quot;</td>
<td></td>
</tr>
<tr>
<td>Shipping Volume, Maximum***</td>
<td>1.10 m³ (38.8 cu.ft)</td>
<td>1.45 m³ (51.2 cu.ft)</td>
<td>1.83 m³ (64.6 cu.ft)</td>
<td>2.23 m³ (78.7 cu.ft)</td>
<td>2.63 m³ (92.8 cu.ft)</td>
</tr>
</tbody>
</table>

* Noise reading in open field condition/ anechoic chamber.
** Additional voltages may be available; contact Esco for ordering information.
*** Cabinet only; excludes optional stand.

## Model AVC (D-Series), Airstream Vertical Laminar Flow Clean Bench Technical Specifications

1. Pre-filter
2. Fan
3. ULPA filter
4. Fluorescent lamp
5. Standard IV bar Retrofit Kit provision
6. Standard UV light Retrofit Kit provision
7. Tempered glass side Panels
8. Service fixture Retrofit Kit provision (2 holes on each side)
9. Optional front cover
10. Esco Sentinel Delta microprocessor control system
11. Electrical outlet Retrofit Kit provision (1 for 2ft and 3ft models, 2 for 4ft and above)
12. Stainless steel work top with front curved edge
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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