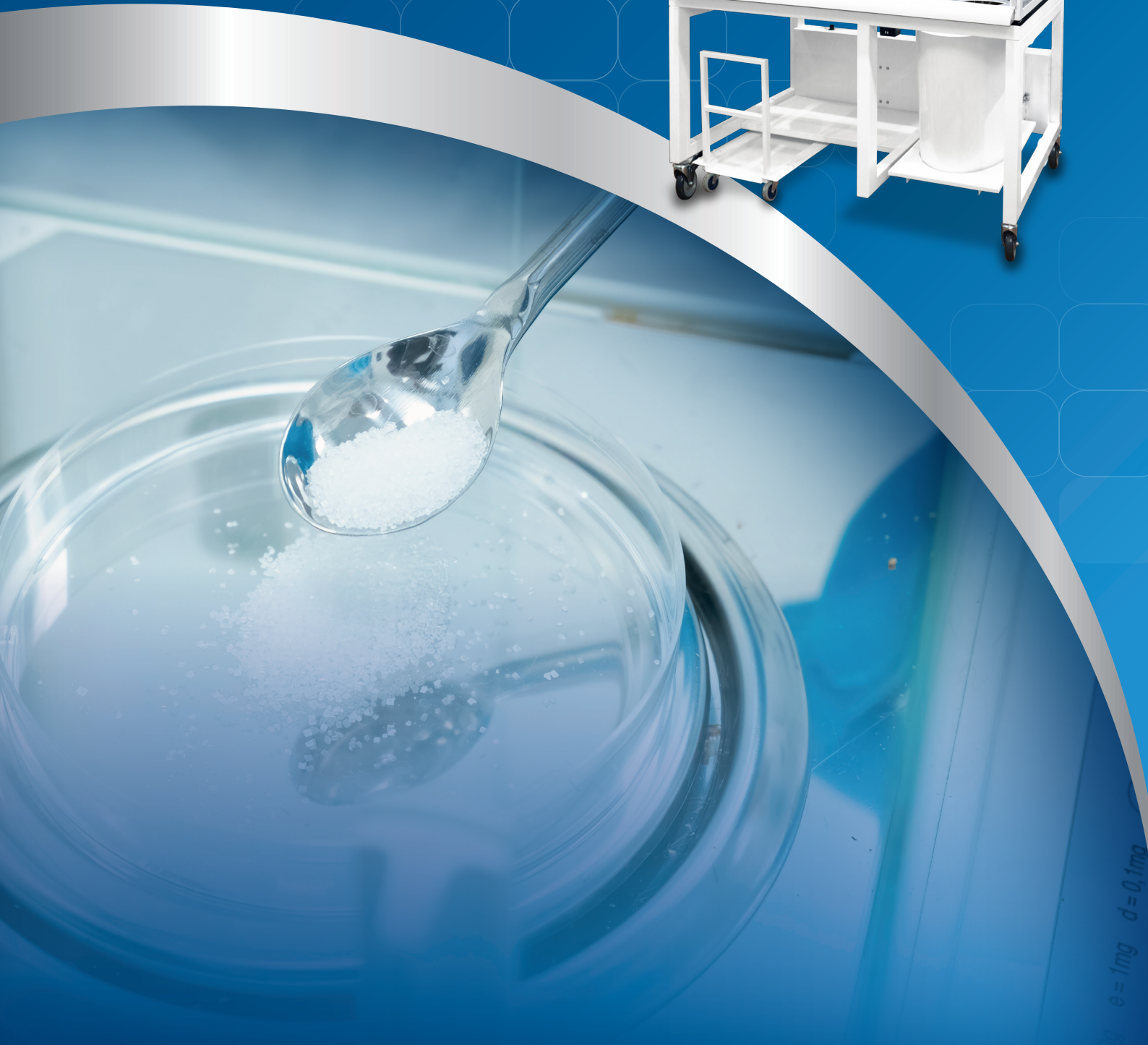


# Ventilated Balance Enclosure (VBE)

Ensuring Stability and Accuracy  
of Powder Weighing Tasks



e = 1mg d = 0.1mg

## Introduction

The Vented Balance Enclosure (VBE) is designed specifically for stability and accuracy while maintaining a high level of operator protection during handling of hazardous airborne powders. With our aerodynamic sash design and arm rest plus a sectionalized baffle, the powders will be well-contained inside the enclosure and discharged through a HEPA filter or directly to the lab exhaust.

## Key Features

- Negative pressure application provides a high level of operator protection from hazardous airborne particles.
- Modular design using VBE modules, the unit can be fully customized.
- The disposal port is equipped with an O-ring to provide a sealed trash bag, as an additional powder containment solution.
- VBE is equipped with a filter, a portable filter, and a blower module for better airflow control.

### TOP COVER

Designed to be ducted or ductless

### BIBO RING WITH BIBO BAG

Provides hazard-free filter change procedure

### SENTINEL MICROPROCESSOR

Provides control, visual monitoring, and alarm system

**SASH SWEEP** – Incoming air from this area sweeps airborne particles away from the sash

**SIDE AIRFOILS** – Designed to maximize the inflow of air via side openings

**MAIN STREAM** – The sash opening provides an airflow velocity of 0.3 m/s

**BLOWER** – With low level noise

**HEPA FILTER** – Provides high-level filtration

- Efficiency: >99.995% at 0.3  $\mu\text{m}$
- Media: Glass Fiber
- Sealing Method: Gasket

**BAFFLE** – Tested to provide optimized airflow inside the enclosure

**SASH HANDLE** – Prevents operator blockage and ensures a continuous inflow of air from the top of the sash towards the internal work zone

**ARM REST** – Provides air from the bottom of the sash into the enclosure; also supplies base sweep

## Optional Features

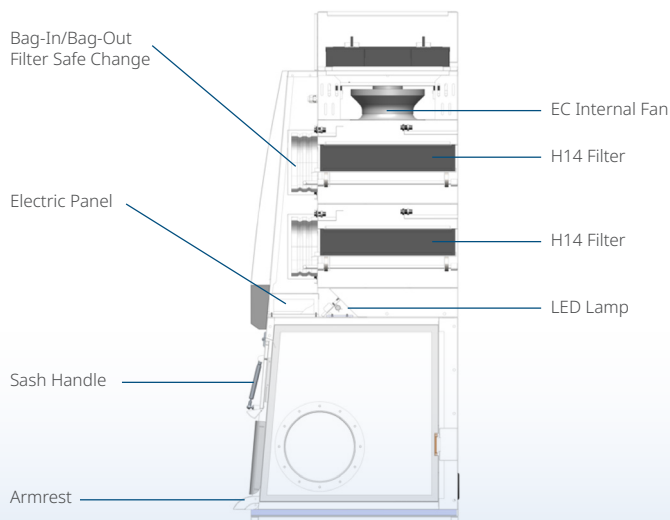
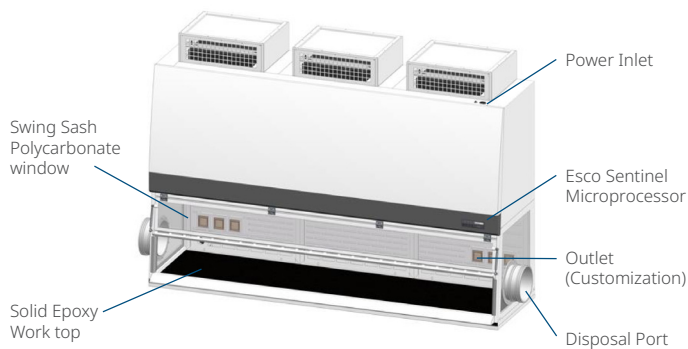
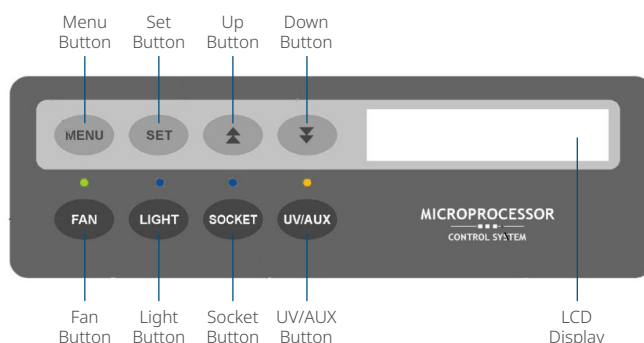
- Add-on RH/Temperature Sensor with LCD
- Add-on carbon filter for removal of volatile compounds or odor control.

## Warranty

One (1) year warranty (excluding consumables). Consumables include ballasts, LED lamps, and filters. The warranty will cover all other parts including the blower, fan switch, and electrical mainboard. During the period of warranty, any repair, modification, testing, and commissioning performed by any unauthorized party other than the Esco Service Team shall void the warranty of the unit.

## Cabinet Construction

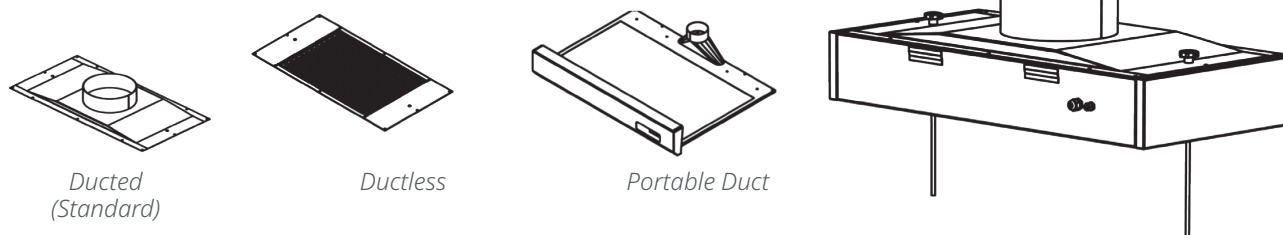
- Constructed with Isocide™ powder-coated electrogalvanized steel with antimicrobial property
- Optional a full stainless steel construction
- Cabinet is shipped fully assembled for ease of installation and operation
- Easy to clean baffle due to the pivoted design



VBE Model with Double Filtration  
VBE-8A8-03DB-C

## EXHAUST MODULE

The Esco Pharma VBE unit has three (3) configuration options for the exhaust system: DUCTED, DUCTLESS, PORTABLE.



Ducted  
(Standard)

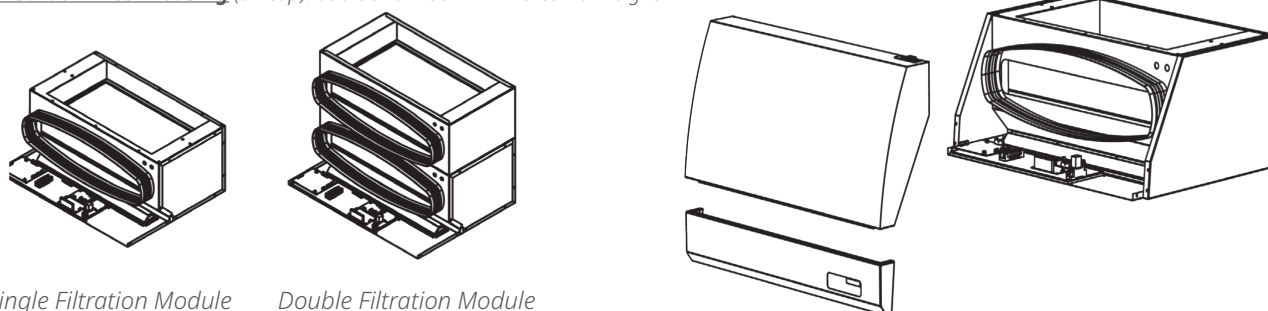
Ductless

Portable Duct

## FILTER MODULE

The Filter Module can be configured to have either a **Single** or a **Double** Filtration System. Each module section quantity may vary from 1 - 3 depending on the width of the enclosure. Additional carbon filter may be supplied for removal of volatile compounds or odor control.

**Optional Carbon Filter housing** (on top): additional 200 mm in external height



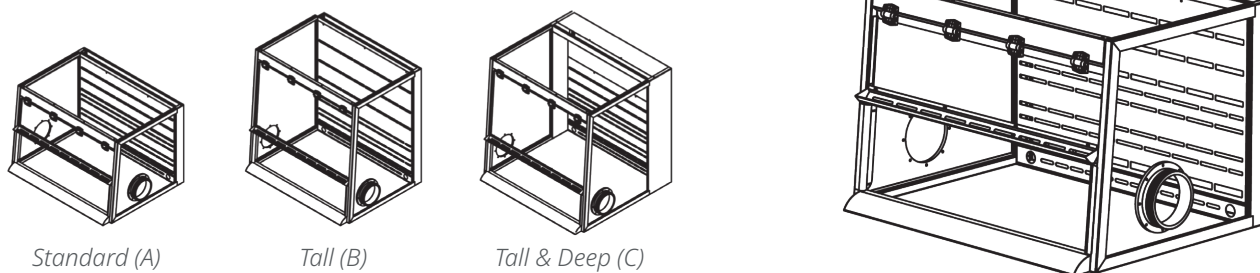
Single Filtration Module

Double Filtration Module

## ENCLOSURE MODULE

The VBE Enclosure covers a wide range of weighing and powder handling options and requirements. We have **Standard (A)**, **Tall (B)**, **Tall & Deep (C)** models.

- **Standard (A)** are smaller models perfect for small spaces, and by adding portable filter options, the end-user can save a great amount of ceiling space.
- **Tall (B)** units are medium-sized models perfect when using tall equipment during powder weighing.
- **Tall & Deep (C)** units are large models perfect for large scale powder handling, it can also be configured to have Worktop with Drum Access Option.



Standard (A)

Tall (B)

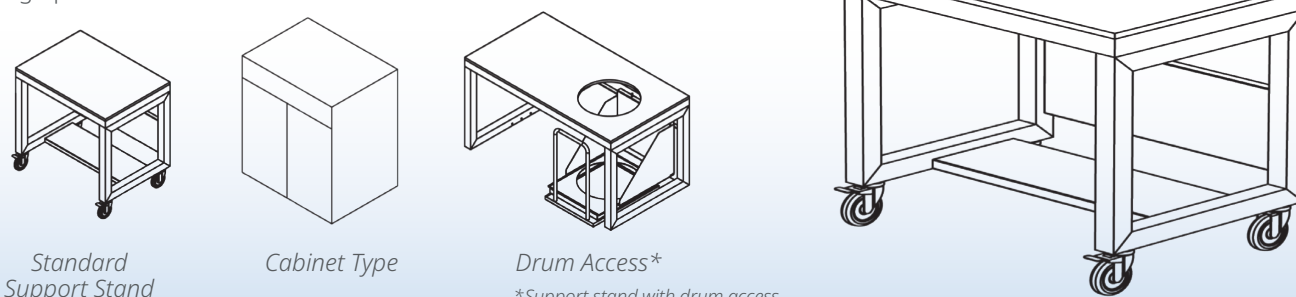
Tall & Deep (C)

## WORKTOP AND BASE (OPTIONAL)

There are three (3) types of Worktop available: **SOLID EPOXY**, **STAINLESS STEEL (SS 316L)**, **GRANITE** (for reduced vibration)

**Worktop Options:** - SS 316L: additional 50 mm in external height  
- Granite/Solid Epoxy: additional 91 mm in external height

For the Base, **SUPPORT STAND**, **CABINET**, **SUPPORT STAND w/ DRUM ACCESS** can be ordered. In addition to this, **Castor wheel** or **Leveling feet** can be selected as footing options.



Standard  
Support Stand

Cabinet Type

Drum Access\*

\*Support stand with drum access  
- Only available for VBE-5C, VBE-6C, VBE-7C and VBE-8C Deep Enclosures (Customized units).

## CARBON FILTER

Carbon Filter	Carbon Type	Size	
CF	A - Organic	<b>2V</b> <ul style="list-style-type: none"> <li><b>Dimension:</b> 420 mm x 457 mm x 65 mm (16.5" x 17.9" x 2.5")</li> <li><b>Used for:</b> VBE with 2 ft, 4 ft, 5 ft, and 8 ft internal widths</li> </ul>	<b>3V</b> <ul style="list-style-type: none"> <li><b>Dimension:</b> 420 mm x 762 mm x 65 mm (16.5" x 30" x 2.5")</li> <li><b>Used for:</b> VBE with 3 ft, 6 ft, and 7 ft internal widths</li> </ul>
	B - Acid		
	C - Mercury		
	D - Sulphur		
	E - Halogen		
	F - Aldehyde		
	G - Ammonia/Amine		
	H - Chloroform/Ethers		

## Comfortable Ergonomic Design

- The 5° angled front frame improves workspace view
- Lightweight sash and properly positioned hinge for easy access inside the equipment
- Instant start-up LED lamp
- The arm rest is raised above the work zone to improve comfort and to ensure the user's arm is not blocking the airflow
- Optimized side panels for proper lighting inside the work zone

## Electrical Safety and Certification Sign

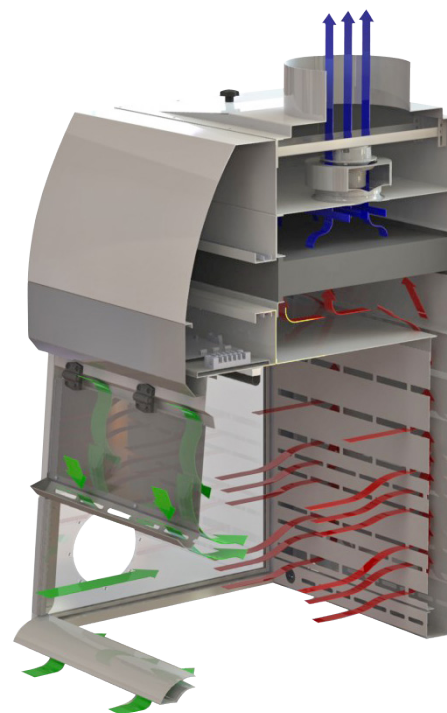
- All components meet or exceed applicable safety requirements
- Each cabinet is individually tested at the factory for electrical safety
- Documentation specific to each cabinet serial number is maintained on file

## Unit Factory Testing

- **Airflow Velocity Check** → Confirms that the air velocity in the chamber is within the specifications and able to prevent cross-contamination in the facility.
- **Filter PAO Leak Test** → detecting system leaks and ensuring containment effectiveness for potent pharmaceutical powders.
- **Noise Level Test**
- **Light Intensity Test**
- **Airflow Visualization Check** → Demonstrates the airflow pattern inside the VBE unit.
- **Vibration Test\***  
*\*Optional for field testing*

## Airflow System

- Air enters the VBE unit through the open sash, via the lower/ middle part of the work zone and through the actual opening on the sash (via sash sweep to allow sweeping of airborne particles away from the sash).
- This air is then pulled through the back wall of the unit by the blowers and passed through HEPA filters (Bag-In, Bag-Out) before being exhausted out of the unit.



- Filtered air
- Room air / Inflow air
- Unfiltered / Potentially contaminated air

### Volume Flow Rate with standard 263 mm sash opening height

<b>2ft:</b> 173 m <sup>3</sup> /hr (102 cfm)	<b>6ft:</b> 520 m <sup>3</sup> /hr (306 cfm)
<b>3ft:</b> 260 m <sup>3</sup> /hr (153 cfm)	<b>7ft:</b> 606 m <sup>3</sup> /hr (357 cfm)
<b>4ft:</b> 347 m <sup>3</sup> /hr (204 cfm)	<b>8ft:</b> 693 m <sup>3</sup> /hr (408 cfm)
<b>5ft:</b> 433 m <sup>3</sup> /hr (255 cfm)	

## Frequently Asked Questions (FAQs)

### Are disposal ports standard by default?

- Disposal ports are included as a default configuration with pre-installed covers.

### Is the trash bag or disposal bag included for the disposal port?

- The trash bag or disposal bag is not included for the disposal port as a standard.

### What are the differences between Ventilated Balance Enclosure (VBE) vs Ascent Fumehood (ADC-E) and Powdermax (PW1)?



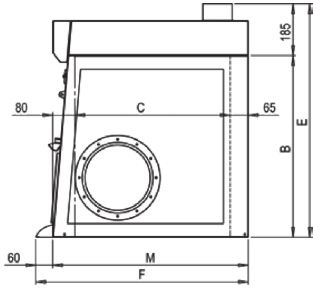
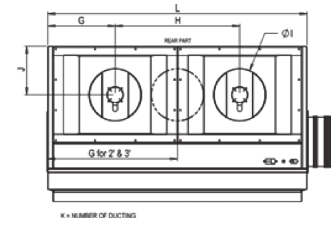
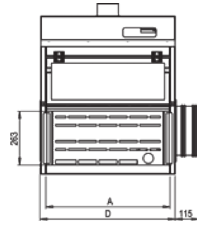
	Powdermax (PW1)	Ascent Fume Hood (ADC-E)	Ventilated Balance Enclosure (VBE)
<b>Application</b>	Ideal for powder weighing / handling granules or particles	Ideal for handling solvents/solutions and chemicals in powdered form/ particles/ - Usually recommended in clean-room applications	Ideal for powder weighing (can reach large scale) for non-sterile hazardous drug preparation. - Provides containment
<b>Classification</b>	Powder weighing balance enclosure	Fume Hood	Containment ventilated enclosure
<b>Exhaust Mode</b>	Ductless only	Ductless	Ducted (standard) or ductless
<b>Filter Module</b>	HEPA only (N/S for carbon filter)	Main filter: Carbon Exhaust filter: HEPA	Single or dual HEPA filtration with option for carbon filter
<b>Airflow Velocity</b>	0.5 m/s	0.4 m/s	0.3 m/s
<b>BIBO</b>	No	No	Yes

## Guide to Models

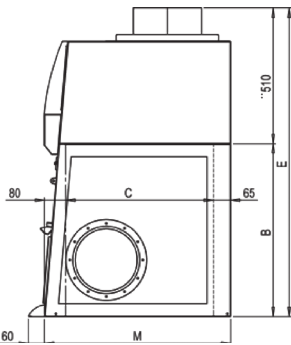
### Guide to Ventilated Balance Enclosure (VBE) Models

VBE-2 A 8-03 S A

Model	Internal Width (mm)	Size	Configuration	Electrical Code	Enclosure Module	Filter Module	Exhaust Type
VBE	610	2	A - Standard B - Tall C - Tall and Deep	7 - 100V 50/60Hz	01 - without filter and blower 02 - with filter 03 - with filter and blower	S - Single Filtration D - Double Filtration	A - Ducted B - Ductless C - Portable Duct
	915	3		8 - 230V 50/60Hz			
	1220	4		9 - 115V 50/60Hz			
	1525	5					
	1830	6					
	2135	7					
	2440	8					

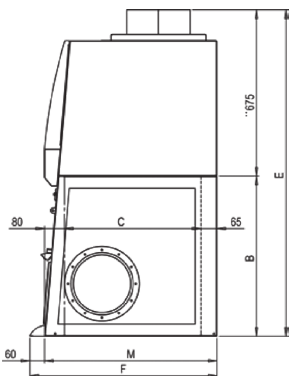


**01 Series**



**02 Series**

\*\*External Height Reference for Ductless "02 series":  
 - Single Filtration: + 385mm  
 - Double Filtration: + 670mm  
 - With ducting: + 125mm

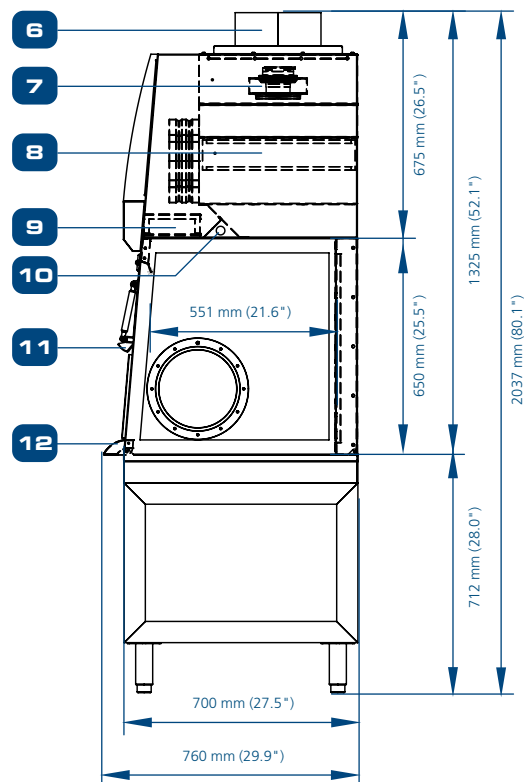
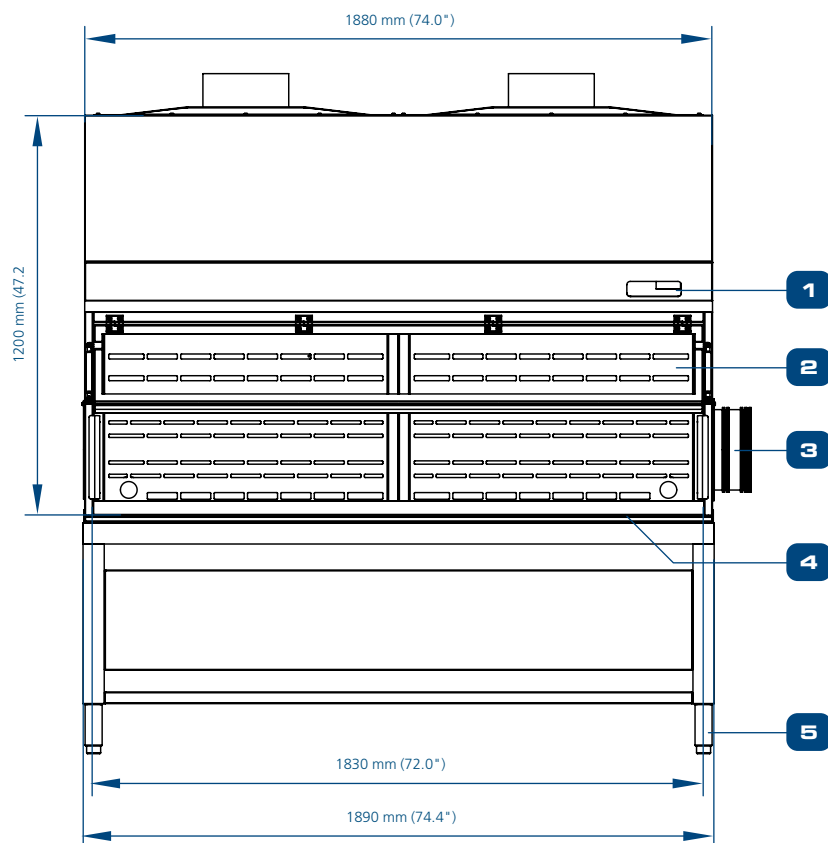
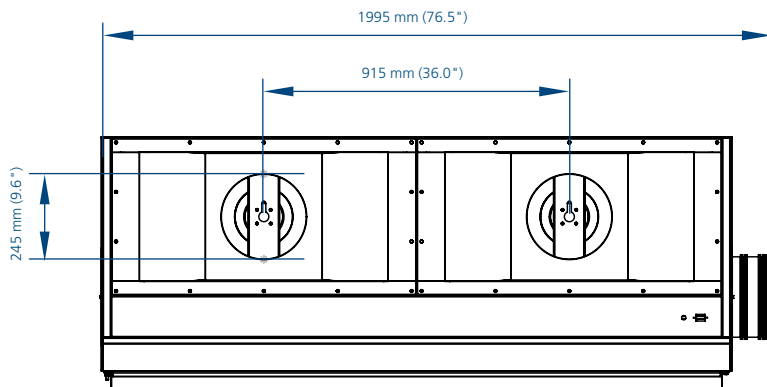


**03 Series**

\*\*External Height Reference for Ductless "03 series":  
 - Single Filtration: + 550mm  
 - Double Filtration: + 835mm  
 - With ducting: + 125mm

SERIES	CONFIG	SIZE	WORK SPACE			EXTERNAL			TOP LAYOUT					BASE SIZE	
			A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (inch)	J (mm)	K (pcs)	L (mm)	M (mm)
01 Series	A	2	610	650	555	666*	835	760	330	-	4"	110	1	660	700
		3	915	650	555	971*	835	760	483	-	4"	110	1	965	700
		4	1220	650	555	1276*	835	760	330	610	4"	110	2	1270	700
		5	1525	650	555	1581*	835	760	407	763	4"	110	2	1575	700
		6	1830	650	555	1886*	835	760	483	915	4"	110	2	1880	700
		7	2135	650	555	2191*	835	760	559	1068	4"	110	2	2185	700
		8	2440	650	555	2496*	835	760	432	814	4"	110	3	2490	700
		8	2440	955	555	2496*	1140	760	330	-	4"	110	1	660	700
	B (TALL)	3	915	955	555	971*	1140	760	483	-	4"	110	1	965	700
		4	1220	955	555	1276*	1140	760	330	610	4"	110	2	1270	700
		5	1525	955	555	1581*	1140	760	407	763	4"	110	2	1575	700
		6	1830	955	555	1886*	1140	760	483	915	4"	110	2	1880	700
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		8	2440	955	555	2496*	1140	760	432	814	4"	110	3	2490	700
		2	610	955	705	666*	1140	910	330	-	4"	110	1	660	850
		3	915	955	705	971*	1140	910	483	-	4"	110	1	965	850
	C (TALL & DEEP)	4	1220	955	705	1276*	1140	910	330	610	4"	110	2	1270	850
		5	1525	955	705	1581*	1140	910	407	763	4"	110	2	1575	850
		6	1830	955	705	1886*	1140	910	483	915	4"	110	2	1880	850
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		8	2440	955	705	2496*	1140	910	432	814	4"	110	3	2490	850
		2	610	650	555	666*	1160	760	330	-	10"	238	1	660	700
		3	915	650	555	971*	1160	760	483	-	10"	238	1	965	700
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	2	610	955	555	666*	1465	760	330	-	10"	238	1	660	700	
	3	915	955	555	971*	1465	760	483	-	10"	238	1	965	700	
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	8	2440	955	555	2496*	1465	760	432	814	10"	238	3	2490	700	
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	2	610	650	555	666*	1325	760	330	-	10"	238	1	660	700	
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	8	2440	955	555	2496*	1630	760	432	814	10"	238	3	2490	700	
B (TALL)	2	610	955	705	666*	1630	910	330	-	10"	238	1	660	850	
	3	915	955	705	971*	1630	910	483	-	10"	238	1	965	850	
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8		2440	955	705	2496*	1630	910	432	814	10"	238	3	2490	850	

## Engineering Drawing (Model: VBE-6A\_-03SA)



- |  |                                   |
|--|-----------------------------------|
| 1. Esco Sentinel™ Silver Microprocessor Controller | 7. ebm-papst® Blower              |
| 2. Polycarbonate Sash Window                       | 8. Bag-In / Bag-Out (BIBO) Filter |
| 3. Disposal Port                                   | 9. Electrical Panel               |
| 4. Stainless Steel Work Top                        | 10. LED Lamp                      |
| 5. Leveling Feet                                   | 11. Sash Handle                   |
|  | 12. Arm Rest                      |

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- 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
- Evidence Drying Cabinet
- Garment Storage Cabinet
- General Processing Platform Isolator (GPPI)
- Laminar Flow Horizontal Trolley
- Laminar Flow Straddle Units, Single and Double
- Laminar Flow Vertical Trolley
- Pass Box
- Soft Wall Cleanroom
- Sputum Booth
- 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.



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