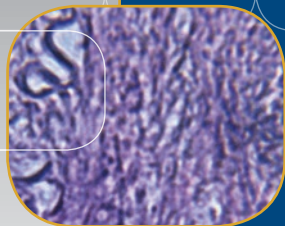# Airstream®

Airstream Class II Type B2 (Total Exhaust)
Biological Safety Cabinet, Model AB2-4S_.
Shown with optional support stand.

Class II, Type B2 (Total Exhaust) Biological Safety Cabinets
The Safety Solution for Life Science Laboratories

ESCO®
WORLD CLASS. WORLDWIDE.

Class II Biohazard safety Cabinet
Operator, Product / Sample and Environment Protection
Read all safety-related instruction before use
Test / certify this cabinet at least annually

Designed to Meet IEC 61010-1
Safety / Protection Standards
ISO 9001 Quality Certified
Manufacturing Environment

ESCO

Fail-safe system

- *Ensures that in case of exhaust failure blockage, the cabinet's main fan automatically shuts down to ensure safety to the user*

Sentinel™ Silver Microprocessor Controller

- *Supervises all cabinet functions*
- *Easy-to-use soft keys for menu, blower, light, UV, electrical outlet, etc.*
- *Large display which monitors the operational parameters*

Single Piece Wall

- *Large radius for easy cleaning*
- *Side-mounted electrical outlets and staggered service fixtures, for easy reach*

Single Piece Work Tray

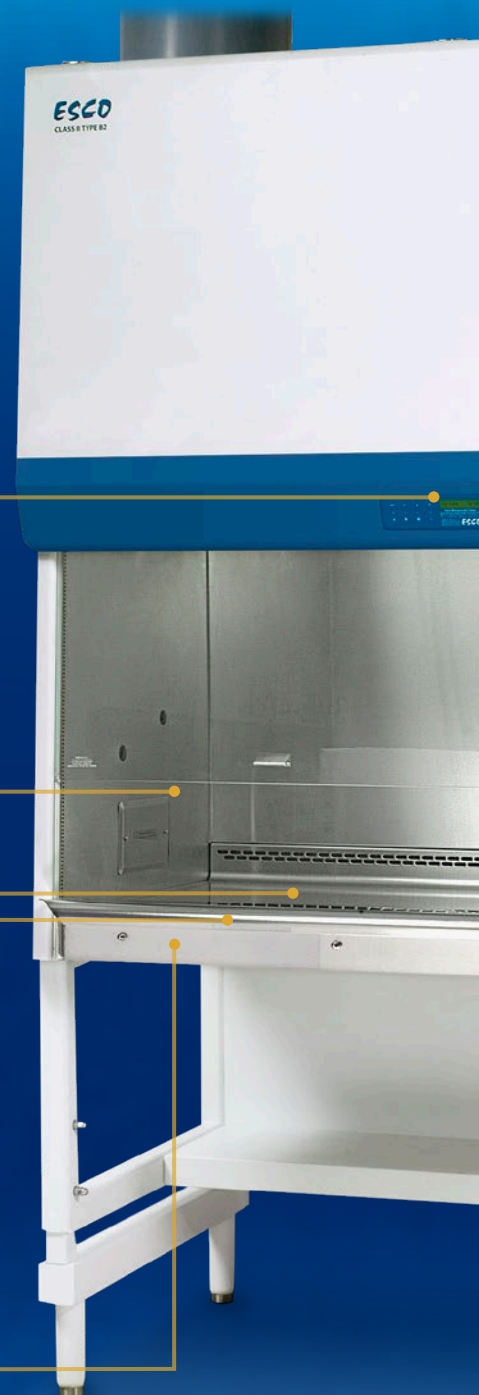- *Recessed to contain spillage*
- *Curved grill to prevent blockage*

Raised Armrest

- *Helps prevent grille blocking*
- *Comfortable working posture*

Angled Drain Pan

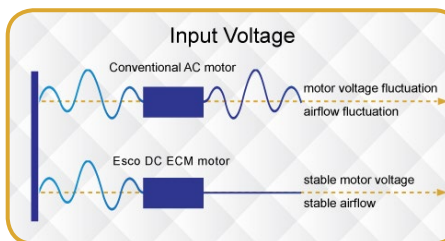- *Easy to clean*
- *Does not harbor contaminants*

Available in 0.9, 1.2, 1.5, and 1.8 meter models (3', 4', 5', and 6'). Shown with optional telescoping stand.

Airstream.

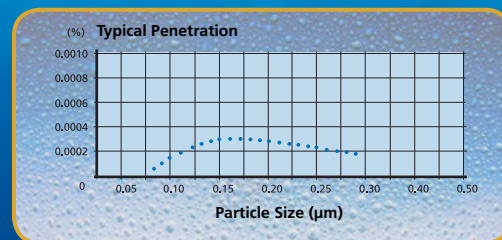Biological Safety Cabinets • **Class II, Type B2 (Total Exhaust) Biological Safety Cabinets**

Energy Efficient ECM Motor

- *Powdered by latest generation ECM motor MADE IN USA, that is more efficient than legacy ECM and VFD motor*
- *70% Energy savings compared to AC Motor*
- *Stable airflow, despite building voltage fluctuations & Filter Loading*

Input Voltage

Conventional AC motor → motor voltage fluctuation → airflow fluctuation

Esco DC ECM motor → stable motor voltage → stable airflow

ULPA Filter

- *10x Filtration efficiency of HEPA filter*
- *Creates ISO Class 3 work zone instead of industry-standard ISO Class 5*

Typical Penetration (%)

0.0010
0.0008
0.0006
0.0004
0.0002
0

Particle Size (μm): 0.05 0.10 0.15 0.20 0.25 0.30 0.40 0.50

Esco cabinets use supply ULPA filters (per IEST-RP-CC001.3) instead of conventional HEPA filters commonly found in biological safety 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.

Dynamic Chamber

- *Blower plenum and side walls (AC2-S and AC2-D variant)*
- *Prevent contaminants from escaping outside*

■ Positive pressure
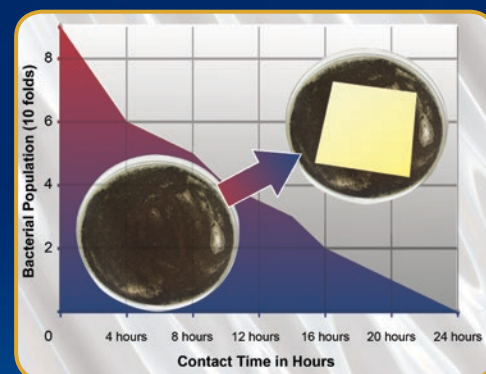■ Negative pressure
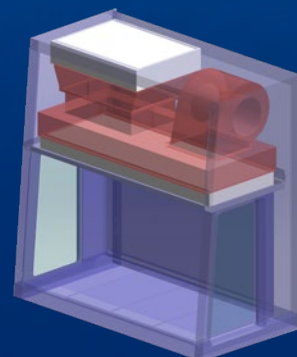
Angled Sash

- *Angled front to optimize user comfort, reduce glare an d maximize reach into the work area*

ISOCIDE™ Powder Coat

- *Silver-ion impregnated powder coat*
- *Inhibit microbial growth to improve safety*

Bacterial Population (10 folds)

8
6
4
2
0

Contact Time in Hours: 4 hours 8 hours 12 hours 16 hours 20 hours 24 hours

Standards Compliance	Biosafety Cabinet	Air Quality	Filtration	Electrical Safety
	NSF/ ANSI 49, USA	ISO 14644.1 Class 3, Worldwide	EN-1822 (H14), Europe	IEC 61010-1, Worldwide
	EN 12469 , Europe	JIS B9920 Class 3, Japan JIS	IEST-RP-CC001.3, USA	EN 61010-1, Europe
	CFDA YY-0569, China*	BS 5295, Class 3, UK	IEST-RP-CC007, USA	UL 61010-1, USA
		US Fed Std 209E, Class 1, USA	IEST-RP-CC034.1, USA	CAN / CSA-22.2, No.61010-1

*CFDA certification is exclusive to AB2 models sold in China.

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Main Features

- The best value of any Type B2 (Total Exhaust) Biological Safety Cabinet in the industry.

- Less energy consumption and heat output than competing products delivers lower total cost of ownership.

- The angled front, narrow profile front grille, raised armrest and frameless sash create an ergonomic work environment.

- Single piece stainless steel internal work zone eliminates welded joints where contaminants may accumulate.

- Dual-wall construction surrounds the work zone with negative pressure plenums for maximum safety.

- Fail-safe system ensures that in case of exhaust failure, the cabinet's main fan automatically shuts down to ensure safety to the user.

- Unique Esco Dynamic Chamber™ plenum design delivers quiet, uniform airflow.

- Long life ULPA (per IEST-RP-CC001.3) supply filter and HEPA exhaust filter for airflow.

- Esco Sentinel™ microprocessor supervises all cabinet functions.

- Esco ISOCIDE™ antimicrobial coating on all painted surfaces minimizes contamination.

Touchpad data entry buttons permit control settings and access to diagnostics, default settings and hierarchical menus.
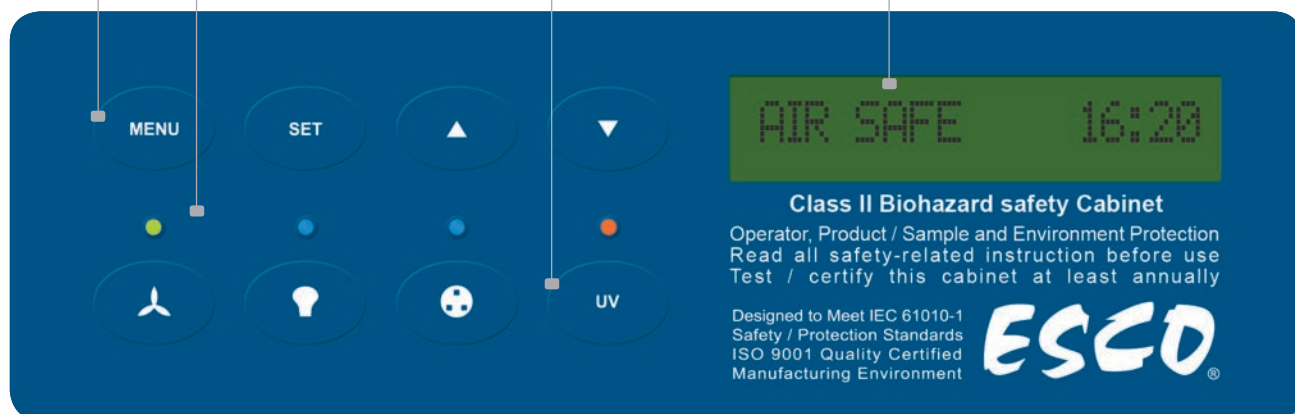
Color coded indicator lamps display green for primary function (fan operation); blue for secondary function (fluorescent lights and electrical outlet); and orange for caution (UV lamp ON).

Programmable automatic UV light timer simplifies operation, enhances contamination control, extends UV lamp life and saves energy.

A graphical interface indicates cabinet performance.

Digital read-out with alpha-numeric display indicates all input, status and alarm functions.

All functions can be user activated through touch-pad programming access; see Operations Manual.

AIR SAFE   16:20

Class II Biohazard safety Cabinet
Operator, Product / Sample and Environment Protection
Read all safety-related instruction before use
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Designed to Meet IEC 61010-1
Safety / Protection Standards
ISO 9001 Quality Certified
Manufacturing Environment

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Sentinel Microprocessor Control System, Programmable

- When programmed ON
  - the start-up sequence confirms status with Air Safe and local time display.
  - the Personal Identification Number (PIN) access restricts unauthorized adjustments.
  - an airflow alarm warns of deviations from normal velocities.

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Biological Safety Cabinets • **Class II, Type B2 (Total Exhaust) Biological Safety Cabinets**

Cabinet Filtration System

Side capture zones

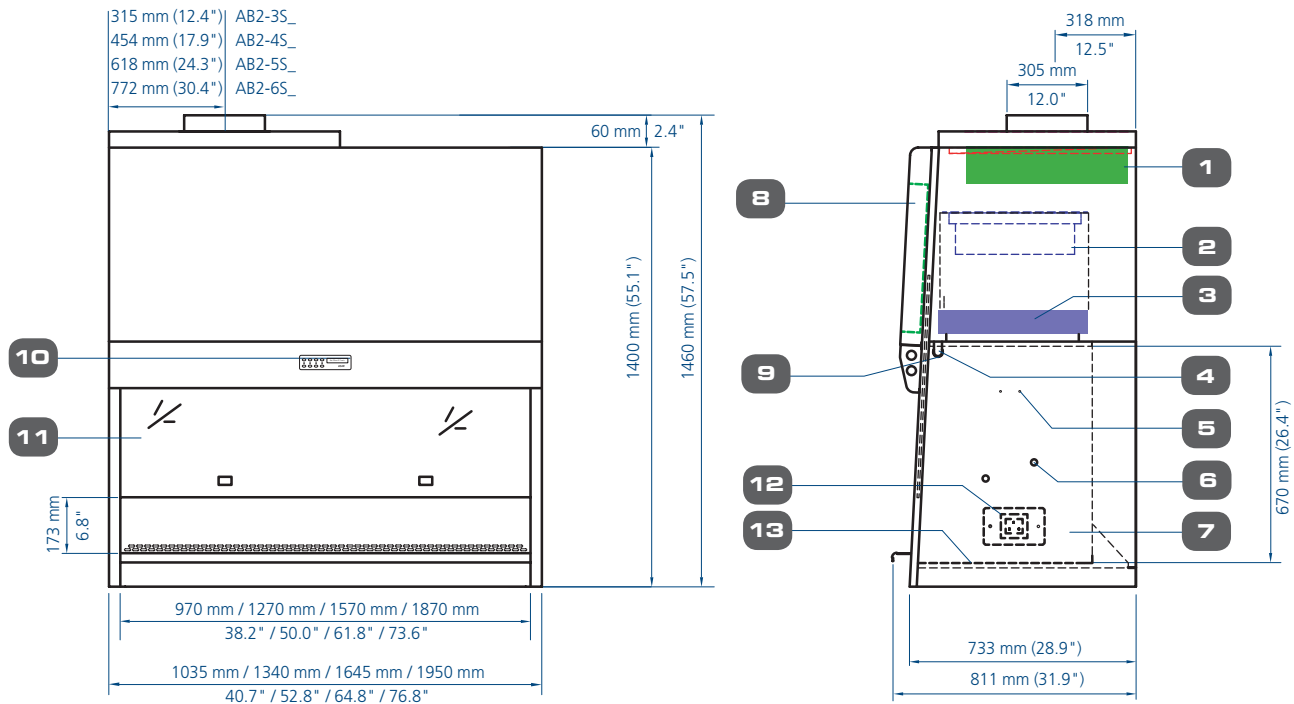Dynamic air barrier, inflow and forward-directed downflow air converge

- Ambient air is pulled through the frontgrille to prevent contamination of the work surface and work product. The inflow does not mix with the clean air within the cabinet work zone. Inflow air travels through a return path toward the common air plenum (blower plenum) at the top of the cabinet.

- Ambient air is taken in through a prefilter at the top of the cabinet, and passes through the downflow ULPA filter, entering the work zone as laminar flow. The uniform, non-turbulent air stream protects against cross contamination within and throughout the work area.

- Near the work surface, the downflow air stream splits with a portion moving toward the front air grille, and the remainder moving

to the rear air grille. A small portion of the ULPA filtered downflow enters the intake perforations at the side capture zones (small blue arrows). The uniform, non-turbulent air stream protects against cross contamination within and throughout the work area.
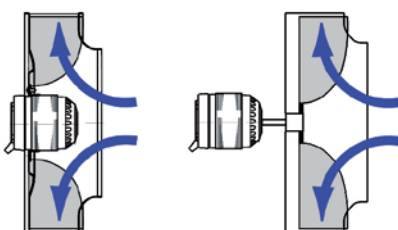
- A combination of inflow and downflow air streams forms an air barrier that prevents contaminated room air from entering the work zone, and prevents work surface emissions from escaping the work zone. The downflow combined with the inflow air enters the common air plenum.

- All air in the common plenum is HEPA-filtered and exhausted via a dedicated ducting system to the external environment.

- ■ ULPA-filtered air
- ■ Unfiltered / potentially contaminated air
- ■ Room air / Inflow air

Model AB2, Class ll Type B2 (Total Exhaust), Biological Safety Cabinet Technical Specifications

315 mm (12.4") AB2-3S_
454 mm (17.9") AB2-4S_
618 mm (24.3") AB2-5S_
772 mm (30.4") AB2-6S_

60 mm 2.4"
1400 mm (55.1")
1460 mm (57.5")
173 mm 6.8"

970 mm / 1270 mm / 1570 mm / 1870 mm
38.2" / 50.0" / 61.8" / 73.6"
1035 mm / 1340 mm / 1645 mm / 1950 mm
40.7" / 52.8" / 64.8" / 76.8"

318 mm 12.5"
305 mm 12.0"
670 mm (26.4")
733 mm (28.9")
811 mm (31.9")

5

1. Exhaust HEPA filter
2. Blower
3. Downflow ULPA filter
4. UV Light Retrofit Kit™ provision
5. IV-Bar Retrofit Kit™ provision
6. Service fixture Retrofit Kit™ provisions (2 on each side wall)
7. Internal single-piece stainless steel work zone
8. Electrical/ Electronic panel
9. Fluorescent lamp
10. Esco Sentinel microprocessor control system
11. Tempered glass sash window
12. Electrical outlet retrofit kit™ provisions (2 no's)
13. Single-piece stainless steel work tray

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

- Esco Airstream cabinets use a combination of high performance scroll blowers (supply) and German made ebm-papst® permanently lubricated, centrifugal motor/blowers with external rotor designs (exhaust).

- Selected for energy efficiency, compact design, and flat profile, the completely integrated exhaust blower assembly optimizes motor cooling, with unified rotating parts and overall component balance for smooth, quiet, vibration-free operation.

- Weight is equally distributed to all bearings to extend bearing life, transfer heat and maximize speed control.

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General Specifications, Airstream Class II Type B2 (Total Exhaust) Biological Safety Cabinets

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

Model		AB2-3S_	AB2-4S_	AB2-5S__	AB2-6S__
Nominal Size		0.9 meters (3')	1.2 meters (4')	1.5 meters (5')	1.8 meters (6')
External Dimension (W x D x H)	Without Base Stand	1035 x 811 x 1460 mm 40.7" x 39.1" x 57.5"	1340 x 811 x 1460 mm 52.8" x 39.1" x 57.5"	1645 x 811 x 1460 mm 64.8" x 39.1" x 57.5"	1950 x 811 x 1460 mm 76.8" x 39.1" x 57.5"
	With Optional Base Stand, 711mm (28") type	1035 x 811 x 2171 mm 40.7" x 39.1" x 85.5"	1340 x 811 x 2171 mm 52.8" x 39.1" x 85.5"	1645 x 811 x 2171 mm 64.8" x 39.1" x 85.5"	1870 x 811 x 2171 mm 76.8" x 39.1" x85.5"
Internal Work Area, Dimensions (W x D x H)		970 x 585 x 670 mm 38.2" x 23.0" x 26.4"	1270 x 585 x 670 mm 50.0" x 23.0" x 26.4"	1570 x 585 x 670 mm 61.8" x 23.0" x 26.4"	1870 x 585 x 670 mm 73.6" x 23.0" x 26.4"
Internal Work Area, Space		0.43 m² (4.67 sq.ft)	0.58 m² (6.2 sq.ft)	0.73 m² (7.8 sq.ft)	0.87 m² (9.3 sq.ft)
Tested and Working Opening		173 mm (6.8") and 198 mm (7.8")			
Average Airflow Velocity	Inflow	0.53 m/s (105 fpm) at initial setpoint			
	Downflow	0.33 m/s (65 fpm) at initial setpoint with uniformity of better than +/- 20%			
Airflow Volume	Inflow	320 m³/h (190 cfm)	419 m³/h (248 cfm)	518 m³/h (307 cfm)	617 m³/h (366 cfm)
	Downflow	622 m³/h (366 cfm)	815 m³/h (480 cfm)	1007 m³/h (593 cfm)	1200 m³/h (707 cfm)
	Certification Exhaust (Inflow + Downflow)	942 m³/h (556 cfm)	1234 m³/h (728 cfm)	1525 m³/h (900 cfm)	1817 m³/h (1072 cfm)
	Concurrent Balance Value Exhaust Volume at corresponding Static Pressure **Note:** Use this for HVAC sizing*	1056 m³/h (623 cfm)	1382 m³/h (816 cfm)	1708 m³/h (1008 cfm)	2035 m³/h (1201 cfm)
	Minimum exhaust static pressure for clean exhaust filter**	465 Pa / 1.9 in H_2O	364 Pa / 1.5 in H_2O	330 Pa / 1.3 in H_2O	417 Pa / 1.7 in H_2O
	Static Pressure with additional 174 Pa (0.7 in H_2O) required by NSF/ANSI 49:2008 **Note:** Use this for HVAC sizing*	639 Pa / 2.6 in H_2O	538 Pa / 2.2 in H_2O	504 Pa / 2.0 in H_2O	591 Pa / 2.4 in H_2O
Downflow ULPA Filter Typical Efficiency		>99.999% for particle size between 0.1 to 0.3 microns			
Exhaust HEPA Filter Typical Efficiency		>99.99% at 0.3 microns			
Sound Emission***	NSF/ANSI 49	<59 dBA	<59 dBA	<60 dBA	<60 dBA
	EN 12469	<56 dBA	<56 dBA	<57 dBA	<57 dBA
Fluorescent Light Intensity At Zero Ambient		>1000 Lux (>93 foot candles)	>1000 Lux (>93 foot candles)	>900 Lux (>84 foot candles)	>1000 Lux (>93 foot candles)
Cabinet Construction	Main Body	1.5 mm (0.06") 16 gauge electro-galvanized steel with Isocide white oven-baked epoxy-polyester powder-coating			
	Work Zone	Stainless steel Type 304 with No.4 finish			
Electrical****	220-240V, AC, 50Hz, 1ø	AB2-3S1	AB2-4S1	AB2-5S1	AB2-6S1
	Cabinet Full Load Amps (FLA)	2 A	2 A	2 A	2 A
	Optional Outlets FLA	5 A	5 A	5 A	5 A
	Cabinet Nominal Power	277 W	292 W	330 W	340 W
	Cabinet BTU	945	996	1126	1160
	110-120V, AC, 60Hz, 1ø	AB2-3S2	AB2-4S2	AB2-5S2	AB2-6S2
	Cabinet Full Load Amps (FLA)	3.5 A	3.5 A	3.5 A	3.5 A
	Optional Outlets FLA	5 A	5 A	5 A	5 A
	Cabinet Nominal Power	293 W	309 W	334 W	360 W
	Cabinet BTU	1000	1054	1140	1228
	220-240V, AC, 60Hz, 1ø	AB2-3S3	AB2-4S3	AB2-5S3	AB2-6S3
	Cabinet Full Load Amps (FLA)	2 A	2 A	2 A	2 A
	Optional Outlets FLA	5 A	5 A	5 A	5 A
	Cabinet Nominal Power	293 W	308 W	345.8 W	356 W
	Cabinet BTU	1000	1051	1180	1215
Net Weight*****		175 kg (386 lbs)	229 kg (505 lbs)	238 kg (525 lbs)	279 kg (615 lbs)
Shipping Weight, Maximum*****		232 kg (511 lbs)	273 kg (602 lbs)	295 kg (650 lbs)	350 kg (772 lbs)
Shipping Dimensions, Maximum (W x D x H)*****		1150 x 850 x 1760 mm 45.2" x 33.5" x 69.3"	1450 x 850 x 1760 mm 57.1" x 33.5" x 69.3"	1750 x 850 x 1760 mm 68.9" x 33.5" x 69.3"	2050 x 850 x 1760 mm 80.7" x 33.5" x 69.3"
Shipping Volume, Maximum*****		1.72 m³ (61 cu.ft.)	2.17 m³ (77 cu.ft.)	2.62 m³ (93 cu.ft.)	3.07 m³ (108 cu.ft.)

*   This Concurrent Balance Value (CBV) Exhaust (per Pitot Duct Traverse) and Static Pressure must be used when sizing the HVAC exhaust & supply.
**   This minimum exhaust static pressure for clean exhaust filter should not be used for exhaust fan sizing, and it is listed here for comparative purpose only.
***   Noise reading in open field condition / anechoic chamber.
****   Additional voltages may be available; contact Esco for ordering information.
*****   Cabinet only, excludes optional stand.

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Biological Safety Cabinets • **Class II, Type B2 (Total Exhaust) Biological Safety Cabinets**

Accesories for AB2 Biological Safety Cabinets

Cabinet	Stainless Steel Side Wall	AB2-3S1 **2010274**	AB2-4S1 **2010284**	AB2-5S1 **2010294**	AB2-6S1 **2010304**
Exhaust Ducting	Anti-blowback Valve	ABBV-10P 5170352			
	Air Tight Damper	B2-Damper 5170104			
Work Zone	UV Lamp	UV-15A 5170251		UV-30A 5170255	
	IV Bars	IV-965 5170250	IV-1265 5170604	IV-1565 5170278	IV-1865 5170244
Electrical Outlet	Direct Mounted	EO-HD 5170036			
Service Fixtures	EU SF-Gas-50 mm	SF-1G50 5170015			
	EU SF-Vacuum-50 mm	SF-1V50 5170004			
	EU SF-Nitrogen-50 mm	SF-1N50 5170012			
	EU SF-Air-50 mm	SF-1A50 5170007			
	EU SF-Water-50 mm	SF-1W50 5170009			
	EU SF-Universal-50 mm	SF-2U50 5170019			
	Cu Piping SF-Must be Factory Installed	CU-Pipe 5170026			
Support Stands, Ships Flat	Support Stand with Caster Wheels (Height 28")	SPC-3A0 Gen 2 5130155	SPC-4A0 Gen 2 5130152	SPC-5A0 Gen 2 5130162	SPC-6A0 Gen 2 5130154
	Support Stand with Caster Wheels (Height 34")	SPC-3B0 Gen 2 5130165	SPC-4B0 Gen 2 5130166	SPC-5B0 Gen 2 5130167	SPC-6B0 Gen 2 5130168
	Support Stand with Leveling Feet - I (Height 28")	SAL-3A0 Gen 2 5130170	SAL-4A0 Gen 2 5130134	SAL-5A0 Gen 2 5130171	SAL-6A0 Gen 2 5130172
	Support Stand with Leveling Feet - I (Height 34")	SAL-3B0 Gen 2 5130174	SAL-4B0 Gen 2 513015	SAL-5B0 Gen 2 5130176	SAL-6B0 Gen 2 5130177

ABBV-10P

B2-DAMPER
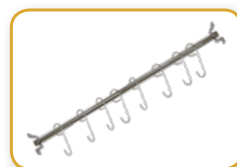
IV-_

UV-_A-L

EO-H_

SF-1_

SPC-_A0 Gen2

SAL-_A0 Gen2

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ESCO GLOBAL NETWORK
43 LOCATIONS IN 24 COUNTRIES ALL OVER THE WORLD

Legend:
- 📍 Global Offices
- 📍 Joint Ventures
- 📍 Licensee
- ■ Distributors
- ■ Factories
- ■ R&D Centers
- ■ Regional Distribution Centers

8

ART Equipment
Biological Safety Cabinets
CO_2 Incubators
Compounding Pharmacy Equipment
Containment / Pharma Products
Ductless Fume Hoods
Lab Animal Research Products
Laboratory Centrifuges
Laboratory Fume Hoods
Laboratory Ovens and Incubators
Laboratory Shakers
Laminar Flow Clean Benches
PCR Cabinets
PCR Thermal Cyclers
Powder Weighing Balance Enclosures
Ultra-low Temperature Freezers

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ISOCIDE™

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