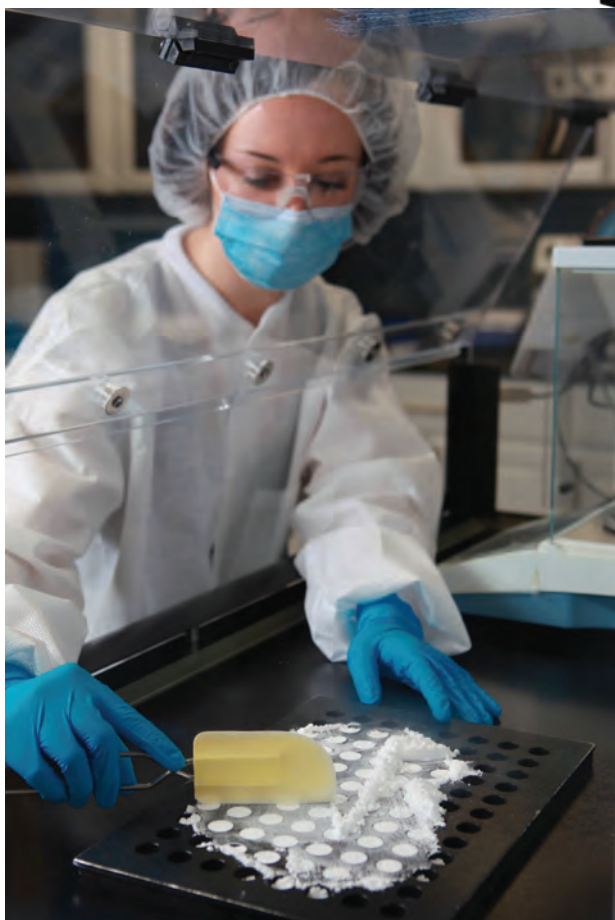


FLOW SCIENCES COMPOUNDING PHARMACY ENCLOSURES

SAFE POWDER HANDLING SOLUTIONS

The Flow Sciences vented enclosure is essential to protect your health and ensures safety by containing powder and virtually eliminating exposure to potent powders.



4' CONTAINED VENTED ENCLOSURE
ID - ETA483024AAD

- SINGLE HEPA ENCLOSURES
- DUAL HEPA BAG-IN/BAG-OUT ENCLOSURES

USP 800

WHAT YOU NEED TO
KNOW TO BE COMPLIANT

USP 800 - EXPLAINED.

The new USP 800 standards can be confusing. Many compounders are asking what they need to do to be compliant. So you can better understand what you need to do to make your pharmacy USP 800 compliant, here is the information and explanations that you need.

Defining Terms:

C-PEC : Containment Primary Engineering Control. A ventilated device designed to minimize worker and environmental hazardous drug exposure when directly handling hazardous drugs.

C-SEC : Containment Secondary Engineering Control. The room in which the C-PEC is placed.

HD : Hazardous Drug. The toxic powder or active pharmaceutical ingredient being used.

HEPA : High-Efficiency Particulate Air. Filters designed to 99.995% filtration effectiveness

ACPH : Air Changes Per Hour. Complete air changes in a C-SEC, typically measured by cubic feet.

CVE : Contained Vented Enclosure. A containment enclosure that provides personnel and environmental protection.

Class I BSC : Biological Safety Cabinet. A containment enclosure that provides personnel and environmental protection.

Class II BSC or CACI : Compounding Aseptic Containment Isolator. A containment enclosure that provides personnel and environmental protection.

Now that we have defined some terms, lets look at the requirements for USP 800.

ENGINEERING CONTROLS FOR NONSTERILE HD COMPOUNDING

C-PEC MUST BE EXTERNALLY VENTED (PREFERRED) OR REDUNDANT HEPA FILTERED IN SERIES

When compounding with your C-PEC, the enclosure must vent out of the enclosure to house exhaust. Alternatively, the enclosure can have redundant HEPA filters (dual filters) in series. Flow Sciences builds both single HEPA and dual HEPA filter units.

C-SEC MUST HAVE 12 AIR CHANGES PER HOUR

The C-SEC (room) that the C-PEC (CVE) is in must have 12 air changes per hour. This means in a room that is 15' wide x 15' long x 8' tall, 1,800 cubic feet, there must be 21,600 cubic feet of air vented and exhausted in the room per hour.

C-PEC EXAMPLES : CVE, CLASS I OR II BIO SAFETY CABINET, OR COMPOUNDING ASEPTIC CONTAINMENT ISOLATOR

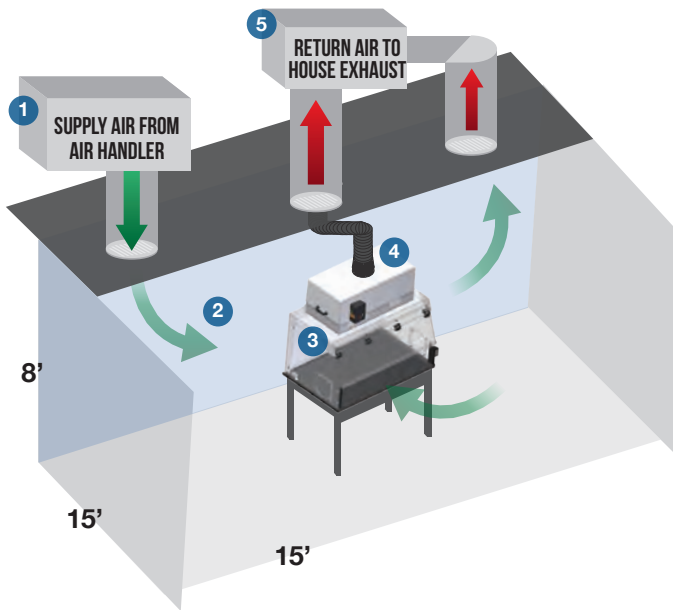
The Flow Sciences CVE Single and Dual HEPA Units.

C-SEC MUST BE EXTERNALLY VENTED

The vented air must be exhausted outside of the room through HEPA filtration.

C-SEC MUST HAVE NEGATIVE PRESSURE BETWEEN 0.01 AND 0.03 INCHES OF WATER COLUMN

The room itself must be under negative pressure to ensure containment.



SINGLE HEPA

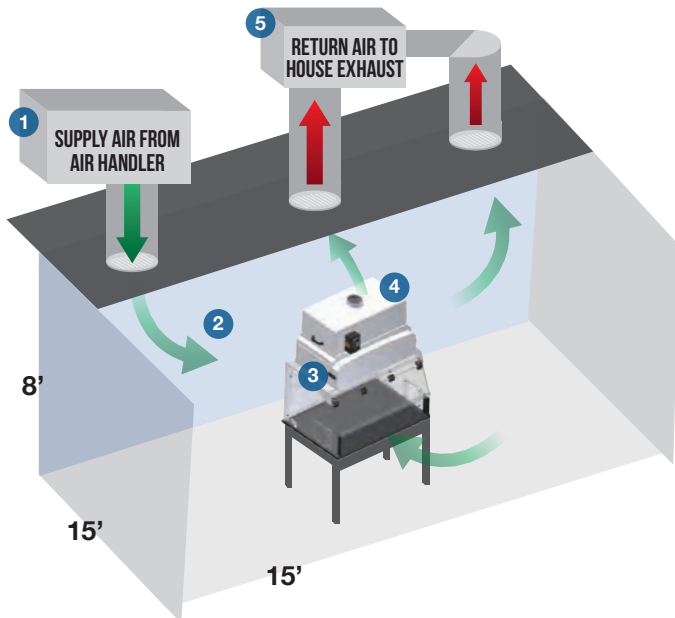
HAZARDOUS / NON-HAZARDOUS NON-STERILE

Flow Sciences Contained Vented Enclosure with Single 4" HEPA filter and Fan



- Safe powder handling of HDs for personnel protection and reproducibility in sensitive application
- **THIMBLE CONNECTION** and **VENT KIT** required to connect CVE to the house exhaust system
- Stable airflow and **NO VIBRATION** on the work surface

- 1 Air handling system pumps conditioned air into the C-SEC
- 2 12 ACPH achieved by supplying and exhausting 21,600 cubic feet of air per hour (for 15' x 15' x 8' room)
- 3 C-PEC containment enclosure - Vented to house exhaust
- 4 Single 4" HEPA Filter - Fan - Thimble Connection
- 5 HEPA filtered air externally vented from the C-SEC (room)



DUAL HEPA

HAZARDOUS NON-STERILE

Flow Sciences Contained Vented Enclosure with Bag-In / Bag-Out Dual 4" HEPA Filters and Fan



- **RECIRCULATE** into your lab to save money by requiring less make-up air and not venting out conditioned air
- **FLEXIBILITY** with placement in lab. Recirculate and move enclosure without moving house exhaust drops.
- Stable airflow and **NO VIBRATION** on the work surface

- 1 Air handling system pumps conditioned air into the C-SEC
- 2 12 ACPH achieved by supplying and exhausting 21,600 cubic feet of air per hour (for 15' x 15' x 8' room)
- 3 C-PEC containment enclosure - Not connected to house exhaust to recirculate into room.
- 4 Dual HEPA Filtration - Two 4" HEPA Filters - Fan
- 5 HEPA filtered air externally vented from the C-SEC (room)

PRICE VS. COST OF OWNERSHIP

When considering a contained vented enclosure (CVE) for your pharmacy, we understand there are many factors to consider. One of the most important factors is cost of ownership. Unfortunately, the price tag of equipment does not tell the entire story when it comes to the significant investment that is being made. Flow Sciences is trusted by pharmacies across the world and is the exclusive provider of containment enclosures for many of the top 25 big pharma companies. The intuitive design, engineering controls, and quality of construction materials in Flow Sciences enclosures make these CVEs the most cost effective option.

WATCH THE VIBRATION
TESTING VIDEO



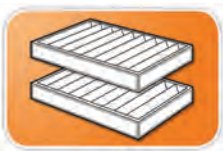
FLOWSCIENCES.COM
/MEDIA



**SAVE TIME,
SAVE MONEY.**



DUAL 4" PLEATED HEPA FILTRATION



OPTIONAL CONNECTION TO HOUSE EXHAUST SYSTEM

REMOVABLE PLUG FOR TESTING IN THE SAMPLING SPACE BETWEEN FILTERS

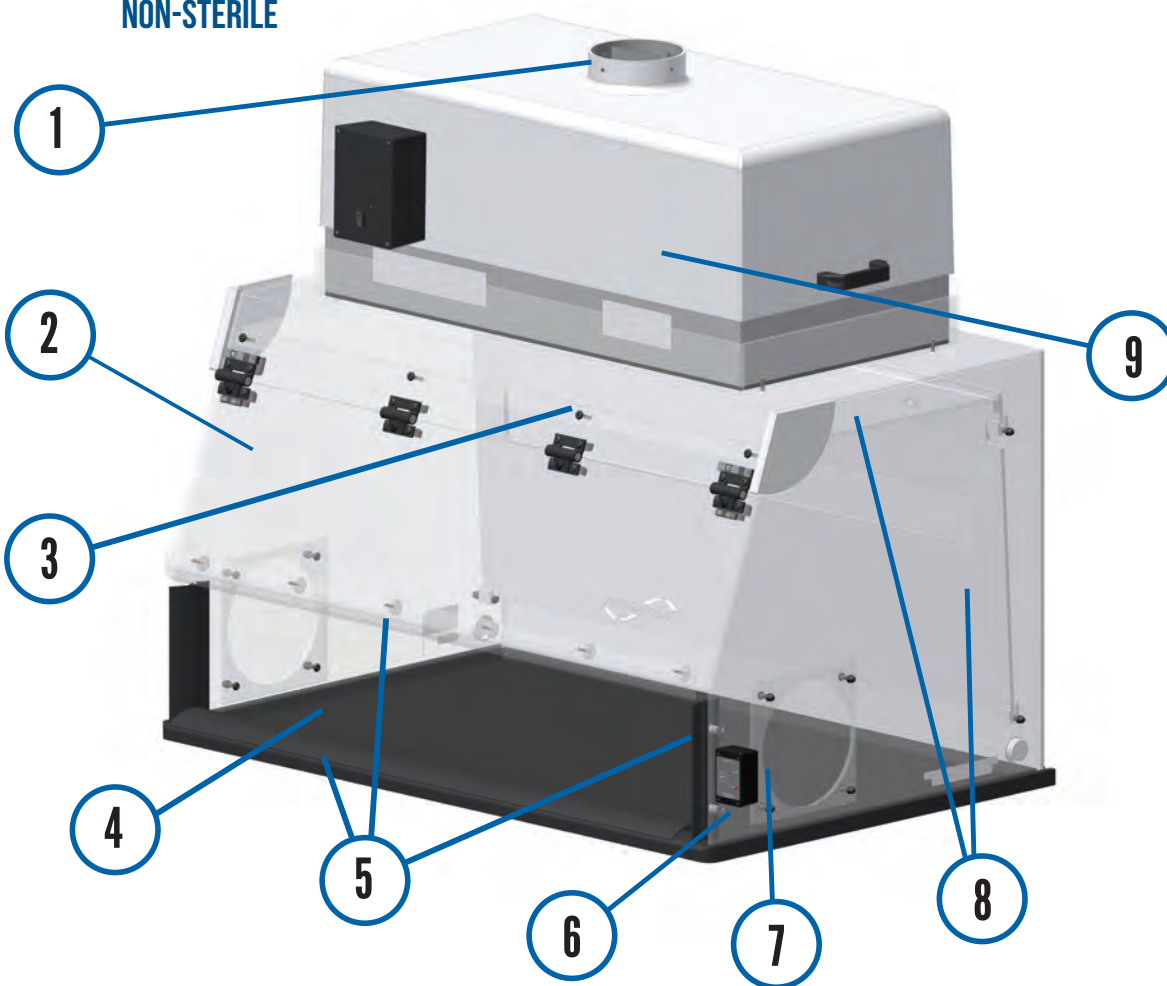
DUAL HEPA HAZARDOUS STERILE/NON-STERILE

ETA363024ABD

- 1 EXHAUST PORT**
 - 6" thimble connections to house system or can be recirculated back into the lab
- 2 FS1650 ALARM**
 - FS1650 Integrated Face Velocity Alarm alerts the operator when airflow is compromised. (Integrated with Dual Hepa Units)
- 3 OPTIONAL LED LIGHT**
 - LED lights available upon request
- 4 FRONT LIFT DOORS**
 - Hinged front doors that lift for easy loading or unloading of equipment
- 5 AIRFOILS**
 - Airfoils placed around the perimeter of the face opening stabilize the airflow, improve laminar airflow, and improve containment along the leading edge
- 6 DISHED BASE**
 - Dishd phenolic base captures accidental liquid and powder spills
- 7 WASTE PORT**
 - Waste port can be placed on either and/or both sides of the enclosure and is used to safely remove waste. (Optional)
- 8 PLENUMS**
 - Rear and Top Plenums are used to direct airflow and maintain containment at the face opening. These also prevent particles from possibly falling back onto the work surface if the fan is turned off
- 9 BAG-IN / BAG-OUT**
 - HEPA change out system that allows for safe removal and replacement of the main 4" HEPA filter

SINGLE HEPA

NON-HAZARDOUS
NON-STERILE



1 EXHAUST PORT

- 6" thimble connections to house system or can be recirculated back into the lab

2 FS1650 ALARM

- FS1650 Integrated Face Velocity Alarm alerts the operator when airflow is compromised.

3 OPTIONAL LED LIGHT

- LED lights available upon request

4 FRONT LIFT DOOR

- Hinged front doors that lift for easy loading or unloading of equipment

5 AIRFOILS

- Airfoils staged around the perimeter of the face opening stabilize the airflow, improve laminar airflow, and improve containment along the leading edge

6 DISHED BASE

- Dished phenolic base captures accidental liquid and powder spills

7 WASTE PORT

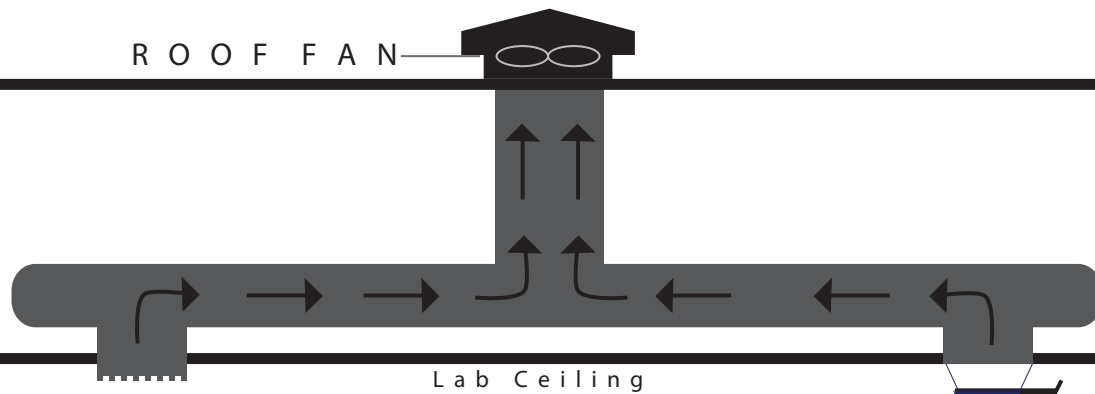
- Waste port can be placed on either and/or both sides of the enclosure and is used to safely remove waste

8 PLENUMS

- Rear and Top Plenums are used to direct airflow and maintain containment at the face opening. These also prevent particles from possibly falling back onto the work surface if the fan is turned off

9 HEPA FILTER

- Single 4" thick HEPA filter and fan



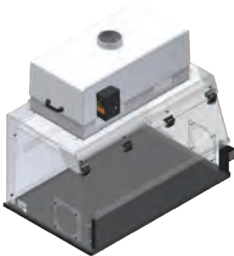
CONNECTING TO HOUSE EXHAUST

A Flow Sciences' 4' wide enclosure exhausts approximately 225 CFM (at 75 linear feet per minute at the face opening).

Each house connection must pull 10% - 15% more CFM than the enclosure. The house CFM required for each enclosure is approximately 260 CFM.

For customers who already use Flow Sciences CVEs, you can still be compliant. To connect a single filter enclosure to house exhaust, you will need a thimble connection and vent kit for each top mount fan. Contact your Flow Sciences representative today to find out more.

(1) 6" EXHAUST PORT



THIMBLE

VENT KIT - (1) 8'
LONG 6" HOSE
W/ (2) CLAMPS

(2) 6" EXHAUST PORT



(2x)
THIMBLES

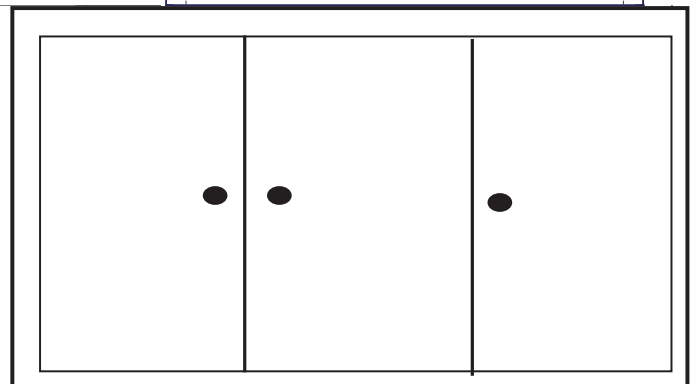
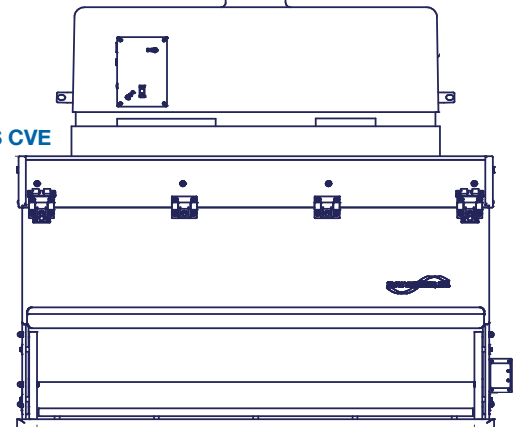
(2X)
VENT KITS

Flow Sciences' enclosures connect to house exhaust systems using a **THIMBLE CONNECTION**

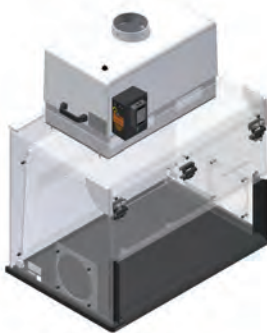
VENT KIT

(1 ea- 6" x 8' flex hose;
2 ea- hose clamps)

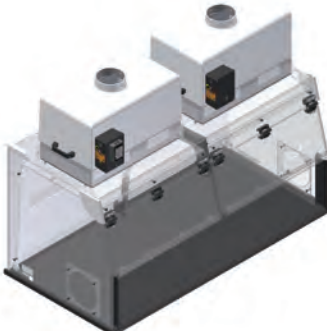
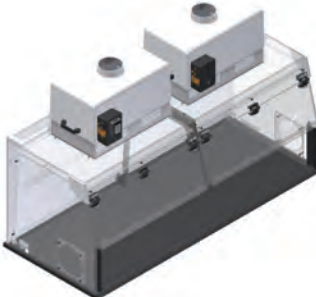
**FLOW SCIENCES CVE
(C-PEC)**



Flow Sciences Contained Vented Enclosures (CVE) Specifications

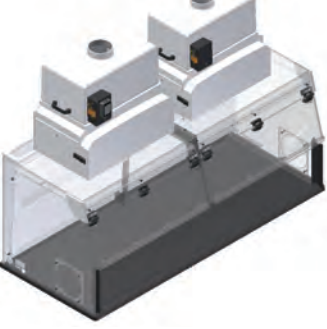
Model		ETA242424AAD	ETA362424AAD	ETA482424AAD
Rendering Image				
Nominal Size		2' (60 cm)	3' (0.9 meter)	4' (1.2 meter)
External Dimensions (W x D x H)		23.75" x 24" x 42.56" (60.3 x 61 x 108.1 cm)	35.75" x 24" x 44.31" (90.8 x 61 x 112.5 cm)	47.75" x 24" x 44.31" (121.2 x 61 x 112.5 cm)
Internal Dimensions (W x D x H)		19.79" x 20.57" x 24.28" (50.3 x 52.2 x 61.7 cm)	31.79" x 20.57" x 24.28" (80.7 x 52.2 x 61.7 cm)	43.79" x 20.57" x 24.28" (111.2 x 52.2 x 61.7 cm)
Nominal Usable Work Area		2 ft ² (0.2 m ²)	4 ft ² (0.4 m ²)	5.5 ft ² (0.5 m ²)
Face Opening Height		12.5" (31.8 cm)	12.5" (31.8 cm)	12.5" (31.8 cm)
Approximate Weight		107 lb (48.5 kg)	138 lb (63 kg)	173 lb (78 kg)
Materials of Construction	Acrylic	Transparent 0.375" clear Acrylic Front, Side Panels, and Curved Airfoil		
	Polypropylene	White 0.375" Polypropylene Baffle, Back, and Top Panels		
	Phenolic	Black 0.5" Phenolic Resin Base, Routed to Fit Sidewalls for Containment		
Fan Performance	Volts	110-120 AC	110-120 AC	110-120 AC
	Watts	270 W	270 W	270 W
	Amps	2.25 A	2.25 A	2.25 A
	CFM Required w/ Thimble Connection	165 CFM @ 75 LFPM Face Velocity	254 CFM @ 75 LFPM Face Velocity	345 CFM @ 75 LFPM Face Velocity
	Sound Emission	50-55 dB at 3'	50-55 dB at 3'	50-55 dB at 3'
Filter Specifications	Filter Type	99.99% Efficient 4" Pleated HEPA Filter		
	Filter Size	18" x 22"	24" x 14"	18" x 36"
	Filter Count	Single HEPA (1)	Single HEPA (1)	Single HEPA (1)
LED Light	Lifetime	About 50,000 Hours		
	Input Power	575ma at 12 Volts DC		
	Lumens	Max of 675 Lumens		
	Beam Angle	120 Degree Beam Angle		
Velocity Alarm		Integrated Go/No-Go Velocity Alarm - 0.2 Amps		
Factory Testing	ASHRAE	ASHRAE 110-2016 Containment of ≤0.050 PPM		
	HAM	Human as Mannequin Test of ≤0.050 PPM		
Accessory Shelf		Optional as Shelf for Printer or Other Accessory		
Waste Chute		Optional for Safe Disposal of Waste Inside Enclosure		

Flow Sciences Contained Vented Enclosures (CVE) Specifications

ETA363024AAD	ETA483024AAD	ETA603027AAD	ETA723027AAD
			
3' (0.9 meter)	4' (1.2 meter)	5' (1.5 meter)	6' (1.8 meter)
35.75" x 30" x 42.48" (90.8 x 76.2 x 107.9 cm)	47.75" x 30" x 44.31" (121.3 x 76.2 x 112.5 cm)	59.75" x 30" x 46.93" (151.7 x 76.2 x 119.2 cm)	71.75" x 30" x 46.93" (182.2 x 76.2 x 119.2 cm)
31.79" x 26.55" x 24.25" (80.7 x 67.4 x 61.6 cm)	43.79" x 26.55" x 24.32" (111.2 x 67.4 x 61.8 cm)	55.79" x 26.55" x 26.9" (141.7 x 67.4 x 68.3 cm)	67.79" x 26.55" x 26.9" (172.2 x 67.4 x 68.3 cm)
4 ft ² (0.4 m ²)	5.5 ft ² (0.5 m ²)	9.5 ft ² (0.9 m ²)	11 ft ² (1 m ²)
9.5" (24.1 cm)	9.5" (24.1 cm)	12.5" (31.7 cm)	12.5" (31.7 cm)
155 lb (70 kg)	193 lb (88 kg)	274 lb (124 kg)	305 lb (138 kg)
Transparent 0.375" clear Acrylic Front, Side Panels, and Curved Airfoil			
White 0.375" Polypropylene Baffle, Back, and Top Panels			
Black 0.5" Phenolic Resin Base, Routed to Fit Sidewalls for Containment			
110-120 AC	110-120 AC	110-120 AC	110-120 AC
270 W	275 W	275 W (EACH)	270 W (EACH)
2.25 A	2.25 A	2.25 A (EACH)	2.25 A (EACH)
194 CFM @ 75 LFPM Face Velocity	262 CFM @ 75 LFPM Face Velocity	348 CFM @ 75 LFPM Face Velocity	420 CFM @ 75 LFPM Face Velocity
50-55 dB at 3'	50-55 dB at 3'	50-55 dB at 3'	50-55 dB at 3'
99.99% Efficient 4" Pleated HEPA Filter			
18" x 30"	18" x 36"	24" x 14" (2)	24" x 14" (2)
Single HEPA (1)	Single HEPA (1)	Single HEPA (2)	Single HEPA (2)
About 50,000 Hours			
575ma at 12 Volts DC			
Max of 675 Lumens			
120 Degree Beam Angle			
Integrated Go/No-Go Velocity Alarm - 0.2 Amps			
ASHRAE 110-2016 Containment of ≤0.050 PPM			
Human as Mannequin Test of ≤0.050 PPM			
Optional as Shelf for Printer or Other Accessory			
Optional for Safe Disposal of Waste Inside Enclosure			

Flow Sciences Contained Vented Enclosures (CVE) Specifications

Model		ETA362424ABD	ETA482424ABD	ETA363024ABD
Rendering Image				
Nominal Size		3' (0.9 meter)	4' (1.2 meter)	3' (0.9 meter)
External Dimensions (W x D x H)		35.75" x 24" x 53.31" (90.8 x 60.9 x 135.4 cm)	47.75" x 24" x 53.31" (121.3 x 60.9 x 135.4 cm)	35.75" x 30" x 51.56" (90.8 x 76.2 x 130.9 cm)
Internal Dimensions (W x D x H)		31.79" x 20.57" x 24.25" (80.7 x 52.2 x 61.6 cm)	43.79" x 20.57" x 24.25" (111.2 x 52.2 x 61.6 cm)	31.79" x 26.55" x 24.25" (80.7 x 67.4 x 61.6 cm)
Nominal Usable Work Area		4 ft ² (0.4 m ²)	5.5 ft ² (0.5 m ²)	4 ft ² (0.4 m ²)
Face Opening Height		12.5" (31.7 cm)	12.5" (31.7 cm)	9.5" (24.1 cm)
Approximate Weight		185 lb (84 kg)	230 lb (105.3 kg)	210 lb (96 kg)
Materials of Construction	Acrylic	Transparent 0.375" clear Acrylic Front, Side Panels, and Curved Airfoil		
	Polypropylene	White 0.375" Polypropylene Baffle, Back, and Top Panels		
	Phenolic	Black 0.5" Phenolic Resin Base, Routed to Fit Sidewalls for Containment		
Fan Performance	Volts	110-120 AC	110-120 AC	110-120 AC
	Watts	270 W	275 W	270 W
	Amps	2.25 A	2.25 A	2.25 A
	CFM Required w/ Thimble Connection	254 CFM @ 75 LFPM Face Velocity	345 CFM @ 75 LFPM Face Velocity	194 CFM @ 75 LFPM Face Velocity
	Sound Emission	50-55 dB at 3'	50-55 dB at 3'	50-55 dB at 3'
Filter Specifications	Filter Type	99.99% Efficient 4" Pleated HEPA Filter		
	Filter Size	24" x 14"	18" x 36"	18" x 30"
	Filter Count	Dual HEPA (2)	Dual HEPA (2)	Dual HEPA (2)
LED Light	Lifetime	About 50,000 Hours		
	Input Power	575ma at 12 Volts DC		
	Lumens	Max of 675 Lumens		
	Beam Angle	120 Degree Beam Angle		
Velocity Alarm		Integrated Go/No-Go Velocity Alarm - 0.2 Amps		
Factory Testing	ASHRAE	ASHRAE 110-2016 Containment of ≤ 0.050 PPM		
	HAM	Human as Mannequin Test of ≤ 0.050 PPM		
Accessory Shelf		Optional as Shelf for Printer or Other Accessory		
Waste Chute		Optional for Safe Disposal of Waste Inside Enclosure		

Flow Sciences Contained Vented Enclosures (CVE) Specifications		
ETA483024ABD	ETA603027ABD	ETA723027ABD
		
4' (1.2 meter)	5' (1.5 meter)	6' (1.8 meter)
47.75" x 30" x 53.31" (121.3 x 76.2 x 135.4 cm)	59.75" x 30" x 55.93" (151.7 x 76.2 x 142 cm)	71.75" x 30" x 55.93" (182.2 x 76.2 x 142 cm)
43.79" x 24.82" x 24.25" (111.2 x 63 x 61.6 cm)	55.79" x 25.98" x 26.9" (141.7 x 65.9 x 68.3 cm)	67.79" x 26.55" x 26.9" (172.2 x 67.4 x 68.3 cm)
5.5 ft ² (0.5 m ²)	9.5 ft ² (0.9 m ²)	11 ft ² (1 m ²)
9.5" (24.1 cm)	12.5" (31.7 cm)	12.5" (31.7 cm)
248 lb (112 kg)	332 lb (150 kg)	388 lb (176 kg)
Transparent 0.375" clear Acrylic Front, Side Panels, and Curved Airfoil		
White 0.375" Polypropylene Baffle, Back, and Top Panels		
Black 0.5" Phenolic Resin Base, Routed to Fit Sidewalls for Containment		
110-120 AC	110-120 AC	110-120 AC
275 W	275 W (EACH)	270 W (EACH)
2.25 A	2.25 A (EACH)	2.25 A (EACH)
262 CFM @ 75 LFPM Face Velocity	348 CFM @ 75 LFPM Face Velocity	420 CFM @ 75 LFPM Face Velocity
50-55 dB at 3'	50-55 dB at 3'	50-55 dB at 3'
99.99% Efficient 4" Pleated HEPA Filter		
18" x 36"	24" x 14" (2)	24" x 14" (2)
Dual HEPA (2)	Dual HEPA (4)	Dual HEPA (4)
About 50,000 Hours		
575ma at 12 Volts DC		
Max of 675 Lumens		
120 Degree Beam Angle		
Integrated Go/No-Go Velocity Alarm - 0.2 Amps		
ASHRAE 110-2016 Containment of ≤0.050 PPM		
Human as Mannequin Test of ≤0.050 PPM		
Optional as Shelf for Printer or Other Accessory		
Optional for Safe Disposal of Waste Inside Enclosure		



Contact Flow Sciences for other sizes and models. A full line of accessories is also available.
Replacement filters available. Please Call Flow Sciences for Assistance and Pricing.

1.800.849.3429