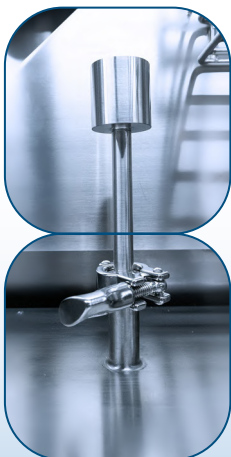


GPPI

General Processing Platform Isolator





Guide to General Processing Platform Isolator					
GPPI-IS-4G-1PTC(2G)					
Base Model	Code	Seal Design	Code	Process Chamber Design	Code
General Processing Platform Isolator	GPPI	Inflatable Seal	IS	2-glove (1200 mm)	2G
				3-glove (1600 mm)	3G
				4-glove (2000 mm)	4G
				5-glove Custom Unit	5G

Automated Pressure Hold Test (APHT)

Emergency Stop Button (E-stop)



HMI/PLC Control System

(with optional upgrade for 21 CFR Part 11 Compliance)

Process Chamber

Glove Ports



Viable Air Sampler

(Fully Integrated)



Form Isolator

Pass Chamber Design	Code	Pass Chamber Size	Code
No Passthrough Chamber	NPTC	Non-glove	NG
1 Passthrough Chamber	1PTC	1-glove	1G
2 Passthrough Chamber	2PTC	2-glove	2G

Other Common Accessories:

IV Bars and S Hooks
SS 316 Trays and Shelves
Rapid Transfer Ports (RTP) – Alpha and Beta
Integration of Sterility Test Pump
Drain Valve
Electrical Outlets

Introduction

The General Processing Platform Isolator (GPPI) is a highly adaptable, unidirectional airflow isolator that can be used for sterility testing or other aseptic processes that require an ISO Class 5 (Grade A) environment. The GPPI's advanced control system allows the operator to select either single pass or recirculating airflow regime. These features along with the ability to perform safe change procedures on the supply and return filters make GPPI a highly versatile isolator that can be used for potent and non-potent aseptic materials.

In addition, the Esco GPPI's design offers over 20 standard options and configurations ensuring that Esco can provide a standard solution to fit your specific process and facility requirements. Should a standard option not fit your requirements, Esco can offer customized solutions as well.

Main Features

- Unidirectional airflow with $0.45 \pm 20\%$ m/s airflow ensuring product protection
- User selectable single pass or recirculating airflow regimes
- Fully integrated Hydrogen Peroxide (H_2O_2) biodecontamination system ensuring 6 log reduction in the bioburden
- Low Contamination Change Filter design allows the handling of potent and non-potent aseptic products
- Temperature and Relative Humidity (RH) real-time monitoring for critical processes

Applications

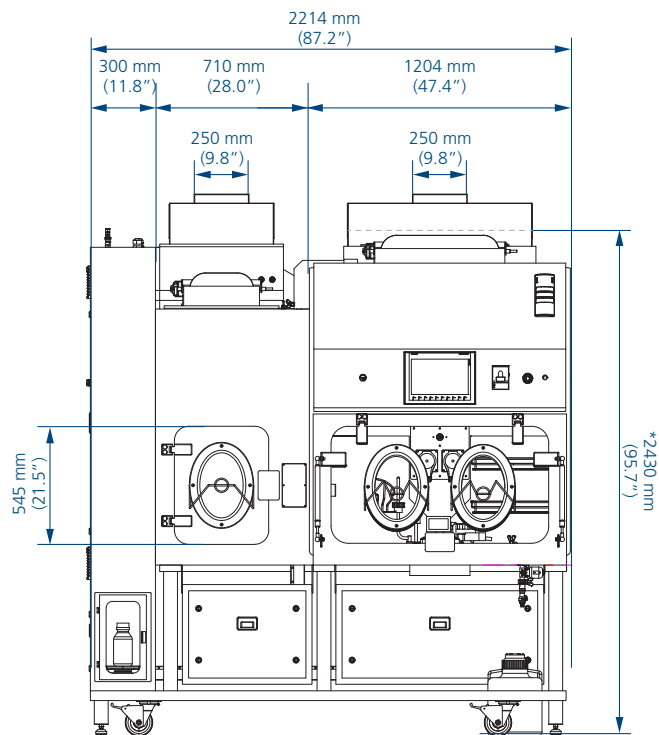
- Aseptic Processing
- Cell Processing
- Pharmaceutical Compounding (Chemotherapy/TPN)
- Potent Material Handling (Small-scale)
- Research and Development
- Sterility Testing

Standard Features

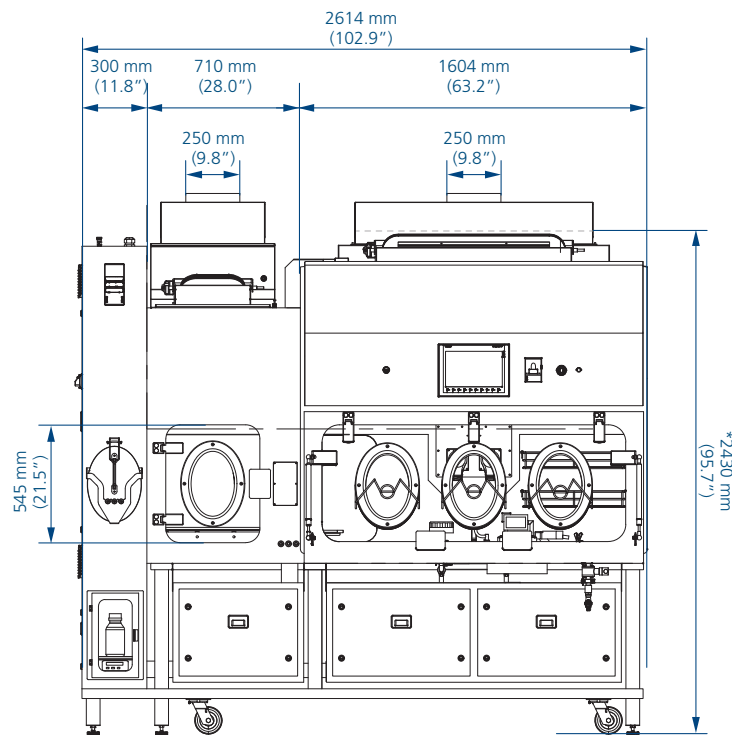
- Fully welded SS316L internal chambers with rounded covered corners
- Optional on-board exhaust catalytic convertor allows exhaust into the surrounding room without modifications to the facility
 - Unit is also fitted with an external interlocked H_2O_2 sensor for operator and environment safety
- Optional mobile air compressor eliminates the need for a site supplied compressed air connection; hence, allowing unit a plug and play design
- Self-contained design of control system & electrics allow for simple, plug-in installation
- Fully integrated particle monitoring connections and optional inclusion of the viable and non-viable monitoring equipment
- Class 3 Leak Tight Containment (ISO 10648-2) automated pressure hold test to ensure there are no leaks prior to decontamination and normal run
- Pre-Programmed system to function with multiple H_2O_2 system options
- Standard design incorporates cGMP compliant features; with the inclusion of an optional chart recorder or printer, the GPPI will meet the data handling requirements for 21 CFR Part 11
- Safe change glove system allows the changing of gloves while maintaining aseptic conditions inside the chambers



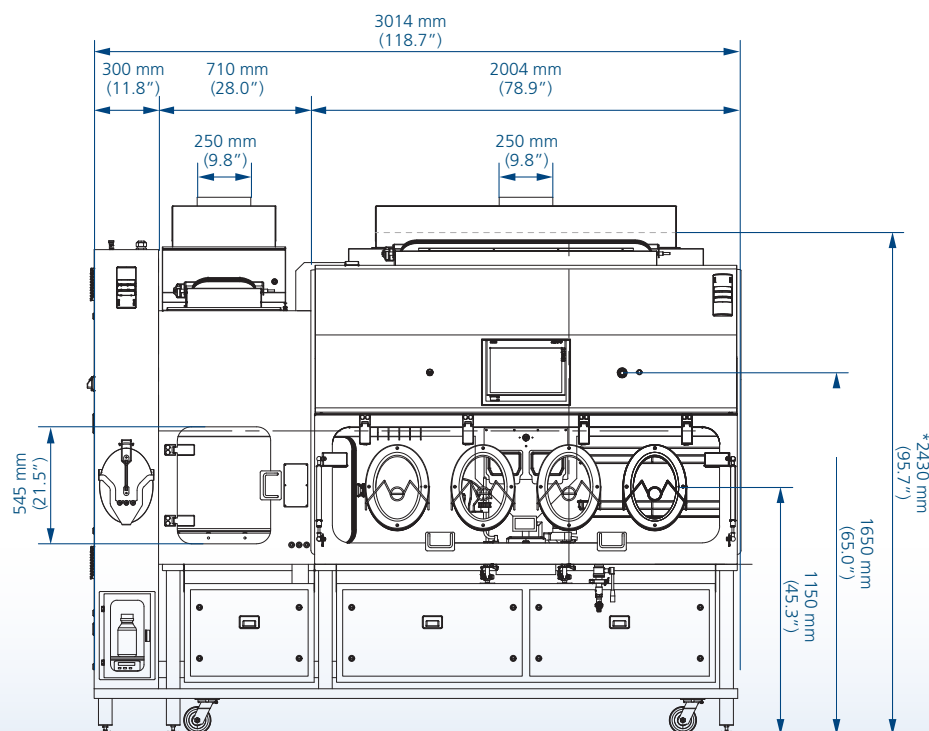
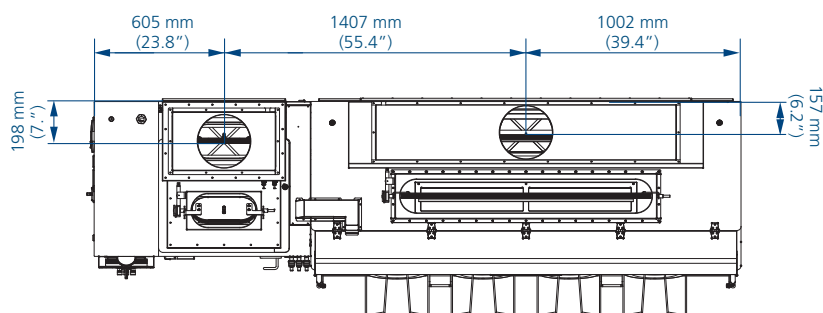
ENGINEERING DRAWING



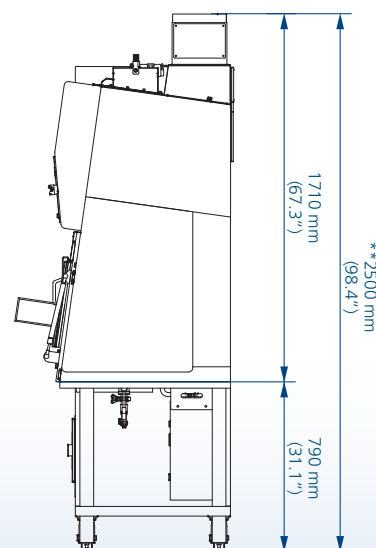
GPPI-2G



GPPI-3G



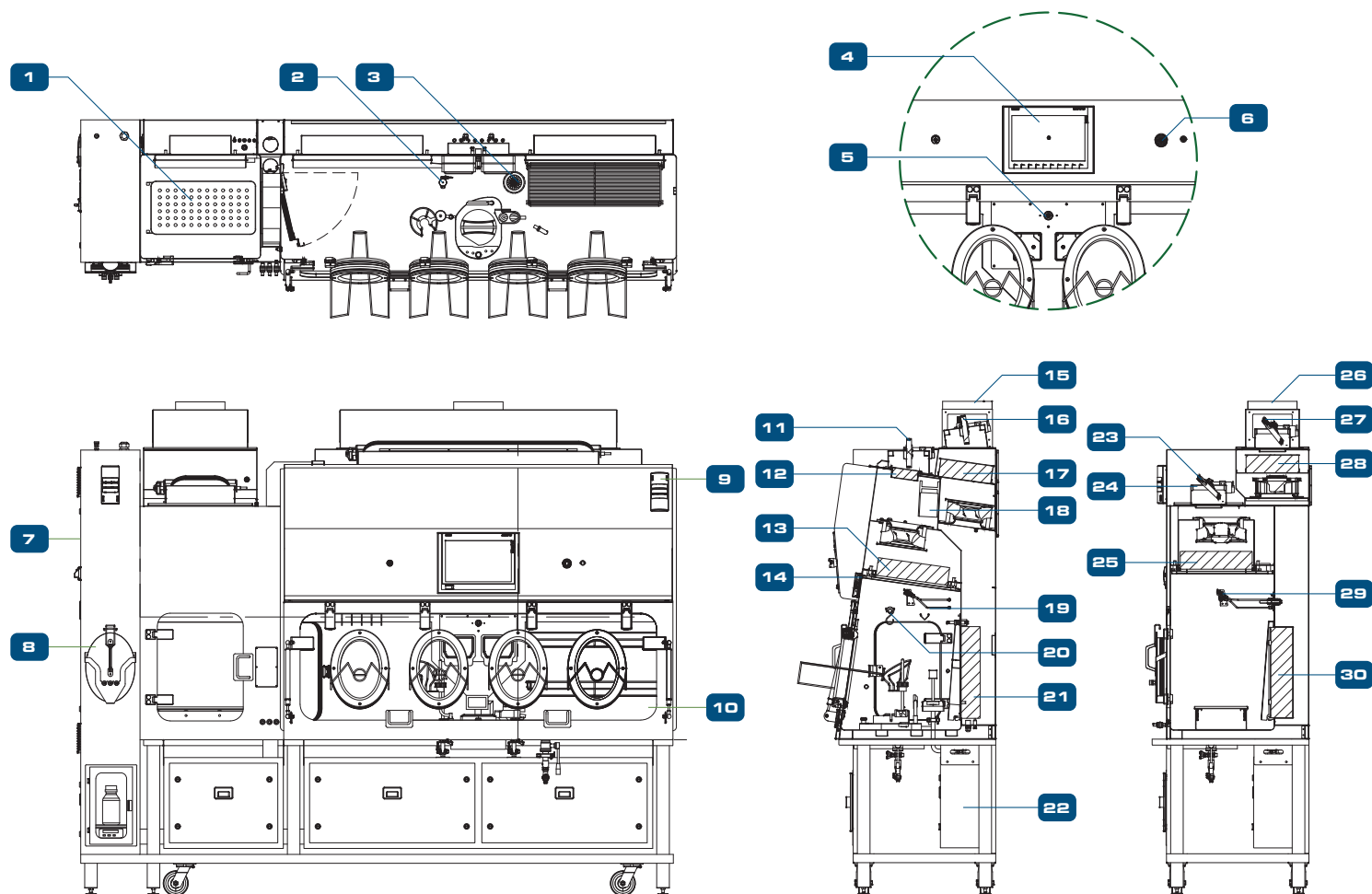
GPPI-4G



* Height without exhaust collar
** Height with exhaust collar

External Depth - 881 mm
Internal Depth - 540 mm

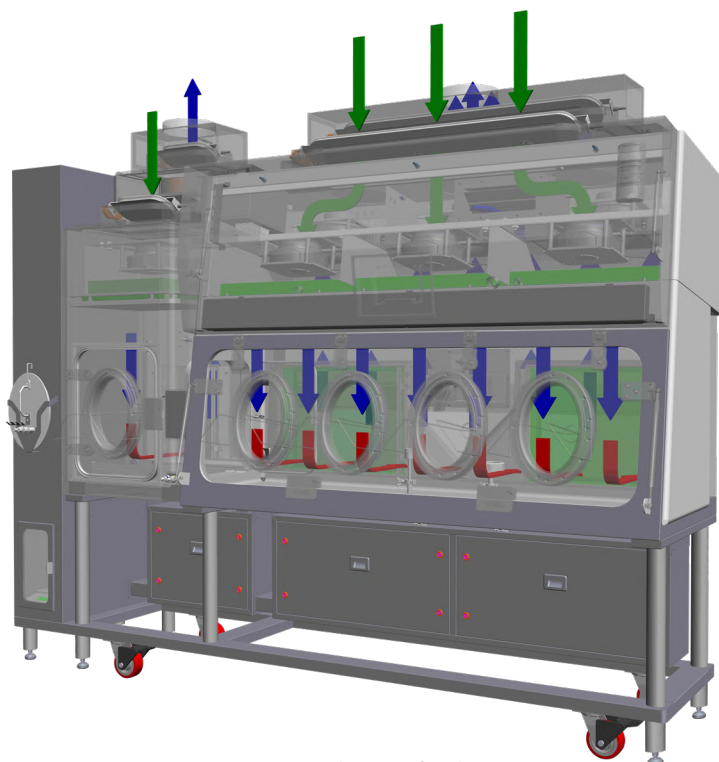
PARTS AND ACCESSORIES



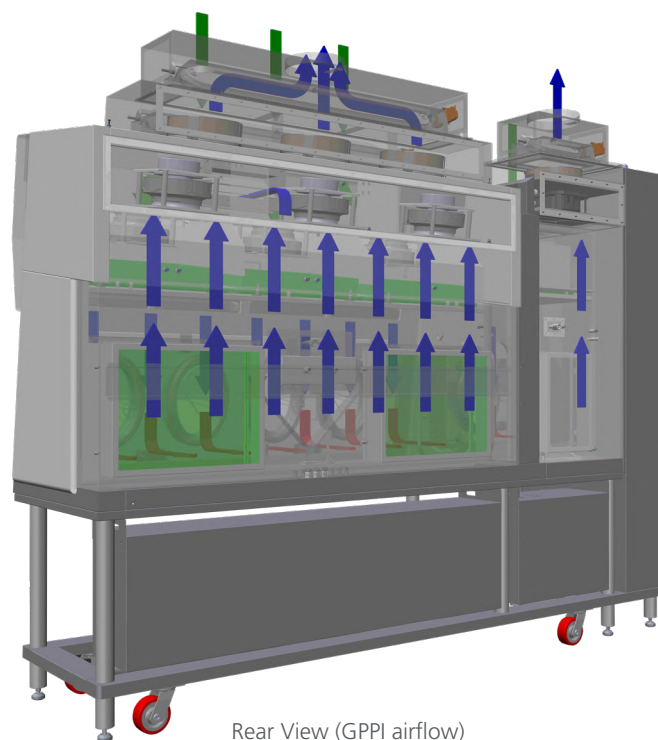
GPPI-4G

1. Pass Chamber Sliding Tray
2. Total Airborne Particle Counter Isokinetic Probe, (Esco offer a PMS IsoAir Pro-Plus as standard configuration)
3. Viable Air Sampler Holding Plate (Esco offer a PMS MiniCapt Remote Microbial Air Sampler 25R as standard configuration)
4. HMI 12"
5. RH and Temperature Sensor Probe
6. Emergency Stop Button
7. Main Control Panel (MCP)
8. Integrated Glove Leak Tester
9. Visual and Audible Alarm Beacon
10. Process Chamber Glass Door with Inflatable Seal
11. Process Chamber Air Inlet, Automatic Damper
12. Process Chamber Air Inlet Pre-filter, M6
13. Process Chamber Supply Filter, U15 ULPA Filter
14. Process Chamber LED Light
15. Process Chamber Exhaust Collar
16. Process Chamber Air Exhaust Collar, Automatic Damper
17. Process Chamber Catalytic Converter
18. Process Chamber Recirculation Damper
19. Process Chamber Decon Nozzle
20. Hanging Rail with S-hook
21. Process Chamber Exhaust Filter, H14 HEPA Filter
22. H2O2 Room Sensor (inside the ICP)
23. Pass Chamber Air Inlet, Automatic Damper
24. Pass Chamber Air Inlet Pre-filter, G4
25. Pass Chamber Supply Filter, U15 ULPA Filter
26. Pass Chamber Exhaust Collar
27. Pass chamber Air Exhaust, Automatic Damper
28. Pass Chamber Catalytic Converter
29. Pass Chamber Decon Nozzle
30. Pass Chamber Exhaust Filter, H14 HEPA Filter

AIRFLOW DIAGRAM



Front View (GPPI airflow)



Rear View (GPPI airflow)



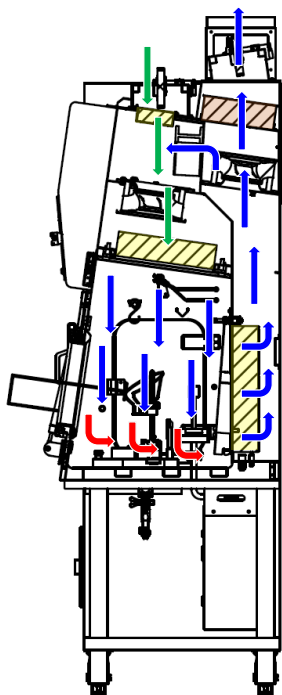
Room Air



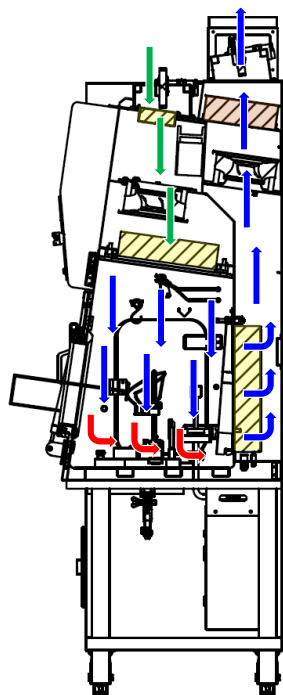
Filtered Air



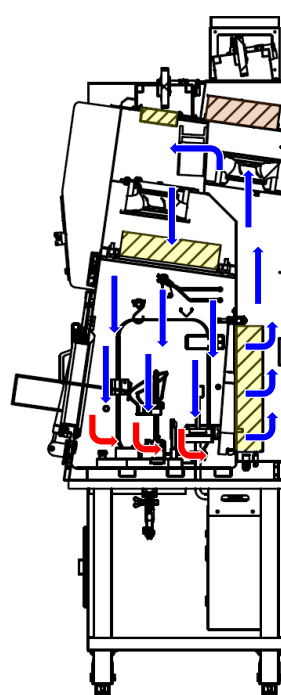
Contaminated Air



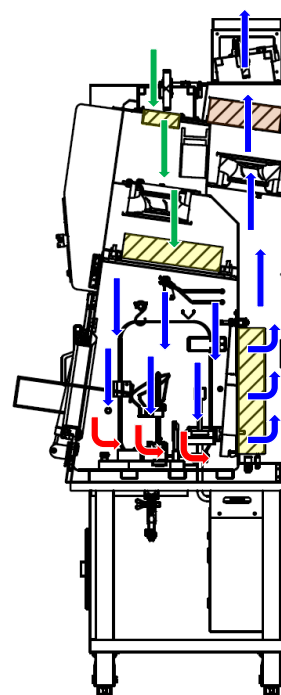
Normal Run
Recirculating Mode



Normal Run
Single Pass Mode



Decontamination Mode
Recirculating Mode



Aeration Mode
Single Pass Mode

GENERAL SPECIFICATIONS

GENERAL PROCESSING PLATFORM ISOLATOR (GPPI)

GENERAL SPECIFICATIONS			GPPI-2G	GPPI-3G	GPPI-4G
GENERAL PROCESSING PLATFORM ISOLATOR (GPPI)					
Nominal Size Main Chamber (Width)			1200 mm (47.2")	1600 mm (63.0")	2000 mm (78.7)
External Dimensions (W x D x H)*		Process Chamber	1504 x 881 x 2430 mm (47.40" x 34.69" x 95.67")	1904 x 881 x 2430 mm (74.96" x 34.69" x 95.67")	2304 x 881 x 2430 mm (90.71" x 34.69" x 95.67")
		Pass Chamber**	710 x 772 x 2430 mm (27.95" x 30.4" x 95.67")		
Internal Dimensions (W x D x H)**		Process Chamber	1200 x 540 x 700 mm (47.24" x 21.26" x 27.56")	1600 x 540 x 700 mm (62.99" x 21.26" x 27.56")	2000 x 540 x 700 mm (78.74" x 21.26" x 27.56)
		Pass Chamber	606 x 458 x 790 mm (23.86" x 18.03" x 31.10")		
Glove Port Height			1150 mm (45.3")		
Chamber Environment			ISO Class 5 (Grade A)		
Filtration	Prefilter		M6 prefilter with ≥ 60% as per EN 779:2012		
	Chamber Supply	Filter Type	ULPA (U15) with Knife Edge Gel Seal		
		Filter Efficiency	99.9995% at Most Penetrating Particle Size (MPPS) as per EN1822:2009		
	Chamber Exhaust	Filter Type	HEPA (H14) with Gasket Seal and Integral Mesh Guard		
		Filter Efficiency	99.995% at Most Penetrating Particle Size (MPPS) as per EN1822:2009		
	Lighting Level			≥ 600 Lux	
Sound Level			≤75 dBA		
Isolator Construction		Internal Chamber Wall	SS 316L		
		Service Housing	SS 304		
		Support Frame	SS 304		
		Main Control Panel (MCP)	In-house SS304 (IP-20)		
		Instrumentation Control Panel (ICP)	In-house SS304 (IP-20)		
		Chamber Glass Outer Door	10 mm (0.39") Tempered Glass		
		Pass Chamber Inner Door	25 mm (0.98") Acrylic		
Isolator Finish		Internal Chamber	≤ 0.4 Ra		
		External Chamber	≤ 0.6 Ra		
		External Service Housing	≤ 0.6 Ra		
Electrical Requirements		220-240V, AC, 50Hz, 1Ø	✓		
		110-120V, AC, 60Hz, 1Ø	✓		
		220-240V, AC, 60Hz, 1Ø	✓		
Compressed Air Requirement (By Client) (If no on-board compressor)		Min 6 Bar - Max 12 Bar, ≥ 200L/min	✓		
Exhaust Duct Requirements (By Client) (Unless Integral Catalytic Convertor is Included)			10" Duct from Isolator to outside		
Shipping Dimension (W x D x H)			2500 x 1100 x 2500 mm (98.4" 43.3" x 98.4")	2800 x 1100 x 2500 mm (110.23" x 43.3" x 98.4")	3250 x 1100 x 2500 mm (128.0 x 43.3 x 98.4)
Shipping Weight			1400 kg (3086.5 lbs)	1600 kg (3527.4 lbs)	1800 kg (3968.3 lbs)

* External height stated is WITHOUT Exhaust Collar. Provision of Exhaust Collar will increase +70 mm (2.8") of total external height

** The dimension stated is for 1-Glove Pass Chamber.

OPTIONS AND ACCESSORIES

BIBO Exhaust Filter Options	Recirculating Airflow	Filter in Rear	With BIBO
		Filter in Bottom	Without BIBO
	Total Exhaust Airflow	Filter in Rear	With BIBO
		Filter in Bottom	Without BIBO
	Recirculating/Total Exhaust Airflow	Filter in Rear	With BIBO
		Filter in Bottom	Without BIBO
Options	Pass Chamber (Size may vary depending on requirements)		
	Biodecontamination System (other brands)		
	Non-viable Particle Counter		
	Viable Air Sampler		
	Sterility Test Pump	Mechanical Integration of Sterility Test Pump includes automatic drain valve, cable access, and test pump cut-out. <i>(Brand and model is up to client preference)</i>	
	Liquid Carboy Container - 10L or		
	Integrated Glove Leak Tester		
	Wireless Glove Leak Tester		
	Sterile Continuous Liner		
	Bag Welder with Table		
	RTPØ105, 190, 270, 350, 460 - Alpha		
	RTPØ105, 190, 270, 350, 460 - Beta Canister		
	RTPØ105, 190, 270, 350, 460 - Beta Liner		
	Weighing Scale		
	Spray Gun		
	H ₂ O ₂ Monitoring System		
	Product Waste Entry/Exit Ports		
	Liquid Entry/Exit Ports		
	Integrated Catalytic Converter		
	Mobile Air Compressor		
	IV-bar with Stainless Steel Hooks		
	Stainless Steel Shelves and Racks		
	Stainless Steel Baskets		
	IP-Rated Main Control Panel		
	IPC Control System - Upgrade		
	SCADA Integration		

BUILDING EXHAUST REQUIREMENTS

		GPPI-2G	GPPI-3G	GPPI-4G
Total Exhaust (Single Pass)	Process Chamber	1021 cmh @500 Pa	1363 cmh @800 Pa	1703 cmh @1100 Pa
	Pass chamber	518 cmh @250 Pa		
Recirculating	Process Chamber	510 cmh	680 cmh	850 cmh
	Pass chamber	518 cmh <i>(Single Pass Mode Only)</i>		

BioVap™ | Biodecontamination System

Esco BioVap™ is an effective hydrogen peroxide based biodecontamination system capable of achieving a 6-log reduction in bioburden. The spore log reduction has been validated using biological indicator stainless steel ribbons populated with *Geobacillus Stearothermophilus* spores.

BioVap™ has been developed in response to increasing demands from the pharmaceutical, biotech, pharmacy, veterinary, and other related industries for microbial-free environments and more stringent decontamination requirements. Hydrogen peroxide breaks down into oxygen and water on completion of the sterilization process which makes it one of the most environment-friendly decontaminants available. The BioVap™ is developed for performing bio-decontamination of aseptic barrier systems, pass-through systems, and Esco isolators.



Science Behind the Process

Esco BioVap™ decontamination leverages the strong oxidizing properties of hydrogen peroxide, which, in vapor or atomized form, can effectively reach complex surfaces on any equipment. The process involves generating vaporized/atomized H₂O₂, distributing it evenly in a sealed space, and allowing it to dwell, during which reactive oxygen species (ROS) such as hydroxyl radicals cause oxidative damage to cellular proteins, lipids, and nucleic acids, effectively killing a broad spectrum of microorganisms, including bacteria, viruses, fungi, and spores.

The H₂O₂ is safely removed through aeration, breaking down into water and oxygen, making BioVap a highly effective and material-compatible sterilization method with the necessary safety protocols to handle its toxicity to humans. The Esco BioVap™ system comes with two systems that the client can choose depending on the requirement:

Esco BioVap™ Generation 1 (Gen 1) – Atomized Hydrogen Peroxide (AHP)

Esco BioVap™ Generation 1 (Gen 1) utilizes atomized hydrogen peroxide sterilant creating a dry fog as it is injected into the space. This system creates a charge on the atomized droplets as they pass through the ultrasonic nozzle.

- This charge imparted on the droplets of sterilant creates two important synergies:
- Each droplet of the sterilant contains billions of reactive molecules to execute the microbial kill.

Through mutual repulsion, the droplets repel each other and distribute quickly through the space achieving a superior distribution of the sterilant. The charged droplets are attracted to the uncharged surfaces within the space so on impact the droplets burst and immediately start the sterilization process.

This revolutionary bio-decontamination system is not affected by temperature or relative humidity therefore there is no requirement to precondition the space being bio-decontaminated and therefore leads to a reduced cycle.

Priming	Injection	Dwell	Aeration
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Esco BioVap™ Generation 2 (Gen 2) – Vaporized Hydrogen Peroxide (VHP)

Esco BioVap™ Generation 2 (Gen 2) utilizes vaporized hydrogen peroxide sterilant, creating a vapor that is evenly dispersed into the space. This advanced system vaporizes hydrogen peroxide, allowing it to permeate the environment thoroughly. The vaporized form of hydrogen peroxide exhibits two key advantages:

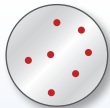
- The vapor phase allows for deeper penetration into porous materials and complex geometries, ensuring thorough decontamination even in difficult-to-reach areas.
- The controlled vaporization process maintains a consistent concentration of hydrogen peroxide throughout the entire space, resulting in a uniform and highly effective sterilization. This consistency minimizes the risk of under-dosing and ensures reliable microbial kill rates across all treated surfaces.

Dehumidification	Injection	Dwell	Aeration
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Level of Decontamination



SANITIZATION
Two log-10⁻²



DISINFECTION
Five log-10⁻⁵



STERILIZATION
Six log-10⁻⁶

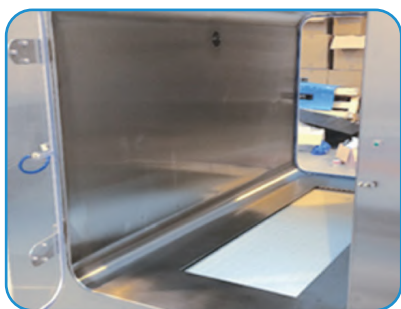
Process Step

The BioVap™ system bio-decontamination cycle will have the following phases

- Injection Phase – In this phase, the sterilant is injected into the space as a dry fog at a pre-set pressure and flow rate and at a given period of time. During this period, the atomising pressure injection airflow and injection air pressure are monitored.
- Dwell Phase – During this phase, the sterilant is allowed to settle on the surfaces inside the enclosure for a set period of time.
- Aeration Phase – In this phase, the hydrogen peroxide sterilant is removed from the space/enclosure.

Flexibility Features

Esco Pharma BioVap™ system is developed to be flexible enough to work in all areas, from Esco isolators and transfer hatches. Keeping in mind that every customer and facility has different requirements.



Esco Pharma Transfer Hatch and BioVap™ integrated system



Esco Pharma BioVap™ system integrated into the isolator as our approach to a cost-effective bio-decontamination



BioVap™ Gen 1 utilizes an ultrasonic nozzle to breakdown hydrogen peroxide droplets to a fine mist provide excellent distribution inside the decontamination chamber

Controls

The BioVap™ system is PLC controlled with an operator interface via a touch screen HMI terminal giving operator log-on security and real-time display of cycle parameters. Cycle parameters are also recorded, and a printout of the cycle parameters is given at the end of a cycle for validation records. Electronic data recording of the cycles 21 CFR 11 compliant is available on request.

At least 10 pre-programmed cycles can be saved on the PLC system selectable from the interface terminal. The BioVap™ can be controlled locally via the HMI located on the BioVap™ generator or can be controlled remotely from an Isolator or Transfer Hatch control system.



HMI Controller

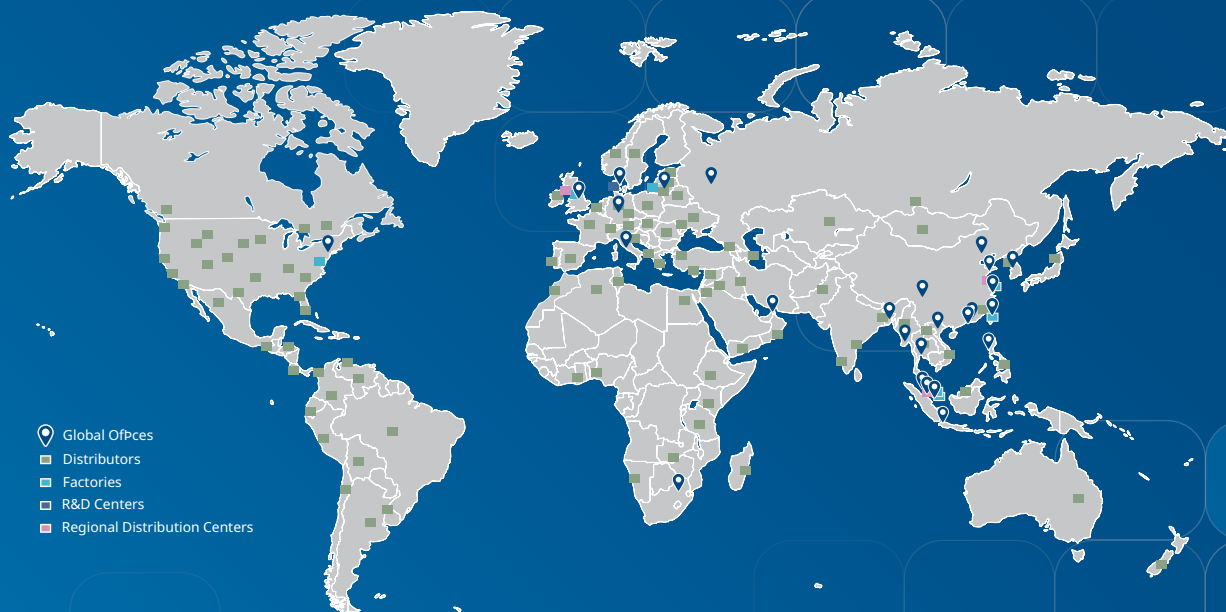


BioVap™



ESCO LIFESCIENCES GROUP NETWORK

42 Locations in 24 Countries All Over the World



- Global Offices
- Distributors
- Factories
- R&D Centers
- Regional Distribution Centers



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.

ESCO

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