

Isoclean®

Healthcare Platform Isolator (HPI-G3)

Optimized Solution for Aseptic/Potent Applications



*Esco Isoclean Healthcare Platform Isolator,
Model HPI-2G_*



*Esco Isoclean Healthcare Platform Isolator,
Model HPI-4P_*



ESCO
PHARMA®

Isoclean® Healthcare Platform Isolator (HPI-G3) with no filter below workstation

Inbuilt **dampers** to allow pressure testing without having to use cover plates, tape & silicone

Centrifugal, direct-drive **blowers** designed for maximum energy efficiency and minimal maintenance

Sentinel™ Gold Microprocessor Control System supervises all functions and monitors airflow and pressures in real-time.

Airlock **Pass Chamber** ensures work zone remains sterile during placement and removal of items.

Horizontal **sliding tray** prevents operator fatigue during transfer procedures.

Electromagnetic Interlocking Doors with time delay effect ensures safety and containment between the Pass Chamber and the Process Chamber.

Optional **sharps disposal system** enables smoother work flow and minimizes transfers in order to enhance patient protection and sterility

Foot switch provides hands-free access to opening of the magnetic interlock minimizing operator fatigue during transfer procedures



2

Guide to Isoclean® Healthcare Platform Isolator - WITHOUT Filter Below Work Zone

HPI-4P1-G3-0

Model	Process Chamber Internal Width (mm)	Code	Pressure	Code	Voltage	Code	Sharps Container Provision	Code
HPI-G3	1130	4	Positive	P	220-240 VAC, 50 Hz	1	No	0
	1360	6	Negative	N	110-120 VAC, 60 Hz	2	Yes	S
					220-240 VAC, 60 Hz	3		



HEPA (H14) filters with a typical efficiency of >99.999% at 0.3 microns provide superior ISO Class 5 air cleanliness, 100 times better than competing products.

Fluorescent lamps (optional LED) deliver >800 Lux to the work surface for superior overall illumination.

The **Process Chamber** facilitates aseptic processing in an ISO Class 5 environment/EU GMP Grade A.

Frameless **front visor panel** with rounded edges to minimize crevices and maximize door vision panel

Circular **glove ports** with minimal crevices, no exposed bolts and nuts

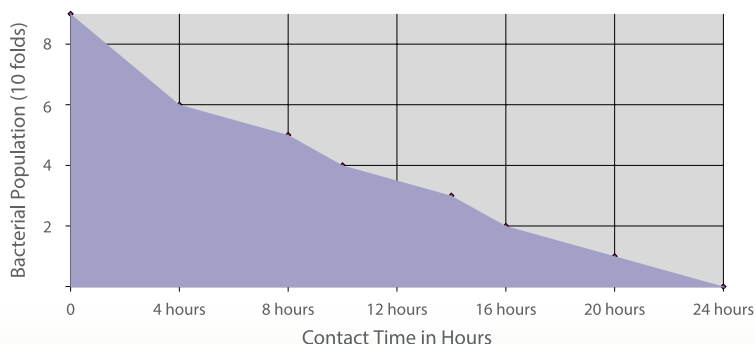
Single-piece stainless steel **work surface** with raised with raised edges on all sides to contain spills.

Optional **hydraulic stand** with caster wheels, adjustable to accommodate user height preference for sitting or standing position.

Angled drain pan for easy cleaning

Esco Isoclean® Healthcare Platform Isolator,
Model HPI-4N_

ISOCIDE™ Antimicrobial Powder-Coating



All exterior painted surfaces are powder-coated with Esco ISOCIDE™, an antimicrobial inhibitor to minimize contamination. Isocide™ is integrated into the coating substrate and cannot be washed out or diminished by repeated cleaning.

Performance results are available upon request. Contact Esco or your Esco Sales Representative for details.

Isoclean® Healthcare Platform Isolator (HPI-G3) with filter below work zone

Inbuilt **dampers** (option for manual or automated) to allow pressure testing without having to use cover plates, tape & silicone

Centrifugal, direct-drive **blowers** designed for maximum energy efficiency and minimal maintenance

Sentinel™ Gold Microprocessor Control System supervises all functions and monitors airflow and pressures in real-time.

Type D **Pass Chamber** with interlocked doors, adjustable purged duration, and time-delayed ingress/egress control allowing sufficient time for surface decontamination to minimize transfer of contamination.

Removable **sliding tray** (option for perforated or non-perforated) prevents operator fatigue during transfer procedures

Electromagnetic Interlocking Doors with time delay effect ensures safety and containment between the Pass Chamber and the Process Chamber.

Return Filter (option to upgrade to safe change BIBO) below work zone filters the contaminated air immediately to minimize possibility of airborne contamination

Foot switch provides hands-free access to opening of the pass chamber inner door minimizing operator fatigue during transfer procedures



Esco Isoclean® Healthcare Platform Isolator, Model HPI-4G_

Guide to Isoclean® Healthcare Platform Isolator - WITH Filter Below Work Zone

HPI - 4 G 8 - P S 2 - 0

Model	Process Chamber Internal Width (mm)	No. of Gloves	Voltage	Code	Pressure	Code	Airflow	Code	Pass-Through Chamber
HPI-G3	1215	2G	220-240 VAC, 50/60 Hz	8	Positive	P	Single Pass	S	None
	1520	3G	110-120 VAC, 50/60 Hz	9	Negative	N	Recirculating	R	Left of Right
	1825	4G							Both Sides

* For standard units with filter below, sharps container is placed inside the work chamber.



HEPA (H14) filters with a typical efficiency of >99.995 at 0.3 microns provide superior ISO Class 5 air cleanliness, 100 times better than competing products.

Fluorescent lamps (optional LED) deliver >800 Lux to the work surface for superior overall illumination.

The **Process Chamber** facilitates aseptic processing in an ISO Class 5 environment/EU GMP Grade A.

Circular **glove ports** with minimal crevices, no exposed bolts and nuts

Frameless **front visor panel** with rounded edges to minimize crevices and maximize door vision panel

Single or multiple, removable work trays for easy surface cleaning and decontamination.

Optional **hydraulic stand** with caster wheels, adjustable to accommodate user height preference for sitting or standing position.



Code	Sharps Container Provision	Code
0	No	0
L or R	Yes	S
2		

HPI-G3 SC+
Safe change BIBO filters
Esco HMI / PLC controller
Standard Integration of BioVap™
Sliding vertical inner pass chamber door
Larger pass chamber (single or dual)



Introduction

The Isoclean® Healthcare Platform Isolator (HPI-G3) facilitates the isolation of a product or process while providing the required sterile/aseptic environment. It is factory-configured to operate at positive or negative pressure in single or recirculating airflow. This equipment provides a comprehensive range of personnel and product protection in addition to the surrounding work areas and the environment.

Application

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

Isolation Technology

Isolation containment systems provide inherently superior sterility compared to open front clean air devices such as laminar flow clean benches and Class II biological safety cabinets. USP <797> guidelines specify that isolators may be situated in an area subject to less severe environmental controls compared with open front clean air devices.

When used as part of a system that includes operator aseptic technique training, process validation, expiration setting and product quality maintenance after the CSP leaves the pharmacy, isolators are an effective solution especially for lower-volume pharmacies. They reduce operating and renovation costs, take up less space, and are easier to maintain.

The positive pressure HPI-G3 model is suitable for work involving non-hazardous materials, while the negative pressure isolator is suitable for work involving hazardous materials eg, cytotoxic compounding applications.

The work zone and pass chamber interchange are either under positive or negative pressure to the room in order to maintain sterility or operator protection, respectively, in case of a breach in the barrier isolation system.

When hazardous drugs compounded have the potential to volatilize, the negative pressure, single pass isolator should be selected. Optional carbon filter may be added.

Maximum Protection and Sterility

- An improved mini-pleat separation technique maximizes filter surface area, improves efficiency and extends filter life over conventional separation.
- The HEPA (H14) supply filters provide clean air to the work surface in a gentle vertical laminar flow.
- Superior air cleanliness of ISO Class 5, 100 times better than

competing products.

- Laminar (unidirectional) airflow within work zone and pass chamber enables recovery of chamber atmosphere to ISO Class 5 conditions within 3 minutes following a worst-case contamination event. The entire work zone air is changed 20-30 times per minute.
- Airlock pass chamber ensures work zone remains sterile during ingress and egress of items.
- The electromagnetic interlocking door mechanism with time-delayed ingress/egress control allows sufficient time for air purging to minimize transfer of contamination.
- Optional sharps disposal system enables smoother work flow and minimizes transfers in order to enhance patient protection and sterility. Sharps may be disposed through the work surface into disposal bins while minimizing contamination of the work zone.
- Improved safe-change cuff rings enable glove change with zero risk of contamination.

Ergonomic Enhancements

Ergonomic enhancements minimize stress associated with long periods of operation.

- Ergonomically styled sloped front reduces glare and allows easier reach into the work area. Rounded edges minimize crevices and maximize door vision panel.
- Sliding tray facilitates material transfer without the operator having to reach into the pass chamber interchange area.
- Circular glove ports with minimal crevices, no exposed bolts and nuts
- Optional hydraulic stand allows the operator to adjust the work surface height to preference, for both sitting and standing operation.
- Adaptable glove system allows all common surgical gloves to attach to the cuff ring.
- Lamps deliver > 800 Lux to the work surface for superior overall illumination.
- Foot switch provides hands-free access to opening of the magnetic interlock minimizing operator fatigue during transfer procedures.

Cabinet Construction

Robust construction and enhanced safety features qualify the HPI-G3 for the most demanding laboratory applications. The isolator is fully assembled and ready to install and operate when shipped.

- The cabinet exterior structure is constructed of industrial-grade electrogalvanized steel.

- External surfaces are coated with ISOCIDE™ antimicrobial coating to protect against surface contamination and inhibit bacterial growth. ISOCIDE™ eliminates 99.9% of surface bacteria within 24 hours of exposure.
- The cabinet interior is constructed of durable and pharmaceutical-grade 316L stainless steel with large radius corners to simplify cleaning.
- Removable tray components to provide easy access and encourage surface decontamination.
- Single or multiple, removable work trays for easy surface cleaning and decontamination.
- Hinged window may be opened for thorough access into the work zone.

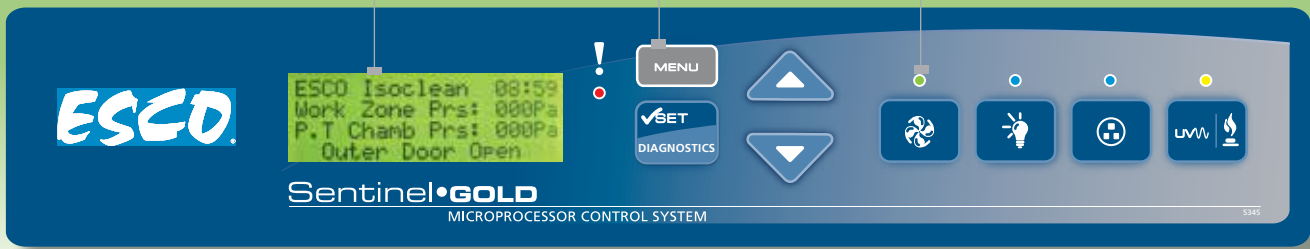
Enlarged, multi-line digital read-out with alpha-numeric display indicates all input, status and alarm functions.

Work zone, interchange pressures and downflow velocity are continuously measured and displayed. Integrated true airflow sensor is temperature compensated for improved accuracy.

Password-protected administration can be set to restrict access to main menu.

Color coded indicator lamps display green for fan operation; blue for fluorescent lights and electrical outlet; and orange for AUX function ON.

Optional audible and visual alarms warn of unsafe conditions such as low chamber pressure.



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.

Control System

The Esco Sentinel™ Gold microprocessor-based control system supervises operation of all cabinet functions. Controls are configurable to meet user requirements. Features of the main control panel include:

- Work zone and pass chamber pressures are monitored and displayed on the LCD screen.
- Continuous monitoring and display of isolator laminar (downflow) airflow on large, easy-to-read LCD display.
- An optional alarm package is available for users with more sophisticated requirements.

Fan Efficiency

The HPI-G3 fan system is designed for maximum energy efficiency and minimal maintenance.

- Centrifugal, direct-drive, external rotor motors reduce operating costs.
- Unique Esco motor/fan orientations minimize noise and vibration.
- Built-in solid-state variable speed controllers are infinitely adjustable from Off to Maximum.

Safety and Certification

All components used in Esco products meet or exceed all applicable safety requirements.

- Each isolator is individually factory tested for electrical safety.
- Documentation specific to the cabinet serial number is maintained on file.

Warranty

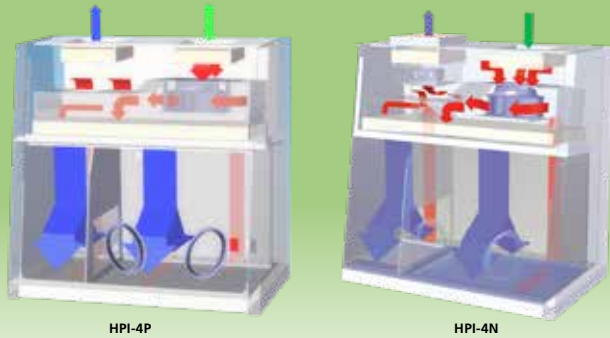
One year warranty (excluding consumables). Consumables are ballast, fluorescent, and filters. The warranty will cover all other parts including the blower, fan switch, and electrical main board. During the period of warranty, any repair, modification, testing and commissioning performed by any unauthorized party other than Esco Service Team will void the warranty of the unit.

Accessories and Options

HPI-G3 is available as a standard bench top unit (for HPI-G3 without filter below models). Additional accessories are available for further enhancement.

Support Stands

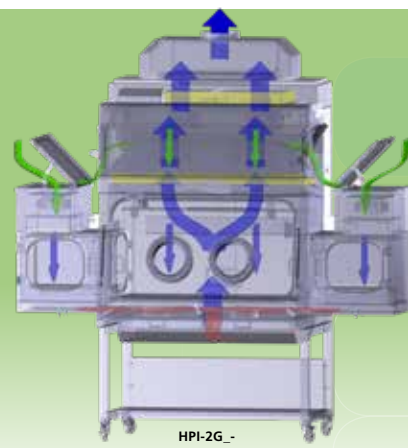
- Fixed height, available 711 mm (28") or 864 mm (34")
 - With leveling feet, ±38.1 mm (1.5") (SPL-__0)
 - With casters (SPC-__0)
- Telescoping height stand for leveling feet (STL-__0), nominal range 660 mm to 960 mm (26" to 37.8") - Adjustable in 25.4 mm (1") increments
- Adjustable hydraulic stand, with casters, elevates to accommodate user preference for sitting or standing work surface height (SHM-_-G3)



HPI-4P

HPI-4N

Ambient Air
 Filtered Air
 Potentially Contaminated Air



HPI-2G-

Ambient Air
 Filtered Air
 Potentially Contaminated Air

Ambient air is pulled through the inlet pre-filter (80% efficiency for positive pressure model) located on top of the isolator. The pre-filter traps large size particles to extend the life of the supply HEPA (H14) filter.

Air from the top inlet and from work zone is pulled by the fan which creates a positive pressure on the plenum that creates downflow. In positive pressure model, the proprietary plenum design forces more air into the work zone, increasing its pressure relative to the pass-thru. In negative pressure model, the work zone and pass-thru interchange are under negative pressure to the room, thereby preventing contaminants from leaving the work zone in case of a breach. The HEPA downflow filter creates a laminar and particle-free ISO Class 5 air cleanliness as per ISO 14644-1 (equivalent to Class 1 as per US Fed Std 209E) inside the isolator to protect the work material inside the main chamber and pass-thru.

Air from the work zone and pass-thru is quickly purged out by the fan to keep the area clean. The fan pulls approximately 90% of the purged air back to the plenum and after passing through the HEPA downflow filter again, it is recirculated back to the work one and pass chamber. The high rate of airflow recirculation helps to prolong filter life and reduces the chances of ambient contaminants entering the work zone.

Approximately 10% of the purged air is exhausted through an HEPA-filter to prevent heat build-up inside the isolator that can be detrimental to drug compounding. This exhausted air is replenished by ambient air coming from the top inlet pre-filter and a filter with 80% efficiency for positive pressure model.

Ambient air is pulled through the inlet pre-filter located on top of the isolator. The pre-filter traps large size particles to extend the life of the supply HEPA filter.

Air from the top inlet and from work zone is pulled by the main fan, which creates positive pressure on the plenum that creates downflow. Work zone pressure is always higher than the pass-through, to prevent contaminants from entering the work zone through the pass-through.

The downflow filter creates a full unidirectional airflow and particle-free ISO Class 5 environment inside the isolator to protect the work material inside the main chamber and pass-through. Air from the work zone and pass-through is quickly purged by the fans to keep the area clean.

Standards Compliance	Design	Cabinet Performance	Air Quality	Filtration	Electrical Safety
	USP 797, USA FDA cGMP, USA AS 4273, AUS PIC/S EU GMP TGA GMP JIS	CETA CAG 001-2005, USA CETA CAG 002-2006, USA AS 4273, AUS ISO 10648-2, Class 2 at Manual Testing DIN 12980:2015-08*	ISO 14644.1, ISO Class 5, Worldwide JIS B9920, Class 5, Japan EU GMP, Grade A	EN-1822, Europe IEST-RP-CC001.3, USA IEST-RP-CC007, USA IEST-RP-CC034.1, USA	IEC 61010-1, Worldwide EN 61010-1, Europe UL 61010-1, USA CAN/CSA -22.2, No 61010-1

*Cabinet performance of Isoclean® Healthcare Platform Isolator (HPI-G3) complies to the proposed guidelines in the DIN 12980:2015-08 draft standard.

Other Options and Accessories

- Electrical outlets
- UV lamp
- IV bars with hooks
- Carbon VOC with filter housing*
- Exhaust Collar+
- Hard Ducting with Anti-blow back valve*
- Glove leak tester
- CCTV and rear view adaptation
- BioVap™ biodecontamination system
- Sharps container
- Continuous Liner for Bag In or Bag Out
- Bag welder for continuous liner system

* for HPI-2G/HPI-3G/HPI-4G models only

+ for negative isolator only

Glove Leak Tester

Features:

- Quantitative pinhole measurement
- Simple operation
- Positive pressure testing
- Single glove test
- Table-top design
- Pneumatic Tubing Connections



BioVap™ | Biodecontamination System

Esco BioVap™ is an effective hydrogen peroxide-based biodecontamination system capable of achieving a 6-log reduction in bioburden. This system can be integrated into the HPI-G3 as our approach to a cost-effective biodecontamination.

SCIENCE BEHIND THE PROCESS

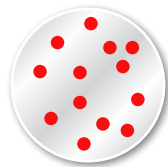
The Esco BioVap™ system employs a process of atomizing the hydrogen peroxide sterilant creating a dry fog after it is injected into the space. This unique system (patent pending) creates a charge on the atomized droplets as it pass through the nozzle.

Each droplet of the sterilant contains billions of reactive antimicrobials to effect a microbial kill. Through a mutual repulsion, the charged droplets repel each other and distribute through the space and are attracted to the negative charged surfaces. This causes the droplets to crash and burst on to the surfaces instead of gently settling.

This revolutionary biodecontamination system is not affected by temperature or relative humidity therefore there is no pre-conditioning requirement to the chamber before use leading to reduced cycle.



LEVELS OF BIODECONTAMINATION



SANITIZATION
Two log-10⁻²



DISINFECTION
Five log-10⁻⁵



STERILIZATION
Six log-10⁻⁶

Specifications	
Air Injection Pressure	4 bar ± 10%
Air Injection Flow rate	32 lpm ± 10%
Injection Time	30 sec - 20 mins
Dwell Time	15 - 45 min
Aeration Time	20 - 90 min
Total Decon Time	30 mins - 2 hr
Sterilant Used in One Cycle	10 - 150 mL
Sterilant Injection Flow Rate	200 - 1000 µL/sec
Sterilant	30% Hydrogen peroxide

CONTROL SYSTEM

BioVap™ is controlled by PLC with operator interface via a touchscreen HMI terminal giving operator log on security and real-time display of cycle parameters.

* Specifications are highly dependent on the isolator unit specifications such as size, level of customization, Biovap design, etc.

Testing and Validation

- Filter Leak Tests verify the integrity of the ULPA and HEPA filters as installed.
- Downflow Velocity Tests verify adequate unidirectional airflow velocities.
- Class 2 Containment Enclosure at Factory Test for process and pass chambers in accordance with ISO 10648-2.
- Particle Counts (Air Cleanliness Tests) verify air cleanliness in accordance with ISO 14644-1.
- Product Ingress and Egress Tests determines if the isolator work zone can maintain ISO Class 5 during transfer procedures.
- Recovery Time Test determines the amount of time it takes the main chamber to recover to ISO Class 4 in the event of a contamination event
- Breach Test verifies user protection in case of a glove failure. Unit will become negative pressure with inward velocity of 0.7 m/s.
- Operator Comfort Tests include noise, light and vibration.

Pressure Test

HPI-G3 is a class 2 containment enclosure on manual pressure leak test and Class 3 containment enclosure on automated pressure test as per ISO 10648-2.

Capable of carrying out a pressure test (Manual or Automated). Compressed air is injected to 280-290 Pa and count down starts when the pressure drops to 250 Pa. Measurements are taken every 10 mins for total of 30 mins. These measurements are recorded and computed as per ISO 10648-2 standard.



SAFE GLOVE CHANGE PROCEDURE: REPLACING DISPOSABLE GLOVES

Safe change design system allows glove change at the middle of a process or when the equipment is in operation.



1. Pull the Glove/Sleeve outside the isolator.



2. Fold the fingers of the glove inside the cuff ring.



3. Remove both inner and outer rings.



4. Carefully roll the gloves from the middle groove to the outer groove.



5. Take the new glove and ensure the thumb is at the top. Stretch the ring of the new glove over the port and over the old glove onto the middle groove.



6. At the last groove, install the first O-ring over the new glove.



7. Carefully loosen the old glove from the outer groove. Then, install the second O-ring at the first groove.



8. Put the glove/sleeve inside the isolator.



9. Working with one hand in the adjacent glove, carefully pull the old glove.



10. The procedure is now complete.

SAFE GLOVE CHANGE PROCEDURE: REPLACING THE SLEEVES



1. Remove the screws that secure the glove port cover



2. Remove the outer glove port cover



3. Remove the "O" ring



4. Carefully roll the ring of the sleeves/gloves from the inner groove to the outer groove of the port



5. Ensure that the old sleeves/gloves is inside the isolator



6. Take the new sleeves and ensure the thumb is at the top and stretch the "O" ring of the new sleeves over the port and over the old sleeves into the inner groove



7. Replace the "O" ring into the outer groove of the glove port



8. Working with one hand in the adjacent sleeves, carefully work from the outer ring and into the isolator. The old sleeves needs to be remove while under the new sleeves

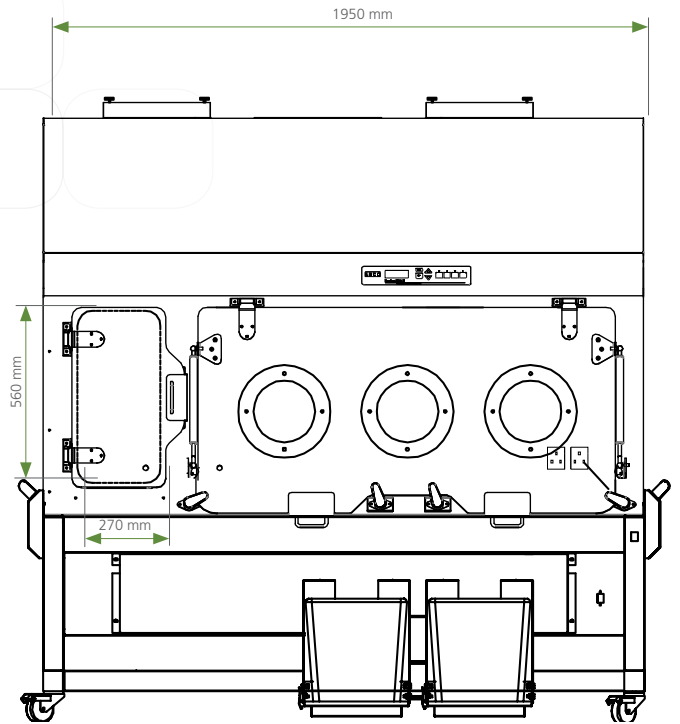
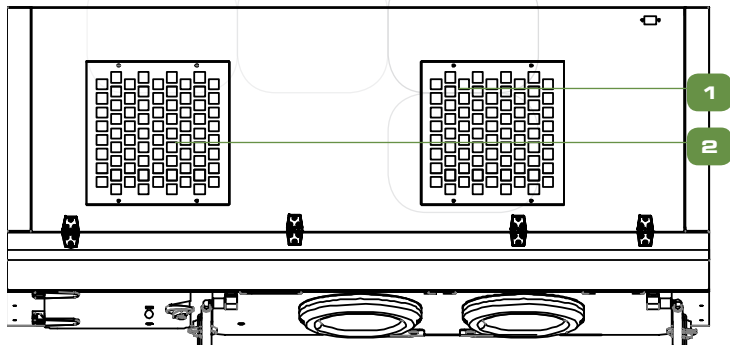


9. Return the glove port outer cover.



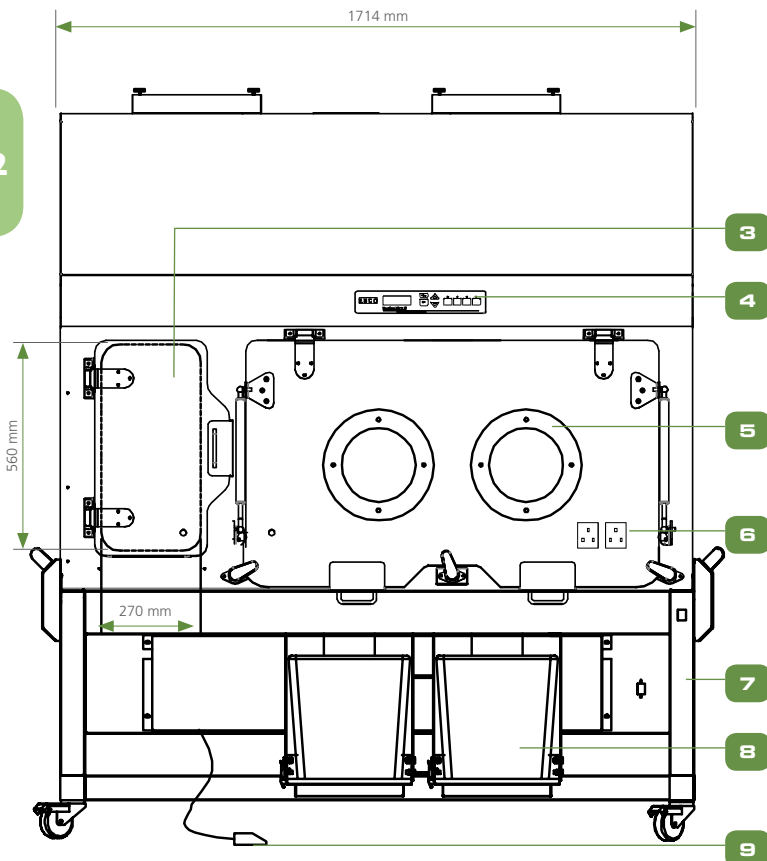
10. Secure the port cover with the screws. The procedure is now complete

ENGINEERING DRAWING

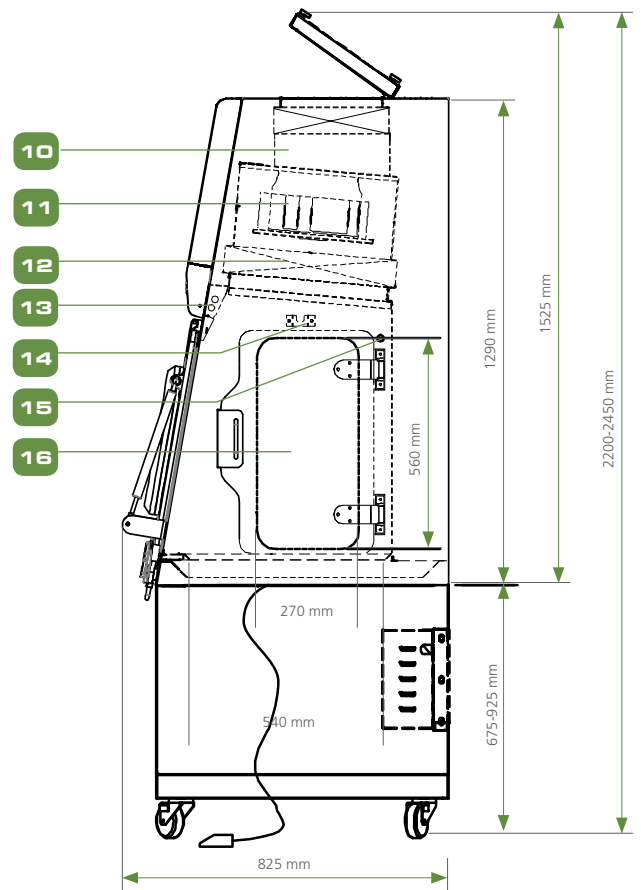


HPI-6__G3

12



HPI-4__G3



- | | | |
|--|---|----------------------------------|
| 1. Inlet Pre-filter 80% efficiency (HPI-N: Inlet H14 filter) | 7. Hydraulic Height Adjustable Base Stand with Casters (Optional) | 12. Downflow H14 Filter |
| 2. Exhaust H14 Filter | 8. Sharps disposal system (Optional) | 13. Fluorescent Lamp |
| 3. Pass-Thru, Hinged Outer Door | 9. Foot switch | 14. IV Bar (Optional) |
| 4. Esco Sentinel™ Gold Microprocessor Control System | 10. Exhaust Fan | 15. UV Lamp (Optional) |
| 5. Round Glove Ports (200 mm) | 11. Supply Fan | 16. Pass-thru, Hinged Inner Door |
| 6. Electrical Outlet (Optional) | | |

GENERAL SPECIFICATIONS

Isoclean® Healthcare Platform Isolator (HPI-G3) (without filter below)

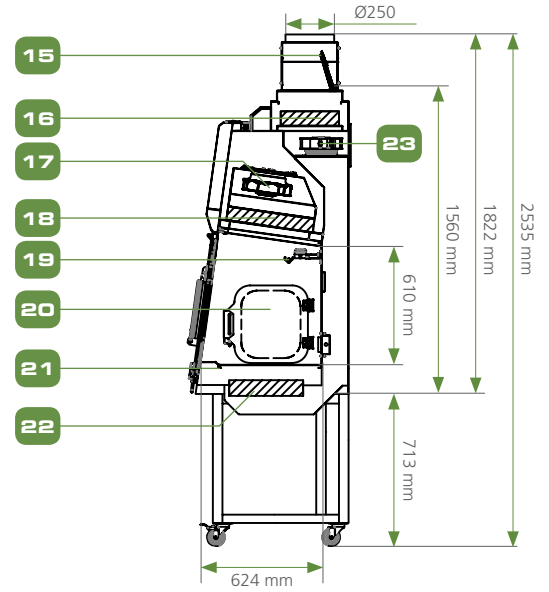
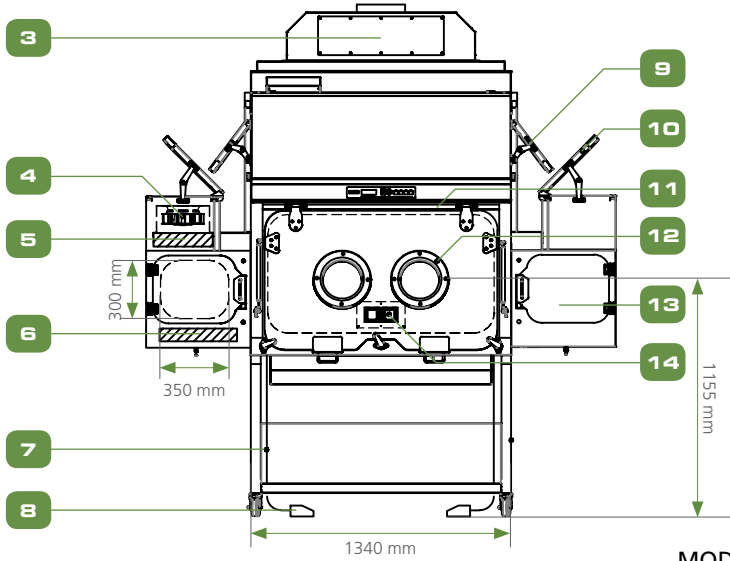
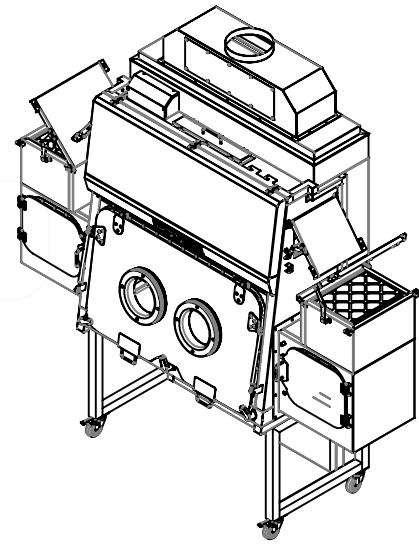
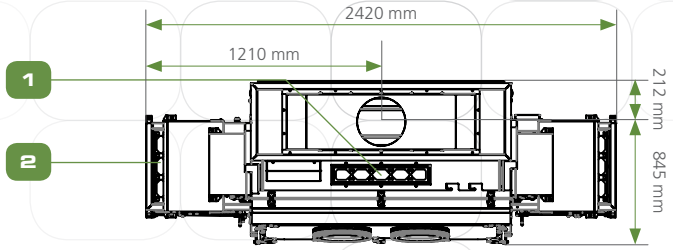
		HPI-4__-G3		HPI-6__-G3	
Main Chamber Nominal Size (Width)		1130 mm		1360 mm	
External Dimensions (W x D x H)	Without stand	1714 x 825 x 1290 mm (67.5" x 3.25" x 50.8")		1950 x 825 x 1290 mm (76.8" x 3.25" x 50.8")	
	With Adjustable Stand (min)	1714 x 825 x 1975** mm (67.5" x 32.5" x 77.8")		1950 x 825 x 1975** mm (76.8" x 32.5" x 77.8")	
	With Adjustable Stand (max)	1714 x 825 x 2225** mm (67.5" x 32.5" x 87.6")		1950 x 825 x 2225** mm (76.8" x 32.5" x 87.6")	
Process Chamber Internal Dimension (W x D x H)		1130 x 540 x 650 (44.5" x 21.3" x 25.6")		1360 x 540 x 650 mm (54.5" x 21.3" x 25.6")	
Pass Chamber Internal Dimension (W x D x H)		318 x 540 x 650 mm (12.5" x 21.3" x 25.6")			
Pass Chamber Dimension - (W x D x H)	Inner Door	270 x 560 mm (10.6" x 22.0")			
	Outer Door	270 x 560 mm (10.6" x 22.0")			
Glove Port Diameter		200 mm			
Glove Port Quantity		2		3	
Chamber Environment		Iso Class 5 all Chambers (Grade A)			
Pre-filter		G4, panel, polyester fiber media			
Downflow and Exhaust Filter Type		HEPA (H14) Filter with Integral Metal Guards and Filter Frame Gaskets; Fully Compliant With EN 1822 (H14) and IEST-SPCC001.3 Requirements			
Filter Efficiency		>99.999% for particle size between 0.1 to 0.3 micron			
Lighting Level		> 800 Lux			
Sound Level		TBD			
Isolator Construction	Main Body	1.2 mm (0.05") 18 gauge electro-galvanized steel with white oven-baked epoxy-polyester antimicrobial powder-coated finish			
	Work Tray	1.5 mm (0.06") 16 gauge stainless steel, type 316L, with 4B finish			
	Side Walls	1.2 mm (0.05") 18 gauge stainless steel, type 316L, with 4B finish			
Electrical	220-240V, AC, 50 Hz, 1Ø	HPI-4N1-G3	HPI-4P1-G3	HPI-6N1-G3	HPI-6P1-G3
	Cabinet Full Load Amps (FLA)	2.5 A	2A	3A	TBD
	Optional Outlets FLA	5 A	5 A	5A	5 A
	Cabinet Nominal Power	450 W	355W	480W	TBD
	Cabinet BTU	1535 BTU/hr	1211 BTU/hr	1638 BTU/hr	TBD
	110-120V, AC, 60 Hz, 1Ø	HPI-4N2-G3	HPI-4P2-G3	HPI-6N2-G3	HPI-6P2-G3
	Cabinet Full Load Amps (FLA)	8A	6.8A	TBD	TBD
	Optional Outlets FLA	5 A	5 A	5 A	5 A
	Cabinet Nominal Power	295W	525W	TBD	TBD
	Cabinet BTU	2030 BTU/hr	1793 BTU/hr	TBD	TBD
	220-240V, AC, 60 Hz, 1Ø	HPI-4N3-G3	HPI-4P3-G3	HPI-6N3-G3	HPI-6P3-G3
	Cabinet Full Load Amps (FLA)	3 A	TBD	TBD	TBD
	Optional Outlets FLA	5 A	5 A	5 A	5 A
	Cabinet Nominal Power	520 W	TBD	TBD	TBD
	Cabinet BTU	1774 BTU/hr	TBD	TBD	TBD
	Compressed Air Requirement (by Client)	2 Bar-g Pressure at 5 L/sec	2 Bar		
Options/Accessories	Adjustable Hydraulic Stand	✓		✓	
	Carbon Filter	✓		✓	
	CCTV	✓		✓	
	Drain	✓		✓	
	Electrical Outlet	✓		✓	
	Glove leak Tester	✓		✓	
	IV Bar with 5 hooks	✓		✓	
	UV Lamp	✓		✓	
	Rear View Screen Adaptation	✓		✓	
Work Surface Options	Single-piece Trays	✓		✓	
	Multiple-piece Trays	✓		✓	
Transfer Options	Sharps Disposal	✓		✓	
	Continuous Liners for BIBO	✓		✓	
	Bag Welder for Continuous Liner System	✓		✓	
Net Weight		540 kg		900 kg	
Shipping Weight		580 kg		950 kg	
Shipping Dimensions, Maximum (W x D x H)		1950 x 950 x 2210 mm		3200 x 1060 x 2250 mm	
Shipping Volume, Maximum*		4.09 m³ (144.4 ft³)		7.63 m³	
BUILDING EXHAUST REQUIREMENTS		HPI-4__-G3 190 cmh at 80 Pa (80% recirculating, 20% exhaust)		HPI-6__-G3 286 cmh at 100 Pa (80% recirculating, 20% exhaust)	

** Total unit only with adjustable stand

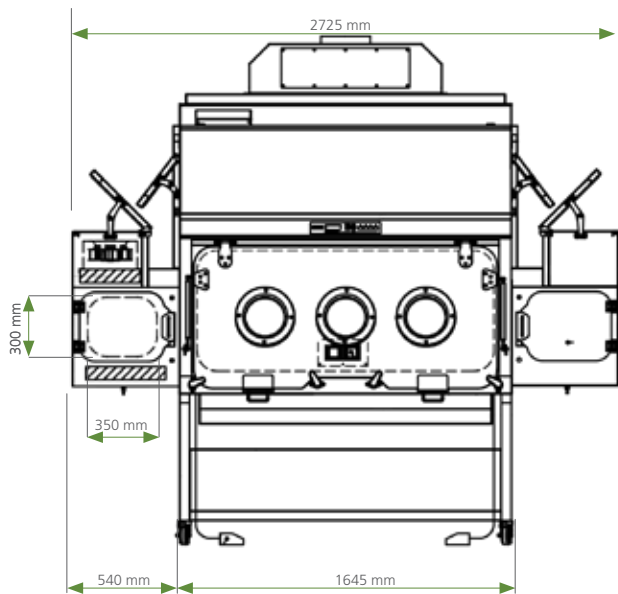
1. Add 150mm height, With Exhaust Collar or Carbon filter
2. Add 90mm height, with cover for manual pressure test

ENGINEERING DRAWING

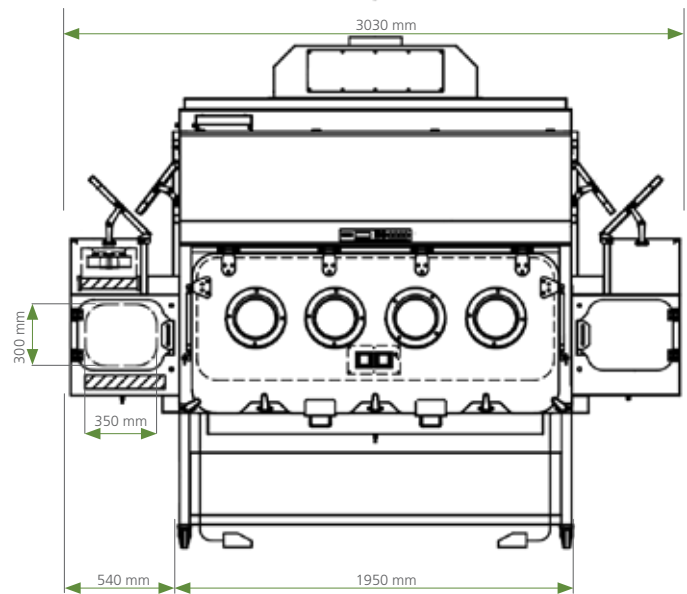
NOTE: FOR CARBON FILTER OPTION, ADD 80mm TO OVERALL HEIGHT



MODEL HPI-2G



MODEL HPI-3G



MODEL HPI-4G

1. Exhaust Collar
2. Pass Chamber Inlet Pre-filter (G4 Pre-filter)
3. Process Chamber Inlet, Manual Damper
4. Pass Chamber Supply Fan
5. Pass Chamber Supply Filter, HEPA (H14) Filter
6. Pass Chamber Exhaust Filter, HEPA (H14) Filter
7. Support Stand
8. Foot Switch for Inner Door

9. Process Chamber Inlet Pre-filter (G4 Pre-filter)
10. Pass Chamber Inlet, Manual Damper
11. Esco Sentinel™ Gold Microprocessor Control System
12. Circular Glove Ports (200 mm)
13. Pass Chamber Outer Door
14. 2x Electrical Outlet Provision
15. Exhaust Collar, Manual Damper (for negative pressure isolator only)

16. 2nd Exhaust Filter, HEPA (H14) Filter
17. Process Chamber Supply Fan
18. Process Chamber Supply Filter, HEPA (H14) Filter
19. IV Bar with 6 Hooks (Optional)
20. Pass Chamber Inner Door
21. Work Zone Tray
22. 1st Exhaust Filter HEPA (H114) Filter
23. Exhaust Fan

GENERAL SPECIFICATIONS

Isoclean® Healthcare Platform Isolator
(with filter below)

		HPI-2G	HPI-3G	HPI-4G
Main Chamber Nominal Size (Width)		1220 mm (4')	1525 mm (5')	1830 mm (6')
External Dimension (with two Pass Chamber) (L x W x H)	Without Base Stand	2420 x 845 x 1822 mm (95.3" x 32.7" x 71.7")	2725 x 845 x 1822 mm (107.3" x 32.7" x 71.7")	3030 x 845 x 1822 mm (119.3" x 32.7" x 71.7")
	With Base Stand (Min)	2420 x 845 x 2507 mm (95.3" x 32.7" x 98.7")	2725 x 845 x 2507 mm (107.3" x 32.7" x 98.7")	3030 x 845 x 2507 mm (119.3" x 32.7" x 98.7")
	With Base Stand (Max)	2420 x 845 x 2757 mm (95.3" x 32.7" x 108.5")	2725 x 845 x 2757 mm (107.3" x 32.7" x 108.5")	3030 x 845 x 2757 mm (119.3" x 32.7" x 108.5")
Process Chamber Work Zone (W x D x H)		1215 x 624 x 610 mm (47.8" x 24.6" x 24.0")	1520 x 624 x 610 mm (59.8" x 24.6" x 24.0")	1825 x 624 x 610 mm (71.9" x 24.6" x 24.0")
Pass Through (W x D x H)		577 x 410 x 320 mm (22.7" x 16.1" x 12.6")		
Work Zone and Interchange Chamber Performance		ISO Class 5 all Chamber (Grade A)		
Pre-filter		G4, panel, polyester fiber media		
Inlet Filter Type		80% efficiency pre-filter		
Downflow and Exhaust Filter Type		HEPA H14 with Integral Mesh Guard and Gasket Seal, fully compliant with EN 1822		
Typical Filter Efficiency		>99.999% for particle size between 0.1 to 0.3 micron		
Sound Level		TBD		
Fluorescent Lamp Intensity		> 800 Lux		
Isolator Construction	Main Body	1.5 mm (0.06") 18 gauge electro-galvanized steel with white oven-baked epoxy-polyester antimicrobial powder-coated finish		
	Work Tray	1.5 mm (0.06") 16 gauge stainless steel, type 316L, with 4B finish		
	Side Walls	1.5 mm (0.06") 16 gauge stainless steel, type 316L, with 4B finish		
Electrical	220-240V, AC, 50 Hz, 1Ø	HPI-2G8-_-_-_-_-_-_-_-	HPI-3G8-_-_-_-_-_-_-_-	HPI-4G8-_-_-_-_-_-_-_-
	Cabinet Full Load Amps (FLA)	12.1A	12.1A	12.1A
	Optional Outlets FLA	10 A (5A per outlet)	10 A (5A per outlet)	10 A (5A per outlet)
	Cabinet Nominal Power	284 W	377 W	600 W
	Cabinet BTU	970 BTU/hr	1,286 BTU/hr	2,047 BTU/hr
	110-120V, AC, 60 Hz, 1Ø	HPI-2G9-_-_-_-_-_-_-_-	HPI-3G9-_-_-_-_-_-_-_-	HPI-4G9-_-_-_-_-_-_-_-
	Cabinet Full Load Amps (FLA)	20A	20A	20A
	Optional Outlets FLA	10 A (5A per outlet)	10 A (5A per outlet)	10 A (5A per outlet)
	Cabinet Nominal Power	346 W	TBD	700W
	Cabinet BTU	1,181 BTU/hr	TBD	2,388 BTU/hr
Compressed Air Requirement (by Client)	2 Bar-g Pressure at 5 L/sec	2 Bar		
General Options/ Accessories	Adjustable Hydraulic Stand	✓	✓	✓
	Carbon VOC Filter with Housing	✓	✓	✓
	Carbon Filter	✓	✓	✓
	CCTV	✓	✓	✓
	Electrical Outlet	✓	✓	✓
	Hard Ducting with Antiblowback	✓	✓	✓
	IV Bars with hooks	✓	✓	✓
	Glove Leak Tester	✓	✓	✓
	Rear View Screen Adaptation	✓	✓	✓
UV Lamp	✓	✓	✓	
Work Surface Options	Single Piece Trays	✓	✓	✓
	Multiple Piece Trays	✓	✓	✓
Transfer Options	Sharps Disposal	✓	✓	✓
	Continuous Liners for BIBO	✓	✓	✓
	Bag Welder for Continuous Liner System	✓	✓	✓
Net Weight		670 kg	750 kg	903 kg
Shipping Weight		745 kg	800 kg	953 kg
Shipping Dimensions, Maximum (W x D x H)		2400 x 1040 x 2260 mm	2700 x 1050 x 2230 mm	3200 x 1060 x 2250 mm
Shipping Volume, Maximum*		5.64 m³	6.32 m³	7.63 m³
BUILDING EXHAUST REQUIREMENTS		HPI-2G	HPI-3G	HPI-4G
Recirculating	1 Pass-thru chamber	240 cmh @ 50 Pa	250 cmh @ 50 Pa	296 cmh @ 50 Pa
	2 Pass-thru chamber	260 cmh @ 50 Pa	270 cmh @ 50 Pa	316 cmh @ 50 Pa
Total Exhaust (Single Pass)	1 Pass-thru chamber	1200 cmh @ 580 Pa	1250 cmh @ 500 Pa	1480 cmh @ 550 Pa
	2 Pass-thru chamber	1300 cmh @ 650 Pa	1350 cmh @ 570 Pa	1580 cmh @ 620 Pa

ORDERING INFORMATION

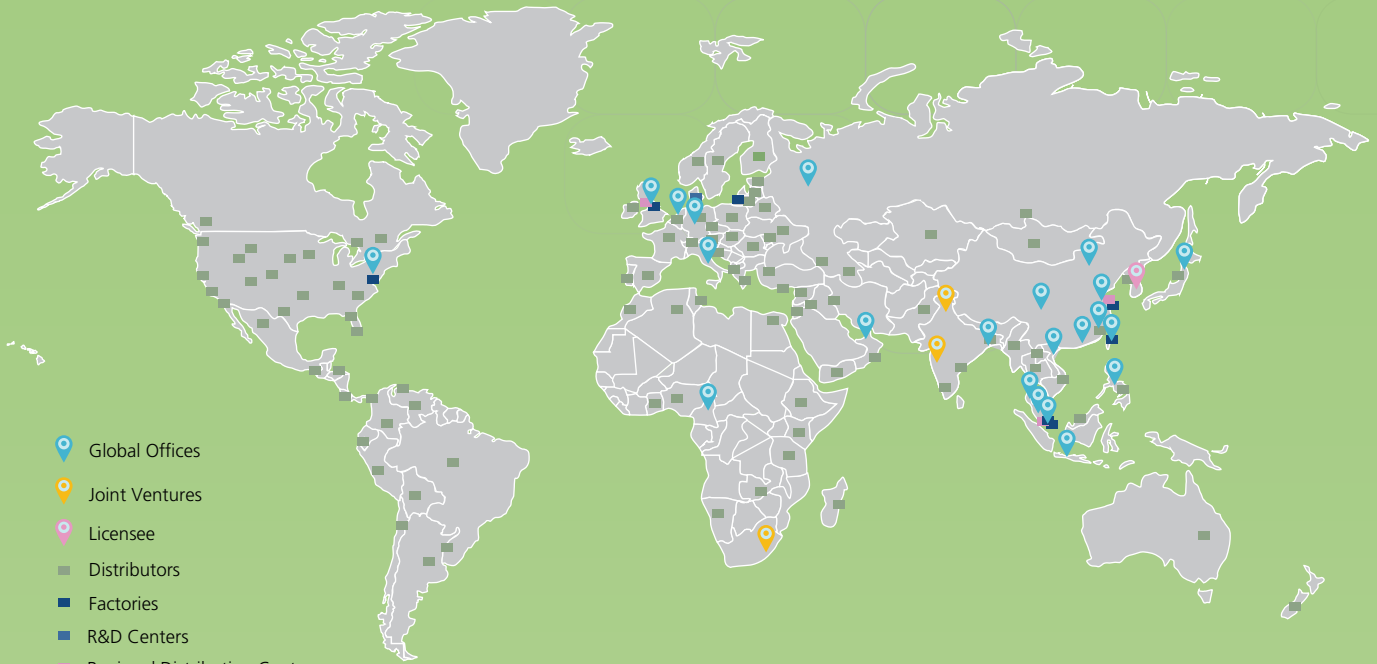
Isoclean® Healthcare Platform Isolator - WITHOUT Filter Below Work Zone		
Model Code	Item Code	Description
HPI-4P1-G3-0	2060097	4' Positive Pressure Isolator Only, No Sharps Provisions, 220-240 VAC, 50 Hz
HPI-4P2-G3-0	2060098	4' Positive Pressure Isolator Only, No Sharps Provisions, 110-120 VAC, 60 Hz
HPI-4P3-G3-0	2060099	4' Positive Pressure Isolator Only, No Sharps Provisions, 220-240 VAC, 60 Hz
HPI-6P1-G3-0	2060100	6' Positive Pressure Isolator Only, No Sharps Provisions, 220-240 VAC, 50 Hz
HPI-6P2-G3-0	2060101	6' Positive Pressure Isolator Only, No Sharps Provisions, 110-120 VAC, 60 Hz
HPI-6P3-G3-0	2060102	6' Positive Pressure Isolator Only, No Sharps Provisions, 220-240 VAC, 60 Hz
HPI-4N1-G3-0	2060103	4' Negative Pressure Isolator Only, No Sharps Provisions, 220-240 VAC, 50 Hz
HPI-4N2-G3-0	2060104	4' Negative Pressure Isolator Only, No Sharps Provisions, 110-120 VAC, 60 Hz
HPI-4N3-G3-0	2060105	4' Negative Pressure Isolator Only, No Sharps Provisions, 220-240 VAC, 60 Hz
HPI-6N1-G3-0	2060106	6' Negative Pressure Isolator Only, No Sharps Provisions, 220-240 VAC, 50 Hz
HPI-6N2-G3-0	2060107	6' Negative Pressure Isolator Only, No Sharps Provisions, 110-120 VAC, 60 Hz
HPI-6N3-G3-0	2060108	6' Negative Pressure Isolator Only, No Sharps Provisions, 220-240 VAC, 60 Hz
HPI-4P1-G3-S	2060109	4' Positive Pressure Isolator With Sharps Provisions, 220-240 VAC, 50 Hz
HPI-4P2-G3-S	2060110	4' Positive Pressure Isolator With Sharps Provisions, 110-120 VAC, 60 Hz
HPI-4P3-G3-S	2060111	4' Positive Pressure Isolator With Sharps Provisions, 220-240 VAC, 60 Hz
HPI-6P1-G3-S	2060112	6' Positive Pressure Isolator With Sharps Provisions, 220-240 VAC, 50 Hz
HPI-6P2-G3-S	2060113	6' Positive Pressure Isolator With Sharps Provisions, 110-120 VAC, 60 Hz
HPI-6P3-G3-S	2060114	6' Positive Pressure Isolator With Sharps Provisions, 220-240 VAC, 60 Hz
HPI-4N1-G3-S	2060115	4' Negative Pressure Isolator With Sharps Provisions, 220-240 VAC, 50 Hz
HPI-4N2-G3-S	2060116	4' Negative Pressure Isolator With Sharps Provisions, 110-120 VAC, 60 Hz
HPI-4N3-G3-S	2060117	4' Negative Pressure Isolator With Sharps Provisions, 220-240 VAC, 60 Hz
HPI-6N1-G3-S	2060118	6' Negative Pressure Isolator With Sharps Provisions, 220-240 VAC, 50 Hz
HPI-6N2-G3-S	2060119	6' Negative Pressure Isolator With Sharps Provisions, 110-120 VAC, 60 Hz
HPI-6N3-G3-S	2060120	6' Negative Pressure Isolator With Sharps Provisions, 220-240 VAC, 60 Hz

Isoclean® Healthcare Platform Isolator - WITH Filter Below Work Zone		
Model Code	Item Code	Description
HPI-2G8-PS0-0	2060121	Positive Pressure Isolator Only, 2 gloves, Single Pass, No Pass Chamber, No Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-2G8-PS0-S	2060122	Positive Pressure Isolator, 2 gloves, Single Pass, No Pass Chamber, With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-2G9-PS0-0	2060123	Positive Pressure Isolator Only, 2 gloves, Single Pass, No Pass Chamber, No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-2G9-PS0-S	2060124	Positive Pressure Isolator, 2 gloves, Single Pass, No Pass Chamber, With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-2G8-PSL-0	2060125	Positive Pressure Isolator Only, 2 gloves, Single Pass, 1 Pass Chamber (Left), No Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-2G8-PSL-S	2060126	Positive Pressure Isolator, 2 gloves, Single Pass, 1 Pass Chamber (Left), With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-2G8-PSR-0	2060127	Positive Pressure Isolator Only, 2 gloves, Single Pass, 1 Pass Chamber (Right), No Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-2G8-PSR-S	2060128	Positive Pressure Isolator, 2 gloves, Single Pass, 1 Pass Chamber (Right), With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-2G8-PS2-0	2060129	Positive Pressure Isolator Only, 2 gloves, Single Pass, 2 Pass Chambers, No Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-2G8-PS2-S	2060130	Positive Pressure Isolator, 2 gloves, Single Pass, 2 Pass Chambers, With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-2G9-PSL-0	2060131	Positive Pressure Isolator Only, 2 gloves, Single Pass, 1 Pass Chamber (Left), No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-2G9-PSL-S	2060132	Positive Pressure Isolator, 2 gloves, Single Pass, 1 Pass Chamber (Left), With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-2G9-PSR-0	2060133	Positive Pressure Isolator Only, 2 gloves, Single Pass, 1 Pass Chamber (Right), No Sharps Provision, 110-120 VAC, 50/60 Hz

HPI-3G8-PS2-S	2060178	Positive Pressure Isolator, 3 gloves, Single Pass, 2 Pass Chambers, With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G9-PSL-0	2060179	Positive Pressure Isolator Only, 3 gloves, Single Pass, 1 Pass Chamber (Left), No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-PSL-S	2060180	Positive Pressure Isolator, 3 gloves, Single Pass, 1 Pass Chamber (Left), With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-PSR-0	2060181	Positive Pressure Isolator Only, 3 gloves, Single Pass, 1 Pass Chamber (Right), No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-PSR-S	2060182	Positive Pressure Isolator, 3 gloves, Single Pass, 1 Pass Chamber (Right), With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-PS2-0	2060183	Positive Pressure Isolator Only, 3 gloves, Single Pass, 2 Pass Chambers, No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-PS2-S	2060184	Positive Pressure Isolator, 3 gloves, Single Pass, 2 Pass Chambers, With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G8-NS0-0	2060185	Negative Pressure Isolator Only, 3 gloves, Single Pass, No Pass Chamber, No Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G8-NS0-S	2060186	Negative Pressure Isolator, 3 gloves, Single Pass, No Pass Chamber, With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G9-NS0-0	2060187	Negative Pressure Isolator Only, 3 gloves, Single Pass, No Pass Chamber, No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-NS0-S	2060188	Negative Pressure Isolator, 3 gloves, Single Pass, No Pass Chamber, With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G8-NSL-0	2060189	Negative Pressure Isolator Only, 3 gloves, Single Pass, 1 Pass Chamber (Left), No Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G8-NSL-S	2060190	Negative Pressure Isolator, 3 gloves, Single Pass, 1 Pass Chamber (Left), With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G8-NSR-0	2060191	Negative Pressure Isolator Only, 3 gloves, Single Pass, 1 Pass Chamber (Right), No Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G8-NSR-S	2060192	Negative Pressure Isolator, 3 gloves, Single Pass, 1 Pass Chamber (Right), With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G8-NS2-0	2060193	Negative Pressure Isolator Only, 3 gloves, Single Pass, 2 Pass Chambers, No Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G8-NS2-S	2060194	Negative Pressure Isolator, 3 gloves, Single Pass, 2 Pass Chambers, With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G9-NSL-0	2060195	Negative Pressure Isolator Only, 3 gloves, Single Pass, 1 Pass Chamber (Left), No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-NSL-S	2060196	Negative Pressure Isolator, 3 gloves, Single Pass, 1 Pass Chamber (Left), With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-NSR-0	2060197	Negative Pressure Isolator Only, 3 gloves, Single Pass, 1 Pass Chamber (Right), No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-NSR-S	2060198	Negative Pressure Isolator, 3 gloves, Single Pass, 1 Pass Chamber (Right), With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-NS2-0	2060199	Negative Pressure Isolator Only, 3 gloves, Single Pass, 2 Pass Chambers, No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-NS2-S	2060200	Negative Pressure Isolator, 3 gloves, Single Pass, 2 Pass Chambers, With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G8-NR0-0	2060201	Negative Pressure Isolator Only, 3 gloves, Recirculating, No Pass Chamber, No Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G8-NR0-S	2060202	Negative Pressure Isolator, 3 gloves, Recirculating, No Pass Chamber, With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G9-NR0-0	2060203	Negative Pressure Isolator Only, 3 gloves, Recirculating, No Pass Chamber, No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-NR0-S	2060204	Negative Pressure Isolator, 3 gloves, Recirculating, No Pass Chamber, With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G8-NRL-0	2060205	Negative Pressure Isolator Only, 3 gloves, Recirculating, 1 Pass Chamber (Left), No Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G8-NRL-S	2060206	Negative Pressure Isolator, 3 gloves, Recirculating, 1 Pass Chamber (Left), With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G8-NRR-0	2060207	Negative Pressure Isolator Only, 3 gloves, Recirculating, 1 Pass Chamber (Right), No Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G8-NRR-S	2060208	Negative Pressure Isolator, 3 gloves, Recirculating, 1 Pass Chamber (Right), With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G8-NR2-0	2060209	Negative Pressure Isolator Only, 3 gloves, Recirculating, 2 Pass Chambers, No Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G8-NR2-S	2060210	Negative Pressure Isolator, 3 gloves, Recirculating, 2 Pass Chambers, With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-3G9-NRL-0	2060211	Negative Pressure Isolator Only, 3 gloves, Recirculating, 1 Pass Chamber (Left), No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-NRL-S	2060212	Negative Pressure Isolator, 3 gloves, Recirculating, 1 Pass Chamber (Left), With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-NRR-0	2060213	Negative Pressure Isolator Only, 3 gloves, Recirculating, 1 Pass Chamber (Right), No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-NRR-S	2060214	Negative Pressure Isolator, 3 gloves, Recirculating, 1 Pass Chamber (Right), With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-NR2-0	2060215	Negative Pressure Isolator Only, 3 gloves, Recirculating, 2 Pass Chambers, No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-3G9-NR2-S	2060216	Negative Pressure Isolator, 3 gloves, Recirculating, 2 Pass Chambers, With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-4G8-PS0-0	2060217	Positive Pressure Isolator Only, 4 gloves, Single Pass, No Pass Chamber, No Sharps Provision, 220-240VAC, 50/60 Hz
HPI-4G8-PS0-S	2060218	Positive Pressure Isolator, 4 gloves, Single Pass, No Pass Chamber, With Sharps Provision, 220-240 VAC, 50/60 Hz
HPI-4G9-PS0-0	2060219	Positive Pressure Isolator Only, 4 gloves, Single Pass, No Pass Chamber, No Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-4G9-PS0-S	2060220	Positive Pressure Isolator, 4 gloves, Single Pass, No Pass Chamber, With Sharps Provision, 110-120 VAC, 50/60 Hz
HPI-4G8-PSL-0	2060221	Positive Pressure Isolator Only, 4 gloves, Single Pass, 1 Pass Chamber (Left), No Sharps Provision, 220-240 VAC, 50/60 Hz

ESCO GLOBAL NETWORK

43 Locations In 23 Countries All Over The World



- Air Shower
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- Cleanroom Transfer Hatch
- Containment Barrier Isolator (CBI)
- Downflow Booth (DFB)
- Dynamic Floor Label 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. www.escoglobal.com.



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