



Heal Force

ALsafe Series

Biological Safety Cabinet



Heal Force leads you to healthier life

ALsafe Biosafety Cabinet Series

Heal Force ALsafe biosafety cabinets set the standard in quality, design, and innovation that comes from a heritage of over 25 years experience. At Heal Force we know how important it is to offer a high level of protection to operator, sample and environment with advanced technology. With an extensive track record of safety, reliability and performance, ALsafe cabinets make ideal investments for a wide range of applications include work with infectious agents that require Biosafety Level 1, 2 or 3 containment.

Product Finder

Class II		Type A2	Type A2 with exhaust system	Type B2
Biotechnology	Medium Preparation	○	○	○
	Tissue Culture	○	○	○
	Blood Elements Analysis	○	○	○
	Human Histology	○	○	○
	Polymerase Chain Reaction	○	○	○
Microbiology	Medium Preparation	○	○	○
	Culture nuisance odors	—	○	○
	Isolated Clinical Sample	○	○	○
	Blood Test/Analysis	○	○	○
	QA/QC	○	○	○
	Minute Quantities of Volatile Toxic Chemicals	—	○	○
	Trace Amount of Radionucleotides	—	○	○
Pharmaceutical	Antitumor drug preparation	—	○	○
	Trace Amount of Radionucleotides	—	○	○
Routine research	Cell/Tissue Immobilization & Staining	—	○	○
	Toxic Powder/ Suspended Substance	○	○	○

○ Applicable- N/A

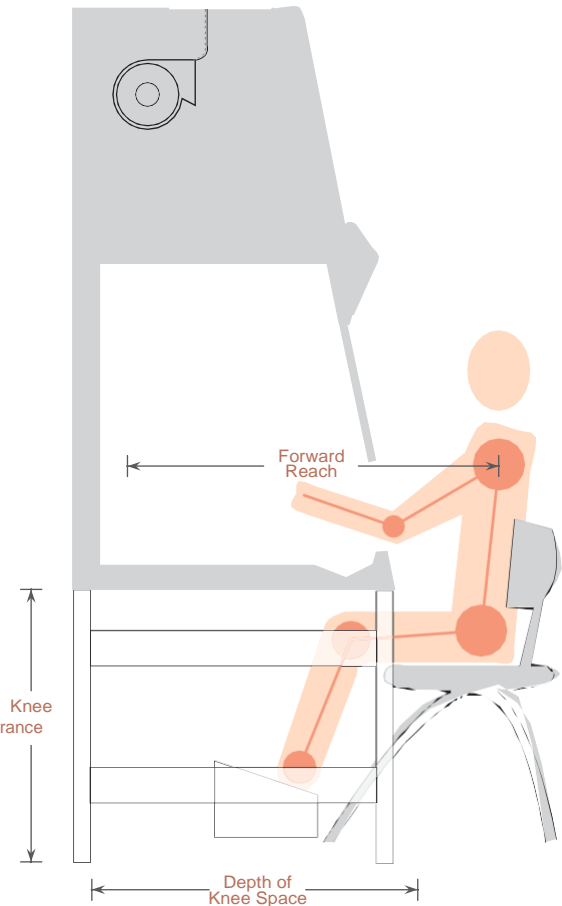


Non-compromising Safety

- Working area is surrounded by negative pressure, double wall plenum for protection.
- Laminar airflow over the working area are set to levels, ensuring the safety of the user, environment and operation.
- The uniform, non-turbulent air stream protects against cross-contamination within and throughout the work area.
- Visual and acoustic alarms for indication of unsafe airflow conditions and window position.
- A sash position indicator decal provides a visual confirmation of the proper working height.
- Laminated safety grade glass provides protection from explosion, breakage and UV. (Safe opening height 200±5mm)
- UV lamp with interlocking safety switch allowing operation only when blower and fluorescent light are off and sash is fully closed.
- Aerodynamic designed airflow grille elevates the operator's arms to prevent blockage which may compromise safety.

Enhance Comfort

- 10 ° backward-slanted window for less glare and closer, more comfortable viewing than vertical sashes.
- Counterbalanced sliding sash can be raised to a maximum height for easy introduction of large items
- Push button (standard) / Foot switch(optional), electrically operated front window with fully open / closed positions (HFsafe motorized type)
- The position of the light tubes ensure excellent illumination over the whole working zone and reduces operator fatigue.
- The radiused edge prevents the potentially dangerous practice of placing materials in this area
- Silent working conditions save your brain, you can concentrate on work and even hear yourself thinking
- Programmable automatic UV light timer simplifies operation while extending UV lamp life and saving energy.



Easy to Clean

The cabinet work zone has no welded joints to collect contaminants or rust.

Details of cabinet developed further to ensure easier cleaning with normal cleaning solvents

Airflow laminator protects the filter surface during wipe cleaning.

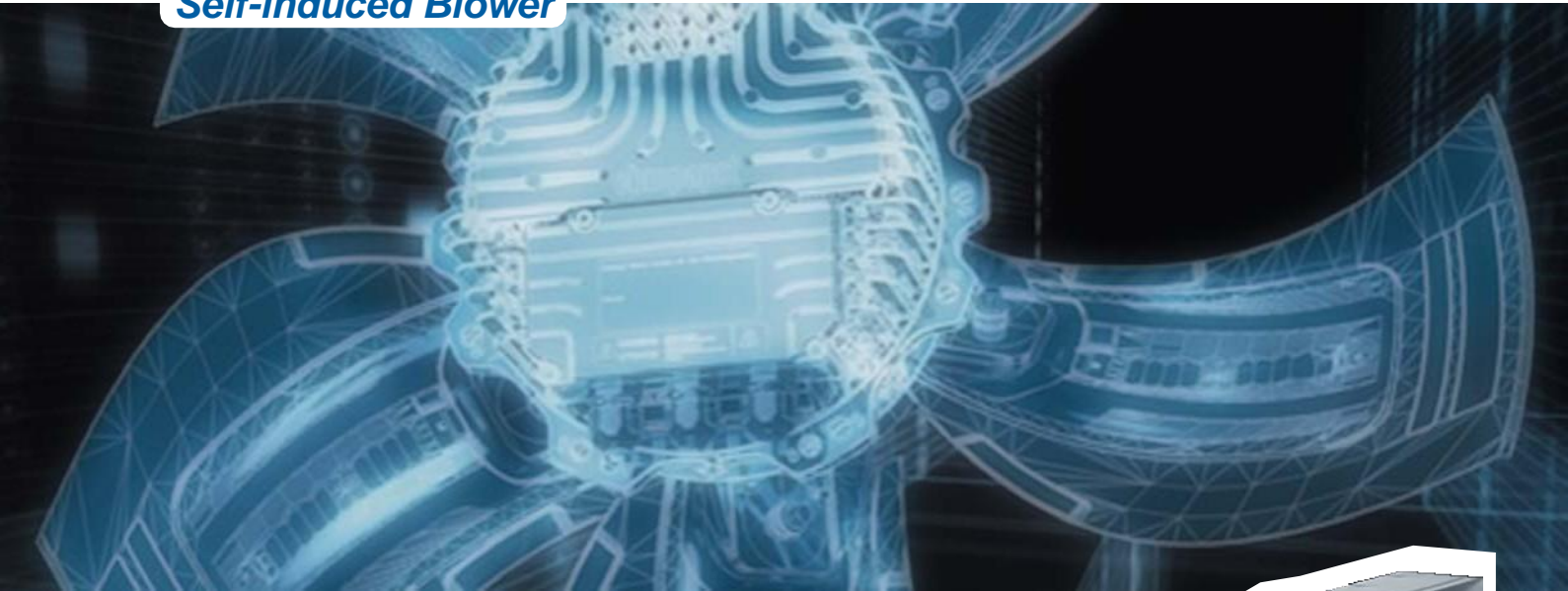
Optional multiple piece stainless steel work surface is easier to remove and put into autoclave / washer.

Bottom sink is made of stainless steel type 304 with round corners and draining valves



Sets a new benchmark for the whole industry

Self-induced Blower



- German made ebm-papst motors selected for energy efficiency, compact design, and flat profile.
- Synchronously communicates with microprocessor, there is no need for manual speed control
- Automatically compensates for normal power line variation, air disruption and filter loading.
- Motor consumes less energy, reduces heat output and operates more quietly.



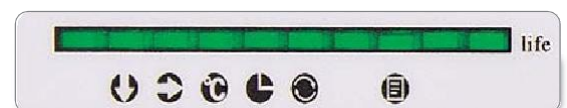
ULPA Filtration System



- equipped with long life ULPA filtration technology by AAF (American Air Filter)
- Supply and exhaust filters provide 99.999% typical efficiency for particle size of 0.1 to 0.2 microns, providing superior product protection over conventional HEPA filters.
- Silicate glass fiber treated with moisture-proof hydrophobic bonding agent is folded in aluminum alloy frame to enlarge filtration area.
- Leak-free performance is guaranteed through structural stability and scan test conducted prior to shipping.
- Self-compensation for the clogging of filters optimizes filter use and minimizes service.

Filter Life Indication

- Filters has estimated service life, which is uncertain subject to different local air quality, research subjects and operation frequency.
- There is potential pollution hazard if operator is unconscious to filter expiration
- Patented filter life indicator is designed to measure filter life according to actual condition of membrane.
- You can rely on filter life indicator to make a confident plan for future filter replacement.



Filter Life Indicator (for Type A2 Manual-control Models)



Filter Life Indicator (for Type A2 Motorized-control & Type B2 Models)

Airflow velocity monitoring

- Temperature-compensated airflow sensors monitor the airflow constantly to ensure safe operating conditions are maintained.
- Two independent sensors (downflow/exhaust airflow) mean double security.
- Downflow sensor provides instant and precise feedback to the blower so that its speed remains constant regardless of changes in conditions, such as filter loading
- Velocities of airflow and temperature are inspected at real-time, and indicated on the control panel
- Alarm thresholds ($\pm 10\%$ of the control point) are precisely controlled via microprocessor which guarantees excellent airflow performance



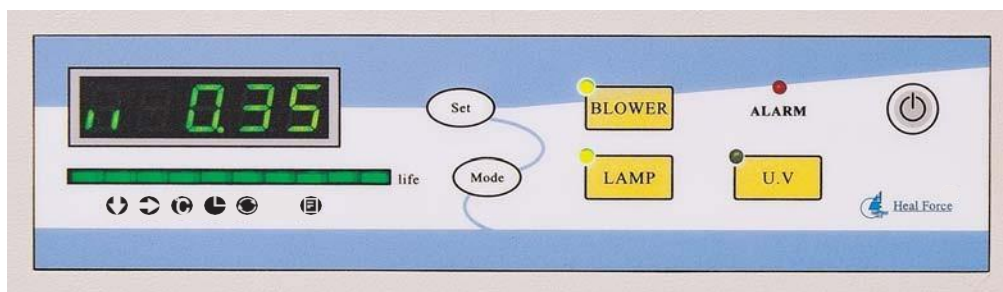
Friendly Communication

- The durable LCD/LED are mounted at eye level for at-a-glance viewing of airflow, operating parameters, and alarm messages.
- The intuitive interface delivers a constant read-out of working area temperature, air velocity/volume, filter life span, total running time.
- Easy-to-clean touchpad controls allow manual activation of blower, lamp, UV, electrical receptacles and menu selection.
- Engage the security lock feature to prevent access to the cabinet by unauthorized or unfamiliar users.



Display Panel for Class II Type A2
Motorized Control / Type B2

- | | |
|----------------------------|---------------------------|
| Downflow Velocity / Volume | P Pressure of Main Filter |
| ≡ Inflow Velocity / Volume | ⌚ Cumulative Working Time |
| F Filter Life Indicator | 😊 System Status |
| °C Temperature | |



Control Panel for Class II Type A2 (Manual-Control)

- | |
|------------------------------|
| ⌚ Downflow Velocity / Volume |
| ⌚ Inflow Velocity / Volume |
| ⌚ Temperature |
| ⌚ Cumulative Working Time |
| ⌚ Circulation |
| ⌚ Menu |

Advanced Pressure Monitoring

- Composed of downflow filter pressure sensor, exhaust filter pressure sensor, airflow pipes and switch circuits.
- Downflow filter pressure sensor detects the pressure of the positive zone in upper of downflow ULPA filter in air duct
- Exhaust filter sensor detects the pressure difference between the up and down ends of exhaust HEPA filter
- When pressure difference is abnormal, the alarm will be activated.

Robust Construction & Compact Design

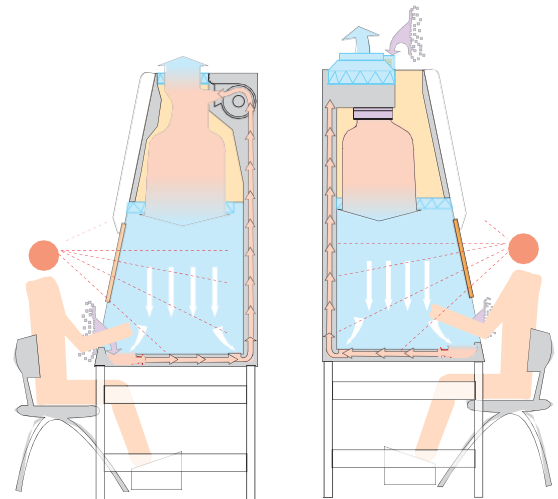
Energy saving epoxy/polyester coated steel exterior with solid construction, nice looking curves and fresh colour
Constructed of seamless, non-porous, autoclavable Type 304 stainless steel for working plate, one-piece side/rear walls and bottom sink.

Slim, compact design and dimensions allows for easy positioning and location in the laboratory, can be easily transported through standard 800 mm doorways.

The low cabinet height allows the choice of bench top location or mounting on a support stand, easily accommodated in a laboratory with 2.5m ceiling height.

AirFlow Pattern

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.



Class II Type A2

Class II Type B2

Options and Accessories

Support stand

- Saves lab bench space and ensure stability & ergonomic working position
- Standard heights available: 560mm (22.0") , 660mm (34.0") or 760mm (29.9")
- Manual adjustable leveling feet to compensate for ground unevenness.
- Available with castors (option) for easy re-location or transportation.
- Durable polyurethane caster wheels with 360 degree horizontal rotation



Ultraviolet Lamp Kits

- Controlled by automatic UV lamp timer through microprocessor control panel
- Emission of 253.7 nanometers for most efficient decontamination
- Lamp is positioned away from operator line of sight for safety and proper exposure to interior surfaces
- Optional mobile UV lamps strengthen the decontamination effect



mobile UV lamps

Prefilters

Optional prefilters can be located beneath the work surface, prevents wipes from being drawn into the blower where they could damage components and alter airflow.

Worktop

- The polished, standard stainless steel Multi-piece table top is easy to remove for cleaning
- This flexibility of work top choice enables the HFSafe to be configured to suit your exact practical requirements.
- Other options are available to suit customer requirements



Illumination Light

Illumination light provides sufficient brightness to the working chamber. There are two illumination lamps located at inner side of the front panel.

Active Carbon Postfilters

- Disposable, impregnated carbon filters (AAF) trap non-volatile nuisance odors of chemicals in the exhaust airflow. Mount atop the biosafety cabinet
- Independent display panel for pressure, temperature, working time of filtration system
- Coordinated control with biosafety cabinet, which can adjust the exhaust air volume automatically to minimize filter load variation effect.
- Real-time filter life display with a visual and audio reminder.



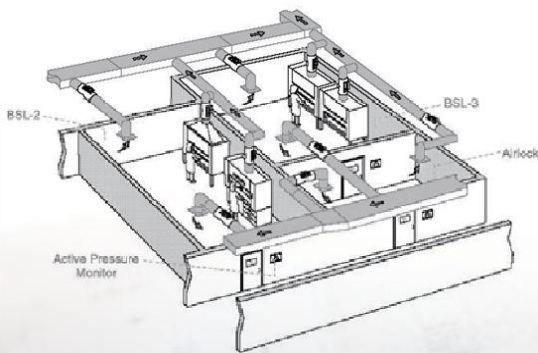
Others

- Two electrical duplex receptacles, with ground fault interruption and splash covers.
- Service valves for Gas, Water and Vacuum mounted on side wall.
- PVC Armrest Chemically treated, improves operator comfort, easy to clean
- Foot pedal for front window control
- Loop heat sterilizer



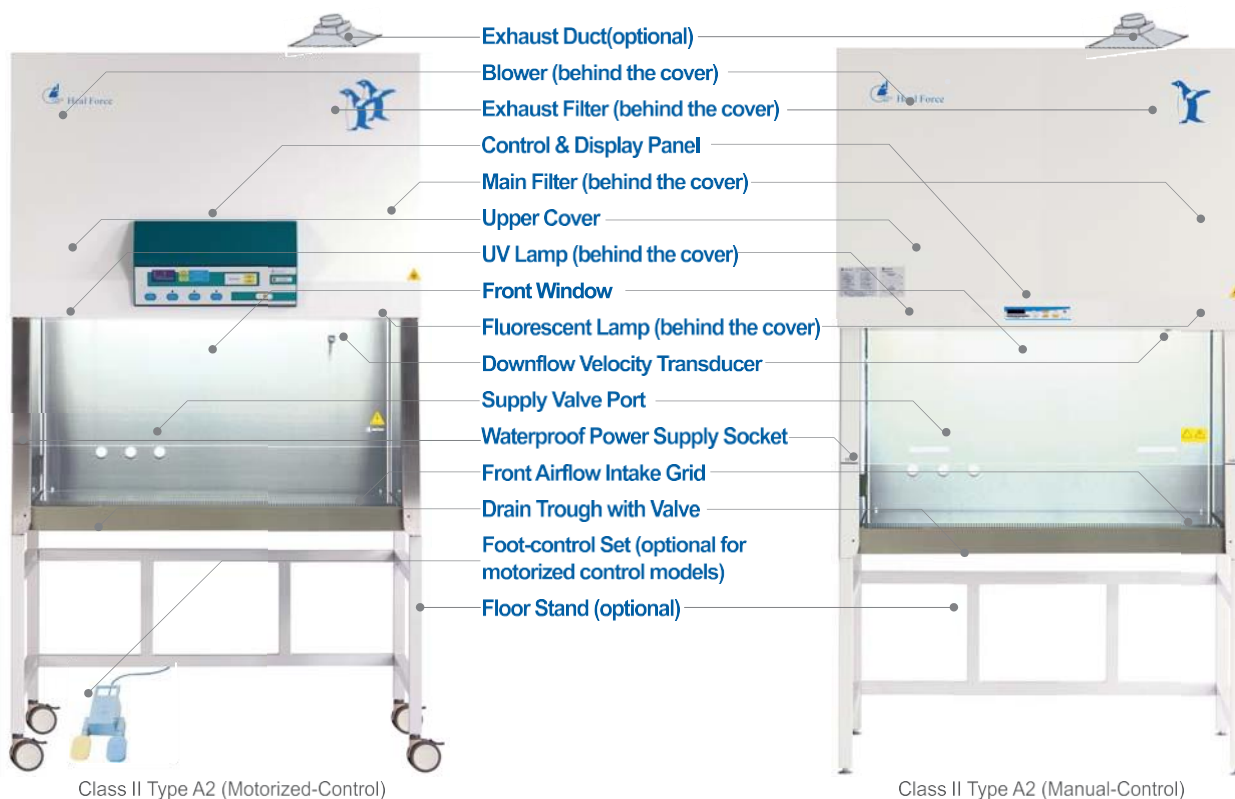
Exhaust connection fitting

If biosafety cabinets are used for minute quantities of volatile toxic chemicals and trace amounts of radionuclides required as an adjunct to microbiological research, they must be exhausted through properly functioning exhaust canopies. The extraction of exhaust air from HFsafe cabinet is usually achieved by either a dedicated or "shared" extract duct, in either case it is always via an electric closed exhaust valve & constant flow rate valve with a coordinated control system.



Contact Heal Force for ordering information and technical assistance in selecting the right ductwork for your installation.

Class II Type A2 Biological Safety Cabinet (Manual & Automatic Control)



Exhaust Duct

Through exhaust duct, Class II Type A2 biological safety cabinet is compatible with exhaust system (optional & customizable), whose function is to exhaust potentially contaminated air outside the cabinet and room.

Upper Cover

Removable upper cover simplifies filter replacement and blower maintenance.

Front Window

Front window consists of frameless laminated glass or toughened glass and UV-resistant glass, automatically sliding (Motorized-control) or handle adjustment (Manual-control).

Control & Display Panel

Panel indicates information on downflow and inflow velocity, filter life, pressure, temperature and system status, with precise alarm system. Password protection is for front window control (Motorized-control models only).

Drain Trough with Valve

Volume of trough is over 4 litres, equipped with drainage valve and easy to clean.

UV Lamp

Interlocked and activated to work when fluorescent lamp and blower are turned off and front window is closed.

Waterproof Socket

2 waterproof sockets are located in the side panel, for optimum convenience of using small devices inside the cabinet.

Downflow Velocity Transducer

Transducer monitors real-time downflow velocity and displays result on the panel.

Front Airflow Intake Grid

Aerodynamically designed front airflow intake grid eliminates potential turbulence and contamination.

Extensible Valve Port

3 supply valve ports are available for extensive functions, compatible with liquid, gas and vacuum cartridge.

Floor Stand (Optional)

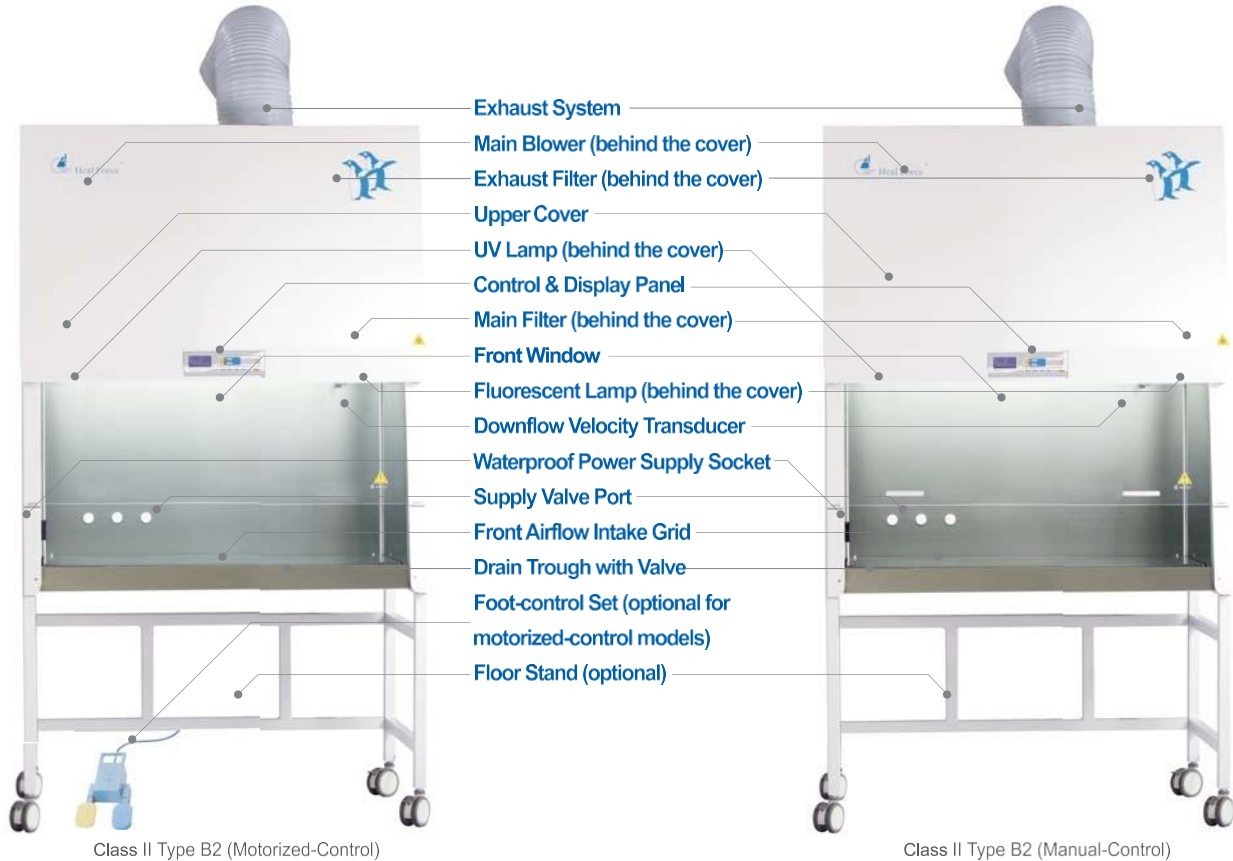
2 styles optional floor stand, stationary (without casters) and moveable (with casters and/or brake).

General Specifications, Biological Safety Cabinets (Class II Type A2)

Model	ALsafe-900	ALsafe-1200	ALsafe-1500	ALsafe-1800
Nominal Size	0.9 meters(3')	1.2 meters(4')	1.5 meters(5')	1.8 meters(6')
External Dimensions with Base Stand (WxDxH)	1023x771x2255mm	1323x771x2255mm	1623x771x2255mm	1923x771x2255mm
	40.3"x30.4"x88.8"	52.1"x30.4"x88.8"	63.90"x30.4"x88.8"	75.7"x30.4"x88.8"
Internal Work Area, Dimensions(WxDxH)	900x600x678mm	1200x600x678mm	1500x600x678mm	1800x600x678mm
	35.4"x23.6"x26.7"	47.2"x23.6"x26.7"	59.1"x23.6"x26.7"	70.9"x23.6"x26.7"
Internal Work Area,Space	0.54m ² (5.8 sq.ft)	0.72m ² (7.8 sq.ft)	0.9m ² (9.7 sq.ft)	1.08m ² (11.6 sq.ft)
Average Airflow Velocity *				
Inflow	0.53m/s(104.3fpm)	0.53m/s(104.3fpm)	0.53m/s(104.3fpm)	0.53m/s(104.3fpm)
Downflow	0.35m/s(68.9fpm)	0.35m/s(68.9fpm)	0.35m/s(68.9fpm)	0.35m/s(68.9fpm)
Airflow Volume				
Inflow	344m³/h(202cfm)	458m³/h(270cfm)	573m³/h(337cfm)	687m³/h(404cfm)
Downflow	680m³/h(400cfm)	987m³/h(581cfm)	1134m³/h(667cfm)	1361m³/h(801cfm)
Exhaust	344m³/h(202cfm)	458m³/h(270cfm)	573m³/h(337cfm)	687m³/h(404cfm)
ULPA Filter Typical Efficiency				
Downflow	Filters provide 99.9995% typical efficiency for particle size of 0.1 to 0.2 microns			
Exhaust	Filters provide 99.9995% typical efficiency for particle size of 0.1 to 0.2 microns			
Biosafety Protection Test				
Personnel Protection Test	KI-Discus containment and microbiological testing is performed			
Product Protection Test 1~8x10 ⁶ <small>(three times in succession)</small>	≤5CFU	≤5CFU	≤5CFU	≤5CFU
Cross-contamination Test 1~8x10 ⁶ <small>(three times in succession)</small>	≤2CFU	≤2CFU	≤2CFU	≤2CFU
Sound Emission (Typical)				
NSF/ANSI 49	<60dBA	<62dBA	<63dBA	<64dBA
EN 12469	<57dBA	<59dBA	<60dBA	<62dBA
Fluorescent Light Intensity	800~1200 Lux (74~112 foot candles)			
Excellent light distribution	Yes	Yes	Yes	Yes
RMS	≤2.3µm	≤2.3µm	≤2.3µm	≤2.3µm
Cabinet Construction				
Main Body	1.2mm(0.05") steel with white oven-baked epoxy-polyester			
Work Zone	1.5mm(0.06") stainless steel, type 304			
Side Walls	1.5mm(0.06") stainless steel, type 304			
Electrical sliding windows Option	Yes	Yes	Yes	Yes
Window material	Hardened/laminated safety glass			
Electrical				
Cabinet Full Load Amp(FLA)	2A	2A	4A	4A
Fuses	10A	10A	10A	10A
Cabinet Nominal Power (Manual Type)	361W	452W	813W	850W
Cabinet Nominal Power (Motorized Type)	470W	474W	870W	900W
Optional Outlets FLA	5A	5A	5A	5A
Total Cabinet FLA	7A	7A	9A	9A
Power Supply*				
220V/50Hz	Yes	Yes	Yes	Yes
220V/60Hz	Yes	Yes	Yes	Yes
110V/60Hz	Yes	Yes	N/A	N/A
Net Weight				
Manual Type	220kg(485lbs)	260kg(573lbs)	300kg(661lbs)	350kg(772lbs)
Automatic Type	233kg(514lbs)	275kg(606lbs)	325kg(717lbs)	375kg(827lbs)
Shipping Weight				
Manual Type	267kg(589lbs)	295kg(650lbs)	350kg(772lbs)	490kg(1080lbs)
Automatic Type	280kg(617lbs)	310kg(683lbs)	375kg(827lbs)	490kg(1080lbs)
Shipping Dimensions Maximum(WxDxH)	1175x1000x1825mm	1475x1000x1825mm	1775x1000x1825mm	2075x1000x1825mm
	46.3"x39.4"x71.9"	58.1"x39.4"x71.9"	69.9"x39.4"x71.9"	81.7"x39.4"x71.9"
Shipping Volume, Maximum	2.14m³(76cu.ft.)	2.69m³(95cu.ft.)	3.24m³(114cu.ft.)	3.79m³(134cu.ft.)

* Please contact us for more optional power supply information

Class II Type B2 Biological Safety Cabinet (Manual & Automatic Control)



Exhaust System

With the exhaust system, Class II Type B2 biological safety cabinet is able to exhaust potentially contaminated air outside the cabinet and room.

Upper Cover

Removable upper cover simplifies filter replacement and blower maintenance.

Front Window

Front window consists of frameless laminated glass or toughened glass and UV-resistant glass, automatically sliding (Motorized-control) or handle adjustment (Manual-control).

Control & Display Panel

Panel indicates information on downflow and inflow velocity, filter life, pressure, temperature and system status, with precise alarm system.

Floor Stand (optional)

2 styles of floor stand are optional, stationary (without casters) and moveable (with casters and/or brake).

Drain Trough with Valve

Volume of trough is over 4 litres, equipped with drainage valve and easy to clean.

UV Lamp

Interlocked UV lamp is controlled to work when fluorescent lamp and blower are turned off and front window is closed.

Waterproof Socket

2 waterproof sockets are located in the side panel, for optimum convenience of using small accessorial devices inside or by the cabinet.

Downflow Velocity Transducer

Transducer monitors real-time downflow velocity and displays result on the panel.

Front Airflow Intake Grid

Aerodynamically designed front airflow intake grid eliminates potential turbulence and contamination.

Supply Valve Port

3 supply valve ports are available for extensive functions, compatible with liquid, gas and vacuum valves.

Exhaust Blower

Besides the routine blower, a blower is equipped in exhaust system for more powerful exhaust.

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

Model	ALsafe-B2-900	ALsafe-B2-1200	ALsafe-B2-1500	ALsafe-B2-1800
Nominal Size	0.9 meters(3')	1.2 meters(4')	1.5 meters(5')	1.8 meters(6')
External Dimensions with Base Stand (W×D×H)	1023×771×2255mm	1323×771×2255mm	1623×771×2255mm	1923×771×2255mm
	40.3"×30.4"×88.8"	52.1"×30.4"×88.8"	63.90"×30.4"×88.8"	75.7"×30.4"×88.8"
Internal Work Area, Dimensions(W×D×H)	900×600×678mm	1200×600×678mm	1500×600×678mm	1800×600×678mm
	35.4"×23.6"×26.7"	47.2"×23.6"×26.7"	59.1"×23.6"×26.7"	70.9"×23.6"×26.7"
Internal Work Area,Space	0.54m ² (5.8 sq.ft)	0.72m ² (7.8 sq.ft)	0.9m ² (9.7 sq.ft)	1.08m ² (11.6 sq.ft)
Average Airflow Velocity *				
Inflow	0.53m/s(104.3fpm)	0.53m/s(104.3fpm)	0.53m/s(104.3fpm)	0.53m/s(104.3fpm)
Downflow	0.30m/s(59.1fpm)	0.30m/s(59.1fpm)	0.30m/s(59.1fpm)	0.30m/s(59.1fpm)
Airflow Volume				
Inflow	344m³/h(202cfm)	458m³/h(270cfm)	573m³/h(337cfm)	687m³/h(404cfm)
Exhaust	927m³/h(546cfm)	1236m³/h(727cfm)	1545m³/h(909cfm)	1854m³/h(1091cfm)
Filter Typical Efficiency				
Downflow	ULPA filters provide 99.9995% typical efficiency for particle size of 0.1 to 0.2 microns			
Exhaust	HEPA filters provide 99.97% typical efficiency for particle size of 0.3 microns			
Biosafety Protection Test				
Personnel Protection Test	KI-Discus containment and microbiological testing is performed			
Product Protection Test 1~8×106 (three times in succession)	≤5CFU	≤5CFU	≤5CFU	≤5CFU
Cross-contamination Test 1~8×106 (three times in succession)	≤2CFU	≤2CFU	≤2CFU	≤2CFU
Sound Emission (Typical)				
NSF/ANSI 49	<59dBA	<60dBA	<61dBA	<63dBA
EN 12469	<55dBA	<57dBA	<58dBA	<60dBA
Fluorescent Light Intensity	800~1200 Lux (74~112 foot candles)			
Excellent light distribution	Yes	Yes	Yes	Yes
RMS	≤3μm	≤3μm	≤3μm	≤3μm
Cabinet Construction				
Main Body	1.2mm(0.05") steel with white oven-baked epoxy-polyester			
Work Zone	1.5mm(0.06") stainless steel, type 304			
Side Walls	1.5mm(0.06") stainless steel, type 304			
Electrical sliding windows Option	Yes	Yes	Yes	Yes
Window material	Hardened/laminated safety glass			
Electrical				
Cabinet Full Load Amp(FLA)	4A	4A	5A	5A
Fuses	10A	10A	10A	10A
Cabinet Nominal Power (Manual Type)	880W	889W	1200W	1200W
Optional Outlets FLA	5A	5A	5A	5A
Total Cabinet FLA	9A	9A	10A	10A
Power Supply*				
220V/50Hz	Yes	Yes	Yes	Yes
220V/60Hz	Yes	Yes	Yes	Yes
Net Weight				
Manual Type	220kg(485lbs)	260kg(573lbs)	300kg(661lbs)	350kg(772lbs)
Automatic Type	233kg(514lbs)	275kg(606lbs)	325kg(717lbs)	375kg(827lbs)
Shipping Weight				
Manual Type	287kg(633lbs)	315kg(694lbs)	350kg(772lbs)	462kg(1019lbs)
Automatic Type	290kg(639lbs)	330kg(728lbs)	370kg(816lbs)	450kg(992lbs)
Shipping Dimensions Maximum(W×D×H)	1175×1000×1825mm	1475×1000×1825mm	1775*1000*1825mm	2075×990*1825mm
	46.3"×39.4"×71.9"	58.1"×39.4"×71.9"	69.9"×39.4"×71.9"	81.7"×39.0"×71.9"
Shipping Volume, Maximum	2.14m³(76cu.ft.)	2.69m³(95cu.ft.)	3.24m³(114cu.ft.)	3.75m³(132cu.ft.)

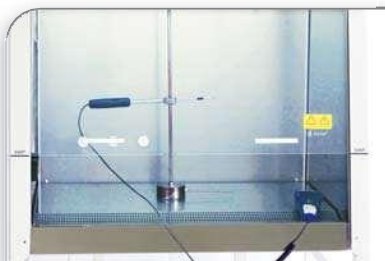
* Please contact us for more optional power supply information

Standards & Test

Standards Compliance	
Biosafety Cabinets	EN12469, Europe, Certified by TUV NORD / SFDA YY0569, China / SANS 12469, South Africa
Air Quality	ISO 14644.1, Class 3, Worldwide
Filtration	EN-1822(H14). Europe / IEST-PR-CC001.3. Worldwide / IEST-PR-CC007.1. Worldwide / IEST-PR-CC034.1. Worldwide
Electrical Safety	EN61010-1, Europe / IEC61010-1, Worldwide

Comprehensive performance testing

Every HFsafe model manufactured by Heal Force is individually tested, documented by serial number and validated with the following test methods.



Inflow/downflow velocity



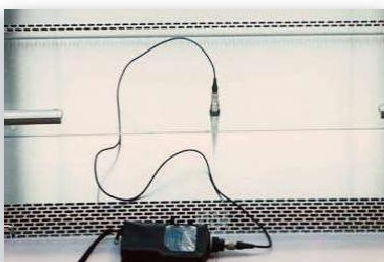
Air particle count test



UV radiation test



scan test for filters



Vibration test



Illumination test

KI Discus Containment Test According to EN12469 (Potassium Iodide)



KI-discus containment test 1

Heal Force is currently one of the few companies in the world equipped to perform the KI Discus test for validating the operator/personnel protection capabilities of biosafety cabinet.

The KI Discus test shows excellent correlation with the microbiological test method for operator protection, and is useful

for validating the actual containment performance of the cabinet on-site.

The KI-Discus takes only 45 minutes as opposed to 2 days for microbiological testing. Thus, Each HFsafe model is factory tested on a sampling basis using the KI-Discus method for operator safety.



KI-discus containment test 2