

# P U R I F I E R<sup>®</sup>

HEPA-Filtered Safety Cabinets, Enclosures & Clean Benches  
Non-Ventilated Enclosures



Protecting your  
laboratory environment

**LABCONCO**

# Biological Safety Cabinets, Enclosures & Clean Benches

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# Biological Safety Cabinets, Enclosures & Clean Benches

## OVERVIEW

### Laminar Airflow

The phrase “laminar flow” often is used to describe a type of equipment when it, in fact, refers to a specific airflow pattern. Laminar flow is defined as airflow in which the entire body of air within a defined space moves with uniform velocity in one direction along parallel flow lines.

### HEPA Filters—The Heart of Laminar Airflow Systems

The HEPA (High Efficiency Particulate Air) filter is a disposable dry-type filter, constructed of boron silicate microfibers cast into a thin sheet, much like a piece of paper. The filter media is folded, to maximize its surface area exposed to the air stream. Separators, such as lines of glue, are placed between the folds, to strengthen the filter, and allow the air to penetrate the deepest part of the fold. (Figure 1). The HEPA filter retains airborne particles and microorganisms, however, gases pass freely through the filter.

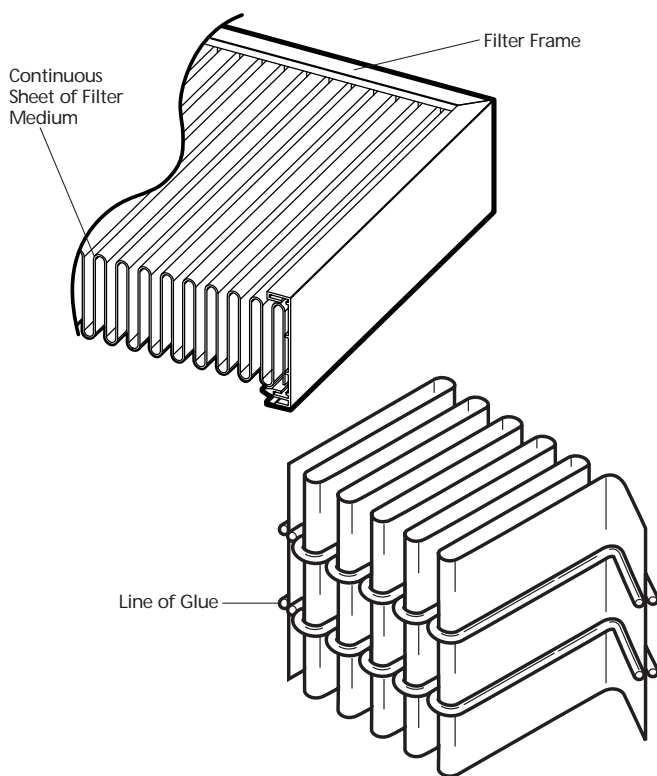


Figure 1. HEPA Details

HEPA filters retain particles by: sedimentation, electrostatic attraction, interception, inertial impaction and diffusion. Sedimentation occurs when particulate matter settles on the filter fiber because of gravity. Electrostatic attraction is the attraction of the particle to the filter fiber due to opposite electrical charges. Sedimentation and electrostatic attraction are the least efficient mechanisms of particle removal by HEPA filtration. Interception is dependent on particle size and occurs when a particle follows the air stream through the filter fibers, and is retained. Inertial impaction occurs when a large particle leaves the air stream to be impacted directly on the filter fiber. Diffusion occurs with very small particles, and is aided by the Brownian motion of the particle (Figure 2 and 3).

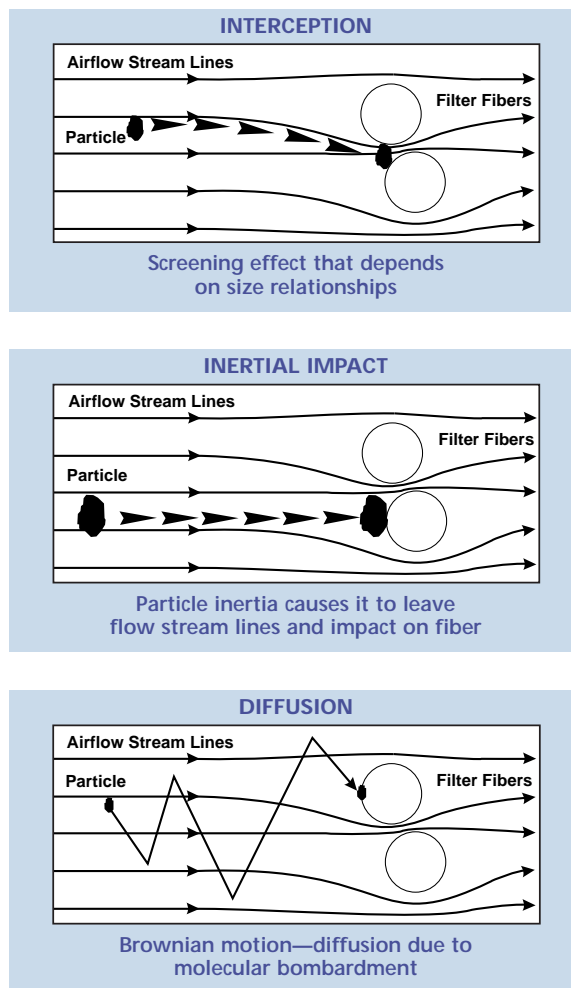


Figure 2. Air Filtration Theory: Particle Collection Mechanisms

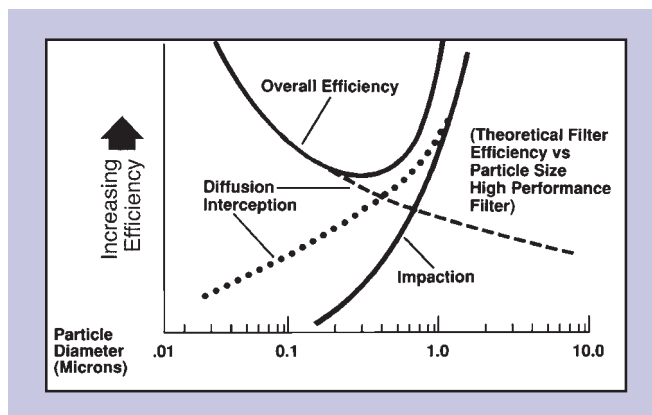


Figure 3. Relative Effect of Particle Collection Mechanisms

HEPA filters are rated on their ability to retain particles 0.3 micron ( $\mu\text{m}$ ) in size. The filters are commonly tested by injecting an aerosol of dioctylphthalate (DOP) or similar liquid, which has a large number of 0.3  $\mu\text{m}$  droplets, into the upstream side of the filter during operation.

# Biological Safety Cabinets, Enclosures & Clean Benches

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Readings are taken on the opposite side of the filter to quantify the number of droplets that penetrate. Thus, if a filter allows one or fewer droplet to penetrate the filter with an initial concentration of 10,000, the filter is rated at 99.99 percent efficiency.

Because most aerosol droplets are larger or smaller than 0.3  $\mu\text{m}$ , the collection efficiency of a HEPA filter for these droplets is actually higher than its rating. Variations in filter efficiency, for example from 99.95 percent to 99.99 percent, are usually due to filter media or manufacturing techniques. While 99.95 percent filters are suitable for some appli-

cations, Labconco uses only 99.99 percent filters in all of its Purifier Biological Safety Cabinets, Enclosures and Clean Benches.

### *The Biosafety Levels*

The Centers for Disease Control (CDC) and the National Institutes of Health (NIH) have established Biosafety Levels 1 through 4. These four Biosafety Levels described below consist of combinations of laboratory practices and techniques, safety equipment and laboratory facilities. These Biosafety Levels are appropriate for the operations performed, the hazard posed by the infectious agents and for the laboratory function or activity.

**Biosafety Level 1** practices, safety equipment, and facility design and construction are appropriate for undergraduate and secondary educational training and teaching laboratories, and for other laboratories in which work is done with defined and characterized strains of viable microorganisms not known to consistently cause disease in healthy adult humans. *Bacillus subtilis*, *Naegleria gruberi*, infectious canine hepatitis virus, and exempt organisms under the NIH Recombinant DNA Guidelines are representative of those microorganisms meeting these criteria. Many agents not ordinarily associated with disease processes in humans are, however, opportunistic pathogens and may cause infection in the young, the aged, and immunodeficient or immunosuppressed individuals. Vaccine strains that have undergone multiple *in vivo* passages should not be considered avirulent simply because they are vaccine strains.

Biosafety Level 1 represents a basic level of containment that relies on standard microbiological practices with no special primary or secondary barriers recommended, other than a sink for handwashing.

**Biosafety Level 2** practices, equipment, and facility design and construction are applicable to clinical, diagnostic, teaching and other laboratories in which work is done with the broad spectrum of indigenous moderate-risk agents that are present in the community and associated with human disease of varying severity. With good microbiological techniques, these agents can be used safely in activities conducted on the open bench, provided the potential for producing splashes or aerosols is low. Hepatitis B virus, HIV, the salmonellae, and *Toxoplasma* spp. are representative of microorganisms assigned to this containment level. Biosafety Level 2 is appropriate when work is done with any human-derived blood, body fluids, tissues, or primary human cell lines where the presence of an infectious agent may be unknown. (Laboratory personnel working with human-derived materials should refer to the OSHA *Bloodborne Pathogen Standard* for specific, required precautions.)

Primary hazards to personnel working with these agents relate to accidental percutaneous or mucous membrane exposures, or ingestion of infectious materials. Extreme caution should be taken with contaminated needles or sharp instruments. Even though organisms routinely manipulated at Biosafety Level 2 are not known to be transmissible by the aerosol route, procedures with aerosol or high splash potential that may increase the risk of such personnel exposure must be conducted in primary containment equipment, or in devices such as a Biological Safety Cabinet or safety centrifuge cups. Other primary barriers should be used as appropriate, such as splash shields, face protection, gowns, and gloves. Secondary barriers such as handwashing sinks and waste decontamination facilities must be available to reduce potential environmental contamination.

**Biosafety Level 3** practices, safety, equipment, and facility design and construction are applicable to clinical, diagnostic, teaching, research, or production facilities in which work is done with indigenous or exotic agents with a potential for respiratory transmission, and which may cause serious and potentially lethal infection. *Mycobacterium tuberculosis*, St. Louis encephalitis virus, and *Coxiella burnetii* are representative of microorganisms assigned to this level. Primary hazards to personnel working with these agents relate to autoinoculation, ingestion, and exposure to infectious aerosols.

At Biosafety Level 3, more emphasis is placed on primary and secondary barriers to protect personnel in contiguous areas, the community, and the environment from exposure to potentially infectious aerosols. For example, all laboratory manipulations should be performed in a Biological Safety Cabinet or other enclosed equipment, such as a gas-tight aerosol generation chamber. Secondary barriers for this level include controlled access to the laboratory and ventilation requirements that minimize the release of infectious aerosols from the laboratory.

**Biosafety Level 4** practices, safety equipment, and facility design and construction are applicable for work with dangerous and exotic agents that pose a high individual risk of life-threatening disease, which may be transmitted via the aerosol route and for which there is no available vaccine or therapy. Agents with a close or identical antigen relationship to Biosafety Level 4 agents also should be handled at this level. When sufficient data are obtained, work with these agents may continue at this level or at a lower level. Viruses such as Marburg or Congo-Crimean hemorrhagic fever are manipulated at Biosafety Level 4.

The primary hazards to personnel working with Biosafety Level 4 agents are respiratory exposure to infectious aerosols, mucous membrane or broken skin exposure to infectious droplets, and autoinoculation. All manipulations of potentially infectious diagnostic materials, isolates, and naturally or experimentally infected animals pose a high risk of exposure and infection to laboratory personnel, the community and the environment.

The laboratory worker's complete isolation of aerosolized infectious materials is accomplished primarily by working in a Class III Biological Safety Cabinet or a full-body, air-supplied positive-pressure personnel suit. The Biosafety Level 4 facility itself is generally a separate building or completely isolated zone with complex, specialized ventilation requirements and waste management systems to prevent release of viable agents to the environment.

From *Biosafety in Microbiology and Biomedical Laboratories*, U.S. Department of Health and Human Services, HHS publication (CDC) 99-8395, 4th ed. April 1999. Available for downloading from CDC's website at [www.cdc.gov/od/ohs](http://www.cdc.gov/od/ohs).



# Biological Safety Cabinets, Enclosures & Clean Benches

## OVERVIEW

### ISO Class 5

In 2001, Federal Standard 209E Airborne Particulate Cleanliness Classes in Cleanrooms and Clean Zones was replaced by ISO Standards 14644-1 and 14644-2. Federal Standard 209E was written in the early 1960s, originally for government contract projects, and was soon accepted by the cleanroom industry as the standard to follow for defining air cleanliness. Federal Standard 209E's Class 100 air, for example, is defined as fewer than 100 particles, 0.5  $\mu\text{m}$  or larger, in one cubic foot of air. The International Organization for Standardization (ISO) Technical Committee (TC 209), comprised of representatives from 19 nations, wrote the new ISO Standard 14644 with the intent of making a universally-accepted standard that was broader and more generic than the U.S. standard. The ISO Standard classification levels are based on particle counts per cubic meter ( $\text{m}^3$ ) instead of per cubic

Particle Counts/ $\text{ft}^3$ ( $\geq 0.5 \mu\text{m}$ )*	Federal Standard 209E Class	Particle Counts/ $\text{m}^3$ ( $\geq 0.5 \mu\text{m}$ )*	ISO Standard 14644 Class
100,000	Class 100,000	3,520,000	ISO Class 8
10,000	Class 10,000	352,000	ISO Class 7
1,000	Class 1000	35,200	ISO Class 6
100	Class 100	3,520	ISO Class 5
10	Class 10	352	ISO Class 4
1	Class 1	35	ISO Class 3

**Table 1. Particle counts for Federal Standard 209E and ISO Standard 14644**

\*maximum concentration limits

The 99.99% efficient HEPA filters used in all Labconco Purifier Class II Biological Safety Cabinets, Purifier Horizontal and Vertical Clean Benches, and Purifier Filtered PCR Enclosures provide ISO Class 5 (formerly Class 100) conditions in the work area.

### Biological Safety Cabinets—For Personnel, Product and Environment Protection

The term “Biological Safety Cabinet” (also Biosafety Cabinet) is widely used to describe a variety of containment devices equipped with HEPA filters, designed to provide personnel and environment protection, or personnel, product and environment protection from biohazardous material. The cabinets are defined by class, and again by type, based on their construction, airflow velocities and patterns, and by their exhaust system.

When using biohazard cabinets in conjunction with biohazardous material, toxins, or radionuclides, the operator and qualified safety officer must carefully assess the risk associated with any operation performed. Concentrations of toxins or radionuclides should not be allowed to reach levels which would interfere with the decontamination or servicing of the cabinet.

#### Class I Enclosure

The Class I enclosure is defined as a HEPA-filtered cabinet providing personnel and environment protection. Class I enclosures draw room air around the operator and through the work area, like a chemical fume hood, except that the exhaust air is passed through a HEPA filter. Class I enclosures may or may not be connected to an exhaust duct system. The Class I enclosure offers **Biosafety Level 1, 2 or 3 containment**; however, it only provides personnel and environment protection. There is no product protection from contaminants in the room air.

Class I enclosures operate with a typical average inflow or face velocity of 75-105 feet per minute (fpm). When operated at the higher velocity,



**Figure 4.** The Purifier Class I Safety Enclosure protects the user, but not the product, from airborne particulates.

Labconco Class I enclosures include the Purifier Class I Safety Enclosure and Purifier HEPA Filtered Enclosure, both in 2-, 3- and 4-foot widths (Figure 4). Average inflow velocity is factory set to 90 fpm, but may be modified to range between 75-105 fpm when the blower is adjusted by a qualified certification technician. Accessories for these enclosures include the Dished Epoxy Work Surface, Adjustable Height Base Stand, Exhaust Connection Kit and Remote Blower. See the Selection Guide on pages 10 and 11.

#### Containment Testing of Class I Enclosures

The containment of Labconco Purifier Class I and HEPA Filtered Enclosures is validated using three separate tests: Personnel Protection Test, modified ANSI/ASHRAE 110-1995 Test and Particulate Containment Test using Naproxen Sodium. The Personnel Protection Test is one of the three tests that comprise the Biological Challenge Testing and is described on page 6.

Since canopy-ducted Purifier Class I and HEPA Filtered Enclosures perform similarly to a fume hood — air flows into the front sash opening aided by the air foil and other aerodynamic features, a modified version of the ANSI/ASHRAE 110-1995 “Method of Testing Performance of Laboratory Fume Hoods” provides meaningful data about the enclosure's ability to contain gaseous contaminants. In the test, a tracer gas, sulfur hexafluoride ( $\text{SF}_6$ ), is released inside the enclosure at a rate of 4 liters per minute and leaks into the breathing zone of a mannequin positioned in front of the enclosure are recorded for five minutes. Average concentrations during the tracer gas test were less than 0.05 ppm.

Naproxen sodium (NS), a non-potent crystalline powder with a high dustiness quotient, is used to perform particulate containment testing on Purifier Class I and HEPA Filtered Enclosures. In the test, several different operators work in the enclosure dispensing NS from a bulk source container into small vials with a spatula. Operators move their hands in and out of the enclosure to simulate recording data in a notebook on a lab bench. The results indicated there was no appreciable release of NS (less than 25  $\text{ng}/\text{m}^3$ ) outside of the Purifier Class I Enclosure throughout the test procedure.

and canopy-ducted to an exhaust system, these cabinets can be used in conjunction with toxic chemicals or radionuclides. Class I enclosures can provide practical, economical containment solutions for users whose work is unaffected by room air. Such applications include handling suspicious mail, handling powders, preparing media, asbestos manipulation, handling pollen or other allergens, and some microbiology procedures.

# Biological Safety Cabinets, Enclosures & Clean Benches

## OVERVIEW

### **The Class II Cabinet**

The Class II cabinet is defined as a ventilated cabinet for personnel, product and environment protection. It has an open front with inward airflow for personnel protection, HEPA-filtered laminar airflow for product protection, and HEPA-filtered exhaust air for environment protection. Class II cabinets are suitable for use with agents that require **Biosafety Level 1, 2 or 3 containment**.

*When toxic chemicals or radionuclides are used as adjuncts to biological studies or pharmacy work, Class II cabinets designed and constructed for this purpose should be used.*

### **The Class III Cabinet**

The Class III cabinet is defined as a totally enclosed, ventilated cabinet of gas-tight construction. Operations in the cabinet are conducted through attached rubber gloves. The cabinet is maintained under negative air pressure of at least 0.5 inch (12.7mm) water gauge (w.g.). Supply air is drawn into the cabinet through HEPA filter(s). The exhaust air is treated by double HEPA filtration, or by HEPA filtration and incineration. These cabinets also include a double door autoclave for transfer operations. Class III cabinets are suitable for work with agents that require **Biosafety Level 1, 2, 3 or 4 containment**. Class III cabinets are not offered in this catalog.

## **Types of Class II Cabinets**

NSF International\*, as part of its NSF Standard 49 for Class II biosafety cabinets, provides Type designations that further delineate the various cabinets based on airflow characteristics. NSF International periodically reviews and changes the Standard as needed and, in 2002, updated its Type designations as described below.

### **Type A1 (formerly Type A)**

Cabinets that: (1) maintain minimum calculated average inflow velocity of 75 fpm through the work area access opening; (2) have HEPA filtered downflow air from a common plenum (i.e. plenum from which a portion of the air is exhausted from the cabinet and the remainder supplied to the work area); (3) may exhaust HEPA-filtered air back into the laboratory or canopy-ducted to the outside; and (4) may have positive pressure contaminated ducts and plenums not surrounded by negative pressure plenums. Type A1 cabinets are suitable for work with biological agents in the absence of volatile toxic chemicals or radionuclides. Class II, Type A1 cabinets are not offered in this catalog. We recommend the Purifier Delta Series Class II, Type A2 Safety Cabinet.

### **Type A2 (formerly Type A/B3)**

Cabinets that: (1) maintain a minimum (calculated or measured) average inflow velocity of 100 fpm through the work area access opening; (2) have HEPA-filtered downflow air that is a portion of the mixed downflow and inflow air from a common exhaust plenum; (3) discharge all exhaust air to the atmosphere after HEPA filtration; and (4) have all biologically contaminated ducts and plenums under negative pressure or surrounded by negative pressure ducts and plenums. Type A2 cabinets are suitable for work with biological agents treated with minute quantities of volatile toxic chemicals and tracer quantities of radionuclides that will not interfere with the work if recirculated in the downflow air.

Labconco offers Purifier Delta Series Class II, Type A2 Safety Cabinets in 3-, 4-, 5- and 6-foot widths. Access opening face velocity is a nominal 105 fpm. With the addition of the Canopy Kit and remote blower,



*Figure 5.  
A Labconco engineer  
sets up equipment in  
a Purifier Delta Series  
Class II Cabinet to  
conduct a biological  
challenge test.*

the Purifier Delta Series Class II Safety Cabinet may be thimble-ducted to the outside. See the Selection Guide on pages 10 and 11.

### **Type B1**

Cabinets that: (1) maintain a minimum (calculated or measured) average inflow velocity of 100 fpm through the work area access opening; (2) have HEPA-filtered downflow air composed largely of uncontaminated recirculated inflow air; (3) exhaust most of the contaminated downflow air through a dedicated duct exhausted to the atmosphere after passing through a HEPA filter; and (4) have all biologically contaminated ducts and plenums under negative pressure or surrounded by negative pressure ducts and plenums. Type B1 cabinets may be used with biological agents treated with minute quantities of toxic chemicals and tracer amounts of radionuclides required as an adjunct to microbiological studies if work is done in the direct exhausted portion of the cabinet, or if the chemicals or radionuclides will not interfere with the work if recirculated in the downflow air. While the Type B1 cabinet allows limited use with toxic chemicals, it recirculates approximately 30 percent of the contaminated work area air through the supply HEPA filter.

Labconco does not offer a Type B1 Cabinet. Instead, we recommend either the Purifier Delta Series Total Exhaust (Class II, Type B2) Cabinet, which exhausts 100 percent of its air, or the Purifier Delta Series Class II, Type A2 Cabinet, which exhausts approximately 30 percent.

### **Type B2**

Sometimes referred to as "Total Exhaust," these are cabinets that: (1) maintain a minimum (calculated or measured) average inflow velocity of 100 fpm through the work area access opening; (2) have HEPA filtered downflow air drawn from the laboratory or outside air; (3) exhaust all inflow and downflow air to the atmosphere after filtration through a HEPA filter without recirculation into the cabinet or return to the laboratory room air; and (4) have all contaminated ducts and plenums under negative pressure, or surrounded by directly exhausted negative pressure ducts and plenums. Type B2 cabinets may be used with biological agents treated with toxic chemicals and radionuclides required as an adjunct to microbiological studies.

Labconco manufactures Purifier Delta Series Total Exhaust Cabinets in 4- and 6-foot widths. Remote blowers and ductwork are required and offered as accessories. See the Selection Guide on pages 10 and 11.

## **NSF Standard Number 49**

NSF International (formerly the National Sanitation Foundation) is an independent, non-profit organization. NSF acts as a neutral agency, serving the consumer, government and industry in developing solutions for problems pertaining to public health and the environment.

\*See pages 5 and 6 for more information on NSF International and Standard 49.

# Biological Safety Cabinets, Enclosures & Clean Benches

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In response to user and industry requests, NSF International, with the cooperation of government, consumers, certifiers, and leading manufacturers, developed NSF Standard 49, which establishes minimum construction and performance standards for Class II Biosafety Cabinets. Standard 49 also establishes the tests which the manufacturer must perform on every cabinet built. To ensure compliance, NSF performs periodic unannounced audits of the manufacturer's assembly locations and sets requirements for retesting.



*Domestic Labconco Purifiers are built to meet or exceed the minimum requirements of NSF Standard 49 and bear the NSF mark. Visit [www.nsf.org/certified/Biosafety/](http://www.nsf.org/certified/Biosafety/) for a current roster of all NSF-Listed biological safety cabinets.*

### Biological Challenge Testing

NSF Standard 49 requires that biological safety cabinets pass biological challenge testing in order to be NSF listed. Biological challenge testing is the ultimate measure of the cabinet's ability to perform its intended function—to contain biohazardous aerosols. In the challenges, aerosol suspensions of *Bacillus subtilis* spores are used to quantify the ability of the cabinet to contain biohazardous aerosols (Figure 5).

The challenge consists of three separate tests:

- The Personnel Protection Test measures the ability of the cabinet to prevent the escape of the aerosol into the outside environment.
- The Product Protection Test measures the ability of the cabinet to prevent aerosols from entering the interior of the cabinet.
- The Cross Contamination Protection Test measures the ability of the cabinet to contain aerosols in different regions of the cabinet work area.

### ETL Electrical Safety Listings



ETL Testing Laboratories, originally organized by the Edison Illuminating Companies, has been conducting electrical performance and reliability tests since 1896. Intertek Testing Services (ITS), which acquired ETL Testing Laboratories from Inchcape in 1996, is recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) just as Underwriters Laboratories (UL), Canadian Standards Association (CSA) and several other independent organizations are recognized. A federal law passed in 1988 established the NRTL program to eliminate provisions that explicitly required or implied that product certification be performed only by standard-writing companies such as UL. Since each NRTL must meet the same OSHA requirements of competency, NRTLs recognized for the same product safety test standard are considered as equivalent in their capability to certify to that standard. This program has allowed competing organizations, such as ETL, into this previously exclusive certification arena and given manufacturers options and bargaining power to drive competitive costs and delivery. ITS uses the ETL mark to signify that a product conforms to UL Standard 3101-1 in the U.S. and the CAN/CSA Standard C22.2 No. 1010.1 in Canada. Products that bear the ETL mark, such as the Purifier line of safety cabinets, enclosures and clean benches, are subjected to a comprehensive safety program that includes testing, listing, labeling and quarterly follow-up inspections. For a current list of Labconco products bearing the ETL mark, visit <http://etlwhidirectory.etlsemko.com>

### CE Marking



The CE mark indicates the product conforms to all safety and other directives/specifications presently required by the Council of European Communities. The CE mark was established in 1993 to standardize European countries' electrical directives into a single set of regulations, eliminating barriers to trade. Present rules require that products meet electrical safety requirements set for laboratory equipment and also pass rigorous electromagnetic emissions testing (interference signals being output by the product) and electromagnetic immunity testing (the product should not respond to outside electromagnetic interference signals).

### Certification and Decontamination

Before each Purifier Delta Series Safety Cabinet is shipped to a customer, Labconco technicians assure its performance by conducting a series of tests including filter integrity testing, setting the damper and motor speed, and verifying the airflow (Figure 6). Upon delivery and installation of a cabinet at the customer's facility, certification plays a critical role in a cabinet's performance. Certification should be performed by an independent certifier, at least annually, and whenever the cabinet is relocated or serviced. An initial certification ensures that no damage occurred while the cabinet was transported. Annual certifications provide verification that performance levels remain satisfactory. A typical certification includes: leak testing of the HEPA filter(s), establishing the proper air velocities and flow patterns in the cabinet, and testing the light level and electrical circuits of the cabinet.

Because biological safety cabinets are often used in research involving biohazardous materials, they are usually decontaminated with gaseous formaldehyde before servicing the interior components of the cabinet. Surface decontamination of biohazard cabinets is usually accomplished by using a 70 percent ethanol solution, or an appropriate disinfectant which is compatible with the materials used in the cabinet. Surface decontamination should be performed routinely before and after using the cabinet.

### Special Applications for Biological Safety Cabinets

#### Handling Suspicious Mail

Bioterrorism involving mail potentially contaminated with biohazards such as anthrax and smallpox has created demand for enclosures where suspicious mail can be safely sorted and opened. The Centers for Disease Control and Prevention (CDC) recommends handling anthrax and smallpox using Biosafety Level 2 practices, containment equipment and facilities. The Biosafety Level 2 recommendation is required for work on a laboratory scale, which would be similar to the small amounts of infected agents found in dangerous mail. Class I enclosures, such as Purifier Class I Safety Enclosures and Purifier HEPA Filtered Enclosures, are Biosafety Level 2 equipment that provide the necessary personnel protection without providing unneeded product protection. Class I enclosures, like any laboratory device, have the potential of misuse by persons unfamiliar with biological safety cabinets or common laboratory practices such as aseptic technique. Training of personnel is essential and the risk of misuse must be weighed against the potential for exposure to biohazards. Consult your safety officer for recommendations based on your specific application.



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Figure 6. Prior to shipment, the proper airflow in the Purifier Delta Series Cabinet is verified.

### Working with HIV

The CDC and the National Institutes of Health (NIH), in an addendum to their publication, *Biosafety in Microbiology and Biomedical Laboratories*, stated that HIV should be included in Biosafety Levels 2 and 3. The Levels are dependent on the concentration or quantity of virus or the type of laboratory procedure used. Labconco offers Purifier Class I Safety Enclosures, Purifier HEPA Filtered Enclosures, Purifier Class II, Type A2 Safety Cabinets, and Purifier Total Exhaust Safety Cabinets, all of which are suitable for Biosafety Level 2 and 3 agents. Consult your safety officer for recommendations based on your specific application.

### Handling cytotoxic or hazardous drugs

Many drugs currently in use may be oncogenic, mutagenic, or exert any number of dangerous side effects on health care professionals exposed to them. Aerosols or chemical dusts are often generated during routine handling and preparation of these hazardous drugs. In 1990, the American Society of Health-System Pharmacists (ASHP) recommended, as a minimum measure, that work involving hazardous drugs be performed in a Class II, Type A1 or A2 cabinet (Figure 7). The selection of a hard-ducted Type B2 cabinet is preferable. In September 2004, the Centers for Disease Control issued a National

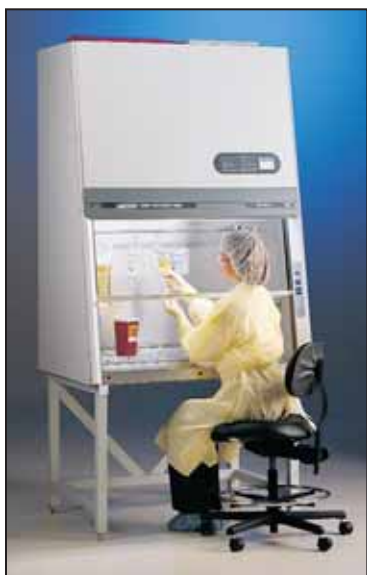


Figure 7. Purifier Delta Series Class II Safety Cabinets may be outfitted with an IV Bar for preparing cytotoxic or hazardous drugs.

Institute for Occupational Safety and Health (NIOSH) Alert, "Preventing Occupational Exposure to Antineoplastic and Other Hazardous Drugs in Health Care Settings." The NIOSH Alert states that employers should "provide and maintain ventilated cabinets designed to protect workers and others from exposure to hazardous drugs and to protect all drugs that require sterile handling. Examples of ventilated cabinets include biological safety cabinets and containment isolators designed to prevent hazardous drugs from escaping into the work environment." The NIOSH Alert

also states that employers should "filter the exhaust from ventilated cabinets with HEPA filters and make sure these cabinets are exhausted to the outdoors wherever feasible." Labconco offers Purifier Delta Series Class II, Type A2 Safety Cabinets, which may be canopy ducted to the outside and Purifier Delta Series Class II, Type B2 Total Exhaust Safety Cabinets, which require hard ducting to the outside.

On January 1, 2004, United States Pharmacopeia issued Chapter 797. USP 797 provides minimum facility and equipment control standards for healthcare institutions with the goal to reduce or prevent harm to patients resulting from microbial contamination during compounding of pharmaceuticals. A laminar airflow workbench and/or a biological safety cabinet certified to ISO Class 5 are required for certain types of compounding. These enclosures must be located within an ISO Class 8 cleanroom\* and be certified for performance every six months. An approved alternative is a barrier isolator (glove box) certified to ISO Class 5, which may be placed outside an ISO Class 8 environment. Since USP 797 is considered a requirement, healthcare institutions are subject to inspection against its standard by Boards of Pharmacy, Food & Drug Administration (FDA) and Joint Commission on Accreditation of Healthcare Organizations (JCAHO). Consult your safety officer to determine if the compounds you are using must meet the USP 797 standard. Labconco offers several enclosures that provide ISO Class 5 including Purifier Delta Series Class II Biological Safety Cabinets and Purifier Horizontal and Vertical Clean Benches. Clean Benches, however, offer no operator protection.

\*A change to ISO Class 7 is pending.

### Rodent cage handling

In vivariums, technicians disposing of rodent cage bedding are exposed to dust and other particulates that can cause allergies.



Figure 8. The PuriCare Open Access Station has openings on two sides providing easy access for two operators to transfer animals from dirty cages to clean ones.

At the same time, rodents transferred from dirty to clean cages risk exposure to environmental and cross contamination. HEPA-filtered laminar air flow enclosures provide animal and/or personnel protection during cage changing operations. Labconco offers the PuriCare® line of Laboratory Animal Research Stations to meet the needs of vivariums (Figure 8). PuriCare Stations are not featured in this catalog. Contact Labconco at 800-821-5525, 816-333-8811 or [www.labconco.com](http://www.labconco.com) for more information.

### Clean Bench—For Product Protection Only

The clean bench is a device that uses a blower to force room air through a HEPA filter, and into a work area. The filtered air may be directed vertically or horizontally over the work surface (Figure 9).

Clean benches were developed as part of "clean room" technology and are widely used in the electronics and pharmaceutical industries. They



# Biological Safety Cabinets, Enclosures & Clean Benches

## OVERVIEW

are also frequently used in research laboratories for tissue culture and media preparation, and in hospitals and pharmacies for syringe filling and parenteral drug formulation.

The major limitation of clean benches is that they only provide product protection; no effort is made to control aerosols generated in the work area. The operator is constantly exposed to any aerosols generated by the work being performed.



Clean benches should never be used in conjunction with biohazardous materials, toxins or radionuclides. The operator and a qualified safety officer must carefully assess the risk associated with any operation performed in a clean bench.

Accessories commonly used in the clean bench include fluorescent lighting, prefilters, electrical outlets, service fixtures, UV lights, and bars for hanging intravenous bags.

Labconco offers Purifier Horizontal Clean Benches in 3-, 4- and 6-foot widths and Purifier Vertical Clean Benches in 2-, 3- and 4-foot widths (Figure 9). The Purifier Filtered PCR Enclosure is a type of vertical clean bench designed to provide a controlled environment in which to perform polymerase chain reaction experiments. The Purifier Filtered PCR Enclosure, available in 2-, 3-, and 4-foot widths, includes an ultraviolet lamp with variable timer so that, between uses, any DNA or RNA present in the work area can be deactivated by the UV light.

### Non-Ventilated Enclosures— For Cross Current Protection

Some enclosures simply provide an area of still air in which non-hazardous applications such as polymerase chain reactions and plant tissue culture can be performed. Because the work area is enclosed on three sides, cross currents and the potential for atmospheric dust contamination are reduced. Since these enclosures do not use HEPA filtration, they do not provide personnel, product or environmental protection.

Labconco offers Purifier Non-Ventilated PCR and Tissue Culture Enclosures (Figure 10). Both enclosures are 4-feet in width and have bi-fold doors that allow the sash opening to be closed off during periods of non-use.

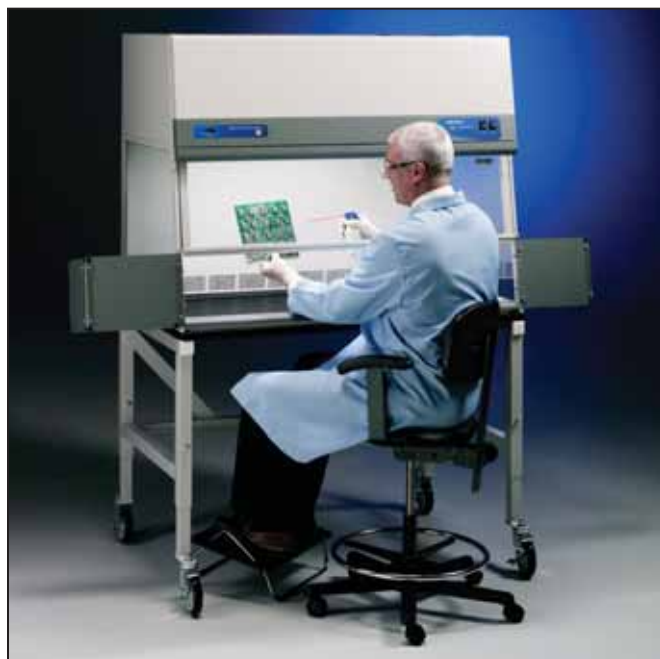


Figure 9. The Purifier Horizontal Clean Bench (above) and Purifier Vertical Clean Bench (below) provide ISO Class 5 conditions for product protection only.



Figure 10. The Purifier Non-Ventilated PCR Enclosure has an enclosed work area for performing polymerase chain reaction experiments.

# Biological Safety Cabinets, Enclosures & Clean Benches

## OVERVIEW

### Selecting a Class I Enclosure, Biological Safety Cabinet or Clean Bench

#### Primary Consideration—Safety

Selecting the proper work station depends largely on its application:

- 1) the type of protection required
  - a. product protection only
  - b. personnel and environment protection only
  - c. personnel, product and environment protection
- 2) the different types of work — present and future — that will be done in the station
- 3) the types and quantities of toxic materials that will be used in the course of the work
- 4) the type of exhaust system that will be needed.

Items 1, 2 and 3 are determined by the user of the cabinet, based on individual needs. Item 4 will be determined by the first three. Biological containment is not an issue when selecting among Class I enclosures and biological safety cabinets because ALL Class I and Class II cabinets are designed for Biosafety Levels 1, 2 and 3 containment.

If after careful consideration of present and future applications, it is determined that only product protection is required and that the work does not involve biohazardous or toxic materials, then a clean bench may be the work station of choice.

#### Secondary Consideration—Cost

Understanding the costs involved in owning and operating a biosafety cabinet or Class I enclosure is important. Capital expenditures include the cabinet itself and a base stand if required. Type B2 cabinets, some Type A2 cabinets and some Class I enclosures, which are ducted to the outside, also require ductwork, remote blowers and dampers for operation. Cost outlays include installation of the cabinet, the exhaust system and its blower, and initial certification. Operating and maintenance expenses include heating or air conditioning losses, electrical power consumed, prefilter and HEPA filter replacement, and the annual recertification charges.

The costs for a clean bench include the bench itself, its base stand, a work surface if not included and initial certification. Installation outlays are generally less expensive than the biosafety cabinet but should be considered. Finally, operating expenses include electrical power consumed, prefilter and HEPA filter replacement, and the annual recertification charges.

#### Tertiary Consideration—Options

Many options and accessories are available that customize a Class II biosafety cabinet, Class I enclosure or clean bench to the user's needs. Purifier Delta Series Class II, Type A2 Cabinets come in 3-, 4-, 5- and 6-foot widths and Purifier Horizontal Clean Benches come in 3-, 4- and 6-foot widths. Purifier Delta Series Class II, Type B2 Total Exhaust Cabinets come in 4- and 6-foot widths. Purifier Class I Enclosures, HEPA Filtered Enclosures and Filtered PCR Enclosures and Purifier Vertical Clean Benches come in 2-, 3- and 4-foot widths. If the user is confused about which size is needed, it is useful to mark a section of laboratory benchtop space equal to the dimensions of the cabinet's interior. The researcher should then perform several "dry runs" of his/her work within the marked area, to see if it is large enough.

Service fixtures are accessories that many researchers prefer to have on their cabinets. The valves, which should be easily accessible to the operator, may provide vacuum, air, gases or water. Purifier Delta Series Safety Cabinets and Purifier Horizontal Clean Benches are available with factory-installed service fixtures or Service Fixture Kits may be field-installed later as needs change. The remaining Purifier Enclosures do not have service fixtures but have open bottoms to allow placement over a counter-mounted fixture if necessary.

Ultraviolet (UV) lamps are often installed in a Class II biosafety cabinet, Class I enclosure or clean bench as an aid in decontamination of the work area. The lamps are similar in construction to fluorescent lights, except they emit ultraviolet light with a wavelength of 254 nanometers (nm). This wavelength of light is disruptive to DNA molecules, resulting in a broad spectrum disinfection. While UV light is effective when it strikes a microbial cell directly, it is ineffective when the cell is protected by dust, dirt, or organic matter. UV irradiation of the work area should only be used as a secondary method of maintaining the disinfected status of the cabinet; it should never be relied on alone to disinfect a contaminated work area. Ultraviolet irradiation is damaging to the eyes and skin, and the UV lamp should never be on when using the cabinet. Purifier Delta Series Safety Cabinets, Class I Safety Enclosures, Clean Benches and PCR Enclosures are available with factory-installed UV lamps.

An IV (intravenous) bar is useful in many clinical and pharmaceutical applications. Users may hang IV bottles or bags from the bar during drug preparation. The bar disrupts the airflow patterns in its area, so the user must ensure that for biosafety cabinets, the cabinet has been certified to NSF Standard 49 with the bar in place. IV Bar Kits are available for Purifier Delta Series Safety Cabinets and Clean Benches.

All Purifier products are benchtop design, therefore, an accessory base stand or supporting bench is necessary. For Class II safety cabinets, the base stand must pass NSF Standard 49 stability tests with the cabinet attached in order to be used with the cabinet.

The Selection Guide that follows on pages 10-12 summarizes the choices Labconco offers and provides at-a-glance descriptions of the protection provided, airflow characteristics, options and applications for Labconco HEPA-filtered Class II safety cabinets, Class I enclosures and clean benches. In most cases, more than one HEPA-filtered product may be suitable for any given application. In other cases, when your application involves both hazardous vapors/ fumes and non-biohazardous particulates, other Labconco ventilation products not included in this catalog, such as the Paramount® Filtered Enclosure, Protector® Multi-Hazard Glove Box or XPert Balance Enclosure, may be more appropriate. For help determining which safety cabinet, enclosure, clean bench or other ventilation product is best suited for your specific combination of applications, contact a Labconco specialist at 800-821-5525, 816-333-8811 or [labconco@labconco.com](mailto:labconco@labconco.com).

## SELECTION GUIDE

10



## SELECTION GUIDE

[illegible]

\*When Trace Odor Carbon Filter is used

## SELECTION GUIDE

12

# Biological Safety Cabinets, Enclosures & Clean Benches

## REFERENCES

American Biological Safety Association  
<http://www.absa.org>

American Society of Health-System Pharmacists Compounding Resource Center  
<http://www.ashp.org/SterileCpd>

"ASHP technical assistance bulletin on handling cytotoxic and hazardous drugs."  
*American Journal of Hospital Pharmacy*, May 1990, 47, 1033-104.  
<http://www.ashp.org>

Fleming, Diane O. & Debra L. Hunt, Editors. *Biological Safety: Principles and Practices*.  
3<sup>rd</sup> Edition. ASM Press, Washington, D.C. American Society for Microbiology, 2000.  
<http://www.asmpress.org>

*Guidelines for the Safe Transport of Infectious Substances and Diagnostic Specimens*.  
Geneva, Switzerland: World Health Organization Division of Emerging and Other  
Communicable Diseases Surveillance and Control, 1997.  
[http://www.who.int/csr/resources/publications/biosafety/WHO EMC\\_97\\_3\\_EN/en/](http://www.who.int/csr/resources/publications/biosafety/WHO EMC_97_3_EN/en/)

*Laboratory Biosafety Guidelines*. 3<sup>rd</sup> Edition. Canada: Public Health Agency of Canada, 2004.  
<http://www.phac-aspc.gc.ca/ols-bsl/lbg-lbmb/index.html>

NSF International Standard Number 49 for Class II (Laminar Flow) Biohazard Cabinetry.  
Ann Arbor, Michigan, 2002.  
[http://www.nsf.org/business/standards\\_and\\_publications/](http://www.nsf.org/business/standards_and_publications/)

NIOSH Publication No. 2004-165:  
Preventing Occupational Exposures to Antineoplastic and Other  
Hazardous Drugs in Health Care Settings  
<http://www.cdc.gov/niosh/docs/2004-165/pdfs/2004-165.pdf>

*Occupational Exposure to Bloodborne Pathogens. – 1910.1030.*  
OSHA Regulation (Standards – 29 CFR). Occupational Health and Safety, U.S. Department of Labor.  
<http://www.osha-slc.gov>

OSHA Technical Manual, Section VI: Chapter 2.  
"Controlling Occupational Exposure to Hazardous Drugs." Occupational Health and Safety,  
U.S. Department of Labor.  
[http://www.osha.gov/dts/osta/otm/otm\\_vi/otm\\_vi\\_2.html](http://www.osha.gov/dts/osta/otm/otm_vi/otm_vi_2.html)

*United States Pharmacopeia National Formulary (USP 27 – NF 22)* "Pharmaceutical Compounding —  
Sterile Preparations <797>." 2004.  
<http://www.usp.org>

Richmond, Jonathan Y, Ph.D. and McKinney, Robert, Ph.D., Editors. CDC-NIH: Primary Containment  
for Biohazards: Selection, Installation and Use of Biological Safety Cabinets. 2<sup>nd</sup> Edition. Bethesda,  
Maryland: U.S. Department of Health and Human Services Public Health Service, Centers for Disease  
Control and Prevention, and National Institutes of Health, September 2000.  
<http://www.cdc.gov/od/ohs/biosfty/bsc/bsc.htm>

Richmond, Jonathan Y. Ph.D. and McKinney, Robert, Ph.D., Editors.  
*CDC-NIH Biosafety in Microbiological and Biomedical Laboratories*.  
HHS Publication No. (CDC) (99-8395). 4<sup>th</sup> Edition. Washington, D.C.: U.S. Department of Health  
and Human Services Public Health Service, Centers for Disease Control and Prevention  
and National Institutes of Health. U.S. Government Printing Office, April 1999.  
<http://www.cdc.gov/od/ohs/biosfty/bmbi4/bmbi4toc.htm>





# △ Purifier® Delta® Series Class II Biological Safety Cabinets

## OVERVIEW

### Delta® Series Delivers Safety

The most compelling reason to choose a Purifier Delta Series Class II Cabinet is safety. You simply won't find another biohazard cabinet with a more comprehensive safety package.

Bright color signifies danger and key components are epoxy-coated orange to provide a visual reminder to work safely in these areas. One such area is the exclusive sash pocket. Located behind the front panel, the sash pocket encases the sash as it is raised, shielding the user and environment from exposure to any potential contamination on the interior side of the sash. The pocket provides an added dimension of safety to other measures such as 99.99% efficient HEPA-filtered laminar flow and negative pressure plenum design.

Unseen, but remarkable, is the unitized, stainless steel frame. The substructure provides a more stable and accurate foundation than multi-piece designs so the potential for leaks is minimized. Other safety features, such as the sash, just can't be missed. The sash provides tactile feedback to the operator to not lift it beyond its working height while the cabinet is in use. Raising the sash beyond this point triggers an audible/visual alarm. The sash may also be fully closed to prevent contaminants from entering or leaving the cabinet during UV disinfection or non-use.



The patented\* towel catch prevents wipes and other lightweight items from being drawn into the cabinet's internal cavity where they could damage components and alter airflow.



The angled sash may be completely closed when not in use, providing a physical barrier.

### Safety Features

- Fully closing tempered safety glass sash with audible/visual alarm indicator
- △ Patented\* sash pocket keeps potential contamination contained
- △ Patented\* curved air foil
- △ Tactile indication when sash is raised to its optimum operating level
- Interlocked UV light only operates when blower and fluorescent light are off and sash is closed
- △ Patented\* Minihelic\*\* II pressure gauge mounted inside the work area so that any leaks from the gauge or tubing are forced through a HEPA filter before exhausting to the environment
- Electrical duplex receptacles with ground fault interruption
- △ Safety color-coded towel catch, sash pocket and exhaust cap
- △ Safety color-coded air foil available
- 99.99% efficient HEPA filters
- Unitized 16 gauge stainless steel structure
- Intrinsically-safe negative pressure design
- 115 volt, 60 Hz models are NSF International Listed



The patented\* curved air foil prevents the potentially dangerous practice of placing materials in this area.



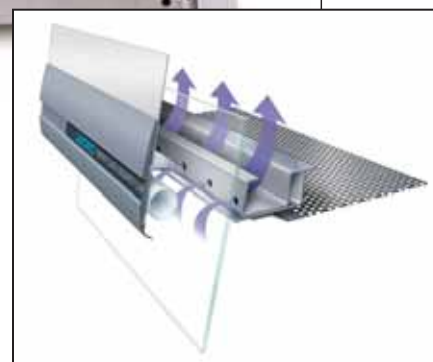
The patented\* sash pocket shields the sash as it is raised so that potential contamination is not spread to upper cabinet areas.

# Purifier® Delta® Series Class II Biological Safety Cabinets

## OVERVIEW



The patented \* Air-Wave™ Entry System, featuring aerodynamic angles surrounding the access opening, provides less airflow resistance for better containment.



Patented\* Contain-Air™ Negative Pressure Channel draws air in, preventing loss of containment at the top of the sash.

\* U.S. Patent No. 6,368,206



# △ Purifier® Delta® Series Class II Biological Safety Cabinets

## OVERVIEW

### Delta® Series Delivers Performance

Every component of the Purifier Delta Series Cabinet has been optimized for peak performance. The Air-Wave™ Entry System, consisting of the curved design of the side posts, air foil and sash handle, ensures smoother airflow into the work area minimizing turbulence and enhancing containment. Internally, we've designed a ramped steel plenum that captures the recirculated air, stabilizes it, and then distributes it evenly across the HEPA filters and the work area. Laminar airflow is idealized and *true*, not zoned. The Air-Wave Entry System and plenum work together to provide superior airflow that protects the operator and prevents cross contamination.

The exclusive Contain-Air™ Negative Pressure Channel, located behind the sash, maximizes containment at the air gap between the top of the sash opening and the cabinet wall. Any hazardous aerosol created in the work area that may travel upward toward the top of the sash is drawn into the channel by negative pressure and then forced through a HEPA filter. Unreliable seals and gaskets, which could degrade or drag on the contaminated glass, are not used.

### Performance Features

- △ Patented\* Air-Wave™ Entry System
- △ Patented\* ramped steel plenum for *true* laminar airflow
  - 105 fpm nominal face velocity
- △ Sure-Start™ voltage-compensating speed control with 40 amp capacity and electronic adjustability
  - Counterweighted sliding sash with anti-racking mechanism
- △ Contain-Air™ Negative Pressure Channel at the top of the access opening
- △ Patented\* Reserve-Air™ Secondary Airflow Slots
  - Low clearance design requires only 6" clearance from ceiling
  - ISO Class 5 air (formerly Class 100) in the work area



*The sash is counterweighted for balance, greater reliability and durability. The anti-racking mechanism ensures easy raising and lowering from all areas of the sash handle.*



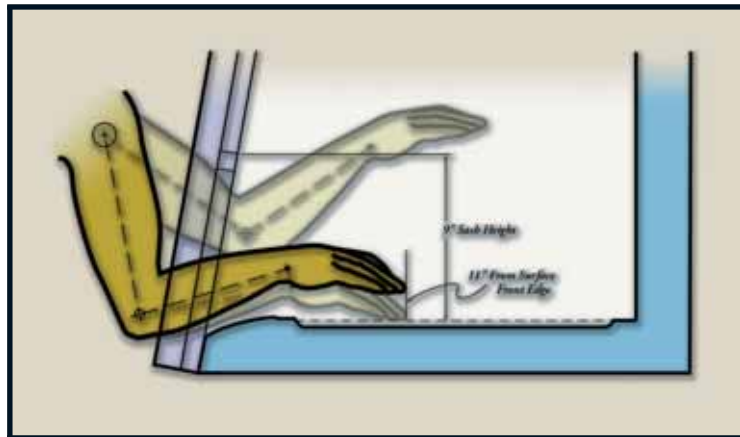
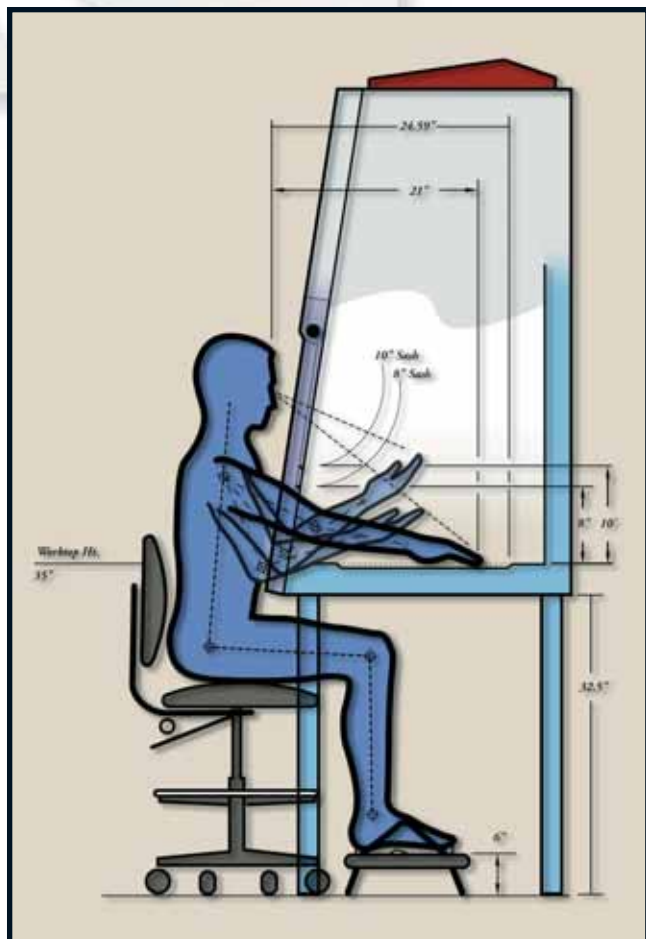
*Reserve-Air™ Secondary Airflow Slots, located in front of the air foil's inflow grille, draw air into the Purifier should the operator inadvertently block the grille area. Safe airflow is always maintained.*

\* U.S. Patent No. 6,368,206

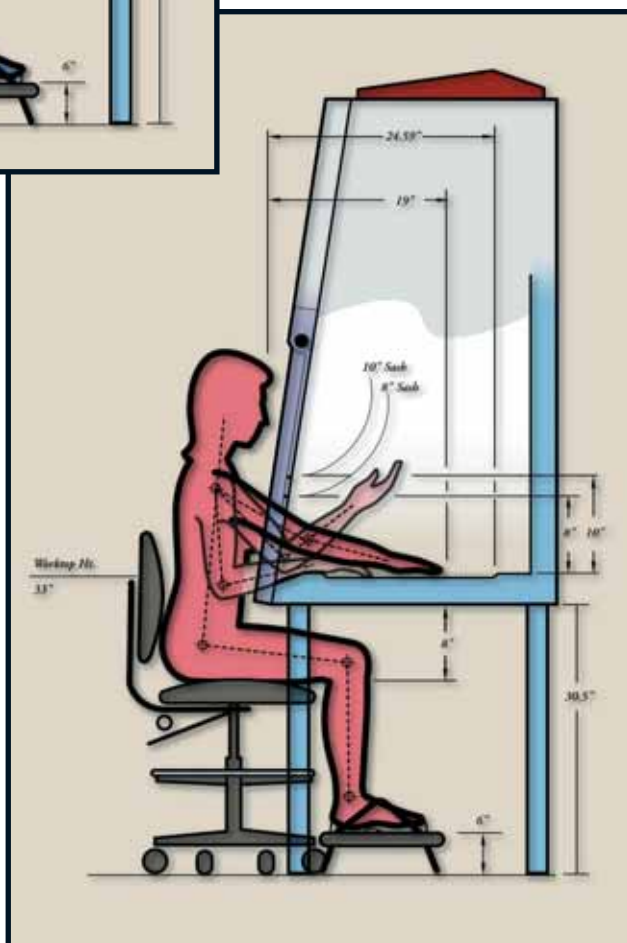
△ Exclusive feature

# Purifier® Delta® Series Class II Biological Safety Cabinets

## OVERVIEW



The radiused air foil provides a comfortable surface for forearms resting on it, reducing fatigue.



The Purifier Delta Series Safety Cabinet was designed to provide a safe and effective work area for both men and women. Ergonomic principles were applied to ensure that humans of all sizes maintain a healthy posture, and have good visibility and range of motion while safely using the cabinet. The illustrations at left show an adult male of an average height of 5' 9.1" and an adult female of an average height of 5' 3". The accessory base stand, chair and footrest work together to achieve the proper height for individuals using the cabinet.

# △ Purifier® Delta® Series Class II Biological Safety Cabinets

## OVERVIEW

### Delta® Series Delivers Ergonomics

Because fatigue increases the risk of accidents and personal injury, we designed the Purifier Delta Series Cabinet to be comfortable and convenient to use. With assistance from human factors specialists, Labconco engineers created dimensions for the cabinet that fit people of all sizes. The monitors and controls are within easy sight and reach—exactly where they should be. The Minihelic II pressure gauge is located in the user's field of vision to allow continuous monitoring of safe operating parameters. The switches and alarm indicators are mounted low to meet ADA\* requirements and to reduce eye strain. The curved air foil has no pronounced edges so arms may rest comfortably.

The inclined sash and front panel offer ergonomic benefits as well as an attractive exterior. The front panel above the sash is free of protrusions that could interfere with visibility or obstruct taller users. More importantly, the sash is angled for closer, more comfortable viewing without glare.

A spacious interior adds to the cabinet's functionality. The service fixtures are mounted 9" above the work surface to maximize usable surface space. They are mounted close to the front within easy reach of the user. The seamless one-piece dished work surface has smooth, radiused edges for easy cleaning.



The Minihelic II pressure gauge has a large dial for easy readability and is located in the user's direct field of vision.



Interior offers the most cubic feet of area in the industry.

### Ergonomic Features

- △ Most spacious interior in the industry
- △ Eye-level Minihelic II pressure gauge
- △ ADA-compliant controls, switches and electrical receptacles
- △ Patented\* curved air foil
  - Inclined, sliding sash
- △ Low profile front panel
  - Service fixtures mounted 9" above the work surface
  - Removable dished work surface is smooth and non-welded
  - ADA-compliant adjustable height accessory base stand
  - Accessory chair and footrest

△ Exclusive feature

*\*Americans with Disabilities Act*



Service fixtures are mounted within reach of the operator but somewhat higher so that they are less likely to snag on clothing or bump the user's forearms.



Controls are mounted in the user's field of vision to limit neck movement and meet ADA requirements.

*\* U.S. Patent No. 6,368,206*





# Purifier® Delta® Series Class II, Type A2 Safety Cabinets

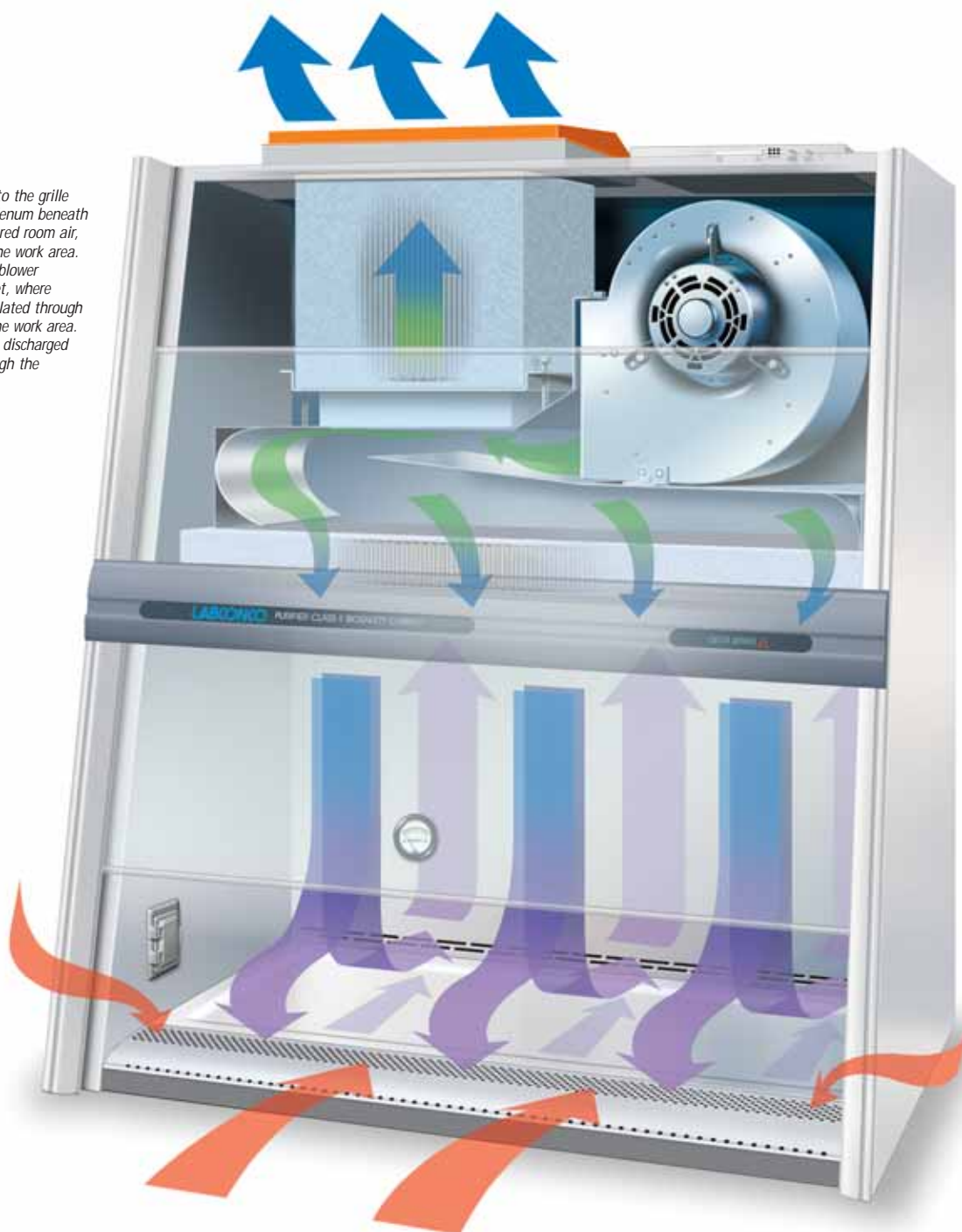
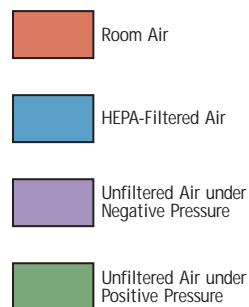
## INTRODUCTION

The patented\* Purifier Delta Series Class II, Type A2 Safety Cabinet protects you, your work and your laboratory environment.


Typical applications include work with agents that require Biosafety Level 1, 2 or 3 containment, and antineoplastic drug preparation.

The cabinet may discharge HEPA-filtered exhaust air directly into the laboratory, or into an exhaust system through the optional Canopy Connection. When canopy-connected, the Purifier Delta Series Cabinet may be used for applications involving minute quantities of volatile toxic chemicals and tracer amounts of radionuclides required as an adjunct to microbiological research.

During operation, room air is drawn into the grille located in the air foil. The air in the plenum beneath the work surface is a mixture of unfiltered room air, and air that has just passed through the work area. This contaminated air is drawn by the blower through the back plenum of the cabinet, where approximately 70% of the air is recirculated through the supply HEPA filter and back over the work area. The balance of the contaminated air is discharged to the environment after passing through the exhaust HEPA filter.



\* U.S. Patent No. 6,368,206

 Purifier Delta Series Class II, Type A2 Safety Cabinet  
3620804 on Telescoping Base Stand 3730400 with  
Ergonomic Chair 3744000, Adjustable Footrest  
3746000 and Delta Cart 8022000.

# Purifier® Delta® Series Class II, Type A2 Safety Cabinets

## FEATURES & BENEFITS

99.99% efficient  
HEPA filters.

Optional 254 nm UV lamp.

Leak-tight Type 304  
stainless steel liner.

△ ADA-compliant  
sash position alarm.

Glare-free fluorescent  
lighting.

Fully-closing clear 0.25"  
tempered safety glass sash.

△ ADA-compliant,  
eye-level Minihelic II  
pressure gauge.\*

Type 304 stainless steel,  
removable, stamped,  
one-piece dished work surface.

△ ADA-compliant fluorescent  
light and blower switches.

Optional ADA-compliant  
service fixtures.

Two ADA-compliant electrical  
duplex receptacles.

△ Reserve-Air™ Secondary  
Airflow Slots.\*

△ Curved air foil.\*



△ Safety color-coded  
towel catch.\*

Accessory Telescoping  
Base Stand. See pages 60 and  
61 for ordering information.



Accessory Hydraulic Lift Base Stand.  
See pages 62 and 63 for ordering  
information.



Optional audible/visual  
low velocity alarm  
indicator.



\* U.S. Patent No. 6,368,206

△ Exclusive feature

# △ Purifier® Delta Series Class II, Type A2 Safety Cabinets

## FEATURES & BENEFITS

△ **ADA-compliant, eye-level Minihelic II pressure gauge\*** is mounted inside the cabinet instead of externally so that should a leak develop from the gauge or tubing, contaminants would be HEPA filtered instead of being released into the laboratory.

△ **Safety color-coded towel catch\*,** located beneath the work surface, prevents wipes from being drawn into the blower where they could damage components and alter airflow.

**99.99% efficient HEPA filters** are industry standard sizes for economical replacement.



△ **Curved stainless steel air foil\*** gently supports the user's forearms without the need for a separate armrest. The radiused edge prevents the potentially dangerous practice of placing materials in this area. Contact Labconco at 800-821-5525 or 816-333-8811 for ordering information on an optional bold orange epoxy coating to caution operators to avoid storing or placing materials near the air foil.

△ **Reserve-Air™ Secondary Airflow Slots\*** draw air into the cabinet should the operator inadvertently block the air foil's grille area. Safe airflow is always maintained.

△ **ADA-compliant fluorescent light and blower switches.**

△ **ADA-compliant sash position alarm** is activated when the sash is raised above its 8" or 10" operating height. The alarm system may be easily muted or reset from the control panel switch.

**Two ADA-compliant electrical duplex receptacles,** located one on each side, with ground fault interruption and splash covers.

**Unitized, 16 gauge stainless steel frame** provides a more stable and accurate foundation than multi-piece designs so the potential for leaks is minimized.

**Variable speed blower** with solid state control is sized for low power consumption.

**Intrinsically-safe negative pressure design.** All contaminated ducts are under negative pressure. The negative pressure plenums capture any contamination, and force the air through the HEPA filter, preventing its escape into the laboratory.

**Fully-closing, clear 1/4" tempered safety glass sash** with anti-racking mechanism is sloped at 10° for less glare and closer, more comfortable viewing than vertical sashes offer. For easy loading and cleaning, the sash may be raised to a maximum height of 18".

△ **Tactile indication when sash is raised to optimum operating level.** A sash position indicator decal provides a visual verification of the proper working height.

**Leak-tight Type 304 stainless steel liner and removable stamped, one-piece dished work surface.**

△ **Air-Wave™ Entry System\*,** consisting of the curved design of the side posts, air foil and sash handle, ensures smooth airflow into the interior minimizing turbulence and enhancing containment.

△ **Contain-Air™ Negative Pressure Channel\*** draws air in, preventing loss of containment at the top of the sash. Unreliable seals and gaskets, which could degrade or drag on the contaminated glass creating aerosols, are not used.

△ **Low profile front panel** is free of protrusions that could interfere with visibility or obstruct taller users.

**Glare-free fluorescent lighting,** located outside the work area, remains uncontaminated and is easily replaced.

**Full three year warranty on parts and service.**

**NSF International and ETL listed.** All 115 volt, 60 Hz, Purifier Delta Series Safety Cabinets carry the NSF International and ETL marks, signifying that the Purifier meets or exceeds all minimum requirements of the NSF Standard 49 for Biohazard Cabinetry, conforms to UL Standard 3101-1/61010-1 in the U.S., and is certified to CAN/CSA C22.2 No. 1010.1-92 in Canada.

**CE mark.** All 230 volt, 50 Hz Purifiers conform to the following CE (European Community) requirements as tested by the Inchcape Testing Services (UK) LTD: Electrical Safety Standard: IEC 1010-1 and Electromagnetic Compatibility Directive: 89/336/EEC.

**Optional 254 nm UV lamp** for secondary decontamination while the cabinet is not in use. Interlocked switch permits the UV light to operate only when the fluorescent light and blower are off and the sash is completely closed.

**Optional ADA-compliant service fixtures** are mounted 9" above the work surface to maximize usable surface area. Service fixtures are available factory-installed or may be ordered separately.

**Optional audible/visual low velocity alarm indicator** continuously monitors the volume of air exhausted from the cabinet. Should the exhaust (inflow) volume drop below the setpoint, the red warning light is activated. Contact Labconco at 800-821-5525, 816-333-8811 or labconco@labconco.com for more information.

**Accessory Base Stands.** Purifier Delta Series Safety Cabinets are benchtop design for use on existing casework or NSF-Listed Labconco Telescoping, Hydraulic Lift, Solo, Unassembled and Seismic Base Stands.

\* U.S. Patent No. 6,368,206

△ Exclusive feature

# Purifier® Delta® Series Class II, Type A2 Safety Cabinets

## ORDERING INFORMATION

### Standard Features

- U.S. Patent No. 6,368,206
- Nominal inflow velocity of 105 feet per minute (fpm)
- Nominal downflow velocity of 55 fpm
- Approximately 70% air recirculation
- Intrinsically-safe negative pressure design
- Two 99.99% efficient HEPA filters
- Unitized 16 gauge stainless steel substructure
- Crevice-free, type 304 stainless steel interior and removable, seamless, dished work surface
- Glacier white epoxy-coated exterior
- △ Safety color-coded and epoxy-coated steel towel catch, sash pocket and perforated exhaust filter cap
- △ 10° angled, sliding, fully-closing, 1/4" tempered safety glass sash with anti-racking mechanism, tactile position indicator and 18" maximum loading height
- △ Air-Wave™ Entry System
- △ Stainless steel air foil with Reserve-Air™ Secondary Airflow Slots
- △ Contain-Air™ Negative Pressure Channel
- △ ADA-compliant, eye-level, inside-mounted pressure gauge
  - ADA-compliant fluorescent light and blower switches
- △ ADA-compliant audible/visual alarm indicator with mute switch
- △ Two ADA-compliant electrical duplex receptacles with ground fault interrupters and splash covers
  - 10' power cord
- Sure-Start™ voltage-compensating speed control with 40 amp
- △ capacity
  - Thermally-protected permanent split capacitor motor/blower(s)
  - Class 5 conditions per ISO 14644-1 and 2 (formerly Class 100)
  - NSF and ETL Listed, UL 3101-1/61010-1 and CAN/CSA C22.2 No. 1010.1 conformity (115 volt models)
  - CE conformity marking (230 volt models)
  - EN 12469 approved (Models 3620930 and 3620934)
  - Three year warranty on parts and service

### Standard Option Package

- 254 nm UV lamp with interlocking safety switch allowing operation only when blower and fluorescent light are off and sash is fully closed
- Chrome-plated forged brass service fixture(s) with quarter turn handle, factory installed 9" above work surface

### Required Accessory

- Supporting base. Place on existing casework or see pages 60-65.

See page 26 for dimensional drawings.

△ Exclusive feature



Purifier Delta Series Class II, Type A2 Safety Cabinet 3620004 on SoLo Hydraulic Lift Base Stand 3780312.

### Installation Requirements

**Location.** Locate the cabinet away from traffic patterns, doors, fans, ventilation registers and other air handling devices.

**Electrical.** The cabinet requires a dedicated electrical receptacle and circuit breaker with current capacity equal to or greater than the electrical requirements provided in the ordering information.

**Services.** All service lines must be 1/4" OD metal tubing and equipped with an easily accessible shut-off valve located outside the cabinet. Line pressure should not exceed 40 psi.

**Space.** Clearance of at least 6 inches on the sides and rear of the cabinet is recommended.

**Overhead Clearance.** Class II, Type A2 cabinets should have at least 6 inches clearance between the top of the exhaust cover and the ceiling.

**Certification.** Prior to initial use, the cabinet must be certified by a qualified certifier. Under normal operating conditions, the cabinet should be recertified at least annually, and when moved or serviced.



# Purifier® Delta® Series Class II, Type A2 Safety Cabinets

## ORDERING INFORMATION

Catalog #	Nominal Width	Sash Opening	Exhaust Volume	Electrical Requirements	Power Cord & Plug	Light(s)	Service Fixture(s)	Shipping Weight
3620400	3 feet	10"	253-279 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	—	505 lbs. (229 kg)
3620404	3 feet	10"	253-279 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Fluorescent Ultraviolet	1	505 lbs. (229 kg)
3620500	3 feet	8"	203-223 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	—	505 lbs. (229 kg)
3620504	3 feet	8"	203-223 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Fluorescent Ultraviolet	1	505 lbs. (229 kg)
3620510*	3 feet	8"	203-223 CFM	100 volts, 50/60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	—	505 lbs. (229 kg)
3620514*	3 feet	8"	203-223 CFM	100 volts, 50/60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Fluorescent Ultraviolet	1	505 lbs. (229 kg)
3620520*	3 feet	8"	203-223 CFM	230 volts, 50 Hz, 7 amps	230 volts, 10 amps, no plug	Fluorescent	—	505 lbs. (229 kg)
3620524*	3 feet	8"	203-223 CFM	230 volts, 50 Hz, 7 amps	230 volts, 10 amps, no plug	Fluorescent Fluorescent Ultraviolet	1	505 lbs. (229 kg)
3620800	4 feet	10"	339-370 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	—	606 lbs. (275 kg)
3620804	4 feet	10"	339-370 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Fluorescent Ultraviolet	1	606 lbs. (275 kg)
3620900	4 feet	8"	269-296 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	—	606 lbs. (275 kg)
3620904	4 feet	8"	269-296 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Fluorescent Ultraviolet	1	606 lbs. (275 kg)
3620910*	4 feet	8"	269-296 CFM	100 volts, 50/60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	—	606 lbs. (275 kg)
3620914*	4 feet	8"	269-296 CFM	100 volts, 50/60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Fluorescent Ultraviolet	1	606 lbs. (275 kg)
3620920*	4 feet	8"	269-296 CFM	230 volts, 50 Hz, 7 amps	230 volts, 10 amps, no plug	Fluorescent	—	606 lbs. (275 kg)
3620924*	4 feet	8"	269-296 CFM	230 volts, 50 Hz, 7 amps	230 volts, 10 amps, no plug	Fluorescent Fluorescent Ultraviolet	1	606 lbs. (275 kg)
3620930*†	4 feet	8"	269-296 CFM	230 volts, 50 Hz, 7 amps	230 volts, 10 amps, no plug	Fluorescent	—	606 lbs. (275 kg)
3620934*†	4 feet	8"	269-296 CFM	230 volts, 50 Hz, 7 amps	230 volts, 10 amps, no plug	Fluorescent Fluorescent Ultraviolet	1	606 lbs. (275 kg)
3620000	5 feet	10"	420-462 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	—	725 lbs. (329 kg)
3620004	5 feet	10"	420-462 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Fluorescent Ultraviolet	1	725 lbs. (329 kg)
3620100	5 feet	8"	336-370 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	—	725 lbs. (329 kg)
3620104	5 feet	8"	336-370 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Fluorescent Ultraviolet	1	725 lbs. (329 kg)
3620110*	5 feet	8"	336-370 CFM	100 volts, 50/60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	—	725 lbs. (329 kg)
3620114*	5 feet	8"	336-370 CFM	100 volts, 50/60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Fluorescent Ultraviolet	1	725 lbs. (329 kg)
3620120*	5 feet	8"	336-370 CFM	230 volts, 50 Hz, 7 amps	230 volts, 10 amps, no plug	Fluorescent	—	725 lbs. (329 kg)
3620124*	5 feet	8"	336-370 CFM	230 volts, 50 Hz, 7 amps	230 volts, 10 amps, no plug	Fluorescent Fluorescent Ultraviolet	1	725 lbs. (329 kg)
3621200	6 feet	10"	503-554 CFM	115 volts, 60 Hz, 16 amps	115 volts, 20 amps	Fluorescent	—	843 lbs. (382 kg)
3621204	6 feet	10"	503-554 CFM	115 volts, 60 Hz, 16 amps	115 volts, 20 amps	Fluorescent Fluorescent Ultraviolet	2	843 lbs. (382 kg)
3621300	6 feet	8"	403-443 CFM	115 volts, 60 Hz, 16 amps	115 volts, 20 amps	Fluorescent	—	843 lbs. (382 kg)
3621304	6 feet	8"	403-443 CFM	115 volts, 60 Hz, 16 amps	115 volts, 20 amps	Fluorescent Fluorescent Ultraviolet	2	843 lbs. (382 kg)
3621310*	6 feet	8"	403-443 CFM	100 volts, 50/60 Hz, 16 amps	115 volts, 20 amps	Fluorescent	—	843 lbs. (382 kg)
3621314*	6 feet	8"	403-443 CFM	100 volts, 50/60 Hz, 16 amps	115 volts, 20 amps	Fluorescent Fluorescent Ultraviolet	2	843 lbs. (382 kg)
3621320*	6 feet	8"	403-443 CFM	230 volts, 50 Hz, 8 amps	230 volts, 10 amps, no plug	Fluorescent	—	843 lbs. (382 kg)
3621324*	6 feet	8"	403-443 CFM	230 volts, 50 Hz, 8 amps	230 volts, 10 amps, no plug	Fluorescent Fluorescent Ultraviolet	2	843 lbs. (382 kg)

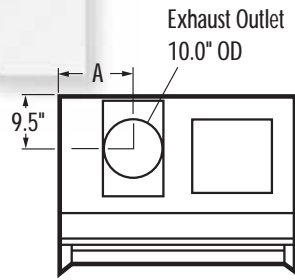
\* International electrical configuration

† Includes audible/visual low velocity indicator and on/off power lock with key.

# Purifier® Delta® Series Class II, Type A2 Safety Cabinets

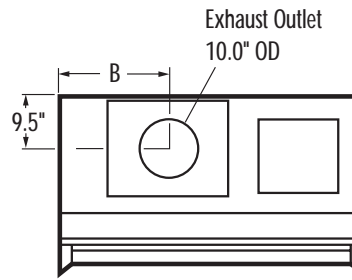
## DIMENSIONS

**36204 and 36205 Series**

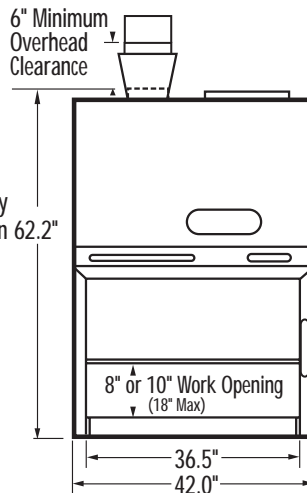


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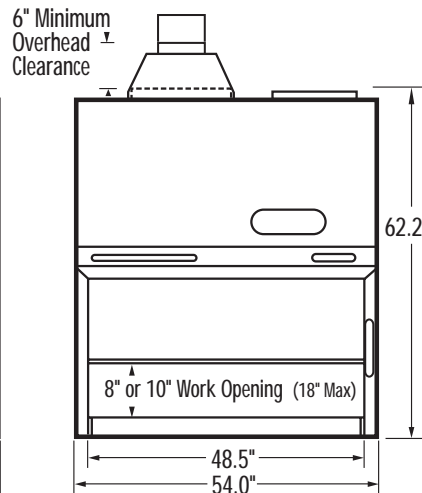
**36208 and 36209 Series**



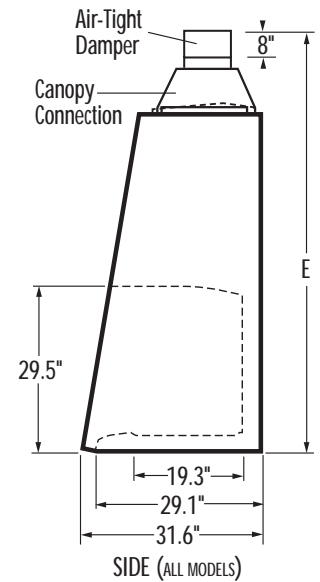
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FRONT



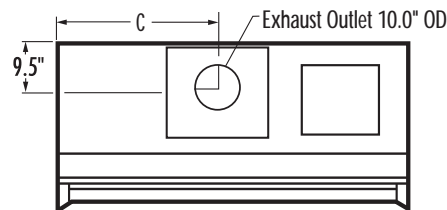
FRONT



Without Canopy Connection 62.2"

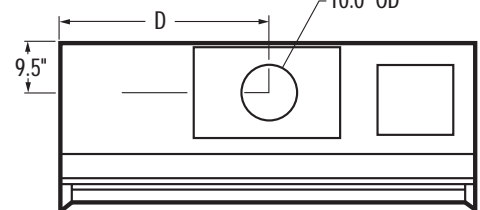
	w/Canopy Connection and Air-Tight Damper	w/Canopy Connection Only
A	13.1"	13.1"
B	19.1"	19.1"
C	22.0"	22.0"
D	39.0"	39.0"
E	78.7"	70.7"

**36200 and 36201 Series**



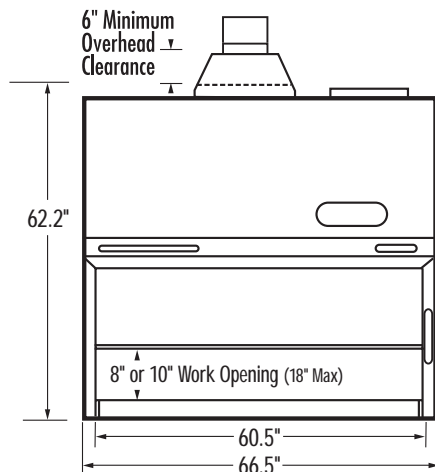
TOP

**36212 and 36213 Series**

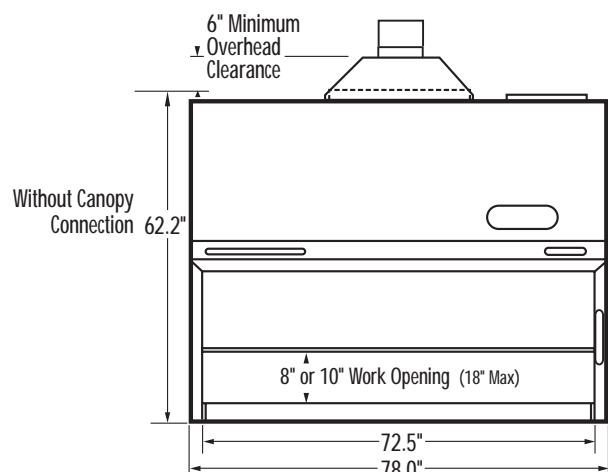


TOP

Dotted line represents exhaust air diffuser, used when cabinet is not thimble-ducted to the outside.



FRONT



FRONT

Air-Tight Damper and Canopy Connection are not included with the Purifier Delta Series Cabinet

# Purifier® Delta® Series Class II, Type A2 Safety Cabinets

## ACCESSORIES



### Safety Orange Air Foil

Bold orange color cautions the operator to avoid storing or placing materials in this area where air-flow is critical. The air foil is epoxy-coated stainless steel and may be factory installed or retrofitted on site. Contact Labconco at 800-821-5525, 816-333-8811 or labconco@labconco.com for ordering information.



### Base Stands

Epoxy-coated steel. Meet NSF Standard for stability and construction. Telescoping Base Stands adjust in 1" increments to provide a working height from 30" to 36" and are available with fixed feet or casters. Electric and Manual Hydraulic Lift Base Stands

have infinite height adjustment using a push button or hand crank. SoLo Hydraulic Lift Base Stands are mobile stands with electric hydraulic adjustment that allows the safety cabinet to be lowered for transport through standard doorways. Unassembled Base Stands are available in two heights and come unassembled for economical shipment. Seismic Base Stands secure to the floor for earthquake-prone regions. See pages 60-65 for more information.



### 3747500 Service Fixture Kit

Includes serrated hose tip valve with quarter turn control handle, hardware and instructions for plumbing to services. Mounts on left or right side interior. Cabinets are factory-prepared to accommodate up to four fixtures. **Installation is required.** Shipping weight 4.0 lbs. (1.8 kg)

### Ultraviolet Lamp Kits

254 nm UV lamp. Kit 3745000 also includes a ballast. **Installation is required.**

Catalog #	For use with	Shipping Weight
3745000	3-Ft, 4-Ft & 5-Ft Purifier Delta Series	5.0 lbs. (2.3 kg)
3745001	6-Ft Purifier Delta Series	3.0 lbs. (1.4 kg)



### IV Bar Kits

Bar supports intravenous solution bottles and bags. Kits include IV bar, mounting hardware and four hangers. **Installation is required.**

Catalog #	For use with	Shipping Weight
3745500	3-Ft Purifier Delta Series	3.0 lbs. (1.4 kg)
3745501	4-Ft Purifier Delta Series	4.0 lbs. (1.8 kg)
3745503	5-Ft Purifier Delta Series	5.0 lbs. (2.3 kg)
3745502	6-Ft Purifier Delta Series	6.0 lbs. (2.7 kg)



### Canopy Connections for Thimble Ducting Purifier Delta Series Cabinets to Outside

Epoxy-coated steel exhaust transition adapter. Remote Blower 3668000 or 3668001 is recommended (not included). See page 67 for more information.

Catalog #	For use with	Duct Diameter	Shipping Weight
3794400	3-Ft Purifier Delta Series	10"	13.0 lbs. (5.9 kg)
3794500	4-Ft Purifier Delta Series	10"	13.0 lbs. (5.9 kg)
3794600	5-Ft & 6-Ft Purifier Delta Series	10"	13.0 lbs. (5.9 kg)



### 3776800 Air-Tight Damper

Mounts atop the Canopy Connection Kit to adjust exhaust airflow and closes for decontamination procedures. Shipping weight 13.0 lbs. (5.9 kg). See page 67 for more information.



### Remote Blowers

Belt drive with adjustable sheave and integral damper. Inlet accepts 10" nominal diameter duct. Outlet accepts 8" nominal diameter duct. See page 67 for more information.

Catalog #	For use with	Shipping Weight
3668000	3-Ft & 4-Ft Purifier Delta Series	93 lbs. (42 kg)
3668001	5-Ft & 6-Ft Purifier Delta Series	99 lbs. (45 kg)



### 3744000 Ergonomic Chair with Armrests

Chair has 6-way articulating seat and back control for personalized adjustment. Pneumatic mechanism adjusts seat height from 18.25" to 25.75". Shipping weight 35.0 lbs. (15.9 kg). See page 66 for more information.



### 3746000 Adjustable Footrest

Elevates feet and permits angle repositioning while in use. 18.5" w x 11.5" d x 8" high. Shipping weight 6.0 lbs. (2.7 kg)

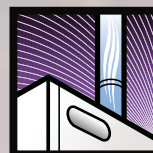


### 8022000 Delta Cart

Provides convenient storage of supplies. Shipping weight 50 lbs. (23 kg). See page 66 for more information.



Requires  
Ductwork  
and  
Blower





# Purifier® Delta® Series Total Exhaust Safety Cabinets

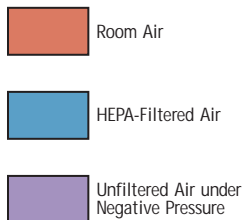
## INTRODUCTION

Like the Class II, Type A2 Cabinet, the patented\* Purifier Delta Series Total Exhaust (Class II, Type B2) Safety Cabinet protects you, your work and your laboratory environment. **It is suitable for work with agents that require Biosafety Level 1, 2 or 3 containment.** One hundred percent of the air that moves through it is exhausted to the outside. Because none of the air in the cabinet is recirculated, the Purifier Delta Series Total Exhaust Cabinet may be used for work with

agents treated with volatile toxic chemicals and radionuclides when required as an adjunct to microbiological research.

This cabinet is equipped with an interlocking alarm system that constantly monitors the volume of air exhausted. If the exhaust air volume drops below an acceptable level, an audible alarm sounds, the alarm light glows red, and the cabinet blowers stop. This added measure of safety protects you from inadvertent exposure to aerosols.

*During operation, room air is drawn through the top of the cabinet. This air is HEPA filtered, and then flows downward through the work area. Room air is also drawn into the grille located in the air foil. All of the contaminated air is drawn under the work surface or through the rear grille, then up the rear plenum, and through the exhaust HEPA filter. A dedicated exhaust system and remote blower draw 100% of the filtered exhaust air out of the laboratory. The ductwork and remote blower are required for operation and sold separately.*



\* U.S. Patent No. 6,368,206

Purifier Delta Series Total Exhaust Safety Cabinet 3621404 on Telescoping Base Stand 3730600 with Ergonomic Chair 3744000.

# Purifier® Delta® Series Total Exhaust Safety Cabinets

## FEATURES & BENEFITS

99.99% efficient HEPA filters.

Air-tight stainless steel damper.

Leak-tight Type 304 stainless steel liner.

Glare-free fluorescent lighting.

Optional 254 nm UV lamp.

Fully closing, clear 0.25" tempered safety sash.

Eye-level Minihelic II pressure gauge.\*

△ Curved air foil.\*

△ Reserve-Air™ Secondary Airflow Slots.\*



△ Safety color-coded towel catch.\*



Optional ADA-compliant service fixtures.

△ ADA-compliant exhaust/sash position alarm system.

△ ADA-compliant fluorescent light and blower switches.

Two ADA-compliant electrical duplex receptacles.

Type 304 stainless steel, removable, stamped, one-piece dished work surface.

Accessory Telescoping Base Stand. See pages 60 and 61 for ordering information.



\* U.S. Patent No. 6,368,206

△ Exclusive feature

# Purifier® Delta® Series Total Exhaust Safety Cabinets

## FEATURES & BENEFITS

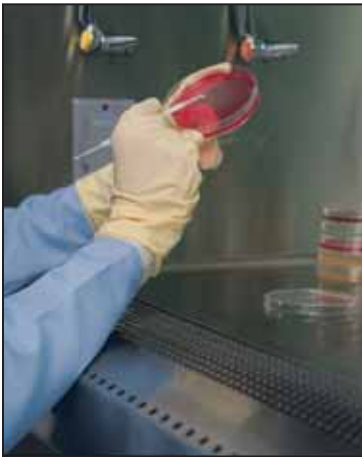
- △ **ADA-compliant, eye-level Minihelic II pressure gauge\*** is mounted inside the cabinet instead of externally so that should a leak develop from the gauge or tubing, contaminants would be HEPA filtered instead of being released into the laboratory.

- △ **Safety color-coded sash pocket\*** encases the sash as it is raised, shielding the user and environment from exposure to potential contamination on the interior side of the sash.



- △ **Safety color-coded towel catch\*** prevents wipes from being drawn into the exhaust filter where damage can occur and airflow can be altered.

**99.99% efficient HEPA filters** are industry standard sizes for economical replacement.



- △ **Curved stainless steel air foil\*** gently supports the user's forearms without the need for a separate armrest. The radiused edge prevents the potentially dangerous practice of placing materials in this area. Contact Labconco at 800-821-5525 or 816-333-8811 for ordering information on an optional bold orange epoxy coating to caution operators to avoid storing or placing materials near the air foil.

- △ **Reserve-Air™ Secondary Airflow Slots\*** draw air into the cabinet should the operator inadvertently block the air foil's grille area. Safe airflow is always maintained.

- △ **ADA-compliant single switch fluorescent light and blower start up.**

- △ **ADA-compliant exhaust/sash position alarm system** is activated when insufficient exhaust air volume is detected and/or the sash is raised above its operating height. The cabinet blowers are automatically deactivated in the event of insufficient exhaust air volume. The alarm system may be easily muted or reset from the control panel switch.

**Two ADA-compliant electrical duplex receptacles** with ground fault interruption and splash covers.

**Unitized, 16 gauge stainless steel frame** provides a more stable and accurate foundation than multi-piece designs so the potential for leaks is minimized.

**Variable speed blower** with solid state control is sized for low power consumption. **An additional remote blower is required for operation.** See page 68 for ordering information.

**Intrinsically-safe negative pressure design.** All contaminated ducts are under negative pressure. The negative pressure plenums capture any contamination, and force the air through the exhaust HEPA filter, preventing its escape into the laboratory.

**Fully-closing, clear 1/4" tempered safety glass sash** with anti-racking mechanism is sloped at 10° for less glare and closer, more comfortable viewing than vertical sashes offer. For easy loading and cleaning, the sash may be raised to a maximum height of 18".

- △ **Tactile indication when sash is raised to optimum operating level.** A sash position indicator decal provides a visual verification of the proper working height.

**Air-tight Type 304 stainless steel liner, removable stamped, one-piece dished work surface and damper.**

- △ **Air-Wave™ Entry System,\*** consisting of the curved design of the side posts, air foil and sash handle, ensures smooth airflow into the interior minimizing turbulence and enhancing containment.

- △ **Contain-Air™ Negative Pressure Channel\*** draws air in, preventing loss of containment at the top of the sash. Unreliable seals and gaskets, which could degrade or drag on the contaminated glass causing aerosolization, are not used.

- △ **Low profile front panel** is free of protrusions that could interfere with visibility or obstruct taller users.

**Glare-free fluorescent lighting,** located outside the work area, remains uncontaminated and is easily replaced.

**Full three year warranty on parts and service.**

**NSF International and ETL listed.** All 115 volt, 60 Hz, Purifier Delta Series Safety Cabinets carry the NSF International and ETL marks, signifying that the Purifier meets or exceeds all minimum requirements of the NSF Standard Number 49 for Biohazard Cabinetry, conforms to UL Standard 3101-1/61010-1 in the U.S., and is certified to CAN/CSA C22.2 No. 1010.1-92 in Canada.

**CE mark.** All 230 volt, 50 Hz Purifiers conform to the following CE (European Community) requirements as tested by the Inchcape Testing Services (UK) LTD: Electrical Safety Standard: IEC 1010-1 and Electromagnetic Compatibility Directive: 89/336/EEC.

**Optional 254 nm UV lamp** for secondary decontamination while the cabinet is not in use. Interlocked switch permits the UV light to operate only when the fluorescent light and blower are off and the sash is completely closed.

**Optional ADA-compliant service fixtures** are mounted 9" above the work surface to maximize usable surface area. Service fixtures are available factory-installed or separately.

**Accessory Stands.** Purifier Delta Series Safety Cabinets are benchtop design for use on existing casework or on Labconco Telescoping, Unassembled and Seismic Base Stands.

\* U.S. Patent No. 6,368,206

△ Exclusive feature

# Purifier® Delta® Series Total Exhaust Safety Cabinets

## ORDERING INFORMATION

### Standard Features

- U.S. Patent No. 6,368,206
- Nominal inflow velocity of 105 feet per minute (fpm)
- Nominal downflow velocity of 55 fpm
- 0% air recirculation
- Intrinsically-safe negative pressure design
- Two 99.99% efficient HEPA filters
- Unitized 16 gauge stainless steel substructure
- Crevice-free, type 304 stainless steel interior and removable, seamless, dished work surface
- Glacier white epoxy-coated exterior
- △ Safety color-coded epoxy-coated steel towel catch and sash pocket
- △ 10° angled, sliding, fully-closing, 1/4" tempered safety glass sash with anti-racking mechanism and tactile position indicator
- △ Air-Wave™ Entry System
- △ Stainless steel air foil with Reserve-Air™ Secondary Airflow Slots
- △ Contain-Air™ Negative Pressure Channel
- △ ADA-compliant, eye-level, inside-mounted Minihelic II pressure gauge
- △ ADA-compliant fluorescent light and blower switches
- △ ADA-compliant audible/visual, exhaust/sash position alarm indicator and mute switch
- Two ADA-compliant electrical duplex receptacles with ground fault interrupters and splash covers
- △ Sure-Start™ voltage-compensating speed control with 40 amp capacity
- Thermally-protected, permanent-split capacitor, 1/3 hp motor/blower
- Air-tight Type 304 stainless steel damper
- Class 5 conditions per ISO 14644-1 and 2 (formerly Class 100)
- NSF and ETL listings, UL 3101-1/61010-1 and CAN/CSA C22.2 No. 1010.1 conformity (115 volt models)
- CE Conformity Marking (230 volt models)
- Three year warranty on parts and service



Purifier Delta Series Total Exhaust Safety Cabinet 3621404 on Telescoping Base Stand 3730600.

### Standard Option Package

- 254 nm UV lamp with interlocking safety switch allowing operation when blower and fluorescent light are off and sash is fully closed
- Chrome-plated forged brass service fixture(s) with quarter turn handle, factory installed 9" above work surface

### Required Accessories

- Supporting base. Place on existing casework or see pages 60-61 and 65.
- Remote blower. See page 68.
- Ductwork. See page 35.

See page 24 for Installation Requirements. See page 33 for dimensional drawings.

Catalog #	Nominal Width	Sash Opening	Exhaust Volume	Electrical Requirements	Power Cord & Plug	Light(s)	Service Fixture(s)	Shipping Weight
3621000	4 feet	8"	743-771 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	—	736 lbs. (334 kg)
3621004	4 feet	8"	743-771 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Ultraviolet	1	736 lbs. (334 kg)
3621010*	4 feet	8"	743-771 CFM	100 volts, 50/60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	—	736 lbs. (334 kg)
3621014*	4 feet	8"	743-771 CFM	100 volts, 50/60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Ultraviolet	1	736 lbs. (334 kg)
3621020*	4 feet	8"	743-771 CFM	230 volts, 50/60 Hz, 7 amps	230 volts, 10 amps no plug	Fluorescent	—	736 lbs. (334 kg)
3621024*	4 feet	8"	743-771 CFM	230 volts, 50/60 Hz, 7 amps	230 volts, 10 amps no plug	Fluorescent Ultraviolet	1	736 lbs. (334 kg)
3621400	6 feet	8"	1111-1151 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	—	875 lbs. (397 kg)
3621404	6 feet	8"	1111-1151 CFM	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Ultraviolet	2	875 lbs. (397 kg)
3621410*	6 feet	8"	1111-1151 CFM	100 volts, 50/60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	—	875 lbs. (397 kg)
3621414*	6 feet	8"	1111-1151 CFM	100 volts, 50/60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Ultraviolet	2	875 lbs. (397 kg)

△ Exclusive feature

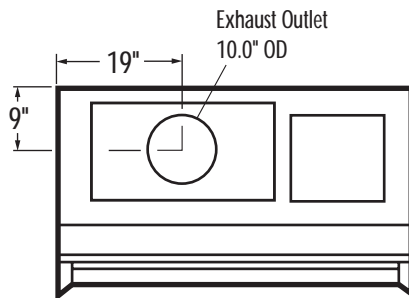
\*International electrical configuration



# Purifier® Delta® Series Total Exhaust Safety Cabinets

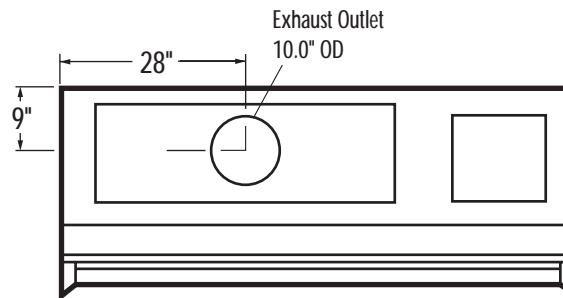
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**36210 Series**

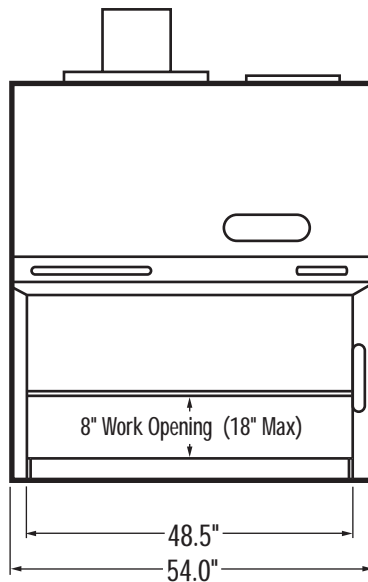


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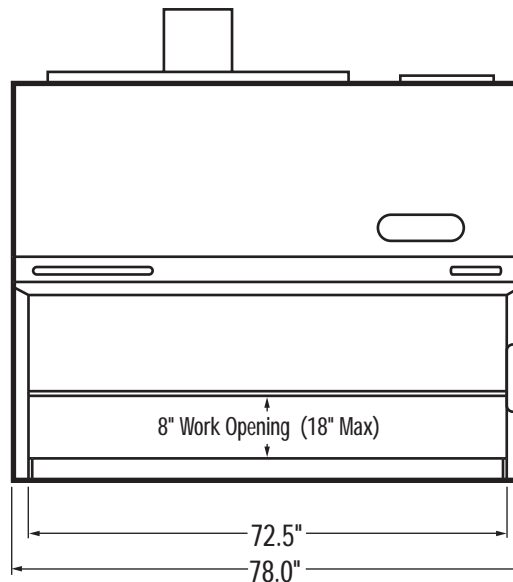
**36214 Series**



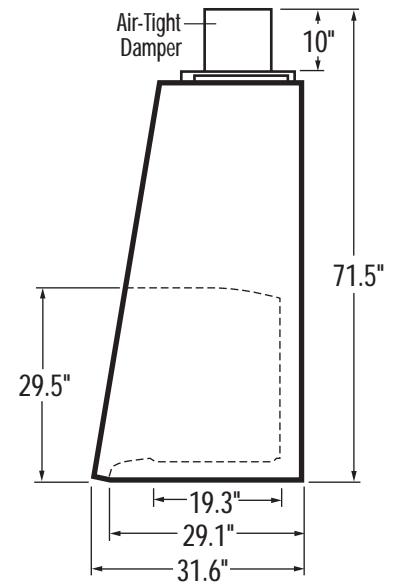
TOP



FRONT



FRONT



SIDE

# Purifier® Delta® Series Total Exhaust Safety Cabinets

## ACCESSORIES



### **Safety Orange Air Foil**

Bold orange color cautions the operator to avoid storing or placing materials in this area where airflow is critical. The air foil is epoxy-coated stainless steel and may be factory installed or retrofitted on site. Contact Labconco at

800-821-5525, 816-333-8811 or labconco@labconco.com for ordering information.

### **Bag-In/Bag-Out Exhaust Filter**

Bag-In/Bag-Out feature allows a contaminated exhaust HEPA filter to be removed from the cabinet without directly contacting it.

Contact Labconco at 800-821-5525, 816-333-8811 or labconco@labconco.com for ordering information.



### **Telescoping Base Stands**

Epoxy-coated steel. Meet NSF Standard for stability and construction. Adjust in 1" increments to provide a working height from 30 to 36". Available with fixed feet or casters. See pages 60 and 61 for more information.



### **Unassembled Base Stands**

Epoxy-coated steel. Meet NSF Standard for stability and construction. Shipped unassembled for economical transport and storage. Available in two fixed heights, 26.6" and 32.6". See page 65 for more information.



### **Seismic Base Stands**

Epoxy-coated 2" tubular steel. Meet NSF Standard for stability and construction. Secure cabinets in earthquake-prone regions. Fixed height. See page 65 for more information.



### **3747500 Service Fixture Kit**

Includes serrated hose tip valve with quarter-turn control handle, hardware and instructions for plumbing to services. Mounts on left or right side interior. Cabinets are factory-prepared to accommodate up to four fixtures.

**Installation is required.** Shipping weight 4.0 lbs. (1.8 kg)

### **Ultraviolet Lamp Kits**

Include 254 nm UV lamp and installation instructions. Kit 3745000 also includes a ballast.

Catalog #	For use with	Shipping Weight
3745000	4-Ft Purifier Delta Series	5.0 lbs. (2.3 kg)
3745001	6-Ft Purifier Delta Series	3.0 lbs. (1.4 kg)



### **IV Bar Kits**

Bar supports intravenous solution bottles and bags. Kits include IV bar, mounting hardware and four hangers. **Installation is required.**

Catalog #	For use with	Shipping Weight
3745501	4-Ft Purifier Delta Series	4.0 lbs. (1.8 kg)
3745502	6-Ft Purifier Delta Series	6.0 lbs. (2.7 kg)



### **3663500 Remote Blower**

Belt drive with adjustable sheave and integral backdraft damper. Inlet and outlet accept 12" nominal diameter duct. Shipping weight 100 lbs. (45 kg). See page 68 for more information.



### **3744000 Ergonomic Chair with Armrests**

Chair has 6-way articulating seat and back control for personalized adjustment. Pneumatic mechanism adjusts seat height from 18.25" to 25.75". Shipping weight 35.0 lbs. (15.9 kg). See page 66 for more information.



### **3746000 Adjustable Footrest**

Elevates feet and permits angle repositioning while in use. 18.5" w x 11.5" d x 8" high. Shipping weight 6.0 lbs. (2.7 kg)



### **8022000 Delta Cart**

Provides convenient storage of supplies. Shipping weight 50 lbs. (23 kg). See page 66 for more information.

# Purifier® Delta® Series Class II, Type A2 & B2 Safety Cabinets

## DUCTWORK

### Thermoplastic Duct

PVC exhaust duct in 10' length. A Female Duct Coupling and solvent cement are required to join two sections.

Catalog #	7027200	5602000
Nominal Diameter	10"	12"
Actual OD	10.750"	12.750"
Actual ID	10.375"	12.375"
Shipping Weight	50 lbs. (23 kg)	65 lbs. (29 kg)

### Female Duct Couplings

PVC coupling joins two sections of Thermoplastic Duct.

Catalog #	7027500	5602300
Nominal Diameter	10"	12"
Shipping Weight	5 lbs. (2 kg)	6 lbs. (3 kg)
Equivalent Resistance*	0	0

### 90° Elbows

PVC Elbow has belled end connections to receive Thermoplastic Duct or Male Duct Coupling directly.

Catalog #	7027300	5602100
Nominal Diameter	10"	12"
Shipping Weight	12 lbs. (5 kg)	14 lbs. (6 kg)
Equivalent Resistance*	20 ft.	25 ft.

### Male Duct Couplings

PVC duct in 6" length. Facilitates connection between Remote Blowers #3668000, 3668001, or 3663500 and 90° Elbow.

Catalog #	7027800	7067300
Nominal Diameter	10"	12"
Actual OD	10.750"	12.750"
Actual ID	10.375"	12.375"
Shipping Weight	5 lbs. (2 kg)	6 lbs. (3 kg)

### Flexible Duct Connections

Reduce vibration between the blower and PVC ductwork. Supplied with two clamps.

Catalog #	7034200	5621400
Nominal Diameter	11" for use with 10" fittings	13" for use with 12" fittings
Shipping Weight	5 lbs. (2 kg)	5 lbs. (2 kg)

### Thermoplastic Duct Reducer

PVC coupling type reducer joins PVC duct of different diameters.

Catalog #	5606100
Nominal Size	10" x 12"
Shipping Weight	6 lbs. (3 kg)
Equivalent Resistance*	0

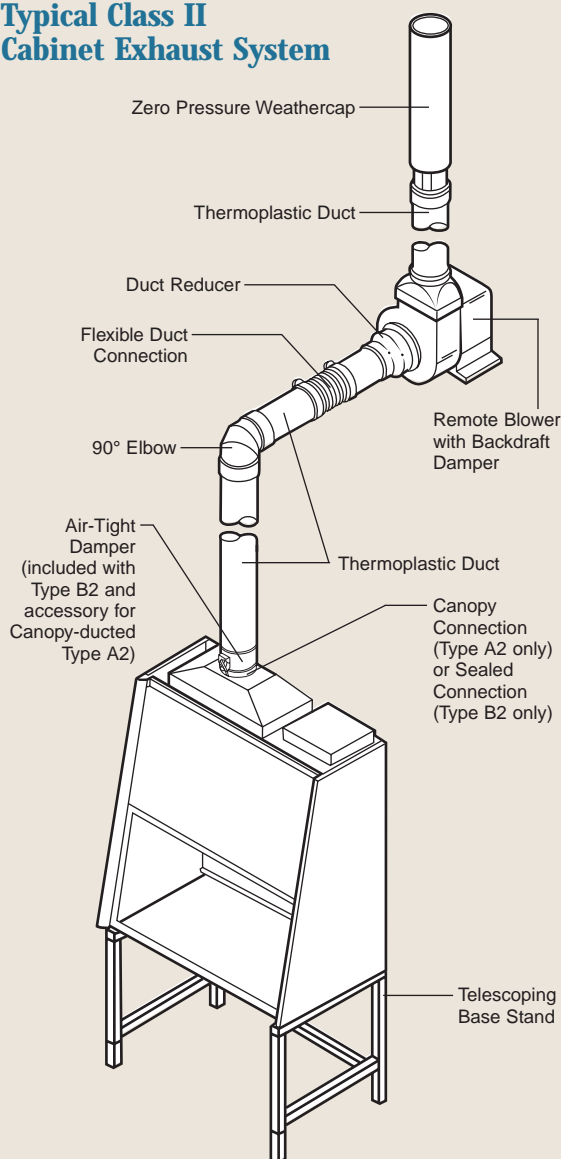
### Zero Pressure Weathercaps

PVC Weathercap fits atop standard PVC duct, permits vertical discharge of effluent air above roofline for dispersion away from the building.

Catalog #	7095100	5622100
Nominal Diameter	10"	12"
Shipping Weight	30 lbs. (14 kg)	35 lbs. (16 kg)
Height	48"	56"
Equivalent Resistance*	5 ft.	5 ft.

\*Equivalent resistance is measured in feet of straight duct.

### Typical Class II Cabinet Exhaust System



Contact Labconco at 800-821-5525 or 816-333-8811 for technical assistance in selecting the right ductwork for your installation.

# Purifier® Class I & HEPA Filtered Safety Enclosures

## INTRODUCTION

Purifier Class I Safety Enclosures and Purifier HEPA Filtered Enclosures protect you and your laboratory environment. They offer an economical alternative to Class II laminar flow cabinets when your applications do not require product protection.

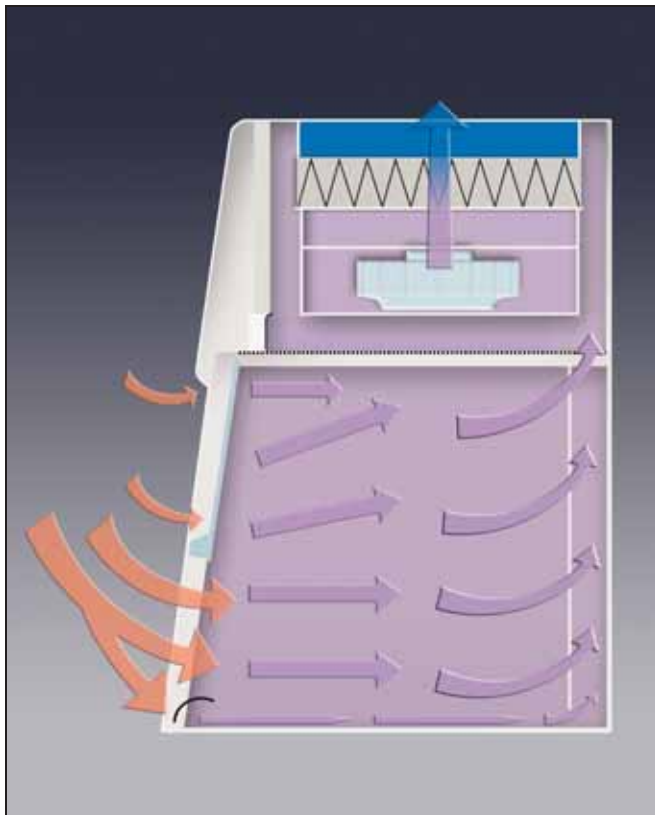
**Purifier Class I Enclosures protect the user from agents that require Biosafety Level 1, 2 or 3 containment but no product protection.** These enclosures include an ultraviolet light that may be used in conjunction with surface disinfection to ensure thorough decontamination. The UV light is turned on while the enclosure is unattended to avoid personnel exposure to UV rays.

**Purifier HEPA Filtered Enclosures, which do not include a UV light, protect the user from hazardous chemical powders, dust and allergens in diverse applications ranging from screening suspicious mail to weighing chemicals.**

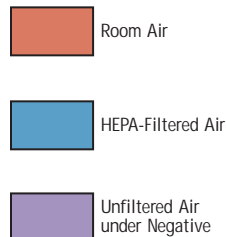
For applications involving odor-generating materials, Purifier Class I and HEPA Filtered Enclosures may be outfitted with an accessory Trace Odor Carbon Filter to trap nuisance organic, formaldehyde or ammonia vapors. When connected to the accessory Canopy Connection and ducted outside to a remote blower or house exhaust, Purifier Class I and HEPA Filtered Enclosures may be used with fume-generating materials or agents that have been treated with toxic chemicals or radionuclides when required as an adjunct to research. These canopy-ducted enclosures have the added benefit of eliminating nuisance odors. Use of acids, which would corrode the internal blower within these enclosures, is prohibited. Contact Labconco for information on enclosures suitable for use with acids.



Purifier HEPA Filtered Enclosure 3980302 on Solid Epoxy Dished Work Surface 3909901 and Telescoping Base Stand 3746701 with Ergonomic Chair 3744000.



*During operation, room air is drawn into the front of the enclosure, preventing aerosols from escaping into the room. Before leaving the enclosure and returning to the environment, 100% of the air passes through an exhaust HEPA filter.*






# Purifier® Class I & HEPA Filtered Safety Enclosures


## FEATURES & BENEFITS

**Sturdy epoxy-coated aluminum frame and steel rear plenum and baffle** dissipate static charge and provide durability and corrosion resistance.

**Front-mounted Minihelic pressure gauge** monitors pressure differential across the HEPA filter to help determine filter loading.

**Tempered safety glass front sash and sides** offer excellent visibility and protection. Glass provides better fire, scratch and corrosion resistance than acrylic and dissipates static charge.

 **Upper containment sash foil** bleeds air into the enclosure to direct contaminants away from the operator's breathing zone.

 **Patented\* rear baffle with zones of perforations** promotes horizontal laminar airflow to maximize containment.

 **Side-entry air foils** allow air to sweep across the interior glass surfaces to enhance containment.

**Two utility ports with iris openings** allow passage of tubing, electrical cords and cables from inside to back exterior for connection to services.

**Accessory Telescoping Base Stand.** See pages 60-61 for ordering information.

**Particulate containment** tested.

**ASHRAE 110-1995 conformity.**

**Biological containment** verified per NSF Standard Number 49 Personnel Protection Test.

**Space-saving design.** Impeller and HEPA filter are contained within the enclosure's upper plenum for a smaller overall footprint than a separate enclosure and exhaust can offer.


**Built-in exhaust HEPA filter,** 99.99% efficient on 0.3 micron particles.

**Intrinsically-safe design.** The positive pressure impeller is surrounded by a negative pressure plenum so that if a leak should develop, the unfiltered air is captured and refiltered.

**Optional built-in Guardian™ Airflow Monitor** alerts the user to face velocities outside of preset range, indicating HEPA filter loading or blower malfunction.

**Glare-free fluorescent lighting.**

**Low discharge volume** reduces cross currents and provides quiet operation from 49 to 67 decibels depending on face velocity.

 **Upper dilution air supply** introduces room air at the top of the sash to dilute concentrations in the upper chamber and bathes the back of the sash with clean air.

**Front-mounted light and blower switches.**

**Speed control** regulates speed of the built-in blower and may be used by a certifier to adjust and validate inflow velocity.

**Ergonomic 10° angled sash** allows a closer view, reduces glare and provides a more comfortable operating position than vertical sashes. The hinged sash pivots upward and locks to a loading height of 20". Side seals help to keep contaminants contained.

 **Patented\* Clean-Sweep™ air foil** allows air to sweep the work surface for maximum containment. Airflow openings pull inflow air from under the air foil so that clean air continually flows over the air foil creating a constant barrier of protection from contaminants.

**Accessory Solid Epoxy Dished Work Surface.** See page 40.

**ETL-listed.** Enclosures carry the ETL mark signifying that they are certified to UL 3101-1/61010-1 and CAN/CSA C22.2 No. 1010.1.

**CE mark.** All 230 volt, 50 Hz models conform to the CE (European Community) requirements for electrical safety and electromagnetic compatibility.

**Optional Trace Odor Carbon Filters** designed for organic, formaldehyde and ammonia odor applications are easily installed and replaced from the top of the enclosure.



**Free validation package** containing containment testing verification is available.

**254 nm UV light** (Class I models only) for secondary decontamination while the enclosure is not in use.



\* U.S. Patent No. 6,461,233

 Exclusive feature

# Purifier® Class I Safety Enclosures

## ORDERING INFORMATION

### Standard Features

- Nominal inflow velocity of 75 to 105 fpm
- Ergonomic air foil with aerodynamic Clean-Sweep\* airflow openings
- Upper dilution air supply
- Zone-perforated rear baffle\*
- Side-entry air foils
  - Exhaust HEPA filter, 99.99% efficient on 0.3 micron particles
  - Variable speed built-in blower with dynamically-balanced, vibration-isolated motorized impeller and solid state control rated for 5 amps
- Intrinsically-safe, negative pressure design
- Minihelic pressure gauge
- Low discharge volume and quiet operation (*see chart below*).

Nominal Width	Total Exhaust CFM and Noise Pressure					
	105 fpm	db(A)	90 fpm	db(A)	75 fpm	db(A)
2 Feet	155	54-59	130	51-57	110	49-55
3 Feet	230	60-64	200	55-58	165	52-56
4 Feet	310	64-67	265	60-63	220	54-58

- Upper containment sash foil
  - Glacier white and gray epoxy-coated aluminum frame and steel rear plenum and baffle
  - Fluorescent lamp
  - 254 nm UV lamp
  - Blower switch and 3-way light switch: UV, off and fluorescent
  - 1/4" thick tempered safety glass front sash and sides
  - 9.44" high sash opening
  - Ergonomic 10° angled and hinged sash that pivots upward, locks to a loading height of 20" and has side wiping seals to contain contaminants
- Two utility ports with iris openings
- Particulate containment tested
- Biological containment verified per NSF Standard Number 49 Personnel Protection Test
- ASHRAE 110-1995 conformity tested
- ETL listing, UL 3101-1/61010-1 and CAN/CSA C22.2 No. 1010.1 conformity (115 volt models)
- CE Conformity Marking (230 volt models)
- One year warranty on parts and service
- Validation package available



Purifier Class I Safety Enclosure 3980203 on Solid Epoxy Dished Work Surface 3909900 and Telescoping Base Stand 3746700.

### Standard Option

- Guardian Airflow Monitor that continuously monitors airflow and has two LED lights to indicate when airflow is within or outside set point range. The green LED glows when airflow is within set point range. The red LED glows and an audible alarm sounds when airflow is outside set point range.

### Required Accessories

- Supporting work surface. Place on existing casework or see page 40.
- Supporting base. Place on existing casework or see pages 60-63.

See page 40 for dimensional drawings.

Catalog #	Nominal Width	Exhaust Volume	Electrical Requirements	Airflow Monitor	Power Cord & Plug	Shipping Weight
3980201	2 feet	110 - 155 CFM	115 volts, 60 Hz, 3 amps		115 volts, 15 amps	125 lbs. (57 kg)
3980203	2 feet	110 - 155 CFM	115 volts, 60 Hz, 3 amps	•	115 volts, 15 amps	125 lbs. (57 kg)
3980221†	2 feet	110 - 155 CFM	230 volts, 50 Hz, 2 amps		230 volts, 10 amps, no plug	125 lbs. (57 kg)
3980223†	2 feet	110 - 155 CFM	230 volts, 50 Hz, 2 amps	•	230 volts, 10 amps, no plug	125 lbs. (57 kg)
3980301	3 feet	165 - 230 CFM	115 volts, 60 Hz, 3 amps		115 volts, 15 amps	160 lbs. (73 kg)
3980303	3 feet	165 - 230 CFM	115 volts, 60 Hz, 3 amps	•	115 volts, 15 amps	160 lbs. (73 kg)
3980321†	3 feet	165 - 230 CFM	230 volts, 50 Hz, 2 amps		230 volts, 10 amps, no plug	160 lbs. (73 kg)
3980323†	3 feet	165 - 230 CFM	230 volts, 50 Hz, 2 amps	•	230 volts, 10 amps, no plug	160 lbs. (73 kg)
3980401	4 feet	220 - 310 CFM	115 volts, 60 Hz, 3 amps		115 volts, 15 amps	195 lbs. (88 kg)
3980403	4 feet	220 - 310 CFM	115 volts, 60 Hz, 3 amps	•	115 volts, 15 amps	195 lbs. (88 kg)
3980421†	4 feet	220 - 310 CFM	230 volts, 50 Hz, 2 amps		230 volts, 10 amps, no plug	195 lbs. (88 kg)
3980423†	4 feet	220 - 310 CFM	230 volts, 50 Hz, 2 amps	•	230 volts, 10 amps, no plug	195 lbs. (88 kg)

• Exclusive feature

\* U.S. Patent No. 6,461,233

† International electrical configuration

# Purifier® HEPA Filtered Enclosures

## ORDERING INFORMATION

### Standard Features

- Nominal inflow velocity of 75 to 105 fpm
- Ergonomic air foil with aerodynamic Clean-Sweep\* airflow openings
  - Upper dilution air supply
- Zone-perforated rear baffle\*
- Side-entry air foils
- Exhaust HEPA filter, 99.99% efficient on 0.3 micron particles
  - Variable speed built-in blower with dynamically-balanced, vibration-isolated motorized impeller and solid state control rated for 5 amps
- Intrinsically-safe, negative pressure design
- Minihelic pressure gauge
- Low discharge volume and quiet operation (*see chart below*).

Nominal Width	Total Exhaust CFM and Noise Pressure					
	105 fpm	db(A)	90 fpm	db(A)	75 fpm	db(A)
2 Feet	155	54-59	130	51-57	110	49-55
3 Feet	230	60-64	200	55-58	165	52-56
4 Feet	310	64-67	265	60-63	220	54-58

- Upper containment sash foil
  - Glacier white and gray epoxy-coated aluminum frame and steel rear plenum and baffle
  - Fluorescent lamp
  - Switches for blower and light
  - 1/4" thick tempered safety glass front sash and sides
  - 9.44" high sash opening
  - Ergonomic 10° angled and hinged sash that pivots upward, locks to a loading height of 20" and has side wiping seals to contain contaminants
  - Two utility ports with iris openings
  - Particulate containment tested
  - Biological containment verified per NSF Standard Number 49 Personnel Protection Test
  - ASHRAE 110-1995 conformity tested
  - ETL listing, UL 3101-1/61010-1 and CAN/CSA C22.2 No. 1010.1 conformity (115 volt models)
  - CE Conformity Marking (230 volt models)
  - One year warranty on parts and service
  - Validation package available



Purifier HEPA Filtered Safety Enclosure 3980402 on Solid Epoxy Dished Work Surface 3909902 and Telescoping Base Stand 3746702.

### Standard Option

- Guardian Airflow Monitor that continuously monitors airflow and has two LED lights to indicate when airflow is within or outside set point range. The green LED glows when airflow is within set point range. The red LED glows and an audible alarm sounds when airflow is outside set point range.

### Required Accessories

- Supporting work surface. Place on existing casework or see page 40.
- Supporting base. Place on existing casework or see pages 60-63.

See page 40 for dimensional drawings.

Catalog #	Nominal Width	Exhaust Volume	Electrical Requirements	Airflow Monitor	Power Cord & Plug	Shipping Weight
3980200	2 feet	110 - 155 CFM	115 volts, 60 Hz, 3 amps		115 volts, 15 amps	125 lbs. (57 kg)
3980202	2 feet	110 - 155 CFM	115 volts, 60 Hz, 3 amps	•	115 volts, 15 amps	125 lbs. (57 kg)
3980220†	2 feet	110 - 155 CFM	230 volts, 50 Hz, 2 amps		230 volts, 10 amps, no plug	125 lbs. (57 kg)
3980222†	2 feet	110 - 155 CFM	230 volts, 50 Hz, 2 amps	•	230 volts, 10 amps, no plug	125 lbs. (57 kg)
3980300	3 feet	165 - 230 CFM	115 volts, 60 Hz, 3 amps		115 volts, 15 amps	160 lbs. (73 kg)
3980302	3 feet	165 - 230 CFM	115 volts, 60 Hz, 3 amps	•	115 volts, 15 amps	160 lbs. (73 kg)
3980320†	3 feet	165 - 230 CFM	230 volts, 50 Hz, 2 amps		230 volts, 10 amps, no plug	160 lbs. (73 kg)
3980322†	3 feet	165 - 230 CFM	230 volts, 50 Hz, 2 amps	•	230 volts, 10 amps, no plug	160 lbs. (73 kg)
3980400	4 feet	220 - 310 CFM	115 volts, 60 Hz, 3 amps		115 volts, 15 amps	195 lbs. (88 kg)
3980402	4 feet	220 - 310 CFM	115 volts, 60 Hz, 3 amps	•	115 volts, 15 amps	195 lbs. (88 kg)
3980420†	4 feet	220 - 310 CFM	230 volts, 50 Hz, 2 amps		230 volts, 10 amps, no plug	195 lbs. (88 kg)
3980422†	4 feet	220 - 310 CFM	230 volts, 50 Hz, 2 amps	•	230 volts, 10 amps, no plug	195 lbs. (88 kg)

■ Exclusive feature

\* U.S. Patent No. 6,461,233

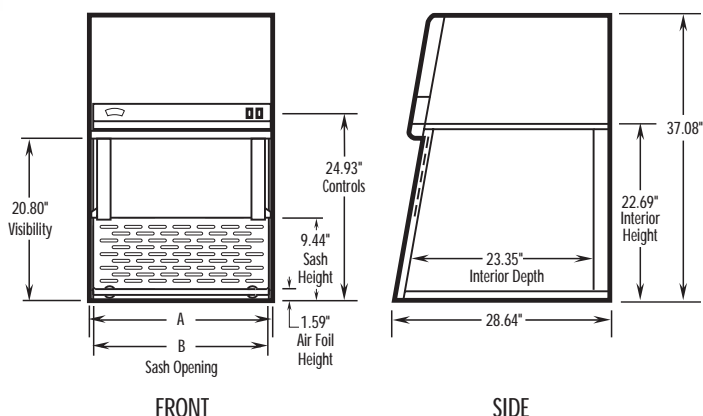
† International electrical configuration



# Purifier® Class I & HEPA Filtered Safety Enclosures

## DIMENSIONS & ACCESSORIES

	2-Foot	3-Foot	4-Foot
A	24.0"	36.0"	48.0"
B	21.6"	33.6"	45.6"



### Trace Odor Carbon Filters

For easy installation atop the Purifier Class I or HEPA Filtered Enclosure. Filters trap non-volatile nuisance odors and vapors from samples or minute quantities of chemicals.

Whether or not a Trace Odor Carbon Filter is appropriate for your application requires consideration of factors such as the time-weighted exposure limits of organic solvents, formaldehyde, ammonia or amines. Using Labconco's exclusive Chemical Assessment Program, our technical specialists can help you determine if the Purifier Enclosure with Trace Odor Carbon Filter is right for your applications and, if so, estimate filter life. To begin the process, please complete the Chemical Usage Assessment Form available on our website at: [www.labconco.com/chemical\\_usage.html](http://www.labconco.com/chemical_usage.html) or call us at 800-821-5525 or 816-333-8811.

Catalog #	Description	For use with:	Shipping Weight
3937200	Organic, 5.5 lbs. activated carbon	2-Ft Purifier Enclosure	6.0 lbs. (2.7 kg)
3937300	Organic, 9.2 lbs. activated carbon	3-Ft Purifier Enclosure	10.0 lbs. (4.5 kg)
3937400	Organic, 12.9 lbs. activated carbon	4-Ft Purifier Enclosure	13.0 lbs. (5.9 kg)
3937201	Formaldehyde, 7 lbs. impregnated carbon	2-Ft Purifier Enclosure	7.5 lbs. (3.4 kg)
3937301	Formaldehyde, 12 lbs. impregnated carbon	3-Ft Purifier Enclosure	12.5 lbs. (5.7 kg)
3937401	Formaldehyde, 16.8 lbs. impregnated carbon	4-Ft Purifier Enclosure	17.0 lbs. (7.7 kg)
3937202	Ammonia & Amines, 8 lbs. impregnated carbon	2-Ft Purifier Enclosure	8.5 lbs. (3.9 kg)
3937302	Ammonia & Amines, 13.5 lbs. impregnated carbon	3-Ft Purifier Enclosure	14.0 lbs. (6.4 kg)
3937402	Ammonia & Amines, 18.9 lbs. impregnated carbon	4-Ft Purifier Enclosure	19.0 lbs. (8.6 kg)



### Solid Epoxy Dished Work Surfaces

Black chemical-resistant work surface is contoured to fit the dimensions of the Purifier Class I and HEPA Filtered Enclosure and to contain spills.

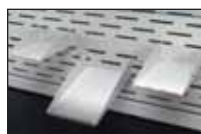
Catalog #	For use with	Dimensions	Shipping Weight
3909900	2-Ft Purifier Enclosure	24.0" w x 29.0" d x 1.0" h (61 cm x 73.7 cm x 2.5 cm)	50 lbs. (23 kg)
3909901	3-Ft Purifier Enclosure	36.0" w x 29.0" d x 1.0" h (91.4 cm x 73.7 cm x 2.5 cm)	75 lbs. (34 kg)
3909902	4-Ft Purifier Enclosure	48.0" w x 29.0" d x 1.0" h (122 cm x 73.7 cm x 2.5 cm)	100 lbs. (45 kg)



### Base Stands

Epoxy-coated steel. Telescoping Base Stands adjust in 1" increments to provide a working height from 30" to 36" and are available with fixed feet or casters. Electric and Manual Hydraulic Lift Base Stands have infinite

height adjustment using a push button or hand crank. See pages 60-63 for more information.



### 3925000 Utility Shelves

Three epoxy-coated steel shelves attach to the rear baffle perforations to hold a printer, utensils and other miscellaneous supplies. The utensil shelf has a scalloped front edge to support spatulas, brushes and other items. Shipping weight 5.0 lbs. (2.2 kg)



### 3927700 Bottle Holder

Epoxy-coated steel. Attaches to the rear baffle perforations to hold a squirt bottle or other round container. 3" diameter opening. Shipping weight 1.0 lb. (0.5 kg)



### 3927800 Tissue Holder

Epoxy-coated steel. Attaches to the rear baffle perforations to hold a 4.63" x 4.75" box of tissue wipers in the upside down position. An opening in the bottom of the holder permits tissues to be dispensed from the bottom. Shipping weight 1 lb. (0.5 kg)



### 3744000 Ergonomic Chair with Armrests

Chair has 6-way articulating seat and back control for personalized adjustment. Pneumatic mechanism adjusts seat height from 18.25" to 25.75". Shipping weight 35.0 lbs. (15.9 kg). See page 66 for more information.



### 3746000 Adjustable Footrest

Elevates feet and permits angle repositioning while in use. 18.5" w x 11.5" d x 8" high. Shipping weight 6.0 lbs. (2.7 kg)



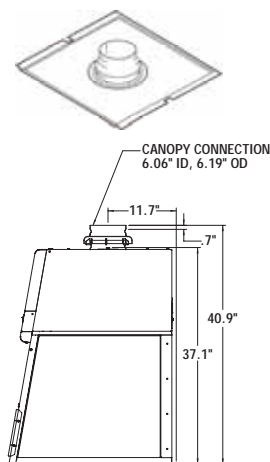
# Purifier® Class I & HEPA Filtered Safety Enclosures

## ACCESSORIES & DUCTWORK



### Remote Blowers

Direct drive blowers with corrosion-resistant phenolic-coated steel housings and impellers. See page 69 for more information.



### Canopy Connections

Allow the Enclosure to be thimble-ducted to the outside for additional protection. The canopy's air gap provides a means of balancing air by allowing room air to enter the ductwork and mix with the filtered air being exhausted from the Enclosure. Outlet is 6.06" ID and 6.19" OD and accepts 6" nominal diameter ductwork. **House exhaust or Remote Blower 3716000 or 3716001 is required (not included).**

Catalog #	Description	For use with:	Exhaust Volume	Shipping Weight
3924400	2-Ft Canopy Connection	3980200, 3980201, 3980202, 3980203, 3980220, 3980221, 3980222, 3980223	110 to 155 CFM	15 lbs. (6.8 kg)
3924401	3-Ft Canopy Connection	3980300, 3980301, 3980302, 3980303, 3980320, 3980321, 3980322, 3980323	165 to 230 CFM	18 lbs. (8.2 kg)
3924402	4-Ft Canopy Connection	3980400, 3980401, 3980402, 3980403, 3980420, 3980421, 3980422, 3980423	220 to 310 CFM	21 lbs. (9.5 kg)

### Thermoplastic Duct

PVC exhaust duct in 10' lengths. A Female Duct Coupling and solvent cement are required to join two sections.

Catalog #	Nominal Dia.	Actual OD	Actual ID	Shipping Wt.
4708600	6"	6.625"	6.25"	25 lbs. (11.3 kg)

### Female Duct Coupling

PVC coupling joins two sections of Thermoplastic Duct.

Catalog #	Nominal Dia.	Equivalent Resistance*	Shipping Wt.
4708900	6"	0	4 lbs. (1.8 kg)

### 90° Elbow

PVC Elbow has belled end connections to receive Thermoplastic Duct or Male Duct Coupling directly.

Catalog #	Nominal Dia.	Equivalent Resistance*	Shipping Wt.
4708700	6"	12 ft.	8 lbs. (3.6 kg)

\*Equivalent resistance is measured in feet of straight duct.

### Flexible Duct Connection

Reduces vibration between the blower and PVC ductwork. Supplied with two clamps.

Catalog #	Nominal Dia.	Shipping Wt.
4861800	7" for use with 6" fittings	8 lbs. (3.6 kg)

### PVC Exhaust Damper

Catalog #	Nominal Dia.	Equivalent Resistance*	Shipping Wt.
4724200	6"	1 ft.	1 lb. (0.5 kg)

### Powder-Coated Steel Exhaust Damper

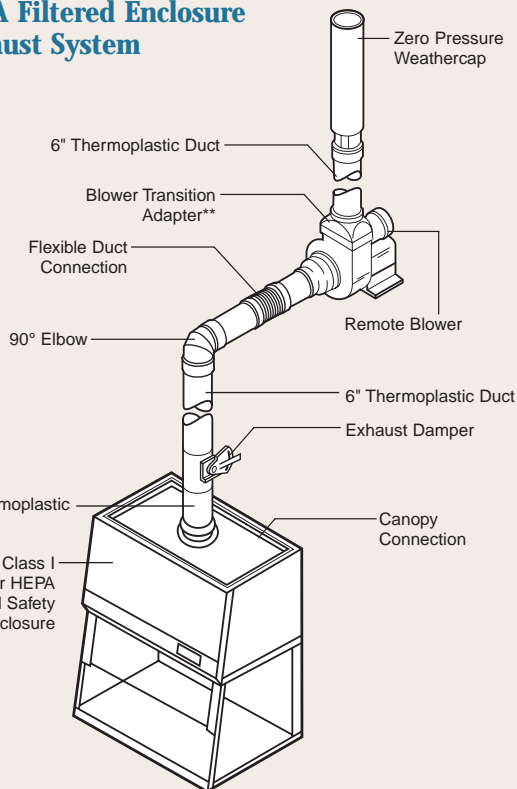
Catalog #	Nominal Dia.	Equivalent Resistance*	Shipping Wt.
3924000	6"	1 ft.	1 lb. (0.5 kg)

### Zero Pressure Weathercap

PVC Weathercap fits atop standard PVC duct, permits vertical discharge of effluent air above roofline for dispersion away from building.

Catalog #	Nominal Diameter	Equivalent Resistance*	Height	Shipping Weight
4722200	6"	5 ft.	36"	20 lbs. (9.1 kg)

### Typical Class I and HEPA Filtered Enclosure Exhaust System



\*\* These parts are provided with 3716000 and 3716001 Remote Blower

Contact Labconco at 800-821-5525 or 816-333-8811 for technical assistance in selecting the right ductwork for your installation.



# Purifier® Horizontal Clean Benches

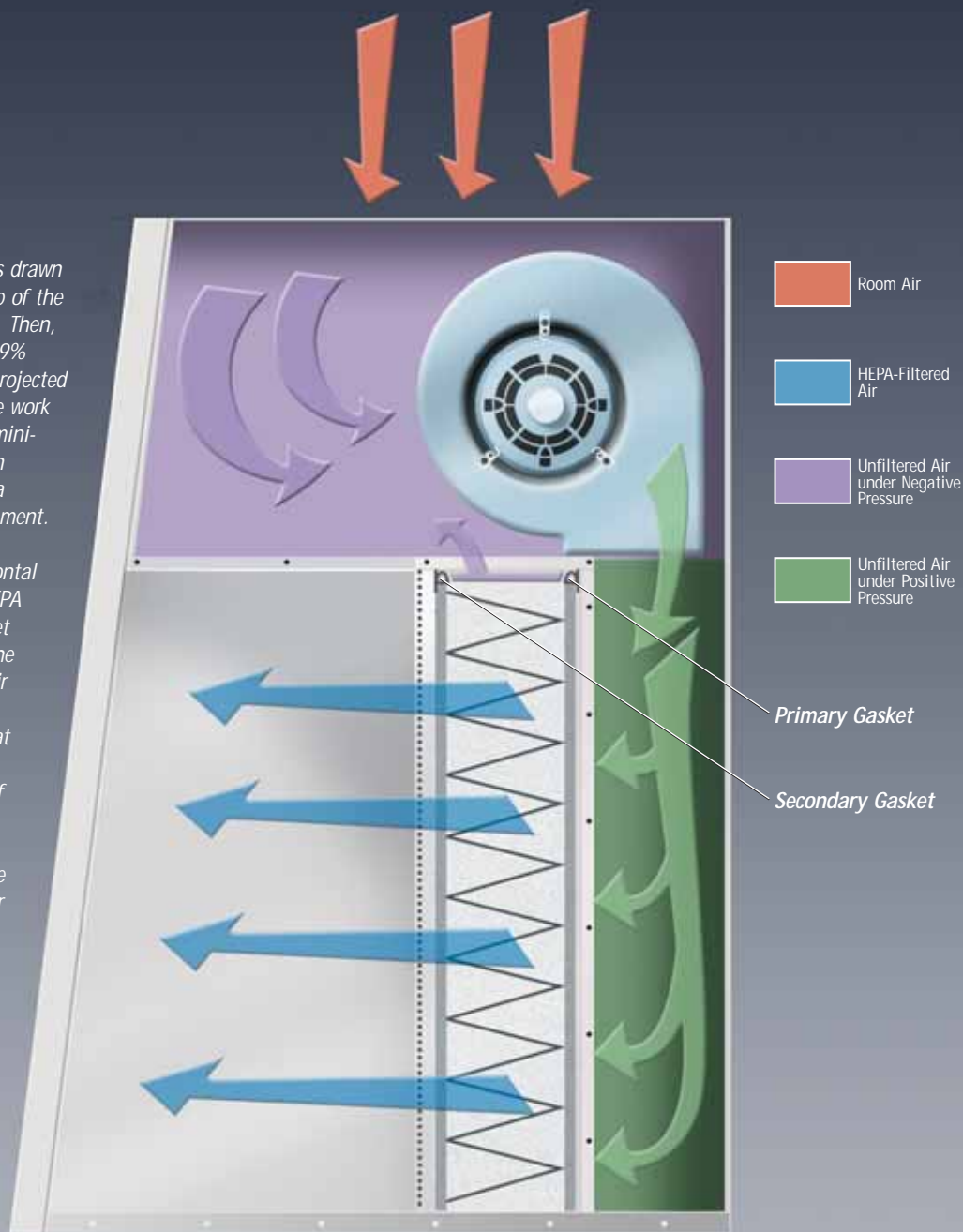
## INTRODUCTION

The Purifier Horizontal Clean Bench protects your work. It is the Class 100 work station of choice when you work with materials that do not generate harmful aerosols or vapors, yet require a particulate-free environment. Suitable applications for the bench include plant tissue culture research, media preparation, electronic part inspection, syringe filling, medical device assembly and parenteral drug formulation.

Because air from the work area is dispersed directly into the laboratory, Purifier Horizontal Clean Benches should never be used in conjunction with biohazardous material, toxins or radionuclides. You and your safety officer must carefully assess the risk associated with any operation performed in a clean bench.

During operation, room air is drawn through a prefilter in the top of the bench to trap large particles. Then, the air flows through a 99.99% efficient HEPA filter and is projected horizontally across the entire work area. This HEPA-filtered air minimizes cross contamination in the work area and provides a particulate-free work environment.

Unique to the Purifier Horizontal Clean Bench is its double HEPA filter seal. The primary gasket seals the upstream side of the filter to prevent unfiltered air from leaking into the work area. The secondary gasket at the front of the HEPA filter seals the downstream side of the filter frame. The area between these two gaskets is maintained under negative pressure. Should a leak occur at the primary HEPA filter gasket, the contaminated air is immediately recaptured and refiltered.



# Purifier® Horizontal Clean Benches

## FEATURES & BENEFITS

**Replaceable prefilters** trap large particles, extend HEPA filter life.

**Particle-free ISO Class 5 air.** Particle counts in the work area conform to ISO 14644-1 and 2, providing ISO Class 5 conditions (formerly Class 100). This ensures fewer than 3520 particles 0.5 µm or larger per cubic meter of air.

**Full one year warranty on parts and service.**

**Optional Vibration Isolation Table.** See page 56 for ordering information.

**Glare-free fluorescent lighting.**

**CE Mark.** All 230 volt models conform to the following CE (European Community requirements for electrical safety and electromagnetic compatibility).

**Optional Vinyl Curtain** acts as a barrier when bench is not in use. See page 46 for ordering information.

**Accessory Telescoping Base Stand.** See pages 60 and 61 for ordering information.

**ETL listed.** All 115 volt, 60 Hz models carry the ETL mark signifying that they conform to UL Standard 3101-1/61010-1 in the U.S. and are certified to CAN/CSA C22.2 No. 1010.1 in Canada.



**Accessory Hydraulic Lift Base Stand.** See pages 62 and 63 for ordering information.

**99.99% efficient HEPA filter** is industry standard size for economical replacement.

**Low vibration, variable speed motor/blower** 1/3 hp on 3-foot models, 1/2 hp on 4-foot models, and two 1/4 hp motors on 6-foot models.

**Minihelic II pressure gauge** displays differential pressure across the HEPA filter.

**Front-mounted light and blower switches.**

**Angled profile design.** Front panel is free of protrusions that could interfere with visibility or obstruct taller users.



**Polarized and grounded electrical outlet(s).**

**Double-gasket, negative pressure leak protection.**

**Optional service fixture** available factory-installed or as a kit for user installation. See page 47 for kit information.

**Dark gray, melamine-laminated hard board work surface.**

**Optional Type 304 brushed stainless steel work surface and sides.** Contact Labconco for ordering information.



**Optional factory-installed 254 nm UV light** for secondary decontamination while the bench is not in use. UV light switch is safety interlocked with fluorescent light and blower switches to help prevent inadvertent UV exposure while the bench is in operation.



 Exclusive feature



# Purifier® Horizontal Clean Benches

## ORDERING INFORMATION

### Standard Features

- 99.99% efficient HEPA filter
- Prefilter
- Class 5 conditions per ISO 14644-1 and 2 (formerly Class 100)
- Minihelic II pressure gauge
- Double-gasket, negative pressure HEPA filter leak protection
- Front-mounted light and blower switches
- Variable speed motor/blower(s) with vibration isolation pads
- Fluorescent lighting
- Polarized and grounded electrical outlet(s)
- Glacier white epoxy-coated steel frame and exterior panels
- Dark gray melamine-laminated hard board work surface
- Angled front profile
- ETL listing, UL 3101-1/61010-1 and CAN/CSA C22.2 No. 1010.1 conformity (115 volt models)
- CE Conformity Marking (230 volt models)
- One year warranty on parts and service

### Standard Option Package

- Factory-installed, 254 nm UV lamp with interlocking safety switch allowing operation only when blower and fluorescent light are off
- Factory-installed, chrome-plated, forged brass service fixture(s) with quarter turn handle

### Required Accessory

- Supporting base. Place on existing casework or see pages 60-63.



Purifier Horizontal Clean Bench 3610004 on Telescoping Base Stand 3746704.

See page 47 for dimensional drawings.

 Exclusive feature

Catalog #	Nominal Width	Electrical Requirements	Power Cord & Plug	Light(s)	Electrical Outlets	Service Fixture(s)	Shipping Weight
3600000	3 feet	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	(1) 115 volt	—	305 lbs. (138 kg)
3600004	3 feet	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Ultraviolet	(1) 115 volt	1	305 lbs. (138 kg)
3600020*	3 feet	230 volts, 50 Hz, 7 amps	230 volts, 15 amps no plug	Fluorescent	(1) 230 volt (IEC 320)	—	305 lbs. (138 kg)
3600024*	3 feet	230 volts, 50 Hz, 7 amps	230 volts, 15 amps no plug	Fluorescent Ultraviolet	(1) 230 volt (IEC 320)	1	305 lbs. (138 kg)
3612500	4 feet	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent	(1) 115 volt	—	370 lbs. (168 kg)
3612504	4 feet	115 volts, 60 Hz, 12 amps	115 volts, 15 amps	Fluorescent Ultraviolet	(1) 115 volt	1	370 lbs. (168 kg)
3612520*	4 feet	230 volts, 50 Hz, 7 amps	230 volts, 15 amps no plug	Fluorescent	(1) 230 volt (IEC 320)	—	370 lbs. (168 kg)
3612524*	4 feet	230 volts, 50 Hz, 7 amps	230 volts, 15 amps no plug	Fluorescent Ultraviolet	(1) 230 volt (IEC 320)	1	370 lbs. (168 kg)
3610000	6 feet	115 volts, 60 Hz, 16 amps	115 volts, 20 amps	Fluorescent	(2) 115 volt	—	515 lbs. (234 kg)
3610004	6 feet	115 volts, 60 Hz, 16 amps	115 volts, 20 amps	Fluorescent Ultraviolet	(2) 115 volt	2	515 lbs. (234 kg)
3610020*	6 feet	230 volts, 50 Hz, 8 amps	230 volts, 15 amps no plug	Fluorescent	(2) 230 volt (IEC 320)	—	515 lbs. (234 kg)
3610024*	6 feet	230 volts, 50 Hz, 8 amps	230 volts, 15 amps no plug	Fluorescent Ultraviolet	(2) 230 volt (IEC 320)	2	515 lbs. (234 kg)

\*International electrical configuration

# Purifier® Horizontal Clean Benches

## ACCESSORIES



### Telescoping Base Stands

Epoxy-coated steel frame. Adjust in 1" increments to provide a working height from 28.75 to 34.75". Available with fixed feet or casters. See pages 60 and 61 for more information.



### Hydraulic Lift Base Stands

Epoxy-coated steel, with infinite height adjustment using push button or hand crank. See pages 62 and 63 for more information.



### 3697500 IV Bar Kit

Supports intravenous solution bottles and bags. Kit includes IV bar, mounting hardware, four hangers and instructions for installation. Three-foot and four-foot Purifier Clean Benches accommodate one IV bar. Six-foot benches accommodate two. Shipping weight 5.0 lbs. (2.3 kg)



### 3773700 Service Fixture Kit

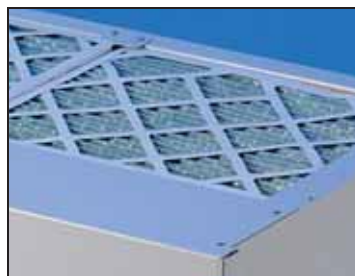
Includes serrated hose tip valve with quarter turn control handle, hardware and instructions for plumbing to services. Up to two fixtures may be mounted on the right hand side of the Purifier Horizontal Clean Bench. Shipping weight 4.0 lbs. (1.8 kg)



### Vinyl Curtain Kits

Provide a barrier to airborne particulates while bench is not in use. Vinyl curtain attaches to top and bottom of bench opening with nylon-loop fastener, included.

Catalog #	For use with:	Shipping Weight
3773800	3-Ft Purifier Clean Benches	3.0 lbs. (1.4 kg)
3773801	4-Ft Purifier Clean Benches	4.0 lbs. (1.8 kg)
3773802	6-Ft Purifier Clean Benches	5.0 lbs. (2.3 kg)



### Replacement Prefilters

Labconco recommends replacing prefilters every three months. One each. Shipping weight 1.0 lb. (0.4 kg)

Catalog #	For use with:	# Required
3768900	3-Ft Purifier Clean Benches	2
3768901	4-Ft Purifier Clean Benches	2
3768901	6-Ft Purifier Clean Benches	3



### 3618000 Vibration Isolation Table

Provides an isolated work surface for conducting procedures with vibration-sensitive equipment such as microscopes and balances. The table never makes contact with the clean bench so vibration from the motor/ blower is not transmitted to the table. Epoxy-coated steel frame, adjusts in 1" increments to provide

a working height from 29.5 to 36". ADA-compliant. Four leveling feet. Work surface is laminated hard board. 30.4" w x 18" d. Overall dimensions: 32.5" x 25" d x 29.5" to 36" high. Shipping weight 110.0 lbs. (49.9 kg)



### 3744000 Ergonomic Chair with Armrests

Lab chair has 6-way articulating seat and back control for personalized adjustment. Pneumatic mechanism adjusts seat height from 18.25" to 25.75". Shipping weight 35.0 lbs. (15.9 kg). See page 66 for more information.



### 3746000 Adjustable Footrest

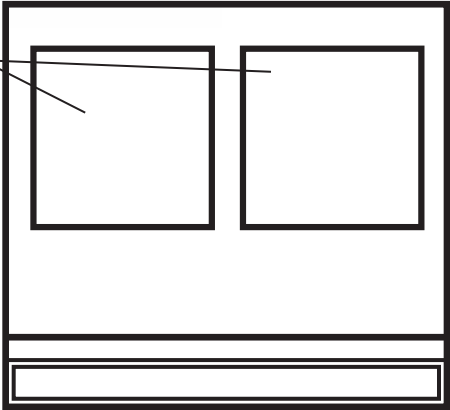
Elevates feet and permits angle repositioning while in use. 18.5" w x 11.5" d x 8" high. Shipping weight 6.0 lbs. (2.7 kg)

# Purifier® Horizontal Clean Benches

## D I M E N S I O N S

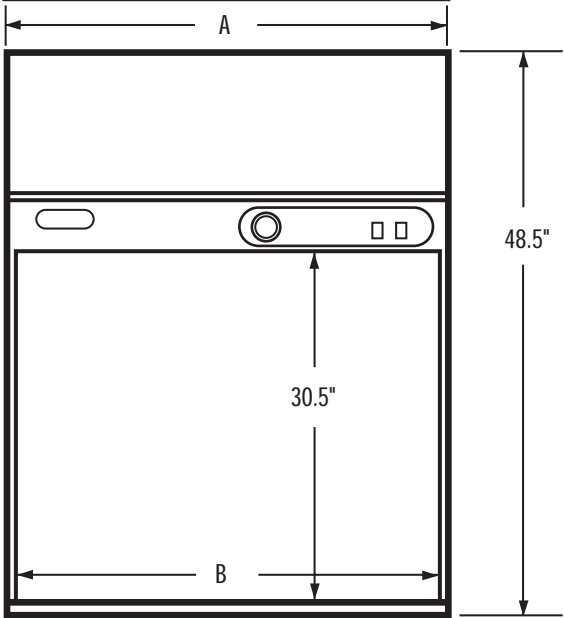
TOP

Prefilters:  
2 each on  
3' and 4' models,  
3 each on  
6' models

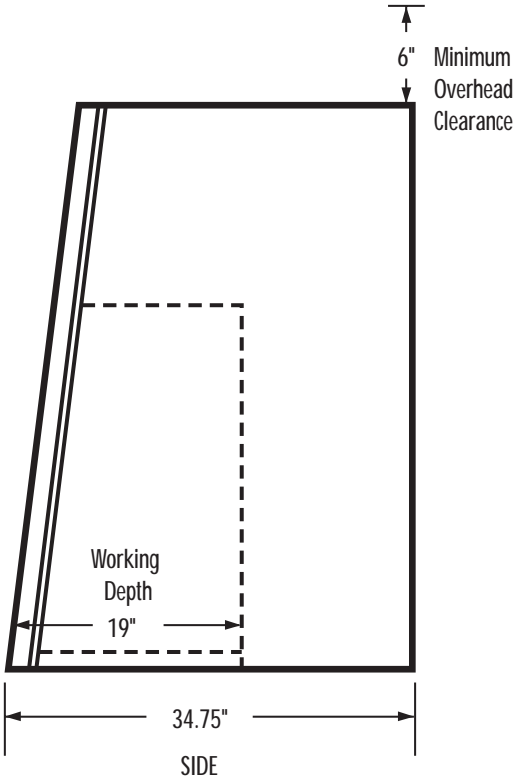


Purifier Horizontal Clean Benches

	3-Foot	4-Foot	6-Foot
A	38.25"	50.25"	74.25"
B	37"	49"	73"



FRONT



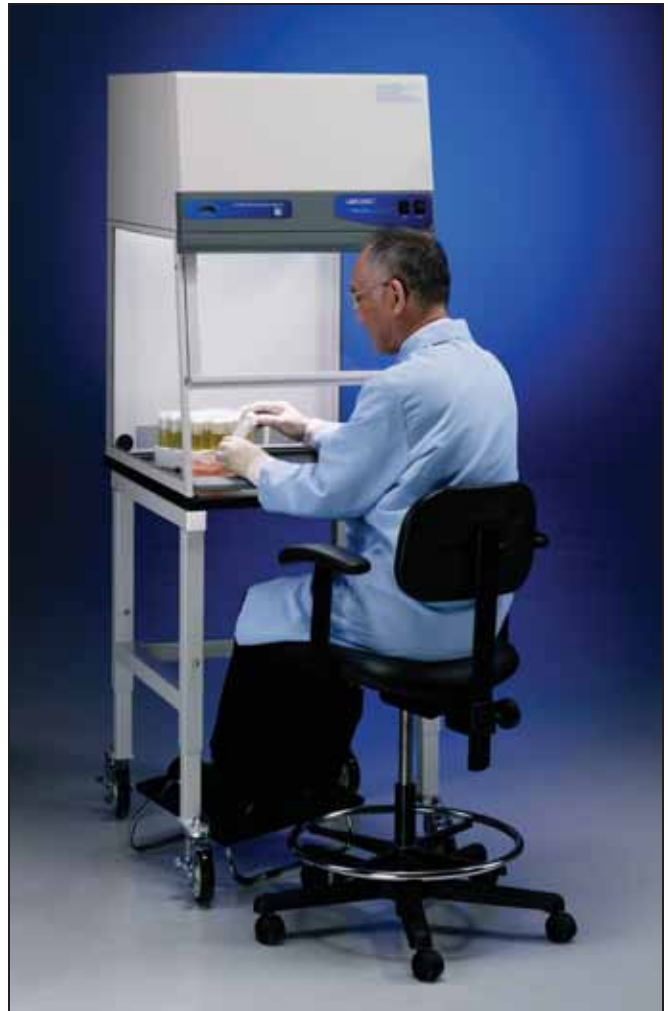
# Purifier® Vertical Clean Benches

## INTRODUCTION

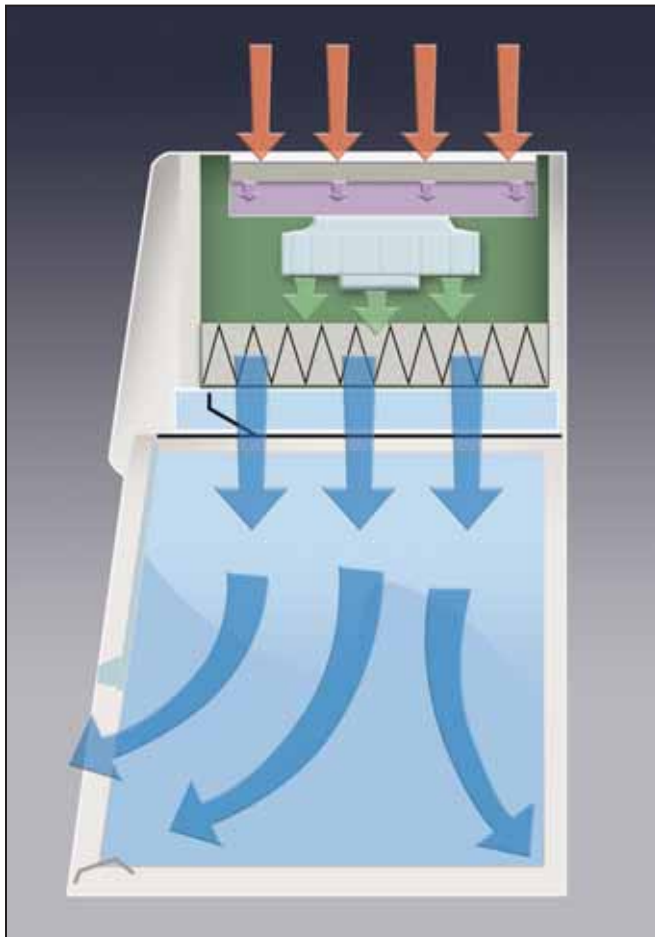
**Purifier Vertical Clean Benches protect your work from particulate contamination.** Using a 99.99% efficient supply HEPA filter, Purifier Vertical Clean Benches maintain ISO Class 5 conditions (formerly Class 100) in the work area. Appropriate applications for Clean Benches include plant tissue culture, media plate preparation, electronics inspection, medical device assembly and IV solution preparation.

Because Purifier Vertical Clean Benches do not provide protection to the user, they should not be used in conjunction with biohazardous material, toxins or radionuclides. You and your safety officer must carefully assess the risk associated with any operation performed in a clean bench.

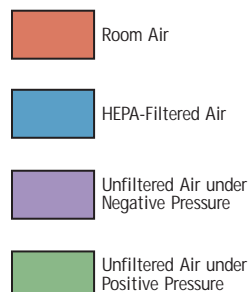
Purifier Vertical Clean Benches are offered in 2', 3' and 4' widths. Built-in options include a UV light for secondary decontamination, bi-fold doors for complete closure and a Guardian Airflow Monitor to monitor downflow velocity and HEPA filter loading.



*Purifier Vertical Clean Bench 3970200 on Solid Epoxy Dished Work Surface 3909900 and Telescoping Base Stand 3746710 with Ergonomic Chair 3744000 and Adjustable Footrest 3746000.*



*During operation, room air is drawn through a prefilter in the top of the cabinet to trap large particles. Then, the air flows through a 99.99% efficient HEPA filter and is projected vertically over the work area. This HEPA-filtered air prevents contaminants from entering the work area and provides a particulate-free work environment that minimizes cross contamination.*





# Purifier® Vertical Clean Benches

## FEATURES & BENEFITS

**Particulate-free ISO Class 5 air.** Particle counts in the work area conform to ISO 14644-1 and 2, providing ISO Class 5 conditions (formerly Class 100 per Federal Standard 209E), ensuring fewer than 3520 particles 0.5 µm or larger per cubic meter of air.

**Front-mounted Minihelic pressure gauge** indicates the total system pressure across the HEPA filter and pressurized plenum to help determine HEPA filter loading.

**Disposable prefilter** traps large particles to extend the life of the HEPA filter.

**Optional 254 nm ultraviolet lamp** provides secondary decontamination while the bench is not in use. The UV light does not penetrate the plane of the sash and air foil.

**Intrinsically-sound design** ensures ISO Class 5 conditions. The positive pressure impeller is surrounded by a negative pressure plenum so that if a leak should occur, the unfiltered air is recaptured and refiltered, preventing contaminated air from entering the work area.

**HEPA filter** is rated to remove 99.99% of all particles 0.3 micron in size. It is industry standard size for economical replacement.

**Air diffuser** protects the HEPA filter from possible damage from direct contact with the operator and apparatus inside the enclosure. It distributes air evenly across the work area to optimize airflow.

**Variable speed blower** with solid state control may be accessed by a certified technician to validate and adjust downflow velocity.

**Light and blower switches** are located within easy reach of the operator. On models with UV light, a single 3-way switch powers the fluorescent and UV light, but only one at a time, helping to protect the operator from inadvertent UV exposure.

**Tempered safety glass sash** is sloped 10° for less glare and closer, more comfortable viewing than vertical sashes offer. The glass is UV opaque and resistant to UV irradiation. Wiping seals ensure ISO Class 5 conditions inside the enclosure. The sash has a spring-loaded latch so that it may be pivoted upward and locked open for loading and cleaning.

**Aerodynamic air foil** promotes the air split associated with downward airflow to help prevent cross contamination.

**CE mark.** All 230 volt, 50 Hz models conform to the CE (European Community) requirements for electrical safety and electromagnetic compatibility.

**ETL listed.** All 115 volt, 60 Hz models carry the ETL mark signifying that they are certified to UL Standard 3101-1/61010-1 and CAN/CSA C22.2 No. 1010.1.

**Optional built-in Guardian™ Airflow Monitor** alerts the user to downflow velocities outside of preset range and HEPA filter loading.



**Two convenient utility ports with iris openings** allow passage of tubing and electrical cords from equipment inside the enclosure through the back for connection to services. Plugs are provided to seal the ports when not in use.

**Optional bi-fold doors, found on models with UV lamps,** allow the sash opening to be closed while UV light is on and prevent contaminants from entering when the clean bench is not in use.

**Accessory Solid Epoxy Dished Work Surface.** See page 55 for ordering information.

**Full one year warranty on parts and service.**



Exclusive feature

# Purifier® Vertical Clean Benches

## ORDERING INFORMATION

### Standard Features

- Nominal downflow velocity of 40-55 fpm
- Aerodynamic air foil
  - Supply HEPA filter, 99.99% efficient on particles 0.3 micron
  - ISO Class 5 air (formerly Class 100 per Federal Standard 209E)
  - Disposable prefilter
  - Variable speed built-in blower with motorized impeller and solid state control rated for 5 amps
  - Intrinsically-safe, negative pressure design
  - Minihelic pressure gauge
  - Air diffuser
- UV-resistant, glacier white and gray epoxy-coated aluminum and steel construction
- UV-opaque and resistant 1/4" thick tempered safety glass sash and sides
  - Fluorescent lamp
  - Light and blower switches
- 9.4" high sash opening
  - Ergonomic 10° angled and hinged sash that pivots upward, locks to a loading height of 20" and has wiping seals to promote ISO Class 5 conditions
  - Two utility ports with iris openings and plugs
  - ETL listing, UL 3101-1/61010-1 and CAN/CSA C222.2 No. 1010.1 conformity (115 volt models)
  - CE Conformity Marking (230 volt models)
  - One year warranty on parts and service

### Standard Options

- Guardian Airflow Monitor that continuously monitors downflow airflow and has two LED lights to indicate when airflow is within or outside set point range. Set point is factory calibrated for 25-35 fpm downflow velocity. The "Safe" green LED glows when airflow is within set point range. The "Alert" red LED glows and an audible alarm sounds when airflow is outside set point range. The audible alarm may be muted by pressing the "Silence Alarm" switch.
- 254 nm UV lamp with 3-way switch (fluorescent, UV and off) and bi-fold doors that close the sash opening.

### Required Accessories

- Supporting work surface. Place on existing casework or see page 55.
- Supporting base. Place on existing casework or see pages 60-61.

See page 55 for dimensional drawings.

■ Exclusive feature



Purifier Vertical Clean Bench 3970200 on Solid Epoxy Dished Work Surface 3909900 and Telescoping Base Stand 3746710.

# Purifier® Vertical Clean Benches

## ORDERING INFORMATION

Catalog #	Nominal Width	Electrical Requirements	UV Lamp/ Bi-Fold Doors	Airflow Monitor	Power Cord & Plug	Shipping Weight
3970200	2 feet	115 volts, 60 Hz, 3 amps			115 volts, 15 amps	125 lbs. (57 kg)
3970201	2 feet	115 volts, 60 Hz, 3 amps	•		115 volts, 15 amps	125 lbs. (57 kg)
3970203	2 feet	115 volts, 60 Hz, 3 amps		•	115 volts, 15 amps	125 lbs. (57 kg)
3970204	2 feet	115 volts, 60 Hz, 3 amps	•	•	115 volts, 15 amps	125 lbs. (57 kg)
3970220*	2 feet	230 volts, 50 Hz, 2 amps			230 volts, 10 amps, no plug	125 lbs. (57 kg)
3970221*	2 feet	230 volts, 50 Hz, 2 amps	•		230 volts, 10 amps, no plug	125 lbs. (57 kg)
3970223*	2 feet	230 volts, 50 Hz, 2 amps		•	230 volts, 10 amps, no plug	125 lbs. (57 kg)
3970224*	2 feet	230 volts, 50 Hz, 2 amps	•	•	230 volts, 10 amps, no plug	125 lbs. (57 kg)
3970300	3 feet	115 volts, 60 Hz, 5 amps			115 volts, 15 amps	160 lbs. (73 kg)
3970301	3 feet	115 volts, 60 Hz, 5 amps	•		115 volts, 15 amps	160 lbs. (73 kg)
3970303	3 feet	115 volts, 60 Hz, 5 amps		•	115 volts, 15 amps	160 lbs. (73 kg)
3970304	3 feet	115 volts, 60 Hz, 5 amps	•	•	115 volts, 15 amps	160 lbs. (73 kg)
3970320*	3 feet	230 volts, 50 Hz, 3 amps			230 volts, 10 amps, no plug	160 lbs. (73 kg)
3970321*	3 feet	230 volts, 50 Hz, 3 amps	•		230 volts, 10 amps, no plug	160 lbs. (73 kg)
3970323*	3 feet	230 volts, 50 Hz, 3 amps		•	230 volts, 10 amps, no plug	160 lbs. (73 kg)
3970324*	3 feet	230 volts, 50 Hz, 3 amps	•	•	230 volts, 10 amps, no plug	160 lbs. (73 kg)
3970400	4 feet	115 volts, 60 Hz, 5 amps			115 volts, 15 amps	195 lbs. (88 kg)
3970401	4 feet	115 volts, 60 Hz, 5 amps	•		115 volts, 15 amps	195 lbs. (88 kg)
3970403	4 feet	115 volts, 60 Hz, 5 amps		•	115 volts, 15 amps	195 lbs. (88 kg)
3970404	4 feet	115 volts, 60 Hz, 5 amps	•	•	115 volts, 15 amps	195 lbs. (88 kg)
3970420*	4 feet	230 volts, 50 Hz, 3 amps			230 volts, 10 amps, no plug	195 lbs. (88 kg)
3970421*	4 feet	230 volts, 50 Hz, 3 amps	•		230 volts, 10 amps, no plug	195 lbs. (88 kg)
3970423*	4 feet	230 volts, 50 Hz, 3 amps		•	230 volts, 10 amps, no plug	195 lbs. (88 kg)
3970424*	4 feet	230 volts, 50 Hz, 3 amps	•	•	230 volts, 10 amps, no plug	195 lbs. (88 kg)

\*International electrical configuration

# Purifier® Filtered PCR Enclosures

## INTRODUCTION

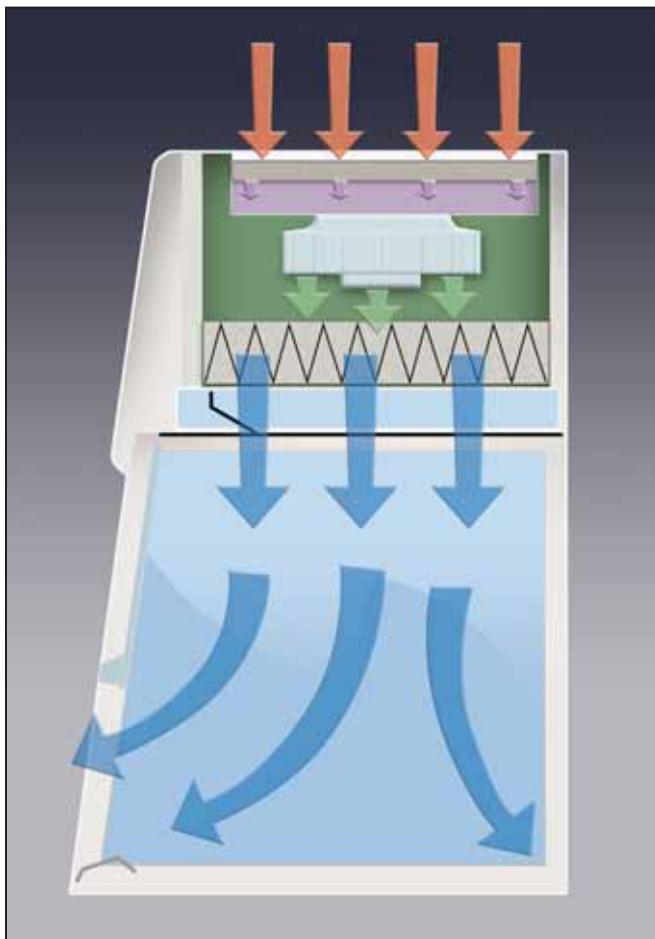
**Purifier Filtered PCR Enclosures are vertical clean benches that protect your work.** Available in 2', 3' and 4' widths, they provide a controlled environment in which to perform polymerase chain reaction experiments. ISO Class 5 air is constantly projected vertically down over the work area, minimizing the risk of cross contamination of samples.

Purifier Filtered PCR Enclosures do not provide protection to the user and should not be used in conjunction with biohazardous material, toxins or radionuclides. You and your safety officer must carefully assess the risks associated with any operation performed in the PCR enclosure.

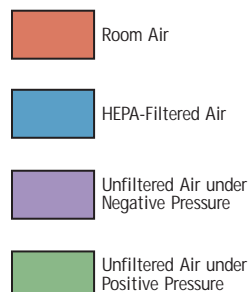
The variable digital timer provides UV light exposure continuously or in user-selected increments of 5, 10, 15, 30, 60, 120 or 240 minutes to deactivate DNA and RNA contaminants. When the timer expires, the UV light automatically switches off in preparation for the next experiment.



*Purifier Filtered PCR Enclosure 3970305 on Solid Epoxy Dished Work Surface 3909901 and Telescoping Base Stand 3746711 with Ergonomic Chair 3744000 and Adjustable Footrest 3746000.*



*During operation, room air is drawn through a prefilter in the top of the cabinet to trap large particles. Then, the air flows through a 99.99% efficient HEPA filter and is projected vertically over the work area. This HEPA-filtered air prevents contaminants from entering the work area and provides a particulate-free work environment that minimizes cross contamination.*





# Purifier® Filtered PCR Enclosures

## FEATURES & BENEFITS

**Particulate-free ISO Class 5 air.** Particle counts in the work area conform to ISO 14644-1 and 2, providing ISO Class 5 conditions (formerly Class 100 per Federal Standard 209E), ensuring fewer than 3520 particles 0.5 µm or larger per cubic meter of air.

**Front-mounted Minihelic pressure gauge** indicates the total system pressure across the HEPA filter and pressurized plenum to help determine HEPA filter loading.

**ETL listed.** All 115 volt, 60 Hz models carry the ETL mark signifying that they are certified to UL Standard 3101-1/61010-1 and CAN/CSA C22.2 No. 1010.1.

**CE mark.** All 230 volt, 50 Hz models conform to the CE (European Community) requirements for electrical safety and electromagnetic compatibility.

**Two convenient utility ports with iris openings** allow passage of tubing and electrical cords from equipment inside the enclosure through the back for connection to services. Plugs are provided to seal the ports when not in use.

**Bi-fold doors** allow the sash opening to be closed while the UV light is on and prevent contaminants from entering when the enclosure is not in use.

**Variable digital timer** provides timed UV light exposure. From the front-mounted control panel, the operator may select from eight settings in minutes of 5, 10, 15, 30, 60, 120, 240 and continuous. When the UV light switch is activated, the previously selected time setting is automatically initiated or the user may select a different setting. An amber LED indicator blinks for the duration of the setting.

**Disposable prefilter** traps large particles to extend the life of the HEPA filter.

**The 254 nm ultraviolet lamp** denatures stray DNA strands and provides secondary decontamination while the enclosure is not in use.

**Full one year warranty on parts and service.**

**Intrinsically-sound design** ensures ISO Class 5 conditions. The positive pressure impeller is surrounded by a negative pressure plenum so that if a leak should occur, the unfiltered air is recaptured and refiltered, preventing particles from entering the work area.

**HEPA filter** is rated to remove 99.99% of all particles 0.3 micron in size. It is industry standard size for economical replacement.

**Air diffuser** protects the HEPA filter from possible damage from direct contact with the operator and apparatus inside the enclosure. It distributes air evenly across the work area to optimize airflow.

**Variable speed blower with solid state control** may be accessed by a certified technician to validate and adjust downflow velocity.

**Glare-free fluorescent lighting.** The lamp is located above the work area, out of contact with the clean air.

**Light and blower switches** are located within easy reach of the operator. The 3-way light switch powers the fluorescent and UV light, but only one at a time, helping to protect the operator from inadvertent UV exposure.

**Tempered safety glass sash** is sloped 10° for less glare and closer, more comfortable viewing than vertical sashes offer. The glass is UV opaque and resistant to UV irradiation. Wiping seals ensure ISO Class 5 conditions inside the enclosure. The sash has a spring-loaded latch so that it may be pivoted upward locked open for loading and cleaning.

**Aerodynamic air foil** promotes the air split associated with downward airflow to help prevent cross contamination.

**Accessory Solid Epoxy Dished Work Surface.** See page 55 for ordering information.

**Optional built-in Guardian® Airflow Monitor** alerts the user to downflow velocities outside of preset range and HEPA filter loading.



# Purifier® Filtered PCR Enclosures

## ORDERING INFORMATION

### Standard Features

- Nominal downflow velocity of 40-55 fpm
- Aerodynamic air foil
  - Supply HEPA filter, 99.99% efficient on particles 0.3 micron
  - ISO Class 5 air (formerly Class 100 per Federal Standard 209E)
  - Disposable prefilter
  - Variable speed built-in blower with motorized impeller and solid state control rated for 5 amps
  - Intrinsically-safe, negative pressure design
  - Minihelic pressure gauge
  - Air diffuser
- UV-resistant, glacier white and gray epoxy-coated aluminum and steel construction
- UV-opaque and resistant 1/4" thick tempered safety glass sash and sides
  - 9.4" high sash opening
  - Fluorescent lamp
  - 254 nm UV lamp
- Variable digital timer for UV exposure with eight settings in minutes of 5, 10, 15, 30, 60, 120, 240 and continuous
  - Blower and 3-way light (fluorescent, UV and off) switches
- Ergonomic 10° angled and hinged sash that pivots upward, locks to a loading height of 20" and has wiping seals to promote ISO Class 5 conditions
- Bi-fold doors that close the sash opening
  - Two utility ports with iris openings and plugs
  - ETL listing, UL 3101-1/61010-1 and CAN/CSA C222.2 No. 1010.1 conformity (115 volt models)
  - CE Conformity Marking (230 volt models)
  - One year warranty on parts and service



Purifier Filtered PCR Enclosure 3970305 on Solid Epoxy Dished Work Surface 3909901 and Telescoping Base Stand 3746711.

### Standard Option

- Guardian Airflow Monitor that continuously monitors down-flow airflow and has two LED lights to indicate when airflow is within or outside set point range. Set point is factory calibrated for 25-35 fpm downflow velocity. The "Safe" green LED glows when airflow is within set point range. The "Alert" red LED glows and an audible alarm sounds when airflow is outside set point range. The audible alarm may be muted by pressing the "Silence Alarm" switch.

### Required Accessories

- Supporting work surface. Place on existing casework or see page 55.
- Supporting base. Place on existing casework or see pages 60-61.

See page 55 for dimensional drawings.

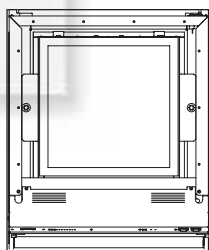
Catalog #	Nominal Width	Electrical Requirements	Variable Timed UV Lamp/Bi-Fold Doors	Airflow Monitor	Power Cord & Plug	Shipping Weight
3970202	2 feet	115 volts, 60 Hz, 3 amps	•		115 volts, 15 amps	125 lbs. (57 kg)
3970205	2 feet	115 volts, 60 Hz, 3 amps	•	•	115 volts, 15 amps	125 lbs. (57 kg)
3970222*	2 feet	230 volts, 50 Hz, 2 amps	•		230 volts, 10 amps, no plug	125 lbs. (57 kg)
3970225*	2 feet	230 volts, 50 Hz, 2 amps	•	•	230 volts, 10 amps, no plug	125 lbs. (57 kg)
3970302	3 feet	115 volts, 60 Hz, 3 amps	•		115 volts, 15 amps	160 lbs. (73 kg)
3970305	3 feet	115 volts, 60 Hz, 3 amps	•	•	115 volts, 15 amps	160 lbs. (73 kg)
3970322*	3 feet	230 volts, 50 Hz, 2 amps	•		230 volts, 10 amps, no plug	160 lbs. (73 kg)
3970325*	3 feet	230 volts, 50 Hz, 2 amps	•	•	230 volts, 10 amps, no plug	160 lbs. (73 kg)
3970402	4 feet	115 volts, 60 Hz, 3 amps	•		115 volts, 15 amps	195 lbs. (88 kg)
3970405	4 feet	115 volts, 60 Hz, 3 amps	•	•	115 volts, 15 amps	195 lbs. (88 kg)
3970422*	4 feet	230 volts, 50 Hz, 2 amps	•		230 volts, 10 amps, no plug	195 lbs. (88 kg)
3970425*	4 feet	230 volts, 50 Hz, 2 amps	•	•	230 volts, 10 amps, no plug	195 lbs. (88 kg)

■ Exclusive feature

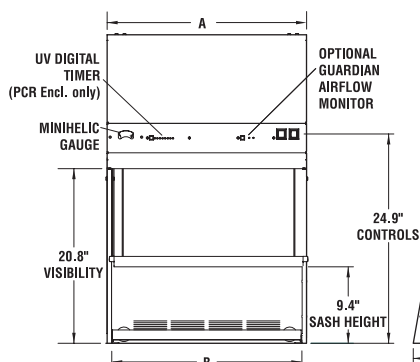
\* International electrical configuration

# Purifier® Vertical Clean Benches & Filtered PCR Enclosures

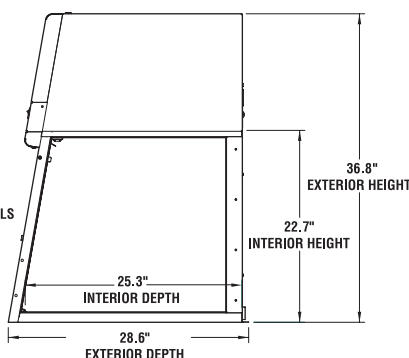
## DIMENSIONS & ACCESSORIES



TOP



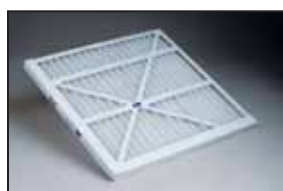
FRONT



SIDE

### Purifier Vertical Clean Benches & Filtered PCR Enclosures

	2-Foot	3-Foot	4-Foot
A	24.0"	36.0"	48.0"
B	22.8"	34.8"	46.8"



#### Replacement Disposable Prefilters

Corrugated paper prefilters trap large particles to extend HEPA filter life. Labconco recommends replacing the prefilter every three months. One each.

Catalog #	For use with	Shipping Weight
3935700	2-Ft Vertical Clean Bench	1.0 lb. (0.5 kg)
3935701	3-Ft Vertical Clean Bench	1.0 lb. (0.5 kg)
3935702	4-Ft Vertical Clean Bench	1.0 lb. (0.5 kg)



#### IV Bars

Support intravenous solution bottles and bags. Include IV bar, mounting hardware, four hangers and installation instructions.

Catalog #	For use with	Shipping Weight
3721000	2-Ft Vertical Clean Bench	4.0 lbs. (1.8 kg)
3721001	3-Ft Vertical Clean Bench	6.0 lbs. (2.7 kg)
3721002	4-Ft Vertical Clean Bench	8.0 lbs. (3.6 kg)



#### Base Stands

Epoxy-coated steel. Telescoping Base Stands adjust in 1" increments to provide a working height from 30" to 36" and are available with fixed feet or casters. Electric and Manual Hydraulic Lift Base Stands have

infinite height adjustment using a push button or hand crank. See pages 60-63 for more information.



#### Solid Epoxy Dished Work Surfaces

Black chemical-resistant work surface is contoured to fit the dimensions of the Purifier Vertical Clean Benches and Filtered PCR Enclosures and to contain spills.

Catalog #	For use with	Dimensions	Shipping Weight
3909900	2-Ft Purifier Enclosure	24.0" w x 29.0" d x 1.0" h (61 cm x 73.7 cm x 2.5 cm)	50.0 lbs. (23 kg)
3909901	3-Ft Purifier Enclosure	36.0" w x 29.0" d x 1.0" h (91.4 cm x 73.7 cm x 2.5 cm)	75.0 lbs. (34 kg)
3909902	4-Ft Purifier Enclosure	48.0" w x 29.0" d x 1.0" h (122 cm x 73.7 cm x 2.5 cm)	100.0 lbs. (45 kg)



#### 3744000 Ergonomic Chair with Armrests

Chair has 6-way articulating seat and back control for personalized adjustment. Pneumatic mechanism adjusts seat height from 18.25" to 25.75". Shipping weight 35.0 lbs. (15.9 kg). See page 66 for more information.



#### 3746000 Adjustable Footrest

Elevates feet and permits angle repositioning while in use. 18.5" w x 11.5" d x 8" high. Shipping weight 6.0 lbs. (2.7 kg)

# Purifier® Non-Ventilated PCR & Tissue Culture Enclosures

## FEATURES & BENEFITS

**Purifier Non-Ventilated Enclosures provide a circulation-free work area designed to reduce cross contamination.** These enclosures have an ultraviolet light that decontaminates surfaces and denatures trace DNA during periods of non-use. Bi-fold doors close the sash opening while the UV light is in use to prevent inadvertent personnel exposure and contaminants from entering the enclosure.

The Purifier Non-Ventilated PCR Enclosures, designed for conducting polymerase chain reaction procedures,

include a UV light timer that allows the user to select from eight time settings. The Purifier Tissue Culture Enclosures may be used for culture manipulation of non-hazardous samples. Because these enclosures do not provide protection to the user, they should not be used in conjunction with biohazardous material, toxins or radionuclides. You and your safety officer must carefully assess the risk associated with any operation performed in a Purifier Non-Ventilated Enclosure.

**Full one year warranty on parts and service.**

**Glare-free fluorescent lighting** provides illumination inside the enclosure.

**The 254 nm ultraviolet lamp** eliminates stray DNA and provides secondary decontamination while the enclosure is not in use.

**Electrical receptacle** located inside the enclosure is powered by the front-mounted auxiliary switch.

**Light and auxiliary electrical receptacle switches** are located within easy reach of the operator. The 3-way light switch powers the fluorescent and UV light, but only one at a time, helping to protect the operator from inadvertent UV exposure.



**Tempered safety glass sash** is sloped 20° for less glare and closer, more comfortable viewing than vertical sashes offer. The glass is UV opaque and resistant to UV irradiation. Wiping seals reduce cross contamination inside the enclosure. The sash has a spring-loaded latch so that it may be pivoted upward and locked open for loading and cleaning.

**CE mark.** All 230 volt, 50 Hz models conform to the CE (European Community) requirements for electrical safety and electromagnetic compatibility.

**Two convenient utility ports with iris openings** allow passage of tubing and electrical cords from equipment inside the enclosure through the back for connection to services. Plugs are provided to seal the ports when not in use.

**Bi-fold doors** allow the sash opening to be closed while the UV light is on and prevent contaminants from entering when the enclosure is not in use.

**Accessory Solid Epoxy Dished Work Surface.** See page 59 for ordering information.

**ETL listed.** All 115 volt, 60 Hz models carry the ETL mark signifying that they are certified to UL Standard 3101-1/61010-1 and CAN/CSA C22.2 No. 1010.1.

**Variable digital timer,** found on Purifier Non-Ventilated PCR Enclosures, provides timed UV light exposure. From the front-mounted control panel, the operator may select from eight settings in minutes of 5, 10, 15, 30, 60, 120, 240 and continuous. When the UV light switch is activated, the previously selected time setting is automatically initiated or the user may select a different setting. An amber LED indicator blinks for the duration of the setting.








Exclusive feature



# Purifier® Non-Ventilated PCR Enclosures

## ORDERING INFORMATION

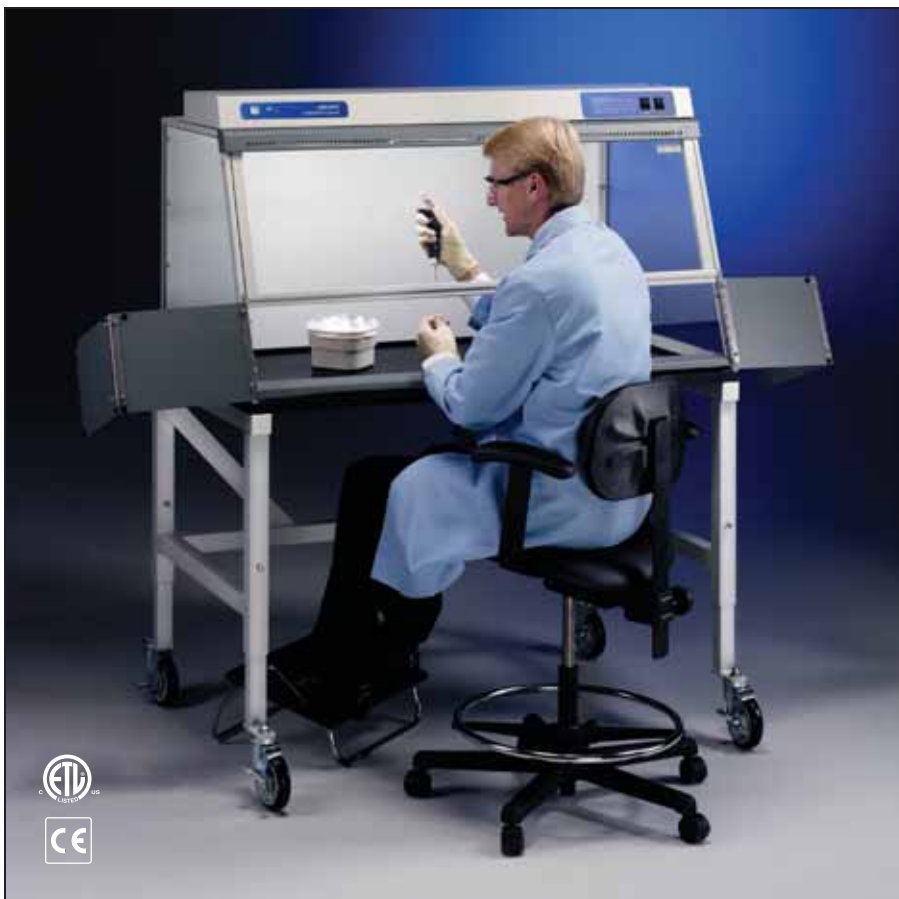
### Standard Features

-  UV-resistant, glacier white and gray epoxy-coated aluminum and steel construction
-  UV-opaque and resistant, 1/4" thick tempered safety glass sash and sides
  - 7.8" high sash opening
-  Ergonomic 20° angled and hinged sash that pivots upward, locks to a loading height of 20" and has wiping seals to reduce cross contamination
-  Bi-fold doors that close the sash opening
  - Fluorescent lamp
  - 254 nm UV lamp
  - Interior electrical receptacle
-  Variable digital timer for UV exposure with eight settings in minutes of 5, 10, 15, 30, 60, 120, 240 and continuous
  - Front-mounted switches for 3-way light (fluorescent, UV and off) and auxiliary electrical receptacle
  - Two utility ports with iris openings and plugs
  - ETL listing, UL 3101-1/61010-1 and CAN/CSA C222.2 No. 1010.1 conformity (115 volt models)
  - CE Conformity Marking (230 volt models)
  - One year warranty on parts and service

### Required Accessories

- Supporting work surface. Place on existing casework or see page 59.
- Supporting base. Place on existing casework or see pages 60 and 61.

See page 59 for dimensional drawings.



Purifier Non-Ventilated PCR Enclosure 3952400 on Solid Epoxy Dished Work Surface 3908402 and Telescoping Base Stand 3747012 with Ergonomic Chair 3744000 and Adjustable Footrest 3746000.





Catalog #	Nominal Width	Electrical Requirements	Variable Timed UV Lamp/Bi-Fold Doors	Power Cord & Plug	Shipping Weight
3952400	4 feet	115 volts, 60 Hz, 10 amps	•	115 volts, 15 amps	100 lbs. (45 kg)
3952420*	4 feet	230 volts, 50 Hz, 5 amps	•	230 volts, 10 amps, no plug	100 lbs. (45 kg)

\*International electrical configuration

# Purifier® Non-Ventilated Tissue Culture Enclosures

## ORDERING INFORMATION

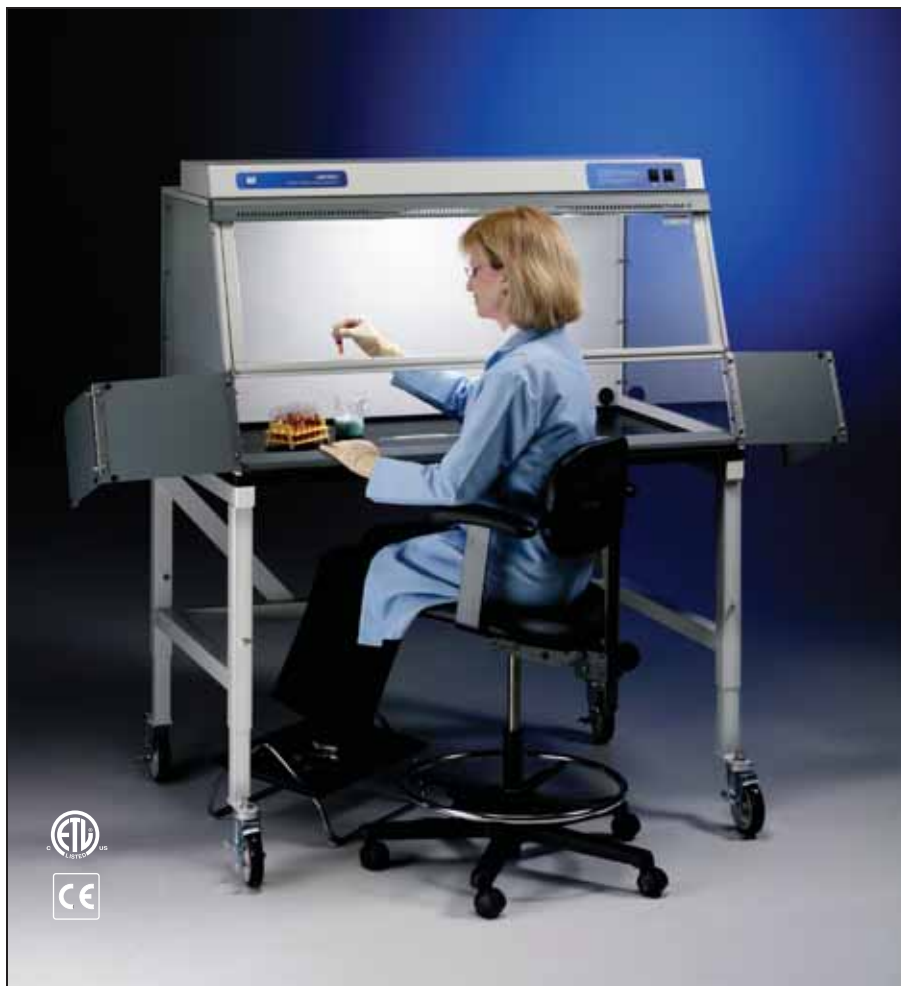
### Standard Features

-  UV-resistant, glacier white and gray epoxy-coated aluminum and steel construction
-  UV-opaque and resistant, 1/4" thick tempered safety glass sash and sides
  - 7.8" high sash opening
-  Ergonomic 20° angled and hinged sash that pivots upward, locks to a loading height of 20" and has wiping seals to reduce cross contamination
  - Fluorescent lamp
  - 254 nm UV lamp
  - Interior electrical receptacle
  - Front-mounted switches for 3-way light (fluorescent, UV and off) and auxiliary electrical receptacle
-  Bi-fold doors that close the sash opening
  - Two utility ports with iris openings and plugs
  - ETL listing, UL 3101-1/61010-1 and CAN/CSA C222.2 No. 1010.1 conformity (115 volt models)
  - CE Conformity Marking (230 volt models)
  - One year warranty on parts and service

### Required Accessories

- Supporting work surface. Place on existing casework or see page 59.
- Supporting base. Place on existing casework or see pages 60 and 61.

See page 59 for dimensional drawings.



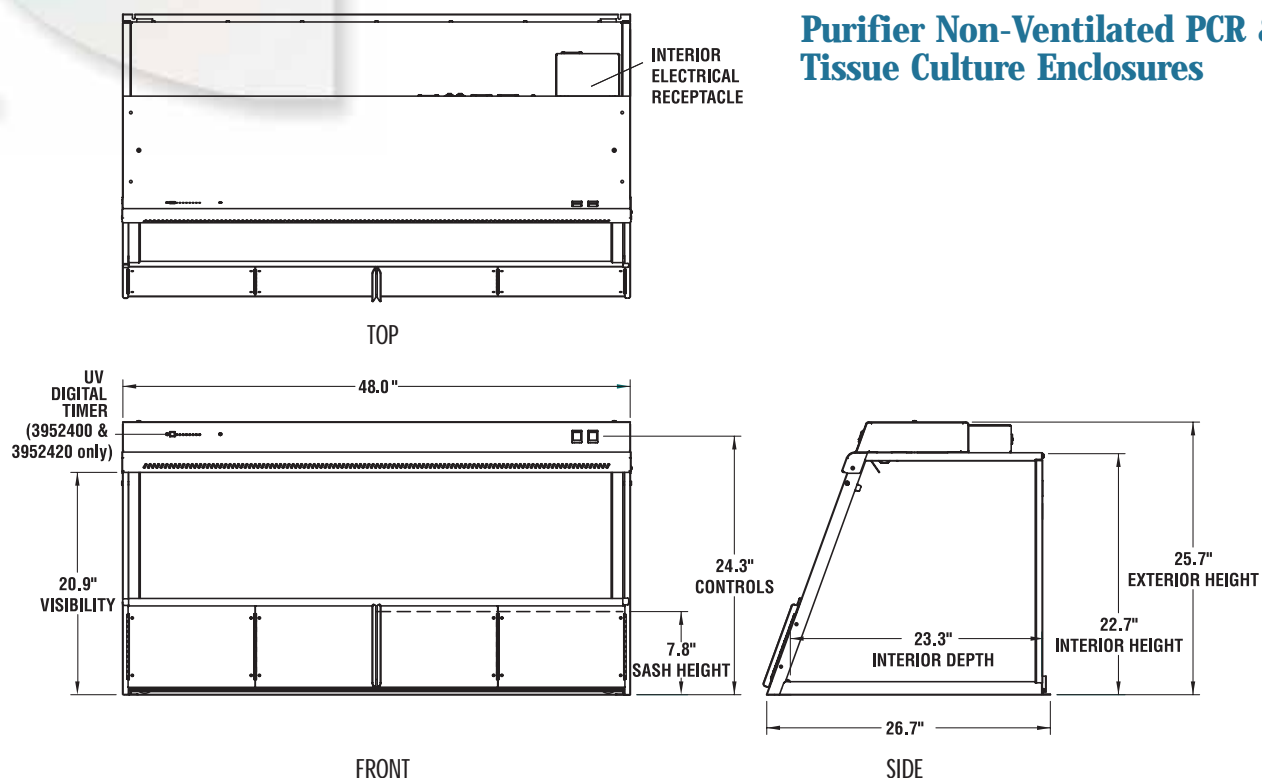
Purifier Tissue Culture Enclosure 3951400 on Solid Epoxy Dished Work Surface 3908402 and Telescoping Base Stand 3747012 with Ergonomic Chair 3744000 and Adjustable Footrest 3746000.

Catalog #	Nominal Width	Electrical Requirements	UV Lamp/ Bi-Fold Doors	Power Cord & Plug	Shipping Weight
3951400	4 feet	115 volts, 60 Hz, 10 amps	•	115 volts, 15 amps	100 lbs. (45 kg)
3951420*	4 feet	230 volts, 50 Hz, 5 amps	•	230 volts, 10 amps, no plug	100 lbs. (45 kg)

\* International electrical configuration

# Purifier® Non-Ventilated PCR & Tissue Culture Enclosures

## DIMENSIONS & ACCESSORIES



### **Solid Epoxy Dished Work Surfaces**

Black chemical-resistant work surface is contoured to fit the dimensions of the Purifier Non-Ventilated PCR Enclosures and Tissue Culture Enclosures and to contain spills.

Catalog #	For use with	Dimensions	Shipping Weight
3908402	Non-Ventilated PCR & Tissue Culture Encl.	48.0" w x 26.7" d x 1.0" h (122 cm x 67.8 cm x 2.5 cm)	96.0 lbs. (43.5 kg)



### **3744000 Ergonomic Chair with Armrests**

Chair has 6-way articulating seat and back control for personalized adjustment. Pneumatic mechanism adjusts seat height from 18.25" to 25.75". Shipping weight 35.0 lbs. (15.9 kg). See page 66 for more information.



### **3746000 Adjustable Footrest**

Elevates feet and permits angle repositioning while in use. 18.5" w x 11.5" d x 8" high. Shipping weight 6.0 lbs. (2.7 kg)



### **Telescoping Base Stands**

Epoxy-coated steel. Adjust in 1" increments from 27.5" to 33.5" high. Available with fixed leveling feet or casters. See pages 60 and 61 for more information.

# Tel escoping Base Stands

These stands have telescoping legs so that they may be adjusted to seven height positions.\* The stands are available with fixed feet or casters for mobility.

## Standard Features

- Meet NSF Standard for stability and construction.
- Support any Purifier Delta Series Safety Cabinet, Purifier Clean Bench or Enclosure.
- Support loads up to 1000 pounds.
- ADA-compliant.
- Durable 1.75" tubular, epoxy-coated steel frame. Models 3' wide and larger have rear crossbar supports.
- Telescoping legs are adjustable to seven height positions in 1" increments from 27.5" to 33.5".\*
- Available with four fixed leveling feet or 5" diameter, toe-locking, non-marking polyurethane casters with bearings for quiet operation.

*\*Height selection and adjustment are required **before** the enclosure is installed atop the stand.*

## 3730500 Caster Kit

For converting Telescoping Base Stands with Fixed Feet manufactured after 10/02. Kit includes four 5" diameter, non-marking polyurethane casters with toe locks. Load rating for each caster is 250 pounds. Casters have bearings for quiet operation. Casters replace the fixed feet included with Telescoping Base Stands. **Installation is required.** Shipping weight 10 lbs. (4.5 kg)



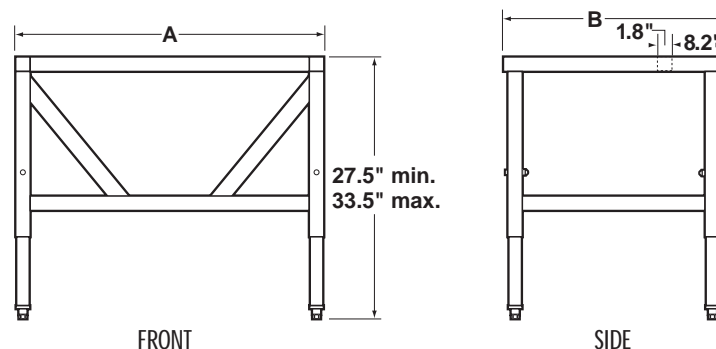
Telescoping Base Stand with Fixed Feet 3747010.



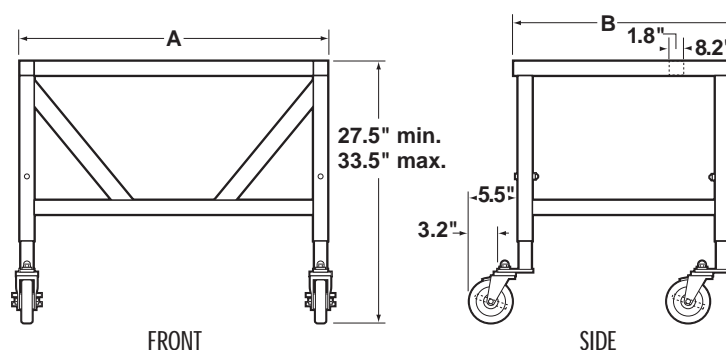
Inset: Telescoping Base Stand with Casters 3746701.

Catalog Numbers	Nominal Width	A	B
3746700, 3746710	2-Ft	24.0"	29.0"
3746701, 3746711	3-Ft	36.0"	29.0"
3730300, 3730310	3-Ft	38.5"	29.0"
3747002, 3747012	4-Ft	48.0"	25.5"
3746702, 3746712	4-Ft	48.0"	29.0"
3730400, 3730410	4-Ft	50.5"	29.0"
3830500, 3830501	5-Ft	62.5"	29.0"
3746704, 3746714	6-Ft	72.0"	29.0"
3730600, 3730610	6-Ft	74.5"	29.0"

## With Fixed Feet



## With Casters





# Tel escoping Base Stands

## Telescoping Base Stands with Fixed Feet

Nominal Width	Catalog #	Overall Width x Depth	Shipping Weight	For Use With:
2-Ft	<b>3746700</b>	24.0" w x 29.0" d	100 lbs. (45 kg)	Purifier Class I Enclosure, Purifier HEPA Filtered Enclosure, Purifier Vertical Clean Bench, Purifier Filtered PCR Enclosure
3-Ft	<b>3746701</b>	36.0" w x 29.0" d	100 lbs. (45 kg)	Purifier Class I Enclosure, Purifier Class I Enclosure, Purifier HEPA Filtered Enclosure, Purifier Horizontal Clean Bench, Vertical Clean Bench, Purifier Filtered PCR Enclosure
3-Ft	<b>3730300</b>	38.5" w x 29.0" d	110 lbs. (50 kg)	Purifier Delta Series Safety Cabinet
4-Ft	<b>3747002</b>	48.0" w x 25.5" d	110 lbs. (50 kg)	Purifier Non-Ventilated PCR Enclosure, Purifier Tissue Culture Enclosure
4-Ft	<b>3746702</b>	48.0" w x 29.0" d	115 lbs. (52 kg)	Purifier Class I Enclosure, Purifier Class I Enclosure, Purifier HEPA Filtered Enclosure, Purifier Horizontal Clean Bench, Vertical Clean Bench, Purifier Filtered PCR Enclosure
4-Ft	<b>3730400</b>	50.5" w x 29.0" d	117 lbs. (53 kg)	Purifier Delta Series Safety Cabinet
5-Ft	<b>3830500</b>	62.5" w x 29.0" d	124 lbs. (56 kg)	Purifier Delta Series Safety Cabinet
6-Ft	<b>3746704</b>	72.0" w x 29.0" d	125 lbs. (57 kg)	Purifier Horizontal Clean Bench
6-Ft	<b>3730600</b>	74.5" w x 29.0" d	130 lbs. (59 kg)	Purifier Delta Series Safety Cabinet

## Telescoping Base Stands with 5" diameter Toe-Locking Casters\*

Nominal Width	Catalog #	Overall Width x Depth	Shipping Weight	For Use With:
2-Ft	<b>3746710</b>	24.0" w x 29.0" d	100 lbs. (45 kg)	Purifier Class I Enclosure, Purifier HEPA Filtered Enclosure, Purifier Vertical Clean Bench, Purifier Filtered PCR Enclosure
3-Ft	<b>3746711</b>	36.0" w x 29.0" d	100 lbs. (45 kg)	Purifier Class I Enclosure, Purifier Class I Enclosure, Purifier HEPA Filtered Enclosure, Purifier Horizontal Clean Bench, Vertical Clean Bench, Purifier Filtered PCR Enclosure
3-Ft	<b>3730310</b>	38.5" w x 29.0" d	110 lbs. (50 kg)	Purifier Delta Series Safety Cabinet
4-Ft	<b>3747012</b>	48.0" w x 25.5" d	110 lbs. (50 kg)	Purifier Non-Ventilated PCR Enclosure, Purifier Tissue Culture Enclosure
4-Ft	<b>3746712</b>	48.0" w x 29.0" d	115 lbs. (52 kg)	Purifier Class I Enclosure, Purifier Class I Enclosure, Purifier HEPA Filtered Enclosure, Purifier Horizontal Clean Bench, Vertical Clean Bench, Purifier Filtered PCR Enclosure
4-Ft	<b>3730410</b>	50.5" w x 29.0" d	117 lbs. (53 kg)	Purifier Delta Series Safety Cabinet
5-Ft	<b>3830510</b>	62.5" w x 29.0" d	124 lbs. (56 kg)	Purifier Delta Series Safety Cabinet
6-Ft	<b>3746714</b>	72.0" w x 29.0" d	125 lbs. (57 kg)	Purifier Horizontal Clean Bench
6-Ft	<b>3730610</b>	74.5" w x 29.0" d	130 lbs. (59 kg)	Purifier Delta Series Safety Cabinet

\*Enclosures supported by mobile Base Stands will require special modifications to incorporate flexible ducting, wiring and plumbing when applied.

## Accessory Shelves

Glacier white, epoxy-coated, 16 gauge steel. Designed to hook on the lower rear horizontal cross member of the Telescoping Base Stand. Provides storage space for wipes, cleaning agents, gloves and other miscellaneous laboratory supplies. One each.



Nominal Width	Catalog #	Shelf Width x Depth	Shipping Weight	For Use With:
2-Ft	<b>3811100</b>	20.4" x 9.9"	9 lbs. (4 kg)	3746700, 3746701
3-Ft	<b>3811101</b>	32.4" x 9.9"	12 lbs. (5 kg)	3746710, 3746711
3-Ft	<b>3811105</b>	34.9" x 9.9"	12 lbs. (5 kg)	3730300, 3730310
4-Ft	<b>3811102</b>	44.4" x 9.9"	15 lbs. (7 kg)	3747002, 3746702, 3747012, 3746712
4-Ft	<b>3811106</b>	46.9" x 9.9"	16 lbs. (7 kg)	3730400, 3730410
5-Ft	<b>3811103</b>	56.4" x 9.9"	19 lbs. (9 kg)	3830500, 3830510
6-Ft	<b>3811104</b>	68.4" x 9.9"	23 lbs. (10 kg)	3746704, 3746714
6-Ft	<b>3811108</b>	70.9" x 9.9"	23 lbs. (10 kg)	3730600, 3730610

# Electric & Manual Hydraulic Lift Base Stands

These stands have a built-in hydraulic lift so that height may be adjusted at any time. They allow you to position the stand and the safety cabinet or clean bench it supports to accommodate persons of different heights and wheelchair-bound users, to transport equipment through doorways, and for easier service access.

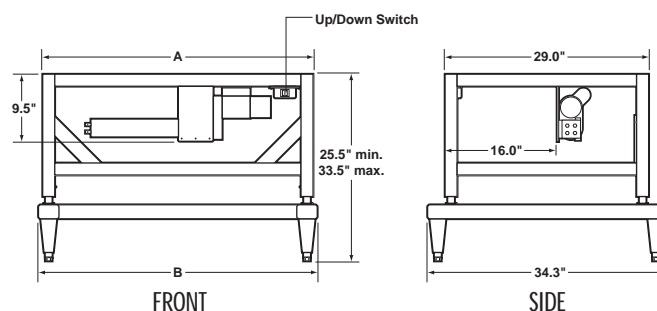
## Standard Features

- Meet NSF Standard for stability and construction.
- Support Purifier Delta Series Safety Cabinets, Purifier Class I Safety Enclosures, Purifier HEPA Filtered Enclosures, Purifier Horizontal Clean Benches, Purifier Vertical Clean Benches and Purifier Filtered PCR Enclosures.
- Support loads up to 1000 pounds.
- ADA-compliant.
- Durable 1.75" tubular, epoxy-coated steel frame with rear cross-bar supports. Sub-frame is 2.0" x 3.0".
- Height is infinitely adjustable from 25.5" to 33.5" high.
- Include four powder-coated, die-cast feet with levelers.
- Include front-accessible up/down switch (Electric Lift models)
- Include front-accessible hand crank. Turning the crank clockwise raises the stand; counterclockwise lowers it. The handle may be disengaged and folded under, out of the way, when not in use. (Manual Lift models)

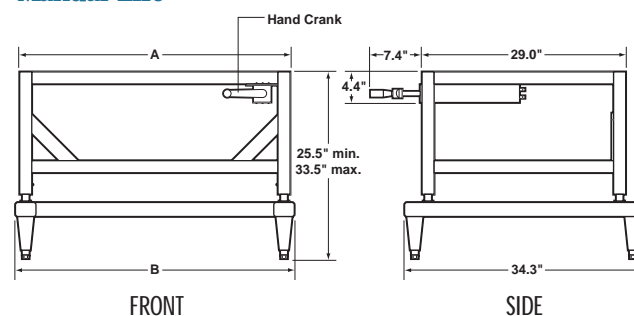


Manual Hydraulic Lift Base Stand 3780304.

## Electric Lift



## Manual Lift



## Caster Kit 3784000

Castors add mobility to the Hydraulic Lift Base Stand. Kit includes four 5" diameter, non-marking polyurethane casters with toe locks. Load rating for each caster is 250 pounds. Casters have bearings for quiet operation. Casters replace the fixed feet that are included with the stand. **Installation is required.** Not for use with stands that support hard-ducted enclosures such as Purifier Class II, Type B2 Safety Cabinets. Shipping weight 10 lbs. (4.5 kg)

Catalog Numbers	Nominal Width	A	B
3780300, 3780303, 3780400	3-Ft	36.0"	37.2"
3780100, 3780103, 3780200	3-Ft	38.5"	39.7"
3780301, 3780304, 3780401	4-Ft	48.0"	49.2"
3780101, 3780104, 3780201	4-Ft	50.5"	51.7"
3780106, 3780107, 3780208	5-Ft	62.5"	63.9"
3780302, 3780305, 3780402	6-Ft	72.0"	73.2"
3780302, 3780105, 3780202	6-Ft	74.5"	75.7"

# Electric & Manual Hydraulic Lift Base Stands

## Electric Hydraulic Lift Base Stands

Nominal Width	Catalog #	Overall Width x Depth	Switch Location	Electrical Requirements	Shipping Weight	For Use With:
3-Ft	<b>3780300</b>	36.0" w x 29.0" d	Right Side	115 volts, 60 Hz, 2.4 amps	150 lbs. (68 kg)	Purifier Class I Enclosure, Purifier HEPA Filtered Enclosure, Purifier Horizontal Clean Bench, Purifier Vertical Clean Bench, Purifier Filtered PCR Enclosure
3-Ft	<b>3780303*</b>	36.0" w x 29.0" d	Right Side	230 volts, 50 Hz, 0.8 amp	150 lbs. (68 kg)	Purifier Class I Enclosure, Purifier HEPA Filtered Enclosure, Purifier Horizontal Clean Bench, Purifier Vertical Clean Bench, Purifier Filtered PCR Enclosure
3-Ft	<b>3780100</b>	38.5" w x 29.0" d	Left Side	115 volts, 60 Hz, 2.4 amps	170 lbs. (77 kg)	Purifier Delta Series Safety Cabinet
3-Ft	<b>3780103*</b>	38.5" w x 29.0" d	Left Side	230 volts, 50 Hz, 0.8 amp	170 lbs. (77 kg)	Purifier Delta Series Safety Cabinet
4-Ft	<b>3780301</b>	48.0" w x 29.0" d	Right Side	115 volts, 60 Hz, 2.4 amps	180 lbs. (82 kg)	Purifier Class I Enclosure, Purifier HEPA Filtered Enclosure, Purifier Horizontal Clean Bench, Purifier Vertical Clean Bench, Purifier Filtered PCR Enclosure
4-Ft	<b>3780304*</b>	48.0" w x 29.0" d	Right Side	230 volts, 50 Hz, 0.8 amp	180 lbs. (82 kg)	Purifier Class I Enclosure, Purifier HEPA Filtered Enclosure, Purifier Horizontal Clean Bench, Purifier Vertical Clean Bench, Purifier Filtered PCR Enclosure
4-Ft	<b>3780101</b>	50.5" w x 29.0" d	Left Side	115 volts, 60 Hz, 2.4 amps	185 lbs. (84 kg)	Purifier Delta Series Safety Cabinet
4-Ft	<b>3780104</b>	50.5" w x 29.0" d	Left Side	230 volts, 50 Hz, 0.8 amp	185 lbs. (84 kg)	Purifier Delta Series Safety Cabinet
5-Ft	<b>3780106</b>	62.5" w x 29.0" d	Left Side	115 volts, 60 Hz, 2.4 amps	215 lbs. (98 kg)	Purifier Delta Series Safety Cabinet
5-Ft	<b>3780107</b>	62.5" w x 29.0" d	Left Side	230 volts, 50 Hz, 0.8 amp	215 lbs. (98 kg)	Purifier Delta Series Safety Cabinet
6-Ft	<b>3780302</b>	72.0" w x 29.0" d	Right Side	115 volts, 60 Hz, 2.4 amps	220 lbs. (100 kg)	Purifier Horizontal Clean Bench
6-Ft	<b>3780305*</b>	72.0" w x 29.0" d	Right Side	230 volts, 50 Hz, 0.8 amp	220 lbs. (100 kg)	Purifier Horizontal Clean Bench
6-Ft	<b>3780102</b>	74.5" w x 29.0" d	Left Side	115 volts, 60 Hz, 2.4 amps	225 lbs. (102 kg)	Purifier Delta Series Safety Cabinet
6-Ft	<b>3780105*</b>	74.5" w x 29.0" d	Left Side	230 volts, 50 Hz, 0.8 amp	225 lbs. (102 kg)	Purifier Delta Series Safety Cabinet

## Manual Hydraulic Lift Base Stands

Nominal Width	Catalog #	Overall Width x Depth	Handle Location	Shipping Weight	For Use With:
3-Ft	<b>3780400</b>	36.0" w x 29.0" d	Right Side	150 lbs. (68 kg)	Purifier Class I Enclosure, Purifier HEPA Filtered Enclosure, Purifier Horizontal Clean Bench, Purifier Vertical Clean Bench, Purifier Filtered PCR Enclosure
3-Ft	<b>3780200</b>	38.5" w x 29.0" d	Left Side	170 lbs. (77 kg)	Purifier Delta Series Safety Cabinet
4-Ft	<b>3780401</b>	48.0" w x 29.0" d	Right Side	180 lbs. (82 kg)	Purifier Class I Enclosure, Purifier HEPA Filtered Enclosure, Purifier Horizontal Clean Bench, Purifier Vertical Clean Bench, Purifier Filtered PCR Enclosure
4-Ft	<b>3780201</b>	50.5" w x 29.0" d	Left Side	185 lbs. (84 kg)	Purifier Delta Series Safety Cabinet
5-Ft	<b>3780203</b>	62.5" w x 29.0" d	Left Side	215 lbs. (98 kg)	Purifier Delta Series Safety Cabinet
6-Ft	<b>3780402</b>	72.0" w x 29.0" d	Right Side	220 lbs. (100 kg)	Purifier Horizontal Clean Bench
6-Ft	<b>3780202</b>	74.5" w x 29.0" d	Left Side	225 lbs. (102 kg)	Purifier Delta Series Safety Cabinet

\* International electrical configuration

# SoLo™ Hydraulic Lift Base Stands

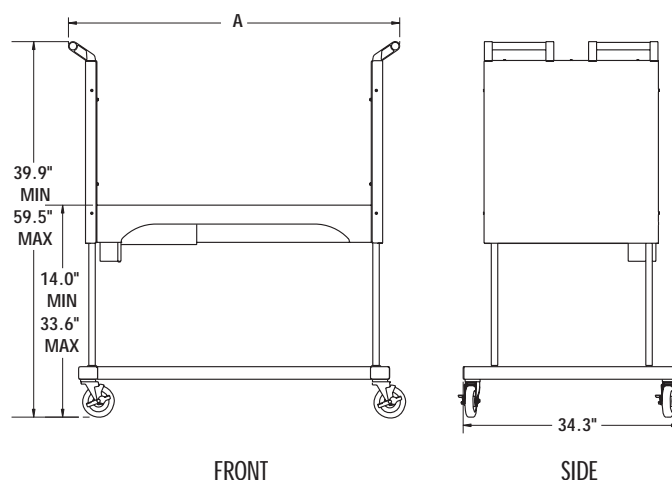
SoLo™ Hydraulic Lift Base Stands are specifically designed to support Purifier® Delta® Series Class II, Type A2 Biological Safety Cabinets. The hydraulic lift system permits the stand to be lowered to allow the safety cabinet to be transported through standard doorways as low as 78" high. Casters provide mobility and lock in place for stability.

## Standard Features

- Meet NSF Standard for stability and construction.
- Support any Purifier Delta Series Class II, Type A2 Safety Cabinet.
- Meet the minimum requirements of NSF Standard 49 for overturn resistance stability when used with Purifier Delta Series Cabinets.
- ADA-compliant.
- Durable epoxy-coated steel construction.
- Support loads up to 1300 pounds (590 kg).
- Built-in hydraulic lift is operated by a remote control with buttons for upward and downward movement. Height adjustment positions the enclosure for persons of different statures, wheel-chair bound users, transport through doorways, and easier service access to upper components.
- Infinitely adjustable height provides work surface heights from 17.2" to 36.8" and overall enclosure height as low as 76.2".
- 5" diameter, toe-locking, non-marking polyurethane casters with bearings for quiet operation.
- Two handle bars on each side facilitate transport. Bars are durable PVC-coated steel tubes with polyamide brackets.



SoLo Hydraulic Lift Base Stand 3780311.



FRONT

SIDE

Nominal Width	Actual Width (A)	Catalog #	Electrical Requirements	Additional Load Capacity*	For Use With: Purifier Delta Series Safety Cabinet	Shipping Weight
3-Ft	52.5"	<b>3780310</b>	115 volts, 60 Hz, 2 amps	700 lbs. (318 kg)	3620400, 3620404, 3620500, 3620504, 3620510, 3620514	395 lbs. (179 kg)
3-Ft.	52.5"	<b>3780314</b>	230 volts, 50 Hz, 3 amps	700 lbs. (318 kg)	3620520, 3620524	395 lbs. (179 kg)
4-Ft	64.5"	<b>3780311</b>	115 volts, 60 Hz, 2 amps	600 lbs. (272 kg)	3620800, 3620804, 3620900, 3620904, 3620910, 3620914	435 lbs. (197 kg)
4-Ft	64.5"	<b>3780315</b>	230 volts, 50 Hz, 3 amps	600 lbs. (272 kg)	3620920, 3620924, 3620930, 3620934	435 lbs. (197 kg)
5-Ft	76.5"	<b>3780312</b>	115 volts, 60 Hz, 2 amps	500 lbs. (227 kg)	3620000, 3620004, 3620100, 3620104	460 lbs. (209 kg)
5-Ft	76.5"	<b>3780316</b>	230 volts, 50 Hz, 3 amps	500 lbs. (227 kg)	3620120, 3620124	460 lbs. (209 kg)
6-Ft	88.5"	<b>3780313</b>	115 volts, 60 Hz, 2 amps	350 lbs. (159 kg)	3621200, 3621204, 3621300, 3621304, 3621310, 3621314	600 lbs. (272 kg)
6-Ft	88.5"	<b>3780317</b>	230 volts, 50 Hz, 3 amps	350 lbs. (159 kg)	3621320, 3621324	600 lbs. (272 kg)

\*Maximum weight of equipment loaded in safety cabinet or station, excluding weight of the safety cabinet or station.



# Seismic Base Stands

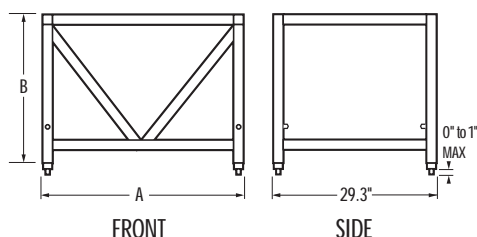
## Standard Features

- Meet NSF Standard for stability and construction.
- Securely support Purifier Delta Series Class II, Type A2 and B2 Safety Cabinets in earthquake-prone regions.
- Sturdy and durable 2" tubular, epoxy-coated steel.
- Available in two fixed working heights, 30" and 36".
- Include four leveling feet.
- Include four epoxy-coated 0.25" thick steel seismic brackets to secure the Seismic Base Stand to the floor.

Catalog #	Nominal Width	Overall Dimensions	Shipping Weight
3770300	3-Ft	38.5" w x 29.3" d x 28.0" h	90 lbs. (41 kg)
3770301	3-Ft	38.5" w x 29.3" d x 34.0" h	95 lbs. (43 kg)
3770400	4-Ft	50.5" w x 29.3" d x 28.0" h	118 lbs. (54 kg)
3770401	4-Ft	50.5" w x 29.3" d x 34.0" h	123 lbs. (56 kg)
3816500	5-Ft	62.5" w x 29.3" d x 28.0" h	138 lbs. (63 kg)
3816501	5-Ft	62.5" w x 29.3" d x 34.0" h	143 lbs. (65 kg)
3770600	6-Ft	74.5" w x 29.3" d x 28.0" h	157 lbs. (71 kg)
3770601	6-Ft	74.5" w x 29.3" d x 34.0" h	162 lbs. (73 kg)



Seismic Base Stand 3770300.



Catalog #	A	B
3770300	38.5"	28.0"
3770301	38.5"	34.0"
3770400	50.5"	28.0"
3770401	50.5"	34.0"
3816500	62.5"	28.0"
3816501	62.5"	34.0"
3770600	74.5"	28.0"
3770601	74.5"	34.0"

## Unassembled Base Stands

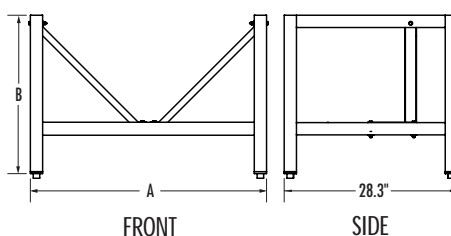
### Standard Features

- Meet NSF Standard for stability and construction.
- Support any Purifier Delta Series Safety Cabinet.
- Durable 2" tubular, epoxy-coated steel end frames with rear crossbar supports.
- Include four leveling feet.
- Shipped unassembled for compact, economical transport.
- Available in two fixed heights: 26.6" and 32.6".
- Easy to assemble.

Catalog #	Nominal Width	Overall Assembled Dimensions	Shipping Package Dimensions	Shipping Weight
3990000	3-Ft	38.5" w x 28.3" d x 26.6" h	6" w x 27" d x 38" h	50 lbs. (22.7 kg)
3990004	3-Ft	38.5" w x 28.3" d x 32.6" h	6" w x 33" d x 38" h	52 lbs. (23.6 kg)
3990001	4-Ft	50.5" w x 28.3" d x 26.6" h	6" w x 27" d x 50" h	53 lbs. (24.0 kg)
3990005	4-Ft	50.5" w x 28.3" d x 32.6" h	6" w x 33" d x 50" h	55 lbs. (24.9 kg)
3990002	5-Ft	62.5" w x 28.3" d x 26.6" h	6" w x 27" d x 62" h	55 lbs. (24.9 kg)
3990006	5-Ft	62.5" w x 28.3" d x 32.6" h	6" w x 33" d x 62" h	57 lbs. (25.9 kg)
3990003	6-Ft	74.5" w x 28.3" d x 26.6" h	6" w x 27" d x 74" h	58 lbs. (26.3 kg)
3990007	6-Ft	74.5" w x 28.3" d x 32.6" h	6" w x 33" d x 74" h	60 lbs. (27.2 kg)



Unassembled Base Stand 3990000.



Catalog #	A	B
3990000	38.5"	26.6"
3990001	50.5"	26.6"
3990002	62.5"	26.6"
3990003	74.5"	26.6"
3990004	38.5"	32.6"
3990005	50.5"	32.6"
3990006	62.5"	32.6"
3990007	74.5"	32.6"

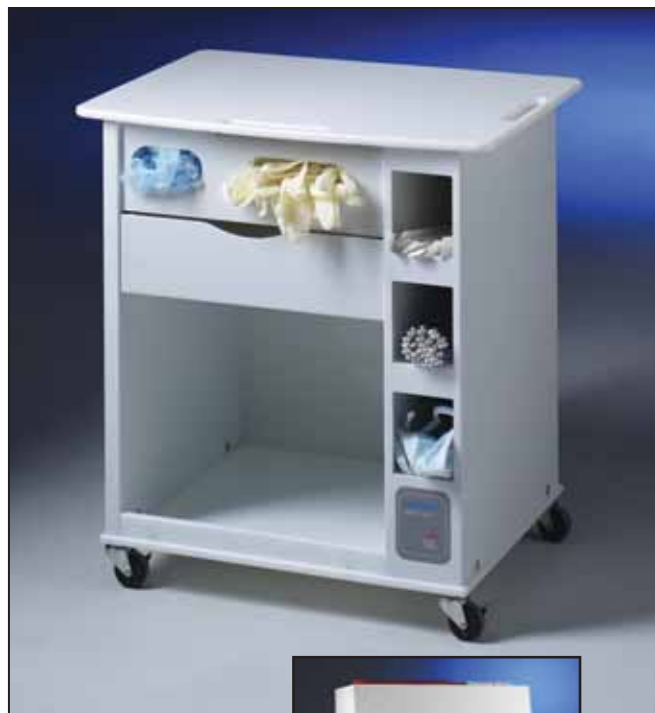
## Delta® Cart

The Delta Cart was specifically designed to provide convenient storage of supplies commonly used in biological safety cabinets. Compartments hold and dispense pipettes, gloves, lab tissues and other small supplies. Its compact size allows it to fit easily under Purifier Delta Series Class II Safety Cabinets mounted on Telescoping Base Stands adjusted to any height. Casters and handles allow the cart to be easily moved to within reach while the user works at the biological safety cabinet.

### Standard Features

- Three right side compartments accommodate pipettes and other supplies.
- Top left side compartment with front panel cutouts accommodates boxes of wipes and gloves. The hinged panel may be pivoted down for loading.
- Drawer holds a variety of miscellaneous small instruments and supplies.
- Open storage area in bottom holds larger equipment and supplies.
- Work surface and bottom are constructed of corrosion-resistant white high density polyethylene that is easy to clean. Remaining components are constructed of corrosion-resistant white ABS.
- Compact dimensions allow easy fit under Purifier Delta Series Class II Safety Cabinets mounted on Telescoping Base Stands.
- Work surface is 25.0" w x 19.0" d (63.5 x 48.3 cm). Cabinet is 21.5" w x 17.4" d (54.6 x 44.2 cm). Overall height is 27.0" (68.6 cm).
- Work surface has handle cutouts in front and right hand side for easy access.
- 2" diameter casters provide mobility.

Catalog #	Description	Shipping Weight
8022000	Delta Cart	50 lbs. (23 kg)



Delta Cart 8022000.

**Inset:** Delta Cart 8022000 stored beneath a Purifier Delta Series Class II, Type A2 Safety Cabinet 3620804 on Telescoping Base Stand 3730400.



## Ergonomic Chair



The Ergonomic Chair provides comfortable seating and may be used throughout the laboratory.

### Standard Features

- 6-way articulating seat and back control for personalized adjustment.
- Pneumatic mechanism seat height adjustment from 18.25" to 25.75".
- Five-leg black reinforced composite base with 2" diameter ball-bearing casters.
- Aluminum support ring.
- Removable armrests.
- Black vinyl upholstery.

Catalog #	Description	Shipping Weight
3744000	Ergonomic Chair with Armrests	35 lbs. (15.9 kg)

## Accessories

### For Purifier® Delta® Series Class II, Type A2 Safety Cabinets

#### Remote Blowers

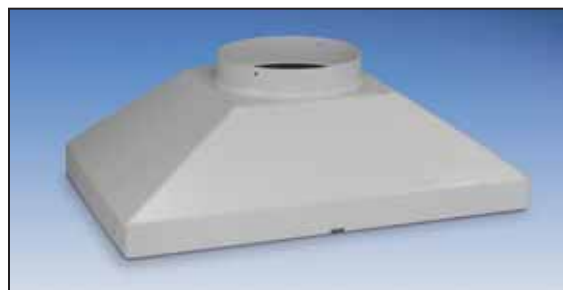
Recommended when thimble-ducting the Purifier Delta Series Class II, Type A2 Safety Cabinets. Helps to remove exhausted air from the ductwork to the outside. Motor is TEFC (totally enclosed fan cooled). Belt-drive blower has an adjustable sheave and self-adjusting gravity belt tightener. Impeller is phenolic-coated steel. Blower has a dry-powder epoxy-coated base and weathercover. An integral damper prevents backdrafts from flowing down through the ductwork and disrupting airflow within the cabinet. Includes a blower transition adapter with 10.875" ID inlet sized to accept 10" nominal diameter PVC duct and outlet sized to accept 8" nominal diameter PVC duct. Dimensions: 22.81" w x 17.13" d x 22.38" high (57.9 x 43.5 x 56.8 cm). See dimensional details on page 68. Shipping weight 93 lbs. (42 kg)



Catalog #	For use with:	HP	CFM@Static Pressure Loss	Electrical Requirements	Shipping Weight
3668000	3-Ft & 4-Ft Purifier	1/4	555 @ 0.25" to 448 @ 0.5"	115 volts, 1 ø, 60 Hz, 4.4 amps	93 lbs. (42 kg)
3668001	5-Ft & 6-Ft Purifier	1/2	760 @ 0.25" to 700 @ 0.5"	115 volts, 1 ø, 60 Hz, 8.4 amps	99 lbs. (45 kg)

#### Canopy Connections

Thimble-ducting expands the use of Class II, Type A2 safety cabinets to include malodorous samples, small amounts of volatile toxic chemicals and tracer quantities of radionuclides. The Canopy Connections allow the Purifier Delta Series Class II, Type A2 Safety Cabinets to be thimble-ducted to the outside with minimal disturbance to the cabinet airflow. The canopy provides an air gap to allow room air to enter the ductwork and mix with the filtered air being exhausted to the outside. Each includes an epoxy-coated steel exhaust transition adapter, hardware necessary to install the adapter and installation instructions. Outlet is 10" ID and accepts 10" nominal diameter ductwork such as the Air-Tight Damper 3776800, which is sold separately. **Remote Blower 3668000 or 3668001 is recommended (not included).** Shipping weight 13 lbs. (5.9 kg)



Contact Labconco for ordering information on Canopy Connections for Purifier Delta Series Safety Cabinets manufactured prior to October 2003.

Catalog #	For use with:	Model Series	Total Exhaust Volume (Safety Cabinet and Room Air)
3794400	3-Ft Purifier Delta Series Class II, Type A2 Cabinets	36204/36205	303-334 CFM / 244-268 CFM
3794500	4-Ft Purifier Delta Series Class II, Type A2 Cabinets	36208/36209	404-444 CFM / 323-355 CFM
3794600	5-Ft Purifier Delta Series Class II, Type A2 Cabinets	36200/36201	546-601 CFM / 437-481 CFM
3794600	6-Ft Purifier Delta Series Class II, Type A2 Cabinets	36212/36213	654-720 CFM / 524-576 CFM

#### 3776800 Air-Tight Damper

Manual adjustable damper may be permanently fastened directly atop the Canopy Connection Kit to provide a transition to exhaust ductwork and means to control the exhaust airflow. The damper may be adjusted to help minimize the amount of conditioned air being exhausted from the room. During cabinet decontamination procedures, a certified technician may close the damper to provide an air-tight seal. Type 304 stainless steel. 10" high with 10" OD inlet and outlet. Shipping weight 13 lbs. (5.9 kg)



# Remote Blower

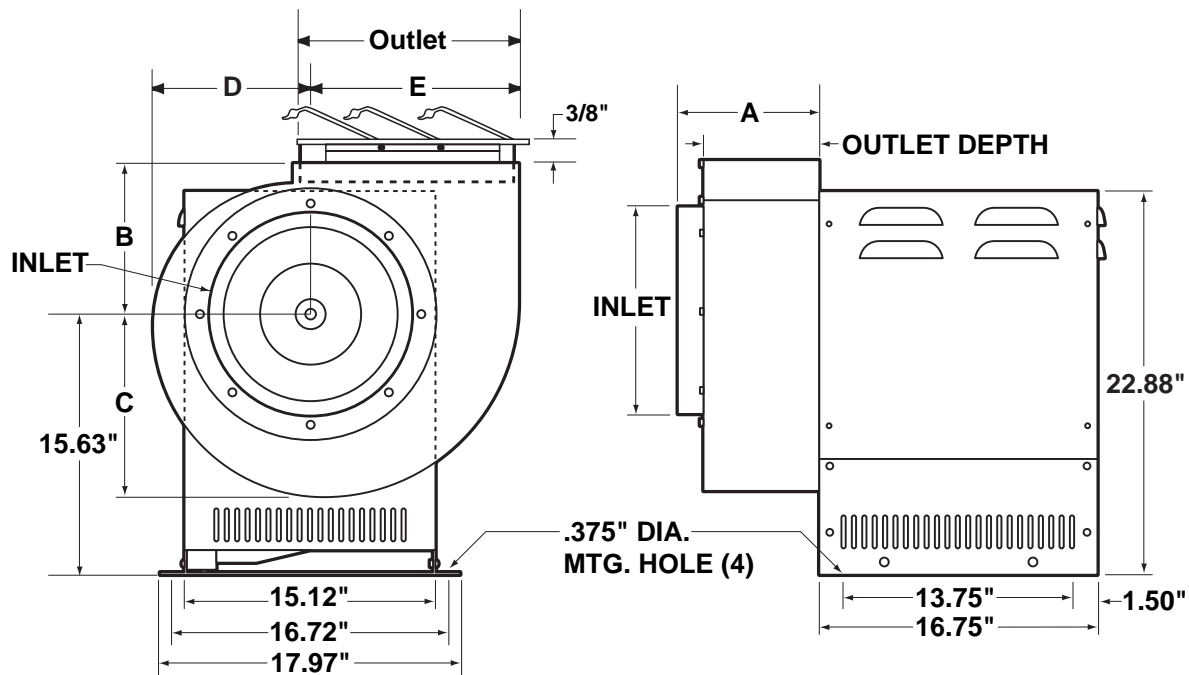
For Purifier® Delta® Series Total Exhaust Safety Cabinets

## 3663500 Remote Blower

A remote blower is required for operation of the Purifier Delta Series Class II, Type B2 Total Exhaust Safety Cabinet. The 2 hp motor is TEFC (totally enclosed fan cooled) and delivers up to 1179 CFM at 3.98" static pressure loss. Belt-drive blower has an adjustable sheave and self-adjusting gravity belt tightener. Impeller is phenolic-coated steel. Blower has a dry-powder epoxy-coated base and weathercover. An integral damper prevents backdrafts from flowing down through the ductwork, disrupting airflow within the cabinet. Blower inlet is 12.25" ID and is sized to accept 12" nominal diameter PVC duct. Includes a blower transition adapter outlet sized to accept 12" nominal diameter PVC duct. For operation on 230/460 volts, 3 phase, 60 Hz, 5.8/2.9 amps AC. Dimensions: 24.31" w x 21.5" d x 22.38" high (61.8 x 54.6 x 56.8 cm). See dimensional details below. Shipping weight 100 lbs. (45 kg)



### Dimensions for Remote Blowers 3668000, 3668001 and 3663500



	3668000 & 3668001	3663500
A	7.16"	8.56"
B	7.00"	9.00"
C	8.13"	10.50"
D	6.81"	9.00"
E	9.25"	12.50"
Inlet	10.87" ID	12.25" OD
Outlet	5.5" x 10" OD	7" x 13.5" OD
Blower Wheel	9.19" dia. x 4.25" w	12.19" x 5.25" w



# Remote Blowers

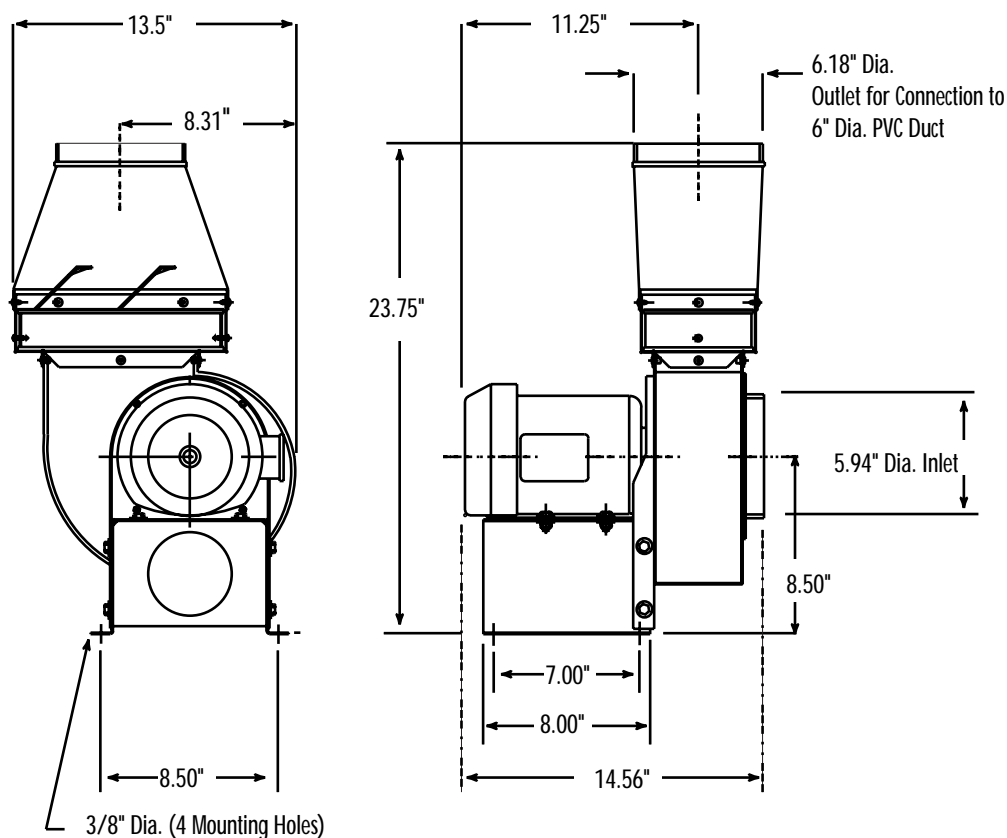
For Purifier® Class I & HEPA Filtered Enclosures



## Remote Blowers with backdraft damper for Canopy-Ducted Purifier Class I and HEPA Filtered Enclosures

A remote blower is required when canopy-ducting the Purifier Class I Safety Enclosure or Purifier HEPA Filtered Enclosure. The direct drive blower has a 1/4 hp TEFC-type motor and overcomes external static pressure of 0.5" at 230 CFM. Housing and impeller are corrosion-resistant phenolic-coated steel. An integral damper prevents back-drafts from flowing down through the ductwork, disrupting airflow within the cabinet. Blower inlet is 5.94" OD and is sized to accept 6" nominal diameter PVC duct. Includes a blower transition adapter outlet sized to accept 6" nominal diameter PVC duct. Dimensions: 14.6" w x 13.5" d x 23.75" high (37.1 x 34.3 x 60.3 cm). See dimensional details below. Contact Labconco for ordering information on Remote Blowers without integral dampers.

Catalog #	For use with:	Electrical Requirements	Shipping Weight
3716000	3980200, 3980201 3980202, 3980203 3980300, 3980301 3980302, 3980303 3980400, 3980401 3980402, 3980403	115 volts, 60 Hz, 4.4 amps	36 lbs. (16.3 kg)
3716001	3980220, 3980221 3980222, 3980223 3980320, 3980322 3980322, 3980323 3980420, 3980421 3980422, 3980423	230 volts, 50 Hz, 2.8 amps	36 lbs. (16.3 kg)



# Biological Safety Cabinets, Enclosures & Clean Benches

## GLOSSARY

**aerosol:** A colloid of liquid or solid particles suspended in a gas, usually air.

**agent:** Any biological, chemical or physical power, principle or substance capable of acting upon a subject organism, usually to its detriment.

**air barrier ("air curtain"):** The unidirectional movement of air past and parallel to the plane of an opening and at a velocity greater than that on either side, thereby creating an impedance to transverse movement of airborne particulates through the opening.

**air stream:** A current of air; airflow.

**antiseptic:** A compound that prevents the multiplication of microorganisms. Bacteriostatic in action, not bactericidal. Its use applies to tissues rather than inanimate surfaces.

**aseptic technique:** The performance of a procedure or operation in a manner that prevents the introduction of microorganisms which are capable of causing infection or contamination.

**assessment of risk:** The process of defining biological hazard associated with a microbial or antigenic entity.

**biohazard:** A contraction of the words biological and hazard; infectious agent(s) presenting a real or potential risk to the well-being of man, other animals, or plants, either directly through infection or indirectly through disruption of the environment.

**biohazard cabinet:** See biological safety cabinet.

**biological challenge:** A series of tests performed to assure that aerosols are contained within the cabinet, that outside contaminants do not enter the cabinet, and contaminants in the cabinet remain localized. Suspensions of *Bacillus subtilis* subsp. *niger* spores are used as an indicator in the tests.

**biological safety cabinet:** Cabinet intended to protect the user and environment from the hazards of handling infectious material and other biohazardous material. Some types may also protect the materials being handled in them from contamination.

**Brownian motion:** A random movement of microscopic particles suspended in liquids or gases resulting from impact of the molecules of the suspending agent on the particles.

**canopy connection:** A biohazard cabinet exhaust system with a physical gap or space between the cabinet's exhaust and the exhaust system intake. During operation, the exhaust system draws all of the cabinet's exhaust air through the duct, plus a small volume of room air through the gap.

**certification:** When pertaining to safety cabinets, measurement and/or correction of safety cabinet air velocities, patterns, balance, leakage and filtration system by a qualified technician.

**chemical carcinogen:** Those chemicals designated as posing a potential occupational carcinogenic risk to workers by OSHA or the Department of Health and Human Services Committee for Coordinating Toxicology and Related Programs.

**clean room:** A dust-free facility.

**collection efficiency:** Usually expressed as the percentage of material collected compared with the total amount present, it may be calculated on a particle number basis or a total weight basis.

**contamination:** Any foreign substance which makes an unwanted incursion. In the present context, usually viable airborne particulates.

**decontamination:** The destruction or removal of living organisms (this does not imply either total destruction or total removal), or the removal or neutralization of toxic agents or chemical carcinogens; to make an object safe for unprotected individuals.

**di- (2 ethyl hexyl) phthalate:** See DOP.

**di-sec-octyl phthalate:** See DOP.

**diffuser:** A device, often a screen, used to distribute airflow evenly.

**diffusion:** A phenomenon of HEPA filtration by which Brownian motion causes particles to diffuse across airstream lines impacting them on a filter fiber.

**dioctylphthalate:** See DOP.

**disinfectant:** A chemical agent that kills or inactivates vegetative bacteria, fungi, and viruses, but not necessarily spores. This term applies to inanimate surfaces as opposed to tissues.

**DOP:** Dioctylphthalate, an oil that can be aerosolized to an extremely uniform size; i.e. 0.3  $\mu\text{m}$  for a major portion of any sample; the aerosol is used to challenge HEPA filters.

**hot DOP:** Produced by controlled vaporization and condensation of liquid DOP to give a cloud of monodisperse droplets with diameters of approximately 0.3  $\mu\text{m}$ .

**cold DOP:** Produced by compressed air atomization of room temperature liquid DOP, aerosol size 0.3 to 3.0  $\mu\text{m}$  with a mean diameter of 0.7  $\mu\text{m}$ .

**downstream:** In the direction of the flow.

**droplet:** An airborne particle consisting primarily of liquid. While some settle out quickly, many dry to become droplet nuclei and can add significant numbers of microorganisms to the air.

**exhaust:** The withdrawing and expelling of air from the cabinet by means of a blower or fan; that portion of the cabinet air that is discharged after filtration, either to the room or into a ventilation system.

**filter:** A device used for removal of particulates, including microorganisms, from air or other gases. (Also see HEPA filter.)

**filter efficiency:** The efficiency of various filters can be established on the basis of entrapped particles, i.e., collection efficiency; or on the basis of particles passed through the filter, i.e., penetration efficiency.

**germicidal:** Able to destroy bacteria, fungi, viruses and other similar organisms.

**hard-ducting:** Permanently installed airtight ductwork not intended to be disassembled for normal cabinet servicing or testing.

# Biological Safety Cabinets, Enclosures & Clean Benches

## GLOSSARY

**HEPA filter:** High-efficiency particulate air filter. A disposable extended-pleated dry-type filter with (1) a rigid casing enclosing the full depth of the pleats; (2) a minimum particle removal efficiency of 99.9% for thermally generated monodisperse DOP smoke particles with a diameter of 0.3  $\mu\text{m}$ ; and (3) a maximum pressure drop of 1 inch water gauge when clean and operated at its rated airflow capacity.

**high efficiency particulate air filter:** See HEPA filter.

**horizontal laminar flow bench:** A ventilated cubicle with solid sides having a table-height work surface and unidirectional, minimum turbulence air entering from a vertically mounted high efficiency filter at one side and leaving the cubicle at the opposite (open) side.

**inches of water gauge (in w.g.):** A unit of pressure equal to the weight of a column of liquid water one inch high at 20°C (1 in. w.g.= 0.036 psi).

**infectious agent:** As used in this text, agents capable of producing a disease or abnormal response in man, laboratory animals, or a tissue culture system.

**inflow velocity:** Air velocity at the cabinet work opening; velocity of the air entering the cabinet at the work opening.

**laminar airflow:** Airflow in which the entire body of air within a designated space moves with uniform velocity along parallel flow lines.

**monodisperse aerosol:** An aerosol containing particles of nearly the same size.

**negative pressure:** Pressure in a space which causes an inflow of air.

**partial containment enclosure:** An enclosure which is constructed so that contamination between its interior and the surroundings is minimized by the controlled movement of air. Class I and Class II safety cabinets are examples.

**plenum:** An enclosure for flowing gases in which the static pressure at all points is relatively uniform.

**positive pressure:** Pressure in a space which causes an outflow of air.

**protection:** In Class II cabinets, any aerosol generated is kept away from the technician doing the work.

**environmental protection:** Any aerosol generated within the cabinet is removed from the air or deactivated (such as by incineration) before the air from the cabinet is discharged either inside or outside the facility.

**personnel protection:** Any aerosol generated within the cabinet is kept away from the technician doing the work.

**product protection:** The air at the work surface of the cabinet has been filtered so that it is free of airborne particles and organisms which could contaminate the work.

**static pressure:** The pressure of a fluid exerted in all directions equal and opposite to the pressure tending to compress the fluid. In ventilation applications, static pressure is usually the difference between the absolute pressure in an exhaust system and atmospheric pressure.

**sterile:** The absence of all life on or in an object. This is an absolute term; there can be no such description as nearly sterile, partially sterile, etc.

**sterilize:** Any process, physical or chemical, which results in the absence of all life in an object, applied especially to microorganisms, including bacteria, fungi, and their spores and the inactivation of viruses.

**supply air:** Air entering the cabinet through the work opening to make up for the volume of air exhausted.

**thimble connection:** See canopy connection.

**ultraviolet (UV) light:** Radiation in the electromagnetic spectrum having wavelengths from approximately 200 to 390 nanometers.

**velocity:** The time rate of linear motion in a given direction.

**capture and/or containment velocity:** The velocity necessary to capture or contain a generated contaminant, in a cabinet this usually ranges from 50 to 200 fpm.

**viable:** Literally, capable of life. Generally refers to the ability of microbial cells to grow and multiply as evidenced by formation of colonies on an agar culture medium; or, as with viruses, to divert the host cell's metabolism to replication of the parasite.

**virus:** A parasitic microorganism, smaller than a bacterium. Viruses have no independent metabolic activity, and may replicate only within a cell of a living plant or animal host.

*Portions of glossary taken from First, Melvin et al., Student Manual: Testing of Class II Biological Safety Cabinets, 1986. Dept. of Environmental Health Science, Harvard School of Public Health, Boston, MA*

# Biological Safety Cabinets, Enclosures & Clean Benches

## I N D E X

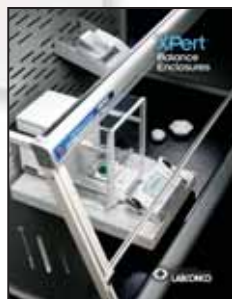
Catalog #	Page	Catalog #	Page	Catalog #	Page
3600000	45	3770301	65	3970204	51
3600004	45	3770400	65	3970205	54
3600020	45	3770600	65	3970220	51
3600024	45	3770601	65	3970221	51
3610000	45	3773700	46	3970222	54
3610004	45	3773800	46	3970223	51
3610020	45	3773801	46	3970224	51
3610024	45	3773802	46	3970225	54
3612500	45	3776800	27, 67	3970300	51
3612504	45	3780100	62, 63	3970301	51
3612520	45	3780101	62, 63	3970302	54
3612524	45	3780102	63	3970303	51
3618000	46	3780103	62	3970304	51
3620000	25	3780104	62, 63	3970305	52, 54
3620004	24, 25	3780105	62, 63	3970320	51
3620100	25	3780106	62, 63	3970321	51
3620104	25	3780107	62, 63	3970322	54
3620110	25	3780200	62, 63	3970323	51
3620114	25	3780201	62, 63	3970324	51
3620120	25	3780202	62, 63	3970325	54
3620124	25	3780203	63	3970400	51
3620400	25	3780208	62	3970401	51
3620404	25	3780300	62, 63	3970402	54
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