



Shown with optional stand

# ESCO Biological Safety Cabinet Reliant Series

## LR2-4S & LR2-6S Class II, Type A2



Introducing the R-Series - the best value Class II Biological Safety Cabinet on the North American market supported by nationwide sales and service representatives in the USA and Canada. The Reliant series is designed with a shorter height and smaller footprint for optimal utilization of lab space.

### Containment and Protection

The airflow ratio of 63% recirculation to 37% exhaust increases operator protection beyond the 70%/30% ratio of conventional biological safety cabinets.

The inflow and downflow balance is precisely established by an external exhaust damper and is adjustable without decontaminating the biosafety cabinet.

Inflow of room air enters the front air grille to establish operator protection; room air does not enter the work zone, preventing product contamination.

The front grille has proportionally larger perforations on the extreme left and right side. Combined with the side air gap between the work tray and the side wall, the stronger side capture zones increase protection in this critical area where contaminants tend to bleed out in conventional cabinets.

Auto-purge holes located at the front side walls eliminate eddy currents and dead air pockets in the critical area behind the sash window. Per NSF/ANSI 49 requirement, these side perforations do not extend completely to the work surface to prevent accidental liquid spills in the work zone from entering the side air column.

### Integrated Filtration System

A combination of a supply ULPA filter and an exhaust ULPA filter give the biosafety cabinet a fully integrated performance envelope for product, operator and environmental protection.

ULPA filters (per IEST-RP-CC001.3), are tested to a typical efficiency of >99.999% for

0.1 to 0.3 micron particles; these provide better filtration capability than conventional HEPA filters that have a typical efficiency of >99.99% for 0.3 micron particles.

Modern separator-less mini-pleat filter construction maximizes the filter surface area to extend filter life and eliminate possible filter media damage by thin and sharp aluminum separators used in conventional HEPA filter construction.

The supply ULPA filter provides ISO Class 3 (per ISO 14644.1) clean air to the work surface in a gentle vertical laminar flow for product protection.

The top cabinet surface is slanted to discourage users from placing objects which could block the exhaust filter and reduce inflow velocity.

### Front Sash Assembly

Integrated sash proximity contacts sense proper sash position, serve as an interlock for the UV lamp, and activate an alarm if the sash is improperly positioned.

The back of the sash can be easily cleaned by removing the sash track cover and swinging up the sash glass.

The sash is counterbalanced for smooth, lightweight operation.

The counterbalance locking mechanism is inherently safe.

The safety glass maintains containment if the sash is accidentally broken during cabinet operation.

General Specifications		LR2-4S2	LR2-6S2
External Dimensions (W x D x H)		52.8" x 30" x 56.7"	76.8" x 30" x 60.6"
Internal Work Area (W x D x H)		50.0" x 21.5" x 26.8"	72" x 21.5" x 26.8"
Average Airflow Velocity	Inflow	0.53 m/s (105 fpm)	
	Downflow	0.35 m/s (70 fpm)	0.33 m/s (65 fpm)
Airflow Volume	Inflow	591 m <sup>3</sup> / h (350 cfm)	708 m <sup>3</sup> / h (420 cfm)
	Downflow, 60%	851 m <sup>3</sup> / h (509 cfm)	1204 m <sup>3</sup> / h (763 cfm)
	Exhaust, 40%	591 m <sup>3</sup> / h (350 cfm)	708 m <sup>3</sup> / h (420 cfm)
Sound Emission	NSF 49	<63 dBA	<62 dBA
	EN 12469	<60 dBA	<59 dBA
Fluorescent Lamp Intensity		> 1076 Lux (>100 foot-candles)	
Cabinet Construction	Main Body	Electrogalvanized steel with Isocide oven-baked epoxy-polyester powder coating	
	Work Zone/ Side Walls	1.2 mm (0.05") / 18 gauge stainless steel, type 304, with 4B finish	

# Reliant Series Biological Safety Cabinet

## Class II, Type A2

### Blower Efficiency

The blower system is designed for high performance operation, maximum energy efficiency and minimal maintenance.

German made ebm-papst® permanently lubricated, centrifugal motor/blowers with external rotor designs.

Motors are selected for energy efficiency, compact design, and flat profile. Completely integrated assembly optimizes motor cooling.

All rotating parts are balanced for smooth, quiet, vibration-free operation.

### Controller

Reliable rocker switches and easy-to-read Minihelic gauge for safety and durability work.

### Cabinet Construction

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

Key components, including fluorescent lamps, motor capacitor, electrical harness, electronic ballast, and switch control are mounted outside the airstream and away from contaminated air to permit service without decontamination. Single-piece stainless-steel work tray and front grille, lower drain pan with angled side, and single-piece work zone liner eliminate joints for superior cleanability.

Unique front grill designed to provide the maximum product and personnel protection.

The double-wall design creates a Dynamic Chamber plenum which surrounds

contaminated areas with negative pressure, preventing the possibility of contamination from leaks in filter seal, gasket or cabinet structure.

External surfaces are coated with Isocide™ antimicrobial coating to protect against surface contamination and inhibit bacterial growth. Isocide eliminates 99.9% of surface bacteria within 24 hours of exposure.

Raised one-piece work surface lifts and removes for easy surface decontamination.

Reliant utilizes a heavy-gauge, one-piece liner with coved corners for easy cleaning and durability.

Lowest height profile of any benchtop biological safety cabinet for the North American market.

Dual-wall construction surrounds the work zone with negative pressure plenums for maximum safety.

### Comfortable Ergonomic Design

The biosafety cabinet is engineered for comfort, utility value and safety.

The angled viewing window and narrow profile front grille improves reach into the work area.

The front armrest is raised above the workzone to improve comfort and to ensure that the operator's arms do not block the forward airflow perforations.

The optional adjustable support stand provides work surface height control.

The frameless sash eliminates operator's line of sight blockage.

A generous sash opening allows for easier access into the work zone, provides ample room for transferring of small equipment.

### Electrical Safety & Certification

All components meet or exceed applicable safety requirements.

Each cabinet is individually tested for electrical safety at factory.

Documentation specific to each cabinet serial number is maintained on file.

UL listed for USA and Canada.

Certified to all major world standards for biological safety cabinets, including the NSF / ANSI 49 and EN 12469 (refer to Standards Compliance table on this page for the full list.)

Contact Geneva Scientific for site preparation information; see Electrical specifications.

### Warranty

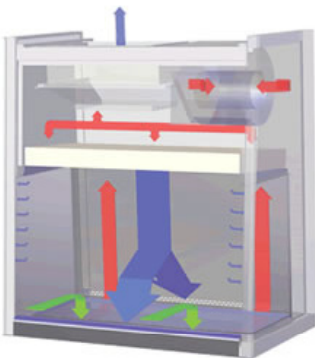
Our biological safety cabinets are warranted for 5 years excluding consumable parts and accessories.

Each cabinet is shipped with a comprehensive user's manual complete with a report documenting all test procedures.

Additional IQ/OQ/PQ documenting is available upon request.

**\*\*Please Contact Geneva Scientific for complete specifications.**

### Cabinet Airflow System



- Ambient air is pulled through the perforations located towards the work zone front to prevent contamination of the work surface and work product. The inflow does not mix with the clean air within the cabinet work zone. Inflow air travels through a return path toward the common air plenum (blower plenum) at the top of the cabinet.
- Approximately 40% of the air in the common plenum is exhausted through the ULPA filter to the room. The remaining 60% of the air is passed through the downflow ULPA filter and into the work area as a vertical laminar flow air stream bathing the work surface in clean air.
- The uniform, non-turbulent air stream protect against cross contamination within and throughout the work area.
- Near the work surface, the downflow air stream splits with a portion moving toward the front air grille, and the remainder moving to the rear air grille. A small portion of the ULPA filtered downflow enters the intake perforations at the side capture zones at a higher velocity (small blue arrows).
- A combination of inflow and downflow air streams forms an air barrier that prevents contaminated room air from entering the work zone, and prevent work surface emissions from escaping the work zone.
- Air return to the common air plenum where the 40% exhaust and 60% recirculation process is continued.

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