

PREMIUM SINGLE- OPERATOR VERTICAL LAMINAR FLOW CABINET



Premium Single-Operator Vertical Laminar Flow Cabinet — ToronLFCab™ SO-P Series

ToronLFCab™ SO-P is a vertical downflow laminar flow cabinet designed for laboratory operations requiring a Class 100 (ISO 5) clean working environment. This clean bench delivers HEPA-filtered air vertically downward across the work surface, creating a positive-pressure airflow curtain at the open front that prevents unfiltered ambient air from entering the work zone such as protecting samples, cultures, and sensitive materials from particulate contamination during open handling operations.

Available in three working widths — ToronLFCab™ SO-1P (830 mm), ToronLFCab™ SO-2P (1300 mm), and ToronLFCab™ SO-3P (1800 mm) — the ToronLFCab™ SO-P series provides a scalable selection of laminar air flow cabinets for single-operator benchtop work through wider multi-step workflow configurations. All three models share the same core performance specifications: wind speed 0.3–0.6 m/s, noise at or below 67 dB, vibration half peak value within 5 µm across all three axes, and illuminance at or above 300 Lux. A cold-rolled steel housing with electrostatic spray finish and SUS304 stainless steel worktable are standard across the lineup.

The LCD control system with touch-type switches governs all operational functions, including six-stage wind speed adjustment, independent UV sterilization lamp control, and a UV timer supporting sterilization cycles from 0 to 999 minutes. A medium-efficiency pre-filter upstream of the HEPA extends HEPA service life by capturing larger particles before they reach the final filter — reducing replacement frequency and long-term operating cost. As a vertical laminar flow cabinet designed for single-sided operation, the ToronLFCab™ SO-P series is suited to microbiological work, pharmaceutical compounding preparation, electronic component handling, and any laboratory workflow where a reproducible Class 100 clean bench environment is required.

APPLICATIONS

Premium Single-Operator Vertical Laminar Flow Cabinet — ToronLFCab™

SO-P Series Applications

The ToronLFCab™ SO-P serves laboratory, pharmaceutical, electronics, and research environments where a Class 100 particulate-free working zone is required for open sample handling:

- Microbiological Culture Work: aseptic transfer of microbial cultures, preparation of culture media, and inoculation of agar plates in a laminar flow cabinet environment that protects samples from airborne contamination
- Pharmaceutical Compounding Preparation: preparation of non-hazardous pharmaceutical compounds, sterile product handling, and reagent preparation in a Class 100 clean bench environment aligned with USP compounding guidelines
- Cell and Tissue Culture: aseptic handling of cell lines, primary cultures, and tissue samples requiring a particulate-controlled work zone without the operator-protection features of a biosafety cabinet
- Electronic Component Assembly and Inspection: handling of semiconductor components, optical elements, sensors, and precision electronic assemblies where particulate contamination on surfaces causes functional failures
- Food Science and Quality Control: aseptic preparation of microbiological test samples, culture plate inoculation, and sterile reagent handling in food safety testing laboratories
- Analytical Chemistry: preparation of analytical standards, gravimetric samples, and trace-level specimens where airborne particulate contamination would introduce measurement error
- Academic and Research Laboratories: general-purpose laminar air flow cabinet applications for multi-user research facilities requiring a reproducible clean working environment for sensitive protocols



TORONTECH

Torontecab™ S0-P Series
Vertical Laminar Flow Cabinet



FEATURES

Premium Single-Operator Vertical Laminar Flow Cabinet — ToronLFCab™

SO-P Series Key Features

Airflow and Filtration

- Vertical downflow laminar airflow at 0.3–0.6 m/s for consistent Class 100 (ISO 5) clean zone maintenance across the full work surface
- Single HEPA filter per unit with medium-efficiency pre-filter upstream — two-stage filtration extends HEPA service life and reduces replacement frequency
- Vertical quasi-closed table design: downward airflow at the open front prevents unfiltered ambient air from entering the work zone
- Centrifugal fan with steady rotational speed and low acoustic output

Control System and Interface

- LCD control system with touch-type switches for clean, direct parameter management
- Six-stage wind speed adjustment for airflow velocity selection within the 0.3–0.6 m/s operating range
- Independent controls for working lamp and UV sterilization lamp
- UV sterilization timer: 0–999 minutes for pre-programmed decontamination cycles

Construction and Work Surface

- Cold-rolled steel plate housing with electrostatic spray plastic finish for durable, cleanroom-compatible exterior surfaces
- SUS304 stainless steel worktable for corrosion resistance, chemical compatibility, and straightforward surface decontamination

Performance Specifications (All Models)

- Cleanliness class: Class 100 (ISO 5)
- Wind speed: 0.3–0.6 m/s
- Noise: ≤67 dB
- Vibration half peak value (X, Y, Z): ≤5 µm
- Illuminance: ≥300 Lux

THEORY & METHOD

Theory and Method

Vertical Laminar Downflow and Clean Zone Formation

The ToronLFCab™ SO-P operates on a vertical laminar downflow principle. HEPA-filtered air is introduced at the top of the working chamber and flows downward across the entire work surface at a controlled velocity of 0.3 to 0.6 m/s. This downward airflow forms a near-laminar, particle-free curtain across the open work zone. At the open front face of the cabinet, the downward flow velocity creates a positive-pressure barrier that deflects ambient laboratory air away from the work surface, preventing unfiltered particles from entering the clean zone from the front.

This vertical quasi-closed table design maintains Class 100 (ISO 5) conditions within the working area so a particle count of no more than 100 particles per cubic foot at 0.5 µm or larger. The airflow design specifically excludes horizontal flow configurations, which manage contamination differently and are suited to distinct application categories. For sample-protection applications requiring vertical downflow clean air delivery, the ToronLFCab™ SO-P provides the correct airflow geometry.

HEPA Filtration and Pre-Filter System

The HEPA filter (one per unit across all three models) captures particles at 0.3 µm and larger with a minimum efficiency of 99.97%, the performance threshold that defines HEPA classification. Upstream of the HEPA, a medium-efficiency pre-filter

captures larger airborne particles before they reach the final filter stage. This two-stage filtration approach reduces the particulate loading on the HEPA, extending its service life meaningfully compared to single-stage HEPA-only configurations. For laboratories managing ongoing laminar air flow cabinet operating costs, the extended HEPA service life that the pre-filter enables has a direct and measurable impact on filter replacement frequency and annual maintenance expenditure.

Airflow Velocity Control and Noise Performance

The centrifugal fan drives airflow through the filtration system at a steady rotational speed with low acoustic output. Six-stage wind speed adjustment (controlled through the LCD touchscreen interface) allows operators to select the airflow velocity that best matches their protocol requirements within the 0.3 to 0.6 m/s operating range. Noise is held at or below 67 dB across all three models and all fan speed settings, and vibration half peak values remain within 5 µm in all three axes — specifications that are particularly relevant for electronic component handling and precision analytical work where fan-induced vibration could affect sample stability or measurement accuracy.

UV Sterilization System

An independently controlled UV sterilization lamp is standard across all three models, with a programmable sterilization timer ranging from 0 to 999 minutes. The UV lamp and the working lamp operate on independent controls, allowing sterilization cycles to be run before or after work sessions without activating the work lighting. The independently timed UV cycle supports consistent pre-use decontamination protocols without requiring operator presence during the sterilization period.

TECHNICAL SPECIFICATIONS

**Premium Single-Operator Vertical Laminar Flow Cabinet — ToronLFCab™
SO-P Series Technical Specifications**

Parameter	ToronLFCab™ SO-1P	ToronLFCab™ SO-2P	ToronLFCab™ SO-3P
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Airflow Direction	Vertical		
Working Sides	1		
Persons per Side	1		
Cleanliness Class	Class 100 (ISO 5)		
Wind Speed (m/s)	0.3-0.6		
Noise (dB)	≤67		
Vibration Half Peak (X,Y,Z) (μm)	≤5		
Illuminance (Lux)	≥300		
Internal Dimensions W×D×H (mm)	830×700×495	1300×700×495	1800×700×495
External Dimensions W×D×H (mm)	900×744×1680	1460×744×1680	1960×744×1680
HEPA Dimensions (mm)	800×604×50	1270×604×50	1770×604×50
Number of HEPA (mm)	1		
Working Lamp (W×pc)	30×1	40×1	30×1
UV Light (W×pc)	20×1	30×1	30×1
Rated Power (kW)	0.2	0.37	0.55
Voltage	220V ±10V, 50/60 Hz (110V is also available)		
Net Weight / Gross Weight (kg)	128/158	165/197	195/230
Package Size (mm)	1210×900×1130	1680×900×1130	2110×860×1760



Torontech Inc.

251 Consumers Road, Suite 1200
Toronto, Ontario, M2J 4R3, Canada 

Phone: +1 416 368 2721 | Fax: +1 416 981 7652
Email: info@torontech.com

Torontech, LLC

601 Brickell Key Drive, Suite 700
Miami, FL 33131, USA 

Toll-Free: 1-866-383-7919
Email: sales@torontech.com

Torontech ME FZE

Meydan Grandstand, 6th Floor,
Meydan Road, Nad Al Sheba,
Dubai-261440, UAE 

Phone: +971 488 19252
Email: me@torontech.com

