

## Cole-Parmer® General Purpose Laminar Flow Cabinets - DLF-400 Series

- Horizontal and vertical
- Provides reliable protection for samples and work processes for numerous applications



# Cole-Parmer® General Purpose Laminar Flow Cabinets - DLF-400 Series

## Introduction

Cole-Parmer® DLF-400 Series Laminar Flow cabinets are designed to protect equipment and other contents of the work zone from particulates.

The series includes Vertical Laminar Flow (VLF) cabinets and Horizontal Laminar Flow (HLF) cabinets and is ideally suited for use with non-hazardous contaminants when flexible access to equipment in the work zone is desired.

At the heart of the DLF-400 Laminar Flow cabinet product line is the Cole-Parmer ULPA Filtration technology which creates a clean work environment over a wide range of applications.

## Applications

DLF-400 Series Laminar Flow cabinets are suitable for applications that generate no biohazardous materials and do not require operator protection. Mycology and Food Microbiology \ Plant and Mammalian Cell Culture \ Clinical Pharmacy and Hospitals \ Cleanrooms \ Semiconductor Assembly \ Pharmaceutical \ Aerospace \ Medical Device Assembly \ Research Laboratories



## Key features

- Provides sterile work zone for aseptic techniques.
- Air cleanliness meets and exceeds ISO Class 4.
- All models use ULPA filters (99.999% efficient at particle sizes between 0.1 to 0.3 µm).
- Available in horizontal or vertical flow configurations.
- All models equipped with a stainless steel work surface.

## Performance advantages

Each Cole-Parmer DLF-400 Series Laminar Flow cabinet includes features expressed through sound design and certified quality construction.

**Professional Quality.** Cole-Parmer cabinets comply with current technical and safety regulations.

**Advanced Filtration.** Cole-Parmer ULPA Filtration provides high performance protection.

**Industrial Components.** The cabinet frame and work surfaces are durable and chemically resistant for long service life. All cabinet components are cleanroom compatible.

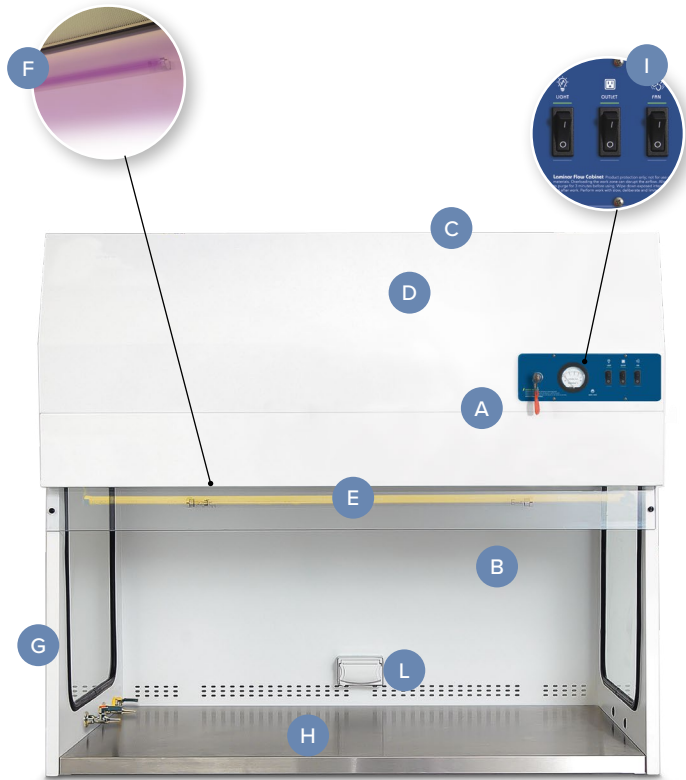


DLF-400 Series

This product exceeds OSHA, ANSI and other International [Certification](#) Standards. Specifications are subject to change without notice.

<sup>1)</sup> Energy consumption disclosure is based on internal testing with ASTS 001 carbon filters during normal airflow with blower motor and interior lights switched on. Power consumption published is nominal and dependent on cabinet size.

# Cole-Parmer® General Purpose Laminar Flow Cabinets - DLF-400 Series



- A.** Control Panel: The control panel includes On/Off switch for fan, lighting, GFCI outlets, Minihelic ULPA pressure gauge to measure filter condition, UV lamp key switch.
- B.** Main Filter: Long-life Camfil Farr ULPA main filter with efficiency of 99.999% at particle sizes between 0.1 to 0.3  $\mu\text{m}$ .
- C.** Pre-Filter: Disposable polyester fiber pre-filter with 85% arrestance.
- D.** Blower Motor: External rotor blower.
- E.** Lighting: Compact LED cabinet lamp located away from laminar flow area.
- F.** UV Lamp: Optional ultraviolet (UV) lamp to create light emission conditions known to safely sterilize and decontaminate work zone and cabinet contents between operating periods.
- G.** Ergonomic Design: Ergonomically angled front improves reach and comfort.
- H.** Work Surface: Stainless steel work surface with no spill retention.
- I.** Fan Control: Recessed fan speed control.
- J.** Power Supply: GFCI outlet to power equipment in cabinet.

Visibility: Side windows allow ambient light into the chamber and provide users with three points of visibility for an unobstructed view of contents. (Not available on stainless steel models.)

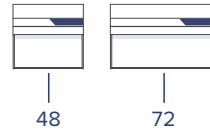
**USP 797** Sterile Compounding Compliant: When used according to best practices, the DLF-400 Series cabinet encourages compliance with criteria set forth by USP 797 for sterile preparation in pharmaceutical compounding of nonhazardous agents.

These include injectables, IV admixtures, pastes and ointments and irrigating solutions which are protected by filtered air blown over the work surface in a laminar flow.

Construction: Powder coated interior with stainless steel work surface and side windows. Available in 120V, 60Hz and 230V, 50Hz models.

# Cole-Parmer® General Purpose Laminar Flow Cabinets - DLF-400 Series

Options and accessories add functional performance to meet specific applications. Accessories include base stand, UV lamp.



## Performance

Cole-Parmer ULPA Filtration provides high performance protection.

The main filter gasket evenly seals the filter face to prevent bypass air leakage. Our pour-in-place silicone gasket outperforms traditional style stick-on "dove-tail" gasketing.

The high capacity air handling system delivers flow velocity of 0.4 m/s - 0.5 m/s (80 - 100 fpm).

VLF and HLF cabinets have an ULPA filter pressure gauge to measure filter performance.

## Design

Cole-Parmer Laminar Flow cabinets incorporate an external rotor blowers. The energy efficient design reduces operating costs and has low noise and vibration levels.

Products are designed for desktop use or installation on the optional mobile base stand.

The rear wall of **vertical flow cabinets** is perforated to reduce work surface turbulence by removing some of the airflow to the rear.

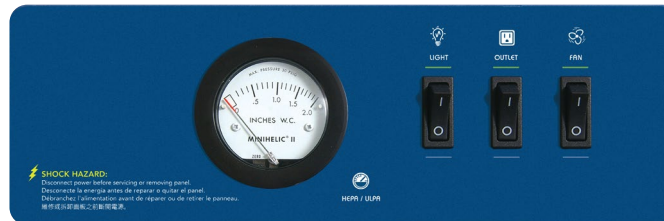
## Selection

DLF-400 Series Laminar Flow cabinets are available in vertical and horizontal configurations with various sizes and options.

## Control

The **standard control panel** features On/Off switches for blower, lighting, GFCI outlets, in addition to a Minihelic ULPA pressure gauge to measure filter performance.

The **standard UV control panel** includes the same features as the standard control panel with the addition of a UV lamp key.



Standard Controller



UV Controller

## Reliability

Each cabinet is factory tested for safety and performance in accordance with international standards.

DLF-400 Series Laminar Flow cabinets are shipped fully assembled. No installation is required; just plug them in and use them.



Cole-Parmer is a single source supplier of all pre-filters, carbon filters and HEPA/ULPA filters used in our products.

# Cole-Parmer® General Purpose Laminar Flow Cabinets - DLF-400 Series

## Airflow

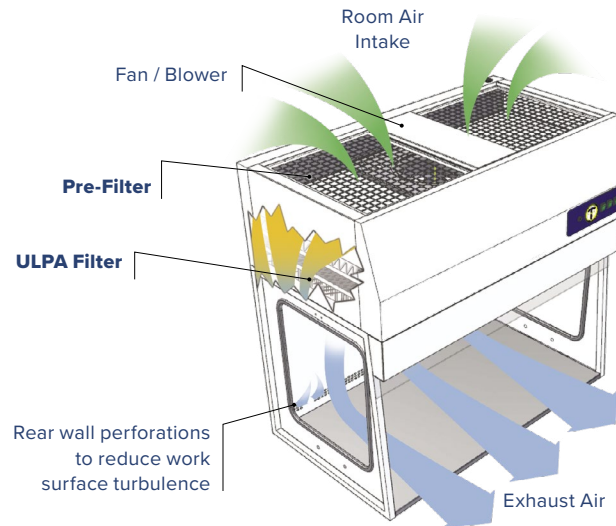
Both VLF and HLF DLF-400 Laminar Flow cabinets offer the same level of quality and performance. When deciding between a VLF or HLF cabinet the differences come down to personal preference for your specific application.

### Vertical Airflow

- The airflow on the DLF-400 Series vertical flow cabinets directly strikes the work surface.
- Vertical laminar flow cabinets are manufactured with rear wall perforations that remove a small amount of air at the rear of the cabinet to reduce turbulence.
- In vertical flow cabinets, the ULPA filter is mounted above the work surface which provides a taller and deeper work space. This allows for larger equipment in the work zone without interrupted airflow.
- Vertical flow cabinets are more easily customized to specific applications.

### Horizontal Airflow

- In horizontal flow cabinets the airflow does not directly impinge on the work surface but rather is smoothly drawn across it. This creates less turbulence.
- Airflow in a horizontal flow cabinet exits directly towards the user.
- Large or tall equipment in a horizontal flow cabinet can interrupt airflow more than in a vertical flow cabinet. This may create more turbulence and possible “dead” spots where airflow is lower.

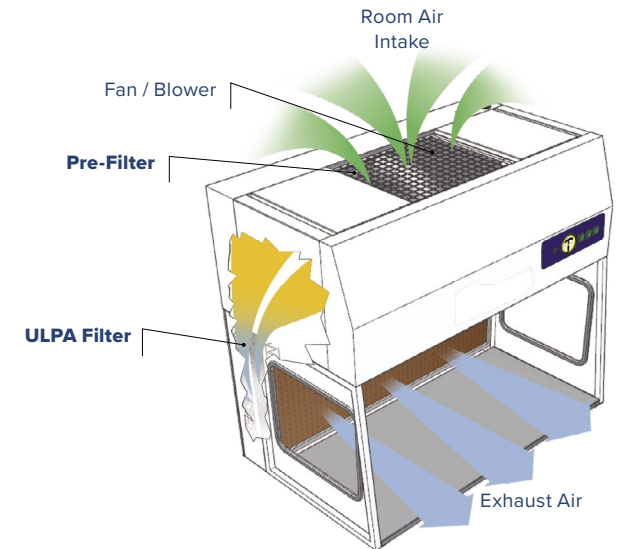


### Vertical Airflow:

**1.** Room air enters from the top of the cabinet through a disposable pre-filter; this traps larger particles and increases filter life. **2.** Air is forced evenly across the ULPA filter in a stream of clean, uniform air within the work zone. This dilutes and flushes airborne contaminants from the interior. **3.** A nominal filter face velocity of 0.4 m/s - 0.5 m/s (80 - 100 fpm) ensures a sufficient number of air changes to maintain cleanliness within the work zone. **4.** The purified air travels down to the work zone in a vertical, unidirectional downflow stream, exiting the work zone across the entire open cabinet front area after deflecting off the work surface. Rear wall perforations are designed to reduce work surface turbulence and minimize the possibility of dead air corners in the work zone.

*DLF-400 Series Laminar Flow cabinets maintain a 0.35-0.45 m/s (80-100 fpm) airflow velocity measured 6"/150 mm from the filter.*

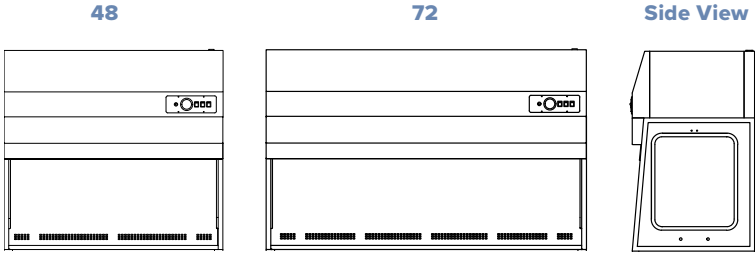
*This face velocity is in compliance with USA and international standards for safety and performance. The ULPA filters are easy to replace with common tools.*



### Horizontal Airflow:

**1.** DLF-400 Series Laminar Flow Cabinets maintain a 0.4 m/s - 0.5 m/s (80 - 100 fpm) airflow velocity, measured 6"/150 mm from the filter. This face velocity is in compliance with USA and international standards for safety and performance. The ULPA filters are easy to replace with common tools. **2.** Room air enters from the top of the cabinet through a disposable pre-filter; this traps larger particles and increases filter life. **3.** Air is forced evenly across the ULPA filter in a stream of clean, uniform air within the work zone. This dilutes and flushes airborne contaminants from the interior. **4.** A nominal filter face velocity of 0.4 m/s - 0.5 m/s (80 - 100 fpm) ensures a sufficient number of air changes to maintain cleanliness within the work zone. **5.** The purified air travels across the work zone in a horizontal, unidirectional stream and exits the work zone across the entire open cabinet front.

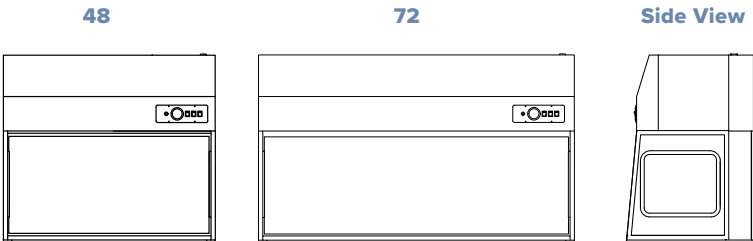
# Cole-Parmer® Laminar Flow Cabinet - DLF-400 Series Specifications



Model		Dimensions					Weight (LBS/KG)	
Metal Interior	Stainless Interior	Nominal Width	Internal Height	Internal Depth	External (W × D × H)	Shipping (W × D × H) without base stand	Net	Ship
<b>Vertical Laminar Flow Cabinets</b>								
<b>78902-40</b>		48" / 1219 mm	28.25" / 718 mm	28.25" / 718 mm	52.4" × 29.25" × 47.25" / 1331 × 743 × 1200 mm	60" × 44" × 54" / 1524 × 1118 × 1372 mm	322 / 146	478 / 217
<b>78902-41</b>								
<b>78902-42</b>		72" / 1829 mm	28.25" / 718 mm	28.25" / 718 mm	76.4" × 29.25" × 47.25" / 1941 × 743 × 1200 mm	91" × 44" × 54" / 2311 × 1118 × 1372 mm	478 / 217	595 / 270
<b>78902-43</b>								

Specifications are subject to change without notice.

# Cole-Parmer® Laminar Flow Cabinet - DLF-400 Series Specifications



Model		Dimensions					Weight (LBS/KG)	
Metal Interior	Stainless Interior	Nominal Width	Internal Height	Internal Depth	External (W × D × H)	Shipping (W × D × H)	Net	Ship

**Horizontal Laminar Flow Cabinets**

<b>78902-50</b>		48" / 1219 mm	23.75" / 603 mm	23.75" / 603 mm	49.25" × 29.5" × 42.75" / 1251 × 749 × 1086 mm	60" × 44" × 54" / 1524 × 1118 × 1372 mm	289 / 131	478 / 217
<b>78902-51</b>								
<b>78902-52</b>		72" / 1829 mm	23.75" / 603 mm	23.75" / 603 mm	73.25" × 29.5" × 42.75" / 1861 × 749 × 1086 mm	91" × 44" × 54" / 2311 × 1118 × 1372 mm	439 / 199	595 / 270
<b>78902-53</b>								

Specifications are subject to change without notice.

# Cole-Parmer® Laminar Flow Cabinet - DLF-400 Series Specifications

Product Specifications		
Airflow Pattern	Vertical	Horizontal

## Filtration

Airflow <sup>1</sup>	0.4 m/s -0.5 m/s (80 - 100 fpm).
Pre-Filter	<... Disposable polyester fibers with 85% arrestance. ...>
Main Filter	<... ULPA, 99.999% efficient at particle sizes between 0.1 to 0.3 µm. ...>
Clamping	<... Spring loaded, adjustable tension adjusts for gasket aging. ...>

## Construction

Finish (exterior)	<... White epoxy coated steel frame. ...>
Finish (interior)	<... Standard models, powder coated interior. -SS models, stainless steel interior. ...>
Windows	<... Tempered glass, transparent, not available on SS models. ...>
Blower	<... External rotor motor, permanently lubricated, low noise and vibration levels. ...>
Controls	<... Main On/Off switch; Solid state fan speed control with RFI filter; UV timer and key switch if included, specify when ordering. ...>
Electrical	<... 120V, 60Hz or 230V, 50Hz voltages available. Specify when ordering. Other voltage options available. ...>
Work Surface	<... Stainless steel. ...>
GFCI outlet	<... Standard, 5A maximum. ...>
Monitoring	<... Minihelic ULPA pressure gauge. ...>

## Efficiency

Lighting	<... LED. ...>
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<sup>1</sup> Average airflow measured 6"/150 mm from filter face.



# Cole-Parmer® Laminar Flow Cabinet - DLF-400 Series Options & Accessories

## Options and accessories

		Vertical	Horizontal
<b>Cole-Parmer Model</b>			
Base Stand, Mobile, with Casters	Floor-standing base for cabinet with locking castors 860 mm (34") height.	7890246 7890247	7890256 7890257
UV Lamp*	Creates light emission conditions know to safely decontaminate interior surfaces. Includes a timer, door microswitch, fully closing front sash and UV filtering clear polycarbonate panels. The UV operation must comply with local codes and facility safety practices.	7890244 7890245	7890254 7890255

\*Sold together; safety precautions must be followed. Factory installed; specify when ordering.

# Cole-Parmer® Laminar Flow Cabinet - DLF-400 Series Warranty, Standards and Compliance

## Standards and Compliance

Quality Management Systems Manufacturing Site	ISO 9001: 2015
Electrical Safety	UL-C-61010-1 CAN/CSA C22.2 61010-1-12 EN 61010-1:2010 CE Mark
OSHA, Occupational Safety and Health Administration	OSHA Standard -29 CFR, Safety and Health Regulations for General Industry, 1910.1450: Occupational exposure to hazardous chemicals in laboratories. Part B, definition, laboratory type hood. This product may assist you with compliance or as part of your chemical hygiene plan. Please consult your Safety Officer and/or Industrial Hygienist.
Environment	ISO 14001: 2015 ENERGY STAR® Partner

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