LAMINAR FLOW with FAN FILTER UNIT (FFU LF)

UNIDIRECTIONAL AIR FLOW (UDAF)

Laminar Flow units are essential for maintaining sterile and particle-free environments across various industries. These units provide a continuous stream of HEPA-filtered air, ensuring unidirectional airflow that protects sensitive processes and products from contamination. In the pharmaceutical industry, Laminar Flow units are indispensable for maintaining sterility. Beyond pharmaceuticals, these units are extensively used in microelectronics, healthcare, food and beverage production, aerospace, optics, biotechnology, medical device manufacturing, and research and development laboratories. They offer the highest standards of cleanliness and contamination control, making them vital for any setting that demands stringent air quality management.



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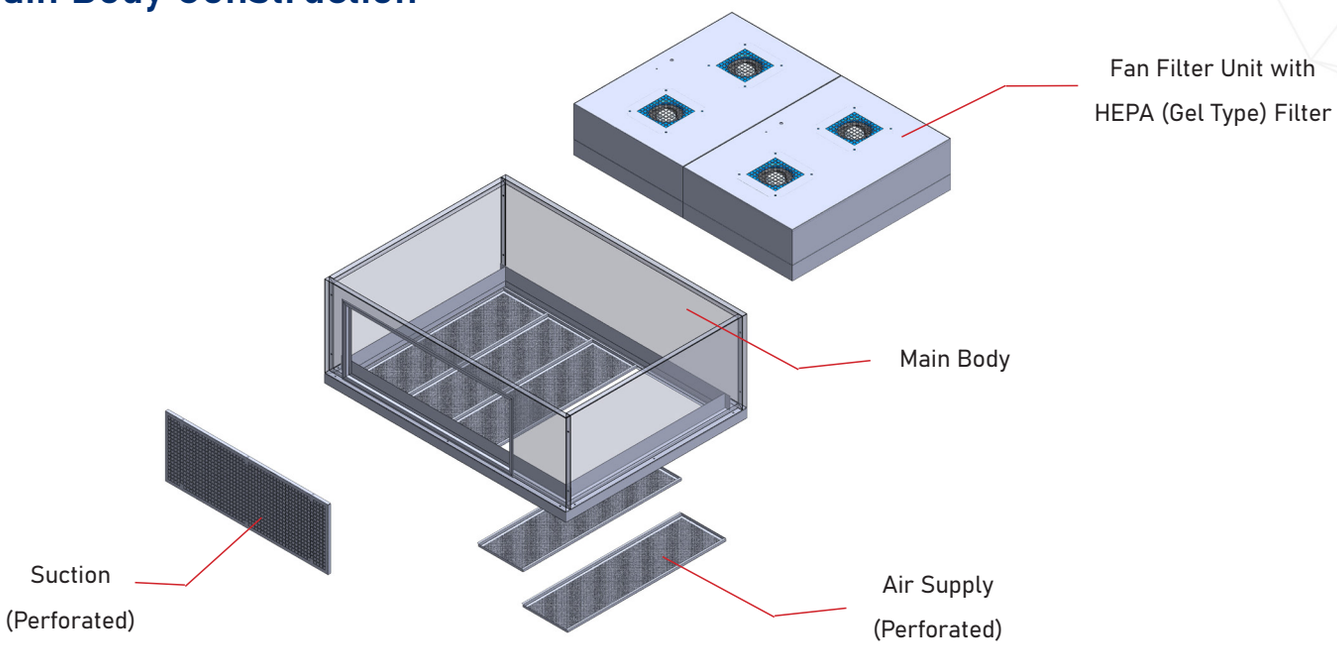
Crafted with precision by Ulpatek, the LAMINAR FLOW with FAN FILTER UNIT (FFU LF) systems are constructed using specialized aluminum profiles and stainless steel frames. These units are designed for versatility, capable of being suspended from the ceiling or equipped with rolling wheels. Standard accessories include transparent hygienic curtains, variable speed controllers, differential pressure gauges, and test aerosol nozzles. LF units meet Class 100 conditions according to ISO Class 5 according to ISO 14644-1, featuring speed-controlled fans, prefilters, and HEPA filters (H14). The clean air velocity is approximately 0.45 m/s (±20%) measured 15-20 cm below the air distributor. The FFU LF systems ensure laminar flow, creating positive pressure within the unit.



Filling Line

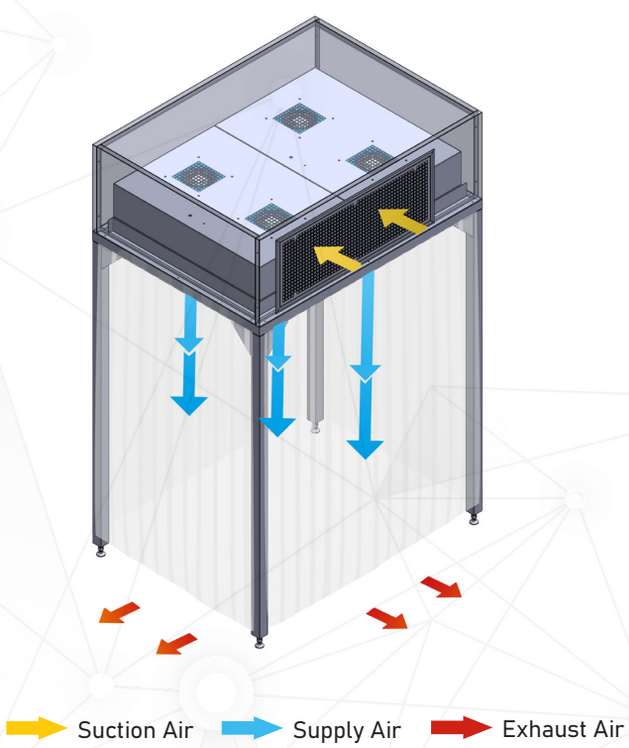
LAMINAR FLOW with FAN FILTER UNIT (FFU LF)

Main Body Construction



Operation Principle

The Laminar Flow (LF) Unit operates by drawing air from its surrounding environment. This air first passes through perforated grilles and a prefilter, which capture larger particles and contaminants. Subsequently, 100% of the filtered air is directed through a high-efficiency HEPA filter, ensuring the 99.995% efficiency at the most penetrating particle size (MPPS).



After passing through the HEPA filter, the clean air flows through a perforated stainless steel air distributor. This design ensures uniform distribution of laminar airflow across the entire working space, creating an environment with minimal turbulence and consistent air quality.

The positive pressure within the unit is maintained by the laminar flow of air, which continuously pushes contaminants away from the protected area. This positive pressure prevents the infiltration of unfiltered air and ensures that the workspace remains sterile and particle-free, making it ideal for critical processes in cleanrooms, laboratories, and other controlled environments.

By maintaining a constant and controlled flow of HEPA-filtered air, the LF Unit effectively creates a barrier against airborne particles and microorganisms, providing a reliable solution for environments requiring stringent air quality control.

LAMINAR FLOW with FAN FILTER UNIT (FFU LF)

Laminar Flow units play a crucial role in the pharmaceutical industry by providing sterile and particle-free environments necessary for various critical processes. These units ensure the highest standards of cleanliness and contamination control, which are essential for maintaining product integrity and safety. Here are some of the key applications of Laminar Flow units in the pharmaceutical industry.

