AIRPLAN

CLEANROOM & PROCESS SOLUTIONS
FOR LIFE-SCIENCE

STERILE AIR
SOLUTIONS

AIRSPECIALIST
CLEANROOM SOLUTIONS

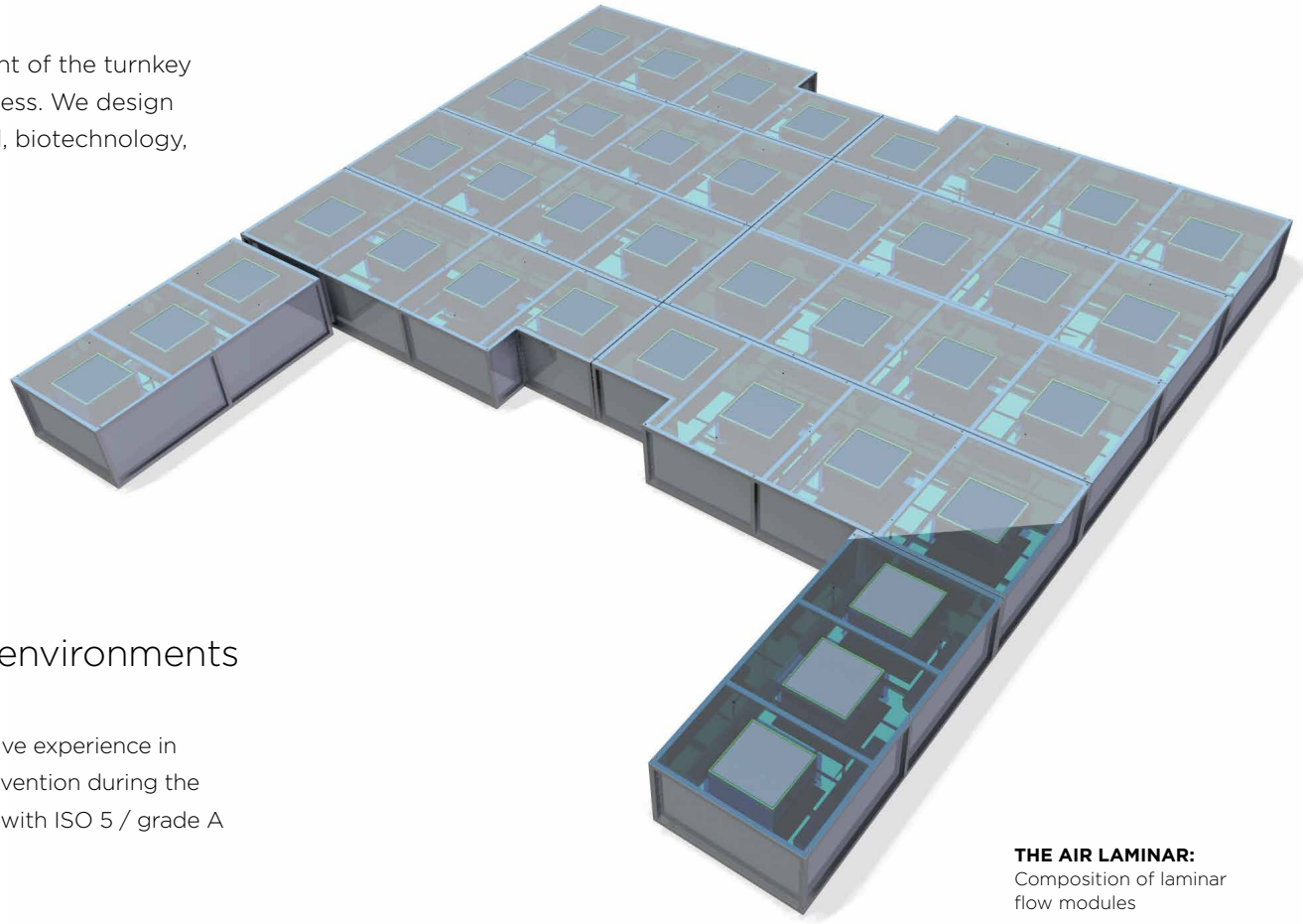
THE**AIR**LAMINAR

LAMINAR FLOW INSTALLED IN DISPENSING AREA

SOLUTIONS CREATED BY **EXPERTS**

For 55 years we've been specialists in custom-made industrial air treatment.
Today, we offer a wide-range of solutions dedicated to providing sterile areas in industrial environments, like the Fan Filter Units (THE AIR FFU), Laminar Flow Modules (THE AIR LAMINAR), dust and fume management (THE AIR DUST & FUMES) systems, along with products like the dispensing and weighing booth (THE AIR BOOTH) and the pass-through (THE AIR BOX).

Our cleanroom solutions using laminar air flow are a critical element of the turnkey projects that we carry out, integrating design, consulting and process. We design cleanroom equipment with unique features for the pharmaceutical, biotechnology, cosmetic, hospital, chemical and food industries.



THE AIR LAMINAR:
Composition of laminar flow modules

AIRSPECIALIST

Solutions and products for laminar air flow environments

THE**AIR**FFU, THE**AIR**LAMINAR and THE**AIR**BOX draw from our extensive experience in air treatment of controlled environments for product contamination prevention during the production process. We provide sterile or aseptic areas or entire rooms with ISO 5 / grade A classification according to applicable standards.

THE**AIR**FFU
FAN FILTER UNIT ADAPTED FOR A PACKING LINE

UNIQUE CONCEPTS
FOR SPECIFIC NEEDS

Integrated solutions

From a detailed study of your cleanroom to the integration and installation of the air solution that best suits your needs, AIRPLAN is there for every stage of your project.

In compliance with international standards

We understand and are governed by the legal framework of each country in which we conduct our projects, as well as the applicable international standards. All of our products and solutions for laminar air flow environments are designed and manufactured to meet the requirements set by the European Machinery Directive (2006/42/CE), cGMP / EU GMP (Vol 4) regulations, ISO 14644, 21 CFR Part 11 (FDA) and ASHRAE.

Viability guarantee

The manufacturing process at our production facility ensures precise and faithful design execution. Without intermediaries, we can respond with greater diligence to the needs of our customers, and offer solutions that are viable from the start, while maintaining cost and ensuring delivery time.

Pictured above: Assembly stage of laminar flow modules at our manufacturing plant.

Left photo: Installation in progress of a custom-made laminar flow for a dispensing area.

Regardless of the geometry or construction of your cleanroom,
AIRPLAN can equip it with a customized solution.

THE**AIR**FFU
Standard models

THE AIR FFU is a filtration and ventilation unit (Fan Filter Unit), ready-to use that provides an environment with ISO 5 classification specified for your cleanroom, such as laminar air flow for packing areas, thanks to its rectangular or square shape, which can be combined to cover areas of different measurements and geometry.
Current models are the result of intensive conceptualization and design which have involved the Engineering, Business and Facilities Divisions and, of course, our Manufacturing Division. Our range for THE AIR FFU has been developed based on the most frequent needs of our customers.

THE**AIR**LAMINAR
Customized solutions

We develop customized solutions for every customer that are perfectly integrated, regardless of the available space, the geometry of the room, technical area accessibility and/or relative flow rate, temperature and humidity requirements. We rely on the necessary know-how for the technical conceptualization of each project and unique 3D design construction solutions.
Our own production plant, integrated with our headquarters, allows us to offer laminar modules specifically manufactured for our customers, whose quality we can guarantee while maintaining competitive prices.

THE**AIR**FFU / THE**AIR**LAMINAR / THE**AIR**BOX
COMMON TECHNICAL CHARACTERISTICS

A careful manufacturing process

The Laminar Flows (THE AIR LAMINAR) along with Fan Filter Units (THE AIR FFU) and Pass Throughs (THE AIR BOX) are functionally designed and constructed with stainless steel 304, 316 or 316L, according to requirements, with a satin polish finish. Critical parts are joined by TIG (Tungsten Inert Gas) welding and the remaining joints are sealed with polyurethane polymer to ensure airtightness.

Both the width of the frame and the filter-frame space of our FFUs have been reduced to guarantee a laminar air flow with minimal dead spots. Likewise, the location of the slats has been designed to optimize the laminar flow area.

High-tech components

Centrifugal fans using EC technology for THE AIR FFU and for the THE AIR LAMINAR models comply with the ErP standards that regulate energy efficiency and noise pollution.

By integrating an electronically-controlled motor, constant air flow can be automatically regulated, saving energy.

Quality-tested according to ISO 14644

Our fan filter units and laminar flows are issued after meeting internal quality controls as defined by our Quality Control division to verify flow, HEPA filter air-tightness and speed uniformity in the terminal air flow.
A customer request can be made for the preparation and performance of a FAT (Factory Acceptance Test) or SAT (Site Acceptance Test) according to testing guidelines for international ISO standard 14644, to obtain a qualification in situ.

Delivery with qualification

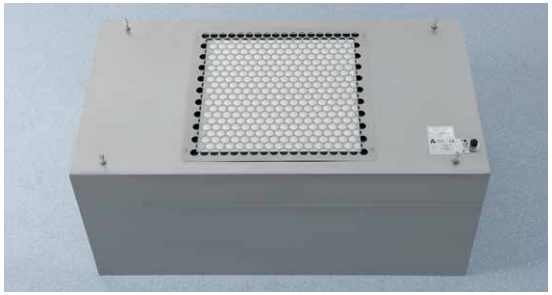
THE AIR FFU / THE AIR LAMINAR / THE AIR BOX come with a *Documentation Dossier* which includes the instruction and/or assembly manual, the technical construction details, as well as a specific maintenance manual with a list of spare parts, individual certificates for the filters and, when applicable, the CE certificate and the electrical diagrams of the equipment.

THE**AIR**FFU

TECHNICAL INFORMATION

Material	Stainless Steel 304, 316 or 316L, according to requirements, with a satin polish finish.
Assembly options	1) Overhead support. 2) Adaptation to the existing structure to protect the equipment. 3) Supporting feet, with or without wheels with breaks for mobility requirements. Supplied with PVC slats or, optionally, with stainless steel and methacrylate structures.
Control	Manual control of air flow in the upper part of the FFU, for adjustments during commissioning and for subsequent qualifications. **Optional (THE AIR FFU Extended):** ‣ Monitoring and independent activation of the alarms for filter clogging. ‣ Automatic control of the air flow to compensate for filter clogging. ‣ DOP ports for easy equipment validation.
Air intake	Air suction is freely carried out from the room where the equipment is located. A minimum space is required between the false ceiling of the room and equipment. Air can also be returned via other solutions. **Optional solution with lateral air intake (THE AIR FFU Extended):** Customized design with prefilters and access door on the Fan Filter Unit's side. Recommended for FFUs mounted on top of filling or dosage lines, allowing to unite the production unit with the false ceiling in order to eliminate any risk of dust and particle accumulation on top.
Filtration	The standard model of THE AIR FFU is designed for applications in rooms with a particle level associated with ISO classification 5/7 and is supplied with a terminal H14 filter. To avoid rapid clogging of the HEPA filter in an environment without this filtration level, we offer the option to include an additional M6 pre-filtration module. **Filtration stages:** 1) **Terminal HEPA filtration for air sterilization:** H14 classification according to EN standard 1882:2009 (HEPA). MPPS efficacy (most penetrating particle size) H14>99.995%. H14 Filter replacement from within the work area / cleanroom. Optionally, access doors for lateral filter replacement (THE AIR FFU Extended). 2) **Optional pre-filtration:** M6 classification according to EN standard 779. The pre-filter can be incorporated without modifications to current models. M6 pre-filter (superior filter replacement access).
Fan	Type EC centrifugal fan, electronically controlled. **Motor:** Voltage of 115 / 240 V, frequency de 50-60 Hz + N + T. **Operating Temperature:** between –20º C and +50º C (-4º F to +122º F)
Electricity	**The FFUs are adaptable to any electrical supply voltage:** Standard models with 115 / 240 V monophase, 50 - 60 Hz.
Air flow	**Number of air changes in the work area:** approx. 800 Vol./h for an average height of 2 meters (6' 7" ft-in). **Output speed in the HEPA filters:** 0,45 m/s (nominal) or 1.48 ft/s.

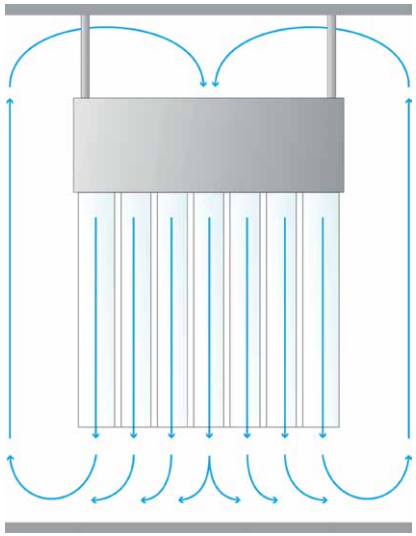
Bottom View: HEPA filter H14



Top view with pre-filter: Air intake area

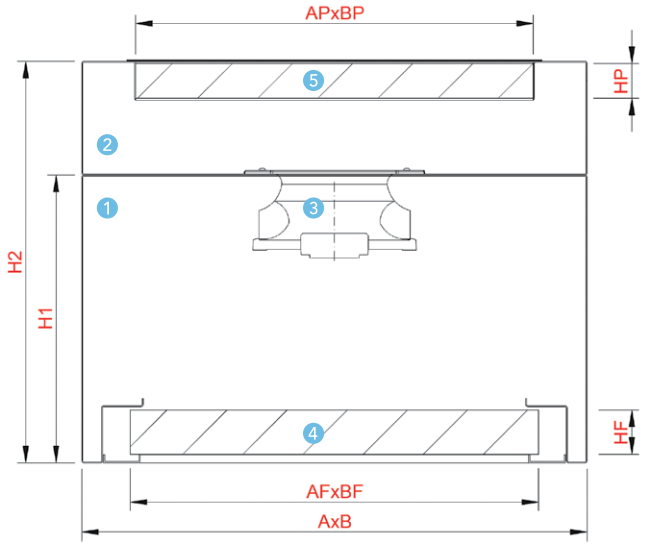
THE AIR FFU Extended. Includes a lateral access door for easy filter replacement, apt for Fan Filter Units mounted on top of filling or dosage lines.

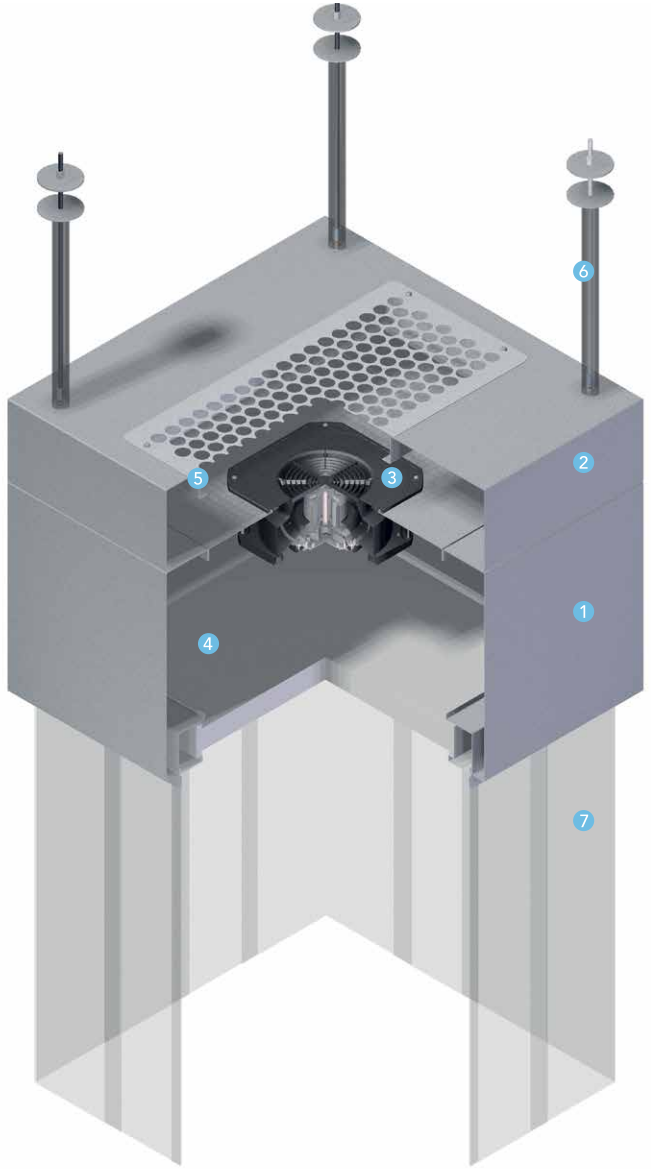
THE AIR FFU Extended. Design including integrated control panel.



Operating diagram of THE AIR FFU mounted with overhead support

Air pushes through the HEPA filter towards the work area creating a slight dynamic pressure and exits through the bottom part of the slats to be recirculated towards the upper suction area of the FFU.





THE AIR FFU	600		900		1 200		1 350		1 500		1 800	
Air flow	m³/h	cfm	m³/h	cfm	m³/h	cfm	m³/h	cfm	m³/h	cfm	m³/h	cfm
Total	600	353	900	530	1200	706	1350	795	1500	883	1800	1060
No. of fans	1		1		2		2		2		2	
Power	170 W		170 W		340 W		340 W		340 W		340 W	
Electricity consumption	1,45 A		1,45 A		2,9 A		2,9 A		2,9 A		2,9 A	
HEPA filter H14	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in
Width (AF)	610	2’	915	3’	1220	4’	915	3’	1220	4’	1220	4’
Depth (BF)	610	2’	610	2’	610	2’	915	3’	762	2’ 6”	915	3’
Height (HF)	66	0’ 2.6”	66	0’ 2.6”	66	0’ 2.6”	66	0’ 2.6”	66	0’ 2.6”	66	0’ 2.6”
External dimensions	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in
Width (A)	770	2’ 6.3”	1075	3’ 6.32”	1380	4’ 6.33”	1075	3’ 6.32”	1380	4’ 6.33”	1380	4’ 6.33”
Depth (B)	770	2’ 6.3”	770	2’ 6.3”	770	2’ 6.3”	1075	3’ 6.32”	922	3’ 0.3’	1075	3’ 6.32”
H1 Height w/o pre-filter	430	1’ 4.9”	430	1’ 4.9”	430	1’ 4.9”	430	1’ 4.9”	430	1’ 4.9”	430	1’ 4.9”
H2 Height with pre-filter	600	1’ 11.6”	600	1’ 11.6”	600	1’ 11.6”	600	1’ 11.6”	600	1’ 11.6”	600	1’ 11.6”
Optional M6 pre-filter	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in
Width (AP)	287	0’ 11.3”	592	1’ 11.3”	592	1’ 11.3”	592	1’ 11.3”	592	1’ 11.3”	592	1’ 11.3”
Depth (BP)	592	1’ 11.3”	592	1’ 11.3”	592	1’ 11.3”	592	1’ 11.3”	592	1’ 11.3”	592	1’ 11.3”
Height (HP)	48	0’ 1.89”	48	0’ 1.89”	48	0’ 1.89”	48	0’ 1.89”	48	0’ 1.89”	48	0’ 1.89”

Complete THE AIR FFU

(1) Filtration and ventilation unit
(2) Optional pre-filter unit
(3) EC fan
(4) H14 HEPA filter
(5) M6 pre-filter
(6) Support system
(7) PVC slats

THE**AIR**LAMINAR
COMPLETELY CUSTOMIZED

Laminar flow concepts

Each laminar flow has various functional levels, itemized as A through F, which are comprised of variable and combination elements.
On pages 12 and 13, we show some of the most common solutions for laminar flow, represented by model and type, that we have designed based on our experience and the frequent requirements of our customers.

LEVEL A - MAKEUP AIR

✱A1 AMU	The Makeup Air Unit (AMU) filters the external air, generating the required overpressure, contributing to the temperature control (T) and humidity (HR) for the system, and provides the minimum ventilation for staff. It can be shared by several laminar flows / rooms in the same productivity area.

LEVEL B - AIR HANDLING

✱B1 AHU	The Air Handling Unit (AHU) controls temperature (T) and humidity (HR) for the air flow and, as an option, the acoustic level in the work area.
✱B2 AHU-AVU	If by a lack of space it is not feasible to install the AHU, you may resort to the AHU combination for partial air management and control of T/HR and AVU (Air Ventilation Unit) and for the remaining air management.
✱B3 Cooling Coil	For technical areas with limited space, the AHU is replaced by a heat exchanger for control of T/HR integrated in the laminar flow module.

Upper image: Complete installation of air makeup and handling units for a laminar flow of 26.600 m³/h.

LEVEL C - ADDITIONAL FILTRATION

✱C1 Optional additional H14	To increase the level of containment, a HEPA filtration module can be included in the supply air coming from the AHU or AMU, as well as in the return air from the cleanroom to the AHU.

LEVEL D - VENTILATION

✱D1 External AVUs	If by lack of space it is not feasible to install the fans within the laminar flow unit, one or more AVUs can be used.
✱D2 WALL FAN	The Air Ventilation Unit (AVU) is integrated vertically or laterally on the filtration-diffusion module. Because of the strategic location and operational independence of each fan, they can work together or separately. In case one fails, the flow is maintained by the other unit, allowing for a quick fix by simply replacing the damaged fan, minimizing production downtime.
✱E2 FFU	The Fan Filter Unit combines fans and filter(s) in a compact unit (see LEVEL E).

LEVEL E - HEPA FILTRATION

✱E1 "TERMINAL 66"	Terminal filtration in a room with a HEPA filter of 66 mm (2.6 inches) thickness that does not require an end diffuser membrane. The filter is mounted on aluminum and airtight fixation is achieved with tightened bolts. Optionally, surface lights, located / anchored peripherally on the structure itself are added. This solution implies that the room must accommodate to the standard filter setting.
✱E2 "COMPACT 110"	Associated with FFUs (Fan Filter Units) with a HEPA filter of 110 mm (4.3 inches) thickness. Allows more surface air flow at the expense of the total surface area occupied by the FFUs.
✱E3 "ADAPT 292"	HEPA filter with 292 mm (11.5 inches) thickness, prior to the level of diffusion. It requires the minimum amount of filters and offers maximum surface air flow.

LEVEL F - DIFFUSION AND LIGHTING

✱F1	Diffuser membrane in aluminum frame with the possibility of including hidden lights (light level.~70/90 W/m^2 according to single or double scrim). This solution allows perfect adaptation to the dimensions and shapes of the existing or required rooms.

OPTIONAL FUMIGATION	We can study any fumigation solution for integration into the laminar flow.

Detail of the interior part of a laminar flow module:
HEPA filters and lights before placing diffuser membrane.

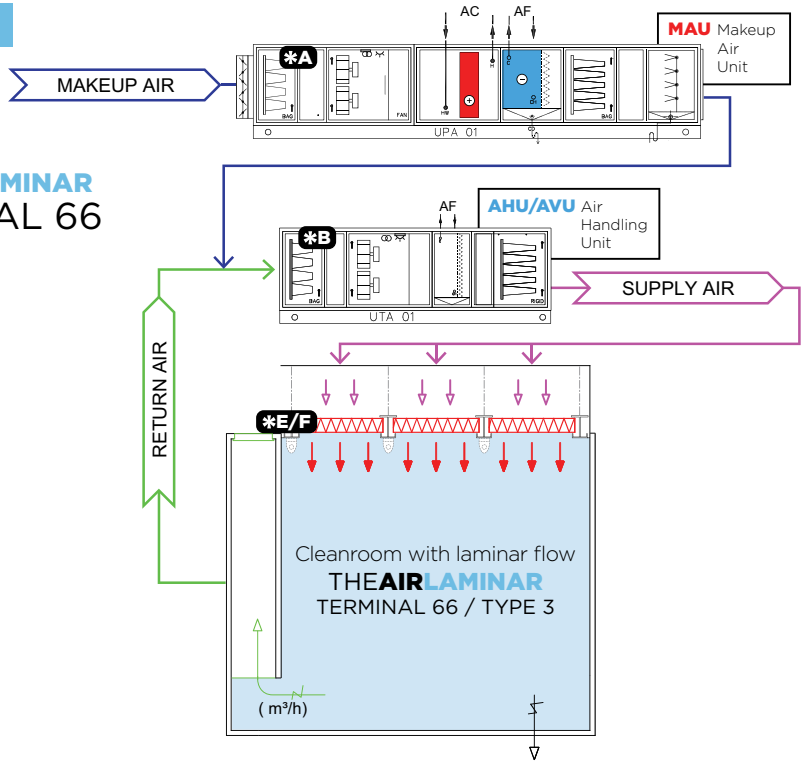
Detail of one of the "TERMINAL 66" HEPA filters.

Laminar flow installed with a dismantled diffuser membrane.

	THE **AIR** LAMINAR TERMINAL 66 with terminal HEPA filters above cleanroom area				THE **AIR** LAMINAR COMPACT 110 with ventilation and filtration unit		THE **AIR** LAMINAR ADAPT 292 with high capacity HEPA filters			
Level / Type	**TYPE 1**	**TYPE 2**	**TYPE 3**	**TYPE 4**	**TYPE 5**	**TYPE 6**	**TYPE 7**	**TYPE 8**	**TYPE 9**	**TYPE 10**
✱**A** - Makeup air	AMU				AMU		AMU			
✱**B** - Air treatment	AHU	AHU	AHU-AVU	Cooling Coil	AHU	Cooling Coil	AHU	AHU	AHU-AVU	Cooling Coil
✱**C** - Additional filtration	Optional H14	Optional H14	Optional H14	Optional H14	Optional H14	Optional H14	Optional H14	Optional H14	Optional H14	Optional H14
✱**D** - Fan	AVU/AVUs	WALL FAN	–	WALL FAN	**FFUs (Fan Filter Units)** High capacity H14 filtration and ventilation units of 110 mm in height		AVU/AVUs	WALL FAN	–	WALL FAN
✱**E** - Terminal filtration	**H14 filters with standard dimensions.** Height of filter: 66 mm Optional visible light fixture						**High capacity H14 filter.** Height of filter: 292 mm			
✱**F** - Diffusion and lighting					Hidden light, cloth diffuser		Hidden light, cloth diffuser			

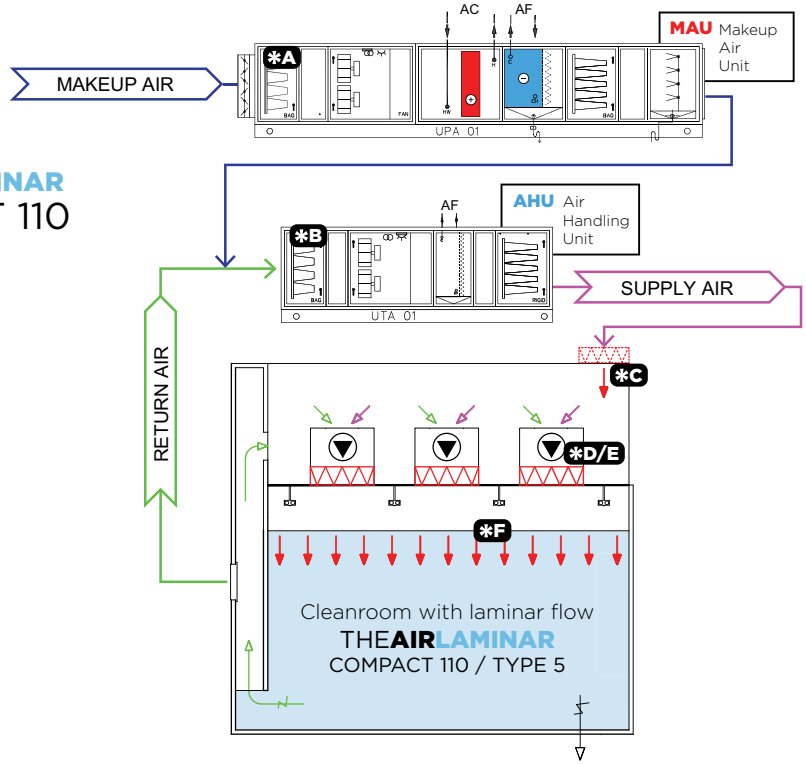
TYPE 3

THE **AIR** LAMINAR
TERMINAL 66

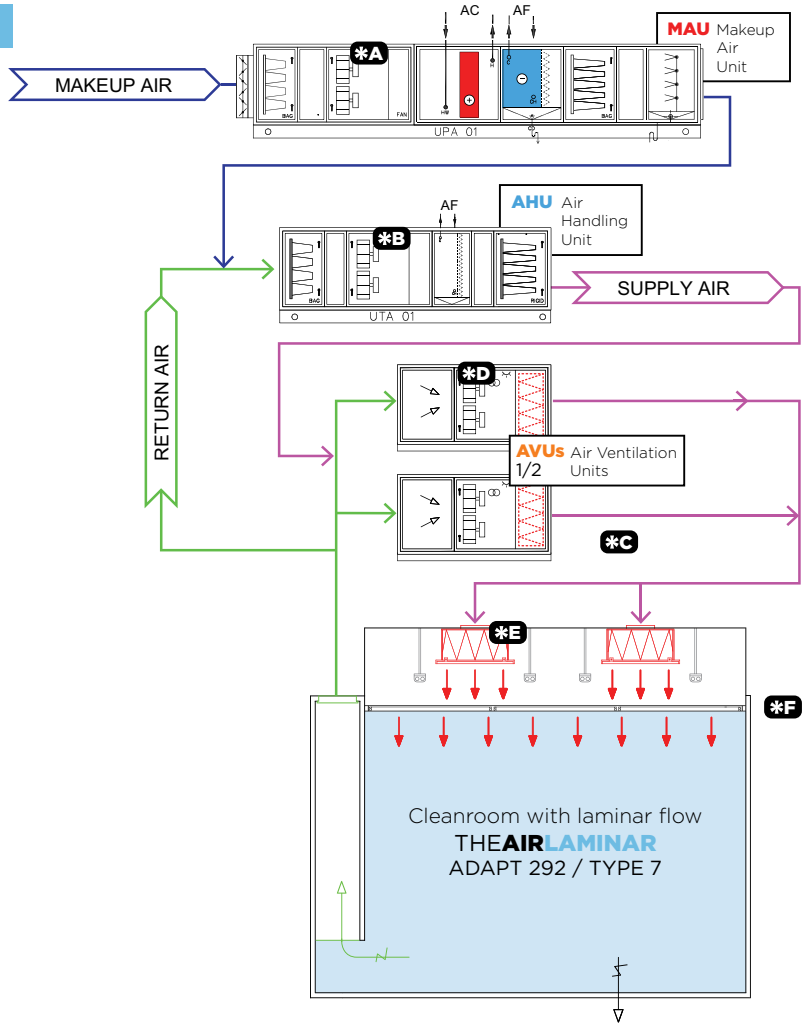


TYPE 5

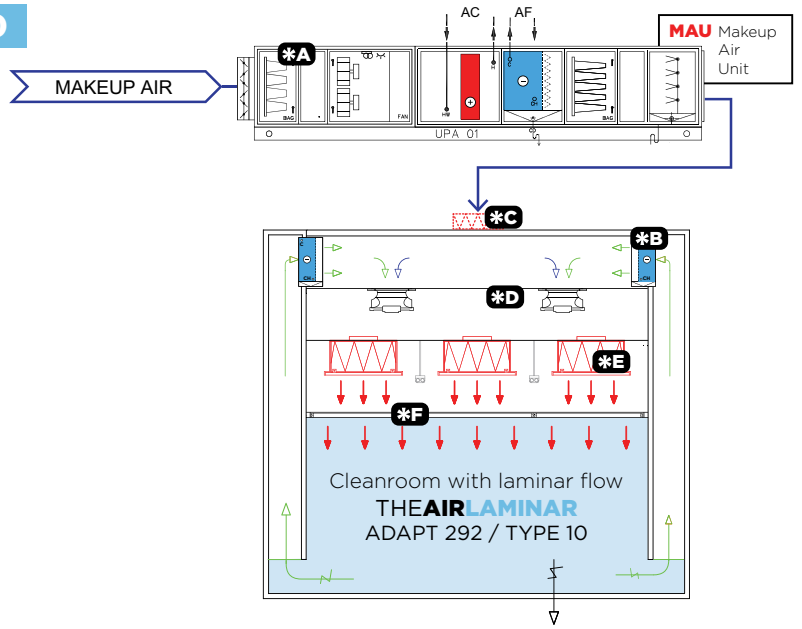
THE **AIR** LAMINAR
COMPACT 110

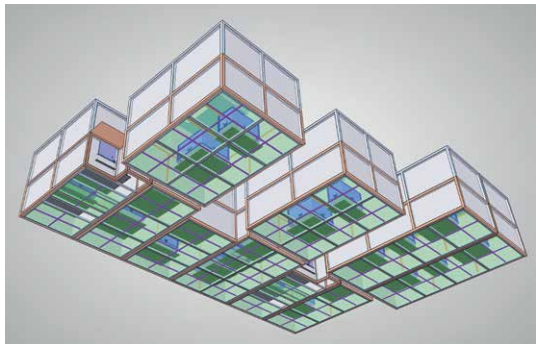


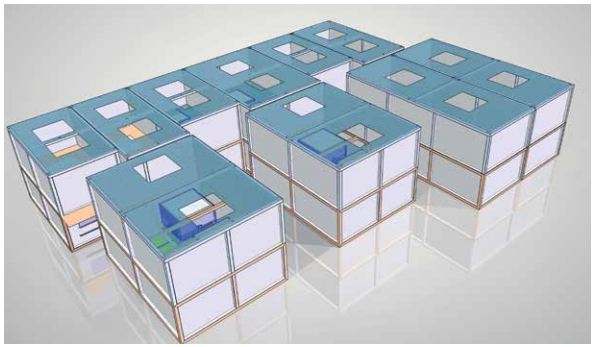
TYPE 7



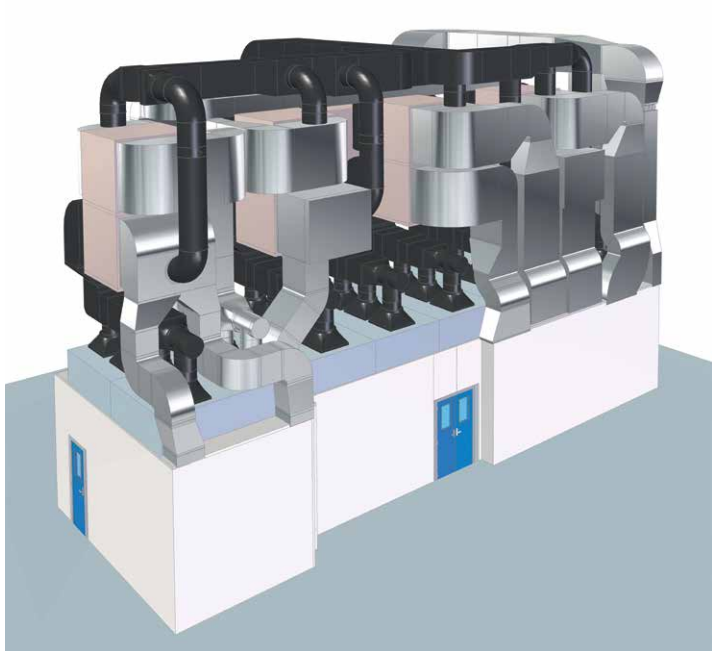
TYPE 10







Examples of 3D laminar flow modules.



Laminar flow for aseptic zone. HVAC in limited space.

THE**AIR**BOX
PASS-THROUGH INTEGRATED IN CLEANROOM

SEVERAL SOLUTIONS, **VARIOUS TYPES**

General Concepts

The AIR BOX is a compact material pass-through unit for cleanrooms, designed to conveniently transfer materials between classified and/or unclassified areas. The electronic interlocking door system prevents the doors from opening simultaneously and thus altering the pressurization between the areas to which it connects.

We have created two types:

THE**AIR**BOX BASIC
The basic solution without filtration

THE**AIR**BOX DYNAMIC
The solution with HEPA filtration

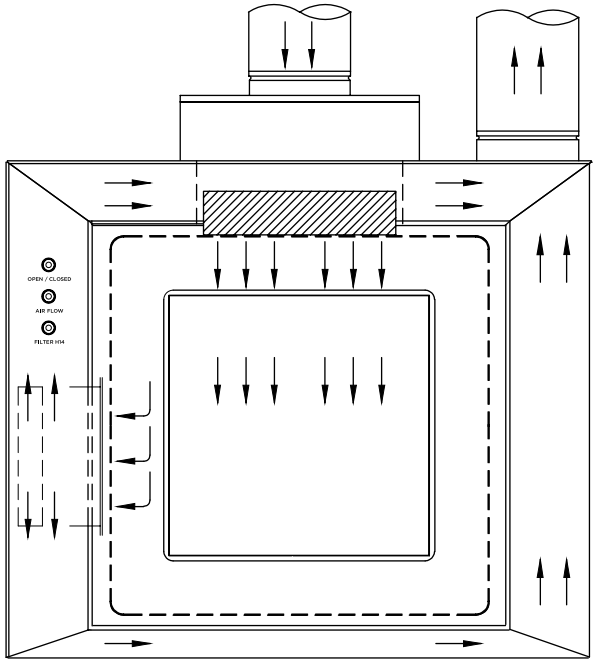
THE**AIR**BOX BESPOKE
Your Pass-through tailormade

THE**AIR**BOX

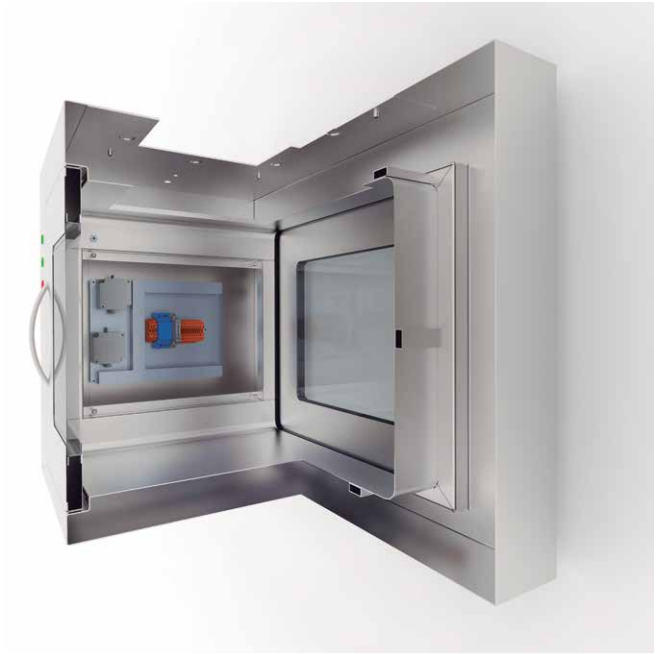
TECHNICAL DATA

Material	Stainless steel AISI 304 or AISI 316L, satin polished
Doors	Laminated glass windows Automatic interlocking
Power	Adaptable to any tension Standard models of 115 / 240V, single phase, 50-60Hz
Air filtration	Only applicable to THE AIRBOX DYNAMIC model H14 HEPA level filter Unit operation and filter clogging visual warning With DOP socket for equipment validation

Interlocked doors to prevent simultaneous opening

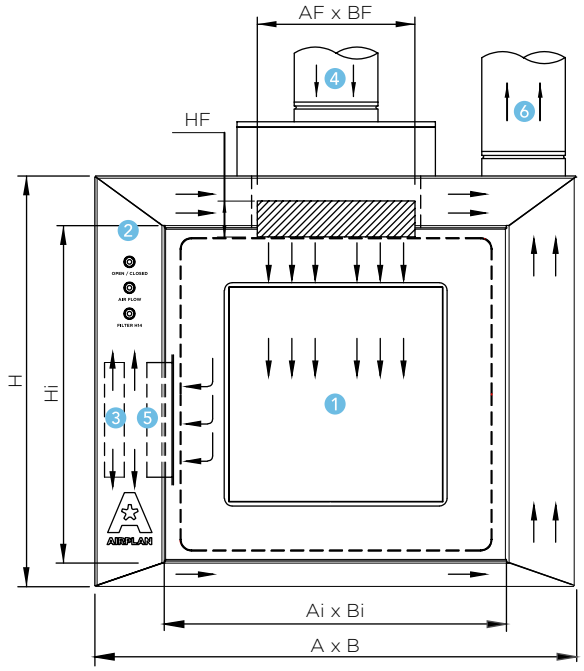


THE AIR BOX DYNAMIC operation diagram
The air is driven through the HEPA filter located at the top, flows into the chamber, and exits on the side for recirculation



Integration of the electrical panel in THE AIR BOX DYNAMIC

cGMP design: flat surfaces, rounded corners; easy cleaning



THE AIR BOX

(1) Door with laminated glass
(2) System status LEDs
(3) Control panel
(4) Supply air
(5) Air return grille
(6) Return air

THE AIR BOX	BASIC										DYNAMIC							
	444		555		666		888		1111		555		666		888		1111	
Airflow	-		-		-		-		-		m³/h	cfm	m³/h	cfm	m³/h	cfm	m³/h	cfm
Total	-		-		-		-		-		150	88	150	88	300	177	600	353
Electric Req.																		
Power	500W																	
Electric Consump.	2,5A																	
Internal measur.	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in
Width (Ai)	400	1' 3.7"	500	1' 7.7"	600	1' 11.6"	800	2' 7.5"	1000	3' 3.4"	500	1' 7.7"	600	1' 11.6"	800	2' 7.5"	1000	3' 3.4"
Depth (Bi)																		
Height (Hi)																		
External measur.	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in
Width (A)	646	2' 1.4"	746	2' 5.4"	846	2' 9.3"	1046	3' 5.2"	1246	4' 1.1"	830	2' 8.7"	930	3' 0.6"	1130	3' 8.5"	1330	4' 4.4"
Depth (B)	470	1' 6.5"	570	1' 10.4"	670	2' 2.4"	870	2' 10.3"	1070	3' 6.1"	570	1' 10.4"	670	2' 2.4"	870	2' 10.3"	1070	3' 6.1"
Height (H)	540	1' 9.3"	640	2' 1.2"	740	2' 5.1"	940	3' 1.0"	1140	3' 8.9"	690	2' 3.2"	790	2' 7.1"	990	3' 3.0"	1190	3' 10.9"
H14 absolute filter	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in
Width (AF)	-		-		-		-		-		305	1' 0.0"	305	1' 0.0"	305	1' 0.0"	610	2' 0.0"
Depth (BF)	-		-		-		-		-						610	2' 0.0"		
Height (HF)	-		-		-		-		-		66	0' 2.6"	66	0' 2.6"	66	0' 2.6"	66	0' 2.6"
Others	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
Weight	50	110	70	154	100	220	140	309	170	375	100	220	140	309	170	375	200	441

THE**AIR**FFU
FAN FILTER UNIT WITH PVC SLATS AND SUPPORT BARS

★AIRPLANCARE

WE SUPPORT EVERY SOLUTION WITH CUSTOMIZED SERVICE

We offer a range of complimentary and after-sales services, to help you get the most out of your installation and take care of your long-term investment.

TECHNICAL SUPPORT

DIRECTCARE

With the DIRECT CARE program, our technicians will contact you in less than 72 hours to determine the best solution to resolve any incidents in your installation via:

- **Remote assistance.** Remote assistance from our technicians to speed up the repair.
- **On-site intervention.** Whenever necessary due to the complexity and impact of the malfunction.
- **With direct remote assistance.** To speed up the repair if the failure can be solved with your own technical team.

In case of any incident, don't hesitate to contact us:

wecare@airplan-sa.com

+34 938 788 384

COMPLIMENTARY SERVICE

Commissioning

We offer a customized start-up service for every client, for implementation of any laminar flow solution / fan filter unit / pass-through requiring special construction integration, guaranteeing correct operation and optimum performance with the appropriate settings.
Upon the client's request, we execute the IQ/OQ protocols.

PREVENTIVE MAINTENANCE

PREVENTIVECARE

We offer a customized maintenance program with **remote assistance** and **regular visits** to the facilities throughout the year with easy fee payment system.

With the PREVENTIVE CARE maintenance program we monitor the operation of the plant, review the status of the facilities and confirm that everything is within the required parameters. And if we find any irregularity, we inform you and correct it before it can affect production and/or staff.

SPARE PARTS

RENEW CARE

We recommend purchasing a pack of spare parts when THE AIR FFU, THE AIR LAMINAR or THE AIR BOX' warranty period begins. Our spare parts packs include matching filters and may be supplemented by additional components of your choice.
You will find a detailed list of recommended spare parts and the necessary replacement instructions within the *Documentation Dossier.*

More?

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