



AIR QUALITY
ENGINEERING

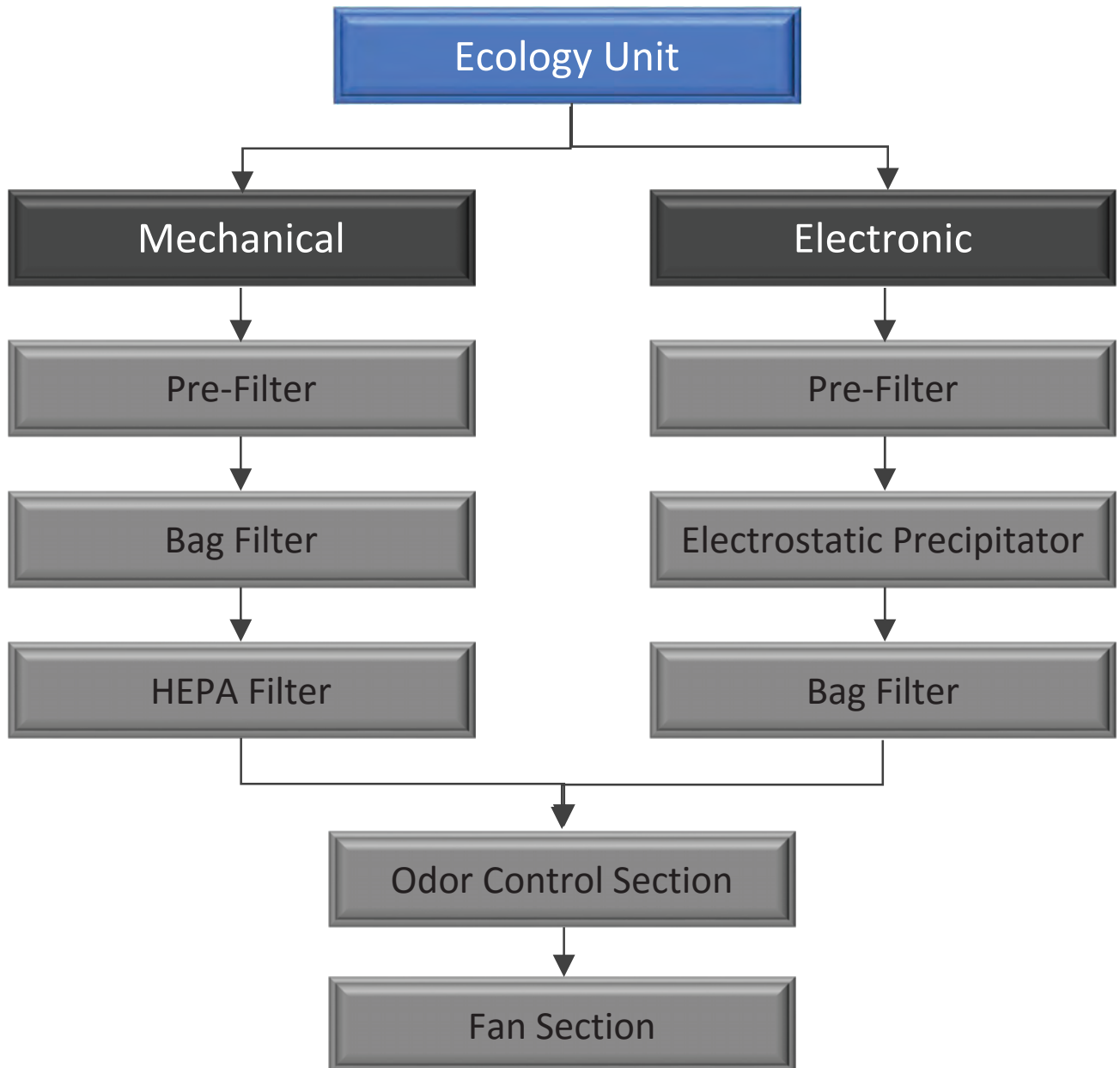


ECOLOGY
UNIT



WHAT IS AN ECOLOGY UNIT?

An Air Purification Unit which removes volatile organic compounds (VOCs) namely oil, grease, smoke, soot and odor from kitchen extract systems is called an ECOLOGY UNIT. This purification can be achieved using either mechanical filtration or electronic filtration. Mechanical Filtration Units consist of a series of mechanical filters whereas Electronic Filtration Units consist of electrostatic precipitators (electronic cells) along with mechanical filters for air purification. Both types of filtration have an odor control section followed by a fan section.

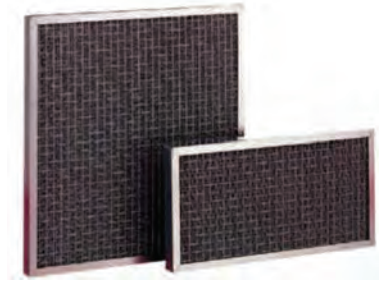


FILTRATION SECTION

Metallic Pre-Filter (G2 Grade):

Metallic washable pre-filters with 2" thickness (4" thickness also available on request) having multiple layers of pleated galvanized wire as a standard are formed into a compact maze of dirt catching surfaces. The pre-filters can also be provided in aluminum or stainless steel filter media. Owing to their excellent dirt holding capacity and ability to perform in high moisture conditions, they are suitable for use as grease filters in kitchen hoods. The average arrestance is 75-85% and classified as G2 in accordance with EN779 Standard. **This filter is designed to remove high oil and grease content from**

the exhaust air. The metallic filter is washable type and requires regular maintenance by washing the filter in a solution of detergent & warm water and dried with compressed air. The average life of these filters (if maintained correctly) is 2 to 3 years.



Pleated Media Pre-Filter (G4 Grade):

These filters feature 100% synthetic media pack which provides excellent performance in conditions of high relative humidity and moisture. The pleated media pack is housed within a sturdy double walled, die cut box, beverage board frame. On the air leaving side of the media pack, a wire-mesh pleat support grid maintains equidistant spacing between pleats, ensuring that the dust is collected evenly over the entire surface of the media. The filters are available in 2" & 4" thickness. These filters are classified G4 in accordance with EN779 Standard. **This filter should be used if exhaust air includes carbon**

soot from charcoal grills and barbecues. The pleated media filters are replaceable type and needs to be replaced every 2-4 weeks depending on the type of cooking load (low / medium / high).



Pleated Media Pre-Filter (F5 Grade):

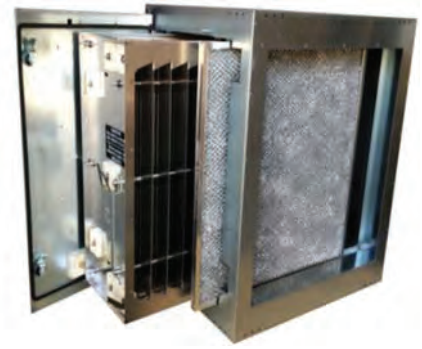
Pre-filters with high loft glass fiber pleated media with synthetic layer on air leaving side. The pleated media is formed and contoured using a meshed support grid. The grid provides consistent pleat shaping and spacing, allowing dust to collect uniformly over the entire surface area of the filter media, ensuring a high dust holding capacity and long service life. The grid also helps retain the media in place and contributes to the overall rigidity of the filter. The filter media is housed in a sturdy die-cut or metal frame to ensure reliable & strong construction. **This filter should be used if exhaust air**

includes carbon soot from charcoal grills and barbecues. The pre filters are replaceable type and needs to be replaced every 3-4 weeks depending on the type of cooking load (low / medium / high).



Electrostatic Precipitator ESP (ETL Listed to UL-710 & UL-867 Standards):

A two stage Electrostatic Precipitator having a charging (ionizing) section as first stage and collection section as second stage is included in the unit. The charging section consists of 11 ionizing wires (per electronic cell) of 0.010 inches diameter Tungsten to prevent corrosion and damage. Wires are fixed at one end and spring mounted on the other for ease of maintenance. Collection plates are of minimum 0.025 inches thick aluminium. The ESP includes a solid state, dual voltage and self-regulating power supply. Nominal output voltages are 9400 VDC ionizer and 4700 VDC on collector section. The power supply is housed in a hinged power door and is sealed from the airstream. The ESP includes a 1" thick pre and post aluminum mesh filters. **The ESP can either supplied in manual wash type or auto wash type as per the project requirement.** A drain pan and drain connection can be provided in the cabinet if required for removal of excess oil and grease flowing down if the cells are not cleaned in time.



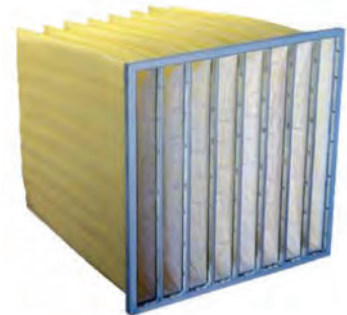
Rigid Bag Filters (F8 Class):

Single header rigid bag filters are designed to handle turbulent airflow and are suitable for high temperature and high humidity operation making them ideal for kitchen extract airflow. The filters are classified F8 in accordance with EN779 Standard. The rigid bag filters have galvanized steel headers and cell sides for better rigidity & corrosion resistance. **The rigid bag filters are replaceable type and need to be replaced every 3-4 months depending on the type of cooking load (low / medium / high).**



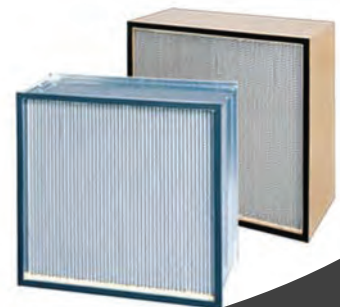
Pocket Bag Filters (F7/F8/F9 Class):

Single header pocket bag filters are made from high quality synthetic media. It comprises of a unique matrix of primary and secondary synthetic fibers with a thin layer of high strength spun bond scrim on the air leaving side to increase filter stability and prevent particle migration. This media design ensures a low initial pressure drop, a high dust holding capacity and a long filter service life. The filters are designed for a continuous operating temperature up to 70 °C. The filters are classified F7/F8/F9 in accordance with EN779 Standard and can be supplied as per above classification or any other classification as required. **The pocket bag filters are replaceable type and needs to be replaced every 2-3 months depending on the type of cooking load (low / medium / high).**



HEPA Filters (H13 Class):

HEPA filters consisting of rigid pleated media pack with aluminum separator, provide high efficiency air filtration on fine particles at the lowest possible resistance. The media pack is enclosed in a galvanized steel frame assembly. The HEPA filter incorporated in our units is rated above 99% efficiency (99.997%) on 0.3 micrometer challenge aerosol with Class H13 European classification in accordance with EN1822 Standard. **The HEPA filters are replaceable type and needs to be replaced every 6-8 months depending on the type of cooking load (low / medium / high).**



ODOR REMOVAL SECTION

Canister Type Carbon Filter:

The carbon filter has a galvanized steel frame measuring 610mm x 610mm x 70mm width with provision to fit 16 canisters filled with carbon media to control odor. The canisters are made of galvanized steel with each canister measuring 145mm in diameter and 600mm in length. Each canister can hold up to 2.8 kg of carbon media. Each frame has 16 canisters with a total of 45 kg of carbon media. **The carbon cartridges are replaceable type and needs to be replaced in 12-18 months depending on the type of cooking load (low / medium / high).**



Cassette Type Carbon Filter:

Cassette type medium duty filters with 1" thick 18" deep V Bank arrangement filled with carbon media which removes the odor. The cassette is constructed from high impact polystyrene and has zero leakage design. Each cassette is of size 6" x 12" x 18" and contains 3.6 kg of carbon media in each cassette. Various carbon media can be supplied as per project requirement and it is easily replaceable by removing the sliding trays from the cassette. **The carbon media is replaceable type and the media needs to be replaced every 8-12 months depending on the concentration of the exhaust (low / medium / high).**



V Type Pleated Rigid Carbon Filters:

Carbon filters having pleated compact filter with activated carbon media as standard. Other carbon media can be provided as per project requirement to control specific odors. These are high impact polystyrene cells having pleat packs arranged in V shape to utilize maximum amount of media for the given face area. The filters can be installed or removed by sliding in the tracks provided in the cabinet. Each filter size is 24" x 24" x 11.5" thickness and contains 4.3 kg of densely packed granular microstructure carbon ensuring higher effective active area per kg of media, resulting in high efficiency in odor removal. **The filters are replaceable type and needs to be replaced every 5-6 months depending on the concentration of the exhaust (low / medium / high).**



Liquid Spray Misting System:

Ecolo-Air liquid spray mist system complete with spray nozzles, liquid pump, timers for cycle time & spray time for site adjustment as per requirement and 1 gallon of liquid spray. The bio chemical liquid is specially formulated to attack the VOCs responsible for the food smell and can take care of most strong smells from the kitchen exhaust. **The liquid is replaceable type and needs to be replaced when finished as per the cooking load and unit setting.**



FAN SECTION

Backward Curved Fan:

The unit includes belt driven centrifugal backward curved Double Inlet Double Width fans with **AMCA certification**. The fan scroll is hot galvanized sheet steel. The impellers are manufactured from high grade cold rolled steel with epoxy coating. The impellers are statically & dynamically balanced from factory. All fan are fitted with high quality ball bearings. The motor is TEFC, class 'F' insulation and IP55 protection. The motors are fitted on adjustable motor base plate for easy belt adjustment. Fan drives are rated at %150 of maximum motor power. The fan motor assembly is mounted on spring vibration isolators. The fan carries **AMCA SEAL** for certified air & sound performance ratings.



CABINET

All the above sections are enclosed in a double skin penta-post aluminium profile construction with the mechanical / electronic filters, carbon filters and fan fitted inside the cabinet. The outer skin is 0.6mm pre-painted GSS and the inner skin is of 270 GSM 0.6mm plain GSS. The framework is made of extruded aluminum hollow profiles. The standard sandwich panel is 25 mm thick filled with either rockwool, or fiberglass or PUF as insulation material. The cabinet can also be manufactured with 50 mm thick panels if required. The cabinet has removable type access doors for cleaning, maintenance & replacement of filters. The entire cabinet is mounted on a galvanized steel C-channel with same reinforcements across the unit base. The cabinet can also be supplied with a drain pan and drain connection if required for removal of excess oil and grease flowing down the specific filters. The unit can also be manufactured in sections for ease of transportation and handling.



OPTIONAL ACCESSORIES

Fire Dampers:

UL/ULC classified fire dampers are mounted in the unit between the odour section and the fan section. The fire damper is fusible link type and approved by UAE Civil Defense. The fire damper GI frame is 1.2mm thick and the GI blade is 0.8mm thick GI. It has a fusible link of 165 °F, fire rating is for 3 hours, and blade is above the airstream, shutter type with mounting sleeve and UL Label.

Magnehelic / Transmitter Type Pressure Gauges:

The ecology unit can be provided with magnehelic / transmitter differential pressure gauges across all mechanical filters to help identify the pressure drop across each filter. This in turn will help the client understand the filter status. The magnehelic differential pressure gauges are for visual indication of filter pressure and transmitter differential pressure gauges are connected and transmit the filter status to the status panel. The ESP and carbon filter status cannot be provided through these gauges.

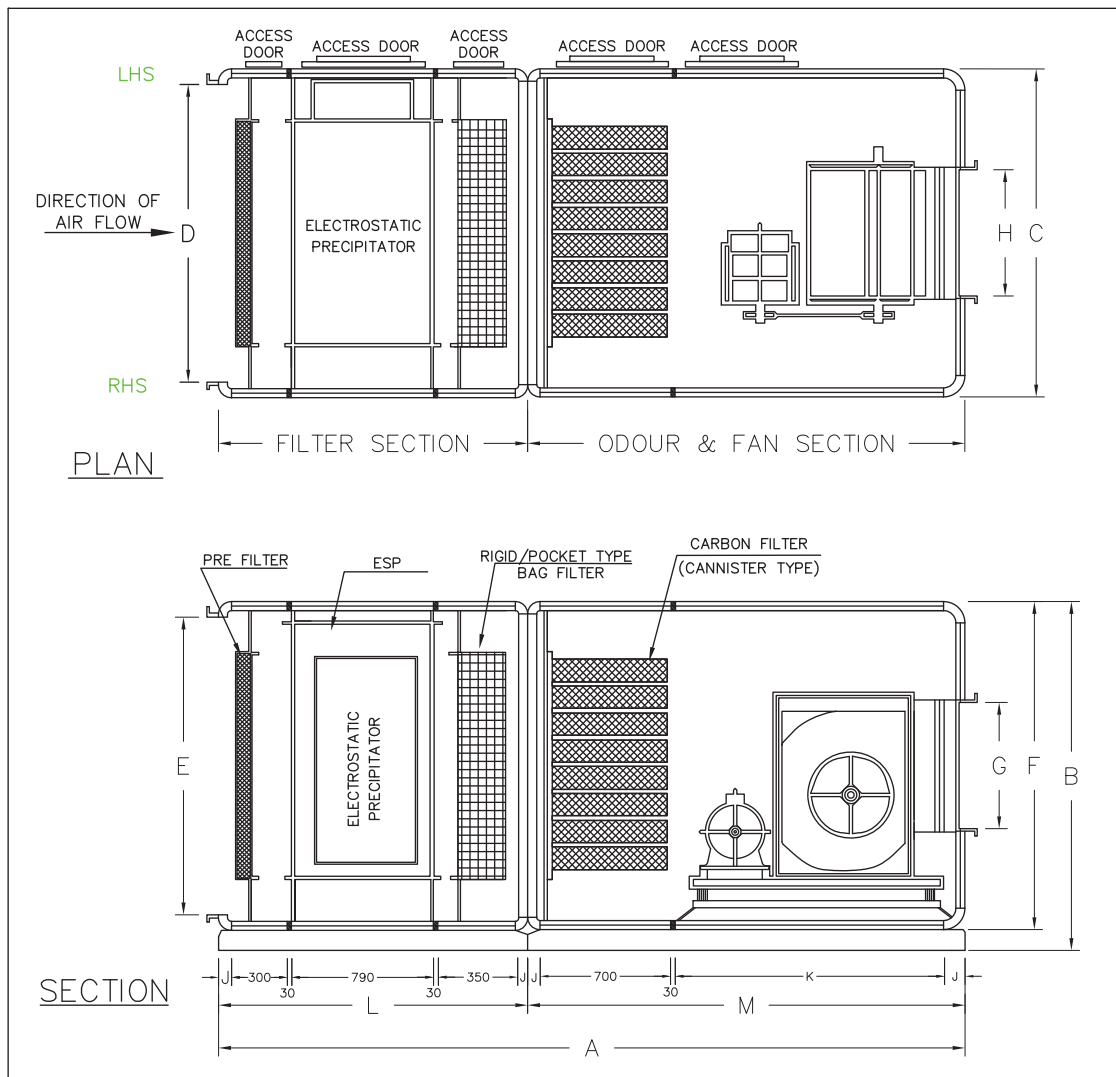
Filter Status Panel:

A filter status panel can be provided to indicate the status of the individual mechanical filters and pilot light & buzzer alarm indication for filter dirty signal in order to clean or replace the respective filters. The panel can also be supplied with provision to provide the status of the filters to the building management system (BMS).

Fan Control Panel:

The unit can be supplied with an IP65 rated cabinet housing either STAR or DELTA or digital VFD controls (for the ecology unit fan/motor). The panel includes switch having variable speed selector for controlling the fan speed, Hands – Auto - Off and fire alarm interfacing. The filter status indications can be incorporated in this panel so as to have a single control panel for fan starter and filter status. The panel incorporating filter status will indicate the status of the individual mechanical filters and pilot light & buzzer alarm indication for filter dirty signal in order to clean or replace the respective filters. The panel can also be supplied with provision to provide the status of the filters to the building management system (BMS).

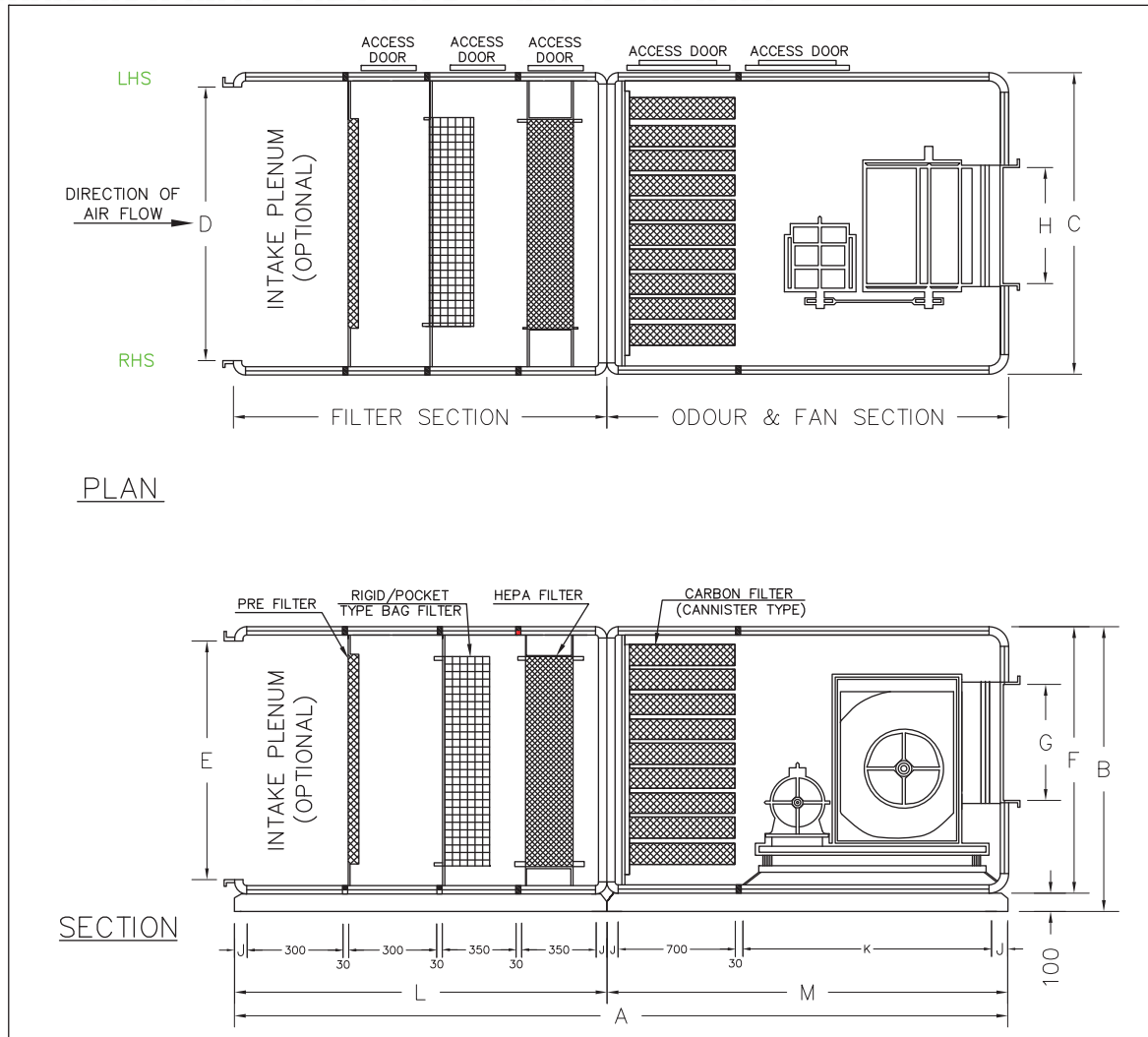
DIMENSIONAL DETAILS – EFU MODEL



Model	Dimensions (mm)										Weight (kg)
	A	B	C	D	E	F	J	K	L	M	
EFU-020	3350	1000	860	800	840	900	30	1000	1560	1790	450
EFU-040	3500	1000	1560	1500	840	900	30	1150	1560	1940	600
EFU-060	3665	1150	2300	2220	970	1050	40	1275	1580	2085	820
EFU-080	3830	1700	1560	1460	1500	1600	50	1400	1600	2230	960
EFU-120	3960	2500	1560	1460	2300	2400	50	1530	1600	2360	1350
EFU-160	4060	1700	3000	2900	1500	1600	50	1630	1600	2460	2000
EFU-240	4230	2500	3000	2900	2300	2400	50	1800	1600	2630	2600

- The above dimensions are for reference only.
- Drawings with accurate dimensional details will be provided in GA drawing upon order confirmation.
- If a particular section is not applicable to the unit, the individual dimension of that section can be deducted from the overall length.
- The weight mentioned is approximate and as per maximum selection of fan and motor model.

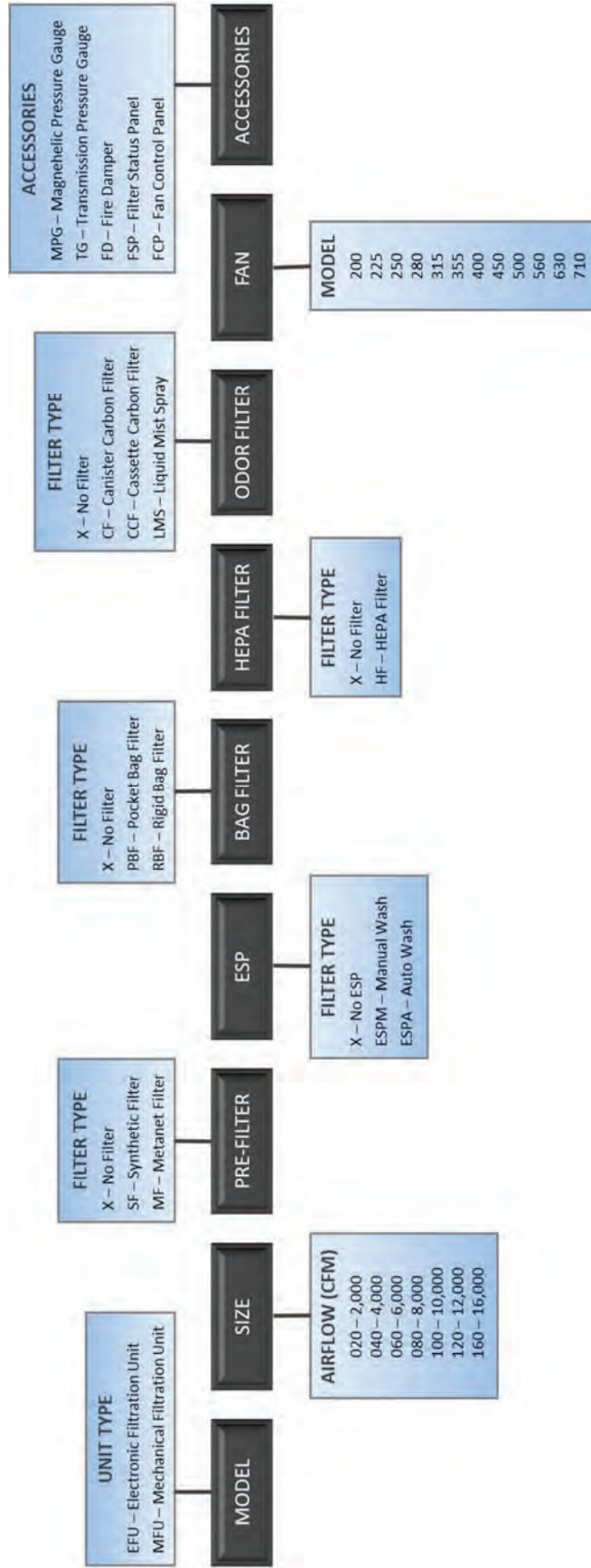
DIMENSIONAL DETAILS – MFU MODEL



Model	Dimensions (mm)										Weight (kg)
	A	B	C	D	E	F	J	K	L	M	
MFU-020	3240	1000	850	790	840	900	30	1000	1450	1790	375
MFU-040	3390	1000	1380	1320	840	900	30	1150	1450	1940	475
MFU-060	3540	1460	1160	1100	1300	1360	30	1300	1450	2090	625
MFU-080	3730	1480	1480	1400	1300	1380	40	1450	1470	2260	685
MFU-100	3780	1480	1800	1720	1300	1380	40	1500	1470	2310	800
MFU-120	3870	1500	2100	2000	1300	1400	50	1550	1490	2380	1000
MFU-160	4020	1600	2700	2600	1400	1500	50	1700	1490	2530	1450
MFU-180	4170	2200	2100	2000	2000	2100	50	1850	1490	2680	1600
MFU-240	4320	2200	2700	2600	2000	2100	50	2000	1490	2830	1850

- The above dimensions are for reference only.
- Drawings with accurate dimensional details will be provided in GA drawing upon order confirmation.
- If a particular filter section is not applicable to the unit, the dimensions of that filter section can be deducted from the overall length.
- The weight mentioned is approximate and as per maximum selection of fan and motor model.

Product Key



Above models are standard models.
 Any special requirement can also be designed and manufactured.

OUR OTHER PRODUCTS

Electrostatic Precipitator



Self-Contained Recirculating Air Cleaning System for Cigar/Hookah Bars



Air Purification for Health Care Application (Isolation Room & Operation Room)



Air Quality Engineering, Inc., founded in 1973, is proud to offer a continued, superior level of experience in manufacturing complete air filtration systems that provide the highest performance, efficiency and capacity for the money. Our sales and engineering team's mission is to identify the most cost-effective, high quality solutions for our customers' needs, whether commercial, industrial or residential.



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