



**INFORMATION TO SUPPORT A PLANNING APPLICATION
FOR A COMMERCIAL KITCHEN AT
455-459 WILMSLOW ROAD MANCHESTER M20 4AN**

Re: Proposed Extract Ventilation for the above property

We can now confirm the design and specification for the proposed extraction system at the above address is in accordance to DW172 specification.

Kitchen Extract Canopy (will incorporated the design parameters below).

The wall Type canopy would be manufactured from 430grade, brushed stainless steel sheet of a Box design.

Measuring 4000mm x (long) x 1100 mm (wide) x 500 mm (deep)

Incorporated within the canopy would be a full length purpose built filter housing to accommodate 8 off, 500mm (wide) x 400mm (high) x 50mm (deep) stainless steel Baffle type grease filters.

Duct work

The duct work would be manufactured from galvanised mild steel sheet of a folded lock- formed and flange construction in accordance with DW144 specification.

The extract ductwork will connect from the face of the canopy, fixed to the ceiling, through the flat roof at the rear, and run vertically up, fixed to the face of the outrigger gable wall. It will incorporate a fan motor, silencers, and odour control as specified in Drawing No. AMA822-003. The ductwork will terminate at a high level, approximately 1 meter above the eave of the roof. To aid in dispersing any odour to the atmosphere, a high-velocity cowl will be installed to increase the efflux velocity by 15 m³/second..

The ducting will have access doors every 1.5 meters for ease of maintenance and cleaning.

Extract Fan Details

Located within the duct work, an S+P Cased Axial 500 diameter, 4 pole, s/ phase fan motor, running via a variable transformer speed controller.

This fan will handle an airflow rate in excess of 1.415m³/second against the resistance of the system to give a velocity across the face of the canopy of 0.4m³/second, there by easily giving 60 air changes per hour with the kitchen area.

This fan runs at 1350rpm with maximum operating noise level of 42dba at THREE METRES.



Noise Control

2 Number 1D acoustic attenuator with Pod would be installed directly before and after the extract fan to reduce breakout noise.

1D podded Attenuator reduces the noise level by -11dba at either end of the fan motor Total

Noise reduction of 22dba from the mechanical plant of 45dba

We would assume the noise level at 4 meter from the discharge point will be no more than 23-28dba.

The fan will also have flexible connections on both side and AV mounts connecting onto the fan bracket.

Odour Control

Prior to the extract fan; 3 stage purpose built housing would be installed to accommodate a 1 x 600 x 600 carbon units with pre-filter housing prior to the bag filter section.

The carbon unit will handle air flow volume of 0.8m³ /second at a resistance of 50pa, thereby giving an optimum carbon contact dwell time of 0.36 seconds.

Before the carbon unit a bag filter and "V" pleated disposable G4 pre-filters would be installed.

Cleaning and maintenance

The "V" pleated panel should be changed every 4 to 6 weeks

The carbon cells should be changed every six months to maintain its optimum efficiency. The canopy and the stainless steel baffle filters should be cleaned on a daily basis.

We recommend that the canopy and the duct work should receive a full deep clean 6 months after installation and then every 6 months thereafter by a professional cleaning company, to maintain the maximum efficiency of the extraction system.

We enclose a copy of all technical data sheets relating to the system detailed above, and trust that the enclosed is in order. Should you require any further details please do not hesitate to contact the under signed

AMA UK CONSULTANCY LIMITED

Director: Dr. A. Nankali B.Sc. (Hons), Ph.D., Structural Civil Engineer

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1. Drawings See Attached AMA822-003

- Typical Extract Canopy Photo

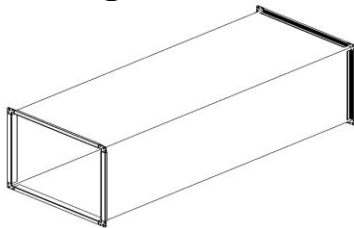


2. Fan Details

Extraction Fan System

- See Attached Helios Giga Box Centrifugal Fan Details with technical specification Information attached.
- Extraction Fan Model TXBR/4-500

3. Ducting Details



The ductwork is manufactured from galvanised mild steel sheet, folded and lock formed with flanged construction in accordance with D.W.144 specification.

Low Loss straight through cowl Termination

Galvanise mild steel construction
Non Restrictive
Designed to slip over spiral ducting
1000mm Long
500 Dia



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4. Noise Control Details

Flanged Circular Silencers Specification

Silencers are available in two standard lengths:-

- 1D (length = diameter)
- 2D (length = 2 x diameter)

Each length is then available with and without cylindrical centre-body or 'pod' which provides additional attenuation. These are identified by the inclusion of the product code 'P' for podded or 'NP' for unpodded versions.

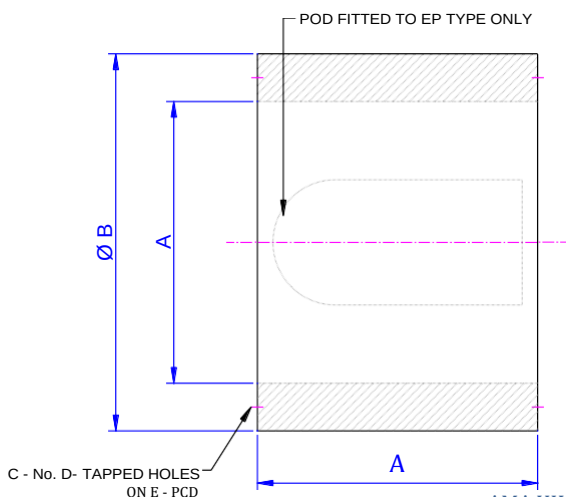
When selecting the appropriate silencer, account needs to be taken of both the level of sound reduction achieved and, in the case of a podded silencer, the additional pressure drop in the system which needs to be overcome by the fan.

For sound, deducting the appropriate 'dBA Attenuation' figure from the 'dBA @ 3m' figure in the relevant fan performance table gives a combined 'dBA @ 3m' figure for the fan and silencer combination.

For pressure, the ' ΔP ' figure should be added to the pre-attenuation pressure requirement before selecting the appropriate fan.

Fan dia	A 1D	A 2D	B	C	D	E	WEIGHT (Kg)			
							1DENPM	1DEPM	2DENPM	2DEPM
450	450	900	602	8	M10	500	15	18	27	31
500	500	1000	652	12	M10	560	18	22	32	37
560	560	1120	712	12	M10	620	22	26	39	46
630	630	1260	782	12	M10	690	26	32	48	57

Fan dia	dBA ATTENUATION		ΔP (Pa) 1DEP	dBA ATTENUATION		ΔP (Pa) 2DEP
	1DENP	1DEP		2DENP	2DEP	
450	-8	-10	21	-13	-15	33
Extract 500	-8	-11	32	-14	-17	51
560	-8	-11	35	-15	-18	56
630	-11	-17	27	-17	-26	43



Casing made from galvanised steel, acoustically lined with high density mineral wool covered with cloth to prevent erosion. Acoustic lining retained by perforated steel sheet.

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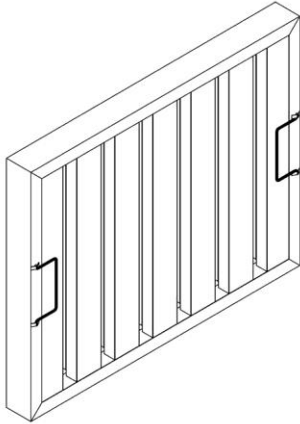
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5. Baffle Filter Details



It is universally recognised that there is an increasing need to maintain & improve hygiene standards & reduce fire hazards within kitchens. The Baffle Grease filter accomplishes both needs through its clever design of interlocking baffles that provide a tortuous route for the passage of air through the filter by creating two rapid 180° air direction changes simultaneously. The grease molecules having a far greater inertial force than air impact themselves on the vanes. A series of vertical Stainless Steel or Aluminium vanes are housed in a channel frame, with each of the baffles strategically aligned to provide the highest potential for grease removal. Due to the smooth nature of the vanes the grease naturally runs downwards, through the drainage holes and into the collecting trays normally provided within the canopy holding casings.

Construction

The WFG Baffle filter range is available in Aluminium or Stainless Steel and is robustly constructed with filter removal handles fitted as standard.

Cleaning

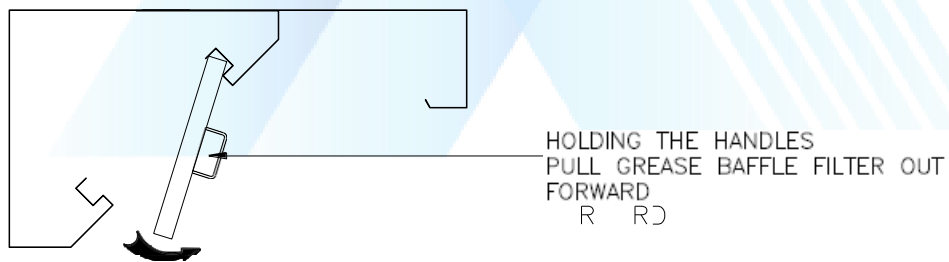
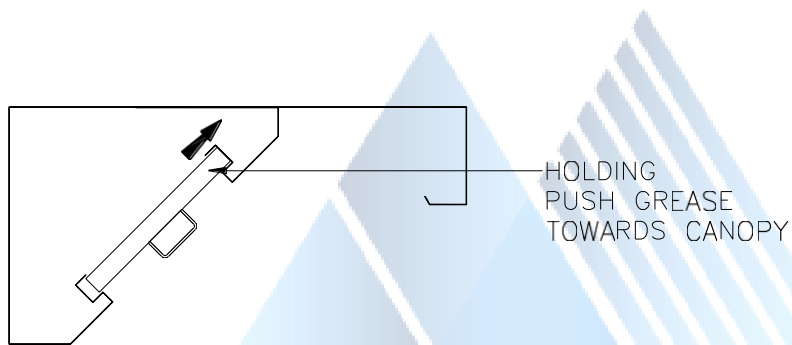
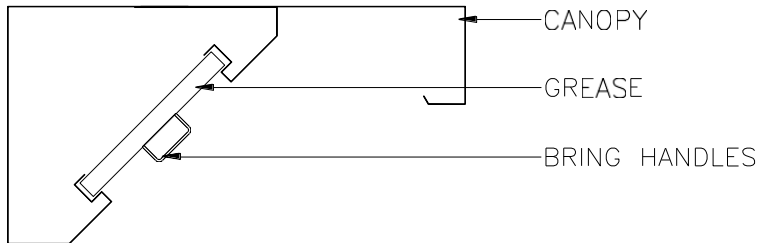
It is imperative that this product is regularly cleaned – according to use. This may be accomplished by steam cleaning, washing in a dishwasher using conventional detergents or cleaners.

Range

Baffle filters are available in a large range of standard sizes, they can also be manufactured in non-standard sizes, however the filter depth is always limited to 47mm due to the nature of the filter.

Nominal Size H x W x D	Actual Size H x W x D	Rated Capacity*	Resistance
10 x 20 x 2"	241 x 495 x 45mm	500m ³ /hr.	120pa
16 x 20 x 2"	395 x 495 x 45mm	830m ³ /hr	124pa
20 x 20 x 2"	495 x 495 x 45mm	1000m ³ /hr.	104pa

***Note** Baffle filters may be used at higher rated capacities whilst retaining their efficiency, however it should be noted that this will increase their resistance to air. Baffle filters must always be used with the baffles running vertically





6. Pre-filter Details

WFV Pleated Disposable Panel

With the increased demands of advancing technology the WFV Disposable Filter provides a high level of protection at a low replacement cost. The product is suitable for use in general filtration applications or as the first line of protection for a more elaborate filtration system. Being fully incinerable the product is particularly suited for application where this form of disposal of the spent filter is anticipated.

Construction

The WFV Disposable Filter contains a core of pleated non-hygroscopic and hydrophobic fibrous media designed specifically for use in air filtration. The media is manufactured with a graded fibre density to ensure optimum and even dust retention combined with low initial resistance and is thermally bonded onto a galvanised steel support mesh for maximum physical stability. The aerodynamic pack is then fully bonded into a moisture resistant rigid white lined card frame and fitted with an airflow indicator.

Applications

The WFV Disposable panel is suitable for use as a pre-filter for higher grades of air filtration or for use as a simple filter for general use within air handling systems where the use of glass-fibre is unacceptable.

Range

The WFV is available in a large range of standard sizes in 25, 50 & 100mm nominal depths (23, 47 & 97mm actual), and may also be produced in non-standard sizes to suit application requirements. The key attributes of the product are consistent efficiency, robust construction and long life combined with low replacement cost.

Filter Reference	Rated Velocity m/s	Efficiency Rating (EN779)	Dust Holding Capacity g/m ²	Max Temp °C	Max Humidity	Initial Resistance At RV (pa)	Rated Final Resistance (pa)
WFV25	1.5	G3	400	100	80%	25	250
WFV50	2.5	G4	625	100	80%	37	250
WFV100	3.2	G4	825	100	80%	68	250

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8. Odour Control Details

WF20 Bonded Carbon Cell Panel – Specification

Carbon filtration is ideal for removing unpleasant or even dangerous odours and gases from a wide variety of sources.

The ever increasing awareness of this problem from public health authorities and environmentalists has resulted in an increase in the use of the unique properties of activated carbon filtration.

Carbon will adsorb chemical molecules in the airstream in varying degrees according to the type of contaminant and the period of time the air remains resident in the carbon.

Typical applications for carbon include: incoming air in industrial plants, airports, art galleries etc., or outgoing air in kitchens, industrial processes, sewage plants etc.

Application

Activated Carbon in its loose granular form can present problems as there is a tendency for the granules to abrade one another, this causes both settlement of the carbon - creating potential bypass voids and produces carbon dust that can be re-entrained into the air-stream. The unique bonding method eradicates these problems by producing a solid and stable biscuit of consistent quality and dimensional stability that produces an even resistance.

Operational Criteria

In order to ensure a carbon filter operates satisfactorily certain criteria need to be met which do not apply to particulate filters. The most important aspect is the "dwell time" (the period of time the air is in contact with the carbon). The minimum dwell time used is 0.1 seconds, this relates to 0.19m/sec through a 25mm nominal thickness panel. The dwell time may vary considerably according to the contaminant to be removed. In order to be able to present adequate surface area to the airstream the panels will normally need to be mounted in 'V' formation within a casing or housing.

As far as possible water vapour should be eradicated from the air-stream to eliminate condensation within the filter that could cause porous blockage causing a dramatic increase in resistance - this also applies to loose carbon. However humidity levels as high as 80% RH are normally acceptable providing no interstitial condensation takes place.

Air-stream temperatures entering the filter in excess of 40°C should be avoided. In the case of anticipating temperatures above this level steps should be taken to reduce the temperature to an acceptable level by fresh air bleed, cooling coil or heat exchanger.

In catering and food preparation applications smoke and grease must be removed from the air-stream prior to entry into the carbon.

The product is available either unframed or framed in Aluminium, Galvanised or Stainless steel channel.

Performance

Due to the complex nature of adsorption carbon filters are generally designed to suit the application, however, the following information is given as an indication of the physical requirements for its use:

Typical Panel Size (HxWxD) - Carbon Unframed	Rated Airflow (m3/hr) at 0.1sec dwell	Resistance At 0.1 sec (pa)	Rated Airflow (m3/hr) at 0.2 sec dwell	Resistance at 0.2 sec (pa)
600x600x19mm	246	65	123	23
600x600x22mm	285	110	143	37

Maximum Temperature: 40°C

Maximum Humidity:

80% RH

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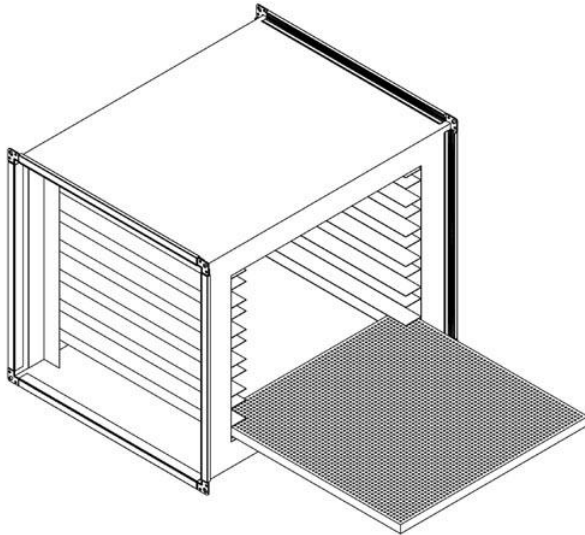
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Carbon Housing Details



Dimensions – 620 x 620 x 800 To
suit 595 x 595 carbon panels



Cleaning and Maintenance Details

Canopy and Filter Maintenance

- a. Grease filters to be cleaned daily by soaking in detergent overnight.
- b. Grease trap and condense channel must be cleaned daily.
- c. Canopy to have professional deep clean every 6 months to maintain warranty.

Carbon Filter Maintenance

- Carbon filter must be changed every six months

Pre-Filter Maintenance

- Pre filter must be changed every six weeks

General Cleaning

- Using a damp cloth with mild detergent diluted in water wipe all stainless steel services.
- Once dry using a mixture of 50% baby oil and 50% white spirits mixed together, applied to a non-abrasive cloth, lightly wipe down following the grain to maintain the stainless steel.

**DO NOT USE ANY ABRASIVE MATERIAL TO CLEAN OR
CONCENTRATED CHEMICALS i.e. mild steel wire wool cleaners**

ROTOREX cased axial flow fans (sickle blade impeller)



Range of cased axial fans manufactured from high grade galvanised steel and provided with a **Sickle blade impeller**. The motor and fan impeller are supported within this cylindrical case by strong electro-welded steel support frame. The whole fan assembly is protected against corrosion by **cataforesis primer and a polyester black paint finish**. Available, depending upon the model, with single or three phase motors in 2, 4, or 6 poles

Motors

All the motors are **IP54**, Class F insulation, equipped with **thermal protection**.
Electrical supplies:
Single phase 230V-50Hz.
(Capacitor located inside the wiring terminal box).
Three phase 400V-50Hz.

Additional Information

Standard air direction: form (B) configuration (Impeller over Motor).
All models are supplied with a pre-wired wiring junction box located on the casing for easy access wiring.

On request

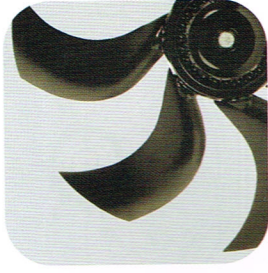
Air direction: form (A) configuration (Motor over Impeller).

Corrosion resistance



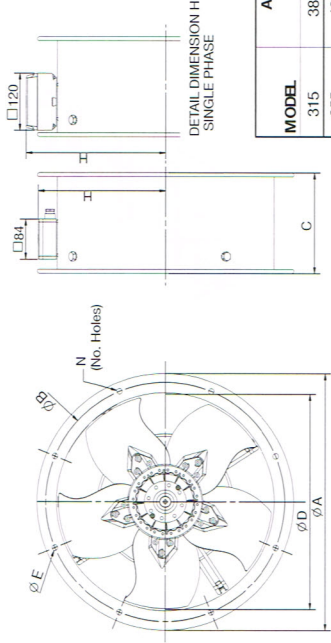
Rolled steel casings and motor support **protected by cataforesis primer and black polyester paint finish**.
Stainless steel screws

High efficiency “Sickle blade” impeller



“Sickle Blade” impeller specifically designed to ensure the highest and most **efficient air-flow performance with the lowest noise level**. **Dynamically balanced** to ISO 1940 standard. Manufactured from **aluminium** plate, except from 250 to 355 models which are manufactured from pressed sheet steel

Dimensions (mm)



MODEL	A	B	C	D	E	H		N
						THREE PHASE	SINGLE PHASE	
315	386	355	170	315	10	200	225	8
355	426	395	170	355	10	220	245	8
400	487	450	170	400	12	243	268	8
450	537	500	210	450	12	267	292	8
500	595	560	210	500	12	292	317	12
560	655	620	240	560	12	322	347	12
630	725	690	240	630	12	357	382	12
710	806	770	240	710	12	397	422	12

Technical characteristics

Code	Model	Diameter ø (mm)	Speed (r.p.m.)	Maximum Power (W)	Max. Current (A)	Maximum Air Volume (m³/h)	Weight (Kg)	Speed Controller
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ROTOREX Cased axial flow fans (Sickle bladed impellers)

SINGLE PHASE 2 POLE

5750281700	TXBR/2-250	250	2650	120	0.55	1650	8.0	
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SINGLE PHASE 4 POLE

5750286600	TXBR/4-315	315	1400	120	0.53	2074	11.0	REB-3
5750287400	TXBR/4-355	355	1400	120	0.55	2970	13.2	REB-3
5740040000	TXBR/4-400	400	1360	290	1.20	5080	15.5	REB-3
5740044200	TXBR/4-450	450	1360	630	2.80	7649	21.0	REB-3
5705024700	TXBR/4-500	500	1350	850	3.80	9957	25.0	REB-5
5705027000	TXBR/4-560	560	1300	1300	6.00	12460	33.0	-
5705030400	TXBR/4-630	630	1200	1300	5.70	14518	40.0	-

SINGLE PHASE 6 POLE

5705066800	TXBR/6-450	450	880	210	1.00	5099	20.7	REB-3
5705072600	TXBR/6-560	560	820	410	1.80	8307	33.0	REB-3
5705067600	TXBR/6-630	630	830	700	3.10	12315	38.0	REB-5
5705037900	TXBR/6-710	710	860	900	4.00	16668	46.0	-

THREE PHASE 2 POLE

5750279100	TXTR/2-250	250	2700	110	0.23	1650	8.0	-
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THREE PHASE 4 POLE

5750283300	TXTR/4-315	315	1420	130	0.46	2074	11.0	RMT-1.5
5750284100	TXTR/4-355	355	1400	150	0.42	2970	13.2	RMT-1.5
5740041800	TXTR/4-400	400	1340	300	0.80	5080	15.5	RMT-1.5
5740045900	TXTR/4-450	450	1340	590	1.30	7649	21.0	RMT-1.5
5705025400	TXTR/4-500	500	1370	970	1.90	9957	25.0	RMT-2.5
5705028800	TXTR/4-560	560	1340	1400	2.50	12460	33.0	RMT-5
5705031200	TXTR/4-630	630	1330	1400	2.50	14518	40.0	RMT-5

THREE PHASE 6 POLE

5705023900	TXTR/6-450	450	910	230	0.57	5099	20.7	RMT-1.5
5705026200	TXTR/6-500	500	900	270	0.62	6638	24.8	RMT-1.5
5705029600	TXTR/6-560	560	860	450	0.90	8307	33.0	RMT-1.5
5705036100	TXTR/6-630	630	880	740	1.50	12315	38.0	RMT-2.5
5705045200	TXTR/6-710	710	920	1000	2.60	16668	46.0	RMT-5

ACTIV-V®

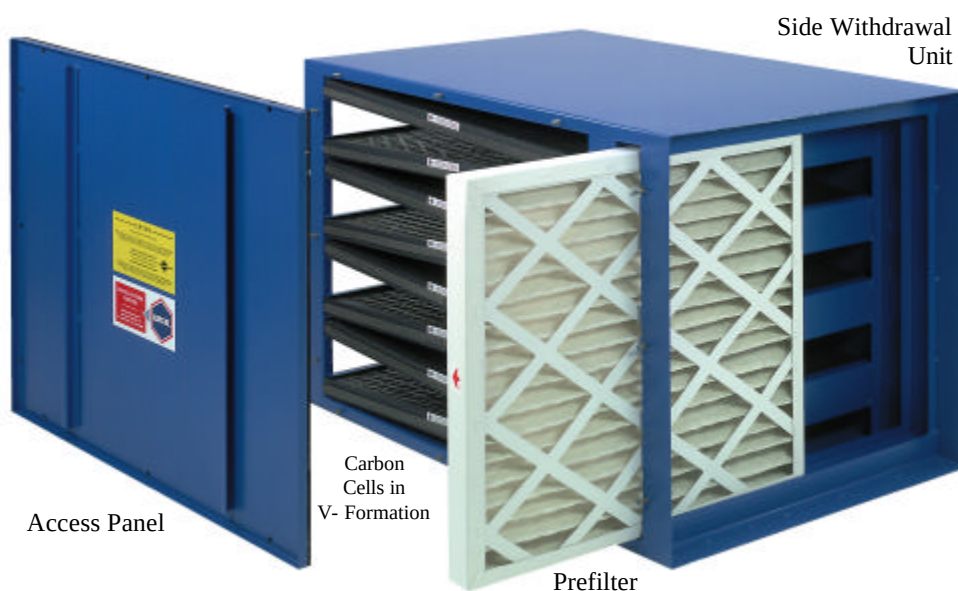
Activated Carbon Filter Units for the high efficiency removal of odours and gaseous contaminants.



The Activ-V has been designed and developed by EMCEL Filters Limited as a high performance, general purpose, activated carbon filter unit to meet the air purification requirements of air conditioning and ventilation systems in many differing applications. The filter meets the requirements of the Department of the Environment specification M&E100.

Applications inc:

- Airports
- Breweries
- Factories
- Hospitals
- Hotels
- Laboratories
- Offices
- Research Units
- Tanneries
- Warehouses



The prime use of the Activ-V filter is a recirculation filter in air conditioning and ventilation systems for the purpose of removing the odour and staleness associated with the recirculation of conditioned air. It is also suitable for the removal of light concentrations of specific chemical and gaseous contaminants from industrial intake or exhaust systems.

High quality activated carbon is used in pure granular form which promotes the efficient adsorption of a wide range of odours, gases and chemical vapours. The carbon employed combines a high CTC value with the necessary hardness to prevent powdering and dusting due to airflow disturbance.

The EMCEL Activ-V construction comprises variable numbers of activated carbon cells arranged in "V" formation, giving high carbon weight/air volume loading for efficient and long service life performance.

The outer casings are manufactured in powder coated mild steel as standard, or in stainless steel for use in corrosive environments.

The filter unit construction allows for front, top, bottom, or side, filter cell withdrawal options and all units are available with a cleanable or disposable particle prefilter.

Units can be produced in a standard range of dimensions or can be manufactured to suit customers' individual application requirements.



The unique, EMCEL patented honeycomb filter cell, design prevents the formation of voids and gaps caused by settlement of the carbon granules in the airstream.

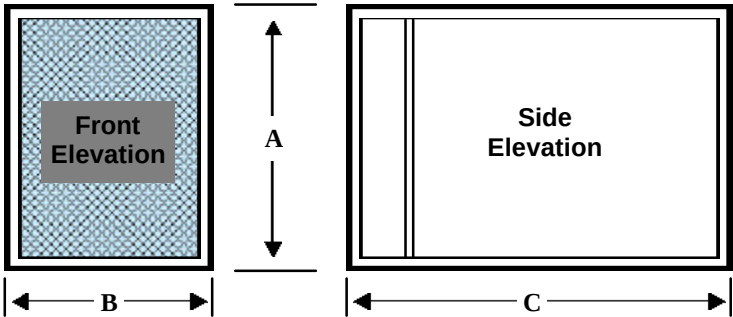
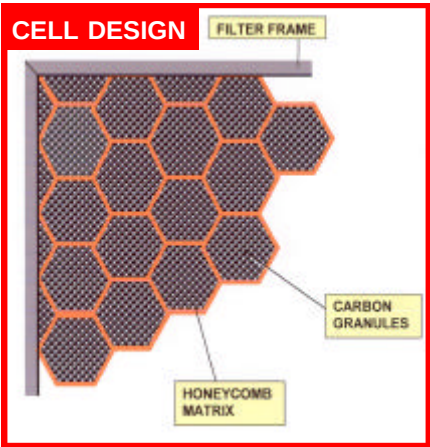
Prolonged contact time between airflow and carbon enhances the retention capability of the filter, and the robust cell design, which enables a high weight of activated carbon to be used, further maximises carbon cell life.

This design also provides a diffuse airflow over the extent of the filter face, ensuring that the contaminated air is exposed to the full weight of activated carbon contained in the filter cells. Low airflow resistance is also achieved despite the high carbon weight and cell thickness that are utilised within the carbon unit.

The Activ-V is suitable for the removal and control of a wide variety of odours and gaseous contaminants. As leaders in the field of activated carbon filtration, the EMCEL Technical Sales Team is available to discuss and advise on the application of Activ-V filters to individual environment conditions, odours and airborne chemical contaminants.

In order to maintain filtration efficiency the carbon filter cells within the Activ-V will need replacing from time to time depending on the contaminant demands made upon them. The EMCEL Carbon Life Prediction Service is available to identify the optimum filter cell replacement point to ensure maximum filtration efficiency coupled with cost-effective replacement.

Standard Activ-V units provide airflow capacities of 0.25 to 1.0m³/sec. Larger airflow are accommodated by assembling multi-banks or complete plenum chambers with channel frames and access doors can be supplied.



ACTIV-V Unit Ref.	Airflow Capacity (m³/sec)	Dimensions		
		A	B	C
NV1	0.25	305	610	550
NV2	0.5	305	610	950
NV3	0.75	457	610	950
NV4	1.0	610	610	950

Nominal Dwell Time: 0.1 second. Minimum Carbon Weight Loading: 40kg/1.0m³/sec. Resistance to airflow: 125 Pa excluding prefilter
 The maximum operating conditions for the ACTIV-V filter are 50°C and 85% RH. The filter should in no circumstances be subjected to temperatures in excess of 70°C. Care must be taken over the handling and disposal of contaminated filter cells consistent with the gaseous contaminant adsorbed.



- Other Emcel products include:
- Replacement Carbon Panels
 - Odour Control Filters
 - Particle Filters
 - HEPA Filters
 - Washable/Cleanable Panels
 - Special Filters



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