PROPOSED VENTILATION SYSTEM AT

44 North Road, Lancing, BN15 9AB

ADUR & WORTHING
PLANNING SERVICES

PLAN	AWDM/0617/16
DATE VALID	- 2 JUN 2016

AMENDMENT

aewarchitects.com

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Date 01.06.2016

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1.0 INTRODUCTION:

The information contained within this document should be used as supporting information when applying for Change of Use Planning Approval and is based on the *'DEFRA Annex B – Guidance on the control of odour and noise from Commercial* Kitchen *Exhaust system – Jan 05'*. This follows feedback from various Local Authorities who use Annex B as a guide when referring to the extract system as part of the application process.

Annex B advises that the aim of any ventilation/extraction is to ensure that no nuisance, disturbance or loss of amenity is caused by odour, fumes, food droplets or noise, to nearby properties.

Additionally, the visual appearance of the flue may be important and the flue itself may require a separate planning permission. Enquiries should be made to the Local Authority Planning Department regarding this matter.

A suitably qualified and experienced person with specialist knowledge of ventilation schemes should undertake the design and installation of a ventilation system.

Designing and installing appropriate ventilation systems may involve considerable expense.

In circumstances where the end user of the premises is unknown, or where the specific type of food to be cooked is unknown, the installation should be designed to achieve the highest level of odour control in order to cater for a worst case scenario.

There are many different types of odour abatement available (carbon filters, electrostatic precipitation, high dilution and high velocity extraction) however not all types are suitable for all cooking methods. In each case, grease filters must be installed.

2.0 PREAMBLE

All work is carried out in accordance with the latest relevant British (or Irish regulations where applicable) and European Standards, statutory Regulation and ByeLaws together with the following publications:

- CIBSE Codes and guides to current practice
- Water Authority Bye Laws
- HVCA – DW143 Practical Guide to Ductwork Leakage Testing
- HVCA DW144 Specification for Sheet Metal Ductwork
- HVCA DW172 Guide to Good Practice for Kitchen Ventilation Systems
- HVCA – RUAG70 Guide to Good Practice Refrigeration
- The Building Regulations
- Gas Safety (Installation and Use) Regulations 1998

All plant, ducts, pipe cables etc. shall be adequately protected against accidental damage corrosion and external environment and shall be capable of safe decontamination and removal in the future without disturbing other services. Pipes and ducts shall be adequately sized, kept as short as practicable, leak-proof with a minimum number of joints and have provision for routine maintenance. All facilities shall be designed to prevent the ingress or egress of rodents, vermin, and insects.

The duct will be fixed to the shell of the unit using anti-vibration fixing mounts and under no circumstances will flexible ductwork be used other than the fan connections

The HVAC contractor shall supply the client with system design drawings, prior to manufacture and installation

For projects in England and Wales, the HVAC contractor shall also demonstrate compliance with Building Regulations Approved documents L2A & L2B. This will include:

(a) Provision of details of the efficiency and controls of heating , cooling and ventilation systems in accordance with Non-Domestic Heating, Cooling and Ventilation compliance Guide (2006)

(b) Provision of commissioning certificates including air leakage tests on the ductwork

Fire/smoke dampers shall be installed in all fire compartment walls to Building Control requirements.

The HVAC contractor shall ensure that externally, the ductwork conforms to the supplied drawings in terms of its route, height and termination. These drawings will

have formed part of the planning permission and must not be deviated from without prior consultation with the Project Manager / Architect.

Upon completion of the installation, all shall be fully tested and proved including airflows. The Contractor shall produce an Operating and Maintenance Manual which shall contain details of all equipment supplied; a record drawing of the complete mechanical services installation and copies of all Test Certificates. It shall contain a Maintenance Schedule based on the manufacturer's recommendations.

3.0 INFORMATION ON TYPE OF OPERATION

The proposed operation will produce approximately 100 meals on average per day.

The proposed hours of operation of the business and ventilation plant will be in accordance with the hours stated in the approved Change of Use

4.0 PLANS AND DRAWINGS

Please refer to drawing B8974-AEW-16017-00-DR-0003-[B] of the proposed premises which shows the indicative internal arrangement and location of the ventilation system.

Please refer to drawing B8974-AEW-16017-ZZ-DR-0004-[B] for proposed elevations of the unit which shows the external location of the ventilation system.

A schematic drawing produced by the HVAC Designer will be provided at a later date.

5.0 DETAILED DESIGN OF VENTILATION SYSTEM

5.1 Pre-filters (fresh air system)

A copy of the manufacturer's product data sheet should be supplied clearly showing:

- Manufacturer's name: Jasun Filtration
- Filter name and product code: Type 90 and VL2 Panel Filter
- Dimensions of the pre-filter: 45mm thick (rated airflow2.0m/s) see data sheets
- Nature of the filter media: Disposable glass fibre media
- Manufacturer's recommendations on the frequency and type of maintenance of the pre-filter having regard to the conditions that it will be used under: 3 monthly maintenance

5.2 Electrostatic precipitators (NOT REQUIRED ON THIS SITE)

5.3 Odour counteracting or neutralising system (NOT REQUIRED ON THIS SITE)

5.4 Cooker hood

The following information on the characteristics of the cooker hood should be supplied that clearly shows:

- The hood will made of: Stainless Steel construction with all visible joints to be welded, ground and polished and to incorporate a gutter around all edges with a plugged drain connection at lowest point.
- Length that the cooker hood overhangs the appliances: 200mm all round
- Face velocity at the cooker hood (metres per second): 0.25cu/m/s
- Dimensions of the opening of the cooker hood= 2m x 3m

The hood will include 6 no. mesh type grease filters, aluminium frame with mesh inserts:

- Manufacturer's name: Jasun Filtration
- Filter name and product code: Model GF (approx. 450mm x 450mm)

The extract system is predominantly removing heat and gas combustion fumes. Mesh filers are much more efficient at removing any fine particles which may be caught in the air flow.

There is not barrier to flame within the filter, and it is accepted that mesh filters cannot therefore be used on their own in applications where there is appreciable risk of fire. However this does not apply in this operation.

5.5 System Operation

In addition to the specification of the components the following must be provided about the system:

- Proposed extract rate (expressed as m^3/second): 1.5m^3/s
- Dwell time of the gases in the carbon filtration zone: in excess of 0.1s
- Volume of the kitchen: based on average prep area size of 100 -150cu/m
- Efflux velocity: 11m/s

Note: The system performance is dependant upon the extract rate of the air. Where the rate can be adjusted by the use of dampers or a variable speed fan, then the conditions under which the extract rate can be achieved must be described. Single speed fan: no adjustment.

5.6 Flue Design

The height and velocity of the final discharge are the two important factors. Generally, the greater the flue height, the better the dispersion and dilution of odours. The discharge of air should be at a minimum height of 1m above the roof ridge, especially if there are buildings nearby that may affect odour dispersion and dilution.

Where this is not possible (e.g. because of ownership or structural constraints), additional techniques will be required in order to reduce odours, such as an increase in efflux velocity and additional filters, etc. The final discharge should be vertically upwards, unimpeded by flue terminals. The number of bends in the ducting should be minimised and the ducting should have a smooth internal surface.

Details of proposal: Proposed 500mm dia. Oven extract duct to run internally at high level within unit. Extract system to include carbon filters and noise attenuation dampers with duct to terminate horizontally in PPC aluminium louvred wall grill (RAL 7043 Traffic Grey).

5.7 Noise

Data on the noise produced by the system as a whole should be provided including:

- Sound power levels or sound pressure levels at given distances (the assumptions to this calculation must be clearly stated);
- An octave band analysis of the noise produced by the system should also be provided, where possible; and
- Hours of operation of the ventilation system (where this differs from the hours of opening).

This information is site dependent and can only be achieved once the system is installed. Please refer to Appendix 1 for data sheets regarding the fans for more information.

5.8 Maintenance

A schedule of maintenance must be provided including details for:

- Cleaning of washable grease filters: Weekly
- Frequency of inspection and replacement of all filters (grease filters, pre-filters and carbon filters where proposed): Monthly
- Inspection and servicing of fans: Bi-annually

Please note that the HVAC contractor will provide 12 months spare filters at each new store.

5.9 Carbon Filters

The details and type of carbon filter units should be identified. A copy of the manufacturer's product data sheet should be supplied that clearly shows:

- Manufacturer's name: Jasun Filtration
- Filter name and product code: AC207
- Dimensions of the filter panel(s):
    - 10no. 292mm x 594mm x 20mm
    - 10no. 594mm x 549mm x 20mm
- The total number of filter panels in the filter bed: 20no.

The following information should also be included:

- The nature of the carbon, including product type: 207c 70% CTC
- The frequency of replacement of the carbon units having regard to the conditions that it will be used under. The assumptions to this calculation must be clearly stated, including the frequency and duration of use. The manufacturer should provide recommendations on the frequency and type of maintenance required: Annual maintenance for carbon units*, 3 monthly maintenance for pre-filters.

  **Please refer to Appendix 3 which contains further details on the carbon system and maintenance programme adopted by the store.*

- Total volume of carbon expressed in cubic metres: 0.105cu/m/sec
- Total mass of carbon expressed in kilograms: 46.9kg
- Total surface area of the panels exposed to the exhausted air: 5.2m²
- Dwell time of the gases in the filter compartment and the control setting at which this is achieved: In excess of 0.1second (calculation based on the volume of carbon, divided by the air volume to give the contact time)

6.0 Additional notes for guidance

The air inlets must not permit pests to enter the kitchen. Fly screens are an example of how this can be achieved.

Sufficient air must be permitted into the premises to replace air extracted. The method for supplying this make-up air should be detailed. The route of the air into the kitchen must not result in its contamination, for example passage through a toilet. Separate provision must be made for ventilation of a toilet.
There must be sufficient access points to permit adequate cleaning of all the ductwork.

Fresh air is introduced via a dedicated air handling unit to supply 80% of the extracted air, fresh air filtered to EU4 – tempered via a low pressure hot water coil - is introduced via ceiling mounted diffusers to the preparation / office and wash-up areas.

APPENDIX 1

COLDROOM AND AIR CONDITIONING COMPRESSORS

AIR CONDITIONING			COLD ROOM	
Model (typical unit)	Mitsubishi H.I. FDC 100VNX		**Model (typical unit)**	Karbox 2464
Dimensions	W 970mm D 350mm H 1300mm		**Dimensions**	W 890 D 560 H 500
Weight	105 kg		**Weight**	78 kg
Airflow	1620 cu.m/h		**Compressor**	Model CAJ2464 34.5cm^3 9.7 MRA 38 LRA
Current	Start N/A Max running current 11.1A		**Refrigerant Connections**	Suction 15.9mm Liquid 9.5mm
Capacity	Cool 10.0 kW Heat 11.2 kW		**Condenser Fan Motor**	220-1 Volts/Phase 0.6 Amps each 2800 m^3/hr Air Flow
Noise	50 dBA @ 1m		**Watts**	4-6kW
			Electrical Details	16 MRA 38 LRA
			Noise	34dBA @ 10m

APPENDIX 2

PRODUCT DATA SHEETS

- Jasun Filtration PLC – Type 90 panel Filter (Fresh Air Intake)
- Air Vent Technology – Water heated air handling units (Fresh Air Intake)
- JASUN Filtration PLC – Model GF mesh grease filters (Canopy Filters)
- Vent-Axia – Black Sabre Slim case sickle fans (Extract Fan)
- Jasun Filtration PLC – AC207 V Line panel filter (Carbon Filters)
- Environlite – Acoustic enclosures for split AC unit applications (AC & Cold room compressors)

APPENDIX 3

Additional Information on Carbon Filters and Maintenance Programme

CARBON FILTER INSTALLATIONS

Generally the installation of carbon filters is undertaken as follows, the fan selection is changed to cater for the increased resistance given by the carbon filters, the area of carbon filter panels/ carbon weight has been calculated in conjunction with the supplier.

In general terms for each cu/m of air moved for a dwell time of 0.1 sec 46.9kg of carbon will be required.

The configuration of the filter housing ensures a minimum dwell time of 0.1 sec to ensure the necessary contact time with the vitiated air.

The carbon filter granules are bonded together and formed in to panels which are contained in metal frames, a purpose made housing to contain the required number of panel has been designed and the panel are installed to form as vee section through the air must pass.

The recommended carbon grade to be used is the Sutcliffe Carbon 207c

The life of the filter is dependent upon many factors; use, nature of air condition etc. Pre filtration is essential to prolong the life of the carbon panel and it is recommended that these are changed bi-monthly.

The fan selection has been altered from a cased axial fan to an in line mixed flow to overcome the additional resistance.

In general terms the above describes the carbon filter installation and specification of materials employed.

Trust the above is satisfactory, if you require additional information please contact the writer.

CARBON FILTER MAINTENANCE SCHEDULE

IT IS IMPORTANT THAT YOU MAINTAIN YOUR FUME EXTRACT SYSTEM FOR THE FOLLOWING REASONS:

1. TO KEEP FLUE EMISSIONS TO A MINIMUM.
2. TO KEEP YOUR OVEN AND EXTRACT OPERABLE.
3. TO AVOID THE COSTLY REPLACEMENT OF THE CARBON FILTER CELLS.

WARNING!

THE ACTIVATED CARBON FILTER CELL FILTRATION PACKAGE FITTED TO THIS EXTRACT INSTALLATION HAS A PRE-FILTER WHICH WILL ENSURE THAT GREASE AND SMOKE PARTICLES ARE PREVENTED FROM REACHING THE MAIN CARBON FILTER. FAILURE TO CARRY OUT THE FOLLOWING CHECKS WILL RESULT IN THE PREMATURE DETERIORATION OF THE FILTERS AND COULD LEAD TO PERMANENT DAMAGE TO THE FANS. THE INSTALLATION IS FITTED WITH A GAS SAFETY CUT OFF VALVE WHICH IS DEPENDANT ON THE DESIGNED AIRFLOW THROUGH THE SYSTEM. IF THE FILTER IS NOT MAINTAINED THE GAS SUPPLY TO THE OVENS WILL BE SHUT OFF DISABLING THE SYSTEM UNTIL THE FILTERS ARE REPLACED.

TO ENSURE YOUR BRANCH CAN OPERATE WITHOUT INTERUPTION IT IS ESSENTIAL THAT THE FOLLOWING CHECKS ARE CARRIED OUT

- **EVERY 14 DAYS.**
  CHECK THE PRE FILTERS TO ENSURE THAT NO GREASE BUILD UP OCCURS REPLACE AS NECESSARY.

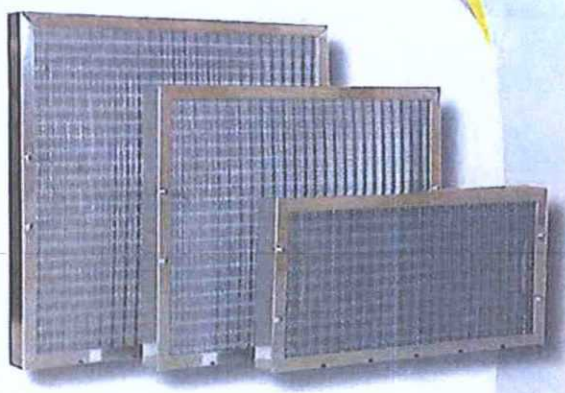
- **EVERY 3 MONTHS**
  CHECK THE MAIN FILTER BODY FOR A BUILD UP OF GREASE AND DUST

- **EVERY 12 MONTHS**
  THE FILTERS ARE TO BE CHECKED BY A QUALIFIED HVAC ENGINEER A REPORT ON THE FILTER CONDITION WILL BE ISSUED IN WRITING WITH A RECOMMENDATION FOR REPLACEMENT OR CONTINUATION TO THE NEXT SEVICE INTERVAL.

JASUN FILTRATION PLC

Model GF

Mesh Grease Filters



GENERAL DESCRIPTION

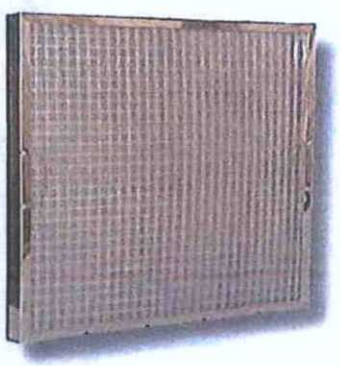
These filters are designed for use in commercial kitchens and ventilation from food preparation areas where their primary function is to reduce grease carry over from the cooking area.
These Filters are rated at 1.5m/sec - where the pressure drop is 15Pa for 45mm filters and less than 10Pa for 20mm filters.

Construction

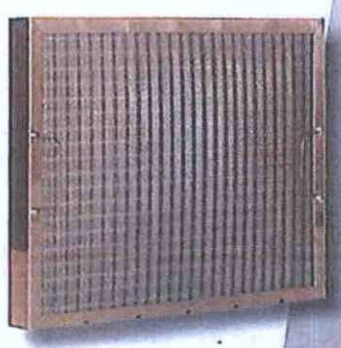
These filters are made from rolled channel frames, with safety edges. Sandwiched between the frame edges are layers of interwoven expanded mesh.

These Filters are available in the frame finishes below - mesh choice is either Galvanised Steel or Stainless Steel.

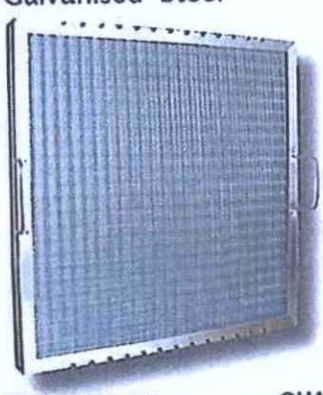
Stainless Steel



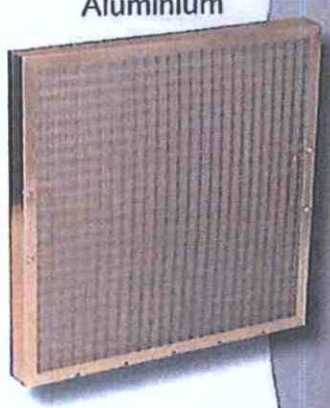
Brushed Stainless Steel



Galvanised Steel



Aluminium



ENVIRONMENT

EMS 81914
BS EN ISO 14001:2004

QUALITY

FM 29257
BS EN ISO 9001:2000

Jasun Filtration Plc
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Bridgwater, Somerset.
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United Kingdom

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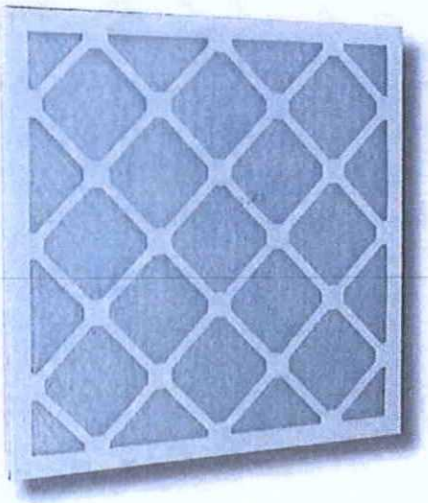
Info@jfilters.com
Http://www.jfilters.com

JASUN FILTRATION PLC



G3

Type 90 Panel Filter

GENERAL DESCRIPTION

The Type 90 panel filter is a disposable product offering a basic level of filtration, or pre-filtration in HEVAC applications.

Construction

This product is constructed by bonding a pad of smartglass fibre into a water repellent AquaKote® card frame

Filter Efficiency to BS EN 779		G3
Filter Thickness	Rated Airflow	Initial Pressure Drop
20mm	1.5m/sec	18Pa
45mm	2.0m/sec	50Pa
Final Recommended Pressure Drop		150Pa

Features

The Frame is made from AquaKote card which has

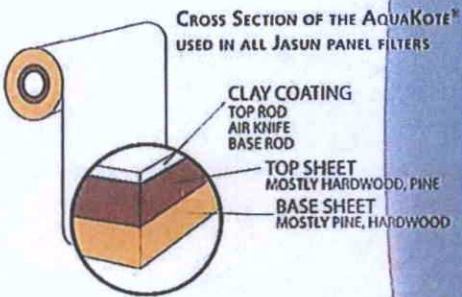
- Superior tear resistance when wet
- Great dry tear resistance and
- Manufacturered from a renewable source.

The Glass Fibre media

- Is made from a recycled products
- Has a graduated density to provide great depth loading of dirt
- Is available any size
- Is Takified to provide improved efficiency
- Is very inexpensivė



CROSS SECTION OF THE GLASS FIBRE MEDIA USED IN TYPE 90 PANEL FILTERS



CROSS SECTION OF THE AQUAKOTE® CARD USED IN ALL JASUN PANEL FILTERS

ENVIRONMENT

EMS 81914
BS EN ISO 14001:2004

QUALITY

FM 29257
BS EN ISO 9001:2000

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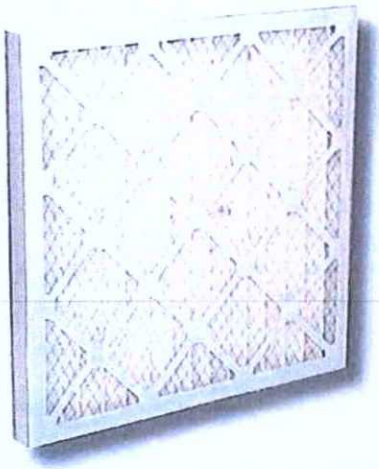
JASUN FILTRATION PLC



G4

V Line
Pleated Panel Filter

GENERAL DESCRIPTION

The V Line pleated Panel filter is a standard capacity disposable product offering a better than basic level of filtration, or pre-filtration in HEVAC applications. This product is made using patented Kimberly Clark media which delivers a constant level of filtration over its life.

Construction

This product is constructed by bonding a pleat pack of Intrepid V Line media into a water repellent AquaKote card frame

Features

The Frame is made from AquaKote card which has

- Superior tear resistance when wet
- Great dry tear resistance and
- Manufactured from a renewable source.

The Patented Kimberley Clark Intrepid media

- Has a Graduated Density for even dirt loading , resulting in greater dust holding
- Hydrophobic – so will not load with moisture in the air
- Has a constant efficiency due to its extra electrostatic charge
- Superior Efficiency V's Particle size (see table)
- Has a low pressure drop
- Is made form continuous fibres so will not shed

Filter Efficiency to BS EN 779		G4
Rating to ASHRAE 52.2 Test Standard		Merv 8
Filter Thickness	Rated Airflow	Initial Pressure Drop
20mm	1.5m/sec	60Pa
45mm	2.0m/sec	62Pa
95mm	2.5m/sec	80Pa
Final Recommended Pressure Drop		250Pa

Test Comparing Filtration efficiency V's different sized particles. Intrepid Media V's Cotton Polyerster Filters

Particle Size Rang(mm)	Initial Fractional Efficiency(%)	
	V Line Intrepid	The "best" Cotton Poly Alternative
0.3-0.4	7	2
0.4-0.55	15	6
0.55-0.7	28	11
0.7-1.0	41	19
1.0-1.3	52	24
1.3-1.6	58	28
1.6-2.2	63	32
2.2-3.0	67	36
3.0-4.0	70	37
4.0-5.5	71	38
5.5-7.0	72	38
7.0-10.0	73	39

Hi Magnification photo showing the cross section of the Intrepid media



Coarse

Airflow

Fine

POWERED BY INTREPID Filtration Media

ENVIRONMENT

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BS EN ISO 14001:2004

QUALITY

FM 29257
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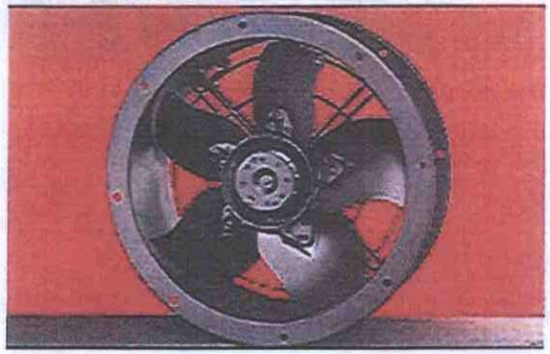
VENT-AXIA
BLACK SABRE SLIM CASE SICKLE FANS (BSC)



- ✓ Sizes 250 to 710 dia are protected to IP54.
- ✓ Motor Insulation Class F up to +70°C
- ✓ 450 to 710 dia. 3 phase motors, 2 speed as standard.
- ✓ All weather epoxy paint finish.
- ✓ Standard Thermal Overload Protection (S.T.O.P.).
- ✓ Performance tested to BS 848 Part 1.
- ✓ 5 Year Guarantee.

BLACK SABRE CASE MOUNTED SICKLE FANS

Black Sabre Sickle bladed fans are the latest addition to the Vent-Axia range offering improved pressure characteristics over axial units and lower sound levels. The advanced blade design and purpose built motor ensure excellent reliability and speed control.

CONSTRUCTION

The Black Sabre range share the same case lengths as the Cased axial range making them fully interchangeable and total compatibility with the full range of Vent-Axia Accessories. The strong and compact short case is constructed from rolled steel plate, electro welded and protected with a tough, epoxy paint finish. Casing dimensions are to DIN 24151 and flange dimensions are to ISO 6580. Manufacture is controlled to BS EN ISO 9001. The compact motor/impeller unit is robustly supported within the casing by electro-welded and epoxy coated steel rod mounting supports for ease of installation and service access. Suitable for all weather outdoor environments.

IMPELLERS

The motors and impellers are factory matched, statically and dynamically balanced to VDI 2060 Quality Class G.6.3.

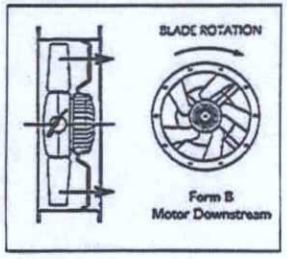
MOTORS

The external rotor motors are specifically designed and styled for this range of fan. Ball bearings are greased for life. Sizes 250-710 motors are protected to IP54, against dust and moisture complying with BS EN 60529. They have ribbed aluminium body castings for efficient cooling with Motor insulation to Class 'F' (from -40°C to + 70°C). Speed controlled sizes 450 to 710, 6 & 8 pole motors are only suitable for operating temperatures of up to 40°C.

ELECTRICAL

The Sabre range is available for either single phase 220-240V 50 Hz capacitor start and run or three phase 380-415V 50Hz. Motors are fitted with Standard Thermal Overload Protection (S.T.O.P.) which should be wired into all controller circuits and into starter contactors to prevent motor damage due to overloading / overheating. Three phase 380-415V 50Hz units, from 450 to 710 diameter are fitted as standard with 2 speed Delta/Star connection motors. Most units are suitable for speed control by either electronic, voltage reduction or frequency inverters where permissible.

FORM OF RUNNING



Cased mounted fans (ex-stock) are supplied for extract use (Form 'B' running).

TERMINAL BOX

An IP65 terminal box is supplied with all models with 20mm and PG11 entry offering protection against dust and water jets from any angle.

PERFORMANCE

The fan performance, is in accordance with tests to BS 848 Part 1.

SOUND LEVELS

Fan sound levels, measured in a reverberant chamber in accordance with BS 848 Part 2. Published dB(A) figures are free field sound pressure levels at 3m with spherical propagation at a reference level of 2 x 10^{-5}Pa (20 micro-Pascal). The sound power level spectra figures are dB with a reference level of 10^{-12} Watts (1 pico-watt). To ensure minimum noise levels during speed control, an auto transformer speed control is recommended.

ACCESSORIES

A full range of accessories is available with the Sabre Slim Cased Sickle fans:

Electronic Speed Controllers.
Auto Transformer Speed Controllers.
Inverter Speed Controller, where permissible.
D.O.L. Starters.
Ancillary Packs.
Flexible Connections.
Mounting Feet.
Coupling Flanges.
Anti-Vibration Mounts.
Attenuators.

Vent-Axia

Vent-Axia

BLACK SABRE SLIM CASE SICKLE FANS PERFORMANCE GUIDE

4 POLE

m³/s at Pa

Dia	Motor	Stock Ref. No	r.p.m	IP Rating	0	25	50	75	100	125	150	175	200	225	250	300	350	Motor kW	SC Amps	FLC Amps	dBA @3m
315	1 phase	BSC315-14	1400	IP54	0.587	0.532	0.463	0.381	0.282	0.179	0.123	0.057						0.12	2.12	0.53	47
	3 phase	BSC315-34	1420	IP54	0.584	0.535	0.465	0.382	0.282	0.186	0.123	0.057						0.13	2.76	0.46	
355	1 phase	BSC355-14	1400	IP54	0.784	0.721	0.638	0.564	0.453	0.258	0.198	0.116						0.12	2.20	0.55	49
	3 phase	BSC355-34	1400	IP54	0.835	0.770	0.682	0.592	0.488	0.282	0.226	0.175	0.083					0.15	2.52	0.56	
400	1 phase	BSC400-14	1360	IP54	1.555	1.458	1.291	1.062	0.583	0.465	0.263							0.32	6.49	1.60	52
	3 phase	BSC400-34	1380	IP54	1.555	1.458	1.291	1.062	0.583	0.465	0.263							0.36	4.49	1.10	
450	1 phase	BSC450-14	1280	IP54	1.902	1.805	1.720	1.602	1.495	1.280	0.600	0.742	0.640	0.508	0.282	0.114		0.63	11.20	2.80	54
	3 phase	BSC450-34*	1240	IP54	1.976	1.891	1.781	1.667	1.514	1.326	0.898	0.748	0.642	0.508	0.282	0.113		0.59	7.80	1.30	
500	1 phase	BSC500-14	1350	IP54	2.667	2.576	2.463	2.301	2.140	1.945	1.682	1.271	1.087	0.915	0.766	0.465	0.229	0.85	15.20	3.80	59
	3 phase	BSC500-34*	1370	IP54	2.708	2.615	2.500	2.336	2.173	1.975	1.708	1.290	1.104	0.929	0.778	0.476	0.232	0.97	11.40	1.90	
560	1 phase	BSC560-14	1300	IP54	3.472	3.327	3.179	3.021	2.840	2.615	2.344	2.029	1.616	1.274	1.172	0.766	0.283	1.30	24.00	6.00	63
	3 phase	BSC560-34*	1340	IP54	3.579	3.440	3.277	3.114	2.928	2.696	2.417	2.092	1.666	1.417	1.208	0.787	0.355	1.40	15.00	2.50	
630	1 phase	BSC630-14	1325	IP54	3.982	3.843	3.657	3.449	3.218	2.963	2.699	2.440	2.176	1.782	1.551	1.180	0.525	1.30	22.80	5.70	67
	3 phase	BSC630-34*	1330	IP54	3.998	3.858	3.672	3.463	3.231	2.975	2.710	2.450	2.185	1.789	1.557	1.185	0.529	1.40	15.00	2.50	

6 POLE

450	3 phase	BSC450-36*	1050	IP54	1.570	1.480	1.374	1.261	1.114	0.724	0.553	0.388	0.219					0.23	3.42	0.57	46
500	3 phase	BSC500-36*	900	IP54	2.336	2.196	2.045	1.894	1.720	1.487	1.092	0.812	0.569	0.348	0.127			0.27	3.72	0.62	48
560	3 phase	BSC560-36*	860	IP54	3.091	2.928	2.777	2.580	2.370	2.138	1.859	1.371	1.022	0.743	0.464			0.45	5.40	0.90	54
630	3 phase	BSC630-36*	880	IP54	3.486	3.277	3.068	2.812	2.556	2.324	2.045	1.720	1.255	0.813	0.464			0.74	9.00	1.50	58
710	1 phase	BSC710-16	860	IP54	4.311	4.013	3.652	3.269	2.840	2.006	1.616	1.220	1.027	0.766	0.518			0.90	16.00	4.00	60
	3 phase	BSC710-36*	920	IP54	4.444	4.127	3.765	3.370	2.928	2.068	1.666	1.271	1.069	0.790	0.534			1.00	15.60	2.60	

8 POLE

710	3 phase	BSC710-38*	670	IP54	3.280	2.887	2.071	1.110	0.306	0.291								0.46	7.80	1.30	50

S.C. - STARTING CURRENT
F.L.C. - FULL LOAD CURRENT

NOTE: All * models are supplied with 2 speed connection motors as standard. (Sizes 450-630 dia. are 4/6 pole. 710 are 6/8 pole).
DELTA Δ (HIGH SPEED)
STAR - (LOW SPEED)

ONLY SELECT THE FANS TYPED IN RED WHEN CONFIDENT OF YOUR SYSTEM RESISTANCE DATA.

VENT-AXIA
BLACK SABRE SLIM CASE FANS
ACCESSORIES

Duct Mtg. Brackets	Duct Mtg. Brackets	Duct Mtg. Brackets	Duct Mtg. Brackets	Duct Mtg. Brackets	Duct Mtg. Brackets	Duct Mtg. Brackets	Duct Mtg. Brackets	Duct Mtg. Brackets	Duct Mtg. Brackets	Duct Mtg. Brackets	Duct Mtg. Brackets	Duct Mtg. Brackets
100 14 201	100 14 202	100 14 203	100 14 204	100 14 205	100 14 206	100 14 207	100 14 208	100 14 209	100 14 210	100 14 211	100 14 212	100 14 213
-	-	-	-	-	-	-	-	-	-	-	-	-

BLACK SABRE SLIM CASE SICKLE FANS
PERFORMANCE CURVES

Vent-Axia

315 to 400 dia. 4 pole, 1 phase units

AIR VOLUME

Sizes	315	355	400
	1	2	3

Ps Pa

STATIC PRESSURE

0 25 50 75 100 125 150 175 200 225

0 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 m³/s

315 to 400 dia. 4 pole, 3 phase units

AIR VOLUME

Sizes	315	355	400
	4	5	6

Ps Pa

STATIC PRESSURE

0 25 50 75 100 125 150 175 200 225

0 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 m³/s

VENT-AXIA
BLACK SABRE SLIM CASE SICKLE FANS
DIMENSIONS (mm)

DIMENSIONS (mm)

ACCESSORY DIMENSIONS (mm)

Sheet Ref.	No.	DA	DB	DC	D	DE	Holes	Weight
								kg
BSC 315	315	355	340	170	10	8	8	10.5
BSC 355	355	395	380	170	10	8	8	12
BSC 400	400	440	427	170	10	8	8	12.5
BSC 450	450	490	477	180	12	8	8	15
BSC 500	500	540	525	180	12	12	12	22
BSC 560	560	600	585	240	12	12	12	31
BSC 630	630	670	655	240	12	12	12	36
BSC 710/4	710	770	755	240	12	12	12	42
BSC 710/6	710	770	755	300	12	12	16	65

Please note: *Dimension D is 2x50mm on 4-pole & 3x50mm on 6-pole versions.*

MESH WIRE GUARD

W Factor loss 0.25

Sheet No.	Dc	b
706 06 315	390	2
706 06 355	430	2
706 06 400	475	2
706 06 450	525	2
706 06 500	565	2
706 06 560	625	2
706 06 630	705	2
706 06 710	784	2

MOUNTING FEET

Sheet No.	Dim. No.	b	c	d	e	Dc	f	g	h	i
706 06 315	315	24	315	274	10	14	115	172.5	167	8
706 06 355	355	24	355	314	10	14	125	187.5	187	8
706 06 400	400	24	400	360	12	14	135	202.5	213	8
706 06 450	450	24	450	410	12	14	145	217.5	240	8
706 06 500	500	24	500	460	12	14	155	232.5	260	8
706 06 560	560	24	560	520	12	14	165	247.5	285	8
706 06 630	630	24	630	590	12	14	175	262.5	310	8
706 06 710A	710	40	710	650	12	18	195	292.5	325	12

COURTESY FLANGE

Sheet No.	Dim. No.	b	Dc	Dd	Ds	De	Dg	n
706 06 315	315	30	355	315	340	315	10	8
706 06 355	355	30	395	355	380	355	10	8
706 06 400	400	40	440	400	427	400	12	8
706 06 450	450	40	490	450	477	450	12	8
706 06 500	500	40	540	500	525	500	12	8
706 06 560	560	40	600	560	585	560	12	8
706 06 630	630	40	670	630	655	630	12	12
706 06 710A	710	40	770	710	755	710	12	12

Mounting Feet Position

Flexible Connection

ANTI-VIBRATION MOUNTS

Sheet No.	Dim. No.	a	b	c	d	e	Dc	f	g	Mass Load kg
706 06 315	315	27	24	315	274	10	14	115	172.5	8
706 06 355	355	27	24	355	314	10	14	125	187.5	8
706 06 400	400	27	24	360	360	12	14	135	202.5	8
706 06 450	450	27	24	410	410	12	14	145	217.5	8
706 06 500	500	27	24	460	460	12	14	155	232.5	8
706 06 560	560	27	24	520	520	12	14	165	247.5	8
706 06 630	630	27	24	590	590	12	14	175	262.5	12
706 06 710A	710	27	24	650	650	12	18	195	292.5	12

Vent-Axia

BLACK SABRE SLIM CASE SICKLE FANS PERFORMANCE CURVES

Vent-Axia

710 dia. 6 pole, 1 phase units

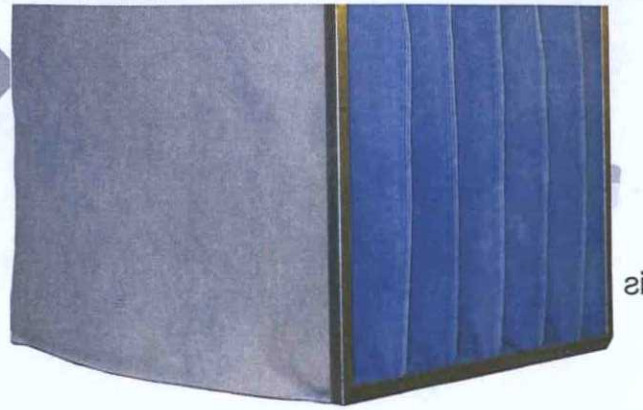
450 to 710 dia. 6 pole 3 phase & 710 dia 8 pole 3 phase units

VENT-AXIA BLACK SABRE SLIM CASE SICKLE FANS PERFORMANCE CURVES

450 to 630 dia. 4 pole, 1 phase units

450 to 630 dia. 4 pole, 3 phase units

Vent-Axia



n

f bag filters are used widely in
s and other sensitive areas. This
condition to offices, theatres,
oths.

ification

factured by mounting the 100% polyester synthetic media into a
Corrosion resistant

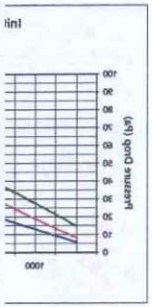
nanufacturing techniques delivery cost effective filtration
rs fire rating to CP413
prevent the material being cut and to prevent injury to the engi-

which provides extended filter life
- available in most sizes and pocket configuration
specify side, face or back.
a plastic bag and then into strong cartons for safe transportation

Filter Efficiency to BS EN 779:2012		G4
Pocket Depth	Rated Airflow	Initial Pressure Drop
300mm	1.70m/sec	30Pa

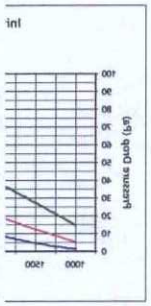
ritant

Series 600 - Economy Configuration



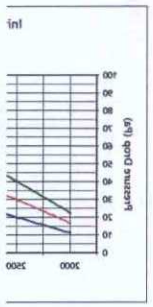
Part Number	Header Dimensions			Pocket Details		Capacity m³/hr
	Height (mm)	Width (mm)	Thickness (mm)	Depth (mm)	No. of Pockets	
CP4-1212	592	287	20	300	2	1000
CP4-2012	592	492	20	300	3	1800
CP4-2412	592	592	20	300	4	2100

Series 350 - Low Initial Pressure Drop Configurat



Part Number	Header Dimensions			Pocket Details		Capacity m³/hr
	Height (mm)	Width (mm)	Thickness (mm)	Depth (mm)	No. of Pockets	
CP4-12S-3	592	287	20	350	3	1500
CP4-20S-4	592	492	20	350	4	2500
CP4-24S-6	592	592	20	350	6	3100

Series 600 - Long Pocket, long Life, High Capaci



Part Number	Header Dimensions			Pocket Details		Capacity m³/hr
	Height (mm)	Width (mm)	Thickness (mm)	Depth (mm)	No. of Pockets	
CP4-12L-3	592	287	20	600	3	2000
CP4-20L-4	592	492	20	600	4	3460
CP4-24L-6	592	592	20	600	6	4200

Options

Standard header frame depth is 20mm, also available 12mm, 15mm, 25mm, 3

Pocket Depths of 229mm(9"), 300mm(12"), 380mm (15"), 450mm (18") 530mm

DCS24082S	3	DCS24218	24 x 8 x 24	24S	24T	18G	52T
DCS24082C	S	DCS24218	24 x 6 x 24	24S	24T	18G	52T
DCS24082T	S	DCS24218	18 x 9 x 24	24S	24T	18G	52T
DCS24082B	3	DCS24218	24 x 8 x 18	24S	24T	18G	45T
DCS24082D	S	DCS24218	18 x 9 x 18	24S	24T	18G	45T
DCS24082S	3	DCS24218	24 x 8 x 18	24S	24T	18G	45T
DCS24082C	S	DCS24218	24 x 6 x 18	24S	24T	18G	45T
DCS24082T	S	DCS24218	18 x 9 x 18	24S	24T	18G	45T
DCS24082B	3	DCS24218	24 x 8 x 12	24S	24T	18G	29T
DCS24082D	S	DCS24218	18 x 9 x 12	24S	24T	18G	29T
DCS24082S	S	DCS24218	24 x 8 x 12	24S	24T	18G	29T
DCS24082C	S	DCS24218	24 x 6 x 12	24S	24T	18G	29T
DCS24082T	S	DCS24218	18 x 9 x 12	24S	24T	18G	29T
DCS24082B	3	DCS24218	24 x 8 x 24	24S	24T	18G	52T
DCS24082D	S	DCS24218	18 x 9 x 24	24S	24T	18G	52T
DCS24082S	S	DCS24218	24 x 8 x 24	24S	24T	18G	52T
DCS24082C	S	DCS24218	24 x 6 x 24	24S	24T	18G	52T
DCS24082T	S	DCS24218	18 x 9 x 24	24S	24T	18G	52

CaterCarb Odour Unit Type FBEC

JASUN ENVIROCARE PLC



Product Description

This unit is designed for odour reduction applications. Primarily for use in Kitchen exhausts, it can also be used in other applications.



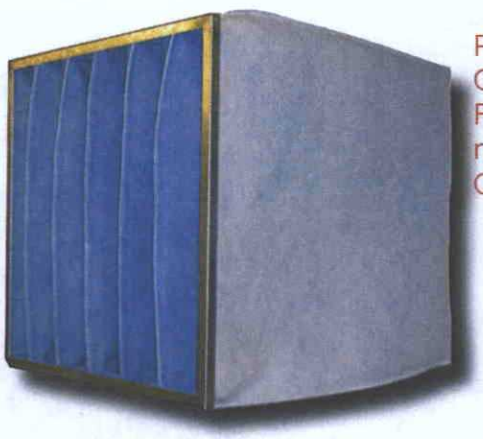
Construction

FRAME Anodised Aluminium Pentapost
SIDE PANS: Dove Grey Plasticaot Steel
Doors sealed using Vice Locks and foam seal flange.
MANOMETER: On Request
SPIGOT On request.
Roof on request

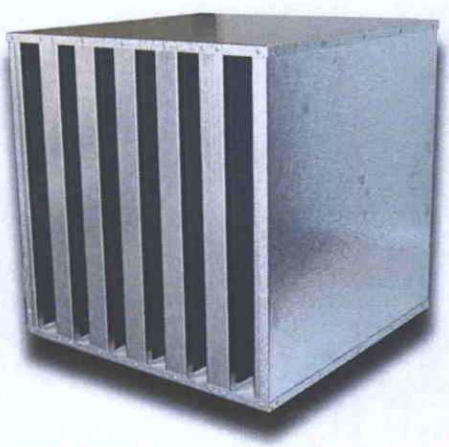


Filter Characteristics

These units are fitted with a two stage filter system. The first stage is a high loft , fire retardant bag filter which will catch any carry over grease from the canopy. The final stage is heavy duty multicarb activated carbon cells which will reduce odours.



Prefilter CP4 Bag Filter, FR rated to CP413



Multicarb Cell. Heavy duty disposable unit, high grade activated carbon filter

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CaterCarb Odour Unit with HEPA FBEC
Standard sizes and capacities



MODEL	External Unit Dimensions (mm)					Access	Price
	H1	H2	W1	W2	D		
FBEC-1212	400	340	355	295	900	Single	£578
FBEC-1224	400	340	657	597	900	Single	£627
FBEC-2424	700	640	657	597	1,200	Single	£729
FBEC-2448	700	640	1,251	1191	1,200	Single	£841
FBEC-2472	700	640	1,845	1131	1,200	Double	£1289
FBEC-2496	700	640	2,441	2381	1,600	Double	£1643
FBEC-4848	1400	1340	1251	1191	1200	Single	£1682

MODEL	Sizing Dwell Time and Pressure Drop					
	0.1 Second Dwell Time		0.2 Second Dwell Time		0.4 Second Dwell Time	
	Air Volume	Pressure Drop	Air Volume	Pressure Drop	Air Volume	Pressure Drop
FBEC-1212	925m³/hr	145Pa	462m³/hr	72Pa	230m³/hr	43Pa
FBEC-1224	1850m³/hr	145Pa	925m³/hr	72Pa	462m³/hr	43Pa
FBEC-2424	3700m³/hr	145Pa	1850m³/hr	72Pa	925m³/hr	43Pa
FBEC-2448	7400m³/hr	145Pa	3700m³/hr	72Pa	1850m³/hr	43Pa
FBEC-2472	11100m³/hr	145Pa	5550m³/hr	72Pa	2775m³/hr	43Pa
FBEC-2496	14800m³/hr	145Pa	7400m³/hr	72Pa	3700m³/hr	43Pa
FBEC-4848	14800m³/hr	145Pa	7400m³/hr	72Pa	3700m³/hr	43Pa

For higher air volumes stack these units. If you require us to pre-drill for this simple specify at the time of ordering.

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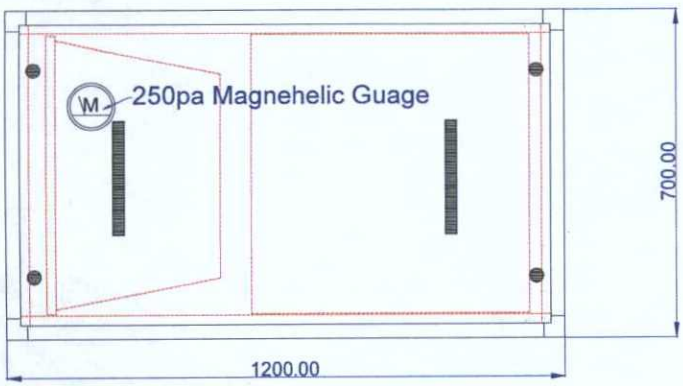
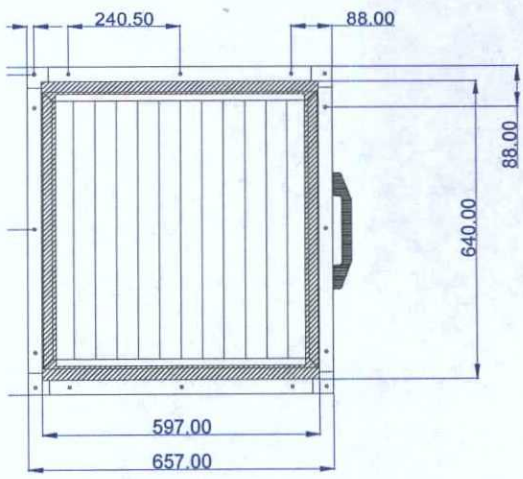
Dimensions below are for a FBEC-2424



SIDE VIEW



INTAKE

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Bridgwater TA6 5LB
www.jfilters.com

AIR VENT
TECHNOLOGY

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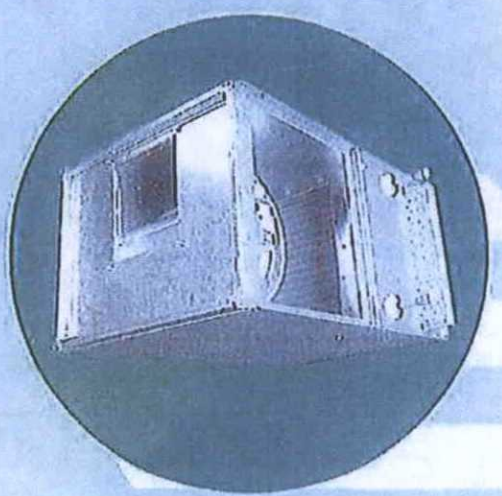


Internal and external versions available

Thermal protection on motor

All models fully speed controllable

Integral mounting points for quick and simple installation

SOUND LEVELS

Sound Levelst Induct sound levels dB ref 10^{-12}W PWL

All sound data measured at full speed

Model	SPL *dBA	Centre Frequency (Hz) 63	125	250	500	1K	2K	4K	8K
1	44	61	70	70	59	62	54	51	47
2	47	65	73	68	67	67	62	59	52
3	51	76	79	73	73	73	67	65	67
4	49	71	73	66	71	71	69	66	62
5	54	77	79	73	74	77	77	74	69
6	52	75	77	71	73	75	74	71	67
7	52	78	80	72	74	74	73	72	66

* At 1 metre from side of casing

CONTROL PANELS

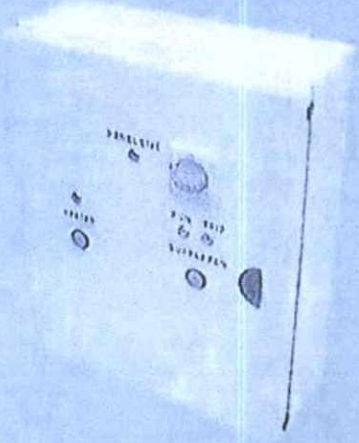
Designed with quick and easy installation in mind, external wiring is kept to a minimum.

A Mains supply is taken to the panel door interlocked isolator and then outputs are taken to the fan, heater and safety circuits.

A duct sensor is supplied (or room if required) pre-wired to the panel with 10m of cable.

Switches on the front of the panel allow control of the fan and heater. All outputs to the fan are protected via an MCB.

The whole panel can be controlled via a fire alarm contact or a seven day time clock to turn off and on in a controlled manner.



environ™
Acoustic Enclosures

Tel: 0870 383 3344
www.environ.co.uk

SELECTION MATRIX

environlite 1.1.25AC Series 7 SP2.2

17 August 2011

Acoustic enclosures for Split AC Unit Applications

CUSTOMER:	SITE / LOCATION / REFERENCE
Dominos Pizza Group	TBA

ORIGINAL EQUIPMENT MANUFACTURERS PUBLISHED DATA

MAKE, MODEL, DIMENSIONS, AIR FLOW & SOUND PRESSURE LEVEL @1.0M FREE FIELD

MAKE:	MODEL:	AIR IN	AIR OUT
Mitsubishi Heavy Industries	FDC100VNX	Rear & 1 Side	Front

WIDTH (MM)	DEPTH (MM)	HEIGHT (MM)	AIRFLOW (M^3S^{-1})	SPL dB(A)	DISTANCE (M)
970	370	1300	1.67	53	1

INNER CUBE DIMENSIONS		
1100	400	1535
WIDTH (MM)	DEPTH (MM)	HEIGHT (MM)
1.67	1.0	53
AIRFLOW (M^3S^{-1})	DISTANCE (M)	SPL dB(A)

ENCLOSURE DETAIL		
1750	1000	1600
WIDTH (MM)	DEPTH (MM)	HEIGHT (MM)
1.67	1.0	27
AIRFLOW (M^3S^{-1})	DISTANCE (M)	SPL dB(A)

INLET AIRWAYS		
1535	275	1
WIDTH (MM)	HEIGHT (MM)	NO.

DESIGN CRITERIA		
OK	OK	OK
UNIT SIZE	OUTLET	INLET

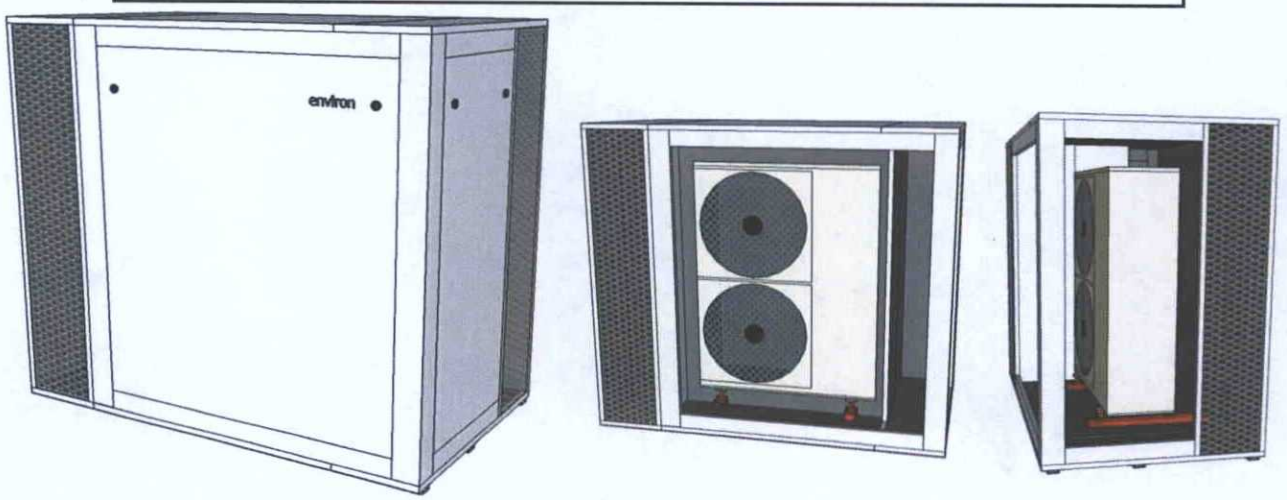
OUTLET AIRWAYS		
275	1535	1
WIDTH (MM)	HEIGHT (MM)	NO.

AIRFLOW INFORMATION		
19	4.0	4.0
PD (NM^{-2})	OUTLET (MS^{-1})	INLET (MS^{-1})

Select Inlet & Outlet Airway Sizes to Ensure Airflows are kept Below 6.0m/s

ENCLOSURE INFORMATION	WIDTH (MM)	DEPTH (MM)	HEIGHT (MM)
INLET AIRWAY	275		1535
OUTLET AIRWAY	275		1535
EXTERNAL SIZE	1750	1000	1600
NOISE LEVEL @ 1 M (Free Field)	27	SPL dB(A) SOUND PRESSURE	

NOTES CONCERNING ENCLOSURE DESIGN



Environ acoustic designs are protected under patent
The information contained in this Selection Matrix is Confidential and shall not be disclosed or used for any unauthorised purposes

Environ acoustic designs are protected under patent
The information contained in this Selection Matrix is Confidential and shall not be disclosed or used for any unauthorised purposes

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Acoustic Enclosures

Tel: 0870 383 3344
www.environ.co.uk

SELECTION MATRIX

environlite 1.1.25CU Series 1

02 March 2012

Acoustic enclosures for Split AC Unit Applications

CUSTOMER:	SITE / LOCATION / REFERENCE
Tony Morgan	Domino's Pizza - Goring by Sea

ORIGINAL EQUIPMENT MANUFACTURERS PUBLISHED DATA

MAKE, MODEL, DIMENSIONS, AIR FLOW & SOUND PRESSURE LEVEL @1.0M FREE FIELD

MAKE:	MODEL:	AIR IN	AIR OUT
Glendon	Karbox 2464	Rear & 1 Side	Front

WIDTH (MM)	DEPTH (MM)	HEIGHT (MM)	AIRFLOW (M^3S^{-1})	SPL dB(A)	DISTANCE (M)
890	500	500	0.70	56	1

INNER CUBE DIMENSIONS		
1050	550	785
WIDTH (MM)	DEPTH (MM)	HEIGHT (MM)
0.70	1.0	56
AIRFLOW (M^3S^{-1})	DISTANCE (M)	SPL dB(A)

ENCLOSURE DETAIL		
1650	1100	850
WIDTH (MM)	DEPTH (MM)	HEIGHT (MM)
0.70	1.0	30
AIRFLOW (M^3S^{-1})	DISTANCE (M)	SPL dB(A)

INLET AIRWAYS		
785	250	1
WIDTH (MM)	HEIGHT (MM)	NO.

DESIGN CRITERIA		
OK	OK	OK
UNIT SIZE	OUTLET	INLET

OUTLET AIRWAYS		
250	785	1
WIDTH (MM)	HEIGHT (MM)	NO.

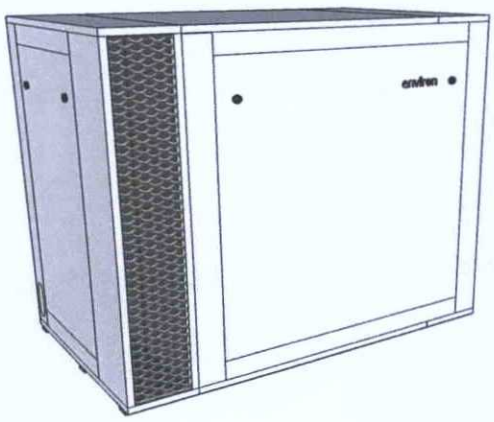
AIRFLOW INFORMATION		
15	3.6	3.6
PD (NM^{-2})	OUTLET (MS^{-1})	INLET (MS^{-1})

Select Inlet & Outlet Airway Sizes to Ensure Airflows are kept Below 6.0m/s

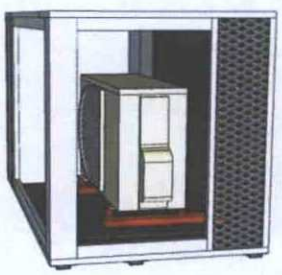
ENCLOSURE INFORMATION	WIDTH (MM)	DEPTH (MM)	HEIGHT (MM)
INLET AIRWAY	250		785
OUTLET AIRWAY	250		785
EXTERNAL SIZE	1650	1100	850
NOISE LEVEL @ 1 M (Free Field)	30	SPL dB(A) SOUND PRESSURE	

NOTES CONCERNING ENCLOSURE DESIGN

Estimated Air Flow







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