

PROPOSED VENTILATION SYSTEM AT

51 London Road, Cowplain, Waterlooville, PO8 8UJ



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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 per day on average.

All meal types served shall consist of dry oven-baked goods and side dishes. No frying shall take place. The exhaust air generated by the baking process consists mainly of water vapour, with little or no grease / fat / oil content.

The proposed hours of operation of the business and ventilation plant will be in accordance with the hours stated in the relevant planning consent notice(s).

4.0 PLANS AND DRAWINGS

Please refer to drawing **B9862-AEW-PJ000773-00-DR-0003** of the proposed premises which shows the indicative internal arrangement and location of the ventilation system.

Please refer to drawing **B9862-AEW-PJ000773-XX-DR-0004** 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 airflow 2.0m/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 – REFER TO 5.9 CARBON FILTERS)

5.3 Odour counteracting or neutralising system

(NOT REQUIRED ON THIS SITE – REFER TO 5.9 CARBON FILTERS)

5.4 Cooker hood

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

- The hood will be 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): 0.25m/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 filters 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 m³/second): 1.5m³/s

- Dwell time of the gases in the carbon filtration zone: 0.2 - 0.4 s
- 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: Extract duct and fan to run internally at high level within shop unit. Proposed 500mm dia. oven extract to match location of existing duct and run vertically terminating 1m above eaves line and to be fitted with rain proof hood. Oven extract system to be fitted with fine filtration and carbon filters in accordance with Purified Air report reference: RM22949_London Road, Cowplain. Fan silencer and noise attenuation dampers to be installed in oven extract system, with extract fan to be fixed on anti-vibration mounts to M&E specialist sub-contractor design and details.

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

Please refer to Purified Air risk assessment and specification document reference RM22949_London Road, Cowplain dated 07th December 2017. Please contact Purified Air directly for any additional information with regards to oven extract filtration details / specification. Contact details as follows:

Contract: Rob Martin
Telephone: 0170 8755 414
Mobile: 0777254488
Email: rob@purifiedair.co.uk

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

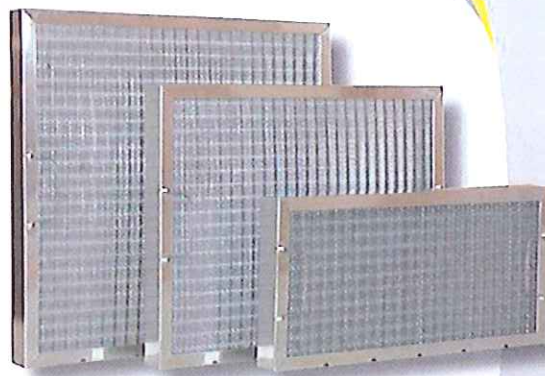
APPENDIX 2

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)



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.

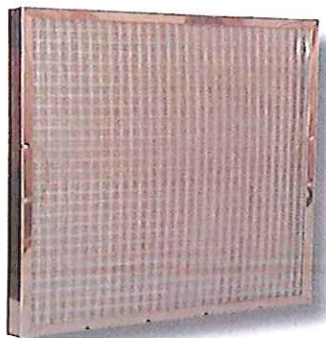
These Filters are rated at 1.5m/sec - where the pressure drop is 15Pa for 45mm filters and less than 10Pa for 20mm filters.

Construction

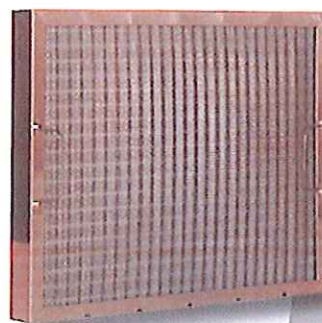
These filters are made from rolled channel frames, with safety edges. Sandwiched between the frame edges are layers of interwoven expanded mesh.

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

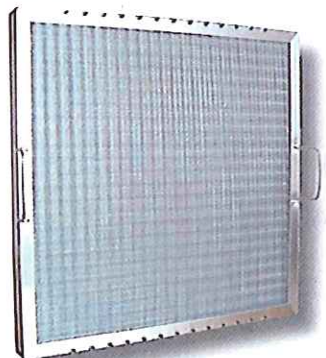
Stainless Steel



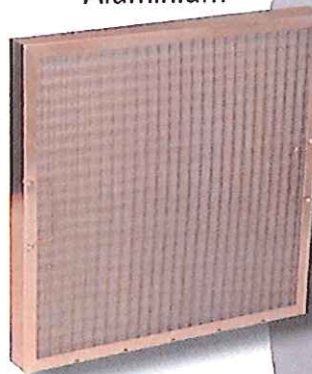
Brushed Stainless Steel



Galvanised Steel



Aluminium



ENVIRONMENT



EMS 81914
BS EN ISO 14001:2004

QUALITY



FM 29257
BS EN ISO 9001:2000

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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

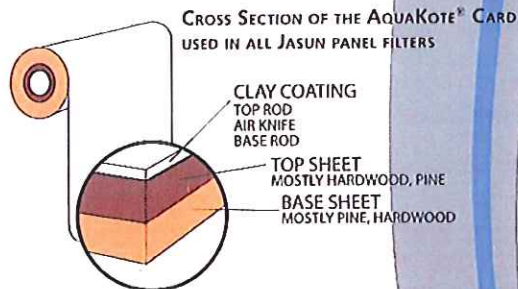
- Superior tear resistance when wet
- Great dry tear resistance and
- Manufactured from a renewable source.

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 inexpensive



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



ENVIRONMENT



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BS EN ISO 14001:2004

QUALITY



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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 from continuous fibres so will not shed

Hi Magnification photo showing the cross section of the Intrepid media



Coarse
↓ Airflow
Fine



POWERED BY
INTREPID
Filtration Media

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 Polyester 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

ENVIRONMENT



EMS 81914
BS EN ISO 14001:2004

QUALITY

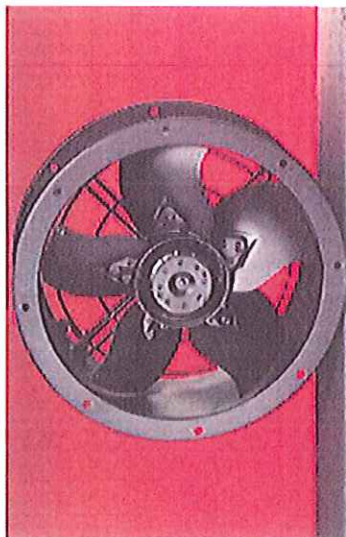


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VENT-AXIA BLACK SABRE SLIM CASE SICKLE FANS (BSC)



- ✓ 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 G6.3.

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

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 PGH entry offering protection against dust and water jets from any angle.

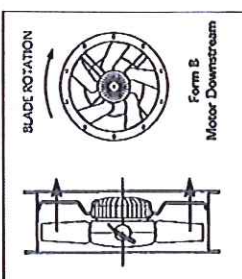
PERFORMANCE

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 10⁻¹²Pa (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.

FORM OF RUNNING



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.

BLACK SABRE SLIM CASE SICKLE FANS (BSC)

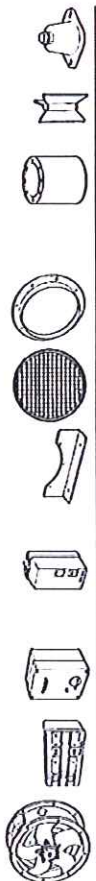
Vent-Axia BLACK SABRE SLIM CASE SICKLE FANS PERFORMANCE GUIDE

4 POLE

m³/s at Pa

Shaft	IP	25	50	75	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500	2550	2600	2650	2700	2750	2800	2850	2900	2950	3000	3050	3100	3150	3200	3250	3300	3350	3400	3450	3500	3550	3600	3650	3700	3750	3800	3850	3900	3950	4000	4050	4100	4150	4200	4250	4300	4350	4400	4450	4500	4550	4600	4650	4700	4750	4800	4850	4900	4950	5000	5050	5100	5150	5200	5250	5300	5350	5400	5450	5500	5550	5600	5650	5700	5750	5800	5850	5900	5950	6000	6050	6100	6150	6200	6250	6300	6350	6400	6450	6500	6550	6600	6650	6700	6750	6800	6850	6900	6950	7000	7050	7100	7150	7200	7250	7300	7350	7400	7450	7500	7550	7600	7650	7700	7750	7800	7850	7900	7950	8000	8050	8100	8150	8200	8250	8300	8350	8400	8450	8500	8550	8600	8650	8700	8750	8800	8850	8900	8950	9000	9050	9100	9150	9200	9250	9300	9350	9400	9450	9500	9550	9600	9650	9700	9750	9800	9850	9900	9950	10000	10050	10100	10150	10200	10250	10300	10350	10400	10450	10500	10550	10600	10650	10700	10750	10800	10850	10900	10950	11000	11050	11100	11150	11200	11250	11300	11350	11400	11450	11500	11550	11600	11650	11700	11750	11800	11850	11900	11950	12000	12050	12100	12150	12200	12250	12300	12350	12400	12450	12500	12550	12600	12650	12700	12750	12800	12850	12900	12950	13000	13050	13100	13150	13200	13250	13300	13350	13400	13450	13500	13550	13600	13650	13700	13750	13800	13850	13900	13950	14000	14050	14100	14150	14200	14250	14300	14350	14400	14450	14500	14550	14600	14650	14700	14750	14800	14850	14900	14950	15000	15050	15100	15150	15200	15250	15300	15350	15400	15450	15500	15550	15600	15650	15700	15750	15800	15850	15900	15950	16000	16050	16100	16150	16200	16250	16300	16350	16400	16450	16500	16550	16600	16650	16700	16750	16800	16850	16900	16950	17000	17050	17100	17150	17200	17250	17300	17350	17400	17450	17500	17550	17600	17650	17700	17750	17800	17850	17900	17950	18000	18050	18100	18150	18200	18250	18300	18350	18400	18450	18500	18550	18600	18650	18700	18750	18800	18850	18900	18950	19000	19050	19100	19150	19200	19250	19300	19350	19400	19450	19500	19550	19600	19650	19700	19750	19800	19850	19900	19950	20000	20050	20100	20150	20200	20250	20300	20350	20400	20450	20500	20550	20600	20650	20700	20750	20800	20850	20900	20950	21000	21050	21100	21150	21200	21250	21300	21350	21400	21450	21500	21550	21600	21650	21700	21750	21800	21850	21900	21950	22000	22050	22100	22150	22200	22250	22300	22350	22400	22450	22500	22550	22600	22650	22700	22750	22800	22850	22900	22950	23000	23050	23100	23150	23200	23250	23300	23350	23400	23450	23500	23550	23600	23650	23700	23750	23800	23850	23900	23950	24000	24050	24100	24150	24200	24250	24300	24350	24400	24450	24500	24550	24600	24650	24700	24750	24800	24850	24900	24950	25000	25050	25100	25150	25200	25250	25300	25350	25400	25450	25500	25550	25600	25650	25700	25750	25800	25850	25900	25950	26000	26050	26100	26150	26200	26250	26300	26350	26400	26450	26500	26550	26600	26650	26700	26750	26800	26850	26900	26950	27000	27050	27100	27150	27200	27250	27300	27350	27400	27450	27500	27550	27600	27650	27700	27750	27800	27850	27900	27950	28000	28050	28100	28150	28200	28250	28300	28350	28400	28450	28500	28550	28600	28650	28700	28750	28800	28850	28900	28950	29000	29050	29100	29150	29200	29250	29300	29350	29400	29450	29500	29550	29600	29650	29700	29750	29800	29850	29900	29950	30000	30050	30100	30150	30200	30250	30300	30350	30400	30450	30500	30550	30600	30650	30700	30750	30800	30850	30900	30950	31000	31050	31100	31150	31200	31250	31300	31350	31400	31450	31500	31550	31600	31650	31700	31750	31800	31850	31900	31950	32000	32050	32100	32150	32200	32250	32300	32350	32400	32450	32500	32550	32600	32650	32700	32750	32800	32850	32900	32950	33000	33050	33100	33150	33200	33250	33300	33350	33400	33450	33500	33550	33600	33650	33700	33750	33800	33850	33900	33950	34000	34050	34100	34150	34200	34250	34300	34350	34400	34450	34500	34550	34600	34650	34700	34750	34800	34850	34900	34950	35000	35050	35100	35150	35200	35250	35300	35350	35400	35450	35500	35550	35600	35650	35700	35750	35800	35850	35900	35950	36000	36050	36100	36150	36200	36250	36300	36350	36400	36450	36500	36550	36600	36650	36700	36750	36800	36850	36900	36950	37000	37050	37100	37150	37200	37250	37300	37350	37400	37450	37500	37550	37600	37650	37700	37750	37800	37850	37900	37950	38000	38050	38100	38150	38200	38250	38300	38350	38400	38450	38500	38550	38600	38650	38700	38750	38800	38850	38900	38950	39000	39050	39100	39150	39200	39250	39300	39350	39400	39450	39500	39550	39600	39650	39700	39750	39800	39850	39900	39950	40000	40050	40100	40150	40200	40250	40300	40350	40400	40450	40500	40550	40600	40650	40700	40750	40800	40850	40900	40950	41000	41050	41100	41150	41200	41250	41300	41350	41400	41450	41500	41550	41600	41650	41700	41750	41800	41850	41900	41950	42000	42050	42100	42150	42200	42250	42300	42350	42400	42450	42500	42550	42600	42650	42700	42750	42800	42850	42900	42950	43000	43050	43100	43150	43200	43250	43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Vent-Axia.



Stock	Electronic connector	Auto transformer	D.O.L. starters & overload	Mounting feet	Inlet wire guard stock	Coupling tamp stock	Asial ancillary pack stock	Asial casing attenuator stock	Anti- vibration mount stock
Ref. No.	Ref. No.	Ref. No.	Ref. No.	Ref. No.	Ref. No.	Ref. No.	Ref. No.	Ref. No.	Ref. No.
BSC715-14	WT03 03 102M	103 14 301	103 11 240 - 103 12 007	105 03 315	105 05 315	105 06 315	105 13 315	105 14 315	105 15 315
BSC715-34	-	103 14 301	103 11 415 - 103 12 007	105 03 315	105 05 315	105 06 315	105 13 315	105 14 315	105 15 315
BSC735-14	WT03 03 102M	103 14 301	103 11 240 - 103 12 007	105 03 355	105 05 355	105 06 355	105 13 355	105 14 355	105 15 355
BSC735-34	-	103 14 301	103 11 415 - 103 12 007	105 03 355	105 05 355	105 06 355	105 13 355	105 14 355	105 15 355
BSC400-14	WT03 03 102M	103 14 301	103 11 240 - 103 12 007	105 03 400	105 05 400	105 06 400	105 13 400	105 14 400	105 15 400
BSC400-34	-	103 14 301	103 11 415 - 103 12 011	105 03 400	105 05 400	105 06 400	105 13 400	105 14 400	105 15 400
BSC450-14	WT03 03 102A	103 14 301	103 11 240 - 103 12 040	105 03 450	105 05 450	105 06 450	105 13 450	105 14 450	105 15 450
BSC450-34	-	103 14 301	103 11 415 - 103 12 018	105 03 450	105 05 450	105 06 450	105 13 450	105 14 450	105 15 450
BSC500-14	WT03 03 100A	103 14 305	103 11 240 - 103 12 018	105 03 500	105 05 500	105 06 500	105 13 500	105 14 500	105 15 500
BSC500-34	-	103 14 304	103 11 415 - 103 12 027	105 03 500	105 05 500	105 06 500	105 13 500	105 14 500	105 15 500
BSC560-14	-	-	103 11 240 - 103 12 105	105 03 560	105 05 560	105 06 560	105 13 560	105 14 560	105 15 560
BSC560-34	-	-	103 11 415 - 103 12 040	105 03 560	105 05 560	105 06 560	105 13 560	105 14 560	105 15 560
BSC600-14	-	-	103 11 240 - 103 12 070	105 03 600	105 05 600	105 06 600	105 13 600	105 14 600	105 15 600
BSC600-34	-	-	103 11 415 - 103 12 040	105 03 600	105 05 600	105 06 600	105 13 600	105 14 600	105 15 600
BSC660-36	-	103 14 301	103 11 415 - 103 12 007	105 03 660	105 05 660	105 06 660	105 13 660	105 14 660	105 15 660
BSC710-14	WT03 03 102M	103 14 301	103 11 240 - 103 12 018	105 03 710	105 05 710	105 06 710	105 13 710	105 14 710	105 15 710
BSC710-36	-	103 14 301	103 11 415 - 103 12 018	105 03 710	105 05 710	105 06 710	105 13 710	105 14 710	105 15 710
BSC760-14	WT03 03 106A	103 14 305	103 11 240 - 103 12 018	105 03 760	105 05 760	105 06 760	105 13 760	105 14 760	105 15 760
BSC760-36	-	103 14 301	103 11 415 - 103 12 018	105 03 760	105 05 760	105 06 760	105 13 760	105 14 760	105 15 760
BSC760-14	WT03 03 106A	103 14 305	103 11 240 - 103 12 018	105 03 760	105 05 760	105 06 760	105 13 760	105 14 760	105 15 760
BSC760-36	-	103 14 301	103 11 415 - 103 12 040	105 03 760	105 05 760	105 06 760	105 13 760	105 14 760	105 15 760

AN INVERTER SPEED CONTROL KIT IS AVAILABLE FOR:

ESC 560-34 - 103 20 302 09
ESC 630-34 - 103 20 302 09

NOTE: When speed control is required a 5-step auto transformer is recommended to ensure low noise levels.

NOTE: All models are supplied with 3-speed delta-star connection motor. (Size 450 to 630 are 4/6 Pole).

When speed control is required on all other models: 5 a step auto transformer/ speed controller is recommended, to ensure low noise levels.

**BLACK SABRE SLIM CASE SICKLE FANS
SOUND DATA**

Sound Power Level Spectra dB (ref 10⁻¹² Watts)

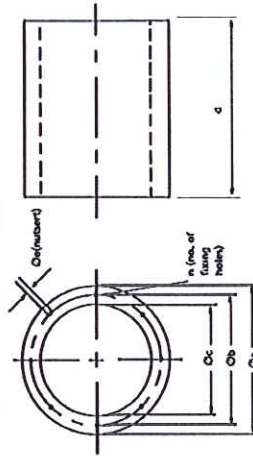
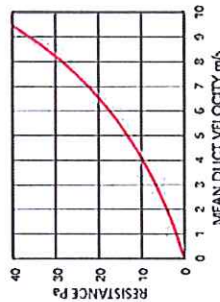
4 POLE

Dis	63	125	250	500	75	25	44	58	dB(A) @ 3m
BSC216/4	Inlet	77	73	66	65	63	60	56	46
	Outlet	77	72	66	65	63	60	56	47
BSC352/4	Inlet	78	73	61	64	65	63	58	50
	Outlet	78	73	61	64	65	63	58	49
BSC400/4	Inlet	79	76	70	65	68	67	56	50
	Outlet	79	76	70	65	68	67	56	52
BSC450/4	Inlet	79	78	71	68	70	68	64	54
	Outlet	79	78	71	68	70	68	64	54
BSC500/4	Inlet	80	79	76	72	75	75	68	61
	Outlet	80	79	76	72	75	75	68	61
BSC560/4	Inlet	82	81	80	79	79	77	74	65
	Outlet	82	81	80	79	79	77	74	65
BSC620/4	Inlet	83	85	82	83	84	80	79	66
	Outlet	83	85	82	83	84	80	79	66
6 POLE									
BSC450/6	Inlet	76	69	64	63	62	55	45	47
	Outlet	76	69	64	63	62	55	45	47
BSC500/6	Inlet	79	70	69	66	65	61	52	51
	Outlet	79	70	69	66	65	61	52	51
BSC560/6	Inlet	80	71	75	73	70	66	55	57
	Outlet	80	71	75	73	70	66	55	57
BSC620/6	Inlet	81	71	80	79	73	67	56	61
	Outlet	81	71	80	79	73	67	56	61
BSC710/6	Inlet	81	72	81	80	76	69	58	63
	Outlet	81	72	81	80	76	69	58	63
8 POLE									
BSC710/8	Inlet	75	70	70	69	68	58	53	50
	Outlet	75	70	70	69	68	58	53	50

Note: The above Sound Power Level Spectra is for B-Form Running Fans.

Published dBA figures, are free field sound levels at 3m, with spherical propagation at a reference level of 2×10^{-5} Pa. The sound power level spectra figure, are dB with reference of 10W Watts.

To ensure minimum noise levels during speed control, an auto transformer speed controller is recommended.

RESISTANCE GRAPH FOR CASED
ATTENUATOR FITTED WITH POD

CASED AXIAL ATTENUATOR

[illegible]

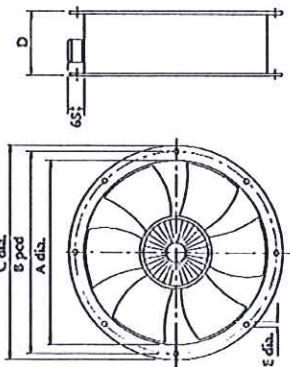
• Threaded hole to take bolt

For Insertion Losses see page 49.

VENT-AXIA

BLACK SABRE SLIM CASE SICKLE FANS DIMENSIONS (mm)

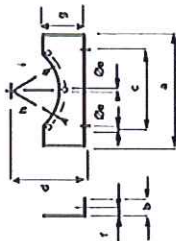
DIMENSIONS (mm)



Stock Ref. No.	OA	OB	OC	D	OE	No. Holes	Weight kg
BSC 315	315	355	396	170	10	8	10.5
BSC 355	355	395	426	170	10	8	13
BSC 400	400	450	487	170	12	8	15.5
BSC 450	450	500	537	180	12	8	20.5
BSC 500	500	560	595	180	12	12	32
BSC 560	560	620	655	240	12	12	31
BSC 630	630	690	725	240	12	12	38
BSC 710/4	710	770	806	350	12	16	65
BSC 710/6	710	770	806	340	12	16	65

Please note: Dimension D is 240mm on 6-pole & 350mm on 4-pole version.

ACCESSORY DIMENSIONS (mm)

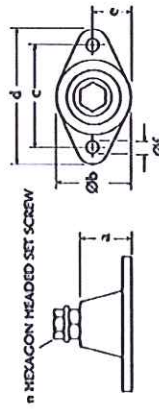


INLET WIRE GUARD 'K' factor less 0.25

Ref. No.	OA	b
105 06 315	380	3
105 06 355	420	3
105 06 400	475	3
105 06 450	525	3
105 06 500	595	3
105 06 560	655	3
105 06 630	725	3
105 06 710	784	5

MOUNTING FEET

Ref. No.	a	b	c	d	e	f	g	h	i
105 03 315	275	24	274	10	14	115	127.5	167	
105 03 355	303	24	290	10	14	125	137.5	187	
105 03 400	348	24	340	10	14	135	150	213	
105 03 450	384	24	375	10	14	145	165	238	
105 03 500	425	24	415	10	14	155	180	268	
105 03 560	475	24	465	10	14	165	195	298	
105 03 630	520	24	500	10	14	175	215	333	
105 03 710A	710	40	610	435	13	18	240	365	



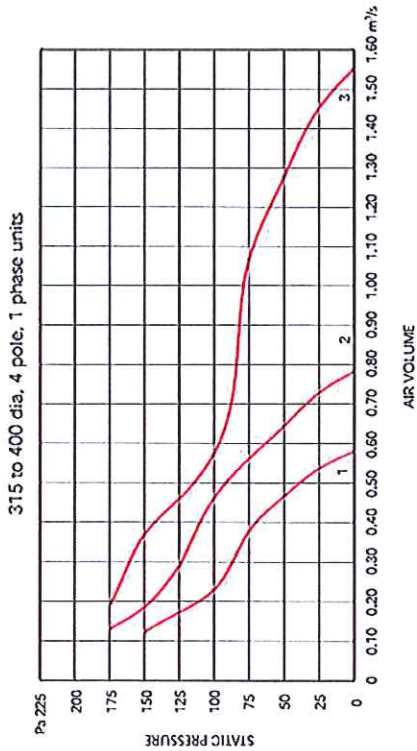
ANTI-VIBRATION MOUNTS

Ref. No.	a	b	c	d	e	f	g	h	i	Max Head kg
105 22 003	27	37	54	67	115.5	7	N/A	23		
105 22 005	27	37	54	67	115.5	7	N/A	26		
105 22 133	35	57	76	95	285.5	10.5	N/A	91		

BLACK SABRE SLIM CASE SICKLE FANS (BSC)

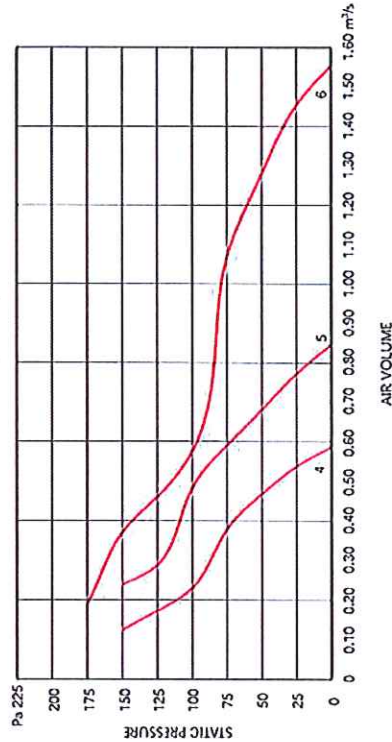
Vent-Axia

BLACK SABRE SLIM CASE SICKLE FANS PERFORMANCE CURVES



AIR VOLUME

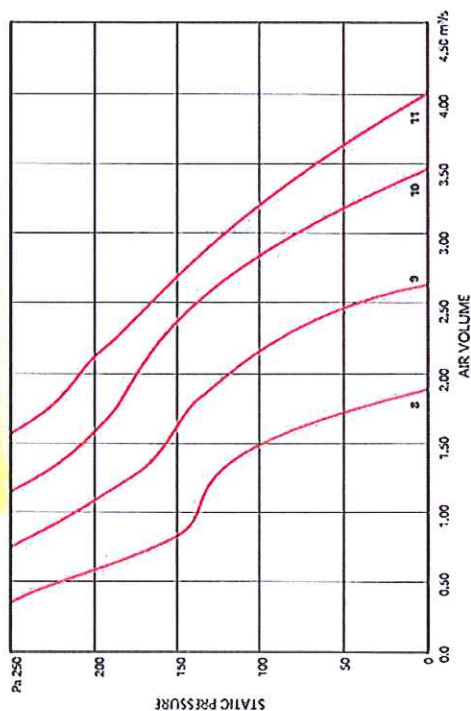
315 to 400 dia. 4 pole, 3 phase units



AIR VOLUME

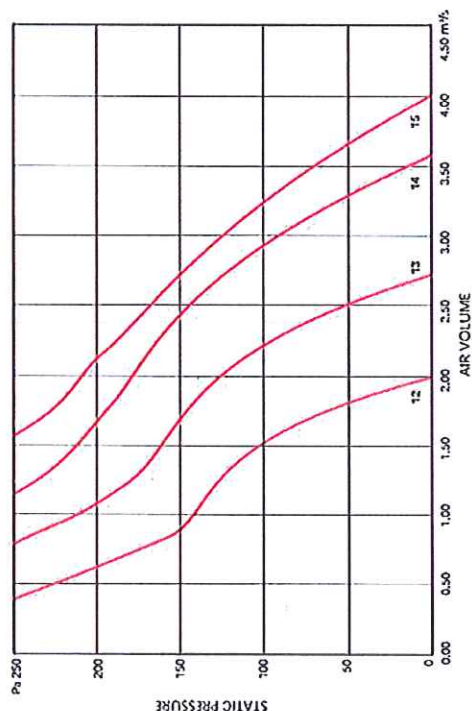
BLACK SABRE SLIM CASE SICKLE FANS PERFORMANCE CURVES

450 to 630 dia, 4 pole, 1 phase units



Size	450/3ph	500/3ph	560/3ph	630/3ph
8	2	3	4	5
9	3	4	5	6
10	4	5	6	7
11	5	6	7	8

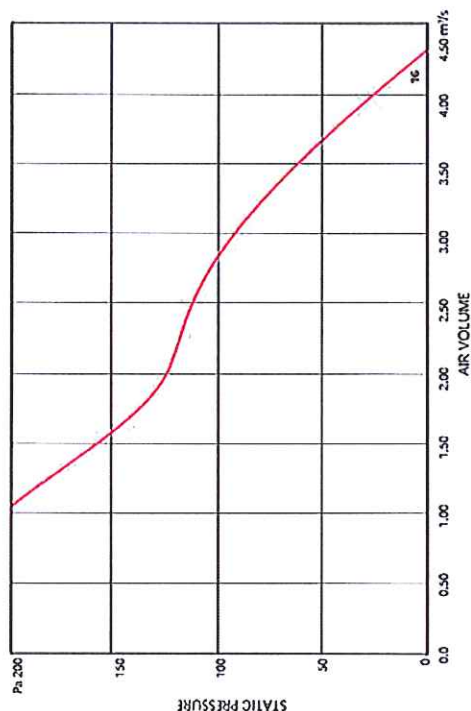
450 to 630 dia, 4 pole, 3 phase units



Size	450/3ph	500/3ph	560/3ph	630/3ph
12	12	13	14	15
13	13	14	15	16
14	14	15	16	17
15	15	16	17	18

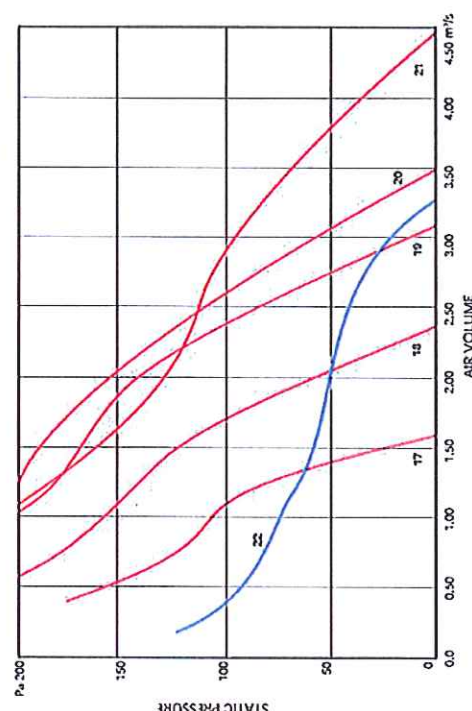
BLACK SABRE SLIM CASE SICKLE FANS PERFORMANCE CURVES

710 dia, 6 pole, 1 phase units

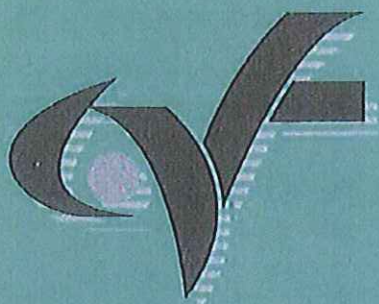


Size	710/1ph
16	16

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



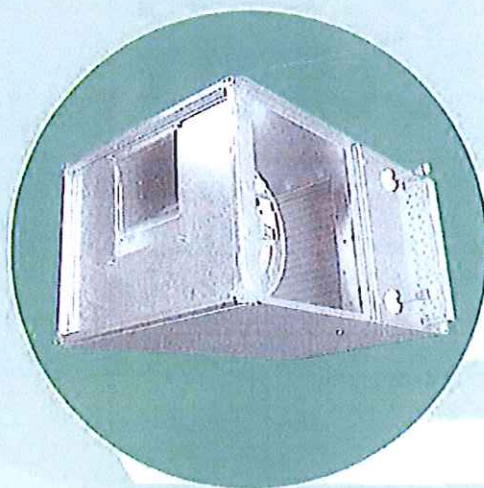
Size	450/3ph	500/3ph	560/3ph	630/3ph	710/6 Pole/3ph	710/8 Pole/3ph
17	17	18	19	20	21	22
18	18	19	20	21	22	23
19	19	20	21	22	23	24
20	20	21	22	23	24	25
21	21	22	23	24	25	26
22	22	23	24	25	26	27



AIR VENT
TECHNOLOGY

QUALITY RANGE

WATER HEATED AIR HANDLING UNITS



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 Levels: Induct sound levels dB ref 10⁻¹²W 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.

