



# Fan Services

*Commercial Kitchen Extraction  
and Ventilation Experts*

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28<sup>th</sup> February 2018

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## **KITCHEN EXTRACTION & ODOUR CONTROL SYSTEM PROPOSAL**

Above the cooking equipment a stainless-steel extractor hood canopy, 2,000mm long x 1,200mm deep X 500mm High at the back.

The canopy is manufactured in 304 grade with external dull polish grain and internal filter housing to removable/washable baffle type grease filters, which are highly efficient at grease removal.

304 grade stainless steel wall cladding underneath of the canopy.

400mm diameter Ductwork from the canopy hood is connected to an odour filtration unit 2X12''X24''X24'' / 50KG heavy duty discarb carbon filtration units which is accommodated in a housing box with V Line G4 Pleated Panel pre-Filters (carbon filtration has a dwell time of 0.2 seconds, please see attached tech spec for carbon and pre filter).

The odour system is then connected to Helios Giga box GBW450 insulated box fan with transformer speed controller and overheat protection. (please see attached fan technical specification).

The fan will be mounted on using anti vibration rubber mountings and connected to ducting using flexible connectors to eliminate vibration levels.

Fan unit is then connected to a 1X of Acustica CP03-C-0450-2D, sound attenuator positioned after the fan to achieve the insertion loss.

The 450mm diameter ductwork from silencer is then exiting the building to terminate with discharge end louver.

The system will be designed and installed in accordance to DW172.

**CLEANING AND MAINTAINCE:**

- 1- TR19 extractor system, ductwork cleaning to be scheduled every 6 months.
- 2- V Line Pleated G4 Panel Filters before the carbon unit to be changed every 2 weeks.
- 3- Carbon units to be changed every 6 months.

We hope this is of assistance and await your further instruction.

Kind regards

Ghaith Zen  
Managing director

# VLine Max Pleated Panel Filter

## High Capacity Performance

### VLX1 / 20mm Deep

#### General Description

This Super Capacity pleated panel filter is designed to operate under the most testing of conditions. The extra high pleat count delivers outstanding filter life, and the blended cotton / polyester filter media has 100% mechanical filtration properties. This is not an electrostatically charged media.

#### Construction

This product is constructed by bonding a pleat pack of pleat media into a water repellent AquaKote card frame, backed with an expanded steel support grid

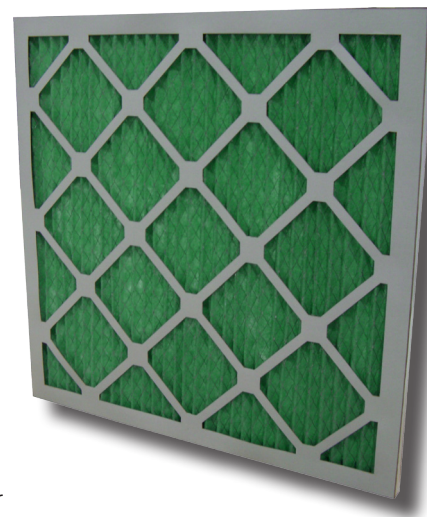
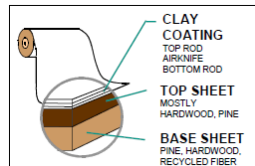
#### Operating Temperature

Continuous 80 °Centigrade

#### 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.

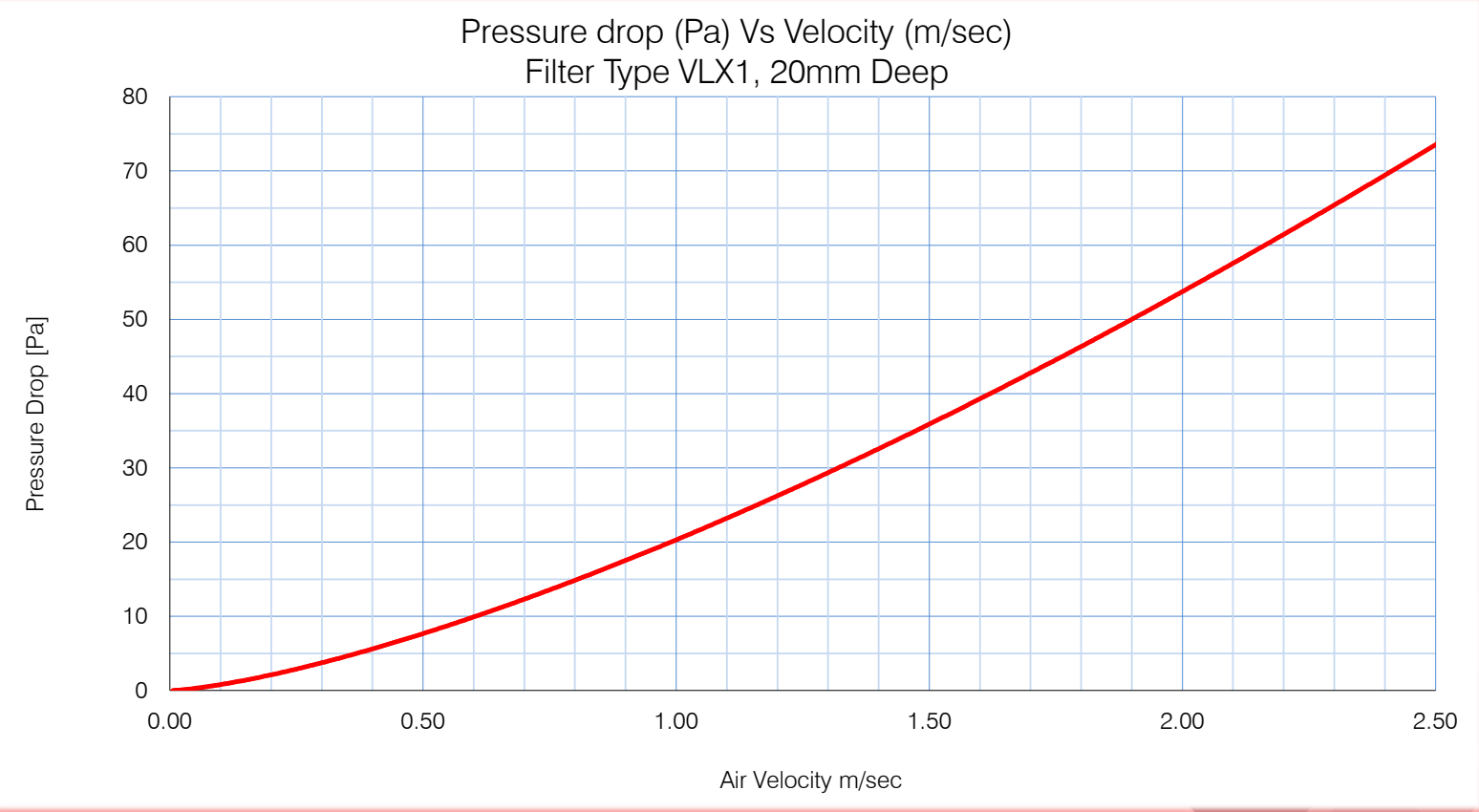


# VLX1 Panel Filter

## STANDARD SIZES

No.	Nominal Size Inches	Height (mm)	Width (mm)	Depth (mm)	Rated Airflow m³/hr
VLX1-1010	10x10x1	241	241	20	314
VLX1-1020	10x20x1	241	495	20	644
VLX1-1212	12x12x1	292	292	20	460
VLX1-1224	12x24x1	292	594	20	937
VLX1-1515	15x15x1	368	368	20	731
VLX1-1520	15x20x1	368	495	20	984
VLX1-1619	16x19x1	394	470	20	1000
VLX1-1620	16x20x1	394	495	20	1053
VLX1-1624	16x24x1	394	594	20	1264
VLX1-1625	16x25x1	394	622	20	1323
VLX1-1818	18x18x1	445	445	20	1069
VLX1-1820	18x20x1	445	495	20	1189
VLX1-1824	18x24x1	445	594	20	1427
VLX1-2020	20x20x1	495	495	20	1323
VLX1-2024	20x24x1	495	594	20	1588
VLX1-2025	20x25x1	495	622	20	1663
VLX1-2424	24x24x1	594	594	20	1905

Filter Class EN 779:2012		G4
Filter Depth	Rated Airflow	Initial Pressure Drop
20mm	1.5m/sec	35Pa
Final Recommended Pressure Drop		200Pa





# VLine Max Pleated Panel Filter

## High Capacity Performance

### VLX2 / 45mm Deep

#### General Description

This Super Capacity pleated panel filter is designed to operate under the most testing of conditions. The extra high pleat count delivers outstanding filter life, and the blended cotton / polyester filter media has 100% mechanical filtration properties. This is not an electrostatically charged media.

#### Construction

This product is constructed by bonding a pleat pack of pleat media into a water repellent AquaKote card frame, backed with an expanded steel support grid

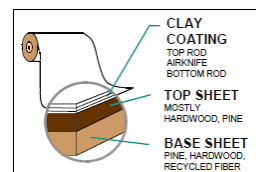
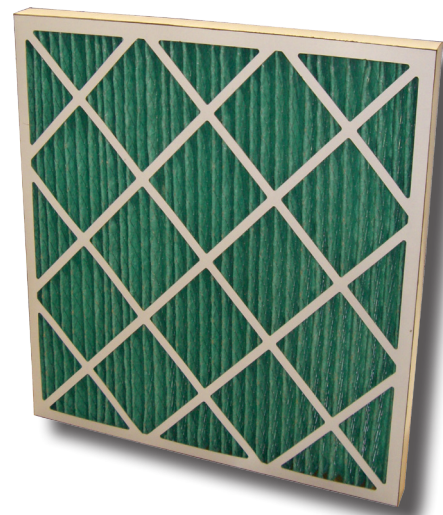
#### Operating Temperature

Continuous 80 °Centigrade

#### 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.



Filter Efficiency EN 779:2012		G4
Filter Depth	Rated Airflow	Initial Pressure Drop
95mm	2.7m/sec	40Pa
Final Recommended Pressure Drop		250Pa

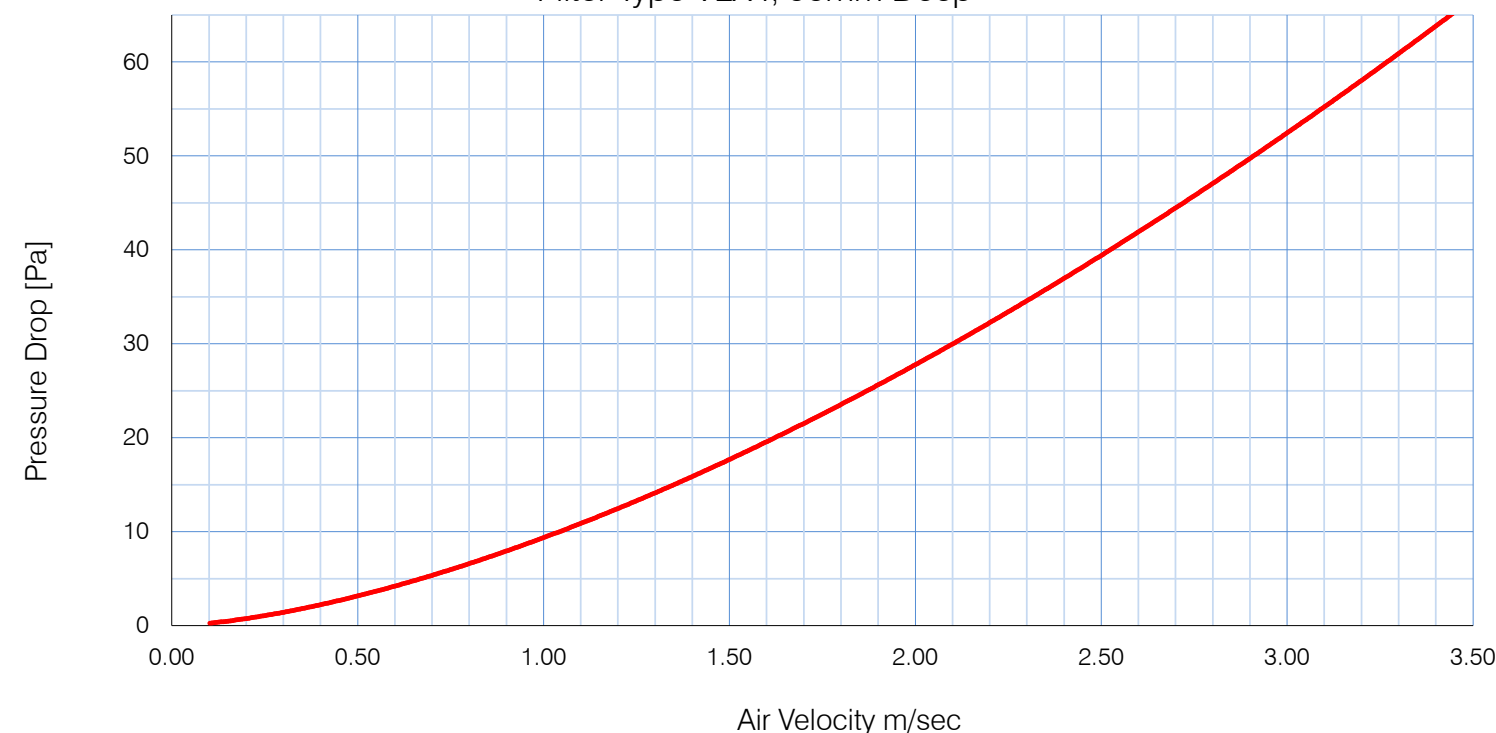
# VLX2 Panel Filter

## STANDARD SIZES



No.	Nominal Size Inches	Height (mm)	Width (mm)	Depth (mm)	Rated Airflow m³/hr
VLX2-1010	10x10x2	241	241	45	544
VLX2-1020	10x20x2	241	495	45	1117
VLX2-1212	12x12x2	292	292	45	798
VLX2-1224	12x24x2	292	594	45	1623
VLX2-1515	15x15x2	368	368	45	1268
VLX2-1520	15x20x2	368	495	45	1705
VLX2-1619	16x19x2	394	470	45	1453
VLX2-1620	16x20x2	394	495	45	1825
VLX2-1624	16x24x2	394	594	45	2294
VLX2-1625	16x25x2	394	622	45	1854
VLX2-1818	18x18x2	445	445	45	3228
VLX2-1820	18x20x2	445	495	45	2293
VLX2-1824	18x24x2	445	594	45	2752
VLX2-2020	20x20x2	495	495	45	2882
VLX2-2024	20x24x2	495	594	45	3303
VLX2-2025	20x25x2	495	622	45	2217
VLX2-2424	24x24x2	594	594	45	3400

Pressure drop (Pa)Vs Velocity (m/sec.)  
Filter Type VLX4, 95mm Deep

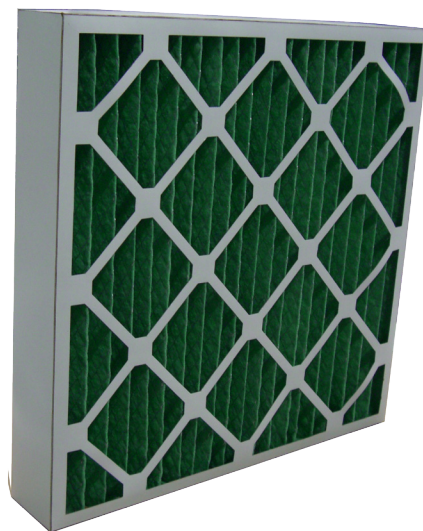




# VLine Max Pleated Panel Filter

## High Capacity Performance

### VLX4 / 95mm Deep



#### General Description

This Super Capacity pleated panel filter is designed to operate under the most testing of conditions. The extra high pleat count delivers outstanding filter life, and the blended cotton / polyester filter media has 100% mechanical filtration properties. This is not an electrostatically charged media.

#### Construction

This product is constructed by bonding a pleat pack of pleat media into a water repellent AquaKote card frame, backed with an expanded steel support grid

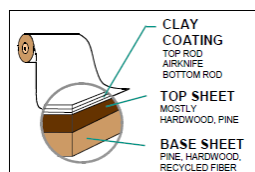
#### Operating Temperature

Continuous 80 °Centigrade

#### 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.

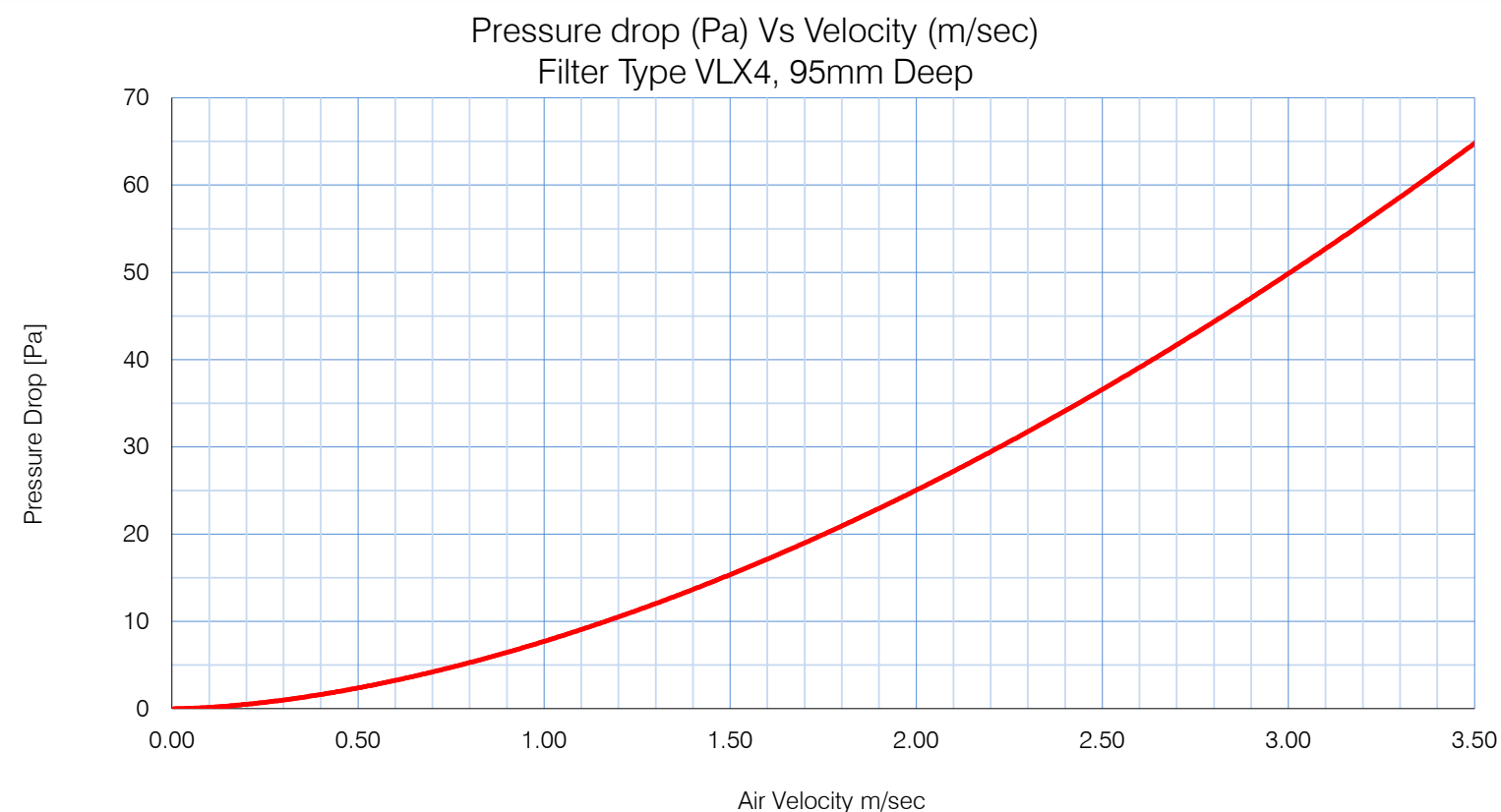


Filter Efficiency EN 779:2012		G4
Filter Depth	Rated Airflow	Initial Pressure Drop
95mm	2.7m/sec	40Pa
Final Recommended Pressure Drop		250Pa

# VLX4 Panel Filter

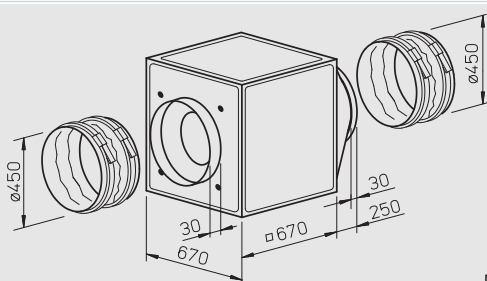
## STANDARD SIZES

No.	Nominal Size Inches	Height (mm)	Width (mm)	Depth (mm)	Rated Airflow m³/hr
VLX4-1010	10x10x4	241	241	95	544
VLX4-1020	10x20x4	241	495	95	1117
VLX4-1212	12x12x4	292	292	95	798
VLX4-1224	12x24x4	292	594	95	1623
VLX4-1515	15x15x4	368	368	95	1268
VLX4-1520	15x20x4	368	495	95	1705
VLX4-1616	16x16x4	394	394	95	1453
VLX4-1620	16x20x4	394	495	95	1825
VLX4-1625	16x25x4	394	622	95	2294
VLX4-1818	18x18x4	445	445	95	1854
VLX4-1831	18x31x4	445	775	95	3228
VLX4-2020	20x20x4	495	495	95	2293
VLX4-2024	20x24x4	495	594	95	2752
VLX4-2025	20x25x4	495	622	95	2882
VLX4-2424	24x24x4	594	594	95	3400



## Models GB..

Arbitrary installation position and flexible assembly by five possible discharge directions.



### ■ Special features of type GB.. T120

- Designed for moving dirty, humid and hot air volumes up to max. 120° C.
- Motor located outside of air flow.
- Temperature insulated partition panel between motor and impeller, lined with 20 mm thick, flame-retardant mineral wool.
- Easily accessible motor and impeller unit, removable without disassembling the system components.
- Inspection cover with handle, simply remove for cleaning and maintenance.
- Condensate collector with condensate spigot included in delivery. Drill hole for rain drainage (accessories) for outdoor installation is prepared.

### □ Assembly of types GB.. T120

Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via the discharge adapter. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

### ■ Feature

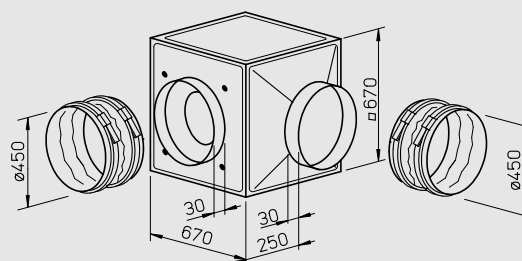
#### □ Assembly of types GB..

Arbitrary installation position and flexible assembly by five possible discharge directions via the discharge adapter. For wall mounting the wall bracket (accessories) has to be used. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

## Models GB.. T120

NEW!

Designed for moving dirty, humid and hot air up to max. 120° C.



### ■ Specification of both types

#### □ Casing

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature consulting and flame-retardant mineral wool. Intake cone for ideal inflow as well as spigot and flexible sleeve (for the respective max. permissible air flow temperature) for duct connection. With discharge adapter (from square to circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks.

#### □ Impeller

Smooth running backward curved centrifugal impeller highly efficient with polymer blades on galvanised steel disc (with GB.. T120 aluminium impeller), direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 – class 6.3.

#### □ Motor

Maintenance-free external rotor motor or IEC-standard motor protected to IP 44 or 54. With ball bearings and radio suppressed as standard.

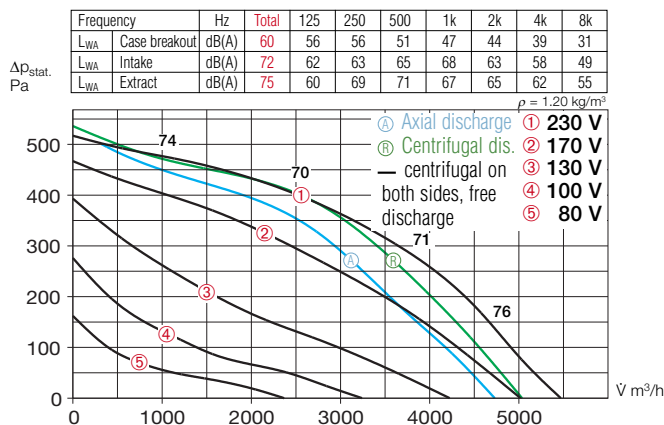
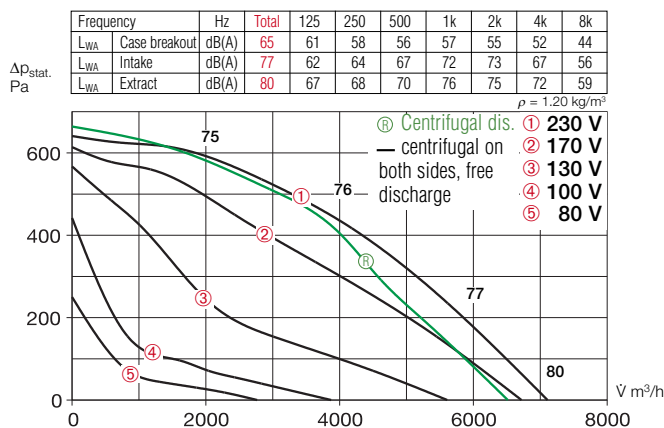
#### □ Electrical connection

Standard terminal box (IP 54) fitted on the motor; with GB.. T120 fitted on the motor support plate.

Type	Ref. No.	Air flow volume (FID)	R.P.M.	Sound press. level case breakout	Motor power (nominal)	full load	Current speed controlled	Wiring diagram	Maximum air flow temperature full load	Nominal weight (net)	5 step transformer controller with motor protect. unit	Full motor protection unit using the thermal contacts
		V m <sup>3</sup> /h	min <sup>-1</sup>	dB(A) at 4 m	kW	A	A	Nr.	+°C	+°C	kg	Type Ref. No.
<b>1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54</b>												
GBW 450/4	5515	5450	1270	40	0.76	3.50	3.50	864	45	45	49	MWS 5 1949 TSW 5.0 1497 MW <sup>1)</sup> 1579
<b>2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54</b>												
GBD 450/4/4	5516	4350/5450	880/1240	40	0.36/0.67	0.70/1.30	1.30	867	55	55	49	RDS 2 1315 TSD 1.5 1501 M4 <sup>2)</sup> 1571
<b>1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54</b>												
GBW 450/4 T120	5774	7110	1370	45	1.00	4.60	5.50	935	120	100	74	MWS 7.5 1950 TSW 7.5 1596 MW <sup>1)</sup> 1579
<b>2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54</b>												
GBD 450/4/4 T120	5775	6210/7180	1100/1350	45	0.65/0.90	1.10/1.60	1.80	947	120	110	74	RDS 2 1315 TSD 3.0 1502 M4 <sup>2)</sup> 1571

1) incl. operation switch

2) incl. operation and 2 speed switch

**GBW 450/4**

**GBW 450/4 T120**

**Motor protection**

Motors have thermal contacts wired to the terminal block and must be connected to a motor protection unit.

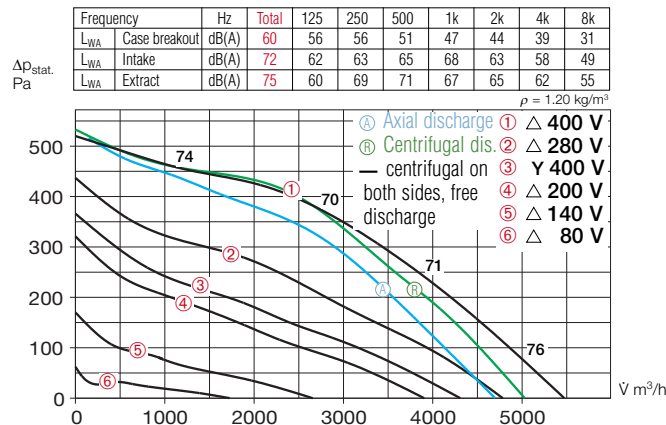
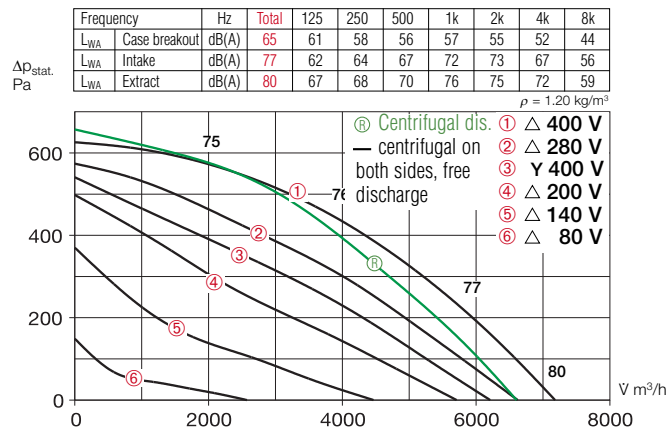
**Speed control**

All types are speed controllable by voltage reduction using a transformer controller. The 3-phase models can also be 2 speed controlled by star/delta switch (accessories DS 2 or full motor protection unit M 4). The duties at different speeds are given in the performance curve.

**Sound levels**

Total sound power levels and the spectrum figures in dB(A) are given for:

- sound level case breakout
- sound level intake
- sound level extract in the tables above the performance curve. Beside, the sound power level (on intake) is stated over the rated characteristic curve. In the table below you can also find the
- case breakout level at 4 m (freefield conditions).

**GBD 450/4**

**GBD 450/4 T120**

**Accessories of both types**

**Anti vibration mounts** for installation indoors. Set of 4.

**SDD-U** Ref. No. 5627

**Wall bracket** for wall mounting.

**GB-WK 450** Ref. No. 5626

**External weather louvers** to cover exhaust opening.

**GB-WSG 450** Ref. No. 5639

**Outdoor cover hood** for outdoor installation.

**GB-WSD 450** Ref. No. 5748

**On/Off and 2-speed switch** for 3-phase star/delta motors.

**DS 2<sup>3)</sup>** Ref. No. 1351

<sup>3)</sup> full motor protection unit recommended:  
MD Ref. No. 5849

**Specific accessories**

for types GB..

**Condensate collector** with condensate spigot for pipe connection.  
**GB-KW 450** Ref. No. 5644

(Condensate collector with condensate spigot included in delivery with GB.. T120).

for types GB.. T120

**Rain drainage** for outdoor installation (drill holes for rain drainage is already prepared).

**GB-RA** Ref. No. 9418

Information	Pages
Design of systems, acoustic	12 on
General techn. information, speed control	17 on
Accessory-Details	Pages
Speed controller and full motor protection unit	397 on



# AIRCLEAN

## YOUR AIR FILTER MANUFACTURER

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**sales@airclean.co.uk www.airclean.co.uk**

### Metal Cased Discarbs

The metal cased 'Discarb' cells have the highest carbon loading in our range, and have standard or heavy-duty carbon panels permanently sealed into a galvanised sheet steel casing. This construction gives a very strong unit capable of handling large air volumes or where conditions dictate, increased contact time. The advantage of this unit is that with panels sealed in, there is no possibility of air leakage. Also, these units can be manufactured to almost any reasonable size, the limiting factors being the overall weight for handling purposes and the size of individual panels. When the unit has finished its useful life it is discarded and replaced with a complete new cell.



Standard Duty Cells							
Nominal Size	Actual Size mm	Number of	Carb.	Discarb	Airflow		Pressure
W x H x L	W x H x L	Panels	Weight	Weight	m <sup>3</sup> /s	cfm	Pa
12" x 12" x 12"	292 x 292 x 292	6	5 kg	9 kg	0.10	212	75
12" x 12" x 18"	292 x 292 x 445	6	8 kg	14 kg	0.15	318	95
12" x 12" x 24"	292 x 292 x 597	6	10 kg	18 kg	0.22	466	140
18" x 18" x 12"	445 x 445 x 292	8	10 kg	17 kg	0.21	445	55
18" x 18" x 18"	445 x 445 x 445	8	15 kg	25 kg	0.31	657	70
18" x 18" x 24"	445 x 445 x 597	8	21 kg	33 kg	0.41	868	105
24" x 24" x 12"	597 x 597 x 292	12	20 kg	31 kg	0.41	868	70
24" x 24" x 18"	597 x 597 x 445	12	31 kg	45 kg	0.61	1292	90
24" x 24" x 24"	597 x 597 x 597	12	42 kg	59 kg	0.81	1716	130
12" x 24" x 24"	298 x 597 x 597	6	21 kg	35 kg	0.40	847	130

Extra Duty Cells							
Nominal Size	Actual Size	No. of	Carb.	Discarb	Airflow		Pressure
W x H x L	W x H x L	Panels	weight	weight	m <sup>3</sup> /s	cfm	Pa
12" x 12" x 12"	292 x 292 x 292	6	6 kg	10 kg	0.13	275	125
12" x 12" x 18"	292 x 292 x 445	6	9 kg	15 kg	0.20	424	175
12" x 12" x 24"	292 x 292 x 597	6	12 kg	20 kg	0.27	572	250
18" x 18" x 12"	445 x 445 x 292	8	12 kg	19 kg	0.30	635	95
18" x 18" x 18"	445 x 445 x 445	8	19 kg	28 kg	0.41	868	125
18" x 18" x 24"	445 x 445 x 597	8	25 kg	37 kg	0.54	1144	185
24" x 24" x 12"	597 x 597 x 292	12	25 kg	35 kg	0.54	1144	125
24" x 24" x 18"	597 x 597 x 445	12	38 kg	52 kg	0.80	1694	150
24" x 24" x 24"	597 x 597 x 597	12	51 kg	68 kg	1.06	2245	225
12" x 24" x 24"	298 x 597 x 597	6	26 kg	46 kg	0.53	1122	225

The company reserves the right to change the specifications without notice. E & OE.

**Code AC6/2a Ref 02/09**

# AIRCLEAN

YOUR AIR FILTER MANUFACTURER

P.O. BOX 147,  
MAIDSTONE, ME14 2LA.

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FAX:01622 832507

[sales@airclean.co.uk](mailto:sales@airclean.co.uk) [www.airclean.co.uk](http://www.airclean.co.uk)

## Technical

The capacities shown are based on a dwell time of 0.1 seconds .

For contact times of 0.3 seconds, reduce rated airflow to 1/3rd, pressure drop will also reduce to 1/3rd.

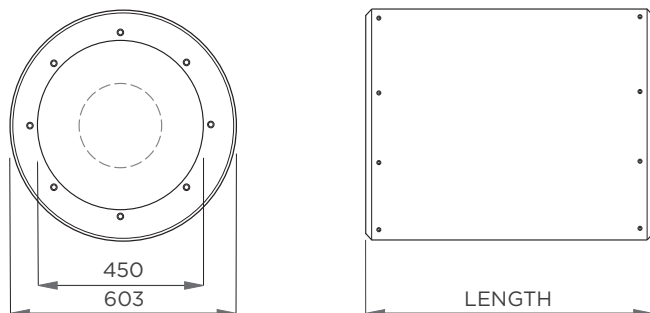
Max Temperature 40 Deg C

Max Humidity 80% RH

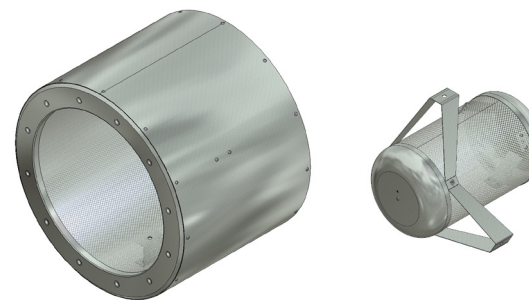
## Non-standard sizes

Other sizes are available to suit individual requirements. Our Technical Department will be pleased to

## CP03-CA-0450 SILENCER



PATTERN A - 8 x M10 - 500 PCD  
PATTERN B - 12 x M8 - 487 PCD



### INSERTION LOSS (dB) - CENTRE BAND FREQUENCY

### DIMENSIONAL DATA

PRODUCT CODE	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	LENGTH	MASS
CP03-C*-0450-1D	2	3	6	12	13	11	9	7	450mm	15 Kg
CP03-C*-0450-2D	3	4	8	17	18	15	11	10	900mm	27 Kg
CP03-C*P-0450-1D	2	6	8	16	23	23	21	16	450mm	18 Kg
CP03-C*P-0450-2D	3	7	12	22	29	29	25	20	900mm	32 Kg

Replace \* in code with A or B for connection pattern. Insertion loss data is derived from continual testing to BS4718 and other standards in independent UKAS certified laboratories, which includes where appropriate, re-generated or self noise testing in both forward and reverse flow conditions. If you request system analysis from our technicians all predictions will be assessed using the relevant certified insertion loss data together with relevant dynamic corrections.

### 450 DIA FAN MOUNTED SILENCER

Available in two standard lengths C Series silencers have excellent attenuation properties, achieved with sound absorbing infill retained in the attenuator casing by a perforated liner. The central pod (code P) is an option to increase the insertion loss, however it will add resistance.

- Fits directly onto 450mm diameter fans
- Standard lengths 450mm (1D) & 900mm (2D)
- Use up to 70°C (standard construction)
- Systems up to 1000 Pascals
- Special lengths on request



## MATERIAL & FINISH

All casings are manufactured from mill finish hot dip galvanised mild steel conforming to EN10327 (BS2989) including the flow formed one piece end fittings. To prevent erosion of absorbing materials the C Series Silencers are fitted with a perforated liner manufactured from galvanised mild steel conforming to EN10327 (BS2989). The C Series Silencers utilise acoustic grade mineral fibre absorbing infill and are manufactured to the HVCA specification DW144 class B and M&E 100 for sheet steel thickness and stiffening.

Pressure Up to 1000 Pascals positive and negative.

Temperature -12° to +70° C.

Location Internally & externally mountable.

## MELINEX LINING (OPTIONAL)

Where moist conditions exist (e.g. process systems) or for critically clean applications (e.g. hospitals) the sound absorbing material may be required to be fully sealed by Melinex lining to prevent fibre migration. This will however, effect the acoustic performance of the silencer. Please contact us to discuss your requirements.

## ALTERNATE SPECIFICATION

The above specification refers to our standard stock range. We can also supply custom made C Series Silencers with alternative dimensions, temperature ratings, construction materials and product finishes. Please contact us for further information and advice.

## PRODUCT CODE GUIDE

Example: CP03-CAP-0450-2D

CP03	Product Group Code
CA	Drilling Pattern CA for A or CB for B
0450	Internal Diameter
2D	Length code 1D = 450, 2D = 900

## RESISTANCE TO AIRFLOW (Pa)

AIR VOLUME M <sup>3</sup> /s	0.5	0.6	0.8	1.0	1.3
CP03-C*-0450-1D	-	-	-	-	-
CP03-C*-0450-2D	-	-	-	-	-
CP03-C*P-0450-1D	15	28	60	85	140
CP03-C*P-0450-2D	23	42	91	125	210

- represents a negligible resistance to airflow that can be assumed to be equivalent to a duct section of the same length.

## INSTALLATION

For recommendations for the support of the silencer the principles of Part Six (pages 43-46) of the HVCA DW144 standard should be followed. It is important that the recommendations in the table are adhered to when locating the silencer in relation to other duct-mounted equipment. If the silencers are to be used in conjunction with equipment not listed please enquire for advice.

ITEM	LOCATION
Centrifugal Fans	Direct couple only at the same size; use an inlet cone if open after silencer. PODDED - position one duct diameter from fan inlet / outlet
Axial Fans	Direct couple only at the same size. Use an inlet cone if open after silencer. PODDED - match hub size within 30% of half nominal diameter.
Mixed-Flow Fans	Direct couple only at the same size. Use an inlet cone if open after silencer.
Ductwork Bends	Direct couple only at the same size. PODDED - position two duct diameters from bend.
Ductwork Reducers	Direct couple only with reducers of maximum 15° cheek slope.
Finned Coils & Filters	Leave 200mm plenum between silencer and coil or filter, and suitable reducer as specified in HVCA DW/144 1998.

## MAINTENANCE

Silencers are of a passive nature and as such require no routine maintenance or lubrication.

## INSPECTION

For inspection access the recommendations set out in Heating & Ventilating Contractors Association specification DW144 1998, appendix M – Guidance Notes for Inspection, Servicing and Cleaning Access Openings, should be followed. We would suggest Level 2 one 300mm x 200mm-inspection panel down-stream or Level 3 one 300mm x 200mm inspection door each side of the silencer. Refer to table 25 of DW144 or Section 2 of HVCA specification TR17 for further recommendations.

It is our recommendation that the silencers are inspected periodically to ensure that the airways are free from obstructions and no dust or foreign matter has collected and blocked the holes in the perforated liner elements.

## CLEANING

Should airways require routine cleaning we recommend low-pressure air blasting, vacuuming or wiping the exposed surfaces with a damp cloth. It is not unusual for “White Zinc Oxide” to develop on galvanised silencers when the zinc in the galvanising reacts electrolytically with moisture.