12b Hillhouse Place
Fartown
Huddersfield
HD1 6EF

Extract & Ventilation Statement

November 2018

nma

Extraction Ventilation Statement

The Proposal are for installation of extraction Louvre to the rear of the building.

Extraction Flue

The main elements of the grease and odour control system starts in the kitchen and will be accordance with the following:

Kitchen Canopy Extraction Requirements

The cooker canopy will be sufficiently long and wide to cover all cooking ranges and appliances. The canopy will be of sufficient height to enable easy working, on the ranges, whilst low enough to entrain all odours/steam generated by the cooking.
The canopy will be constructed from stainless steel grade 304 and will be fitted with primary grease filters.
There will be sufficient primary grease filters fitted to cover the complete length of the canopy face above the cooking ranges in addition there will be grease catch trays attached to the canopy at min 1m centres.
Primary grease filters will be cleaned daily, However a second set of filters will be used and will be rotated weekly, so that one-set is always in use whilst the second set is being cleaned. The extraction system has been designed to ensure that the velocity of gases through these filters enables sufficient residence time this system has been designed to have 0.4s residence time. The canopy extraction velocity rate would 0.5 m/s.

Odour Filtration Selection / Risk Assessment

Assessment and risk of odour and filtration techniques have been assessed against Defra "Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems"

Risk Assessment

Dispersion:	20
Proximity of receptors:	10
Size of kitchen:	3
Cooking type (odour and grease loading):	7
Total:	**40**

The extract air would disperse at ground level based on the score level of 40 it is considered that the level of odour abatement required would be high therefore a pre filter fine filter and carbon filter is sufficient.
The odour control is in accordance with NETCEN page vi which consists of Pre filter, fine filter and carbon filter.
The above odour control selection fulfills the requirements of the guidelines were a high level of odour control filtration is required.

Pleated Panel Filter

This filter will be installed in the ductwork within the filter housing this will be a disposable pleated panel filter located within the ductwork. The filter will be in-line but prior to the odour control/filtration, in the same filtration housing. The secondary filter shall be replaced every 3 months, however this could be done earlier depending on the volume of cooking.

Fine Filter

This filter will be installed in the ductwork within the filter housing before the odour control/filtration the filter would be constructed of fibre glass and be used to remove any smaller particles

Odour Control Filtration (Carbon Filter)

Discarb Unit Activated multi carb filters will be installed after the fine filter.
Activated-carbon filters absorbs gaseous odours, usually volatile organic compounds, onto the filter medium. They take the form of a panel having a 3-stage system of activated carbon frames contained within a single module, the carbon filter will have a dwell time of 0.4s. It is imperative that all grease is removed by the preceding grease filtration as grease contamination will reduce the life of the filters and increasing cost.
Activated carbon filters shall be checked every 3 months prior to replacement.
All secondary/final grease and activated carbon filtration will be located at a sufficient distance along the duct run, to prevent the heat from the cooking reducing the efficiency of the filtration. The filter housing has been designed to ensure ease of access for maintenance and to provide a good seal around the filters to prevent gases bypassing the filters, rendering them ineffective.
The internal surfaces of the filter housing shall be cleaned monthly.
The gaseous flow rates, through the filters, shall be matched to the respective retention time of each filter to achieve optimum efficiency of the filters. It is critical to achieve optimum efficiency to effectively remove grease and odour and to prevent breakthrough of grease and odour, by too great a flow.

Extraction Motor / Fan

The extraction motor has been correctly rated for the application and at the correct speed/flow rate to achieve optimum performance of the filtration. The shall be Helios Multiflow 500dia The extraction fan shall be mounted on Anti – Vibration component and the extraction motor will be cleaned and maintained in accordance with the manufactures specifications. The motor controller shall be located in the kitchen and be of, two speed or variable speed design, adjusted so that the speed settings correlate to and achieve the optimum flow rates of the odour control system.

Noise Control / Attenuator

Noise control shall be implemented; attenuator will be installed after fan installation as per schematic. The attenuation will be of pod type supplied by London Fans.

Noise Level Assessment

British Standard 8233:1999 'Sound insulation and noise reduction for buildings – Code of Practice' gives recommendations for acceptable internal noise levels in residential properties. Assuming worst case conditions, of the closest window being for a bedroom, BS8233:1999 recommends 30-35dB(A) as being 'Good' to 'Reasonable' internal resting/sleeping conditions. With external levels of 40dB(A) at this window, the window itself would need to provide 10dB attenuation to achieve 'Good' conditions. However, according to BS8233:1999, a partially open window offers between 10-15dB attenuation.

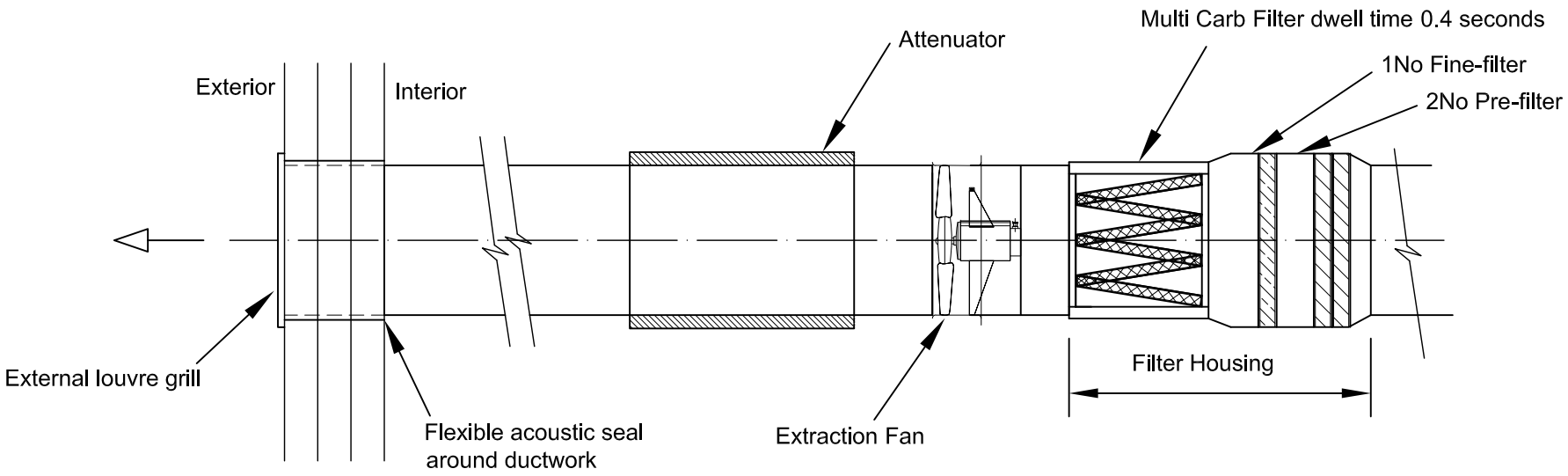
The design has taken into consideration that the noise level from the extract fan/ductwork should not exceed 40dB at the closest receptor between 11pm – 7am. Therefore our target level would be 40dB @ to the external sensitive point. The closest receptor would be the first floor window of the above the building which is 15m from the extraction fan and set back from the extraction Louvre. We have calculated the sound pressure level at 15m from the fan which well below the requirements, the levels would be 19.4 dB(A) to the closest receptor.

Extract Fan Details

We propose to use MFW 500/4 extract fan, Sound levels provided by manufacturer as The calculations (enclosed next page) predict a sound level of below 36.9dB @6m when installed with attenuation which is considered satisfactory.

Final Termination

The final discharge will be through the rear wall with no restriction to final opening. Duct termination has been designed to achieve a vertical efflux velocity of at least 8 metres per second (m/s).



Notes:

1. For component details refer to specification.
2. Length and position may vary slightly due to site conditions.
3. The filters and flue will be maintained every 3 months by a specialist.
4. Anti-vibration component will be installed on the fan.
5. Internal canopy grease filters etc will be maintained by user.
6. Ductwork to include sump at bends

client	
project	12b Hillhouse Lane Huddersfield HD1 6EF
title	Extraction flue component schematic

Information Only

rev	amendments	scale: NTS	drawing no

Sound Pressure Level at 6m from extraction Fan

Source Noise Levels

Octave band centre frequency	31.5	63	125	250	500	1k	2k	4k	8k	Hz
Sound Power Level (PWL, Lw)		76	76	82	79	79	77	73	67	dB
Reduction by silencing equipment		-4	-10	-16	-26	-29	-29	-29	-20	dB

Immission Point (listener)

Distance from Source 6m

CALCULATION RESULTS

Sound spectra and overall levels	31.5	63	125	250	500	1k	2k	4k	8k	Hz	Overall levels
Source levels											
Sound Power Level (PWL)	0	76	76	82	79	79	77	73	67	**86.7 dB**	**83.7 dB(A)**
Silencing measures	0	4	10	16	26	29	29	29	20		
Silenced Sound Power Level (PWL)	0	72	66	66	53	50	48	44	47	**73.8 dB**	**60.1 dB(A)**
Attenuation											
Attenuation by distance of 6 m	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6		
Attenuation by atmosperical absorption	0	0	0	0	0	0.1	0.2	0.4	0.1		
Immission (listener's) point											
Sound Pressure Level (SPL, Lp)		45.4	39.4	39.4	26.4	23.4	21.4	17.3	20.2	**47.3 dB**	
A - weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	1.2	1	-1.1		
A - weighted SPLA, LpA		**19.2**	**23.3**	**30.8**	**23.2**	**23.4**	**22.6**	**18.3**	**19.1**		**33.6 dB(A)**

Baffle Filter
Model GFBE

GENERAL DESCRIPTION

These filters are designed for use in commercial kitchens and ventilation from food preparation areas where their primary function is to reduce flame from travelling from the cooking area up into the extract duct.

Construction

These filters are manufactured by rolling stainless steel to create a series of baffle plates which are welded onto a sub frame. The sub frame is then wrapped with the outer frame.

Features

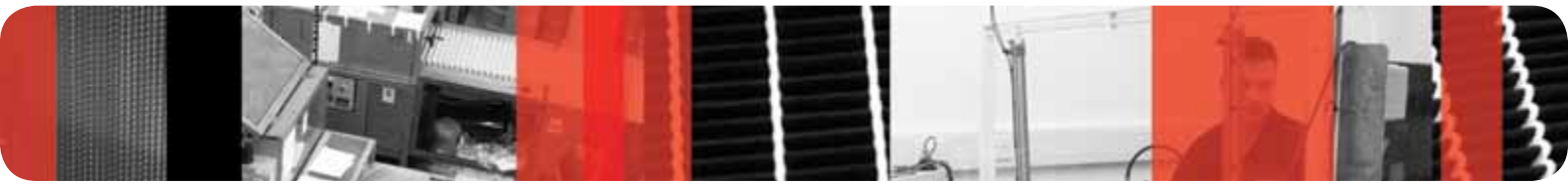
- Strong Double frame construction
- Scratch Free outer surface
- Bright Polished Surface
- Fold down handles
- Drain Holes
- Rolled Safety Edges
- Low Price
- Ex-Stock Delivery

Frame Material

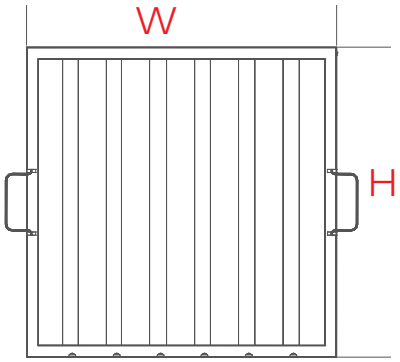
- Stainless Steel to Specification BS1449(2)
- Bright Polished Surface

Designed in Britain, Made in Britain

GFBE Baffle Filter STANDARD SIZES



Jasun Envirocare always specify filters as Height (H) x Width (W) This is particularly important with baffle filters because the handles will always go on the H edge, the blades will always run along the H edge, and the drain holes will always be in the W edge



Part No.	Nominal Size Inches	Height (mm)	Width (mm)	Depth (mm)	Minimum Airflow m³/hr	Recommended Airflow m³/hr	Maximum Airflow m³/hr
GFBE-1020	10 x 20 x 2	241	495	45	490	558	644
GFBE-1212	12 x 12 x 2	292	292	45	350	399	460
GFBE-1216	12 x 16 x 2	292	394	45	472	538	621
GFBE-1224	12 x 24 x 2	292	594	45	712	812	937
GFBE-1616	16 x 16 x 2	394	394	45	637	727	838
GFBE-1620	16 x 20 x 2	394	495	45	800	913	1053
GFBE-1625	16 x 25 x 2	394	622	45	1006	1147	1323
GFBE-1818	18 x 18 x 2	445	445	45	813	927	1069
GFBE-2010	20 x 10 x 2	495	241	45	490	558	644
GFBE-2016	20 x 16 x 2	495	394	45	800	913	1053
GFBE-2020	20 x 20 x 2	495	495	45	1006	1147	1323
GFBE-2025	20 x 25 x 2	495	622	45	1264	1441	1663
GFBE-2424	24 x 24 x 2	597	597	45	1463	1668	1925

Pressure Drop	
Minimum	57Pa
Recommended	76Pa
Maximum	100Pa
Final Recommended Pressure Drop	

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Manufacturing Air Filters in the UK for Over 40 Years

V Line Pleated Panel Filter Economy Standard

JASUN ENVIROCARE PLC

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.

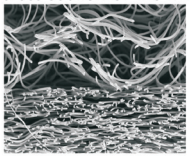
Kimberley Clark Patented Intrepid Media

- 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

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

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

Hi Magnification photo showing the cross section of the Intrepid media

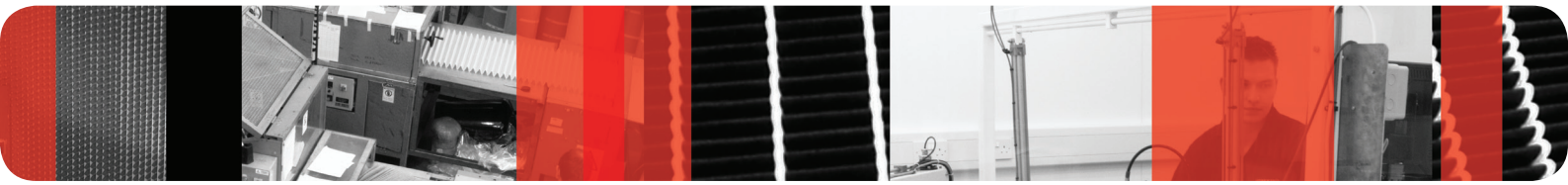


FM 29257
BS EN ISO 9001:2008

EMS 81914
BS EN ISO 14001:2004

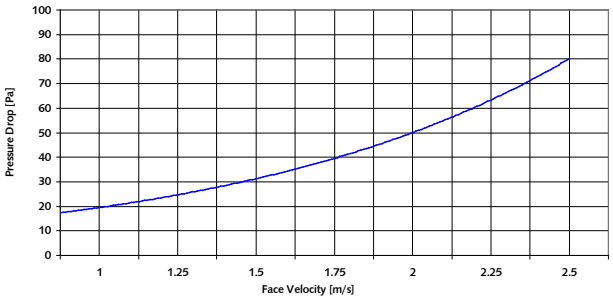
Issue Date 17 September 2012 9:36 AM

V Line Panel Filter (VL) STANDARD SIZES



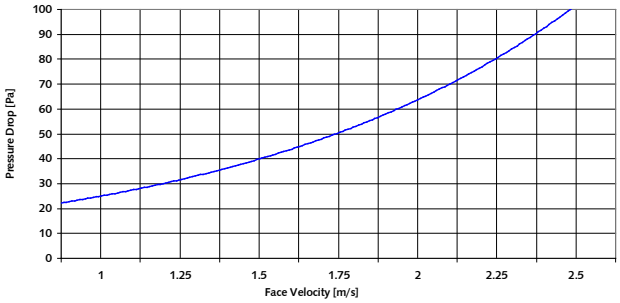
No.	Nominal Size Inches	Height (mm)	Width (mm)	Depth (mm)	Rated Airflow m^3/hr
VL4-1010	10x10x4	241	241	95	544
VL4-1020	10x20x4	241	495	95	1117
VL4-1212	12x12x4	292	292	95	798
VL4-1224	12x24x4	292	594	95	1623
VL4-1515	15x15x4	368	368	95	1268
VL4-1520	15x20x4	368	495	95	1705
VL4-1616	16x16x4	394	394	95	1453
VL4-1620	16x20x4	394	495	95	1825
VL4-1625	16x25x4	394	622	95	2294
VL4-1818	18x18x4	445	445	95	1854
VL4-1831	18x31x4	445	775	95	3228
VL4-2020	20x20x4	495	495	95	2293
VL4-2024	20x24x4	495	594	95	2752
VL4-2025	20x25x4	495	622	95	2882
VL4-2424	24x24x4	594	594	95	3303

Pressure Drop vs/ Face Velocity
V Line VL4 Panel Filter 95mm Thick



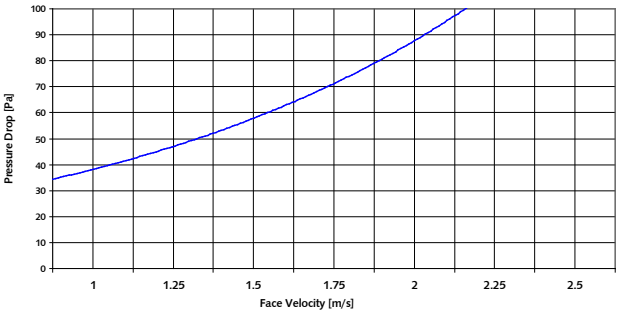
No.	Nominal Size Inches	Height (mm)	Width (mm)	Depth (mm)	Rated Airflow m^3/hr
VL2-1010	10x10x2	241	241	45	418
VL2-1020	10x20x2	241	495	45	859
VL2-1212	12x12x2	292	292	45	614
VL2-1224	12x24x2	292	594	45	1249
VL2-1515	15x15x2	368	368	45	975
VL2-1520	15x20x2	368	495	45	1312
VL2-1619	16x19x2	394	470	45	1333
VL2-1620	16x20x2	394	495	45	1404
VL2-1624	16x24x2	394	594	45	1685
VL2-1625	16x25x2	394	622	45	1764
VL2-1818	18x18x2	445	445	45	1426
VL2-1820	18x20x2	445	495	45	1586
VL2-1824	18x24x2	445	594	45	1903
VL2-2020	20x20x2	495	495	45	1764
VL2-2024	20x24x2	495	594	45	2117
VL2-2025	20x25x2	495	622	45	2217
VL2-2424	24x24x2	594	594	45	2540

Pressure Drop vs/ Face Velocity
V Line VL2 Panel Filter 45mm Thick



No.	Nominal Size Inches	Height (mm)	Width (mm)	Depth (mm)	Rated Airflow m^3/hr
VL1-1010	10x10x1	241	241	20	314
VL1-1020	10x20x1	241	495	20	644
VL1-1212	12x12x1	292	292	20	460
VL1-1224	12x24x1	292	594	20	937
VL1-1515	15x15x1	368	368	20	731
VL1-1520	15x20x1	368	495	20	984
VL1-1619	16x19x1	394	470	20	1000
VL1-1620	16x20x1	394	495	20	1053
VL1-1624	16x24x1	394	594	20	1264
VL1-1625	16x25x1	394	622	20	1323
VL1-1818	18x18x1	445	445	20	1069
VL1-1820	18x20x1	445	495	20	1189
VL1-1824	18x24x1	445	594	20	1427
VL1-2020	20x20x1	495	495	20	1323
VL1-2024	20x24x1	495	594	20	1588
VL1-2025	20x25x1	495	622	20	1663
VL1-2424	24x24x1	594	594	20	1905

Pressure Drop vs/ Face Velocity
Vline VL1 Panel Filter 20mm Thick



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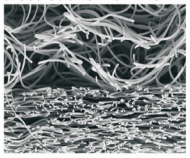
Particle Size Rang(mm)	Initial Fractional Efficiency(%)	
	V Line Intrepid	The "best" Cotton Poly Alternative
0.3-0.4	7	2
0.4-0.55	15	6
0.55-0.7	28	11
0.7-1.0	41	19
1.0-1.3	52	24
1.3-1.6	58	28
1.6-2.2	63	32
2.2-3.0	67	36
3.0-4.0	70	37
4.0-5.5	71	38
5.5-7.0	72	38
7.0-10.0	73	39

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

Hi Magnification photo showing the cross section of the Intrepid media



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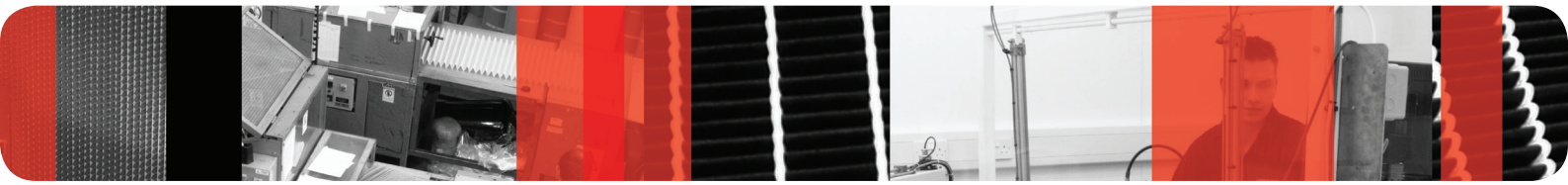
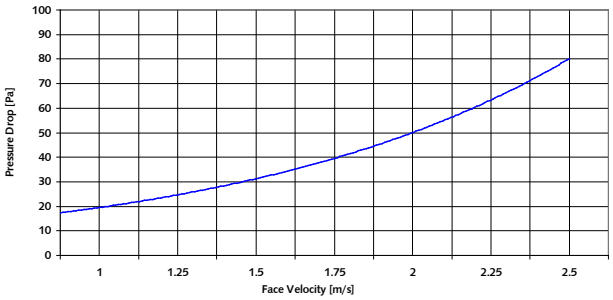
V Line Panel Filter (VL) STANDARD SIZES



No.	Nominal Size Inches	Height (mm)	Width (mm)	Depth (mm)	Rated Airflow m³/hr
VL4-1010	10x10x4	241	241	95	544
VL4-1020	10x20x4	241	495	95	1117
VL4-1212	12x12x4	292	292	95	798
VL4-1224	12x24x4	292	594	95	1623
VL4-1515	15x15x4	368	368	95	1268
VL4-1520	15x20x4	368	495	95	1705
VL4-1616	16x16x4	394	394	95	1453
VL4-1620	16x20x4	394	495	95	1825
VL4-1625	16x25x4	394	622	95	2294
VL4-1818	18x18x4	445	445	95	1854
VL4-1831	18x31x4	445	775	95	3228
VL4-2020	20x20x4	495	495	95	2293
VL4-2024	20x24x4	495	594	95	2752
VL4-2025	20x25x4	495	622	95	2882
VL4-2424	24x24x4	594	594	95	3303

Pressure Drop vs/ Face Velocity
V Line VL4 Panel Filter 95mm Thick



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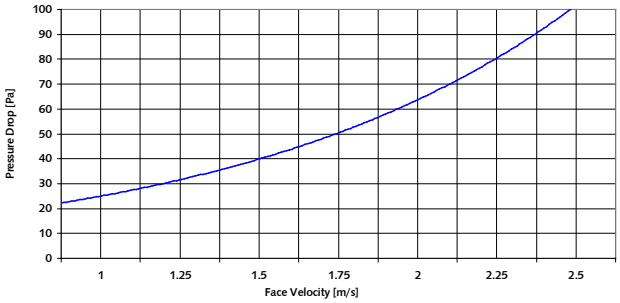
VL2-1212	12x12x2	292	292	45	614
VL2-1224	12x24x2	292	594	45	1249
VL2-1515	15x15x2	368	368	45	975
VL2-1520	15x20x2	368	495	45	1312
VL2-1619	16x19x2	394	470	45	1333
VL2-1620	16x20x2	394	495	45	1404
VL2-1624	16x24x2	394	594	45	1685
VL2-1625	16x25x2	394	622	45	1764
VL2-1818	18x18x2	445	445	45	1426
VL2-1820	18x20x2	445	495	45	1586
VL2-1824	18x24x2	445	594	45	1903
VL2-2020	20x20x2	495	495	45	1764
VL2-2024	20x24x2	495	594	45	2117
VL2-2025	20x25x2	495	622	45	2217
VL2-2424	24x24x2	594	594	45	2540

Pressure Drop vs/ Face Velocity
V Line VL2 Panel Filter 45mm Thick



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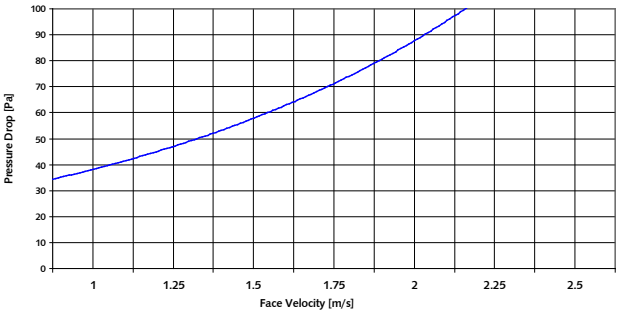
VL1-1010	10x10x1	241	241	20	314
VL1-1020	10x20x1	241	495	20	644
VL1-1212	12x12x1	292	292	20	460
VL1-1224	12x24x1	292	594	20	937
VL1-1515	15x15x1	368	368	20	731
VL1-1520	15x20x1	368	495	20	984
VL1-1619	16x19x1	394	470	20	1000
VL1-1620	16x20x1	394	495	20	1053
VL1-1624	16x24x1	394	594	20	1264
VL1-1625	16x25x1	394	622	20	1323
VL1-1818	18x18x1	445	445	20	1069
VL1-1820	18x20x1	445	495	20	1189
VL1-1824	18x24x1	445	594	20	1427
VL1-2020	20x20x1	495	495	20	1323
VL1-2024	20x24x1	495	594	20	1588
VL1-2025	20x25x1	495	622	20	1663
VL1-2424	24x24x1	594	594	20	1905

Pressure Drop vs/ Face Velocity
Vline VL1 Panel Filter 20mm Thick



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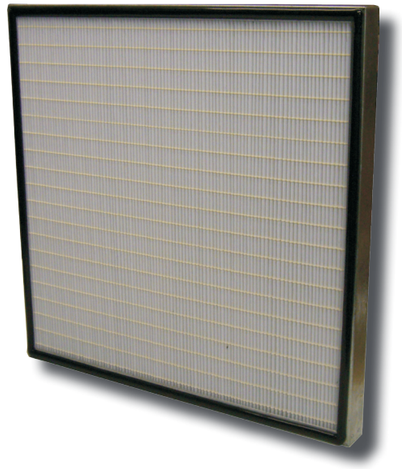
Manufacturing Air Filters in the UK for Over 40 Years

UltimaPleat Panel Filters

Product Description

UltimaPleat Filters are a range of fine minipleat filters which range from Grades F6 to F9.



Features

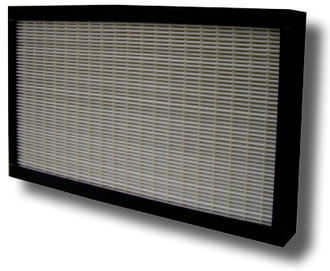
Due to the minipleat construction these filters are COMPACT. Made from glass fibre media these filters will meet the new EN779:2012 test standard

Frame

These filters sealed into either galvanised or plastic frames using a polyurethane seal

- Galvanised frames 20mm, 45mm and 95mm deep
- Plastic frames at 48mm and 96mm Deep

Face seals or grills are available as optional extras on request.



Filter Thickness Model UltimaPleat	Rated Airflow	Initial Pressure Drop Efficiency to EN779:2012 F6
25mm	1.25m/sec	48Pa
45mm	2.0m/sec	65Pa
95mm	2.3m/sec	80Pa

Model UltimaPleat	Efficiency to EN779:2012 F7	
25mm	1.25m/sec	74Pa
45mm	2.0m/sec	102Pa
95mm	2.5m/sec	123Pa

Model UltimaPleat	Efficiency to EN779:2012 F8	
25mm	1.25m/sec	106Pa
45mm	2.0m/sec	146Pa
95mm	2.3m/sec	160Pa

Model UltimaPleat	Efficiency to EN779:2012 F9	
25mm	1.25m/sec	250Pa
45mm	2.0m/sec	250Pa
95mm	2.5m/sec	250Pa

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Ultimapleat - Standard sizes and capacities

Model Number	Type	Height mm	Width mm	Depth mm	Capacity m^3/hr
UP[__]11212	UltimaPleat[__] 12x12x1	292	292	25	384
UP[__]11224	UltimaPleat[__] 12x24x1	594	287	25	767
UP[__]11620	UltimaPleat[__] 16x20x1	394	495	25	878
UP[__]11625	UltimaPleat[__] 16x25x1	394	622	25	1103
UP[__]12020	UltimaPleat[__] 20x20x1	495	495	25	1103
UP[__]12024	UltimaPleat[__] 20x24x1	594	495	25	1323
UP[__]12025	UltimaPleat[__] 20x25x1	495	622	25	1386
UP[__]12424	UltimaPleat[__] 24x24x1	594	594	25	1588
UP[__]21212	UltimaPleat[__] 12x12x2	292	292	45	614
UP[__]21224	UltimaPleat[__] 12x24x2	594	287	45	1227
UP[__]21620	UltimaPleat[__] 16x20x2	394	495	45	1404
UP[__]21625	UltimaPleat[__] 16x25x2	394	622	45	1764
UP[__]22020	UltimaPleat[__] 20x20x2	495	495	45	1764
UP[__]22024	UltimaPleat[__] 20x24x2	594	495	45	2117
UP[__]22025	UltimaPleat[__] 20x25x2	495	622	45	2217
UP[__]22424	UltimaPleat[__] 24x24x2	594	594	45	2540
UP[__]41212	UltimaPleat[__] 12x12x4	292	292	95	767
UP[__]41224	UltimaPleat[__] 12x24x4	594	287	95	1534
UP[__]41620	UltimaPleat[__] 16x20x4	394	495	95	1755
UP[__]41625	UltimaPleat[__] 16x25x4	394	622	95	2206
UP[__]42020	UltimaPleat[__] 20x20x4	495	495	95	2205
UP[__]42024	UltimaPleat[__] 20x24x4	594	495	95	2646
UP[__]42025	UltimaPleat[__] 20x25x4	495	622	95	2771
UP[__]42424	UltimaPleat[__] 24x24x4	594	594	95	3176

When specifying a filter use the insert the grade i.e. 6 for F6 where the brackets show. E.g. UP641212 for an F6 Grade Neatpleat 292x292x95mm
If a plastic frame is required insert a letter C before the grade, for example UPC62424. Please note plastic frames are only available in 48mm and 96mm widths.

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Telephone 023 9264 4700 Fax 023 9264 4677 Email service@jfilters.com

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ISSUE 06/01/14

Multicarb Activated Carbon Discarb Units

JASUN ENVIROCARE PLC

General Description

These filters are manufactured for ease of installation and incorporation into ducted air systems. They can be used on both supply for purifying incoming air, and can be used on the extract to remove toxic gasses and odours generated within a process.

Construction

These modules are manufactured by mounting a series on carbon panel filters with a sealed case. The airflow is epitomize by presenting the filtering surfaces in a “V” formation.

Each carbon panel is sealed into the filter case so as to ensure no air can bypass the carbon granules.

The panels are manufactured using long established bonding techniques which hold the activated carbon granules in a rigid biscuit. The biscuit is encapsulated in a carbon impregnated cloth which prevents any leakage of granules or powder.

The unique bonding method used by Jasun Envirocare ensures that, unlike our competitors filters, that the panels will remain intact and rigid even if wet.

Typical Applications

- Reduction of Cooking Odours
- Removal of Kerosene Exhaust Fumes
- General Odour Reduction
- Neutralisation of Ammonia and its Derivatives
- Removal of Formaldehyde
- Removal of Airborne Pollutants and Contaminants
- Removal of Acid Gases (H_2S, SO_2, NOX, HCl)

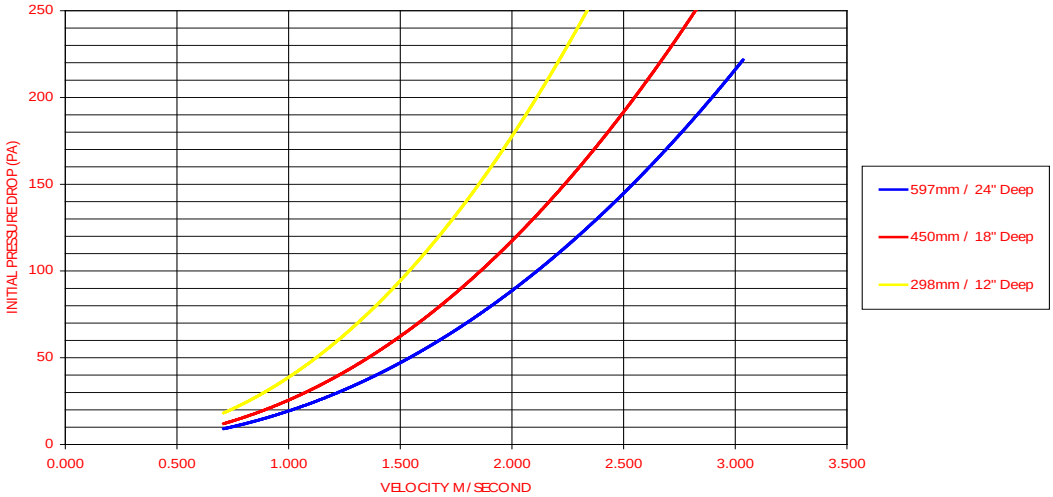
Please check with our sales department when specifying carbon filters as most applications require a bespoke solution specifically tailored for the job in hand.

Designed in Britain, Made in Britain

Multicarb Cells STANDARD SIZES

No.	Nominal Size (Inches)	Height (mm)	Width (mm)	Depth (mm)	Weight of Carbon (Kg)	Cell Weight	Capacity @ 0.1 Second Dwell Time
DC-CF1	24 x 24 x 8	594	594	197	10	22	800
DC-CF1-HALF	24 x 12 x 8	594	291	197	5	11	400
DC242412/8	24 x 24 x 12	594	594	292	13	24	990
DC121212	12 x 12 x 12	297	297	297	6	12	450
DC181812	18 x 18 x 12	445	445	297	13	25	990
DC241212	24 x 12 x 12	594	297	297	13	25	990
DC242412	24 x 24 x 12	594	594	297	25	36	1900
DC-CF2	24 x 24 x 16	594	594	397	18	34	1370
DC-CF2-HALF	24 x 12 x 16	594	291	397	9	18	685
DC-WA15-208	24 x 6 x 18	144	600	440	7	13	533
DC121218	12 x 12 x 18	292	292	451	10	15	761
DC181818	18 x 18 x 18	445	445	451	19	26	1445
DC241218	24 x 12 x 18	594	297	451	18	26	1369
DC242418	24 x 24 x 18	594	594	451	36	52	2740
DC121224	12 x 12 x 24	292	292	597	13	19	990
DC181824	18 x 18 x 24	445	445	597	25	36	1900
DC241224	24 x 12 x 24	594	297	597	25	36	1900
DC242424	24 x 24 x 24	594	594	597	50	61	3800

LINEAR VELOCITY M/SECOND V'S PRESSURE DROP
MULTICARB ACTIVATED CARBON CELLS



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Multiflow

Box centrifugal fans

MFW & MFD

Box centrifugal fans with multi option outlet.

– Choice of outlet by moving side panels.
– Simplified installation through outlet options.
– Fully speed controllable.
– Insulated panels reduce condensation.
– Thermal protection of motor.
– Compact motor design.

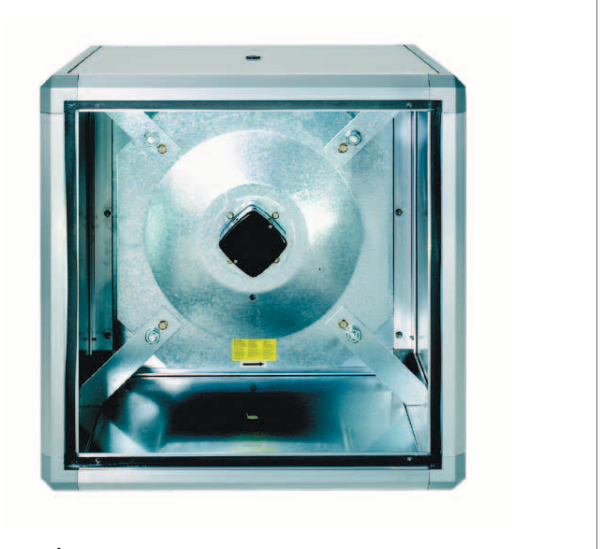
Helios

so refreshing

MFW & MFD

The front view

MFW & MFD



The rear view

Specification

☐ **Casing**
The unit frame is manufactured from extruded aluminium profile with polymer corners. The inlet panel is galvanised sheet steel with an integral spun inlet ring. The side panels are 20 mm double skinned galvanised sheet steel filled with a non-flammable fibreglass insulation providing noise and temperature insulation.
The side panels are removable and interchangeable so that discharge is possible in different directions.

☐ **Impeller**
All models have dynamically balanced backward curved centrifugal impellers for high efficiency and low noise levels. The blades are manufactured in plastic with galvanised support plates for sizes up to 450 mm and in aluminium for sizes 500 to 630. Each impeller together with its external rotor motor is statically and dynamically balanced to quality standard G 2.5 DIN ISO 19410.

☐ **Inlet cones**
The inlet cone is made of galvanised sheet steel.
The cone design has been optimised to achieve the best possible airflow and is an integral part of the inlet panel.

☐ **Motor**
External rotor motor with a die-cast aluminium casing, protected to IP 54. Thermal contacts for motor protection and radio suppression are fitted as standard. The ball bearings are sealed for life with a special lubricant to guarantee low noise and maintenance free operation.

☐ **Motor protection**
All models are fitted with thermal contacts, which should be connected to a suitable motor protection unit (see below). The automatic resetting thermal contacts can be used wired in series with the motor windings on single-phase units. These thermal contactors are simply designed to protect the motor from damage by overheating.

☐ **Electrical connection**
The rating plate shows the correct operating voltage range. The motor terminal box is fitted on the rear of the motor inside the unit. One side panel has a pre-drilled hole for the cable to pass through. This side panel can be positioned to suit the required side by exchanging it with any other panel.

☐ **Speed control**
All models are speed controllable with matched 5 step autotransformer speed controllers listed in the table below. All models can also be inverter controlled.

☐ **Temperatures**
Maximum ambient airflow operating temperatures are shown in the table below.

☐ **Installation**
Simple fan design for easy installation able to be installed at any angle or position with a choice of straight through or side outlet positions.

☐ **Guards**
The Multiflow units are designed for connection into ducted systems both up-stream and down-stream and therefore are not supplied with guards. If the moving parts of the unit are exposed then suitable protection guards must be fitted.

☐ **Dimensions**
All dimensions shown in the table are in millimetres.

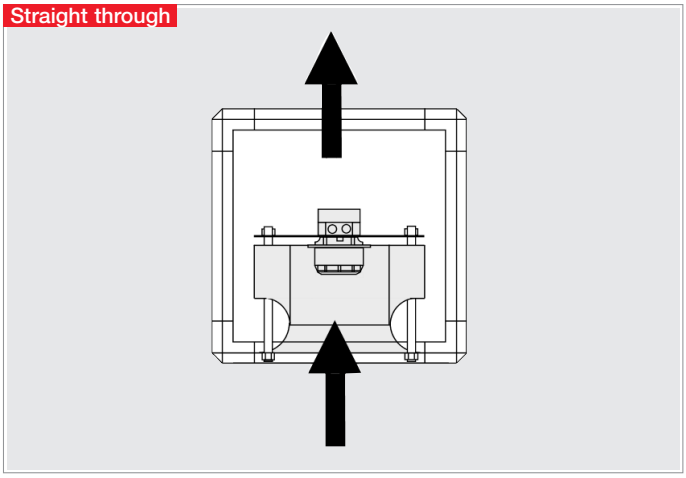
☐ **Air performance curves.**
The air performance curves have been produced using the inlet test chamber method in accordance with DIN 24163.

☐ **Sound levels**
The sound levels have been produced from tests in accordance with DIN 45653 part 38. The figures are 'A' scale weighted levels L_{WA} and are given for the mid performance position with correction values for high and low pressures. The sound spectrum figures are 'A' weighted.

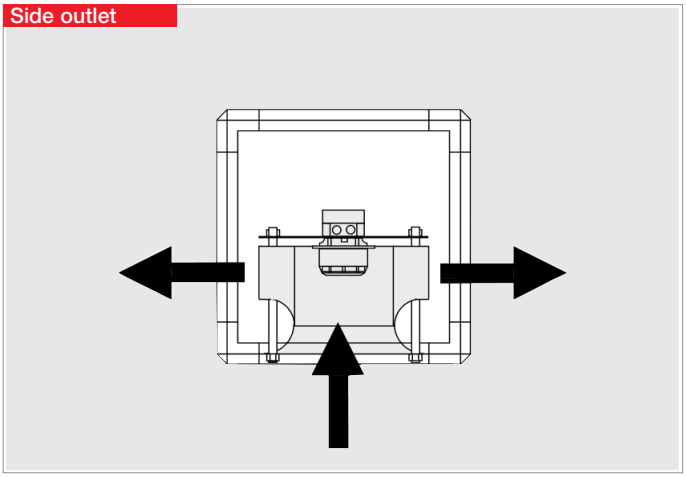
Technical data

Size	Model		Ref.	Number	Motor kW		Amps		Max. air	IP	5 Step transformer speed controller				Starter with full motor protection	
	Single phase	Three phase	No	of poles	230V	400V	230V	400V	flow temp.	rating	single phase		three phase			
mm					kW	kW	A	A	+°C		**Type**	Ref. No	**Type**	Ref. No	230V	400V
355	**MFW 355/4**	-	7864	4	0.33	0.33	1.50	0.70	45	IP54	**TSW 1.5**	1495	-	-	**MW**	-
400	**MFW 400/4**	-	7865	4	0.54	0.48	2.55	0.90	45	IP54	**TSW 3.0**	1496	-	-	**MW**	-
450	**MFW 450/4**	-	7866	4	0.76	0.71	3.50	1.40	45	IP54	**TSW 5.0**	1497	-	-	**MW**	-
500	**MFW 500/4**	-	7867	4	1.70	1.80	7.50	3.70	45	IP54	**TSW 7.5**	1596	-	-	**MW**	-
560	-	**MFD 560/4**	7868	4	-	2.50	-	4.80	40	IP54	-	-	**TSD 5.5**	1503	-	**MD**
630	-	**MFD 630/4**	7869	4	-	4.00	-	6.90	40	IP54	-	-	**TSD 7.0**	1504	-	**MD**

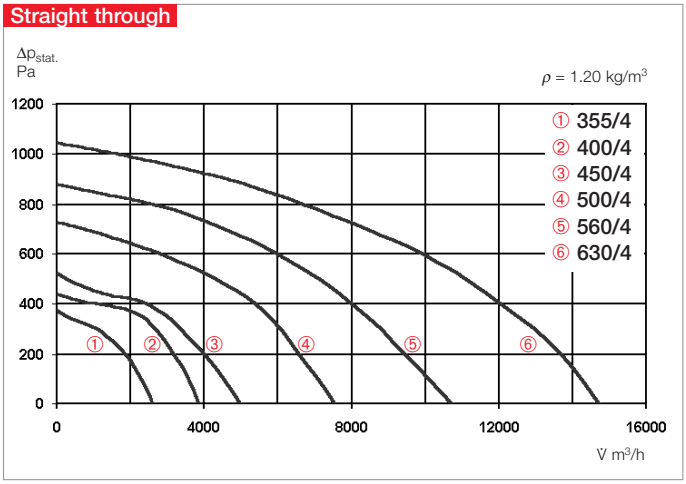
Straight through



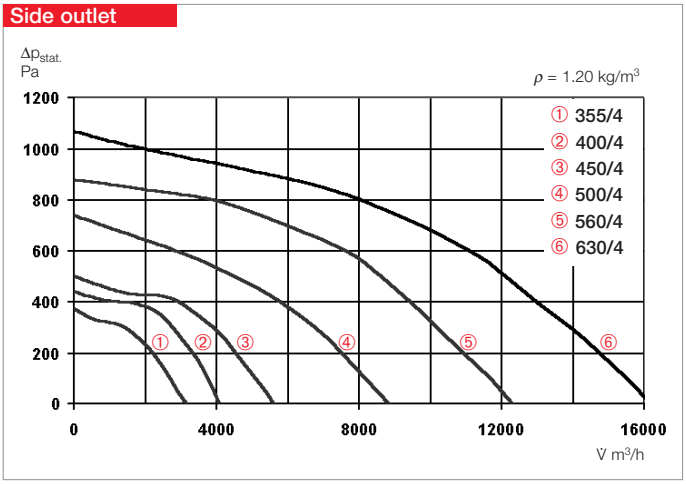
Side outlet



Straight through



Side outlet



Selection table

Straight through

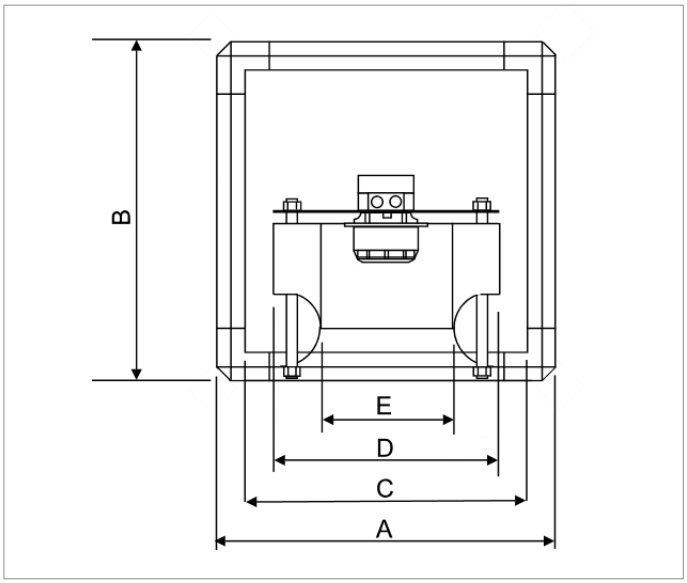
Size	Model	Electrical supply	Air volume flow m³/s against static pressure Pa												
mm			0	50	100	150	200	250	300	400	500	600	700	800	900
355	**MFW 355/4**	230 V/1ph /50 Hz	0.722	0.683	0.636	0.583	0.522	0.433	0.322						
400	**MFW 400/4**	230 V/1ph /50 Hz	1.069	1.036	0.992	0.944	0.886	0.822	0.747	0.333					
450	**MFW 450/4**	230 V/1ph /50 Hz	1.389	1.333	1.261	1.181	1.114	1.028	0.939	0.683					
500	**MFW 500/4**	230 V/1ph /50 Hz	2.097	2.042	1.967	1.903	1.833	1.767	1.694	1.500	1.208	0.792	0.222		
560	**MFD 560/4**	400 V/3ph /50 Hz	2.972	2.889	2.806	2.722	2.625	2.528	2.444	2.222	1.986	1.667	1.278	0.750	
630	**MFD 630/4**	400 V/3ph /50 Hz	4.083	4.028	3.958	3.889	3.806	3.708	3.611	3.347	3.083	2.764	2.347	1.875	1.306

Selection table

Side outlet

Size	Model	Electrical supply	Air volume flow m³/s against static pressure Pa												
mm			0	50	100	150	200	250	300	400	500	600	700	800	900
355	**MFW 355/4**	230 V/1ph /50 Hz	0.872	0.808	0.750	0.689	0.619	0.525	0.403						
400	**MFW 400/4**	230 V/1ph /50 Hz	1.130	1.089	1.036	0.986	0.928	0.856	0.775	0.444					
450	**MFW 450/4**	230 V/1ph /50 Hz	1.556	1.500	1.417	1.347	1.264	1.189	1.089	0.828					
500	**MFW 500/4**	230 V/1ph /50 Hz	2.458	2.364	2.272	2.194	2.089	1.986	1.883	1.611	1.261	0.789	0.242		
560	**MFD 560/4**	400 V/3ph /50 Hz	3.417	3.344	3.250	3.161	3.042	2.939	2.833	2.625	2.043	2.111	1.672	1.111	
630	**MFD 630/4**	400 V/3ph /50 Hz	4.500	4.389	4.292	4.208	4.097	3.972	3.875	3.611	3.361	3.083	2.722	2.250	1.514

Dimensions and weights



Type	Ref No.	Dimensions in mm A	B	C	D	E	kg
MFW 355/4	7864	500	500	420	365	224	33
MFW 400/4	7865	670	670	590	404	253	52
MFW 450/4	7866	670	670	590	454	286	58
MFW 500/4	7867	670	670	590	504	321	66
MFD 560/4	7868	800	800	720	570	361	95
MFD 630/4	7869	800	800	720	634	407	105

Sound levels

Inlet/ outlet	Model	Ref. No.	Sound power	Sound pressure level at 4 m	High pressure	Low pressure	Sound power level dB(A) 63	125	250	500	1000	2000	4000	8000
mm			dB(A)	dB(A)	add	add								
Nominal size 355														
Inlet	**MFW 355/4**	7864	66	46	-3	4	39	53	58	60	60	67	53	48
Outlet	**MFW 355/4**	7864	70	50	-3	4	43	58	61	63	65	62	53	48
Nominal size 400														
Inlet	**MFW 400/4**	7865	72	52	-2	3	45	60	64	66	66	63	59	53
Outlet	**MFW 400/4**	7865	76	56	-2	3	47	64	68	69	71	68	60	55
Nominal size 450														
Inlet	**MFW 450/4**	7866	74	54	-2	5	46	61	65	67	68	66	62	52
Outlet	**MFW 450/4**	7866	78	68	-2	5	49	58	70	71	73	70	63	53
Nominal size 500														
Inlet	**MFW 500/4**	7867	74	58	-2	4	55	61	66	66	70	69	61	54
Outlet	**MFW 500/4**	7867	82	62	-2	4	54	66	74	75	77	74	66	56
Nominal size 560														
Inlet	**MFD 560/4**	7868	82	62	-5	2	59	65	70	70	74	73	65	58
Outlet	**MFD 560/4**	7868	86	66	-5	2	58	70	78	79	81	78	70	60
Nominal size 630														
Inlet	**MFD 630/4**	7869	86	66	-1	4	63	69	74	74	79	78	70	61
Outlet	**MFD 630/4**	7869	90	70	-1	4	60	74	81	85	85	82	75	67

The sound levels are given for the mid pressure of the fans performance. The amount to add to all figures where high or low pressure selections are made are shown in the table above.

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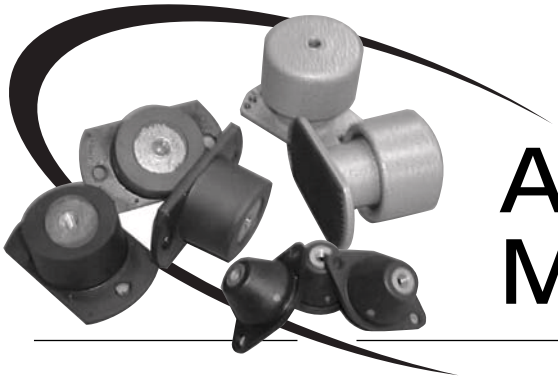


Anti Vibration Mounts (AV's)

Introduction

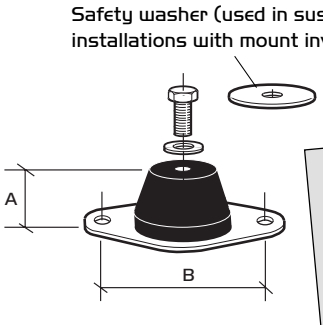
Anti-vibration mounting kits are available in both rubber and spring type, the correct selection and type employed will depend on the accurate calculation of the weight of the assembly to be supported.

Installation

AV mounts should not be fitted to a fan/silencer assembly unless there are flexible connectors fitted between the assmbly and associated duct work.

AV mounts should be installed with the matched mounting feet and positioned such that they carry an equal proportion of the assembly weight. This is particularly important where fans and silencers are installed on suspension rods.

Figure 1. **NAV 1 to NAV 5 (Resilient Rubber)**



AV mounts isolate the fan only. Silencers/backdraught dampers and other "significant mass" accessories should form part of the fixed ductwork after the flexible connection.

Figure 2. **NAV 6 (Resilient Rubber)**

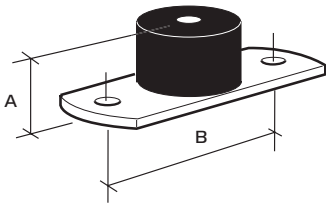
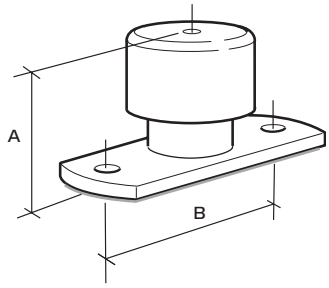


Figure 3. **NAV 49 to NAV 58 (Spring)**



AV mounts are maintenance free but a periodical inspection is recommended to check security of fixings and condition of rubbers and springs.

Resilient Mounting Details

Figure 4.

NAV 1 to NAV 5 shown in floor (Figure 4) and suspended configurations (Figure 5).

Fans using size NAV 6 upwards require supporting steelwork to be designed (by others) for suspended applications.

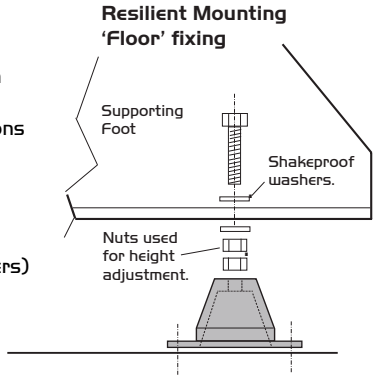
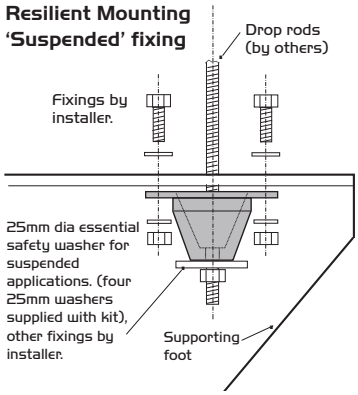


Figure 5.



Dimensions (mm) and Weights

Rubber Type

Code	A	B	Max. kg per kit
NAV1	30	50	20
NAV2	40	75	80
NAV3	40	75	180
NAV4	40	75	260
NAV5	40	75	130
NAV6	50	100	320

Spring Type

NAV49	77	76	400
NAV50	77	76	480
NAV51	77	76	520
NAV52	87	127	600
NAV53	87	127	700
NAV54	87	127	800
NAV55	87	127	950
NAV56	87	127	1110
NAV57	87	127	1270
NAV58	87	127	1430

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Leaflet Number 671224 October 2004

ATTENUATORS

Internal or External/Roof mounted

Cylindrical Silencers for the efficient reduction of airbourne noise.

RANGE

Size 250mm to 1250mm diameter. Standard lengths are:

1 x fan dia (1D) or 2 x fan dia (2D).

STRAIGHT THROUGH TYPE

Straight Through type without the centre pod reduce the fan noise with negligible effect to the fan performance.

POD TYPE

These have a centre pod for enhanced noise reduction. Our fan selection software will take account of the additional system resistance when selecting this product.

MOUNTING

All units are suitable for internal or external operation at any installed angle.

FLANGES

Internal flanges with threaded inserts match ISO fan sizes.

MELINEX LINING

For damp or grease laden air we can supply attenuators with this special lining. This will also contain any loose mineral fibres, making the units suitable for clean environments such as hospitals.

OPERATING TEMPERATURES

From -20°C to +200°C as standard; units for operation beyond these limits are also available for smoke extract applications.

SPECIAL UNITS

We can also supply attenuators with built in spigot for flexible duct connection or rectangular type. Please consult our sales team for any non standard requirements.

MATERIAL

Units are manufactured from galvanised steel with sealed seams. The inner lining is perforated galvanised steel enclosing mineral fibre slabs for sound absorption.

PRODUCT RANGE

- Long Cased Axial
- Bifurcated Axial
- Plate or Short Cased Axial
- Axial Impellers
- Smoke Extract
- Boxed Centrifugal
- Propeller
- Flameproof (Hazardous Area)
- Roof Mounted
- Portable

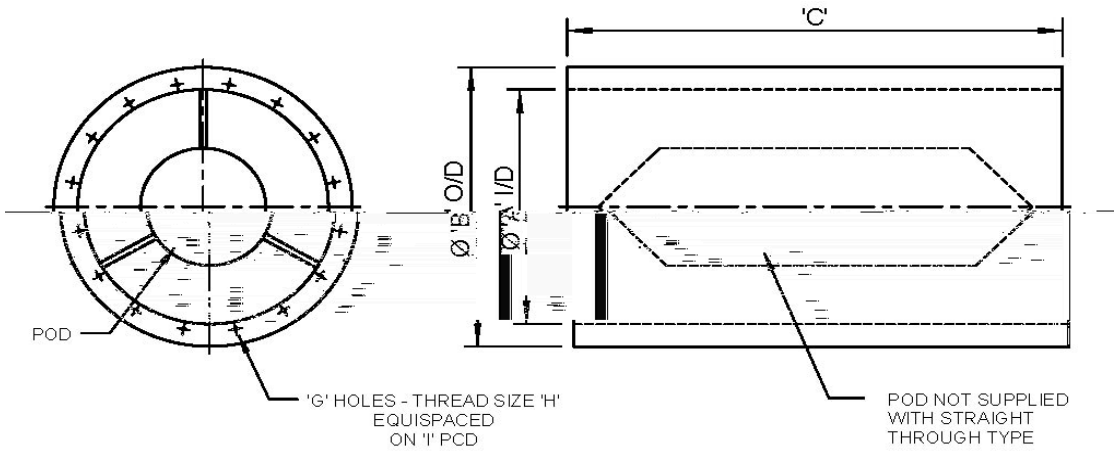
We can also design and manufacture fans to suit non standard or special applications.

the London Fan company

Attenuator insertion loss data

		Straight Through Type (no pod)								Pod Type							
Dia	Length	Octave band mid frequencies Hz								Octave band mid frequencies Hz							
mm	[x Dia]	63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k
250	1D	1	2	2	8	10	8	8	7	2	6	8	13	21	24	22	18
	2D	1	3	4	13	18	12	12	10	3	12	13	23	29	29	19	20
315	1D	1	2	4	9	11	10	9	7	2	7	8	14	22	25	22	19
	2D	2	2	5	13	18	12	11	10	3	13	14	23	30	30	20	25
355	1D	2	3	5	11	13	11	10	8	2	6	8	11	22	24	21	16
	2D	3	4	7	14	18	15	11	10	3	10	15	22	29	30	29	22
400	1D	2	3	5	10	13	11	9	8	2	7	9	15	23	25	21	17
	2D	3	4	8	14	18	14	11	9	3	10	14	24	30	29	28	21
450	1D	2	3	6	12	13	11	9	7	2	6	8	16	23	23	21	16
	2D	3	4	8	17	18	15	11	10	3	7	12	22	29	29	25	20
500	1D	2	3	6	14	14	12	10	5	2	7	9	17	24	24	20	16
	2D	3	7	8	19	20	17	14	11	4	10	16	26	29	29	29	20
560	1D	2	4	7	14	14	9	9	7	3	7	9	18	24	24	20	15
	2D	3	6	10	19	20	14	12	10	4	9	17	27	29	28	23	23
630	1D	2	5	7	15	13	9	9	8	3	5	9	18	25	22	18	13
	2D	4	7	13	21	21	14	13	12	5	9	18	28	30	29	24	19
710	1D	3	5	9	15	14	10	9	8	3	5	10	19	25	22	18	14
	2D	4	9	16	22	23	17	13	9	5	9	17	28	29	30	26	20
800	1D	3	5	9	16	14	10	8	8	4	5	10	15	25	22	19	14
	2D	4	6	10	21	23	17	12	10	5	8	18	29	30	29	27	19
900	1D	3	5	10	17	15	11	9	8	5	6	11	21	23	22	17	13
	2D	4	6	13	22	21	14	12	11	5	11	18	29	30	26	19	16
1000	1D	4	6	11	17	15	11	9	8	5	6	13	22	25	21	17	14
	2D	5	10	16	23	23	16	13	11	5	10	19	29	30	27	22	18
1250	1D									3	6	13	21	23	14	10	9
	2D									6	12	26	41	44	30	16	13

Refer to our Sales Office for data relating to Melinex lined attenuators.



Dimensions in mm

A	B	C	C	G	H	I	Approx Weight kg			
		1D	2D				1D	2D	1D Pod	2D Pod
250	320	250	500	4	M6	280	7	11	9	13
315	455	315	630	8	M6	355	9	15	11	17
400	540	400	800	8	M10	450	13	22	16	26
500	664	500	1000	12	M10	560	18	32	22	37
560	724	560	1120	12	M10	620	22	39	26	46
630	794	630	1260	12	M10	690	26	48	32	47
710	874	710	1420	16	M10	770	32	59	39	71
800	964	800	1600	16	M10	860	40	74	49	90
900	1064	900	1800	16	M12	970	55	102	67	123
1000	1190	1000	2000	16	M12	1070	66	124	82	151
1120	1310	1120	2240	20	M12	1190	137	220	156	253
1250	1440	1250	2500	20	M12	1320	165	334	192	380