

GO GO BAB LTD

NOISE AND ODOUR RISK ASSESSMENT

- REF: PP-13287813
- UNIT D THE COLONNADE, STATION ROAD, LETCHWORTH
GARDEN CITY, HERTFORDSHIRE, SG6 3AQ

I.I ODOUR - MITIGATION

Canopy dimensions	
Length (mm)	Depth (mm)
2000	1200

Odour control	Quantity	
Carbon filter	3	597 x 196 x 597 Carbon filter unit
Pre filter	1	Grade M5 to EN779 Pleated panel filter
Baffle filter	1	500 x 500 x 50 VEEVENT baffle filter

I.2 ODOUR - RISK ASSESSMENT

Criteria	Score	Score	Details
Dispersion	Very poor	20	Low level discharge, discharge into courtyard or restriction on stack.
	Poor	15	Not low level but below eaves, or discharge at below 10 m/s.
	Moderate	10	Discharging 1m above eaves at 10 -15 m/s.
	Good	5	Discharging 1m above ridge at 15 m/s.
Proximity of receptors	Close	10	Closest sensitive receptor less than 20m from Kitchen discharge.
	Medium	5	Closest sensitive receptor between 20 and 100m from kitchen discharge.
	Far	1	Closest sensitive receptor more than 100m from kitchen discharge.
Size of kitchen	Large	5	More than 100 covers or large sized take away.
	Medium	3	Between 30 and 100 covers or medium sized take away.
	Small	1	Less than 30 covers or small take away.
Cooking type (odour and grease loading)	Very high	10	Pub (high level of fried food), fried chicken, burgers or fish & chips. Turkish, Middle Eastern or any premises cooking with solid fuel
	High	7	Vietnamese, Thai, Indian, Japanese, Chinese, steakhouse
	Medium	4	Cantonese, Italian, French, Pizza (gas fired)
	Low	1	Most pubs (no fried food, mainly reheating and sandwiches etc), Tea rooms

- An Odour Risk Assessment was undertaken based on the EMAQ+ guidance
- Using the criteria in the table, the following score methodology is used as a means of assessing the potential for adverse odour impacts at sensitive receptors in the vicinity of the site
- Applicable criteria has been highlighted and the total score is calculated to be 25
- A total score of 25 will require high level odour control and therefore 'Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.2 - 0.4 second residence time).'
- Adequate filtration system is planned for the extraction system

Dispersion	Proximity of receptors	Size of kitchen	Cooking type	Total
15	5	1	4	25

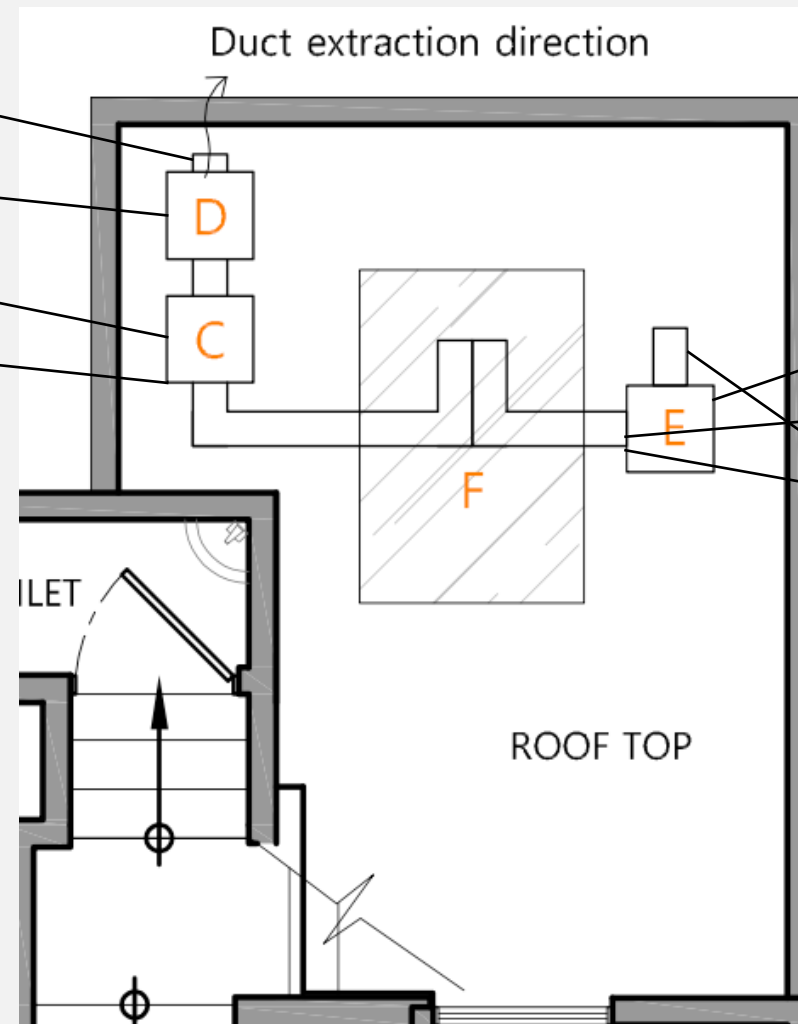
2.1 NOISE - RISK ASSESSMENT

- The new premises is a Korean takeaway serving Korean food
- It is a small takeaway and is expected to serve less than 30 covers
- Cooking will only require the following appliances. Stir fry is required for 5 menu items (no gas). Rest of the menu will not require stir-fry.
 - 6 zone open top induction hob
 - 2 electric steamers – rice cookers
- Opening hours 12:00 – 20:00, Monday – Saturday
- Extraction system is located at the rear elevation of the premises, directly above the kitchen area through the existing skylight.
- Both fans are proposed to be mounted on the first floor roof (red), and extraction discharged in the direction of the open courtyard. Existing extraction to the pub next door can also be seen.



2.2 NOISE - RISK ASSESSMENT

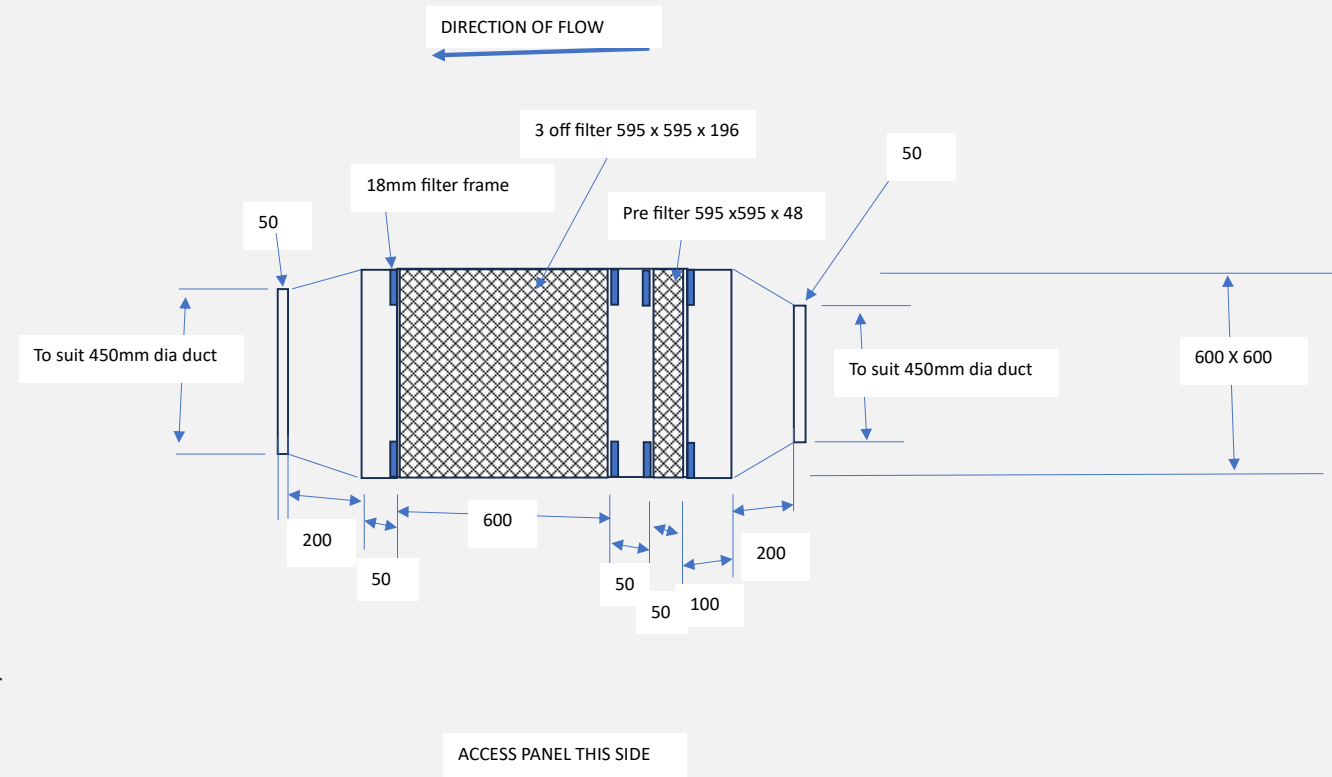
- Proposed supply air
 - 1 x ELTA 068-500-IDENP Attenuator
 - 1 x Helios GBW 500/4 fan
 - 3 x carbon filters (unit)
 - 1 x Pre filter
 - 8320 m3h
- We do not believe that a sound attenuator is required on the inlet side of the extraction fan, due to the attenuation properties of the odour reduction unit.
- However, if the sound engineer thinks it is necessary, we would propose using the same attenuator fitted to the inlet side of the extraction fan, before the odour reduction unit.



- Proposed supply air
 - 1 x Helios GBW 450/4 fan
 - 1 x Pre filter
 - 2 x ELTA 068-450-IDENP Attenuator
- Specifications attached in addition to:
 - Extract flexible duct connectors
 - Anti vibration mountings

2.3 NOISE - RISK ASSESSMENT

- Extraction hood
 - Wall mounted stainless steel extraction hood. The hood will measure 2,000mm long x 1,200mm deep and will be fitted with stainless steel baffle filters, a drain gully and a drain tray. The hood will be fitted to the rear external wall of the kitchen.
- Extraction ducting
 - Existing skylight to the flat roof of the kitchen to be removed and to replace the skylight with a flat, galvanised steel weatherproof cover. The cover will be fitted with two off galvanised steel duct spigots to suit two off 300mm x 300mm galvanised steel ducts.
 - Galvanised steel ducting will pass through the roof cover on to the roof area
 - Externally, the duct will turn horizontally 1.5 metre and will extend towards the rear of the kitchen roof.
- Extraction fan
 - A low noise acoustically clad extraction fan to be installed into the extraction ducting on the flat roof. Attenuator to be attached to the fan outlet and will be terminated with a bird mesh grille.
- Supply air ducting
 - A fresh air discharge grille will be fitted to the second duct opening on the flat roof upstand. Above the duct opening, galvanised steel duct will extend horizontally for 1 metre, directed towards the rear of the flat roof.
- Supply air fan
 - A low noise acoustically clad extraction fan to be installed into the ducting on the flat roof. Attenuator to be attached to the inlet and outlet of the fan and will be terminated with a bird mesh grille.
- Fan enclosure units **D** and **E** to measure 600 x 600 x 600
- To minimise mechanical noise transmission, the fan unit will be connected to the ducting with flexible duct connections and will also be mounted on anti-vibration mountings.
- Fan speed controller to be installed to allow user adjustment of the airflow to suit kitchen conditions. This will allow energy savings to be made.



Specifications of filter enclosure unit **C**

2.4 NOISE - RISK ASSESSMENT

Extraction fan

Helios GBW 500/4

GBW 500/4

Δp_{fa}
Pa

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Case breakout	dB(A)	67	64	63	53	52	50	46	40
L_{WA}	Intake	dB(A)	79	63	72	72	74	72	66	59
L_{WA}	Exhaust	dB(A)	83	72	75	76	78	75	71	67

$\rho = 1,20 \text{ kg/m}^3$

	Sound press. case breakout	Sound press. intake	Air flow volume $\dot{V} \text{ m}^3/\text{h}$ depending on static pressure												
Type GB	$L_{PA} \text{ dB(A)}$	$L_{PA} \text{ dB(A)}$	(ΔP_{fa}) in Pa												
	at 4 m	at 4 m	0	50	100	150	200	250	300	350	400	500	600	700	800
GBW 500/4	47	59	8320	8020	7740	7460	7180	6910	6630	6340	6030	5330	4340	370	

Type	Ref. no.	Air flow volume (FID)	R.P.M.	Sound press. case breakout	Motor power (nominal)	Current		Wiring diagram	Maximum air flow temperature		Weight (net) kg	5 step transformer controller with mot. protect. unit		without mot. protect. unit		Full motor protection unit using the thermal contacts	
						full load	speed controlled		Full load	controlled		Type	Ref. no.	Type	Ref. no.	Type	Ref. no.
		ṽ m³/h	min ⁻¹	dB(A) in 4 m	kW	A	A	No.	+°C	+°C	kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54																	
GBW 500/4	5517	8321	1401	47	1.50	6.70	9.60	865	65	55	61	MWS 10	1946	TSW 10	1498	MW ¹⁾	1579

2.5 NOISE - RISK ASSESSMENT

Supply fan

Helios GBW 450/4

GBW 450/4

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k	
Δp_{fa} Pa	L_{WA}	Case breakout	dB(A)	60	56	56	51	47	44	39	31
	L_{WA}	Intake	dB(A)	69	61	63	65	67	65	60	54
	L_{WA}	Exhaust	dB(A)	75	64	66	68	70	68	63	57

$\rho = 1,20 \text{ kg/m}^3$

	Sound press. case breakout	Sound press. intake	Air flow volume $\dot{V} \text{ m}^3/\text{h}$ depending on static pressure												
Type GB	$L_{PA} \text{ dB(A)}$	$L_{PA} \text{ dB(A)}$	$(\Delta P_{fa}) \text{ in Pa}$												
	at 4 m	at 4 m	0	50	100	150	200	250	300	350	400	500	600	700	800
GBW 450/4	40	49	4610	4400	4200	3990	3770	3530	3270	2970	2610				

Type	Ref. no.	Air flow volume (FID)	R.P.M.	Sound press. case breakout	Motor power (nominal)	Current		Wiring diagram	Maximum air flow temperature		Weight (net) kg	5 step transformer controller with mot. protect. unit		Full motor protection unit using the thermal contacts	
		$\dot{V} \text{ m}^3/\text{h}$	min^{-1}	dB(A) in 4 m	kW	full load	speed controlled	No.	Full load	controlled	kg	Type	Ref. no.	Type	Ref. no.
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54															
GBW 450/4	5515	4600	1380	40	0.66	2.90	4.0	864	45	45	49.0	MWS 5	1949	TSW 5,0	1497
														MW ¹⁾	1579



ACE Filtration

CLEAN AIR FOR ALL

TECHNICAL DATA SHEET: AF111 rev A

BAFFLE GREASE FILTER

TYPE VEEVENT

Construction

Outer frame: Rolled stainless steel section with safety edge. Drain holes in both top & bottom leading edge, allowing filters to be installed either way up.

Baffle plates: Rolled stainless steel section with safety edge.

Handles: Fitted as standard on short side.

Maintenance:

As the VEEVENT baffle filter is self draining, all that is required is to wash the filter occasionally in a mild detergent.

Standard sizes and technical data

DESIGN FACE VELOCITY IS 1.2 m/s

Nominal Size (w x h x d)	Actual Size (w x h x d)	Rated Airflow	Operating Pd
500x250x50	495 x 241 x 48	0.15 m ³ /s	90 Pa
500x400x50	495 x 394 x 48	0.24 m ³ /s	90 Pa
500x500x50	495 x 495 x 48	0.30 m ³ /s	90 Pa
450x450x50	445 x 445 x 48	0.24 m ³ /s	90 Pa
400x400x50	394 x 394 x 48	0.19 m ³ /s	90 Pa

Notes: To get good grease retention a slot velocity of between 4.5 and 5.5 m/s is recommended. Standard sizes only available.



ACE Filtration

CLEAN AIR FOR ALL

TECHNICAL DATA SHEET: AF101

DISPOSABLE PLEATED PANEL FILTERS

TYPE AP

Construction

Media: Non-woven fibres manufactured to give high dust holding capacity. The media is bonded to an expanded metal support grid.

Frame & Facia: Frame and facia are manufactured from AquaKote cardboard 490 g/m², with diamond lattice facia. Frames are glued together with grade J2013 adhesive.

Technical Data (based on 50mm panels)

Maximum Temperature: 100°C
Maximum Humidity: 80%
Rated Volume: Based on 2 m/s face velocity
Maximum Volume: 2.5 m/s face velocity
Initial Resistance: 40 Pa

Final Resistance: 250 Pa
BS EN 779 Classification: G4
ISO 16890 Classification: Coarse 65%

Standard Sizes & Rated Volumes

Nominal Size	Rated Volume		Initial Resistance	
	50mm	100mm	50mm	100mm
600 x 600	0.72 m ³ /s	1.44 m ³ /s	40 Pa	75 Pa
600 x 300	0.36 m ³ /s	0.72 m ³ /s	40 Pa	75 Pa
500 x 500	0.50 m ³ /s	0.76 m ³ /s	40 Pa	75 Pa

Servicing

Filters should be changed when the final resistance is reached. These filters are only as efficient as the installation. Please check that all holding frame seals are intact and replace as necessary.

Notes: Non-standard sizes are available. For specific performance data, please contact the Sales Office on 01474 325666

Activated Carbon Filters Metal Cased Discarb Cells

Applications

Activated Carbon Discarb Cells can be used for the reduction of odour or for gas control. Activated Carbon Discarb Cells offer a compact and convenient method to housing bonded carbon panels ready for mounting in a range of filter housings.

Typical applications for Airclean Activated Carbon Cells include Kitchen Extract Odour Control, Commercial Food Manufacture, Laboratory supply and extract systems, Office Air Supply, and VOC control.

Activated Carbon Discarbs offer a practical solution for controlling gases and odours in airflows from 0.1m³/s up to 10m³/s +.

Description

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.

Activated Carbon Discarb Filter 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.

Technical

Carbon Filters must be selected based on system duty airflows, and required contact times (dwell / residence). Contact times must be selected based on concentration and specific gases / odours that need to be removed.

The following tables on the next page offer selections for Activated Carbon Discarbs of all styles based on 0.1 second contact times.

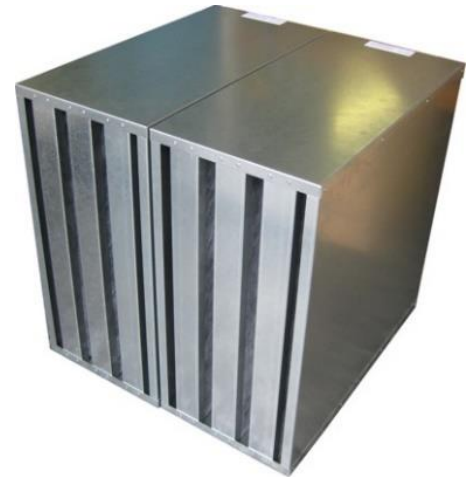
For 0.2 second contact times reduce the airflows in the 0.1 second tables by 50%, pressure drops will reduce to 50%.

For 0.3 second contact times reduce the airflows in the 0.1 second tables to 33.3%, pressure drops will reduce to 33.3%.

For 0.4 second contact times reduce the airflows in the 0.1 second tables to 25%, pressure drops will reduce to 25%.

Pre filtration of grade M5 to EN779 is recommended prior to Activated Carbon Filters to aid effective gas removal.

Max allowable air on conditions to the unit are 40 Degree Centigrade and 80% Relative Humidity, if these conditions are exceeded then the activated carbon filter will be ineffective.



ACTIVATED CARBON DISCARB FILTERS - STANDARD FLOW						
Dimensions (Actual, mm)			m³/s	Pa	Grade 20 – Std. Flow	Grade 50 – Std. Flow
H	W	D			Part No.	Part No.
293	293	293	0.10	75	1620101	1620121
293	293	445	0.15	95	1620102	1620122
293	293	597	0.22	140	1620103	1620123
445	445	293	0.21	55	1620104	1620124
445	445	445	0.31	70	1620105	1620125
445	445	597	0.41	105	1620106	1620126
597	597	293	0.41	70	1620107	1620127
597	597	445	0.61	90	1620108	1620128
597	597	597	0.81	130	1620109	1620129
597	293	597	0.40	130	1620110	1620130
597	196	597	0.27	130	1620111	1620131

ACTIVATED CARBON DISCARB FILTERS - EXTRA DUTY						
Dimensions (Actual, mm)			m³/s	Pa	Grade 20 – Extra Duty	Grade 50 – Extra Duty
H	W	D			Part No.	Part No.
293	293	293	0.13	125	1620201	1620221
293	293	445	0.20	175	1620202	1620222
293	293	597	0.27	250	1620203	1620223
445	445	293	0.30	95	1620204	1620224
445	445	445	0.41	125	1620205	1620225
445	445	597	0.54	185	1620206	1620226
597	597	293	0.54	125	1620207	1620227
597	597	445	0.80	150	1620208	1620228
597	597	597	1.06	225	1620209	1620229
597	293	597	0.53	225	1620210	1620230
597	196	597	0.35	225	1620211	1620231

Notes

- * Airflow rates are based on a 0.1 second contact time. (Indian & Thai Cuisine require minimum of 0.3s)
- * **Grade 20** 20 - 30% retention CTC. **Grade 50** 50 - 60% retention CTC.

Holding Frames and Cases

Holding frames and casings for Activated Carbon Filters are available singularly or in multiples, and can be manufactured to suit non-standard sizes and special applications.

See Catalogue Section 8 (AC8) and Section 11 (AC11) for full information.



Fully Welded Side Withdrawal Filter Housing (1840)



Kitchavent – Grease, Smoke and Odour Control for Kitchen Extract (1815)



FLANGED SILENCER

FLANGED SILENCER

Overview



Ideal for:

- bolting directly to fan flange
- all axial fans
- cross talk elimination
- flexible or spiral ducting

Overview

Elta Fans are able to provide 2 types of cylindrical silencers as standard; type DENP (without pod) and DEP (with pod), these are categorised as either compact silencers (ENP / EP) or standard silencers (ENP / EP / Melinex).

Construction

Both types are rigidly constructed in galvanised sheet steel, with a highly absorbent sound attenuating lining between the outer casing and the inner perforated steel lining. The end faces of the silencer has a series of threaded holes for direct mounting to the fixing flange / flexible collar. The EP (podded versions) will provide an improved level of attenuation. The inner acoustic pod is constructed from perforated steel sheet with a sound absorbent infill.

Melinex lined silencers must be used to prevent grease impregnation into the acoustic media for kitchen extract applications as prescribed in DW/172 HVAC Specification For Kitchen Ventilation Systems. For Melinex insertion losses, please contact Elta Fans. Silencers can be provided with differing lengths: 1D = 1 times diameter, 2D = 2 times diameter. The Velocity through podded silencer should not exceed 15m/s.

Silencer Attenuation

To determine the sound level of a fan fitted with a silencer, the dynamic insertion loss should be subtracted from the sound power level spectrum (dBW) of the fan. This should be done for the entire octave band mid-frequency spectrum. The fan dBW ratings and silencer attenuation apply equally to in duct applications, with a silencer connected between the fan and the duct system.

Dynamic Insertion Loss

The silencer attenuation is defined as the “dynamic insertion loss”. The values quoted in the tables represent the difference between the sound power level of a fan and silencer combination (dBW) and that of the fan alone (dBW). The dynamic insertion losses shown are the attenuations recorded under ideal working conditions. The achieved attenuation will vary according to the air velocity and flow pattern in the airways. Noise regeneration can occur at higher velocities, especially in EP silencers.

Square / Rectangular Silencers

In highly noise sensitive areas, where the circular silencers cannot achieve the necessary attenuation levels, Elta Fans can design and build optional splitter silencers for greater effect.

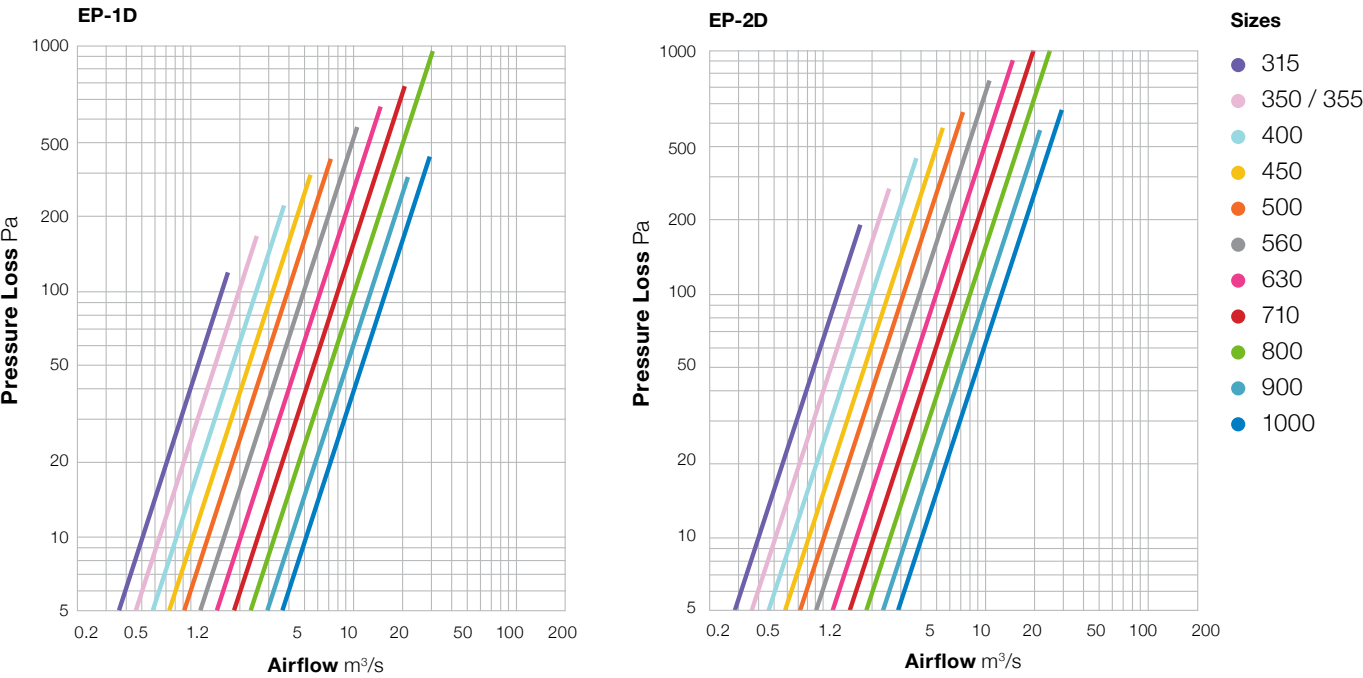
FLANGED SILENCER

Dynamic Insertion Loss & Pressure Graphs

Dynamic Insertion Loss

Fan Size	Silencer Length	Silencer Type	Insertion Loss @ Octave Band (Hz)							
			63	125	250	500	1k	2k	4k	8k
0250	1D	ENP	-2	-5	-6	-9	-13	-11	-6	-6
		EP	-4	-6	-8	-11	-14	-16	-11	-10
	2D	ENP	-4	-7	-10	-15	-19	-16	-12	-9
		EP	-7	-10	-15	-16	-15	-17	-13	-13
0315-0560	1D	ENP	-2	-5	-6	-9	-13	-11	-6	-6
		EP	-4	-6	-8	-11	-18	-19	-17	-14
	2D	ENP	-4	-8	-12	-17	-23	-17	-12	-10
		EP	-7	-10	-12	-21	-26	-26	-24	-22
0630-0800	1D	ENP	-3	-4	-9	-15	-15	-8	-7	-6
		EP	-4	-6	-8	-17	-23	-20	-18	-10
	2D	ENP	-6	-8	-13	-22	-22	-13	-12	-9
		EP	-8	-11	-16	-27	-32	-31	-29	-19
900-1000	1D	ENP	-3	-4	-9	-14	-13	-7	-7	-6
		EP	-4	-6	-11	-20	-18	-15	-13	-11
	2D	ENP	-6	-8	-13	-21	-18	-12	-11	-9
		EP	-8	-11	-18	-26	-27	-26	-22	-16

Podded Silencers Pressure Graphs



For Ø250 podded pressure losses, please contact Elta Fans.

FLANGED SILENCER

Dimensional Data

Compact Ø400-630

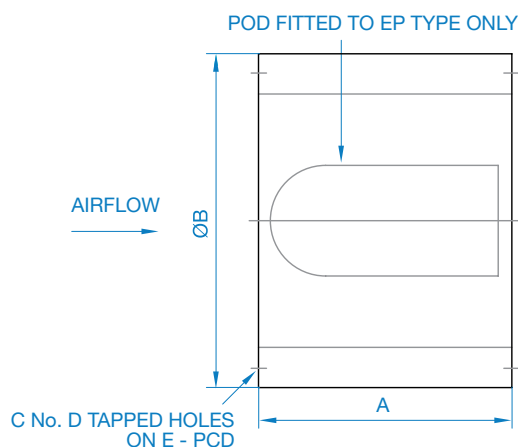
Product Code	Fan Dia	A 1D	A 2D	B	C	D	E	Weight kg			
								1DENP	1DEP	2DENP	2DEP
068-0400-*D**PC	400	400	800	500	12	M8	438	13	16	22	26
068-0450-*D**PC	450	450	900	602	12	M8	487	15	18	27	31
068-0500-*D**PC	500	500	1000	652	12	M8	541	18	22	32	37
068-0560-*D**PC	560	560	1120	712	16	M10	605	22	26	39	46
068-0630-*D**PC	630	630	1260	782	16	M10	674	26	32	48	57

*1 or 2 - see A (length in mm) **E (with pod) or EN - (without pod)

Standard Ø250-1000

Product Code	Fan Dia	A 1D	A 2D	B	C	D	E	Weight kg			
								1DENP	1DEP	2DENP	2DEP
068-0250-*D**P*	250	250	500	350	8	M8	299	7	9	11	13
068-0315-*D**P*	315	315	630	416	8	M8	355	9	11	15	17
068-0350-*D**P*	350	350	700	452	8	M8	395	11	13	18	21
038-0355-*D**P*	355	355	710	456	8	M8	395	11	13	18	21
068-0400-*D**P*	400	400	800	503	8	M10	450	13	16	22	26
068-0450-*D**P*	450	450	900	604	8	M10	500	15	18	27	31
068-0500-*D**P*	500	500	1000	657	12	M10	560	18	22	32	37
068-0560-*D**P*	560	560	1120	714	12	M10	620	22	26	39	46
068-0630-*D**P*	630	630	1260	784	12	M10	690	26	31	48	57
068-0710-*D**P*	710	710	1420	864	16	M10	770	32	39	59	71
068-0800-*D**P*	800	800	1600	954	16	M10	860	40	49	74	90
068-0900-*D**P*	900	900	1800	1103	16	M12	970	55	67	102	123
068-1000-*D**P*	1000	1000	2000	1203	16	M12	1070	66	82	124	151

*1 or 2 See A (length in mm) **E With Pod / EN Without Pod *M Melinex



Dimensions are in mm.

3.1 MAINTENANCE

- Proprietors of commercial kitchens have a duty to ensure that the ventilation system serving the respective premises are maintained and operated effectively. Good maintenance is a prerequisite for ensuring that a system complies with best practicable means under statutory nuisance provision and will form a key element of any scheme designed to minimize harm to the amenity under planning regulation. Good maintenance is required by the food hygiene regulations and will also minimize the risk of fire and noise.
- Visual inspections of the ventilation system shall be carried out at least once a week. All metal surfaces should be checked to ensure that there is no accumulation of grease or dirt and that there is no surface damage.
 - Kitchen Hood (Canopy) Cleaning: All metal surfaces shall be cleaned with a suitable metal cleaner. Canopy to be washed down weekly with soapy hot water ensuring all fat removed from channels.
 - Baffle Filters: Cleaning to be done on a daily basis with soapy hot water ensuring oil and fat outlets are clear and clean.
 - Pre Filters: Cleaning if required on visual inspection. Replaced every 4 weeks.
 - Carbon Filters: Replaced every 6 months.
 - Ductwork: Cleaning every 3-6 months with medium-light use.