122 High Street
London
TW11 8JB

Report on Kitchen Extract

Client : Mehmet AYDIN

GOYA WORKS

20th March 2021
Project No: G0023

GOYA WORKS

Report on Kitchen Extract

Ref: G002

Notice

This document and its contents have been prepared on behalf of the company Your Bakery Ltd and are intended solely for their information and use in relation to the issues relating to the 122 High Street TW11 8JB.

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Document history

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COMMENTS:

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Contents

1. INTRODUCTION

1.1. Background

In February Goya works was instructed by Mehmet Aydin on behalf of the company Your Bakery Ltd to design proposed new kitchen extract system and ventilation system at 122 High Street, Teddington TW11 8BJ in support of their planning application for a new kitchen extract sytem and ventilation system associated to be proposed used as a restaurant.

This report is prepared solely for the use of the company Your Bakery Ltd but maybe relied upon by its affiliates, being wholly–owned subsidiaries or wholly–owned subsidiaries of its parent / ultimate holding company. It is not intended that a third party should use this report.

1.2. The Site and Surrounding Area

The site comprises a ground floor retail unit located along the center of Teddington. Which includes retail uses at ground floor, and flat uses on the first,second and roof floors.
The company Your Bakery Ltd will be occupying the ground floor of this building. The building fronts onto High Street which is a busy transport route, connecting Fulwell and Thames River.
The site is located within a predominantly commercial area with a large number of shops in surrounding the site.

Picture 1. 122 Teddington High Street

2. ODOUR FROM COMMERCIAL KITCHEN EXHAUST SYSTEMS

2.1. Introduction

Offensive and objectionable odours can cause significant adverse effects on the lives of people and their wellbeing. In urban areas problems associated with nuisance odour emissions from commercial kitchen exhausts are very common. Overall responsibility for enforcement of statutory controls rests with the Local Authorities. These responsibilities cross a number of their regulatory functions including:

- Planning
- Environmental Health
- Building control.

There are two reference publications available to Local Authorities in this area both of which are published by the Department for Environment Food and Rural Affairs. These are:

- Odour Guidance for Local Authorities (March 2010)
- Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems (January 2005).

In preparing this report we have used the guidance and methodologies outlined in these documents.

2.2. What is Odour

An odour is an organoleptic attribute perceptible by the olfactory on sniffing certain volatile substances. Odorous substances have a property that makes them perceptible to our sense of smell and the term odour refers to the stimuli from a chemical compound that is volatilised in air. Odours may be perceived as being pleasant or unpleasant and can trigger strong reactions for good reason. Unpleasant odours can be useful indicators to protect us from harm such as the ingestion of rotten food. Whilst normally there is general agreement as to what are pleasant and unpleasant odours there is a wide variation between individuals as to what is deemed to be unacceptable and what affects our quality of life.

2.3. Odour Characteristics and Attributes

There are five basic sensory properties of odour:

1. Detection Threshold – the concentration at which odour is first detected;
2. Recognition Threshold – the ability to differentiate between two odours;
3. Intensity – perceived strength at different concentrations;
4. Hedonic Tone - pleasant or unpleasant;
5. Odour Quality or Character – association and complexity.

Our responses to odours vary greatly between individuals and not all unpleasant odours are offensive at all times. For example coal fire smells can be 'comforting' at times yet the smell of soot can be objectionable at other times. It is argued that when an individual is exposed to an odour perceived as being unwanted the following factors are the main determinants:

- Offensiveness of the odour;
- Intensity of the odour;
- Duration of the exposure to the odour;
- Frequency of the odour exposure; and
- Tolerance and expectation of the exposed subjects.

Studies of environmental exposure to odour at different concentrations over different time periods have led to a number of conclusions as to how individuals perceive odour, and how this is established and then retained in memory. Studies in communities when odour nuisance is abated show that the perception of odour impact is reported for prolonged periods by those living in the area even years after the odour is no longer present. From these studies it is evident that:

- The nuisance suffered is not caused by short-term exposure to environmental odours and similarly are not reduced by short-term mitigation or prevention;
- The association between an individual's perception and experience of nuisance from an odour is persistent and prolonged. For such individuals, exposure to the same odour at lower concentrations causes greater nuisance than for those without a history of exposure; and
- The perception of annoyance/nuisance appears to be cumulative, developing over long periods of time. Memory of periods of heightened or intense exposures alongside other unwanted outcomes such as disturbance to wellbeing or lack of influence are all important. These appear to dominate the overall perception of the odour impact and the perceived history of the complaint.

2.4. Sources of Odour

Defining the origin of an odour, as well as recognising common odour sources are all important aspects of defining the problems presented by odours. Odour sources vary greatly in concentration, hedonic tone and quality even for the same source type. The factors which will influence the magnitude of an odour problem associated with commercial kitchen exhausts will be:

- Size of cooking facility – this will influence the intensity of the odour and the volume of air being discharged;
- Type of food being prepared – this affects the chemical constituents within the discharge air;
- Type of cooking appliances used- this dictates the level of fat, water droplets and the temperature within the discharge air.

The degree of dispersion, proximity of receptors, size of kitchen and the cooking type will contribute to the odour problem to a greater or lesser degree.

The characteristics of different food types and cooking appliances is given the following table:

Establishment	Description	Odour Concentration				Grease Content			
		Low	Moderate	High	Very High	Low	Moderate	High	Very High
Tea Shop	-	■				■			
Pizza Parlour	Herb		■				■		
Steakhouses	Fat		■				■		
French	Herbs/garlic		■				■		
Italian	Herbs/garlic		■				■		
Most Pubs	Fat		■				■		
Chinese	Ginger, spice, oil		■					■	
Japanese	Spice, oil		■					■	
Cantonese	Spice, oil		■					■	
Indian	Spice, oil			■				■	
Thai	Spice, oil			■				■	
Vietnamese	Spice, oil			■				■	
Kabab Houses	Fat, cooking meat			■				■	
Fried Chicken	Oil, cooking meat				■				■
Pubs (Deep fired food)	Oil, cooking meat				■				■
Fish and chips	Oil				■				■
Fast Food (burger)	Oil, cooking meat				■				■

2.5. Risk Assessment for Odour

Appendix C of the Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems gives a simplified risk assessment. The scoring methodology is suggested as a means of determining if odour control is required in proposed installations.

Criteria	Score	Score	Details
Dispersion	Very poor	20	Low level discharge, discharge into courtyard or restriction into stack
	Poor	15	Not low level but discharge below eaves or discharge > 10m/s
	Moderate	10	Discharge 1m above eaves or discharge 10 to 15 m/s
	Good	5	Discharge is 1m above ridge at 15 m/s
Proximity of receptors	Close	10	Closest sensitive receptor <20m from kitchen discharge
	Medium	5	Closest sensitive receptor between 20m & 100m from kitchen discharge
	Far	1	Closest sensitive receptor >100m from kitchen discharge
Size of kitchen	Large	5	>100 covers or large takeaway
	Medium	3	>30 to <100 covers or medium takeaway
	Small	1	>30 covers or small take away
	Very high	10	Pub (deep fried food), fried chicken, burgers, fish and chips
	High	7	Kebab, Vietnamese, Thai or Indian
	Medium	4	Cantonese, Japanese or Chinese.
	Low	1	Most pubs, Italian, French, Pizza or Steakhouse

Impact	Odour Control requirement	Significance Score
Low to Medium	Low level of odour control	< 20
High	High level of odour control	20 to 35
Very high	Very high level of odour control	>35

2.6. Odour as a Statutory Nuisance

Nuisances caused by odours are regulated by the relevant provisions within the Environmental Protection Act (EPA) 1990. Section 79(1)(d) of the EPA consolidated various atmospheric pollution that was previously regulated under the Public Health Act 1936. Smell and steam were added to the list of atmospheric pollution.

The EPA also imposes a duty on the local authority environmental services to 'inspect' their districts from time to time for statutory nuisances. In addition they have a duty, where ever reasonably practicable, to investigate any complaint made about alleged odour nuisance made by a member of the public / resident.

Like all other statutory nuisances set down in Section 79 EAP 1990 the odour provisions are two-limbed. There is a requirement for the local authority to decide if the odour is prejudicial to health or a nuisance (or both).

Private Nuisance is a continuous, unlawful and indirect interference with the use or enjoyment of land, or of some right over or in connection with land. The emissions would have to interfere, in a material or substantial way, with the victim's use of his property. You take civil proceedings for nuisance ("private nuisance") in the High Court or County Court.

An alternative approach is to follow the statutory nuisance procedure which involves going to the Magistrates Court. This is laid out in the Environmental Protection Act 1990 (sections 79 to 82). It is based on similar principles to private nuisance, but it is intended to enable people to get relatively quick relief through the most local court system. The EPA 1990 provides two routes: one for local authorities to act (often following complaints to them, though also on their own volition), and another which allows people to act directly, without involving the local authority. Under the nuisance limb interference in a person's 'personal comfort' is required. However the standard applied is an objective one so where a particularly sensitive victim experiences as significant interference in their 'personal comfort' which an average person would not, there can be no statutory nuisance.

3. RISK ASSESSMENT AND VERIFICATION SITE VISITS

3.1. Risk Assessment

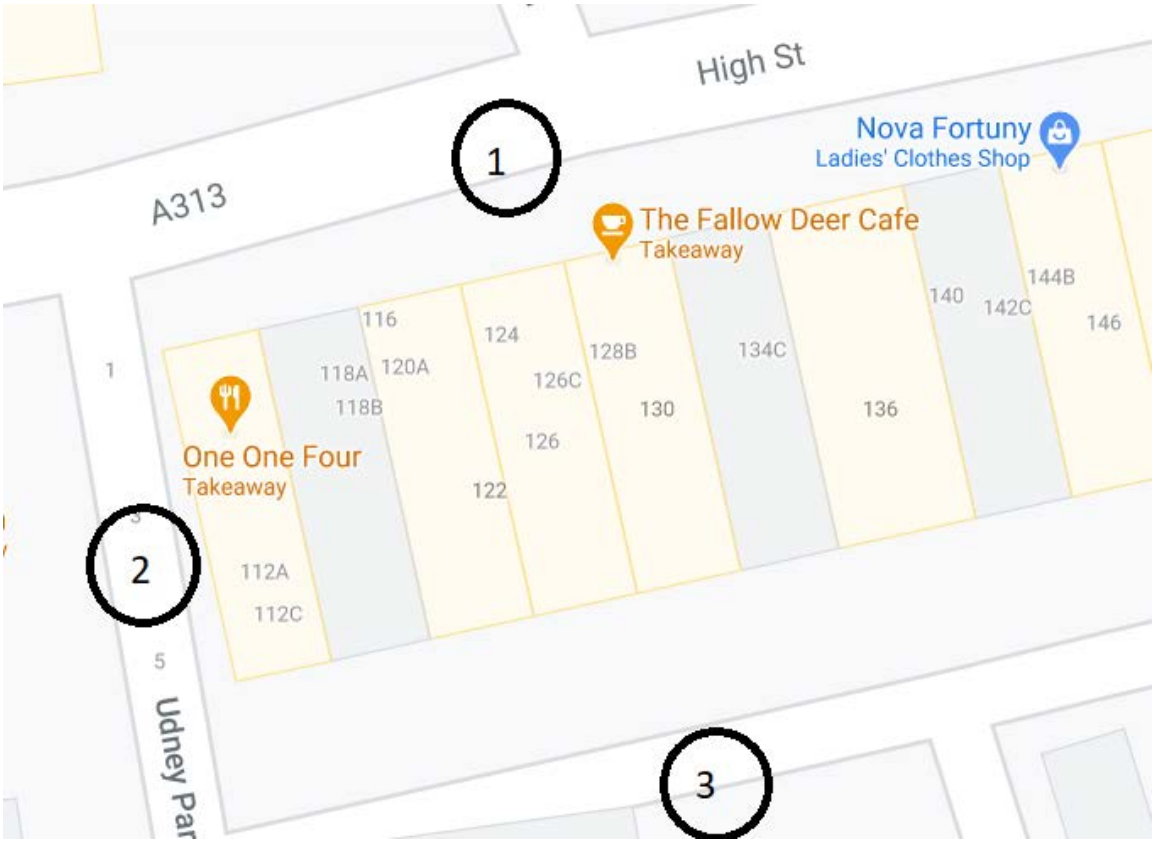
Based upon the methodology set out in Appendix C of Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems we carried out the following risk assessment.

Impact	Odour Control requirement	Significance Score
Low to Medium	Low level of odour control	< 20
High	High level of odour control	20 to 35
Very high	Very high level of odour control	>35

Source	Dispersion	Proximity of receptors	Size of Kitchen	Cooking Type	Total Score
166 High Street	15	10	3	1	29

3.2. Verification Site Visit

The risk assessment suggests a medium to high level of odour being admitted from this type of cuisine, however assessing and testing 3 different points of the project site determined the odour situation in the vicinity. The system that will be installed is sufficient and adequate to neutralize the odour according to our plans.



Picture 1.2 Visited points

4. SYSTEM DESCRIPTION AND RECOMMENDATIONS

4.1. System Description

The kitchen at 122 High Street as per risk assessment table above is considered to be small to medium in size. The kitchen equipment comprises an oven, a 6 ring hob, a griddle, double deep fat fryer,a combi-oven. Above the equipment there will be 2x I shaped extract canopy with integral grease filters and fans. The canopy has to be manufactured by Eral Metal Works Ltd and are designed in accordance with B&ES DW/172 and B&ES DW/144.

4.2. Design

All units to be used are designed to prevent odorous and oil emissions. This system is designed to prevent odoeur emissions which may effect neighbors or the surrounding area. If necessary, the system can be improved by supplementing ozone healing systems.

5. EXECUTIVE SUMMARY

- In February Goya Works was instructed byMehmet Aydin on behalf of the company Your Bakery Ltd to carry out an assessment of the kitchen extract system at 122 High Street Teddington TW11 8BJ in support of their planning application.
- The size of kitchen is relatively small and the type of small stroke medium food cooked there only gives rise to moderate amounts of odour concentration. The exhaust is discharged 3.6m above back street level at a point which is away from the main building elevation by 9m.
- A risk assessment has been undertaken and the score was found to be 29/45.
- According to the conducted tests the risk assessment score is high, therefore, it is recommended that the system has

  -Esp3000e filter equipment, manufacture by Purified Air
  -x3 Activated side carbon filters
  -x2 Straight Through Silencer
  -GBW560/4 1ph extraction fan

- After these equipments is to be installed, 95% odour will decrease.
- In conclusion, the kitchen size is small to medium. The distance of the extract flue, the direction and with additional mitigation with high quality of filters the impact on the neighbors will be very low.

DETAILS OF THE GEASE FILTER

1	Manufacturer`s Name	Longar Industries LTD
2	Filter name and product code	Longar TYPE2 Baffle Filter
3	Dimensions of the filter	395x395x45mm
4	Nature of the filter media	Filters are manufactured with stainless steel 430 polished finish, MAX operating temp. 400^{o}C
5	Manufacturer`s recommendation of the frequency and type of maintenance of the pre filter	Filters should be cleaned by a trained operative either daily for heavy use or weekly for light use

DETAILS OF THE PRE-FILTER

6	Manufacturer`s name	Longar Industries LTD
7	Filter name and product code	PPF59659697
8	Dimensions of the filter	596 x 596 x 97mm
9	Nature of the filter media	synthetic media
10	Manufacturer`s recommendation on the frequency and type of maintenance of the pre-filter	Needs change every 3-6 months

CARBON FILTER OR OTHER ODOUR ABATEMENT METHOD

11	Dimensions of the filter name	120x90x60 cm
12	Total number of filter panels in the filter bed	6
13	Nature of the activated carbon	Carbon 3xPA240824
14	Total volume of the carbon expressed in cubic meters	0.65 m3
15	Total mass of carbon expressed in kilograms	55 kg
16	Total surface area of the panels exposed to the exhausted air	4.32 m2
17	Dwell time of the gases in the filter compartment and the setting of the control at which this is achieved	2 sec
18	The air change rate for the setting quoted above, please provide workings or reference where the rate was sourced from	70 air changes/hour
19	Dimensions of the room in metres and calculate the overall volume in m^3 that area required to benefit from air changes.	60m^3
20	Dimensions of the carbon filter- if applicable	120x90x60cm
21	Ratio of room volume to carbon filter volume	404
22	How to proposed to access the carbon filter to replace spent filter?	From units access panels

COOKER HOOD

23	The length the cooker hood overhangs the appliances	3150- 1200 x 1300 L shaped
24	The face velocity at the cooker hood, expressed in metres per second	Canopy face area 5m2 0.3m3/s face velocity
25	Dimensions of the opening of the cooker hood	2.9

SYSTEM OPERATION

26	The extract rate (expressed as m^3/s) at the proposed rate of extract.	1.4 m^3 / s
27	The volume of the space to be ventilated in m^3	75 m^3
28	The efflux speed at the flue terminal	6.5 m/s
29	The type of flue terminal to be fitted	Bird Beak
30	Name and address of company to install system	-
31	Cleaning of washable grease filters. Frequency and method please describe.	Daily at least once of 2 day The filters should wash with warm soapy water
32	Frequency of inspection and replacement of the pre-filters please describe	Change filters every two weeks
33	Frequency of deep clean to fan and flue please describe.	Light use 12 months Moderate use 6 months Heavy use 4 months

NOISE

34	Specify the fan type, its sound power level and sound frequency characteristics and provide a manufacturer`s specification sheet showing those values	GBW 560/4 Breakout 64 db Intake 77 db Exhaust 81 db Sound press cage break out 36db in 4m
35	Describe how the fan and ducting will be isolated from the building	duct work will be mounted on brackets, which will be fitted onto wall using anti vibartion mounts. this will eliminate any vibration from the duct work to the building. Fan will also be fitted using anti vibarion mounts and also there will be flexible connection between fan and duct work.

The Particulate Phase

Our ESP Range

ESP 4500

- **ESP 1500E which can handle up to 0.7m³/sec of air flow**
- **ESP 3000E which can handle up to 1.4m³/sec of air flow**
- **ESP 4500E which can handle up to 2.1m³/sec of air flow**
- **ESP 6000E which can handle up to 2.8m³/ air flow**

Our ESP's have been specifically designed for kitchen extract systems; they have integral sumps to collect the oil, grease and smoke particles filtered out of the exhaust. This not only simplifies servicing but eradicates potentially dangerous spillage from the bottom of the units and greatly cuts down on build-ups of grease within the ducting.

The ionisation voltage has been designed to run at a negative potential which enhances the ionisation of particles and also produces more ozone which is helpful in reducing cooking odours.

Our ESP units fit in-line with the kitchen ducting and can be configured modularly to cope with all extract volume requirements.

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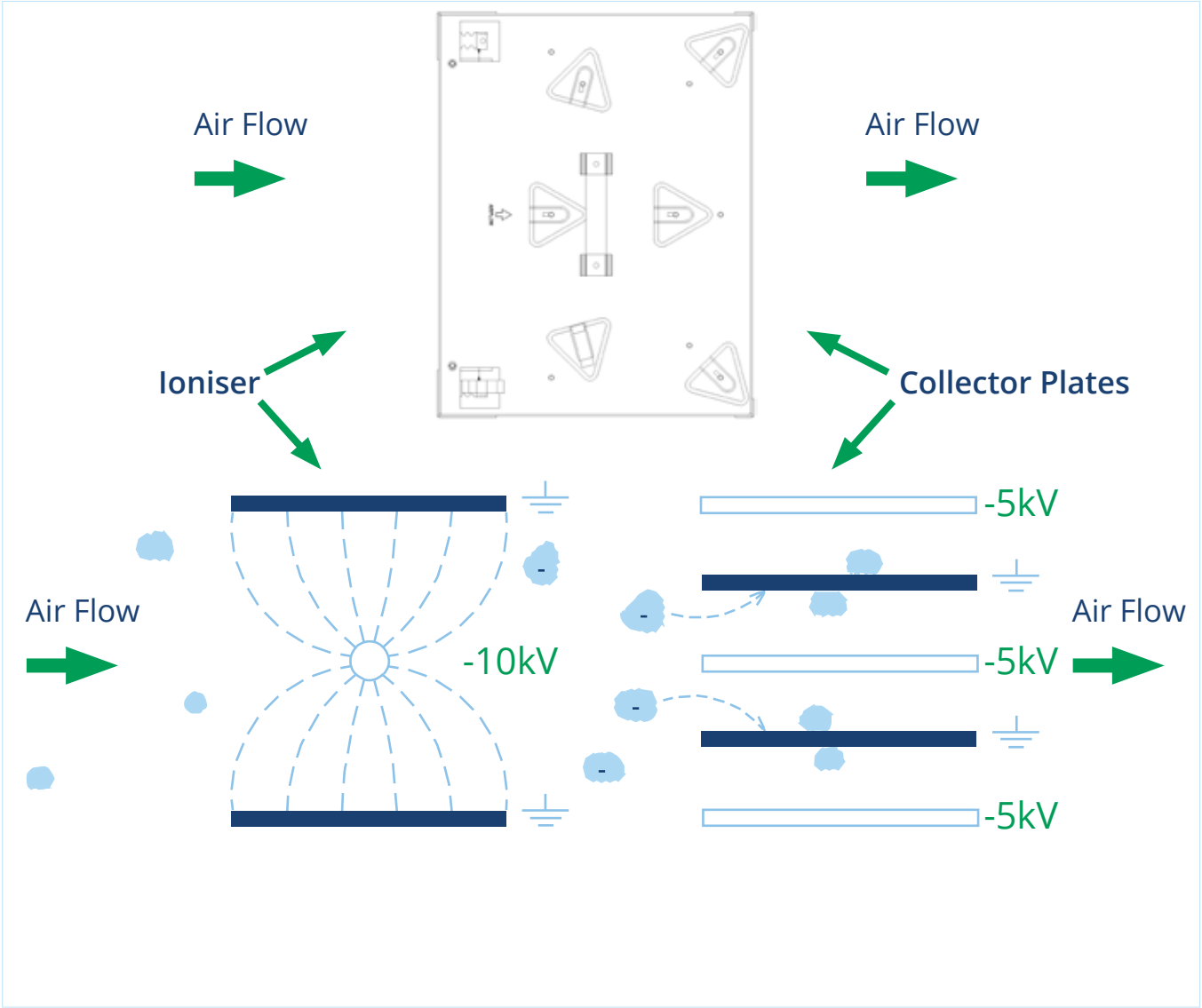
KEY FEATURES

- Eliminates up to 98% of oil, grease and smoke particles
- Filters particles down to sub-micron levels
- Produces Ozone to help reduce malodours
- Designed with an integral sump
- Modular in design
- Specifically designed for commercial kitchen application
- Energy efficient: - uses no more than 50W
- Greatly reduces grease build-up within the duct run

Technical Specification

	ESP 1500E	ESP 3000E	ESP 4500E	ESP 6000E
Electrical Supply	220/240V 50Hz	220/240V 50Hz	220/240V 50Hz	220/240V 50Hz
Power Consumption	20 Watts	30 Watts	40 Watts	50 Watts
Max Air Volume	up to 0.7m³/sec	up to 1.4m³/sec	up to 2.1m³/sec	up to 2.8m³/sec
Dimensions W/H/D	450mm/630mm/ 640mm	900mm/630mm/ 640mm	1350mm/630mm/ 640mm	1800mm/630mm/ 640mm
Weight	55Kg	85Kg	118Kg	153Kg

1. Cooking particulates and odours
2. Canopy Grease Filter
3. ESP - Particulate Control Unit
4. Airflow



The above diagram shows, in a basic visual, how an electrostatic precipitator works. As air passes into the combined ioniser / collector cell, the particulates in the air stream are polarised to a negative potential. As they continue through the ioniser and between the collector cell plates, the polarised particulates are repelled away from the negatively charged plates and attracted to the earthed plates where they stick and so are filtered out of the air flow.

An Autowash option can be provided for our entire ESP range.

The autowash nozzle attachment sits inside our standard ESP units. Once connected to the control / wash station the collection cells can be automatically cleaned at regular frequency. The system is usually factory fitted but can also be retro fitted in existing installations, dependant on the generation of units installed.

Daily cleaning keeps the filters working at their optimum efficiency and will greatly reduce the number of service visits required through the year.

For more information please contact our sales team.

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Will require two people plus lifting equipment to carry and install.

Carbon PA242424

Size	594 x 594 x 597
Gross Weight	68.2Kg
Carbon Weight	50Kg
Rated Airflow	3600m³/hr*
Pressure Drop	120Pa

Safe for one person to carry.

No special lifting equipment required.

Sitesafe PA240824

Size	594 x 196 x 597
Gross Weight	17.95Kg
Carbon Weight	16.6Kg
Rated Airflow	1200m³/hr*
Pressure Drop	120Pa

Sitesafe 3 x PA240824

Size	594 x 594 x 597
Gross Weight	53.85Kg
Carbon Weight	50Kg
Rated Airflow	3600m³/hr*
Pressure Drop	120Pa

*Rated Airflow based on a dwell time of 0.1 seconds. Available in all sizes to retrofit carbon cells

Carbon Filter Cell Part Number	Nominal Size (inches)	Height (mm)	Width (mm)	Depth (mm)	Weight of Encased Carbon (Kg)	Weight of Entire Cell (Kg)	Capacity @ 0.1 Second Dwell Time M3/h
PA-240824-7C "Site Safe"	24 x 08 x 24	594	196	597	17	18	1266
PA-242412-7C	24 x 24 x 12	594	594	297	25	36	1900
PA-242424-7C	24 x 24 x 24	594	594	597	50	61	3800

Please find our most popular sizes above, we do supply many different sizes and grades of carbon filters so please contact us with your requirements.

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Bays 2 & 3 Pattenden Lane, Marden, TN12 9QS. T: 01622 832777 F: 01622 832507

Carbon Impregnated Bag Filters

Applications

The Activated Carbon impregnated bag filter, can be utilised to remove the slight general odours associated with towns and cities.

When a Carbon Bag Filter is used in the extract systems of light duty catering establishments, such as coffee shops, the life of it will be very short, as the odour retention is directly proportional to the weight of activated carbon on the product.

Airclean will not recommend this product for new installations for odour removal.

Description

The fully cured coating of the activated carbon powder on the polyester non-woven bag filter material is formed into pockets which are stitched and tagged to minimise blinding from each other.

The formed pockets are supported by a copper coated rod assembly which, with the media, is sealed into the corrosion resistant galvanised steel header frame.

Technical

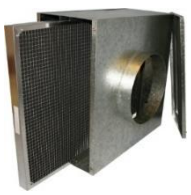
Filter Classification:
Maximum Operating Temperature : 40 Degrees Centigrade
Maximum Operating Humidity: 80% RH

STANDARD CARBON IMPREGNATED BAG FILTERS

Dimensions					Flow Rate		Part Numbers
OT Inches		Actual mm			Flow	Pressure Drop	
H x W	D	H	W	D	m^3/s	Pa	
24 x 12	12	594	289	289	0.38	70	1410801
	20	594	289	492	0.47	70	1410804
24 x 20	12	594	492	289	0.50	70	1410802
	20	594	492	492	0.64	70	1410805
24 x 24	12	594	594	289	0.75	70	1410803
	20	594	594	492	0.94	70	1410806
NON STANDARD							1410899

Front Withdrawal Frame (1810)

MEZ Flanged Side Access Housing (1820)



Duct Mounted Filter Housing (1825)

Fully Welded Side Withdrawal Filter Housing (1840)

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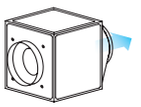
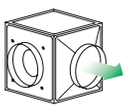
Models GB..

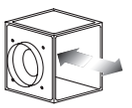
Arbitrary installation position and flexible assembly by five possible discharge directions.



Ⓐ Axial discharge



Ⓡ Centrifugal discharge

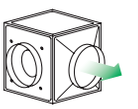


— centrifugal on both sides, free discharge

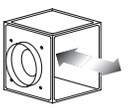
Models GB.. T120

NEW!

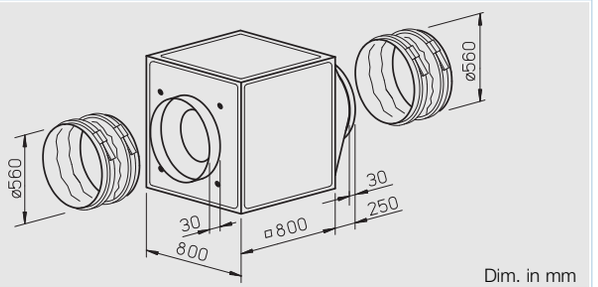
Designed for moving dirty, humid and hot air up to max. 120° C.



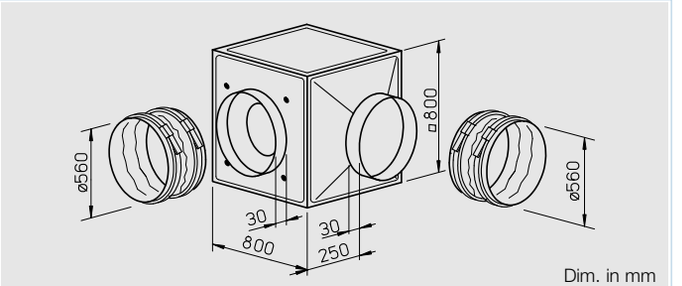
Ⓡ Centrifugal discharge



— centrifugal on both sides, free discharge



Dim. in mm



Dim. in mm

■ 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).

■ 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 insulting 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 aluminium centrifugal impeller highly efficient and 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

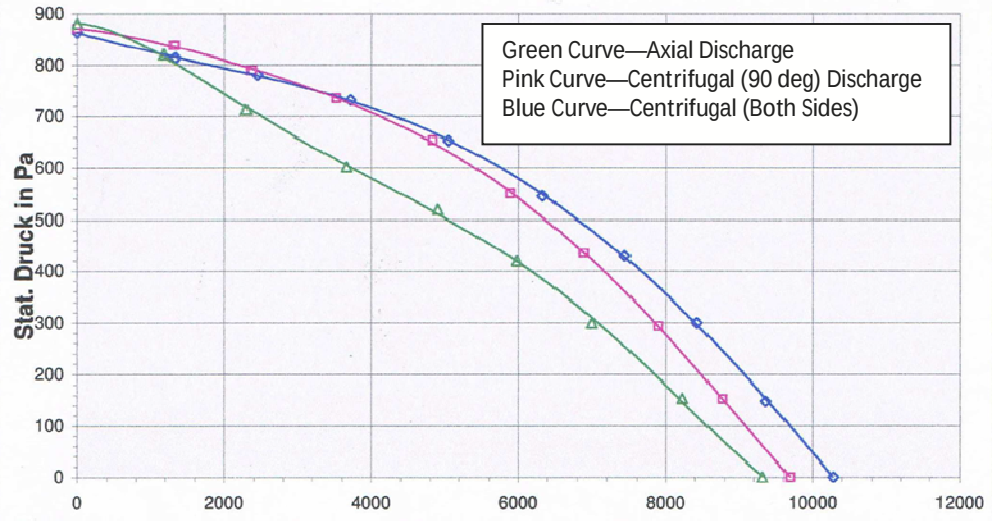
Standard terminal box (IP 54) fitted on the motor; with GB.. T120 fitted on the motor support plate.

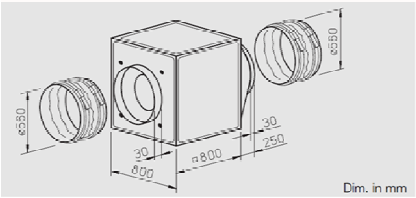
Type	Ref. No.	Air flow volume (FID)	R.P.M.	Sound press. level case breakout	Motor power (nominal)	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temperature full load	Maximum air flow temperature controlled	Nominal weight (net)	5 step transformer controller with motor protect. unit Type	Ref. No.	5 step transformer controller without motor protect. unit Type	Ref. No.	Full motor protection unit using the thermal contacts Type	Ref. No.
		V̇ m³/h	min⁻¹	dB(A) at 4 m	kW	A	A	Nr.	+°C	+°C	kg						
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/△-wiring, protection to IP 54																	
GBD 560/6/6	5522	7800/8640	690/870	35	0.51/0.80	0.90/1.90	1.90	867	60	60	80	**RDS 4**	1316	**TSD 3.0**	1502	**M4**[1)]	1571
GBD 560/4/4	5521	11500/12590	1110/1350	44	1.70/2.50	2.80/4.80	4.90	867	55	45	90	**RDS 7**	1578	**TSD 7.0**	1504	**M4**[1)]	1571
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/△-wiring, protection to IP 54																	
GBD 560/4/4 T120	5778	11520/12300	1250/1400	48	1.85/2.50	3.20/6.80	6.80	520	120	120	105	**RDS 7**	1578	**TSD 7.0**	1504	**M4**[1)]	1571

[1)] incl. operation and 2 speed switch

GOYA WORKS

GBW 560/4





$\Delta p_{stat.}$ Pa

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Case breakout	dB(A)	64	64	64	48	50	46	43	37
L_{WA}	Intake	dB(A)	77	57	66	69	74	70	64	55
L_{WA}	Extract	dB(A)	81	62	74	75	75	74	70	61

Self supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel. Intake cone for ideal airflow, spigot and flexible connector for duct connection. With discharge adapter (square to circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks. Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via discharge adapter. Outdoor installation is possible using outdoor cover hood and external weather louvres (accessories).

Impeller:
Smooth running backward curved aluminium centrifugal impeller highly efficient and 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 and 54. With ball bearings and radio suppressed as standard.

Electrical Connection:
Standard terminal box (IP54) fitted on the motor support plate.

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

Speed Control:
Speed controllable by voltage reduction using transformer controller.

Type	Ref. No.	R.P.M.	Sound Level	Motor power (nominal)	Current Full Load	Maximum air flow temp.	Nom. weight (net)	5 step trans. controller	
		min^{-1}	dB(A) at 4 m	kW	Amps	+°C	kg	Type	Ref.
GBW 560/4	5508	1370	44	2.0	8.7	60	90	TSW 10	1498

Volume Flow m3/s against static pressure

0	50	100	150	200	250	300	400	500	600	700	800
2.77	2.72	2.55	2.48	2.41	2.31	2.22	2.0	1.72	1.44	1.00	0.36

Type Ref.

CASED AXIAL ACCESSORIES

SILENCER

PERFORMANCES

The performances are derived from tests to BS848. Measurements of fan noise are made with and without the silencer in position. The difference between recorded levels is the dynamic (with airflow) attenuation or insertion loss of the silencer. Type B silencers may be directly coupled to both inlet and outlet flanges of the fan. When type C silencers are directly coupled to the fan flanges they are most effective on the outlet. A spacer duct of 1D length between the fan inlet flange and a type C silencer is necessary to ensure maximum performance.

Note: C type silencers mounted close to a fan may effect the aerodynamic performance.

CONSTRUCTION

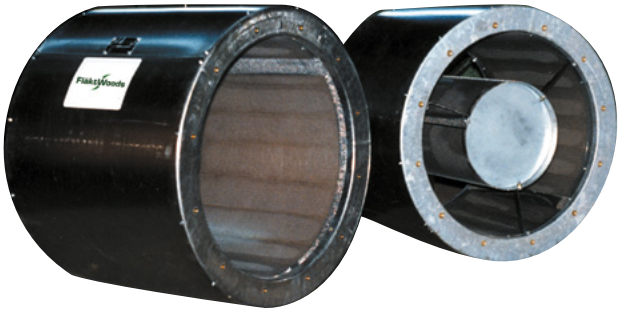
Casings are of rolled, pre-galvanised sheet steel with spun end rings incorporating tapped inserts for fixing. Suitable fixing screws are provided with all steel silencers.

The absorbent material is acoustic grade mineral fibre with an erosion resistant facing. It is protected and contained by a pre-galvanised perforated steel sheet formed to match the fan diameter.

Cylindrical silencers shall be suitable for air pressures up to a maximum of 1000 Pa. For duct pressures in excess of 1000 Pa please enquire.

A Melinex Lining (variant code M) can be supplied for critically clean applications such as hospitals to ensure no fibre migration. The lining may also be used in moisture or grease laden conditions, such as kitchen extract systems where the material is used to stop the ingress of grease etc. into the acoustic media.

The use of the lining also allows the silencers to be low pressure steam cleaned. Some reduction of attentuation due to the lining will be experienced.



SIZE RANGE

Type B silencer bore diameters range from 280 mm to 1000 mm metric range in lengths equal to or twice the bore diameter (ID or 2D) Pressure loss for type B silencers is the same as a plain duct.

Type C silencers have a centrally mounted absorbent pod in the airway for increased attenuation. The pressure loss due to the pod is provided in Fan Selector when selecting the C type silencer as an accessory.

The diameter range is 315 mm to 1000 mm metric range.

FINISHES

Standard finish is galvanised zinc coating to BS2989 Z2. Other finishes including epoxy paint are available to special order.

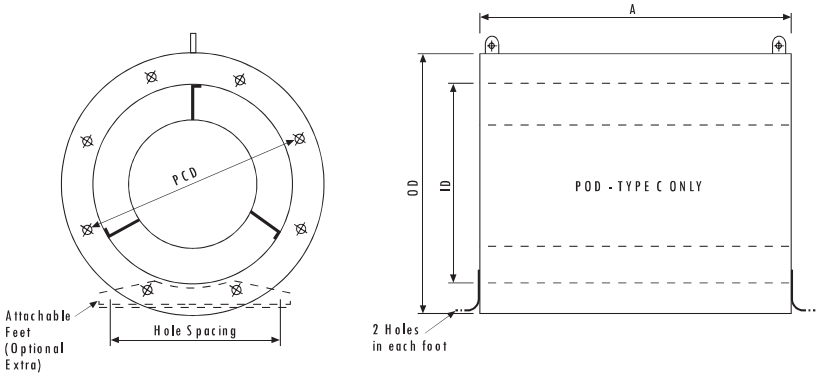
TEMPERATURE RANGE

Standard silencers are suitable for temperatures from -40°C to 200°C. When moisture resistant lining is used the continuous air handling temperature is limited to 80°C. Special treatments enable silencers to operate at temperatures up to 600°C. For smoke applications, please enquire.

MOUNTING

Galvanised steel mounting feet and matching flanges corresponding to those supplied for Aerofoil fans are available.

CASED AXIAL ACCESSORIES



B TYPE SILENCER

Bore Dia. mm (A)	Product Number (B1D)	OD	No of holes	PCD	Thread	Mounting Foot holes		A Length		Weight (kg)	
						Dia	Spacing	1D	2D	1D	2D
315	SB211401	415	8	355	M8	10	265	315	630	10	17
355	SB221401	455	8	395	M8	10	305	355	710	12	20
400	SB241401	500	8	450	M10	10	350	400	800	15	25
450	SB251401	600	8	500	M10	10	400	450	900	20	33
500	SB271401	650	12	560	M10	10	450	500	1000	25	41
560	SB281401	710	12	620	M10	10	510	560	1120	30	50
630	SB301401	780	12	690	M10	12	580	630	1260	35	61
710	SB311401	860	16	770	M10	10	660	710	1420	44	76
800	SB331401	1000	16	860	M10	12	750	800	1600	55	96
900	SB341401	1100	16	970	M12	12	850	900	1800	70	129
1000	SB351401	1200	16	1070	M12	12	950	1000	2000	82	157

C TYPE SILENCER (PODDED)

Bore Dia. mm (A)	Product Number (C1D)	OD	No of holes	PCD	Thread	Mounting Foot holes		A Length		Weight (kg)	
						Dia	Spacing	1D	2D	1D	2D
315	SC211401	415	8	355	M8	10	265	315	630	13	19
355	SC221401	455	8	395	M8	10	305	355	710	15	24
400	SC241401	500	8	450	M10	10	350	400	800	18	30
450	SC251401	600	8	500	M10	10	400	450	900	24	39
500	SC271401	650	12	560	M10	10	450	500	1000	29	48
560	SC281401	710	12	620	M10	10	510	560	1120	35	58
630	SC301401	780	12	690	M10	12	580	630	1260	42	72
710	SC311401	860	16	770	M10	10	660	710	1420	53	90
800	SC331401	1000	16	860	M10	12	750	800	1600	66	116
900	SC341401	1100	16	970	M12	12	850	900	1800	84	150
1000	SC351401	1200	16	1070	M12	12	950	1000	2000	100	182

CASED AXIAL ACCESSORIES

SILENCER ACOUSTIC PERFORMANCE

TYPE B DYNAMIC ATTENUATION

		OCTAVE-BAND MID FREQUENCIES HZ							
BORE DIA. MM (D)	LENGTH	63	125	250	500	1K	2K	4K	8K
315	1D	1	2	4	9	11	10	9	7
	2D	1	2	5	11	16	12	11	10
355	1D	1	2	4	10	12	10	9	7
	2D	2	3	6	13	17	14	11	11
400	1D	2	3	5	10	13	11	9	8
	2D	3	4	7	14	18	15	11	12
450	1D	2	3	6	12	13	11	10	6
	2D	3	4	8	17	18	15	11	11
500	1D	2	3	6	13	14	10	10	5
	2D	3	4	8	19	18	14	11	10
550	1D	2	4	7	14	14	9	10	7
	2D	3	5	9	19	18	14	12	11
630	1D	2	5	7	15	13	8	9	8
	2D	4	6	9	19	19	14	13	12
710	1D	2	5	7	15	13	9	9	8
	2D	4	6	9	19	17	13	12	11
800	1D	2	5	8	16	12	9	9	8
	2D	4	6	10	19	15	12	11	10
900	1D	2	5	10	17	13	11	10	8
	2D	4	6	12	19	15	12	11	10
1000	1D	4	5	11	16	11	10	8	9
	2D	4	6	13	19	14	12	11	11

TYPE C DYNAMIC ATTENUATION

		OCTAVE-BAND MID FREQUENCIES HZ							
BORE DIA. MM (D)	LENGTH	63	125	250	500	1K	2K	4K	8K
315	1D	2	5	5	9	18	20	18	15
	2D	2	6	6	12	20	25	20	17
355	1D	2	5	6	9	18	22	19	16
	2D	2	6	7	13	25	27	21	17
400	1D	2	6	6	10	19	24	20	17
	2D	3	7	8	14	29	29	23	18
450	1D	2	4	7	13	20	23	22	17
	2D	2	5	9	16	29	29	21	20
500	1D	2	3	8	16	21	22	21	17
	2D	2	4	10	20	29	30	20	26
550	1D	3	5	8	16	20	18	19	15
	2D	4	5	10	20	29	28	21	23
630	1D	3	5	8	15	19	16	14	12
	2D	5	6	10	19	29	25	21	20
710	1D	3	5	8	15	19	15	14	12
	2D	5	6	10	20	26	23	18	17
800	1D	4	5	8	16	19	15	14	13
	2D	5	7	11	22	23	21	16	14
900	1D	4	5	9	17	19	15	14	13
	2D	5	7	12	24	23	21	16	15
1000	1D	5	5	11	18	19	15	14	13
	2D	5	7	13	26	24	20	16	16

All performances are derived from tests to BS848.

The above silencers give the following approximate dBA reductions: -

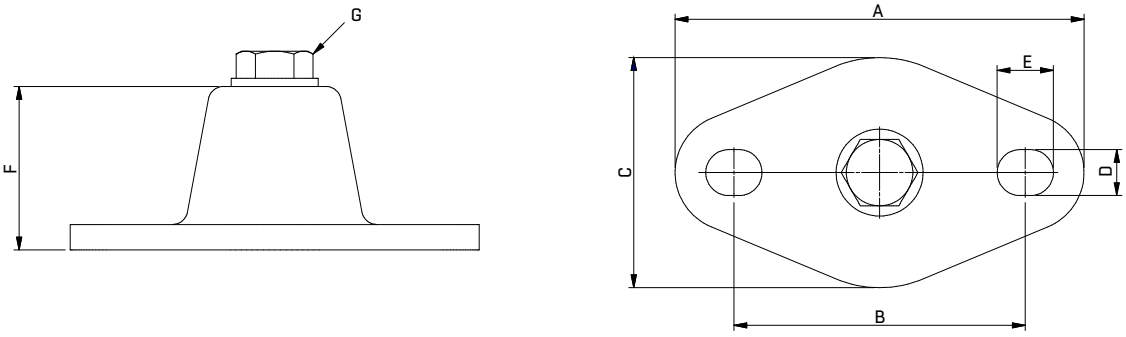
B Type 1 diameter length - 7 to -10 dBA

C Type 1 diameter length - 12 to -15 dBA

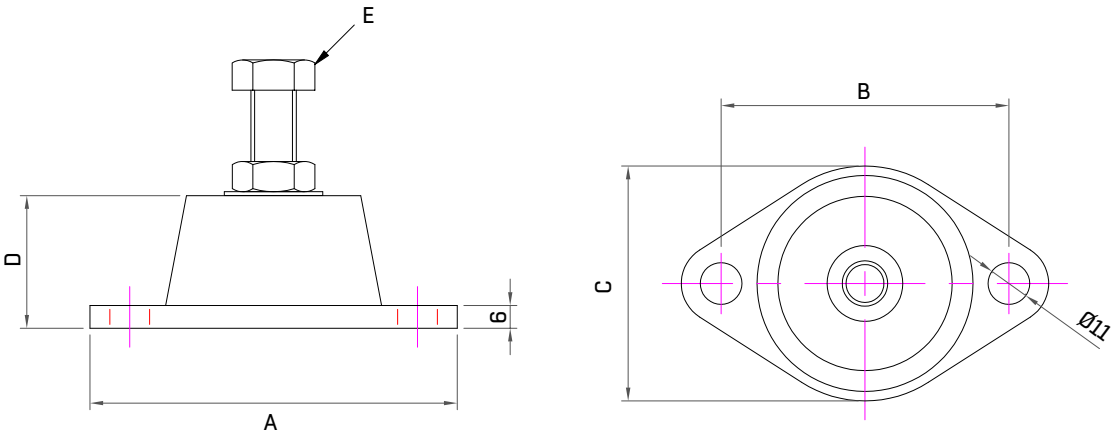
For full acoustic details and resistance to airflow for type C please refer to fan selector.

CASED AXIAL ACCESSORIES

RUBBER IN SHEAR ANTI-VIBRATION MOUNTS



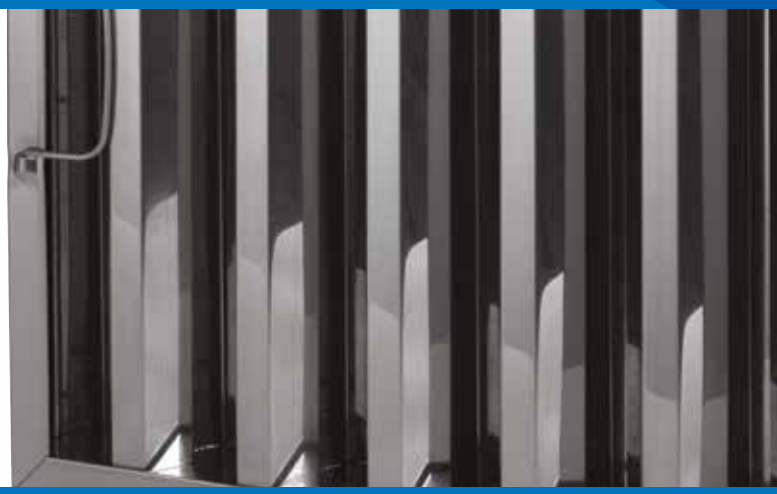
Product Code	Type	Load at 5-6mm deflection (Kg)	A	B	C	D	E	F	G
505000	AV Rubber MP2-28 Yellow ISL	28	80	57	45	9	11	32	M8
505001	AV Rubber MP2-50 Blue ISL	50	80	57	45	9	11	32	M8
505002	AV Rubber MP2-80 Red ISL	80	80	57	45	9	11	32	M8



Product Code	Type	Load at 8mm deflection (Kg)	A	B	C	D	E
863893	AV Rubber MP5-110 Yellow ISL	110	95	71	60	9	M10 x 25mm
863894	AV Rubber MP5-180 Blue ISL	180	95	71	60	9	M10 x 25mm
863895	AV Rubber MP5-280 Red ISL	280	95	71	60	9	M10 x 25mm
863896	AV Rubber MP6-260 Blue ISL	260	150	115	80	11	M12 x 30mm

All dimensions in mm.

LONGAR® Type 2
High Performance Premium Baffle Filter



LONGAR® TYPE 2 FEATURES:
- 100% Flame barrier protection to DIN 18869-5.
- Cutsafe safety edges.
- Fully welded construction – all stainless steel construction.
- Meets insurance requirements.
- Meets HVCA DW172 requirements.
- Folding handles and drainholes as standard.
- Robust baffle filter construction – built to last.
- Tested & certified to European standard DIN 18869-5.
- Tested & certified to American standard UL1046.
- Tested & certified to ASTM2519.

APPLICATIONS
- Commercial kitchens
- Water mist separation
- Spark arrestors
- Sand filtration
- Grease filtration

LONGAR® TYPE 2 PREMIUM BAFFLE FILTER
For use in commercial kitchens and ventilation to extract grease laden air and act as a fire barrier. Fire barriers prevent any cooking flames traveling past the extract canopy. The new Type 2 is a development of customers requesting certain attributes for the baffle filter, the main ones being safety edges on frame and blades. LONGAR® Type 2 is available in standard depths of 20mm and 45mm depths, this is required for the filter to operate at a constant efficiency and to protect the system as a flame barrier as tested to European Standard DIN 18869-5 and American Standard UL1046. Custom sizes are available on request.

CONSTRUCTION / MATERIAL SPECIFICATIONS
As standard all baffles are manufactured with Stainless Steel 430 polished finish, (Other finishes and materials are available). Maximum Operating temperature 400C or 750F.

FITTING INSTRUCTIONS
- Fit products, handles in direction of air in.
- Product vertical in air stream.

HANDLING
- Handle with care when unpacking.
- Store in dry and frost protected place.

MAINTENANCE
- All maintenance should be carried out in accordance with the planned maintenance set by installation contractor.
- When handling any components suitable PPE should be used - gloves, eye protection and access equipment.
- Filters should be cleaned by a trained operative either daily for heavy use or weekly for light use.
- For more exact guide to cleaning you should contact a cleaning specialist.

PACKAGING
- All units are packaged in double wall boxes with separators for standard sizes, glued closed for protection whilst in transit against contamination.

FILTER CLASSIFICATION:
- Filter Class G2
- UL Class 2

TESTED TO:
- DIN 18869-5
- UL 1046
- ASTM 2519

MANUFACTURED TO:
- DW172
- ISO9001

GOYA WORKS

A.V.MOUNT (ANTI VIBRATION MOUNT)

Anti Vibration Mounts (A.V. Mounts) attach to the bottom of Mounting Feet.A.V. Mounts are used to isolate the fan from the system to prevent vibration transfer through fixings or structures.A.V. Mounts can be used to isolate any products from the main system to prevent vibration transfer. The main uses we supply A.V. Mounts for are, Axial flow fans, Box fans, Centrifugal fans, in fact A.V. Mounts can be used with anything that causes vibration.

Flexible Duct Connector

For damping vibration generated by fans or ventilation equipment and transferred to air ducts. For partial compensation of ductworks distortion resulting from temperature changes. Flexible vibration damping connectors are fixed to air ducts with clamps.

Universal Bracket For Wall Mounting

High Velocity Jet Cowl

High velocity jet cowl. This type of termination provides a higher efflux velocity over standard cowls. In simple terms any residual odours will be "Jetted" high above areas that may be affected by nuisance odours. DEFRA kitchen guidance 2018 actually lists this is a preferred method of extraction. Rainwater is captured in a dish within the cowl and is fed out through a drinage tube.

GOYA WORKS

The DEFRA Guide

When the Environmental Protection Act 1990 was brought in, "an Act to make provision for the improved control of pollution arising from certain industrial and other processes", Councils up and down the country had the power to enforce pollution levels across their boroughs.

In 2004 Netcen, an operating division of AEA Technology Plc was asked to produce a report on behalf of the Department for Environment, Food and Rural Affairs exclusively covering Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems and in January 2005 the DEFRA Guide was published.

Purified Air's Managing Director, David Collins, was consulted extensively during the preparation of the DEFRA guide and was very pleased to be able to assist NETCEN and DEFRA. David has been working in this business since the early 1980's and is a world renowned expert in the field of commercial kitchen exhaust filtration.

DEFRA Guide Risk Assessment for Odour Table 1

Criteria	Score	Score	Details
Dispersion	Very Poor	20	Low level discharge into courtyard or restriction on stack
	Poor	15	Not low level but below eaves, or discharge at below 10m/s
	Moderate	10	Discharging 1m above eaves at 10-15m/s
	Good	5	Discharging 1m above ridge at 15m/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 for medium sized take away
	Small	1	Less than 30 covers or small sized take away
Cooking Type (odour and grease loading)	Very High	10	Pub (high level of fried food), fried chicken, burgers or fish and chips
	High	7	Kebab, Vietnamese, Thai or Indian
	Medium	4	Cantonese, Japanese or Chinese
	Low	1	Most pubs, Italian, French, Pizza or Steakhouse

DEFRA Guide Risk Assessment for Odour Table 2

Impact Risk	Odour Control Requirement	Significance Score*
Low to Medium	Low level odour control	Less than 20
High	High level odour control	20 to 35
Very high	Very high level odour control	more than 35

*Based on the sum of contributions from dispersion, proximity of receptors, size of kitchen and cooking type

- **Annex B of the DEFRA Guide lays out the information required to support the planning application for a commercial kitchen.**
- **Annex C of the DEFRA Guide outlines risk assessment for odour control for a commercial kitchen.**

To establish what odour control equipment your premises may require, calculate your score from the Risk Assessment for Odour Table 1.

This score can then be applied to the Risk Assessment for Odour Table 2 which will dictate the broad level of control that you require.

These levels are expanded upon in the Risk Assessment for Odour Table 2 Notes.

Specifying the right equipment at the right level is not an exact science and takes years to perfect, our specialist field team are all highly experienced and only too pleased to give you a free site survey.

Risk Assessment for Odour Table 2 Notes

Low to medium level odour control may include:

1. **Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.1 second residence time).**
2. **Fine filtration followed by counteractant/ neutralising system to achieve the same level of control as point 1.**

High level odour control may include:

1. **Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.2 – 0.4 second residence time).**
2. **Fine filtration or ESP followed by UV ozone system to achieve the same level of control as point 1.**

Very high level odour control may include:

1. **Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.4 – 0.8 second residence time).**
2. **Fine filtration or ESP followed by carbon filtration and counteractant/neutralising system to achieve the same level of control as point 1.**
3. **Fine filtration or ESP followed by UV ozone system to achieve the same level of control as point 1.**
4. **Fine filtration or ESP followed by wet scrubbing to achieve the same level of control as point 1.**

above are excerpts from the DEFRA Guide, a full copy of the guide is available upon request

GOYA WORKS