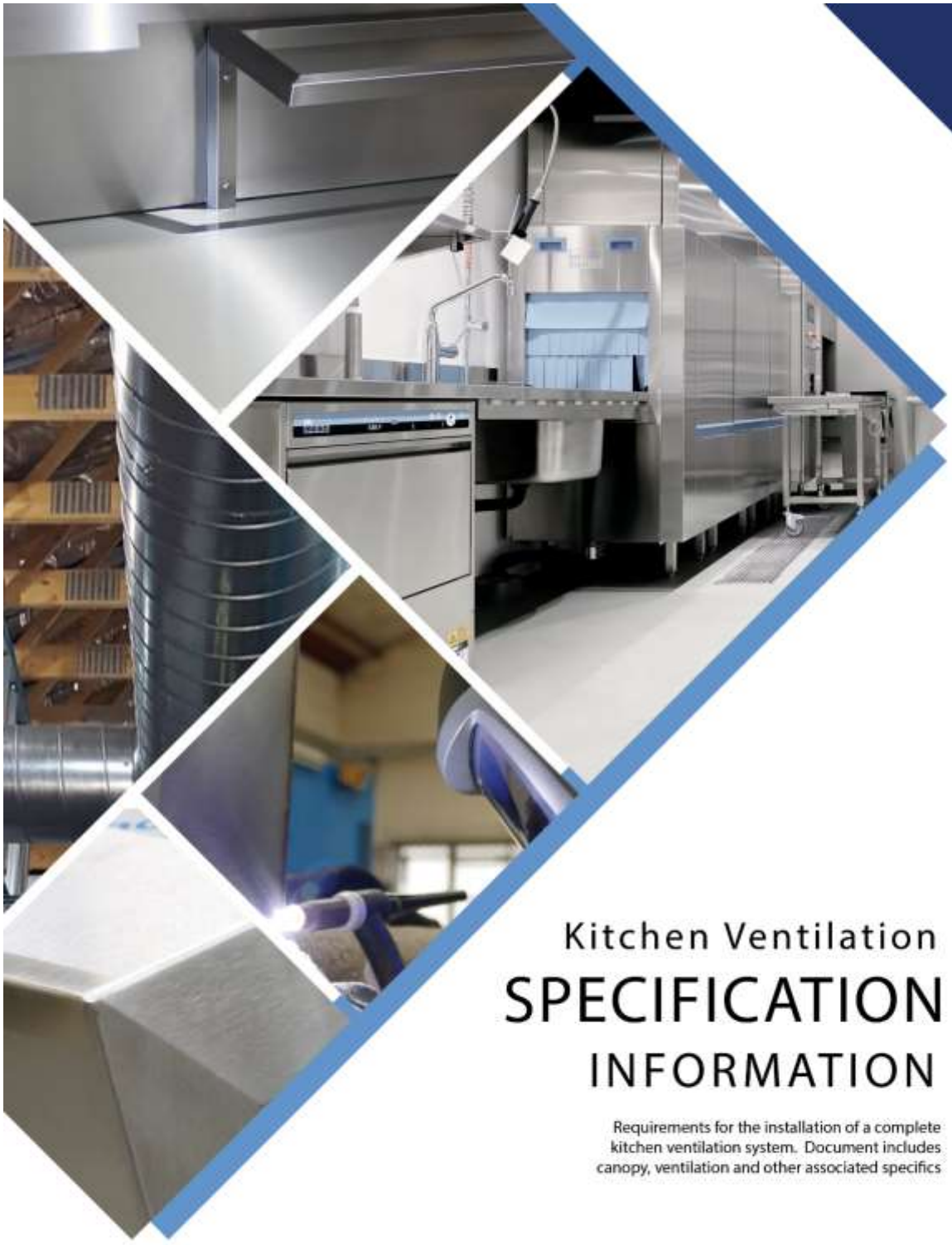


Kitchen Ventilation
SPECIFICATION
INFORMATION

Requirements for the installation of a complete kitchen ventilation system. Document includes canopy, ventilation and other associated specifics

Springfield Group

thespringfieldgroup.net - info@thespringfieldgroup.net

59 VIOLET AVENUE

Information Provided By –

UNIT C1 OYO BUSINESS PARK
CASTLE VALE
BIRMINGHAM
B35 6AN

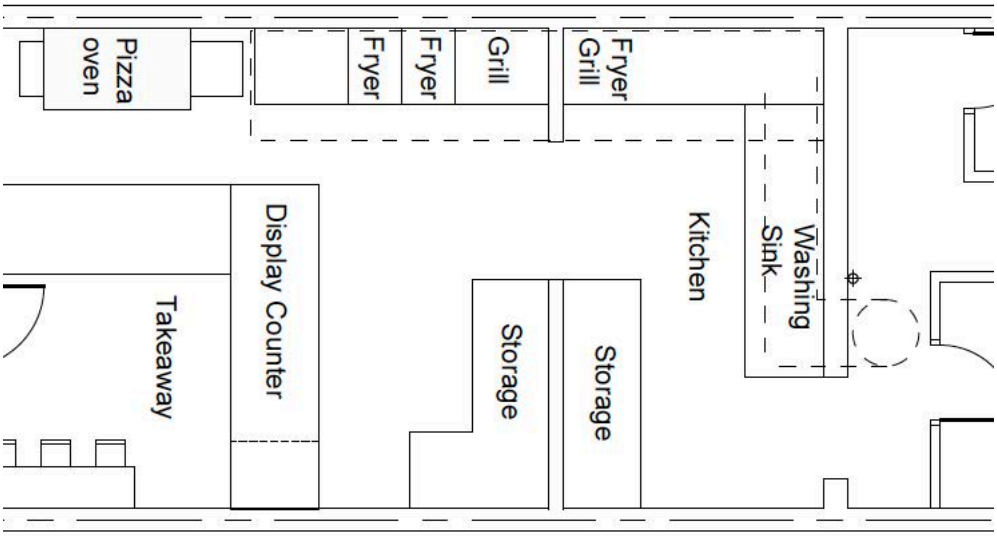
01675 430 490

info@thespringfieldgroup.net

Property Details

59 VIOLET AVENUE

Now the equipment has been confirmed this specification is based on coefficient values.



Cooking Equipment

Item	Kitchen Equipment Item	Gas/Electric	Coefficient	Stack	Width	Depth	Height	Area	Ov.Height	Flow Rate
A	Open Top 6 Burner Range and Oven	GAS	0.5	1	900	700	880	0.63	800	0.32
B	Table		0.03	3	300	800	800	0.24	800	0.02
C	Heavy duty double fat fryer	GAS	0.6	1	400	700	800	0.28	800	0.17
D	Tandoor Oven	GAS	0.55	2	750	800	800	0.6	800	0.66
E	Gas Boiling Table, Hob Top, Stock Pot Stove	GAS	0.4	1	610	610	450	0.37	450	0.15
Total					2.96m	0.8m		2.12m2	0.8m	1.3126m3/s

BESA SPECIFICATION DW/172:2017

Table 2: Appliance, Coefficient and Temperature Schedule

Appliances ↓	CANOPIES & VENTILATED CEILINGS GAS	CANOPIES & VENTILATED CEILINGS ELECTRIC	Surface Temp.
	(m³/s/m²)		(°C)
MISCELLANEOUS			
Benches, Spreaders & Worktops	0.03		25
Sink	0.15		25
Pass Through Dishwasher	0.40		61
Pan / Utensil Wash Machine	0.40		42
Rack & Flight Dishwasher	see manufacturers literature		–
Coffee Maker	–	0.03	25
Light Duty Microwave Oven / Toaster	–	0.03	25
Bain Marie / Hot Cupboard	0.20	0.15	57
Chip Scuttle	–	0.15	25
Servery Counter - Hot Food	0.24	0.24	75
Water Boiler / Still / Beverage Unit	0.25	0.20	70
Refrigeration Unit	see manufacturers literature		–
BOILING / ROASTING / STEAMING			
Induction Hob / Ceramic Stove	–	0.25	90
Combination Microwave Ovens	–	0.15	35
Open-Top Range & Oven	0.50	0.30	190
Solid Top Oven Range	0.60	0.51	420
Boiling Table / Hob Top / Stock Pot Stove	0.40	0.25	190
Boiling Pan / Steam Kettle	0.35	0.25	146
Brat Pan	0.60	0.50	240
Heavy Duty Multi/Bulk Cooking Pan	–	0.50	240
Pasta Cooker	0.30	0.20	120
Roasting Oven (with worktop)	0.55	0.30	90
Tandoori Oven (not solid fuel)	0.50	0.33	90
Combination Ovens (Combis): (If stacked, use larger value)			
Stand-Mounted 6 grid.	0.35	0.30	92
Stand-Mounted 10 grid.	0.45	0.32	92
Floor-Mounted 12 grid.	0.50	0.35	92
Floor-Mounted 20 grid.	0.60	0.40	92
Floor-Mounted 40 grid.	0.75	0.55	92
Atmospheric Steamer	0.35	0.20	125
Pressure Steamer	0.30	0.20	120
Dim Sum Steamer	0.60	0.50	123
Fan-Assisted Convection Oven	0.40	0.30	86
Holding Oven	–	0.10	57
FRYING			
Deep Fat Fryer	0.60	0.45	190
Pressure Fryer	0.50	0.45	170

Appliances ↓	CANOPIES & VENTILATED CEILINGS GAS	CANOPIES & VENTILATED CEILINGS ELECTRIC	Surface Temp.
	(m³/s/m²)		(°C)
GRILLING & BROILING			
Mild Steel Griddle	0.30	0.25	190
Chrome Griddle / Plancha	0.45	0.40	290
Induction Griddle	–	0.25	62
Clam Shell / Contact Grill	0.45	0.34	105
Upright or Chain Broiler	0.75	0.55	410
Salamander Grill	0.75	0.55	260
Rotisserie (not solid fuel)	0.75	0.55	195
Shawarma Kebab Machine	0.75	0.55	195
Chargrill / Charbroiler	0.95	0.52	350
Vapourizing Grill (less than 3kW/m²)	0.75	–	170
Chinese Wok Range (Induction)	–	0.40	88
Chinese Wok Range	0.50	–	200
Chinese Wok Range (Turbo)	0.60	–	370
PIZZA COOKING & BAKING (gas or electric only. No solid fuel)			
Conveyor Pizza Oven			
Single Deck	0.50	0.25	90
Double Deck	0.60	0.50	90
Triple Deck	0.90	0.75	90
Deck Pizza Oven:			
Single Deck	0.20	0.15	90
Double Deck	0.25	0.20	90
Triple Deck	0.30	0.25	90
Pastry / Baking Ovens			
Single Deck	0.15	0.10	90
Double Deck	0.20	0.15	90
Triple Deck	0.25	0.20	90
SOLID FUEL COOKING (including gas ovens that have solid fuel capability)			
Open Grill / BBQ / Charcoal Pit	0.96		420
Enclosed Charcoal Oven	1.14		210
Stone Hearth Oven	0.35		90
Smoker	see manufacturers literature		–
Tandoori Oven	0.55		90
Rotisserie	0.85		95

IMPORTANT NOTE

IGEM/UP/19 (in association with the HSE and GAS SAFE) states that Carbon Dioxide (CO2) levels within a commercial kitchen, that includes one or more gas-fired appliance, must not exceed 2000ppm. Experience has shown that this is not a problem for the vast majority of projects. However, occasionally a design involves the incorporation of multiple gas appliances of a certain type and if the standard coefficients as shown above in Table 2 are used to calculate the extract flow rate, then there exists a clear risk that the 2000ppm threshold could be exceeded. For projects such as Food Technology Teaching Kitchens where there might be numerous multi-burner gas ranges, then to mitigate the risk of excessive levels of CO2 in the space, it is suggested that the extract flowrates may need to be increased.

GENERAL NOTES:

1) Other Gas Thermal Coefficients have been analysed and modified, where appropriate, to reflect GAS SAFE suggestions for the control of Carbon Dioxide (CO2) in commercial kitchens. Ref. IGEM/UP/19.
2) Canopy / Ventilated Ceiling Factors must be applied.
3) Treat LPG appliances the same as "gas"
4) It is the responsibility of catering equipment manufacturers to test new models and provide ventilation requirements, such as they would for water, gas & electrical services, to a recognised international standard.
5) Designers should always be aware that it is essential to consider the context in which the catering equipment is being used and that exceptional circumstances call for special consideration.
6) The coefficients for Combination Ovens assume that the recommended two-stage door opening procedure, if fitted, is utilised by operatives, so allowing proper capture of the steam plume and assume that doors on "stacked" Combis would never be opened simultaneously.

Extraction:

Volume M3/second	*Resistance*	*Discharge Velocity*	*Filtration*	*Noise level*
1.31 M3/sec	*345 pa*	*15.00*	*Baffle filters Activated carbon filters*	*40 dba*

Supply:

Volume m3/second	*Resistance*	*Replacement Percentage*	*Air Filter*	*Noise level*
1.12 M3/sec	*150 pa*	*85%*	*EU4*	*53 dba*

Our canopies are installed at a working height of 2000mm to 2100mm underneath the canopy. 300mm overhang on front and sides of appliances.

Proposed system specification

Brief description of site requirement

Discharge through cut off discharge cowl at roof level, all extraction and air supply plant to be mounted on flat roof area at the rear of the premises.

Due to the nature of the building with low ceilings to have any equipment mounted externally all the below parapet perimeter wall, with easy access from staircase onto the roof area for maintenance and filter changes.

We can confirm that the design and specification for the extraction system at the above address is in accordance to DW172 specification.

Canopy Information

4700mm (long) x 1200mm (wide) 430 grade, brushed stainless steel wall canopy, complete with stainless steel convolute coil filters. Incorporated within the main canopy, would be a full-length plenum, built filter housing to accommodate 6off, Coil filters.

Length Metre	*Width Metre*	*Type*	*Grade Satin*	*No: of filters*	*Filter Size*	*Filter Type*	*Canopy Style*
4.70	*1.20*	*Wall*	*430*	*8*	*500x500*	*Coil*	*Box*

Extraction System Information

Galvanised mild steel sheet of lock-formed ducting in accordance with DW144. Constructed from hot-dip galvanized steel sheet. Joints and spigots sealed with High-pressure ducting sealant, which complies with HVCA specification DW144.

Off the top of the canopy with rectangular galvanised ducting through external wall to a twin activated carbon filter complete with pre-filters, transposing to a 500mm Acoustic cabinet fan complete with speed controller, 1200mm long splitter silencer exiting through rear flat roof, turning

up to rise to high roof level, one metre above the eaves for high dilution dispersion with a efflux velocity of 15 M/sec.

Criteria: which our design is based on regarding airflow velocities.

High velocity cowl: - 10-15 M/sec velocity, to disperse into atmosphere. Duct velocities should be as follows: Extract (m/s) Main runs 6-8 M/sec with the branch and spigots 5-7 M/sec.

Type of discharge cowl

High velocity cowl with bird guard discharging.

Volume 1.31 M3/sec tapered inlet cowl divided by 0.087 M2 = 15.00 M/sec

Extraction fan details

Located Internally 4 pole, single-phase mixed flow fan at the designed Duty: 1.31 M3/sec @ 310 Pascal's resistance.

Grease filter resistance

Baffle filters	*Quantity*	*System Volume*	*Model*	*Resistance in Pascal's*
2020T	*7*	*1.76 M3/sec*	*BF5050*	*50*

System resistance calculations

	Extraction system	***Pascal's***
1	*Ducting system*	*60 Pa*
1	*Silencer*	*55 Pa*
7	*Baffle filters in Wall canopy*	*50 Pa*
1	*Activated carbon filter and pre-filter*	*115 Pa*
Total static resistance on the system		***260 Pa plus 20% clean to dirty 310 Pa***

Selected Fan Details

Fan Model	*Type*	*m3/sec*	*Resistance*	*Rpm*	*Phase*	*Noise level*
500 P Box	*Mixed flow*	*1.31*	*310 Pascal's*	*1470*	*1*	*56 dba @ 3 Mtrs*
With the fan mounted on flat roof and splitter silencer after the fan reducing induct noise by 18 decibels, with the fan mounted below parapet wall. Noise level will be greatly reduced and is estimated to be 38 ***dba @ 3 metres distance from Cowl***						

FlaktWoods Limited
Fan Selector - Technical Datasheet

FläktGroup

Project	:	Project Code	:
Quotation	:	Date	: 27 June 2023

Lang_ESTOC

ePowerBox 67-500-1-4
(6HF)
ASHFORD
1 Day

PRODUCT

Model Code	ePowerBox 67-500-1-4 (6HF)
Fan Diameter	500 mm
Installation	Type D - Form B
Fan Casing	Long Case - Horizontal

PERFORMANCE

Requested Duty	1.32 m³/s @ 310 Pa (Static)
Outlet Dynamic Pressure	27.3 Pa
Velocity	6.75 m/s

MOTOR

Motor Rating	1.38 kW [Integral Frame]
Full Load Current	6.22 A
Starting Current	19.9 A
Electrical Supply	220 - 240 Volts 50 Hz 1 Phase
Motor Winding	Standard
Motor Type	Class F Insulation

EFFICIENCY GRADES

Regulation 1253 - 2014

UVU Efficiency	53.5% (ErP Compliant) ✓
Nominal Flow Rate	1.61 m³/s @ 461 Pa
Effective Input Power	1.38 kW
Nominal RPM	1383 rpm
Internal Fan Efficiency	53.5%
SFP value	0.84 W/l/s @ Actual Duty

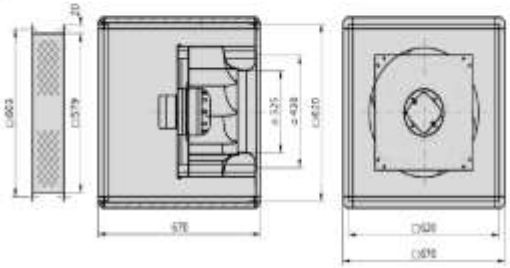
ENVIRONMENT

Air Density	1.2 kg/m³ / 20 °C / 0 m / 40% RH
Smoke Venting	No Smoke Venting
Operating Environment	Normal

RUNNING COSTS

Power from mains	1.12 KWh
Energy Consumption	2,237.81 (2,000.00 h/Year)
Running Cost / Year	£559.45
CO2 per Year	786.72 kgCO2e

PRODUCT DIMENSIONS



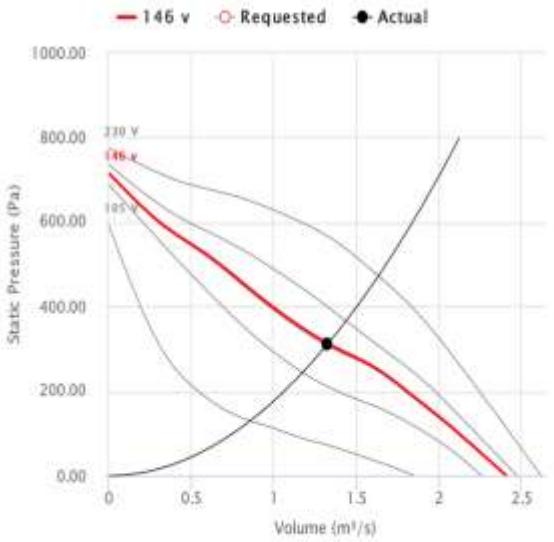
MECHANICAL

Operating Temperatures	0 °C to 40 °C
Minimum Running Speed	277 rpm [13850 Hz]

COMMENTS

A speed controller will be needed to control the speed of this product

FAN PERFORMANCE CURVE



ACOUSTICS

	Sound Spectrum (Hz)								Overall		Distance (3 m)
	63	125	250	500	1k	2k	4k	8k	Lw*	LwA*	LpA @ 3 m **
Inlet	45	56	63	63	63	60	56	50	77	69	49
Outlet	43	69	71	69	69	63	59	54	87	76	56
Breakout	37	53	50	39	35	25	<20	<20	71	55	35

Sound Data At Requested Duty. * Lw dB re 10^{-12} W * Lw dB re 10^{-12} W

FAN & ACCESSORIES

Item Description	Part Number	Qty
ePowerBox 67-500-1-4 (6HF)	BE500003	1

Springfield Group

Splitter attenuator Splitter silencer baffle pods on the sides and radiused centre pod, flange each side for installation.

600mm X 600mm X 900mm Long Radius baffles							
63	125	250	500	1K	2K	4K	8K
4	8	12	23	26	26	17	12

ODOUR ABATEMENT

Dispersion of the discharge cowl risk assessment

Low-level discharge, discharging to courtyard or restriction on stack	*Very poor*	*20*	
Not low-level but below eaves, or discharge of below 10 M/S	*Poor*	*15*	
Discharging 1m above eaves 10 to 15 M/S	*Moderate*	*10*	
Discharging 1M above ridge 15 M/S	*Good*	*5*	*5*

Proximity of receptors

Close sensitive receptor less than 20metres kitchen discharge	*Close*	*10*	*10*
Close sensitive receptor between 20 to 100 metres from kitchen discharge	*Medium*	*5*	
Close sensitive receptor more than 100metres from kitchen discharge	*Far*	*1*	

Kitchen size

More than 100 covers a large size takeaway	*Large*	*5*	
Between 30 and 100 covers or medium sized takeaway	*Medium*	*3*	*3*
Less than 30 covers or small takeaway	*Small*	*1*	

Type of Cooking Odour & grease loading

Pub (high level of fried food), fried chicken, burgers or fish and chips	*Very high*	*10*	
Kebab, Vietnamese, Thai or Indian	*High*	*7*	*7*
Cantonese, Japanese or Chinese	*Medium*	*4*	
Most pubs, Italian, French, pizza or steakhouse	*Low*	*1*	

Based on	*Total Score*	*High*	*25*

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	25
Very High	Very high-level odour control	more than 35	

Carbon Filtration

Activated Carbon filter information. Second stage

The carbon filter is the ideal solution for a modular approach to fume removal. Activated carbon dates back many years. In the First World War, gas masks were filled with activated carbon to remove chlorine gas.

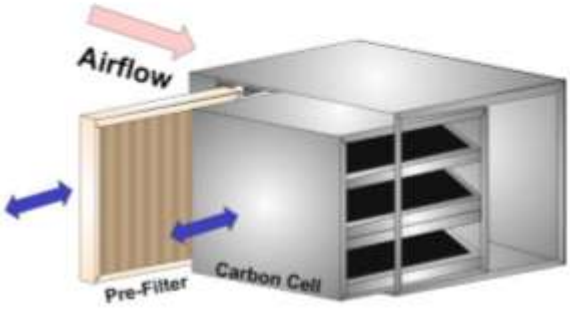
Today a wide range of carbon filters to deal with many noxious fumes and gases, whilst maintaining high levels of strength and low-pressure loss.

Manufactured from several carbon biscuits held in a vee formation within a corrosion-proof metal casing, these are sealed into the frames of our filters using polymer, which eliminates the possibility of any air bypass around the carbon.
Type 8 carbon filter features: High quality carbon – all grades available
Robust modular construction: Low-pressure losses: High carbon content.

Typical required residence dwell times for various cooking Premises

Cooking Establishment	Capacity Required	Residence Time (seconds)
Canteen, Cafes, English style normal kitchen and restaurants, pizza and bread shops	Normal'	0.1 – 0.15
Kitchens producing large amounts of fried foods or Concentrated cooking of burgers	2 times 'normal'	0.2 – 0.35
Indian restaurants, Chinese, Kebabs etc. (spices etc.)	3 times 'normal'	0.4 – 0.60

Dwell time to achieve 0.20 to 0.35 seconds Kebab cooking.



High level control may include:

Carbon filtration (carbon filters rated with a 0.20 - 0.35 second residence time).

Maintenance must be carried out to ensure these performance levels are always achieved.

First stage filtration

Stainless steel baffle grease filters in canopy as specification sheet

Second stage for Odour removal

Type	Width	Height	Length	M2 Area	Pre-filters fitted
Activated carbon	**1200**	**600**	**900**	**0.72**	**V Pleat Synthetic**

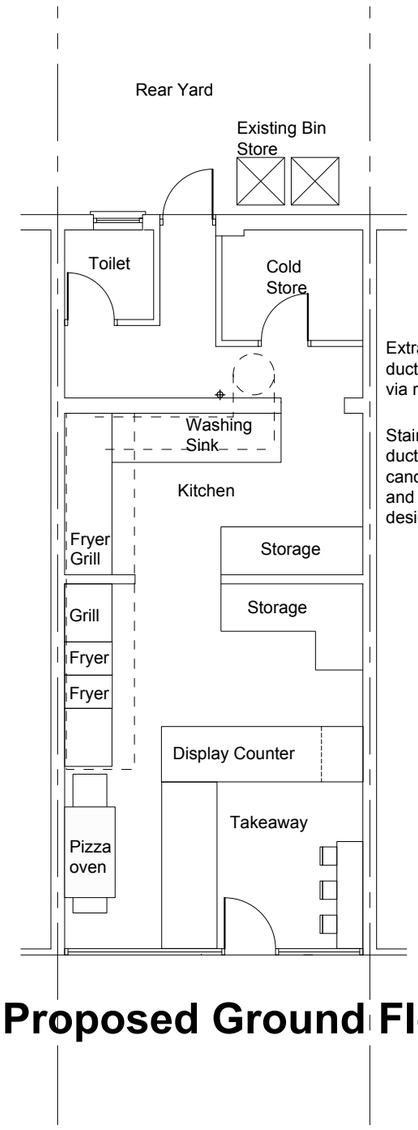
Odour control method

Area M2	Multiply	Length	Divided	Volume m3/sec	Equals	Seconds dwell Time
0.72	**x**	**0.80**	**÷**	**1.31**	**=**	**0.44**
Mesh pre-filters / Synthetic fitted to take out any large particulates each						**0.02**
Achieving a Total dwell time (seconds)						**0.46**

Very high level of filtration with a 0.46 dwell time

Notes:
Contractors must verify all dimensions on site before commencing any work or shop drawings. This drawing must not be scaled. Use figured dimensions only. Subject to statutory approvals and survey.

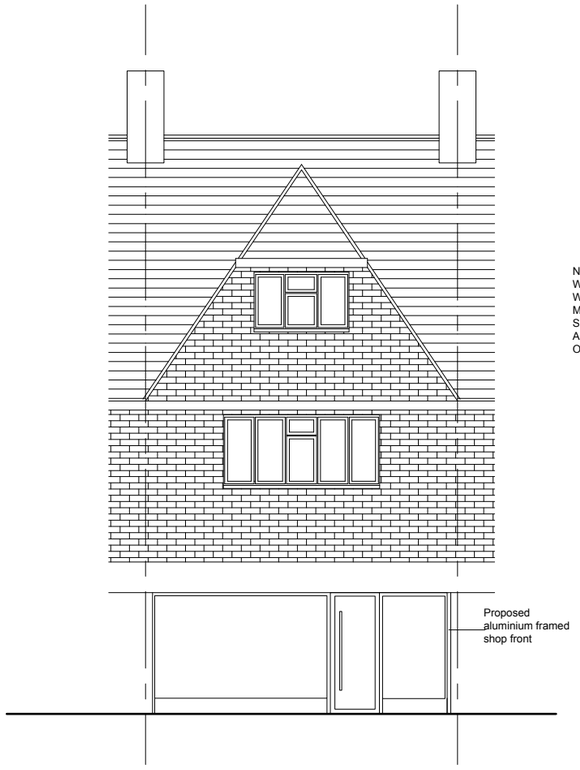
ALL DRAWINGS 730/01-06,
AND ENGINEER'S DETAILS TO BE READ TOGETHER



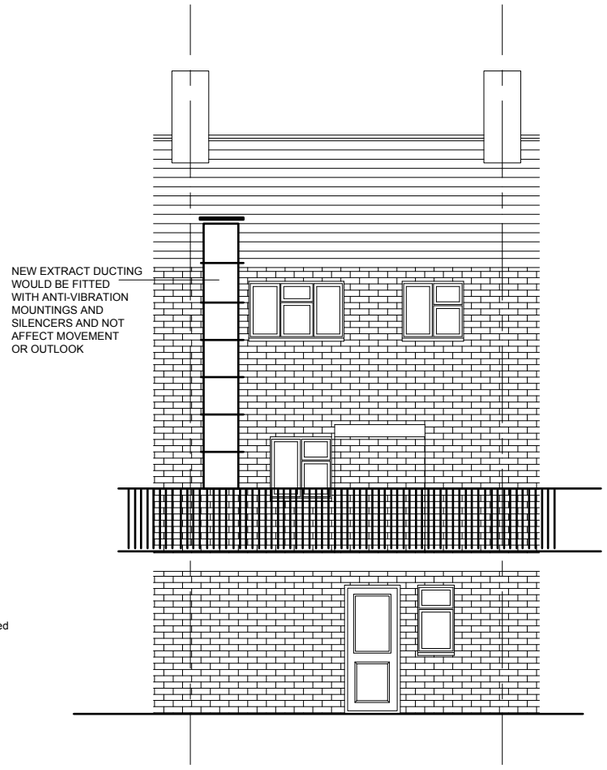
Extractor ducting via rear wall

Stainless steel extractor ductwork canopy with carbon filters and silencers to m&e specalist design to suit kitchen arrangement

Proposed Ground Floor Plan



Proposed Front Elevation



Proposed Rear Elevation

0 2 4 6 8 10m

SCALE: 1/ 100 @ A3

This is a '**Scheme Level Drawing**' and is intended to illustrate the general arrangement of the project proposals. As it stands this drawing does not include all of the detail necessary for a full plans building regulations application.

While this drawing can be used as a base drawing for construction purposes, your building contractor may require more information. It is therefore important to discuss, with your architect & builder together, where more detail would be appropriate.

1. This drawing has been based upon a measured survey drawing by others. As a result, the precision of the dimensions indicated is dependent upon the information supplied.
2. While this drawing can be used as a base drawing for construction purposes, it is VERY IMPORTANT that all dimensions are checked carefully before any work commences or any materials are ordered.
3. This drawing can be used as part of a planning application, although your planning officer may ask for more specific information about some aspects of the design. Ask your architect for more information on planning applications.
4. Where applicable, a suitable Structural Engineer and/or a Party Wall Surveyor should be consulted. Although as far as possible these instances have been indicated, this is not necessarily exhaustive and the whole scope of proposed works should be reviewed.
5. Unless other arrangements have been specifically made, your building contractor should serve a Building Notice, as and where applicable, to your local authority to satisfy the requirements of the Building Regulations. Your building contractor should also liaise with the Building Control Officer regarding routine inspections of the work.

Further detailed design / dwgs may be needed for this section.

This symbol indicates that it may be beneficial to have more detailed design drawings prepared to illustrate elements of the proposal in more detail so that your building contractor can more fully understand the intention of the design.

You may need a Structural Engineer for this section.

This symbol indicates that structural calculations / structural design may be required, both of which should be undertaken by a suitable structural engineer. Your architect can help point you in the right direction.

You may need to consult a Party Wall Surveyor for this section.

This symbol indicates that you may need to take action in order to comply with the Party Wall Act and it may ne wise to consult a suitable Party Wall surveyor. Your architect can help point you in the right direction.

Revisions:
a. date.

All dimensions are in millimetres
All dimensions to be checked on site

AH ARCHITECTURE
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Drawing name: **Proposed Drawings**		
Job no: **AH 730**	Drawing no: **01**	Revision: **-**
Scale: **1/100 @ A3**	Date: **31/12/25**	Drawn by: **AH**

Project name:
59 Violet Avenue, Hillingdon, Uxbridge, UB8 3PR