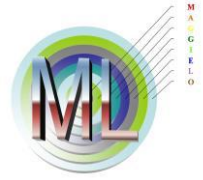


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Design and Specification For Extraction Ventilation System

Proposed Property:

Bento House
200 Cheltenham Road
Bristol
BS6 5QZ

Date: 08th September 2023



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1.0 Brief description of current site installation

- Canopy, fan and ducting
- High velocity cowl
- 2 of Silencers
- (Carbon filter and pre-filter) odour abatement measures installed

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2.0 Summary of extract fan and fresh air in fan detailed information attached in this specification

TF500/4-1AC



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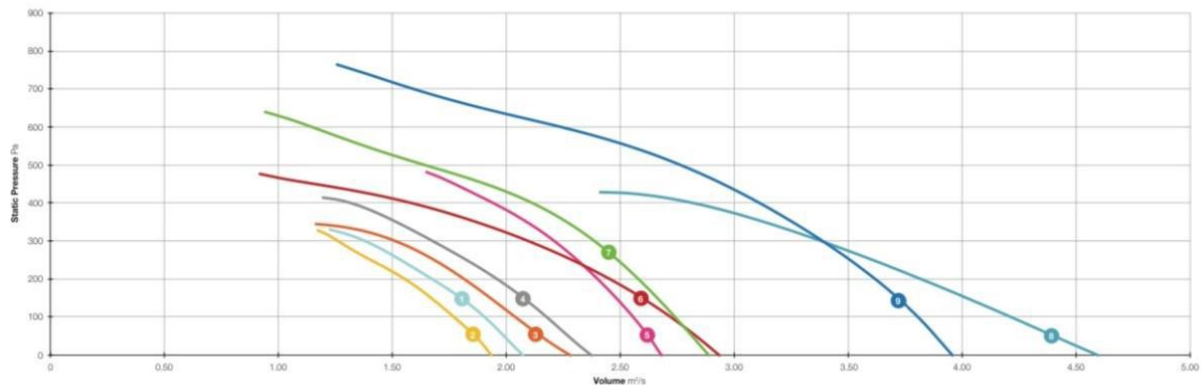
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TURBOFLOW TF



Performance Range Curves



- 1 TF450 / 4-1AC
- 2 TF450 / 4-3AC
- 3 TF500 / 4-1AC
- 4 TF500 / 4A-3AC
- 5 TF500 / 4B-3AC
- 6 TF560 / 4-1AC
- 7 TF560 / 4-3AC
- 8 TF630 / 4-1AC
- 9 TF630 / 4-3AC

TURBOFLOW TF



Sound Data

Single Phase 220V to 240V / 50Hz

Product Code		Sound Power Level dBW @ Octave Band Hz							Total dB	
		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz		8kHz
TF450/4-1AC	Inlet	89	92	91	85	82	76	71	66	96
	Outlet	90	91	90	87	82	79	73	68	96
TF500/4-1AC	Inlet	78	86	89	83	77	74	70	63	92
	Outlet	79	86	88	82	79	75	71	64	91
TF560/4-1AC	Inlet	79	85	86	82	80	77	73	68	91
	Outlet	80	84	85	82	81	79	75	70	90
TF630/4-1AC	Inlet	86	87	88	85	84	83	80	75	94
	Outlet	85	87	88	86	84	81	76	71	94

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3.0 Introduction

An Island canopy with side extraction 2.5m x 1.2m and a wall canopy 2.8m x 1.2m based the airflow duty on a 500mm fan. This system is to service the Japanese type cooking appliances underneath. The size and volume of the canopy has been designed and calculated to capture the grease-laden air and heat removal over the appliances used.

4.0 Proposed system rectification work specification

Due to the low ceiling nature of the kitchen all of the equipment shall be externally mounted on the roof and extract ducting located along the side of the building and terminating at roof level with a high velocity discharge cowl complete with bird guard.

Two separate 2500mm x 1200mm and 2800mm x 1200mm , brushed stainless steel canopies are used to construct an Island canopy and wall canopy. Incorporated within each canopy will be a full-length plenum with build-in filter housing to accommodate 9 off stainless steel baffle filters. Discharge will be through the kitchen ceiling with a ninety degrees turn up to the roof. Within the extraction ducting housings are provisioned to accommodate pre-filters and carbon filters. To reduce as much as possible the noise from the extraction system, 2 of silencers will be installed on either side of fan. Along with the silencers the fan will also be positioned on anti-vibration mounts to mitigate any reverberation type vibration from the extraction system. This will reduce the discharge noise to around 48 dBA (3 metres from discharge).

This proposed system to be mounted or hung on anti-vibration mountings to reduce any reverberation type vibration from the extraction system, travelling through the building.

All ducting will be provided with numerous access doors for cleaning and maintenance purpose.

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

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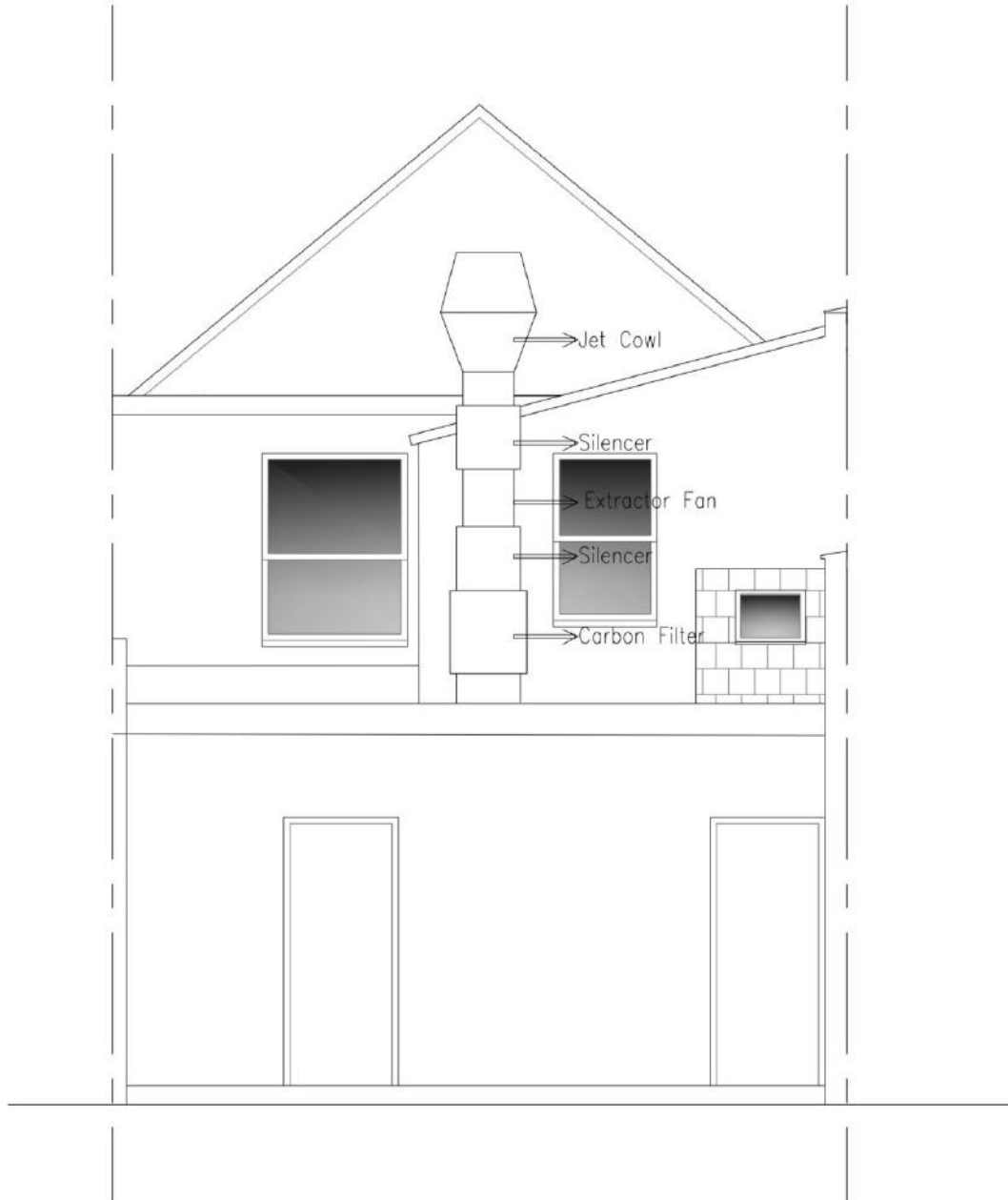
PROPOSED FRONT ELEVATION

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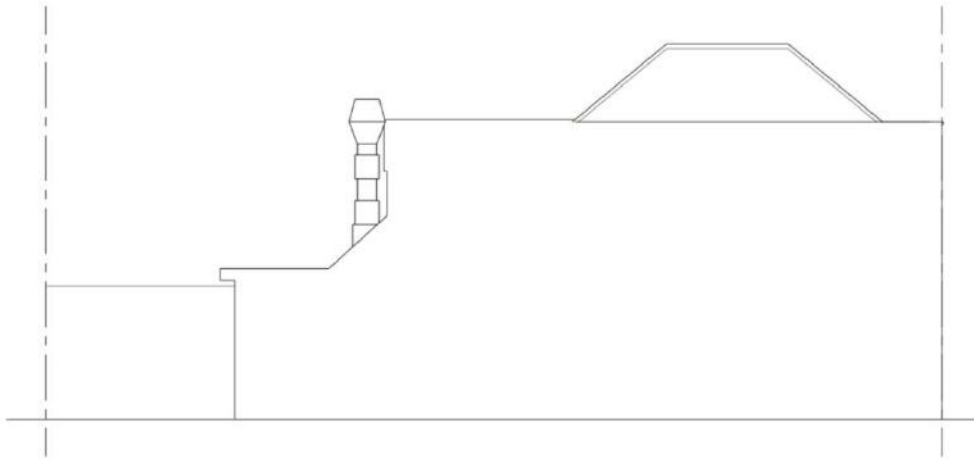
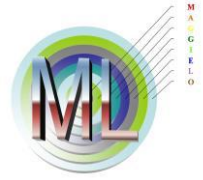
PROPOSED REAR ELEVATION

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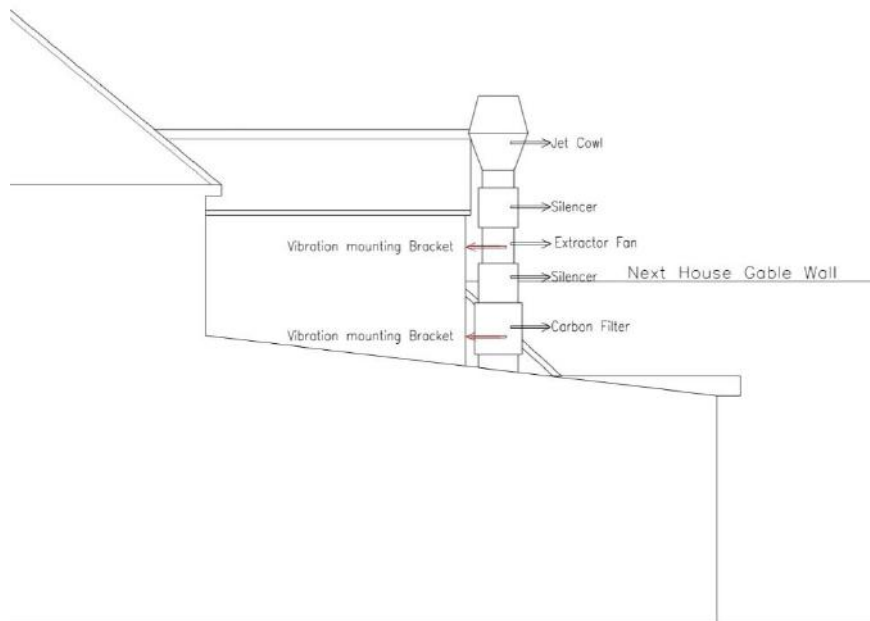
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PROPOSED SIDE ELEVATION



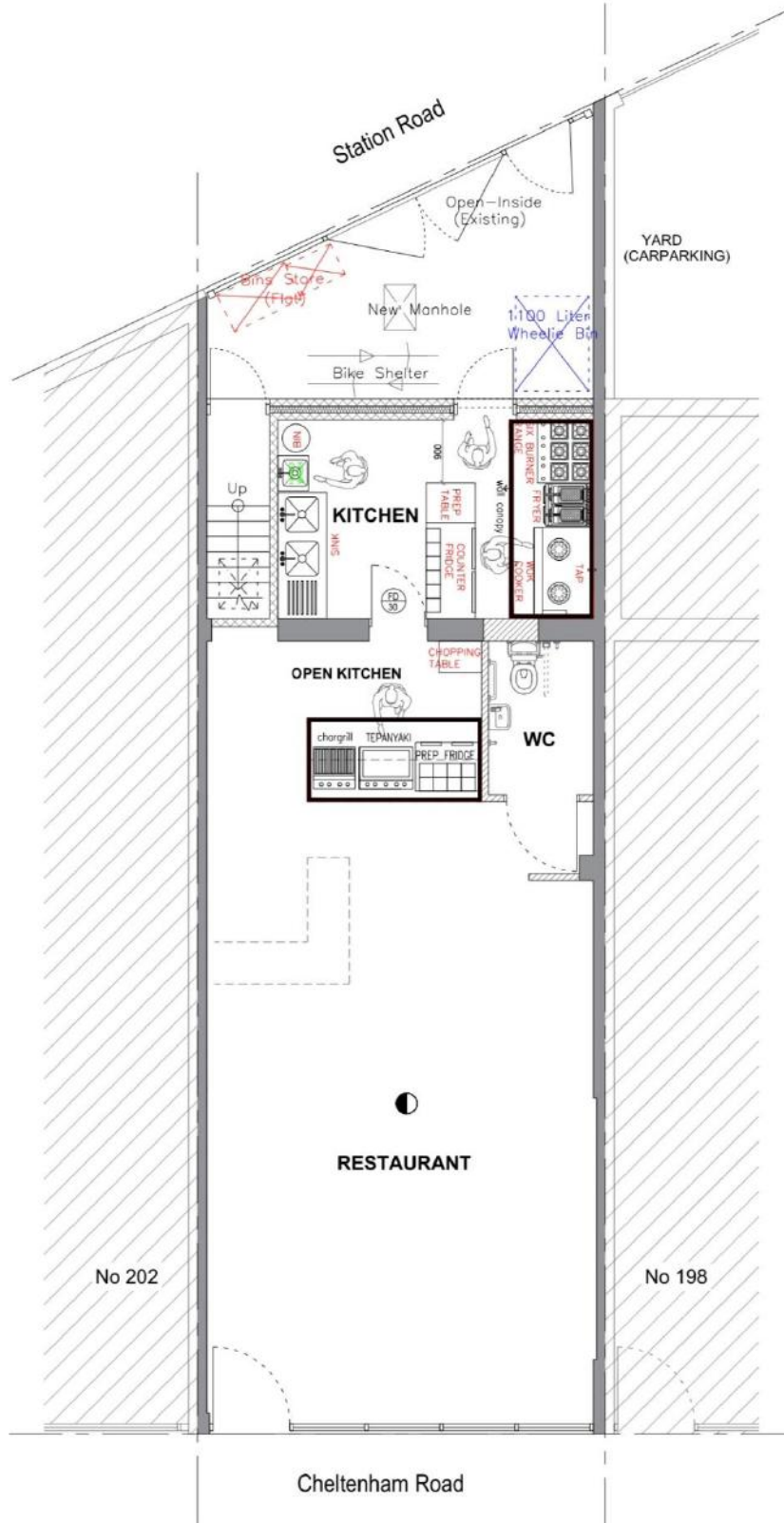
PROPOSED FLANK ELEVATION

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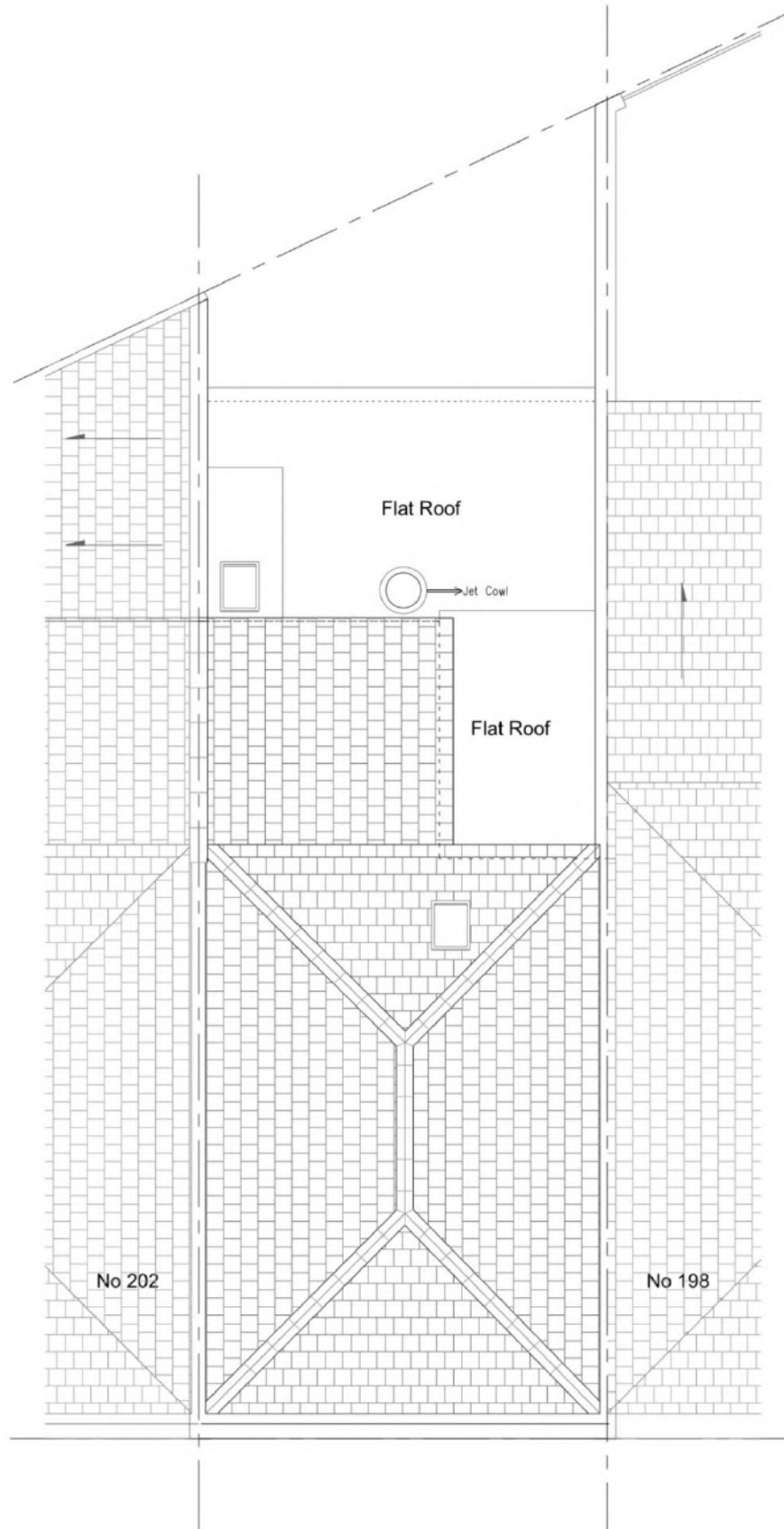
Proposed kitchen layout

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Proposed roof plan

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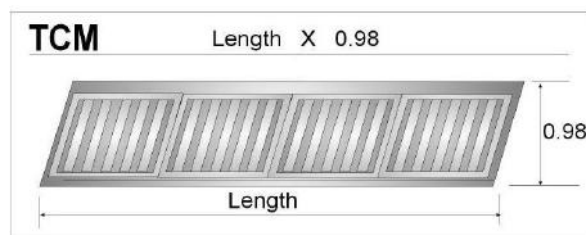
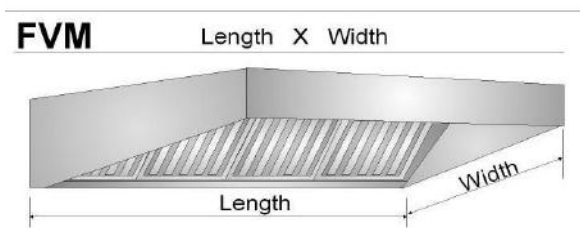
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5.1 Canopy Information

An island canopy 2500mm x 1200mm + a wall canopy 2800mm x 1200mm , complete with stainless steel baffle filters.

Length Metre	Width Metre	Grade	No: of filters	Filter Size	Filter Type	Canopy Style
2.5 / 2.8	1.2/1.2/0.2	304 S/S	9	495x495mm	Baffle	Island canopy



FVM Canopy Calculation volume based on total face velocity

Length		Width		M ²		Velocity		Volume m3/second
2.8 + 2.5	X	1.20	=	6.36	X	0.50	=	3.18 m/sec

TCM Canopy volume based on face velocity required extraction through sloping filter plenum

Length		Width		M ²		Velocity		Volume m3/second
5.30	X	0.98	=	5.19	X	0.50	=	2.60 m3/sec

Operating volume required 2.60 m3/sec

Working on an extraction velocity of 0.50 m/sec

Light loading – 0.25 m/s (applies to steaming ovens, boiling pans, stock-pot stoves) Pizza shop, bakery

Medium loading – 0.35 m/s (applies to deep fat fryers, solid and open top ranges and griddles) cafes, pubs

Heavy loading – 0.5 m/s (applies to char grills, specialist broiler units) Indian, Chinese, kebab shops.

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5.2 Canopy Design

With the canopy supplied we have based the extraction airflow duty on the cooking type appliances underneath and calculated the volume required to capture the grease-laden air and heat removal over the appliances used.

Our Kitchen extraction Canopies are manufactured out of 430 grade stainless steel. Stainless steel baffle filters within the canopy housing fully welded drain channel and complete with grease tap or grease pot.

Grease Tap



A stainless-steel ball valve with plastic lever handle, threaded if want to make a permanent grease run off to grease pack.

These are installed at one or each end of the canopy, where the grease runs down the welded drain channel, turn the tap

Anti-clockwise and drain off any excess grease or oil and wash with hot soapy water and turn lever clockwise to shut off.

Grease Pot



Installed in bottom plenum a removable pot at one or each end of the canopy, where the grease runs through hole above into the drain pot, remove the pot and dispose of the grease appropriately, wash out with hot soapy water and re-fit by pushing back into the slides, wash drain channel with hot soapy water and drain off any excess grease or oil.

This is for good housekeeping for cleaning grease daily and is easily accessible

5.3 Extraction and Air Supply System

Extraction:

Volume m3/second	Resistance	Discharge Velocity	Filtration	Noise level
2.60 m3/sec	275 pa	10.75	Activated Carbon 0.23 Seconds	48 dba

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.

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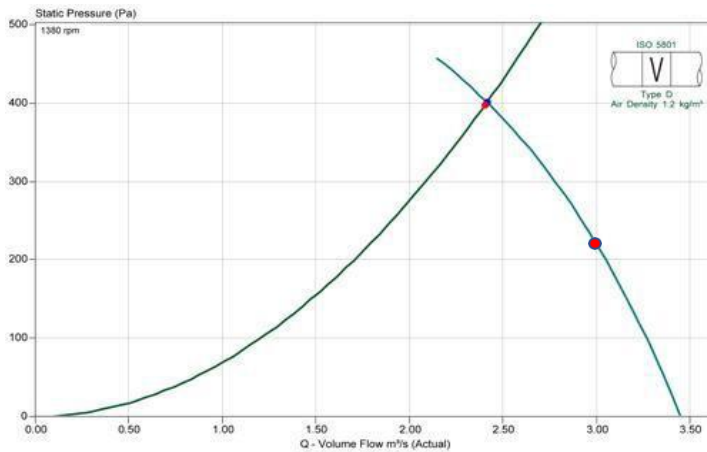
5.3 Criteria

Our design is based on regarding airflow velocities.

Weather cowl: 10-15 m/sec to disperse high into atmosphere for flue dilution.

Duct velocities should be as follows: Extract (m/s) Main runs 6-8 m/sec with the branch and spigots 5-7 m/sec.

500mm High velocity cowl with bird guard velocity discharging @ 15.10 m/sec.



System resistance calculations

	Extraction system	Pascal's
1	Ducting system	50 pa
2	Splitter silencer & High velocity	80 pa
9	Baffle filters in canopy	90 pa
1	Activated carbon filter s & Pre-filters	55 pa
	Total static resistance on the system	275 Pa

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5.4 Baffle filters in the canopy



It is universally recognised that there is an increasing need to maintain & improve hygiene standards & reduce fire hazards within kitchens. The Baffle Grease filter accomplishes both needs through its clever design of interlocking baffles that provide a tortuous route for the passage of air through the filter by creating two rapid 180° air direction changes simultaneously. The grease molecules having a far greater inertial force than air impact themselves on the vanes.

A series of vertical Stainless Steel vanes are housed in a channel frame, with each of the baffles strategically aligned to provide the highest potential for grease removal.

Due to the smooth nature of the vanes the grease naturally runs downwards, through the drainage holes and into the collecting trays normally provided within the canopy holding casings.

5.5 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 a number of 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.

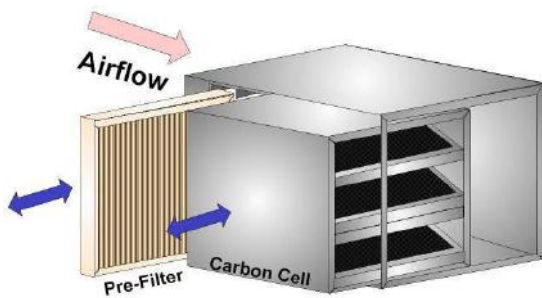
Type 8 carbon filter features: High quality carbon – all grades available
Robust modular construction: Low-pressure losses: High carbon content.

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High level control may include:

Carbon filtration (carbon filters rated with a 0.3 second residence time).

Take away food establishments with smaller covers 0.30 seconds would be sufficient to eliminate odours before discharging to atmosphere.

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

Type	Width	Height	Length	M2 Area	Pre filters fitted
Activated triple carbon filters	1800	300	600	0.32	V Pleat Synthetic

Odour control method

Triple carbon filters Area m2	Multiply	Length	Divided	Volume m3/sec	Equals	Seconds dwell Time
0.32	x	1.80	÷	2.60	=	0.22
Mesh pre-filters / Synthetic fitted to take out any large particulates 0.065/each x 3						0.195

Achieving a Total dwell time (seconds)	0.42
---	-------------

High efflux dispersion through high velocity cowl into the atmosphere

		Seconds (s)
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.	3 times Normal'	0.4 – 0.6

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6.0 Cleaning and maintenance of extraction system:

6.1 Canopy

Wash down weekly with hot soapy water ensure all fat channels are clear and clean.

6.2 Grease Filters

Clean at least three times a week using hot soapy water, water must be hot enough that rubber gloves are worn.

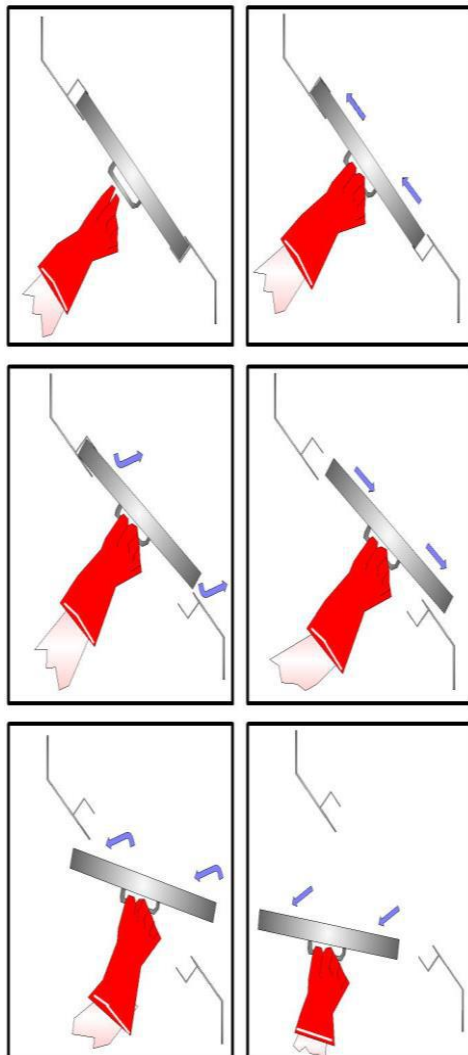
Ensure oil and fat outlets are clear and clean.

Replace filters with the drainage slots at the bottom facing down.

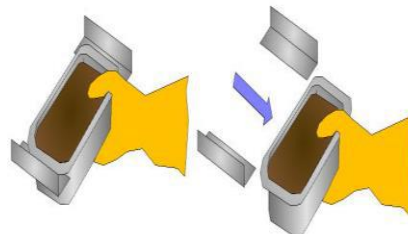
6.3 Carbon Filters

Inspect for signs of grease build up monthly. Change- manufactures Recommendation every eight - twelve months depending on hours used and type of deposits left on the filters.

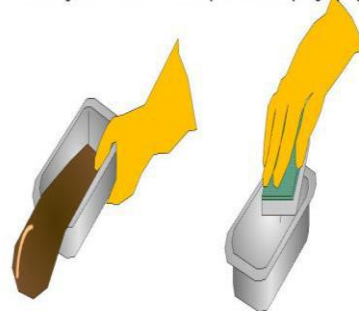
Removal of grease filters and grease pots for cleaning



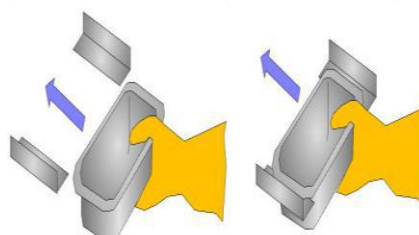
Grease pots to be emptied and cleaned every day



Put on gloves and slide the pot out keeping upright



Empty oil and dispose of correctly & clean with hot soapy water



Slide the clean pot back into position and clean around the hole