



Design and Specification For Each Individual Unit

Extraction Ventilation System

Proposed property:

Johnson's Square
Manchester.
M40 8DR.

Date:

22nd March 2021



Proposed system Specification:

Low level discharge and Carbon filtration

Due to the extraction dispersing at the roof of the building the equipment would be mounted internally, above the extraction hood on anti-vibration mountings and discharge vertically through a large weather louver. The carbon filters and the fan complete with silencer all to be mounted within the 1500mm tall space and run internally to minimise visual impact. The odour control system to be implemented to reduce any odour emanating from the premises, odour abatement on the canopy extraction. Medium grade carbon filter to make a carbon filter.

Using rubber mounted anti-vibration feet, the carbon filtration machines will neutralise 98% of any odour that will be discharging into the atmosphere.

Extraction Ventilation System

Specification

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

Canopies

The canopies which would be mounted over the various equipment around the kitchen and serving perimeter would total to a complete size of which we are supplying the specification to 2500mm (long) x 1100 mm (wide) 304 grade, brushed stainless steel wall canopy, complete with stainless steel baffle filters. Incorporated within each canopy would be a full length plenum built filter housing to accommodate 5 off, 500mm (wide) x 500mm (high) x 50mm (deep) grease filters.



Canopy details description as above

Length Metre		Width Metre	Type	Grade Satin	Number of filters	Filter size	Filter Type	Canopy Style
A	2.50	1.10	Wall	304	5	500x500	Baffle	Box

Canopy volume using one common twin fan

Length		Width		M ²		Velocity		Volume m3/sec
2.50	X	1.10	=	2.75	X	0.51 (100ft/min)	=	1.40 m3/sec

Because of the equipment proposed the duty could be less due to the coefficient or larger canopies could be installed to suit the same duty of this system.

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.

Extraction system details

Off the top of the canopies into false ceiling area with 500mm x 400mm galvanised rectangular ducting, then one heavy duty activated carbon filter complete with pre-filter.

Giga box 710mm diameter mixed flow fan 3 phase complete with transformer speed controller, mounted after the carbon box taper and then tapering afterwards to a splitter type silencer and terminating with a weather louver complete with bird guard 1800mm x 1000mm with a 60% free area of extraction.

Extract Fan Details

Located internally on anti vibration rubber mounting feet to stop vibration through the wall 4 pole, three phase fan, which works against the increased resistance of the carbon filter.

Noise Control

Acoustic attenuator will be installed within the system, after the fan, break out would be reduced;

The sum of this noise attenuation takes the breakout noise level to 38dB at two metres distance from discharge.

Selected Fan Details

Fan Model	Type	volume m3/sec	Resistance	Speed rpm	Phase	Noise level @ 3 metres
GBD 710	Mixed Flow	4.88	400 Pa	1465	3	72 db
Splitter Attenuator reduce noise level by						- 34 db
Total noise level at 3 metres from Weather louver and distance correction						38 dba



Grease filter resistance

Baffle filters	Quantity	System volume	Equals each	Resistance in Pascal's
500x500	5	1.40m3/sec	0.34 m3/sec	35 pa

System resistance calculations

Qty	Extraction system	Pascal's
2.5 metres	Ducting and take off spigots	25
1	Treble carbon filter unit	180
14	Baffle grease filters as above	35
0	Treble Electrostatic filter unit	
Total static resistance on the system		240

Voltage	Frequency	Watts	Current	Starting Current	Max temp	Class	Enc	Spl @ 4mtrs	KG
400 V	50Hz	6000	10.20 A	56.00 A	70 C	F	55	62 db(A)	170

Odour control method

Type	width	Height	Length	M2 Area	Pre-filters fitted
Treble activated carbon	1800	600	500	1.08	Mesh type

Area m2	Multiply	Length	Divided	Volume m3/sec	Equals	seconds dwell time
1.08	x	0.90	÷	1.40	=	0.69
Mesh pre-filters fitted to take out any large particulates						0.09
Total dwell time achieved						0.29

To meet DEFRA's requirements. The filtered air stream will be free from grease and cooking particulates. The unit will neutralise 98% of the odour before discharging to atmosphere.



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**
- **High carbon content**
- **Low pressure losses**

Product 5529 GBD 710/4

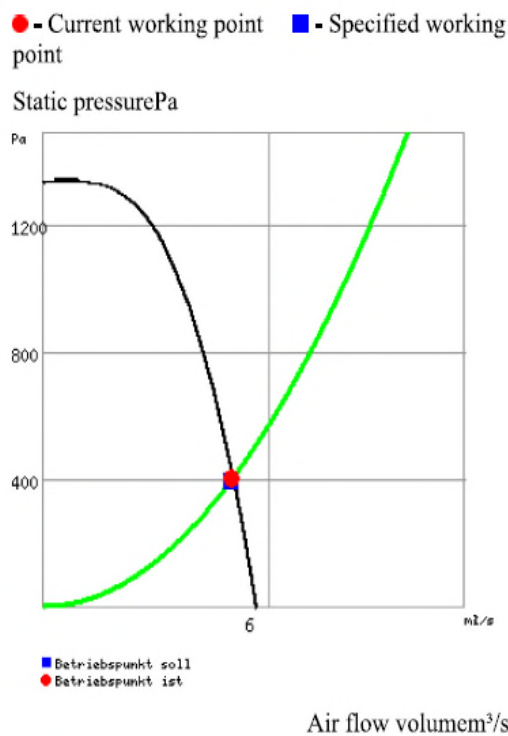
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Properties

Ref.no.	5529
Model	GBD 710/4
Description	Gigabox with discharge adapter and flex. sleeve, 3-ph., controllable 400V-50Hz
Actual pressure	401 Pa static
Actual volume	5 m ³ /s
Air flow volume	100 %
Speed	1465 min ⁻¹
FLC un-controlled	10.20 A
STC un-controlled	
Power	6.00 kW
Voltage	400 V / 3 ph / 50 Hz
Max. Temperatur	70 °C
Wiring diagram no.	499
Weight	170.00 kg
Delivery time	On request
Acoustic data:	
Sound in-duct	62 in 4 m
Case breakout	51 in 4 m
Spectrum	Hz
Lwa Intake	dB(A)
Lwa Extract	dB(A)
Lwa Breakout	dB(A)

Characteristics



Dimensions

