

POWERED VENTILATION LTD.

Kitchen Extract system Solutions

www.poweredventilation.co.uk

SITE REF:

**936-938 STOCKPORT ROAD,
MANCHESTER,
M19 3NN,**

PLANNING REF No:

DATE: 21/04/23

CALCULATION STATEMENT ON PROPOSED EXTRACT SYSTEM:

SPECIFICATION

Canopy Hoods Details

Dimensions hood (A) 4500 x 1100 x 400 / 500

Dimensions hood (B) 3500 x 1100 x 400 / 500

Dimensions hood (C) 4000 x 1100 x 400 / 500

The canopy's will be manufactured from stainless steel grade 430, with grease drain off taps on either sides of the extract hoods. The canopy hoods will be supplied with stainless steel baffle filters.

Face velocity hood (A) = 3.85m/s

Design volume = 1.54m³/sec (medium / heavy load)

6 off stainless steel baffle filters (cook face area)

Face velocity hood (B) = 2.31m/s

Design volume = 0.81m³/sec (medium load)

4 off stainless steel baffle filters (cook face area)

Face velocity hood (C) = 4.40m/s

Design volume = 1.98m³/sec (medium / heavy load)

8 off stainless steel baffle filters (cook face area)

Combined Design Volume: 4.33m³/sec

Total number of grease filters per hood (A) / (B) / (C) = 24 / Dimensions 495*495*45

Design Volume 4.33m³/s / 18 = 0.24m³/s

4.33m³/s / 0.24m³/s = 18.04

18 off stainless steel baffle filters (between hoods (A / 9) / (B / 7) / (C / 8))

Combined Design Volume for hoods (A) / (B) / (C) = 4.33m³/sec (Medium / Heavy 0.40m/s /

Heavy Loading-0.51m/s

Extract Plant details & Extract duct connections for Hood (A)

The Extract duct work will connect off the top entry filter bank spigot of the 4.5mtr canopy extract hood which will go horizontal against ceiling internal of the building before connecting onto the main header of the extract duct with a volume control damper to balance off extract in order to allow correct velocity of each hood connecting onto main header.

The connections for hoods (B) and (C) will follow the same principle as connection (A) with VCD's (volume control dampers) before exiting onto the external vertical discharge riser rear of the property upon the flat roof before going onto the vertical discharge riser 1mtr above eaves. Before the vertical riser the extract duct will connect onto the external plant system which will consist of the carbon filtration unit before the extractor fans which will be united to attenuators and AVMS fixed and isolated which will help nullify any further transmitting noise (please see noise assessment for attenuator details and calculations provided by Acoustic Consultant), the extractor fans will be speed controlled via auto-transformer / inverter regulator which will help prevent harmonic sounds which cause fan to make when operated by electronic controllers. The vertical discharge flue will be 1metre above eaves of main building discharging at high level via a high Velocity low-loss efficiency cowl.

Extract Duct details for Hood (B)

The Extract duct work will connect off the top entry filter bank spigot of the 3.5mtr canopy extract hood which will connect to the main header of duct with the VCD as mentioned above which canopy extract hood (A) is connecting onto

Extract Duct details for Hood (C)

The Extract duct work will connect off the top entry filter bank spigot of the 4.0mtr canopy extract hood which will connect to the main header of duct with the VCD which canopy extract hood (A) & (B) is connecting onto, to help balance the airflow and extract velocity for all three canopy extract hood and not to cause spillage volume control damper will be installed onto the spigots connecting before the main header of the extract duct for each hood as detailed in the extract layout specifics given above. The extract ductwork off all Canopy extract hoods will be internal against the ceiling.

Overall Extract Duct Work connections off Extract Hoods & Plant section details:

The extract duct work will spigot off the top filter bank section off all three Canopy Extract hoods (A) / (B) & (C), the extract duct will then horizontally internal up to the plant section which will be located external upon the rear flat roof section of the property, the internal extract duct will be suspended against the ceiling, note: all duct and plant will be hard fixed and isolated with Anti-vibration -Mounts (AVMS) and Dura-Dyne connectors were required also h/duty 40*40 uni-struct and M10 rod hanger supports will be used for duct and plant support again this will be the same with the external vertical discharge flue.

The extract hoods will have a clearance of 2mtr to the front underside, the plant section will consist of Carbon filtration unit before the extractor fan which will be united to an attenuator with anti-vibration mounts and Dura-dyne connections which will help nullify any further transmitting noise and vibrations, the extractor fans will be speed controlled via auto-transformer / inverter regulator which will help prevent harmonic sounds which cause fans to make when operated by electronic controllers, **the plant will have accessible points for service and maintenance.**

For aesthetic purposes the exposed vertical discharge flue can be painted to suit exterior of building colour to soften image of the gray steel finish of all general ducts (to be approved by Authority please see below two selection of RAL colour codes which can be checked via websites on RAL colours with code given for selection. (brick red / Terracotta Ral code: 3009 / matt black slate Ral code:9005 / Graphite grey Ral code:7024)

There are no real impact of this issue to the rear as it faces a main railway lines with residential premises approximately 67mtrs away from the site this is the same for the front right hand side which again has residential premises approximately 24mtrs away with the front and left hand side of the building facing onto the main road with some residential premises at a distance of 44mtrs, the remaining units closest to the site are a few abandoned closed industrial & commercial units with no residential flats within. Also as there are no open able residential windows higher than the roof ridge of the property within the location as stated above in which the Vertical Discharge flue is positioned that there would be any issues of Odour or Cooking fumes. The site has no plans for flats above which have been planned for the restaurant private function area.

The vertical discharge flue will be of a high Velocity low-loss Discharge cowl which will be set 1mtr above main building roof ridge. The High Velocity low-loss Discharge Cowl is ideal for good dispersion of fumes.

Extract Duct Dimensions for Hood (A)

The duct work size is approximately 430*430 or equivalent spigots connections up to main header of duct.

$$1.54 / 0.18 = 8.55\text{m/second}$$

Extract Duct Dimensions for Hood (B)

The duct work size is approximately 300*300 or equivalent spigots connections up to main header of duct.

$$0.81 / 0.09 = 9.00\text{m/second}$$

Extract Duct Dimensions for Hood (C)

The duct work size is approximately 490*490 or equivalent spigots connections up to main header of duct.

$$1.98 / 0.24 = 8.25\text{m/second}$$

Duct Dimensions for Main Extract header for Extract hoods (A) / (B) & (C) and Discharge flue efflux velocity :

The main extract duct header will be required to be approximately 700*700 or equivalent up to the external plant system.

$$4.33 / 0.49 = 8.84\text{m/second}$$

The efflux velocity is **17.58m/second** and the duct work will be free from grease disperse all odours to high level via 560dia or equivalent High Velocity low-loss Discharge Cowl. The vertical discharge flue will be set 1mtr above eves.

Pressure Lost in System Hood (A) / (B) & (C) :

13off, Linear Metres	@	3 pa=	39pa
7off, 90deg bends	@	10pa=	70pa
24off, Stainless Baffle Filters		=	150pa
1off, High Efficiency cowl		=	20pa
1off, Carbon unit and pre-filter		=	150pa
Total		=	429pa clean

Required duty and pressure: 4.33m³/s @ 429 pa clean / 500 pa dirty

Extract Fan Specification for hood (A) / (B) & (C) :

Fan selected: SLC-560-2-3AC CASED AXIAL FAN, 2 pole, Three phase, speed control via Inverter drive. The Extract fans will be located internal of building plant area which will be united to an attenuator and will be fixed and isolated with anti-vibration mounts and Dura-dyne connections which will help any further transmitting noise and vibrations nullify.

The two fans each run at 2900rpms each with a maximum operating noise of 77dBA and will handle air flow rate 4.33m³/s @ 900-1000 pa.

KITCHEN FRESH AIR-INLET DETAILS & CALCULATIONS :

Combined Design Volume: $4.33\text{m}^3/\text{s}$ (combined canopy hood design volumes)x 3600=
 $15,588\text{m}^3/\text{hr}$

Kitchen area volume $5.8\text{m} \times 6.1\text{m} \times 3.0\text{m} = 106.14\text{m}^3$ recommended air change rate for commercial kitchen is 30- 60 ach

The air change rate equates to $15,588\text{m}^3/\text{hr}$ divided by the Kitchen area volume 106.14m^3
This gives us an air change rate of 146.68ach. Minimum for commercial kitchen 30-60 ach, this figure can be brought down using the speed regulator.

Supply Volume Design:

With such a high air change the design would call for the maximum recommended replacement of 85%

This would be $4.33\text{m}^3/\text{s}$ ($15,588\text{m}^3/\text{hr}$) x 85% requires $3.68\text{m}^3/\text{s}$ ($13,248\text{m}^3/\text{hr}$)

Pressure Lost in Air- Supply System

Allowing for 50 pa filter /(700*700 duct =7.51m/s velocity) 150 pa duct / 50 pa grille / bends
100 = **350pa clean / 450 pa dirty**

Required duty and pressure: $3.68\text{m}^3/\text{s}$ @ 450 pa dirty

Air-Supply Fan and Grill Specification

Fan selected: SLC-500-2B-3AC CASED AXIAL FAN, 2 pole, Three phase, speed control via Inverter drive. The Air-supply fan will be located internal of building plant area which will be united to an attenuator and will be fixed and isolated with anti-vibration mounts and Dura-dyne connections which will help any further transmitting noise and vibrations nullify.

This fan runs at 2900rpms with a maximum operating noise of 71dBA and will handle air flow rate in excess of $3.68\text{m}^3/\text{sec}$ @ 600pa.

Silencer Details:

PLEASE SEE ACCOUSTIC DETAILS PROVIDED BY ACOUSTIC CONSULTANT

Odour Control Details:

Before the fan will be a purpose built carbon filtration discarb unit and will house a pre-filter (to prolong the life of the activated carbon cells) and hold approximately 150 carbon bonded panel cells.

For 0.3 seconds contact time- Typically recommended for Spicy cuisine and High Level Food Odour Such as / Grill House / Fast Foods / Thai and Indian. (1 single carbon panel @ 594 x 594 x 25mm framed will achieve a 0.3 second contact time at 0.029m3/s)

$$\text{DESIGN AIR FLOW RATE } 4.33\text{m}^3/\text{s} / 0.029\text{m}^3/\text{s} = 149.31$$

Therefore a minimum of 150 Extra Duty carbon cells panels must be used.

By rounding the number of carbon filters up from the calculations, it allows some room for any inefficiency in the odour control.

Cleaning and maintenance

The carbon cells should be inspected for carbon testing every 3 months for results in changing, again this will be done by Installation contractors. This will give us a result in whether the change of the Carbon Filters should take place every 3 to 6 months to maintain its optimum efficiency however it will be also the clients duty to inform contractor of services due not to cause any fall back of issues of odour arising due to the fact of the contractors absence of notifying the client of service.

The canopy and the stainless steel baffle filters should be cleaned on a daily basis. The stainless steel baffle grease filters are of a 304 grade, the grease filters are to be cleaned on the regime and use of the kitchen, typically a grease filter is cleaned on a daily basis.

The inspection and service of the fan is required every 6 months which will have to be carried out by the Installation contractors. This again will be inspected by the installers.

We recommend that the canopy and the duct work should receive a full deep clean 6 months after installations and then every 6 months thereafter by our recommend cleaning company, to maintain the maximum efficiency of the extraction system.

The carbon filter/pre-filters and system will be kept on a data base by the installers which will contact the user when inspection is due, the customer will have a inspection book which will be stamped after inspection and service by the Installation contractors.



Ref: MDR/J5327a

28th May 2023

Powered Ventilation Ltd

Alexander House

60 Tenby Street North

Birmingham

B1 3EG

For the attention of Mr M J Ali

Dear Sirs

Re: 936-938 Stockport Road, Manchester, M19 3NN - Proposed Kitchen Supply & Extract Ventilation Systems - External Noise Assessment

Further to the receipt of your ventilation design information, we are pleased to forward our noise assessment for the proposed kitchen supply & extract ventilation systems as follows:-

We visited the site on Saturday 27/5/23 to inspect the proposed location for the proposed ventilation systems. There is no residential use of the upper floors of the building and the nearest residential use is likely to be on adjoining buildings. For assumed residential use of adjoining buildings, the nearest residential windows will be at least 12m from the proposed extract discharge and at least 8m from the supply intake on the building. The intended operation times for the site are from 11.00hrs to 02.00hrs, 7 days a week. At 01.30hrs 28/5/23 at the small rear yard area to the rear of the site off Albert Road, the background noise level was 42.0dB LA90 30min; the background noise level was controlled by road traffic flow in the locality; there was no access to a location adjacent to rear residential windows on adjoining buildings.



Ref: MDR/J5327a

The instrumentation used for the noise measurements was a Rion NL-52 precision grade real time analysing sound level meter, serial number 00976153. The instrument was calibration checked before and after the measurements and seen to be calibrated correctly. Please see the attached current certificate of calibration. The noise measurements were undertaken in satisfactory weather condition, with no significant wind or precipitation.

The design criteria we advise to be applied to the proposed ventilation systems external noise to be measured outside the nearest residential windows is to be at least 10dB below the prevailing background L_{A90t} measured on 28/5/23, equating to no more than 32dBA for the supply intake @ 8m and extract discharge @ 12m combined. BS4142:2014 assessment methodology compares the background noise level with a plant rating noise level. For this site, the noise- controlled ventilation systems will have no distinct tonal characteristics or intermittency which would require correction to the plant source noise to derive a rating level. Controlling the proposed plant noise sources to be at least 10dBA below background ensures no adverse addition to the background noise level at the nearest residential window location.

For the proposed kitchen extract ventilation system, the fan discharge silencer advised would be a circular silencer with pod, typically 560mm i/d x 710mm o/d x 1680mm long. The silencer should reduce the radiated discharge noise to approximately 31dBA at 12m distance.

For the proposed kitchen supply air ventilation system, the fan intake silencer would be a circular silencer with pod, typically 500mm i/d x 650mm o/d x 2000mm long. The silencer should reduce the radiated intake noise to 26dBA at 8m distance.

The combined extract discharge noise at 12m and supply intake noise at 8m equates to 32dBA

In addition, the fans and ductwork systems should be supported off the building structure using anti-vibration mounts/hangers to avoid vibration transmission into the structure.



Ref: MDR/J5296a

We have attached our noise level design calculation sheets and supporting information for your reference.

We trust the noise assessment meets with your approval and we remain.

Yours faithfully

A handwritten signature in black ink, appearing to read 'M D Randall', with a stylized, flowing script.

M D Randall BSc(Eng) CEng MCIBSE MIOA





CERTIFICATE OF CALIBRATION



0653

Date of Issue: 29 March 2023**Certificate Number: UCRT23/1441**

Calibrated at & Certificate issued by:

ANV Measurement Systems

Beaufort Court

17 Roebuck Way

Milton Keynes MK5 8HL

Telephone 01908 642846 Fax 01908 642814

E-Mail: info@noise-and-vibration.co.ukWeb: www.noise-and-vibration.co.uk

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages
Approved Signatory
K. Mistry

Customer ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes
MK5 8HL

Order No. ANV MS HIRE
Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator
Identification

Manufacturer	Instrument	Type	Serial No. / Version
Rion	Sound Level Meter	NL-52	00976153
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	76270
Rion	Microphone	UC-59	12046
Rion	Calibrator	NC-74	34536109
	Calibrator adaptor type if applicable		NC-74-002

Performance Class 1

Test Procedure TP 10. SLM 61672-3:2013

Procedures from IEC 61672-3:2013 were used to perform the periodic tests.

Type Approved to IEC 61672-1:2013 Yes

If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013

Date Received 23 March 2023

ANV Job No. UKAS23/03210

Date Calibrated 29 March 2023

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	Dated	Certificate No.	Laboratory
	27 April 2022	UCRT22/1571	0653

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

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Company Number 13751425



CERTIFICATE OF CALIBRATION	Certificate Number
	UCRT23/1441
UKAS Accredited Calibration Laboratory No. 0653	Page 2 of 2 Pages

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	NL-52/NL-42 Description for IEC 61672-1		
SLM instruction manual ref / issue	No. 56034 21-03	Source	Rion
Date provided or internet download date	19 March 2021		
	Case Corrections	Wind Shield Corrections	Mic Pressure to Free Field Corrections
Uncertainties provided	Yes	Yes	Yes
Total expanded uncertainties within the requirements of IEC 61672-1:2013			
YES			
Specified or equivalent Calibrator	Specified		
Customer or Lab Calibrator	Lab Calibrator		
Calibrator adaptor type if applicable	NC-74-002		
Calibrator cal. date	23 March 2023		
Calibrator cert. number	UCRT23/1384		
Calibrator cal cert issued by Lab	0653		
Calibrator SPL @ STP	94.04	dB	Calibration reference sound pressure level
Calibrator frequency	1001.98	Hz	Calibration check frequency
Reference level range	Single	dB	
Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15			
Note - The Extension Cable was used between the SLM and the pre-amp for this calibration.			
Environmental conditions during tests	Start	End	
Temperature	23.83	23.66	± 0.30 °C
Humidity	40.6	49.5	± 3.00 %RH
Ambient Pressure	99.93	99.83	± 0.03 kPa
Indication at the Calibration Check Frequency			
Initial indicated level	94.2	dB	Adjusted indicated level
			94.0 dB
Uncertainty of calibrator used for Indication at the Calibration Check Frequency ±			
0.10 dB			
Self Generated Noise			
Microphone installed -	Less Than	17.6	dB A Weighting
Microphone replaced with electrical input device -			
UR = Under Range indicated			
Weighting	A	C	Z
	11.3	15.5	21.2
	dB	dB	dB
	UR	UR	UR

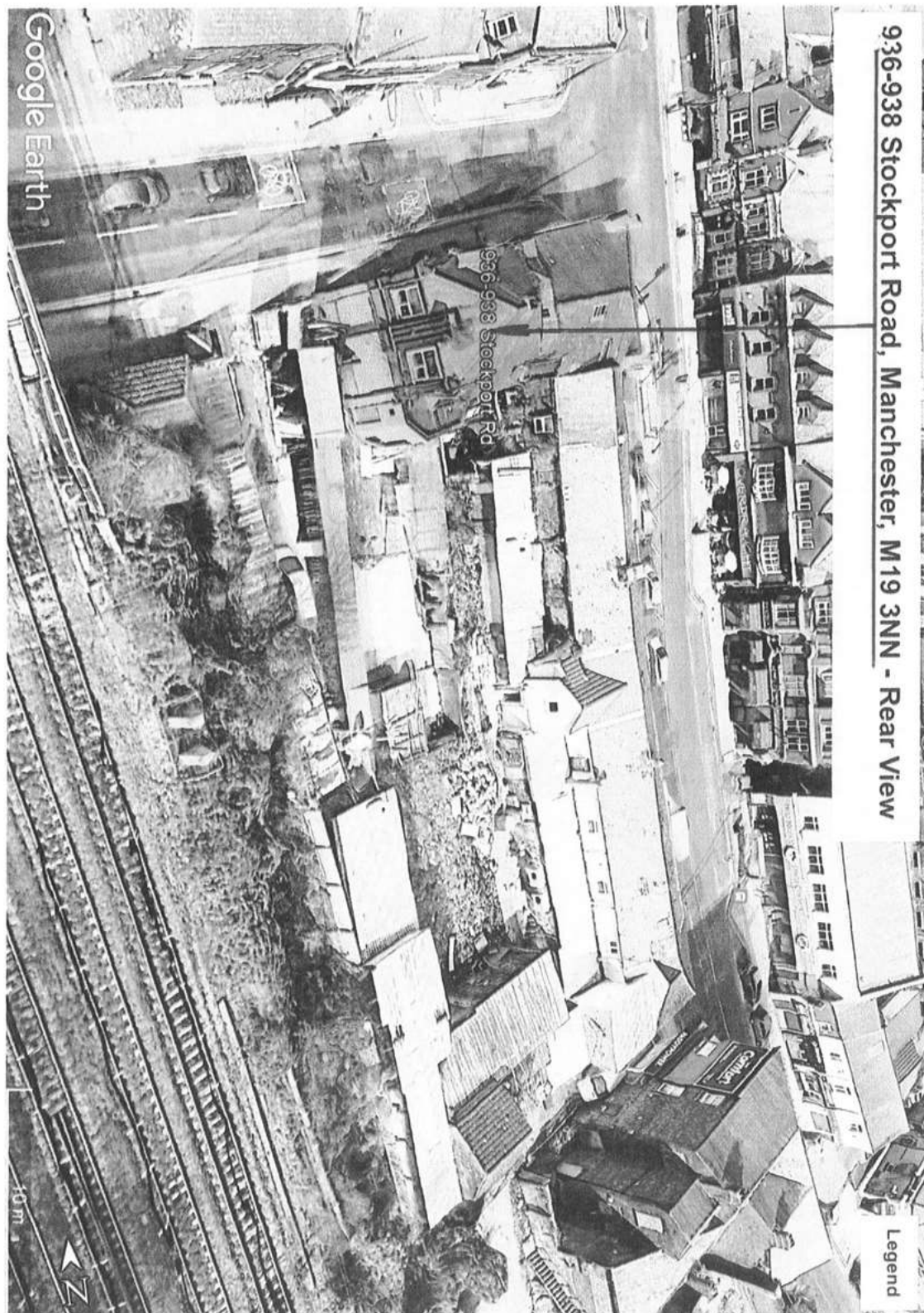
Self Generated Noise reported for information only and not used to assess conformance to a requirement

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Additional Comments The results on this certificate only relate to the items calibrated as identified above.

None

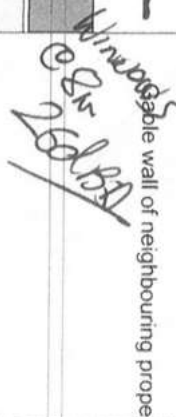
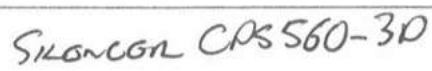
..... END
 Calibrated by: BB/KZ R 1



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Mob 07966 913809 / 07772 691280

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E-mail mdrand1@aol.com
Company Number 13751425



Windows @ 12m
3rd BA

powered

Client: 936-938 STOCKPORT ROAD,
MANCHESTER,
M19 3AN.

REG: MUR/TS327

Project: PROPOSED SIDE ELEVATION OF
EXTERNAL EXTRACT DUCT & PLANT
EXTERNAL AIR-INTAKE LOUVER GRILL
LOCATIONS

Scale: 1/100

Drawing no.3

Job no N/A

Council 721

Officer:

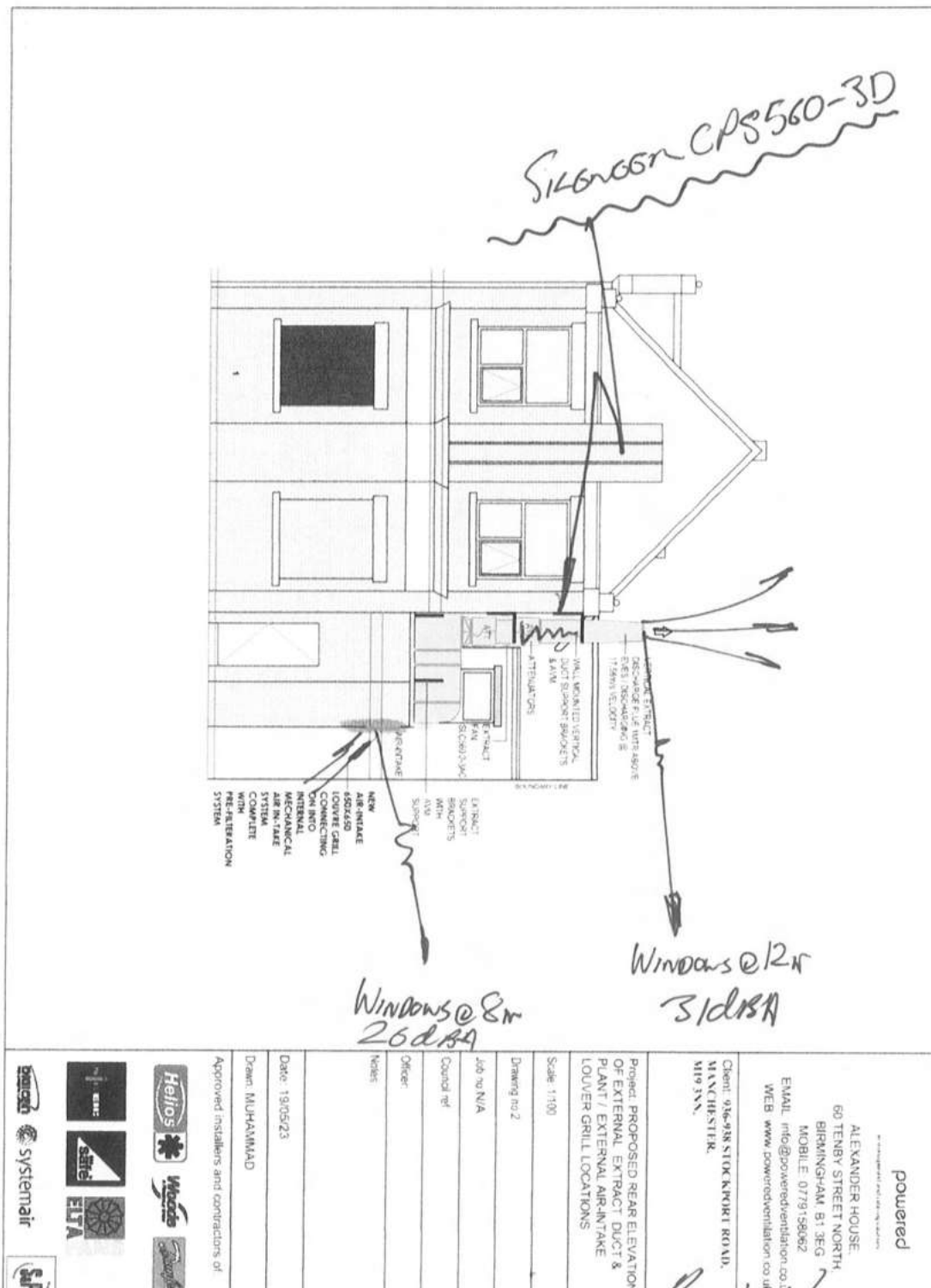
5280 J. Neurosci., September 24, 2008 • 28(39):5275–5280

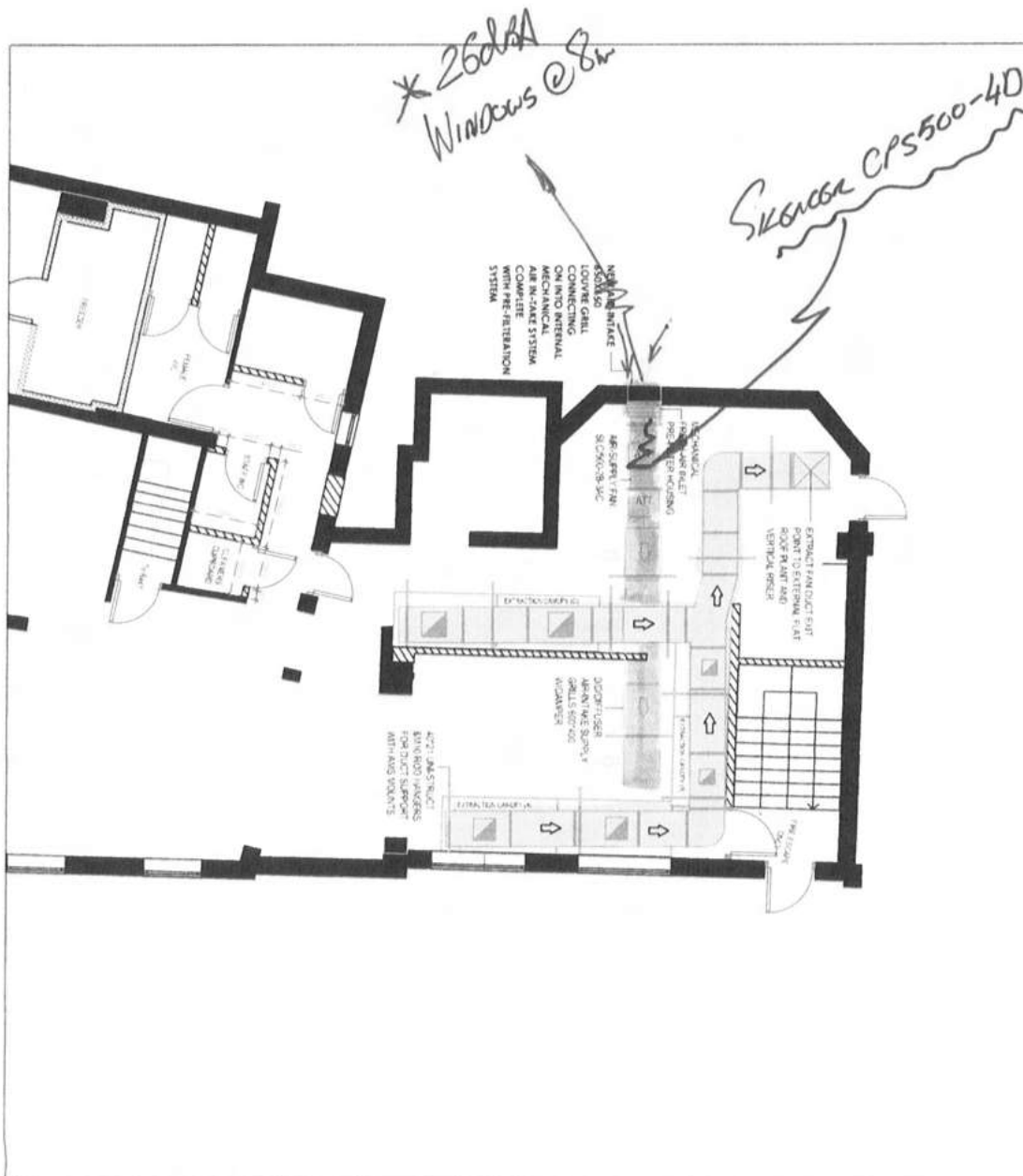
Date: 19/05/23

Drawn: MUHAMMAD

Approved installers and contractors of







SKRIVER CPS 500-40

NEARLY 100% INTAKE —
\$50,000.00
LOUVER GRILL
CONNECTING
ON INTO INTERNAL
MECHANICAL
AIR IN-TAKE SYSTEM
COMPLETE
WITH PRE-FILTRATION
SYSTEM

ATT

EXTRACT FROM DUCT EXIT
POINT TO EXTREME FLAT
ROOF PLANT AND
VERTICAL RISER

00000000
APR 1986
00000000

AND HOW MANY
FOR DIRECT SUPPORT
WITH AIDS VOLUNTEERS

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Client: 936-938-1100 N. POET ROAD,
MANCHESTER,
M19 3NN,

Ref: MEX/55327

Project: PROPOSED PLAN ELEVATION
OF INTERNAL EXTRACT HOOD & DUCT
/ INTERNAL AIR-INTAKE DUCT & PLAN
LOCATIONS

Scale 1/100

Drawing no.

Job No. N/A

Council ref

Office

Notes

Date: 19/05/23

Drawn: MUHAMMAD

Approved installers and contractors of:



BSim SNOOT ①

936-938 Stockport Road, M19 3NN - KITCHEN EXTRACT DISCHARGE

	L/A	63	125	250	500	1k	2k	4k	8k
EXTRACT FAN - DATA SILENCE									
Z-BAL SWL		91	88	92	93	90	88	86	83
2m x 560φ DUCT		0	0	0	0	0	0	0	0
400φ DISCHARGE BR 0.125m		10	6	2	0	0	0	0	0
SWL @ DISCHARGE		81	82	90	93	90	88	86	83
SWL → SPL @ 12m		32	32	32	32	32	32	32	32
SPHERICAL RADIATION									
SPL @ 12m		49	50	58	61	58	56	54	51
'A' - WEIGHTING		-26	-16	-9	-3	0	+1	+1	-1
		23	34	49	58	58	57	55	50
			34	59		61	56		
				59		62			
						64 dBA			
SILENCER ROUND									
CPS 560-30 CIRCULAR		7	14	24	38	34	36	35	30
SILENCER WITH PCD 560mm/φ		16	20	25	20	24	21	20	20
x 710mm/φ x 1680mm Length			21		26		26		23
				27			28		
* RESULTANT SPL _A @ 12m WITH SILENCER						31 dBA			

Ref: M02/J5327



Design Sheet (2)

936-938 Stockport Road, M19 3NN - Kitchen Supply Intake

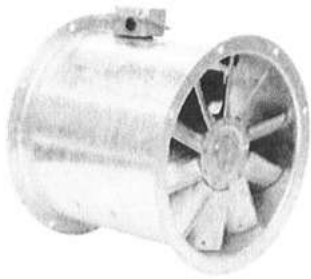
	L/A	63	125	250	500	1k	2k	4k	8k
SUPPLY FROM BLTN SLCSO/									
2B-3DC SWL		84	81	88	85	88	86	83	79
SCOOP DUCT 1m		0	0	0	0	0	0	0	0
FILTER		3	3	3	3	3	3	3	3
LOWERS (500x650) 0.4225m ² EN		7	3	0	0	0	0	0	0
SWL @ INTAKE		74	75	85	82	85	83	80	76
SWL → SPL @ 8m		25	25	25	25	25	25	25	25
HEMISPHERICAL RADIATION									
SPL @ 8m		49	50	60	57	60	58	55	51
'A' - WEIGHTING		-26	-16	-9	-3	0	+1	+1	-1
		23	34	51	54	60	59	56	50
			34		56		63		57
				56			64		
						65dB			
SILG CORR REQUIRED									
CP 500-40 CIRCULAR		8	16	30	50	40	42	45	44
SILG COR WITH PND 500mm %		15	18	21	4	20	17	11	6
x 650mm % x 2000mm Lens			20	21		22		12	
				24			21		
* RESONANT SPL @ 8m WITH SILG COR					26dB				
x * COMBINED SUPPLY INTAKE @ 8m					26dB				
EXTRACT DISCHARGE @ 8m					31dB				
							32dB		

Ref: NNN/55327



Revolution SLC

Long Cased Axial Flow Fan



The Revolution SLC is a robust range of long cased axial fans, fitted with the renowned, Elta, adjustable pitch aerofoil section bladed impellers. An industry workhorse, this extensive range offers superb performance characteristics, combined with strength, durability and corrosion resistance for a longer life.

11 standard sizes from 315mm to 1000mm.
Air volume flow rates of up to 18.48 m³/s.
Static pressures of up to 800 Pa.
Suitable for operating temperatures up to +54°C.
Extensive stock range available.

The all metal fan casing provides a long lasting and robust construction. The units have been constructed from a single sheet of steel, with both motors and axial impellers mounted within the length of the unit casing.

All casing parts are heavy gauge mild steel sheet, roll formed and welded for added strength and durability, hot dip galvanised to BS EN ISO 1461:2009 after fabrication and drilled to BS ISO 6580:2005.

The fans are suitable for external mounting as standard.

Motors are to be foot mounted totally enclosed metric type to IP55, with sealed for life bearings, standard industrial paint finish and Class F insulation to EN 60034-5, suitable for operating temperatures of up to +54°C.

Motors are to be wired via a weatherproofed cable to an IP55 protected terminal box mounted on the outside of the unit casing.

General Requirements

Units are to be designed and manufactured with procedures as defined in BS EN ISO 9001:2008.

All SLC units are to be tested to ISO 5801:2007 (airside performance) and BS 848 Part 2:1985 (sound performance).

Adjustable pitch aerofoil impellers are provided with blades made from high quality pressure die cast aluminium (LM6), natural finish.

Impellers are factory set at an angle to provide maximum performance.

The hubs are manufactured from die cast aluminium alloy (LM24). Assembled impellers are to be dynamically balanced to ISO 14694 Grade G6.3.



Unit Specification	Price
315mm diameter and height (1/2hp)	5
400mm diameter (1/2hp)	7
500mm diameter (1/2hp)	9
630mm diameter (1/2hp)	10
800mm diameter (1/2hp)	11
1000mm diameter (1/2hp)	12
1250mm diameter (1/2hp)	13

01384 275800

01384 275810

bs@eltafans.com

eltaselect.com

Ref: M04/3550

RandTech Consulting Ltd
Tel 01604 451213
www.randtech-consulting.co.uk

3 Melbourne Lane Duston Village
Mob 07966 913809 / 07772 691280

Northampton NN5 6HS
E-mail mdrand1@aol.com
Company Number 13751425



Revolution SLC

Sound Data

SINGLE Phase - 220V-240V / 50Hz

	1/1	1/2	1/3	1/4	1/5	1/6	1/7	1/8	1/9	1/10
1/1	76	75	72	72	70	67	63	58	54	
1/2	62	62	59	56	53	50	46	43	42	
1/3	52	51	49	46	43	40	37	34	33	
1/4	46	45	43	40	37	34	31	28	27	
1/5	40	39	37	34	31	28	25	22	21	
1/6	34	33	31	28	25	22	19	16	15	
1/7	28	27	25	22	19	16	13	10	9	
1/8	22	21	19	16	13	10	7	4	3	
1/9	16	15	13	10	7	4	1	0	0	
1/10	10	9	7	4	1	0	0	0	0	

Support Fan SLC 500/2B-30C

Exhaust Fan SLC 500/2-30C

THREE Phase - 380V-415V / 50Hz

	1/1	1/2	1/3	1/4	1/5	1/6	1/7	1/8	1/9	1/10
1/1	80	76	73	70	67	63	59	54	50	
1/2	64	64	61	57	53	50	46	42	40	
1/3	53	51	48	44	40	37	33	30	28	
1/4	42	40	37	33	29	26	22	19	17	
1/5	37	34	31	27	23	20	16	13	11	
1/6	30	28	25	21	17	14	10	7	5	
1/7	23	21	18	14	10	7	4	1	0	
1/8	16	14	11	7	4	1	0	0	0	
1/9	10	8	5	1	0	0	0	0	0	
1/10	5	3	0	0	0	0	0	0	0	

Continued...

	1/1	1/2	1/3	1/4	1/5	1/6	1/7	1/8	1/9	1/10
1/1	87	84	81	77	73	69	64	59	54	
1/2	70	67	63	59	54	50	45	40	36	
1/3	57	53	49	44	40	36	31	26	22	
1/4	45	40	36	31	26	22	17	12	9	
1/5	37	31	26	21	16	12	7	4	1	
1/6	29	23	18	13	9	6	1	0	0	
1/7	21	16	11	7	4	1	0	0	0	
1/8	13	9	5	1	0	0	0	0	0	
1/9	7	4	1	0	0	0	0	0	0	
1/10	3	1	0	0	0	0	0	0	0	

Tests and preparation of the sound data have been carried out in accordance with BS 6841 Part 2: 1985 at 50% peak pressure.
The In-Duct Sound Power Level Spectra are in dB (pW).
The Overall A-weighted sound pressure level is at a distance of 3m with spherical free field propagation. It is expressed in dB (p20µPa) and is presented for comparative purposes only.

01384 275800

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Ref: M02/5327

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ALEXANDER HOUSE,
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MOBILE: 0779158062

EMAIL: info@poweredventilation.co.uk
WEB: www.poweredventilation.co.uk

Client: 936-938 STOCKPORT ROAD,
MANCHESTER,
M19 3NN,

Project: PROPOSED PLAN ELEVATION
OF INTERNAL EXTRACT HOOD & DUC
/ INTERNAL AIR-INTAKE DUCT & PLAN
LOCATIONS

Scale: 1/100

Drawing no: 1

Job no: N/A

Council ref:

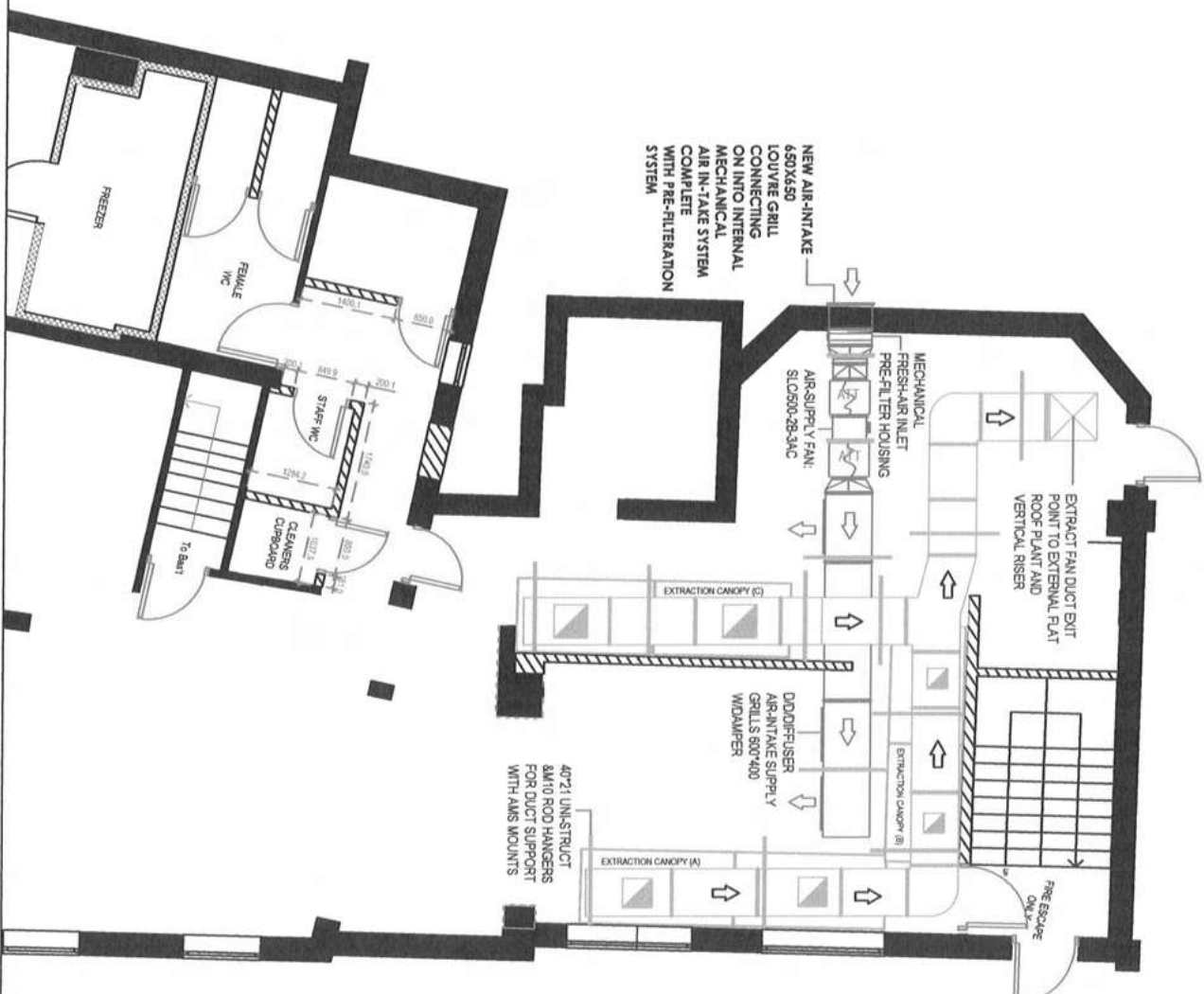
Officer:

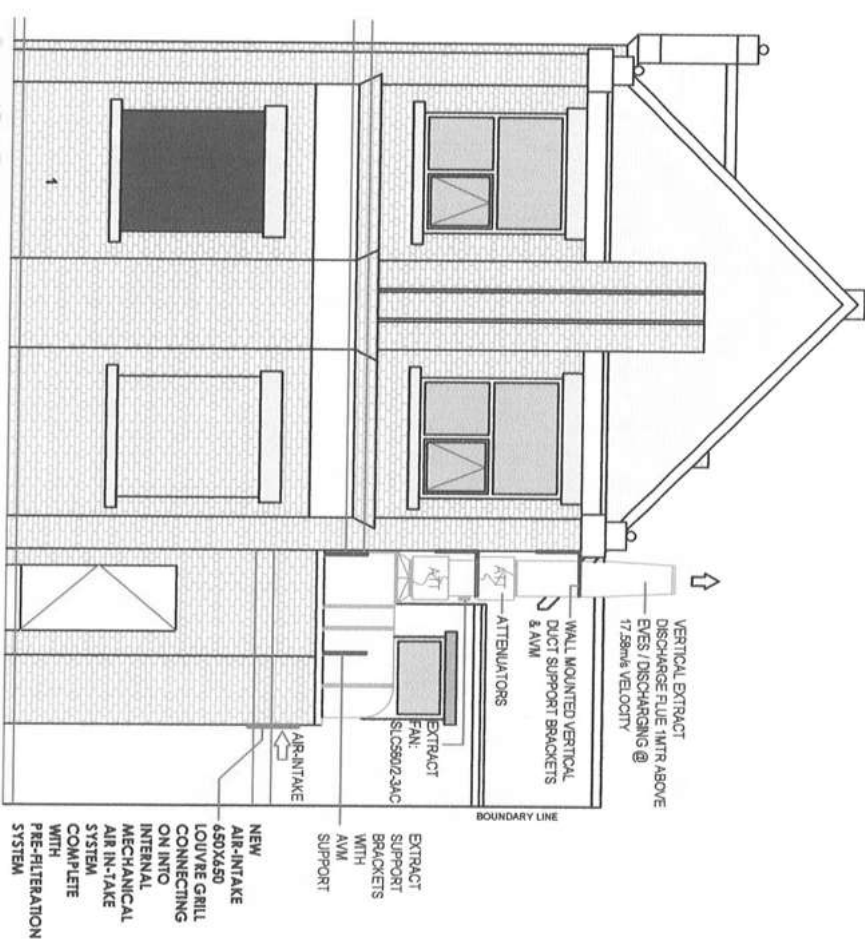
Notes:

Date: 19/05/23

Drawn: MUHAMMAD

Approved installers and contractors of:





Proposed Rear Elevation

powered
VENTILATION
air management and cooling solutions

ALEXANDER HOUSE,
60 TENBY STREET NORTH,
BIRMINGHAM, B1 3EG
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WEB: www.poweredventilation.co.uk

Client: 336-938 STOCKPORT ROAD,
MANCHESTER,
M19 3NN,

Project: PROPOSED REAR ELEVATION
OF EXTERNAL EXTRACT DUCT &
PLANT / EXTERNAL AIR-INTAKE
LOUVER GRILL LOCATIONS

Scale: 1/100

Drawing no:2

Job no:N/A

Council ref:

Officer:

Notes:

Date: 19/05/23

Drawn: MUHAMMAD

Approved installers and contractors of:





ALEXANDER HOUSE,
60 TENBY STREET NORTH,
BIRMINGHAM, B1 3EG
MOBILE: 0779158062

EMAIL: info@poweredventilation.co.uk
WEB: www.poweredventilation.co.uk

Client: 936-938 STOCKPORT ROAD,
MANCHESTER,
M19 3NN,

Project: PROPOSED SIDE ELEVATION C
EXTERNAL EXTRACT DUCT & PLANT
EXTERNAL AIR-IN-TAKE LOUVER GRILL
LOCATIONS

Scale: 1/100

Drawing no:3

Job no: N/A

Council ref:

Officer:

Notes:

Date: 19/05/23

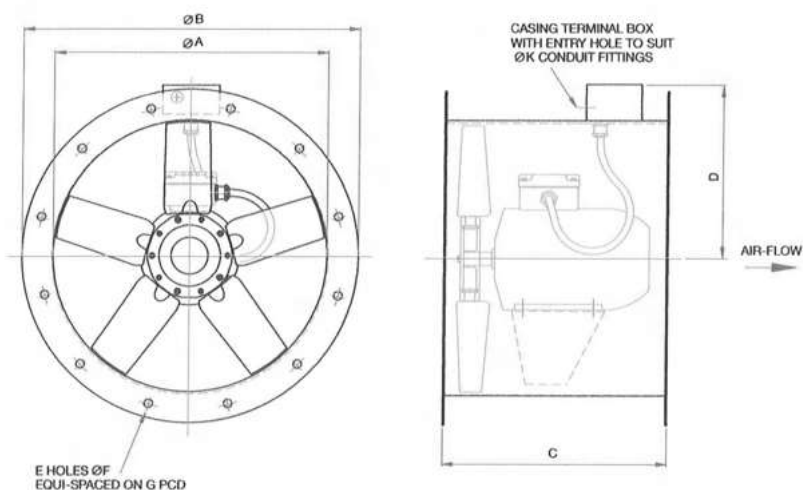
Drawn: MUHAMMAD

Approved installers and contractors of:



Revolution SLC

Dimensional Data



Product Code	Fan Dia. A	B	C	D	E	F	G	K	Weight kg	
									1Ph	3Ph
SLC315	315	375	300	225	8	10	355	20	17	17
SLC355	355	425	375	245	8	10	395	20	23	29
SLC400	400	475	400	265	8	12	450	20	34	36
SLC450	450	530	375	290	8	12	500	20	34	33
SLC450/2-3B	450	530	450	290	8	12	500	25	-	58
SLC500	500	585	400	315	12	12	560	20	37	37
SLC500/2-3	500	585	450	315	12	12	560	25	-	72
SLC560	560	645	400	345	12	12	620	20	40	44
SLC560/2-3	560	645	570	345	12	12	620	25	-	96
SLC630	630	715	400	380	12	12	690	20	50	47
SLC630/4-3B	630	715	450	380	12	12	690	20	-	58
SLC710	710	795	450	420	16	12	770	20	-	70
SLC710/4-3B	710	795	450	420	16	12	770	25	-	77
SLC800	800	885	450	465	16	12	860	25	-	79
SLC800/4-3B	800	885	570	465	16	12	860	25	-	101
SLC900/4-3A	900	1000	450	465	16	15	970	25	-	107
SLC900/4-3B	900	1000	450	515	16	15	970	25	-	107
SLC900/6-3A	900	1000	570	515	16	15	970	25	-	127
SLC900/6-3B	900	1000	570	515	16	15	970	25	-	135
SLC900/8-3	900	1000	710	515	16	15	970	32	-	203
SLC1000	1000	1110	590	565	16	15	1070	25	-	159
SLC1000/4-3B	1000	1110	790	565	16	15	1070	32	-	239
SLC1000/4-3C	1000	1110	790	565	16	15	1070	32	-	263

All dimensions are expressed in mm.

Revolution SLC

Performance and Electrical Data

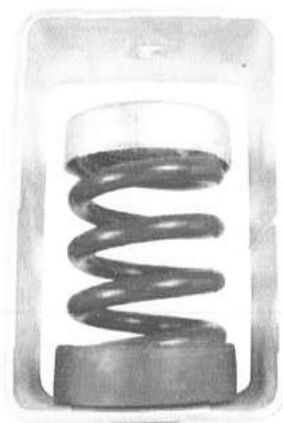
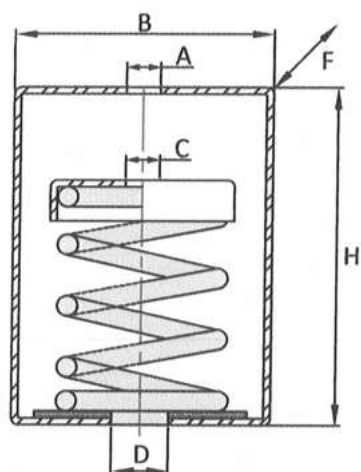
THREE Phase - 380V-415V / 50Hz

Product Code	Speed r/min	Airflow	Airflow m³/s @ Static Pressure Pa.												Motor Electrical Data			A.V. Mounts
			0	50	100	150	200	250	300	400	500	600	700	800	FLC Amps	SC Amps	Output kW	
SLC315/2-3	2780	m³/s	0.95	0.93	0.91	0.88	0.84	0.82	0.78	0.66					1.4	8.54	0.55	S1G
SLC315/4-3	1365	m³/s	0.64	0.58	0.46										0.44	1.94	0.12	S1G
SLC355/2-3A	2800	m³/s	1.48	1.45	1.42	1.38	1.34	1.31	1.26	1.17	1.03				2.26	179	1.1	S1G
SLC355/2-3B	2840	m³/s	1.93	1.89	1.85	1.82	1.77	1.73	1.68	1.56	1.40				4.42	33.6	2.2	S1G
SLC355/4-3	1340	m³/s	0.85	0.77	0.66										0.62	3.22	0.18	S1G
SLC400/2-3	2840	m³/s	2.40	2.37	2.34	2.29	2.25	2.22	2.16	2.04	1.88	1.67			4.58	33.6	2.2	S2B
SLC400/4-3	1390	m³/s	1.42	1.31	1.16										1.03	5.82	0.37	S1G
SLC450/2-3A	2840	m³/s	2.89	2.82	2.78	2.72	2.66	2.60	2.53	2.39	2.22	2.00			4.42	33.6	2.2	S2B
SLC450/2-3B	2840	m³/s	3.83	3.79	3.74	3.69	3.63	3.57	3.50	3.31	3.10	2.84	2.50		7.49	61.7*	4.0	S2B
SLC450/4-3A	1390	m³/s	1.70	1.57	1.42	1.18									1.03	5.82	0.37	S2B
SLC450/4-3B	1365	m³/s	2.04	1.88	1.70	1.43									1.57	9.42	0.55	S2B
SLC500/2-3A	2850	m³/s	4.12	4.08	4.02	3.98	3.90	3.84	3.75	3.63	3.46	3.25	3.02	2.70	7.49	61.7*	4.0	S2
SLC500/2-3B	2935	m³/s	4.76	4.72	4.68	4.60	4.52	4.46	4.40	4.24	4.08	3.88	3.63	3.32	10.2	82.4*	5.5	S2
SLC500/4-3A	1390	m³/s	1.72	1.63	1.50	1.30	1.03	0.50							1.03	5.82	0.37	S2B
SLC500/4-3B	1370	m³/s	2.59	2.41	2.23	2.00	1.62								1.65	11.4	0.75	S2B
SLC500/4-3C	1380	m³/s	3.00	2.83	2.60	2.32									2.37	15.4	1.1	S2B
SLC560/2-3	2920	m³/s	6.70	6.63	6.51	6.37	6.30	6.18	6.05	5.80	5.53	5.25	4.88	4.50	13.7	92.5*	7.5	S2
SLC560/4-3A	1370	m³/s	2.80	2.67	2.52	2.29	1.98								1.56	11.4	0.75	S2B
SLC560/4-3B	1380	m³/s	3.50	3.31	3.13	2.88	2.60								2.37	15.4	1.1	S2B
SLC560/4-3C	1390	m³/s	4.06	3.85	3.60	3.32	2.94								3.30	20.4	1.5	S2B
SLC630/4-3A	1380	m³/s	3.69	3.52	3.32	3.08	2.76	2.32							2.37	15.4	15.4	S2
SLC630/4-3B	1400	m³/s	5.40	5.17	4.90	4.61	4.30	3.88							4.43	25.0	25.0	S2B
SLC630/6-3A	925	m³/s	2.78	2.40	1.90										1.11	5.77	0.37	S2B
SLC630/6-3B	920	m³/s	3.40	3.04	2.48										1.61	8.53	0.55	S2B
SLC710/4-3A	1405	m³/s	7.12	6.82	6.52	6.18	5.82	5.38	4.76						5.96	47.5	3.0	S2G
SLC710/4-3B	1420	m³/s	8.18	7.88	7.52	7.17	6.75	6.22							7.85	61.7*	4.0	S2G
SLC710/6-3A	920	m³/s	3.80	3.40	2.85										1.61	8.53	0.55	S2B
SLC710/6-3B	940	m³/s	5.56	5.06	4.28										3.8	22.3	1.5	S2
SLC800/4-3A	1420	m³/s	8.28	8.08	7.82	7.54	7.22	6.87	6.48	5.55					7.85	61.7*	4.0	S2G
SLC800/4-3B	1470	m³/s	9.60	9.38	9.08	8.82	8.50	8.16	7.80	6.90					10.4	84.8*	5.5	S2G
SLC800/6-3A	940	m³/s	6.92	6.38	5.62										3.8	22.3	1.5	S2
SLC800/6-3B	940	m³/s	7.48	7.02	6.50	5.69									5.26	30.5	2.2	S2G
SLC900/4-3A	1470	m³/s	12.10	11.78	11.47	11.16	10.78	10.39	10.00	9.00	7.70				13.9	114*	7.5	S2Y
SLC900/4-3B	1470	m³/s	14.70	14.39	14.04	13.76	13.38	13.02	12.60	11.65	10.38				20.9	126*	11	S3B
SLC900/6-3A	930	m³/s	8.18	7.72	7.20	6.55	5.66								5.26	30.5	2.2	S2G
SLC900/6-3B	950	m³/s	9.45	9.02	8.48	7.82	6.95								6.76	36.1	3.0	S2G
SLC900/8-3	710	m³/s	8.00	7.22	6.00										4.08	22.4	1.5	S2Y
SLC1000/4-3A	1470	m³/s	13.20	12.86	12.50	12.19	11.80	11.42	10.96	9.90	8.70				13.9	114*	7.5	S2Y
SLC1000/4-3B	1470	m³/s	16.00	15.62	15.35	15.02	14.62	14.18	13.71	12.71	11.50	9.77			20.9	126*	11	S3B
SLC1000/4-3C	1460	m³/s	18.22	17.92	17.48	17.15	16.84	16.35	15.35	14.12	12.38				28.2	170*	15	S3B
SLC1000/6-3A	930	m³/s	9.16	8.65	8.09	7.38	6.52	5.10							5.26	30.5	2.2	S2Y
SLC1000/6-3B	950	m³/s	10.70	10.15	9.57	8.88	8.00	6.88							6.76	36.1	3.0	S2Y
SLC1000/8-3	710	m³/s	8.60	7.90	6.92										4.08	22.4	1.5	S2Y

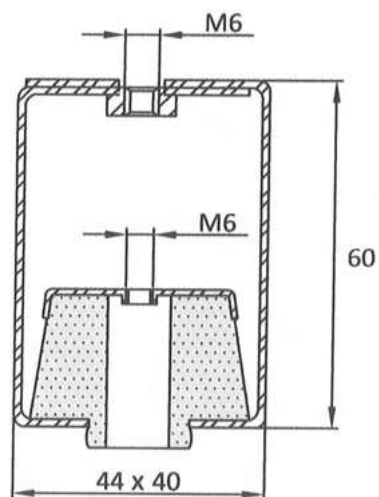
All starting currents are quoted as direct-on-line.

*Available for star-delta starting if required.

Hangers



Part No	B	F	H	A	D	C	Defl. mm	Max Kg
TM 25	75	55	100	12	30	11	24	25
TM 50	75	55	100	12	30	11	24	50
TM 75	75	55	100	12	30	11	24	75
TM 100	75	55	100	12	30	11	24	100
TM 150	120	75	155	16	16	14	35	150
TM 250	120	75	155	16	16	14	35	250
TM 350	120	75	155	16	16	14	35	350



Part No	Min kg	Max Kg
TVAR 40	8	25
TVAR 60	18	50
TVAR 75	25	75

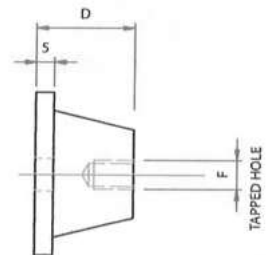
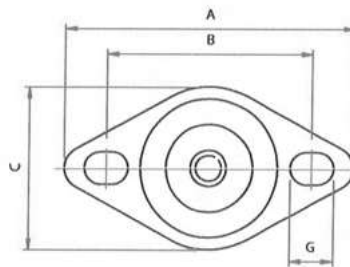
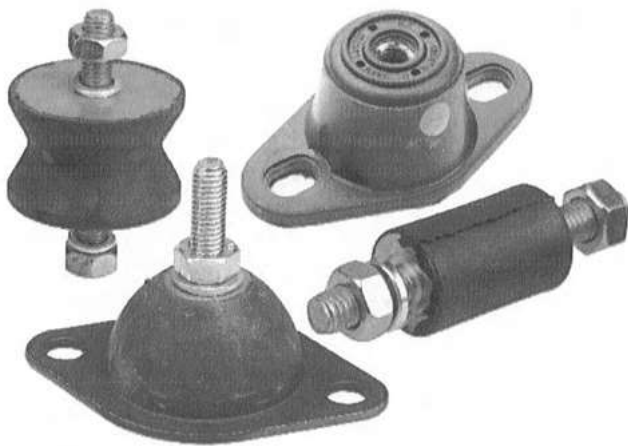
Max compression load in Kg deflection in mm.

This information is for guidance only. Customers are recommended to contact us for further technical information on products and applications. We reserve the right to alter specifications or withdraw products without notice.

Revolution SLC - Long Cased Anti-Vibration Mounts



- Fit directly to mounting feet
- Rubber with steel insert
- Supplied as set of 4, complete with fixings



Product Code	A	B	C	D	E	F	G	Weight kg
062-S1G	64	50	43	5.5	20	M6	Ø7	0.040
062-S2	80	57	45	5	32	M8	12 x 9	0.100
062-S2B								0.100
062-S2Y								0.102
062-S3B	95	71	60	5	45	M10	14 x 9	0.104

ODOUR CONTROL: OPERATION & MAINTANCE (EMAQ+CONTROLL OF ODOUR AND NOISE FROM COMMERCIAL KITCHEN EXHAUST SYSTEM)

The carbon cells will be inspected for carbon testing every 3 months for results in changing, again this will be done by Installation contractors. This will give us a result in whether the change of the Carbon Filters should take place every 3 to 6 months to maintain its optimum efficiency.

The canopy and the stainless steel baffle filters should be cleaned on a daily basis. The stainless steel baffle grease filters are of a 304 grade, the grease filters are to be cleaned on the regime and use of the kitchen, typically a grease filter is cleaned on a daily basis.

The inspection and service of the fan is required every 6 months which will have to be carried out by the Installation contractors. This again will be inspected by the installers.

We recommend that the canopy and the duct work should receive a full deep clean 6 months after installations and then every 6 months thereafter by our recommend cleaning company, to maintain the maximum efficiency of the extraction system.

The carbon filter/pre-filters and system will be kept on a data base by the installers whom will contact the user when inspection is due, the customer will have a inspection book which will be stamped after inspection and service by the Installation contractors, also so that there are no issues in missed services it will also be the responsibility for the customer to contact the service contractor in order that no issues arise of odour due to a missed service on behalf of the contactors.

All plant and Machinery for the Ventilation extraction system and fresh-air inlet fans will be located internal of building with Anti-Vibration mounts and Dura-Dyne and attenuators hard fixed and isolated as per Design shown on the report this will help reduce outbreak noise from plant and any transmitting vibration as its located internally again Anti-Vibration mounts will also be fixed to the external vertical riser , secondly the fans will be regulated via Auto-transformer/inverter control which nullify any harmonic sounds which are found when using electronic regulators.

FURTHER DETAILS OF FILTERS WITH O & M (EMAQ) - MANUFACTURER AIRCLEAN LTD)

O & M INSTRUCTION

PRODUCT GROUP 1130 – DISPOSABLE PLEATED PANELS (GRADE G4 TO EN779) - (PRE-FILTER)

Safety

It is recommended that industrial gloves, overalls, eye protection and nuisance dust masks are utilised when changing filters which have been subjected to natural air, as opposed to air drawn from processes, where full risk assessments should be performed prior to changing. For some filters, an assessment regarding manual handling will need to be made.

Changing of filters should be carried out by experienced or trained personnel, in accordance with safety requirements as defined by the "Control of Substances Hazardous to Health (COSHH) Regulations. ie. Someone who fully understands the design, operation and implications of the product and its use.

General

Withdraw and dispose of the dirty filter and replace with a clean panel.

Recommended discard resistance is 0.5" w.g. (125 Pa) in excess of clean resistance for a 2" panel, for a 4" panel 0.60" w.g. (150 Pa).

Disposal of Air Filters Including Personal Protective Equipment

☐ Filters and PPE have been damaged prior to use can be disposed of as normal industrial waste.

☐ Filters and PPE soiled with exterior air can be disposed of as normal industrial waste.

☐ Filters and PPE soiled by process air, bacterial, toxic and/or radioactive matter must be disposed of as Hazardous Waste in accordance with local regulations of the site and Environmental Health. Legislation prohibits removal of this waste from the site location.

QUANTITY 2 OFF 595*595*45 (INSTALLED BEFORE CARBON FILTER PANELS)

Applications The Pleated Panel Air Filter is a medium efficiency disposable air filter, suitable for ventilation and air conditioning systems which require a higher efficiency and greater dust holding capacity than can be achieved with glass or synthetic panels. The G4 filter can be used where glass panels are undesirable, such as in the food industry and hospitals. Typically, G4 panel filters are used as pre filters on supply air systems to High Performance Bag Filters, or to protect heating or cooling coils from dust build up which leads to system inefficiency. Another common place to see G4 Pleated Panel Air Filters is to protect fans in extract systems for office blocks or kitchen extract systems.

O & M INSTRUCTION PRODUCT GROUP 1610 ACTIVATED CARBON PANEL FILTERS

Safety

It is recommended that industrial gloves, overalls, eye protection and nuisance dust masks are utilised when changing filters which have been subjected to natural air, as opposed to air drawn from processes, where full risk assessments should be performed prior to changing. For some filters, an assessment regarding manual handling will need to be made. Changing of filters should be carried out by experienced or trained personnel, in accordance with safety requirements as defined by the "Control of Substances Hazardous to Health (COSHH) Regulations. ie. Someone who fully understands the design, operation and implications of the product and its use.

General

Withdraw and dispose of the filter to be replaced. Replace with new filter panel. Unlike a particulate filter the resistance will not vary as the carbon adsorbs the odours, and the time that a carbon filter will last before a new one is needed will vary according to the range and amount of odours. A test sample filter can be supplied which you return to ourselves for analysis, which knowing how long it has been in service, we can then provide an approximate prediction as to when the filter will require replacement. Disposal of Air Filters Including Personal Protective Equipment ? Filters and PPE have been damaged prior to use can be disposed of as normal industrial waste. ? Filters and PPE soiled with exterior air can be disposed of as normal industrial waste. ? Filters and PPE soiled by process air, bacterial, toxic and/or radioactive matter must be disposed of as Hazardous Waste in accordance with local regulations of the site and Environmental Health. Legislation prohibits removal of this waste from the site location. For further information please contact Airclean Ltd

QUANTITY 150 OFF 595*595*22 (INSTALLED AFTER PRE-FILTER PANELS)

Applications The disposable Activated Carbon Filter Panel, can be sized and used in a wide variety of odour reduction applications. Multiple Carbon Panel Filters are often used in V formations enabling sufficient contact times with air to offer high levels of gas and odour removal from the air stream.

O & M INSTRUCTION

PRODUCT GROUP 1120 – DISPOSABLE SYNTHETIC PANELS (GRADE G3 TO EN779) (FRESH-AIR INLET FILTER)

Safety

It is recommended that industrial gloves, overalls, eye protection and nuisance dust masks are utilised when changing filters which have been subjected to natural air, as opposed to air drawn from processes, where full risk assessments should be performed prior to changing. For some filters, an assessment regarding manual handling will need to be made.

Changing of filters should be carried out by experienced or trained personnel, in accordance with safety requirements as defined by the "Control of Substances Hazardous to Health (COSHH) Regulations. ie. Someone who fully understands the design, operation and implications of the product and its use.

General

Withdraw and dispose of the dirty filter and replace with a clean panel. Recommended discard resistance is 0.5" w.g. (125 Pa) in excess of clean resistance.

Disposal of Air Filters Including Personal Protective Equipment

- ☐ Filters and PPE have been damaged prior to use can be disposed of as normal industrial waste.
- ☐ Filters and PPE soiled with exterior air can be disposed of as normal industrial waste.
- ☐ Filters and PPE soiled by process air, bacterial, toxic and/or radioactive matter must be disposed of as Hazardous Waste in accordance with local regulations of the site and Environmental Health. Legislation prohibits removal of this waste from the site location.

QUANTITY 3 OFF 595*595*22 (FRESH-AIR INLET PRE-FILTER PANELS INSTALLED BEFORE AIR-INLET FAN)

Applications The disposable Synthetic Panel Air Filter is a medium efficiency filter suitable for ventilation and air conditioning systems, providing an improved performance over the fibre glass panel air filter. The construction of the synthetic panel air filter makes it less liable to shed fibres than a fibre glass panel filter, and therefore suitable for installations such as the food industry and hospitals.

PLEATED PANEL AIR FILTER G4 to EN779:2012

Applications

The Pleated Panel Air Filter is a medium efficiency disposable air filter, suitable for ventilation and air conditioning systems which require a higher efficiency and greater dust holding capacity than can be achieved with glass or synthetic panels.

The G4 filter can be used where glass panels are undesirable, such as in the food industry and hospitals.

Typically, G4 panel filters are used as pre filters on supply air systems to High Performance Bag Filters, or to protect heating or cooling coils from dust build up which leads to system inefficiency. Another common place to see G4 Pleated Panel Air Filters is to protect fans in extract systems for office blocks or kitchen extract systems.

Description

Pleated Panel Filters consist of a dry non-woven fabric media which is pleated to give an extended surface area, producing a low initial resistance for the same air volume, making this an energy efficient filter. The pleat is supported by an expanded galvanised steel mesh.

The pleated air filter media is contained within the air filter by a rigid all-cardboard casing. The filter is sealed together using hot melt adhesive glues to ensure a highly rigid and quality disposable panel air filter.

Three frame options are available; Standard, Airclean Moisture Resistant (AMR) and Metal. Each offering an increased strength and resilience against moisture and humidity experienced in supply air from atmosphere.

Technical

The pleated air filter media is Flame Retardant to UL Class II

Max Operating Temp 80 Deg C

Dust Holding Capacity for 50mm Filter = 840 g/m² Dust Holding Capacity for 100mm Filter = 1260 g/m²

Nominal to Actual Size: less 6mm on H & W, 3mm on Depth

PLEATED PANEL FILTER STANDARD SIZES

Size		Flow Rate			Part Numbers					
OT Inches	Actual mm	22mm m ³ /s	47mm m ³ /s	97mm m ³ /s	1" (22mm)		2" (47mm)		4" (97mm)	
					STD	AMR	STD	AMR	STD	AMR
10 x 10	242 x 242	0.12	0.15	0.18	1130101	1134121	1130201	1134221	1130401	1134421
12 x 12	289 x 289	0.17	0.21	0.25	1130102	1134122	1130202	1134222	1130402	1134422
15 x 15	369 x 369	0.27	0.34	0.41	1130103	1134123	1130203	1134223	1130403	1134423
18 x 18	445 x 445	0.40	0.50	0.59	1130104	1134124	1130204	1134224	1130404	1134424
20 x 10	495 x 242	0.24	0.30	0.36	1130106	1134125	1130206	1134225	1130406	1134425
20 x 16	495 x 394	0.39	0.49	0.59	1130108	1134126	1130208	1134226	1130408	1134426
20 x 20	495 x 495	0.49	0.61	0.74	1130110	1134127	1130210	1134227	1130410	1134427
25 x 16	620 x 394	0.49	0.61	0.73	1130111	1134128	1130211	1134228	1130411	1134428
25 x 20	620 x 495	0.61	0.77	0.92	1130112	1134129	1130212	1134229	1130412	1134429
24 x 12	594 x 289	0.34	0.43	0.51	1130113	1134130	1130213	1134230	1130413	1134430
24 x 20	594 x 495	0.59	0.74	0.88	1130114	1134131	1130214	1134231	1130414	1134431
24 x 24	594 x 594	0.71	0.88	1.06	1130115	1134132	1130215	1134232	1130415	1134432

STD: Standard Cardboard Frame

AMR: Airclean Moisture Resistant Cardboard Frame

Activated Carbon Filters - Panels **Odour and Gas Removal**

Applications

The disposable Activated Carbon Filter Panel, can be sized and used in a wide variety of odour reduction applications.

Multiple Carbon Panel Filters are often used in V formations enabling sufficient contact times with air to offer high levels of gas and odour removal from the air stream.

Description

Activated Carbon Panel Filters are generally manufactured using the bonding process to provide a rigid panel which is often called a "Biscuit". The bonded carbon biscuit can be framed in a metal channel so that it can be easily slid into channel holding frames mounted into ductwork or filter housings. The panel is finished in a "fabric facia" which minimises the dusting from the panel.

Activated Carbon Panel Filters can also be produced using a loose fill technique, which can offer an improved rate of absorbency. Despite the improved rate of absorbency the Activated Carbon Panels capacity will remain the same. The panels are designed to minimise the risk of bypass due to settlement, and for this reason their installation should be designed to be horizontal,

Technical

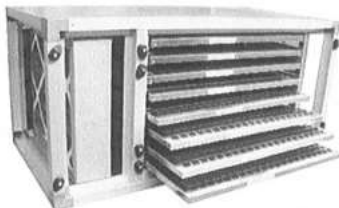
Nominal thickness	Actual thickness	Pressure drop	Face velocity m/s
25mm	22mm	45 Pa	0.22 (43fpm)
22mm	19mm	40 Pa	0.19 (37fpm)

Maximum Operating Temperature: 40 Deg C
Maximum Operating Humidity: 80% RH

Holding Frames and Cases

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

See Catalogue Section 8 (code AC8) for full information.



AHU Style Side Withdrawal Filter Housing (1908)



Fully Welded Side Withdrawal Filter Housing (1840)

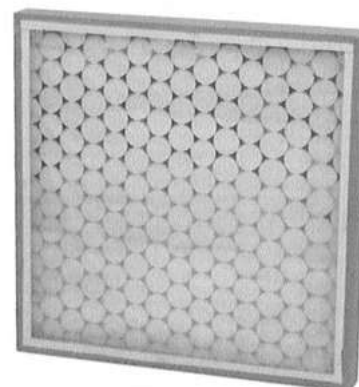
DISPOSABLE SYNTHETIC MEDIA FILTERS

Grade G3 to EN779:2012

Applications

The disposable Synthetic Panel Air Filter is a medium efficiency filter suitable for ventilation and air conditioning systems, providing an improved performance over the fibre glass panel air filter.

The construction of the synthetic panel air filter makes it less liable to shed fibres than a fibre glass panel filter, and therefore suitable for installations such as the food industry and hospitals.



Description

Synthetic Panel Air Filters consist of a dry, graduated, high loft and fully flame retardant synthetic fibre filter media, housed within either a standard rigid cardboard filter frame, or an Airclean Moisture Resistant (AMR) cardboard frame. Air Filter stiffening bars can be provided if required. Panel Filter Stiffening bars can be provided if required.

Our method of manufacture for panel air filters utilise modern hot-melt adhesive techniques, which produce an extremely rigid and robust product.

Technical

The media is Flame Retardant to DIN53438

Max Operating Temp 100 Deg C

Dust Holding Capacity 844 g/m²

Recommended Face Velocity 2.25m/s

Nominal to Actual Size: less 6mm on H & W, 3mm on Depth

STANDARD SYNTHETIC PANEL FILTER SIZES

Size		Flow Rate	Part Numbers	
OT Inches	Actual mm	m ³ /s	1" (22mm)	2" (47mm)
10 x 10	242 x 242	0.13	1120101	1120201
12 x 12	289 x 289	0.19	1120102	1120202
15 x 15	369 x 369	0.31	1120103	1120203
18 x 18	445 x 445	0.44	1120104	1120204
20 x 10	495 x 242	0.27	1120106	1120206
20 x 16	495 x 394	0.43	1120108	1120208
20 x 20	495 x 495	0.55	1120110	1120210
25 x 16	620 x 394	0.55	1120111	1120211
25 x 20	620 x 495	0.69	1120112	1120212
24 x 12	594 x 289	0.39	1120113	1120213
24 x 20	594 x 495	0.66	1120114	1120214
24 x 24	594 x 594	0.79	1120115	1120215

Notes

- * Actual sized filters will be manufactured as ordered +/- 3mm
- * Clean Pressure Drops 1"- 66Pa, 2"- 75Pa based on a Face Velocity of 2.25 m/s
- * Max Size: 625Hx900W

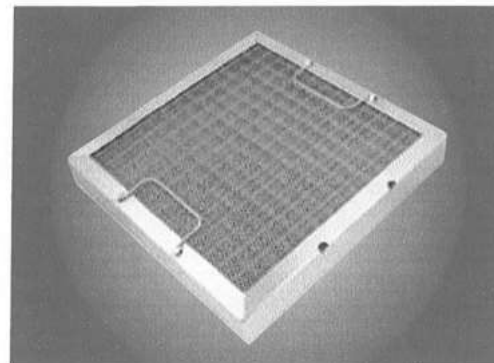
Grease Filters

by Express-air

Aluminium Frame Galvanised Mesh Grease Filters

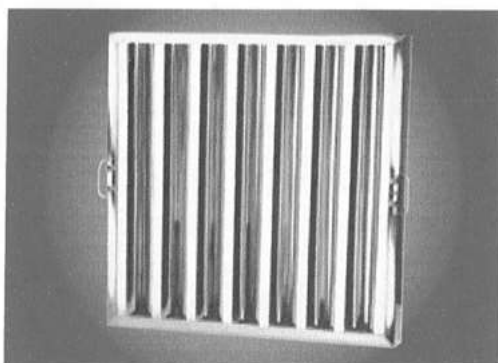
Order Ref	Size Inches	Size mm			Capacity
	W x H x D	W	H	D	m ³ /s *
EAGF12121	12 x 12 x 1	292	292	20	0,19
EAGF12122	12 x 12 x 2	292	292	45	0,19
EAGF16161	16 x 16 x 1	394	394	20	0,33
EAGF16162	16 x 16 x 2	394	394	45	0,33
EAGF18181	18 x 18 x 1	445	445	20	0,42
EAGF18182	18 x 18 x 2	445	445	45	0,42
EAGF20101	20 x 10 x 1	495	241	20	0,26
EAGF20102	20 x 10 x 2	495	241	45	0,26
EAGF20161	20 x 16 x 1	495	394	20	0,41
EAGF20162	20 x 16 x 2	495	394	45	0,41
EAGF20201	20 x 20 x 1	495	495	20	0,52
EAGF20202	20 x 20 x 2	495	495	45	0,52
EAGF24241	24 x 24 x 1	597	597	20	0,75
EAGF24242	24 x 24 x 2	597	597	45	0,75
EAGF25202	25 x 20 x 2	662	495	45	0,65

*capacity based on initial clean resistance of 30Pa @ 2.5m/s velocity



Aluminium Baffle Filters

Order Ref	Size Inches	Size mm			Capacity m ³ /s against Resistance Pa *			
	W x H x D	W	H	D	50pa	100pa	150pa	200pa
EABFA16162	16 x 16 x 2	394	394	45	0,12	0,16	0,20	0,24
EABFA18182	18 x 18 x 2	445	445	45	0,20	0,28	0,35	0,39
EABFA20102	20 x 10 x 2	495	241	45	0,12	0,16	0,20	0,24
EABFA20162	20 x 16 x 2	495	394	45	0,20	0,28	0,35	0,39
EABFA20202	20 x 20 x 2	495	495	45	0,26	0,38	0,46	0,51
EABFA24242	24 x 24 x 2	597	597	45	0,35	0,50	0,66	0,71



Stainless Steel Baffle Filters

Order Ref	Size Inches	Size mm			Capacity m ³ /s against Resistance Pa *			
	W x H x D	W	H	D	50pa	100pa	150pa	200pa
EABFS16162	16 x 16 x 2	394	394	45	0,12	0,16	0,20	0,24
EABFS18182	18 x 18 x 2	445	445	45	0,20	0,28	0,35	0,39
EABFS20102	20 x 10 x 2	495	241	45	0,12	0,16	0,20	0,24
EABFS20162	20 x 16 x 2	495	394	45	0,20	0,28	0,35	0,39
EABFS20202	20 x 20 x 2	495	495	45	0,26	0,38	0,46	0,51
EABFS24242	24 x 24 x 2	597	597	45	0,35	0,50	0,66	0,71

* The resistance quoted above is both the initial and operating resistance due to the self draining capacity of the filter.

Annex A:

Information Required To Support Planning Application For Commercial Kitchen

Information on Premises:

The number of meals which will be served per day will be around 30-100.

The methods and preparation of cooking will take place during business hours only and not before or after. The cooking style involves using fresh produce with light touches of fresh ground spices.

The types of meal that will be served is Grilled fast food which involves use of standard spices which are often used in other establishment, the strongest of the odour to be found in this type of cooking is the use of garlic and onion, the other spices are lightly used and have a low level of odour.

Plans and drawings:

Please find the scaled drawing submitted with this form in the ventilation design scheme.

Pre-filters:

Disposable Synthetic Panel Filters Manufacturers AirClean Ltd please see o&m instructions and technical supplied information see documents in ventilation report. To be used with the carbon filtrates system before the carbons which come after the stainless steel baffle filters which are installed on the canopy extract hood. Dimensions 595*595*45

Electrostatic precipitators:

n/a

Carbon filters (where proposed):

Before the fan will be a purpose built carbon filtration discarb unit and will house a pre-filter (to prolong the life of the activated carbon cells) and hold approximately 150 carbon bonded panel cells.

For 0.3 seconds contact time- Typically recommended for Spicy cuisine and High Level Food Odour Such as / Grill House / Fast Foods / Thai and Indian. (1 single carbon panel @ 594 x 594 x 25mm framed will achieve a 0.3 second contact time at 0.029m3/s)

$$\text{DESIGN AIR FLOW RATE } 4.33\text{m}^3/\text{s} / 0.029\text{m}^3/\text{s} = 149.31$$

Therefore a minimum of 150 Extra Duty carbon cells panels must be used.

By rounding the number of carbon filters up from the calculations, it allows some room for any inefficiency in the odour control.

Cleaning and maintenance

The carbon cells should be inspected for carbon testing every 3 months for results in changing, again this will be done by Installation contractors. This will give us a result in whether the change of the Carbon Filters should take place every 3 to 6 months to maintain its optimum efficiency however it will be also the clients duty to inform contractor of services due not to cause any fall back of issues of odour arising due to the fact of the contractors absence of notifying the client of service.

The canopy and the stainless steel baffle filters should be cleaned on a daily basis. The stainless steel baffle grease filters are of a 304 grade, the grease filters are to be cleaned on the regime and use of the kitchen, typically a grease filter is cleaned on a daily basis.

The inspection and service of the fan is required every 6 months which will have to be carried out by the Installation contractors. This again will be inspected by the installers. We recommend that the canopy and the duct work should receive a full deep clean 6 months after installations and then every 6 months thereafter by our recommend cleaning company, to maintain the maximum efficiency of the extraction system.

The carbon filter/pre-filters and system will be kept on a data base by the installers which will contact the user when inspection is due, the customer will have a inspection book which will be stamped after inspection and service by the Installation contractors.

Odour counteract ant or neutralising system (where applied):N/A

n/a

Canopy hoods:

Dimensions hood (A) 4500 x 1100 x 400 / 500

Dimensions hood (B) 3500 x 1100 x 400 / 500

Dimensions hood (C) 4000 x 1100 x 400 / 500

The canopy's will be manufactured from stainless steel grade 430, with grease drain off taps on either sides of the extract hoods. The canopy hoods will be supplied with stainless steel baffle filters.

Face velocity hood (A) = 3.85m²

Design volume = 1.54m³/sec (medium / heavy load)

6 off stainless steel baffle filters (cook face area)

Face velocity hood (B) = 2.31m²

Design volume = 0.81m³/sec (medium load)

4 off stainless steel baffle filters (cook face area)

Face velocity hood (C) = 4.40m²

Design volume = 1.98m³/sec (medium / heavy load)

8 off stainless steel baffle filters (cook face area)

Combined Design Volume: 4.33m³/sec

Total number of grease filters per hood (A) / (B) / (C) = 24 / Dimensions 495*495*45
Design Volume $4.33\text{m}^3/\text{s} / 18 = 0.24\text{m}^3/\text{s}$
 $4.33\text{m}^3/\text{s} / 0.24\text{m}^3/\text{s} = 18.04$

18 off stainless steel baffle filters (between hoods (A / 9) / (B / 7) / (C / 8)
Combined Design Volume for hoods (A) / (B) / (C) = $4.33\text{m}^3/\text{sec}$ (Medium / Heavy 0.40m/s / Heavy Loading- 0.51m/s

System operation:

The Extract duct work will connect off the top entry filter bank spigot of the 4.5mtr canopy extract hood which will go horizontal against ceiling internal of the building before connecting onto the main header of the extract duct with a volume control damper to balance off extract in order to allow correct velocity of each hood connecting onto main header. The connections for hoods (B) and (C) will follow the same principle as connection (A) with VCD's (volume control dampers) before exiting onto the external vertical discharge riser rear of the property upon the flat roof before going onto the vertical discharge riser 1mtr above eaves. Before the vertical riser the extract duct will connect onto the external plant system which will consist of the carbon filtration unit before the extractor fans which will be united to **attenuators and AVMS fixed and isolated which will help nullify any further transmitting noise (please see noise assessment for attenuator details and calculations provided by Acoustic Consultant)**, the extractor fans will be speed controlled via auto-transformer / inverter regulator which will help prevent harmonic sounds which cause fan to make when operated by electronic controllers. The vertical discharge flue will be 1metre above eaves of main building discharging at high level via a high Velocity low-loss efficiency cowl.

Extract Duct details for Hood (B)

The Extract duct work will connect off the top entry filter bank spigot of the 3.5mtr canopy extract hood which will connect to the main header of duct with the VCD as mentioned above which canopy extract hood (A) is connecting onto

Extract Duct details for Hood (C)

The Extract duct work will connect off the top entry filter bank spigot of the 4.0mtr canopy extract hood which will connect to the main header of duct with the VCD which canopy extract hood (A) & (B) is connecting onto, to help balance the airflow and extract velocity for all three canopy extract hood and not to cause spillage volume control damper will be installed onto the spigots connecting before the main header of the extract duct for each hood as detailed in the extract layout specifics given above. The extract ductwork off all Canopy extract hoods will be internal against the ceiling.

Extract Duct Dimensions & extraction system flue details:

Extract Duct Dimensions for Hood (A)

The duct work size is approximately 430*430 or equivalent spigots connections up to main header of duct.

$$1.54 / 0.18 = 8.55\text{m/second}$$

Extract Duct Dimensions for Hood (B)

The duct work size is approximately 300*300 or equivalent spigots connections up to main header of duct.

$$0.81 / 0.09 = 9.00\text{m/second}$$

Extract Duct Dimensions for Hood (C)

The duct work size is approximately 490*490 or equivalent spigots connections up to main header of duct.

$$1.98 / 0.24 = 8.25\text{m/second}$$

Duct Dimensions for Main Extract header for Extract hoods (A) / (B) & (C) and Discharge flue efflux velocity :

The main extract duct header will be required to be approximately 700*700 or equivalent up to the external plant system.

$$4.33 / 0.49 = 8.84\text{m/second}$$

The efflux velocity is **17.58m/second** and the duct work will be free from grease disperse all odours to high level via 560dia or equivalent High Velocity low-loss Discharge Cowl. The vertical discharge flue will be set 1mtr above eaves.

Extractor Fans Specification

Extract Fan Specification for hood (A) / (B) & (C) :

Fan selected: SLC-560-2-3AC CASED AXIAL FAN, 2 pole, Three phase, speed control via Inverter drive. The Extract fans will be located internal of building plant area which will be united to an attenuator and will be fixed and isolated with anti-vibration mounts and Dura-dyne connections which will help any further transmitting noise and vibrations nullify.

The two fans each run at 2900rpms each with a maximum operating noise of 77dBA and will handle air flow rate 4.33m³/s @ 900-1000 pa.

Flue design:

The efflux velocity is **17.58m/second** and the duct work will be free from grease disperse all odours to high level via 560dia or equivalent High Velocity low-loss Discharge Cowl. The vertical discharge flue will be set 1mtr above eves.

Noise:

PLEASE SEE ACCOUSTIC DETAILS PROVIDED BY ACOUSTIC CONSULTANT

Maintenance:

The carbon cells should be inspected for carbon testing every 3 months for results in changing, again this will be done by Installation contractors. This will give us a result in whether the change of the Carbon Filters should take place every 3 to 6 months to maintain its optimum efficiency however it will be also the clients duty to inform contractor of services due not to cause any fall back of issues of odour arising due to the fact of the contractors absence of notifying the client of service.

The canopy and the stainless steel baffle filters should be cleaned on a daily basis. The stainless steel baffle grease filters are of a 304 grade, the grease filters are to be cleaned on the regime and use of the kitchen, typically a grease filter is cleaned on a daily basis.

The inspection and service of the fan is required every 6 months which will have to be carried out by the Installation contractors. This again will be inspected by the installers. We recommend that the canopy and the duct work should receive a full deep clean 6 months after installations and then every 6 months thereafter by our recommend cleaning company, to maintain the maximum efficiency of the extraction system.

The carbon filter/pre-filters and system will be kept on a data base by the installers which will contact the user when inspection is due, the customer will have a inspection book which will be stamped after inspection and service by the Installation contractors.

Additional notes for guidance: n/a

KITCHEN FRESH AIR-INLET DETAILS & CALCULATIONS :

Combined Design Volume: $4.33\text{m}^3/\text{s}$ (combined canopy hood design volumes)x 3600=
 $15,588\text{m}^3/\text{hr}$

Kitchen area volume $5.8\text{m} \times 6.1\text{m} \times 3.0\text{m} = 106.14\text{m}^3$ recommended air change rate for commercial kitchen is 30- 60 ach

The air change rate equates to $15,588\text{m}^3/\text{hr}$ divided by the Kitchen area volume 106.14m^3
This gives us an air change rate of 146.68ach. Minimum for commercial kitchen 30-60 ach,
this figure can be brought down using the speed regulator.

Supply Volume Design:

With such a high air change the design would call for the maximum recommended replacement of 85%

This would be $4.33\text{m}^3/\text{s}$ ($15,588\text{m}^3/\text{hr}$) x 85% requires $3.68\text{m}^3/\text{s}$ ($13,248\text{m}^3/\text{hr}$)

Pressure Lost in Air- Supply System

Allowing for 50 pa filter /(700*700 duct =7.51m/s velocity) 150 pa duct / 50 pa grille /
bends 100 = **350pa clean / 450 pa dirty**

Required duty and pressure: $3.68\text{m}^3/\text{s}$ @ 450 pa dirty

Air-Supply Fan and Grill Specification

Fan selected: SLC-500-2B-3AC CASED AXIAL FAN, 2 pole, Three phase, speed control via Inverter drive. The **Air-supply fan will be located internal of building plant area which will be united to an attenuator and will be fixed and isolated with anti-vibration mounts and Dura-dyne connections which will help any further transmitting noise and vibrations nullify.**

This fan runs at 2900rpms with a maximum operating noise of 71dBA and will handle air flow rate in excess of $3.68\text{m}^3/\text{sec}$ @ 600pa.