

POWERED VENTILATION LTD.

Kitchen Extract system Solutions

www.poweredventilation.co.uk

SPECIFICATION ON EXTRACTION SYSTEM:

SITE REF:

109B OXFORD ROAD,
READING,
RG1 7UD

APPLICATION REF:

Canopy Hoods Details

Dimensions of hood : 6100 x 1300 x 400 / 600

The canopy will be manufactured from stainless steel grade 304, with a 400mm front and 600mm back design. The canopy hood will be supplied with 495*495*45 stainless steel baffle filters, with grease drain off taps on each end of the extraction hood.

Face velocity hood	= 7.93m/s
Design volume	= 4.04m ³ /sec

Total number of grease filters 12 / Dimensions 495*495*45

Design Volume 4.04m³/s / 12 = 0.34m³/s

12 off stainless steel baffle filters

Duct Work and Discharge Efflux Velocity for Hood

The duct work will spigot off the top of the 6.1mtr hood, the extract duct will then continue up to the plant section which will run horizontally against the kitchen ceiling internal of the building before going up to the vertical discharge flue above eaves and above dormer window which will appear externally.

The extract hood will have a clearance of 2mtr to the front underside, the plant section consists of a 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 fan will be speed controlled via auto-transformer regulator which will help prevent harmonic sounds which cause fan to make when operated by electronic controllers, the plant will have accessible points for service and maintenance. The vertical discharge flue will be of a high Velocity

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Discharge cowl which will be set 2033mtr above the eaves in order to pass dorma window.
The High Velocity Cowl is ideal for good dispersion of fumes.

The duct work size is approximately 550*550 or equivalent and at the discharge point will be 560 dia

$.55 \times .55 = 0.42\text{m}^2$ (air across duct section)

$4.04\text{m/s} / 0.42 = 9.62\text{m/second}$ (air speed in duct)

The efflux velocity is **16.41m/second** and the duct work will be free from grease disperse all fumes to high level.

($4.04\text{m}^3/\text{s} / 0.2463\text{m}^3$ (free area inside 560 dia duct or equivalent) = **16.41m/s velocity**)

Pressure Lost in System

34mtr off, Linear Metres duct@ 2.5 pa = 85pa

12off, Stainless Baffle Filters = 100pa

1off, High Efficiency cowl + Bends = 70pa

1off, Carbon unit and pre-filter = 125pa

Total = 380pa clean / 400pa dirty

Required duty and pressure: 4.04m³/s @ 380 pa

Extractor Fan Specification

Located within the duct work is a SLC560/2-3 EXTRACTOR FAN, 2 pole, 3 phase, speed control via Transformer /Inverter regulator.

This fan runs at 2920rpms with a maximum operating noise of 75dBA and will handle air flow rate in excess of 5.269m³/sec @ 595pa.

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KITCHEN FRESH AIR-INLET DETAILS & CALCULATIONS:

Design Volume: $4.04\text{m}^3/\text{s}$ (canopy hood design volume) $\times 3600 = 14,544\text{m}^3/\text{hr}$

Kitchen area $3.2\text{m} \times 8.1\text{m} \times 2.9\text{m} = 75.17\text{m}^3$ recommended air change rate for commercial kitchen is 60 ach

The air change rate equates to $14,544\text{m}^3/\text{hr}$ divided by the room volume 75.17m^3
This gives us an air change rate of 193.48ach. 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 $4.04\text{m}^3/\text{s}$ ($14,544\text{m}^3/\text{hr}$) $\times 85\%$ requires $3.44\text{m}^3/\text{s}$ ($12,384\text{m}^3/\text{hr}$)

Pressure Lost in Air- Supply System

Allowing for 45 pa filter / (550*550 duct = 7.55m/s velocity) 100 pa duct / 80 pa grille / bends 30 / = **255pa clean / 300 pa dirty**

Air-Supply Fan and Grill Specification

Fan selected: SCP630/4-1 Contra Rotating Axial Fan, 4 pole, single phase, speed regulated via transformer.

This fan runs at 1350rpms with a maximum operating noise of 71dBA and will handle air flow rate in excess of $3.471\text{m}^3/\text{sec}$ @ 305pa.

POWERED VENTILATION LTD.
ALEXANDER HOUSE,
60 TENBY STREET NORTH,
BIRMINGHAM, B1 3EG EMAIL:
info@poweredventilation.co.uk

**Client: 109B OXFORD ROAD.
READING
RG1 7UD**

**Project : PLAN VIEW OF KITCHEN
SHOWING LAYOUT OF EXTRACT
& AIR SUPPLY SYSTEM BOTH
SYSTEM PLANT INTERNAL JUST
DUCT ON FLAT ROOF**

Scale: 1/100

Drawing no: 1

Job no:

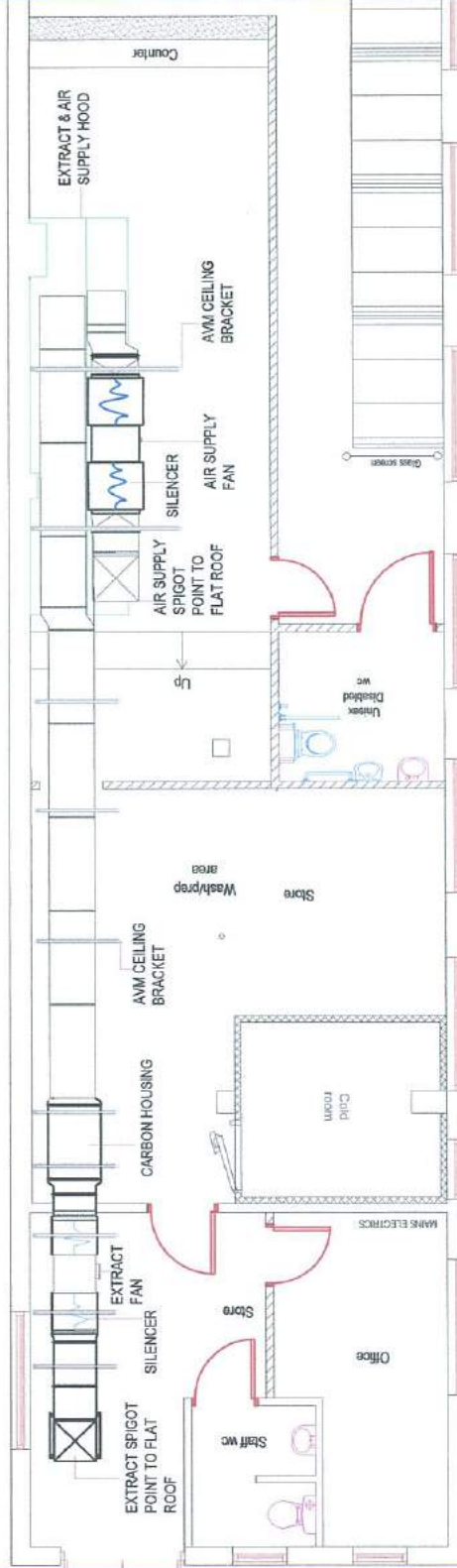
NOTES:

Council ref:

Officer:

Date: 24-1-18

Drawn:ABU TAHMID



PLAN VIEW OF KITCHEN

POWERED VENTILATION LTD.
ALEXANDER HOUSE,
60 TENBY STREET NORTH,
BIRMINGHAM, B1 3EG EMAIL:
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Client: 109B OXFORD ROAD
READING
RG1 7UD

Project : SIDE ELEVATION
SHOWING EXTRACT DUCT & AIR
SUPPLY DUCT ON FLAT ROOF

Scale: 1/100

Drawing no: 2

Job no:

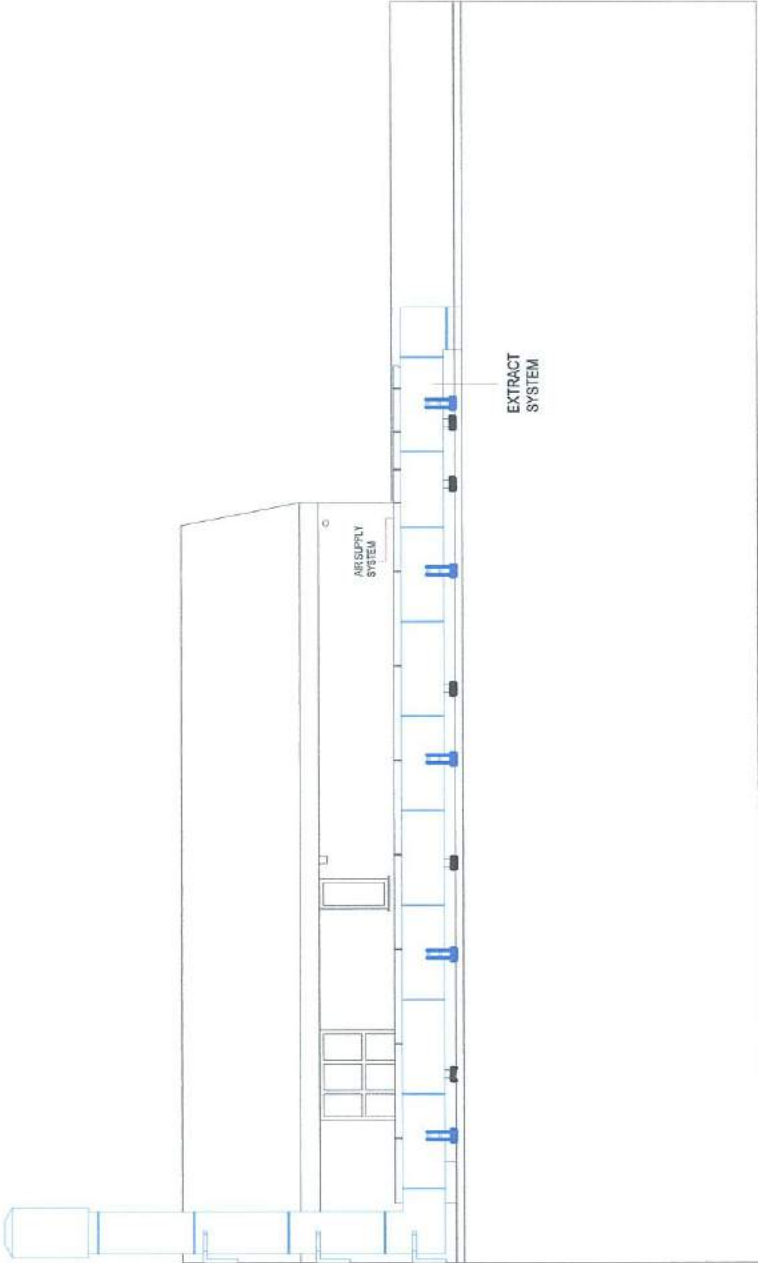
NOTES:

Council ref:

Officer:

Date: 24-1-18

Drawn:ABU TAHMID



SIDE ELEVATION SHOWING EXTRACT SYSTEM & AIR SUPPLY SYTEM ON FLAT ROOF

POWERED VENTILATION LTD.
ALEXANDER HOUSE,
60 TENBY STREET NORTH,
BIRMINGHAM, B1 3EG EMAIL:
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Client: 109B OXFORD ROAD
READING
RG1 7UD

Project :REAR ELEVATION
SHOWING FRONT VIEW OF
EXTRACT SYSTEM DUCT & AIR
SUPPLY SYSTEM LOUVER GRILL

Scale: 1/100

Drawing no: 4

Job no:

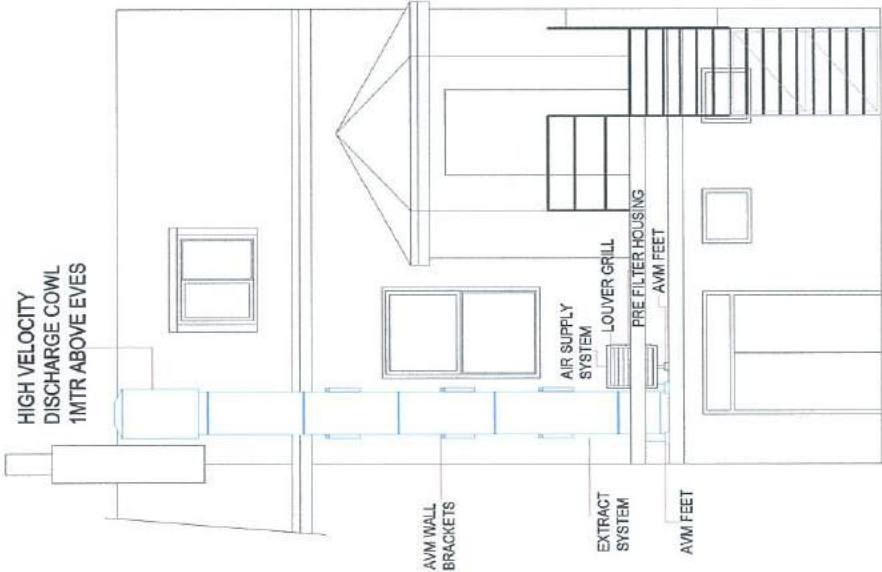
NOTES:

Council ref:

Officer:

Date: 24-1-18

Drawn:ABU TAHMID



ELTA FANS LTD (BUILDING SERVICES)

a member of the Elta Group

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 46 Third Avenue, Pensnett Trading Estate, Kingswinford, West Midlands DY6 7US, UK

**ELTA FAN DATA FOR MODEL SLC560/2-3**

Location: 109B OXFORD RD

Designation: EXTRACTION

Fan Code: **SLC560/2-3****Requirements**

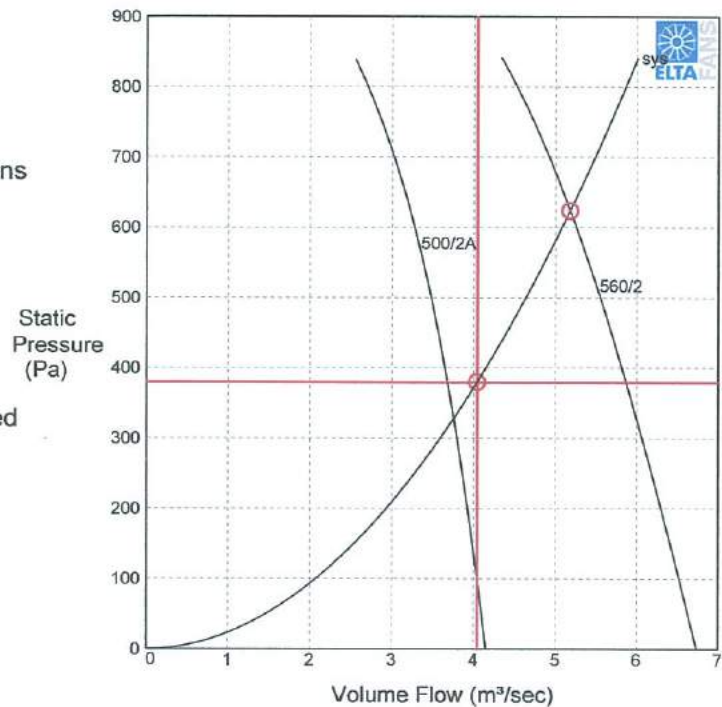
Volume: 4.04 m³/s
 Static Pressure: 380 Pa
 Selection Pressure: 380 Pa at std conditions
 Operating Duty: 5.178 m³/s at 624 Pa
 Temperature: 20 deg C
 Altitude: 0 m

Fan Data (at STP)

Type: Revolution Long Cased
 Axial Fan
 Diameter: 560 mm
 Speed: 2920 RPM
 Weight: 96 kg

Motor Data (at STP)

Motor Power 7.5 kW
 Electrical Supply: 415V@50Hz
 Motor Speed Poles: 2 Poles

**SOUND DATA**

Spectrum (Hz)	63	125	250	500	1K	2K	4K	8K	dBA @ 3m
Sound Power (dB)	91	88	92	93	90	88	86	83	75

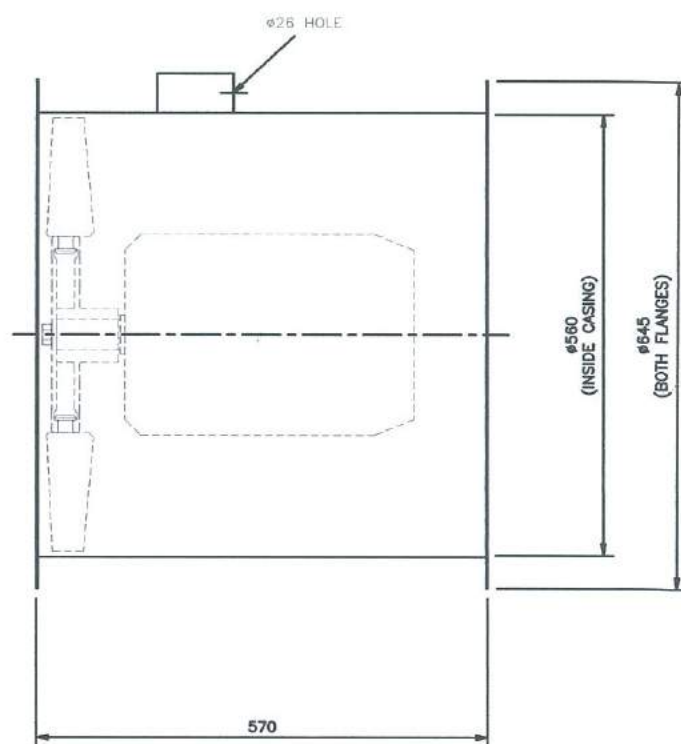
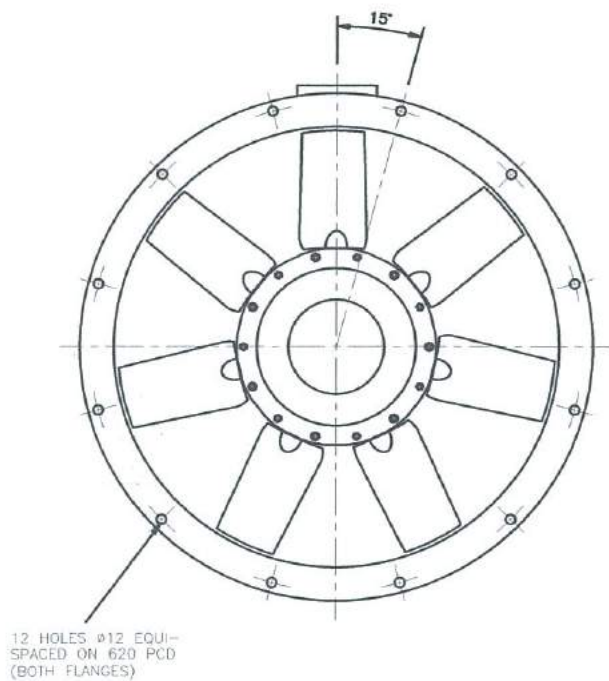
Note: Levels are quoted as in-duct values. dBA values are average spherical free-field for comparative use only.

DRAWING FOR MODEL SLC560/2-3

Location: 109B OXFORD RD

Designation: EXTRACTION

Version 2 On-going product improvements may result in dimensional changes without notice.



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**ELTA FAN DATA FOR MODEL SCPP630/4-1**

Location: 109B OXFORD RD

Designation: AIR SUPPLY

Fan Code: **SCPP630/4-1****Requirements**

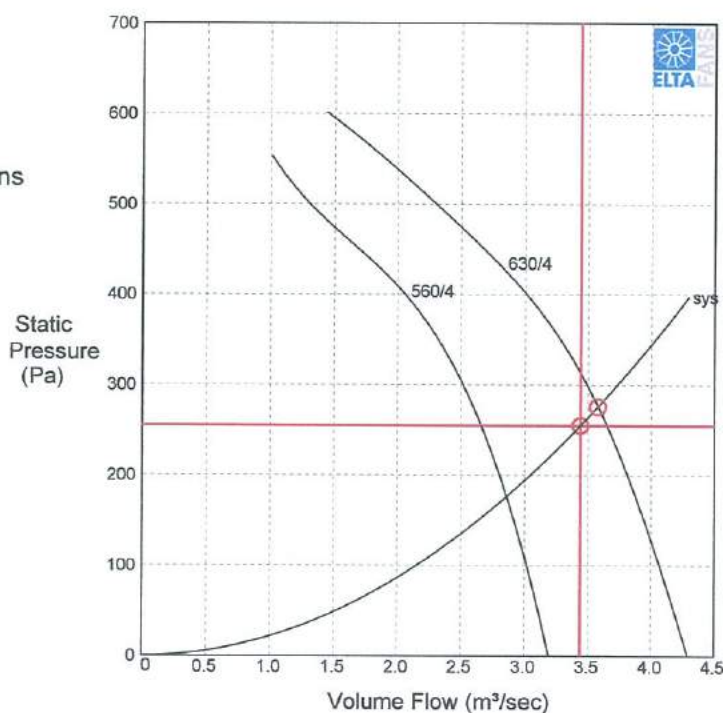
Volume: 3.44 m³/s
 Static Pressure: 255 Pa
 Selection Pressure: 255 Pa at std conditions
 Operating Duty: 3.579 m³/s at 276 Pa
 Temperature: 20 deg C
 Altitude: 0 m

Fan Data (at STP)

Type: Compact
 Contra-Rotating Axial
 Fan
 Diameter: 630 mm
 Speed: 1350 RPM
 Weight: 70 kg

Motor Data (at STP)

Motor Power: 2.2 kW
 Electrical Supply: 240V@50Hz
 Motor Speed Poles: 4 Poles

Density: 1.2 kg/m³**SOUND DATA**

Spectrum (Hz)	63	125	250	500	1K	2K	4K	8K	dBA @ 3m
Sound Power (dB)	85	83	87	88	86	86	82	77	71

Note: Levels are quoted as in-duct values. dBA values are average spherical free-field for comparative use only.

© 2001 Elta Fans

Silencer Details:

PLEASE SEE ACCOUSTIC DETAILS PROVIDED BY RANDTECH CONSULTANTS

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 140 carbon bonded panel cells.

For 0.3 seconds contact time- Typically recommended for Spicy cuisine such as Thai / Indian / Grill & Steakhouse. (1 single carbon panel @ 594 x 594 x 25mm framed will achieve a 0.3 second contact time at 0.029m3/s)

$$\text{DESIGN AIR FLOW RATE } 4.04\text{m}^3/\text{s} / 0.029\text{m}^3/\text{s} = 139.31$$

Therefore a minimum of 140 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.

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/J3514a

2nd February 2018

Powered Ventilation Ltd

Alexander House

60 Tenby Street North

Birmingham

B1 3EG

Dear Sirs

Re: 109B Oxford Road, Reading, RG1 7UD - Proposed Kitchen Supply & Extract Ventilation Systems - External Noise Assessment

Further to the receipt of your ventilation system 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 1/2/18 to inspect the proposed location for the new kitchen ventilation systems and measure the background noise level. The proposed ventilation systems, will be located at the rear of the building, which incorporates residential windows. The distance from the proposed extract ventilation system discharge to the nearest residential window is approximately 2m. The distance from the proposed supply ventilation system intake louvre to the nearest residential window is approximately 4m.

On our site visit we measured the typical background noise level in a ground floor level rear yard area, beneath the location of the residential windows at 23.00hrs for a period of 30 minutes. The background noise level recorded was 49.0dB LA90 30min; this background noise level was controlled by the road traffic in the town centre location.



Ref: MDR/J3439a

The instrumentation used for the measurements was a Rion NL-52 precision grade real time analysing sound level meter, serial number 00810302. The RTA was calibration checked before and after the measurements and seen to be correct. Please see attached current certification for the instrument.

We have been advised that the proposed ventilation systems would operate up to 23.30hrs. If assessing the proposed ventilation systems to BS4142:2014 we would base the assessment on a background noise level of 49dB LA90 and advise noise control to the two external plant noise sources to control the combined plant noise outside the nearest residential window, the plant rating level, to be at least 5-10dB below the background noise.

For the proposed kitchen extract ventilation system the fan discharge silencer advised would be a cylindrical podded silencer design, typically 560mm i/d x 1120mm long. The silencer should reduce the radiated discharge noise to approximately 38dBA @ 2m distance.

For the proposed kitchen fresh air supply ventilation system the fan intake silencer advised would be a cylindrical podded silencer design, typically 630mm i/d x 1260mm long. The silencer should reduce the radiated inlet noise to 39dBA at 4m distance.

The ventilation system fans, silencing and a significant amount of ductwork will be located within the building which controls the break-out noise from the systems prior to silencing for nearby noise sensitive windows.

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

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



Ref: MDR/J3514a

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

Yours faithfully

A handwritten signature in dark ink, appearing to read 'MD Randall', with a stylized, cursive script.

M D Randall BSc(Eng) CEng MCIBSE MIOA





CERTIFICATE OF CALIBRATION



Date of Issue: 15 June 2017

Certificate Number: UCRT17/1494

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.uk

Web: 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	00810302
Rion	Firmware		1.8
Rion	Pre Amplifier	NH-25	10296
Rion	Microphone	UC-59	03951
Rion	Calibrator	NC-74	34536109
	Calibrator adaptor type if applicable		NC-74-002

Performance Class 1
Test Procedure TP 2.SLM 61672-3 TPS-49
Procedures from IEC 61672-3:2006 were used to perform the periodic tests.
Type Approved to IEC 61672-1:2002 YES **Approval Number** 21.21 / 13.02
If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003
Date Received 13 June 2017 **ANV Job No.** UKAS17/06283
Date Calibrated 15 June 2017

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully performed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	Dated	Certificate No.	Laboratory
	08 July 2016	UCRT16/1222	7623

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.

**CERTIFICATE OF CALIBRATION**

Certificate Number

UCRT17/1494

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	Sound Level Meter	NL-42 / NL-52
SLM instruction manual ref / issue		1,1-03
SLM instruction manual source	Manufacturer	
Internet download date if applicable	N/A	
Case corrections available	Yes	
Uncertainties of case corrections	Yes	
Source of case data	Manufacturer	
Wind screen corrections available	Yes	
Uncertainties of wind screen corrections	Yes	
Source of wind screen data	Manufacturer	
Mic pressure to free field corrections	Yes	
Uncertainties of Mic to F.F. corrections	Yes	
Source of Mic to F.F. corrections	Manufacturer	
Total expanded uncertainties within the requirements of IEC 61672-1:2002		Yes
Specified or equivalent Calibrator	Specified	
Customer or Lab Calibrator	Lab Calibrator	
Calibrator adaptor type if applicable	NC-74-002	
Calibrator cal. date	07 June 2017	
Calibrator cert. number	UCRT17/1460	
Calibrator cal cert issued by	0653	
Calibrator SPL @ STP	94.03	dB Calibration reference sound pressure level
Calibrator frequency	1001.87	Hz Calibration check frequency
Reference level range	25 - 130	dB

Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15

Note - if a pre-amp extension cable is listed then it was used between the SLM and the pre-amp.

Environmental conditions during tests	Start	End	
Temperature	23.13	23.14	± 0.20 °C
Humidity	47.9	44.6	± 3.00 %RH
Ambient Pressure	100.35	100.35	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	94.2	dB	Adjusted indicated level	94.0	dB
The uncertainty of the associated calibrator supplied with the sound level meter ±			0.10		dB

Self Generated Noise This test is currently not performed by this Lab.

Microphone installed (if requested by customer) = Less Than	N/A	dB	A Weighting
Uncertainty of the microphone installed self generated noise ±	N/A	dB	

Microphone replaced with electrical input device - UR = Under Range indicated

Weighting	A	C	Z
	12.9	16.9	22.1
	dB	dB	dB
	UR	UR	UR
Uncertainty of the electrical self generated noise ±		0.12	
		dB	

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.

For the test of the frequency weightings as per paragraph 12. of IEC 61672-3:2006 the actual microphone free field response was used.

The acoustical frequency tests of a frequency weighting as per paragraph 11 of IEC 61672-3:2006 were carried out using an electrostatic actuator.

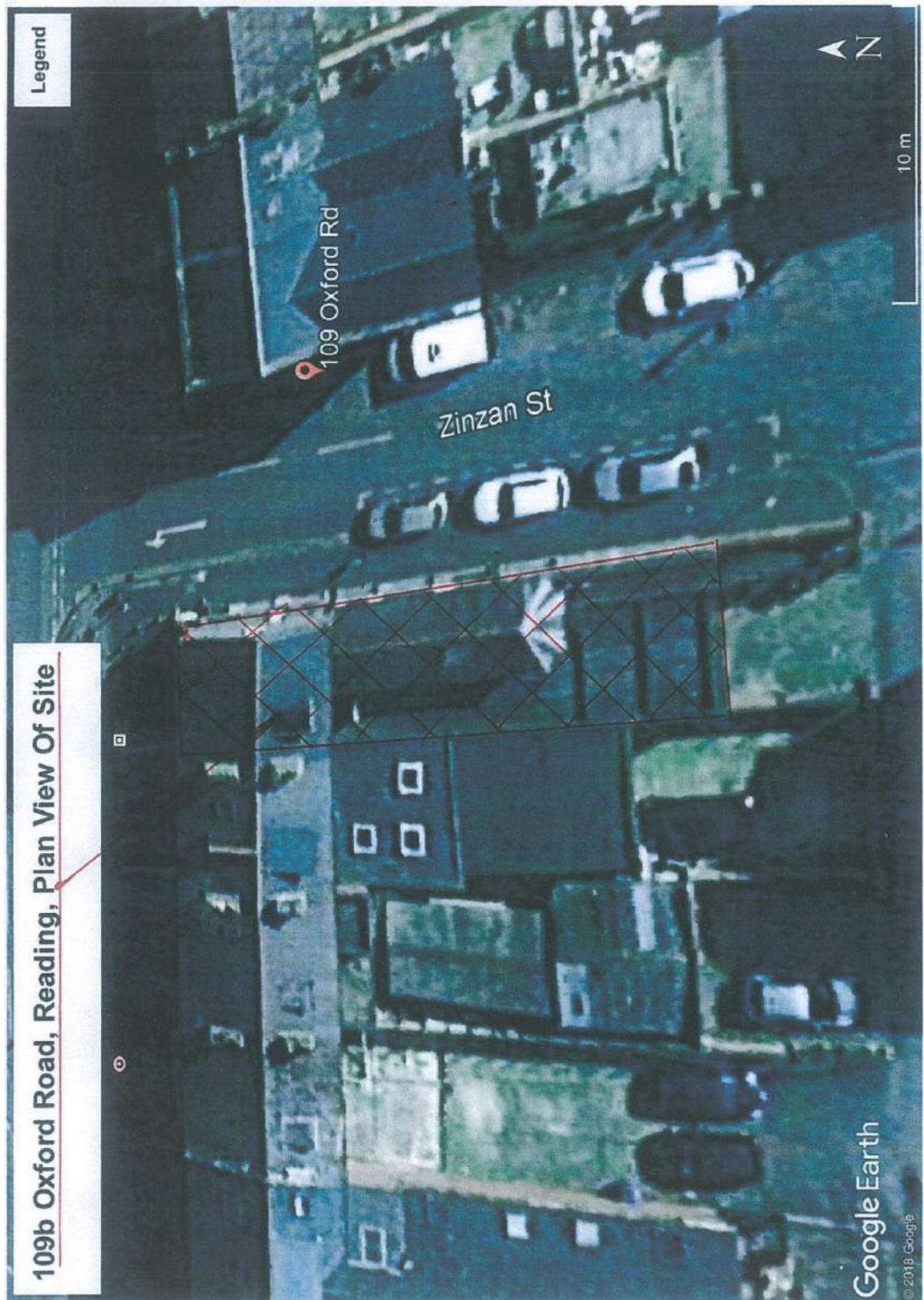
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Calibrated by: B. Bogdan

R 2

Additional Comments

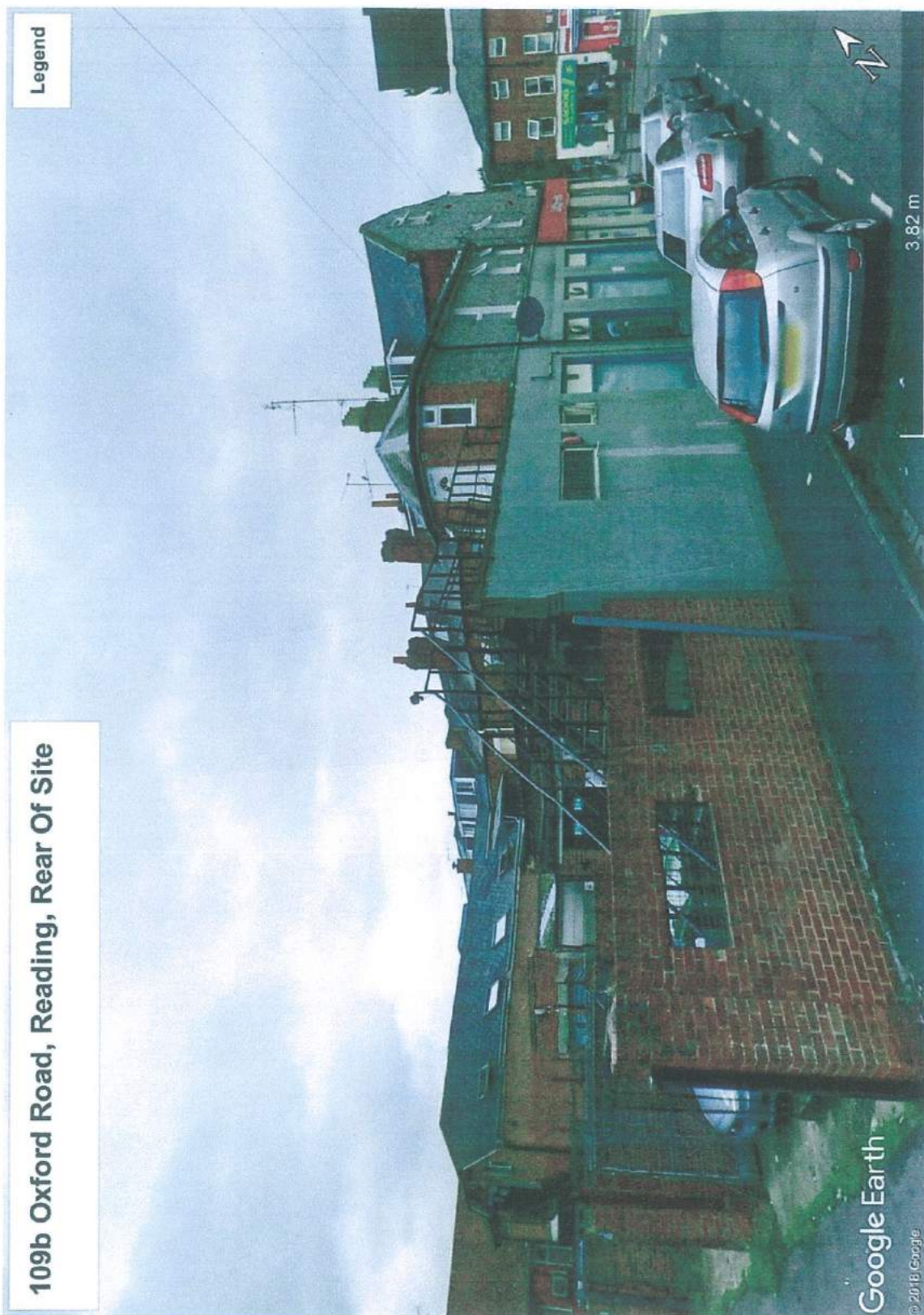
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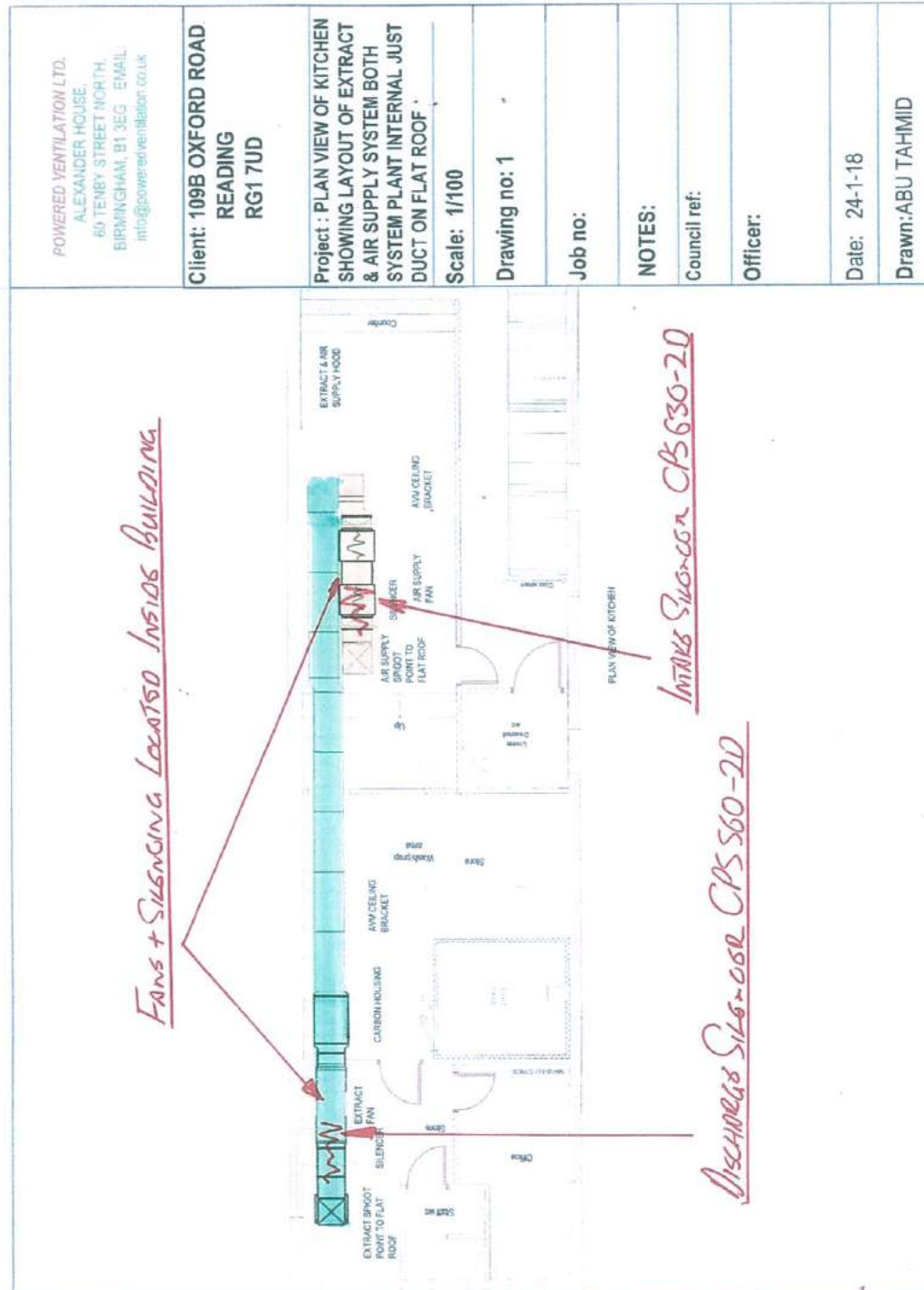




109b Oxford Road, Reading, Rear Of Site

Legend







POWERED VENTILATION LTD. ALEXANDER HOUSE, 60 TENBY STREET NORTH BIRMINGHAM, B1 3EG E-MAIL info@poweredventilation.co.uk	Client: 109B OXFORD ROAD READING RG1 7UD	Project : SIDE ELEVATION SHOWING EXTRACT DUCT & AIR SUPPLY DUCT ON FLAT ROOF	Scale: 1/100	Drawing no: 2	Job no:	NOTES:	Council ref:	Officer:	Date: 24-1-18	Drawn: ABU TAHMID
 SIDE ELEVATION SHOWING EXTRACT SYSTEM & AIR SUPPLY SYTEM ON FLAT ROOF										

1/25/18 MDR/J3514



POWERED VENTILATION LTD. ALEXANDER HOUSE, 60 TENBY STREET NORTH, BIRMINGHAM, B1 3EG EMAIL: info@poweredventilation.co.uk	Client: 109B OXFORD ROAD READING RG1 7UD	Project :REAR ELEVATION SHOWING FRONT VIEW OF EXTRACT SYSTEM DUCT & AIR SUPPLY SYSTEM LOUVER GRILL	Scale: 1/100	Drawing no: 4	Job no:	NOTES:	Council ref:	Officer:	Date: 24-1-18	Drawn:ABU TAHMID
Proposed rear elevation										

RSF: AMW/TJSS/L4



Design Sheet ①

1091B, OXFORD ROAD, READING - FRESH AIR SUPPLY INTAKE NOISE

	L/A	63	125	250	500	1k	2k	4k	8k
SUPPLY FAN EXTRA SCPP630/4-1									
3.44m ³ /s @ 255Pa SWL		85	83	87	88	86	86	82	77
600x600 Duct 2m		0	0	0	0	0	0	0	0
2 IN-600 S2 BOMBS		0	2	16	14	8	6	6	6
INTAKE LEAVES 600x600 0.36m ² EN		7	3	0	0	0	0	0	0
SWL @ INTAKE		78	78	71	74	78	80	76	71
SWL → SPL @ 4m		20	20	20	20	20	20	20	20
ISOMPHONICAL RADIATION		58	58	51	54	58	60	56	51
SPL @ 4m									
A-WEIGHTING		-26	-16	-9	-3	0	+1	+1	-1
SPL _A @ 4m		32	42	42	51	58	61	57	50
			42		52		63		58
				52				64	
						64.5dB			
SILENCER REQUIRED									
CPS-630-21) CYLINDRICAL		5	9	18	28	30	30	27	20
POORER SILENCER 630mm ² /o		27	33	24	23	28	31	30	30
x 1260mm LENA			34		27		33		33
				35			36		
* RESULTANT INTAKE SPL _A @ 4m						39dB			*

Ref: NWR/H3514



Design Sheet ②

1091B, Oxford Road, Reading - EXTRACT DISCHARGE NOISE

	L/A	63	125	250	500	1k	2k	4k	8k
EXTRACT FAN FTA SLC S60/2-3									
4.0 L/s @ 350 Pa SWL		91	88	92	93	90	88	86	83
3N ² 600 Sq Bands		0	3	24	21	12	9	9	9
14m 600x600 Duct		9	9	4	2	2	2	2	2
600x600 DISCHARGE 0.36m ² GR		7	3	0	0	0	0	0	0
SWL @ DISCHARGE		75	73	64	70	76	77	75	72
SWL → SPL @ 2m		17	17	17	17	17	17	17	17
STRUCTURAL RADIATION		58	56	47	53	59	60	58	55
SPL @ 2m									
'A' - WEIGHTING		-26	-16	-9	-3	0	+1	+1	-1
SPL _A @ 4m		32	40	38	50	59	61	59	54
			41		50		63		60
				51			65		
						65dB			
Silencer Recommended									
CPS-S60-20 GLINDURAL		5	10	17	28	30	30	28	23
Porous Silencer S60mm 1/2		27	30	21	22	29	31	31	31
x 1120mm Length			32		25		33		34
				33			37		
* Resultant Discharge SPL _A @ 2m						38dB			*

Ref: MDR/J3514

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ELTA FAN DATA FOR MODEL SCPP630/4-1

Location: 109B OXFORD RD

Designation: AIR SUPPLY

Fan Code: SCPP630/4-1

Requirements

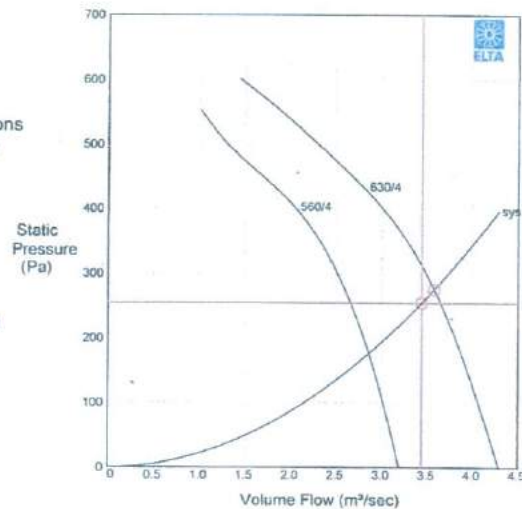
Volume: 3.44 m³/s
Static Pressure: 255 Pa
Selection Pressure: 255 Pa at std conditions
Operating Duty: 3.579 m³/s at 276 Pa
Temperature: 20 deg C
Altitude: 0 m

Fan Data (at STP)

Type: Compact
Contra-Rotating Axial
Fan
Diameter: 630 mm
Speed: 1350 RPM
Weight: 70 kg

Motor Data (at STP)

Motor Power: 2.2 kW
Electrical Supply: 240V@50Hz
Motor Speed Poles: 4 Poles

**SOUND DATA**

Spectrum (Hz)	63	125	250	500	1K	2K	4K	8K	dBA @ 3m
Sound Power (dB)	85	83	87	88	86	86	82	77	71

Note: Levels are quoted as in-duct values. dBA values are average spherical free-field for comparative use only.

© 2001 Elta Fans

Ref: W07/3514

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a member of the Elta Group

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46 Third Avenue, Pensnett Trading Estate, Kingswinford, West Midlands DY6 7US, UK**ELTA FAN DATA FOR MODEL SLC560/2-3**

Location: 109B OXFORD RD

Designation: EXTRACTION

Fan Code: SLC560/2-3

Requirements

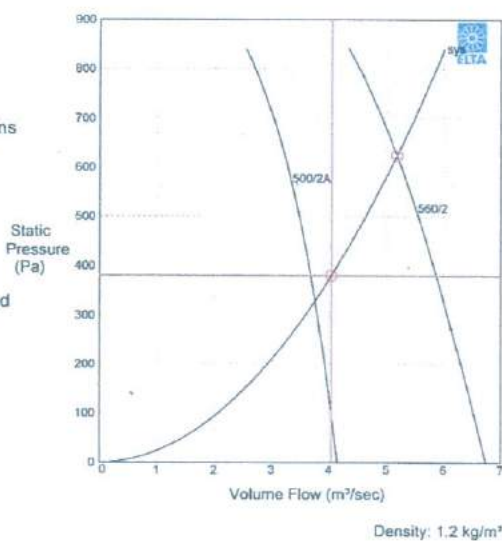
Volume: 4.04 m³/s
Static Pressure: 380 Pa
Selection Pressure: 380 Pa at std conditions
Operating Duty: 5.178 m³/s at 624 Pa
Temperature: 20 deg C
Altitude: 0 m

Fan Data (at STP)

Type: Revolution Long Cased
Axial Fan
Diameter: 560 mm
Speed: 2920 RPM
Weight: 96 kg

Motor Data (at STP)

Motor Power: 7.5 kW
Electrical Supply: 415V@50Hz
Motor Speed Poles: 2 Poles

**SOUND DATA**

Spectrum (Hz)	63	125	250	500	1K	2K	4K	8K	dBA @ 3m
Sound Power (dB)	91	88	92	93	90	88	86	83	75

Note: Levels are quoted as in-duct values. dBA values are average spherical free-field for comparative use only.

© 2001 Elta Fans

KSF: 11014/3514

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 produces with light touches of fresh ground spices.

The types of meal that will be served is Grilled Chicken / 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 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 140 carbon bonded panel cells.

For 0.3 seconds contact time- Typically recommended for Spicy cuisine such as Thai / Indian / Grill & Steakhouse. (1 single carbon panel @ 594 x 594 x 25mm framed will achieve a 0.3 second contact time at 0.029m3/s)

$$\text{DESIGN AIR FLOW RATE } 4.04\text{m}^3/\text{s} / 0.029\text{m}^3/\text{s} = 139.31$$

Therefore a minimum of 140 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.

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

Cooker hood:

Dimensions of hood : 6100 x 1300 x 400 / 600

The canopy will be manufactured from stainless steel grade 304, with a 400mm front and 600mm back design. The canopy hood will be supplied with 495*495*45 stainless steel baffle filters, with grease drain off taps on each end of the extraction hood.

Face velocity hood	= 7.93m/s
Design volume	= 4.04m ³ /sec

Total number of grease filters 12 / Dimensions 495*495*45
Design Volume 4.04m³/s / 12 = 0.34m³/s

12 off stainless steel baffle filters

System operation:

Duct Work and Discharge Efflux Velocity for Hood

The duct work will spigot off the top of the 6.1mtr hood, the extract duct will then continue up to the plant section which will run horizontally against the kitchen ceiling internal of the building before going up to the vertical discharge flue above eaves and above dorma window which will appear externally.

The extract hood will have a clearance of 2mtr to the front underside, the plant section consists of a 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 fan will be speed controlled via auto-transformer regulator which will help prevent harmonic sounds which cause fan to make when operated by electronic controllers, the plant will have accessible points for service and maintenance.

The vertical discharge flue will be of a high Velocity Discharge cowl which will be set 2033mtr above the eaves in order to pass dorma window. The High Velocity Cowl is ideal for good dispersion of fumes.

The duct work size is approximately 550*550 or equivalent and at the discharge point will be 560 dia

$.55 \times .55 = 0.42\text{m}^2$ (air across duct section)

$4.04\text{m}^3/\text{s} / 0.42 = 9.62\text{m}/\text{second}$ (air speed in duct)

The efflux velocity is **16.41m/second** and the duct work will be free from grease disperse all fumes to high level.

($4.04\text{m}^3/\text{s} / 0.2463\text{m}^3$ (free area inside 560 dia duct or equivalent)) = **16.41m/s velocity**)

Duct Dimensions of extraction system & flue

The duct work size is approximately 550*550 or equivalent and at the discharge point will be 560 dia

$.55 \times .55 = 0.42\text{m}^2$ (air across duct section)

$4.04\text{m}^3/\text{s} / 0.42 = 9.62\text{m}/\text{second}$ (air speed in duct)

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($4.04\text{m}^3/\text{s} / 0.2463\text{m}^3$ (free area inside 560 dia duct or equivalent)) = **16.41m/s velocity**)

Extractor Fan Specification

Located within the duct work is a SLC560/2-3 EXTRACTER FAN, 2 pole, 3 phase, speed control via Transformer /Inverter regulator.

This fan runs at 2920rpms with a maximum operating noise of 75dBA and will handle air flow rate in excess of 5.269m³/sec @ 595pa.

Flue design:

The vertical discharge flue is a 560 dia or equivalent High Velocity Discharge Cowl , the flu will be above 2033mtr above eves to pass dorma window (please see plans and drawing section for this view)

Noise:

PLEASE SEE ACCOUSTIC DETAILS PROVIDED BY RANDTECH CONSULTANTS

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.

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.

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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:

KITCHEN FRESH AIR-INLET DETAILS:

Design Volume: $4.04\text{m}^3/\text{s}$ (canopy hood design volume) $\times 3600 = 14,544\text{m}^3/\text{hr}$

Kitchen area $3.2\text{m} \times 8.1\text{m} \times 2.9\text{m} = 75.17\text{m}^3$ recommended air change rate for commercial kitchen is 60 ach

The air change rate equates to $14,544\text{m}^3/\text{hr}$ divided by the room volume 75.17m^3 . This gives us an air change rate of 193.48ach. 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 $4.04\text{m}^3/\text{s}$ ($14,544\text{m}^3/\text{hr}$) $\times 85\%$ requires $3.44\text{m}^3/\text{s}$ ($12,384\text{m}^3/\text{hr}$)

Pressure Lost in Air- Supply System

Allowing for 45 pa filter / (550×550 duct $= 7.55\text{m/s}$ velocity) 100 pa duct / 80 pa grille / bends 30 / = **255pa clean / 300 pa dirty**

Air-Supply Fan and Grill Specification

Fan selected: SCP630/4-1 Contra Rotating Axial Fan, 4 pole, single phase, speed regulated via transformer.

This fan runs at 1350rpms with a maximum operating noise of 71dBA and will handle air flow rate in excess of $3.471\text{m}^3/\text{sec}$ @ 305pa.

Annex C: Risk Assessment for Odour

Odour control must be designed to prevent odour nuisance in a given situation. The following score methodology is suggested as a means of determining odour control requirements using a simple risk assessment approach. The odour control requirements considered here are consistent with the performance requirements listed in this report.

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

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

Criteria	Score	Score	Details
Dispersion	Very poor	20	Low level discharge, discharge into courtyard or restriction on stack.
	Poor	15	Not low level but below eaves, or discharge at below 10 m/s.
	Moderate	10	Discharging 1m above eaves at 10 -15 m/s.
	Good	5	Discharging 1m above ridge at 15 m/s.
Proximity of receptors	Close	10	Closest sensitive receptor less than 20m from kitchen discharge.
	Medium	5	Closest sensitive receptor between 20 and 100m from kitchen discharge.
	Far	1	Closest sensitive receptor more than 100m from kitchen discharge.
Size of kitchen	Large	5	More than 100 covers or large sized take away.
	Medium	3	Between 30 and 100 covers or medium sized take away.
	Small	1	Less than 30 covers or small take away.
Cooking type (odour and grease loading)	Very high	10	Pub (high level of fried food), fried chicken, burgers or fish & chips.
	High	7	Kebab, Vietnamese, Thai or Indian.
	Medium	4	Cantonese, Japanese or Chinese.
	Low	1	Most pubs, Italian, French, Pizza or steakhouse.

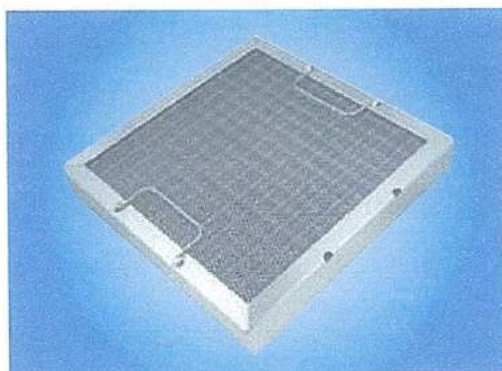
Grease Filters

by Express-air

Aluminium Frame Galvanised Mesh Grease Filters

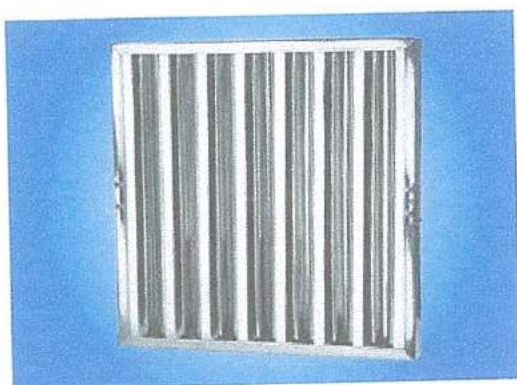
Order Ref	Size Inches	Size mm			Capacity
	W x H x D	W	H	D	m ³ /s *
EAGF12121	12 x 12 x 1	292	292	20	0,19
EAGF12122	12 x 12 x 2	292	292	45	0,19
EAGF16161	16 x 16 x 1	394	394	20	0,33
EAGF16162	16 x 16 x 2	394	394	45	0,33
EAGF18181	18 x 18 x 1	445	445	20	0,42
EAGF18182	18 x 18 x 2	445	445	45	0,42
EAGF20101	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.

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O & M INSTRUCTION

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

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.

For further information please contact Airclean Ltd

Panel Filters

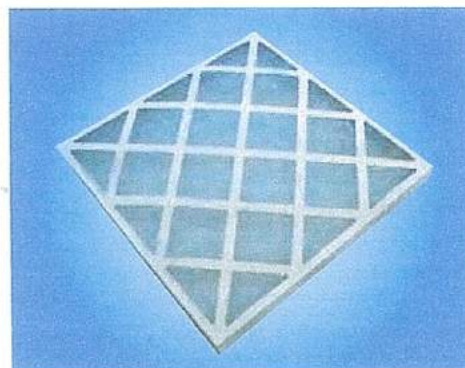
by Express-air

Glass Fibre Disposable Filter (Cardboard Frame)

Order Ref	Size Inches	Size mm			Filter Grade	Capacity m ³ /s *
	W x H x D	W	H	D		
EAAF10101	10 x 10 x 1	241	241	22	G3	0,12
EAAF10102	10 x 10 x 2	241	241	45	G3	0,13
EAAF12121	12 x 12 x 1	292	292	22	G3	0,16
EAAF12122	12 x 12 x 2	292	292	45	G3	0,18
EAAF15152	15 x 15 x 2	368	368	45	G3	0,28
EAAF16161	16 x 16 x 1	394	394	22	G3	0,31
EAAF16162	16 x 16 x 2	394	394	45	G3	0,35
EAAF18182	18 x 18 x 2	445	445	45	G3	0,41
EAAF20101	20 x 10 x 1	495	241	22	G3	0,22
EAAF20102	20 x 10 x 2	495	241	45	G3	0,25
EAAF20152	20 x 15 x 2	495	368	45	G3	0,38
EAAF20162	20 x 16 x 2	495	394	45	G3	0,41
EAAF20201	20 x 20 x 1	495	495	22	G3	0,47
EAAF20202	20 x 20 x 2	495	495	45	G3	0,52
EAAF24122	24 x 12 x 2	594	292	45	G3	0,37
EAAF24242	24 x 24 x 2	594	594	45	G3	0,73
EAAF25162	25 x 16 x 2	622	394	45	G3	0,52
EAAF25202	25 x 20 x 2	622	495	45	G3	0,64

* Capacity based on a face velocity of 2m/s giving initial resistance of 32Pa

Maximum velocity for Glass Fibre Filters 2.5m/s



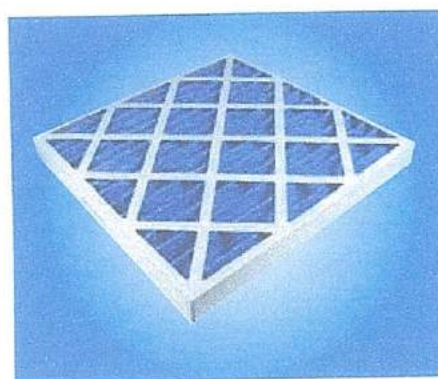
Synthetic Pleated Disposable Filters (Cardboard Frame)

Order Ref	Size Inches	Size mm			Filter Grade	Capacity m ³ /s *
	W x H x D	W	H	D		
EAPF10102	10 x 10 x 2	241	241	45	G4	0,12
EAPF12122	12 x 12 x 2	292	292	45	G4	0,18
EAPF15152	15 x 15 x 2	368	368	45	G4	0,27
EAPF16162	16 x 16 x 2	394	394	45	G4	0,35
EAPF18182	18 x 18 x 2	445	445	45	G4	0,41
EAPF20152	20 x 15 x 2	495	368	45	G4	0,37
EAPF20162	20 x 16 x 2	495	394	45	G4	0,40
EAPF20202	20 x 20 x 2	495	495	45	G4	0,48
EAPF24242	24 x 24 x 2	594	594	45	G4	0,72
EAPF25202	25 x 20 x 2	622	495	45	G4	0,63

* Capacity based on initial resistance of 40Pa, max capacity 25% above shown data.

Available as 20mm (1") & also 95mm (4") depths.

Made to order sizes available, please enquire.



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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". i.e. 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

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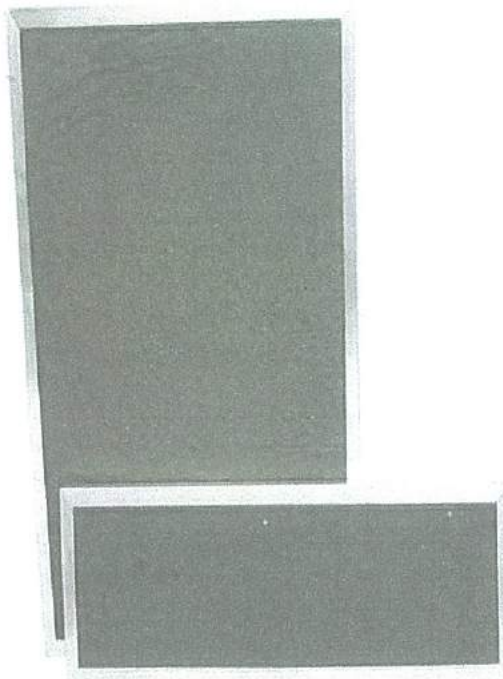
Activated Carbon Filters—Panels

Applications

The disposable activated carbon filter panel, can be sized and used in a wide variety of odour reduction applications. They can be fitted into duct mounted casings to provide the required contact time and airflow.

Construction

The panels are generally manufactured using the bonding process to provide a rigid panel which is framed in a metal channel. The panel is finished in a "fabric facia" which minimises the dusting from the panel. Panels can also be produced using a loose fill technique, whilst this offers an improved rate of adsorbancy, the activated capacity remains the same. The panels are designed to minimise the risk of by pass due to settlement, and for this reason their installation should be designed to be horizontal,



Technical:

Maximum Operating Temperature:
Maximum Operating Humidity

40 Deg C
80% RH

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

SIZE	Nominal Inches	SIZE	Actual mm
	12" x 12" x 1"		302 x 302 x 22mm
	15" x 15" x 1"		379 x 379 x 22mm
	18" x 18" x 1"		454 x 454 x 22mm
	20" x 20" x 1"		505 x 505 x 22mm
	24" x 24" x 1"		606 x 606 x 22mm

The company reserves the right to change specifications without notice. E&OE

Code AC6/1h Ref 06/06

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Grade 50 Activity Carbons are rated 55% on their ability to 'adsorb' carbon tetrachloride (CTC) in testing; have a typical surface area per weight of between 1100-1200 m²/g by the BET N2 method (the area being a measure of the area of the walls of the cavern like structure of the activated carbon); Bulk density is between 0.49 - 0.53 g/cc

Guide to the Gaseous Adsorption Level for Grade 50 Activity Carbon

A = 20 - 50% adsorption
B = 10 - 20%

C = 1 - 10%
D = under 1%

	Chemical	Index	Common Source of Chemical
1	ACETAHALDEHYDE	C	REAGENT
2	ACETIC ACID	A	REAGENT, SOUR VINEGAR
3	ACETIC ANHYDRIDE ACID	A	
4	ACETONE	B	SOLVENT
5	ACETYLENE	D	WELDING AND CUTTING
6	ACROLEIN	B	
7	ACRYLALDEHYDE	B	AEROLEIN, BURNING FATS
8	ACRYLIC ACID	A	
9	ADHESIVES	A	
10	AMINES	C	
11	AMMONIA	D	
12	AMYL ACETATE	A	LACQUER SOLVENT
13	AMYL ALCOHOL	A	FUSEL OIL
14	AMYL ETHER	A	
15	ANILINE	A	
16	ANIMAL ODOURS	A	
17	BENZALDEHYDE	A	
18	BENZENE	A	BENZOL, PAINT SOLVENT & REMOVER
19	BROMINE	A	
20	BUTADIENE	C	
21	BUTANE	C	HEATING GAS
22	BUTYL ACETATE	A	LACQUER SOLVENT
23	BUTYL ALCOHOL	A	SOLVENT
24	BUTYL CHLORIDE	A	SOLVENT
25	BUTYL ETHER	A	SOLVENT
26	BUTYLENE	B	
27	BUTYRALDEHYDE	B	PRESENT IN INTERNAL COMBUSTION EXHAUST - DIESEL
28	BUTYRIC ACID	A	
29	BUTYRIC ACID	A	SWEAT, BODY ODOUR
30	CAMPHOR	A	
31	CAPROALDEHYDE	A	
32	CAPRYLIC ACID	A	ANIMAL ODOUR

Code AC6/1b Ref 05/06

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33	CARBOLIC ACID	A	
34	CARBON DIOXIDE	A	
35	CARBON DISULPHIDE	B	
36	CARBON MONOXIDE	D	
37	CARBON TETRACHLORIDE	A	SOLVENT, CLEANING FLUID, FIRE EXTINGUISHER
38	CELLOSOLVE ACETATE	A	
39	CELLOSOLVE ETHER	A	
40	CHLORINE	B	
41	CHLORO PICRIN	A	
42	CHLOROBENZINE	A	
43	CHLOROBUTADEINE	A	
44	CHLOROFORM	A	
45	CHLORONITROPROPANE	A	
46	CITRUS FRUITS	A	
47	COOKING ODOURS	A	
48	CRESOL	A	WOOD PRESERVATIVE
49	CRONTONALDEHYDE	A	SOLVENT, TEAR GAS
50	CYCLOHEXANE	A	
51	CYCLOHEXANOL	A	
52	DECANE	A	INGREDIENT OF KEROSENE
53	DEGREASING SOLVENTS	A	
54	DEODERISERS	B	
55	DETERGENTS	A	
56	DIBROMOETHANE	A	
57	DICHLOROBENZINE	A	
58	DICHLORODIFLUORO ETHANE	A	
59	DICHLORODIFLUORO METHANE	B	
60	DICHLOROETHANE	A	
61	DICHLOROETHYL ETHER	A	
62	DICHLOROETHYLENE	A	
63	DICHLOROMETHANE	A	
64	DICHLOROMONOFUORO METHANE	B	
65	DICHLOROPROPANE	A	
66	DICHLOROTETRAFLUORO ETHANE	B	
67	DIETHYL AMINE	B	
68	DIETHYL ANILINE	A	
69	DIETHYL KETONE	A	SOLVENT
70	DIMETHYL AMINE	B	
71	DIMETHYL SULPHATE	A	
72	DIOXAN ETHER	A	
73	DIPROPYL KETONE	A	
74	ETHANE	D	
75	ETHYL ACETATE	A	LACQUER SOLVENT
76	ETHYL ACRYLATE	A	
77	ETHYL ALCOHOL	A	GRAIN ALCOHOL Code AC6/1c Ref 05/06

AIRCLEAN

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78	ETHYL AMINE	B	
79	ETHYL BROMIDE	B	
80	ETHYL CHLORIDE	B	REFRIGERANT, ANESTHETIC
81	ETHYL ETHER	B	MEDICAL ETHER, REAGENT
82	ETHYL FORMATE	B	
83	ETHYL MERCAPTAN	A	GARLIC, ONION, SEWER
84	ETHYLENE	D	MORE RETENTIVITY BY REACTION,
85	ETHYLENE CHLOROHYDRIN	A	
86	ETHYLENE DICHLORIDE	A	
87	ETHYLENE OXIDE	B	
88	EXYLENE	A	
89	FLUOROTRICHLOROMETHANE	B	
90	FORMALDEHYDE	C	DISINFECTANT, PLASTIC INGREDIENT
91	FORMIC ACID	B	REAGENT
92	FREON	C	
93	GARLIC	A	
94	HEPTANE	A	INGREDIENT OF GASOLINE
95	HEPTYLENE	C	
96	HEXANE	B	INGREDIENT OF GASOLINE
97	HOSPITAL ODOURS	A	
98	HUMAN ODOURS	A	
99	HYDROGEN BROMIDE	C	
100	HYDROGEN CHLORIDE	C	
101	HYDROGEN CYANIDE	B	
102	HYDROGEN FLUORIDE	C	
103	HYDROGEN IODIDE	B	
104	HYDROGEN SULPHIDE	C	OXIDIZES TO INCREASE RETENTIVITY CONSIDERABLY
105	INDOLE	A	IN EXCRETIA
106	IODINE	A	
107	IODOFORM	A	ANTISEPTIC
108	ISO BUTANE	B	
109	ISOPROPYL ACETATE	A	LACQUER SOLVENT
110	ISOPROPYL ALCOHOL	A	SOLVENT
111	ISOPROPYL ETHER	A	SOLVENT
112	LACTIC ACID	A	
113	LEATHER	A	
114	MERCAPTANS	A	
115	MESITYL OXIDE	A	
116	METHANE	D	
117	METHANOL (METHYL)	B	

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118	METHYL ACETATE	B	SOLVENT
119	METHYL ACRYLATE	A	
120	METHYL ALCOHOL	B	WOOD ALCOHOL
121	METHYL BROMIDE	B	
122	METHYL BUTYLKETONE	A	
123	METHYL CELLOSOLVE	Q	
124	METHYL CHLORIDE	B	REFRIGERANT
125	METHYL ETHER	A	
126	METHYL FORMATE	B	
127	METHYL ETHYLKETONE	A	SOLVENT
128	METHYL FORMATE	B	
129	METHYL ISOBUTYLKETONE	A	SOLVENT
130	METHYL MERCAPTAN	A	
131	METHYLENE CHLORIDE	A	
132	MONOCHLOROBENZINE	A	
133	MONOFLUOROTRICHORO METHANE	B	
134	n-DECANE	D	
135	n-HEPTANE	D	
136	n-NONANE	D	
137	n-OCTANE	D	
138	n-OCTYLENE	D	
139	NAPHTHALENE	A	REAGENT, MOTH BALLS
140	NICOTINE	A	TOBACCO
141	NITRIC ACID FUMES	B	
142	NITROBENZENE	A	OIL OF BITTER ALMONDS, OIL OF MIRBANE
143	NITROETHANE	A	
144	NITROGEN DIOXIDE	C	HYDROLYZES TO INCREASE RETENTIVITY
145	NITROGLYCERENE	A	
146	NITROMETHANE	A	
147	NITROPROPANE	A	
148	NITROTOLUENE	A	
149	NONANE	A	INGREDIENT OF KEROSENE
150	OCTANE	A	INGREDIENT OF GASOLENE
151	OZONE	A	GENERATED BY ELECTRICAL DISCHARGE
152	PALMITIC ACID	A	PALM OIL
153	PARADICHLOROBENZENE	A	
154	PENTANE	B	LIGHT NAPHTHA

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155	PERCHLOROETHYLENE	A	
156	PERFUMES	A	
157	PETROL	A	
158	PHENOL ACID	A	CARBOLIC ACID, PLASTIC INGREDIENT
159	PHOSGENE	B	
160	PLASTIC	A	
161	POULTRY ODOURS	A	
168	PROPYL CHLORIDE	A	
169	PROPYL ETHER	A	
170	PROPYL MERCAPTAN	A	
171	PROPYLENE	B	COAL GAS
172	PURIFYING ODOURS	B	
173	PUTRESCINE	A	DECAYING FLESH
174	PYRIDINE	A	BURNING TOBACCO
175	RANCID OILS & FATS	A	
176	RESINS	A	
177	RUBBER	A	
178	SKATOLE	A	IN EXCRETA
179	STABLE ODOURS	A	
180	STALE ODOURS	A	
181	STYRENE MONOMER	A	
182	SULPHUR TRIOXIDE	B	HYDROLYZES TO SULPHURIC ACID
183	SULPHUR DIOXIDE	C	OXIDIZES TO SULPHUR TRIOXIDE, COMMON IN CITY ATMOSPHERES
184	SULPHURIC ACID	A	
185	TAR ODOURS	A	
186	TETRACHLORO ETHANE	A	
187	TETRACHLORO ETHYLENE	A	
188	TETRAHYDROTHIOPHENE	A	
189	TOBACCO SMOKE	C	
190	TOILET ODOURS	A	
191	TOLUENE	A	MANUFACTURE OF TNT
192	TOLUIDINE	A	

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193	TRICHLORO ETHYLENE	A	
194	TURPENTINE	A	SOLVENT
195	UREA	A	
196	URIC ACID	A	
197	VALERALDEHYDE	A	
198	VALERIC ACID	A	SWEAT, BODY ODOUR, CHEESE
199	VALERIC ALDEHYDE	A	
200	VARNISH	A	
201	VENTILATION SYSTEMS	A	
202	VINEGAR	A	
203	VINYL CHLORIDE	B	
204	WOOD ALCOHOL	B	
205	XYLENE	A	SOLVENT

Free Carbon Testing Service

It is extremely difficult to calculate in advance the life expectancy of an activated carbon filter.

Generally speaking, accurate information regarding concentration and details of all contaminants in the airstream are not available and in any case these are often constantly changing.

However, reasonably accurate life expectancy levels can be obtained by a method known as CTC testing.

Either a small sample of carbon from one of the cells, or a complete panel, should be returned to us together with the date of installation. From this information the contamination level will be assessed in the laboratory, which will indicate the likely remaining useful life of the carbon.

This testing service is totally free of charge to our customers.

The company reserves the right to change specifications without notice. E&OE