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CLIENT:

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ODOUR IMPACT ASSESSMENT

Commercial Kitchen Extract Ventilation System

**94 Whitley Street
Whitley, Reading RG2 0EQ**

Proposed GBW 450/4 Fan | ESP 3000 | Activated Carbon Filtration

Prepared for planning / technical review purposes

Document Control

Project / Site	94 Whitley Street, Whitley, Reading RG2 0EQ
Assessment scope	Odour risk, preliminary airflow, ESP and carbon sizing, fan suitability, discharge and maintenance requirements
Proposed cooking equipment	1 No. gas burner 800 x 800 mm; 1 No. fryer 600 x 600 mm; 1 No. flat griddle 900 x 600 mm
Proposed extract fan	GBW 450/4 - exact variant, temperature rating and final fan curve to be confirmed
Odour control	ESP 3000 with pre-filtration and activated carbon filter bank
Source drawing	ADSJ drawing 193/004, Proposed Ground & First Floor Layouts, Draft-03 Planning, dated 01.12.2025
Revision	P01 - Draft for review

Important limitation

This report is a preliminary assessment based on the supplied equipment dimensions and architectural layout. Final gas input ratings, canopy position, duct route, discharge height, fan variant, system pressure loss, noise criteria and manufacturer-certified carbon media data were not supplied. These items must be confirmed before manufacture, planning discharge detail or final commissioning.

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1. Executive Summary

This Odour Impact Assessment has been prepared for the proposed commercial kitchen at 94 Whitley Street, Whitley, Reading RG2 0EQ. The assessment reviews the preliminary extract airflow, proposed filtration arrangement and odour-control requirements for a cooking line comprising one gas burner, one fryer and one flat griddle.

The architectural plan places the commercial kitchen at the rear of the ground floor, with residential accommodation shown at first-floor level. Sensitive receptors are therefore located in immediate proximity to the kitchen and any proposed discharge route. The final extract terminal should be routed to high level and positioned to achieve effective dispersion away from windows, doors and occupied areas.

Using a preliminary DW/172-style thermal convection assessment and conservative capture allowance, the proposed design extract duty is approximately 0.85 m³/s, equivalent to 850 L/s or 3,060 m³/h. A corresponding make-up air provision of approximately 0.68 m³/s, equal to 80% of the extract rate, should be allowed through a controlled supply or transfer-air route.

The proposed ESP 3000 is suitable in airflow capacity for this preliminary duty because the manufacturer schedule identifies a maximum airflow of up to 1.4 m³/s. The GBW 450/4 fan may be suitable, but the exact model variant and fan curve must be verified against the final system resistance after the canopy filters, ESP, pre-filter, carbon bank, ductwork and terminal have been selected.

For the preliminary airflow, a minimum effective activated-carbon media volume of 0.170 m³ is required to achieve 0.20 seconds nominal contact time. Applying a 20% design allowance gives 0.204 m³. Two deep carbon filters of approximately 597 x 597 x 293 mm provide a nominal combined volume of approximately 0.209 m³ and a calculated nominal contact time of approximately 0.25 seconds, subject to manufacturer confirmation of actual carbon fill and air bypass control.

Preliminary design extract	0.85 m ³ /s 850 L/s 3,060 m ³ /h
Make-up air allowance	0.68 m ³ /s 2,448 m ³ /h, approximately 80% of extract
Indicative wall canopy	Approximately 2,600 x 1,100 mm with suitable side and front overhang
ESP selection	ESP 3000 - airflow capacity adequate in principle at 0.85 m ³ /s
Carbon recommendation	2 No. deep carbon filters, nominal combined media volume approximately 0.209 m ³
Fan assessment	GBW 450/4 proposed; exact variant and final fan curve check required
Risk category	High to very high depending on final discharge height and dispersion
Discharge	High-level external discharge above roofline, final route subject to survey and planning coordination

2. Documents and Information Reviewed

D01	ADSJ drawing 193/004 - Proposed Ground & First Floor Layouts, Draft-03 Planning, 01.12.2025	Site layout, kitchen position, first-floor residential relationship and planning note
D02	User-provided cooking equipment schedule	Appliance dimensions and preliminary airflow calculation
D03	User-provided proposed system schedule: GBW 450/4, ESP 3000 and carbon filters	Preliminary fan and filtration assessment
D04	Purified Air ESP range technical schedule	ESP 3000 maximum airflow and equipment function
D05	Retained Goya Works odour impact assessment template	Report structure, carbon dwell-time and maintenance methodology

The supplied architectural drawing includes a generic note stating that the new kitchen should have a commercial extractor fan with a minimum capacity of 60 m³/hour. This generic figure is not adequate for the listed commercial cooking appliances. The preliminary mechanical design duty established by this assessment is approximately 3,060 m³/hour.

3. Site and Receptor Context

The ground-floor plan shows the commercial kitchen positioned at the rear of a long, narrow restaurant unit. The first-floor plan shows residential accommodation, including a kitchen, dining room, lounge and bedrooms, directly above the premises. This arrangement creates a sensitive receptor condition because residential windows and occupied rooms may be close to the proposed extract route and discharge.

The architectural drawing does not identify the final duct riser, plant location, extract terminal height or separation from opening windows. Until these details are confirmed, the odour assessment should adopt a conservative approach and require enhanced odour control together with high-level discharge.

4. Proposed Cooking Line and Canopy

1	Gas burner / range	1	800 x 800 mm	0.640 m ²	Medium to heavy
2	Deep-fat fryer	1	600 x 600 mm	0.360 m ²	Medium / grease producing
3	Flat griddle	1	900 x 600 mm	0.540 m ²	Heavy grease and smoke potential

The combined equipment width is approximately 2,300 mm. For a wall-mounted canopy, a minimum side overhang of approximately 150 mm at each end gives an indicative canopy length of 2,600 mm. The maximum equipment depth is 800 mm; adding approximately 300 mm front overhang gives an indicative canopy depth of 1,100 mm.

Canopy type	Wall-mounted commercial kitchen extract canopy
Indicative size	Approximately 2,600 mm long x 1,100 mm deep
Construction	304-grade stainless steel, liquid-tight fabrication where required
Grease filtration	Removable stainless-steel baffle filters with grease collection/drainage
Side containment	Side panels/downstands where practical to improve capture
Access	Filters, plenum and duct connection accessible for inspection and cleaning

5. Preliminary Extract Airflow Calculation

The airflow has been calculated using an appliance plan-area method consistent with the thermal convection approach commonly applied to commercial kitchen extract design. The coefficients are preliminary because the final gas input ratings and manufacturer heat-release data were not provided.

Gas burner / range	0.80 x 0.80	0.640	0.40	0.256
Deep-fat fryer	0.60 x 0.60	0.360	0.40	0.144
Flat griddle	0.90 x 0.60	0.540	0.45	0.243
Total theoretical airflow				0.643

Theoretical airflow	0.643 m ³ /s
Wall canopy / capture factor	x 1.15
Airflow after canopy factor	0.739 m ³ /s
Additional heavy-duty / operational allowance	x 1.15
Preliminary design extract airflow	0.850 m ³ /s
Converted airflow	850 L/s 3,060 m ³ /h
Make-up air at 80%	0.680 m ³ /s 2,448 m ³ /h

Design status

The 0.85 m³/s duty is a preliminary design value. It must be checked after the exact appliance ratings, canopy geometry, room air movement and final duct route are confirmed. On-site capture testing remains mandatory.

6. Ductwork and Fan Assessment

The main extract duct should be selected to maintain a practical grease-conveyance velocity without excessive pressure loss or noise. Two preliminary options are shown below. Final sizing should be coordinated with available ceiling/shaft space and the fan connection.

Ø400 mm circular	0.126 m ²	6.8 m/s	Preferred where spatially practical; good cleaning and pressure characteristics
450 x 300 mm rectangular	0.135 m ²	6.3 m/s	Suitable in principle; maintain aspect ratio and access panels
Ø450 mm circular	0.159 m ²	5.3 m/s	Lower velocity; may be acceptable for short run but grease conveyance should be reviewed

The GBW 450/4 fan is proposed. Available manufacturer-style selection data indicate that fan performance varies materially between standard and T120/high-temperature variants. The exact nameplate designation must therefore be confirmed. The fan should be selected for approximately 0.85 m³/s at the final calculated external static pressure, including all clean-filter pressure drops and a reasonable allowance for system fouling.

Design airflow	Approximately 0.85 m ³ /s (3,060 m ³ /h)
Preliminary pressure range	Approximately 400-550 Pa, subject to final calculation
Control	Variable speed control / suitable speed controller for commissioning
Temperature rating	Confirm suitability for commercial kitchen extract duty
Access	Allow full access to fan casing, motor, impeller, flexible connections and isolation
Contingency	If the selected GBW 450/4 variant cannot achieve duty after full filtration pressure loss, select a higher-pressure T120 or larger equivalent fan

7. Proposed Odour Control Arrangement

The proposed system should use staged treatment. Activated carbon must not be exposed directly to heavy grease and smoke because rapid contamination can cause early saturation, excessive pressure drop and odour breakthrough.

1. Capture	Wall canopy with suitable overhang and side containment
2. Primary grease control	Stainless-steel baffle filters and grease collection arrangement
3. Fine grease / smoke control	ESP 3000 electrostatic precipitator, installed with safe service access
4. Carbon protection	G4/F7 or manufacturer-approved pre-filter immediately upstream of carbon
5. Odour adsorption	Two deep activated-carbon filters in a sealed, non-bypass housing
6. Extract fan	GBW 450/4 with flexible connections, vibration isolation and speed control
7. Acoustic treatment	Silencer/attenuation if required by the project noise assessment
8. Discharge	High-level external termination designed for effective dispersion

The ESP 3000 technical schedule gives a maximum airflow of up to 1.4 m³/s. The preliminary design duty of 0.85 m³/s is therefore within the unit airflow capacity, leaving approximately 39% capacity margin. Final pressure drop, cell configuration, access orientation and airflow direction must be confirmed before procurement.

PROPOSED KITCHEN EXTRACT AND ODOUR CONTROL SEQUENCE

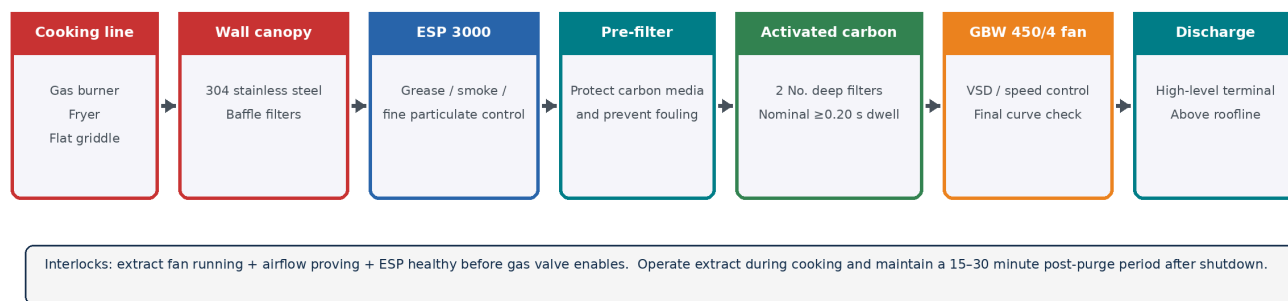


Figure 2: Proposed odour-control and extract sequence.

8. Activated Carbon Dwell-Time Check

Activated-carbon sizing has been checked using the relationship between effective media volume, extract airflow and nominal contact time. A minimum nominal contact time of 0.20 seconds has been adopted for preliminary assessment, with a 20% design allowance.

Design airflow, Q	0.85 m ³ /s
Minimum contact time, t	0.20 s
Minimum effective media volume, V = Q x t	0.170 m ³
Design allowance	20%
Preferred effective media volume	0.204 m ³
Indicative filter size	597 x 597 x 293 mm
Nominal volume per filter	0.104 m ³
Proposed quantity	2 No.
Combined nominal volume	0.209 m ³
Nominal contact time, 0.209 / 0.85	Approximately 0.25 s

The calculated nominal contact time is adequate in principle. The final carbon supplier must confirm actual carbon weight, carbon grade, bed depth, air distribution, maximum face velocity, pressure drop and expected service life. The filter housing must prevent air bypass around the media.

9. EMAQ-Style Odour Risk Assessment

A conservative odour risk score has been prepared using the standard factors of dispersion, receptor proximity, kitchen size and cooking type. The final discharge has not yet been shown; therefore two dispersion cases are presented.

Dispersion	Low-level or restricted discharge versus high-level terminal above roofline	15	1
Proximity of receptors	Residential accommodation above and nearby; within 20 m	10	10
Size of kitchen	Small commercial kitchen	1	1
Cooking type	Gas burner, fryer and flat griddle; high grease/odour potential	10	10
Total score		36	22
Risk category		Very high	High

The preliminary assessment demonstrates that discharge design is critical. A low-level or poorly dispersed terminal could produce a very high impact score. A properly designed high-level discharge can reduce the score to the high category, but enhanced filtration remains appropriate because receptors are immediately adjacent and the cooking process includes frying and griddle use.

Required mitigation level

The system should be designed to a high to very high odour-control standard until the final discharge height, terminal velocity and receptor separation are confirmed.

10. Discharge and Dispersion Requirements

The discharge terminal should be taken to high level, preferably above the highest nearby roofline or ridge and clear of opening windows, rooflights, air intakes, terraces and access areas. A vertical discharge terminal or jet cowl should be used where appropriate to promote upward momentum and avoid horizontal impingement on neighbouring façades.

- Confirm final outlet coordinates, height above roof and distance to all sensitive receptors on an elevation/roof plan.
- Avoid low-level wall discharge adjacent to the rear walkway or directly below residential windows.
- Design the terminal for robust upward discharge velocity at the commissioned airflow; final outlet size should be selected by the ventilation designer.
- Provide weather protection without restrictive bird mesh or terminal features that collect grease and reduce discharge velocity.
- Retain safe access for inspection and cleaning of the outlet and final duct section.

11. Installation, Controls and Fire Safety

11.1 Ductwork and Access

- Kitchen extract ductwork should follow the principles of DW/144 and DW/172 for manufacture, sealing, supports, grease tightness, access and cleanability.
- Provide access panels at changes of direction, before and after filtration plant, at fan inlet/outlet and at suitable intervals for TR19-style cleaning.
- Do not support ductwork weight from the ESP, carbon housing or fan spigots. Use independent structural supports.
- Use flexible anti-vibration connections at the fan and resilient mounts where required to limit structure-borne vibration.

11.2 Controls and Gas Interlock

- The gas valve must be interlocked with extract fan operation and airflow proving.
- The ESP should operate whenever the extract fan runs, with visible run/fault indication and safe local isolation.
- Cooking equipment should be prevented from operating when the extract system or required odour-control stage is unavailable.
- Provide a post-purge period of approximately 15-30 minutes after cooking to clear residual heat and odour.

11.3 Fire Strategy and Penetrations

- Any penetration through walls, floors or fire compartments must be coordinated with the project fire strategy and sealed using a tested compatible fire-stopping system.
- Kitchen extract ducts should not use standard fire dampers where grease contamination would prevent safe operation; final fire-resistance requirements must be confirmed by the fire designer.

- The route adjacent to or through residential accommodation requires particular attention to fire separation, acoustic breakout and maintenance access.

12. Commissioning Requirements

Pre-commissioning inspection	Correct duct route, supports, access panels, filters, isolation, fire stopping and weathering	Inspection checklist and photographs
Fan operation	Correct rotation, stable operation, no abnormal vibration or noise	Fan model/nameplate, speed setting, motor current
Airflow measurement	Approximately 0.85 m³/s at final clean-filter condition, subject to final approved duty	Duct traverse / hood airflow readings
Canopy capture test	Smoke/steam captured under representative cooking conditions	Smoke-test note and photographs/video
ESP function	Correct airflow direction, cells energised, no fault lights or abnormal arcing	ESP commissioning sheet
Carbon integrity	Correct quantity, sealing, no bypass, installation date recorded	Filter schedule and photographs
Gas interlock	Gas disabled if fan/airflow proving fails	Functional test certificate
Noise and vibration	No excessive breakout, rattling or structure-borne vibration	Commissioning observation or acoustic report
Discharge check	Terminal unobstructed and discharging vertically at intended duty	Photographic and airflow confirmation

13. Maintenance and Management Plan

Odour control performance depends on regular inspection, cleaning and replacement of filtration elements. The following initial schedule should be adopted and then adjusted after the first three months based on grease loading, pressure drop, operating hours and odour observations.

Canopy baffle filters	Daily / after service	Remove and wash; do not operate without filters
Canopy/plenum and grease trough	Weekly	Inspect and clean grease accumulation
ESP cells and sump	Every 4 weeks initially	Remove, clean, dry and refit; check electrical operation and arcing
Pre-filter	Every 2-6 weeks	Inspect/replace based on loading and pressure drop
Activated carbon filters	Every 3-6 months initially, or earlier on odour breakthrough	Replace as a complete matched set; record date and supplier data
GBW 450/4 fan	Quarterly	Check impeller, motor, bearings, fixings, vibration and cleanliness
Ductwork	6-monthly inspection; clean as risk assessment requires	TR19-style inspection and cleaning records
Discharge terminal	Quarterly	Check grease build-up, obstruction, weather condition and safe access
Airflow / interlock	Annually and after major maintenance	Confirm airflow, fan proving, ESP operation and gas interlock

A site maintenance logbook should record inspection dates, contractor details, pressure-drop readings, ESP cleaning, filter replacement, duct cleaning certificates, odour complaints and corrective actions.

14. Conclusion

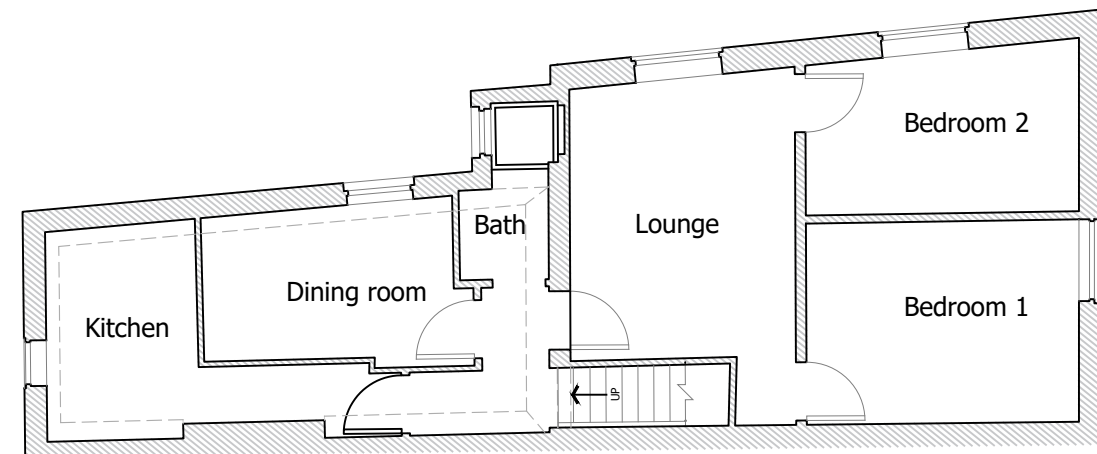
The proposed kitchen extract and odour-control strategy for 94 Whitley Street has been reviewed against the supplied appliance schedule and architectural plan. The preliminary extract duty is approximately 0.85 m³/s (3,060 m³/h), with approximately 0.68 m³/s of replacement air.

- An indicative wall canopy of approximately 2,600 x 1,100 mm is suitable for coordination, subject to final appliance positions and capture testing.
- The ESP 3000 is adequate in airflow capacity in principle because the preliminary duty is below its stated 1.4 m³/s maximum airflow.
- Two deep activated-carbon filters provide approximately 0.25 seconds nominal contact time at the preliminary airflow, subject to manufacturer confirmation of actual media volume and pressure drop.

- The GBW 450/4 fan requires an exact model/temperature-rating and fan-curve check against the completed system pressure loss. A higher-pressure T120 or larger equivalent may be required if the standard variant cannot achieve duty.
- Because residential accommodation is shown directly above the commercial unit, a high-level external discharge and robust maintenance regime are essential.

Subject to final site survey, high-level discharge coordination, fan verification, installation quality and commissioning, the proposed arrangement is considered capable of supporting a high-level odour-control strategy for the listed cooking equipment.

This plan is based on OS data which shows the general approximate position, not the exact line, of the boundaries. It may be subject to distortions in scale. Measurements scaled from this plan may not match measurements between the same points on the ground.

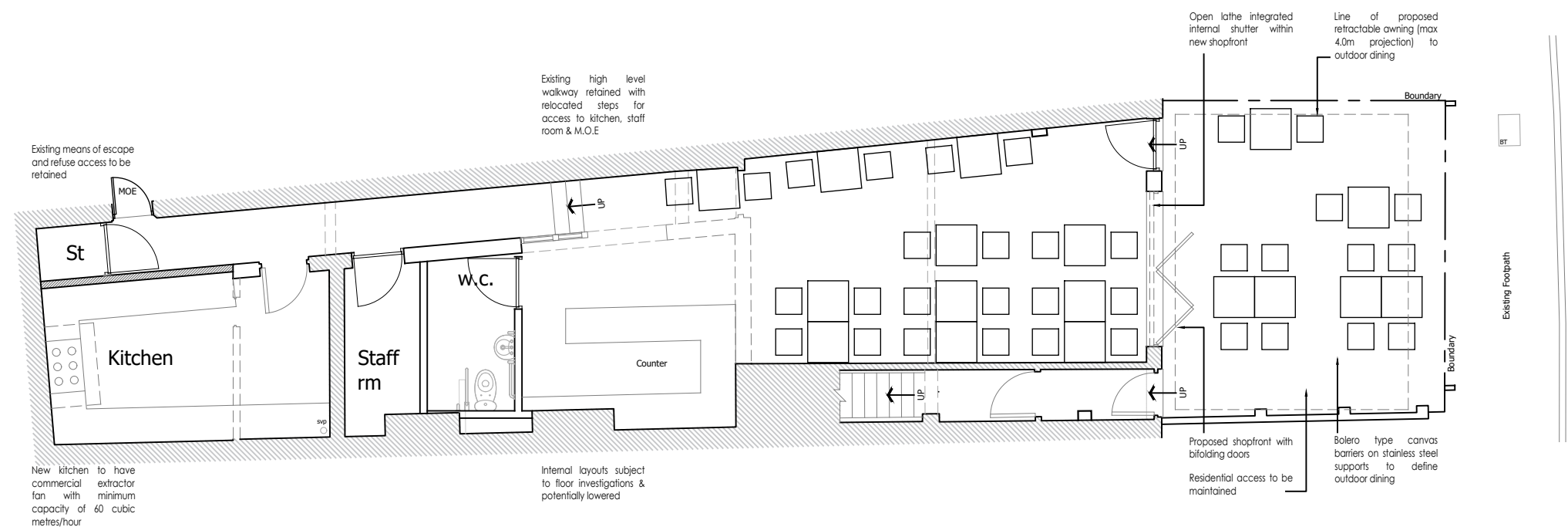


2

First floor

Proposed

SCALE 1:100



1

Ground floor

Proposed

SCALE 1:100

This drawing has been prepared with building survey information prepared by Thames Valley Geomatics Ltd, May 2025

NORTH

W E

SUNPATH

PLANNING

Project

94 Whitley Street, Whitley, Reading RG2 0EQ

Drawing Title

Proposed Ground & First Floor Layouts

Date

01.12.2025

Project No

193

Scale

As noted @A3

Drawing No

004

Drawn by

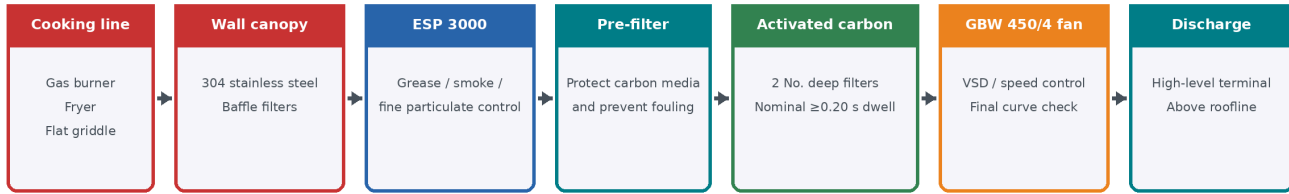
SJ

Revision

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Appendix B - System Schematic

PROPOSED KITCHEN EXTRACT AND ODOUR CONTROL SEQUENCE



Interlocks: extract fan running + airflow proving + ESP healthy before gas valve enables. Operate extract during cooking and maintain a 15-30 minute post-purge period after shutdown.

The schematic shows the required order of treatment. Final arrangement may be horizontal or vertical, but service access and the airflow direction specified by each manufacturer must be maintained.

Appendix C - Calculation Notes and Assumptions

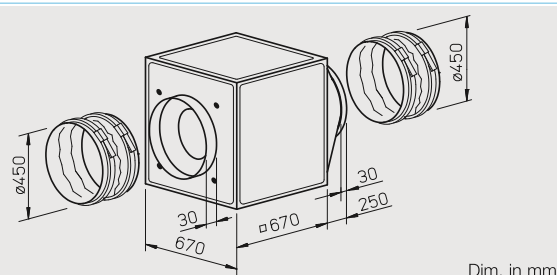
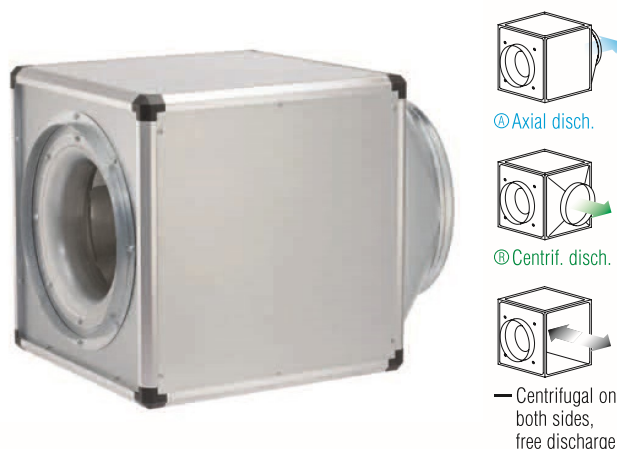
Gas burner coefficient	0.40 m ³ /s·m ² pending exact gas input and appliance manufacturer data
Fryer coefficient	0.40 m ³ /s·m ² pending exact duty and oil capacity
Flat griddle coefficient	0.45 m ³ /s·m ² pending gas/electric confirmation and rated load
Canopy factor	1.15 for wall canopy / capture arrangement
Operational allowance	15% due to fryer/griddle loading and uncertainty
Carbon dwell time	Minimum 0.20 s nominal; 20% volume allowance applied
Carbon filter size	597 x 597 x 293 mm indicative only; actual media fill to be certified
Make-up air	80% of extract as preliminary allowance; final air-balance strategy required
Duct length and fittings	Not supplied; fan pressure is preliminary only
Discharge route	Not shown on architectural drawing; high-level route assumed as design requirement
Noise criteria	Not assessed in this odour report; separate acoustic review may be required

Final design information required

Site-measured duct route and dimensions; fan nameplate and curve; final discharge elevation; opening-window locations; appliance gas input ratings; carbon supplier schedule; pressure-drop schedule; acoustic criteria; fire strategy and structural support details.

GB

Arbitrary installation position and flexible assembly by five possible discharge directions.


Special features of types GB T120

- Designed for moving dirty, humid and hot air volumes up to max. 120° C.
- Motor located outside of air flow.
- Temperature insulated partition panel between motor and impeller, lined with 20 mm thick, flame-retardant mineral wool.
- Easily accessible motor and impeller unit, removable without disassembling the system components.
- Inspection cover with handle, simply remove for cleaning and maintenance.
- Condensate collector with condensate spigot included in delivery. Drill hole for rain drainage (accessories) for outdoor installation is prepared.

Assembly GB T120

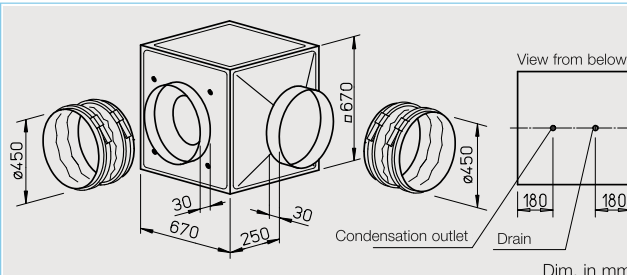
Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via the discharge adapter. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

Feature
Assembly of types GB

Arbitrary installation position and flexible assembly by five possible discharge directions via the discharge adapter. For wall mounting the wall bracket (accessories) have to be used. Outdoor installation is possible using outdoor cover

GB T120

Designed for moving dirty, humid and hot air up to max. 120° C. Motor located outside the air flow.



hood and external weather louvers (accessories).

Specification of both types
Casing

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature insulating and flame-retardant mineral wool. Intake cone for ideal inflow as well as spigot and flexible sleeve (for the respective max. permissible air flow temperature) for duct connection. With discharge adapter (from square to circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks.

Impeller

Smooth running backward curved centrifugal impeller highly efficient with polymer blades on galvanised steel disc (with GB T120 aluminium impeller), direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 – class 6.3.

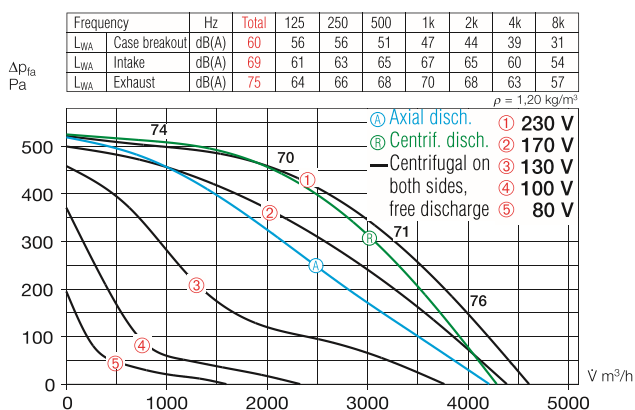
Motor

Maintenance-free external rotor motor or IEC-standard motor protected to IP 54. With ball bearings and interference-free as standard.

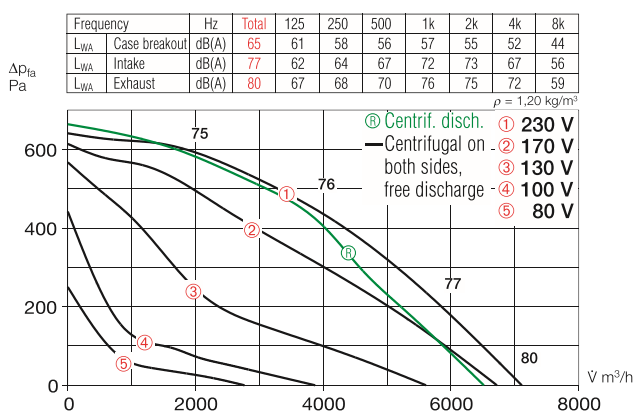
Type	Ref. no.	Air flow volume (FID)	R.P.M.	Sound press. case breakout	Motor power (nominal)	full load	Current speed controlled	Wiring diagram	Maximum air flow temperature Full load controlled	Weight (net) kg	5 step transformer controller with mot. protect. unit	Full motor protection unit using the thermal contacts
		m^3/h	min^{-1}	dB(A) in 4 m	kW	A	A	No.	$^{\circ}\text{C}$	$^{\circ}\text{C}$	Type Ref. no.	Type Ref. no.
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54												
GBW 450/4	5515	4600	1380	40	0.66	2.90	4.0	864	45	45	MWS 5 1949	TSW 5,0 1497 MW ¹⁾ 1579
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ wiring, protection to IP 54												
GBD 450/4/4	5516	4350/5450	880/1240	40	0.36/0.67	0.67/1.33	1.30	867	55	55	RDS 2 1315	TSW 1,5 1501 MD 5849
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54												
GBW 450/4 T120	5774	7110	1370	45	1.00	4.60	5.50	935	120	100	MWS 7,5 1950	TSW 7,5 1596 MW ¹⁾ 1579
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ wiring, protection to IP 54												
GBD 450/4/4 T120	5775	6210/7180	1100/1350	45	0.65/0.90	1.10/1.60	1.80	947	120	110	RDS 2 1315	TSW 3,0 1502 MD 5849

1) incl. operation switch

GBW 450/4



GBW 450/4 T120



Electrical connection

Standard terminal box (IP 54) fitted on the motor; with GB T120 fitted on the motor support plate.

Motor protection

Motors have thermal contacts wired to the terminal block and must be connected to a motor protection unit.

Speed control

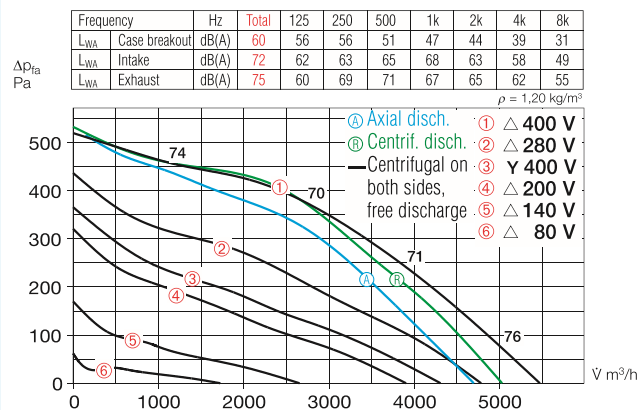
All types are speed controllable by voltage reduction using a transformer controller. The 3-phase models can also be 2 speed controlled by star/delta switch (accessories DS 2 or full motor protection unit M 4). The duties at different speeds are given in the performance curve.

Sound levels

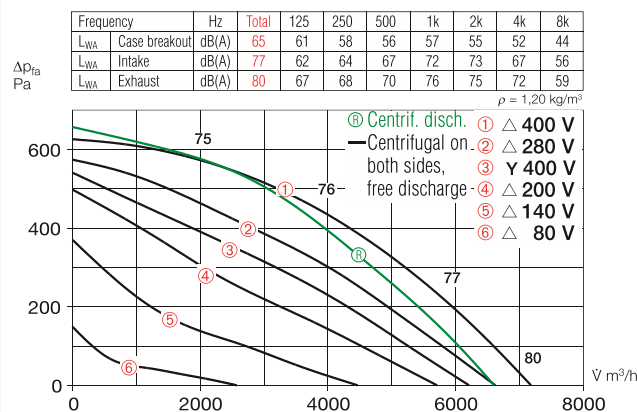
Total sound power levels and the spectrum figures in dB(A) are given for:

- Sound level case breakout
 - Sound level intake
 - Sound level exhaust
- In the table below as well as underneath the performance curve you can find additionally the sound pressure levels at 4 m (free field conditions).

GBD 450/4



GBD 450/4 T120



Accessories of both types

Anti vibration mounts for installation indoors. Set of 4.

SDD-U Ref. no. 5627

Wall bracket for wall mounting.

GB-WK 450 Ref. no. 5626

External weather louvers to cover exhaust opening.

GB-WSG 450 Ref. no. 5639

Outdoor cover hood for outdoor installation.

GB-WSD 450 Ref. no. 5748

On/Off and 2-speed switch for 3-phase Y/Δ motors.

Type DS 2²⁾ Ref. no. 1351

²⁾ full motor protection unit recommended:
MD Ref. No. 5849

Specific accessories

for types GB

Condensate collector with condensate spigot for pipe connection.

GB-KW 450 Ref. no. 5644

(Condensate collector with condensate spigot included in delivery with GB T120).

for types GB T120

Rain drainage for outdoor installation (drill holes for rain drainage is already prepared).

GB-RA Ref. no. 9418

Information	Page
Information for planning	10 on
General techn. information, speed control	15 on
Accessory-Details	Page
Speed controller and full motor protection unit	525 on

KITCHEN EXTRACT

ESP RANGE

1500 | 3000 | 4500 | 6000



Our ESP's have been specifically designed for kitchen extract systems; they have integral sumps to collect the oil, grease and smoke particles filtered out of the exhaust.

This not only simplifies servicing but eradicates potentially dangerous spillage from the bottom of the units and greatly cuts down on build-ups of grease within the ducting.

The ionisation voltage has been designed to run at a negative potential which enhances the ionisation of particles and also produces more ozone which is helpful in reducing cooking odours.

KEY FEATURES

- Eliminates up to 98% of oil, grease and smoke particles
- Filters particles down to sub-micron levels
- Produces Ozone to help reduce malodours
- Designed with an integral sump
- Modular in design
- Specifically designed for commercial kitchen application
- Energy efficient: - uses no more than 50W
- Greatly reduces grease build-up within the duct run
- IP65 rated for outside location

FILTERS REMOVE



Smoke



Steam

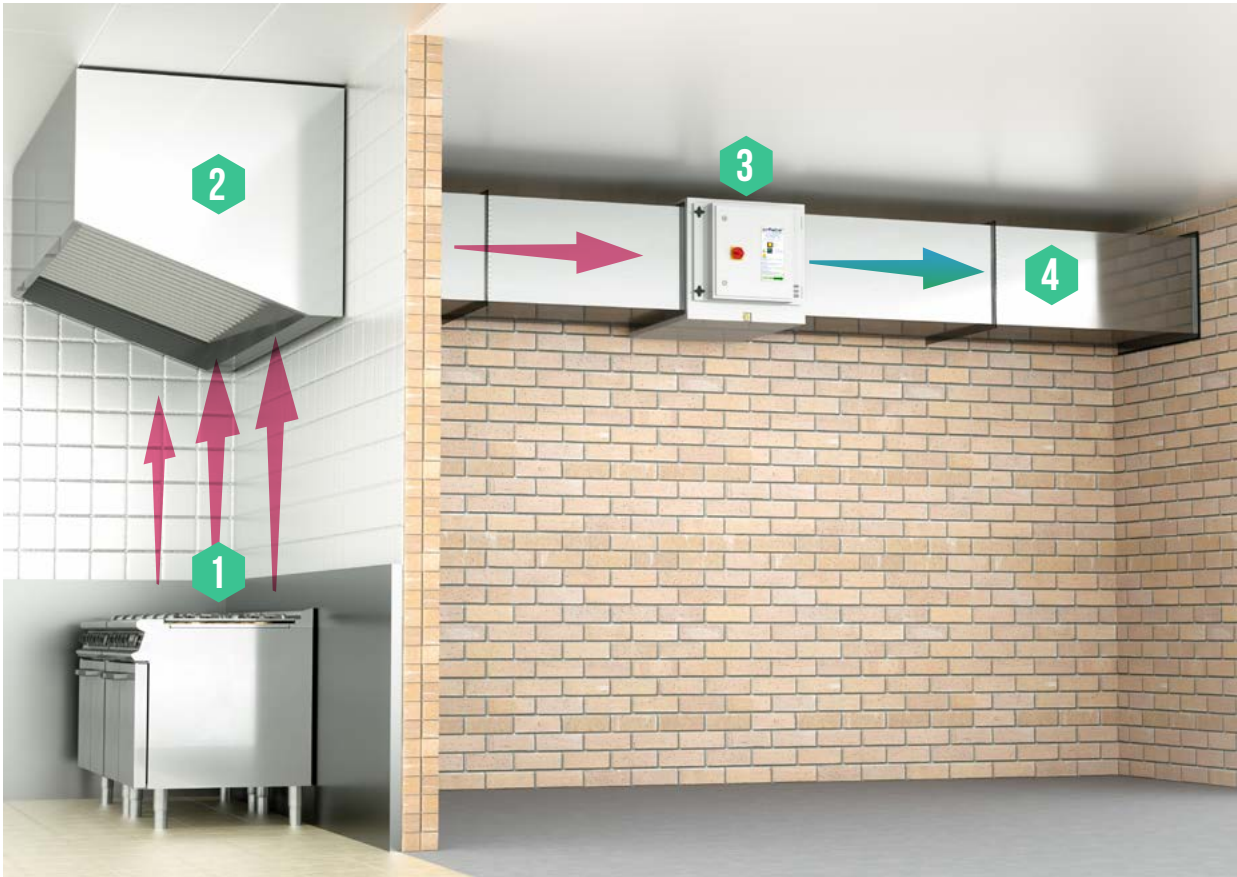


Oil



Grease

HOW IT WORKS



Our ESP units fit in-line with the kitchen ducting and can be configured modularly to cope with all extract volume requirements.

- 01

Cooking particulates and odours
- 02

Canopy Grease Filter
- 03

ESP - Particulate Control Unit
- 04

Airflow

OUR SERVICES



Design

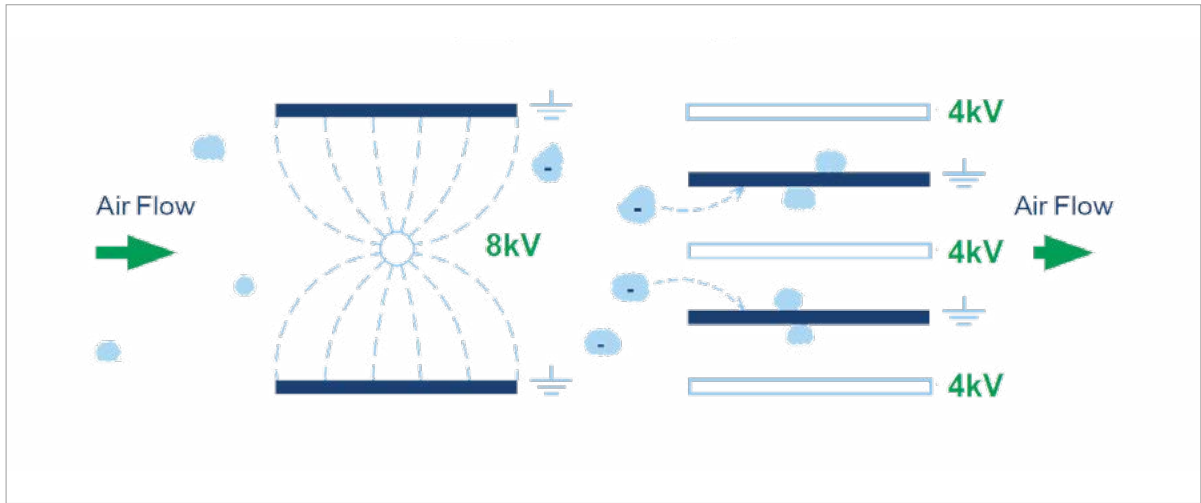


Manufacture



Maintain

THE ELECTROSTATIC PROCESS



The above diagram shows, in a basic visual, how an electrostatic precipitator works. As air passes into the combined ioniser / collector cell, the particulates in the air stream are polarised. As they continue through the ioniser and

between the collector cell plates, the polarised particulates are repelled away from the positively charged plates and attracted to the earthed plates where they stick and so are filtered out of the air flow.

THE BENEFITS OF ELECTROSTATIC TECHNOLOGY

- %

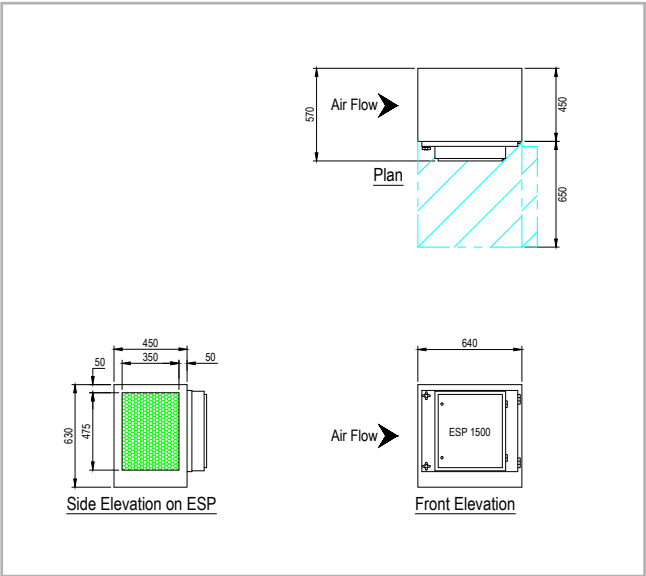
Eliminates up to 99% of particles
- Filters particles down to sub-micron levels
- Modular design
- Energy efficient

TECHNICAL SPECIFICATION

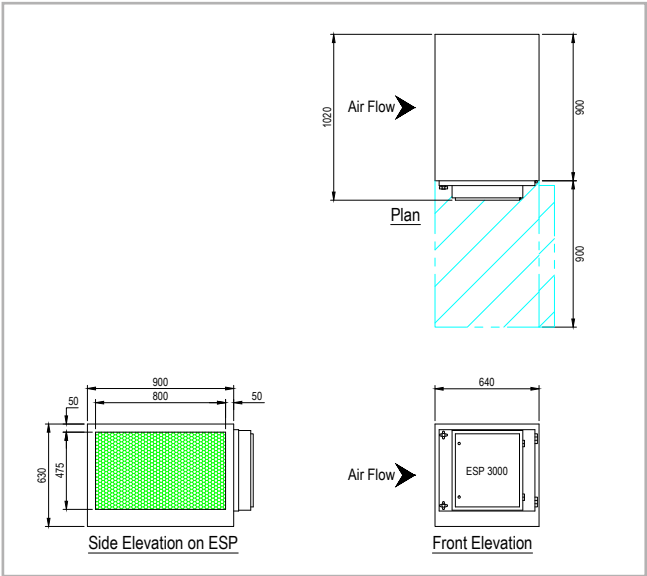
	ESP 1500	ESP 3000	ESP 4500	ESP 6000
Supply	220-240 V 50HZ	220-240 V 50HZ	220-240 V 50HZ	220-240 V 50HZ
Power Consumption	20 _W	30 _W	40 _W	50 _W
Maximum Airflow	0.7 M ³ /SEC (UP TO)	1.4 M ³ /SEC (UP TO)	2.1 M ³ /SEC (UP TO)	2.8 M ³ /SEC (UP TO)
Dimensions (mm)	W 450 H 630 D 640	W 900 H 630 D 640	W 1350 H 630 D 640	W 1800 H 630 D 640
Weight	55 _{KG}	85 _{KG}	118 _{KG}	153 _{KG}

DRAWINGS

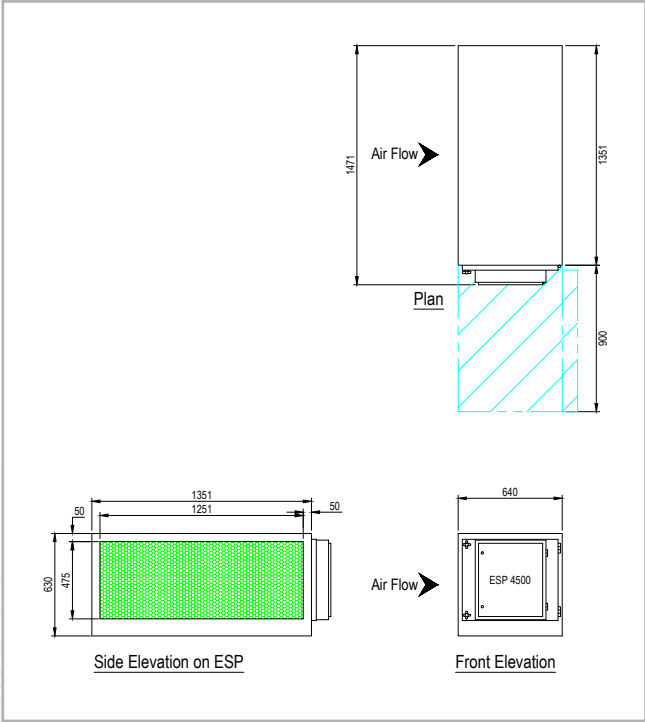
ESP 1500



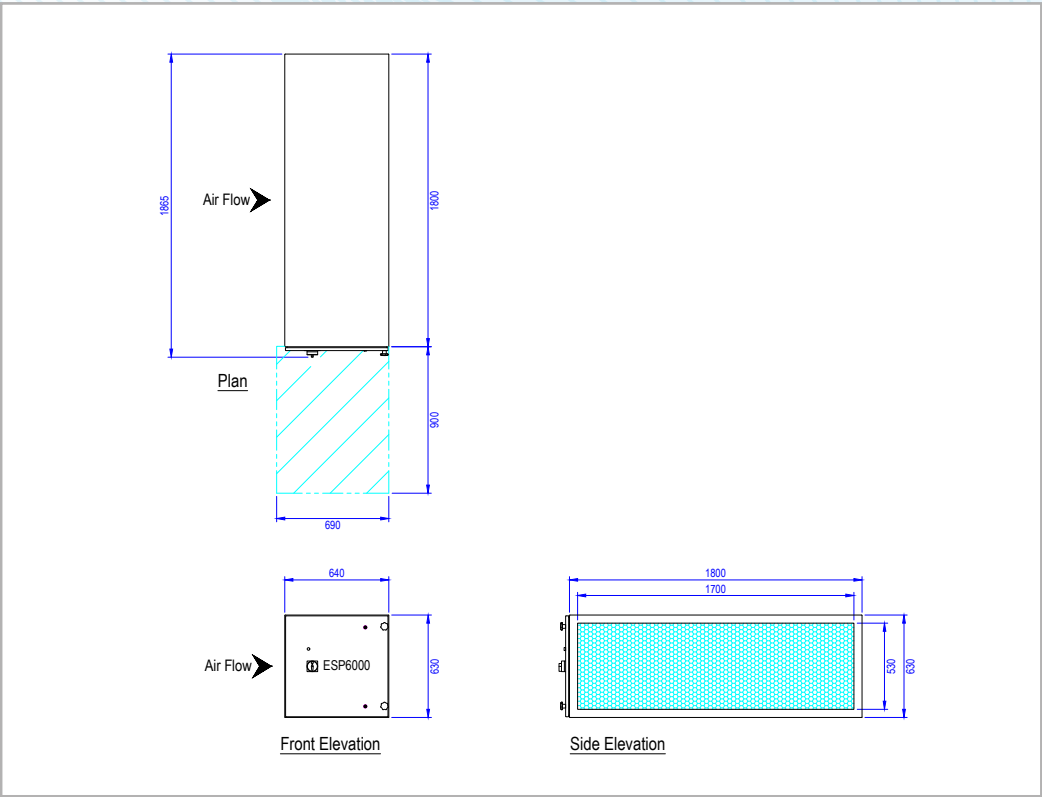
ESP 3000



ESP 4500



ESP 6000



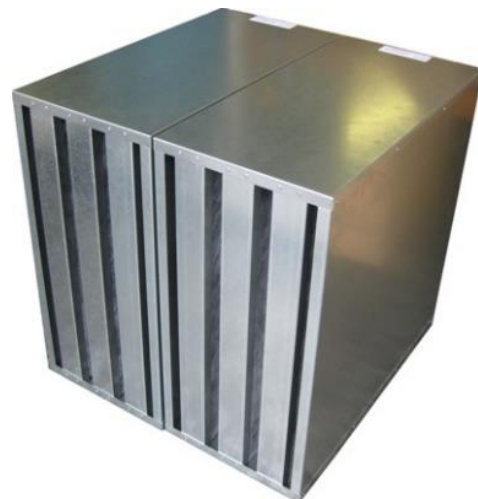
Activated Carbon Filters Use and Selection

Carbon panels are normally supplied and fitted with an aluminium frame and can be made to any reasonable size to match existing panels of all makes. The depth of panel is restricted by our own imposed limits of not less than 10mm and not greater than 60mm Actual depth.

Capacities shown for Panels & 'Discarb' units are based on a dwell time of 0.1 seconds, which is the normally accepted minimum for most applications.

Air Flow = Width x Length x Depth/Dwell Time
or Air Flow = Width x Length x Face Velocity

As a guide,



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

For 'heavier' odours i.e. Indian cooking odours, a contact time of 0.3 seconds is recommended, which will effectively reduce the Face Velocity and rating to one third..

Where hot air is being filtered (e.g. extract from cooker hoods) the carbon cells should be positioned as far from the heat source as possible.

Air stream temperatures must be maintained below 40Deg C. and humidity levels below 80% RH. If temperatures or humidity in excess of either of these figure are anticipated, the airstream must be treated to ensure compliance. Additional fresh air, and or cooling may be considered as suitable measures.

Pre-filters should be fitted in the ventilation system to protect the carbon filters in all installations from particulate contamination. We do not consider a glass panel to be suitable and recommend a filter having a minimum grade of F5 to EN779.

Some cooking operations give off large amounts of smoke, which is extremely detrimental if allowed to reach the carbon filters(smoke is a particulate).

In most cases this can be overcome by the use of a good quality pre-filter. e.g. an F8 Grade Bag Filter or better, depending upon circumstances. In some instances a HEPA Filter grade H14 is necessary.

'Discarb' Cells can be 'tailor-made' to any reasonable size to fit ducting, air-handling units etc.

Activated carbons are graded as follows :

Grade 20 Activity Carbons are rated 30% on their ability to 'adsorb' carbon tetrachloride (CTC) in testing; and have a typical surface area per weight of between 700-800 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 0.55 - 0.59 g/cc

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	BUTADEINE	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
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	DICHLOROTETRAFLURO 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
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	ODOFORM	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	
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
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	
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.