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Commercial Kitchen Design and Installation

Ventilation strategy for the below address

Address
581 Wilbraham Rd
Chorlton-cum-Hardy,
Manchester M21 9AF

Installation of extraction system proposed at the above address to *EMAQ Guidance Control of Odour and Noise from Commercial Kitchen Exhaust Systems*

All canopy and ductwork to *BESA DW172 DW144*
If required a noise assessment can be undertaken we recommend noiseharvest.com

Canopy dimensions to Dw172 in mm			
Length	**Width**	**Depth Back**	**Depth Front**
4700	**1500**	**500**	**500**

Extraction Filtration
Longar type 3 baffle filters
Supply Air Filtration
Longar G4 Filter

Odour control
1 x Purified Air ESP 6000 electrostatic precipitation unit **1 x Purified Air UVO 1000** **1 x G4 Pleated filter 495 x 495 50mm (Supply Air)**

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UNIT 5 FIREFLY SQUARE PLANTATION ROAD BURSCOUGH L408JT

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Email: sales@fusionhot.co.uk **Web:** www.fusionhot.co.uk

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Extract Fan Model	Speed (r.p.m.)	Maximum Absorbed Power kw	Maximum absorbed current (A)		Maximum air volume (m3/h)	Sound pressure level* (dB(A)3m)	Weight (Kg)
			230v	400v			
ePowerBox EC 80-560-3	1550	3.1		4.8	14.652	50	82

Supply Fan Model	Speed (r.p.m.)	Maximum Absorbed Power	Maximum absorbed current (A)		Maximum air volume (m3/h)	Sound pressure level* (dB(A)3m)	Weight (Kg)
			230v	400v			
Ruck 355	2770	960	5.4		4940	72	17.3

Extract Attenuation Octave – Band Mid Frequencies (Hz)									
4 (3 silencers after extract 1 silencer before)									
Diameter	Length	63	125	250	500	1000	2000	4000	8000
560	2D HP	4	5	10	20	29	28	21	23

Supply Attenuation Octave – Band Mid Frequencies (Hz)									
4 (1silencers after supply 3 silencer before)									
Diameter	Length	63	125	250	500	1000	2000	4000	8000
355	2d	1	2	4	10	12	10	9	7

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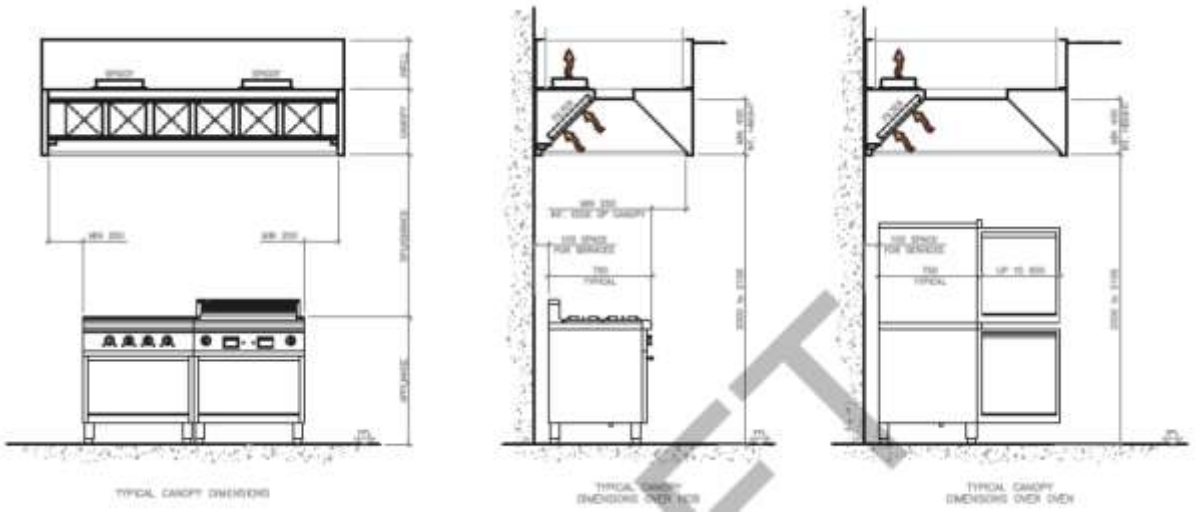
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Typical extraction canopy's below



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Risk Assessment for Odour EMAQ
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.

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[1].
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[1].
Cooking type (odour and grease loading)	Very high	10	Pub (high level of fried food), fried chicken, burgers or fish & chips. *Turkish, Middle Eastern or any premises cooking with solid fuel*
	High	7	Vietnamese, Thai, Indian, *Japanese*, *Chinese, steakhouse*
	Medium	4	Cantonese, *Italian, French, Pizza (gas fired),*
	Low	1	Most pubs (*no fried food, mainly reheating and sandwiches etc*), *Tea rooms*[1]

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Premises type	Dispersion	Proximity of receptors	Size of Kitchen	Cooking Type	Total Score
Restaurant	**10**	**10**	**1**	**10**	**31**

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:		

Odour Arrestment Plant Performance	
Low to medium level control may include:	1. Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.1 second Residence time). 2. Fine filtration followed by counteractant/neutralising system to achieve the same level of Control as 1.
High level odour control may include	1. Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.2 - 0.4 Second residence time). 2. Fine filtration or ESP followed by UV ozone system to achieve the same level of control As 1.
Very high level of odour control may include:	1. Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.4 0.8 Second residence time). 2. Fine filtration or ESP followed by carbon filtration and by counteractant/neutralising system To achieve the same level of control as 1. 3. Fine filtration or ESP followed by UV ozone system to achieve the same level of control As 1.

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Filtration Filters	
	LONGAR® TYPE 2 PREMIUM BAFFLE FILTER For use in commercial kitchens and ventilation to extract grease laden air and act as a fire barrier. Fire barriers prevent any cooking flames traveling past the extract canopy. The new Type 2 is a development of customers requesting certain attributes for the baffle filter, the main ones being safety edges on frame and blades. LONGAR® Type 2 is available in standard depths of 20mm and 45mm depths, this is required for the filter to operate at a constant efficiency and to protect the system as a flame barrier as tested to European Standard DIN 18869-5 and American Standard UL1046. Custom sizes are available on request.
	LONGAR® TYPE 11 FEATURES: • Moisture resistant cardboard frame. • G4 efficiency to provide a good base level of filtration. • Fully supported media bonded to expanded mesh grid. • The filtering media is bonded to the case to eliminate air by-pass. • Strong, robust construction. • Extended surface area. • High dust holding capacity. • Dimensions of product are part marked into frame for positive ID.

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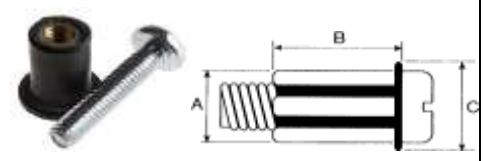
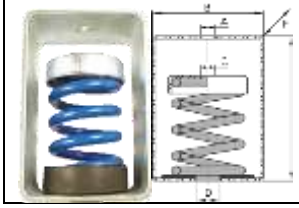
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Av Hanging & Support System	
Both the plant and ventilation ductwork will be supported from the structure using non – drill anchors in the slab, drop rods to either a length of 41 x 41 heavy gauge slotted unistrut c/w uninuts and washers (rectangular ductwork) or split rings with locking nuts (Spiral ductwork). A range of Anti- vibration mounts will be installed with the brackets (type best suited for the purpose intended) to pervert noise penetration to any occupied areas above Typical anti-vibration shown below.	
	The Rawlnut multipurpose fixing consists of a rubber sleeve with a flange at one end and a bonded-in nut at the other
	Metal bracket with rubber isolating bush typically fixed as an acoustic suspension point to the side of ducting or to timber joints.
	Male/female Bobbin Mounts are a low-cost solution to reducing vibration and shock. They can be used in either Compression or Shear or a combination and are available with various thread configurations.
	Hangers are available in 2 types. Rubber hangers and Steel coil spring hangers. Rubber Hangers are extremely cost effective, whilst steel coil spring hangers offer high performance

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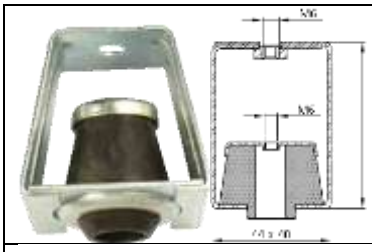
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	Hangers are available in 2 types. Rubber hangers and Steel coil spring hangers. Rubber Hangers are extremely cost effective, whilst steel coil spring hangers offer high performance
	The Durafoot is 350x350mm & weighs 6kg. Designed as a simple "push in and go" solution for 41 x 41 strut. They offer a load spreading solution for ducting, pipework, cable trays & air condition units that are to be installed on flat roofs & surfaces. Made from heavy duty recyclable rubber, the Durafoot can be used over and over again. 350mm x 350mm Weighs 6kg 110mm overall height 60/65mm recess
	Tamlex 300/600 mm Long Cantilever Arm for Strut

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Gas Safe Interlock System
In accordance with current regulation the gas range will be supplied with a gas interlock system which prevents the gas solenoid valve from opening if the system canopy extract fan fails to run, or the manual knock off button has been activated.







The VentGuard has a simple key switch operated ON/OFF function and a panel mounted flush emergency stop button to avoid accidental operation.

The panel has interfaces for air DP switches as well as having integral fan current monitors for both the intake and extract. Each channel can be easily setup using the range select jumper (for greater accuracy) and a potentiometer for fine tuning.

If the intake or extract fans are not in operation the panel will still allow gas through until they have been open circuit for a full 30 seconds. As some systems use the valve status to enable the fans this will allow the fans to get up to speed and provide a healthy signal to the VentGuard without any issues.

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Cleaning and maintenance

Kitchen Extraction System – Operation & Maintenance Guidelines

1. Initial Testing & Inspection

A wet film test will be undertaken to establish the level of grease production based on the cooking type and daily usage. Cleaning frequencies will then be recommended in line with your kitchen load. In accordance with BESA requirements, the cleaning contractor must inspect the full installation, identify and advise on inaccessible areas that require additional access points, and highlight any high-risk areas where ignition is most likely to occur.

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2. Daily Maintenance (By Franchisee / Staff)

Grease filters must be cleaned daily by soaking in detergent overnight. The grease trap and condensate channel must also be cleaned daily. The canopy, ductwork, and extract fan require a professional deep clean every three to six months, as advised by the cleaning contractor following inspection and grease level testing.

---

3. ESP & Carbon Filtration Maintenance (By BESA Approved Contractor)

A service contract must be in place with Purified Air for the ESP4500 units prior to opening. Cleaning and servicing should be carried out every three to four months to ensure that the ESP operates at full efficiency, removing smoke, oil, and grease from the extract stream.

Carbon filters, which are protected by the ESP and pre-mesh filters, typically last up to twelve months. Their condition must be checked during each service visit and replacements made when necessary. Carbon blocks weigh approximately eighteen kilograms each and safe, direct access must be provided. They must never be moved through ceiling tiles, and engineers must seek guidance if in doubt before changing or cleaning.

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4. Supply Air Filter Maintenance

Supply air panel filters should be visually checked periodically and replaced as required. This is normally every six to twelve months or sooner if staining is evident.

---

5. General Cleaning (Surfaces, Cladding, Furniture)

Stainless steel should be wiped with a damp cloth and mild detergent. Once dry, surfaces should be lightly wiped with a non-abrasive cloth using a mixture of fifty percent baby oil and fifty percent white spirit, always following the steel grain. Abrasive pads, wire wool, and concentrated chemicals must not be used.

---

6. Fan Operation & System Care

The correct cleaning and care of your canopy extraction system is required to maintain the warranty of the plant installed. The cleaning of grease-laden ductwork is critical to prevent fire risk, hygiene infection, vermin infestation, and premature mechanical failure.

Insurance premiums may be reduced where correct cleaning procedures are demonstrated, and there is also a legal duty of care to protect employees in the workplace.

The extraction fan is one of the most expensive items to replace. It must be removed from the system and cleaned separately using a non-corrosive agent. The common practice of injecting de-greasing chemicals into the system while the fan remains in place must not be used, as these chemicals attack the grease in the bearings, causing them to run dry and seize. This overloads the motor windings and leads to motor burnout. Fan manufacturers clearly state that warranties are invalid if this incorrect process is carried out. Ductwork may be cleaned with a de-grease agent, but it must always be fully flushed and cleaned before the fan is reinstalled.

All fans, particularly extract fans with motors located in the airstream, must be commissioned and operated at the correct airflow. They must not be run at excessively low speeds during quiet periods, as reduced airflow across the motor creates excessive heat within the fan housing, eventually leading to overheating and motor

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failure.

Normal running of the canopy extraction system should be set at step three to four on the controller, with adjustments made as system pressure rises, indicating that the ESP or carbon filters require cleaning. The supply air system should normally be run at step two to three on the controller, again with increases made as filters become dirty and require replacement.

---

7. TR19® Grease Cleaning Frequency Guide

To comply with BESA TR19® Grease, ductwork and canopy cleaning frequencies must be based on cooking intensity. Heavy usage of twelve to sixteen hours per day requires cleaning every three months. Moderate usage of six to twelve hours per day requires cleaning every six months. Light usage of two to six hours per day requires cleaning every twelve months. These are minimum standards, and shorter intervals may be necessary where grease accumulation is excessive.

---

8. Compliance Note

These operation and maintenance requirements apply only if the system has been installed in accordance with the agreed Kitchen Ventilation Strategy Report. Any deviation in specification, layout, or access provisions may compromise performance and compliance.

---

9. Client Obligations

The client must employ a competent, BESA-approved cleaning company to maintain the system in accordance with Council Environmental Health requirements, the manufacturer's equipment guidelines, and the cleaning frequencies set out in BESA TR19® Grease. Failure to comply may result in non-compliance with statutory regulations, an increased fire risk, premature equipment failure, and the invalidation of warranties and insurance cover.

Responsibilities in summary: franchisee and staff are responsible for daily cleaning of filters, grease traps, and

canopies. The approved cleaning contractor is responsible for TR19®-compliant deep cleans, ESP servicing, and carbon filter checks. The client is responsible for employing competent contractors, providing safe access, and ensuring compliance with Council and TR19® requirements.

Notes

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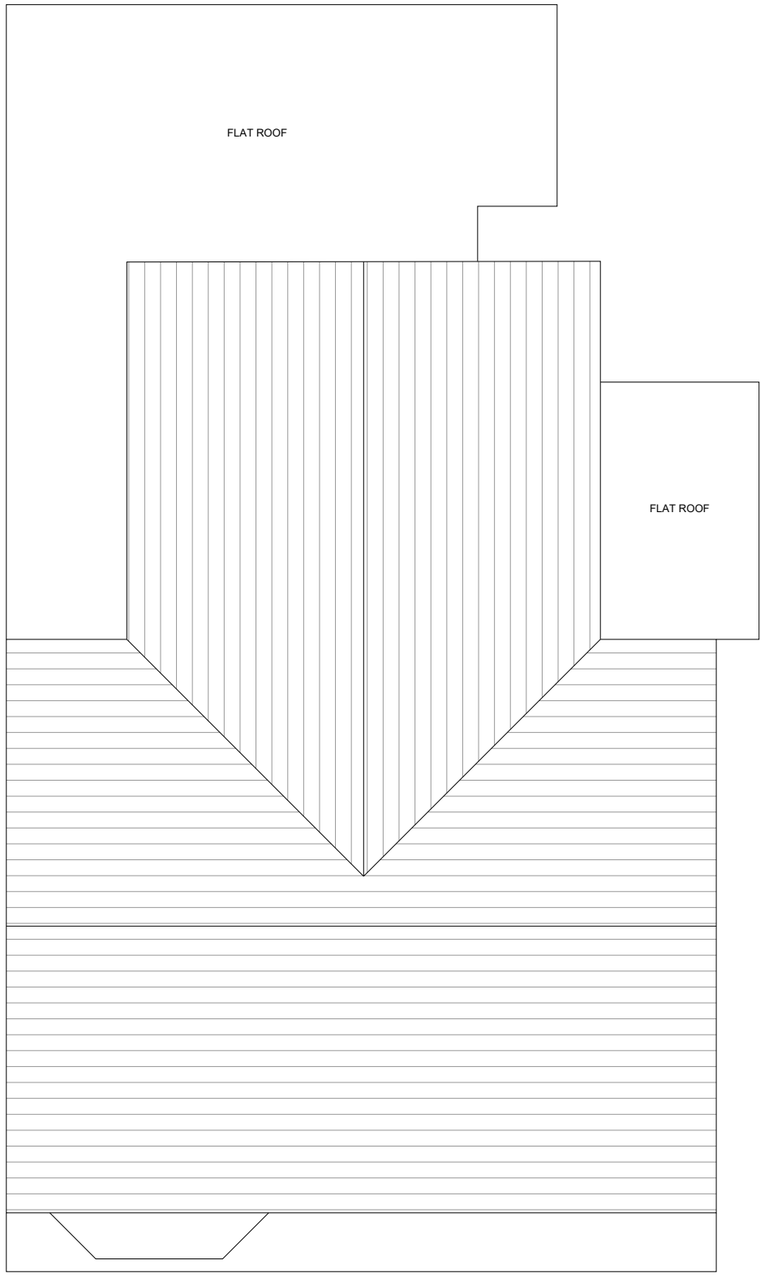
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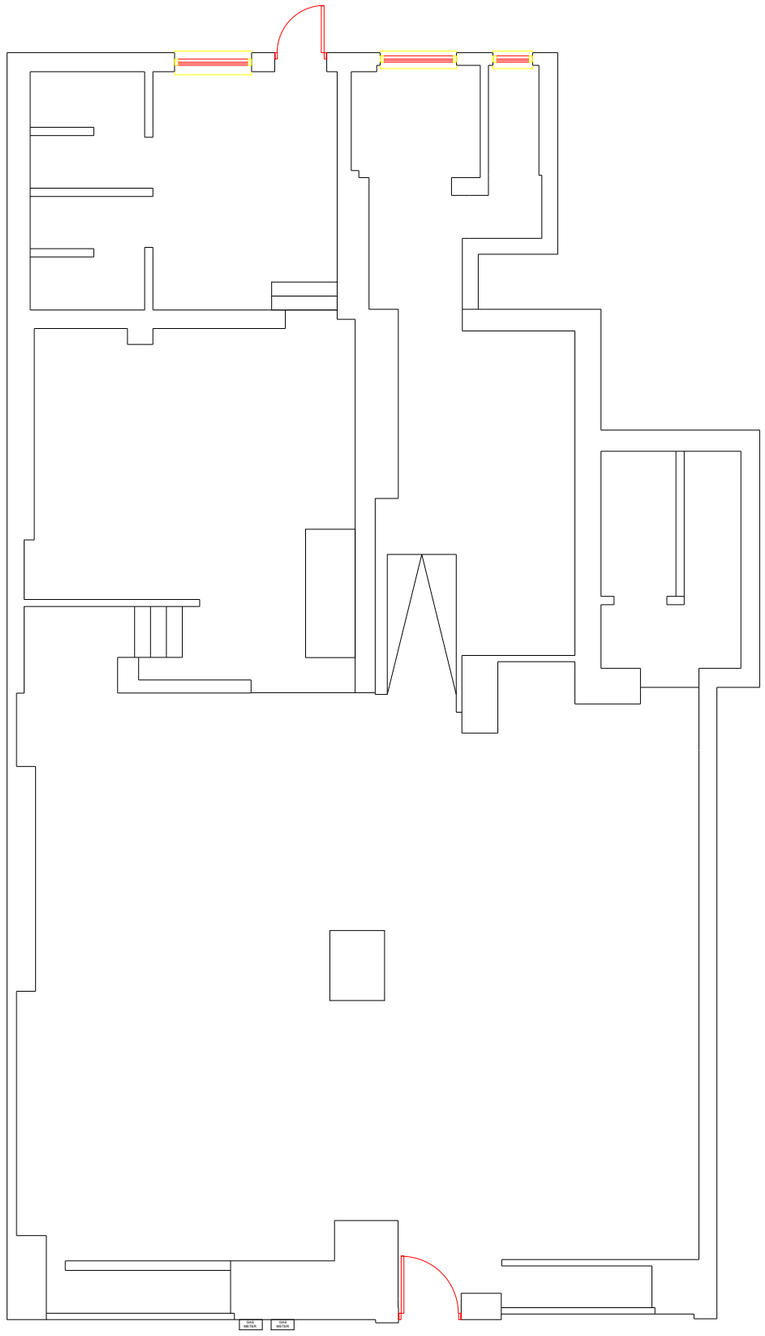
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EXISTING ROOF PLAN



EXISTING GROUND FLOOR

1:100

2m 0 2m 4m 6m 8m 10m

	REVISION	DATE 11-03-26

PROJECT

581 WILBRAHAM RD CHORLTON-CUM-HARDY, MANCHESTER M21 9AF

TITLE

EXISTING GROUND FLOOR AND ROOF PLAN

SCALE @ A3 1:100

DATE

JOB NO.

FUSIONHOT

COMMERCIAL KITCHEN DESIGN & INSTALLATION
01704893945

SALES@FUSIONHOT.CO.UK

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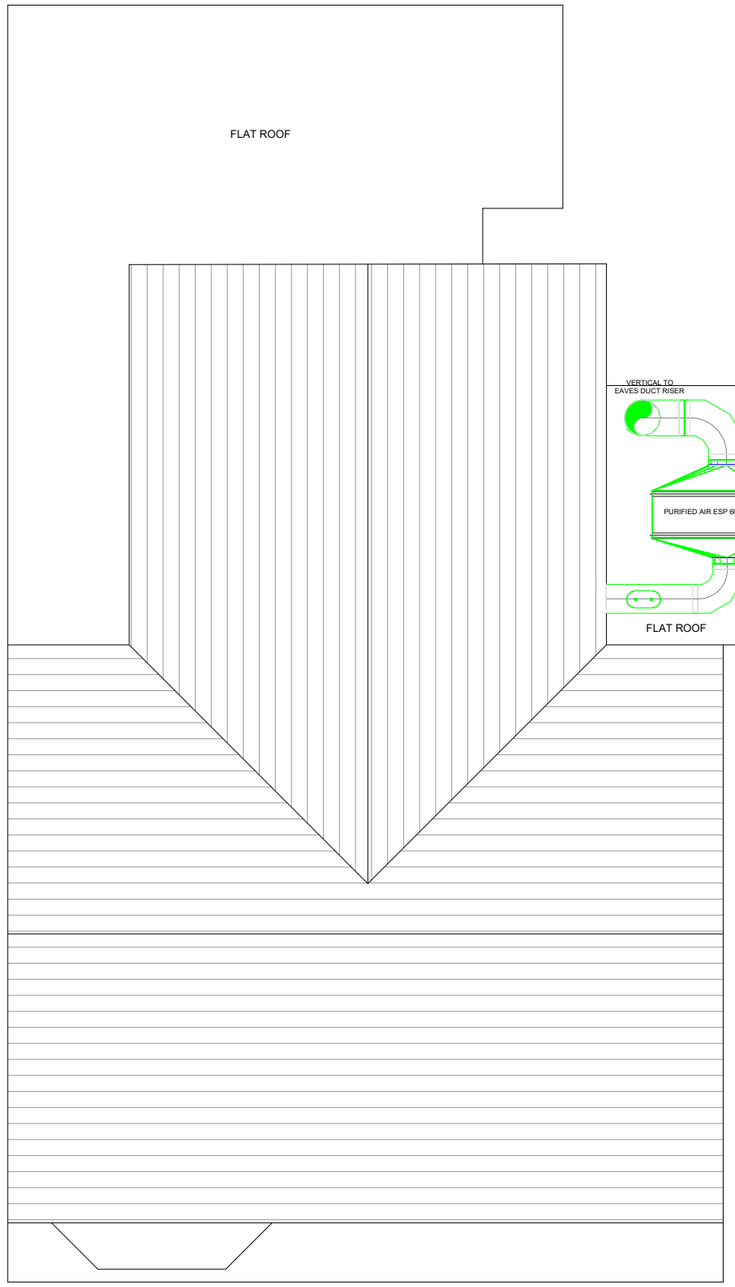
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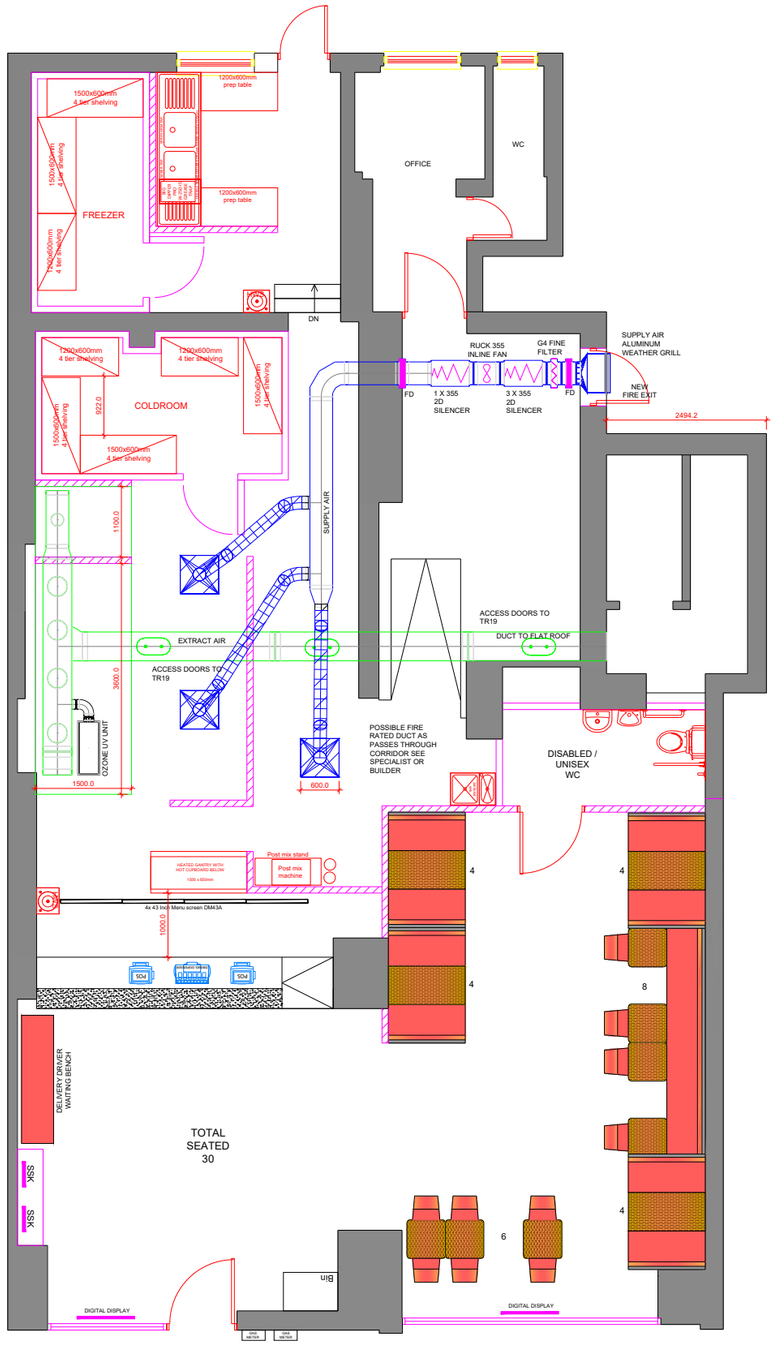
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PROPOSED ROOF PLAN



1:100

2m 0 2m 4m 6m 8m 10m

REVISION | DATE 11-03-26

PROJECT

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TITLE

PROPOSED GROUND FLOOR AND ROOF PLAN

SCALE @ A3 1:100

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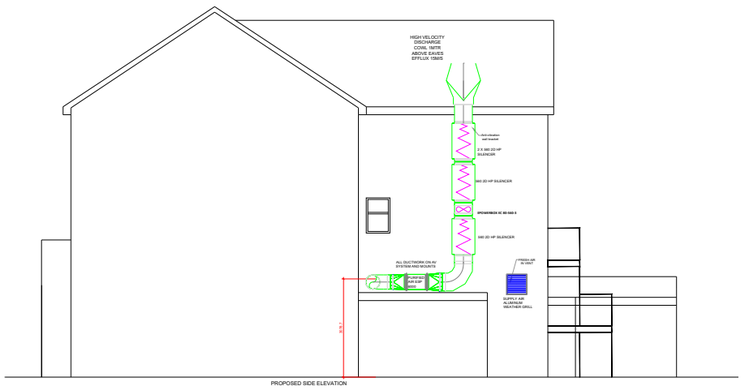
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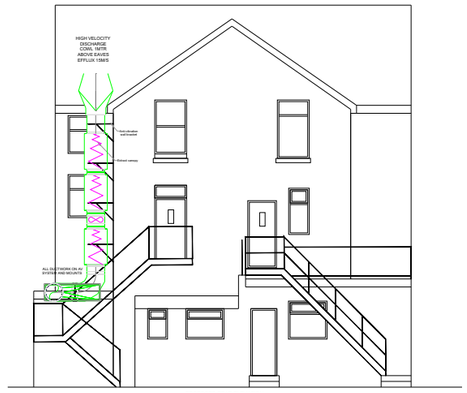
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PROPOSED SIDE ELEVATION



PROPOSED REAR ELEVATION

1:200

4m 0 4m 8m 12m 16m 20m

	REVISION	DATE 11-03-26

PROJECT **581 WILBRAHAM RD CHORLTON-CUM-HARDY, MANCHESTER M21 9AF**

TITLE **PROPOSED ELEVATIONS**

SCALE @ A3	1:200
DATE	-
JOB NO.	-

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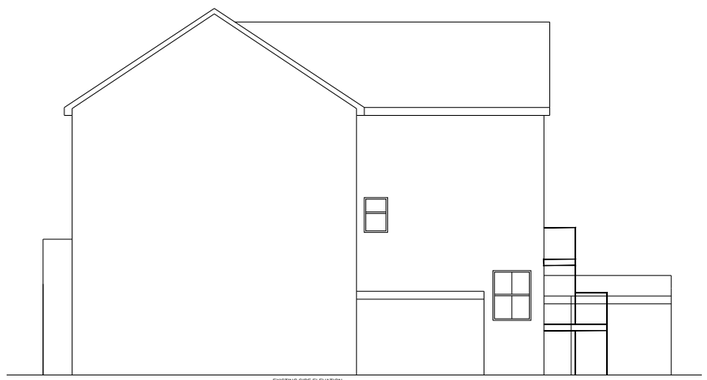
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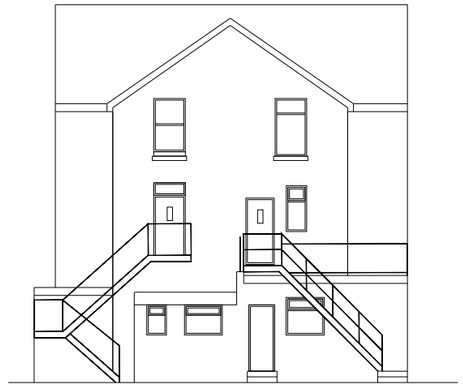
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EXISTING SIDE ELEVATION



EXISTING REAR ELEVATION

EXISTING FRONT ELEVATION

1:200

4m 0 4m 8m 12m 16m 20m

	REVISION	DATE 11-03-26

PROJECT **581 WILBRAHAM RD CHORLTON-CUM-HARDY, MANCHESTER M21 9AF**

TITLE **EXISTING ELEVATIONS**

SCALE @ A3	1:200
DATE	-
JOB NO.	-

FUSIONHOT
COMMERCIAL KITCHEN
DESIGN & INSTALLATION
01704893945
SALES@FUSIONHOT.CO.UK

Woods
AIR MOVEMENT

WOODS

Box Fans



BOX FAN

Application

Box fans are used in commercial complexes where a fan needs to be placed with a ducted system to maintain the pressure within the system for proper ventilation.



Offices & Kitchens



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PRODUCT FACTS

- Air flow up to 5.7 m³/s
- Static pressures up to 1400 Pa
- Speed controllable external rotor motors
- Multiple outlet orientations motor located out of air stream
- Air discharged at 90 degrees
- DW172 compliant for solid fuel cooking applications

ELECTRICAL SUPPLY

220-240V/50Hz/1PH & 380-420V/50Hz/3PH

TEMPERATURE RANGE

Up to 110ºC depending on size, see electrical data table on next page for more information.

SIZES

355, 400, 450, 500, 560 and 630 mm

CONSTRUCTION

The casing is galvanized and made from sheet steel with double chambered aluminum supporting frames and plastic made corners. The acoustic insulation is made from fibre glass with a thickness of 20 mm.

Can be horizontal or vertical mounted with weather proof hood and has removable side panels. One side of the casing is open as standard.

IMPELLER

The Estoc Targe is equipped with high efficiency backward curved centrifugal impellers made of plastic for size up to 560 mm and with aluminum for 630 mm.

MOTOR

Motor is situated out of air stream. The fans are equipped with direct driven external motors having motor protection through thermal contacts in the motor windings. The impellers together with the external rotor motors are dynamically balanced to quality standard G2,5 DIN ISO 19410.

SPEED CONTROLLER

Speed is variable using auto transformers and inverter control with auxiliary electronic control option and includes a integrated emergency switch.



PRODUCT CODE

Estoc Targe 50-355-3

- ESTOC TARGE - Product Name
- 50 = Box Size ie, 50 = 500mm; 67 =670mm; 80 = 800mm; 102 = 1020mm
- 355 = Spigot Diameter size (mm)
- 1 = 1PH or 3 = 3PH

ACCESSORIES

The range of accessories include dampers, flexible connectors, service doors, outlet covers, guards, side covering and insulating connections. A quick reference guide is shown below.


SOC


STP


SWR


SFC


Mounting track/SMT


Electronic Controller


Controls Transformer


Controls Inverter

220-240V/50Hz/1PH & 380-420V/50HZ/3PH

ErP COMPLIANT

Performance Table

Product Code	0	50	100	150	200	250	300	350	400	450	500	550	600	650
Estoc Targe 50-355-1	0.80	0.73	0.66	0.59	0.53	0.44	0.35	0.22	0.08					
Estoc Targe 67-400-1	1.26	1.20	1.12	1.03	0.93	0.83	0.73	0.62	0.49	0.28	0.09			
Estoc Targe 67-450-1	1.77	1.71	1.64	1.56	1.48	1.40	1.30	1.20	1.12	1.01	0.87	0.75	0.55	0.25

Product Code	m3/s @ Pa (Static)																							
	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	900	1000	1100	1200	1300	1400
Estoc Targe 50-355-3	0.85	0.79	0.72	0.63	0.53	0.44	0.32	0.18	0.04														
Estoc Targe 67-400-3	1.25	1.17	1.09	1.00	0.87	0.76	0.69	0.51	0.37	0.17													
Estoc Targe 67-450-3	1.81	1.73	1.66	1.59	1.52	1.45	1.35	1.25	1.14	1.03	0.90	0.74	0.56	0.22									
Estoc Targe 80-500-3	2.50	2.41	2.33	2.24	2.18	2.07	1.99	1.88	1.77	1.65	1.53	1.39	1.25	1.05	0.83	0.56	0.26						
Estoc Targe 80-560-3	3.06	3.01	2.94	2.87	2.79	2.73	2.66	2.58	2.51	2.43	2.34	2.24	2.13	2.01	1.87	1.72	1.55	0.80					
Estoc Targe 80-630-3	3.97	3.90	3.84	3.77	3.70	3.62	3.55	3.46	3.37	3.29	3.20	3.11	3.00	2.89	2.77	2.64	2.52	2.30	2.06	1.71	0.72	0.19	
Estoc Targe 102-630-3	5.75	5.66	5.57	5.48	5.39	30.30	5.19	5.10	4.99	4.88	4.77	4.66	4.54	4.41	4.28	4.14	3.98	3.63	3.27	2.80	2.19	1.55	0.32

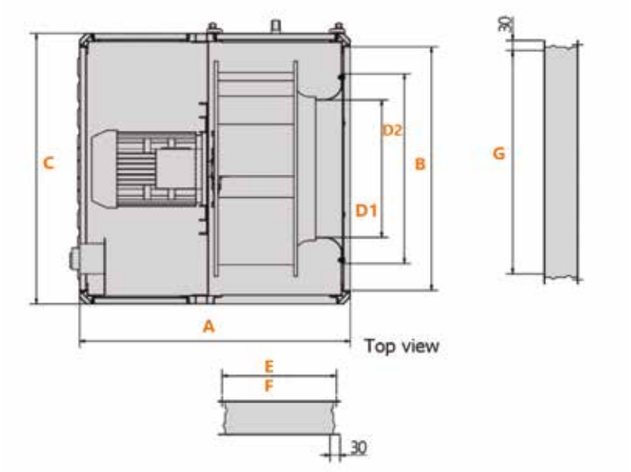
Product and Electrical Details

Product Code	Product Number	Speed rpm	Motor Frame	Electrical Supply	Electrical Current			Wiring Diagrams	**Speed Controllers		Maximum Operating Temp °C	Breakout
					Motor (kW)	Full Load Current (A)	Starting Current (A)		Transformer	Inverter		*Sound Level db(A) (3m)
Estoc Targe 50-355-1	GF503551	1360	Integral	220-240 V/50 Hz/1 Ph	0.3	1.4	3.5	CD3006	ME1.3	TEID 1.5	110	35
Estoc Targe 67-400-1	GF674001	1270	Integral	220-240 V/50 Hz/1 Ph	0.5	2.2	4.8	CD3006	ME1.3	TEID 2.2	90	39
Estoc Targe 67-450-1	GF674501	1380	Integral	220-240 V/50 Hz/1 Ph	1	5.4	12	CD3006	ME1.6	TEID 5	80	44

Product Code	Product Number	Speed rpm	Motor Frame	Electrical Supply	Electrical Current			Wiring Diagrams	**Speed Controllers		Maximum Operating Temp °C	Breakout
					Motor (kW)	Full Load Current (A)	Starting Current (A)		Transformer	Inverter		*Sound Level db(A) (3m)
Estoc Targe 50-355-3	GF535524	1360	Integral	380-420 V/50 Hz/3 Ph	0.3	0.7	2.6	CD3031	TDID 2.5	IDDXF54 2.2	110	35
Estoc Targe 67-400-3	GF674003	1240	Integral	380-420 V/50 Hz/3 Ph	0.5	1	2.8	CD3031	TDID 2.5	IDDXF54 2.2	100	38
Estoc Targe 67-450-3	GF674503	1380	Integral	380-420 V/50 Hz/3 Ph	0.9	1.8	8.8	CD3031	TDID 2.5	IDDXF54 2.2	100	44
Estoc Targe 80-500-3	GF805003	1380	Integral	380-420 V/50 Hz/3 Ph	1.5	3	15	CD3032	TDID 4	IDDXF54 3.7	90	47
Estoc Targe 80-560-3	GF805607	1410	Integral	380-420 V/50 Hz/3 Ph	2.5	5	35	CD3032	-	IDDXF54 7.2	100	49
Estoc Targe 80-630-3	GF806303	1445	Integral	380-420 V/50 Hz/3 Ph	4.4	8	46	CD3032	-	IDDXF54 9	90	53
Estoc Targe 102-630-3	GF163027	1460	Integral	380-420 V/50 Hz/3 Ph	6	11	62.6	CD3032	-	IDDXF54 12	75	91

*Sound power levels are average dBA at 3 metres distance over sphere, under free field conditions and are presented for comparative purposes only. Values shown are those at the mid-point of the performance curve.
**For speed controllers, please refer to accessories section. For ErP efficiency ratings and grades please refer to our Fan Selector for more information.

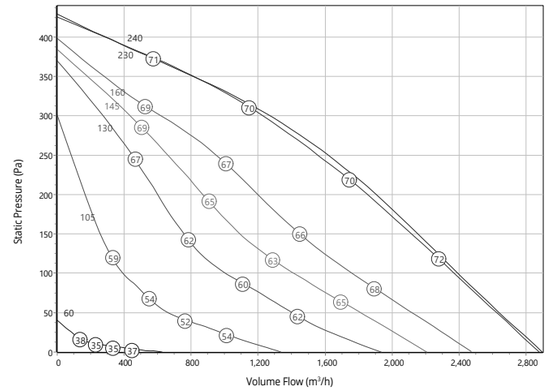
Drawings and Dimensions



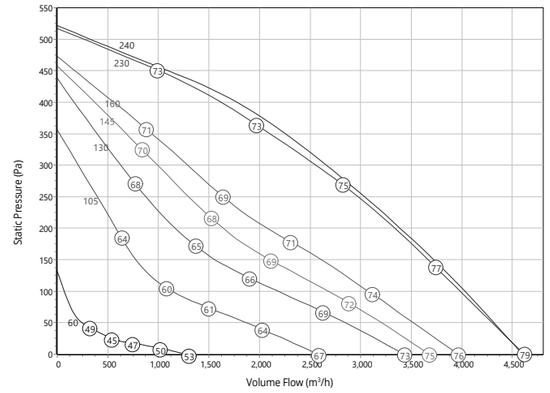
Product Code	A	B	C	D1	D2	E	F	G	Weight Max (kg)
Estoc Targe 50-355	420	420	500	228	350	218	398	360	35
67-400	500	590	670	248	422	258	568	450	52
67-450	500	590	670	289	422	258	568	450	69
80-500	590	720	800	310	519	338	698	580	78
80-560	740	720	800	362	519	338	698	580	106
80-630	800	720	800	405	560	338	698	580	146
102-630	880	940	1020	390	640	398	918	750	173

Performance charts

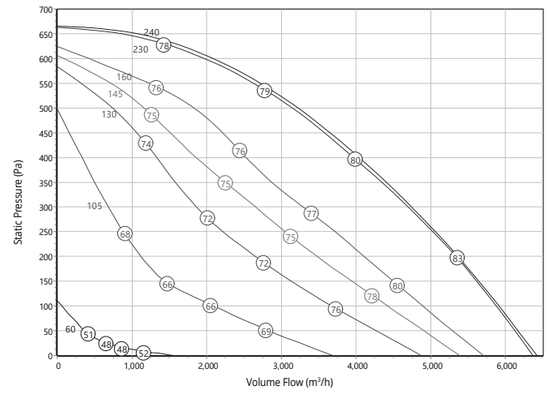
ESTOC TARGE 50-355-1 - GF503551



ESTOC TARGE 67-400-1 - GF674001

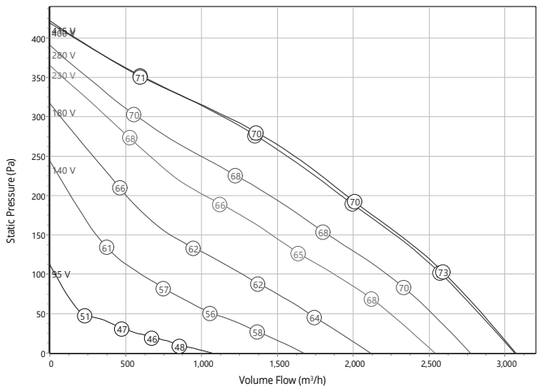


ESTOC TARGE 67-450-1 - GF674501

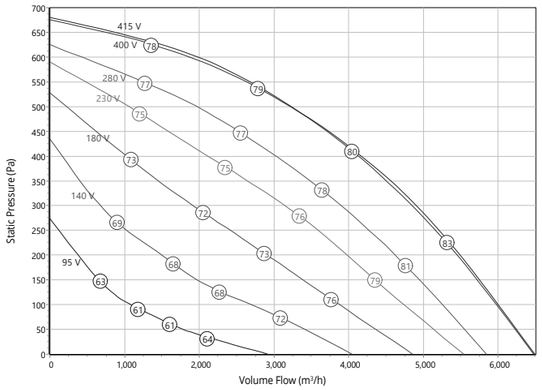


Drawings and Dimensions

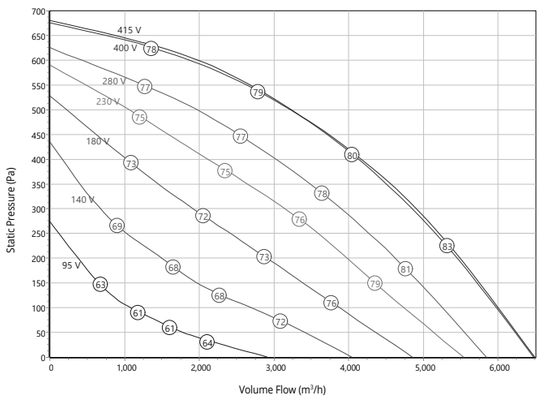
ESTOC TARGE 50-355-3 - GF535524



ESTOC TARGE 67-400-3 - GF674003

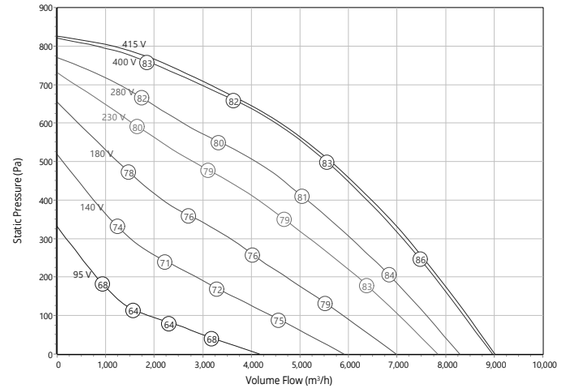


ESTOC TARGE 67-450-3 - GF674503

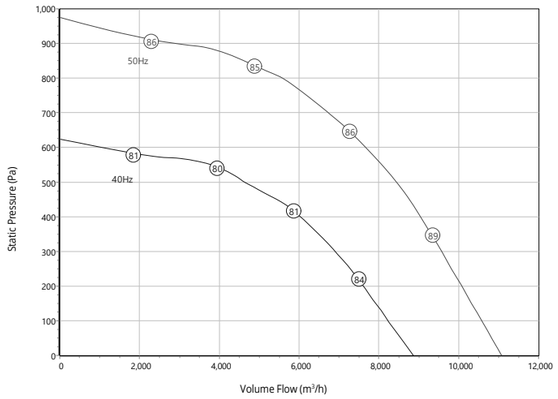


Performance charts

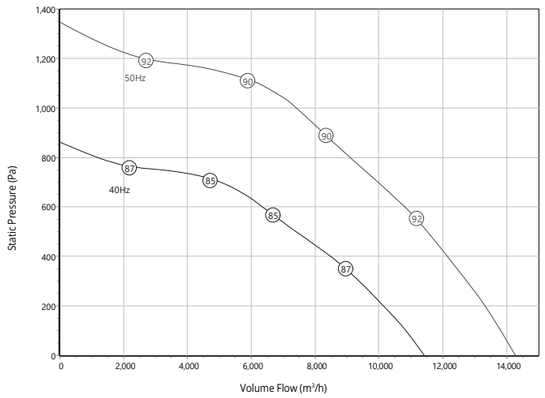
ESTOC TARGE 80-500-3 - GF805003



ESTOC TARGE 80-560-3 - GF805607

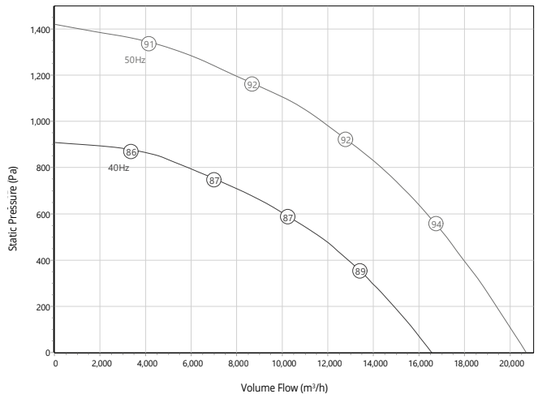


ESTOC TARGE 80-630-3 - GF806303



Performance Charts

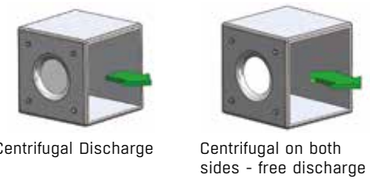
ESTOC TARGE 102-630-3 - GF163027



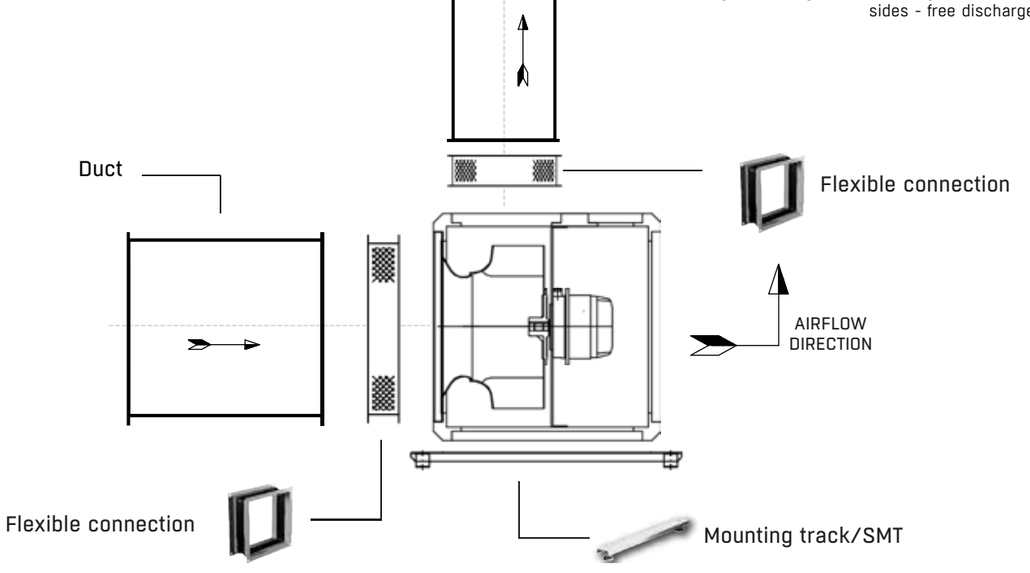
INSTALLATION GUIDE

Outdoor installation PowerBox GF Estoc Targe
Axial air flow (90° discharge available)

All accessories supplied separately


Centrifugal Discharge

Centrifugal on both sides - free discharge



When the Estoc Targe is used externally with a horizontal outlet an additional weather roof/cowl is available if required.

Construction Scheme

INDOOR INSTALLATION

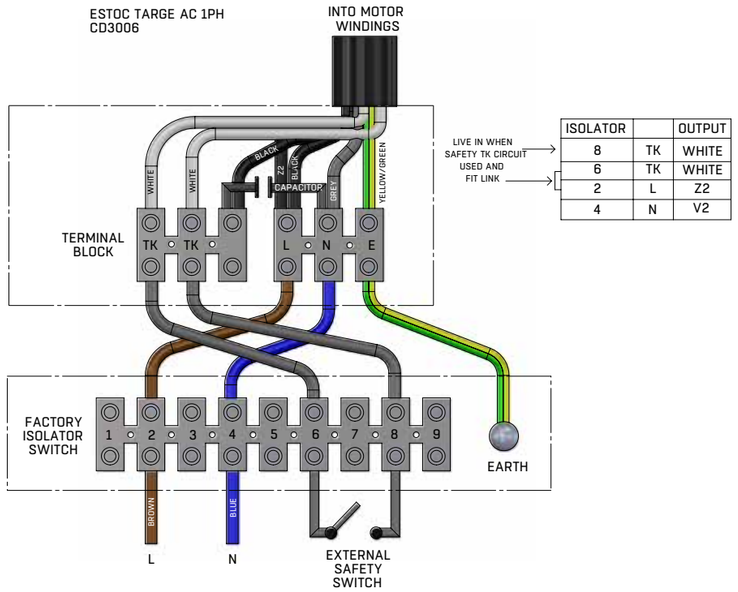


OUTDOOR INSTALLATION



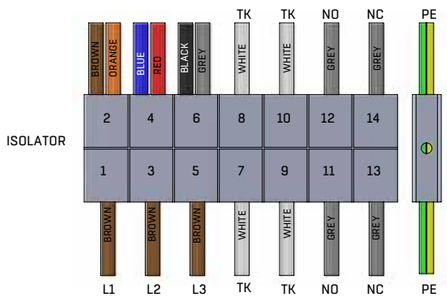
Wiring Diagrams - Estoc Targe

CD3006



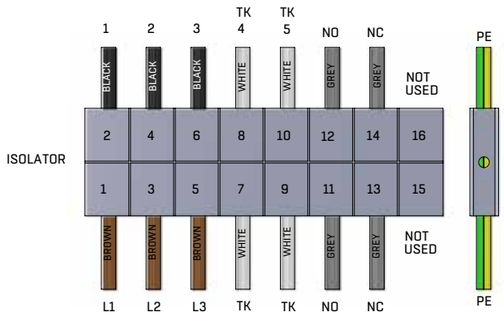
CD3031

355-450



CD3032

500-630



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SELECT for Air Diffusion and
FAN SELECTOR for Air Movement products

- Product technical documentation
- Instruction manuals
- Certifications
- Sales and marketing leaflets
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EC Version

PRODUCT FACTS

- Air flow up to 3.7 m3/s
- Static pressures up to 1000 Pa
- Controllable EC motors
- Multiple outlet orientations motor located out of air stream
- Air discharged at 90 degrees
- DW172 compliant for solid fuel cooking applications

ELECTRICAL SUPPLY

220-240V/50Hz/1PH & 380-420V/50Hz/3PH

TEMPERATURE RANGE

Up to 120ºC depending on size, see electrical data table on next page for more information.

SIZES

355, 400, 450, 500, 560 and 630 mm

CONSTRUCTION

The casing is galvanized and made from sheet steel with double chambered aluminum profiles and plastic made corners. The acoustic insulation is made from fibre glass with a thickness of 20 mm.

Can be horizontal or vertical mounted with weather proof hood and has removable side panels. One side of the casing is open as standard.

IMPELLER

The Estoc Targe is equipped with high efficiency backward curved centrifugal impellers made of plastic for size up to 560 and with aluminum for 630 mm.

MOTOR

Motor is situated out of air stream. The fans are equipped with direct driven external motors having motor protection through thermal contacts in the motor windings. The impellers together with the external rotor motors are dynamically balanced to quality standard G2,5 DIN ISO 19410.

SPEED CONTROLLER

Speed is variable using a 0-10 volt potentiometer.

Up to
110



PRODUCT CODE

Estoc Targe EC 50-355-3

- ESTOC TARGE EC - Product Name
- 50 = Box Size ie, 50 = 500mm; 67 = 670mm; 80 = 800mm; 102 =1020mm
- 355 = Spigot Diameter size (mm)
- 1 = 1PH or 3 = 3PH

ACCESSORIES

The range of accessories include dampers, flexible connectors, service doors, outlet covers, guards, side covering and insulating connections. A quick reference guide is shown below.


SOC


STP


SWR


SFC


Mounting track/SMT

220-240V/50Hz/1PH & 380-420V/50HZ/3PH

ErP COMPLIANT

Performance Table

Product Code	m³/s @ Pa (Static)										
	0	100	200	300	400	500	600	700	800	900	1000
Estoc Targe EC 50-355-1	0.90	0.81	0.69	0.55	0.19						
Estoc Targe EC 67-400-1	1.25	1.13	0.98	0.78	0.37						
Estoc Targe EC 67-450-1	1.57	1.43	1.28	1.08	0.74						

Product Code	m³/s @ Pa (Static)										
	0	100	200	300	400	500	600	700	800	900	1000
Estoc Targe EC 50-355-3	0.91	0.80	0.69	0.55	0.21						
Estoc Targe EC 67-400-3	1.41	1.31	1.20	1.05	0.86	0.58					
Estoc Targe EC 67-450-3	1.79	1.67	1.54	1.39	1.20	0.91	0.13				
Estoc Targe EC 80-500-3	2.50	2.37	2.23	2.07	1.88	1.63	1.39	1.02	0.01		
Estoc Targe EC 80-560-3	3.03	2.88	2.74	2.59	2.41	2.23	2.01	1.74	1.00		
Estoc Targe EC 80-630-3	3.68	3.52	3.37	3.21	3.06	2.89	2.70	2.49	2.20	1.74	0.41

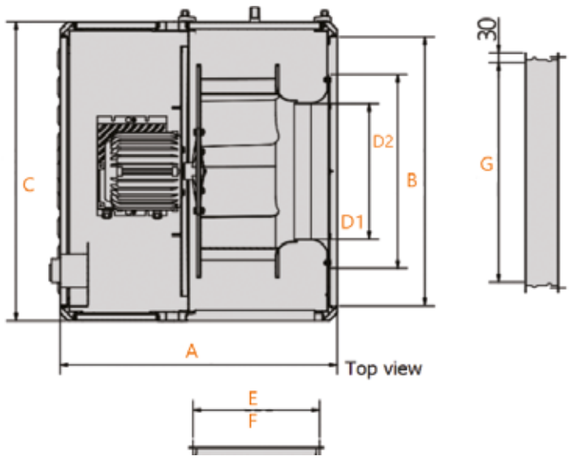
Product and Electrical Details

Product Code	Product Number	Speed rpm	Motor Frame	Electrical Supply	Electrical Current			Wiring Diagrams	**Speed Controllers	Maximum Operating Temp°C	Breakout
					Motor (kW)	Full Load Current (A)	Starting Current (A)		Potentiometer		*Sound Level db(A) (3m)
Estoc Targe EC 50-355-1	GF503555	1500	Integral	220-240 V/50 Hz/1 Ph	0.36	1.5	1.5	1.451	0-10 V Pot	120	36
Estoc Targe EC 67-400-1	GF674006	1320	Integral	220-240 V/50 Hz/1 Ph	0.43	1.8	1.8	1.451	0-10 V Pot	120	41
Estoc Targe EC 67-450-1	GF674506	1230	Integral	220-240 V/50 Hz/1 Ph	0.65	2.8	2.8	1.451	0-10 V Pot	120	42

Product Code	Product Number	Speed rpm	Motor Frame	Electrical Supply	Electrical Current			Wiring Diagrams	**Speed Controllers	Maximum Operating Temp°C	Breakout
					Motor (kW)	Full Load Current (A)	Starting Current (A)		Potentiometer		*Sound Level db(A) (3m)
Estoc Targe EC 50-355-3	GF503556	1500	Integral	380-420 V/50 Hz/3 Ph	0.36	0.7	0.7	1.451	0-10 V Pot	120	37
Estoc Targe EC 67-400-3	GF674006	1500	Integral	380-420 V/50 Hz/3 Ph	0.62	1.2	1.2	1.451	0-10 V Pot	120	43
Estoc Targe EC 67-450-3	GF674507	1400	Integral	380-420 V/50 Hz/3 Ph	0.95	1.7	1.7	1.451	0-10 V Pot	120	45
Estoc Targe EC 80-500-3	GF805006	1400	Integral	380-420 V/50 Hz/3 Ph	1.45	2.4	2.4	1.451	0-10 V Pot	120	48
Estoc Targe EC 80-560-3	GF805608	1400	Integral	380-420 V/50 Hz/3 Ph	2.3	3.6	3.6	1.451	0-10 V Pot	120	50
Estoc Targe EC 80-630-3	GF806306	1350	Integral	380-420 V/50 Hz/3 Ph	3.6	5.5	5.5	1.451	0-10 V Pot	120	51

*Sound power levels are average dBA at 3 metres distance over sphere, under free field conditions and are presented for comparative purposes only. Values shown are those at the mid-point of the performance curve.
**For speed controllers, please see pages 250-297. For ErP efficiency ratings and grades please refer to our Fan Selector for more information.

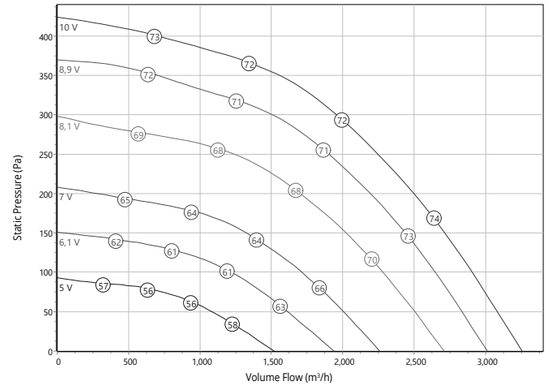
Drawings and Dimensions



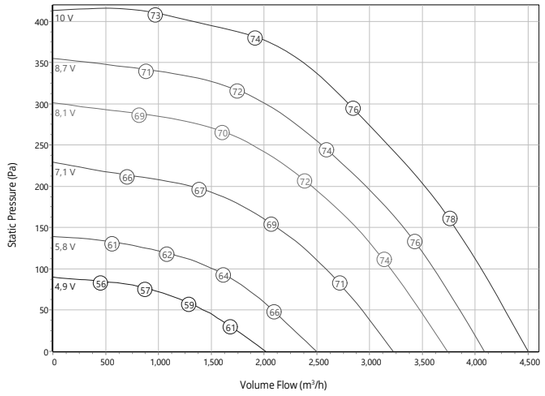
Product Code	A	B	C	D1	D2	E	F	G	Weight Max (kg)
Estoc Targe EC 50-355	540	420	500	228	348	218	398	360	44
67-400	600	590	670	248	422	258	568	450	60
67-450	600	590	670	289	422	258	568	450	66
80-500	740	720	800	310	519	338	698	580	96
80-560	740	720	800	362	519	338	698	580	102
80-630	740	720	800	405	560	338	698	580	112

Performance charts

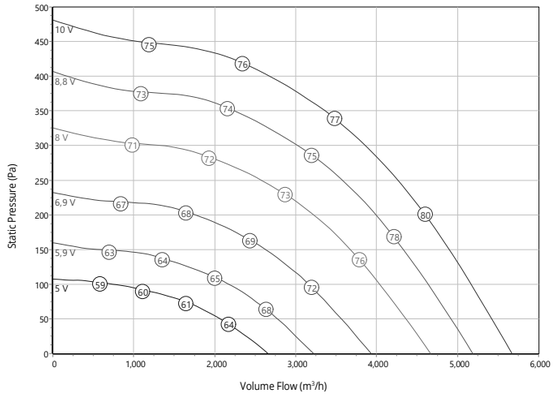
ESTOC TARGE EC 50-355-1 - GF503555



ESTOC TARGE EC 67-400-1 - GF674006

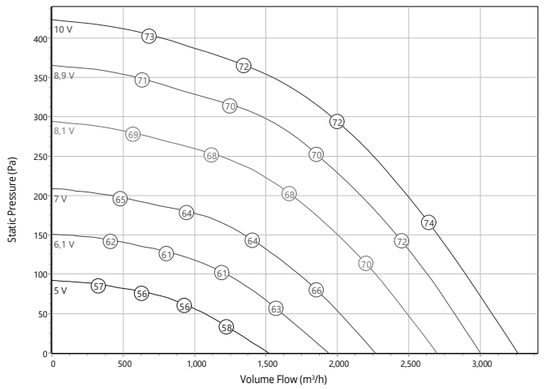


ESTOC TARGE EC 67-450-1 - GF674506

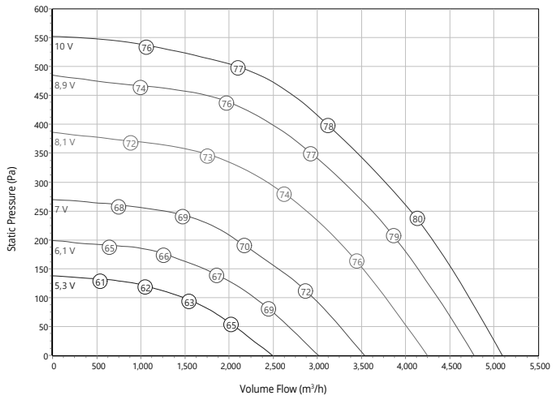


Performance charts

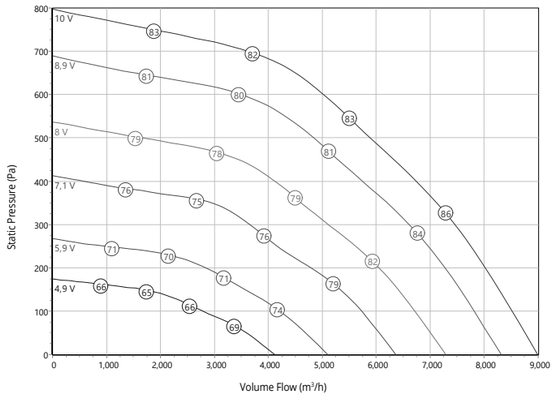
ESTOC TARGE EC 50-355-3 - GF503556



ESTOC TARGE EC 67-400-3 - GF674006

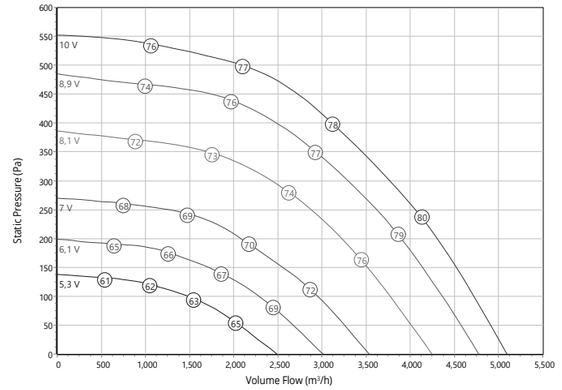


ESTOC TARGE EC 50-355-3 - GF503556

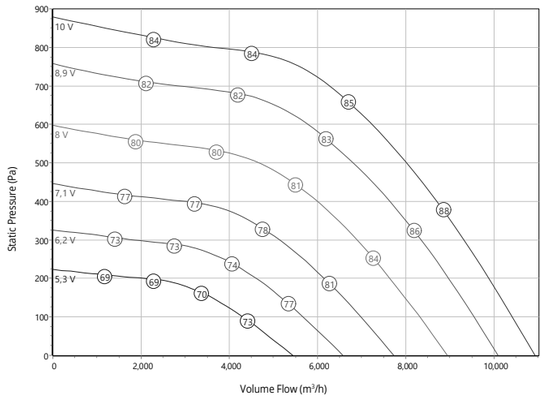


Performance charts

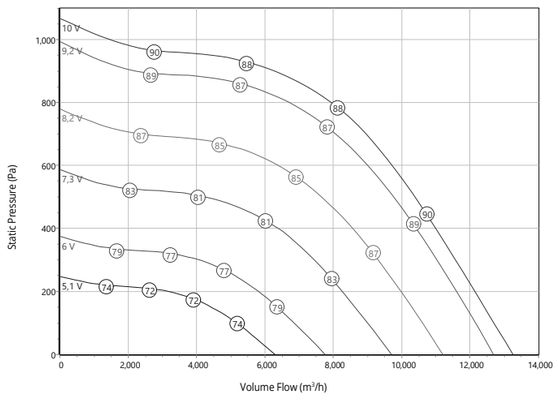
ESTOC TARGE EC 67-400-3 - GF674006



ESTOC TARGE EC 80-560-3 - GF805608



ESTOC TARGE EC 80-630-3 - GF806306



Construction Scheme

INDOOR INSTALLATION

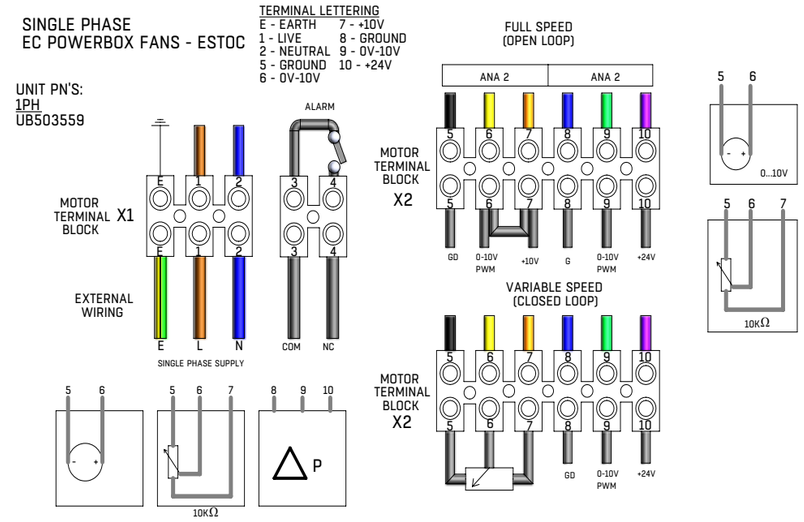


OUTDOOR INSTALLATION

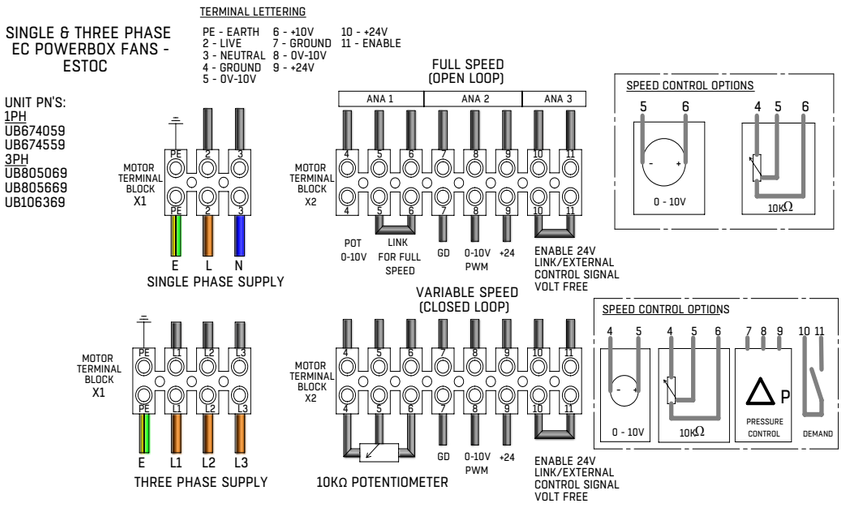


Wiring Diagrams - Estoc Targe EC

CD3011



CD3012



PRODUCT FACTS

- Air flow up to 5.2 m3/s
- Static pressures up to 1130 Pa
- Speed controllable external rotor motors
- Multiple outlet orientations
- All panels interchangeable to offer flexible outlet position

ELECTRICAL SUPPLY

220-240V/50Hz/1PH & 380-420V/50Hz/3PH

TEMPERATURE RANGE

Maximum temperature from +40°C to +70°C (depending on the model)

SIZES

355, 400, 450, 500, 560, 630 and 710 mm

CONSTRUCTION

The ePowerBox AC casing is made from galvanized sheet steel with double chambered aluminum supporting frames and plastic made corners. The acoustic insulation made from mineral wool with a thickness of 20 mm.

IMPELLER

The ePowerBox AC has a backward curved centrifugal impellers made of plastic with galvanised steel support plates for those up to 560 mm. Fans with a diameter of 630 mm and larger have high efficiency backward curved centrifugal impellers made of aluminium.

MOTOR

The impellers together with the external rotor motors are dynamically balanced to quality standard G2,5 DIN ISO 19410.

SPEED CONTROLLER

Speed is 100% infinitely variable using auto transformers or inverter control.

NB; Performance reduction in straight through configuration. Please refer to performance curve.



PRODUCT CODE

ePowerBox AC 50-355-3

- ePowerBox AC - Product Name
- 50 = Box Size ie, 50 = 500mm; 67 = 670mm; 80 = 800mm; 102 = 1020mm
- 355 = Spigot Diameter size (mm)
- 1 = 1PH or 3 = 3PH

ACCESSORIES

The range of accessories include dampers, flexible connectors, service doors, outlet covers, guards, side covering and insulating connections. A quick reference guide is shown below.



SOC



STP



SWR



SFC



Mounting track/SMT

220-240V/50Hz/1PH & 380-420V/50HZ/3PH

ErP COMPLIANT

Performance Table

Product Code	m3/s @ Pa (Static)										
	0	100	200	300	400	500	600	700	800	900	1000
ePowerBox AC 50-355-1	0.91	0.79	0.66	0.45							
ePowerBox AC 67-400-1	1.30	1.17	1.04	0.87	0.58						
ePowerBox AC 67-450-1	1.91	1.77	1.61	1.44	1.21	0.91	0.13				
ePowerBox AC 67-500-1	2.61	2.43	2.24	2.04	1.83	1.55	1.16	0.40			

Product Code	m3/s @ Pa (Static)										
	0	100	200	300	400	500	600	700	800	900	1000
ePowerBox AC 50-355-3	0.92	0.80	0.66	0.43							
ePowerBox AC 67-400-3	1.29	1.15	1.01	0.81	0.40						
ePowerBox AC 67-450-3	1.81	1.66	1.49	1.29	1.03	0.59	0.03				
ePowerBox AC 67-500-3	2.58	2.40	2.23	2.03	1.81	1.55	1.16	0.39			
ePowerBox AC 80-560-3	3.61	3.40	3.19	2.98	2.75	2.47	2.13	1.69	0.88	0.21	
ePowerBox AC 80-630-3	4.03	3.84	3.65	3.44	3.28	3.05	2.84	2.56	2.24	1.73	0.09
ePowerBox AC 102-710-3	4.81	4.47	4.06	3.63	3.13	2.59	0.92				

Product and Electrical Details

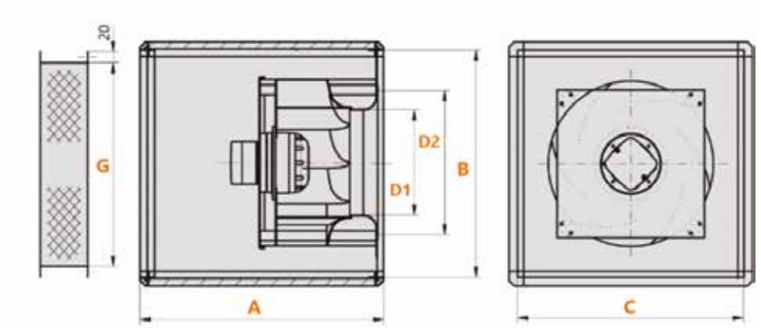
Product Code	Product Number	Speed rpm	Motor Frame	Electrical Supply	Electrical Current			Wiring Diagrams	**Speed Controllers	Maximum Operating Temp°C	Breakout
					Motor (kW)	Full Load Current (A)	Starting Current (A)		Transformer		*Sound Level db(A) (3m)
ePowerBox AC 50-355-1	BE355017	1325	Integral	220-240 V-50 Hz-1 Ph	0.28	1.35	4.46	CD3028	TEID 1.5	65	33
ePowerBox AC 67-400-1	BE400018	1360	Integral	220-240 V-50 Hz-1 Ph	0.51	2.45	7.11	CD3028	TEID 2.2	65	45
ePowerBox AC 67-450-1	BE450022	1270	Integral	220-240 V-50 Hz-1 Ph	0.85	4.1	15.58	CD3028	TEID 3.5	45	41
ePowerBox AC 67-500-1	BE500003	1310	Integral	220-240 V-50 Hz-1 Ph	1.38	6.22	19.90	CD3028	TEID 7.5	40	45

Product Code	Product Number	Speed rpm	Motor Frame	Electrical Supply	Electrical Current			Wiring Diagrams	**Speed Controllers	Maximum Operating Temp°C	Breakout
					Motor (kW)	Full Load Current (A)	Starting Current (A)		Transformer		*Sound Level db(A) (3m)
ePowerBox AC 50-355-3	BE355018	1355	Integral	380-420V-50 Hz-3 Ph	0.28	0.67	2.68	CD3030	IDDXF54 2.2	70	34
ePowerBox AC 67-400-3	BE400019	1335	Integral	380-420V-50 Hz-3 Ph	0.44	0.88	3.34	CD3030	IDDXF54 2.2	70	37
ePowerBox AC 67-450-3	BE450023	1345	Integral	380-420V-50 Hz-3 Ph	0.73	1.47	4.85	CD3030	IDDXF54 2.2	50	37
ePowerBox AC 67-500-3	BE500004	1380	Integral	380-420V-50 Hz-3 Ph	1.29	2.82	14.95	CD3030	IDDXF54 3.7	60	44
ePowerBox AC 80-560-3	BE560023	1350	Integral	380-420V-50 Hz-3 Ph	2.1	4.07	16.28	CD3030	IDDXF54 5.3	50	47
ePowerBox AC 80-630-3	BI101234	1380	Integral	380-420V-50 Hz-3 Ph	3.28	6.1	34.20	CD3030	IDDXF54 7.2	60	55
ePowerBox AC 102-710-3	BI101237	890	Integral	380-420V-50 Hz-3 Ph	2.17	4.79	19.16	CD3030	IDDXF54 5.3	70	49

*Sound power levels are average dBA at 3 metres distance over sphere, under free field conditions and are presented for comparative purposes only. Values shown are those at the mid-point of the performance curve.

** For speed controllers, please refer to accessories section. For ErP efficiency ratings and grades please refer to our Fan Selector for more information.

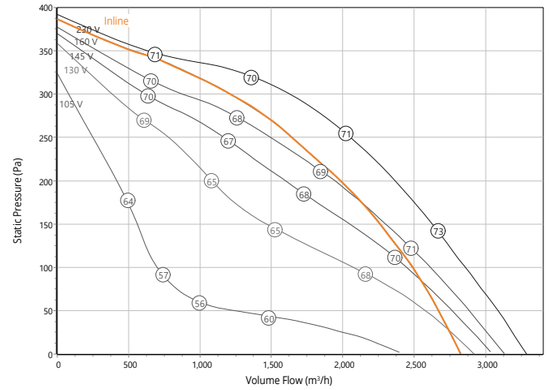
Drawings and Dimensions



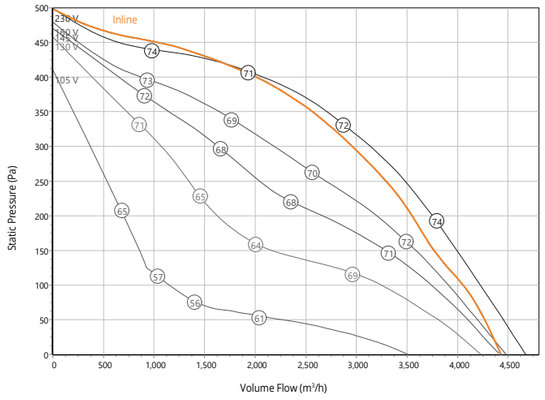
Product Code	A	B	C	D1	D2	G	Weight Max (kg)
ePowerbox 50-355	500	450	450	228	320	409	32
67-400	670	620	620	257	356	579	48
67-450	670	620	620	286	395	579	50
67-500	670	620	620	325	438	579	60
80-560	800	720	720	365	490	659	95
80-630	800	720	720	410	541	659	105
102-710	1020	940	940	460	605	879	146

Performance charts

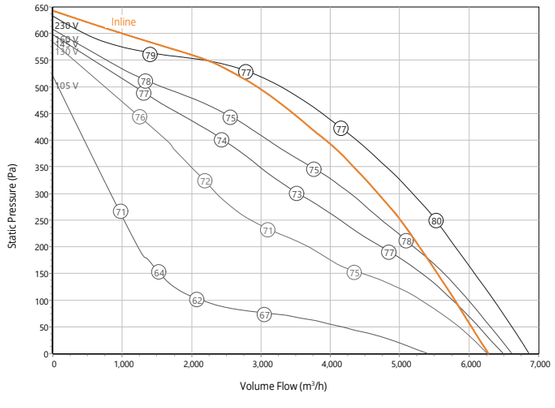
ePOWERBOX AC 50-355-1 - BE355017



ePOWERBOX AC 67-400-1 - BE400018



ePOWERBOX AC 67-450-1 BE450022

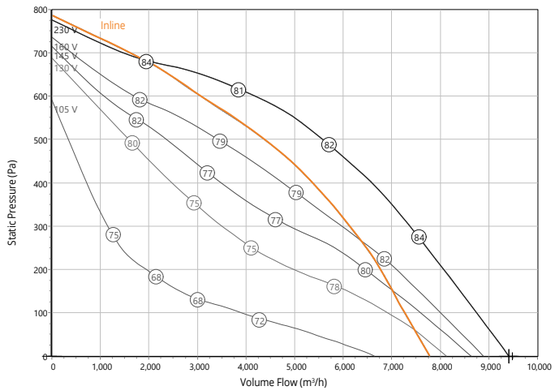


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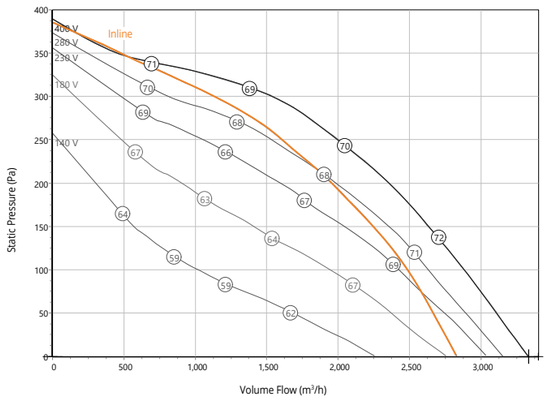
The performances shown are based on the centrifugal 90 degrees discharge, for the axial flow performance please contact our sales team.

Performance charts

ePOWERBOX AC 67-500-1 - BE500003



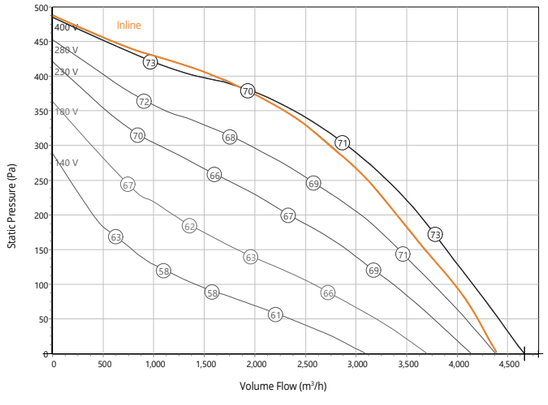
ePOWERBOX AC 50-355-3 - BE355018



Please note : -

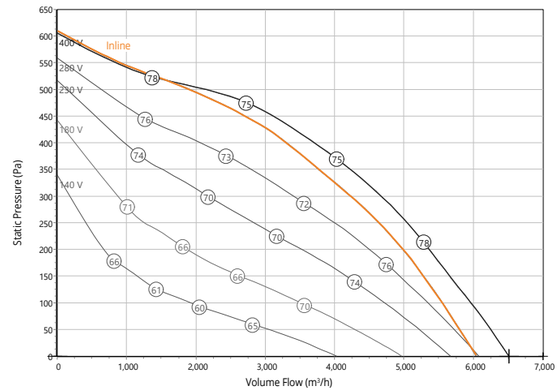
The performances shown are based on the centrifugal 90 degrees discharge, for the axial flow performance please contact our sales team.

ePOWERBOX AC 67-400-3 - BE400019

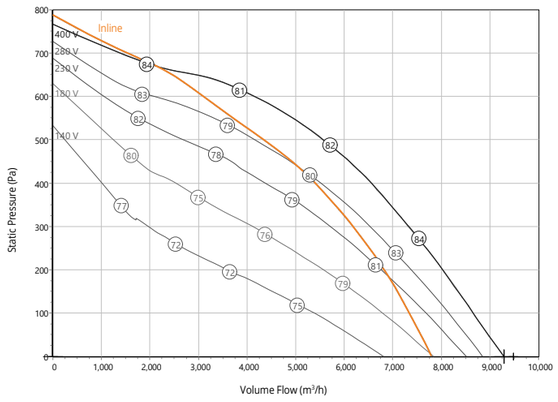


Performance charts

ePOWERBOX AC 67-450-3 - BE450019



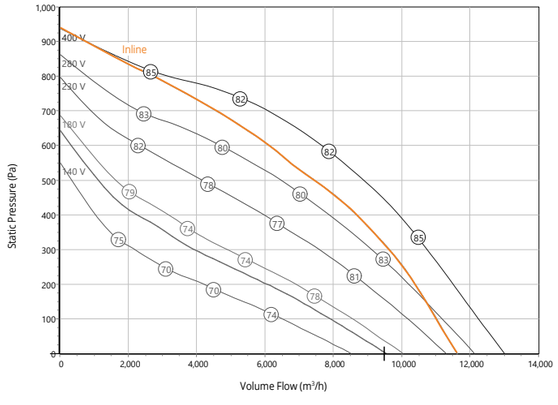
ePOWERBOX AC 67-500-3 - BE500004



Please note : -

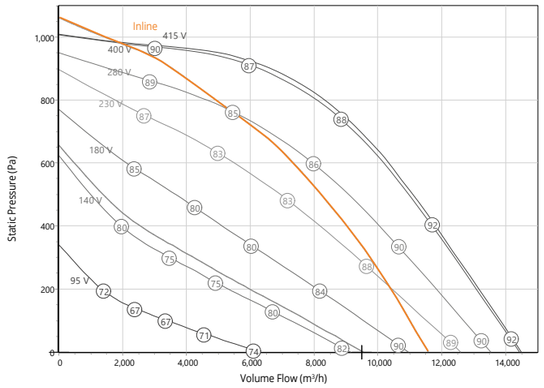
The performances shown are based on the centrifugal 90 degrees discharge, for the axial flow performance please contact our sales team.

ePOWERBOX AC 67-560-3 - BE560023



Performance charts

ePOWERBOX AC 80-630-3 - BI101234

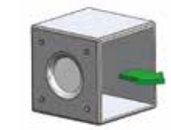


ePOWERBOX AC 102-710-3 - BI101237

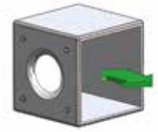
Please note : -

The performances shown are based on the centrifugal 90 degrees discharge, for the axial flow performance please contact our sales team.

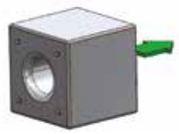
Installation guide



Centrifugal Discharge



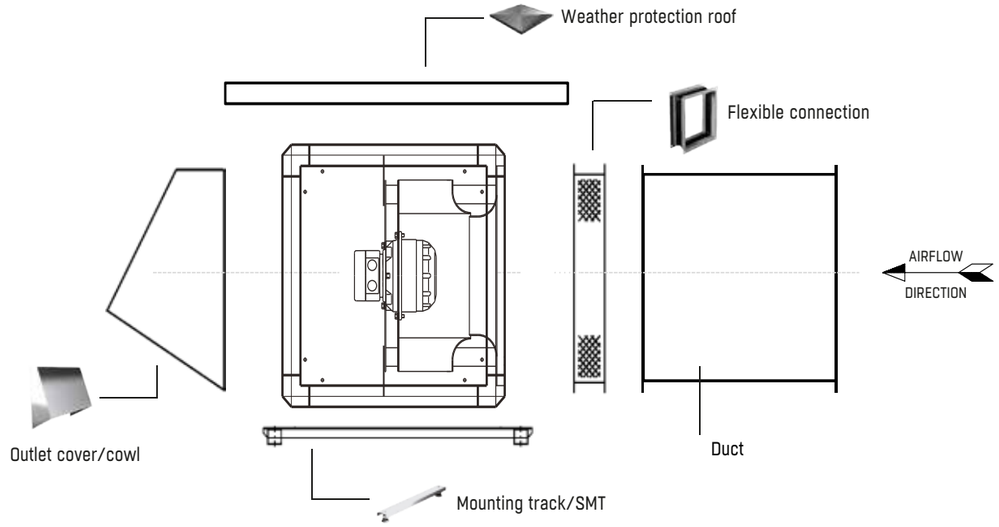
Centrifugal on both sides - free discharge



Axial Discharge

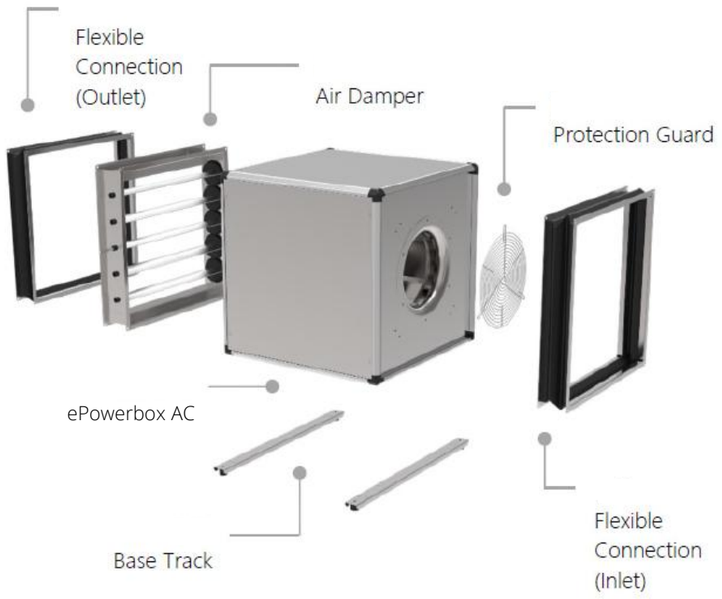
Outdoor installation PowerBox Estoc
Axial air flow (90° discharge available)

All accessories supplied separately

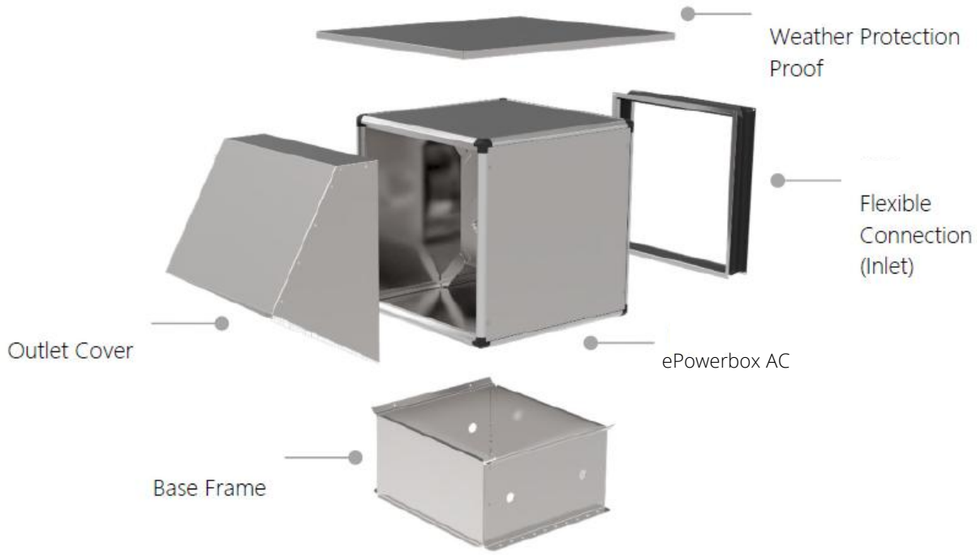


Construction Scheme

Indoor installation:



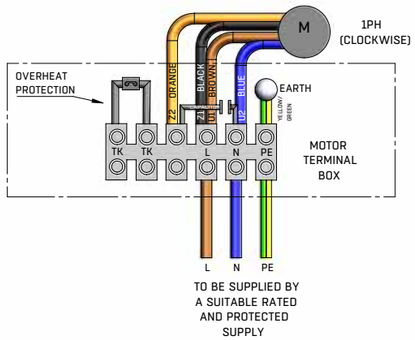
Outdoor installation:

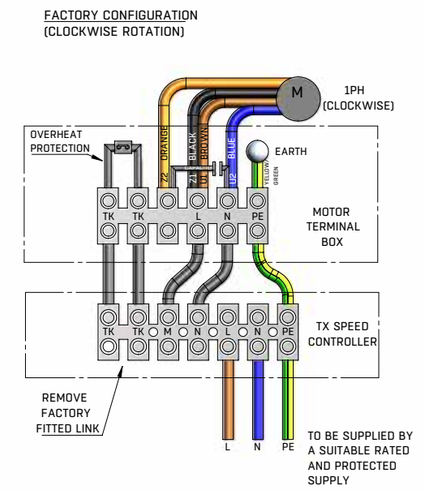


Powerbox Fans
ePOWERBOX AC

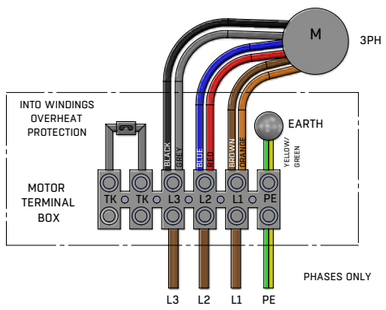
Wiring Diagrams - ePowerBox AC

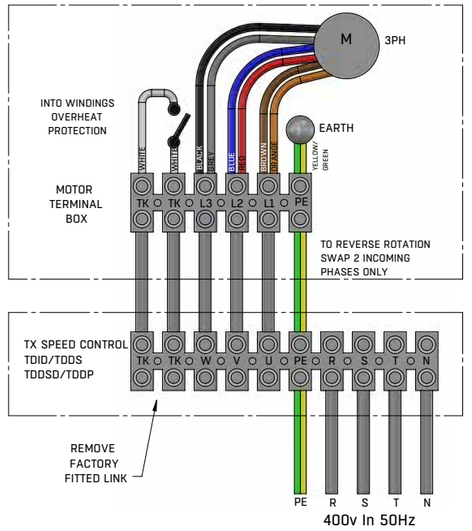
CD 3028





CD 3030





EC Version

PRODUCT FACTS

- Air flow up to 5.4 m3/s
- Static pressures up to 840 Pa
- Controllable EC motors
- Multiple outlet orientations

ELECTRICAL SUPPLY

220-240V/50Hz/1PH & 380-420V/50Hz/3PH

TEMPERATURE RANGE

Maximum temperature up to +55°C (depending on the model)

SIZES

315, 355, 400, 450, 500, 560, 630 and 710 mm

CONSTRUCTION

The ePowerBox EC casing is galvanized and made from sheet steel with with double chamber aluminum profiles and corners made of plastic and acoustic insulation made from fibre glass mats with a thickness of 20 mm. One side of the casing is open as standard.

IMPELLER

The ePowerBox EC has a backward curved centrifugal impellers made of plastic with galvanised steel support plates for those up to 560 mm. Fans with a diameter of 630 mm and larger have high efficiency backward curved centrifugal impellers made of aluminium.

MOTOR

The impellers together with the EC (electronically controlled) external rotor motors are dynamically balanced to quality standard G2,5 DIN ISO 19410.

SPEED CONTROLLER

Speed is variable using a 0-10 volt potentiometer.



PRODUCT CODE

ePowerBox EC 50-355-3

- ePowerBox EC - Product Name
- 50 = Box Size ie, 50 = 500mm; 67 = 670mm; 80 = 800mm; 102 = 1020mm
- 355 = Spigot Diameter size (mm)
- 1 = 1PH or 3 = 3PH 1020mm

ACCESSORIES

The range of accessories include dampers, flexible connectors, service doors, outlet covers, guards, side covering and insulating connections. A quick reference guide is shown below.


SOC


SWR


iFan


SFC


Mounting track/SMT


0-10 v Potentiometer

ErP COMPLIANT

220-240V/50Hz/1PH & 380-420V/50HZ/3PH

Performance Table

Product Code	m³/s @ Pa (Static)										
	0	100	200	300	400	500	600	700	800	900	1000
ePowerBox EC 50-315-1	0.75	0.67	0.59	0.48	0.25						
ePowerBox EC 50-355-1	1.13	1.04	0.93	0.82	0.66	0.16					
ePowerBox EC 67-400-1	1.34	1.22	1.09	0.91	0.56						
ePowerBox EC 67-450-1	2.03	1.91	1.79	1.66	1.49	1.29	0.98				

Product Code	m³/s @ Pa (Static)											
	0	100	200	300	400	500	600	700	800	900	1000	1100
ePowerBox EC 80-500-3	3.28	3.16	3.05	2.93	2.81	2.69	2.53	2.37	2.19	1.96	1.65	0.56
ePowerBox EC 80-560-3	4.07	3.93	3.76	3.59	3.44	3.27	3.07	2.84	2.54	2.18	1.44	
ePowerBox EC 102-630-3	4.31	4.11	3.86	3.60	3.30	2.93	2.37					
ePowerBox EC 102-710-3	5.25	4.92	4.65	4.32	3.90	3.32	1.90					

Product and Electrical Details

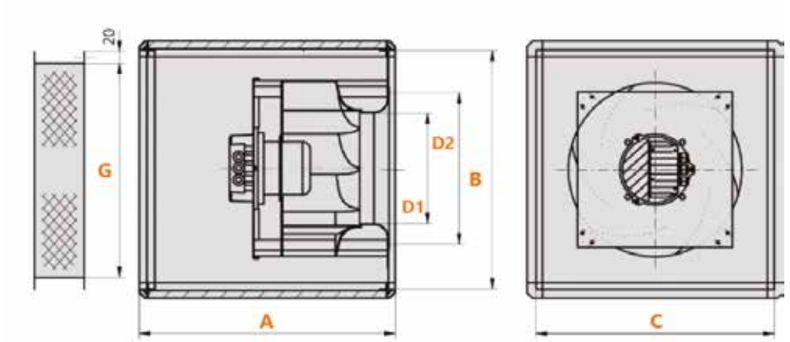
Product Code	Product Number	Speed rpm	Motor Frame	Electrical Supply	Electrical Current			Wiring Diagrams	**Speed Controllers	Maximum Operating Temp°C	Breakout
					Motor (kW)	Full Load Current (A)	Starting Current (A)		Potentio-meter		*Sound Level db(A) (3m)
ePowerBox EC 50-315-1	BE315005	1800	Integral	220-240 V/50 Hz/1 Ph	0.25	1.12	1.12	CD3011	0-10 V Pot	50	37
ePowerBox EC 50-355-1	BE355004	1715	Integral	220-240 V/50 Hz/1 Ph	0.46	2.04	2.04	CD3011	0-10 V Pot	40	37
ePowerBox EC 67-400-1	BE400008	1400	Integral	220-240 V/50 Hz/1 Ph	0.46	2.06	2.06	CD3011	0-10 V Pot	40	33
ePowerBox EC 67-450-1	BE450015	1550	Integral	220-240 V/50 Hz/1 Ph	1.03	4.63	4.63	CD3011	0-10 V Pot	40	41

Product Code	Product Number	Speed rpm	Motor Frame	Electrical Supply	Electrical Current			Wiring Diagrams	**Speed Controllers	Maximum Operating Temp°C	Breakout
					Motor (kW)	Full Load Current (A)	Starting Current (A)		Potentio-meter		*Sound Level db(A) (3m)
ePowerBox EC 80-500-3	BE500019	1800	Integral	380-420 V/50 Hz/3 Ph	2.69	4.15	4.15	CD3012	0-10 V Pot	60	48
ePowerBox EC 80-560-3	BE560017	1550	Integral	380-420 V/50 Hz/3 Ph	3.1	4.8	4.8	CD3012	0-10 V Pot	50	50
ePowerBox EC 102-630-3	BE630016	1100	Integral	380-420 V/50 Hz/3 Ph	2.39	3.71	3.71	CD3012	0-10 V Pot	60	50
ePowerBox EC 102-710-3	BE710014	940	Integral	380-420 V/50 Hz/3 Ph	2.66	4.13	4.13	CD3012	0-10 V Pot	60	51

*Sound power levels are average dBA at 3 metres distance over sphere, under free field conditions and are presented for comparative purposes only. Values shown are those at the mid-point of the performance curve.

** For speed controllers, please see pages 250-297. For ErP efficiency ratings and grades please refer to our Fan Selector for more information.

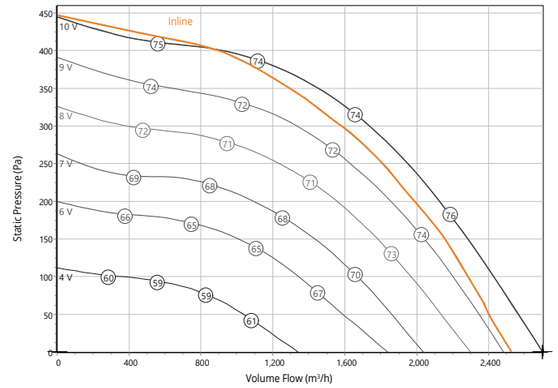
Drawings and Dimensions



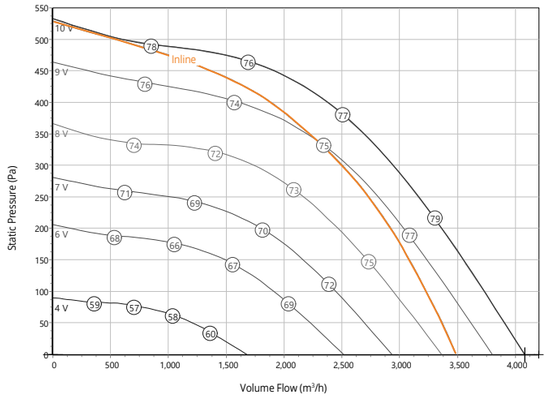
Product Code	A	B	C	D1	D2	G	Weight Max (kg)
ePowerbox EC 50-315	500	450	450	203	486	409	30
50-355	500	450	450	228	320	409	33
67-400	670	620	620	257	356	579	43
67-450	670	620	620	289	395	579	55
80-500	800	720	720	325	438	659	76
80-560	800	720	720	365	490	659	82
102-630	1020	940	940	410	541	879	113
102-710	1020	940	940	460	605	879	121

Performance charts

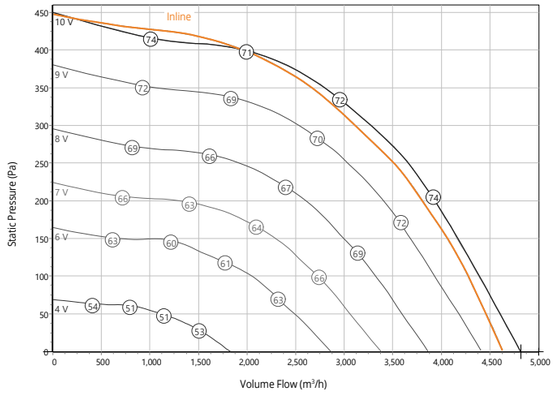
ePOWERBOX EC 50-315-1 - UB503159



ePOWERBOX EC 50-355-1 - UB503559



ePOWERBOX EC 67-400-1 - UB674059

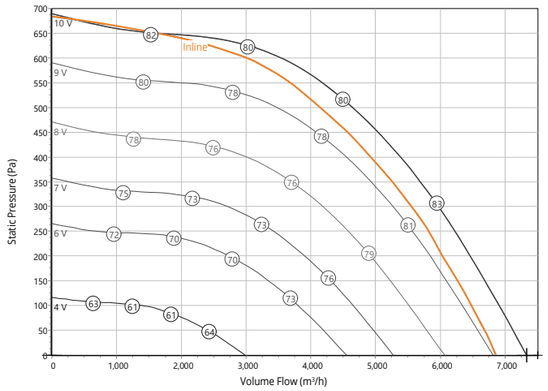


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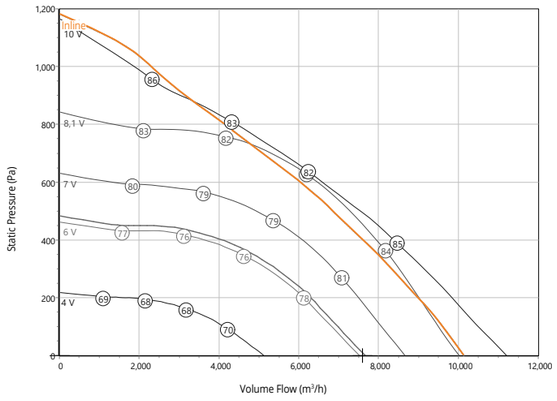
The performances shown are based on the centrifugal 90 degrees discharge, for the axial flow performance please contact our sales team.

Performance charts

ePOWERBOX EC 67-450-1 - UB674559



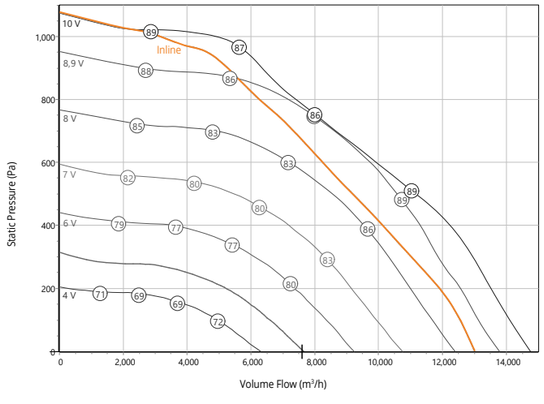
ePOWERBOX EC 80-500-3 - UB805069



Please note : -

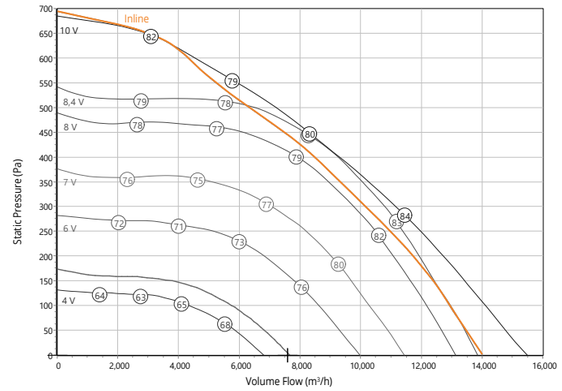
The performances shown are based on the centrifugal 90 degrees discharge, for the axial flow performance please contact our sales team.

ePOWERBOX EC 80-560-3 - UB805669

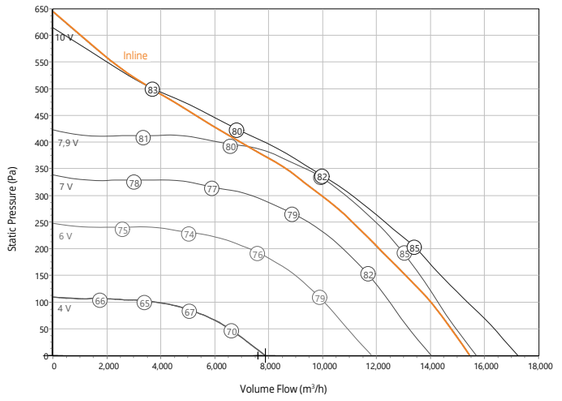


Performance charts

ePOWERBOX EC 102-630-3 - UB106369



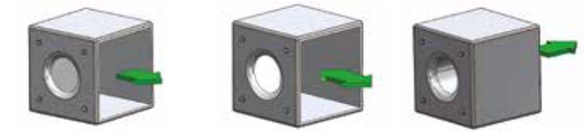
ePOWERBOX EC 102-710-3 - UB107169



Please note : -

The performances shown are based on the centrifugal 90 degrees discharge, for the axial flow performance please contact our sales team.

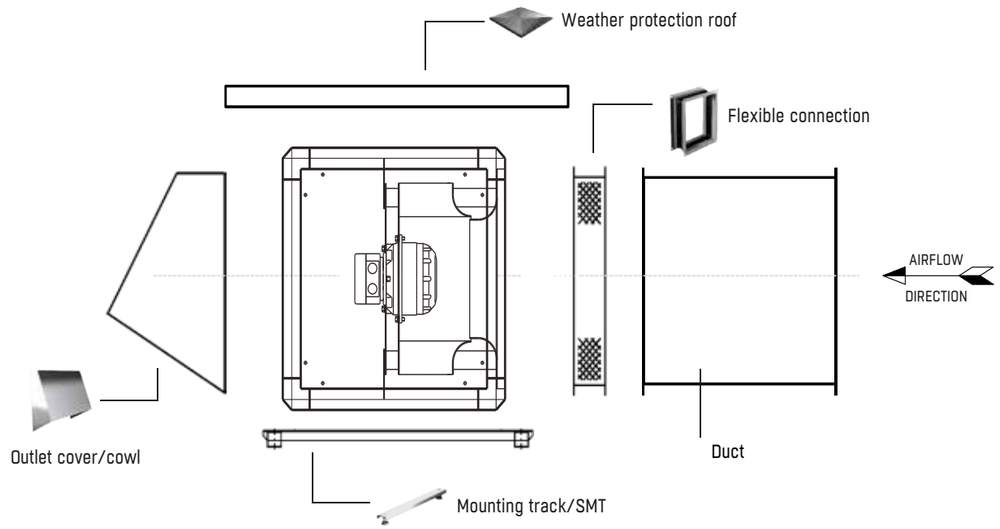
Installation guide



Centrifugal Discharge | Centrifugal on both sides - free discharge | Axial Discharge

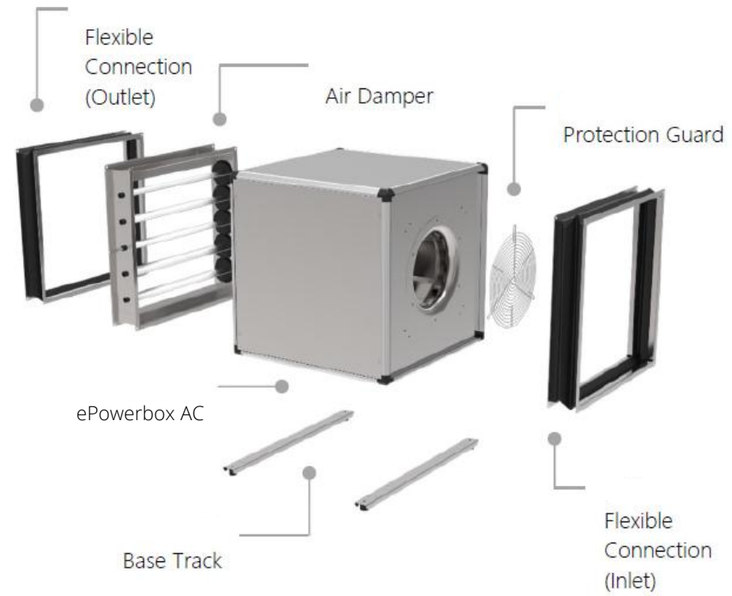
Outdoor installation ePowerBox EC
Axial air flow (900 discharge available)

All accessories supplied seperately

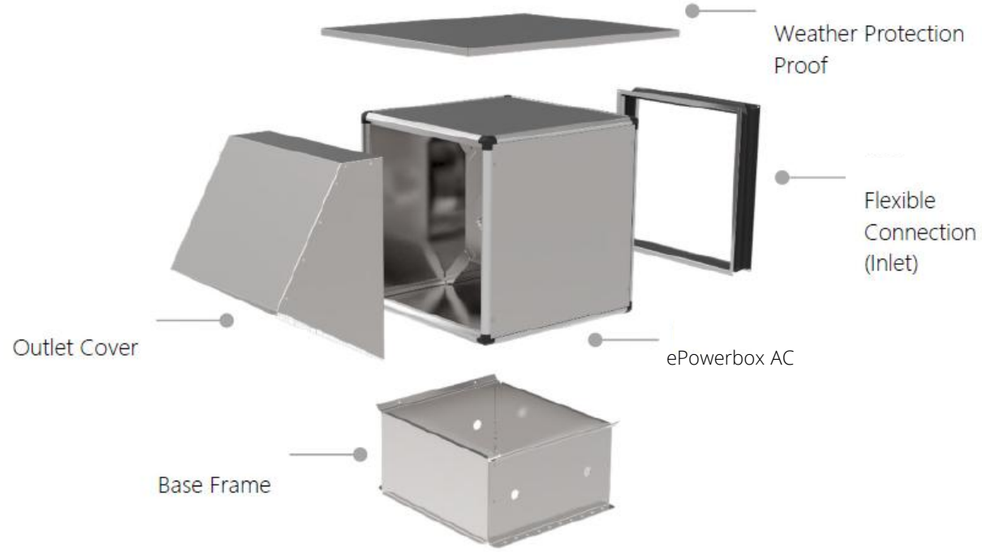


Construction Scheme

Indoor installation:

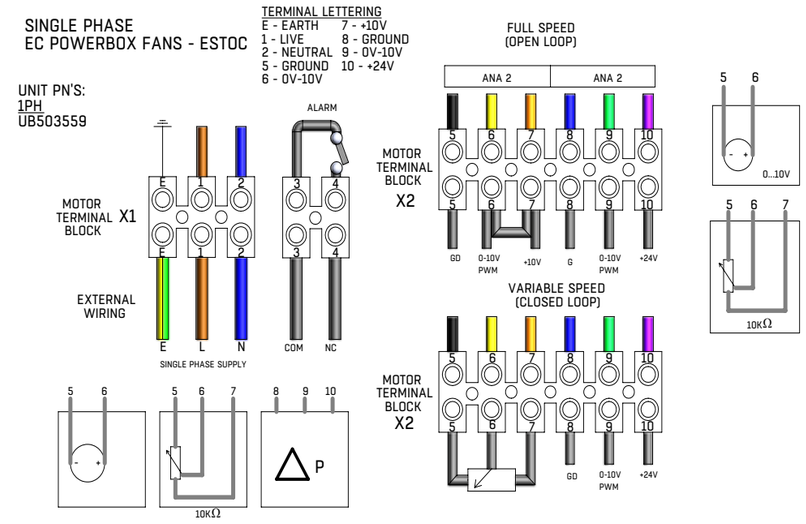


Outdoor installation:

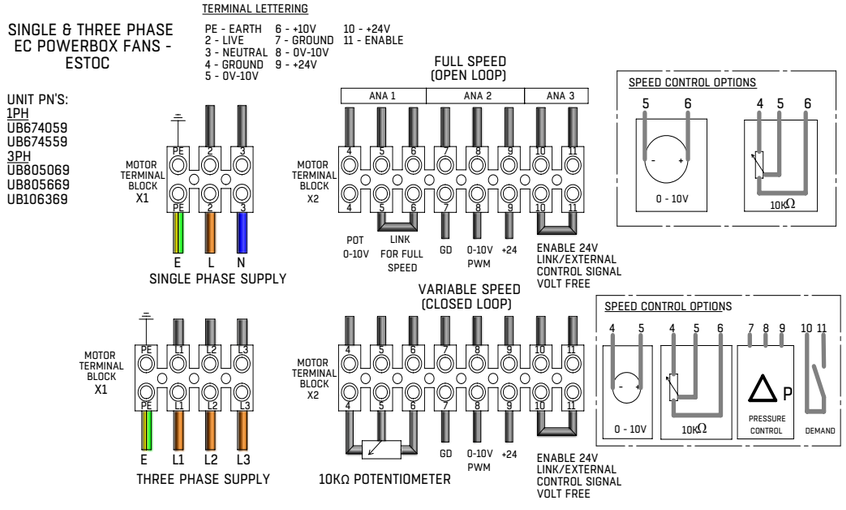


Wiring Diagrams - ePOWERBOX EC

CD3011



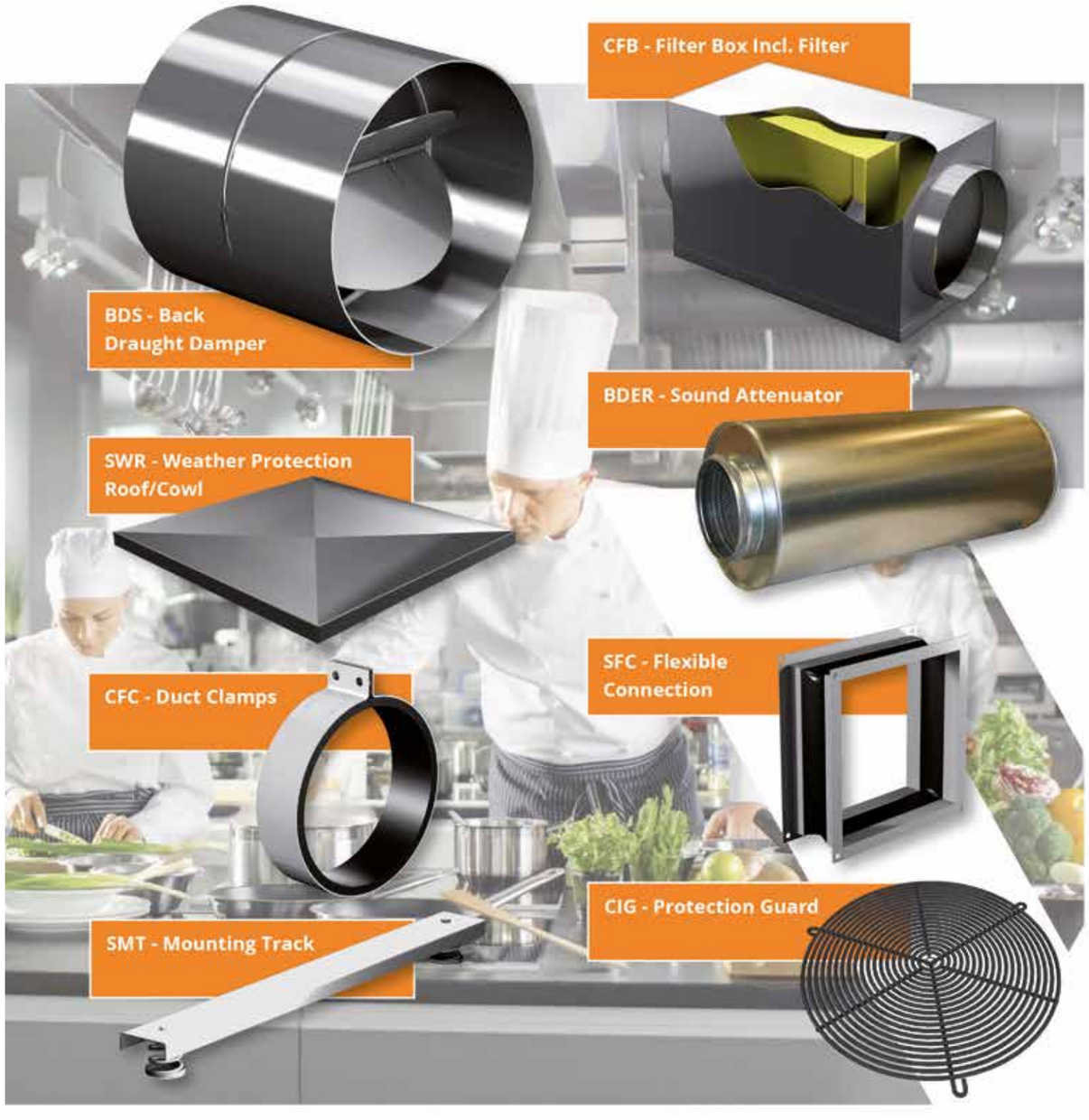
CD3012



BOX FAN
Accessories

A large number of box fan accessories are available which are suitable for connecting to various sizes of ducts, mounting at different locations, both internal and external, and also protecting the fans against extreme weather conditions.

Protection guards, filter with filter boxes and sound attenuators (for rectangular and circular connections) are available for ready supply wherever applicable.



EC Version

PRODUCT FACTS

- Air flow up to 3.3 m3/s
- Static pressures up to 877 Pa
- Speed controllable external rotor motors
- Horizontal or vertical mounting
- Low profile ideal for mounting in ceiling voids
- The fans are suitable for mounting internally
- Speed Controllable (0-10V) via potentiometer

ELECTRICAL SUPPLY

220-240V/50Hz/1f & 380-420V/50Hz/3f

TEMPERATURE RANGE

Maximum temperature from +45°C to +50°C (depending on the model)

SIZES

315, 355, 400, 450, 500 & 560 mm

CONSTRUCTION

The Katana is a centrifugal in-line duct fan which can be mounted in any position. Constructed from galvanized sheet metal. The flange is drilled to allow for ease of installation for mounting in any position. Equipped with complete swing-out motorised impellers for easy inspection cleaning and maintenance. The fans are driven by an external rotor EC motor, fitted in the centrifugal impeller.

IMPELLER

The Katana has a backward curved centrifugal impeller.

MOTOR

External rotor motor directly coupled class F, IP54. Motor-impeller dynamically balanced according to ISO 1940. The integrated motor protection is signaled via alarm relay.

SPEED CONTROLLER

Speed is 100% infinitely variable using 0-10 volt potentiometer.



PRODUCT CODE

Katana EC 315-2-1(A)

- Katana - Product Name
- 315 = Impeller diameter size (mm)
- 2 = 2 pole or 4 pole
- 1 = 1PH or 3 = 3PH

ACCESSORIES

The range of accessories include duct clamps, filters, guards, dampers, silencers, mounting brackets, shutters. A quick reference guide is shown below.



RSA



RFC



RCF



RLS



RAD



RFB



0-10v Potentiometer

220-240V/50HZ/1PHF & 380-420V/50HZ/3PH

ErP COMPLIANT

Performance Table

Product Code	m³/s @ Pa (Static)									
	0	100	200	300	400	500	600	700	800	900
Katana EC 315-1	0.57	0.51	0.44	0.34	0.07					
Katana EC 355-1	0.95	0.85	0.76	0.63	0.35					
Katana EC 400-1	1.35	1.26	1.17	1.08	0.97	0.83	0.61			
Katana EC 450-1	1.55	1.44	1.33	1.20	1.05	0.87	0.56			

Product Code	m³/s @ Pa (Static)									
	0	100	200	300	400	500	600	700	800	900
Katana EC 355-3	1.10	1.02	0.94	0.86	0.76	0.61	0.34			
Katana EC 400-3	1.36	1.28	1.19	1.09	0.98	0.85	0.66	0.19		
Katana EC 450-3	1.80	1.71	1.62	1.52	1.41	1.29	1.15	0.99	0.81	0.01
Katana EC 500-3	2.67	2.56	2.44	2.30	2.14	1.99	1.75	1.51	1.30	0.86
Katana EC 560-3	3.33	3.19	3.05	2.90	2.71	2.51	2.24	1.93	1.50	0.24

Product and Electrical Details

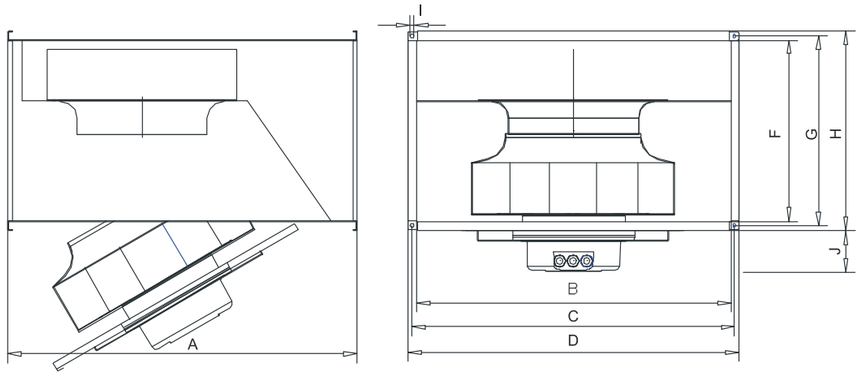
Product Code	Part Number	Speed rpm	Motor Frame	Electrical Supply	Motor Details			Speed Controller	Maximum Operating Temp °C	Breakout
					Motor (kW)	Nominal Current (A)	Motor Eff. Rating			Sound Level at 3m (dbA)
Katana EC 315-1	RE315001	1650	Integral	220-240V/ 50Hz/ 1ph	0.21	0.96	IE4	0-10V Potentiometer	50	40
Katana EC 355-1	RE355052	1500	Integral	220-240V/ 50Hz/ 1ph	0.36	1.6	IE4	0-10V Potentiometer	50	37
Katana EC 400-1	RE400003	1700	Integral	220-240V/ 50Hz/ 1ph	0.8	3.55	IE4	0-10V Potentiometer	50	46
Katana EC 450-1	RE450023	1450	Integral	220-240V/ 50Hz/ 1ph	0.84	3.72	IE4	0-10V Potentiometer	50	46

Product Code	Part Number	Speed rpm	Motor Frame	Electrical Supply	Motor Details			Speed Controller	Maximum Operating Temp °C	Breakout
					Motor (kW)	Nominal Current (A)	Motor Eff. Rating			Sound Level at 3m (dbA)
Katana EC 355-3	RE355007	1800	Integral	380-420V/ 50Hz/ 3ph	0.6	1.2	IE4	0-10V Potentiometer	50	50
Katana EC 400-3	RE400005	1700	Integral	380-420V/ 50Hz/ 3ph	0.8	1.5	IE4	0-10V Potentiometer	50	49
Katana EC 450-3	RE450005	1700	Integral	380-420V/ 50Hz/ 3ph	1.3	2.3	IE4	0-10V Potentiometer	50	47
Katana EC 500-3	RE500004	1580	Integral	380-420V/ 50Hz/ 3ph	1.83	2.88	IE4	0-10V Potentiometer	60	45
Katana EC 560-3	RE560004	1440	Integral	380-420V/ 50Hz/ 3ph	2.47	3.85	IE4	0-10V Potentiometer	60	42

*Sound power levels are average dBA at 3 metres distance over sphere, under free field conditions and are presented for comparative purposes only. Values shown are those at the mid-point of the performance curve.

** For speed controllers, please see pages 250-297. For ErP efficiency ratings and grades please refer to our Fan Selector for more information.

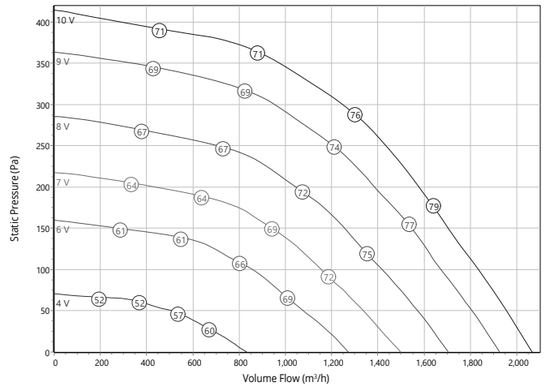
Drawing and Dimensions



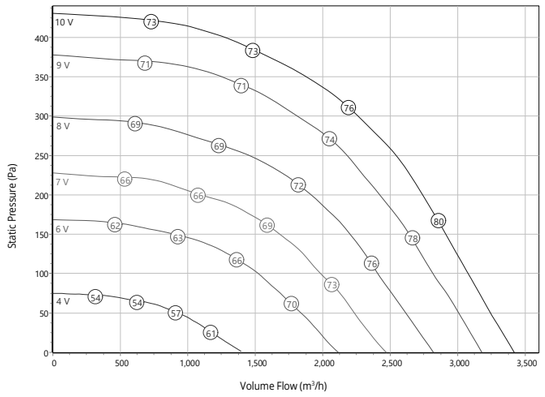
Product Code	A	B	C	D	F	G	H	I	J	Weight max (kg)
KATANA EC 315-1	700	600	620	640	350	370	391	9	81	36
KATANA EC 355-1	700	600	620	640	350	370	391	9	52	36.5
KATANA EC 355-3	700	600	620	640	350	370	391	9	52	36.5
KATANA EC 400-3	700	600	620	640	350	370	391	9	84	36.5
KATANA EC 450-3	780	700	720	740	400	420	442	9	73	51
KATANA EC 500-3	880	800	820	840	500	520	542	9	88	78
KATANA EC 560-3	982	1000	1020	1040	500	520	543	9	88	91

Performance charts

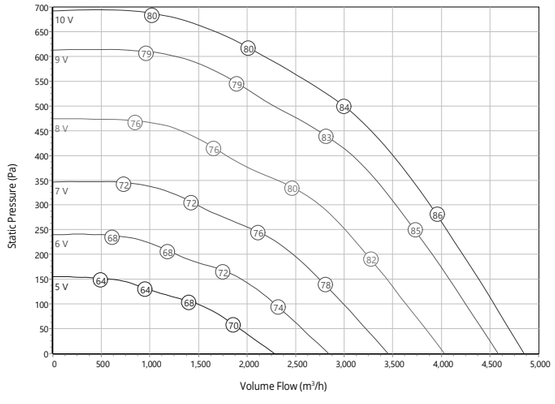
KATANA EC 315-1 - RE315001



KATANA EC 355-1 - RE355052



KATANA EC 400-1 - RE400003

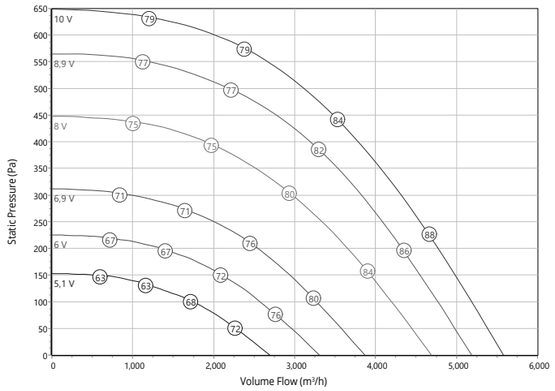


Please note : -

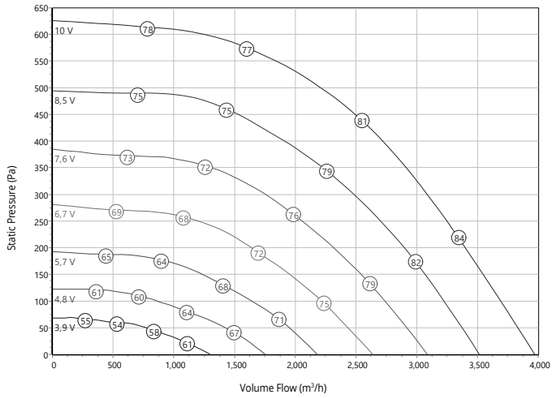
The performances shown are based on the centrifugal 90 degrees discharge, for the axial flow performance please contact our sales team.

Performance charts

KATANA EC 450-1 - RE450023



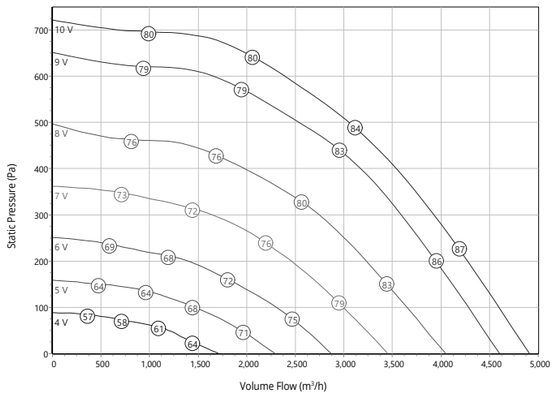
KATANA EC 355-3 - RE355007



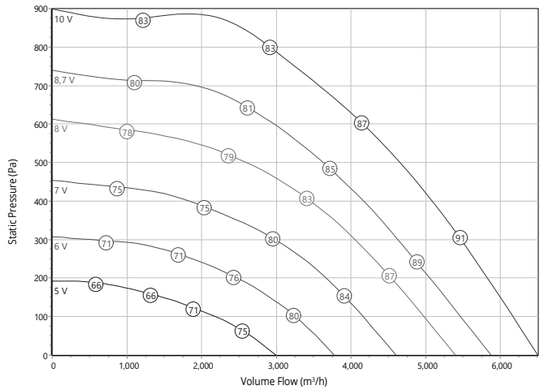
Please note : -

The performances shown are based on the centrifugal 90 degrees discharge, for the axial flow performance please contact our sales team.

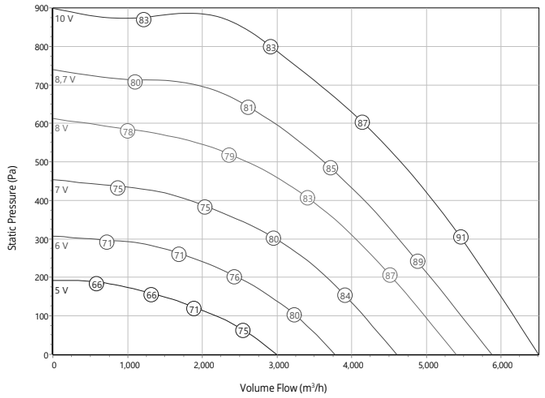
Katana EC 400-3 - RE400005



KATANA EC 450-3 - RE450005



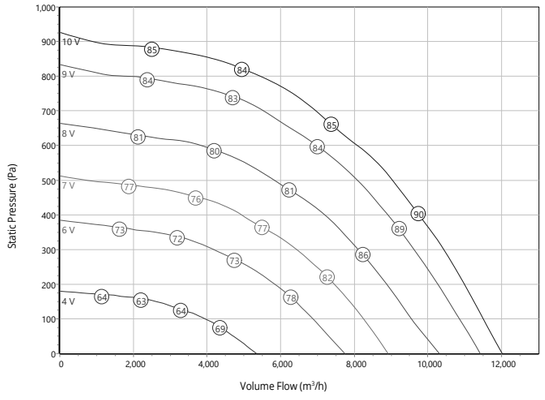
KATANA EC 500-3 - RE500004



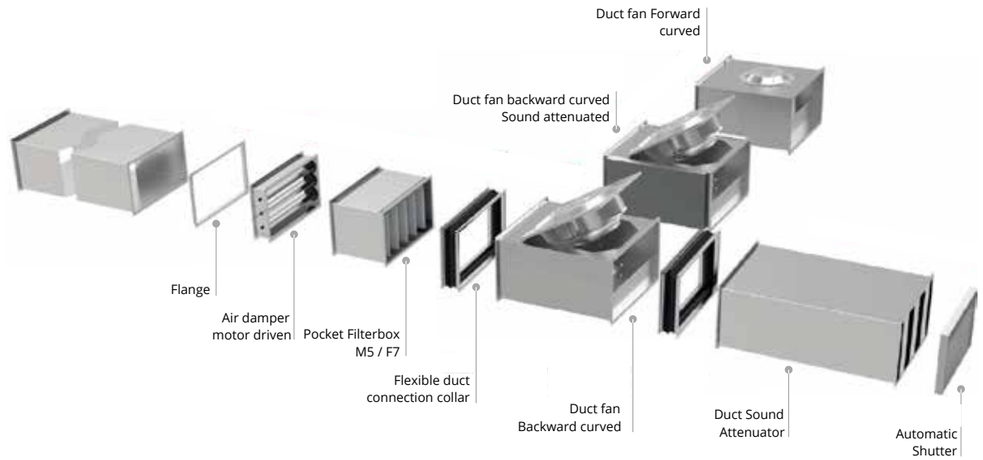
Please note : -

The performances shown are based on the centrifugal 90 degrees discharge, for the axial flow performance please contact our sales team.

KATANA EC 560-3 - RE560004

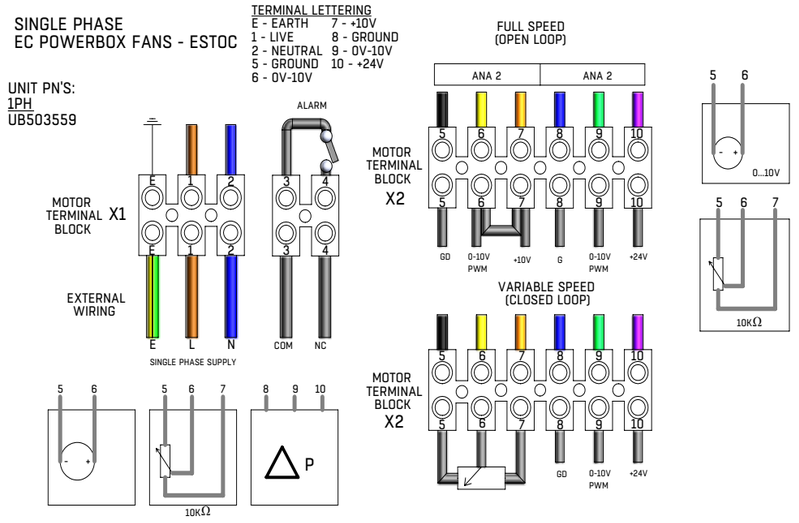


Construction Scheme

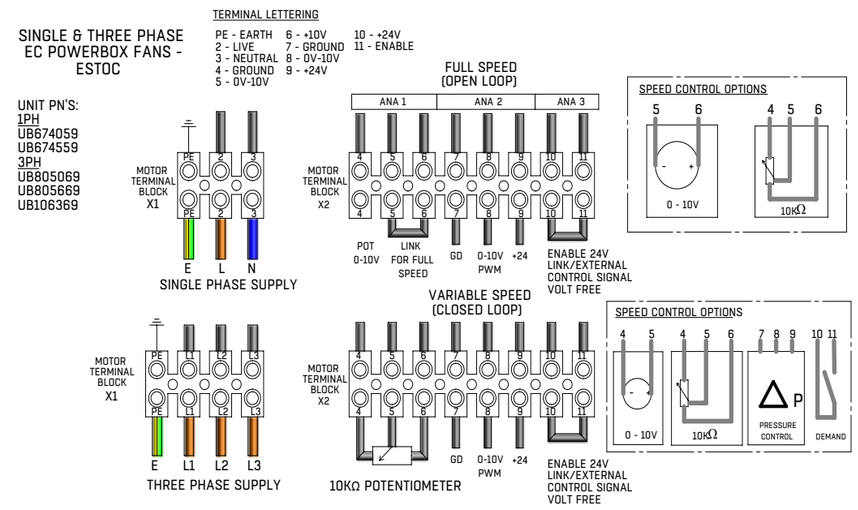


Wiring Diagrams - KATANA

CD3011



CD3012



WAM_DC_00061GB_Box Fans Catalogue _BR_20230124_R0_.pdf

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www.woodsairmovement.com

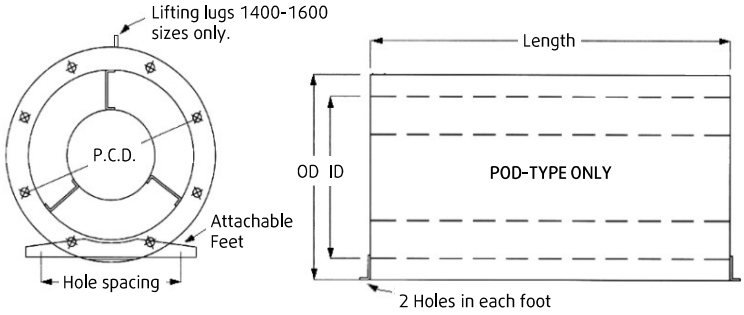
CYLINDRICAL SILENCERS (TYPE LP AND HP)

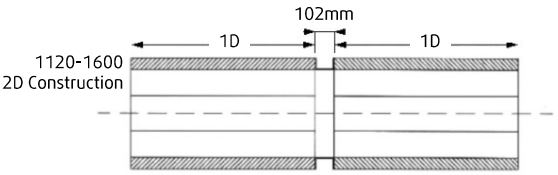
Features

- Casing are rolled, pre-galvanised sheet steel with spun end rings incorporating tapped inserts for fixing.
- Absorbent material is acoustic grade mineral fibre with a layer of erosion resistant facing and is further protected by a sheet of pre-galvanised perforated steel.
- Moisture resistant lining available for wet conditions or critically clean applications.
- Type LP silencer bore diameters range from 315mm to 1600mm in lengths of equal to or twice the bore diameter (1D or 2D). Pressure loss for type LP silencers is the same as a plain duct.
- Type HP silencers have a centrally mounted absorbent pod in the airway for increased attenuation.



Dimensions





In metric

Metric (mm)									Weight (kg)			
Sizes		No. of Holes	P.C.D.	Thread	Mounting Foot		Length		Type LP		Type HP	
ID	OD				Holes Dia.	Spacing	1D	2D	1D	2D	1D	2D
315	415	8	355	M8	10	265	315	630	10	17	13	19
355	455	8	395	M8	10	305	355	710	12	20	15	24
400	500	8	450	M8	12	350	400	800	15	25	18	30
450	600	8	500	M8	12	400	450	900	20	33	24	39
500	650	12	560	M8	12	450	500	1000	25	41	29	48
560	710	12	620	M8	12	510	560	1120	30	50	35	58
630	780	12	690	M8	12	580	630	1260	35	61	42	72
710	860	16	770	M8	12	660	710	1420	44	76	53	90
800	1000	16	860	M8	12	750	800	1600	55	96	66	116
900	1100	16	970	M12	14	850	900	1800	70	129	84	150
1000	1200	16	1070	M12	14	950	1000	2000	82	157	100	182
1120	1320	20	1160	M12	14	1070	1120	2342	100	211	118	247
1250	1450	20	1320	M12	18	1150	1250	2540	127	266	147	306
1400	1600	20	1470	M12	18	1300	1400	2902	193	399	220	453
1600	1800	24	1680	M16	18	1500	1600	3302	311	637	362	739

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Tel : +603-6157 1177
Fax : +603-6156 6618

Email : info@systemair.my
Website : www.systemair.com

As part of ongoing research of product development & improvement, Systemair reserves the right to make any changes in design & specification to products without notice or obligation and to change or discontinue models.

Acoustic Performance

TYPE LP Attenuation

Metric (mm)									
Bore Dia. mm	Length	Octave – Band Mid Frequencies (Hz)							
		63	125	250	500	1000	2000	4000	8000
315	1D	1	2	4	9	11	10	9	7
	2D	1	2	5	11	16	12	11	10
355	1D	1	2	4	10	12	10	9	7
	2D	1	3	6	13	17	14	11	11
400	1D	1	3	5	10	13	11	9	8
	2D	2	4	7	14	18	15	11	12
450	1D	2	3	6	12	13	11	10	6
	2D	3	4	8	17	18	15	11	11
500	1D	2	3	6	13	14	10	10	5
	2D	3	4	8	19	18	14	11	10
560	1D	2	4	7	14	14	9	10	7
	2D	3	5	9	19	18	14	12	11
630	1D	2	5	7	15	13	8	9	8
	2D	3	6	9	19	19	14	13	12
710	1D	2	5	7	15	13	9	9	8
	2D	4	6	9	19	17	13	12	11
800	1D	3	5	8	16	12	9	9	8
	2D	4	6	10	19	15	12	11	10
900	1D	3	5	10	17	13	11	10	8
	2D	4	6	12	19	15	12	11	10
1000	1D	3	5	11	16	11	10	8	9
	2D	4	6	13	19	14	12	11	11
1120	1D	4	5	11	17	11	9	8	8
	2D	4	6	13	19	14	12	11	8
1250	1D	4	6	12	17	10	9	8	7
	2D	4	6	14	19	14	11	11	9
1400	1D	4	6	12	16	10	8	7	6
	2D	4	7	14	18	13	10	10	8
1600	1D	4	7	12	16	10	8	7	6
	2D	4	8	15	18	12	10	9	7

TYPE HP Attenuation

Metric (mm)									
Bore Dia. mm	Length	Octave – Band Mid Frequencies (Hz)							
		63	125	250	500	1000	2000	4000	8000
315	1D	2	5	5	9	18	20	18	15
	2D	2	6	6	12	20	25	20	17
355	1D	2	5	6	9	18	22	19	16
	2D	2	6	7	13	25	27	21	17
400	1D	2	6	6	10	19	24	20	17
	2D	3	7	8	14	29	29	23	18
450	1D	2	4	7	13	20	23	22	17
	2D	2	5	9	16	29	29	21	20
500	1D	2	3	8	16	21	22	21	17
	2D	2	4	10	20	29	30	20	26
560	1D	3	5	8	16	20	18	19	15
	2D	4	5	10	20	29	28	21	23
630	1D	3	5	8	15	19	16	14	12
	2D	5	6	10	19	29	25	21	20
710	1D	3	5	8	15	19	15	14	12
	2D	5	6	10	20	26	23	18	17
800	1D	4	5	8	16	19	15	14	13
	2D	5	7	11	22	23	21	16	14
900	1D	4	5	9	17	19	15	14	13
	2D	5	7	12	24	23	21	16	15
1000	1D	5	5	12	18	19	15	14	13
	2D	5	7	13	26	24	20	16	16
1120	1D	5	7	11	19	18	14	13	12
	2D	5	8	13	25	23	18	16	13
1250	1D	5	8	12	19	17	14	12	10
	2D	5	8	14	25	17	17	17	12
1400	1D	5	8	12	18	16	13	11	9
	2D	5	9	15	23	22	17	15	10
1600	1D	5	8	13	17	16	13	11	8
	2D	6	10	17	21	20	17	14	9

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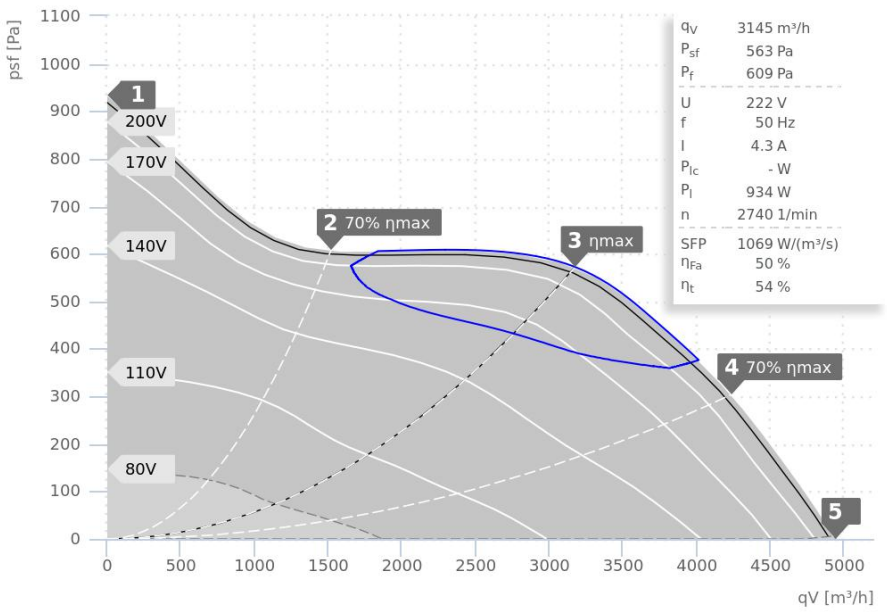
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DATA SHEET

EL 355 E2 01 | 112757



— **ErP compliant range**

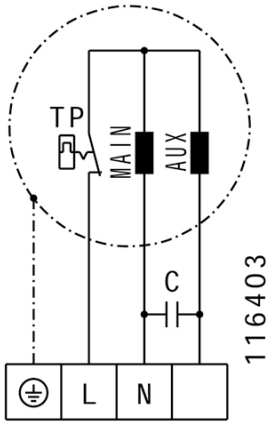


- Diagonal impeller with downstream three-dimensional guide vanes
- Galvanized metal housing
- Speed controllable
- Integrated thermostatic switch
- Including mounting bracket

		Operating Point	1	2	3	4	5
Current I	A		3,7	3,0	4,2	4,2	3,8
Power consumption P_1	W		842	694	955	957	856
RPM n	1/min		2802	2866	2776	2776	2810
SWL inlet L_{WA5}	dB(A)		88	83	79	80	84
SWL outlet L_{WA6}	dB(A)		91	87	83	85	87
SWL casing break out L_{WA2}	dB(A)		72	69	63	64	66

Sound power (L_W) dB(A)		Medium Frequency Band								
		Σ	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**
Inlet	L_{WA5}	79	-	47	65	69	74	73	71	64
Outlet	L_{WA6}	83	-	54	69	76	80	77	72	63
Casing	L_{WA2}	63	-	45	53	54	58	56	55	44

EL 355 E2 01 | 112757	
Voltage U_N	230 V 1~
Current I_{max}	5,4 A
Ambient temperature t_A	45 °C
Medium temperatures t_M	45 °C
Speed Control	V
Motor protection	TMI
Insulation class motor	F
Weight	17,3 kg
Poles	2
IP motor	IP00
IP terminal box	IP44
IP complete unit	-
Min. operating temperature	-25 °C



Print 17.09.2020

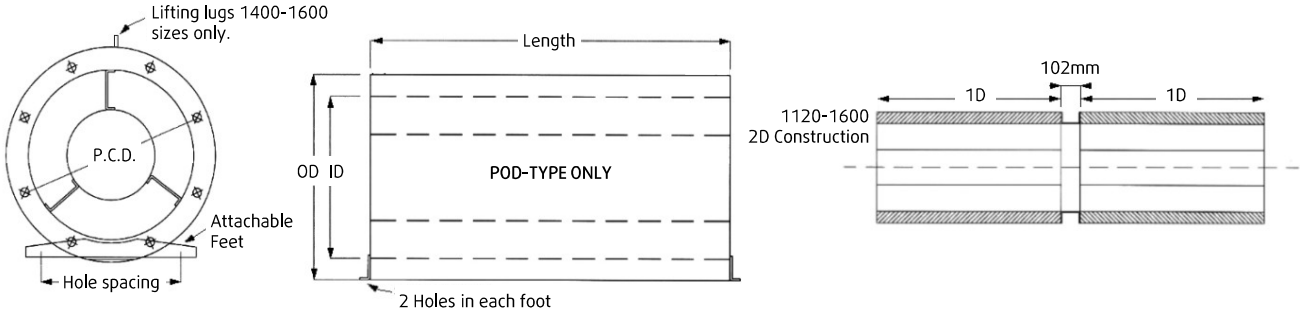
CYLINDRICAL SILENCERS (TYPE LP AND HP)

Features

- Casing are rolled, pre-galvanised sheet steel with spun end rings incorporating tapped inserts for fixing.
- Absorbent material is acoustic grade mineral fibre with a layer of erosion resistant facing and is further protected by a sheet of pre-galvanised perforated steel.
- Moisture resistant lining available for wet conditions or critically clean applications.
- Type LP silencer bore diameters range from 315mm to 1600mm in lengths of equal to or twice the bore diameter (1D or 2D). Pressure loss for type LP silencers is the same as a plain duct.
- Type HP silencers have a centrally mounted absorbent pod in the airway for increased attenuation.



Dimensions



In metric

Metric (mm)									Weight (kg)			
Sizes		No. of Holes	P.C.D.	Thread	Mounting Foot		Length		Type LP		Type HP	
ID	OD				Holes Dia.	Spacing	1D	2D	1D	2D	1D	2D
315	415	8	355	M8	10	265	315	630	10	17	13	19
355	455	8	395	M8	10	305	355	710	12	20	15	24
400	500	8	450	M8	12	350	400	800	15	25	18	30
450	600	8	500	M8	12	400	450	900	20	33	24	39
500	650	12	560	M8	12	450	500	1000	25	41	29	48
560	710	12	620	M8	12	510	560	1120	30	50	35	58
630	780	12	690	M8	12	580	630	1260	35	61	42	72
710	860	16	770	M8	12	660	710	1420	44	76	53	90
800	1000	16	860	M8	12	750	800	1600	55	96	66	116
900	1100	16	970	M12	14	850	900	1800	70	129	84	150
1000	1200	16	1070	M12	14	950	1000	2000	82	157	100	182
1120	1320	20	1160	M12	14	1070	1120	2342	100	211	118	247
1250	1450	20	1320	M12	18	1150	1250	2540	127	266	147	306
1400	1600	20	1470	M12	18	1300	1400	2902	193	399	220	453
1600	1800	24	1680	M16	18	1500	1600	3302	311	637	362	739

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Acoustic Performance

TYPE LP Attenuation

Metric (mm)									
Bore Dia. mm	Length	Octave – Band Mid Frequencies (Hz)							
		63	125	250	500	1000	2000	4000	8000
315	1D	1	2	4	9	11	10	9	7
	2D	1	2	5	11	16	12	11	10
355	1D	1	2	4	10	12	10	9	7
	2D	1	3	6	13	17	14	11	11
400	1D	1	3	5	10	13	11	9	8
	2D	2	4	7	14	18	15	11	12
450	1D	2	3	6	12	13	11	10	6
	2D	3	4	8	17	18	15	11	11
500	1D	2	3	6	13	14	10	10	5
	2D	3	4	8	19	18	14	11	10
560	1D	2	4	7	14	14	9	10	7
	2D	3	5	9	19	18	14	12	11
630	1D	2	5	7	15	13	8	9	8
	2D	3	6	9	19	19	14	13	12
710	1D	2	5	7	15	13	9	9	8
	2D	4	6	9	19	17	13	12	11
800	1D	3	5	8	16	12	9	9	8
	2D	4	6	10	19	15	12	11	10
900	1D	3	5	10	17	13	11	10	8
	2D	4	6	12	19	15	12	11	10
1000	1D	3	5	11	16	11	10	8	9
	2D	4	6	13	19	14	12	11	11
1120	1D	4	5	11	17	11	9	8	8
	2D	4	6	13	19	14	12	11	8
1250	1D	4	6	12	17	10	9	8	7
	2D	4	6	14	19	14	11	11	9
1400	1D	4	6	12	16	10	8	7	6
	2D	4	7	14	18	13	10	10	8
1600	1D	4	7	12	16	10	8	7	6
	2D	4	8	15	18	12	10	9	7

TYPE HP Attenuation

Metric (mm)									
Bore Dia. mm	Length	Octave – Band Mid Frequencies (Hz)							
		63	125	250	500	1000	2000	4000	8000
315	1D	2	5	5	9	18	20	18	15
	2D	2	6	6	12	20	25	20	17
355	1D	2	5	6	9	18	22	19	16
	2D	2	6	7	13	25	27	21	17
400	1D	2	6	6	10	19	24	20	17
	2D	3	7	8	14	29	29	23	18
450	1D	2	4	7	13	20	23	22	17
	2D	2	5	9	16	29	29	21	20
500	1D	2	3	8	16	21	22	21	17
	2D	2	4	10	20	29	30	20	26
560	1D	3	5	8	16	20	18	19	15
	2D	4	5	10	20	29	28	21	23
630	1D	3	5	8	15	19	16	14	12
	2D	5	6	10	19	29	25	21	20
710	1D	3	5	8	15	19	15	14	12
	2D	5	6	10	20	26	23	18	17
800	1D	4	5	8	16	19	15	14	13
	2D	5	7	11	22	23	21	16	14
900	1D	4	5	9	17	19	15	14	13
	2D	5	7	12	24	23	21	16	15
1000	1D	5	5	12	18	19	15	14	13
	2D	5	7	13	26	24	20	16	16
1120	1D	5	7	11	19	18	14	13	12
	2D	5	8	13	25	23	18	16	13
1250	1D	5	8	12	19	17	14	12	10
	2D	5	8	14	25	17	17	17	12
1400	1D	5	8	12	18	16	13	11	9
	2D	5	9	15	23	22	17	15	10
1600	1D	5	8	13	17	16	13	11	8
	2D	6	10	17	21	20	17	14	9

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KITCHEN EXTRACT

ESP RANGE

1500 | 3000 | 4500 | 6000

purifiedair®

COMMERCIAL KITCHEN FILTRATION EXPERTS

Purified Air Ltd. has been manufacturing and servicing market-leading technology to filter and control oil, grease, smoke and odour from commercial kitchens since 1984.

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ESP Technology 03
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Benefits of ESP 05
Technical Specification 06

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Our Coverage

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Contact Details

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.

UL CERTIFIED

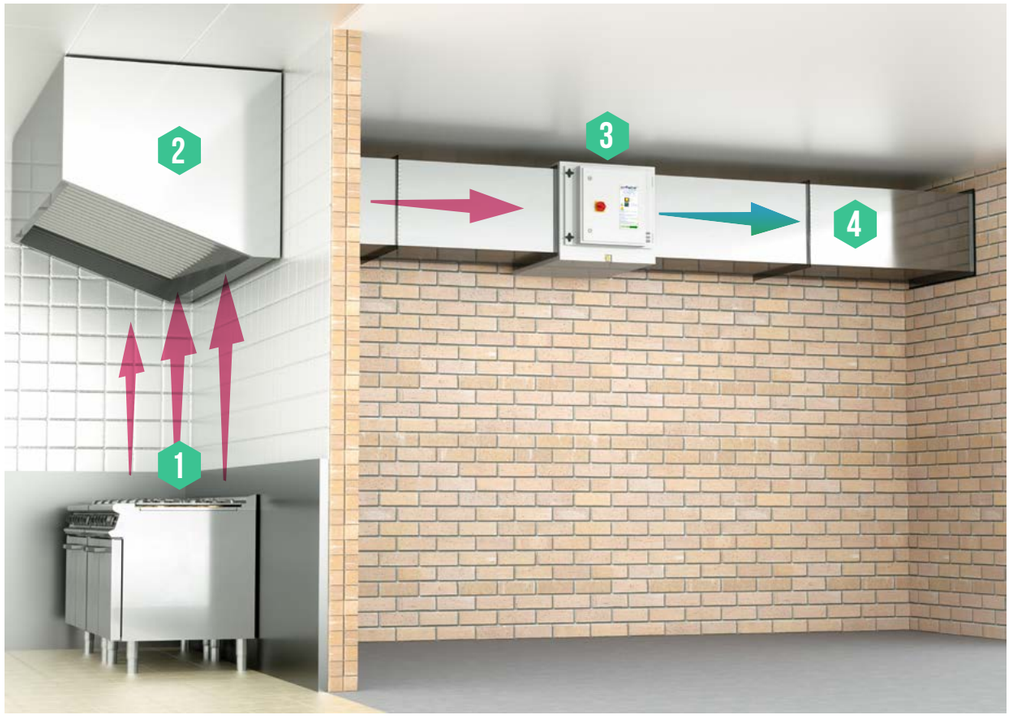
KEY FEATURES

- 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

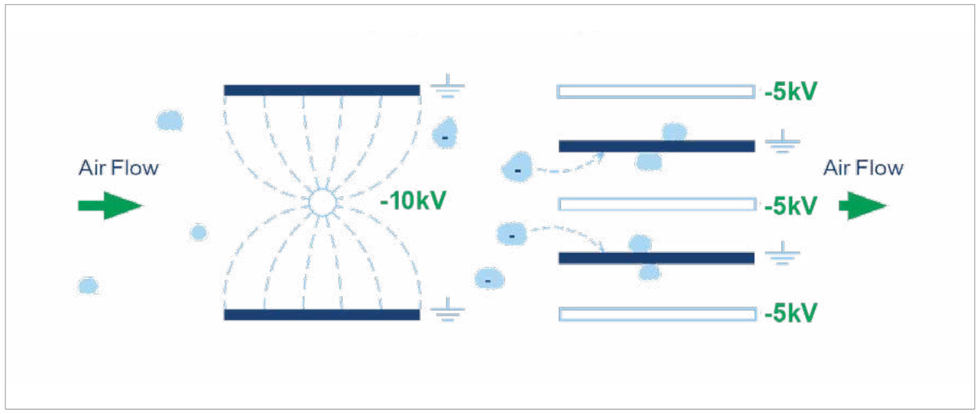
OUR SERVICES

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 negatively 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

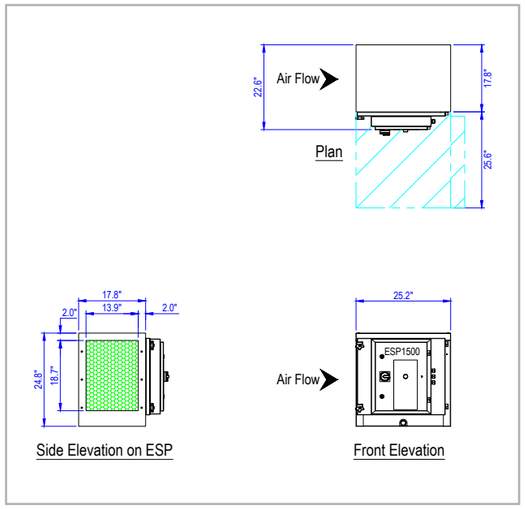
TECHNICAL SPECIFICATION

	ESP 1500	ESP 3000	ESP 4500	ESP 6000
Supply	115V/1PH 50-60HZ	115V/1PH 50-60HZ	115V/1PH 50-60HZ	115V/1PH 50-60HZ
Power Consumption	20W	30W	40W	50W
Maximum Airflow	1500CFM (UP TO)	3000CFM (UP TO)	4500CFM (UP TO)	6000CFM (UP TO)
Dimensions (Inches)	W 17.7 H 24.8 D 25.2	W 35.4 H 24.8 D 25.2	W 53.1 H 24.8 D 25.2	W 70.9 H 24.8 D 25.2
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 (lb)	122LBS	188LBS	260LBS	338LBS

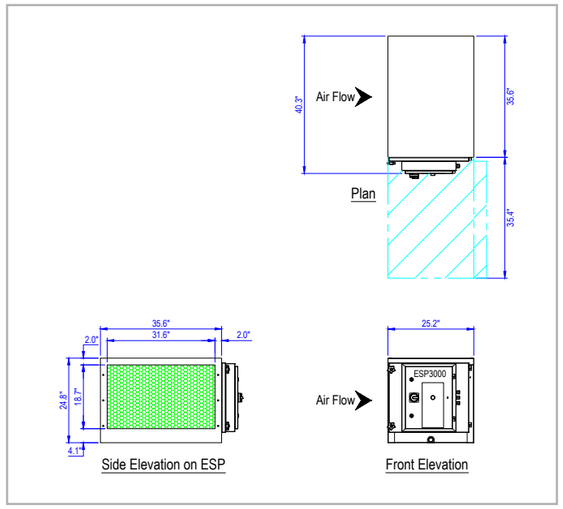
Please note: This equipment needs to be interlocked with the extract fan.

DRAWINGS

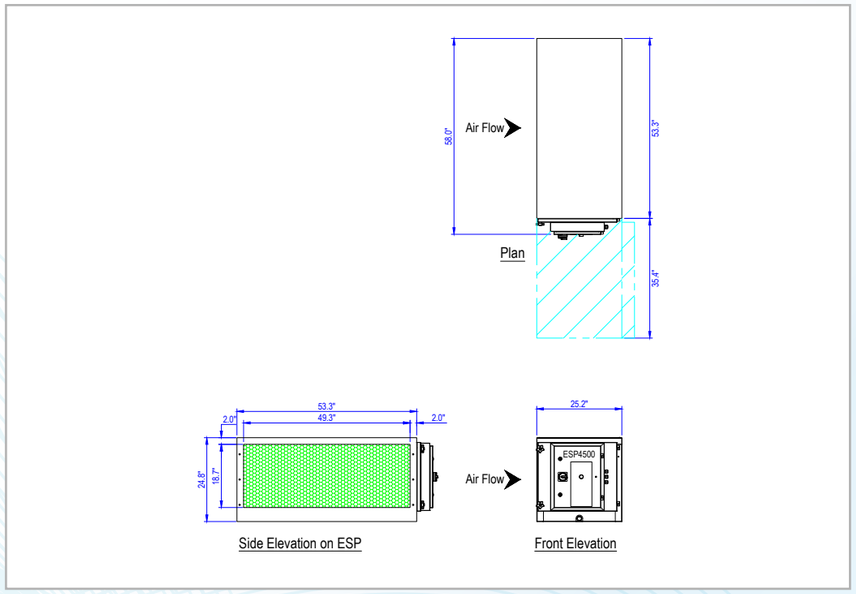
ESP 1500



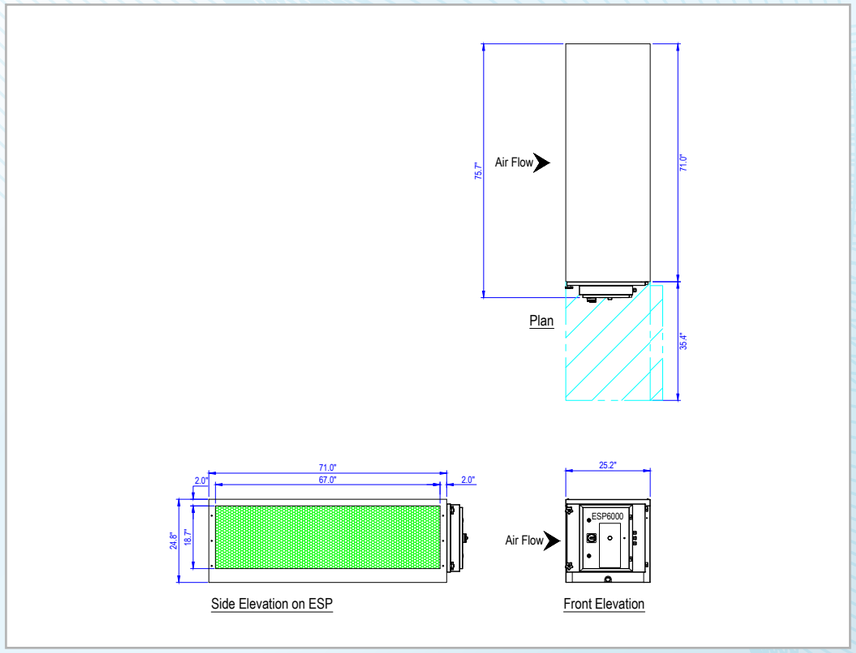
ESP 3000



ESP 4500



ESP 6000



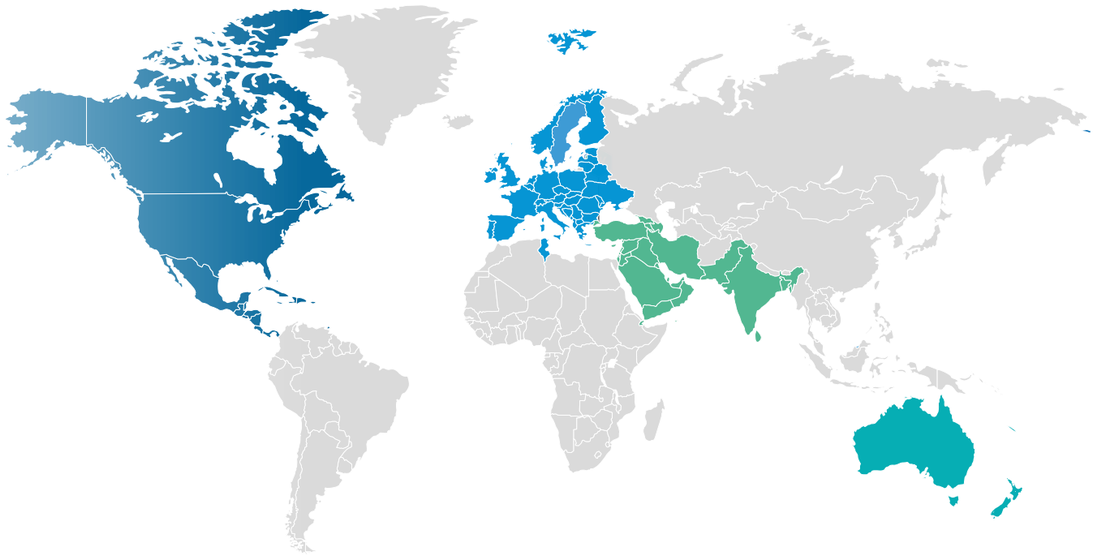
ABOUT US

Purified Air Ltd. has been striving to find the best and most cost-effective way to filter and control oil, smoke, fat and odour produced by commercial kitchens and service since 1984.

Purified Air manufactures filtration and odour control products for stock and bespoke systems, supplying systems to many sectoral brands. The design of each solution is based on the type of food cooked, the cooking process used, and the extracted air volume providing tried and tested purified kitchen exhaust air for Fast Food, Casual Dining and Luxury Concept Restaurant (Fine Dining) markets. By working with these variables, we can design and supply some of the world's best commercial kitchen filtration and odour control systems.

WORLDWIDE COVERAGE

- United Kingdom
- Middle East
- Europe
- North America
- Asia
- Australasia



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KITCHEN EXTRACT

UV-O RANGE

500 | 1000

purifiedair®

COMMERCIAL KITCHEN FILTRATION EXPERTS

Purified Air Ltd. has been manufacturing and servicing market-leading technology to filter and control oil, grease, smoke and odour from commercial kitchens since 1984.

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KITCHEN EXTRACT

UV-O RANGE

500 | 1000



Unlike other UV-C systems, our UV-O units are located outside of the kitchen extract duct and are connected via a spigot and spiral ducting.

KEY FEATURES

- Easy to install
- Can be retro-fitted into existing duct
- Virtually no pressure loss
- No monthly maintenance needed

UV-O TECHNOLOGY

The UV-O range uses UV-C technology which is based on the synergy of oxygen and ultraviolet light to produce ozone. The ozone acts on the gases by changing their molecular structure, reduce the smells and breaking down odours in the ductwork ready for extraction.

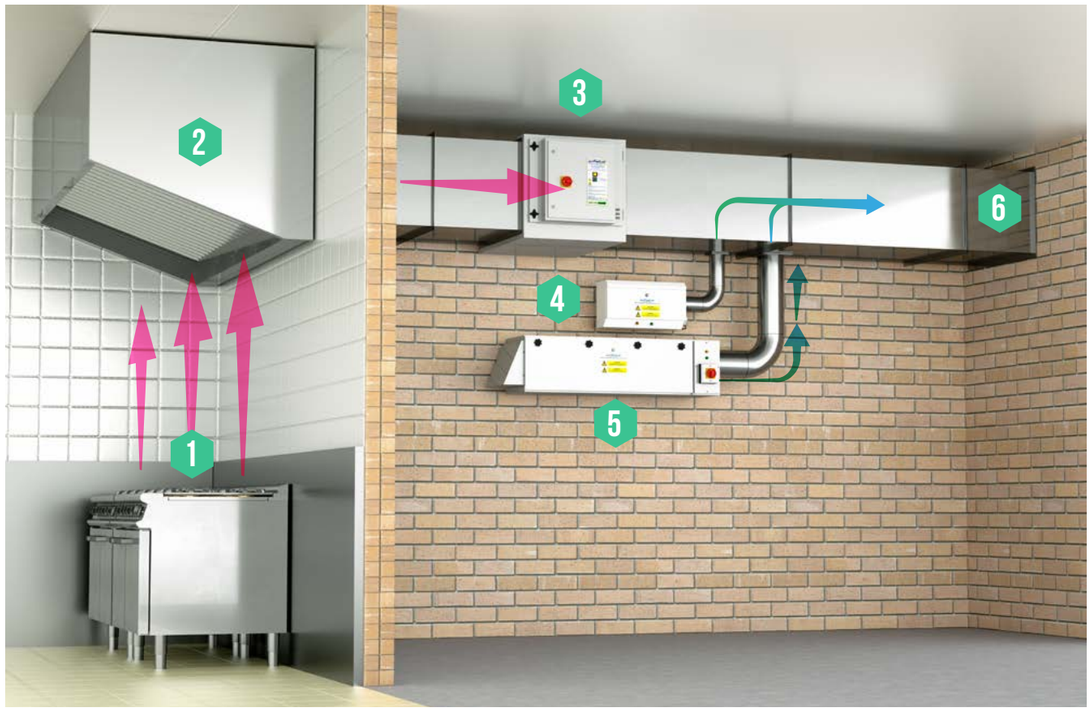
Unlike other UV-C systems, our UV-O units are located outside of the kitchen extract duct and are connected via a spigot and small diameter ducting.

Although it is widely accepted that the best way to apply UV-C light is directly in-line with the air stream itself, performance will be impacted as the lamps get dirty.

With our UV-O units the air flow does not come from the exhaust duct but from the ambient air around the unit, which is filtered on entry. This means that it is able to provide a uniform supply of ozone and hydroxyl free radicals into the extract system with an extremely low pressure loss.

For optimum performance we would recommend between 2 & 6 seconds of dwell time to allow the ozone to work effectively upon the malodorous gasses within the duct.

HOW IT WORKS



For optimum performance, we would recommend between 2 & 6 seconds of dwell time to allow the ozone to work effectively upon the malodorous gasses within the duct.

When installed correctly our UV-O systems can reduce cooking odours by up to 90%.

01 Cooking particulates and odours

02 Canopy Grease Filter

03 ESP - Particulate Control Unit

04 UV-O 500

05 UV-O 1000

06 Ozone breaks down odours within the duct

THE BENEFITS OF UV-O TECHNOLOGY

- Reduces odours by up to 90%
- Easy to retro fit
- Low maintenance
- Low pressure loss

TESTED & VERIFIED BY

This unit's tried and tested UV-C technology allows commercial kitchens to be sited in locations such as residential areas and shopping centres, where previously planning permission may not have been granted. After extensive research and development Purified Air are able to devise the best combination of lamps to provide the most effective odour control.

OUR SERVICES

Design

Manufacture

Maintain

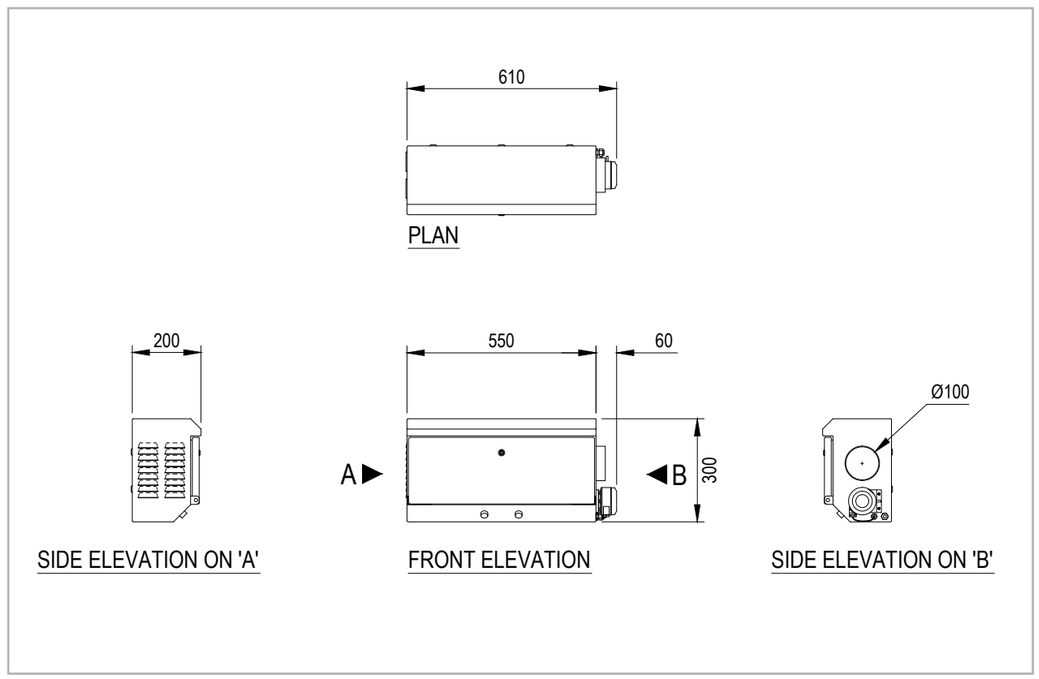
TECHNICAL SPECIFICATION

	UV-O 500	UV-O 1000
Supply	220-240V 50-60HZ	220-240V 50-60HZ
Power Consumption	140W	640W
Maximum Airflow	1.5M³/SEC (UP TO)	2.5M³/SEC (UP TO)
Dimensions (mm)	W 610 H 300 D 200	W 1521 H 350 D 404
Weight	10.5KG (APPROX)	50KG (APPROX)

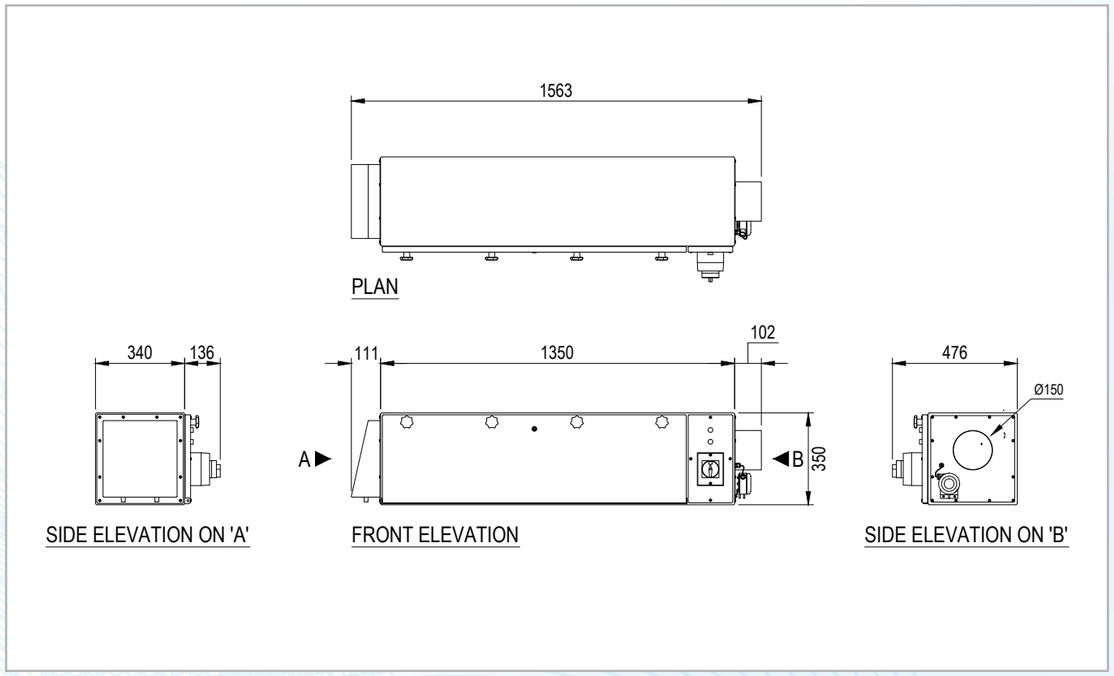
Please note: This equipment needs to be interlocked with the extract fan.

DRAWINGS

UV-O 500



UV-O 1000



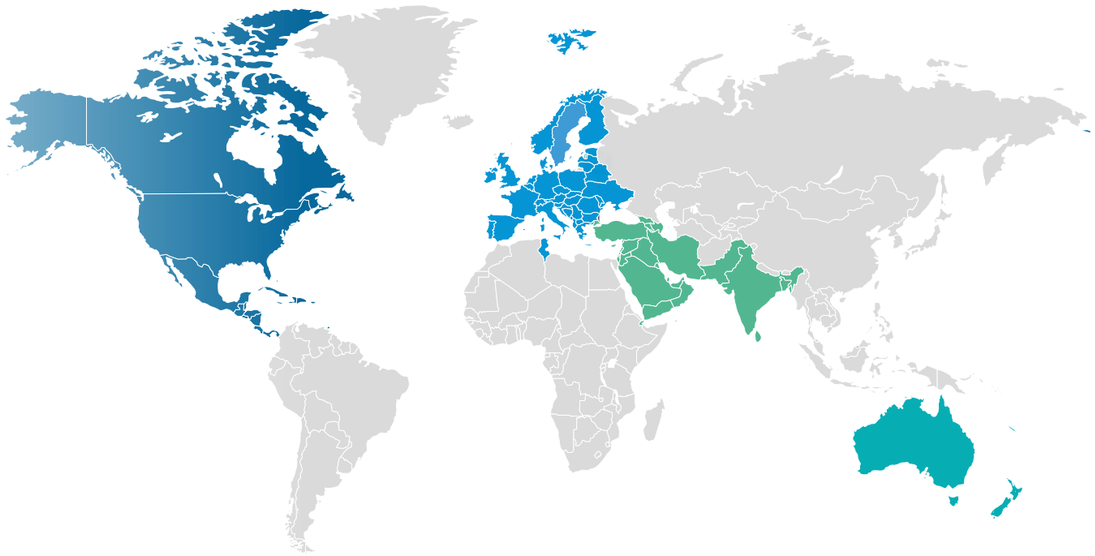
ABOUT US

Purified Air Ltd. has been striving to find the best and most cost-effective way to filter and control oil, smoke, fat and odour produced by commercial kitchens and service since 1984.

Purified Air manufactures filtration and odour control products for stock and bespoke systems, supplying systems to many sectoral brands. The design of each solution is based on the type of food cooked, the cooking process used, and the extracted air volume providing tried and tested purified kitchen exhaust air for Fast Food, Casual Dining and Luxury Concept Restaurant (Fine Dining) markets. By working with these variables, we can design and supply some of the world's best commercial kitchen filtration and odour control systems.

WORLDWIDE COVERAGE

- United Kingdom
- Middle East
- Europe
- North America
- Asia
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1. General

By placing an order with Fusion Hot Ltd ("the Company"), the client ("the Customer") agrees to be bound by the following terms and conditions.
These conditions apply to all goods and services supplied unless otherwise stated in writing by Fusion Hot Ltd.

---

2. Quotations and Scope of Works

Our quotations clearly outline the products and services included. Any item or service not specifically listed in the quotation is excluded from our scope unless confirmed in writing.

---

3. Exclusions

Unless expressly stated otherwise, the following are **excluded** from all quotations:

- Ventilation systems designed to EMAQ Guidelines (subject to separate quotation)
- Odour control and noise management systems
- Fire-rated ductwork, insulation, or wall rating where ductwork passes through structures
- Planning permission or local authority approvals (client's responsibility)
- Hanging of canopies exceeding 4500mm from finished floor level
- Infill panels or finishing between canopy tops and ceilings
- Correction of gaps due to building inaccuracies
- Specialist fixings or structural supports specific to building design
- Balancing and commissioning of canopies
- **All electrical works**, including final connections and control commissioning
- Gas works, including gas valves or interlocks
- Pipework and inclusion of valves
- Builders, roofing, or waterproofing works (including scaffolding or lifting equipment)
- Structural works to roof areas or plant supports
- Protection of internal flooring and finishes
- Lifting or hoisting of plant to roof level
- Edge protection, thermal insulation, or ceiling void boarding

- Fire suppression systems
- Strip-out or removal of existing canopies or ductwork
- Earth bonding and ductwork insulation
- TR19 inspection hatches (to be installed by others)
- Extraction canopy fan or speed controller wiring to mains or board
- Heater batteries for air input systems
- Grease traps (if required)
- Asbestos management or removal
- Revisit to site due to incorrect, incomplete, or inactive services (chargeable call-out applies)
- Notifications to authorities or regulatory bodies
- VAT

Any additional works requested outside our agreed scope will be quoted and charged separately.

---

4. Working Hours

Standard working hours are **Monday to Friday, 8:30am – 5:30pm**, excluding bank holidays. Additional hours or weekend work due to unforeseen circumstances or client delays will be charged at **£50 per hour**, payable directly to our installation team.

---

5. Warranty

- All new fans are covered under the manufacturer's warranty.
- In the event of a fault, a replacement fan must be purchased and the original unit returned to the manufacturer for inspection. If confirmed faulty under warranty, the cost of the fan will be reimbursed.
- Labour or call-out costs related to inspection or replacement are not covered and remain the responsibility of the client.
- Any fan or controller failure resulting from incorrect wiring is not covered under warranty. Replacement parts and return shipping will be chargeable.

---

6. Installation Responsibility

Installation is carried out by Fusion Hot Ltd's own engineers or approved partners working under our direct supervision.
All installation works are covered under Fusion Hot Ltd's scope of responsibility unless otherwise stated in writing.

---

7. Payment Terms

- A **50% deposit** is required upon order placement.
- The **remaining 50% balance** is due **upon installers' arrival on site**, unless otherwise stated in a written contract with the client.
  This ensures the installation proceeds smoothly without interruption or delay.

Once payment has been made, any refund is subject to a **25% restocking charge** and deduction of any fees incurred.

---

8. Limitation of Liability

Fusion Hot Ltd shall not be liable for any delays, damages, or losses caused by circumstances beyond our control, including but not limited to site inaccessibility, delayed approvals, or pre-installation works not completed by others.
Our liability shall in all cases be limited to the value of the goods or services supplied under the relevant contract.

---

9. Health & Safety

All works will be carried out in accordance with current health and safety legislation.
The client must ensure that the working area is safe, clear, and accessible prior to our team's arrival.

---

10. Acceptance

By accepting a quotation or making a payment, the client confirms agreement to these terms and acknowledges that any works not itemised in the quotation are excluded.

Fusion Hot Ltd
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NOISE HARVEST

Environmental Noise Report



Project: 581 Wilbraham Road

Client: AAA23 Ltd

Revision:	-	Date:	25/03/2026
Job Number:	2026-02-27 A0269	Written by:	CJB

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Revision	Date of issue	Purpose of issue
-	25/03/2026	First issue

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1.0 Introduction

1.1 Project overview

Noise Harvest has been commissioned by AAA23 Ltd to carry out an environmental noise survey, to establish limiting noise levels and assess the noise from the proposed fixed items of plant at the following address:

581 Wilbraham Rd
Chorlton-cum-Hardy,
Manchester,
M21 9AF

The location of the restaurant is shown in red below:



Figure 1 Location of the restaurant

The purpose of this report is to:

- Document existing noise levels around the site;
- Set limiting noise levels for new items of building services plant;
- Assess the noise from the proposed fixed items of plant;
- Suggest mitigation measures if necessary.

2.0 Assessment Criteria

The building is yet to have the new items of fixed plant installed. In order to ensure that complaints are not made after the installation and the existing noise climate does not suffer from noise creep an environmental noise survey and assessment has been requested by the client.

2.1 Local Authority requirements

Local Authority policy requirements are set out within the Manchester City Council Planning and Noise Technical Guidance.

When considering the assessment of potential impacts, the document identifies the following criteria:

'The development should be designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.'

2.2 BS 4142

BS 4142:2014 provides a method for rating and assessing sound of an industrial and/or commercial nature, which includes sound from industrial and manufacturing processes, fixed services plant, sound generated by the loading and unloading of goods and sound from mobile plant / vehicles associated with industrial / commercial premises (e.g. fork-lift trucks).

The standard utilises various descriptors to assess the likelihood of complaints and the impact of sound associated with proposed industrial / commercial activities.

The magnitude of impact is assessed by subtracting the measured background sound level (dB L_{A90}) at a location representative of the nearest noise-sensitive receiver, from the 'rating level' (dB $L_{Ar,Tr}$) – the specific sound source to be introduced into the locality, corrected for acoustically distinguishing characteristics which may make it more subjectively prominent, over a reference time interval of 1 hour during the day and 15 minutes at night.

As a guideline, BS 4142 states that:

"a) Typically, the greater this difference, the greater the magnitude of the impact.

b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

d) The lower the rating level relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

For reference, the following terms are introduced in BS 4142:

- **Specific sound** – the commercial / industrial sound source under consideration;
- **Residual sound** – the sound level at the sound-sensitive receivers in the absence of the specific sound;

- **Ambient sound** – the sound level at the sound-sensitive receivers in the presence of the specific sound (i.e. ambient = residual + specific);
- **Background level** - the sound pressure level which is exceeded by the residual sound for 90% of the measurement period;
- **Rating level** – the specific sound, corrected for acoustically distinguishing characteristics.

3.0 Site description

3.1 General

It is understood the ground floor is currently vacant and will be converted into a restaurant. The proposed building is set within a row of shops and commercial properties.

Above the site are residential dwellings, with windows looking out onto to the rear of the property.

To the front of the site is Wilbraham Road, a residential road within Chorlton-cum-Hardy.

The nearest noise sensitive receptors is shown on the image below in red.



Figure 2 Location of the NSR's and proposed plans

4.0 Noise survey

An unattended noise survey was carried out between the following dates, Tuesday 3rd March 2026 starting at approximately 13:30 hours until Wednesday 4th of March 2026 ending at approximately 13:00 hours.

The engineer who carried out the survey was Phoebe Pearce who has over two years experience in acoustics and has achieved competency of environmental noise measurement alongside the diploma in acoustics. She was overseen by C J Biggs, who is a full member of the Institute of Acoustics and holds the Institute of acoustics diploma and a master's in applied acoustics. He has eighteen years of experience in acoustics.

4.1 Equipment and measurement locations

A single measurement position for the noise survey was chosen which was representative of the Nearest Noise Sensitive Receptor generally in accordance with guidance given in BS 7445: 1993.

The sound level meter was field-calibrated before and after use with no significant drift witnessed. Laboratory calibration certificates for all measurement equipment used are available upon request.

The meter was setup on a pole at a height of 2 m on the stairwell at the rear of the property on the first floor.

The approximate survey location is indicated in the Figure below.



Figure 3 Approximate survey location

The Table below summarises the equipment used and shows an image of the microphone position.

Position	Make and model	Image
P1	Sound level meter Cirrus CR171B (s/n: G056352) Calibrator Cirrus CR515 Calibrator (s/n: 95717)	

Table 1 List of equipment used

At the start and end of the survey the engineer noted the following subjective impressions:

Noise: The general noise conditions were moderate due to the area being shielded from traffic noise by surrounding buildings as it was at the rear of the property.

4.2 Weather conditions

The Table below shows highest and lowest temperatures and the precipitation.

Day	Date	Temp (°C)		Precipitation
		Low	High	
Tuesday	03/03/2026	8	12	None
Wednesday	04/03/2026	5	14	None

Table 2 Recorded weather during survey

As can be seen in the Table above there was no precipitation. It should be noted that due to the location of the meter it was shielded from direct wind. Wind speed measurements were taken at the beginning and the end of the survey. As you can see in the images below they were well below the recorded wind speed. Further details of the weather can be found in the appendix.



Beginning



End

Figure 4 Wind speed

5.0 Survey results

5.1 Noise survey

The Table below shows a summary of the daytime and night-time ambient noise levels. The values are the logarithmically averaged L_{Aeq}, the maximum $L_{AF,max}$ and the typical L_{A90}. All figures have been rounded to the nearest integer value (as fractions of a decibel are imperceptible).

Date	Period	Averaged L_{Aeq} (dB)	Maximum L_{AFmax} (dB)	Typical L_{A90} (dB)
03/03/2026-04/03/2026	Day	51	86	45
03/03/2026-04/03/2026	Night	45	67	41

Table 3 Summary of measured noise levels

As can be seen above the noise climate is moderate for both daytime and night time due to the fact the building is within a residential area.

6.0 Noise emission limits – building services plant

Based on fixed items of plant achieving 5 dB to the typical background noise level, as per local authority requirements, the following table summarises the maximum rating level (when penalties such as tonality and impulsiveness are applied) for all new items of fixed services plant associated with the proposed development when assessed at 1 m from the nearest noise-sensitive receptor:

Date	Period	Measured L_{A90} (dB)	Maximum sound pressure level for items of plant as per local authority ($L_{A,Trn}$)
03/03/2026 -04/03/2026	Day	45	40
03/03/2026- 04/03/2026	Night	41	36

Table 4 Summary of limiting noise levels

The above limit applies to all new items of services plant, running simultaneously at the appropriate design duty.

7.0 BS 4142 & Local Authority Assessment

The following sub-sections provide assessment of noise impacts associated with the fixed items of plant associated with the restaurant in accordance with BS 4142.

The opening times of the restaurant are from 11:00 to 23:00 every day. As the restaurant will not operate past 23:00 hours the kitchen extract will be assessed against only the daytime scenarios.

7.1 Nearest noise sensitive receptors

The image below shows what is understood to be the nearest noise sensitive receptor, a residential dwelling above the proposed site on Wilbraham Road, the assessment will be carried out at 4.5 and 7.5 metres for daytime. In addition there is another nearest noise sensitive receptor with the neighbouring property shown in the figure below.



Figure 5 Nearest noise sensitive receivers

7.2 Specific Noise level and Background Level

The tables below show the proposed item of fixed plant that are associated with the restaurant and insertion loss of the attenuator and image below shows the location.

The data for the kitchen extract (Fläkt Woods Estoc Targe EC 80-560-3 inline box fan) below.

The Targe EC 80-560-3 has a sound pressure level of 50 dBA at 3 metres. Octave or third octave data is not available from the manufacture and a single broad band is only available.

In the absence of the data octave band data a similar extract fan from the same manufacturer was used. The data has come from ePowerBox EC 67-450-1-4.

Item	Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
	Sound power of fan							
ePowerBox EC 67-450-1-4	68	75	77	71	67	65	62	59

Table 5 Summary of noise from kitchen extract

The Table below shows the dynamic insertion loss from the proposed attenuators for the extract.

Number	Item	Frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
4 (3 silencers after extract 1 silencer before)	Systemair Cylindrical Silencers HP 560 2D	4	5	10	20	29	28	21	23

Table 6 Summary of insertion loss from attenuator

The data for the kitchen supply (Ruck 355) below.

Item	Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
	Sound power of fan							
Ruck 355	-	47	65	69	74	73	71	64

Table 7 Summary of sound from kitchen supply

The Table below shows the dynamic insertion loss from the proposed attenuator for the supply.

Number	Item	Frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
4 (1silencers after supply 3 silencer before)	355 2D	1	2	4	10	12	10	9	7

Table 8 Insertion loss from kitchen supply attenuator

The image below shows the approximate location for the proposed plant.

7.3 Assessment after duct work and silencer

It is understood that the kitchen extract and supply fans are installed at the rear of the unit and will have flues with a silencers and several bends. Calculations have been carried out to assess the attenuation of the distance and the flue. The Table below shows the predicted sound power of the extract fan leaving the flue alongside the predicted sound power level of the supply.

Item	Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
	Sound power of fan							
Kitchen Extract	47	62	44	11	0	0	0	0
Kitchen supply	-	34	51	39	38	43	46	53

Table 9 Summary of noise at flue

7.4 Background level

The Table below shows the typical background level that has been measured without the restaurant operating together with the histogram.

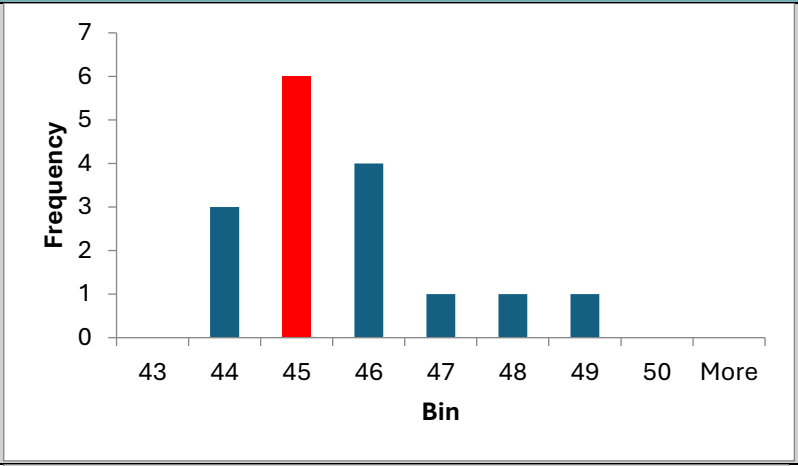
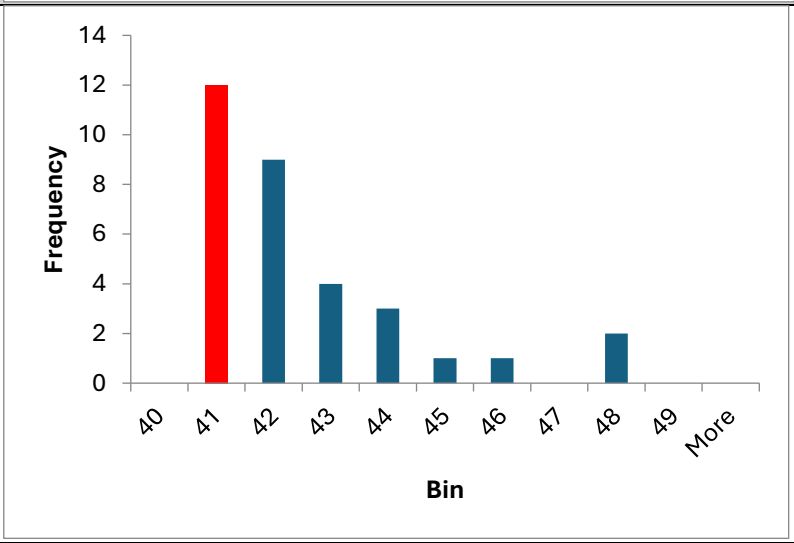
Period	Typical background level	Measured histogram
Daytime	45	
Nighttime	41	

Table 10 Summary of background noise levels

7.5 Penalties for acoustic characteristics of activity noise

As discussed in Section 2, it is a requirement of BS 4142 that the subjective prominence of the specific sound is considered when assessing the likely impact at nearby sound sensitive receivers, based on the likelihood of any acoustically distinguishing characteristics of the specific sound which may attract attention (whilst considering the existing residual sound climate).

Noise Harvest have experience of assessing industrial sound, and the staff are (minimum) degree-qualified engineering consultants in acoustics or a related discipline. All staff are members of the Institute of Acoustics and are therefore considered suitably qualified to make the following assessments.

7.6 Tonality

Annex C of BS 41412 provides the following guidance with respect to assessing a noise source for the presence of prominent, spectral components:

For a prominent, discrete tone to be identified as present, the time-averaged sound pressure level in the octave band of interest is required to exceed the time-averaged sound pressure levels of both adjacent one-third-octave bands by some constant level difference.

The level differences between adjacent octave bands that identify a tone are:

- 15 dB in the low-frequency one-third-octave bands (25 Hz to 125 Hz);
- 8 dB in the middle-frequency one-third-octave bands (160 Hz to 400 Hz);

And

- 5 dB in the high-frequency one-third-octave bands (500 Hz to 10 000 Hz).

The figure below presents the linear octave band values from the data supplied for each of the items of plant:

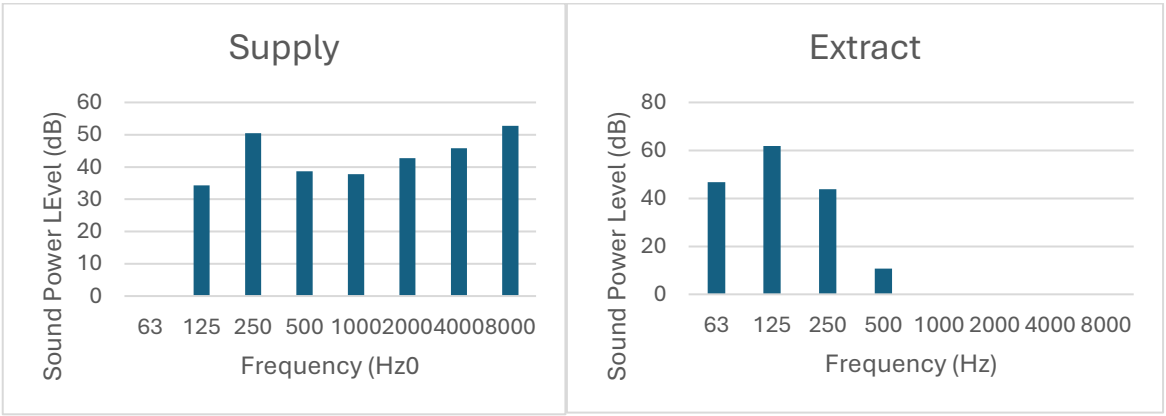


Figure 6 Octave band data for plant

As can be seen from the Figure above, none of the frequencies could be perceived as being tonal. On this basis, no correction for tonality is needed. It should be noted that one third octave band data was not present, so the above principals have been applied to octave bands.

7.7 Impulsivity and Intermittency

It is understood that the items of plant will run continuously during the hours of operation. As the items of plant will be continuous no acoustic correction will be applied for impulsiveness.

7.8 BS4142 Assessment

A 3D computer noise modelling software (iNoise Pro version 2026) which complies with BS EN ISO 9613:2024 was used to assess the noise levels at the nearest noise sensitive receptor.

The table below shows the scenario, the predicted single point receptor, the typical background noise level and difference between the corrected rating level and background.

Scenario	Receptor	Receptor height	Predicted noise at receptor (dB)	BS 4142 correction	Rating level	Background (dB)	Local Authority Requirement (dB)	Difference (dB)
Daytime	First floor apartments	4.5 m	34	0	34	45	40	-6
	Second floor apartments	7.5m	34	0	34	45	40	-6
Daytime	Neighbouring property	7.5m	36	0	36	45	40	-4

Table 11 Summary of BS4142 assessment

As can be seen from the Table above the rating level is below the daytime background noise levels for both BS 4142 and local authority guidelines. This would indicate that the plant would not likely cause an adverse impact and meets local authority guidelines.

8.0 Uncertainty

The following subsections focus on the potential uncertainty of the measurements and calculation.

8.1 Measurements

The measurement position potentially may be marginally different to the nearest noise sensitive receptor as there may be more of a direct line of sight to a noise source that may not be seen.

One measurement position was selected due to the security of the site.

8.2 Calculations

Unknown errors in the software may adversely influence the predicted noise levels.

Measured noise levels for the specific noise may not be accurate due to external noise levels increasing them.

Meteorological conditions such as wind diffraction or temperature inversions have not been taken into account.

9.0 Conclusion

A noise assessment has been undertaken as part of the planning application for the new kitchen extract and supply on the proposed restaurant at 581 Wilbraham Road Chorlton-Cum- Hardy.

An assessment of the proposed kitchen extract and supply has taken place and has found that there is likely to be no adverse impact on the nearest noise sensitive receptor and it meets local authority guidelines.

10.0 Appendix

10.1 Environmental noise survey data

Date and Time	$L_{Aeq,15min}$	$L_{AfMax.\ 15min}$	$L_{A90,\ 15min}$
03/05/2026			
03/03/2026 13:38	58.8	78.3	45.2
03/03/2026 13:45	53.0	72.6	44.3
03/03/2026 14:00	52.5	74.4	44.0
03/03/2026 14:15	48.3	65.0	44.0
03/03/2026 14:30	48.5	67.0	43.6
03/03/2026 14:45	48.0	61.6	44.1
03/03/2026 15:00	47.5	58.9	44.3
03/03/2026 15:15	51.6	71.8	44.5
03/03/2026 15:30	48.9	62.5	44.4
03/03/2026 15:45	48.1	63.7	44.7
03/03/2026 16:00	52.0	70.9	45.0
03/03/2026 16:15	52.3	71.7	45.0
03/03/2026 16:30	50.1	68.4	45.0
03/03/2026 16:45	47.7	62.8	44.8
03/03/2026 17:00	51.6	76.4	45.6
03/03/2026 17:15	52.2	69.4	45.2
03/03/2026 17:30	54.5	69.7	45.8
03/03/2026 17:45	48.9	64.7	46.1
03/03/2026 18:00	50.8	64.7	46.1
03/03/2026 18:15	47.9	61.5	45.4
03/03/2026 18:30	47.2	57.5	45.1
03/03/2026 18:45	50.2	66.3	45.3
03/03/2026 19:00	47.5	59.8	44.9
03/03/2026 19:15	50.1	65.3	45.4
03/03/2026 19:30	47.2	55.8	45.5
03/03/2026 19:45	56.9	86.4	45.9
03/03/2026 20:00	47.3	55.8	45.0
03/03/2026 20:15	47.7	62.1	44.9
03/03/2026 20:30	48.3	63.4	44.9
03/03/2026 20:45	51.7	70.6	44.8
03/03/2026 21:00	47.2	60.5	44.4
03/03/2026 21:15	47.6	63.0	45.1
03/03/2026 21:30	46.8	60.6	44.8
03/03/2026 21:45	46.4	56.4	44.2
03/03/2026 22:00	47.0	57.2	44.4
03/03/2026 22:15	47.1	61.4	44.4
03/03/2026 22:30	47.0	59.4	44.2
03/03/2026 22:45	47.8	64.4	44.4
03/03/2026 23:00	45.7	56.4	43.6
03/03/2026 23:15	46.0	66.8	43.2
03/03/2026 23:30	45.5	65.3	43.0
03/03/2026 23:45	44.5	58.2	42.4
04/03/2026			
04/03/2026 00:00	44.9	65.1	42.3

Date and Time	$L_{Aeq,15min}$	$L_{AfMax.\ 15min}$	$L_{A90,\ 15min}$
04/03/2026 00:15	44.1	54.7	42.1
04/03/2026 00:30	43.6	53.1	41.7
04/03/2026 00:45	43.6	60.2	41.6
04/03/2026 01:00	43.6	61.3	41.4
04/03/2026 01:15	42.7	53.2	41.3
04/03/2026 01:30	42.9	55.2	41.4
04/03/2026 01:45	42.6	47.9	41.2
04/03/2026 02:00	41.9	50.1	40.9
04/03/2026 02:15	41.9	48.4	40.9
04/03/2026 02:30	42.4	57.3	41.0
04/03/2026 02:45	42.5	57.0	41.0
04/03/2026 03:00	42.4	51.3	41.3
04/03/2026 03:15	42.3	52.6	41.3
04/03/2026 03:30	42.0	49.0	41.3
04/03/2026 03:45	42.7	54.0	41.5
04/03/2026 04:00	42.3	57.8	41.2
04/03/2026 04:15	42.9	52.9	41.7
04/03/2026 04:30	42.9	57.5	41.6
04/03/2026 04:45	43.2	50.7	42.0
04/03/2026 05:00	44.4	56.1	42.6
04/03/2026 05:15	44.6	61.2	42.7
04/03/2026 05:30	46.1	58.9	43.6
04/03/2026 05:45	45.7	53.7	43.7
04/03/2026 06:00	47.3	59.8	44.7
04/03/2026 06:15	48.4	63.4	45.6
04/03/2026 06:30	51.0	65.2	47.5
04/03/2026 06:45	51.7	63.7	48.1
04/03/2026 07:00	51.2	62.8	48.1
04/03/2026 07:15	52.6	64.3	49.0
04/03/2026 07:30	51.6	61.3	49.8
04/03/2026 07:45	52.4	64.3	49.8
04/03/2026 08:00	52.2	73.8	48.8
04/03/2026 08:15	52.1	70.5	48.2
04/03/2026 08:30	49.7	64.3	47.3
04/03/2026 08:45	58.6	77.8	48.3
04/03/2026 09:00	49.3	63.3	47.2
04/03/2026 09:15	52.0	67.6	47.4
04/03/2026 09:30	51.2	63.2	47.4
04/03/2026 09:45	49.7	63.0	47.3
04/03/2026 10:00	47.9	58.7	45.9
04/03/2026 10:15	50.1	65.3	45.9
04/03/2026 10:30	51.9	73.3	45.7
04/03/2026 10:45	48.0	61.0	45.1
04/03/2026 11:00	49.7	62.2	45.8
04/03/2026 11:15	50.2	66.8	45.6
04/03/2026 11:30	50.4	67.0	46.9
04/03/2026 11:45	52.5	66.6	46.3
04/03/2026 12:00	49.4	64.4	45.7

Date and Time	$L_{Aeq,15min}$	$L_{AfMax.\ 15min}$	$L_{A90,\ 15min}$
04/03/2026 12:15	49.2	63.5	46.8
04/03/2026 12:30	48.2	57.7	46.0
04/03/2026 12:45	50.8	72.5	46.4

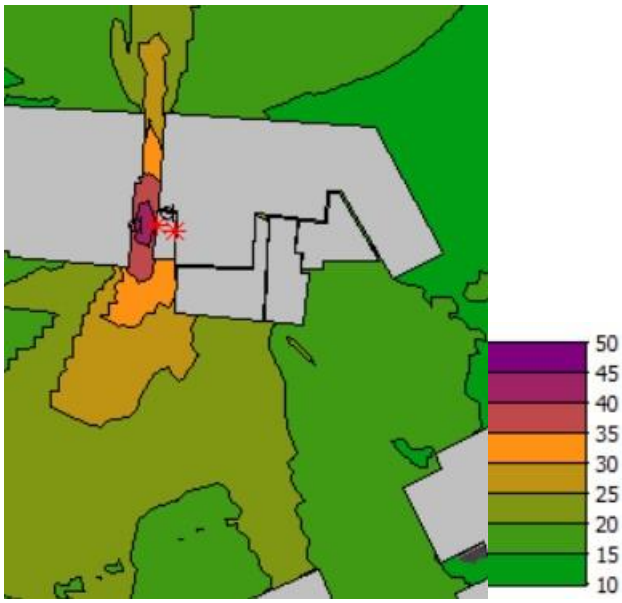
10.2 Weather Conditions

The following Table shows the record weather from www.timeanddate.com

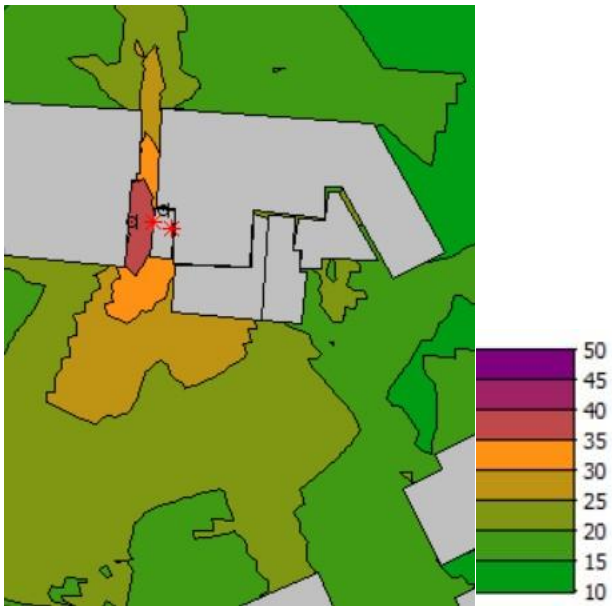
Date	Time	Temp	Weather	Wind
03/03/2026	13:20	12 °C	Clear.	2 mph
03/03/2026	13:50	12 °C	Clear.	3 mph
03/03/2026	14:20	12 °C	Clear.	3 mph
03/03/2026	14:50	12 °C	Clear.	5 mph
03/03/2026	15:20	12 °C	Scattered clouds.	3 mph
03/03/2026	15:50	12 °C	Passing clouds.	6 mph
03/03/2026	16:20	11 °C	Clear.	5 mph
03/03/2026	16:50	10 °C	Clear.	3 mph
03/03/2026	17:20	10 °C	Clear.	3 mph
03/03/2026	17:50	9 °C	Clear.	2 mph
03/03/2026	18:20	9 °C	Clear.	2 mph
03/03/2026	18:50	8 °C	Clear.	5 mph
03/03/2026	19:20	8 °C	Passing clouds.	5 mph
03/03/2026	19:50	9 °C	Passing clouds.	3 mph
03/03/2026	20:20	9 °C	Passing clouds.	3 mph
03/03/2026	20:50	9 °C	Passing clouds.	3 mph
03/03/2026	21:20	9 °C	Overcast.	2 mph
03/03/2026	21:50	8 °C	Passing clouds.	2 mph
03/03/2026	22:20	8 °C	Overcast.	2 mph
03/03/2026	22:50	8 °C	Overcast.	3 mph
03/03/2026	23:20	8 °C	Mostly cloudy.	2 mph
03/03/2026	23:50	8 °C	Partly cloudy.	3 mph
04/03/2026	00:20	8 °C	Overcast.	1 mph
04/03/2026	00:50	8 °C	Overcast.	2 mph

Date	Time	Temp	Weather	Wind
04/03/2026	01:20	8 °C	Overcast.	1 mph
04/03/2026	01:50	8 °C	Overcast.	2 mph
04/03/2026	02:20	8 °C	Overcast.	1 mph
04/03/2026	02:50	8 °C	Overcast.	1 mph
04/03/2026	03:20	8 °C	Overcast.	1 mph
04/03/2026	03:50	8 °C	Overcast.	2 mph
04/03/2026	04:20	7 °C	Overcast.	2 mph
04/03/2026	04:50	7 °C	Overcast.	1 mph
04/03/2026	05:20	7 °C	Passing clouds.	No wind
04/03/2026	05:50	6 °C	Clear.	3 mph
04/03/2026	06:20	6 °C	Clear.	2 mph
04/03/2026	06:50	5 °C	Clear.	1 mph
04/03/2026	07:20	5 °C	Clear.	1 mph
04/03/2026	07:50	7 °C	Clear.	1 mph
04/03/2026	08:20	7 °C	Clear.	1 mph
04/03/2026	08:50	8 °C	Clear.	1 mph
04/03/2026	09:20	9 °C	Clear.	2 mph
04/03/2026	09:50	11 °C	Clear.	3 mph
04/03/2026	10:20	12 °C	Clear.	2 mph
04/03/2026	10:50	13 °C	Clear.	6 mph
04/03/2026	11:20	13 °C	Passing clouds.	7 mph
04/03/2026	11:50	14 °C	Clear.	6 mph
04/03/2026	12:20	14 °C	Clear.	7 mph
04/03/2026	12:50	14 °C	Clear.	7 mph
04/03/2026	13:20	14 °C	Clear.	8 mph

10.3 Grid Noise Maps



4.5m



7.5m