

ODOUR CONTROL ASSESSMENT

For

48 Princess Street Manchester M1 6HR



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PURPOSE OF THIS REPORT

PLANNING CONSTRAINTS

This report is intended to provide information collected and produced as part of the design of the ventilation systems which will be included in the restaurant within the basement of 48 Princess street, located at the corner of the Harter street and Princess street junction, Manchester.

The following information should provide a planning officer with information that is suitable to allow the sign off any planning conditions relating to the risk of nuisance odour production in the vicinity of the building.

METHODOLOGY

This report will highlight the regulatory and industry best practice guidance and the related documentation and work through the assessment methodology included within.

SITE SPECIFIC DETAILS

LOCATION

The commercial kitchen is located in the basement level of the building, with the restaurant situated below residential apartments on the upper floors.

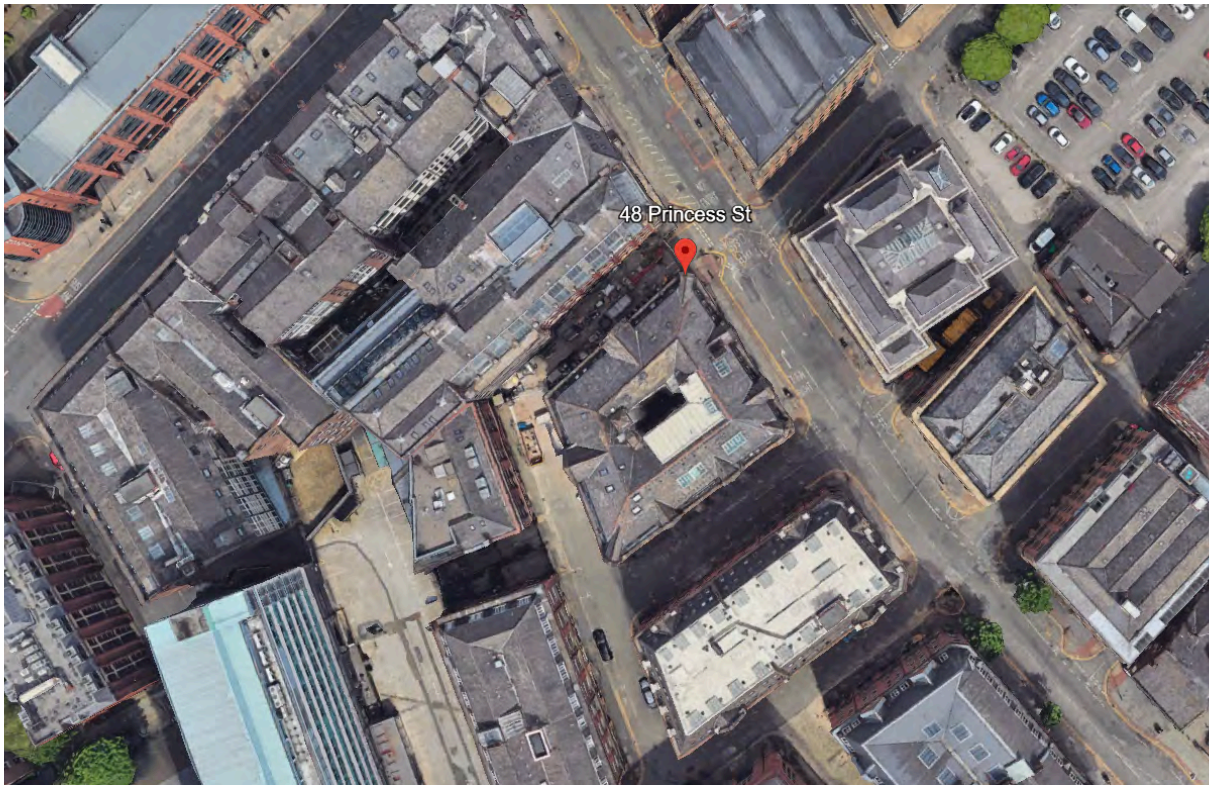


Fig 1. – Aerial Photograph of the site area.

A site location plan has been included in the appendices.

ASSESSMENT CRITERIA

The following score methodology derived from defined standardised risk levels is suggested in the original DEFRA report and is unchanged in the new EMAQ+ version as a means of determining odour control requirements using a simple risk assessment approach.

The total 'significance score' is used to determine the recommended odour control measures and techniques to be applied according to the severity of risk.

The risk schedule carries the following sub-note:

'Note 1: A Planner may take a pragmatic view when assessing whether certain low risk kitchens require any odour abatement to be fitted. In reaching this decision the Planner may consider the nature of the food being cooked and/or the size of kitchen and/or its location.'

TABLE: Odour Risk Severity Assessment

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, the proximity of receptors, size of kitchen and cooking type.

The Defra and EMAQ+ Guides on the 'Control of Odour and Noise from Commercial Kitchen Exhaust Systems' contain an assessment procedure for identifying the potential risk of odour impacts from commercial kitchen operations. The results of this risk assessment can be used to determine a suitable level of odour abatement to be installed into a commercial kitchen.

The risk assessment for odours is split into the following four parts:

- dispersion;
- proximity to receptors;
- size of kitchen; and
- cooking type and grease loading.

Each part is given a risk rating score and the total risk rating denotes the level of odour abatement which is likely to be required to prevent the kitchen from causing odour impacts.

The following sections of this report outline each part of the risk assessment in relation to the proposed Restaurant.

ODOUR CONTROL ASSESSMENT

DISPERSION

The risk rating for dispersion relates to the conditions under which kitchen extraction emissions are discharged. The relevant risk ratings described in the guidance are shown below. The risk score is shown in parentheses.

- VERY POOR (20) – Low level discharge, discharge into courtyard, or restriction on stack;
- POOR (15) – Discharge not low level, but below eaves, or discharge rate below 10 m/s;
- MODERATE (10) – Discharging 1 m above eaves at a rate of 10-15 m/s;
- GOOD (5) – Discharging 1 m above ridge at a rate of 15 m/s or more

At the proposed restaurant, the kitchen air extraction system will have a very poor dispersion rating due to the constraints of the building. As a Grade II listed building, there are strict limitations on alterations, including restrictions on the installation of high-level discharge stacks. Consequently, the extraction emissions will be discharged at a low level, potentially onto Harter street, resulting in a risk rating of **VERY POOR** according to the assessment criteria. These constraints make it challenging to achieve optimal dispersion and may necessitate additional mitigation measures.

The elevational drawings in Appendices show the existing VE vent and the proposed vent locations.

PROXIMITY OF RECEPTORS

The risk rating for proximity to receptors relates to the distance between the point of discharge of kitchen emissions and the nearest sensitive receptor locations. Sensitive receptor locations may be residential properties, commercial premises or frequently used public open spaces. The relevant risk ratings described in the guidance are shown below. The risk score is shown in parentheses

- CLOSE (10) – Closest sensitive receptor is less than 20m from kitchen discharge;
- MEDIUM (5) – Closest sensitive receptor is between 20 and 100m from kitchen discharge;
- FAR (1) – Closest sensitive receptor is more than 100m from kitchen discharge.

The closest sensitive receptors are the apartments on the upper floors of the building, with windows that are frequently open. As these are less than 20m from the kitchen discharge point, the proximity risk rating is **CLOSE** according to the assessment criteria.

SIZE OF KITCHEN

The risk rating for size of kitchen relates to the volume of food prepared by the kitchen and is described in terms of the capacity of the restaurant or take-away. The relevant risk ratings described in the guidance are shown below. The risk score is shown in parentheses

- LARGE (5) – More than 100 covers or a large-sized take-away;
- MEDIUM (3) – Between 30 and 100 covers or a medium-sized take-away;
- SMALL (1) – Less than 30 covers or a small take-away.

This restaurant has covers between 30 and 100, classing it as a **MEDIUM** sized kitchen.

COOKING TYPE

The risk rating for cooking type and grease loading relates to the type of cooking methods employed in the kitchen and the type of food prepared. The relevant risk ratings described in the guidance are shown below. The risk score is shown in parentheses.

- VERY HIGH (10) – Pubs (those serving a high level of fried food), fried chicken, burgers or fish and chips;
- HIGH (7) – Kebab, Vietnamese, Thai or Indian;
- MEDIUM (4) – Cantonese, Japanese or Chinese;
- LOW (1) – Most pubs, Italian, French, Pizza or Steakhouse.

The proposed restaurant is a Chinese restaurant, which classifies it as a **MEDIUM** cooking type based on the assessment criteria.

ODOUR RISK ASSESSMENT

The Defra/EMAQ+ Guides state:

‘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	Rating	Score	Details
Dispersion	Very poor	20	Low-level discharge, discharge into courtyard or restriction on the stack.
	Poor	15	Not low level but below eaves, or discharge at below 10 m/s
	Moderate	10	Discharging 1m above eaves at 10-15 m/s
	Good	5	Discharging 1m above ridge at 15 m/s
Proximity of receptors	Close	10	Closest sensitive receptor less than 20m from kitchen discharge
	Medium	5	Closest sensitive receptor between 20 and 100m from kitchen discharge
	Far	1	Closest sensitive receptor more than 100m from kitchen discharge
Size of Kitchen	Large	5	More than 100 covers (several vendors)
	Medium	3	Between 30 and 100 covers or medium-sized take away
	Small	1	Less than 30 covers or small take away
Cooking type (odour and Grease loading)	Very high	10	Pub (high level of fried food), fried chicken, burgers or fish and chips
	High	7	Kebab, Vietnamese, Thai or Indian
	Medium	4	Cantonese, Japanese or Chinese
	Low	1	Most pubs, Italian, French, pizza or steakhouse
		37	

CONCLUSIONS

Based on the odour control assessment, the total significance score for the proposed restaurant is **37**, which falls into the **very high risk** category. The key contributing factors include the very poor dispersion due to building restrictions, the close proximity of sensitive receptors (apartments less than 20m away), and the medium-sized kitchen with a medium cooking type. Given this, very high-level odour control measures will be required to mitigate the impact and prevent odour issues affecting the surrounding area.

RECOMMENDED ODOUR ABATEMENT MEASURES

The Guides define a number of recognised odour abatement measures, to be used individually or in combinations to achieve levels of abatement rated 'None', 'High' or 'Very High', depending on configuration and on sizing and selection.

Abatement Type	Level of Odour Abatement
Panel and Bag	None
Panel, Bag and HEPA	None
Pre, Fine and Carbon Filter	High
Panel, Bag, HEPA and Carbon Filter. (Note: 'Very High' is the minimum level recommended for fried foods and concentrated cooking of burgers)	High - 0.1 to 0.2 Seconds dwell Very High - 0.2 to 0.4 Seconds dwell Extreme - 0.3 to 0.8 Seconds dwell
Panel, Bag, HEPA and Carbon Filter (As above)	High to Very High (As above)
ESP and Carbon Filter (As above)	High to Very High (As above)
ESP and Counteractant	Medium to High
ESP and UV/Ozone	High

EMAQ+ Guide Abatement Classifications

In addition to the above, whilst the exhaust location is factored into the point scoring assessment method, the guidance additionally states that the discharge should:

1. Discharge the extracted air not less than 1 m above the roof ridge of any building within 20 m of the building housing the commercial kitchen.
2. If 1 cannot be complied with for planning reasons, then the extracted air shall be discharged not less than 1m above the roof eaves or dormer window of the building housing the commercial kitchen. Additional odour control measures may be required.
3. If 1 or 2 cannot be complied with for planning reasons, then an exceptionally high level of odour control will be required

Thus, if the flue cannot be extended to a height of 1m above the tallest building within 20m, then additional odour abatement may be required.

ODOUR CONTROL MEASURES

CONTEXT

This section of the report describes the proposed odour control measures for this restaurant with the particular site specific odour risk factors, using the assessment and control techniques from the Guides, to minimise the risk of odour impacts giving cause for complaint at surrounding properties.

Based on the recommendations and approaches identified in this report, the following combination of odour abatement measures have been selected as the most appropriate solution for this situation.

The kitchen extract drawings in the appendix shows the arrangement of the proposed grease and odour control system.

Canopy Filtration

Each item of cooking equipment is arranged in a linear layout, with fume extraction provided by a wall-mounted canopy positioned above them. The extract canopy is fitted with baffle filters, made of stainless steel, which are removable and cleanable. These baffle filters are designed to effectively capture grease particles from the air, ensuring efficient grease filtration. By preventing grease buildup within the extraction system, the filters reduce the risk of blockages and help maintain the cleanliness of the system, minimizing grease emissions before the air is discharged.

Odour & Grease Treatment

To address odour and grease treatment, the proposed system incorporates ESP (Electrostatic Precipitator) and OC3 technology. The ESP will efficiently remove particulate matter, including fine grease particles, ensuring that the extracted air meets high cleanliness standards. The OC3 treatment further improves the system's capacity to neutralise odours, providing an added layer of protection against any residual smells. Together, these technologies will achieve a high to very high level of odour control, meeting the necessary abatement standards for commercial kitchens with medium to high grease loading.

Discharge Arrangement

A common ducted extraction system is connected to a centrifugal fan of suitable capacity, which discharges air through vents to the street. Due to the vents being located at street level, the air will be discharged at a low height, potentially affecting dispersion. This low-level discharge could increase the risk of odour impact on nearby properties, especially as emissions are released directly onto

Harter Street. Given these constraints, high-level odour control measures such as high-efficiency filters OR ozone treatment, and electrostatic precipitators (ESP) are essential to effectively manage odour and grease emissions, reducing their impact on the surrounding area.

Kitchen Extract drawings have been included in the appendices.

MAINTENANCE

Standard arrangement for maintenance is for quarterly changing of supply air system filters and six-monthly servicing.

Kitchen extract duct cleaning is carried out in accordance with Building & Engineering Services Association Guide To Good Practice – Internal Cleanliness of Ventilation Systems TR19.

Access doors are provided in the exact ductwork at minimum 1200mm intervals for cleaning purposes.

Intervals for filter changing and duct cleaning may be increased or decreased depending on the particular store characteristics when they are apparent.

CONCLUSIONS

The proposed odour control system for the restaurant has been designed to address site-specific odour risks. Given the low-level discharge from the kitchen extraction system, high-efficiency measures, including baffle filters, ESP technology, and OC3 treatment, ensure very high levels of odour control. These measures will effectively manage grease and odour emissions, mitigating their impact on nearby properties.

Although the discharge point is at street level, the combination of advanced filtration and treatment technologies will meet the necessary standards for commercial kitchens. Regular maintenance and cleaning of the system will ensure its ongoing effectiveness and compliance with odour control requirements.

In light of the odour control guidelines and EMAQ+ standards, the proposed system aligns with the required abatement measures, offering an appropriate solution for the site's specific conditions.

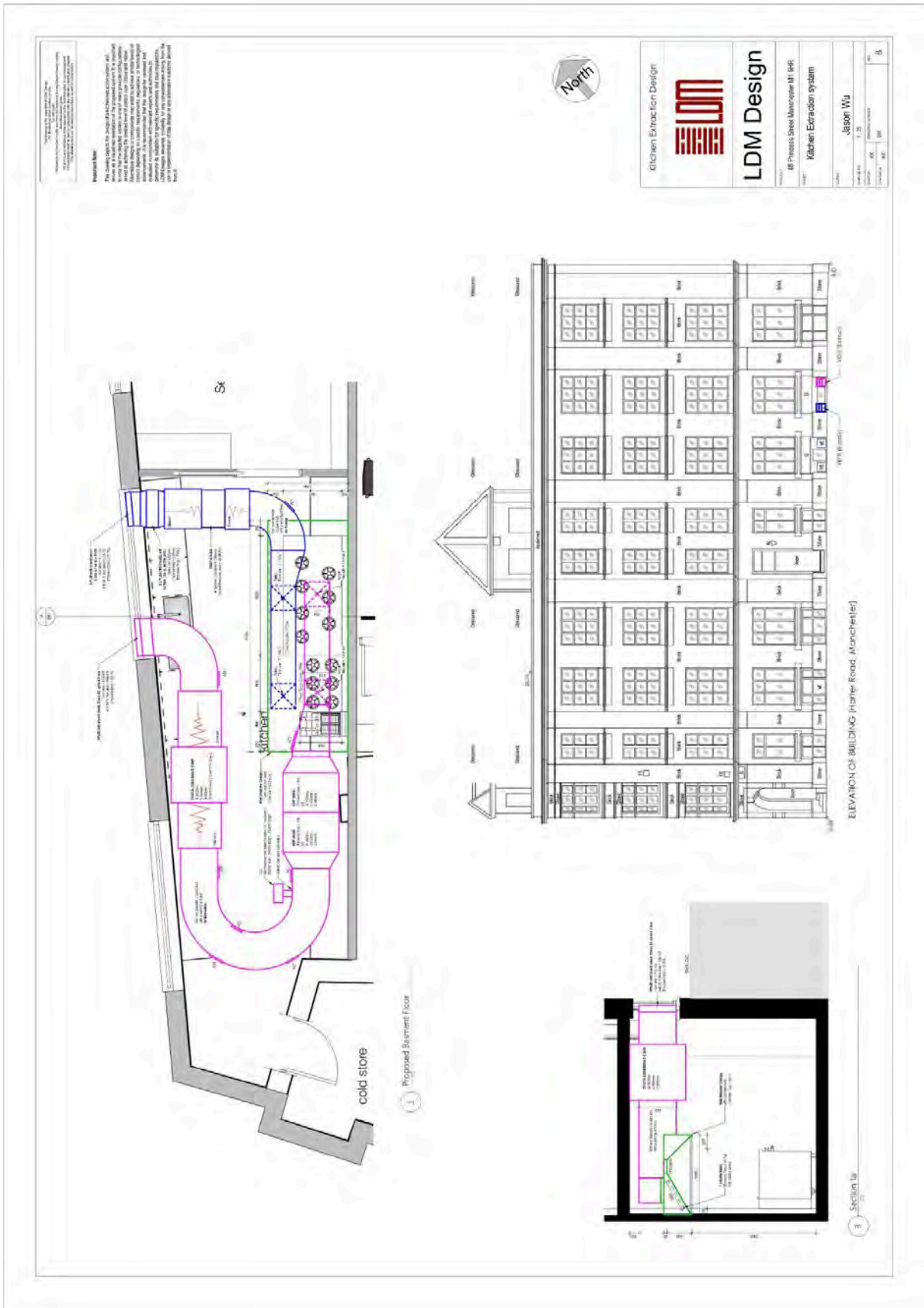
APPENDIX 1 – SITE PLAN & LOCATION DRAWING

SITE LOCATION PLAN
AREA 2 HA
SCALE 1:1250 on A4
CENTRE COORDINATES: 384179, 397811



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APPENDIX 2 – DRAWINGS - COMMERCIAL KITCHEN VENTILATION SYSTEM



LONGAR® Type 3

Low Pressure Baffle Filter



*Stainless steel 240 grit finish - standard handles



*Stainless steel bright annealed finish - optional fixed high temp handles

LONGAR® TYPE 3 FEATURES:

- Low pressure loss
- Polished finish or 240 grit dull grain finish
- Fully welded construction – all stainless steel construction
- Robust construction, our strongest filter yet
- Folding handles and drain holes standard (optional rigid handle available)
- Meets HVCA DW172 requirements
- Stock Sizes 2-3 days delivery, custom sizes available
- Cutsafe safety edges

APPLICATIONS

- Commercial kitchens
- Water mist separation
- Spark arrestors
- Sand filtration

LONGAR® TYPE 3 BAFFLE FILTER

For use in commercial kitchens and ventilation to extract grease laden air and offer a barrier to flame. The Type 3 has been developed for customers that require a lower pressure baffle filter, it still holds many of the features of the premium Type 2 yet offer a lower resistance to air. The Type 3 is available in standard depths of 20mm and 45mm. Custom sizes available on request. Meets DW172 and ISO9001.

CONSTRUCTION / MATERIAL SPECIFICATION

As standard all baffles are manufactured with Stainless Steel 430 polished finish and 240 Grit Dull Grain Finish. Maximum Operating temperature 400C or 750F.

FITTING INSTRUCTIONS

- Fit products, handles in direction of air in.
- Product vertical in air stream.

HANDLING

- Handle with care when unpacking.
- Store in dry and frost protected place.

MAINTENANCE

- All maintenance should be carried out in accordance with the planned maintenance set by installation contractor.
- When handling any components suitable PPE should be used - gloves & eye protection and access equipment.
- Filters should be cleaned by a trained operative either daily for heavy use or weekly for light use.
- For more exact guide to cleaning you should contact a cleaning specialist.

PACKAGING

All units are packaged in double wall boxes with separators for standard sizes, glued closed for protection whilst in transit against contamination.

FILTER CLASSIFICATION:

- Filter Class G2.
- UL Class 2.

MANUFACTURED TO:

- DW172.
- ISO9001.

For technical specifications, part numbers and ordering information, please see overleaf.

LONGAR® Type 3

Low Pressure Baffle Filter

TECHNICAL SPECIFICATIONS

Longar specifies the baffle filter as height x width x thickness. The handles are fixed to the height and drain holes punched on the width. The length of the baffle blade is the height; please ensure correct orientation is given when ordering.

SIZE ORDERING GUIDE (TOLERANCES +/- 2mm)			
Part Number	Actual Size HxWxD	Nominal Size HxWxD	Weight
TYPE3ST10X20	243 x 496 x 45mm	254 x 508 x 50mm	1.47kgs
	9.57 x 19.53 x 1.77"	10 x 20 x 2"	3.23lbs
TYPE3ST12X20	295 x 496 x 45mm	304 x 508 x 50mm	1.79kgs
	11.61 x 19.53 x 1.77"	12 x 20 x 2"	3.94lbs
TYPE3ST16X16	395 x 395 x 45mm	406 x 406 x 50mm	1.90kgs
	15.55 x 15.55 x 1.77"	16 x 16 x 2"	4.18lbs
TYPE3ST16X20	395 x 496 x 45mm	406 x 508 x 50mm	2.39kgs
	15.55 x 19.53 x 1.77"	16 x 20 x 2"	5.26lbs
TYPE3ST18X18	444 x 444 x 45mm	457 x 457 x 50mm	2.42kgs
	17.48 x 17.48 x 1.77"	18 x 18 x 2"	5.32kgs
TYPE3ST20X16	496 x 395 x 45mm	508 x 406 x 50mm	2.39kgs
	19.53 x 15.55 x 1.77"	20 x 16 x 2"	5.26lbs
TYPE3ST20X20	496 x 496 x 45mm	508 x 508 x 50mm	2.87kgs
	19.53 x 19.53 x 1.77"	20 x 20 x 2"	6.31lbs
TYPE3ST24X24	597 x 597 x 45mm	609 x 609 x 50mm	4.35kgs
	23.50 x 23.50 x 1.77"	24 x 24 x 2"	9.57lbs
FINAL RECOMMENDED PRESSURE DROP: 400 PASCALS			



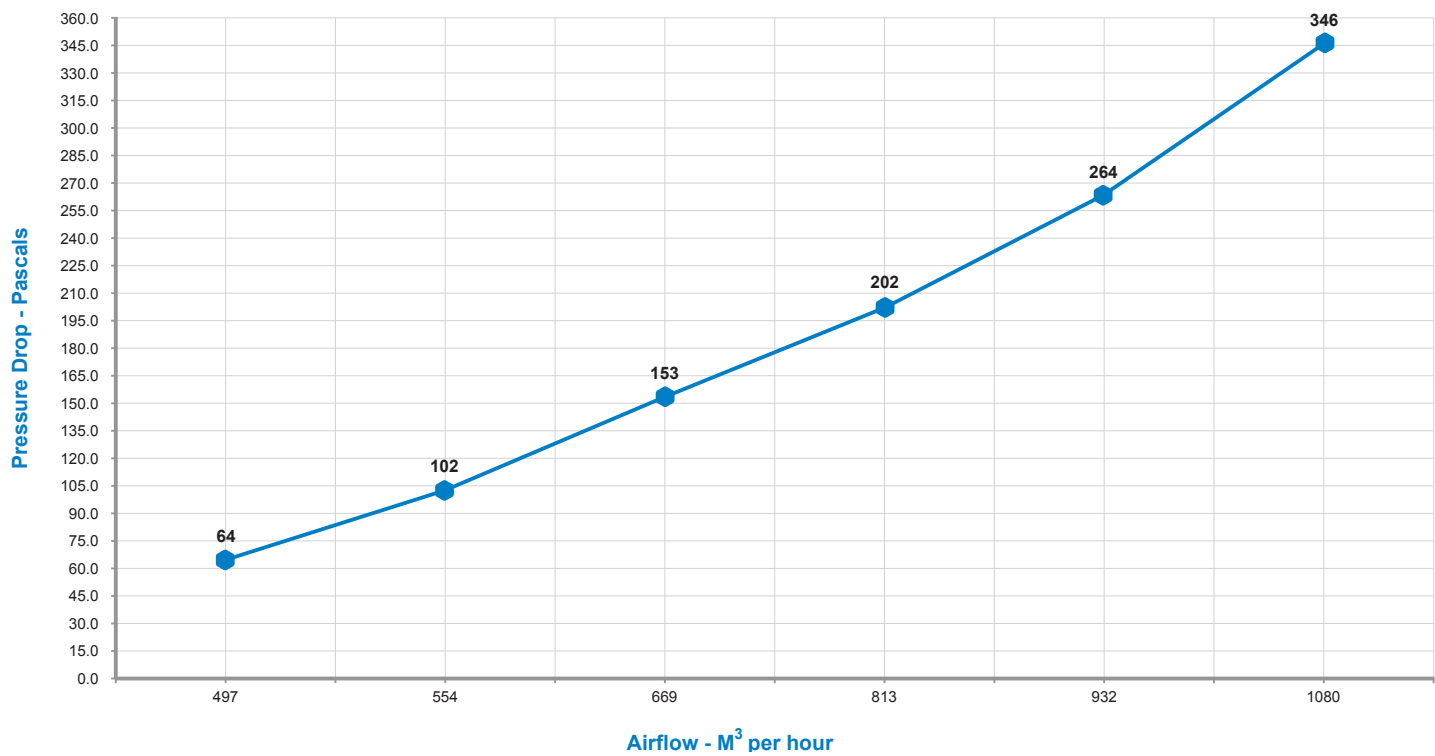
LONGAR INDUSTRIES

FILTERS AND FABRICATIONS FOR A CLEANER ENVIRONMENT

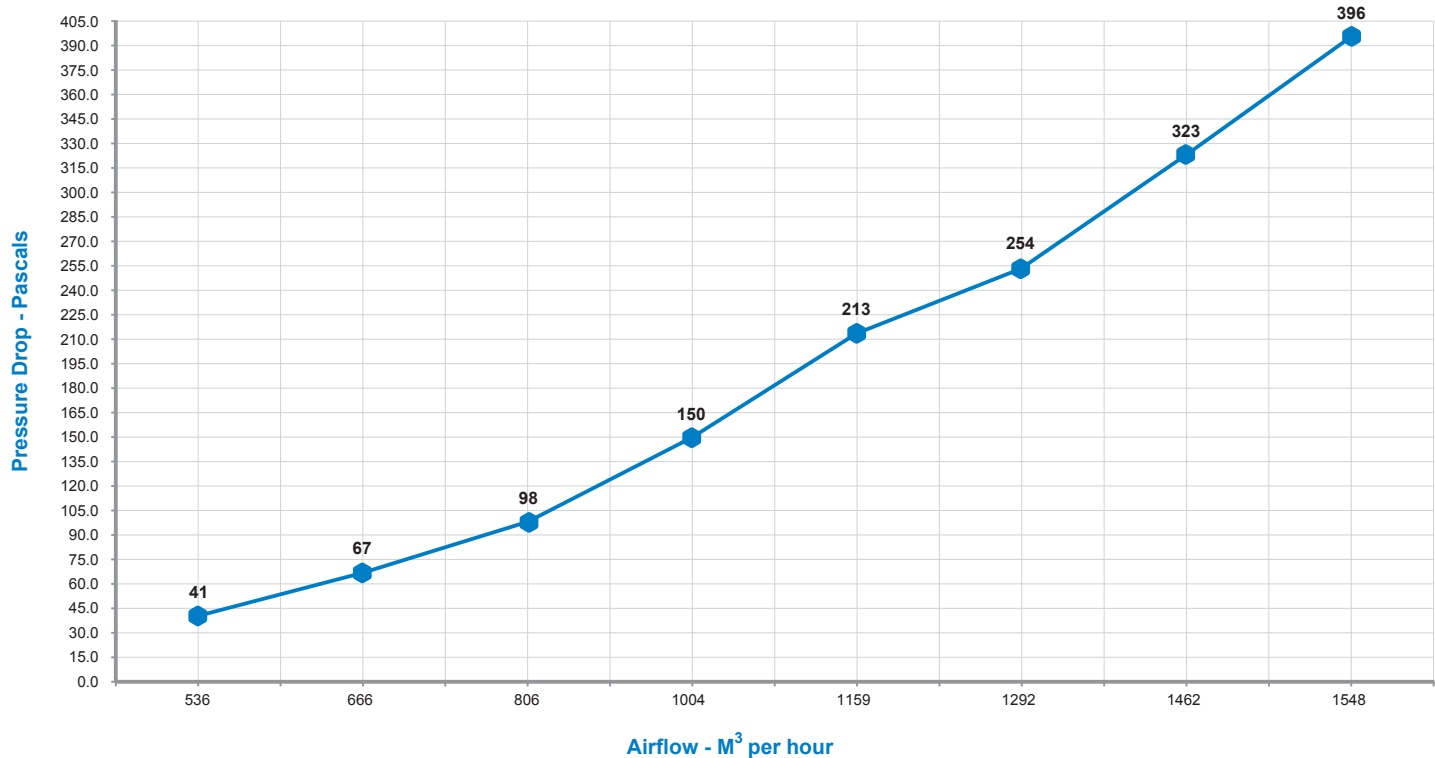
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As part of our program for continuous improvement, Longar Ltd reserves the right to change specifications without notice. 15-01-2016.

LONGAR® Type 3 - Low PD - Baffle Filter - 243x495x45mm



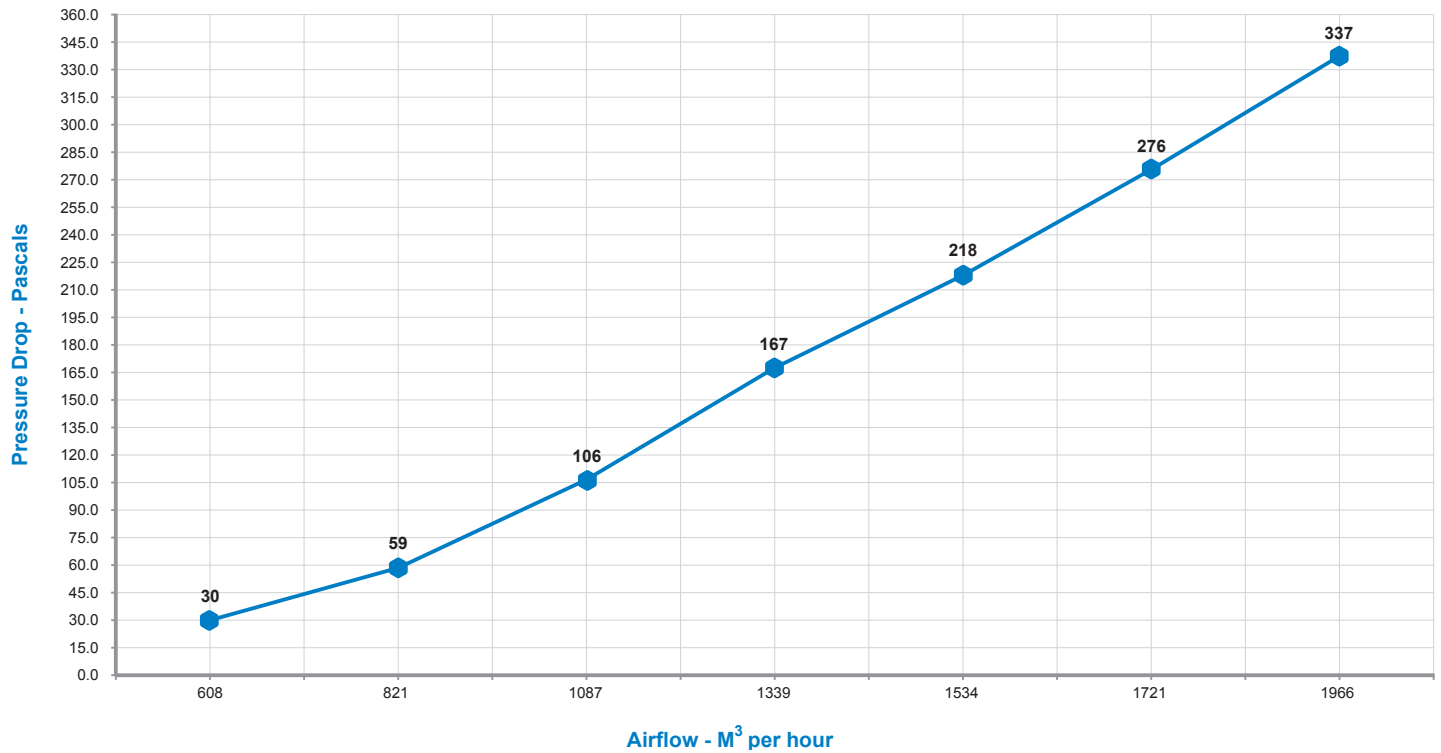
LONGAR® Type 3 - Low PD - Baffle Filter - 395x395x45mm



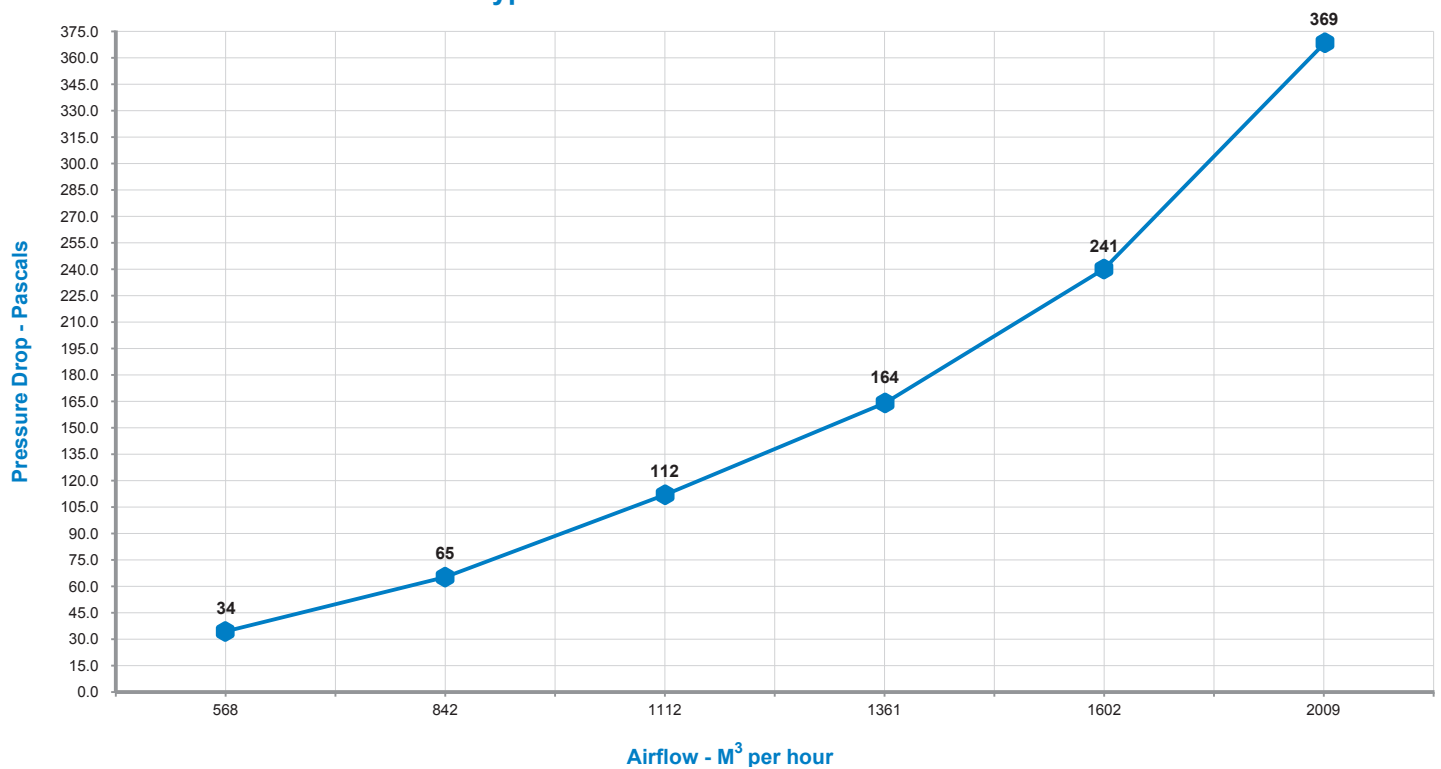
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FILTERS AND FABRICATIONS FOR A CLEANER ENVIRONMENT

LONGAR® Type 3 - Low PD - Baffle Filter - 395x496x45mm



LONGAR® Type 3 - Low PD - Baffle Filters - 444x444x45mm



LONGAR INDUSTRIES

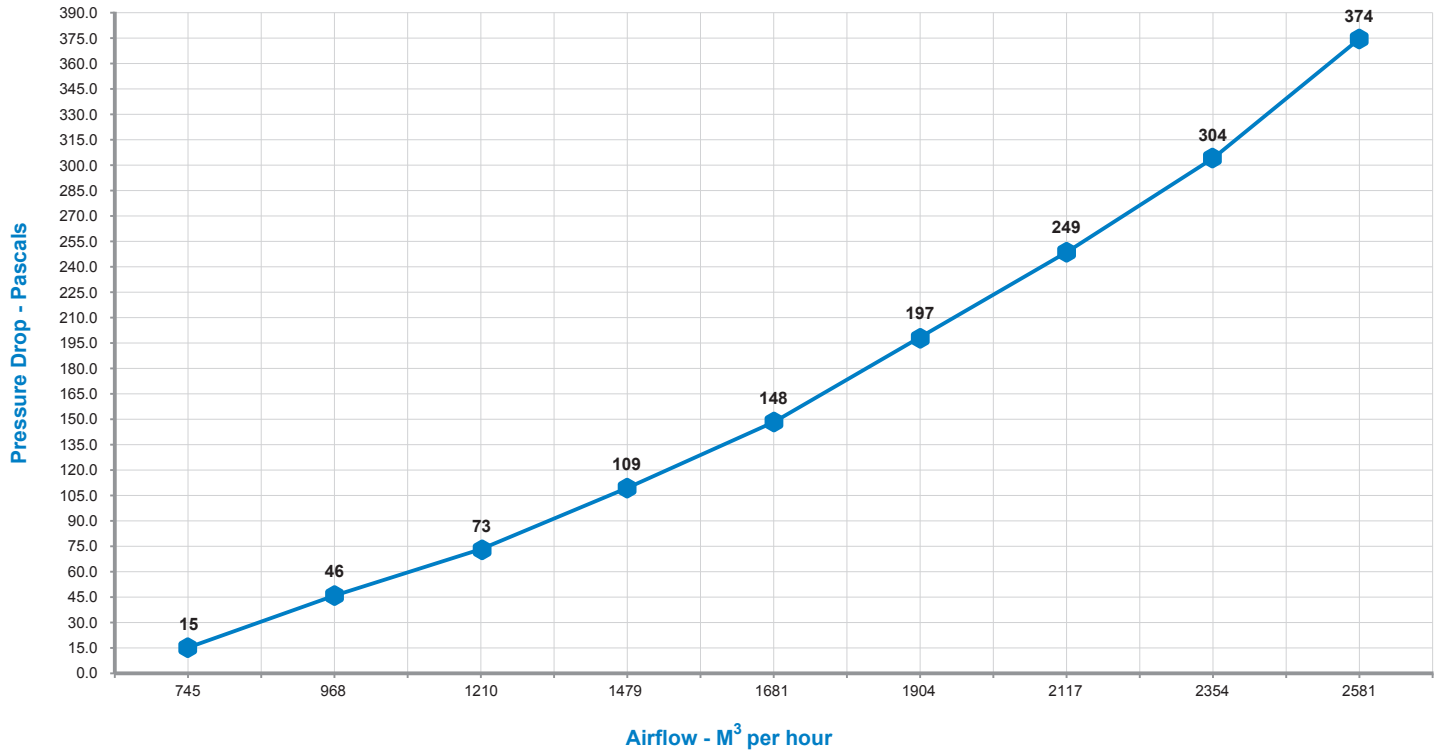
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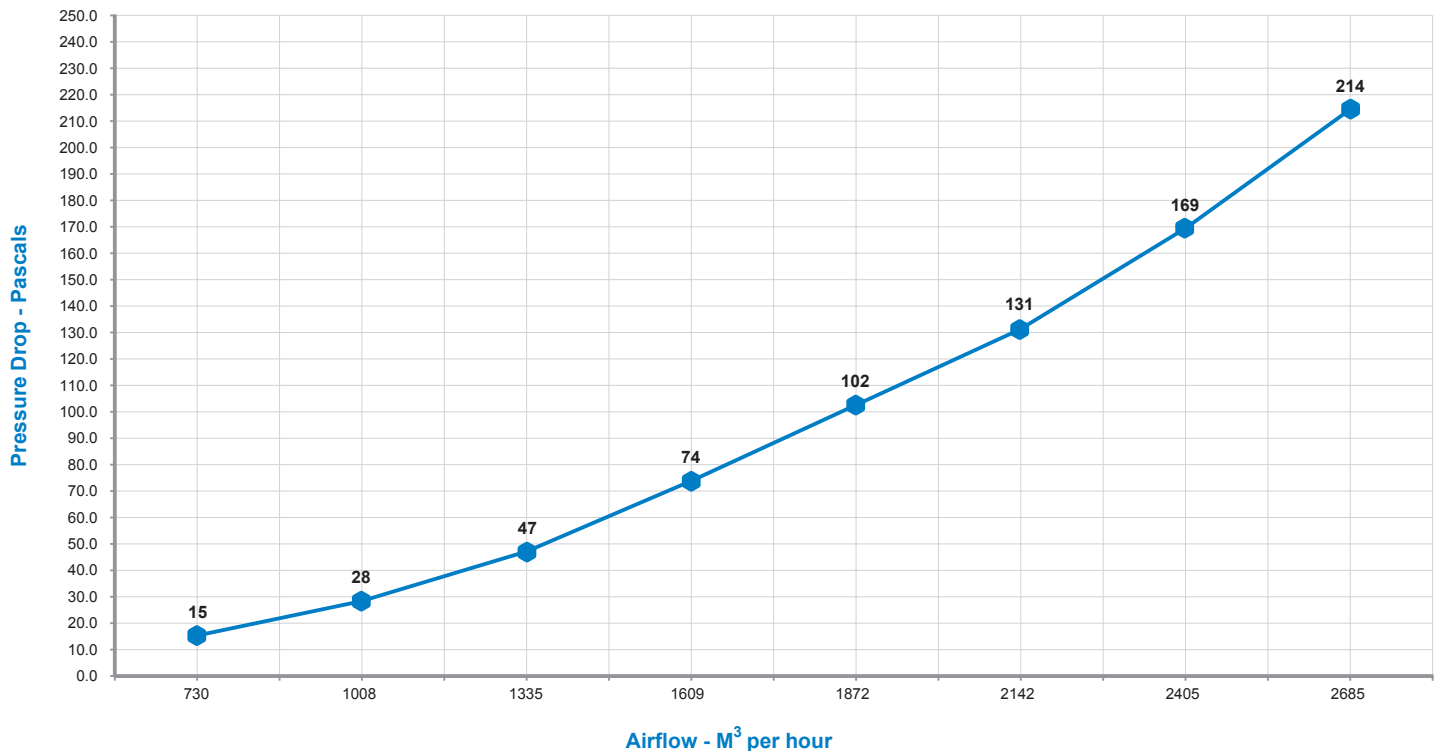
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LONGAR® Type 3 - Low PD - Baffle Filters - 496x496x45mm



LONGAR® Type 3 - Low PD - Baffle Filters - 597x597x45mm



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FILTERS AND FABRICATIONS FOR A CLEANER ENVIRONMENT

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Electrostatic Precipitation (ESP) Filter Unit



Technical and Operations Manual

For Models: ESP 1500EI
ESP 3000EI
ESP 4500EI
ESP 6000EI

Using this Manual

This manual is intended to be used as a work of reference for professional, well trained and authorised users to assist them to safely install, use, maintain and repair the Unit mentioned on the cover of this document.

Please note that it is strongly recommended training be given by Purified Air Limited prior to operatives attempting to carry out maintenance or repair work on these Units.

Copyright Statement

All rights reserved

No part of this publication may be copied or published by means of printing, photocopying, microfilm or otherwise without prior written consent of the manufacturer. This restriction also applies to the corresponding drawings and diagrams.

The information given in this manual has been collected for the general convenience of our clients. It has been based on general data pertaining to construction material properties and working methods known to us at the time of issue of the document and is therefore subject at any time to change or amendment and the right to change or amend is hereby expressly reserved. The instructions in this publication only serve as a guideline for installation, use, maintenance and repair of the models mentioned on the cover page of this document.

This manual is to be used for the standard models of the Unit of the types given on the cover page. Thus the manufacturer cannot be held responsible for any damage resulting from the application of this manual to the version actually delivered to you.

This manual has been written with great care. However, the manufacturer cannot be held responsible, either for any errors occurring in this manual or their consequences.

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1. Safety

1.1 Introduction

Everyone working on or with the Unit must be familiar with the contents of this manual and must strictly observe the instructions herein.

The Management should instruct personnel in accordance with this manual and observe all instructions and directions given herein.

Note: Always follow the steps for any instructions in this manual in the order given.

Always keep this manual with the Unit.

The user of the Unit is always fully responsible for observing all applicable local safety instructions and regulations.

Specific working conditions or selected accessories may require additional safety instructions. Contact your supplier immediately if you detect a potential danger when using the Unit.

1.2 Safety Warnings and Instructions

The following symbols and notifications are used in this manual:



WARNING!

Used to warn of a risk of injury or death.



WARNING! - DANGER OF ELECTRIC SHOCK!

Used to warn of a risk of injury or death from electric shock.



CAUTION

Used to caution of a risk of damage to equipment.



INFORMATION

Important information or useful hints about usage.



RECYCLING

Recycling information.



WEEE REGULATIONS

Ensure that waste electrical equipment is disposed of correctly.

1.3 Pictograms, Warnings and Instructions Displayed on the Unit

The pictograms, warning and instructions attached to the Unit are part of the safety features.

They must not be covered or removed and must be present and legible during the entire life of the Unit.

- Immediately replace or repair damaged or illegible pictograms, warnings and instructions.

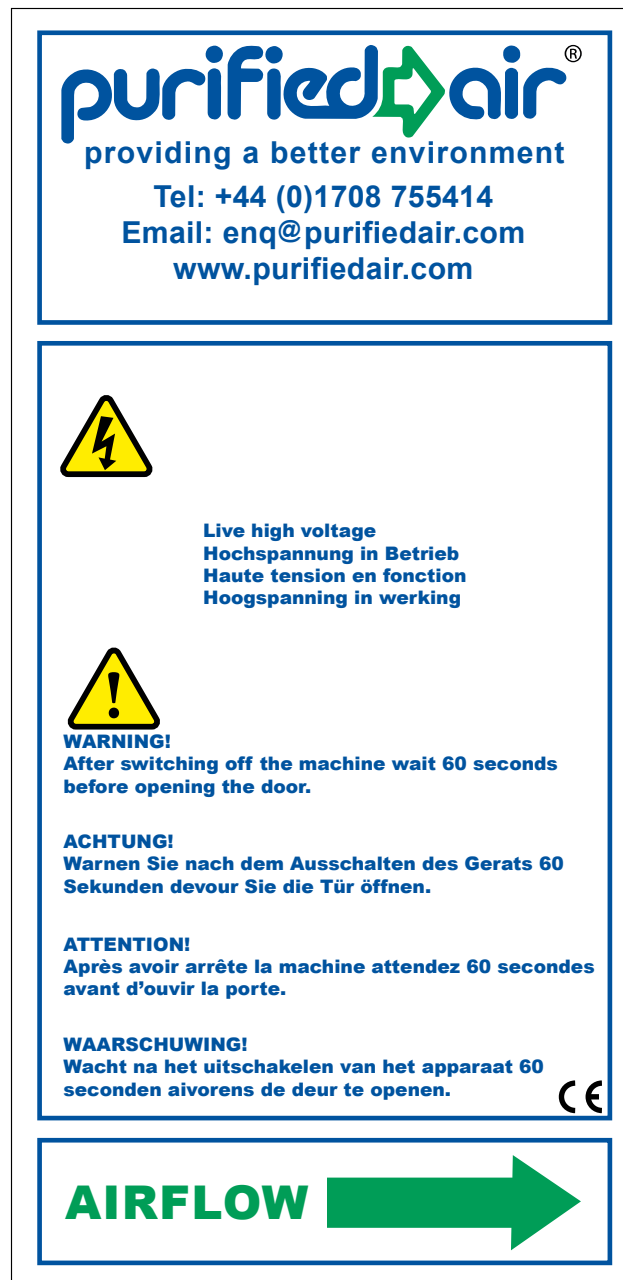


Figure 1 - Unit Label

1.4 Safety Features

An Interlock in the Unit's Door Assembly interrupts the mains power if the main filter compartment is opened before the mains power has been isolated.



CAUTION

All safety features must be correctly installed and can only be removed for maintenance and repair tasks by skilled and authorised service engineers.

The Unit must not be used if the safety features are not fully present or defective.

The safety features should be regularly checked to ensure that they are functioning correctly and, if defective, should be repaired immediately.

1.5 Safety Warnings and Cautions



WARNING! RISK OF EXPLOSION!

The Unit is not explosion-proof rated. It can cause sparks and should therefore not be used in areas with an explosion risk.



WARNING! Fire Hazard!

Never use the Unit for extracting and/or filtering inflammable, glowing or burning particles or solids or liquids.

Never use the Unit for extracting and/or filtering of aggressive fumes (such as hydrochloric acid) or sharp particles.



WARNING!

Ozone (O₃) is produced by the Unit. Ozone can be poisonous at low concentrations.



Inhalation of ozone causes dryness of the mouth, coughing and irritates the nose, throat, and chest.

It may cause difficulty in breathing, headaches and fatigue, and could aggravate existing bronchial conditions including asthma. The characteristic sharp, irritating odour is readily detectable at low concentrations (0.01 to 0.05 ppm).

The Unit must not be operated without the kitchen's extractor fan(s) running.



WARNING! - DANGER OF ELECTRIC SHOCK!

To avoid electric shock:

Do not operate Unit without a proper electrical ground/earth.

Always disconnect power to the Unit and isolate the Unit, before performing any service or maintenance.

Do not operate the Unit if its power cables are damaged or if any other damage to the Unit is visible or suspected.

The supplied utility/mains power must match the power requirements listed on the Unit's rating label.



CAUTION

Regularly inspect the Unit and check it for damage.

Verify the correct functioning of all of the safety features.

Read and save all notices, warnings and safety instructions received with this Unit.

Do not alter the construction or design of this Unit.

Do not remove safety labels or devices.

Do not use this equipment for other than its intended purpose, as described in this manual.

Only use original spare parts.



CAUTION

Make sure the room is always sufficiently ventilated, particularly in smaller, confined areas.

Do not use the Unit at a relative humidity exceeding 75%.

Do not use the Unit at temperatures below -10°C or above 60°C.

Keep the operating controls free from dirt and grease.

Check the working environment. Do not allow unauthorised persons to enter the working environment.

Use common sense. Stay alert and pay attention to your work. Do not use the Unit when you are tired or under the influence of drugs, alcohol or medicine.

1.6 Modifications

Modification of the Unit is not permitted.

1.7 Users

Installation or maintenance of the Unit is exclusively reserved for authorised, trained and qualified users.

Temporary personnel and trainees should only access the Unit under the supervision and responsibility of the authorised, trained and qualified users.

1.8 Technical Specifications

There are currently four models in the range:

- ESP 1500EI, which contains a single ESP Collector Cell.
- ESP 3000EI, which contains two ESP Collector Cells.
- ESP 4500EI, which contains three ESP Collector Cells.
- ESP 6000EI, which contains four ESP Collector Cells.

The specification of each model is detailed below:

	ESP 1500EI	ESP 3000EI	ESP 4500EI	ESP 6000EI
Power consumption	20 Watts	30 Watts	40 Watts	50 Watts
Maximum air handling capacity	Up to 0.7m ³ /sec	Up to 1.4m ³ /sec	Up to 2.1m ³ /sec	Up to 2.8m ³ /sec
Dimensions	W 450mm H 630mm D 640mm	W 900mm H 630mm D 640mm	W 1350mm H 630mm D 640mm	W 1800mm H 630mm D 640mm
Weight	55kg	85kg	118kg	153kg
Power supply	220/240V 50Hz 1ph	220/240V 50Hz 1ph	220/240V 50Hz 1ph	220/240V 50Hz 1ph
Filter efficiency	Up to 98%	Up to 98%	Up to 98%	Up to 98%
Housing	Epoxy-coated galvanised steel	Epoxy-coated galvanised steel	Epoxy-coated galvanised steel	Epoxy-coated galvanised steel

1.8.1 Rating Plates

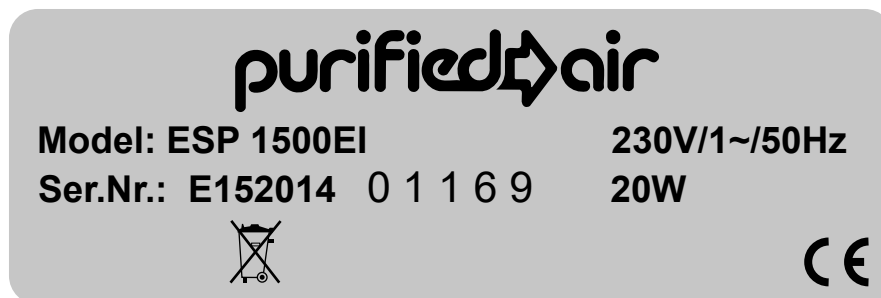
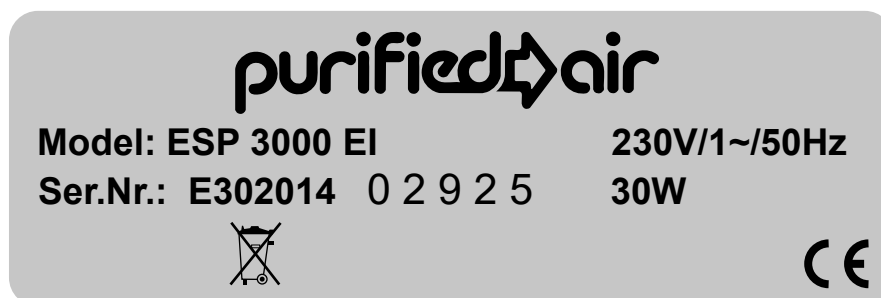
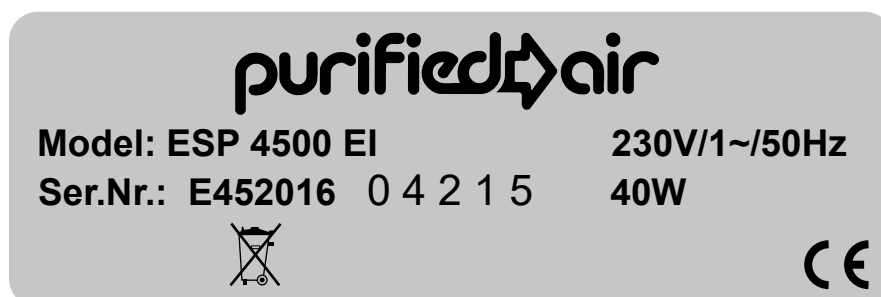


Figure 2 - Rating Plates for Each Model

2. Product Overview

2.1 Intended Use

The Electrostatic Precipitator (ESP) models covered by this manual have been designed primarily for filtering the extract air from commercial kitchens and have various specific features to suit that purpose.

Note: Though they can also be used for air filtration in other commercial and industrial applications where a high degree of filtration is needed, before considering alternative uses, please check with the manufacturer to confirm that your Unit will be suitable for its intended use.



CAUTION

No liability is accepted for damage or injury which results from any alternative use which has not been verified in writing by the manufacturer.

Using the Unit for alternative uses not approved in writing by the manufacturer is considered contrary to its intended use.

The Unit has been built in accordance with state-of-the-art standards and recognised safety regulations.

Individual Units can be mounted together in various combinations to satisfy the requirements of a particular installation.



CAUTION

Only use the Unit:

If it is not damaged in any way.

After following the instructions laid down in this manual.



Figure 3 - ESP Filter Unit (Model ESP 4500EI)

2.2 Features

The following features are applicable to all four models covered by this manual:

- They can be installed outside without an additional weather housing.
The Unit's casings is fully weatherproofed, with the Main Door components having an IP Rating of 64 and the Door Assemblies themselves being tightly sealed to the main chassis.
- The ionisation voltage runs at a negative potential which enhances both the ionisation of particles and their consequent precipitation and the production of ozone which helps eliminate odours in a kitchen environment.
- A high degree of efficiency, with power consumption between 20 Watts and 50 Watts, depending on the model.
- The Unit can be linked to a Building Management System (BMS) via a suitable relay mounted on the DIN rail (See: *Connecting the Unit to a Building Management System on page 21*).
- All internal components are designed for easy removal.
- The Mesh Filters (Pre and Post) are designed to drain independently and the Collector Cell is designed to be efficient, robust and effective.
- The Collector Cells and Filter Carriers can be easily removed for cleaning.
- The Collector Cells can be fitted with ionisation wires or with stainless steel spiked ioniser blades.
- All internal surfaces are as smooth and as free from screw and rivet heads as practically possible to allow for ease of cleaning.
- Fully welded sumps prevent leakage of collected grease. The inward sloping edges of the sumps encourage the flow of grease away from both the ducting and either side of the Unit.
- The Door Assemblies are designed to allow the Unit to be quickly reconfigured for different airflow directions.

2.3 Operating Principles

Commercial kitchen exhaust pollution is composed of two distinct phases:

- The particulate phase; oil, smoke and grease particles.
- The gaseous or odour phase.

2.3.1 Oil, Smoke and Grease Filtration

The primary function of Purified Air's range of Electrostatic Precipitators (ESPs) is to effectively filter the particulate phase (oil, smoke and grease) of extracted kitchen fumes.

The Unit covered by this manual utilises an ionisation process to filter particulates in the exhaust down to a sub-micron level, with an efficiency of up to 98% when fitted correctly.

The ESP Filters have been exclusively designed for filtering extracted kitchen fumes and have integral sumps built in to collect the oil and grease particles. This not only simplifies servicing but eradicates potentially dangerous spillage from the bottom of the Unit.

The entire range fits in-line with the kitchen's ducting and the modular layout allows additional Units to be easily added to cope with all kitchen fume extraction requirements.

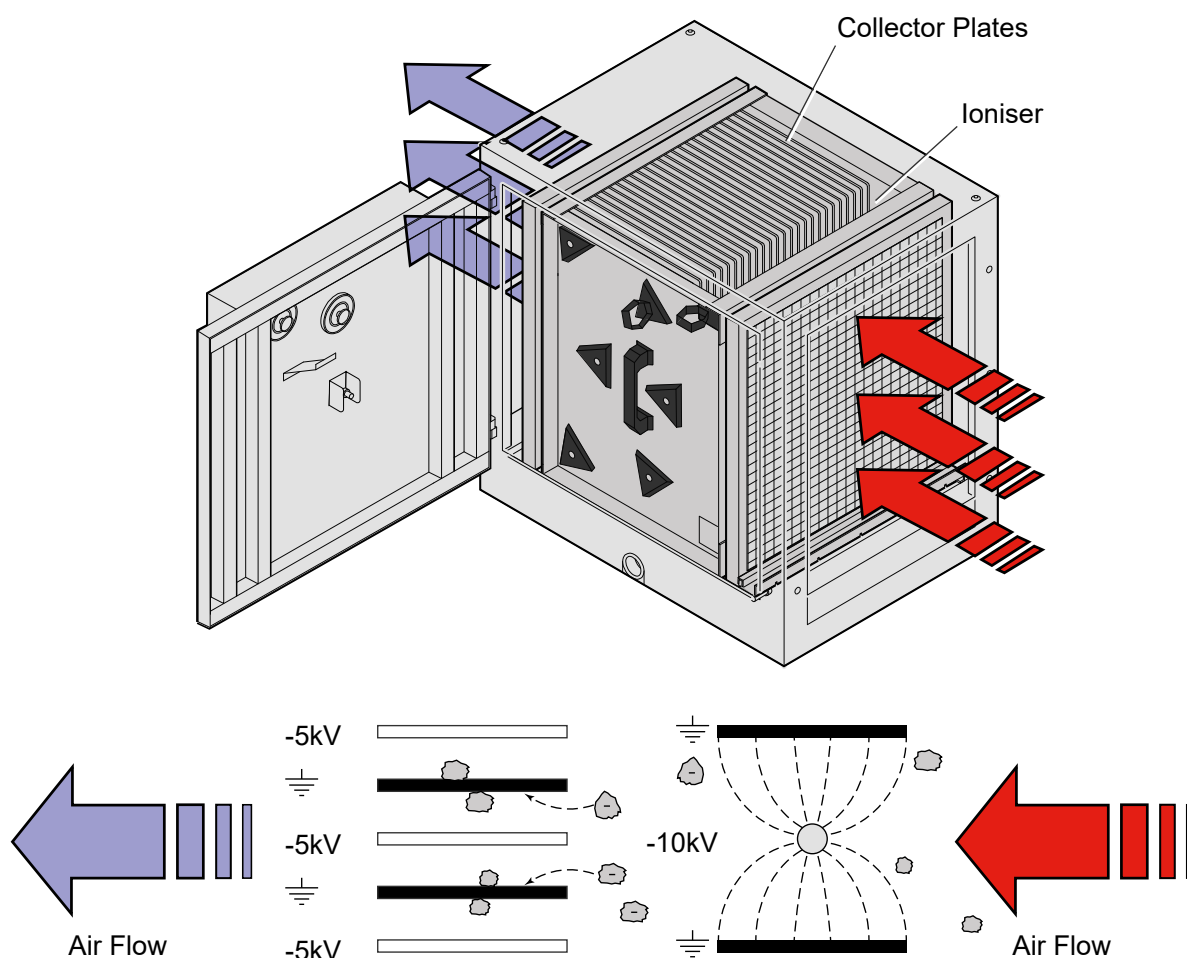


Figure 4 - Electrostatic Precipitator (ESP) - Operating Principles

Figure 4 (above) shows, in simple terms, how an electrostatic precipitator functions and this is summarised below:

1. The air first passes through a pre-filter.
2. The air then passes into the combined Collector Cell/Ioniser section where the particulates in the air stream are charged to a negative potential.
3. The negatively ionised air then passes between the Collector Cell's plates, which are alternatively negatively charged or earthed.
4. The negatively charged particulates passing through the plates are then simultaneously repelled away from the negatively charged plates and attracted to the earthed plates, where they stick, effectively filtering them from the airflow.
5. The particulates remain on the plates or drain down in to the sump (hence the need for regular cleaning).
6. The cleaned air exits through a post filter.

2.3.2 Odour Control

Ozone is produced as a function of the charging of the Collector Cell's plates in Purified Air's range of Electrostatic Precipitators. This helps to combat the gaseous or odour phase of kitchen exhaust pollution.

However, for total control of the gaseous phase, Purified Air also manufactures and distributes a range of Ultra Violet equipment and Ozone Generators as well as our Odour Neutraliser, the ON100.

Note: We also supply a full range of passive filtration equipment, including Activated Carbon, Baffle, Mesh, HEPA, Bag and Panel filters.

2.4 Electrostatic Precipitator Unit - Components

All models of Electrostatic Precipitator Unit comprise a Main Chassis with a number of removable components, a Main Door and an Electrical Housing Door.

2.4.1 Main Chassis

The Main Chassis contains the removable Collector Cell, Filter Carrier, Pre and Post Mesh Filters and non-removable, fully welded, Sump with Drain Plug.

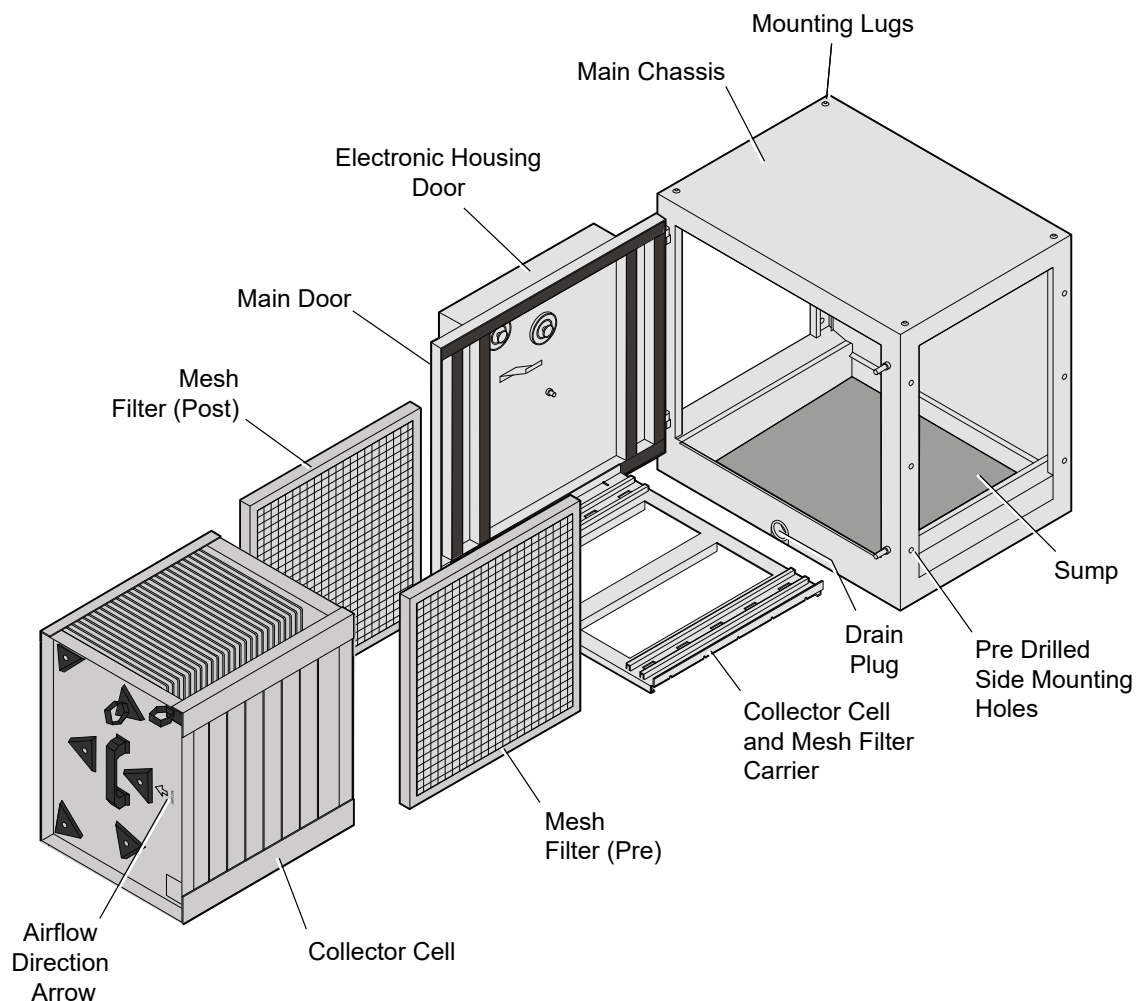


Figure 5 - Electrostatic Precipitator Unit - Main Chassis Components

2.4.2 Main and Electrical Housing Door Assemblies

The Main Door has an Electrical Housing Door which contains the High Voltage Power Supply (HVPS) and control elements. On the front of the Electrical Housing Door are mounted the Rotary Mains Isolator Switch and green Run Light Indicator.

The Main Door can be hung either way up to allow the Unit to be handed for different airflow directions.

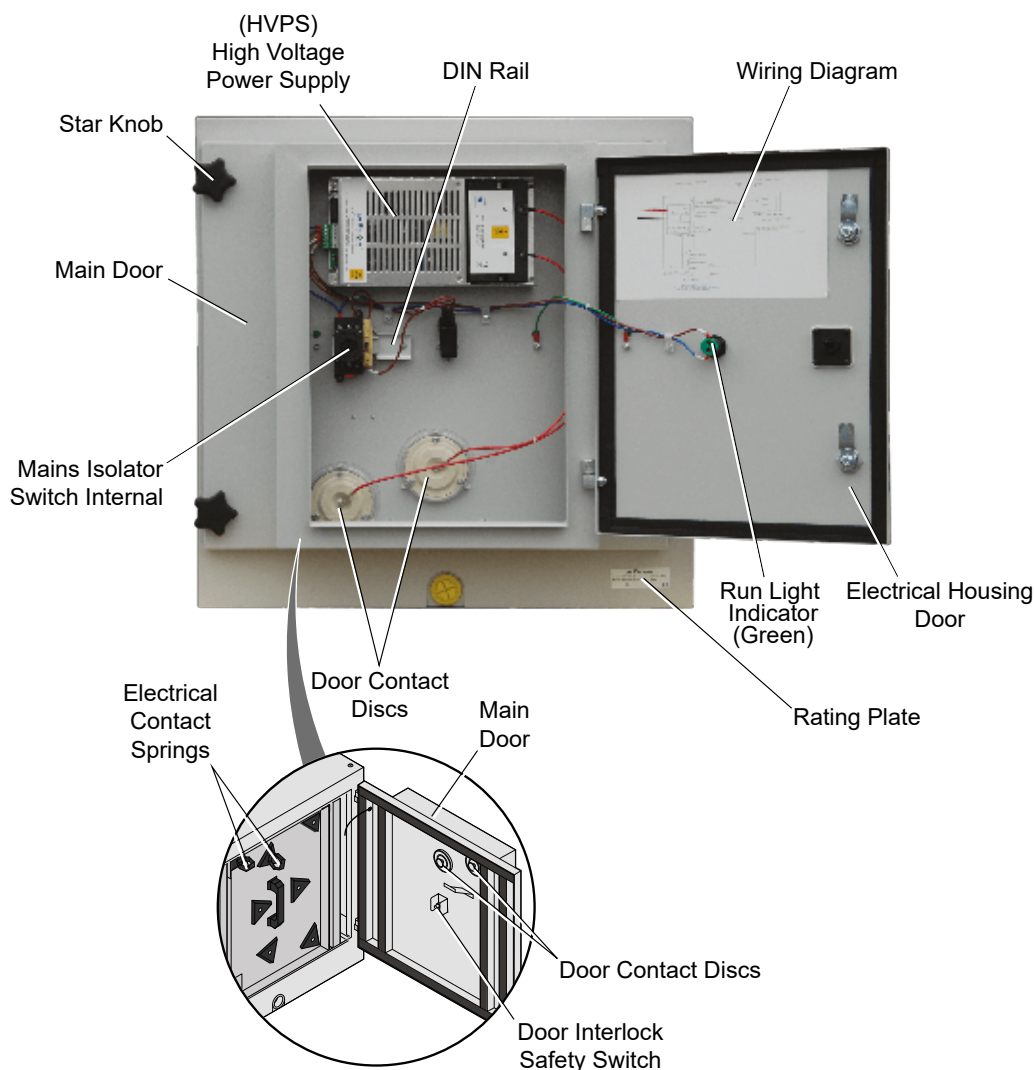


Figure 6 - Door Assemblies

3. Storage, Unpacking and Handling

3.1 Storage

Prior to installation, each ESP Filtration Unit must be stored in its original packaging in dry conditions.

3.2 Shipping List

Each Unit is shipped with the following:

- ESP Filter components - Mesh Filters and Collector Cells.
- This Technical and Operations Manual.

3.3 Unpacking and Handling

Before installing:

1. Strip away all packaging, wrapping and strapping (this must only be done by trained, professional installers).
2. Open the Unit and carefully remove all Mesh Filters and Collector Cells and place in a safe and secure position, away from the installation area.

This operation will greatly reduce the weight of the Unit and allow much easier installation.

3. Once the Unit have been successfully installed, carefully replace the Mesh filters and Collector Cells, ready for commissioning.



WARNING!

The Unit is heavy and the appropriate lifting and handling practices must be observed, for both unpacking and installation, to avoid personal injury or damage to the equipment.

See the Technical Specifications for Unit weights.

4. Installation Guidance

4.1 Overview

Installation should be carried out by a trained professional installer.

As installations vary widely depending on the specific site requirements, this section only provides general guidance for the installer.

If in any doubt, contact Purified Air Limited.

4.2 Model Dimensions

The dimensions, and the necessary service space required at the front of the Unit, are detailed opposite for each model.

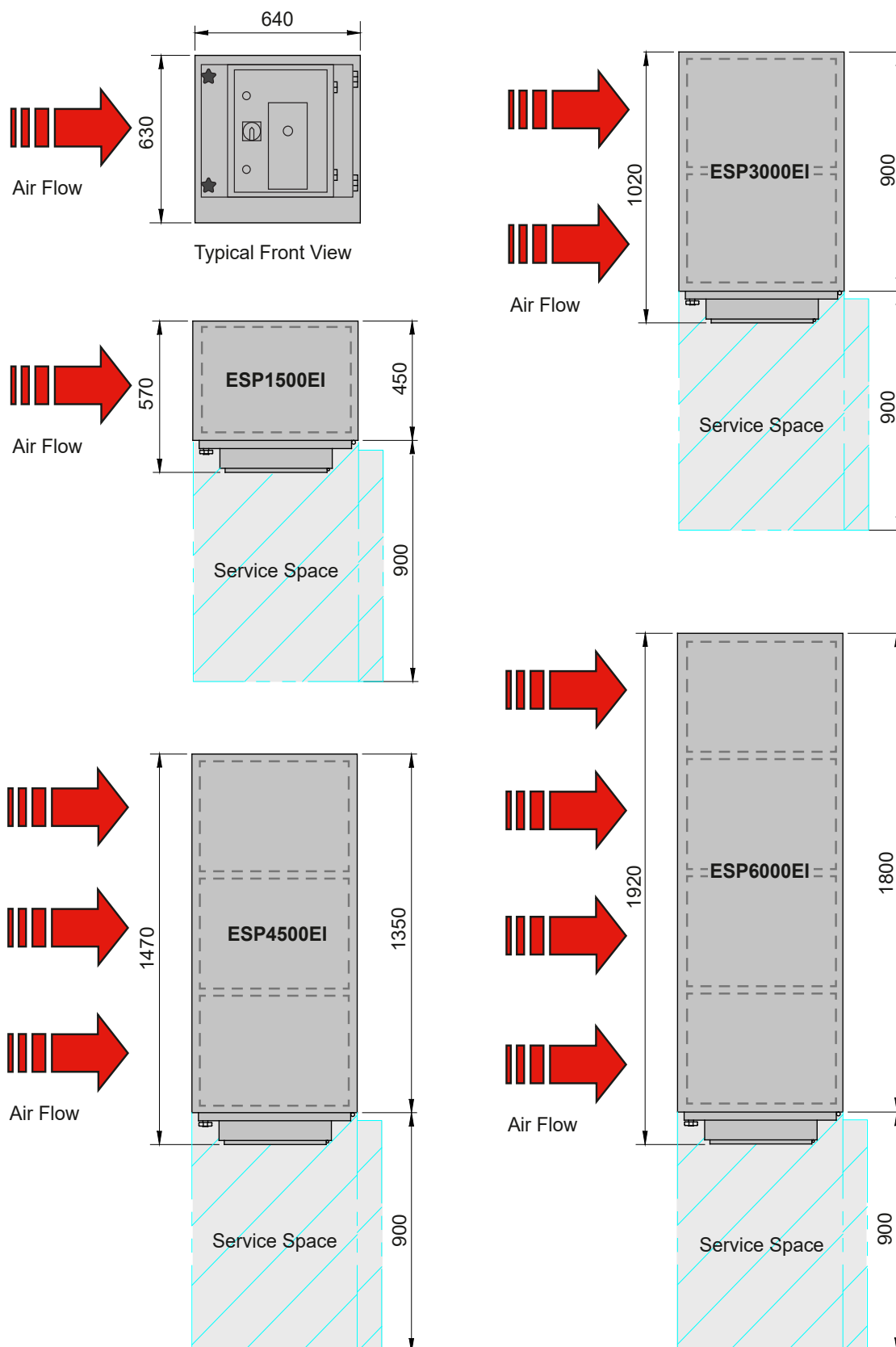


Figure 7 - Model Dimensions - ESP 1500EI, ESP 3000EI, ESP 4500EI and ESP 6000EI
(All Dimensions in Millimetres)

4.3 Pressure Loss Graphs

Any equipment added to a duct system will cause a drop in air pressure in the duct system, downstream of the added equipment.

To ensure that the duct system performs as expected, please note the Pressure Loss Graphs for each of the models:

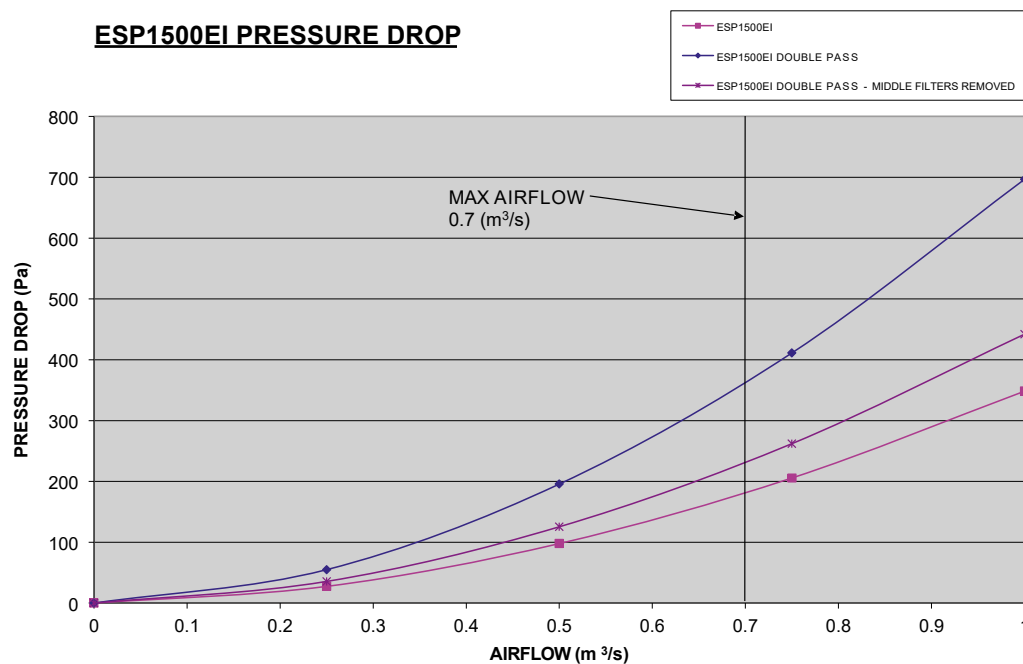


Figure 8 - Graph of ESP 1500EI Pressure Drop

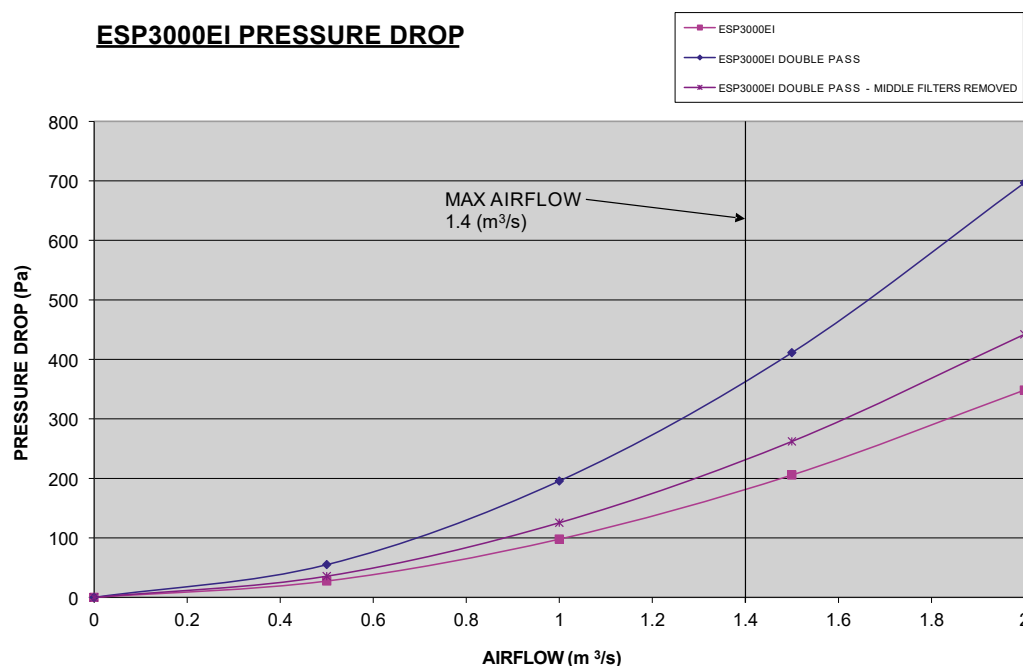


Figure 9 - Graph of ESP 3000EI Pressure Drop

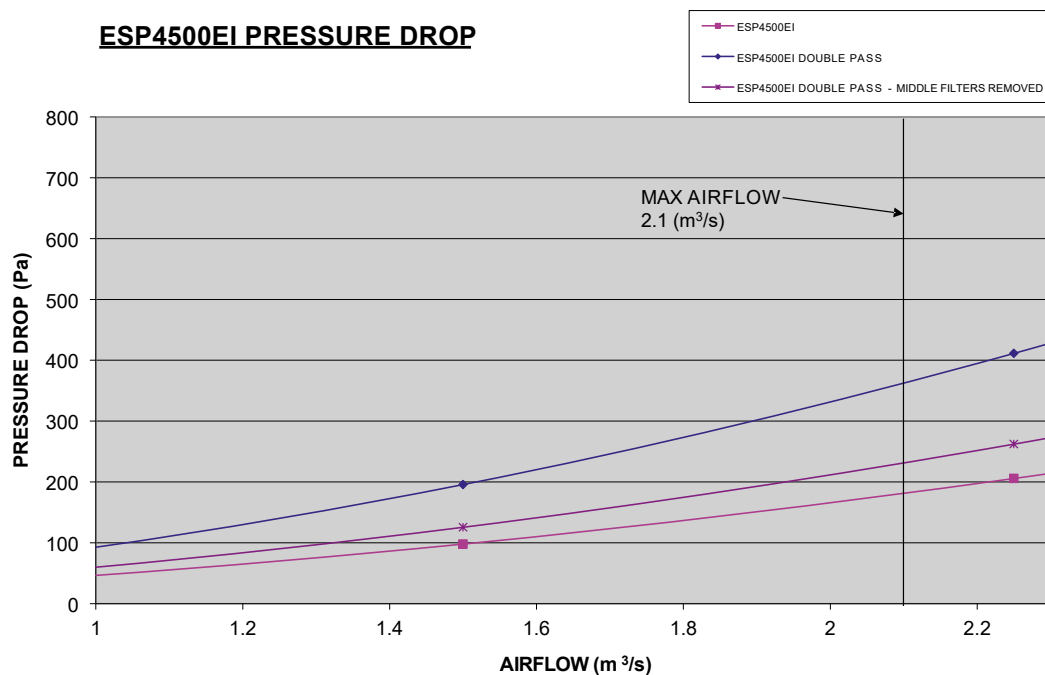


Figure 10 - Graph of ESP 4500EI Pressure Drop

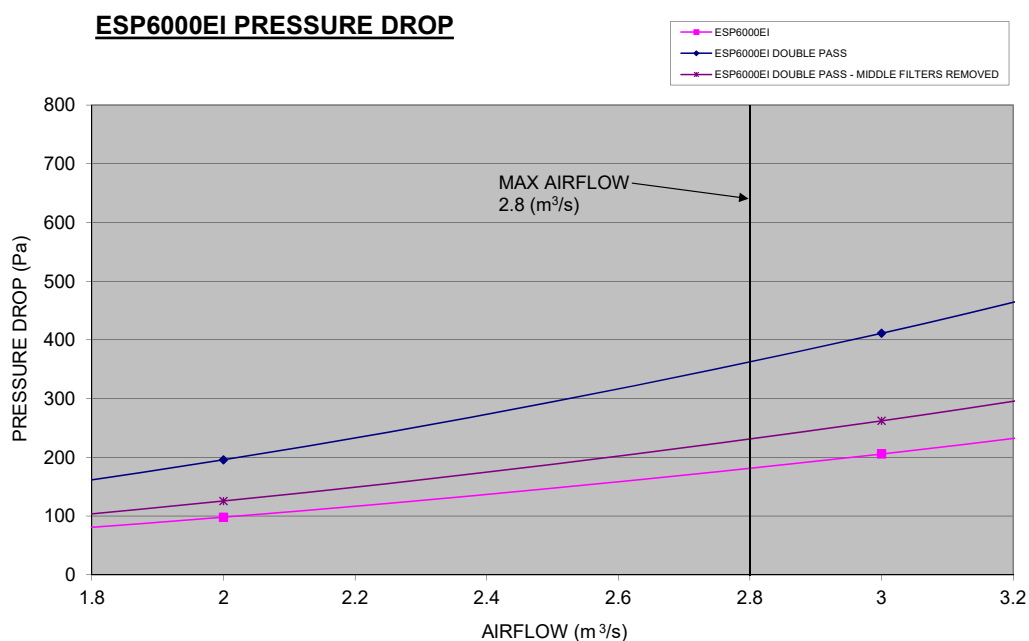


Figure 11 - Graph of ESP 6000EI Pressure Drop

4.4 Installing Single Units

When installing a single Unit, please note the following:

- The Unit should be positioned as close to the cooking source as possible, but please ensure that the fume temperature will never exceed the maximum operational temperature of the Unit, i.e. 60°C.
- Ensure that there is adequate service space around the Unit to enable the removal of the Unit's components.
- Ensure that there is adequate and safe access for servicing and maintaining the Unit.
- Check that the supporting structure is adequate for the weight of the Unit prior to installation. See Technical Specifications for Unit weights.
- The Unit should be mounted in the ducting system.
- The Unit can either be supported by a suspension bracket or suspended by screw rods attached to the top of the Unit. Suspension by screw rods will necessitate drilling holes in the top of the Unit's housing for this purpose.
- The Unit can also be placed on the ground, providing a suitable frame is placed in between the Unit and the floor to allow the system to be drained properly.

We suggest that this frame has a minimum height of 150mm and that you use suitable rubber or neoprene insulation between the Unit and the frame.

- The ducting should be fabricated to ensure as straight and even an airflow as possible, prior to entry into the Unit.
Turbulent air or air directed to one side of the Unit will make the Unit less efficient.

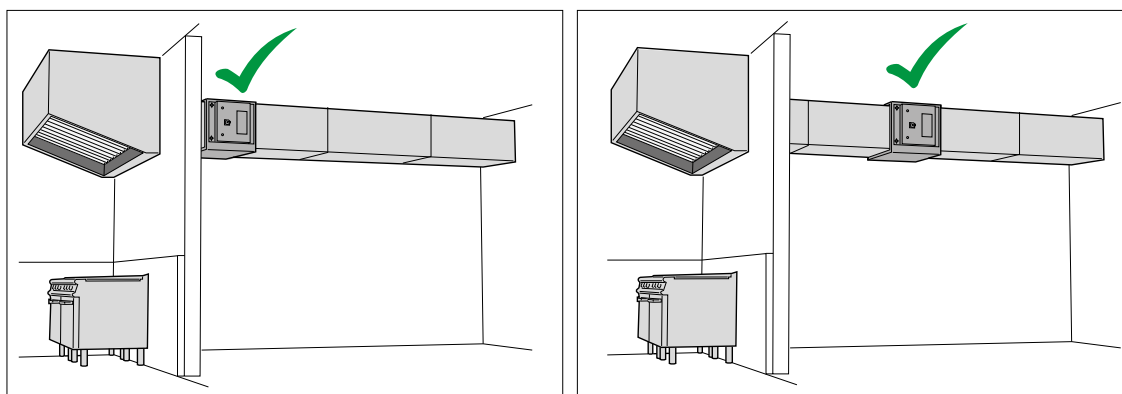


Figure 12 - Preferred Mounting of Filter Unit

Please consult the Wiring Diagram, mounted on the inside of the Door Assembly and shown on page 33 of this manual, when connecting the Unit to the mains. Beware of possible differences in the mains power supply.



INFORMATION

The ESP filter must be interfaced with the extraction fan so that they run in conjunction.

4.5 Installing Multiple Units

Multiple Units can be mounted in series, both vertically or horizontally or in parallel with each other.

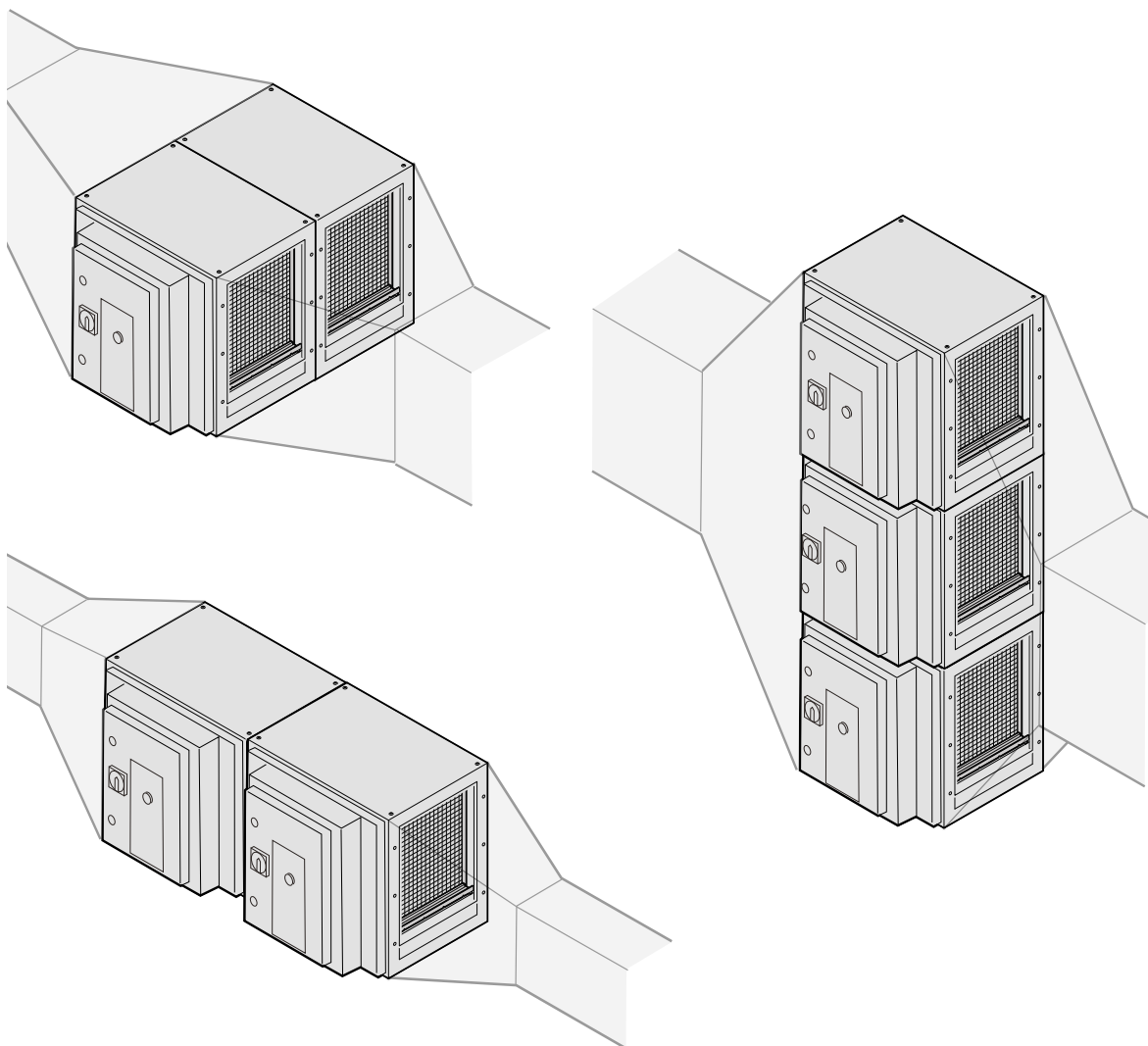


Figure 13 - Multiple Unit Installation Examples

When mounting multiple Units, please note the guidance for installing a single Unit and also note the following:

- The side flanges are pre-drilled to allow combinations of Units to be easily aligned and connected together.
- Locating lugs are also provided on the top of the Units to allow the vertical stacking and connection of combinations of Units. Up to four Units can be stacked on top of each other.



INFORMATION

Never install Units in front of entrances and exits which may be used by the emergency services.

4.6 Changing Airflow Direction / Re-Handling Unit

The ESP can be configured to allow airflow in either direction, i.e. air entering the Unit from the left or right hand side to take account of space constraints or the existing infrastructure.

The following tools will be required to change the airflow's direction:

- 7mm spanner or socket.
- Small adjustable spanner.
- 14 or 13mm socket depending on model.
- Cross head screwdriver.
- Pair of pliers.
- Optionally, a portable electric drill with a socket attachment.

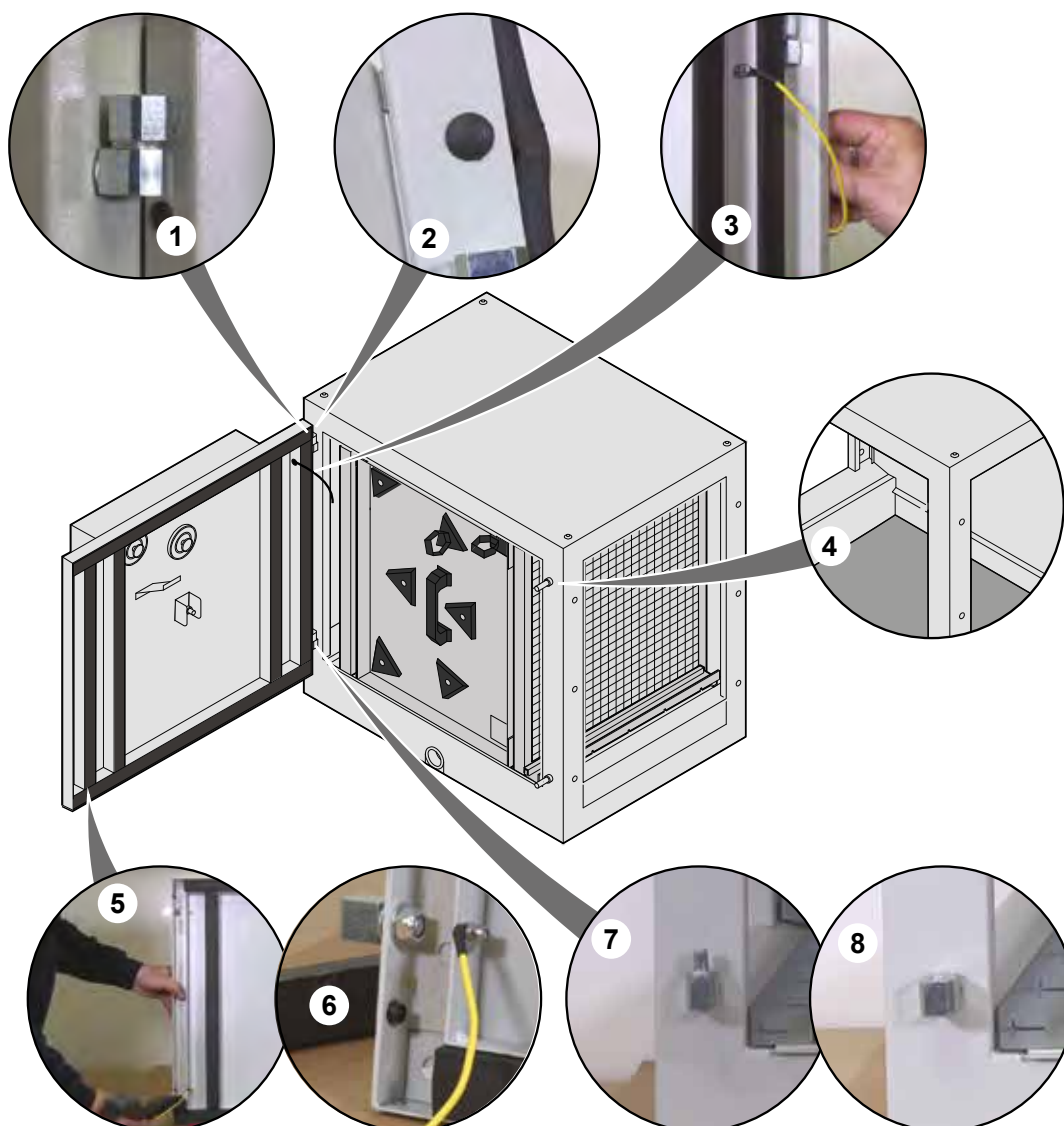


Figure 14 - Re-Handling Process Components

To change the airflow direction:

1. Fully undo the two Star Knobs ❹ (anti-clockwise) and open the Main Door.
2. Remove the Mesh Filters (pre and post), followed by the Collector Cell.
3. Remove the Earth Connection ❸ from the Main Chassis using a 7mm spanner.
4. Lift the Door Assembly off the Two Part Hinge ❶, taking care not to drop the hinge pins ❷ and washers.
5. Remove the hinge pins and washers and put somewhere safe.
6. Put the Door Assembly in a safe place.
7. Undo the Hinge Blocks ❸ using a combination of a 13/14mm socket and adjustable spanner and remove from the Main Chassis.
8. Remove the Threaded Rods ❹ that the Star Knobs were attached to, from the other side of the door aperture, using a deep 13/14mm socket or portable drill with the same attached.



INFORMATION

Note that the two sets of holes on either side of the door aperture are identical.

9. Install the Threaded Rods ❹ and Hinge Blocks ❸ on the opposite sides of the door aperture to their original locations, ensuring that the hinge pin location holes on the hinge blocks face upwards.
10. Turn the Door Assembly through 180° i.e. turn upside down.
11. Remove the Door Assembly Sealing Strip/Rubber Seal ❺.
12. Remove the Grommets ❷ from the holes near the Hinge Blocks ❸.
13. Remove the Hinge Blocks ❸ using a combination of an adjustable spanner and pliers.
14. Replace the Hinge Blocks ❸ into the holes previously occupied by the Grommets ❷, making sure that the hinge pin location holes on both hinge blocks point downwards.
15. Refit the Grommets ❷ into the holes left by the hinge blocks.
16. Relocate the Earth Connections ❸ to the top of the door's frame using either a screwdriver or pliers depending on the model.
17. Replace the Sealing Strip/Rubber Seal ❺.
18. Locate the Hinge Pins ❷ into the hinge pin location holes in the Hinge Blocks ❸ on the main body of the Unit.
19. Rehang the Door Assembly.
20. Re-attach the Earth Connection ❸ to the main body of the Unit.
21. Turn the Collector Cell through 180° (i.e. turn upside down to match the new orientation of the door) and replace in the Unit followed by the Mesh Filters (pre and post).
22. Ensure that the Collector Cell's spring electrical contacts line up with the electrical contact discs on the Door Assembly.

23. Remove the label from the door and replace with a new one in the correct orientation having first cleaned the door's surface.
It will be easier to adjust the new label's location if the door's surface is first wiped over with a slightly wet cloth before the label is attached. Once the water has dried, the correctly located label can be smoothed down.
24. Re-orientate the Rotary Mains Isolator Switch by removing the centre fixing screw and the red cover. Turn the red cover through 180°, replace it on the square centre shaft and secure with the fixing screw.
25. Follow the instructions listed in Operation and Control on page 22 to test the correct functioning of the Unit.



INFORMATION

For additional information, please see the video showing how to change the airflow's direction on the Purified Air website:

www.purifiedair.com

4.7 Connecting the Unit to a Building Management System

The Unit can be connected to a Building Management System (BMS).

- In order to complete this connection, a BMS Connection Kit must be purchased as a separate item.
- Connect the BMS to the Unit using the relay provided on the DIN rail in the Door Assembly.
- Refer to the Wiring Diagram on page 33 for details on how to connect the Unit to a BMS.



INFORMATION

Note that the BMS connection will only provide a Run or Fault signal.

5. Operation and Control

5.1 Control Panel

The Control Panel is part of the Electrical Housing Door and contains the Unit's Rotary Mains Isolator Switch and Run Light Indicator.

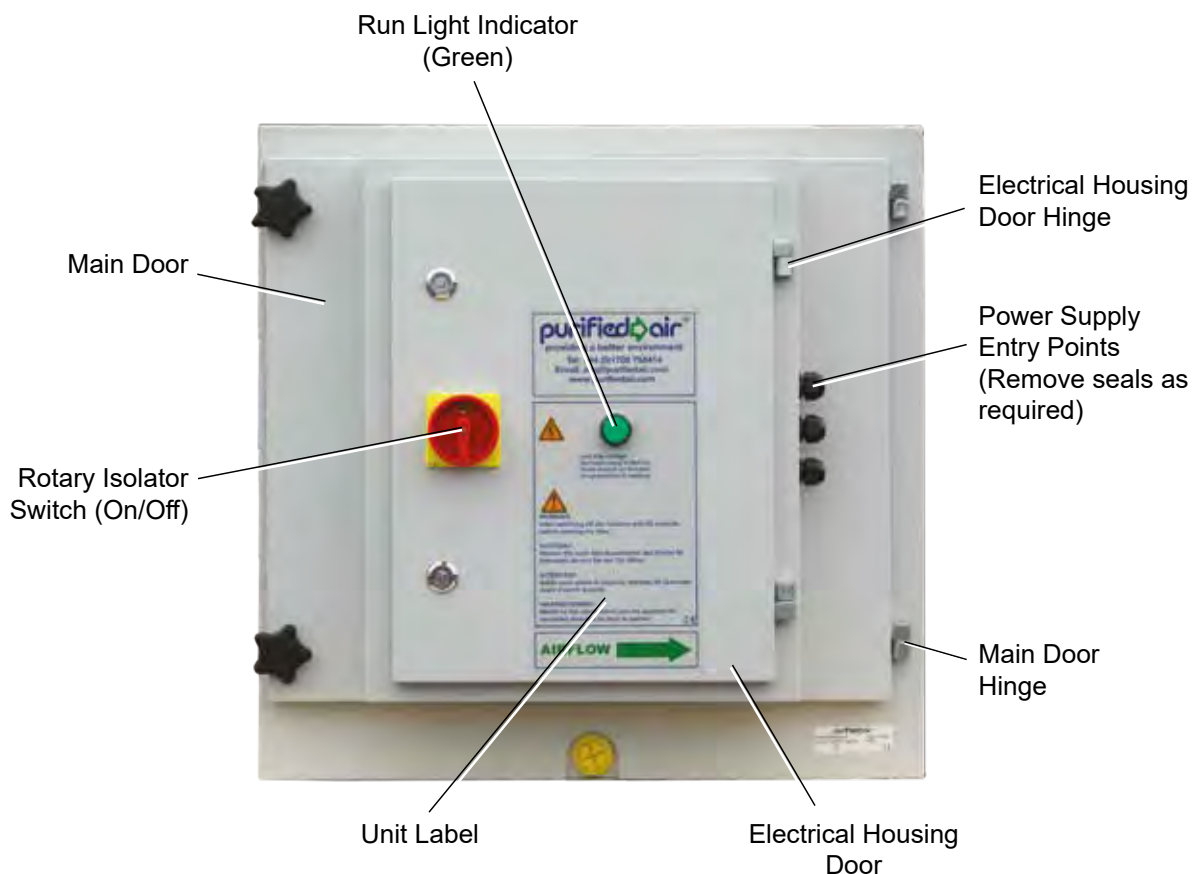


Figure 15 - Control Panel Components

5.2 Before Use

Before use, ensure that all safety precautions have been taken and that environmental conditions are suitable for operation of the Unit (see 1.5 Safety Warnings and Cautions on page 3).

5.3 Switching On

To start the Unit from the Control Panel on the Electrical Housing Door:

1. Turn the Rotary Mains Isolator Switch to the 'On' position.

Note: The green Run Light Indicator will illuminate during normal operation.

Regularly check that the green Run Indicator Lamp is illuminated when using the Unit as it indicates that the electrostatic filter is properly charged.



WARNING

Please contact your service agent if the green Run Light Indicator doesn't illuminate when the Rotary Main Isolator Switch is in the 'On' position.

2. Check that the interfaced extractor fan is also running. Turn off the Unit if this is not the case and investigate further.

5.4 Arcing and Auto-Shutdown

Some arcing within the Unit during operation is normal.

If the problem persists, due to excess debris, the Unit will automatically cycle on and off until the problem clears or until a service visit is carried out.

Note: If excessive arcing occurs, the Unit will automatically shutdown and then restart after a short time.

5.5 Switching Off

To stop the Unit, turn the Rotary Mains Isolator Switch to the 'Off' position.



CAUTION!

After switching off the Unit, wait 60 seconds before opening the door to allow the static electricity charge to dissipate.

6. Fitting Stainless Steel Ioniser Blades

6.1 Fitting Stainless Steel Ioniser Blades to a Collector Cell

Some specifications require solid stainless steel spiked ioniser blades to be fitted, replacing the standard Ioniser Wires.



Figure 16 - Stainless Steel Ioniser Blade

The stainless steel spiked blades are made out of 0.7mm sheet stainless steel with a pressed ridge or spine down the centre.



WARNING!

The Ioniser Blade has sharp points so care should be taken when handling.

This modification can be made in the factory or, alternatively, an engineer can perform the replacement on site.

6.1.1 Replacing Ioniser Wires with Stainless Steel Ioniser Blades on Site

To replace the Ionisers Wires with Stainless Steel Ioniser Blades on site, please see the instructions below:

1. Turn the Rotary Mains Isolator Switch to the 'Off' position and wait for 60 seconds to allow the accumulated static electricity charge to dissipate.
2. Fully undo the two Star Knobs (anti-clockwise) and open the Main Door.
3. Slide out the Pre and Post Filters and, after making a note of the airflow direction arrow, slide out the Collector Cell.
4. Remove the existing Ioniser Wires by unhooking them from the Upper and Lower Ioniser Bars, pulling the unsprung end of each Ioniser Wire against the spring's tension.
Once the Ioniser Wires have been removed from the Collector Cell, there will be eight locating holes in each of the Upper and Lower Ioniser Bars.
5. Take the first Stainless Steel Ioniser Blade and locate its protruding lugs into both the Upper and Lower Ioniser Bars location holes.
6. Once in place, using a pair of long nosed pliers, carefully bend the lug down to secure the top of the Ioniser Blade into position on the Upper Ioniser Bar (see Figure 17 - Fitting Stainless Steel Ioniser Blades on page 25).

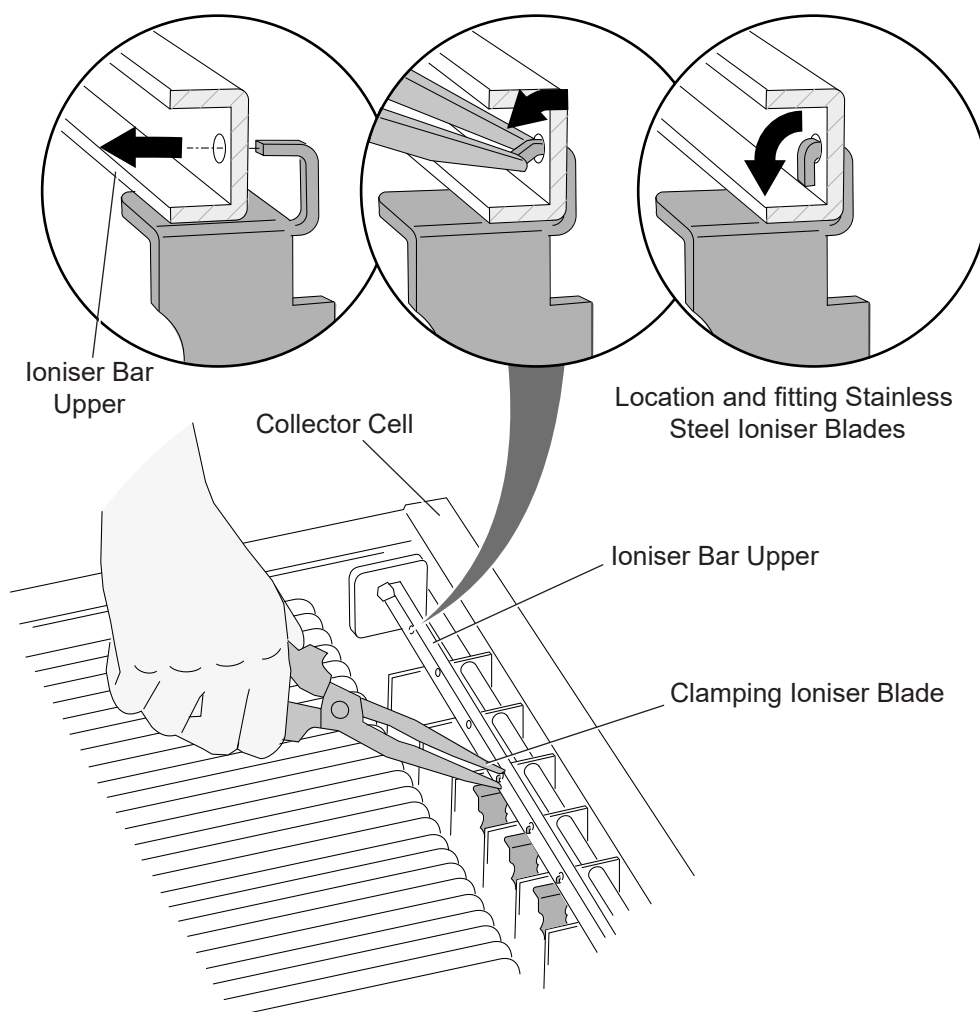


Figure 17 - Fitting Stainless Steel Ioniser Blades

7. Turn the Collector Cell upside down, being careful to keep the Ioniser Blade's lower protruding lug located in the Lower Ioniser Bar's location hole, and carefully bend the lug down to secure the bottom lug of the Ioniser Blade. The blade should now be securely attached to the Collector Cell's Upper and Lower Ioniser Bars.
8. Turn the Collector Cell back upright and repeat the steps 5, 6 and 7 above for each Ioniser Blade until all eight have been securely fitted.

The Collector Cell is now ready to be placed back into the Main Chassis:

1. Replace the Pre and Post Mesh Filters and replace the Collector Cell back into the Main Chassis.
Note: Make sure that the air flow direction arrow, noted in step 3 on page 24, is pointing in the correct direction.
2. Close the Main Door and replace and tighten the two Star Knobs making sure that the Main Door is tightly closed.
3. Turn the Rotary Mains Isolator Switch to the 'On' position.

7. Maintenance and Cleaning

7.1 Introduction

If you carry out the simple cleaning and maintenance described below, at the prescribed intervals, paying attention to the associated Warnings and Cautions, then any problems will mostly be detected and corrected before they result in a total breakdown of the Unit.

The indicated maintenance intervals can vary depending on specific working and local environmental conditions. It is therefore recommended that the Unit is thoroughly inspected annually in addition to the indicated periodic maintenance. Please contact your service agent to arrange this.



WARNING!

Overdue maintenance can lead to fire.

Always switch OFF the Unit and isolate the electric supply before carrying out the activities below.

Do not carry out any service, maintenance or repairs to the Unit before it has been protected against unintended starting by switching off and isolating the electrical supply.

7.2 Maintenance and Cleaning Schedule

Basic maintenance activities can be carried out by the user. Please see the table below for the optimum frequency for such activities.

Note: Other activities are strictly reserved for qualified personnel.

Basic Maintenance Activities	Frequency
Clean the outside of the Unit with mild detergent	Every 6 months
Check the door sealing material (see 7.3.2 on page 27)	Every 12 months
Clean the inside of the Unit and remove dust/ grease from the filter compartment (see 7.3.2 on page 27)	From once a week to once every 3 months depending on the degree of pollution.
Clean the Mesh Pre-filter, ESP Collector Cell and the Mesh Post-filter and check for damage (see 7.3.3 on page 28 and 7.3.4 on page 28)	From once a week to once every 3 months depending on the degree of pollution.

7.3 Cleaning and Maintenance Tasks

Clean or replace the Mesh Filters and Collector Cell and clean the Main Chassis at the prescribed intervals mentioned in Maintenance and Cleaning Schedule on page 26 or:

- If the Mesh Filters and/or Collector Cell are damaged.
- When the Collector Cell starts to make a crackling sound (arcing).
- When the filtering and extraction performance of the Unit starts to decline.

It is a matter of experience to determine when the Unit needs to be cleaned, since the nature and the degree of pollution depends strongly on factors such as the particular location, humidity, and intensity of use etc. Nevertheless, the filters and Main Chassis should be cleaned regularly at intervals ranging from once a week to once every 3 months using the procedures outlined in the sections below:

7.3.1 Removing the Mesh Filters and Collector Cell

Start the cleaning procedure by removing the Mesh Filters and Collector Cell from the Main Chassis:

1. Isolate the Unit from the mains power supply by turning the Rotary Mains Isolator Switch to the 'Off' position.
2. Allow at least 60 seconds for any static electrical charge to dissipate.
3. Double check that the mains power supply has been isolated.
4. Unscrew the top and bottom Star Knobs on the main Door Assembly anti-clockwise and open it.
5. Remove the Mesh Pre-Filter, Collector Cell and the Mesh Post-Filter in this order.
6. Remove the Filter Carrier.

7.3.2 Cleaning the Main Chassis

Having removed the Mesh Filters (pre and post) and the Collector Cell:

1. Remove any accumulated grease from the sump; depending on its viscosity, either via the Drain Plug (see Figure 5 - Electrostatic Precipitator Unit - Main Chassis Components on page 10) or by scooping and scraping it out.
2. Spray the sump with a high quality degreaser and wipe over the sump's surfaces with a suitable cloth or paper towels.
3. Clean the electrical contact points on the inside of the Door Assembly, using a high quality degreaser and a suitable cloth or paper towels, ensuring that they are free of contaminants/grease.
4. Ensure that the rubber door seal is undamaged and free from contaminants/grease, cleaning with warm soapy water if necessary.
5. Clean the Filter Carrier and Backplate, using a high quality degreaser and a cloth, and replace in the Unit.

7.3.3 Cleaning the Mesh Filters (pre and post)

Clean the Mesh Filters as follows:

1. Clean the Mesh Filters (pre and post) in hot water (at approx. 60°C) to which a detergent solution has been added. This treatment can be repeated several times. A pressure washer can also be used to clean the filters.
2. Allow the Mesh Filters to dry completely after cleaning before re-inserting into the Unit.

7.3.4 Cleaning the Collector Cell

Clean the Collector Cell as follows:

1. Clean the Collector Cell in hot water (approx. 60°C) to which a detergent solution has been added.



WARNING

Although the Collector Cell can be cleaned using a pressure washer, extreme care must be exercised to avoid damaging or distorting the plates.

2. Check the Ioniser during washing for broken Ionisation Wires.

Note: If fitted, broken ionisation wires can simply be replaced by hooking the sprung end of the new wire over the support post, pulling the wire against the spring's tension and attaching the other end of the wire to the opposite post, having first removed the broken wire.

3. Whilst washing the Collector Cell, check to see if any of the Collector Cell's plates have been bent.

Note: If a bent plate is found, it can normally be straightened by either carefully applying pressure with a screwdriver or by using a pair of long nosed pliers.

If the Collector Cell is beyond repair, please contact Purified Air to purchase a new one.

4. Allow the Collector Cell to dry completely after cleaning before re-inserting into the Unit.

7.3.5 Replacing the Collector Cell and Pre and Post Mesh Filters

Replace the Collector Cell and pre and post Mesh Filters as follows:

1. Replace the Collector Cell.

Note: If the Unit has more than one Collector Cell, ensure that the electrical connections between them are making contact.

2. Slide the Mesh Filters (pre and post) into their previous positions in the Collector Cell and Filter Carrier.



INFORMATION

Ensure that the Collector Cell is correctly orientated with the extraction duct's airflow, as indicated by the arrow engraved on the Collector Cell.

Pay due attention to the position of the contact pin and contact spring on the Collector Cell which should connect with the contact discs on the door when it is closed.

3. Close the Main Door and refit the top and bottom Star Knobs.
4. Tighten the Star Knobs clockwise sufficiently to ensure a good seal between the Main Door and the Main Chassis of the Unit.

Note: It may be necessary to push the Main Door inwards, against the seal, onto the Main Chassis of the Unit whilst tightening the Star Knobs to enable them to be tightened sufficiently to ensure an adequate seal.

5. Switch the Unit On as normal. The green Run Light Indicator should illuminate.



INFORMATION

After the Unit is turned on, you may briefly hear a clicking or arcing as the plates in the Collector Cell build up a charge. This is perfectly normal.



WARNING

Should the clicking or arcing persist or the green Run Light Indicator go out, the Unit has a fault.

In this case, switch off the Unit and consult a qualified service technician.

7.4 Servicing

Purified Air or their designated distributor will be happy to carry out regular servicing of the Unit and offer Preventative Maintenance Contracts for all installations of their equipment.

Please contact their Head Office for full details:

service@purifiedair.com

Freephone: 0800 018 4000

8. Troubleshooting

If the Unit does not function correctly, consult the checklist below to see if you can correct the error yourself.



INFORMATION

A number of problems in the checklist below can also be caused by defects in other equipment connected to the Unit. This manual only deals with problems and solutions directly related to the Unit itself.

Problem	Possible Cause	Solution
Insufficient Extraction Capacity	Mesh Filters clogged or saturated.	Clean the filters.
	A breach/hole in the ducting.	Check and replace sealing material/repair hole.
Dust or smoke from the extraction outlet and/or green Run Light Indicator is not illuminated.	Collector Cell is saturated or mounted incorrectly causing short-circuiting.	Clean the Collector Cell and mount correctly.
	Poor/dirty electrical contacts in the Collector Cell.	Check and clean/repair.
	Short-circuit in the Collector Cell (caused by bent plates).	Check and repair.
Unit makes a cracking sound (= short circuit).	Collector Cell incorrectly mounted.	Mount correctly.
	Collector Cell heavily polluted.	Clean Collector Cell.
	Collector Cell not totally dry.	Allow thorough drying after cleaning.
	Bent Collector Cell plates.	Repair.
	Bent or broken ionisation wires (see 6. Fitting Stainless Steel Ioniser Blades on page 24).	Replace.
	Metal particles in Collector Cell.	Clean Collector Cell.
Unit switches off or will not start when clean collectors are installed during service.	The collector cell could appear dry but could have traces of water behind the insulators or secreted within the collector.	Run the extract system for one hour with the ESP switched off. This should allow any excess water to evaporate. After this period, try to restart the unit. If it still fails to start contact the supplier.



CAUTION

Should it not be possible to correct the error, consult a qualified service engineer.

9. Spare Parts List and Components Illustration

Item Number	Item Description	Part Number
	Collector	
1	Collector Cell Unit	ESP-1601-CC
2	Mesh Filter Element	ESP-1501-MF
	Collector Cell	
3	Ioniser Wire with springs (8 per pack) (Not Shown)	ESP-1602-IW
4	Push Button Brass HV contact	ESP-1603-BB
5	HV Spring contact	ESP-1604-SC
6	Insulator HV Black Thermoset Square	ESP-1605-IS
8	Stainless Steel Spiked Ioniser Blades (8 per pack) (Not Shown) (see 6 - Fitting Stainless Steel Ioniser Blades on page 24)	ESP-1607-SI
	Door	
9	Complete ESP Door & Electronics	ESP-1701-CD
10	High Voltage Power Supply (HVPS) including HV cable (2 parts) + wiring loom for post 2014 models.	ESP-1750-HV
11	Door Hinge (15mm) (main door & electrical door)	ESP-1702-DH
12	Door safety interlock switch	ESP-1703-DS
13	Rotary Mains Isolator Switch	ESP-1704-MS
14	HV Output Terminal Contact Disc on door (ceramic)	ESP-1705-OT
15	Clear PVC dome covers for HV output terminals.	ESP-1706-DC
16	HV Cable (2 pcs per set) (Not Shown)	ESP-1707-HC
17	LED Run Lamp (green 230V)	ESP-1708-LG
18	Door Star Knobs	ESP-1709-SK
19	Drain Plug	ESP-1710-DP
20	Rubber Door Seals (set of 6)	
21	Pictograms, Warning and Instruction Labels	
	Upgrades	
	HVPS (PWM200) replaces components in older models such as HF Driver, HV Transformer & HV short circuit protector.	These older parts are all now superseded
	HVPS Conversion kit for pre-2008 and pre-2014 Models.	ESP-HVPSCONV1
	HVPS Conversion kit for post-2014 Models. (ESP ____ EI)	ESP-HVPSCONV2
	BMS Kit fitted prior to leaving factory	ESP-1801-BMS
	BMS Kit fitted on site	ESP-1802-BMS

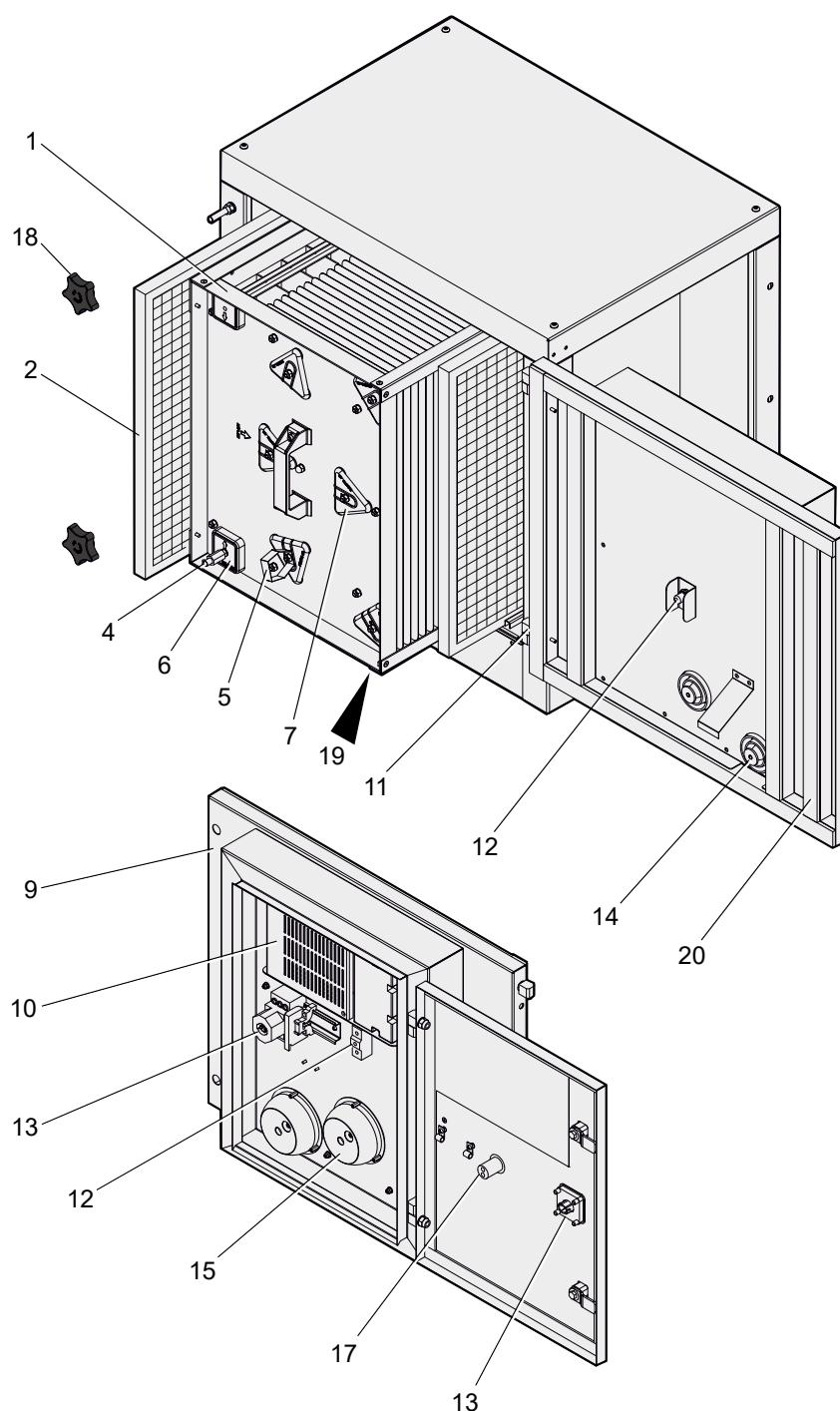


Figure 18 - Parts List Components Illustration

9.1 Spare Parts Ordering

All parts listed in the 9. Spare Parts List and Components Illustration on page 31 are available as spare parts.

Please quote the Part Number when ordering.

10. Wiring Diagram

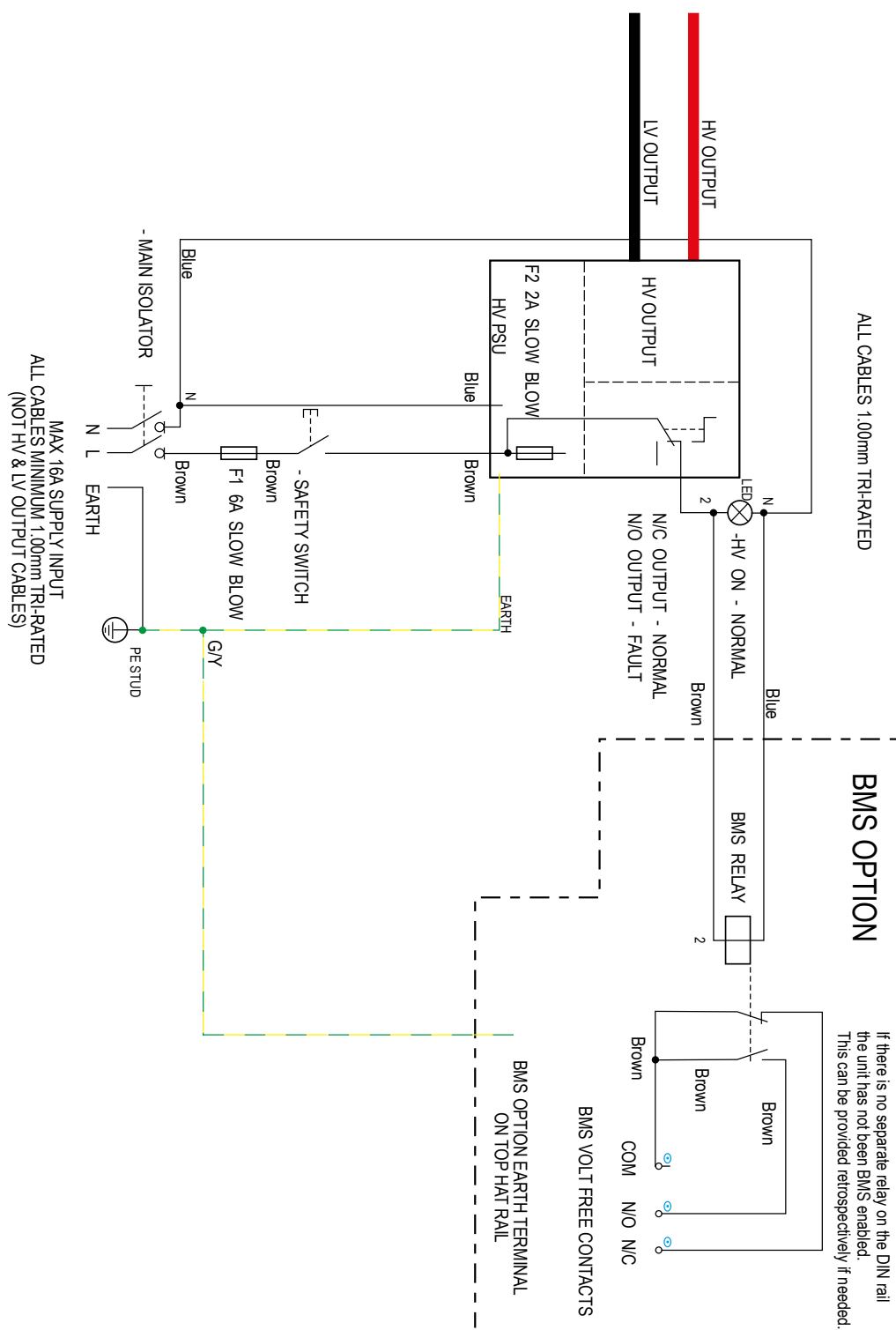


Figure 19 - Unit Wiring Diagram

11. Equipment Disposal



11.1 Packaging Material Disposal



INFORMATION

The Unit's Packaging materials are manufactured from recyclable materials in accordance with applicable local regulations.

The purpose of the packaging is to protect the Unit during transport. It consists of the following substances that can be reused:

- Cardboard (corrugated)
- Wood (untreated)

Do not dispose of the packaging material as general industrial waste.

11.2 Used Unit Disposal

Units which you would like to dispose of may still contain valuable substances and materials. Do not dispose of the Unit as general industrial waste.

12. Contact Details

At Purified Air, we pride ourselves on our excellent levels of customer service and maintenance.

12.1 Nationwide Coverage in the UK

We can offer nationwide coverage with teams of directly employed service engineers working out of our UK hubs.

For all UK Service and Maintenance enquiries, please contact via:

service@purifiedair.com

0800 018 4000

12.2 Service and Maintenance Contracts

With every installation, we offer the opportunity to sign up to one of our service and maintenance contracts. These are structured to suit individual needs, on a post pay basis with the customer only being invoiced after each service, saving them both time and money against ad hoc servicing requests.

12.3 Dependability

Whether you have our commercial kitchen exhaust filtration equipment in your restaurant, cafe or take away, you can rest assured that we will always be there when you need us.

12.4 Global Sales

For all installations of our equipment outside of the UK, please refer back to your designated distributor.

13. Warranty Statement

Your new Electrostatic Precipitator is guaranteed against the cost of breakdown repairs for one year from the date of the original purchase.

The manufacturer does not accept any liability for damage to the Unit or personal injury caused by non-observance of the safety instructions in this manual or negligence during the installation, use, maintenance and repair of the models mentioned on the cover of this manual and any associated accessories.

What is covered?

- Repairs necessary as a result of faulty materials, defective components or manufacturing defect.
- The cost of functional replacement parts, but excluding consumable items.
- The labour costs of a Purified Air approved repairer to carry out the repair.

What is not covered?

- Transit, delivery or accidental damage or misuse and abuse.
- Any installation which fails to meet the installation, location and operating requirements and parameters outlined in this manual.
- Manufacturing defects only affecting the Unit's cosmetic appearance.
- Consumable items including but not limited to pre and post Mesh Filters, Collector Cell and Ionisation Wires (see 6. Fitting Stainless Steel Ioniser Blades on page 24).
- Repairs required as a result of unauthorised repair or installation by anyone other than a Purified Air approved installer.
- Any damage caused to the Unit by its use by anyone other than authorised, trained and qualified users or personnel under the supervision and responsibility of authorised, trained and qualified users.
- Any damage caused to the Unit by incorrect servicing procedures.
- Use of the Unit in any application which is not specifically mentioned in this manual or approved, in writing, by the manufacturer.
- The guarantee is applicable only to new products and is not transferable if the product is resold.

Purified Air disclaims any liability for incidental or consequential damages.

The guarantee does not in anyway diminish your statutory or legal rights.

Please keep your purchase receipt or other proof of purchase in a safe place. You will need to have it should the product require attention under guarantee.

14. Certification

14.1 EC Declaration of Conformity

Purified Air Limited Lyon House Lyon Road Romford Essex RM12BG Tel: +44 1708 755414 Fax: +44 1708 721488 Email: enq@purifiedair.co.uk www.purifiedair.co.uk	 
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EC Declaration of Conformity

Document Number: Doc ESP 1201

We, Purified Air Limited at above address, declare the products detailed below comply with the requirements of the following EU Directives,

- Low Voltage Directive 2005/95/EC
- Electromagnetic Compatibility Directive 2004/108/EC

Equipment description	<i>Electrostatic Precipitator</i>			
Make/Brand	<i>Purified Air</i>			
Model reference	ESP 1500EI	ESP 3000EI	ESP 4500EI	ESP 6000EI

Compliance of the equipment has been assessed with respect to the essential requirements and with reference to the following harmonised standards:

- EN 60204-1:2006 +A1:2009
- EN55014-1 :2006+A 1:2009
- EN 55014-2: 1997+ A2:2008
- EN 61000-3-2:2006 +A2: 2009
- EN 61000-3-3:2008

A technical file for this equipment is retained at the above address



Gareth Smith
 Technical Director
 Purified Air Limited
 January 2016

Figure 20 - EC Declaration of Conformity



FreePhone (UK Only) 0800 018 4000
International +44 1708 755414

Purified Air Limited. Lyon House, Lyon Road, Romford, Essex. RM1 2BG

www.purifiedair.com | enq@purifiedair.com

OC INNOVATIONS - OC3

Process Information

Oxidation using ozone and activated oxygen ions is used to treat odour emissions from commercial and industrial kitchen processes (DEFRA, 2005: Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems).

The OC3 has been specifically designed for use in commercial kitchens. The system injects ozone into the kitchen extraction canopy or associated duct work where it reacts with odours, which are oxidized in a chemical reaction, which results in the production of carbon dioxide and water vapour. The ozone itself is consumed during the process and is converted back into oxygen.

The benefits of purchasing an OC3 unit over traditional UV/Ozone systems are as follows:

- Compact, lightweight and quiet operation so is less obtrusive
- Quick and easy low cost installation
- Low capital and running costs – up to 50% less than traditional UVC systems
- Injection into ductwork – adding negligible back pressure to the system so requiring less energy to push air through the air handling system. This means less ductwork modifications
- The OC3 maintains efficiency as they remain outside of the air stream, they also require less maintenance and require less cleaning.
- Tested to EN13725:2003, CE Approved



Spec sheet overleaf >

OC INNOVATIONS - OC3 (SPECIFICATIONS)

Technical Information

Ozone Output	36g/hr ozone output
Housing dimensions	300mm wide x 300mm length x 150mm height
Housing material	Stainless Steel powder coated white/grey
Duct work connection	100mm circular
Volume flow rate in ductwork	Up to 3m ³ /s per unit, subject to cooking odours.
Air residence time inside chamber	>0.1 seconds
Pressure drop	N/A
Weight of unit	5Kg approx.
Two individual Light Indicators	Green Power On / Green Ozone On
Electrical requirements	240V / 1 ph / 50/60Hz
Power requirements	168W
Safety	Built in Air pressure switch

Installation

It is recommended to locate the units with an injection point located closest to the source of odours (i.e. Canopy plenum or nearest accessible point on ductwork, in order to maximize dwell time. In any case the dwell time must be no less than 1 second.

The units in built air pressure switch is activated by the installation of the black three pinned connector to the unit to the sensor lock connector.

Maintenance

An optional service contract is available which entails a yearly inspection of the unit.
Please contact us for further information and pricing.



Range of direct drive backward curved centrifugal cabinet fans designed for ventilation of commercial kitchens and industrial applications. Cabinet fan manufactured from aluminium profiles and double thickness side panels internally lined with 25 mm thickness of fireproof fiberglass acoustic insulation. Circular duct connection flange on the inlet and outlet. CVAB-N/CVAT-N incorporates direct drive backward curved centrifugal impeller, manufactured from aluminium (CVAB-N) or steel (CVAT-N) sheet, with motor fitted inside the air stream.

Motors

CVAB-N
Single-phase external rotor motors 230V 50Hz, IP55, class F, with thermal protection, speed controllable by tension. Working temperature from -40°C to 60°C.

CVAT-N
Three-phase 4 and 6 pole motors 230/400V 50Hz, IP55, class F, with thermal protection (PTC), speed controllable by inverter. Working temperature from -20°C to 40°C.

ATEX versions

On request, explosion proof versions in accordance to ATEX Directive, for three phase models. Working temperature from -20°C to +40°C.

- ATEX Flameproof - Gas

In standard ATEX version flameproof motors are without thermal protection.

If used with frequency inverter, flameproof motors with a PTC-type thermal protection must be specified at order.

⊕ II 2G Exd IIB T4

⊕ II 2G Exd IIB+H2 T4 (with motor Exd IIC T4)

- ATEX Increased safety - Gas

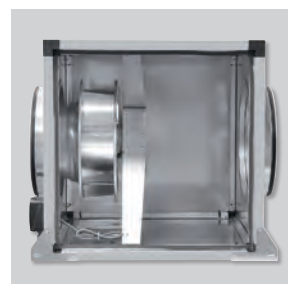
⊕ II 2G Exe IIC T3

To select CVAT-N ATEX refer to performance curves, or Easyvent. Note electrical data may vary for ATEX motors.

Specific applications

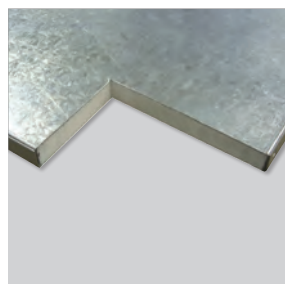


Versions



Backward curved centrifugal impellers

To prevent accumulation of dirtiness. Dynamically balanced.



Low noise level

Double thickness side panels lined with 25 mm thickness of fireproof fiberglass acoustic insulation.



Robustness

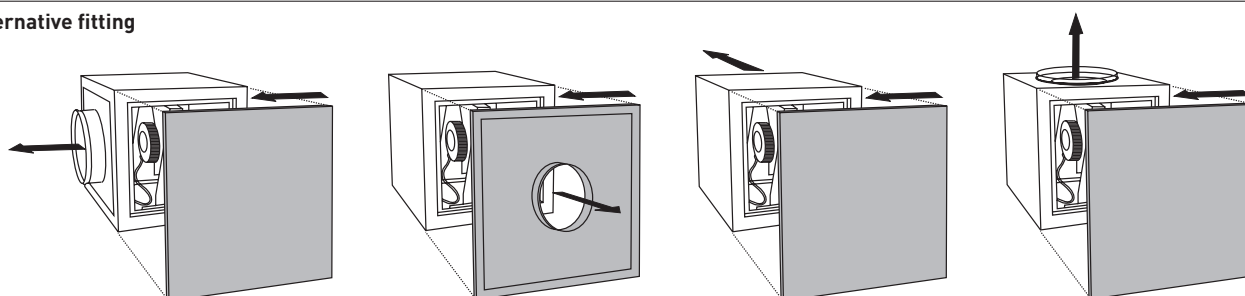
Quality finished aluminium profiles and plastic corners providing a great robustness.



IP55 external terminal box

To ease electrical connection. Only available for CVAB single-phase models. For three-phase models, connection to the motor terminal box.

Alternative fitting



TECHNICAL CHARACTERISTICS

Before installation check that the product electrical characteristics listed on the data plate label (voltage, power, frequency, etc.) match those of the intended electrical supply.

Model	Speed (rpm)	Maximum absorbed power (W)	Maximum absorbed current (A)	Maximum airflow (m³/h)	Sound pressure level* (dB(A))			Weight (kg)	Speed control	
					Inlet	Radiated	Outlet		REB	RMB

SINGLE-PHASE 4 POLES

CVAB/4-1400/250N D	1300	107	0,5	1280	49	44	50	13,0	REB-1	RMB-1,5
CVAB/4-2000/315N D	1390	169	0,7	1820	53	47	54	13,0	REB-1	RMB-1,5
CVAB/4-3000/355N D	1370	312	1,3	2800	58	51	58	30,0	REB-2,5	RMB-1,5
CVAB/4-4000/400N D	1390	557	2,3	4210	62	54	60	32,0	REB-2,5	RMB-3,5
CVAB/4-6000/450N D	1380	930	4,0	6140	64	57	63	46,0	REB-5	RMB-5
CVAB/4-9000/500N D	1390	1289	5,5	7580	68	61	66	58,0	REB-10	RMB-8

Model	Speed (rpm)	Maximum absorbed power (W)	Maximum absorbed current (A)		Maximum airflow (m³/h)	Sound pressure level* (dB(A))			Weight (kg)
			230V	400V		Inlet	Radiated	Outlet	

THREE-PHASE 4 POLES

CVAT/4-1400/250N D 0,18	1480	116	0,9	0,5	1.230	50	37	48	13,0
CVAT/4-2000/315N D 0,18	1460	169	0,9	0,5	1.830	54	41	53	13,0
CVAT/4-3000/355N D 0,18	1430	251	0,9	0,5	2.660	56	43	56	30,0
CVAT/4-4000/400N D 0,37	1445	438	1,6	0,9	3.850	60	47	60	32,0
CVAT/4-6000/450N D 0,75	1465	747	3,0	1,7	5.620	63	50	64	46,0
CVAT/4-9000/500N D 1,1	1480	1347	4,4	2,5	7.900	67	53	68	58,0
CVAT/4-12000/560N D 2,2	1470	2093	7,3	4,2	11.100	69	56	71	82,0
CVAT/4-16000/630N D 3	1460	3234	10,3	5,9	14.640	72	60	75	113,0

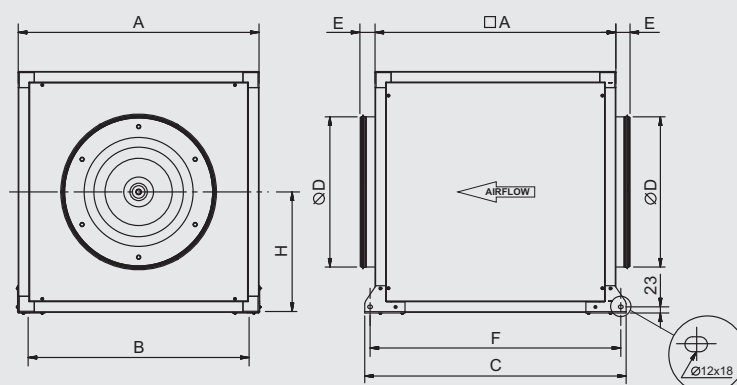
THREE-PHASE 6 POLES

CVAT/6-15000/710N D 1,5	970	1828	6,3	3,6	14.320	72	60	74	149,0
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* Sound pressure level measured in free field condition at 1.5m, at the medium working point on the performance curve, shown 2, 5, 8 and 11.

Model	VFTM		VFKB	
	1-PHASE SUPPLY	3-PHASE SUPPLY	1-PHASE SUPPLY	3-PHASE SUPPLY
CVAT/4-1400/250N D 0,18	VFTM MONO 0,18	VFTM TRI 0,37	VFKB-24	VFKB-45
CVAT/4-2000/315N D 0,18	VFTM MONO 0,18	VFTM TRI 0,37	VFKB-24	VFKB-45
CVAT/4-3000/355N D 0,18	VFTM MONO 0,18	VFTM TRI 0,37	VFKB-24	VFKB-45
CVAT/4-4000/400N D 0,37	VFTM MONO 0,37	VFTM TRI 0,37	VFKB-24	VFKB-45
CVAT/4-6000/450N D 0,75	VFTM MONO 0,37	VFTM TRI 0,75	VFKB-24	VFKB-45
CVAT/4-9000/500N D 1,1	VFTM MONO 0,75	VFTM TRI 1,1	VFKB-24	VFKB-45
CVAT/4-12000/560N D 2,2	VFTM MONO 1,5	VFTM TRI 2,2	VFKB-27	VFKB-48
CVAT/4-16000/630N D 3	VFTM MONO 2,2	VFTM TRI 3	VFKB-27	VFKB-48
CVAT/6-15000/710N D 1,5	VFTM MONO 1,1	VFTM TRI 1,5	VFKB-27	VFKB-48

DIMENSIONS (mm)

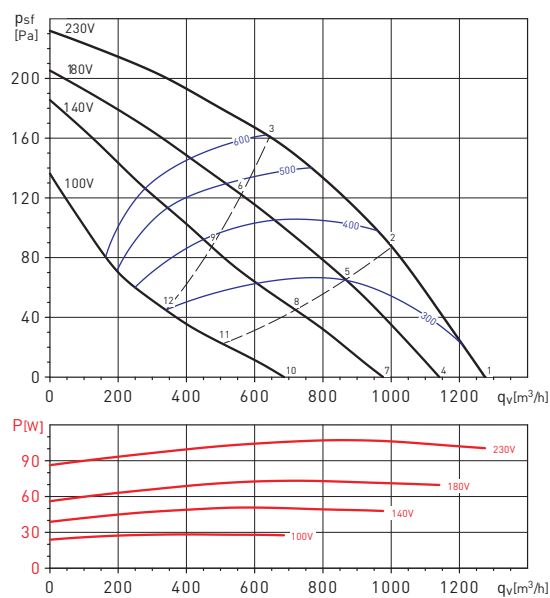


Model CVAB - CVAT	A	B	C	D	E	F	H
1400/250N D	500	457	574	250	58	534	250
2000/315N D	500	457	574	315	58	534	250
3000/355N D	650	607	724	355	58	684	325
4000/400N D	650	607	724	400	58	684	325
6000/450N D	750	707	824	450	58	784	375
9000/500N D	800	757	874	500	58	834	400
12000/560N D	900	826	977	560	58	937	450
16000/630N D	1000	959	1077	630	58	1037	500
15000/710N D	1100	1059	1177	710	58	1137	550

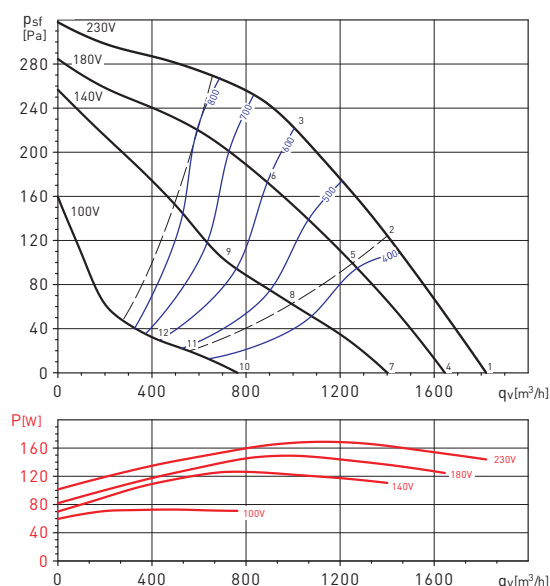
PERFORMANCE CURVES - ACOUSTIC CHARACTERISTICS

- q_v : Airflow in m^3/h .
- p_{st} : Static pressure in Pa.
- P : Input power in W.
- SFP: Specific fan power in $W/m^3/s$ (blue curves).
- Performance data in accordance with ISO 5801 and AMCA 210-99 Standards.

CVAB/4-1400/250N D



CVAB/4-2000/315N D



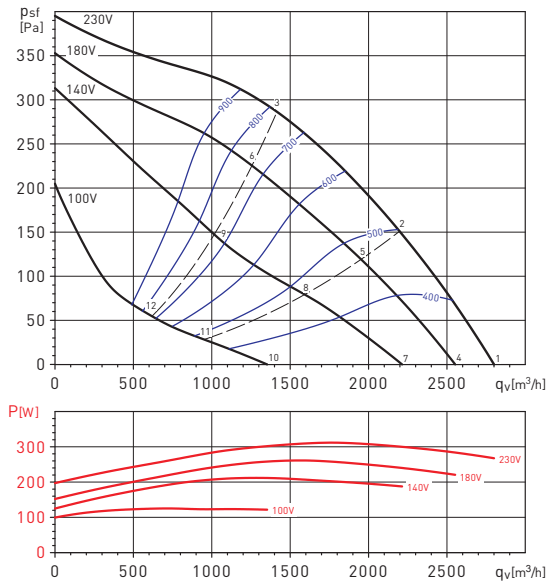
Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	32	50	58	59	61	57	56	37	66
	Outlet	35	49	57	59	60	56	49	35	65
	Break-Out	26	43	46	49	55	56	51	28	60
2	Inlet	28	48	56	57	59	57	53	36	64
	Outlet	29	47	55	57	61	58	47	35	64
	Break-Out	22	41	44	48	54	56	48	27	59
3	Inlet	26	47	53	56	60	58	44	52	64
	Outlet	27	44	52	57	62	61	51	41	66
	Break-Out	21	41	42	47	54	57	47	35	60
4	Inlet	32	32	57	57	59	57	56	35	64
	Outlet	33	31	55	57	55	58	48	32	63
	Break-Out	26	28	42	47	54	56	51	27	60
5	Inlet	26	30	54	55	57	56	49	33	62
	Outlet	27	30	52	55	55	58	44	31	62
	Break-Out	21	25	39	46	53	55	45	25	58
6	Inlet	26	29	53	55	58	56	48	38	62
	Outlet	26	31	50	55	60	60	46	38	64
	Break-Out	20	25	38	46	54	55	44	31	58
7	Inlet	30	44	55	55	56	56	48	31	62
	Outlet	30	44	53	54	56	53	43	31	61
	Break-Out	23	38	40	45	51	54	42	22	56
8	Inlet	25	41	54	53	55	55	39	31	60
	Outlet	25	40	50	53	57	52	36	29	60
	Break-Out	18	35	39	43	50	53	33	21	55
9	Inlet	23	37	49	51	54	50	41	33	58
	Outlet	24	39	48	52	58	54	41	32	60
	Break-Out	17	31	34	41	49	48	35	24	52
10	Inlet	27	35	48	49	52	49	33	26	56
	Outlet	28	39	47	50	51	48	32	26	55
	Break-Out	22	30	34	40	47	42	26	17	52
11	Inlet	23	34	45	48	50	41	30	26	53
	Outlet	26	36	43	47	49	39	28	25	52
	Break-Out	18	29	31	41	48	38	23	17	49
12	Inlet	23	34	43	47	47	36	28	32	51
	Outlet	23	35	40	45	50	38	30	27	52
	Break-Out	17	29	30	40	45	34	25	19	47

Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	37	55	63	64	65	62	60	45	70
	Outlet	40	55	61	64	65	60	54	42	69
	Break-Out	32	50	52	55	58	58	53	35	63
2	Inlet	32	53	60	62	63	60	56	42	68
	Outlet	35	52	59	61	65	61	51	40	68
	Break-Out	27	48	50	53	57	57	49	33	61
3	Inlet	32	52	58	61	63	61	47	55	67
	Outlet	32	49	56	60	64	62	53	44	68
	Break-Out	26	46	47	51	57	57	49	38	61
4	Inlet	37	37	62	63	63	62	59	43	69
	Outlet	39	35	60	62	59	64	53	40	68
	Break-Out	32	31	49	53	58	58	53	34	62
5	Inlet	31	34	59	60	61	59	53	40	66
	Outlet	33	33	57	59	58	62	48	37	66
	Break-Out	26	29	46	51	55	56	47	31	60
6	Inlet	31	33	56	58	60	58	52	42	65
	Outlet	31	33	54	58	60	62	49	41	66
	Break-Out	25	27	43	49	55	55	46	35	59
7	Inlet	35	50	59	60	60	60	53	39	66
	Outlet	36	50	57	59	60	57	48	37	65
	Break-Out	30	45	46	50	55	56	47	29	60
8	Inlet	29	46	56	56	57	56	44	35	63
	Outlet	30	45	53	55	59	54	41	32	62
	Break-Out	24	41	43	47	52	53	38	25	56
9	Inlet	27	41	51	53	55	52	44	36	59
	Outlet	28	44	49	53	58	54	42	34	61
	Break-Out	22	36	38	43	50	48	37	27	53
10	Inlet	29	40	49	51	53	51	36	29	57
	Outlet	30	42	47	50	52	48	34	28	56
	Break-Out	26	35	38	40	48	45	30	21	53
11	Inlet	24	38	46	48	49	43	32	27	53
	Outlet	27	39	44	47	50	41	31	26	53
	Break-Out	21	34	35	42	47	40	26	20	49
12	Inlet	22	36	43	45	46	38	28	33	50
	Outlet	24	37	41	45	50	40	31	27	52
	Break-Out	19	31	31	39	43	35	26	20	45

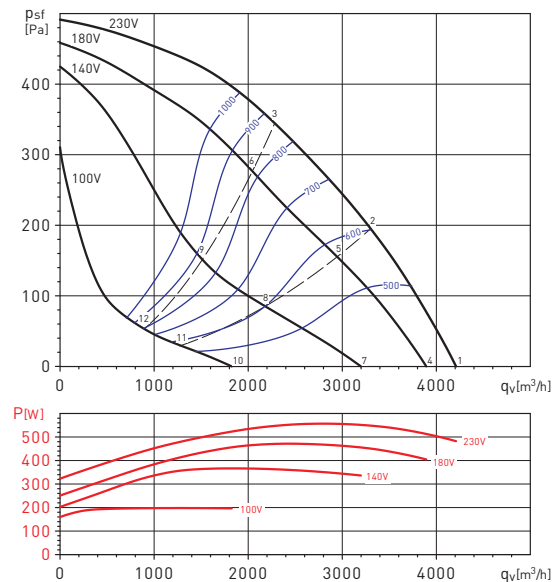
PERFORMANCE CURVES - ACOUSTIC CHARACTERISTICS

- q_v : Airflow in m^3/h .
- p_{st} : Static pressure in Pa.
- P: Input power in W.
- SFP: Specific fan power in $W/m^3/s$ (blue curves).
- Performance data in accordance with ISO 5801 and AMCA 210-99 Standards.

CVAB/4-3000/355N D



CVAB/4-4000/400N D



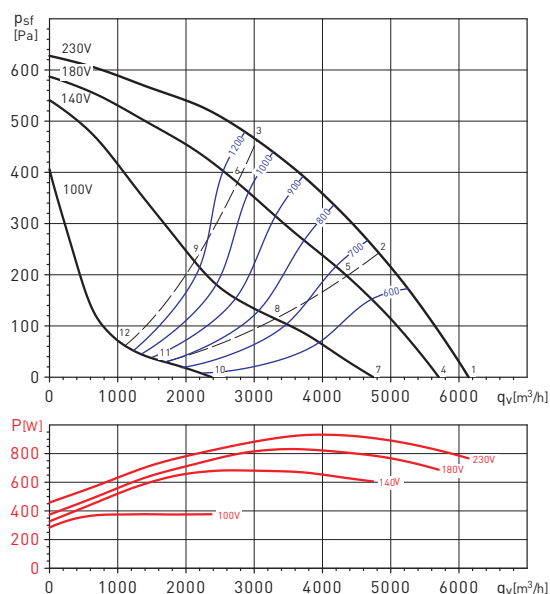
Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	32	50	58	59	61	57	56	37	66
	Outlet	35	49	57	59	60	56	49	35	65
	Break-Out	26	43	46	49	55	56	51	28	60
2	Inlet	28	48	56	57	59	57	53	36	64
	Outlet	29	47	55	57	61	58	47	35	64
	Break-Out	22	41	44	48	54	56	48	27	59
3	Inlet	26	47	53	56	60	58	44	52	64
	Outlet	27	44	52	57	62	61	51	41	66
	Break-Out	21	41	42	47	54	57	47	35	60
4	Inlet	32	32	57	57	59	57	56	35	64
	Outlet	33	31	55	57	55	58	48	32	63
	Break-Out	26	28	42	47	54	56	51	27	60
5	Inlet	26	30	54	55	57	56	49	33	62
	Outlet	27	30	52	55	55	58	44	31	62
	Break-Out	21	25	39	46	53	55	45	25	58
6	Inlet	26	29	53	55	58	56	48	38	62
	Outlet	26	31	50	55	60	60	46	38	64
	Break-Out	20	25	38	46	54	55	44	31	58
7	Inlet	30	44	55	55	56	56	48	31	62
	Outlet	30	44	53	54	56	53	43	31	61
	Break-Out	23	38	40	45	51	54	42	22	56
8	Inlet	25	41	54	53	55	55	39	31	60
	Outlet	25	40	50	53	57	52	36	29	60
	Break-Out	18	35	39	43	50	53	33	21	55
9	Inlet	23	37	49	51	54	50	41	33	58
	Outlet	24	39	48	52	58	54	41	32	60
	Break-Out	17	31	34	41	49	48	35	24	52
10	Inlet	27	35	48	49	52	49	33	26	56
	Outlet	28	39	47	50	51	48	32	26	55
	Break-Out	22	30	34	50	47	42	26	17	52
11	Inlet	23	34	45	48	50	41	30	26	53
	Outlet	26	36	43	47	49	39	28	25	52
	Break-Out	18	29	31	41	48	38	23	17	49
12	Inlet	23	34	43	47	47	36	28	32	51
	Outlet	23	35	40	45	50	38	30	27	52
	Break-Out	17	29	30	40	45	34	25	19	47

Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	37	55	63	64	65	62	60	45	70
	Outlet	40	55	61	64	65	60	54	42	69
	Break-Out	32	50	52	55	58	58	53	35	63
2	Inlet	32	53	60	62	63	60	56	42	68
	Outlet	35	52	59	61	65	61	51	40	68
	Break-Out	27	48	50	53	57	57	49	33	61
3	Inlet	32	52	58	61	63	61	47	55	67
	Outlet	32	49	56	60	64	62	53	44	68
	Break-Out	26	46	47	51	57	57	49	38	61
4	Inlet	37	37	62	63	63	62	59	43	69
	Outlet	39	35	60	62	59	64	53	40	68
	Break-Out	32	31	49	53	58	58	53	34	62
5	Inlet	31	34	59	60	61	59	53	40	66
	Outlet	33	33	57	59	58	62	48	37	66
	Break-Out	26	29	46	51	55	56	47	31	60
6	Inlet	31	33	56	58	60	58	52	42	65
	Outlet	31	33	54	58	60	62	49	41	66
	Break-Out	25	27	43	49	55	55	46	35	59
7	Inlet	35	50	59	60	60	60	53	39	66
	Outlet	36	50	57	59	60	57	48	37	65
	Break-Out	30	45	46	50	55	56	47	29	60
8	Inlet	29	46	56	56	57	56	44	35	63
	Outlet	30	45	53	55	59	54	41	32	62
	Break-Out	24	41	43	47	52	53	38	25	56
9	Inlet	27	41	51	53	55	52	44	36	59
	Outlet	28	44	49	53	58	54	42	34	61
	Break-Out	22	36	38	43	50	48	37	27	53
10	Inlet	29	40	49	51	53	51	36	29	57
	Outlet	30	42	47	50	52	48	34	28	56
	Break-Out	26	35	38	50	48	45	30	21	53
11	Inlet	24	38	46	48	49	43	32	27	53
	Outlet	27	39	44	47	50	41	31	26	53
	Break-Out	21	34	35	42	47	40	26	20	49
12	Inlet	22	36	43	45	46	38	28	33	50
	Outlet	24	37	41	45	50	40	31	27	52
	Break-Out	19	31	31	39	43	35	26	20	45

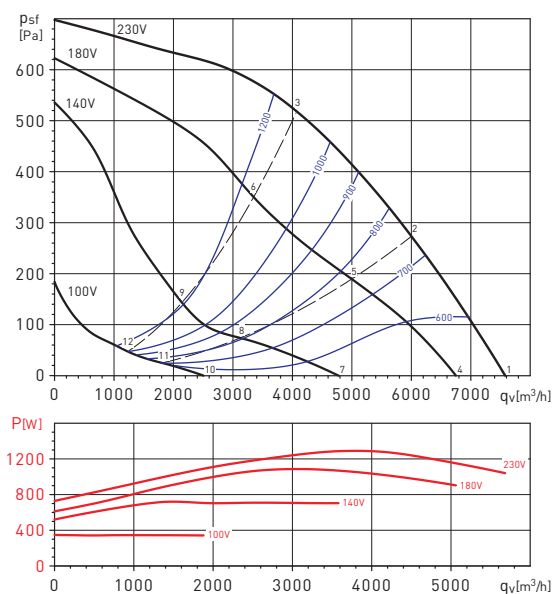
PERFORMANCE CURVES - ACOUSTIC CHARACTERISTICS

- q_v : Airflow in m^3/h .
- p_{sf} : Static pressure in Pa.
- P : Input power in W.
- SFP: Specific fan power in $W/m^3/s$ (blue curves).
- Performance data in accordance with ISO 5801 and AMCA 210-99 Standards.

CVAB/4-6000/450N D



CVAB/4-9000/500N D



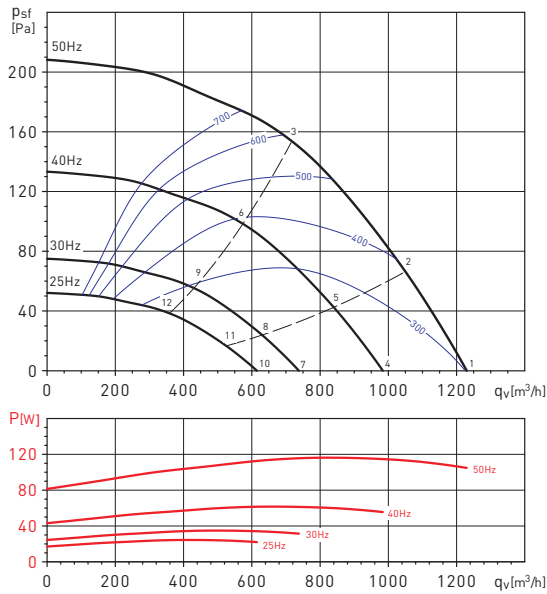
Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	41	60	66	68	67	65	62	51	73
	Outlet	45	59	65	67	68	63	57	47	73
	Break-Out	36	55	57	59	61	59	54	41	66
2	Inlet	38	60	66	67	67	64	59	50	73
	Outlet	40	58	63	66	69	64	55	46	72
	Break-Out	33	55	57	58	60	58	52	40	65
3	Inlet	38	58	63	66	67	64	52	59	72
	Outlet	38	54	60	64	67	64	56	48	71
	Break-Out	33	53	54	56	60	58	51	42	64
4	Inlet	40	40	65	67	66	64	61	49	72
	Outlet	43	38	63	65	62	67	56	45	71
	Break-Out	35	34	55	57	59	58	53	39	64
5	Inlet	37	38	63	65	65	63	57	47	70
	Outlet	39	37	61	63	61	66	52	43	69
	Break-Out	32	32	53	55	58	56	49	37	62
6	Inlet	36	36	60	62	63	61	55	46	68
	Outlet	36	36	58	61	61	64	53	44	68
	Break-Out	31	30	49	53	57	55	48	38	61
7	Inlet	38	55	62	63	62	61	57	44	69
	Outlet	41	54	60	61	63	59	52	40	68
	Break-Out	35	49	52	54	57	56	50	35	62
8	Inlet	33	52	58	59	59	58	50	39	65
	Outlet	35	51	56	58	61	56	46	36	64
	Break-Out	30	46	48	50	53	52	43	30	58
9	Inlet	31	47	53	55	57	54	48	40	62
	Outlet	32	49	51	55	59	55	45	36	62
	Break-Out	27	41	43	47	51	48	41	30	55
10	Inlet	31	45	51	53	53	53	40	31	59
	Outlet	33	46	48	50	54	48	37	30	57
	Break-Out	29	40	41	49	47	46	32	23	53
11	Inlet	26	43	48	50	50	47	36	30	56
	Outlet	29	44	46	48	52	44	35	29	55
	Break-Out	24	38	38	43	45	41	28	22	49
12	Inlet	24	41	45	47	47	43	31	36	52
	Outlet	26	42	44	47	51	44	34	29	54
	Break-Out	23	36	35	40	43	37	28	23	46

Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	46	65	71	73	71	69	66	58	78
	Outlet	50	65	69	71	73	68	62	54	77
	Break-Out	42	61	63	64	64	61	57	48	70
2	Inlet	42	65	69	71	70	67	61	56	76
	Outlet	45	62	66	69	71	65	58	51	75
	Break-Out	37	60	62	62	63	58	52	46	68
3	Inlet	43	63	68	70	70	67	56	62	76
	Outlet	43	59	64	67	70	65	59	51	73
	Break-Out	39	58	60	61	63	59	53	46	68
4	Inlet	45	45	71	73	70	69	65	58	77
	Outlet	50	44	69	70	67	73	61	53	76
	Break-Out	41	38	62	63	63	60	56	47	68
5	Inlet	41	41	67	69	67	65	60	53	74
	Outlet	43	40	64	66	63	69	55	48	72
	Break-Out	36	34	58	59	59	56	50	42	65
6	Inlet	41	39	64	66	66	64	59	51	72
	Outlet	42	39	61	63	62	67	56	48	70
	Break-Out	36	32	55	56	59	54	49	41	63
7	Inlet	43	61	66	68	66	65	62	51	73
	Outlet	47	60	63	65	67	62	57	45	72
	Break-Out	41	55	58	60	60	57	54	42	66
8	Inlet	36	55	59	61	59	58	54	41	66
	Outlet	38	55	57	59	61	56	48	38	65
	Break-Out	34	50	51	52	53	50	46	32	59
9	Inlet	34	51	55	57	58	56	51	42	63
	Outlet	36	53	52	56	59	55	47	38	63
	Break-Out	32	46	48	49	52	48	44	34	56
10	Inlet	33	50	53	56	54	56	44	35	61
	Outlet	36	50	50	51	56	49	40	33	59
	Break-Out	33	45	45	49	48	49	36	26	54
11	Inlet	26	46	48	50	49	49	38	31	56
	Outlet	30	47	47	48	52	45	36	29	55
	Break-Out	25	41	40	43	43	41	30	23	49
12	Inlet	25	45	45	47	47	47	33	38	53
	Outlet	28	45	45	48	52	46	37	30	55
	Break-Out	25	40	37	40	41	39	30	25	47

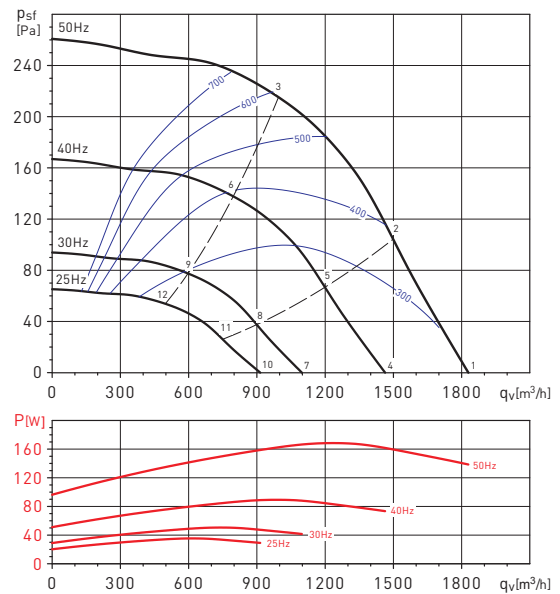
PERFORMANCE CURVES - ACOUSTIC CHARACTERISTICS

- q_v : Airflow in m^3/h .
- p_{sf} : Static pressure in Pa.
- P: Input power in W.
- SFP: Specific fan power in $W/m^3/s$ (blue curves).
- Performance data in accordance with ISO 5801 and AMCA 210-99 Standards.

CVAT/4-1400/250N D 0,18kW



CVAT/4-2000/315N D 0,18kW



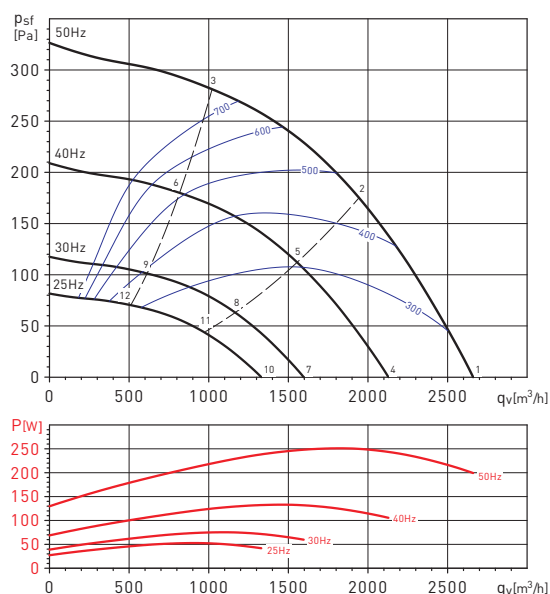
Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	32	55	59	62	58	57	54	51	66
	Outlet	34	50	56	56	59	57	47	42	64
	Break-Out	28	44	45	48	47	45	36	30	53
2	Inlet	34	54	57	61	58	54	52	47	65
	Outlet	34	49	55	55	60	54	46	37	63
	Break-Out	29	42	43	47	47	42	34	24	52
3	Inlet	37	53	58	62	59	54	52	46	65
	Outlet	39	49	56	57	56	54	49	40	63
	Break-Out	31	41	43	48	48	44	35	25	53
4	Inlet	27	50	54	57	53	52	49	46	61
	Outlet	29	46	51	51	54	52	42	38	59
	Break-Out	23	39	40	43	43	40	31	25	48
5	Inlet	29	49	52	56	53	49	47	42	60
	Outlet	29	44	50	50	55	49	41	32	58
	Break-Out	24	38	38	42	42	37	30	19	47
6	Inlet	32	49	53	57	54	49	47	41	61
	Outlet	34	44	51	53	51	50	45	36	58
	Break-Out	26	37	38	43	43	39	30	20	48
7	Inlet	21	44	48	51	47	46	43	40	55
	Outlet	23	39	45	45	48	46	36	31	52
	Break-Out	17	33	33	37	36	34	25	18	42
8	Inlet	23	43	46	50	47	43	41	36	54
	Outlet	23	38	44	44	49	43	35	26	52
	Break-Out	18	31	32	36	35	31	23	13	41
9	Inlet	26	42	46	51	48	43	41	35	54
	Outlet	27	38	45	46	45	43	38	29	51
	Break-Out	20	30	31	37	37	33	24	14	41
10	Inlet	17	40	44	47	43	42	39	36	51
	Outlet	19	35	41	41	44	42	32	27	48
	Break-Out	13	29	30	33	32	30	21	15	38
11	Inlet	19	39	42	46	43	39	37	32	50
	Outlet	19	34	40	40	45	39	31	22	48
	Break-Out	14	27	28	32	32	27	19	9	37
12	Inlet	22	38	42	47	44	39	37	31	50
	Outlet	23	34	41	42	41	39	34	25	47
	Break-Out	16	26	27	33	33	29	20	10	38

Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	37	60	63	66	63	62	58	54	71
	Outlet	40	56	61	61	64	62	52	47	69
	Break-Out	33	48	49	52	51	49	40	33	57
2	Inlet	38	59	62	64	62	58	56	51	69
	Outlet	39	54	60	59	64	58	50	41	67
	Break-Out	33	47	48	50	50	45	38	28	55
3	Inlet	40	57	61	64	61	57	55	49	68
	Outlet	42	53	59	61	59	57	52	43	66
	Break-Out	35	45	46	50	50	46	37	28	55
4	Inlet	32	55	58	61	58	58	53	50	66
	Outlet	35	51	56	56	59	57	47	42	64
	Break-Out	28	43	45	47	46	44	35	29	52
5	Inlet	33	54	57	60	57	53	51	46	64
	Outlet	34	49	55	54	59	53	46	37	63
	Break-Out	28	42	43	45	45	40	33	23	51
6	Inlet	35	52	56	59	57	52	50	44	63
	Outlet	37	49	54	56	54	52	47	39	61
	Break-Out	30	40	42	45	45	41	32	23	50
7	Inlet	26	49	52	55	51	51	47	43	59
	Outlet	29	45	50	50	53	50	41	36	57
	Break-Out	22	37	38	41	40	38	29	22	46
8	Inlet	27	48	51	53	50	47	45	40	58
	Outlet	28	43	49	48	53	47	39	30	56
	Break-Out	22	36	37	39	39	34	27	17	44
9	Inlet	29	46	50	53	50	46	44	38	57
	Outlet	31	42	48	50	48	46	41	32	55
	Break-Out	24	34	35	39	39	35	26	17	44
10	Inlet	22	45	48	51	47	47	43	39	56
	Outlet	25	41	46	46	49	47	37	32	54
	Break-Out	18	33	34	37	36	34	25	18	42
11	Inlet	23	44	47	49	47	43	41	36	54
	Outlet	24	39	45	44	49	43	35	26	52
	Break-Out	18	32	33	35	35	30	23	13	40
12	Inlet	25	42	46	49	46	42	40	34	53
	Outlet	27	38	44	46	44	42	37	28	51
	Break-Out	20	30	31	35	35	31	22	13	40

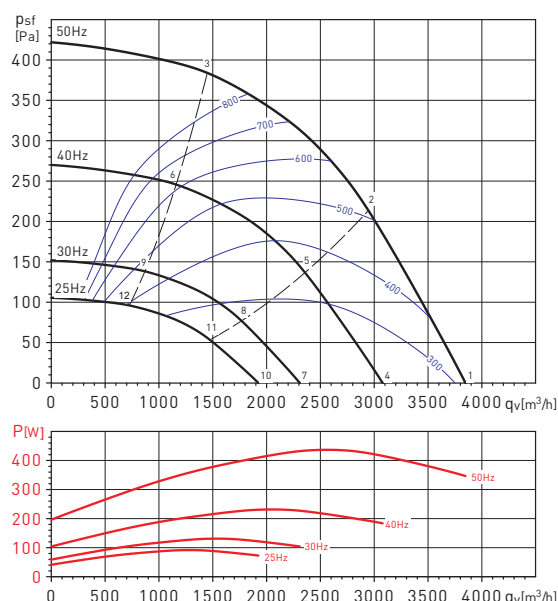
PERFORMANCE CURVES - ACOUSTIC CHARACTERISTICS

- q_v : Airflow in m^3/h .
- p_{st} : Static pressure in Pa.
- P: Input power in W.
- SFP: Specific fan power in $W/m^3/s$ (blue curves).
- Performance data in accordance with ISO 5801 and AMCA 210-99 Standards.

CVAT/4-3000/355N D 0,18kW



CVAT/4-4000/400N D 0,37kW



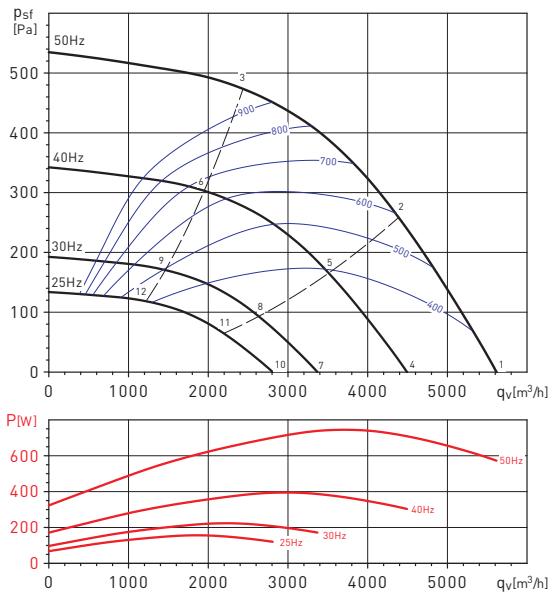
Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	41	64	67	69	66	67	61	57	74
	Outlet	45	61	65	66	68	66	57	50	73
	Break-Out	37	52	54	55	54	53	43	37	61
2	Inlet	40	61	64	66	64	61	57	52	71
	Outlet	42	58	63	62	67	60	53	44	70
	Break-Out	35	50	51	52	52	47	40	31	58
3	Inlet	41	58	61	63	61	57	55	49	68
	Outlet	43	55	59	61	59	57	51	44	66
	Break-Out	36	47	48	50	50	46	38	29	56
4	Inlet	37	59	62	64	61	62	56	53	69
	Outlet	40	56	61	61	63	61	52	45	68
	Break-Out	32	47	49	50	49	48	39	32	56
5	Inlet	35	57	59	61	59	56	53	48	66
	Outlet	38	53	58	57	62	55	48	39	65
	Break-Out	30	45	46	47	47	42	35	26	53
6	Inlet	36	53	56	58	56	53	50	44	63
	Outlet	38	50	54	56	54	52	47	39	61
	Break-Out	31	42	43	45	45	41	33	24	51
7	Inlet	30	53	56	58	55	56	50	46	63
	Outlet	34	50	54	55	57	55	46	39	62
	Break-Out	26	41	43	44	43	42	32	25	50
8	Inlet	29	50	53	55	53	50	46	41	60
	Outlet	31	47	52	51	56	49	42	33	59
	Break-Out	24	39	40	41	40	36	29	20	47
9	Inlet	30	47	50	52	50	46	43	38	57
	Outlet	32	44	48	50	48	46	40	32	55
	Break-Out	25	36	37	39	39	35	27	18	45
10	Inlet	26	49	52	54	51	52	46	42	59
	Outlet	30	46	50	51	53	51	42	35	58
	Break-Out	22	37	39	40	39	38	28	22	46
11	Inlet	25	46	49	51	49	46	42	37	56
	Outlet	27	43	48	47	52	45	38	29	55
	Break-Out	20	35	36	37	37	32	25	16	43
12	Inlet	26	43	46	48	46	42	39	34	53
	Outlet	28	40	44	46	44	42	36	28	51
	Break-Out	21	32	33	35	35	31	23	14	41

Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	45	67	70	71	68	70	64	59	77
	Outlet	50	65	68	69	71	69	60	52	76
	Break-Out	40	55	57	57	56	55	46	39	63
2	Inlet	43	65	68	69	67	65	61	56	74
	Outlet	47	63	68	66	71	64	57	49	74
	Break-Out	38	54	55	55	54	50	43	34	61
3	Inlet	44	62	65	66	64	61	57	52	71
	Outlet	47	59	62	65	62	60	54	47	69
	Break-Out	40	51	52	52	52	48	40	32	59
4	Inlet	40	62	65	66	64	65	59	55	72
	Outlet	45	61	64	65	66	64	55	48	71
	Break-Out	35	50	52	52	51	50	41	34	58
5	Inlet	38	61	63	64	62	60	56	51	70
	Outlet	42	58	63	61	66	59	52	44	69
	Break-Out	33	49	51	50	49	45	38	29	56
6	Inlet	39	57	60	61	59	56	52	47	66
	Outlet	42	54	57	60	57	55	49	42	64
	Break-Out	35	46	48	48	47	43	36	28	54
7	Inlet	33	56	59	60	57	59	53	48	66
	Outlet	39	54	57	58	60	58	49	41	65
	Break-Out	29	44	46	46	45	44	35	28	52
8	Inlet	32	54	57	58	56	54	49	44	63
	Outlet	36	52	57	55	60	53	46	37	63
	Break-Out	27	43	44	44	43	39	32	23	50
9	Inlet	33	51	53	55	53	50	46	41	60
	Outlet	36	48	51	54	51	49	43	36	58
	Break-Out	28	40	41	41	41	37	29	21	48
10	Inlet	29	52	55	56	53	55	49	44	62
	Outlet	35	50	53	54	56	54	45	37	61
	Break-Out	25	40	42	42	41	40	31	24	48
11	Inlet	28	50	53	54	52	50	46	41	59
	Outlet	32	48	53	51	56	49	42	34	59
	Break-Out	23	39	40	40	39	35	28	19	46
12	Inlet	29	47	50	51	49	46	42	37	56
	Outlet	32	44	47	50	47	45	39	32	54
	Break-Out	25	36	37	37	37	33	25	17	44

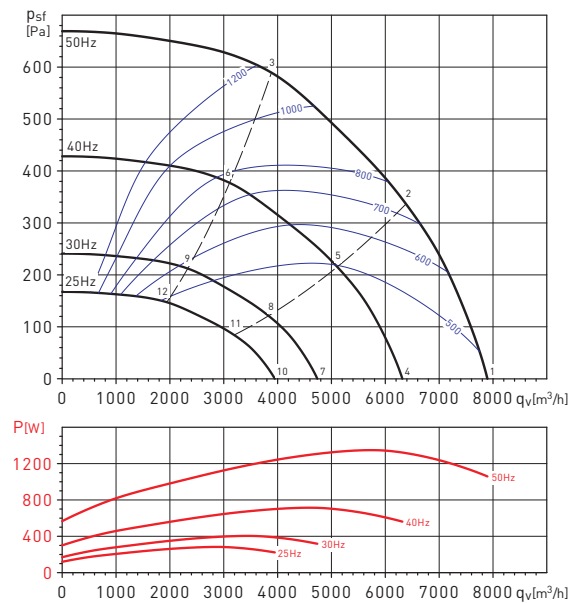
PERFORMANCE CURVES - ACOUSTIC CHARACTERISTICS

- q_v : Airflow in m^3/h .
- p_{st} : Static pressure in Pa.
- P: Input power in W.
- SFP: Specific fan power in $W/m^3/s$ (blue curves).
- Performance data in accordance with ISO 5801 and AMCA 210-99 Standards.

CVAT/4-6000/450N D 0,75kW



CVAT/4-9000/500N D 1,1kW



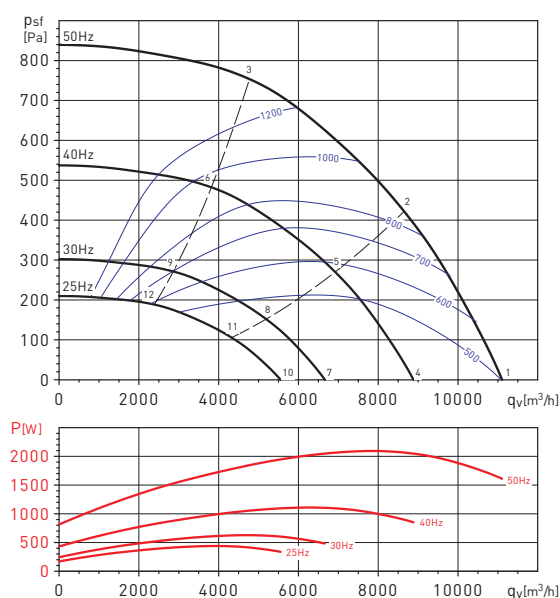
Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	48	71	73	74	71	74	67	62	80
	Outlet	55	70	72	74	75	72	64	55	80
	Break-Out	43	59	61	59	58	58	49	41	66
2	Inlet	46	69	72	72	70	69	64	59	78
	Outlet	52	68	72	70	75	67	60	53	78
	Break-Out	41	58	60	58	57	53	46	38	65
3	Inlet	49	68	69	70	68	66	61	57	75
	Outlet	52	65	67	70	67	64	59	52	75
	Break-Out	44	57	58	56	55	51	44	37	63
4	Inlet	43	66	69	69	67	69	62	57	75
	Outlet	50	65	67	69	70	68	59	51	75
	Break-Out	38	54	56	55	54	54	44	37	62
5	Inlet	41	64	67	67	65	64	59	54	73
	Outlet	47	63	67	65	70	62	56	48	74
	Break-Out	36	53	55	53	52	48	41	33	60
6	Inlet	44	63	65	65	63	61	57	52	71
	Outlet	48	61	62	66	62	60	54	47	70
	Break-Out	40	52	53	51	51	46	39	32	58
7	Inlet	37	60	62	63	60	63	56	51	69
	Outlet	44	59	61	62	64	61	53	44	69
	Break-Out	32	48	50	48	47	47	38	30	55
8	Inlet	35	58	61	61	59	57	52	47	67
	Outlet	41	57	61	59	64	56	49	42	67
	Break-Out	30	46	49	47	46	42	35	27	53
9	Inlet	38	57	58	58	57	54	50	46	64
	Outlet	41	54	56	59	56	53	47	41	64
	Break-Out	33	46	47	45	44	40	33	26	52
10	Inlet	33	56	58	59	56	59	52	47	65
	Outlet	40	55	57	58	60	57	49	40	65
	Break-Out	28	44	46	44	43	43	34	26	51
11	Inlet	31	54	57	57	55	54	48	43	63
	Outlet	37	53	57	55	60	52	45	38	63
	Break-Out	26	43	45	43	42	38	31	23	50
12	Inlet	34	53	54	54	53	50	46	42	60
	Outlet	37	50	52	55	52	49	43	37	60
	Break-Out	29	42	43	41	40	36	29	22	48

Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	51	73	75	75	73	77	68	63	82
	Outlet	58	73	74	76	77	75	67	57	83
	Break-out	46	61	63	61	60	60	50	43	68
2	Inlet	48	73	75	75	73	72	66	61	81
	Outlet	56	72	77	74	78	71	64	57	82
	Break-out	43	61	64	61	59	56	49	41	68
3	Inlet	54	73	74	73	72	70	65	61	80
	Outlet	58	71	72	75	72	69	62	56	79
	Break-out	49	62	63	59	58	54	48	41	67
4	Inlet	46	68	71	70	68	72	64	58	77
	Outlet	53	68	70	71	72	70	62	52	78
	Break-out	41	56	59	56	55	55	45	38	63
5	Inlet	44	68	71	70	68	67	61	56	76
	Outlet	52	67	72	69	74	66	59	52	77
	Break-out	39	56	59	56	55	51	44	36	63
6	Inlet	49	68	69	68	67	65	60	56	75
	Outlet	53	66	67	70	67	64	58	51	74
	Break-out	44	57	58	54	54	49	43	36	62
7	Inlet	40	62	64	64	62	66	57	52	71
	Outlet	47	62	63	65	66	64	56	46	71
	Break-out	35	50	52	50	49	49	39	32	57
8	Inlet	37	62	64	64	62	61	55	50	70
	Outlet	45	61	65	63	67	60	53	46	71
	Break-out	32	50	53	50	48	44	37	30	57
9	Inlet	42	61	63	62	60	59	54	50	68
	Outlet	46	60	61	64	61	57	51	45	68
	Break-out	38	50	52	48	47	43	37	30	56
10	Inlet	36	58	60	60	58	62	53	48	67
	Outlet	43	58	59	61	62	60	52	42	68
	Break-out	31	46	48	46	45	45	35	28	53
11	Inlet	33	58	60	60	58	57	51	46	66
	Outlet	41	57	62	59	63	56	49	42	67
	Break-out	28	46	49	46	44	40	33	26	53
12	Inlet	39	57	59	58	56	55	50	46	64
	Outlet	42	56	57	60	57	53	47	41	64
	Break-out	34	47	48	44	43	39	33	26	52

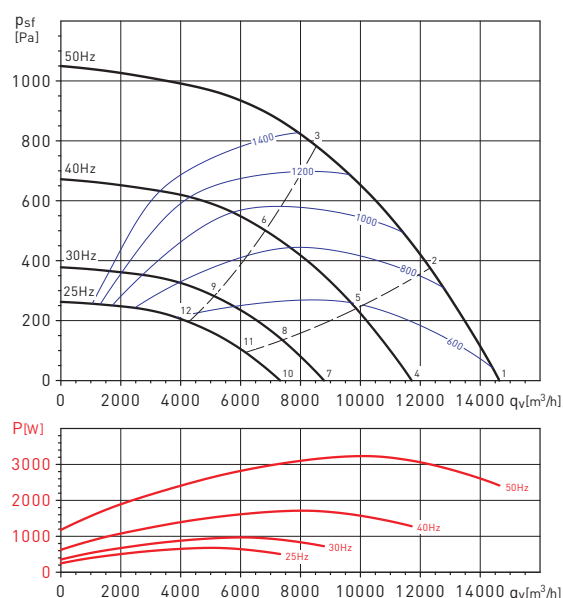
PERFORMANCE CURVES - ACOUSTIC CHARACTERISTICS

- q_v : Airflow in m^3/h .
- p_{sf} : Static pressure in Pa.
- P: Input power in W.
- SFP: Specific fan power in $W/m^3/s$ (blue curves).
- Performance data in accordance with ISO 5801 and AMCA 210-99 Standards.

CVAT/4-12000/560N D 2,2kW



CVAT/4-16000/630N D 3kW



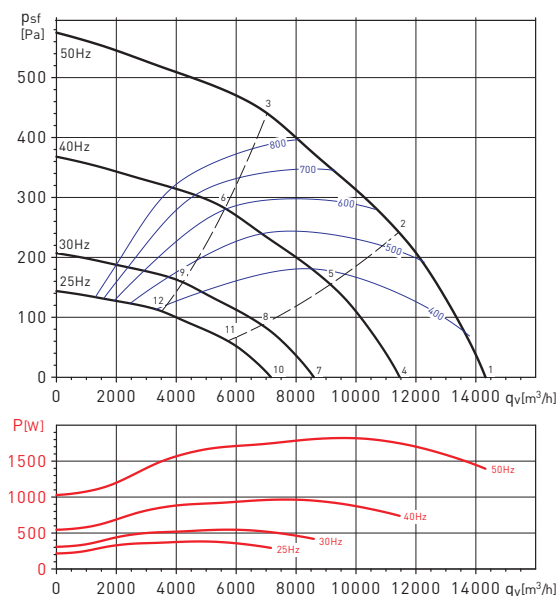
Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	55	77	79	78	76	81	72	66	86
	Outlet	63	78	78	81	81	78	71	60	87
	Break-Out	49	64	67	64	62	63	53	46	72
2	Inlet	51	76	78	77	76	75	69	64	84
	Outlet	60	76	80	77	81	73	67	60	85
	Break-Out	46	64	67	63	61	58	51	44	71
3	Inlet	56	75	76	74	73	72	67	63	81
	Outlet	60	74	74	78	74	70	64	58	81
	Break-Out	51	65	66	61	60	55	49	43	70
4	Inlet	50	72	74	73	71	76	67	61	81
	Outlet	58	73	73	76	76	74	66	55	82
	Break-Out	44	60	63	59	58	59	49	41	67
5	Inlet	46	71	73	72	71	70	64	59	79
	Outlet	55	71	75	72	76	68	62	55	81
	Break-Out	41	59	62	58	57	53	46	39	66
6	Inlet	51	70	71	69	68	67	62	58	77
	Outlet	55	69	69	73	69	65	59	53	77
	Break-Out	46	60	61	56	55	50	45	39	65
7	Inlet	44	66	68	67	65	70	61	55	75
	Outlet	52	67	67	69	70	67	60	49	76
	Break-Out	38	53	56	52	51	52	42	35	61
8	Inlet	39	65	67	66	64	64	57	52	73
	Outlet	49	65	69	66	70	62	56	49	74
	Break-Out	34	53	56	52	50	47	40	33	60
9	Inlet	45	64	65	63	62	61	56	52	70
	Outlet	49	63	62	66	62	59	53	47	70
	Break-Out	40	53	55	49	49	44	38	32	59
10	Inlet	40	62	64	63	61	66	57	51	71
	Outlet	48	63	63	65	66	63	56	45	72
	Break-Out	34	49	52	49	47	48	38	31	57
11	Inlet	36	61	63	62	61	60	53	48	69
	Outlet	45	61	65	62	66	58	52	45	70
	Break-Out	31	49	52	48	46	43	36	29	56
12	Inlet	41	60	61	59	58	57	52	48	66
	Outlet	45	59	59	62	59	55	49	43	66
	Break-Out	36	49	51	45	45	40	34	28	55

Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	57	79	81	80	78	84	74	68	88
	Outlet	67	82	81	84	84	81	74	62	90
	Break-Out	52	67	70	65	64	66	56	48	74
2	Inlet	53	79	82	80	78	78	71	66	87
	Outlet	64	81	84	81	85	76	70	64	89
	Break-Out	48	68	71	66	64	60	53	47	74
3	Inlet	61	81	81	78	78	77	71	68	87
	Outlet	66	81	79	84	79	75	69	64	88
	Break-Out	56	70	71	65	64	59	54	48	75
4	Inlet	53	75	77	75	74	79	69	63	83
	Outlet	62	77	76	79	79	76	69	57	85
	Break-Out	47	62	66	61	59	61	51	43	69
5	Inlet	48	75	77	75	74	74	66	61	82
	Outlet	60	76	79	76	80	72	65	59	84
	Break-Out	43	63	66	61	59	55	48	42	69
6	Inlet	56	76	77	74	73	72	67	63	82
	Outlet	61	76	74	79	74	71	64	59	83
	Break-Out	52	65	67	60	59	54	49	44	70
7	Inlet	46	68	70	69	67	73	63	57	77
	Outlet	56	70	70	73	73	70	63	51	78
	Break-Out	41	56	59	54	53	55	45	37	63
8	Inlet	42	68	71	69	67	67	60	55	76
	Outlet	53	69	73	69	74	65	59	53	78
	Break-Out	37	57	60	54	53	49	42	36	63
9	Inlet	50	70	70	67	67	66	60	57	76
	Outlet	55	70	68	72	68	64	58	53	76
	Break-Out	45	59	60	53	53	48	43	37	64
10	Inlet	42	64	66	65	63	69	59	53	73
	Outlet	52	67	66	69	69	66	59	47	74
	Break-Out	37	52	55	50	49	51	41	33	59
11	Inlet	38	64	67	65	63	63	56	51	72
	Outlet	49	65	69	65	70	61	55	49	74
	Break-Out	33	53	56	50	49	45	38	32	59
12	Inlet	46	66	66	63	63	62	56	53	72
	Outlet	51	66	64	69	64	60	54	49	72
	Break-Out	41	55	56	49	49	44	39	33	60

PERFORMANCE CURVES - ACOUSTIC CHARACTERISTICS

- q_v : Airflow in m^3/h .
- p_{st} : Static pressure in Pa.
- P: Input power in W.
- SFP: Specific fan power in $W/m^3/s$ (blue curves).
- Performance data in accordance with ISO 5801 and AMCA 210-99 Standards.

CVAT/6-15000/710N D 1,5kW



Working point		63	125	250	500	1000	2000	4000	8000	LwA
1	Inlet	58	80	82	80	78	85	74	67	89
	Outlet	68	83	81	84	84	81	74	62	90
	Break-Out	53	69	72	66	65	67	56	48	75
2	Inlet	52	79	81	79	78	78	70	65	86
	Outlet	64	81	84	80	84	75	69	63	89
	Break-Out	48	68	72	65	63	60	53	47	75
3	Inlet	60	80	80	76	76	76	70	67	85
	Outlet	65	80	77	82	77	73	66	62	86
	Break-Out	56	71	72	63	62	57	53	48	75
4	Inlet	53	75	77	75	74	80	69	63	84
	Outlet	64	78	76	79	79	76	69	57	85
	Break-Out	48	64	67	61	60	62	51	43	71
5	Inlet	47	74	76	74	73	73	65	60	81
	Outlet	59	76	79	75	79	70	64	58	84
	Break-Out	43	63	67	60	58	55	48	43	70
6	Inlet	55	76	75	71	71	71	65	62	80
	Outlet	60	75	72	77	72	68	61	57	81
	Break-Out	51	66	67	58	57	52	48	43	70
7	Inlet	47	69	71	69	67	74	63	56	78
	Outlet	57	72	70	73	73	70	63	50	79
	Break-Out	42	57	61	55	53	56	45	37	64
8	Inlet	41	68	70	67	67	67	59	54	75
	Outlet	53	69	73	69	73	64	58	52	78
	Break-Out	37	57	61	54	52	49	42	36	64
9	Inlet	49	69	69	65	64	65	58	56	74
	Outlet	54	69	66	71	66	62	55	51	75
	Break-Out	45	60	61	52	51	46	42	37	64
10	Inlet	43	65	67	65	63	70	59	52	74
	Outlet	53	68	66	69	69	66	59	47	75
	Break-Out	38	53	57	51	50	52	41	33	60
11	Inlet	37	64	66	64	63	63	55	50	71
	Outlet	49	66	69	65	69	60	54	48	74
	Break-Out	33	53	57	50	48	45	38	32	60
12	Inlet	45	65	65	61	61	61	54	52	70
	Outlet	50	65	62	67	62	58	51	47	71
	Break-Out	41	56	57	48	47	42	38	33	60

MOUNTING ACCESSORIES



MBE
Electric heaters.



MBW
Hot water coil.



MFL-G4
Filtration boxes.



SIL
Sound attenuators.



ACOPEL F400 N
Circular flexible connector.



CRC
Circular reducers.



CTI CVA-N
Outdoor cover
For outdoor installations.



APC
Discharge protection guards for direct connection to the inlet-outlet flange (for more information see Mounting accessories).



KSE
Anti-vibration mounts.

CVAB-N / CVAT-N model	APC model	CTI CVA-N model
1400/250N D	APC-250	CTI CVA-N 250/315
2000/315N D	APC-315	CTI CVA-N 250/315
3000/355N D	APC-355	CTI CVA-N 355/400 CHAT-400/450
4000/400N D	APC-400	CTI CVA-N 355/400 CHAT-400/450
6000/450N D	APC-450	CTI CVA-N 450
9000/500N D	APC-500	CTI CVA-N 500 CHAT-500
12000/560N D	APC-560	CTI CVA-N 560
16000/630N D	APC-630	CTI CVA-N 630
15000/710N D	APC-710	CTI CVA-N 710

ELECTRICAL ACCESSORIES



REB
Single-phase electronic speed controller



RMB
Single-phase auto-transformer speed controller



AJUSTABLE FREQUENCY DRIVE VFKB
Die cast aluminium IP65 case. Simple to operate. Speed selection with potentiometer.



AJUSTABLE FREQUENCY DRIVE VFTM
IP21 o IP54 models. External display to adjust parameters.



SC02-A
CO₂ and temperature sensor.
SC02-AD
CO₂ and temperature sensor, with display.
SCHT-AD
CO₂, temperature and relative humidity sensor with display.



CPFL-S / CPFL-E
Presence detector.



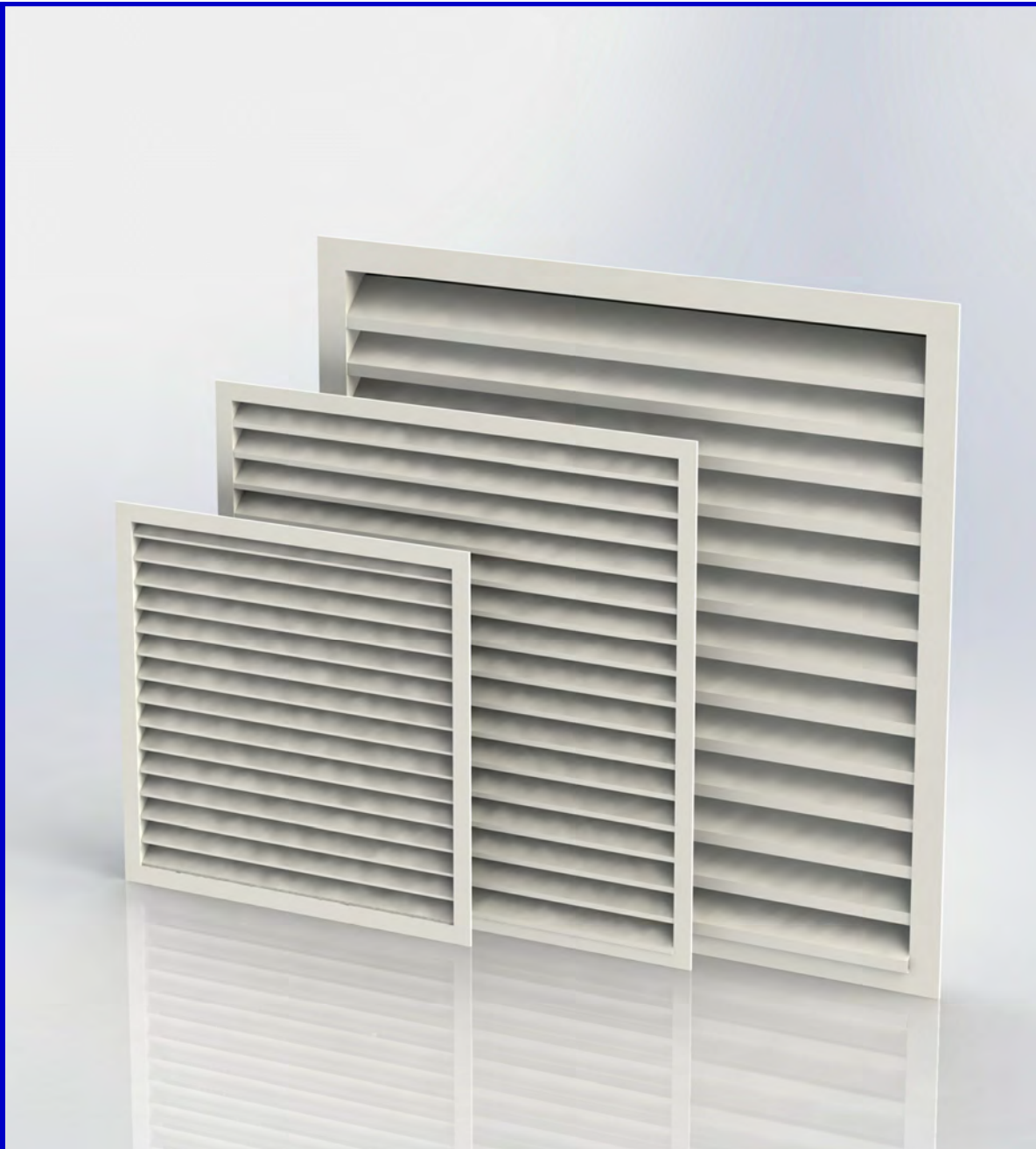
TDP-S/TDP-D/TDP-PI
Pressure sensor.



REMP
Motorised damper.

Series WL Standard weather louvres

- Standard range of single bank louvres as used in countless installations worldwide
- Good resistance to water ingress, with low resistance to airflow
- Approximately 50% free area on all models
- Polyester powder coating to the full range of RAL and BS colours
- WL38's in popular square sizes held in stock for immediate despatch
- Now available with burglar/security bars



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Testing and certification

4 - Product testing

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Security bars

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14 - Feature: New Series HPL80 ultra high performance weather louvre
Class A2 rain rejection up to 4 m/s

16 - Finish details and ordering codes

Series WL

Series WL standard weather louvres are the standard weather louvre used in countless installations throughout the world.

Available in three formats to suit any size installation, all WL types have a single bank of blades with a 45° face for good levels of rain resistance in the majority of conditions. Minimal resistance to airflow is assured with an approximate free area of 50% on all series.

Break points for switching between series (WL50 and WL75 are advised only):

WL38: Up to 1m nominal size (either width or height)

WL50: Up to 2m²

WL75: Anything above 2m²



Design features

Material	Extruded aluminium
	BZP steel screws or aluminium pop rivets
Sizes	Minimum heights (flanged units, nominal): WL38: 105mm WL50: 125mm WL75: 185mm
Blade	Various pitches (WL38 - 40mm, WL50 - 50mm, WL75 - 75mm) All with 45° face slope
Core	Fixed
Frame	Standard: Flanged Optional: Recessed and reversed
Fixings	Standard: None Optional: See page 8
Finish	Standard: Mill aluminium Optional: See page 14
Mass/m² face area	WL38: 12 kg WL50: 12 kg WL75: 15 kg
Free area	Approx. 50% (varies with size)

Important note:

Free area is not a reliable guide to performance.

It is possible to have two louvres with identical geometric free areas but different airflow characteristics.

Wherever possible use a tested airflow coefficient, as stated on the following page or available in the test certificate WL75 louvres which is available on request.

BSRIA Testing

WL75 standard weather louvres have been tested against:

BS EN 13030:2001

The testing was carried out in April 2013 by BSRIA in Bracknell, Berkshire, England.

Copies of the test reports are available on request.



Performance

Louvres are subjected to simulated rainfall of 75mm per hour, with a wind speed of 13m/s (29mph).

Rain ingress is then measured at various draw speeds through the louvre, this is in addition to the constant 13m/s simulated wind speed.

WL75 louvres were tested with an optional rear mounted drip tray, this will have had negligible impact on airflow but a large impact on rain resistance.

Headline figures are shown here, a copy of the full test report is available on request.

WL75 - DT: (WL75 complete with rear mounted drip tray)

Mean airflow coefficient: 0.252 (Class 3)

Rain rejection: Class C up to approx. 1.4 m/s draw velocity
Class D above approx. 1.4 m/s draw velocity

Stocked sizes

The following sizes of Series WL38 standard weather louvres are held in stock, fitted with bird mesh and in mill aluminium finish available for immediate despatch.

150mm²
200mm²
250mm²
300mm²
350mm²
400mm²
450mm²
500mm²
550mm²
600mm²
700mm²
800mm²
900mm²
1000mm²

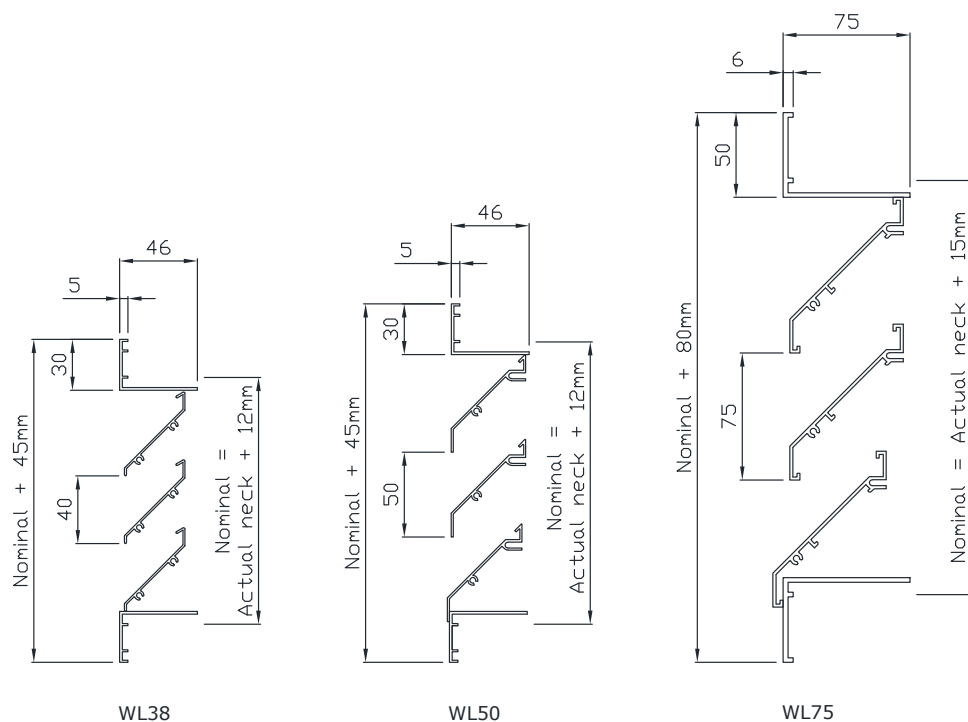
All sizes are nominal (hole size)

Units can be powder coated if a painted finish is required.

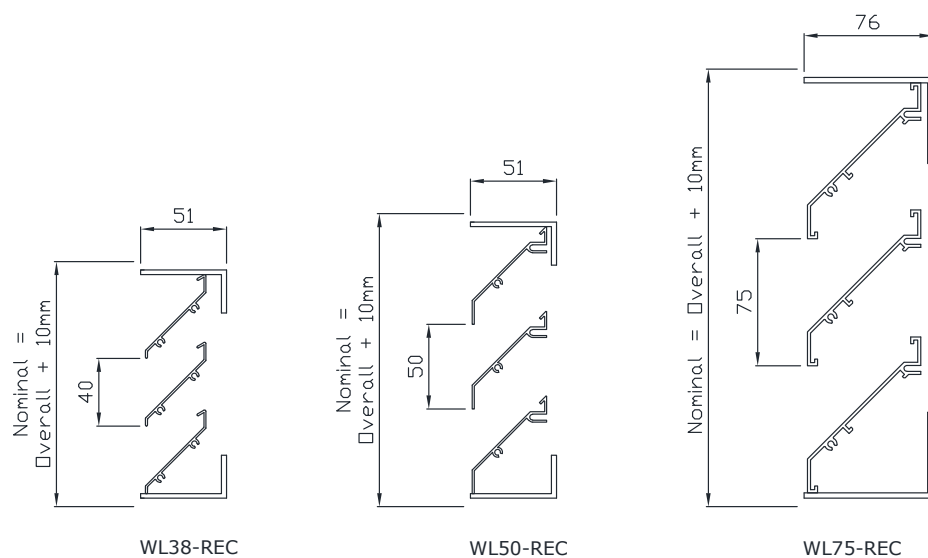
Product codes: WL38 - BM - Mill

Technical drawings

Flanged (standard)

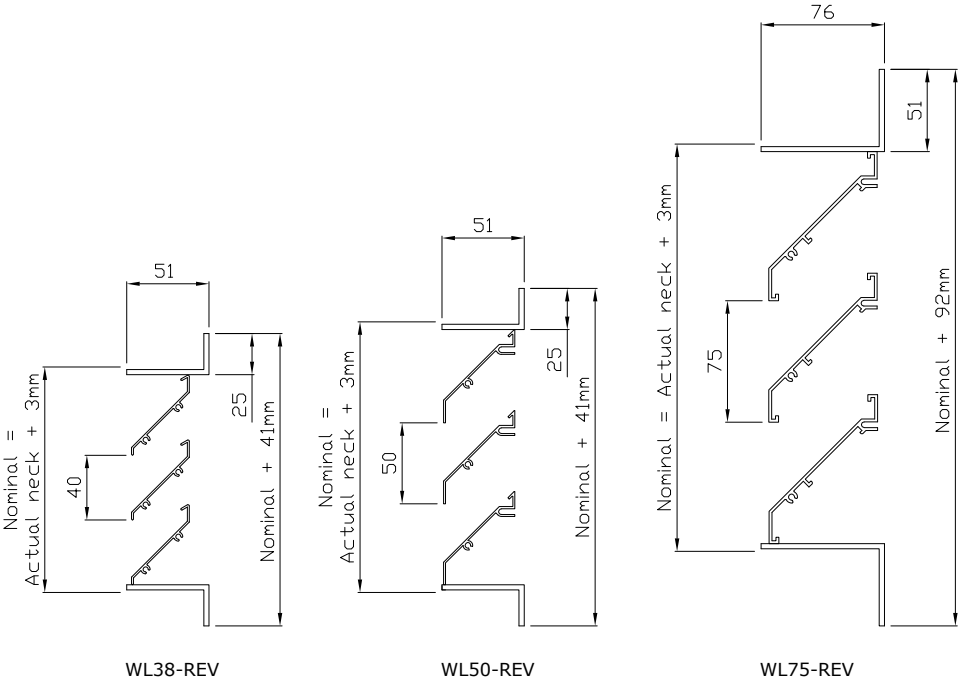


Recessed frame - REC (optional)



Technical drawings

Reversed frame - REV (optional)



Technical notes

Stop gaps

Louvre blades are laid out starting with the bottom blade and then working upwards.

Should a whole number of blades not be possible to fit into the required height, the top-most blade will either be cut down, or a stop gap will be fitted.

The maximum heights of stop gaps, based on louvre series are:

WL38: 25mm

WL50: 40mm

WL75: 60mm

Stop gaps are visible only as flat aluminium sections, and are fitted prior to powder coating (if required).

Frame types

The below table shows the standard and optional frames available for each louvre series, along with ordering codes and dimensions.

These are only standard frame types. If you have a special requirement not shown here, please contact us.

WL Series	Frame code	Description	Standard or optional	Nominal to overall size	Overall depth
WL38 and WL50	30FW	30mm flat	Standard	+ 45mm	46mm
	25F	25mm flat	Optional	+ 30mm	46mm
	50FS	50mm flat (shallow)	Optional	+ 80mm	50mm
	3" x 2" x 1/8"	3 inch (76.2mm) flat	Optional	+ 130mm	2 inches (50.8mm)
	4" x 2" x 1/8"	4 inch (101.6mm) flat	Optional	+ 180mm	2 inches (50.8mm)
WL75	50FD	50mm flat (deep)	Standard	+ 80mm	75mm
	3" x 3" x 1/8"	3 inch (76.2mm) flat	Optional	+ 130mm	3 inches (76.2mm)
	4" x 4" x 1/8"	4 inch (101.6mm) flat	Optional	+ 180mm	4 inches (101.6mm)

Large units

Large louvres may need to be produced in sections. The number of sections can be stated in your ordering code, or will be decided by HVC and stated on your order acknowledgement.

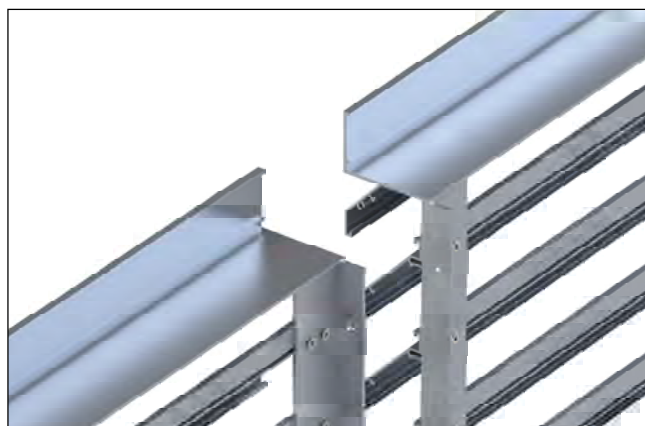
Side-by-side sections

Continuous appearance with concealed bolting points for joining adjacent sections. This will increase louvre depth by approximately 25mm.

Joining strips are supplied to ensure blade alignment with WL75's.

Vertically stacked sections

Units will be manufactured in sections of equal height, to be stacked together upon installation.



WL75 in side-by-side sections showing concealed angle with bolting points.

Fixings

None (Standard)

Most weather louvres are supplied with no fixings.

In this instance we recommend drilling through either the louvre flange or the neck, and screwing directly into the supporting structure with an appropriate fixing.



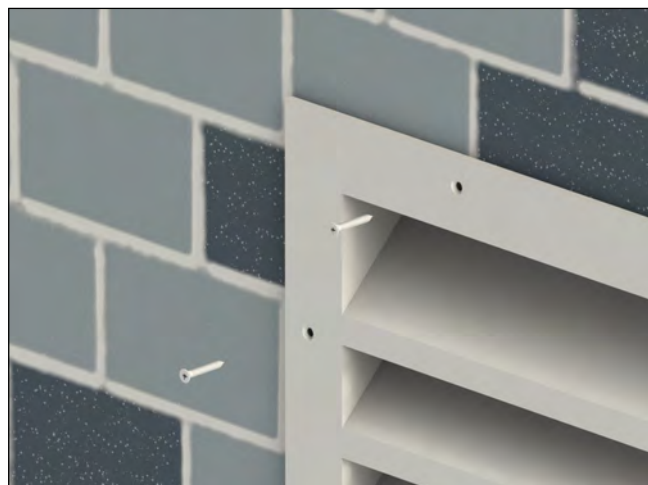
Pre-punched face fixing holes - Ordering code FH

5.7mm countersunk fixing holes will be punched into the louvre frame before powder coating, allowing quick and easy fitting on site.

Number and layout of fixing holes will be appropriate to louvre size. Arrangements can be specified.

Supplied with pozidrive self tapping screws in the same finish as the louvre.

Only available with flanged and reversed flange louvres.



Glazing bar - Ordering code GZ (Required depth needed)

An additional frame can be fixed to the louvre neck to create a glazing bar frame suitable for installation into uPVC channels in place of glass window panes.

Only available with flanged and reversed flange louvres.

Please note - Series GL50 glazing louvres are now available, designed from the ground up to suit glazing systems. Please refer to our website for more information.



Rear mounted concealed fixing lugs - Ordering code RFL

3mm thick, 25mm wide aluminium lugs, protruding 50mm from the back of the louvre neck can be factory fitted to your louvre.

Lugs are supplied undrilled to accept whatever fixing is required on site, and are either welded or double riveted to the louvre.

An appropriate amount of lugs will be fitted to suit the louvre size.

Only available with flanged and recessed louvres.



Additional options

Face mounted drip cill - Ordering code DC

By fitting an extended cill beneath the bottom blade, any water caught by the louvre is ejected away from the wall, instead of the bottom section of frame.

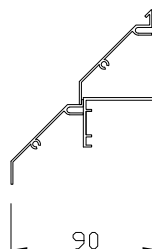
This can help prevent streak marks where water has run down a wall over time.

Not available with WL38.

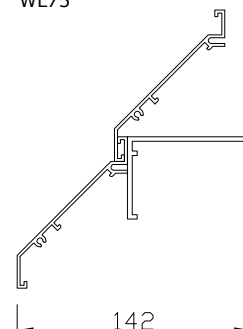
Please note: Recessed and reversed flange louvres will have a folded sheet metal drip cill with a profile appropriate to the selected blade type.



WL50



WL75



Rear mounted drip tray - Ordering code DT

Drip trays can be fitted to any series weather louvre, however on WL75's they are required if Class C rain rejection performance is needed.

Drip trays act to catch any water which penetrates through the louvre.

Trays protrude 65mm past the rear of the frame.

Please note: If specified on a reversed flange weather louvre, the drip tray will protrude into the aperture.



Further options

Combination units

Combining two essential components in any ventilation system, combination units integrate a standard weather louvre with a volume control damper. A fully welded, black powder coated galvanised steel backbox joins the two components.

This ready made solution means installation time and costs are reduced and ordering is made simple as you only need supply us with one size; we do the rest.

Volume control dampers can be supplied with a plastic handle or locking quadrant for manual operation, or with a factory fitted electric or pneumatic actuator.

For more information on combination units please refer to the combination unit PDF available for download from our website.

Suitable weather louvres:
Series WL50 and WL75

Suitable volume control dampers:
Series LF uPVC VCD high performance plastic
Series HVC-VCD aluminium



Burglar bars - Ordering code BB

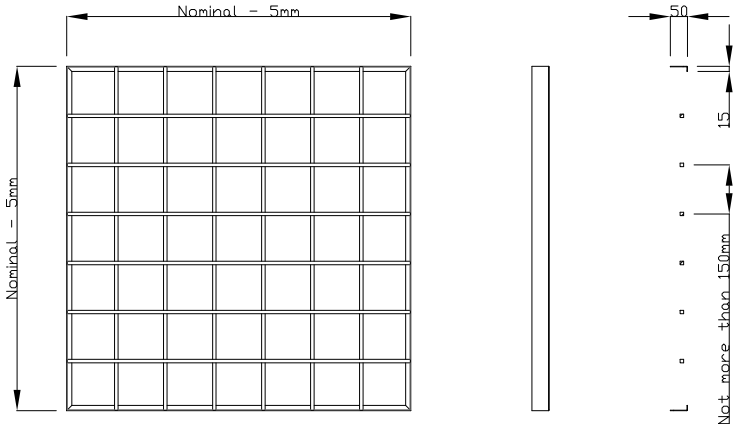
A wall mounted aluminium weather louvre can be a security risk, potentially providing an un-alarmed entry point to a building for any determined would be intruder.

Proving an extremely robust barrier to entry, burglar bars can be fitted to mitigate this risk.

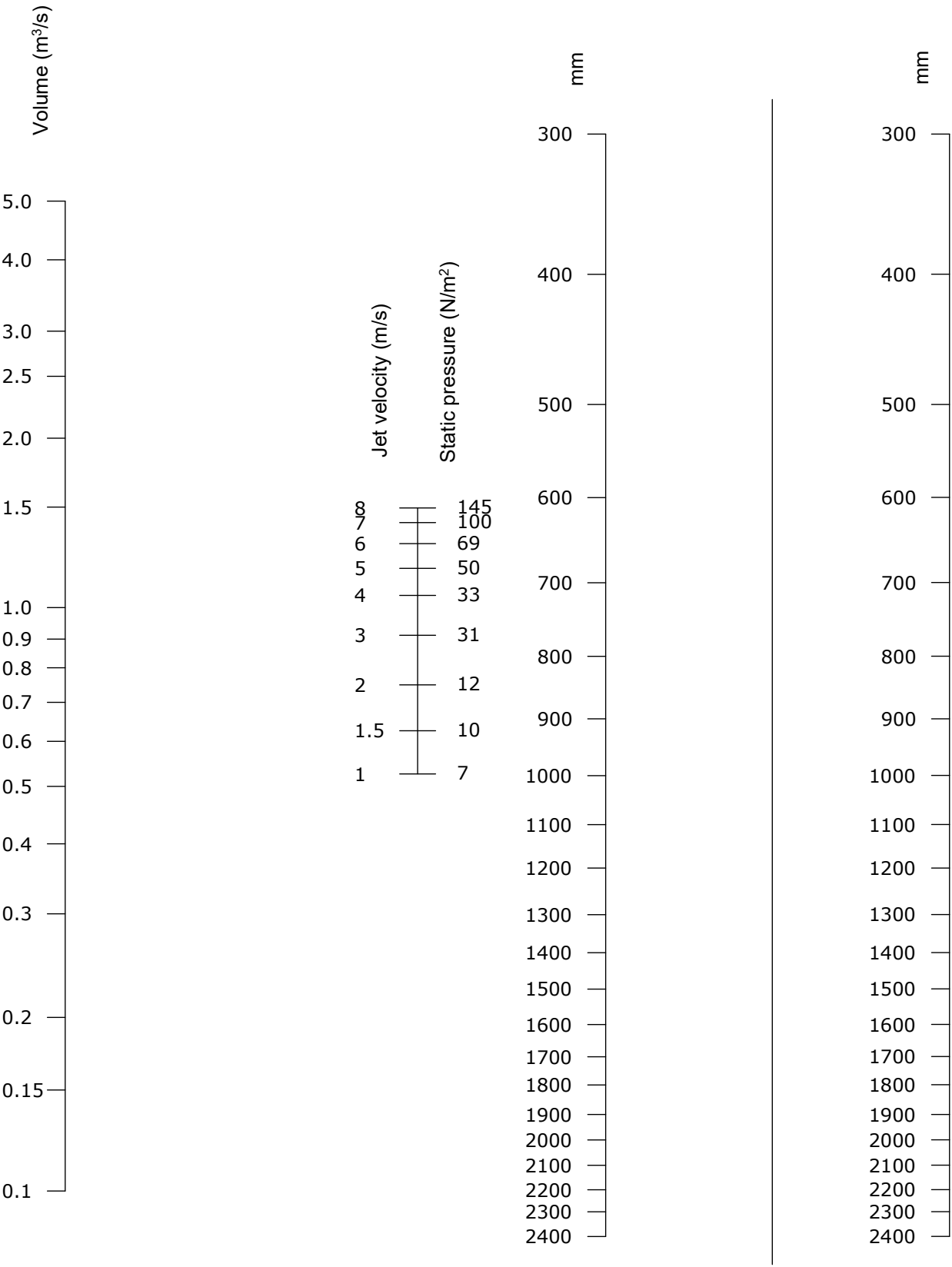
Designed to be fitted directly behind a louvre, burglar bars are constructed with a 1.2mm thick galvanised steel outer frame and a grid of 10mm fully welded steel bars, leaving spaces of not more than 150mm square.

Frames are supplied undrilled to accept whatever fixings are required on site.

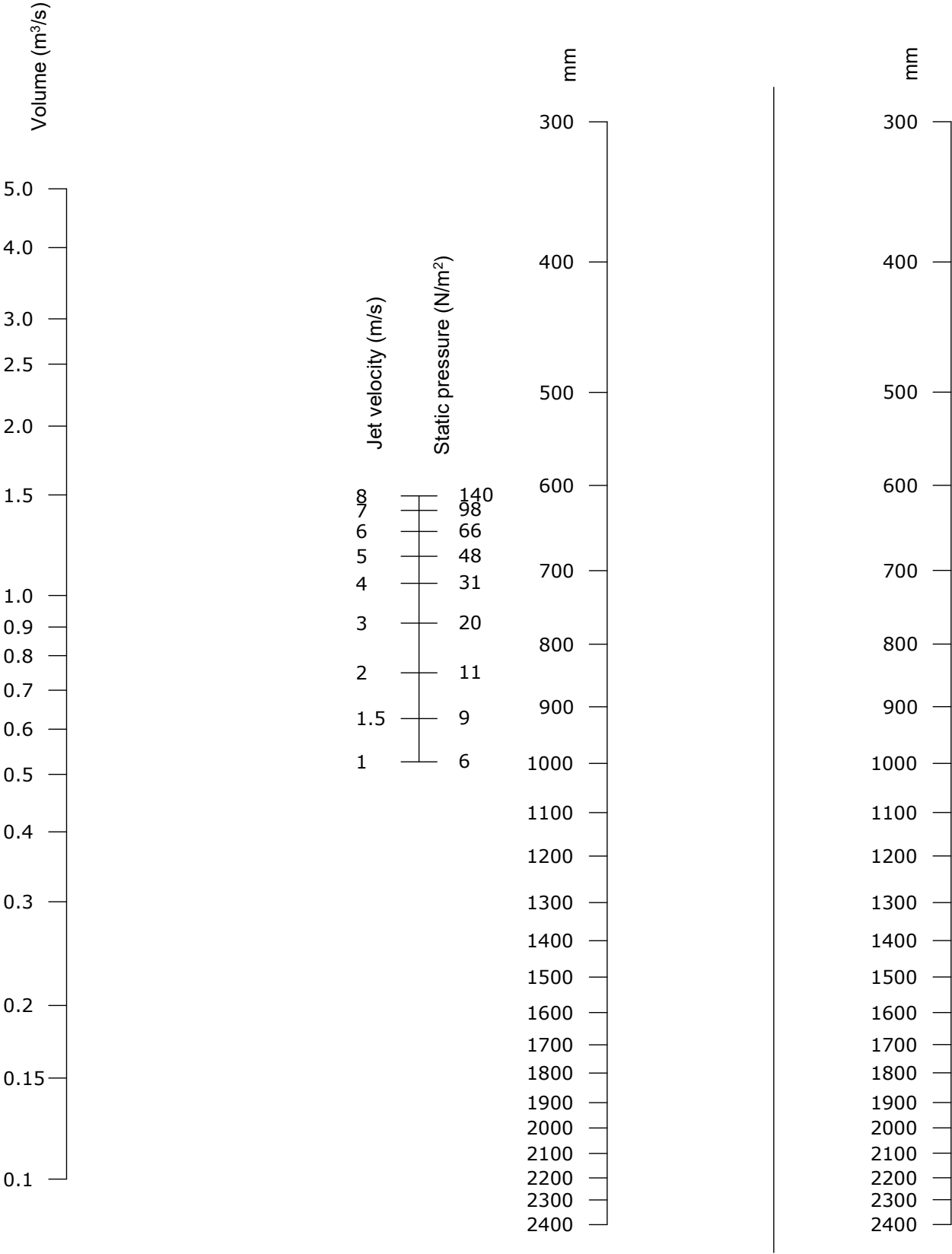
Supplied in a powder coated black finish as standard.



Selection data: WL38 and WL50



Selection data: WL75



Feature: Series HPL80 ultra high performance weather louvres

Should high performance rain rejection be required for your application, the new HPL80 may be more suitable than a Series WL standard weather louvre.

The new HPL80 louvre is an extremely high performance weather louvre, intended for installations demanding unimpeded ventilation, without the risk of water ingress.

Through its use of the new '*Air-Bypass*' blade design (UK patent application pending), never-before-seen levels of performance for a horizontally bladed weather louvre are achieved when tested against BS EN 13030:2001, the most widely used weather louvre test standard in Europe:

HPL80 with insect mesh: Class A2 up to 4.0 m/s

HPL80 with bird mesh: Class A2 up to 2.5 m/s

For more details on the HPL80, please search for the HPL80 on our website.



Finish

- Mill aluminium (standard)
- Satin anodised (AA5) - Only with WL50-25F/30FW
- Polyester powder coating to any RAL or BS colour



Ordering codes

Example

1 - 1000 x 1000 - WL50 - BM - FH - 30FW - DC - RAL9010 - 1S - BB

Codes

1)	Quantity		
2)	Size (mm)	(Width x height)	
3)	Series	WL38 WL50 WL75	38mm pitch weather louvre 50mm pitch weather louvre 75mm pitch weather louvre
4)	Frame design	(nothing) REC REV	Flanged Recessed frame Reversed frame
5)	Debris screens	BM IM VM	Bird mesh (12.7mm x 12.7mm weave, galvanised steel) Insect mesh (1.6mm x 1.6mm weave, G304 stainless steel) Vermin mesh (6mm x 6mm weave, G304 stainless steel)
6)	Fixings	FH RFL GZ	Pre-punched face fixing holes Rear mounted fixing lugs Glazing bar. State depth required.
7)	Flanges	30FW 25F 50FS 3" x 2" x 1/8" 4" x 2" x 1/8" 50FD 3" x 3" x 1/8" 4" x 4" x 1/8"	WL38 and WL50: 30mm flat flange (standard) 25mm flat flange (optional) 50mm flat flange - shallow (optional) 3" (76.2mm) flat flange (optional) 4" (101.6mm) flat flange (optional) WL75: 50mm flat flange - deep (standard) 3" (76.2mm) flat flange (optional) 4" (101.6mm) flat flange (optional)
8)	Additional options	DC DT	Face mounted drip cill (not available with WL38) Rear mounted drip tray (required for Class C performance with WL75)
9)	Finish	Mill SAA RAL... BS...	Mill aluminium (standard) Satin anodised - AA5 (only available with WL50-25F/30FW) Polyester powder coated to RAL... Polyester powder coated to BS...
10)	Sections	_S	Number of sections required. If left blank this will be confirmed on order acknowledgement
11)	Burglar/security bars	BB	Burglar bars required

Important: Size will be taken to be nominal (hole internal) unless stated otherwise.

Leave code section blank if no option is required.

Circular silencers
SIL**ducting express****Description**

The silencers are usually supplied with SPIRAL®system sealing. Diameters $d_1 > 315$ mm require additional NSL couplings to be ordered, which should be installed in the silencer prior to installation. These male ends are not silencer parts, and they should be ordered separately.

Glass mineral wool inside with thickness:

50 mm dla SIL-50 - depending on the dimension of the outer casing

100 mm dla SIL-100 - depending on the dimension of the outer casing

Example identification

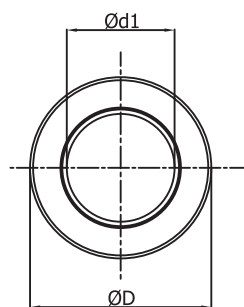
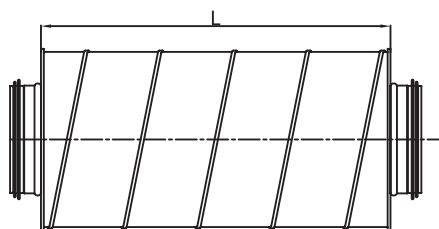
Product code: **SIL - iii - aaa - bbb**

type _____

insulation thickness _____

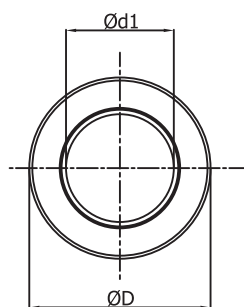
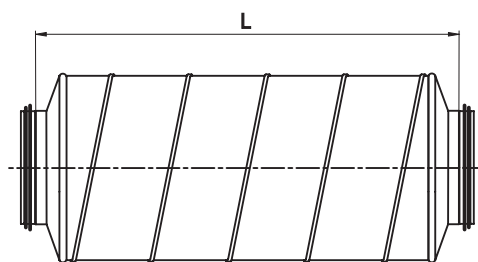
$\varnothing d_1$ _____

L _____

Dimensions

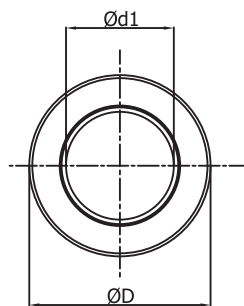
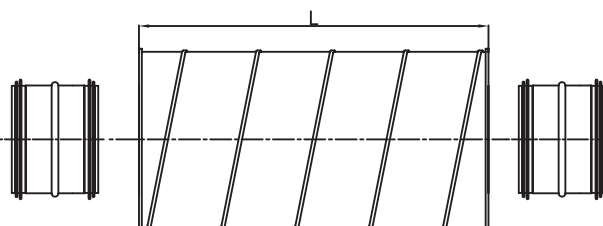
Cross-section for individual types: SIL, SIRC, $d_1 \leq 315$ mm.

Not applicable diameters: D-100, D-125, D-160, D-200, D-250 - in the embodiment of the insulation thickness of 50 mm.



Cross-section for silencers: SIL, SIRC in the embodiment of the insulation thickness of 50 mm and applicable diameters: D-100, D-125, D-160, D-200, d-250.

Silencers made with pressed reductions.



Cross-section for individual types: SIL, SIRC, $d_1 > 315$ mm

Circular silencers

SIL

Dimensions

SIL-50 - 50 mm thickness insulation

Description	Ød, nom [mm]	D nom [mm]	L [mm]	attenuation [dB] for frequency [Hz]								[kg]
				125	250	500	1000	2000	4000	8000		
SIL 080-300	80	180	300	6	15	29	45	50	26	28	2	
080-500	80	180	500	9	18	32	48	53	29	31	3	
080-600	80	180	600	11	19	33	49	54	30	32	3	
080-900	80	180	900	13	22	36	52	57	33	35	5	
080-1000	80	180	1000	14	23	37	53	58	34	36	6	
080-1200	80	180	1200								7	
SIL *100-300	100	200	350	5	13	26	41	44	22	24	2	
*100-500	100	200	550	8	16	29	44	47	26	27	3	
*100-600	100	200	650	9	17	30	45	49	27	29	3	
*100-900	100	200	950	12	19	32	48	51	29	31	5	
* 100-1000	100	200	1050	13	21	34	49	52	30	32	6	
* 100-1200	100	200	1250								7	
SIL *125-300	125	224	350	4	11	22	37	41	19	21	3	
*125-500	125	224	550	7	14	26	40	44	22	24	4	
*125-600	125	224	650	8	15	27	41	45	24	25	4	
*125-900	125	224	950	11	18	29	44	47	26	28	7	
* 125-1000	125	224	1050	12	19	31	45	49	27	29	7	
* 125-1200	125	224	1250								9	
SIL 150-300	150	250	300	4	11	23	34	36	18	19	4	
150-500	150	250	500	7	14	26	37	39	21	22	4	
150-600	150	250	600	8	15	27	39	41	22	23	6	
150-900	150	250	900	11	18	29	42	43	25	26	8	
150-1000	150	250	1000	12	19	30	42	44	26	27	8	
150-1200	150	250	1200								10	
SIL *160-300	160	250	350	3	9	20	33	35	16	18	3	
*160-500	160	250	550	6	12	23	36	38	19	21	5	
*160-600	160	250	650	7	14	24	37	39	21	22	6	
*160-900	160	250	950	10	16	26	40	42	23	25	8	
* 160-1000	160	250	1050	11	17	28	41	43	24	26	8	
* 160-1200	160	250	1250								10	
SIL *200-300	200	300	350	2	7	16	31	31	15	16	4	
*200-500	200	300	550	5	10	19	34	34	18	19	6	
*200-600	200	300	650	6	11	20	35	35	19	20	7	
*200-900	200	300	950	8	13	23	38	38	22	23	10	
* 200-1000	200	300	1050	9	15	24	39	39	23	24	11	
* 200-1200	200	300	1250								12	
SIL *250-500	250	355	550	4	9	18	29	27	15	16	9	
*250-600	250	355	650	5	11	19	30	28	16	18	11	
*250-900	250	355	950	8	13	22	33	31	19	20	14	
* 250-1000	250	355	1050	9	14	23	33	32	20	21	12	

SIL-50 - 50 mm thickness insulation

Description	Ød _i nom [mm]	D nom [mm]	L [mm]	attenuation [dB] for frequency [Hz]								[kg]
				125	250	500	1000	2000	4000	8000		
*	250-1250	250	355	1200	11	17	25	35	34	21	23	17
*	250-1550	250	355	1500	12	18	26	37	35	23	24	20
SIL	300-500	300	400	500	4	8	16	25	23	13	15	13
	300-600	300	400	600	5	10	18	27	25	14	16	15
	300-900	300	400	900	7	12	20	30	27	17	18	16
	300-1000	300	400	1000	8	13	21	30	28	18	19	19
	300-1200	300	400	1200	10	15	23	32	30	20	21	22
	300-1500	300	400	1500	12	17	24	34	32	21	23	25
SIL	315-500	315	400	500	4	7	14	23	21	13	14	11
	315-600	315	400	600	5	8	16	25	19	14	15	12
	315-900	315	400	900	7	11	18	28	21	17	18	16
	315-1000	315	400	1000	8	12	19	28	22	18	19	16
	315-1200	315	400	1200	10	14	21	30	24	19	21	19
	315-1500	315	400	1500	12	16	23	32	26	21	22	25
SIL	355-600	355	450	600	4	9	16	22	17	13	14	13
	355-900	355	450	900	7	11	19	25	19	16	17	18
	355-1000	355	450	1000	8	12	20	26	21	17	18	20
	355-1200	355	450	1200	10	15	22	27	22	18	20	22
	355-1500	355	450	1500	11	16	23	29	24	20	21	27
SIL	400-600	400	500	600	4	8	15	20	15	12	13	15
	400-900	400	500	900	6	10	18	23	17	15	16	20
	400-1000	400	500	1000	8	12	19	24	18	16	17	22
	400-1200	400	500	1200	9	14	21	25	20	17	19	25
	400-1500	400	500	1500	11	15	22	27	22	19	20	31
SIL	450-600	450	560	600	4	8	16	18	13	12	12	23
	450-900	450	560	900	6	11	18	21	16	15	15	27
	450-1000	450	560	1000	7	12	19	22	17	16	16	29
	450-1200	450	560	1200	9	14	21	23	18	17	17	31
	450-1500	450	560	1500	11	16	23	25	20	19	19	36
SIL	500-600	500	600	600	3	7	14	17	11	11	12	32
	500-900	500	600	900	6	9	16	20	14	13	14	42
	500-1000	500	600	1000	7	11	17	21	15	14	15	51
	500-1200	500	600	1250	9	13	19	22	17	16	17	59
	500-1500	500	600	1500	10	14	20	24	18	17	19	72

Circular silencers

SIL

SIL-50 - 50 mm thickness insulation

Description		$\varnothing d_1$	D	L	attenuation [dB] for frequency [Hz]								[kg]
		nom [mm]	nom [mm]	nom [mm]	125	250	500	1000	2000	4000	8000		
SIL	560-900	560	630	900	6	9	15	19	13	12	14	31	
	560-1000	560	630	1000	7	10	16	20	14	13	15	34	
	560-1200	560	630	1200	9	13	18	21	15	15	16	39	
SIL	630-900	630	710	900	5	8	14	18	11	12	13	34	
	630-1000	630	710	1000	6	10	16	18	12	13	14	39	
	630-1200	630	710	1200	8	12	17	20	14	14	15	42	

* made with pressed lids

SIL-50 - 50 mm thickness insulation

Description	attenuation [Pa] for air velocity [m/s]				
	2	4	8	10	12
SIL-50-080-300	0,43	1,74	6,95	10,86	15,64
SIL-50-080-500	0,44	1,77	7,07	11,04	15,90
SIL-50-080-600	0,45	1,80	7,18	11,22	16,16
SIL-50-080-900	0,48	1,93	7,72	12,06	17,37
SIL-50-080-1000	0,50	2,01	8,03	12,54	18,06
SIL-50-080-1200					
SIL-50-100-300	0,36	1,42	5,68	8,88	12,79
SIL-50-100-500	0,36	1,44	5,76	9,00	12,96
SIL-50-100-600	0,37	1,47	5,88	9,18	13,22
SIL-50-100-900	0,40	1,61	6,45	10,08	14,52
SIL-50-100-1000	0,42	1,68	6,72	10,50	15,12
SIL-50-100-1200					
SIL-50-125-300	0,29	1,15	4,61	7,20	10,37
SIL-50-125-500	0,29	1,17	4,68	7,32	10,54
SIL-50-125-600	0,30	1,20	4,80	7,50	10,80
SIL-50-125-900	0,34	1,34	5,38	8,40	12,10
SIL-50-125-1000	0,35	1,41	5,64	8,82	12,70
SIL-50-125-1200					
SIL-50-150-300	0,34	1,34	5,38	8,40	12,10
SIL-50-150-500	0,34	1,36	5,45	8,52	12,27
SIL-50-150-600	0,35	1,39	5,57	8,70	12,53
SIL-50-150-900	0,38	1,54	6,14	9,60	13,82
SIL-50-150-1000	0,40	1,61	6,45	10,08	14,52
SIL-50-150-1200					
SIL-50-160-300	0,24	0,96	3,84	6,00	8,64
SIL-50-160-500	0,25	0,99	3,96	6,18	8,90
SIL-50-160-600	0,25	1,02	4,07	6,36	9,16
SIL-50-160-900	0,29	1,15	4,61	7,20	10,37
SIL-50-160-1000	0,31	1,23	4,92	7,68	11,06
SIL-50-160-1200					

SIL-50 - 50 mm thickness insulation

Description	pressure loss [Pa] for air velocity [m/s]				
	2	4	8	10	12
SIL-50-200-300	0,17	0,67	2,69	4,20	6,05
SIL-50-200-500	0,17	0,69	2,76	4,32	6,22
SIL-50-200-600	0,18	0,72	2,88	4,50	6,48
SIL-50-200-900	0,22	0,86	3,46	5,40	7,78
SIL-50-200-1000	0,24	0,94	3,76	5,88	8,47
SIL-50-200-1200					
SIL-50-250-500	0,18	0,74	2,96	4,62	6,65
SIL-50-250-600	0,19	0,77	3,07	4,80	6,91
SIL-50-250-900	0,23	0,91	3,65	5,70	8,21
SIL-50-250-1000	0,25	0,99	3,96	6,18	8,90
SIL-50-250-1200	0,35	1,39	5,57	8,70	12,53
SIL-50-250-1500	0,40	1,58	6,34	9,90	14,26
SIL-50-300-500	0,15	0,59	2,34	3,66	5,27
SIL-50-300-600	0,16	0,62	2,50	3,90	5,62
SIL-50-300-900	1,90	7,58	30,34	47,40	68,26
SIL-50-300-1000	0,21	0,84	3,34	5,22	7,52
SIL-50-300-1200	0,31	1,24	4,95	7,74	11,15
SIL-50-300-1500	0,37	1,50	5,99	9,36	13,48
SIL-50-315-500	0,12	0,50	2,00	3,12	4,49
SIL-50-315-600	0,13	0,53	2,11	3,30	4,75
SIL-50-315-900	0,17	0,67	2,69	4,20	6,05
SIL-50-315-1000	0,19	0,75	3,00	4,68	6,74
SIL-50-315-1200	0,29	1,15	4,61	7,20	10,37
SIL-50-315-1500	0,35	1,39	5,57	8,70	12,53
SIL-50-355-600	0,11	0,43	1,73	2,70	3,89
SIL-50-355-900	0,14	0,57	2,27	3,54	5,10
SIL-50-355-1000	0,16	0,64	2,57	4,02	5,79
SIL-50-355-1200	0,26	1,05	4,19	6,54	9,42
SIL-50-355-1500	0,33	1,33	5,34	8,34	12,01
SIL-50-400-600	0,09	0,37	1,50	2,34	3,37
SIL-50-400-900	0,13	0,52	2,07	3,24	4,67
SIL-50-400-1000	0,15	0,59	2,34	3,66	5,27
SIL-50-400-1200	0,25	1,00	3,99	6,24	8,99
SIL-50-400-1500	0,33	1,31	5,22	8,16	11,75
SIL-50-450-600	0,08	0,34	1,34	2,10	3,02
SIL-50-450-900	1,20	4,80	19,20	30,00	43,20
SIL-50-450-1000	0,14	0,56	2,23	3,48	5,01
SIL-50-450-1200	0,24	0,96	3,84	6,00	8,64
SIL-50-450-1500	0,31	1,25	4,99	7,80	11,23
SIL-50-500-600	0,07	0,29	1,15	1,80	2,59
SIL-50-500-900	0,11	0,43	1,73	2,70	3,89
SIL-50-500-1000	0,12	0,50	2,00	3,12	4,49

Circular silencers

SIL

SIL-50 - 50 mm thickness insulation

Description	pressure loss [Pa] for air velocity [m/s]				
	2	4	8	10	12
SIL-50-500-1200	0,23	0,91	3,65	5,70	8,21
SIL-50-500-1500	0,30	1,21	4,84	7,56	10,89
SIL-50-560-900	0,10	0,39	1,57	2,46	3,54
SIL-50-560-1000	0,12	0,47	1,88	2,94	4,23
SIL-50-560-1200	0,22	0,87	3,49	5,46	7,86
SIL-50-630-900	0,09	0,36	1,42	2,22	3,20
SIL-50-630-1000	0,11	0,43	1,73	2,70	3,89
SIL-50-630-1200	0,21	0,84	3,34	5,22	7,52

SIL-100 - 100 mm thickness insulation

Description		Ød, nom	D nom	L	attenuation [dB] for frequency [Hz]								[kg]
		[mm]	[mm]	[mm]	125	250	500	1000	2000	4000	8000		
SIL	100-500	100	300	500	20	29	40	44	52	27	27	6	
	100-600	100	300	600	21	30	44	48	53	29	28	7	
	100-900	100	300	900	22	34	52	57	57	32	31	9	
	100-1000	100	300	1000	22	34	55	60	58	33	33	11	
	100-1200	100	300	1200	24	37	58	64	61	34	34	12	
SIL	125-300	125	315	300	17	24	38	42	51	26	28	5	
	125-500	125	315	500	18	26	36	42	49	25	25	8	
	125-600	125	315	600	18	26	36	42	49	25	25	8	
	125-900	125	315	900	20	30	48	55	54	29	30	11	
	125-1000	125	315	1000	20	31	51	58	55	31	31	13	
	125-1200	125	315	1200	21	34	54	62	58	31	33	13	
SIL	150-300	150	355	300	15	21	33	37	44	23	25	5	
	150-500	150	355	500	20	29	40	44	52	27	27	9	
	150-600	150	355	600	17	25	36	41	43	23	24	10	
	150-900	150	355	900	18	28	44	50	47	26	27	13	
	150-1000	150	355	1000	18	28	47	53	48	28	28	15	
	150-1200	150	355	1200	24	37	58	64	61	34	34	18	
SIL	160-300	160	355	300	16	21	29	34	41	20	23	7	
	160-500	160	355	500	17	23	28	34	39	19	20	9	
	160-600	160	355	600	17	24	32	38	40	21	21	10	
	160-900	160	355	900	18	27	40	47	44	24	25	14	
	160-1000	160	355	1000	19	28	43	50	45	25	26	14	
	160-1200	160	355	1200	20	31	46	54	48	26	28	17	
SIL	200-300	200	400	300	13	18	27	29	36	18	21	8	
	200-500	200	400	500	14	20	25	28	34	17	18	12	
	200-600	200	400	600	14	21	29	33	35	19	19	12	
	200-900	200	400	900	15	25	38	42	39	22	22	16	
	200-1000	200	400	1000	16	25	41	45	40	23	24	16	
	200-1200	200	400	1200	17	28	43	48	43	24	26	20	

SIL-100 - 100 mm thickness insulation

Description		Ød _i	D	L	attenuation [dB]								kg
		nom	nom		for frequency [Hz]								
		[mm]	[mm]	[mm]	125	250	500	1000	2000	4000	8000		
SIL	250-500	250	450	500	11	17	22	26	29	15	16	16	
	250-600	250	450	600	12	18	26	30	30	17	17	14	
	250-900	250	450	900	13	22	34	39	34	20	20	20	
	250-1000	250	450	1000	14	22	37	42	35	21	22	17	
	250-1200	250	450	1200	15	25	40	46	38	22	23	24	
	250-1500	250	450	1500	16	29	44	51	42	23	26	28	
SIL	315-500	315	500	500	10	16	17	22	25	13	14	14	
	315-600	315	500	600	14	17	21	26	26	15	15	16	
	315-900	315	500	900	12	20	39	35	30	18	19	21	
	315-1000	315	500	1000	12	21	32	38	31	19	20	22	
	315-1200	315	500	1200	14	24	35	42	34	22	23	26	
	315-1500	315	500	1500	15	28	39	47	38	21	25	35	
SIL	355-600	355	560	600	10	15	20	23	23	13	14	26	
	355-900	355	560	900	11	19	28	32	27	16	18	29	
	355-1000	355	560	1000	11	19	31	35	28	18	19	33	
	355-1200	355	560	1200	13	22	34	39	31	18	21	33	
	355-1500	355	560	1500	14	26	38	44	35	19	24	47	
SIL	400-600	400	600	600	9	15	18	21	20	12	11	21	
	400-900	400	600	900	11	18	26	30	24	14	14	30	
	400-1000	400	600	1000	11	18	29	33	25	16	16	29	
	400-1200	400	600	1200	12	22	32	37	28	16	17	41	
	400-1500	400	600	1500	14	26	36	42	32	17	20	51	
SIL	450-600	450	630	600	9	14	16	18	17	10	10	32	
	450-900	450	630	900	10	17	24	27	21	13	13	40	
	450-1000	450	630	1000	10	18	27	30	22	15	15	36	
	450-1200	450	630	1200	11	21	30	34	25	15	16	46	
	450-1500	450	630	1500	13	25	34	39	29	16	19	56	
SIL	500-600	500	710	600	8	13	14	15	15	10	9	23	
	500-900	500	710	900	10	16	22	24	19	13	13	35	
	500-1000	500	710	1000	10	17	25	27	20	14	14	39	
	500-1200	500	710	1200	11	20	28	31	23	15	16	43	
	500-1500	500	710	1500	13	24	32	36	27	16	19	50	
SIL	560-900	560	800	900								39	
	560-1000	560	800	1000								53	
	560-1200	560	800	1200								56	
	560-1500	560	800	1500								46	
SIL	630-900	630	800	900	8	15	20	22	17	11	11	50	
	630-1000	630	800	1000	9	15	23	25	18	12	12	48	
	630-1200	630	800	1200	10	18	26	29	21	13	14	58	
	630-1500	630	800	1500	11	22	29	34	25	14	17	66	
SIL	710-1000	710	900	1000	8	14	20	23	16	11	10	59	
	710-1200	710	900	1200	9	17	23	27	18	11	12	64	

Circular silencers

SIL**SIL-100 - 100 mm thickness insulation**

opis	Ød ₁	D	L	tłumienie [dB]								waga [kg]
	nom	nom		dla częstotliwości [Hz]								
	[mm]	[mm]	[mm]	125	250	500	1000	2000	4000	8000		
710-1500	710	900	1500	11	21	26	30	22	12	15	73	
SIL 800-1000	800	1000	1000	8	14	20	22	15	10	10	0	
800-1200	800	1000	1200	9	17	22	25	18	11	12	73	
800-1500	800	1000	1500	10	21	26	30	22	12	15	103	
SIL 900-1000	900	1120	1000	7	13	19	20	13	9	10	80	
900-1200	900	1120	1200	8	16	22	24	16	10	11	88	
900-1500	900	1120	1500	10	20	26	29	20	11	14	95	

SIL-100 - 100 mm thickness insulation

opis	pressure loss [Pa] for air velocity [m/s]				
	2	4	8	10	12
SIL-100-100-500	0,26	1,04	4,15	6,48	9,33
SIL-100-100-600	0,28	1,13	4,53	7,08	10,20
SIL-100-100-900	0,34	1,34	5,38	8,40	12,10
SIL-100-100-1000	0,35	1,40	5,61	8,76	12,61
SIL-100-100-1200	0,37	1,50	5,99	9,36	13,48
SIL-100-125-300	0,19	0,77	3,07	4,80	6,91
SIL-100-125-500	0,25	0,99	3,96	6,18	8,90
SIL-100-125-600	0,27	1,08	4,34	6,78	9,76
SIL-100-125-900	0,33	1,31	5,22	8,16	11,75
SIL-100-125-1000	0,34	1,36	5,45	8,52	12,27
SIL-100-125-1200	0,36	1,46	5,84	9,12	13,13
SIL-100-150-300	0,18	0,72	2,88	4,50	6,48
SIL-100-150-500	0,24	0,94	3,76	5,88	8,47
SIL-100-150-600	0,26	1,04	4,15	6,48	9,33
SIL-100-150-900	0,31	1,25	4,99	7,80	11,23
SIL-100-150-1000	0,33	1,31	5,22	8,16	11,75
SIL-100-150-1200	0,35	1,40	5,61	8,76	12,61
SIL-100-160-300	0,17	0,67	2,69	4,20	6,05
SIL-100-160-500	0,23	0,91	3,65	5,70	8,21
SIL-100-160-600	0,25	1,01	4,03	6,30	9,07
SIL-100-160-900	0,31	1,23	4,92	7,68	11,06
SIL-100-160-1000	0,32	1,29	5,15	8,04	11,58
SIL-100-160-1200	0,35	1,38	5,53	8,64	12,44
SIL-100-200-300	0,16	0,64	2,57	4,02	5,79
SIL-100-200-500	0,20	0,82	3,26	5,10	7,34
SIL-100-200-600	0,23	0,91	3,65	5,70	8,21
SIL-100-200-900	0,28	1,12	4,49	7,02	10,11
SIL-100-200-1000	0,30	1,18	4,72	7,38	10,63
SIL-100-200-1200	0,32	1,28	5,11	7,98	11,49
SIL-100-250-500	0,17	0,67	2,69	4,20	6,05
SIL-100-250-600	0,19	0,77	3,07	4,80	6,91

SIL-100 - 100 mm thickness insulation

Description	pressure loss [Pa] for air velocity [m/s]				
	2	4	8	10	12
SIL-100-250-900	0,24	0,98	3,92	6,12	8,81
SIL-100-250-1000	0,26	1,04	4,15	6,48	9,33
SIL-100-250-1200	0,28	1,13	4,53	7,08	10,20
SIL-100-250-1500	0,31	1,25	4,99	7,80	11,23
SIL-100-315-600	0,14	0,57	2,27	3,54	5,10
SIL-100-315-900	0,19	0,78	3,11	4,86	7,00
SIL-100-315-1000	0,21	0,84	3,34	5,22	7,52
SIL-100-315-1200	0,23	0,93	3,72	5,82	8,38
SIL-100-315-1500	0,26	1,05	4,19	6,54	9,42
SIL-100-355-500	0,12	0,47	1,88	2,94	4,23
SIL-100-355-600	0,11	0,44	1,77	2,76	3,97
SIL-100-355-900	0,17	0,66	2,65	4,14	5,96
SIL-100-355-1000	0,18	0,71	2,84	4,44	6,39
SIL-100-355-1200	0,20	0,81	3,23	5,04	7,26
SIL-100-355-1500	0,23	0,93	3,72	5,82	8,38
SIL-100-400-600	0,08	0,32	1,27	1,98	2,85
SIL-100-400-900	0,13	0,53	2,11	3,30	4,75
SIL-100-400-1000	0,15	0,59	2,34	3,66	5,27
SIL-100-400-1200	0,17	0,68	2,73	4,26	6,13
SIL-100-400-1500	0,20	0,80	3,19	4,98	7,17
SIL-100-450-600	0,05	0,19	0,77	1,20	1,73
SIL-100-450-900	0,10	0,40	1,61	2,52	3,63
SIL-100-450-1000	0,12	0,46	1,84	2,88	4,15
SIL-100-450-1200	0,14	0,56	2,23	3,48	5,01
SIL-100-450-1500	0,17	0,67	2,69	4,20	6,05
SIL-100-500-600	0,02	0,08	0,31	0,48	0,69
SIL-100-500-900	0,07	0,29	1,15	1,80	2,59
SIL-100-500-1000	0,09	0,35	1,38	2,16	3,11
SIL-100-500-1200	0,11	0,44	1,77	2,76	3,97
SIL-100-500-1500	0,14	0,56	2,23	3,48	5,01
SIL-100-560-900					
SIL-100-560-1000					
SIL-100-560-1200					
SIL-100-560-1500					
SIL-100-630-900	0,02	0,10	0,38	0,60	0,86
SIL-100-630-1000	0,04	0,14	0,58	0,90	1,30
SIL-100-630-1200	0,06	0,24	0,96	1,50	2,16
SIL-100-630-1500	0,09	0,36	1,46	2,28	3,28
SIL-100-710-1000	0,02	0,08	0,31	0,48	0,69
SIL-100-710-1200	0,04	0,17	0,69	1,08	1,56
SIL-100-710-1500	0,07	0,30	1,19	1,86	2,68
SIL-100-800-1000	0,01	0,04	0,15	0,24	0,35
SIL-100-800-1200	0,03	0,13	0,54	0,84	1,21

Circular silencers

SIL

SIL-100 - 100 mm thickness insulation

Description	pressure loss [Pa] for air velocity [m/s]				
	2	4	8	10	12
SIL-100-800-1500	0,06	0,25	1,00	1,56	2,25
SIL-100-900-1000	0,00	0,01	0,04	0,06	0,09
SIL-100-900-1200	0,03	0,11	0,42	0,66	0,95
SIL-100-900-1500	0,06	0,23	0,92	1,44	2,07



Range of cylindrical cased axial fans fitted with aluminium impellers and manufactured from high grade rolled galvanised steel and protected against corrosion by cataforesis primer and black polyester paint finish. Fitted with 2 contra rotating complementary impellers manufactured from die-cast aluminium. All models are supplied with pre-wired wiring junction box located on the outside of the fan casing for easy wiring access. Available with single or three phase 4 poles motors.

Motors

All the motors are IP65, Class F insulation (1), equipped with thermal protection. Single phase motors are variable voltage [Excepted TCBBX2/4-630]. Three phase motors suitable for inverter control.

Electrical supplies:

Single phase 230V-50Hz (Capacitor located inside the wiring terminal box)
Three phase 230/400V-50Hz.

(1) Working temperatures from -40°C up to 70°C.



Contra rotating: High pressure

Contra rotating system with two complementary impellers allowing the duplication of the pressure with the same air volume.



Corrosion resistance

Rolled steel casings and motor support protected by cataforesis primer and black polyester paint finish. Stainless steel screws.



Terminal box

Wiring terminal box with cable gland PG-11.



Impeller dynamically balanced

Impellers are dynamically balanced, according to ISO 1940 standard, giving vibration free operation.

CONTRA ROTATING CASED AXIAL FANS

TCBBx2 / TCBTx2 Series



TECHNICAL CHARACTERISTICS

Before installation check that the product electrical characteristics listed on the data plate label (voltage, power, frequency, etc.) match those of the intended electrical supply.

Model	Speed (rpm)	Diameter (mm)	Maximum absorbed power (W)	Maximum absorbed current (A)		Sound pressure level* (dB(A))	Maximum air volume (m³/h)	Weight (kg)	Speed controller RMB/T	Variable frequency inverter			
				to 230 V	to 400 V					VFTM		VFKB	
										1/230V**	3/400V	1/230V**	3/400V
SINGLE PHASE													
TCBBx2/4-450	1420	450	1316	5,7	–	74	7.430	42	RMB-8	–	–	–	–
TCBBx2/4-500	1370	500	1957	9,0	–	76	9.950	50	RMB-10	–	–	–	–
TCBBx2/4-560	1370	560	2972	13,6	–	78	13.930	66	–	–	–	–	–
TCBBx2/4-630	1400	630	3671	16,3	–	79	16.560	80	–	–	–	–	–
THREE PHASE													
TCBTx2/4-450	1430	450	1309	5,2	3	74	7.250	42	RMT-5	VFTM MONO 1,1	VFTM TRI 1,1	VFKB 27	VFKB 45
TCBTx2/4-500	1390	500	1700	5,8	3,4	76	9.800	50	RMT-5	VFTM MONO 1,1	VFTM TRI 1,5	VFKB 27	VFKB 45
TCBTx2/4-560	1390	560	3173	10,0	5,8	78	15.170	66	–	VFTM MONO 2,2	VFTM TRI 3	–	VFKB 48
TCBTx2/4-630	1445	630	4014	–	7,4	79	17.810	80	–	–	VFTM TRI 4	–	VFKB 48

* Sound pressure level, measured in free field condition at a distance equivalent of three times the diameter of the impeller or a minimum of 1.5 meters whichever is the greater.

** Only for fans fitted with three phase motors 230/400V.

ACOUSTIC CHARACTERISTICS

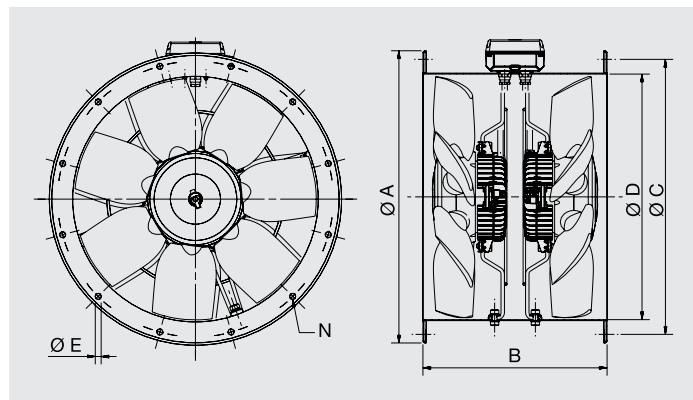
The sound levels –NPS– shown in the technical characteristic chart, correspond to the value of sound pressure dB(A), measured in free field conditions at a distance equivalent to three times the diameter of the impeller with a minimum of 1.5 meters.

The following table shows the sound power level spectrums in dB(A) measured with the fan ducted, at both inlet and discharge sides.

Model	Air volume m³/h	63	125	250	500	1000	2000	4000	8000	Global
450 Inlet	6.600	46	73	85	82	85	79	72	64	90
	5.850	46	73	84	81	83	79	71	64	88
	4.300	58	70	80	80	83	79	71	64	87
450 Outlet	6.600	63	75	86	85	87	82	74	67	92
	5.850	53	73	85	84	87	81	74	67	91
	4.300	58	70	82	83	86	82	74	67	90
500 Inlet	9.000	48	78	87	85	87	81	74	67	92
	7.500	52	76	85	85	85	80	73	65	90
	6.000	60	73	83	82	85	80	73	66	89
500 Outlet	9.000	65	76	87	88	90	84	77	70	94
	7.500	62	75	86	87	88	83	76	69	92
	6.000	59	72	86	85	88	83	76	69	92

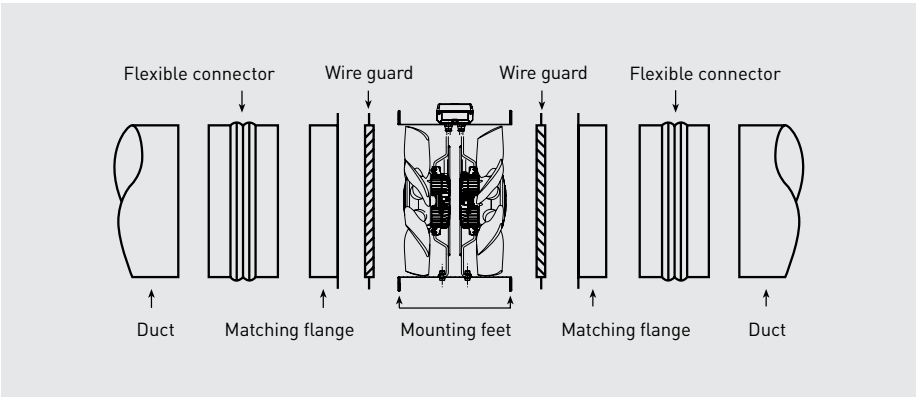
Model	Air volume m³/h	63	125	250	500	1000	2000	4000	8000	Global
560 Inlet	13.720	50	85	87	88	91	85	78	73	95
	10.800	57	79	83	86	89	84	78	72	93
	9.000	63	79	81	86	89	84	78	72	92
560 Outlet	13.720	74	86	85	91	94	88	81	75	97
	10.800	70	82	84	88	92	87	81	74	95
	9.000	74	81	85	89	92	87	81	74	95
630 Inlet	17.500	51	85	91	89	93	87	80	74	97
	15.600	55	85	85	88	91	86	80	73	95
	12.000	64	80	84	88	90	86	80	73	94
630 Outlet	17.500	73	87	88	93	95	89	83	77	99
	15.600	71	87	86	91	94	89	83	76	98
	12.000	67	84	86	90	94	89	84	76	97

DIMENSIONS (mm)



Model	Ø A	B	Ø C	Ø D	Ø E	Number of holes N
450	537	375	500	450	12	8
TCBBx2/4-500	595	520	560	500	12	12
TCBTx2/4-500	595	375	560	500	12	12
560	655	520	620	560	12	12
630	725	520	690	630	12	12

MOUNTING ACCESSORIES

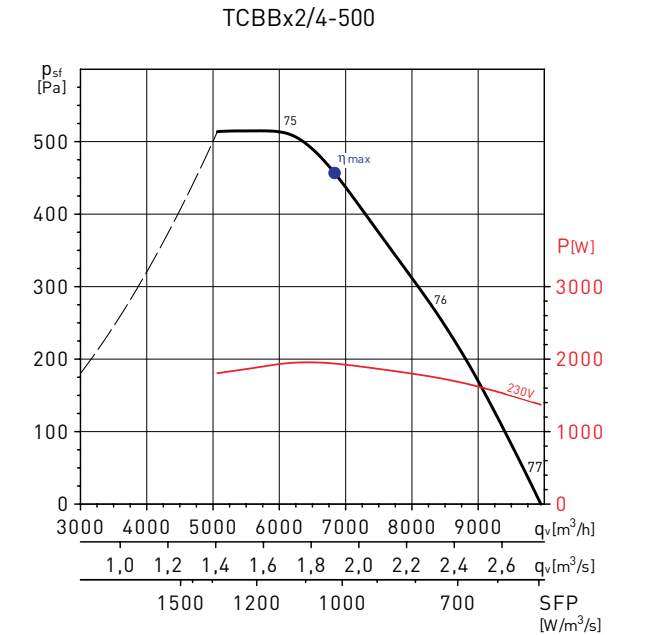


PERFORMANCE CURVES TCBBx2 / TCBTx2

- q_v : Air volume in m^3/h and m^3/s .
- p_{st} : Static pressure in Pa.
- SFP: Specific fan power in $W/m^3/s$.
- P: Input power in W.
- Measurement category: C or D depending on the models.
- Efficiency category: Static or Total depending on the models.
- Fan tested with inlet bellmouth.
- Fan efficiency without VSD.
- Air flow data in accordance with ISO 5801.
- Sound pressure level dB(A), measured in a free field distance equal to 3 times the diameter, with a minimum of 1,5 m.

MC	Measurement category
EC	Efficiency category
VSD	Speed control: supplied with the fan
SR	Specific ratio
η [%]	Efficiency
N	Efficiency grade
[kW]	Absorbed power
[m³/h]	Air volume
[Pa]	Static pressure
[RPM]	Speed

EXAMPLE CURVE

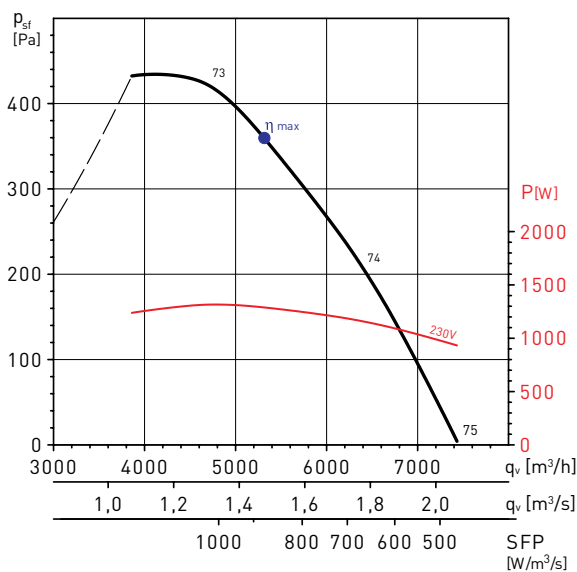


MC*	EC*	VSD*	SR*	η [%]*	N*	[kW]	[m³/h]	[Pa]	[RPM]
C	Static	No	1	45,1	49,6	1,957	6383	498	1394

* See example curve.

PERFORMANCE CURVES – 4 POLE MOTOR

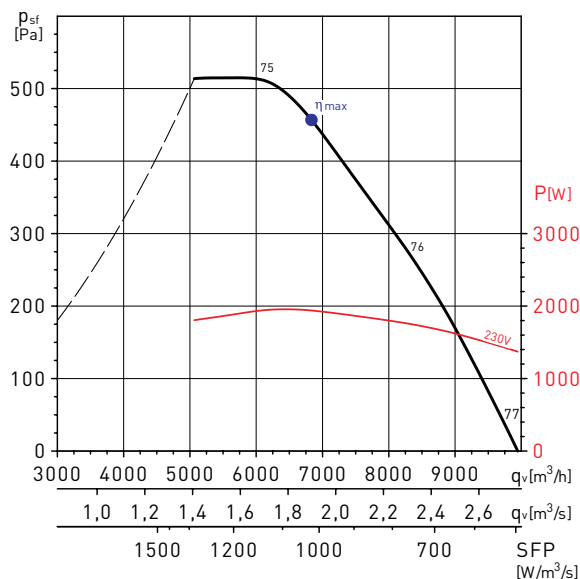
TCBBx2/4-450



MC*	EC*	VSD*	SR*	η[%]*	N*	[kW]	[m³/h]	[Pa]	[RPM]
C	Static	No	1	41,9	47,5	1,316	4842	411	1349

* See example curve.

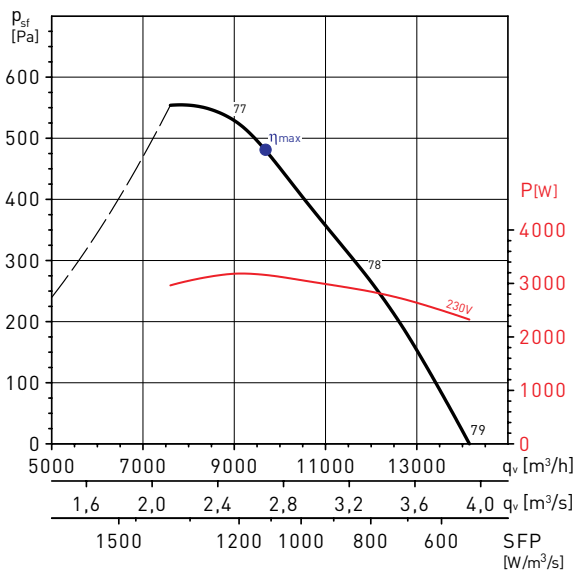
TCBBx2/4-500



MC*	EC*	VSD*	SR*	η[%]*	N*	[kW]	[m³/h]	[Pa]	[RPM]
C	Static	No	1	45,1	49,6	1,957	6383	498	1394

* See example curve.

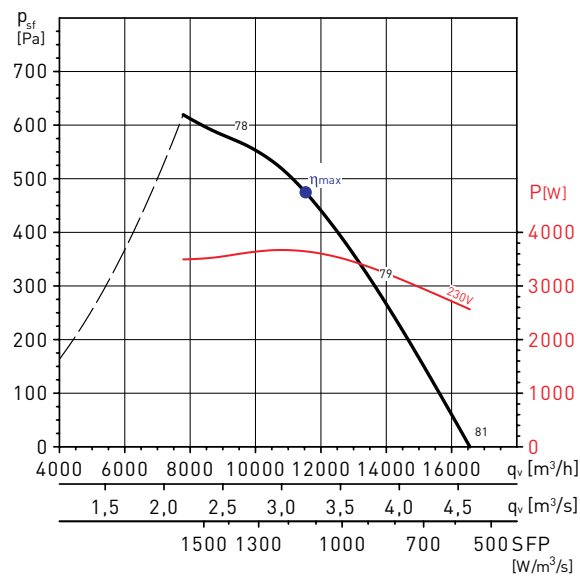
TCBBx2/4-560



MC*	EC*	VSD*	SR*	η[%]*	N*	[kW]	[m³/h]	[Pa]	[RPM]
C	Static	No	1	41,9	45,2	2,970	8741	513	1311

* See example curve.

TCBBx2/4-630

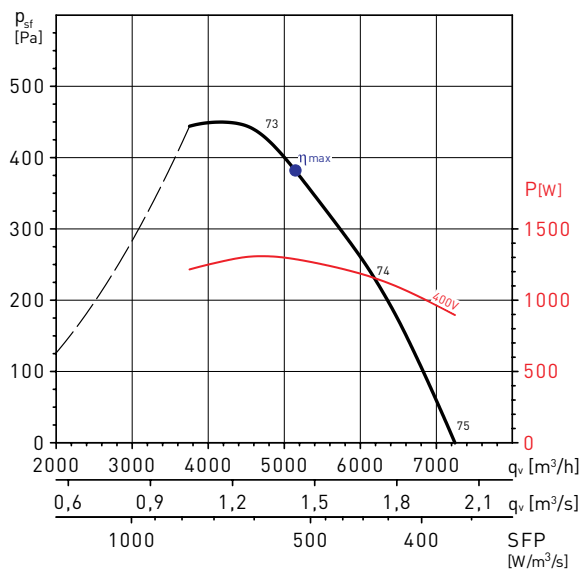


MC*	EC*	VSD*	SR*	η[%]*	N*	[kW]	[m³/h]	[Pa]	[RPM]
C	Static	No	1	42,4	45,2	3,665	10542	536	1285

* See example curve.

PERFORMANCE CURVES – 4 POLE MOTOR

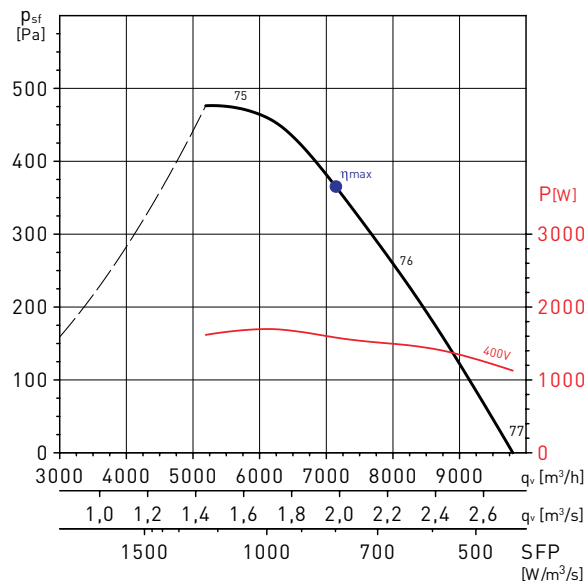
TCBTx2/4-450



MC*	EC*	VSD*	SR*	η [%]*	N*	[kW]	[m³/h]	[Pa]	[RPM]
C	Static	No	1	43,0	48,6	1,309	4705	432	1375

* See example curve.

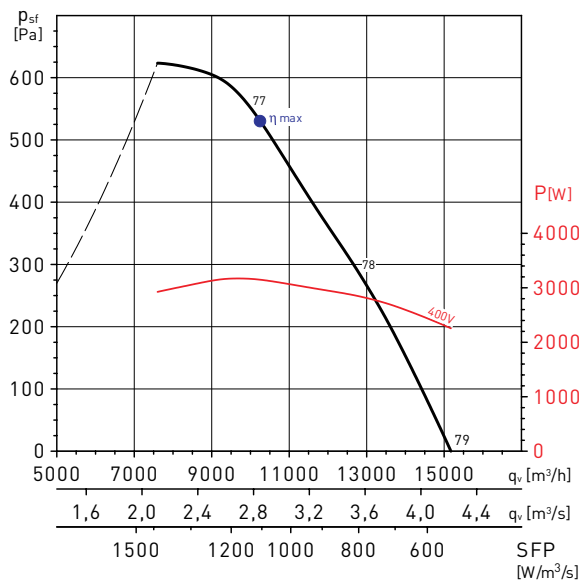
TCBTx2/4-500



MC*	EC*	VSD*	SR*	η [%]*	N*	[kW]	[m³/h]	[Pa]	[RPM]
D	Total	No	1	53,5	58,6	1,581	7145	427	1348

* See example curve.

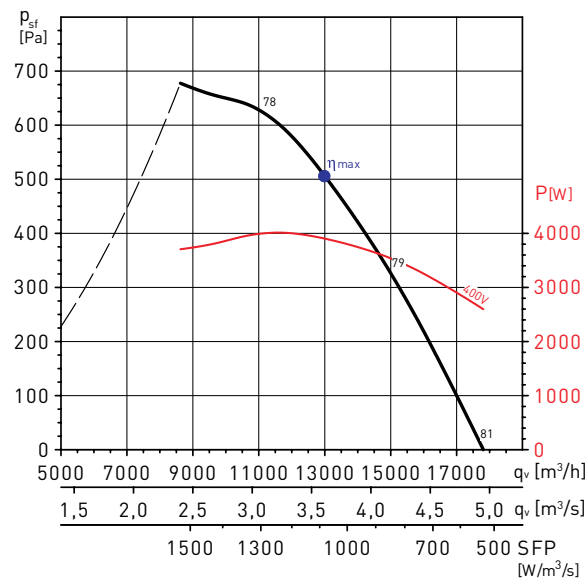
TCBTx2/4-560



MC*	EC*	VSD*	SR*	η [%]*	N*	[kW]	[m³/h]	[Pa]	[RPM]
D	Total	No	1	55,0	58,2	3,148	10254	611	1365

* See example curve.

TCBTx2/4-630



MC*	EC*	VSD*	SR*	η [%]*	N*	[kW]	[m³/h]	[Pa]	[RPM]
D	Total	No	1	54,2	56,8	3,903	12997	587	1387

* See example curve.

PLEATED PANEL AIR FILTER G4 to EN779:2012

Applications

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

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

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

Description

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

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

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

Technical

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

Max Operating Temp 80 Deg C

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

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

Filter Grade to ISO 16890: Coarse 75%

PLEATED PANEL FILTER STANDARD SIZES

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

STD: Standard Cardboard Frame

AMR: Airclean Moisture Resistant Cardboard Frame

FOR NON-STANDARD SIZES CONTACT THE SALES TEAM

Airclean Ltd reserve the right to amend or delete the product as they decide, without prior notification. E&OE.

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Notes

- * Actual sized filters will be manufactured as ordered +/- 3mm
- * Rated Airflows based on Face Velocities : 22mm = 2.0m/s, 47mm = 2.5m/s, 97mm = 3.0m/s
- * Clean Pressure Drops at Rated Airflows : 22mm = 75Pa, 47mm = 75Pa, 97mm = 75Pa
- * Max Size: 625Hx900W

Airclean Moisture Resistant Panel (AMR) Filters

Airclean Moisture Resistant Panel Filters are for use in high humidity or moist environments. These premium filters still have a cardboard frame, but have a higher moisture resistance than our standard range, which help the filter maintain rigidity and functionality without structural failure.

Airclean Moisture Resistant Panels are available in G2/3 Glass Fibre, G3 Synthetic and G4 Pleated Panel Filters. "AMR Panel Filters" are manufactured in the same way as our standard panel filters but utilise "Carrier / Beverage Board" which has an increased wet-strength.

Metal Framed Pleated Panel Filters

Metal Framed Pleated Panels offer an increased level of fire retardancy and rigidity by removing and replacing the cardboard frame with a galvanised or stainless steel frame. A small amount of hot melt or polyurethane adhesive is used to fix and seal the pleated elements into the frame.

PLEASE NOTE: This is not a "wrap around" metal frame, but a complete replacement for the cardboard frame removing any chance the filter collapsing in humid environments.



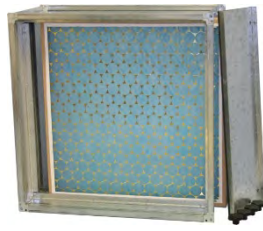
Holding Frames and Cases

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

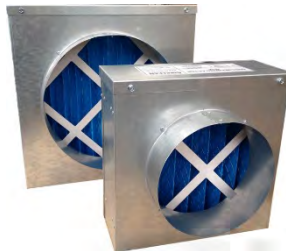
See Catalogue Section 8 (code AC8) for full information.



Front Withdrawal
Frame (1810)



MEZ Flanged Side
Access Housing (1820)



Duct Mounted Filter
Housing (1825)



Fully Welded Side
Withdrawal Filter Housing
(1840)