

Odour Management Plan

811 HIGH ROAD, LONDON N12 8JT

Prepared on March 2023

Prepared by:

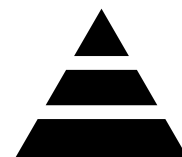
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Architecture & Construction

Table of Contents

1. INTRODUCTION	3
2. ODOUR ASSESSMENT	4
2.1. Introduction	4
2.2. Nature and Effect of Odour	4
2.3. Assessment Methodology	4
2.4. Odour Impact Assessment	6
2.5. Risk Assessment	6
2.6. The Odour Management Plan	7
3. CONCLUSIONS	10

List of Tables

Table 2.1: Odour Risk Assessment – 811 HIGH ROAD, LONDON N12 8JT.....	6
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List of Appendices

Appendix 1 Site Layout Plan	11
Appendix 2 Proposed Flue and Ducting Location	12
Appendix 3 Classification of Odour and Grease Content of Extract Air from Commercial Kitchens 13	
Appendix 4 EMAQ Odour Impact Risk Assessment Methodology	16
Appendix 5 Specification for proposed motor, flue and Carbon Filters	18

1. INTRODUCTION

Delta Tech have been commissioned by the Applicant to provide an Odour Management Plan to accompany a Planning Application for the Change of use of retail unit into new restaurant (E use class) and into 2 smaller retail units with alterations to shop front for new access and installation of extraction flue system to rear side.

The planning application proposes a new extraction flue system and seeks to identify a scheme for the extraction and treatment of fumes and odours at the site and in parallel to this provides an Odour Management Plan which would adhere to the fumes/odours not being detectable at the site boundary.

2. ODOUR ASSESSMENT

2.1. Introduction

This odour assessment relates to the potential future odour emanating from any kitchen extraction system associated with the change of use development, and the potential odour impacts on any sensitive receptors in close proximity to the extract flue.

2.2. Nature and Effect of Odour

Odour is perceived by our brains in response to chemicals present in the air we breathe. Odour is the effect that those chemicals have upon us. Humans have sensitive senses of smell and they can detect odour even when chemicals are present in very low concentrations. Most odours are a mixture of many chemicals that interact to produce what we detect as an odour.

Different life experiences and natural variation in the population can result in different sensations and emotional responses by individuals to the same odorous compounds. Because the response to odour is synthesised in our brains, other senses such as sight and taste, and even our upbringing, can influence our perception of odour and whether we find it acceptable, objectionable or offensive.

2.3. Assessment Methodology

The assessment of odour takes on the following aspects:

- A qualitative assessment of proposed odour emissions from the change of use development;
- An assessment taking into account the nature of the premises;
- The height and position of any proposed flue;
- The recommended exit velocity from the flue; and
- The distance between the proposed flue and the potential odorous emissions and the distance to the sensitive receptor.

2.3.1. Guidance on Control of Odours from Kitchens

The Department for Environment Food and Rural Affairs (DEFRA) originally published guidance¹ (now withdrawn) on the control of odours from kitchens. That guidance has been subsequently updated by 'Control of Odour and Noise from Commercial Kitchen Exhaust Systems' (EMAQ, July 2018)

Although the guidance is not statutory, it provides very useful information on best practice techniques for the minimisation of odour nuisance from kitchen exhaust systems. This source of guidance and ACCON's own experience form the basis of the assessment to determine whether nearby occupiers of existing residential properties would consider that odour emanating from the kitchen extract flue is acceptable or not.

2.3.2. General Principles in Controlling Odour

The guidance is generally used for premises where food is cooked for patrons on or off the premises and where a kitchen is used to prepare and cook food. In these instances, a kitchen canopy extract system, are invariably present.

The main purpose of a kitchen canopy is to extract excess heat, steam, fats, smoke and odour arising from cooking processes. Removal of these unwelcome by-products of kitchen activity helps to achieve a reasonably comfortable and safe working environment, protect the working environment, as well as preventing the spread of the products from the kitchen area to other parts of the building.

Odours from cooking are contained both within the solid, liquid and gaseous material which is extracted by the kitchen canopy, and these different phases generally require different abatement techniques to reduce levels of odour to those levels which are acceptable to those in the vicinity. The extent to which any odour mitigation is required is dependent on the type of foods being prepared and cooked.

Commonly the kitchen extract canopy will contain the first line of odour control through the incorporation of coarse grease filters, which take out the largest grease particles from the extracted air stream. Such coarse grease filters tend to be a common feature of almost all kitchen canopy systems.

The type and levels of odour control required downstream of the canopy is very much dependent on a number of factors. The principle ones are:

- Type of food prepared. This is probably the most dominant factor as the type of food, and particularly any spices used, dictates the chemical constituents present in the exhaust air;
- Size of the cooking facility. The number of covers; and
- Types of cooking appliances used. This dictates the level of fat, water droplets and temperature within the ventilation air.

The guidance includes two Tables which classify the odour and grease content of extract air according to the general cooking type and equipment used. These are reproduced in Appendix 3 (Table 2A and Table 2B). The information, in Appendix 3, has been used in his report to carry out the odour risk assessment in respect of the consented change of use development.

2.4. Odour Impact Assessment

Based on the observed location of the proposed external extraction system located to the rear side and running along the elevation wall to the ridge, this odour impact assessment and Odour Management Plan has been undertaken in accordance with the EMAQ guidance 'Control of Odour and Noise from Commercial Kitchen Exhaust Systems'.

2.5. Risk Assessment

The guidance provides a means of risk assessing the impact of any catering establishment and proposed and existing uses. The key elements of the method are reproduced in Appendix 3. The method relies on scoring the proposal on four different aspects:

- Dispersion – where the extract vents to atmosphere are in relation to the building to which the vent is attached;
- Proximity of receptors – the location of the nearest residents;
- The kitchen size – number of covers, i.e. level of activity; and
- Cooking type – based on grease and odour loading.

The level of odour which is created by a premises will depend on the size of kitchen and type of cooking. These can be determined using categories which have been set out in the guidance and are replicated in Appendix 4.

The scores for each aspect are summed to derive an overall significance score, an impact risk, and a statement about the odour control requirement. The guidance has been utilised where possible to determine the risk of odour nuisance from the proposed change of use development, without any additional odour abatement in place.

The risk assessment provided in Table 2.1, is a worst-case scenario.

Table 2.1: Odour Risk Assessment – 811 HIGH ROAD

	Descriptor	Score	Impact Risk	Odour Control Requirement
Dispersion	Good	5	High	High Level Odour Control
Proximity of Receptors	Close	10		
Size of Kitchen	Small	1		
Cooking Type (Odour & Grease Load)	High	7		
TOTAL		23		

* Estimated, based on the details provided.

For the proposed flue extract system, it would be discharging high level at 10-15m/s (Good, Score 5). There are receptors within 20m of the proposed flue extract (Close, Score 10). The kitchen will be small, less than 30 covers/small kitchen (Small, Score 1) . The food cooked on site will be peri peri chicken using electric as fuel, the cooking type (odour and grease loading) is classed as High (Score 7).

The results of the overall assessment are potentially High.

2.6. The Odour Management Plan

Section 2.5 has quantified that as a worst case for the consented change of use development (provided the recommendations are taken into account) there is deemed to be a 'High' risk of potential nuisance and ordinarily a High level of odour mitigation would be recommended.

2.6.1. Proposed Ventilation and Extraction System

The proposals are for the installation of an external high-level flue extract to the rear section of the property. Refer to plans in Appendix 2.

The proposed system is electric grilled chicken using carbon filters and ESP system with Ozone.

The fan is located above the oven, on the flue, designed to efficient and low noise for electric grills and located within an acoustic insulation housing. It is proposed a fine carbon filter is installed to (carbon filter with a 0.2 – 0.4 residence time) to prevent any form of odour to be captured under very heavy use which is able to stand high temperatures and easily accessible for visual inspection and cleaning.

In order to address the High Level of Odour Control requirement, it's proposed an ESP and Ozone filtration system is used. These systems combined the most effective level of odour management available within the market.

2.6.2. Maintenance Programme (Type, Frequency and Regime)

To minimise the risk of complaints, it is recommended that:

- A visual inspection of the ventilation system be carried out at least once a week. All metal surfaces should be checked to ensure that there is no accumulation of grease or dirt and that there is no surface damage;
- Cooker hoods and grease filters should be cleaned on a daily basis;
- Baffle type self-draining filters and collection drawers should be cleaned weekly, as a minimum. The cleaning period for mesh filters should be at least twice a week;
- Cleaning period for extract ductwork should as follows:

Use No. hours use per day Minimum Cleaning Interval

Heavy use 12 – 16 Every 3 months

Moderate Use 6 – 12 Every 6 Months

Light Use 2 – 6 Annually

Based on the information provided, it is likely that the premises will be of Light to Moderate Use, and should be cleaned at least every 6 months;

- Periodic 'deep hygiene cleaning' should be undertaken by a specialist contractor. All accessible main ductwork runs and branches, including fitted equipment should be inspected and cleaned;
- All fans are to be maintained on a regular basis as recommended by the fan manufacturer; and
- Ventilation grilles, where fitted should have easily removable cores to facilitate cleaning.

Recommendations for maintenance of odour control system

For a system employing fine filtration and carbon filtration;

- Change fine filters every two weeks
- Change carbon filters every 4 to 6 months

For a system employing ESP and other in line abatement systems:

- Clean every 2-6 months

Daily cleaning keeps the filters working at their optimum efficiency and will greatly reduce the number of service visits required throughout the year.

It will be important that the odour control methods are fully implemented and additionally, that the proposed OMP management measures and frequency of servicing is complied with. With respect to the servicing and maintenance regime, audit and service records should be maintained and made available to the Local Authority on demand.

3. CONCLUSIONS

With respect to odour, it has been identified that providing that the recommendations in this Odour Management Plan are taken into account, there should not be a loss of amenity at the existing residential receptors in the vicinity of the extraction flue and as long as the systems recommended in the OMP are implemented, this would consist of using the “best practicable means” and would prevent statutory nuisance occurring.

As long as the proposed extraction system is properly maintained on a regular basis, it is highly unlikely that odour would become an issue in the future.

Appendix 1
Site Layout Plan

Appendix 2
Proposed Flue and Ducting Location

Appendix 3
Classification of Odour and Grease Content of Extract Air from
Commercial Kitchens

Table 2A: Table detailing the grease and odour content of various types of food

Catering Establishment	Description	Odour Content				Grease Content			
		Low	Moderate	High	V. High	Low	Moderate	High	V. High
Tea shop		x				x			
Pizza	Herb		x				x		
Steakhouses	Fat		x				x		
French	Herbs/ garlic		x				x		
Italian	Herbs/ garlic		x				x		
Most pubs Fat	Fat		x				x		
Chinese	Ginger, spices, oil		x					x	
Japanese	Spices, oil		x					x	
Cantonese	Spices, oil		x					x	
Indian	Spices, oil			x				x	
Thai	Spices, oil			x				x	
Vietnamese	Spices, oil			x				x	
Kebab	Fat cooking meat			x				x	
Fried Chicken	Oil, cooking meat				x				x
Pubs (fried)	Oil, cooking meat				x				x
Fish & chip	oil				x				x
Fast food, burger	Oil, cooking meat				x				x

Table 2B: Table detailing the grease & moisture content of various cooking appliances

Cooking appliance	Grease loading			Moisture content		
	Light	Medium	Heavy	Light	Medium	Heavy
Cooking pots	x					x
Bains Marie	x					x
Steam ovens	x					x
Pizza ovens		x			x	
Bratt pans		x				x
Oven ranges		x			x	
Flat top grills		x			x	
Chip fryers		x			x	
Salamanders		x			x	
Charcoal			x		x	
Gas fired open grills			x		x	
Char boilers			x		x	
Chinese wok ranges			x			x

Appendix 4
EMAQ Odour Impact Risk Assessment Methodology

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.

Impact Risk	Odour Control Requirement	Significance Score*
Low to Medium	Low Level Odour Control	<20
High	High Level Odour Control	20-35
Very High	Very High level Odour Control	>35

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

Criteria	Descriptor	Score	Details
Dispersion	Very Poor	20	Low level discharge, discharge into courtyard or restriction on stack.
	Poor	15	Not low level but below eaves, or discharge at below 10m/s
	Moderate	10	Discharging 1m above eaves at 10-15m/s
	Good	5	Discharging 1m above ridge at 15m/s
Proximity of receptors	Close	10	Closest sensitive receptor less than 20 m from kitchen discharge
	Medium	5	Closest sensitive receptor between 20-100m from kitchen discharge
	Far	1	Closest sensitive receptor greater than 100m from kitchen discharge
Size of Kitchen	Large	5	More than 100 covers
	Medium	3	Between 30-100 covers
	Small	1	Less than 30 covers
Cooking Type (odour & 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

Appendix 5
Specification for proposed motor, flue and Carbon Filters

Our ESP Range

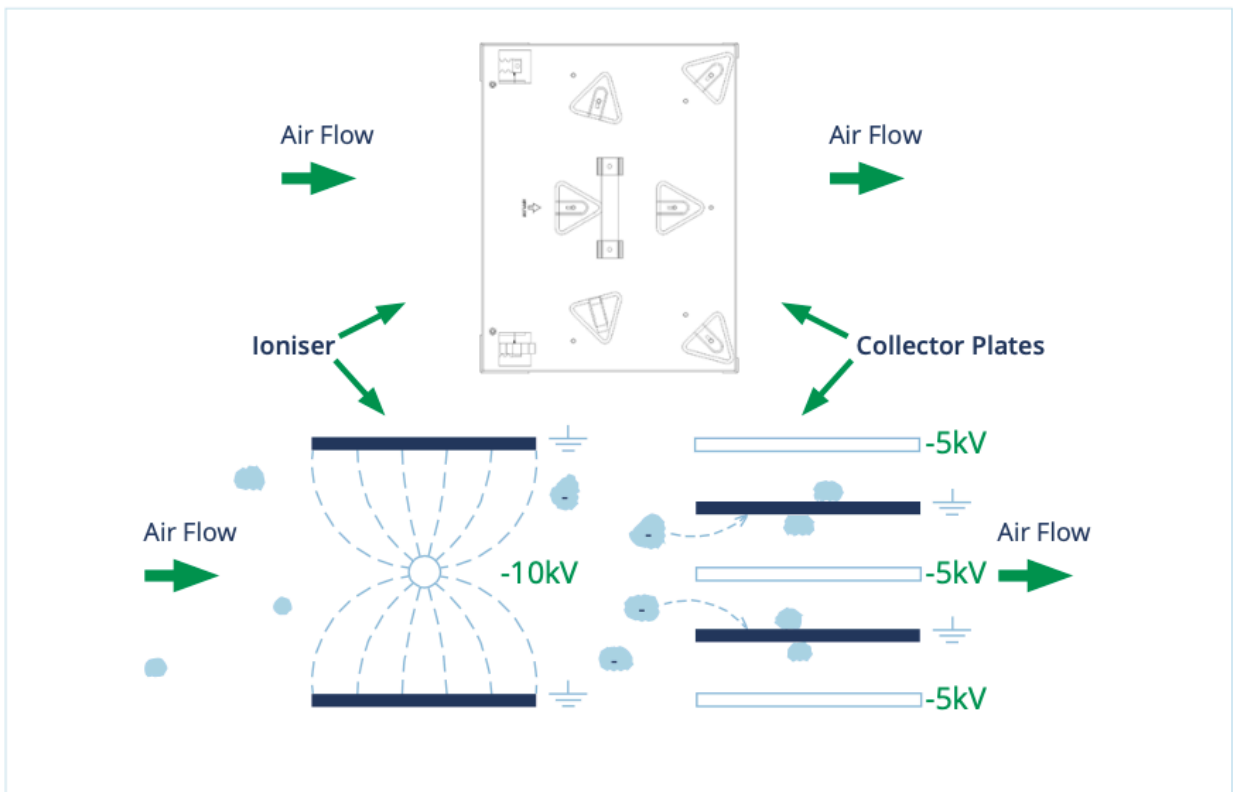


ESP 4500

- ESP 1500E which can handle up to 0.7m³/sec of air flow
- ESP 3000E which can handle up to 1.4m³/sec of air flow
- ESP 4500E which can handle up to 2.1m³/sec of air flow
- ESP 6000E which can handle up to 2.8m³/sec of air flow

Our ESP's have been specifically designed for kitchen extract systems; they have integral sumps to collect the oil, grease and smoke particles filtered out of the exhaust. This not only simplifies servicing but eradicates potentially dangerous spillage from the bottom of the units and greatly cuts down on build-ups of grease within the ducting.

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



The above diagram shows, in a basic visual, how an electrostatic precipitator works. As air passes into the combined ioniser / collector cell, the particulates in the air stream are polarised to a negative potential. As they continue through the ioniser and between the collector cell plates, the polarised particulates are repelled away from the negatively charged plates and attracted to the earthed plates where they stick and so are filtered out of the air flow.

UV-O Range

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



KEY FEATURES

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

Our UV-O range includes:-

- UV-O 500 which handles up to 1.5 m³/sec of air flow
- UV-O 1000 which handles up to 2.5 m³/sec of air flow

The UV-O 500 has been designed for smaller capacity commercial kitchens.

The UV-O range uses UV-C technology to produce ozone and hydroxyl free radicals to oxidise cooking odours through a process of ozonolysis.

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

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

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

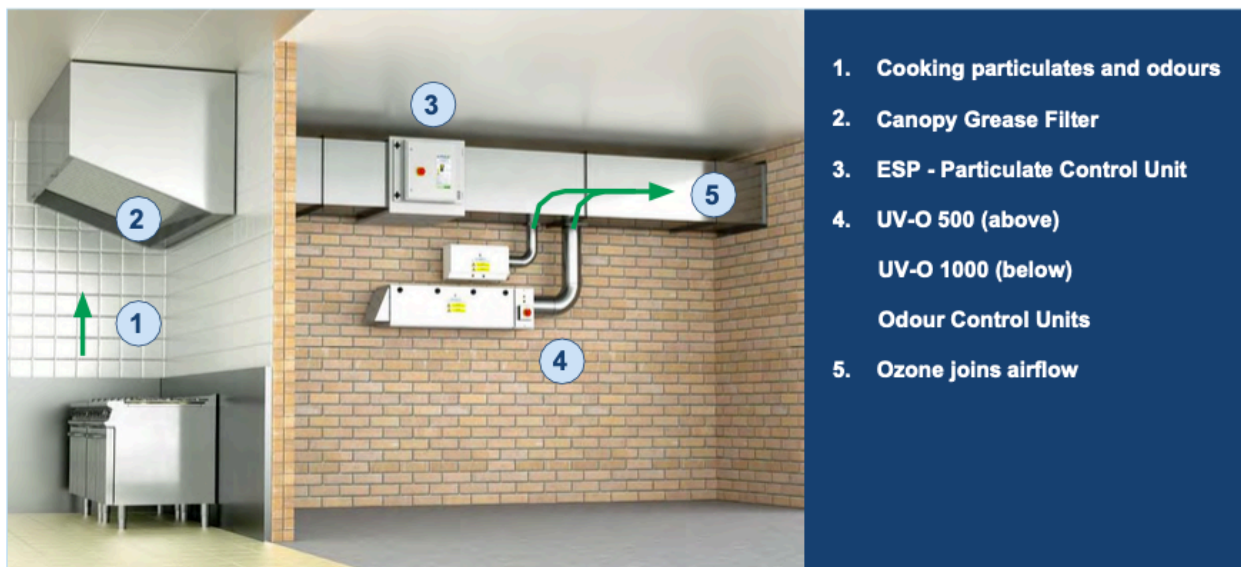
For optimum performance we would recommend between 2 & 6 seconds of dwell time to allow the ozone to work effectively upon the malodorous gasses within the duct.



UV-O 500 Unit



UV-O 1000 Unit



1. Cooking particulates and odours
2. Canopy Grease Filter
3. ESP - Particulate Control Unit
4. UV-O 500 (above)
UV-O 1000 (below)
Odour Control Units
5. Ozone joins airflow

Technical Specification

	UV-O 500	UV-O 1000
Electrical Supply	220/240V 50Hz	220/240V 50Hz
Power Consumption	120 Watts	700 Watts
Max Air Volume	up to 1.5m ³ /sec	up to 2.5m ³ /sec
Dimensions	W 605mm H 300mm D 200mm	W 1568mm H 350mm D 363mm
Weight	10.5Kg	50Kg

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

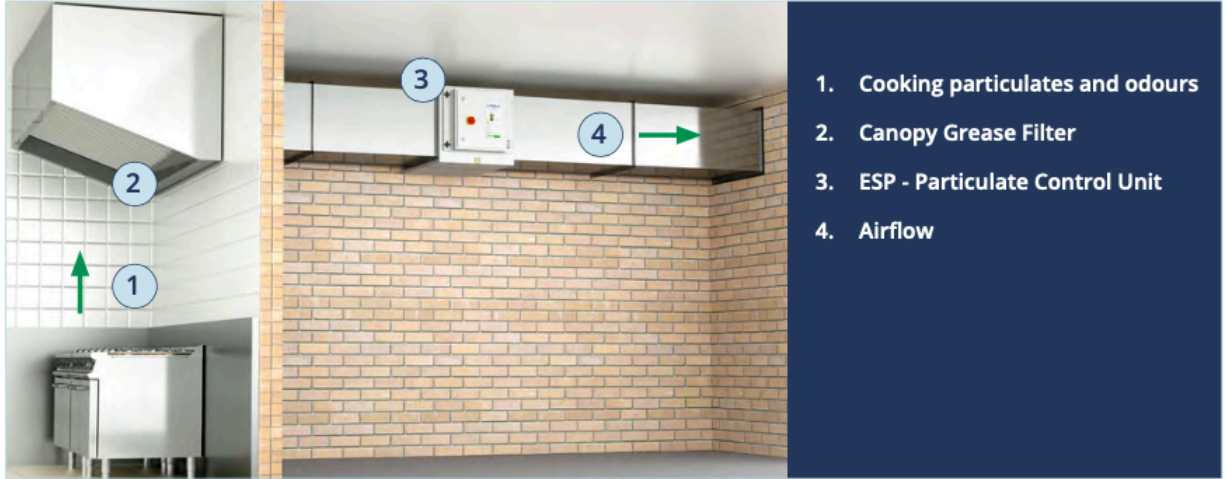
Safety

Ultra-Violet band C light is the most powerful of the three bands, it is a very strong oxidant and as such exposure to UV-C light is dangerous. To ensure safety the UV-C lamps are secured behind locked panels and the system has been engineered to shut down automatically when these panels are unlocked. However, since the lamps typically have a minimum life of twelve months and with the system able to operate at optimum efficiency even if one lamp fails it is unlikely that, apart from routine servicing by experienced engineers, that the system will ever need to be opened.



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



KEY FEATURES

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



3 ESP Units Stacked in modular formation



4 ESP Units Stacked in modular formation with a double pass

Technical Specification

	ESP 1500E	ESP 3000E	ESP 4500E	ESP 6000E
Electrical Supply	220/240V 50Hz	220/240V 50Hz	220/240V 50Hz	220/240V 50Hz
Power Consumption	20 Watts	30 Watts	40 Watts	50 Watts
Max Air Volume	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/H/D	450mm/630mm/ 640mm	900mm/630mm/ 640mm	1350mm/630mm/ 640mm	1800mm/630mm/ 640mm
Weight	55Kg	85Kg	118Kg	153Kg



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Sitesafe Carbon Filters



We manufacture Sitesafe carbon filters, these innovative carbon units measure 594x196x597mm, three combining to 594x594x597mm, directly replacing our original carbon blocks whilst providing exactly the same filter performance as an existing full size cell.

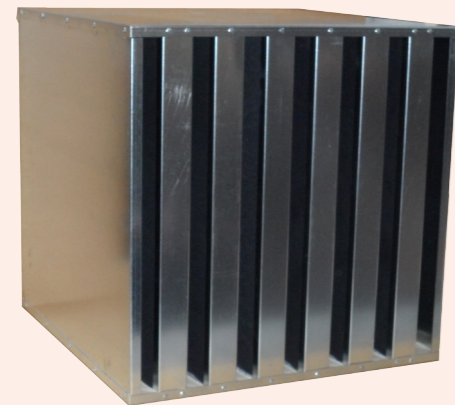
Their advantage is that they only weigh 18kg each against the 68kg of our original blocks. This takes the strain out of fitting and servicing, allowing only one engineer to complete the task where two had been previously required.

Our Sitesafe carbon filters use panels of activated carbon to remove the malodorous gases within the commercial kitchen extract duct through the process of chemical adsorption. By installing our ESP units before our Sitesafe filters, the carbon life span is greatly increased, allowing it to nullify malodours at optimum efficiency for much longer.

Please see below for the recommended minimum dwell times required for different applications and scale up accordingly.

It should be noted that filtration performance will be improved by increasing the dwell times applied.

Will require two people plus lifting gear to carry and install.



Carbon PA242424

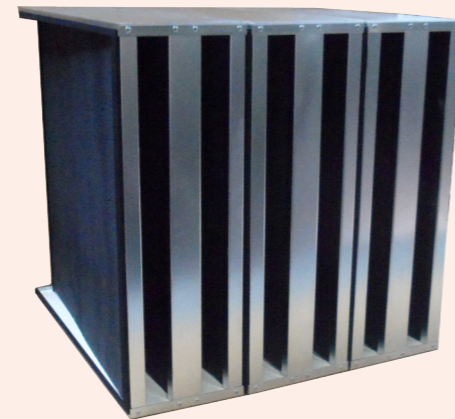
Size 594x594x597
Gross Weight 68.20kg
Carbon Weight 50.00kg
Rated Airflow 3600m³/hr*
Pressure Drop 120Pa

Safe for one person to carry. No special lifting gear required.



Sitesafe PA240824

Size 594x196x597
Gross Weight 17.95kg
Carbon Weight 16.6kg
Rated Airflow 1200m³/hr*
Pressure Drop 120Pa



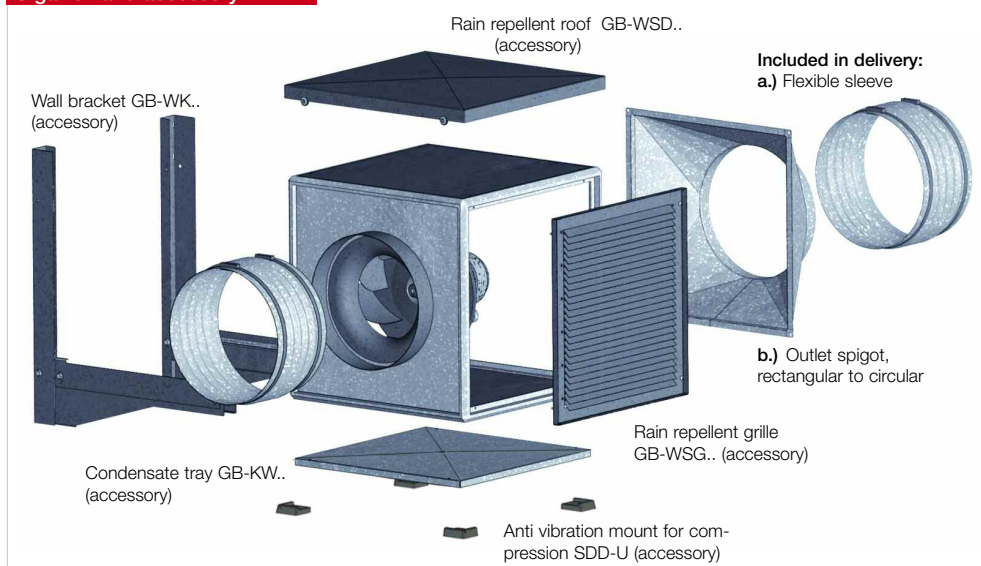
Sitesafe 3 x PA240824

Size 594x594x597
Gross Weight 53.85kg
Carbon Weight 50.00kg
Rated Airflow 3600m³/hr*
Pressure Drop 120Pa

Application	Recommended Dwell Time	Grade
Cooking - Low Odour, Tea Shop, Canteens	0.1 to 0.2 Seconds	Carbon grade Enhanced for improved performance for light catering odours
Cooking - Moderate Odour. Pizza, Steak House, French, Italian, Pubs, Chinese, Japanese, Cantonese	0.2 to 0.4 Seconds	Enhanced Carbon grade suitable for many applications 65% Minimum CTC
Cooking High Odour, Indian, Thai, Vietnamese, Kebab	0.4-0.6 Seconds	Enhanced Carbon grade suitable for many applications 65% Minimum CTC
Cooking Very High Odour. Fried Chicken, Pubs with large fried food turnover, Fish and Chip Shops, Fast Food / Burgers	0.4-0.8 Seconds	Enhanced Carbon grade suitable for many applications 65% Minimum CTC
Reduction of Kerosene Exhaust fumes	0.1 to 0.2 Seconds	General Purpose Activated Carbon
Reduction of Ozone	0.1 to 0.2 Seconds	General Purpose Activated Carbon
Reduction of Diesel Fumes, including H ₂ S, SO ₂ , NO _x , HCl	0.2 Seconds	Carbon Museum,Archive, Café Directive: SO ₂ SO _x NO ₂ NO _x Removal
Museum and Archives	0.2 Seconds	Carbon Museum,Archive, Café Directive: SO ₂ SO _x NO ₂ NO _x Removal

The cooking odour classes above are as classified by DEFRA in **Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems, PB10527**

GigaBox and accessory



■ **Application**

Multifunctional fan box, suitable for medium to higher air flow volumes against high resistances in every type of ventilation system. The compact frame construction offers easy conversion of the outlet position. Together with a choice of ideal accessories make these units ideal for all applications.

The **GB.. T120 types** are suitable for the extraction of dirty, humid and hot air up to max. 120° C, i.e. as extract air fan in commercial kitchens and many applications of process technology.

■ **Casing**

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature insulating and flame-retardant mineral wool.

Intake cone for ideal airflow, spigot and flexible connector for duct connection. With outlet adapter (from square to circular) on the exhaust side for low-loss discharge and flexible connector to reduce vibration transmission. The flexible connectors are supplied as standard and correspond to the max. permissible air flow temperature of +70 °C and/or +120 °C with the types GB.. T120. Lifting lugs are standard for using crane hooks.

With **GB.. T120** the motor is located outside of the air flow. The thermally insulated partition panel is also the support plate for the motor and impeller unit and can be removed completely for inspection without removing the complete fan from the system.

■ **Speed control**

All types (except GBD 630/4 T120) are speed controllable by voltage reduction using a 5-step transformer controller or an electronic controller. The 3-phase models can also be 2 speed controlled by star/delta switch (accessories DS 2 or full motor protection unit M 4). The performances of the speeds are given in the performance curve. 3-phase models are controllable with frequency inverters by installation of a sinusoidal filter (accessories) between inverter and motor. Type GBD 630/4 is only controllable by frequency inverter.

■ **Assembly**

□ **Assembly of types GB..**

Adaptable installation position and flexible assembly using the five possible discharge directions via the discharge adapter. Removable panels allow inspection access on all sides.

□ **Assembly of types GB.. T120**

Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via the discharge adapter. Inspection cover with handle, for cleaning and maintenance simply remove. Lifting lugs are standard for using crane hooks. Vibration transmission to the building is minimised by anti vibration mounts (type SDD-U, accessories). Vibration transmission to the ducting is prevented by using the standard flexible connector supplied.

■ **Impeller**

Smooth running centrifugal impeller with backward curved polymer blades (size 250 from steel) on a galvanised steel back plate, direct driven. Size 500 and all GB.. T120 types with impellers from aluminium. These energy efficient impellers are low noise. Dynamically balanced assembled with the motor to DIN ISO 1940 Pt.1 – class 6.3 or 2.5.

■ **Motor**

IEC-standard motor or maintenance-free external rotor motor protected to IP 54 or 44. Thermal overload protection through built-in thermal contacts. Suitable for continuous operation S1. Insulation class F. Ball bearings are lubricated for life.

■ **Electrical connection**

Terminal box protection to IP 54.

■ **Air flow direction**

The air flow direction of centrifugal fans is not reversible, but can be set by positioning the fan to the required air flow direction. Furthermore the position can be set individually to constructional conditions through conversion of discharge adapter and panels. The correct motor rotation direction is marked through rotation arrows on the motor and has to be checked at start-up.

■ **Incorrect direction of rotation**

If the fan is operated in the incorrect direction of rotation the motor will overheat and the thermal contact will trip. Typical indication for this is a very low air flow combined with high noise levels and vibration.

■ **Ambient temperature**

The maximum permitted air flow temperature is given in the individual fan chart.

■ **Surrounding temperature**

From – 40° C to + 40° C.

Information	Pages
Design of systems, acoustic	12 on
General techn. information, speed control	17 on



Quick selection chart for GB.. and GB.. T120 Requirements for exhaust air systems in commercial kitchens

Type GB..	Sound press. Case breakout	Sound press. Intake	Air flow volume $\dot{V}m^3/s$ against static pressure												
	L _{PA} dB(A) at 4 m	L _{PA} dB(A) at 4 m	(ΔP_{stat}) in Pa												
			0	50	100	150	200	250	300	350	400	500	600	700	800
GBW 250/4	27	39	0.389	0.319	0.244	0.147									
GBW 315/4	29	41	0.414	0.361	0.300	0.236	0.153	0.042							
GBW 355/4	34	46	0.817	0.747	0.675	0.594	0.505	0.400	0.258						
GBD 355/4/4	34	46	0.836	0.772	0.711	0.638	0.577	0.492	0.367	0.089					
GBW 400/4	38	50	1.142	1.092	1.036	0.975	0.917	0.85	0.764	0.656	0.511				
GBD 400/4/4	38	50	1.097	1.031	0.961	0.889	0.811	0.725	0.628	0.469	0.114				
GBW 450/4	40	52	1.514	1.433	1.361	1.292	1.217	1.122	1.006	0.867	0.692	0.083			
GBD 450/4/4	40	52	1.514	1.431	1.344	1.256	1.161	1.061	0.947	0.822	0.664	0.083			
GBW 500/4	45	57	2.333	2.236	2.139	2.042	1.947	1.85	1.744	1.628	1.506	1.219	0.778	0.042	
GBD 500/4/4	44	57	2.458	2.367	2.278	2.189	2.097	2.006	1.903	1.789	1.664	1.369	0.947	0.014	
GBW 500/6	35	46	1.600	1.478	1.347	1.189	0.978	0.678	0.144						
GBD 560/4/4	44	57	3.497	3.397	3.300	3.203	3.106	3.011	2.911	2.811	2.706	2.461	2.142	1.731	1.144
GBW 560/6/6	35	48	2.400	2.261	2.114	1.953	1.767	1.539	1.239	0.767					
GBD 630/4/4	48	61	4.153	4.058	3.961	3.869	3.775	3.683	3.592	3.500	3.403	3.194	2.953	2.675	2.333
GBD 630/6/6	43	56	3.192	2.992	2.794	2.597	2.375	2.103	1.767	1.356	0.792				
GBD 710/6/6	46	59	5.194	4.989	4.783	4.564	4.333	4.083	3.811	3.511	3.178	2.333	0.753		
Type GB.. T120	L _{PA} dB(A) at 4 m	L _{PA} dB(A) at 4 m	(ΔP_{stat}) in Pa												
			0	50	100	150	200	250	300	350	400	500	600	700	800
GBW 355/4 T120	36	49	0.961	0.894	0.831	0.767	0.683	0.567	0.418	0.201					
GBD 355/4/4 T120	36	49	0.964	0.908	0.846	0.778	0.697	0.594	0.469	0.192					
GBW 400/4 T120	40	53	1.369	1.293	1.217	1.136	1.053	0.942	0.806	0.622	0.439				
GBD 400/4/4 T120	40	53	1.353	1.275	1.193	1.106	1.014	0.900	0.761	0.581	0.381				
GBW 450/4 T120	45	57	1.975	1.887	1.800	1.700	1.625	1.525	1.426	1.317	1.208	0.917	0.528		
GBD 450/4/4 T120	45	57	1.994	1.914	1.833	1.750	1.653	1.556	1.450	1.336	1.206	0.897	0.372		
GBW 500/4 T120	45	59	2.318	2.244	2.158	2.075	1.989	1.903	1.800	1.696	1.575	1.300	0.975	0.511	
GBD 500/4/4 T120	45	59	2.319	2.239	2.157	2.081	1.994	0.191	1.833	1.739	1.642	1.381	1.061	0.533	
GBW 560/4/4 T120	48	62	3.417	3.322	3.247	3.164	3.078	2.994	2.910	2.817	2.722	2.533	2.336	2.064	1.671
GBD 630/4 T120	53	67	3.928	3.867	3.803	3.742	3.667	3.594	3.533	3.469	3.397	3.242	3.097	2.908	2.703

Special application for GigaBox T120 – commercial kitchens

For the design of exhaust air systems in commercial kitchens the VDI 2052 (2006) "Ventilation equipment for kitchens – design, layout, approval" is applied. This follows for extract air fan:

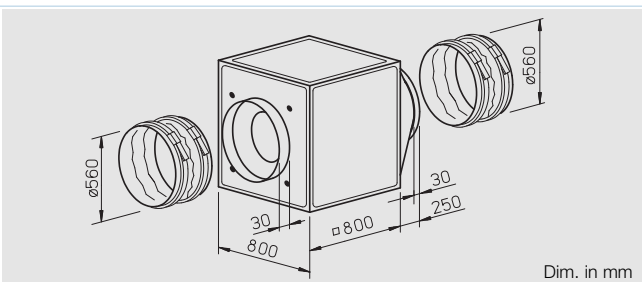
- Fans of exhaust air systems must be designed and installed in such a way that they are easily accessible, can be easily controlled and cleaned.
They must be able to be switched off from the kitchen.
The motors must be located outside of the extract air flow.
Connected kitchen extraction hoods must separate solid and liquid components, if possible.
A backdraft into following units is to be prevented.

These specific requirements from the GigaBoxes GB.. T120 are fulfilled in an outstanding manner. Easily accessible casing and double-walled side panels make cleaning simple with grease dissolving agents and steam possible.

Requirements in excess thereof of kitchen extract air units and the appropriate fire protection can deviate country-specifically; these special requirements of the respective country, in which the unit is to be used, must be considered.

Models GB..

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



■ **Special features of type GB.. T120**

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

□ **Assembly of types GB.. T120**

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

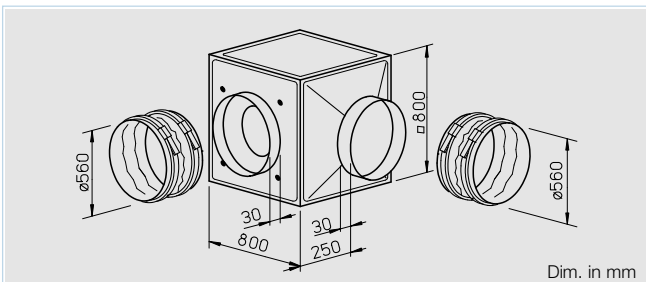
■ **Feature**

□ **Assembly of types GB..**
Arbitrary installation position and flexible assembly by five possible discharge directions via the discharge adapter. For wall mounting the wall bracket (accessories) has to be used. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

NEW!

Models GB.. T120

Designed for moving dirty, humid and hot air up to max. 120° C.



■ **Specification of both types**

□ **Casing**

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

□ **Impeller**

Smooth running backward curved aluminium centrifugal impeller highly efficient and direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 – class 6.3.

□ **Motor**

Maintenance-free external rotor motor or IEC-standard motor protected to IP 44 or 54. With ball bearings and radio suppressed as standard.

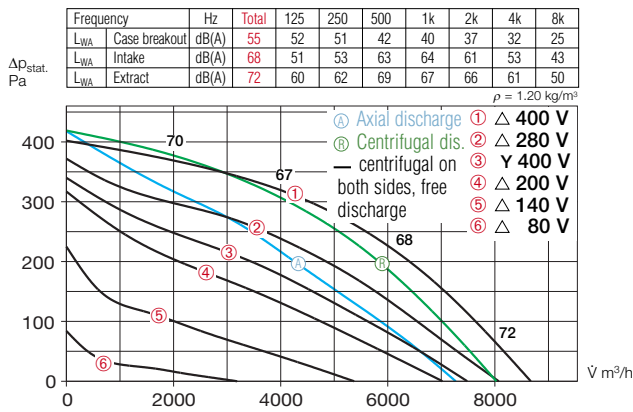
□ **Electrical connection**

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

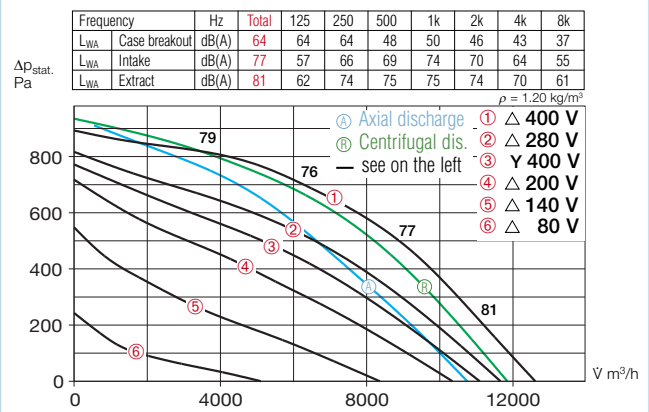
Type	Ref. No.	Air flow volume (FID)	R.P.M.	Sound press. level case breakout	Motor power (nominal)	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temperature full load	Nominal weight (net)	5 step transformer controller with motor protect. unit		Full motor protection unit using the thermal contacts				
		V m ³ /h	min ⁻¹	dB(A) at 4 m	kW	A	A	Nr.	+°C	+°C	kg	Type	Ref. No.	Type	Ref. No.	Type	Ref. No.
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54																	
GBD 560/6/6	5522	7800/8640	690/870	35	0.51/0.80	0.90/1.90	1.90	867	60	60	80	RDS 4	1316	TSD 3.0	1502	M4 ¹⁾	1571
GBD 560/4/4	5521	11500/12590	1110/1350	44	1.70/2.50	2.80/4.80	4.90	867	55	45	90	RDS 7	1578	TSD 7.0	1504	M4 ¹⁾	1571
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54																	
GBD 560/4/4 T120	5778	11520/12300	1250/1400	48	1.85/2.50	3.20/6.80	6.80	520	120	120	105	RDS 7	1578	TSD 7.0	1504	M4 ¹⁾	1571

¹⁾ incl. operation and 2 speed switch

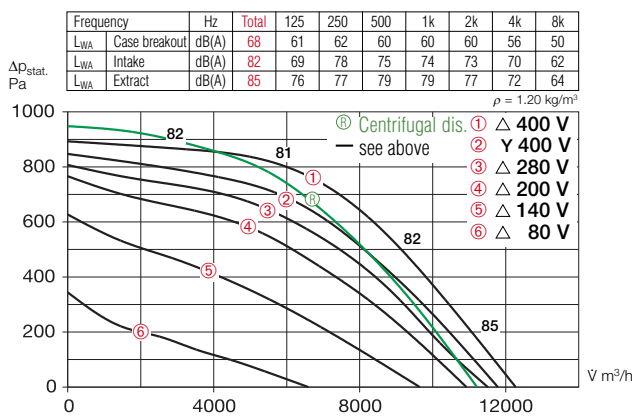
GBD 560/6/6



GBD 560/4/4



GBD 560/4/4 T120



Motor protection

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

Speed control

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

Sound levels

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

- sound level case breakout
 - sound level intake
 - sound level extract
- in the tables above the performance curve. Beside, the sound power level (on intake) is stated over the rated characteristic curve. In the table below you can also find the
- case breakout level at 4 m (freefield conditions).

Accessories of both types

Anti vibration mounts for installation indoors. Set of 4.

SDD-U Ref. No. 5627

Wall bracket for wall mounting.

GB-WK 560 Ref. No. 5626

External weather louvers to cover exhaust opening.

GB-WSG 560 Ref. No. 5640

Outdoor cover hood for outdoor installation.

GB-WSD 560 Ref. No. 5749

On/Off and 2-speed switch for 3-phase star/delta motors.

DS 2²⁾ Ref. No. 1351

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

Specific accessories

for types GB..

Condensate collector with condensate spigot for pipe connection.
GB-KW 560 Ref. No. 5645

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

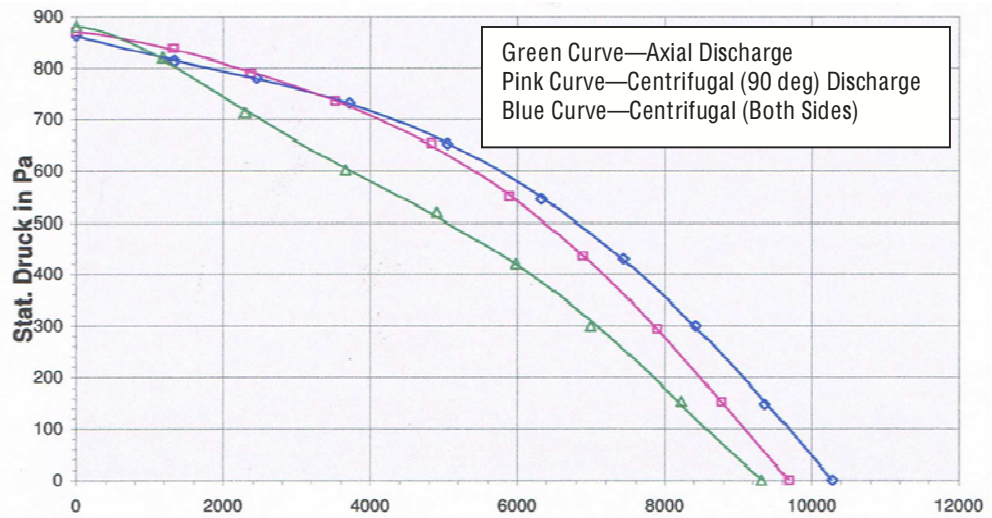
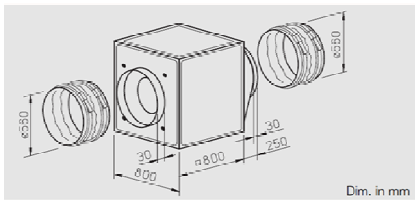
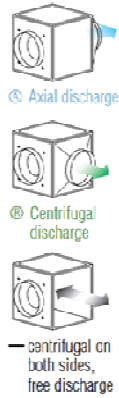
for types GB.. T120

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

GB-RA Ref. No. 9418

Information	Pages
Design of systems, acoustic	12 on
General techn. information, speed control	17 on
Accessory-Details	Pages
Speed controller and full motor protection unit	397 on

GBW 560/4



Δp_{stat}
Pa

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} Case breakout	dB(A)	64	64	64	48	50	46	43	37
L _{WA} Intake	dB(A)	77	57	66	69	74	70	64	55
L _{WA} Extract	dB(A)	81	62	74	75	75	74	70	61

Self supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel. Intake cone for ideal airflow, spigot and flexible connector for duct connection. With discharge adapter (square to circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks. Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via discharge adapter. Outdoor installation is possible using outdoor cover hood and external weather louvres (accessories).

Impeller:

Smooth running backward curved aluminium centrifugal impeller highly efficient and direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 - class 6.3

Motor:

Maintenance free external rotor motor or IEC standard motor protected to IP 44 and 54. With ball bearings and radio suppressed as standard.

Electrical Connection:

Standard terminal box (IP54) fitted on the motor support plate.

Motor Protection:

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

Speed Control:

Speed controllable by voltage reduction using transformer controller.

Type	Ref. No.	R.P.M.	Sound Level	Motor power (nominal)	Current Full Load	Maximum air flow temp.	Nom. weight (net)	5 step trans. controller	
		min ⁻¹	dB(A) at 4 m	kW	Amps	+°C	kg	Type	Ref.
GBW 560/4	5508	1370	44	2.0	8.7	60	90	TSW 10	1498

Volume Flow m³/s against static pressure

0	50	100	150	200	250	300	400	500	600	700	800
2.77	2.72	2.55	2.48	2.41	2.31	2.22	2.0	1.72	1.44	1.00	0.36

Type Ref.

Installation Instructions

ANTI-VIBRATION PRODUCTS | EXPANSION COMPENSATORS | FLEXIBLE CONNECTORS | ACOUSTIC PRODUCTS | THERMAL INSULATION

ANTI-VIBRATION PRODUCTS

MP1 Rubber Turret Mount

Before installation please carefully review the data below to ensure your equipment and installation environment does not exceed the products limitations.

NOTE - Failure to install the correct mount may result in the failure of the anti-vibration mount.

NOTE - These mounts should only be used in compression, never in tension or shear.



Mount Variant	Max Load Kg / (N)	Colour Code
MP1-GN	23 - 91 / (225 - 892)	Green
MP1-WH	36 - 123 / (353 - 1206)	White
MP1-BU	50 - 154 / (490 - 1510)	Blue
MP1-RD	82 - 245 / (804 - 2402)	Red
MP1-YW	94 - 300 / (921 - 2941)	Yellow

STEP 1

Ensure all the anti-vibration mounts are of the correct variant for the application and are undamaged.

Remove the fixing screw, lock nut and washer from the top of the anti-vibration mount.

STEP 2

Position the anti-vibration mounts beneath the base of the equipment that is to be isolated. Line up the holes in the base of the equipment with the fixing holes on the anti-vibration mounts.

Proceed to lower the equipment down onto the anti-vibration mounts.

STEP 3

It will be noted that each mount will have deflected by a varying amount due to the static loads applied. Other factors such as slight variances in the floor surface can also cause differences in deflection.

STEP 4

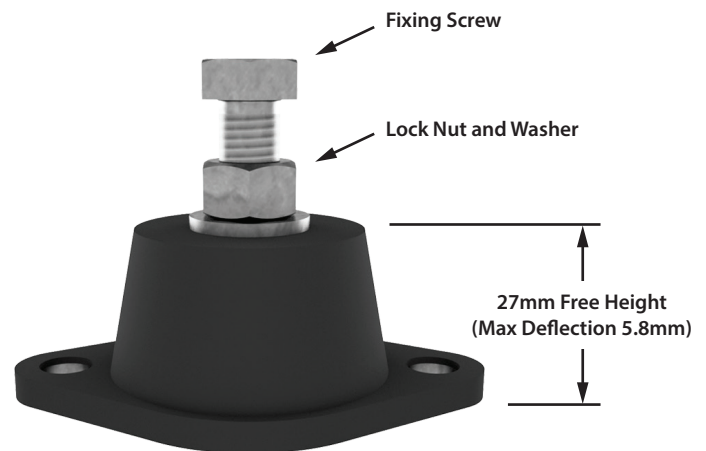
Once the equipment is in position, with the lock nut wound up to the head of the screw, re-insert the fixing screw and washer into the threaded hole of each anti-vibration mount.

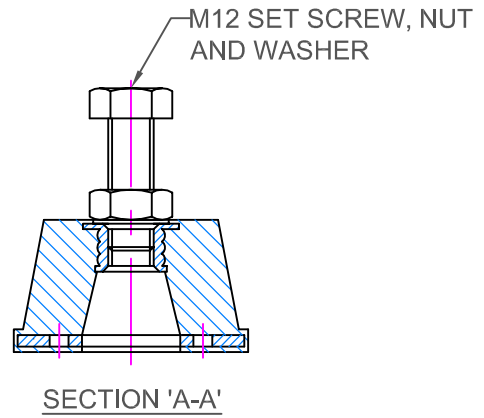
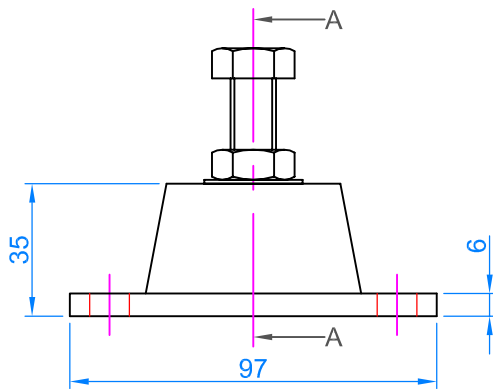
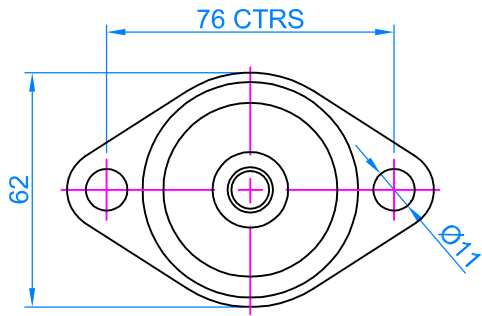
When all the fixings have been re-inserted, proceed to tighten the lock nuts and washers firmly down onto the equipment.

STEP 5

Further adjustment and maintenance should not be required.

However we do recommend that visual inspections take place to check for accidental damage and / or misuse.





REFERENCE NUMBER	COLOUR CODE	MAX LOAD (kgs)	MAX DEFLECTION (mm)
MP1 33	GREEN	23-91	5.84
MP1 45	WHITE	36-123	5.84
MP1 55	BLUE	50-154	5.84
MP1 65	RED	82-245	5.84
MP1 75	YELLOW	94-300	5.84

NOTES:

TITLE:

DATA SHEET
MP1 MOUNT

A	27/06/14	TEXT & BORDER UPDATED	M.T.	G.F.	J.D.
0	13/09/05	CREATED	G.F.	J.D.	J.D.
REV	DATE	REVISION DETAIL	DRN	CHK'D	APP'D
MP1 MOUNT					A



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