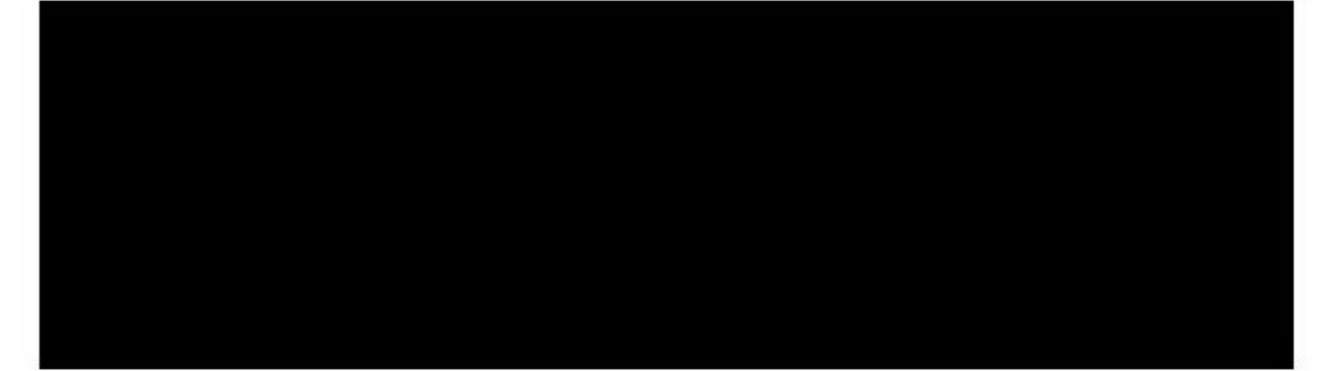


132 Oxford Road  
Oxford  
OX4 2DU

Unit 1  
Gregory's Mill Street  
Worcester  
WR3 8BA



16<sup>th</sup> November 2020

Dear Sir,

With Reference my site visit to discuss canopy extraction system,

I confirm the design and specification of the extraction system at the above address in accordance to DW172. We have designed the system with regards to noise, as well as odour.

If you have any questions or require further clarification of any point within this document, please do not hesitate to contact ourselves, we will be most happy to assist where possible.

Kind regards,

Mamunur Rashid

Kitchen Extraction Design Engineer

## Canopy Hood

The wall type canopy will be manufacturer from Stainless steel sheets in brush finish.

Measuring, length; 3000mm, depth; 1100mm

Incorporate within the canopy would be a full-length purpose-built filter housing to accommodate 4 off, 500mm (wide) x 500mm (height) x 50mm (deep) stainless steel baffle grease filters.

## Duct Work

The main duct work will be manufactured from galvanised mild steel sheet of a spiral lock-formed and coupler construction in accordance with DW144 specification.

We will also fit a bird beak in order to provide sufficient efflux, and prevent any nuisance to surrounding residential properties.

## Extract fan

Located within the ducting will be a 450mm diameter, 4 pole, and single phase cased axial fan motor running via a variable speed controller.

This fan will handle an airflow in excess of 1.97m<sup>3</sup>/second, against the resistance of the system @290pa.

Thereby easily giving 35 air changes per hour within the kitchen area as per CIBSE B2.

The fan runs at 1380rpm with maximum operating noise level of 65 dBA (free field) without any silencer at a distance of 3m.

## Odour Control

There will be a residual gaseous element from the cooking process that will require odour control. To eliminate any odours a carbon unit with a 0.2sec dwell time will be fitted at the exhaust ductwork.

The purpose built discarb unit will house activated carbon 207c carbon filters. A pre-filter will be situated before the discarb unit, to prevent any grease from being entered into the filters and prevent clogging of the activated carbon.

Please see attached data sheet and details of the discarb unit to be fitted.

## **Air Make up**

If gas equipment is to be used within the kitchen an additional air supply fan will be required to allow for 85% of the extracted air to be returned back into the kitchen, this will include a 315mm dia cased axial fan, variable speed controller and external air supply vent.

## **Cleaning and Maintenance**

### **Canopy and Filter**

- a. Grease filter to be cleaned daily by soaking in detergent overnight.
- b. Grease tray and condense channel must be cleaned daily.
- c. Canopy to have professionally deep clean every 6 months to maintain warranty, cleaning certificate should be available for inspection.

### **Carbon Filter**

Carbon filter must be changed every six months or sooner depending upon usage and volume/ type of cooking.

### **Pre-Filter**

Pre-filter must be changed every three to six weeks.

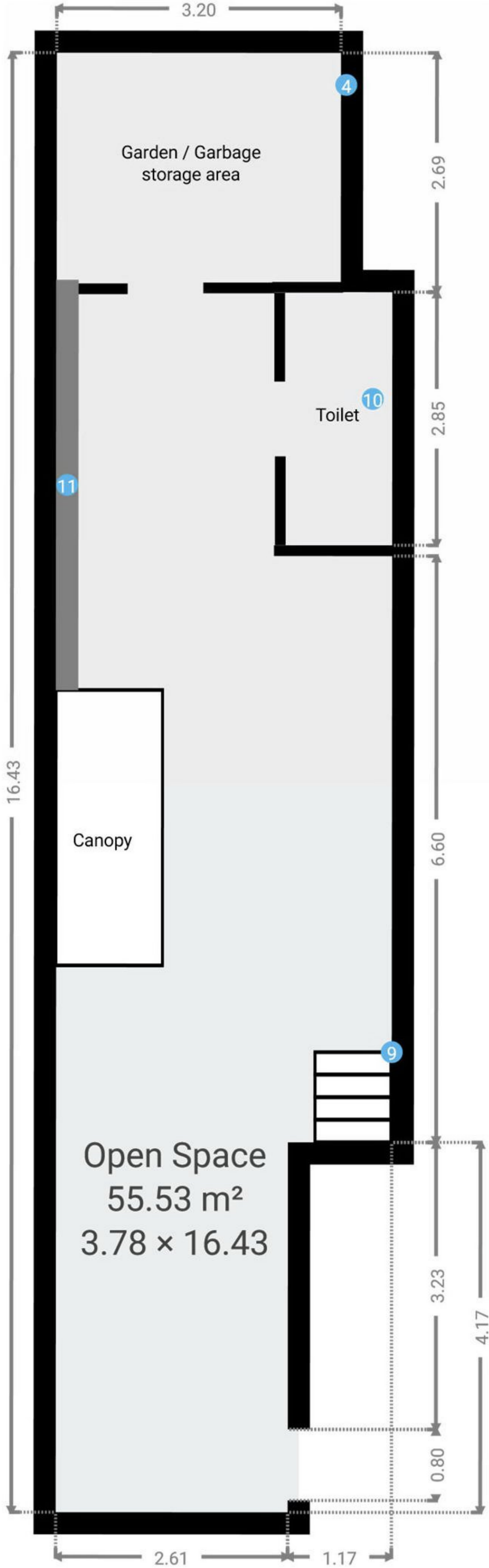
### **General Cleaning**

Using a damp cloth with mild detergent diluted in water wipe all stainless-steel services.

Once dry using a mixture of 50% baby oil and 50% white spirits apply to a non-abrasive cloth, lightly wipe down following the grain to maintain the stainless steel.

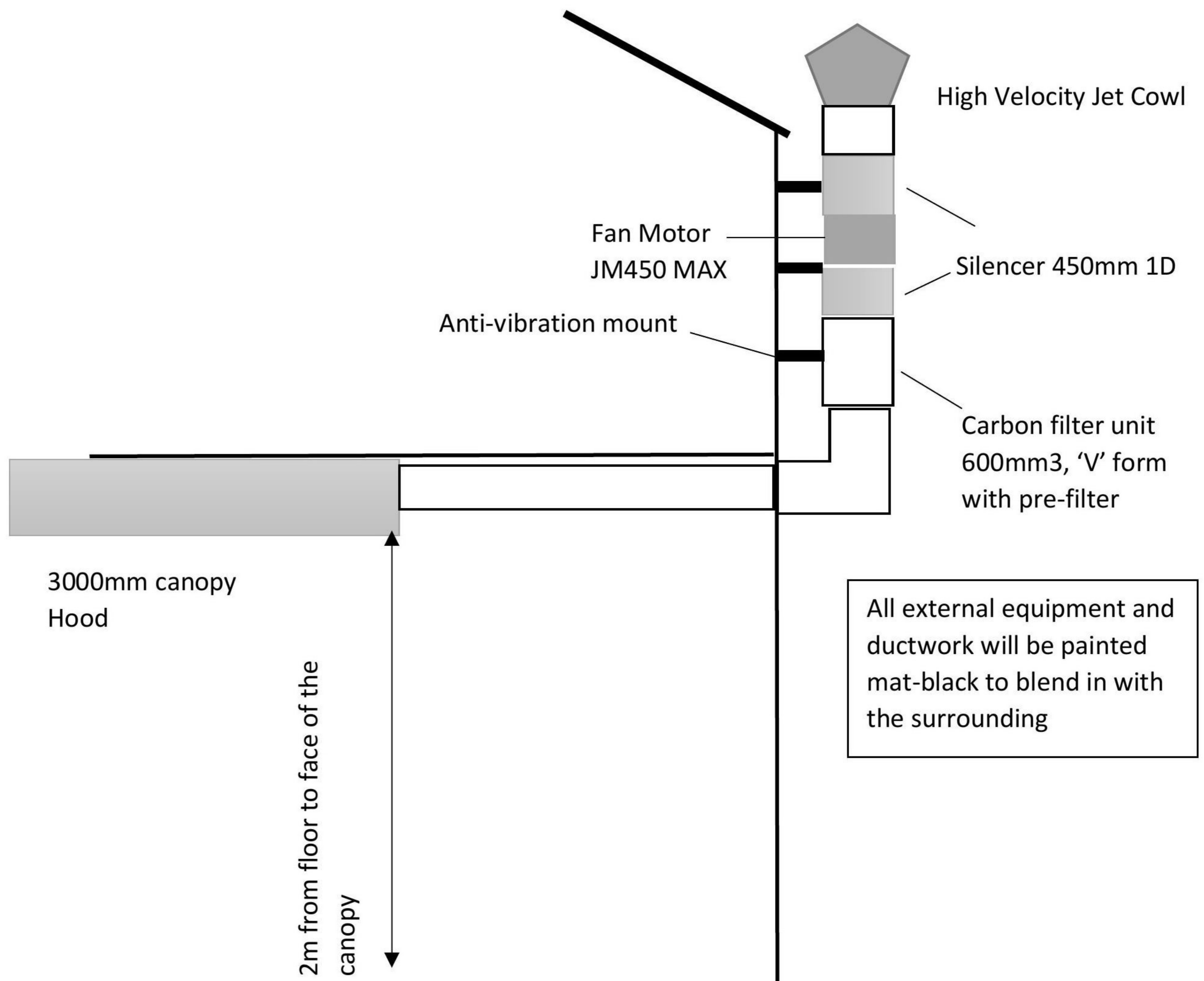
## KITCHEN EXTRACT SYSTEM DETAILS

### Floor Plan



## Layout of Extraction system

*Drawing not to scale*



The Face velocity of the Canopy will reach 0.35m/s (medium Cooking),

Face Velocity:  $3\text{m} \times 1.1\text{m} \times 0.35 = 1.155\text{m}^3/\text{s}$

Design Volume  $1.26\text{m}^3/\text{s}$

Duct air speed  $9\text{m}/\text{s}$

Pressure 285 pa

Noise level of JM450mm Max cased axial flow Fan motor produces 65dBA in free field condition at 3m, using our recommended Silencers, 450mm 1D with 80mm thick wall, will bring the noise level down to less than 45dB.

The system will be located on the back of the building, all equipment will be stacked vertically against the rear wall. And terminated with high velocity jet cowl, if required the ductwork can be painted mat-black to blend in the surrounding

All ductwork are low pressure class A and constructed in accordance with HVCA specification DW/144(1) with a minimum thickness of 0.8mm.



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## **Baffle Grease Filters / Baffle Filters (VeeVent)**

It is universally recognised that there is an increasing need to maintain & improve hygiene standards & reduce fire hazards within the kitchen. The baffle grease filter accomplishes both needs through its clever design of interlocking baffle that provides a tortuous route for the passage of air through the filter by creating two rapid 180Deg air direction changes simultaneously. The grease molecules having a far greater inertial force than air impact themselves on the vanes. A series of vertical stainless steel or aluminium vanes are housed in a channel frame, with each of the baffles strategically aligned to provide the highest potential for grease removal. Due to the smooth nature of the vanes the grease naturally runs downwards, through the drainage holes and into the collecting trays normally provided within the canopy holding casings.

### **Construction**

The baffle filter range is available in stainless steel and is robustly constructed with filter removal handles fitted as standard.

### **Cleaning**

It is imperative that this product is regularly cleaned – according to use. This may be accomplished by steam cleaning, washing in a dish washer using conventional detergents or cleaners.

## Carbon Discarb Unit

The carbon discarb unit is made to suit the ductwork size, which results in reduce noise and reduce in duct turbulence. It comes complete with a pre-filter unit that is situated before the main cell compartment, and prevents grease from entering into the carbon cells. This leaves the carbon cells free from grease and thus able to capture gaseous odours more efficiently.

## Odour Control Details

### WF20 Bonded Carbon Cell Panel (207c) – Specification

Carbon filtration is ideal for removing unpleasant or even dangerous odour and gases from a wide variety of sources.

The ever-increasing awareness of this problem from public health authorities and environmentalist has resulted in an increase in the use of the unique properties of activated carbon filtration.

Carbon will absorb chemical molecules in the airstream in varying degrees according to the type of contaminant and the period of time the air remains resident in the carbon.

Typical applications for carbon include, incoming air in industrial plants, airport, art galleries etc, or outgoing air in the kitchen, industrial processes, sewage plants etc.

## Application

Activated carbon in its loose granular form can present problems as there is a tendency for the granules to abrade one another, this causes both settlement of the carbon- creating potential bypass voids and produces carbon dust that can be re-entrained into the air-stream. The unique bonding method eradicated these problems by producing a solid and stable biscuit of consistent quality and dimensional stability that produces an even resistance.

## Operational Criteria

In order to ensure a carbon filter operates satisfactorily certain criteria need to be met which do not apply to particulate filters. The most important aspect is the “dwell time” (the period of time the air is in contact with the carbon). The minimum dwell time used is 0.1 seconds, this relates to 0.19m/sec through a 25mm nominal thickness panel. The dwell time varies considerably according to the contaminant to be removed. In order to be able to present adequate surface area to the airstream. the panels will normally need to be mounted in “V” formation within a casing or housing.



As far as possible water vapour should be eradicated from the air-stream to eliminate condensation within the filter that could cause porous blockage causing a dramatic increase in resistance – this also applies to lose carbon. However, humidity levels as high as 80%RH are normally acceptable providing no interstitial condensation takes place.

Air-stream temperatures entering the filter in excess of 40 Celsius should be avoided. In the case of anticipating temperatures above this level steps should be taken to reduce the temperature to an acceptable level by fresh air bleed, cooling coil or heat exchanger. In catering and food perpetration applications smoke and grease must be removed from the air-stream prior to entry into the carbon.

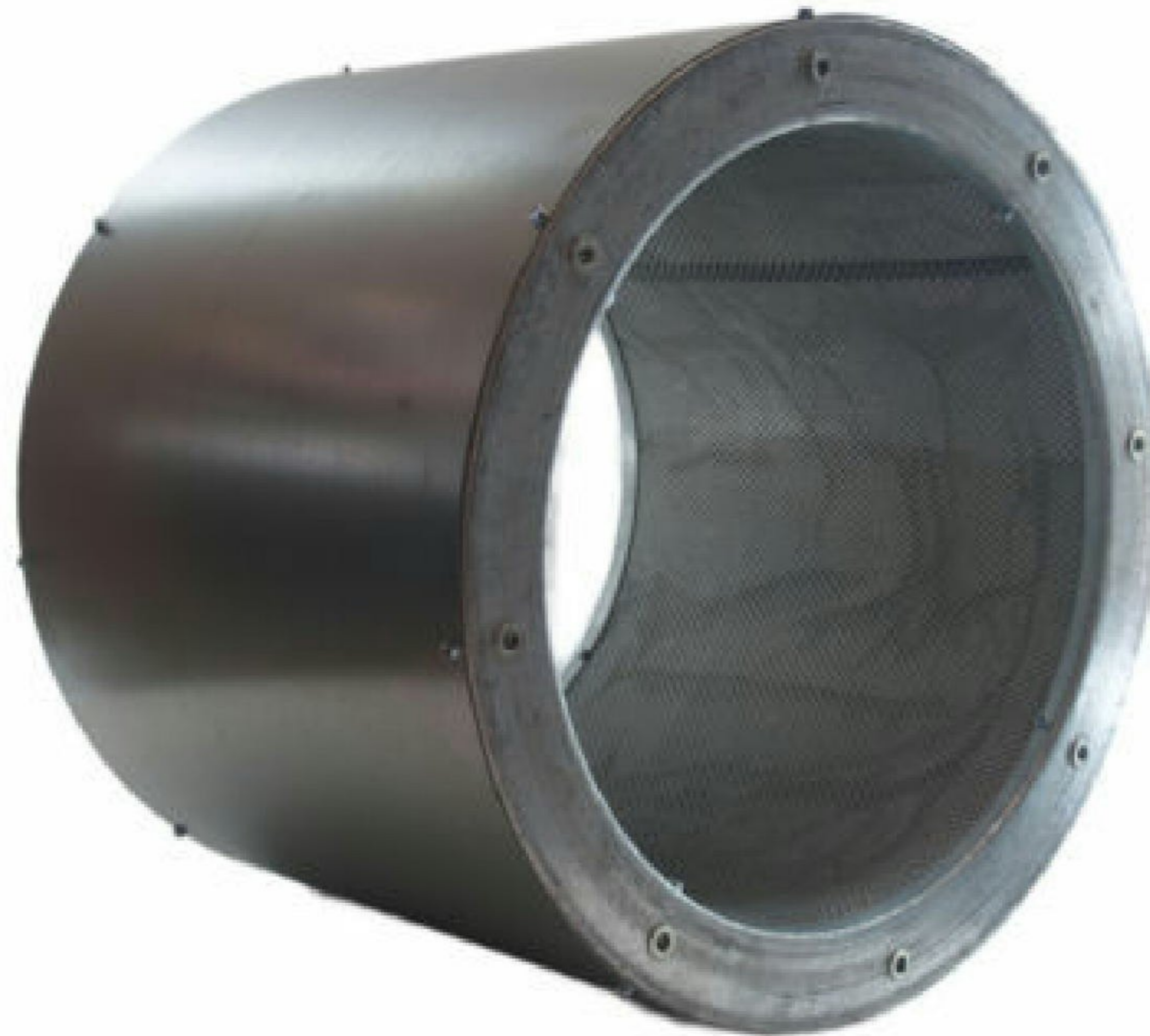
## Performance

Due to the complex nature of absorption, carbon filters are generally designed to suit the application, however, the following information is given as an indication of the physical requirement for its use.

Typical Panel Size	Rated Airflow *m <sup>3</sup> /hr at 0.1 sec dwell time	Resistance at 0.1 sec (pa)	Rated Airflow (m <sup>3</sup> /hr) at 0.2sec dwell time	Resistance at 0.2 sec (pa)
600x600x19mm	246	65	123	23
600x600x22mm	285	110	143	37



## CDA 450 X 1D STRAIGHT THROUGH SILENCER



450mm dia x 450mm long straight through silencer (generally reduces a fan noise level by 7 – 10dB (A)\* Can be supplied to either bolt directly to any manufacturer of cased axial or with spigots to mount inline with ducting.

The addition of this silencer to a system will act in the same way a silencer does on a car, so if you've ever heard a car with no silencer fitted, this gives you an idea of the impact a silencer can have on a system.

Please Note — for a straight through silencer to work to have the maximum impact on a system, a silencer should be fixed either side of the fan, this will give 3 benefits to the overall noise level of the system.

1. System side (usually the noise level inside a building) noise level is reduced
2. Atmospheric side (usually the noise level outside a building) noise level is reduced
3. The breakout from the fan is reduced, this could be a big factor depending where the fan is fitted, such as a false ceiling in a class room or office area

## 45JM MAXFAN HIGH PRESSURE LONG CASED AXIAL FAN BY FLAKT WOODS



The Flakt Woods JmMax fan axial flow extract fan range of high performance and reliability 2 stage axial flow fans

This fan was introduced to satisfy ventilation systems where high-pressure fans are required, where only single-phase supply (240volts) is available and speed control is required

A typical application where this fan is commonly used is in the catering industry where a high level of filtration is required, usually the result of fitting odour control via Pre and Carbon Filters\*

The build quality and reliability are the highest we have ever experienced, in a range of fans that are designed to work harder than most

Every time you fit this fan you know you've made the right choice, and it will enhance your reputation for only using the best quality products

- Supplied fully assembled
- Fully speed controllable
- Can be used in any non-hazardous environment
- Suitable in temperatures from -40°C to 50°C
- Low to high air volumes
- Low to high static pressures
- Available sizes 315mm – 630mm from stock

The Casings are spun sheet steel, then hot dipped galvanised to give a finish highly resistant to corrosion and can be mounted externally and internally

The impeller (the bit that goes around and moves the air) is manufactured die cast aluminium

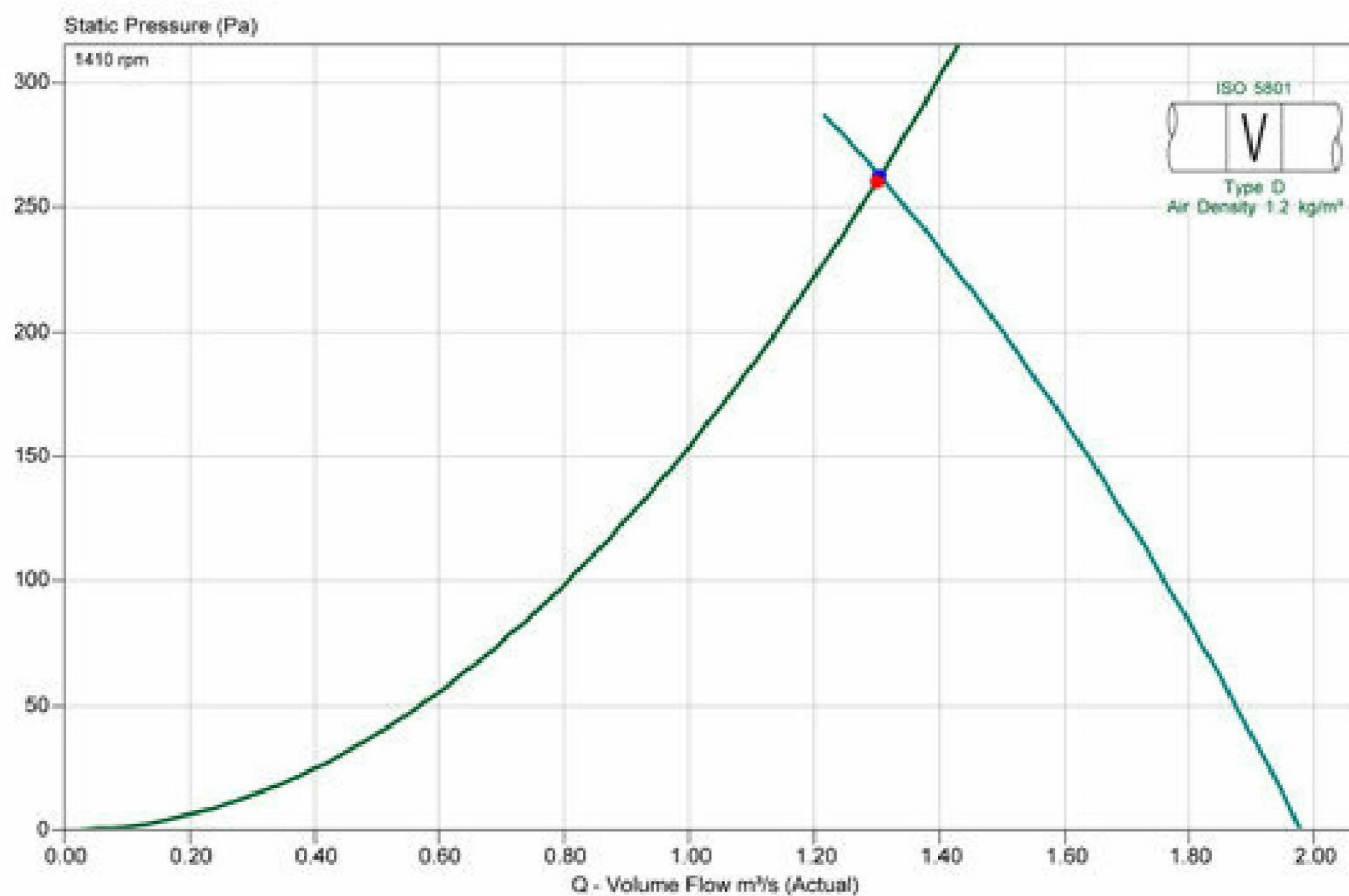
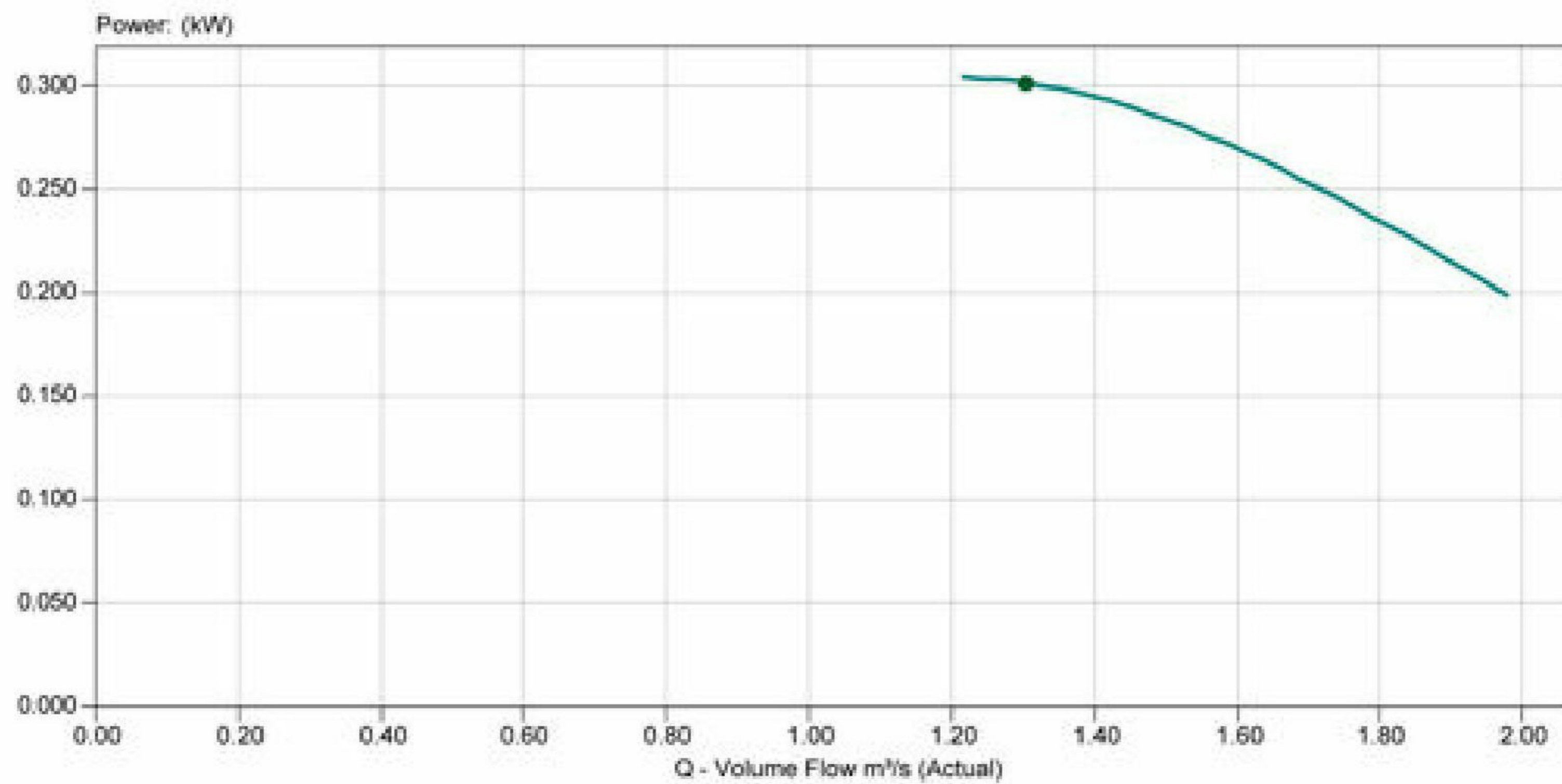
The motors are totally enclosed with class F insulation with protection to IP55.

The curve below shows the fans performance, which is 1.97 m<sup>3</sup>/s at Free Air and peaks at 1.2 m<sup>3</sup>/s at 290Pa, the fan can perform anywhere between these points and the red dot is shown as an example.

## Northern Fan Supplies Ltd Performance Chart MaXfan (JM Aerofoil 2 Stage)

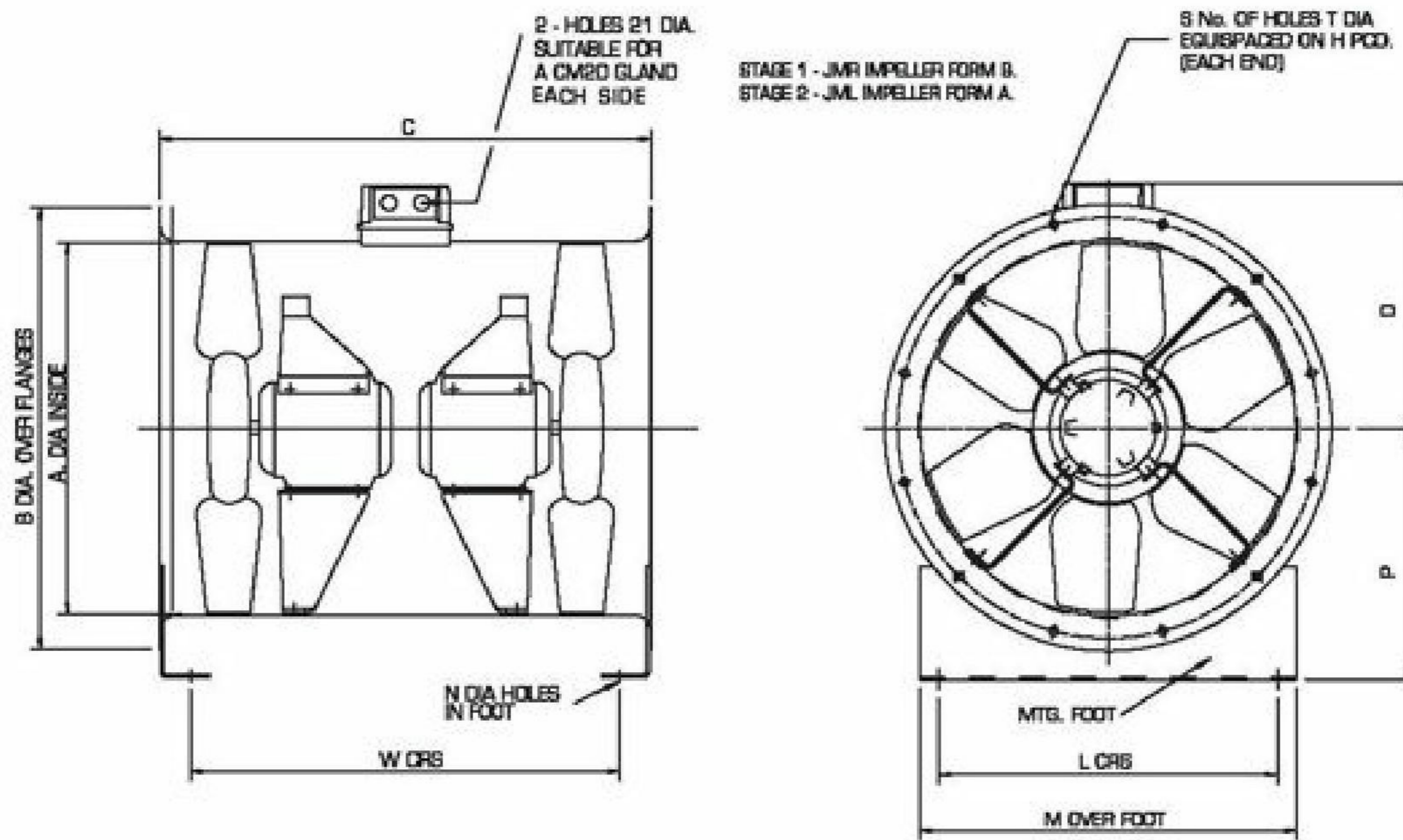


Project Name :	Date:	: Wednesday, July 11, 2012
Quotation Number :	Fan Code :	45MaxFan/16/4/5/32/26
Customer :	Item Reference:	:





## Dimensions



Product Code	Motor	A	B	C	D	H	L	M	N	P	S	T	W	Weight (kg)
40 MaFan	BT9	400	480	680	279	450	350	400	10	260	e	12	590	38
45 MaFan	CT5	450	530	620	306	500	400	450	10	280	e	12	530	43
50 MaFan	CT9	500	594	710	338	580	450	500	10	315	12	12	620	57
56 MaFan	CT9	560	654	680	368	620	510	560	10	355	12	12	590	61
63 MaFan	CT9	630	724	710	403	690	580	630	10	400	12	12	624	71

All dimensions shown in mm