

**Noise Control (Extract)**

2D Podded acoustic attenuators will be installed directly before and after the extract fan motor to reduce breakout noise, the fan is also to be clad in a purpose made acoustic jacket. A 2D podded Attenuator reduces the noise level by ~ 17dba. With a total combined noise reduction of 34dba from the mechanical plant of 76dba the noise level at maximum operating speed and at 3m from the discharge point will be no more than 42dba. The fan will also AV mounts further reducing noise where connecting onto the ductwork.

**Noise Control (Supply)**

A 2D acoustic podded attenuator will be installed directly before and after the Supply fan motor to reduce breakout noise, the fan is also to be clad in a purpose made acoustic jacket. A 2D podded Attenuator reduces the noise level by ~ 15dba. With a total combined noise reduction of 30dba from the mechanical plant of 74dba the noise level at maximum operating speed and at 3m from the inlet point will be no more than 44dba. The fan will also have flexible connections on both sides and AV mounts further reducing noise where connecting onto the ductwork.

**Odour Control**

Shall be via 1 No Plasma Clean Xtract 2100 ozone unit (see details attached)

**Cleaning and maintenance**

The supply pre filters should be changed a minimum of every 2 month's dependant on system usage.

The canopy and baffle filters should be cleaned on a daily basis.

We recommend that the canopy and the duct work should receive a full deep clean 6 months after installation and then every 6 months thereafter by a professional cleaning company, to maintain the maximum efficiency of the extraction system.

We enclose a copy of all technical data sheets relating to the system detailed above, and trust that the enclosed is in order. Should you require any further details please do not hesitate to contact the under signed.

## 2. Drawings See Attached EQ1408-169-01 Rev A

- Typical Extract Canopy Photo's

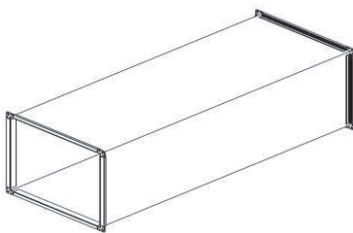


### **3. Fan Details**

#### **Extract and supply Fans.**

- See Attached Fan Details with technical specification Information attached.
- Extraction Fan Model – Solar and Palau 500 diameter TCBBx2 Contra rotating cased axial fan.
- Supply Air Fan Model – Solar and Palau 450 diameter TCBBx2 Contra rotating cased axial fan

### **4. Ducting Details**



The ductwork is manufactured from galvanized mild steel sheet, folded and lock formed with flanged construction in accordance with DW 172 and DW.144 specifications.

### **5. Noise Control Details**

#### **Circular Silencers Specification**

Silencers are available in two standard lengths:-

- 1D (length = diameter)
- 2D (length = 2 x diameter)

Each length is then available with and without cylindrical centre-body or 'pod' which provides additional attenuation. These are identified by the inclusion in the product code 'P' for podded or 'NP' for unpodded versions.

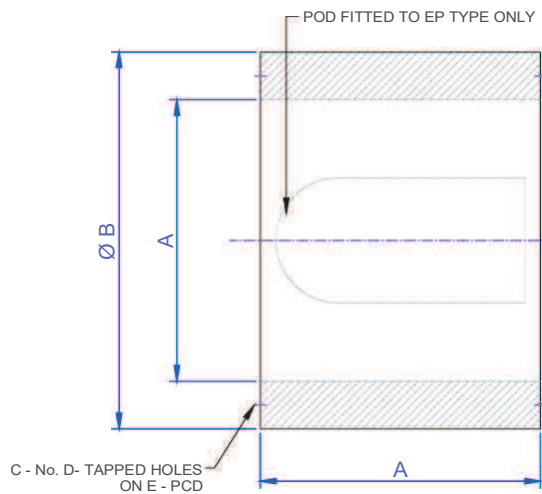
When selecting the appropriate silencer, account needs to be taken of both the level of sound reduction achieved and, in the case of a podded silencer, the additional pressure drop in the system which needs to be overcome by the fan.

For sound, deducting the appropriate 'dBA Attenuation' figure from the 'dBA @ 1.5m figure in the relevant fan performance table gives a combined 'dBA @ 1.5m figure for the fan and silencer combination.

For pressure, the ' $\Delta P$ ' figure should be added to the pre-attenuation pressure requirement before selecting the appropriate fan.

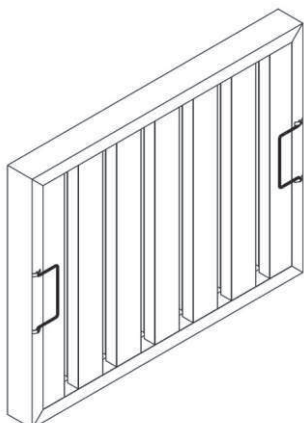
| Fan dia | A 1D | A 2D | B   | C  | D   | E   | WEIGHT (Kg) |       |        |       |
|---------|------|------|-----|----|-----|-----|-------------|-------|--------|-------|
|         |      |      |     |    |     |     | 1DENPM      | 1DEPM | 2DENPM | 2DEPM |
| 450     | 450  | 900  | 602 | 8  | M10 | 500 | 15          | 18    | 27     | 31    |
| 500     | 500  | 1000 | 652 | 12 | M10 | 560 | 18          | 22    | 32     | 37    |
| 560     | 560  | 1120 | 712 | 12 | M10 | 620 | 22          | 26    | 39     | 46    |
| 600     | 600  | 1200 | 722 | 12 | M10 | 690 | 26          | 32    | 48     | 57    |
|         |      |      |     |    |     |     |             |       |        |       |

| Fan dia | dBA ATTENUATION |      | $\Delta P$ (Pa)<br>1DEP | dBA ATTENUATION |      | $\Delta P$ (Pa)<br>2DEP |
|---------|-----------------|------|-------------------------|-----------------|------|-------------------------|
|         | 1DENP           | 1DEP |                         | 2DENP           | 2DEP |                         |
| 450     | -8              | -10  | 21                      | -13             | -15  | 33                      |
| 500     | -8              | -11  | 32                      | -14             | -17  | 51                      |
| 560     | -8              | -12  | 35                      | -15             | -20  | 56                      |
| 600     | -11             | -17  | 27                      | -17             | -26  | 43                      |
|         |                 |      |                         |                 |      |                         |



Casing made from galvanized steel, acoustically lined with high density mineral wool covered with cloth to prevent erosion. Acoustic lining retained by perforated steel sheet.

## 6 Grease Block Baffle Filter Details



It is universally recognised that there is an increasing need to maintain & improve hygiene standards & reduce grease build up within kitchen canopies. The Grease Bloc Baffle filter accomplishes this by trapping the large particles of grease at source and finer particles through its design of interlocking baffles, these provide a tortuous route for the passage of air through the filter by creating two rapid 180° 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 Grease bloc Baffle filter range is manufactured from 304 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 dishwasher using conventional detergents or cleaners.

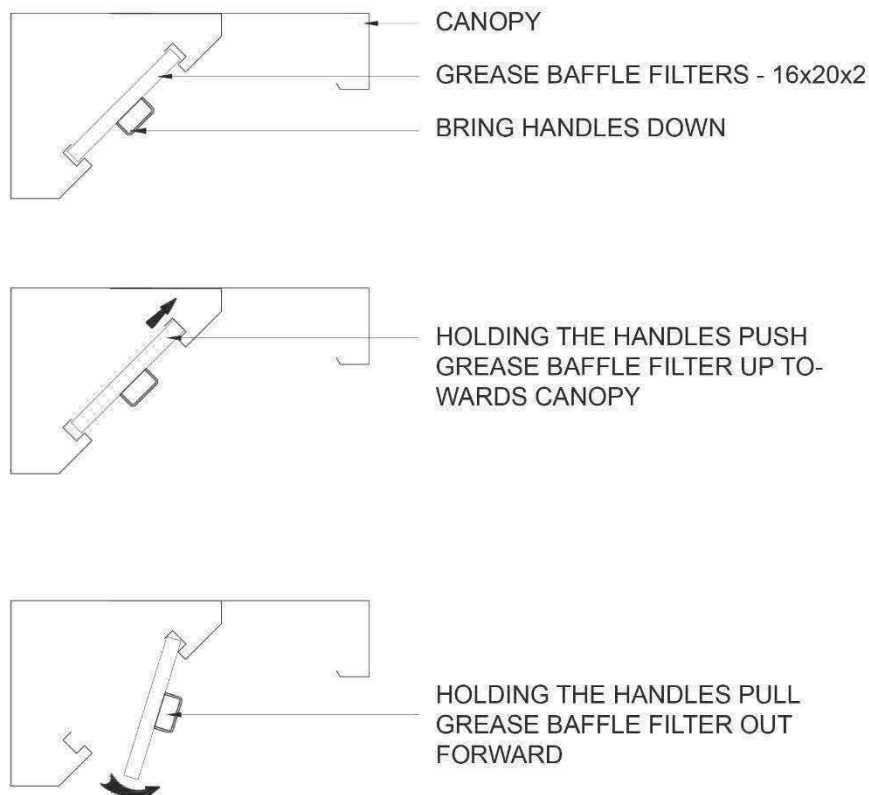
### Range

Baffle filters are available in a large range of standard sizes, they can also be manufactured in non-standard sizes, however the filter depth is always limited to 47mm due to the nature of the filter.

| Nominal Size<br>H x W x D | Actual Size<br>H x W x D | Rated<br>Capacity*      | Resistance |
|---------------------------|--------------------------|-------------------------|------------|
| 10 x 20 x 2"              | 241 x 495 x 45mm         | 500m <sup>3</sup> /hr.  | 120pa      |
| 16 x 20 x 2"              | 395 x 495 x 45mm         | 830m <sup>3</sup> /hr   | 124pa      |
| 20 x 20 x 2"              | 495 x 495 x 45mm         | 1000m <sup>3</sup> /hr. | 104pa      |

**\*Note Baffle filters may be used at higher rated capacities whilst retaining their efficiency, however it should be noted that this will increase their resistance to air. Baffle filters must always be used with the baffles running vertically**

### How to remove filters from canopy



## 7 Odour Control Details

Odour control shall be by installation of a Plasma Clean Xtract 2100 ozone unit. The Plasma Clean Xtract uses ozone, a well known disinfectant and odour neutralizer, this is released directly into the kitchen ventilation canopy. Here it immediately starts to act on the cooking odours produced.

Please refer to manufacturer's details.

## **8 Cleaning and Maintenance Details**

### **Canopy and Filter Maintenance**

- a. Grease Baffle filters to be cleaned as manufacturer's recommendations.
- b. Grease trap and condense channel must be cleaned daily.
- c. Canopy to have professional deep clean every 6 months to maintain warranty.

### **Carbon Filter Maintenance**

- Carbon filter must be changed every 12 months

### **Pre-Filter Maintenance**

- Pre filter must be changed every Eight weeks

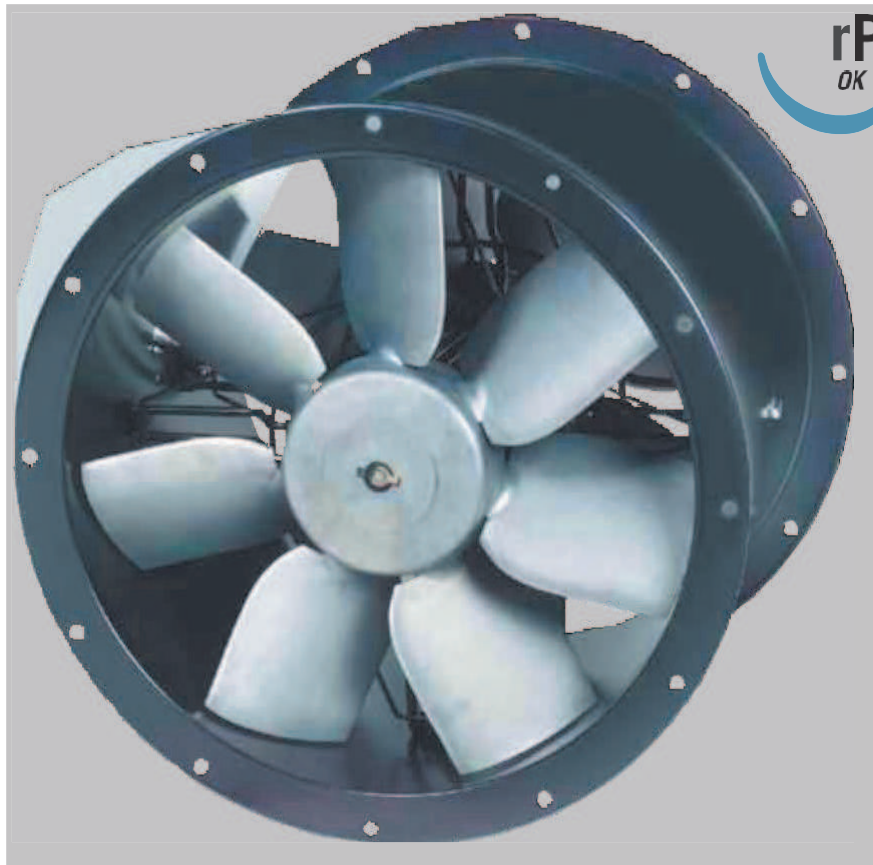
### **General Cleaning**

- 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 mixed together, applied to a non-abrasive cloth, lightly wipe down following the grain to maintain the stainless steel.

**DO NOT** USE ANY ABRASIVE MATERIAL OR CONCENTRATED CHEMICALS TO CLEAN i.e. mild steel wire wool cleaners

## **9 Manufacturers Details**





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.



### 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<br>(rpm) | Maximum<br>absorbed<br>power<br>(W) | Maximum<br>absorbed current<br>(a) |          | sound<br>pressure<br>level*<br>(dB(a)) | Maximum<br>air<br>volume<br>(m³/h) | Weight<br>(kg) | speed<br>controller<br>rMB/T | Variable frequency inverter |              |          |         |
|--------------|----------------|-------------------------------------|------------------------------------|----------|----------------------------------------|------------------------------------|----------------|------------------------------|-----------------------------|--------------|----------|---------|
|              |                |                                     |                                    |          |                                        |                                    |                |                              | VFTM                        |              | VFKB     |         |
|              |                |                                     | to 230 V                           | to 400 V |                                        |                                    |                |                              | 1/230V**                    | 3/400V       | 1/230V** | 3/400V  |
| SINGLE PHASE |                |                                     |                                    |          |                                        |                                    |                |                              |                             |              |          |         |
| TCBBx2/4-450 | 1420           | 1316                                | 5,7                                | –        | 74                                     | 7.430                              | 42             | RMB-8                        | –                           | –            | –        | –       |
| TCBBx2/4-500 | 1425           | 1957                                | 9,0                                | –        | 76                                     | 9.950                              | 50             | RMB-10                       | –                           | –            | –        | –       |
| TCBBx2/4-560 | 1425           | 3185                                | 14,2                               | –        | 78                                     | 14.150                             | 66             | –                            | –                           | –            | –        | –       |
| TCBBx2/4-630 | 1400           | 3671                                | 16,3                               | –        | 79                                     | 16.560                             | 80             | –                            | –                           | –            | –        | –       |
| THREE PHASE  |                |                                     |                                    |          |                                        |                                    |                |                              |                             |              |          |         |
| TCBTx2/4-450 | 1430           | 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           | 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           | 3173                                | 10,0                               | 5,8      | 78                                     | 15.170                             | 66             | –                            | VFTM MONO 2,2               | VFTM TRI 3   | –        | VFKB 48 |
| TCBTx2/4-630 | 1445           | 4014                                | 12,8                               | 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

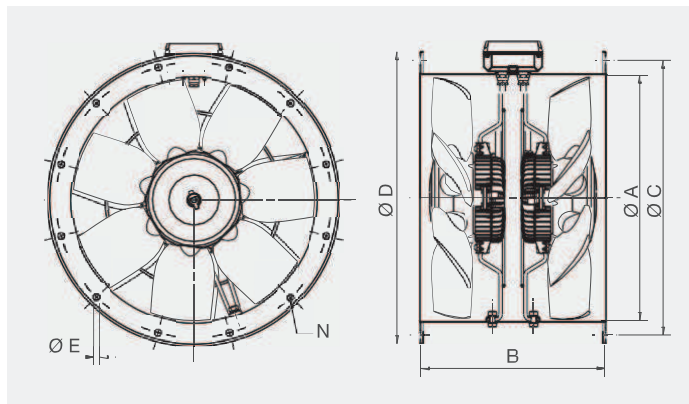
The sound levels –NPS- shown in the technical characteristic chart, correspond to the value of sound pressure dB(A), measured in free field conditions at a distance equivalent to three times the diameter of the impeller with a minimum of 1.5 meters.

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<br>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     |

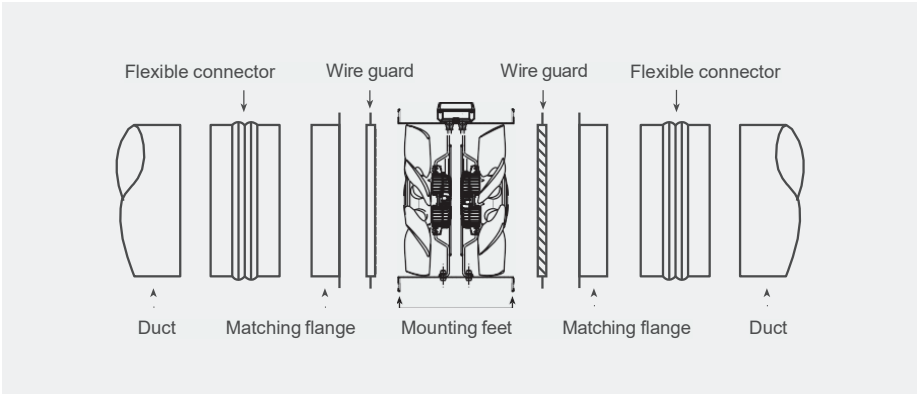
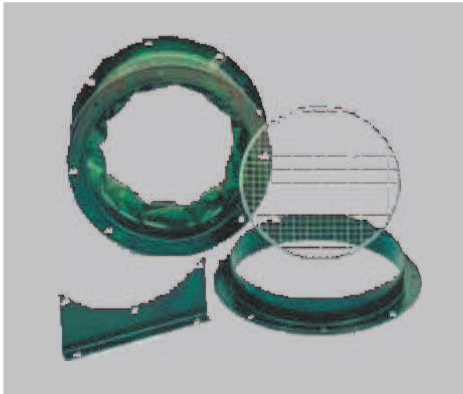
| Model      | air volume<br>m³/h | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Global |
|------------|--------------------|----|-----|-----|-----|------|------|------|------|--------|
| 560 Inlet  | 13.720             | 50 | 85  | 87  | 88  | 91   | 85   | 78   | 73   | 95     |
|            | 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<br>of holes<br>n |
|-------|-----|-----|-----|-----|-----|-------------------------|
| 450   | 537 | 375 | 500 | 450 | 12  | 8                       |
| 500   | 595 | 520 | 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: D.
- Efficiency category: total.
- 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.

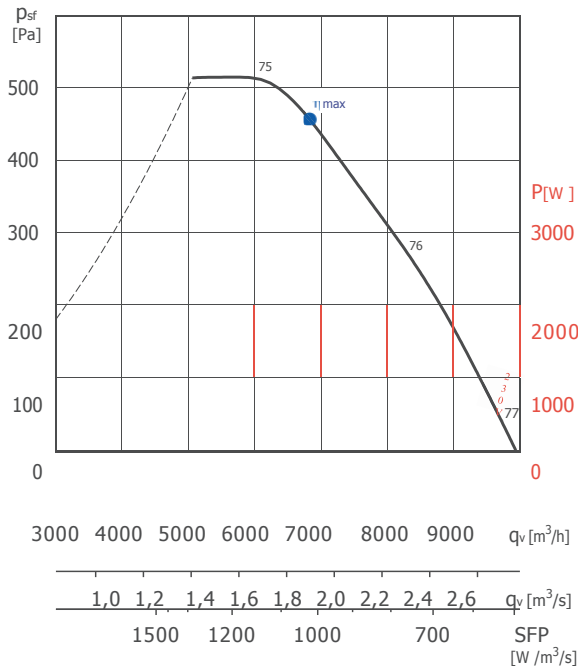
**MC** Measurement category  
**eC** Efficiency category

**VsD** Speed control: supplied with the fan

**SR** Specific ratio  
 **$\eta$ [%]** Efficiency  
**n** Efficiency grade  
**[kW]** Absorbed power  
**[ $m^3/h$ ]** Air volume  
**[Pa]** Static pressure  
**[rPM]** Speed

EXAMPLE CURVE

TCBBx2/4-500

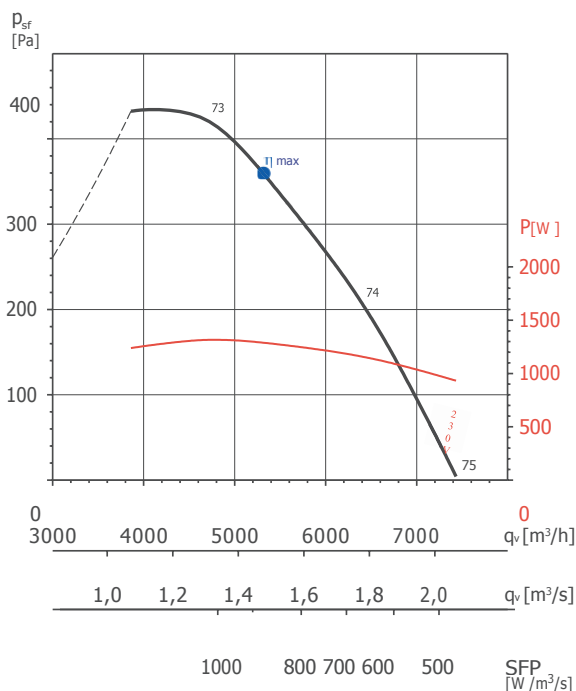


| MC* | EC*   | VSD* | SR* | $\eta$ [%]* | N*   | [kW]  | [ $m^3/h$ ] | [Pa] | [RPM] |
|-----|-------|------|-----|-------------|------|-------|-------------|------|-------|
| D   | Total | No   | 1   | 50,0        | 54,5 | 1,939 | 6832        | 514  | 1393  |

\* See example curve.

PERFORMANCE CURVES – 4 POLE MOTOR

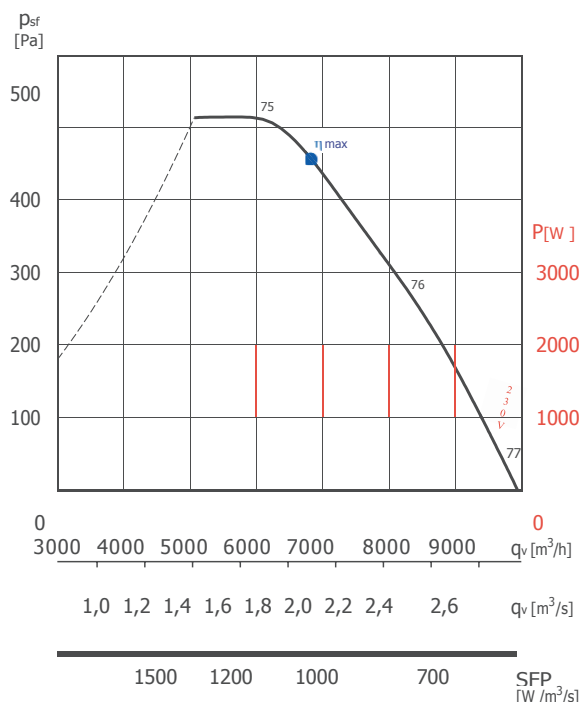
TCBBx2/4-450



| MC* | EC*   | VSD* | SR* | $\eta$ [%]* | N*   | [kW]  | [m³/h] | [Pa] | [RPM] |
|-----|-------|------|-----|-------------|------|-------|--------|------|-------|
| D   | Total | No   | 1   | 46,9        | 52,5 | 1,289 | 5315   | 411  | 1356  |

\* See example curve.

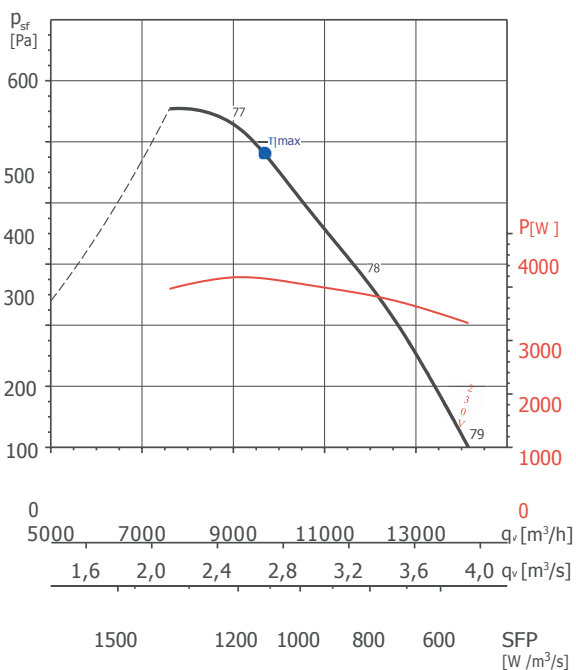
TCBBx2/4-500



| MC* | EC*   | VSD* | SR* | $\eta$ [%]* | N*   | [kW]  | [m³/h] | [Pa] | [RPM] |
|-----|-------|------|-----|-------------|------|-------|--------|------|-------|
| D   | Total | No   | 1   | 50,0        | 54,5 | 1,939 | 6832   | 514  | 1393  |

\* See example curve.

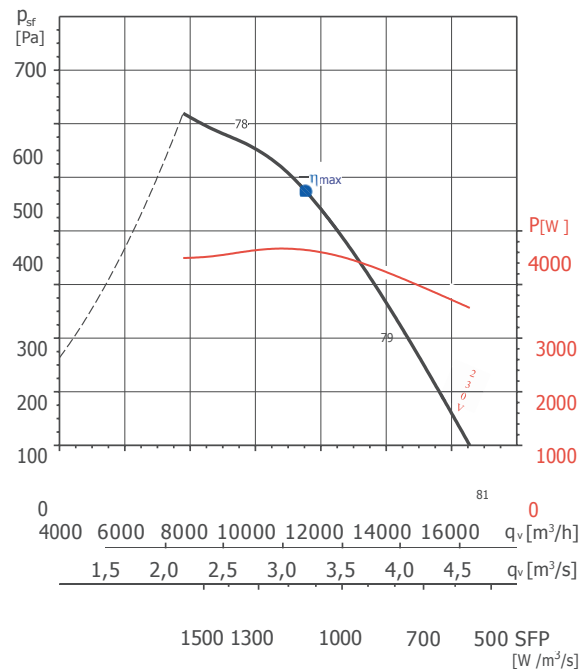
TCBBx2/4-560



| MC* | EC*   | VSD* | SR* | $\eta$ [%]* | N*   | [kW]  | [m³/h] | [Pa] | [RPM] |
|-----|-------|------|-----|-------------|------|-------|--------|------|-------|
| D   | Total | No   | 1   | 46,8        | 50,0 | 3,159 | 9680   | 552  | 1349  |

\* See example curve.  
www.solerpalau.com

TCBBx2/4-630



| MC* | EC*   | VSD* | SR* | $\eta$ [%]* | N*   | [kW]  | [m³/h] | [Pa] | [RPM] |
|-----|-------|------|-----|-------------|------|-------|--------|------|-------|
| D   | Total | No   | 1   | 47,2        | 50,0 | 3,646 | 11530  | 539  | 1328  |

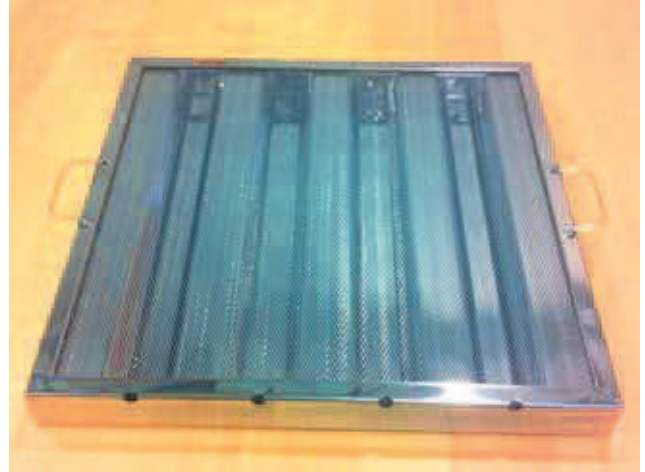
\* See example curve.

## 6 Step Zebra filter pad replacement



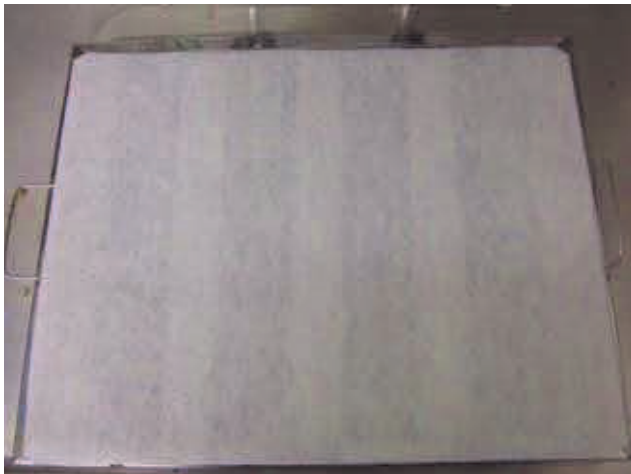
### STEP 1

Once the pads become visibly loaded with grease (stripes become dark brown), remove the baffle filter from the canopy.



### STEP 2

Place the baffle filter on a flat surface (handles and mesh facing up) remove the used filter pad and dispose.



### STEP 3

Place the replacement filter pad on top of the baffle filter (with the handles folded out).



### STEP 4

Push the edges of the filter pad under the baffle frame (using instrument provided).



### STEP 5

Ensure the filter pad is fully in place under the lip around the entire baffle filter.



### STEP 6

Insert the baffle filter back into the canopy ensuring the handles are folded over the filter pad.

**Call +44(0)161 443 4125 for assistance**

**HANDLE WITH CARE** - Keep fingers away from drain holes and mesh edges.



## Plasma Clean Xtract 2100

The Plasma Clean Xtract uses ozone - a well known disinfectant and odour neutralizer - which is released directly into the kitchen ventilation canopy. Here it immediately starts to act on the cooking odours produced.

Simple to install, with low maintenance and running costs, this versatile modular solution provides affordable and reliable odour control in one unit, making it the perfect partner for a wide range of cooking applications.

The compact and lightweight units have been designed for modern kitchens, where space is at a premium, and are an ideal solution for fast food bars, pubs and restaurants.

### Plasma Clean Xtract versus conventional odour control solutions:

- Low capital and running costs
- Simple installation and maintenance
- No consumable chemicals
- Compact and lightweight
- Quiet operation
- Environmentally friendly
- Tested to EN13725:2003

### Product Specification | Xtract 2100

|                   |                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------|
| Volume Flow rate  | Up to 1.5 m <sup>3</sup> /s per unit                                                           |
| Power consumption | 160 W                                                                                          |
| Power supply      | 230V/ 1 ph / 50Hz                                                                              |
| Size HxDxL        | 307x185x343 mm                                                                                 |
| Weight            | 12kg                                                                                           |
| Safety            | Circuit breaker 5A required<br>Air flow proving switch installed<br>Fan power supply interlock |
| Operation         | Fully automatic                                                                                |



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 Plasma Clean Xtract injects ozone into the kitchen extraction canopy where it reacts with odour, grease and smoke. These 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.

### Compact and Lightweight

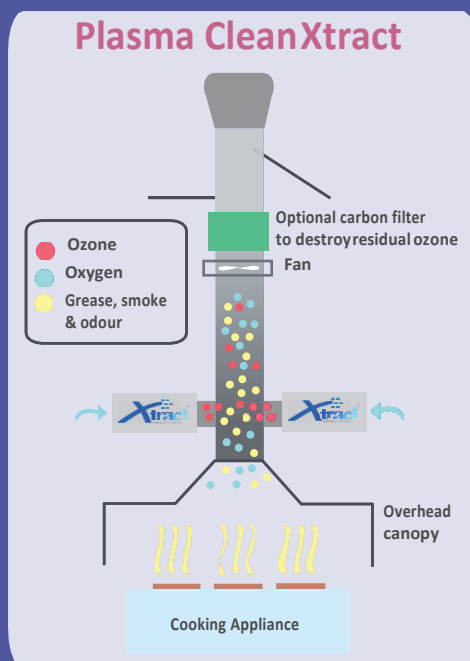
The unit has been designed to be compact (343mm(L)X185mm(D)X307mm(H)) and lightweight (12kg) so that it can be installed in kitchen areas where space is at a premium and / or where there is little load bearing capacity.

### Installation

The unit has been designed to attach to the wall adjacent to the kitchen canopy. The outlet is then connected into the kitchen canopy and the unit is plugged in or hardwired into mains electricity (230V / single phase / 50Hz) via a main fan control box. Full installation and operating instructions are provided.

### Silent Operation

The unit sits outside of the kitchen extraction canopy and ozone is drawn into the kitchen canopy by the existing fans. There is no need to upgrade the existing fan and the unit operates silently.



### Servicing

Plasma Clean recommends a yearly service to ensure efficient operation, and can offer a planned maintenance contract.

### Additional Options

A fan can be fitted in the unlikely event that the kitchen extraction fan can not draw air through the unit. A site survey option is available, as is a planned maintenance contract.

Plasma Clean is continuously improving its products and services and reserves the right to alter designs without prior notice.