

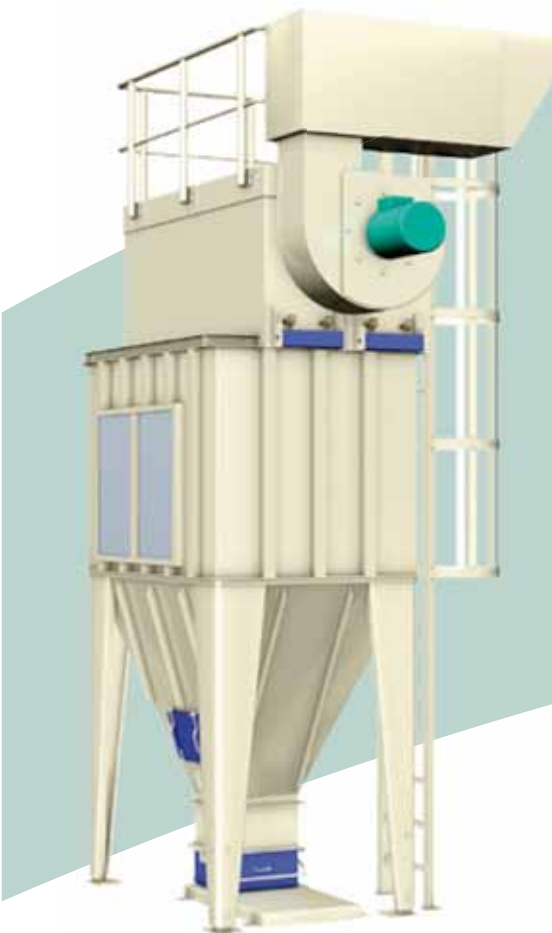


# MJC Cartridge Filter

# MJC

## Features

### 48m<sup>2</sup> to 739m<sup>2</sup> Filter Area



- High level down-flow dirty air inlet.
- Strength independently tested and verified.
- Built-in pre-separation chamber enables bigger dust loads; reduces cartridge wear.
- Suitable for explosive dusts St1, St2 and St3 with ATEX certified components.
- Vertical tubular cartridges shed dust easily.
- No-tool cartridge replacement in safe working location.
- Dantherm's patent Unclean cartridges clean from top to bottom with maximum efficiency saving energy costs and offer longer life.
- Top (clean air) cartridge replacement.
- Ledge free dirty air chamber.
- Crossflow / downflow dirty air distribution allows more effective cleaning on-line.

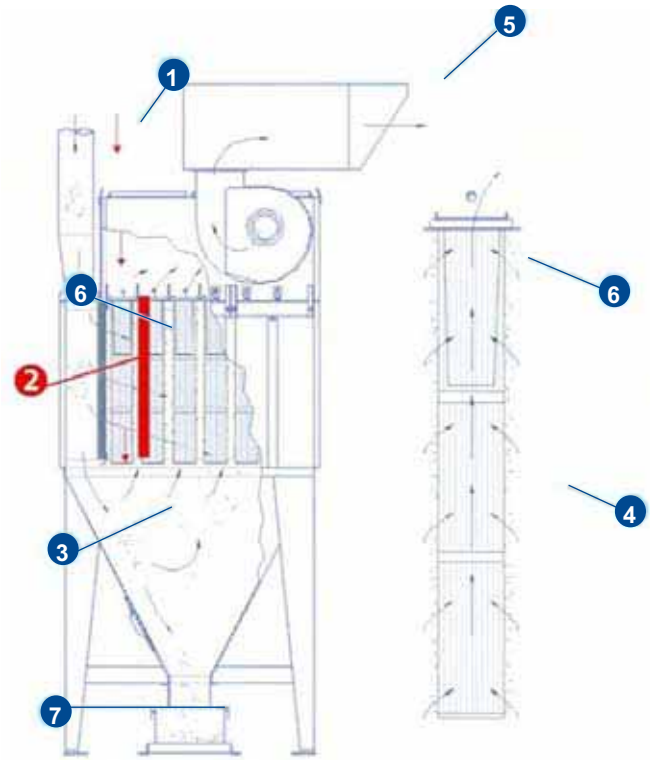
- Integral fans up to 18.5Kw save floor space, or separate fan if desired.
- Robust, weatherproof, long lasting welded steel construction for tough industrial environments.
- Optional air inlet, outlet and explosion panel positions to suit site location.
- Negative operating pressures up to 800mm standard. Higher pressures plus positive pressure optional.
- Benefits from over 15 years development and use in hundreds of installations.



## How it works

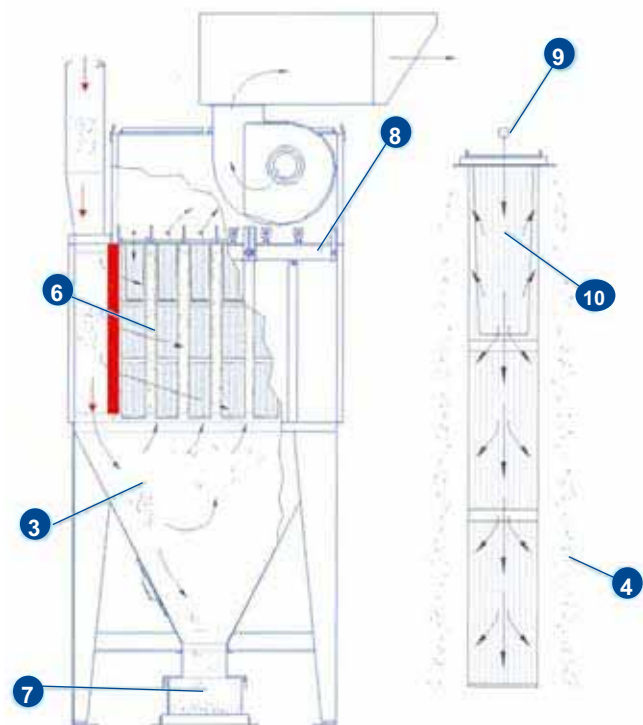
### ....during normal operation

1. During normal operation, the dust laden air from the plant travels down the supply duct. **1**
2. A vertical slotted baffle **2** separates the inlet section that slows the airstream and directs dust downward into the hopper, protecting the cartridges from direct abrasion but allowing air to pass horizontally between the cartridges.
3. The lighter dust collects on the outside of the filter cartridges **4** as clean air passes through to the inside of the cartridges.  
Finally, the clean air travels through the air outlet **5** where it may be returned to the plant or exhausted outdoors. **6**
4. The heavier dust settles in the hopper section **3** from where it can be discharged into a metal bin **7** or through a rotary valve.



### ....while cleaning

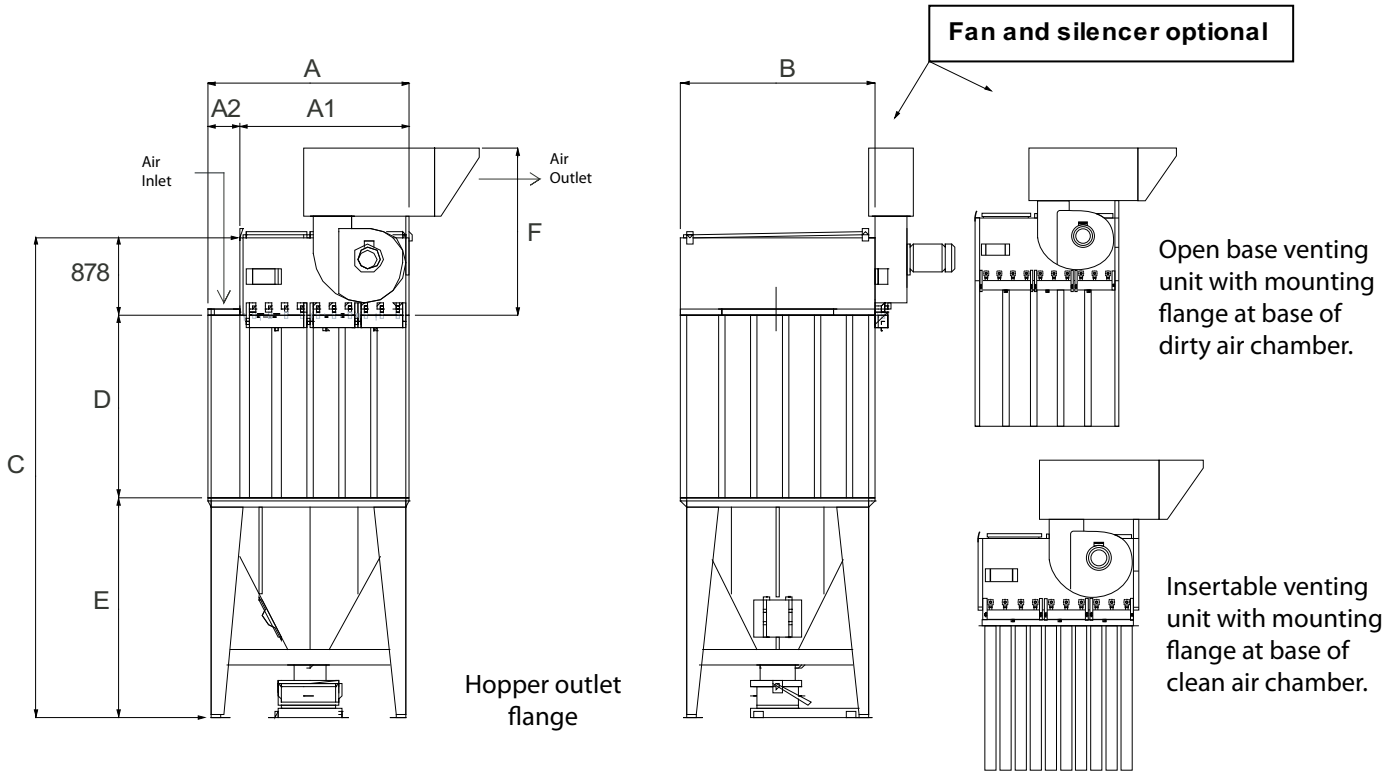
1. The MJC can utilise a differential pressure gauge to control the compressed air cleaning. In essence, the filter cleans itself when it needs to!
2. A compressed air line must be connected to one end of the compressed air manifold. **8**
3. A solenoid valve opens to allow compressed air from the manifold into **8** into the jet tubes. **9**  
The jet tubes are aligned above each row of the filter cartridges. **6**
4. The downward blast **10** blows the dust off the cartridge (from the inside out) **4** where it passes through into the hopper section **3** to be collected in the metal bin **7** or discharged through a rotary valve.



# MJC

## Planning-in

### MJC Type 40 (4.0 m<sup>2</sup> cartridge)



Front and side view of standard MJC complete with typical fan and silencer, mounted on a bin hopper. Rotary valve, flap valve and other discharge options available.

Fan size [kW]	Fan + silencer [kg]	Dimension F [mm]
up to 3,0	67	1396
4,0 to 7,5-5	108	1685
7,5-L to 18,5	188	1850

MJC Unit	A1 Clean air chamber (CAC) width	A2 Add for side pre-separation chamber	A Dirty air Chamber (DAC) hopper width	B Depth of clean and dirty air chamber and hopper	C CAC plus DAC plus hopper height	D Dirty air chamber height	E Hopper height 75 litre bin	Typical weights using normal construction kg		Bins number of bins
								Filter Unit	Hopper	
Type 40 cartridges, each 4.0 m <sup>2</sup> area First number = filter area m <sup>2</sup>										

Note: - Three units below have built-in pre-separation chamber at rear

48/40/43	1150	N/A	1150	1220	3395	1050	1467	385	354	1
64/40/44	1500	N/A	1500	1570	3755	1050	1867	622	490	1
80/40/54	1850	N/A	1850	1570	3935	1050	2007	723	558	1

Note: - Seven units below have built-in pre-separation chamber at side, left or right

96/40/38	1150	350	1500	2095	4195	1050	2267	770	716	1
128/40/48	1500	700	2200	2095	4195	1050	2437	834	852	1
160/40/58	1850	700	2550	2095	4195	1050	2267	985	957	2
192/40/68	1850	700	2550	2095	4195	1050	2267	1017	957	2
224/40/78	2200	700	2900	2095	4195	1050	2267	1155	1025	2
256/40/88	2550	700	3250	2095	4195	1050	2267	1347	1093	2
288/40/98	2900	700	3600	2095	4195	1050	2267	1512	1161	2

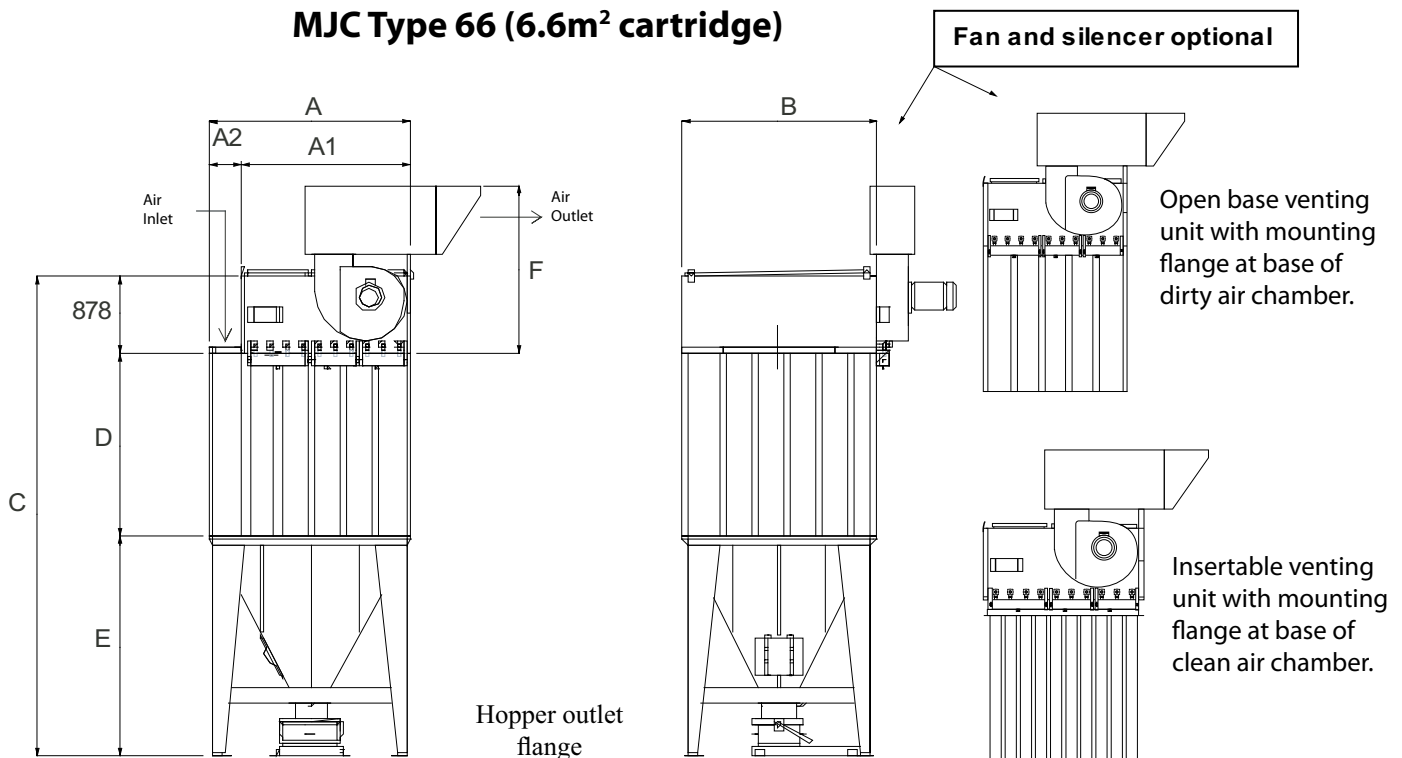
**Key:** example. MJC 128/40/48 has 128m<sup>2</sup> filter area; Type 40 cartridges, each 4.0m<sup>2</sup>; 4 cleaning valves cleaning 8 cartridges per valve.

**Note:** Side removal of cartridges from the dirty air side is not an available option with Type 40 cartridges. However, a hatch may be specified in the side of the clean air chamber to enable Type 40 cartridges to be removed and replaced within the clean air chamber.

# MJC

## Planning-In Data

### MJC Type 66 (6.6m<sup>2</sup> cartridge)



Front and side view of standard MJC complete with typical fan and silencer, mounted on a bin hopper. Rotary valve, flap valve and other discharge options available.

Fan size [kW]	Fan + silencer [kg]	Dimension F [mm]
up to 3,0	67	1396
4,0 to 7,5-S	108	1685
7,5-L to 18,5	188	1850

MJC Unit	A1 Clean air chamber (CDC) width	A2 Add for side pre-separation chamber	A Dirty air Chamber (DAC) hopper width	B Depth of clean and dirty air chamber and hopper	C CAC plus DAC plus hopper height	D Dirty air chamber height	E Hopper height 75 litre bin	Typical weights using normal construction kg		Bins number of bins
								Filter Unit	Hopper	
Type 66 cartridges, each 6.6 m <sup>2</sup> area First number = filter area m <sup>2</sup>										

Note: - Four units below have built-in pre-separation chamber at rear

60/66/33	1150	0	1150	1220	3765	1420	1467	441	354	1
79/66/43	1150	0	1150	1220	3765	1420	1467	458	354	1
105/66/44	1500	0	1500	1570	4125	1420	1827	721	490	1
132/66/54	1850	0	1850	1570	4305	1420	2007	837	558	1

Note: - Seven units below have built-in pre-separation chamber at side, left or right

158/66/38	1150	350	1150	2095	4565	1420	2267	852	716	1
211/66/48	1500	700	2200	2095	4735	1420	2437	936	852	1
264/66/58	1850	700	2550	2095	4565	1420	2267	1102	957	2
316/66/68	1850	700	2550	2095	4565	1420	2267	1142	957	2
369/66/78	2200	700	2900	2095	4735	1420	2437	1299	1025	2
422/66/88	2550	700	3250	2095	4565	1420	2267	1500	1093	2
475/66/98	2900	700	3600	2095	4565	1420	2267	1679	1161	2

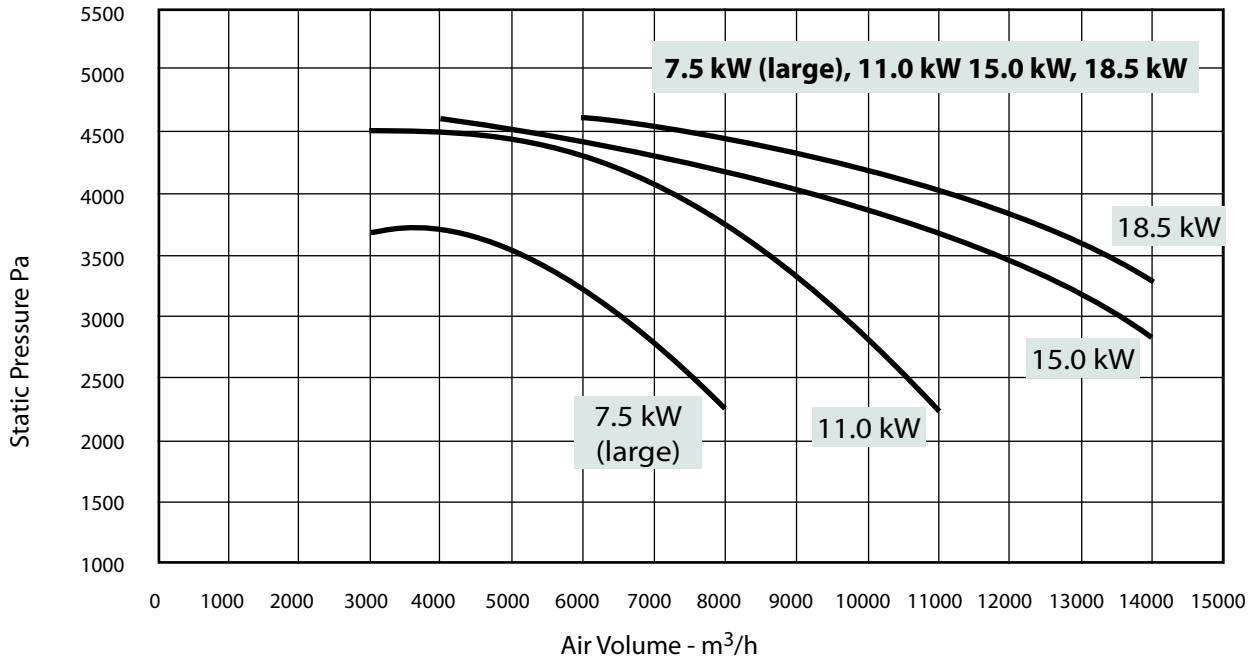
Note: - Five units below have built-in pre-separation chamber in the centre

528/66/10-8	3550	950	4300	2095	4565	1420	2267	2001	1297	2
580/66/11-8	3700	950	4650	2095	4565	1420	2267	2167	1423	3
634/66/12-8	3700	950	4650	2095	4565	1420	2267	2212	1423	3
686/66/13-8	4050	950	5000	2095	4565	1420	2267	2372	1491	3
739/66/14-8	4000	1300	5700	2095	4735	1420	2437	2532	1560	3

# MJC

## Fan Performance

Fan performance, with open outlet, at running speed 2900/min.  
Detachable fans used on MJB and MJC.



## Specification

### Construction

Welded painted steel; clean air chamber 2.0mm thick steel;  
dirty air chamber 2.0mm or 3.0mm; hopper typically 2.5mm thick.

### Strength

Maximum negative and positive operating pressures; Standard - minus 8000Pa to plus 2000Pa;  
Optional - minus 15000Pa to plus 5000Pa For explosion relief area calculation St1, St2, St3;  
Reduced explosion pressure Pred = 0.2 bar.

### Operating temperature

Standard unit -10 to +80°C . No high temperature option.

### Compressed air requirement

Normal operating pressure for cleaning air 5.0 - 5.5 barg dry and oil free.  
Typical compressed air consumption for 2 minute continuous cleaning cycle  
(for units with up to 12 valves); or 10 second interval between pulses (for units  
with more than 12 valves). Based upon 75 liters at NTP per pulse.

No. of valves	3	4	5	6	7	8	9	10	11	12	>12
m³/h	6.75	9	11.25	13.5	15.75	18	20.25	22.5	24.75	27	27

**Note:** - use of "clean-on-demand" or increased cleaning cycle time will reduce typical compressed air consumption.

### Electrical requirement

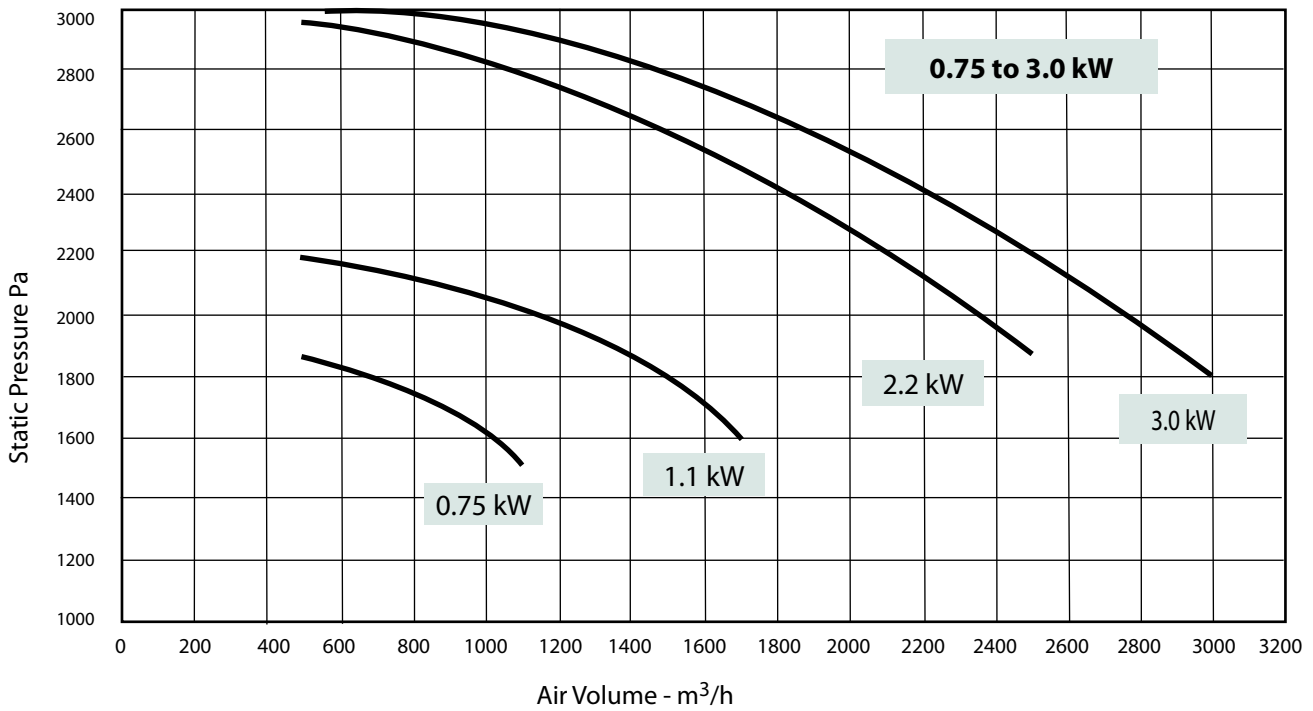
Controller: - 240/220/110v AC input (24v DC to special order only)  
Fan: - 230/ 460v 3ph 60Hz (USA) (other voltages available by request)

# MJC

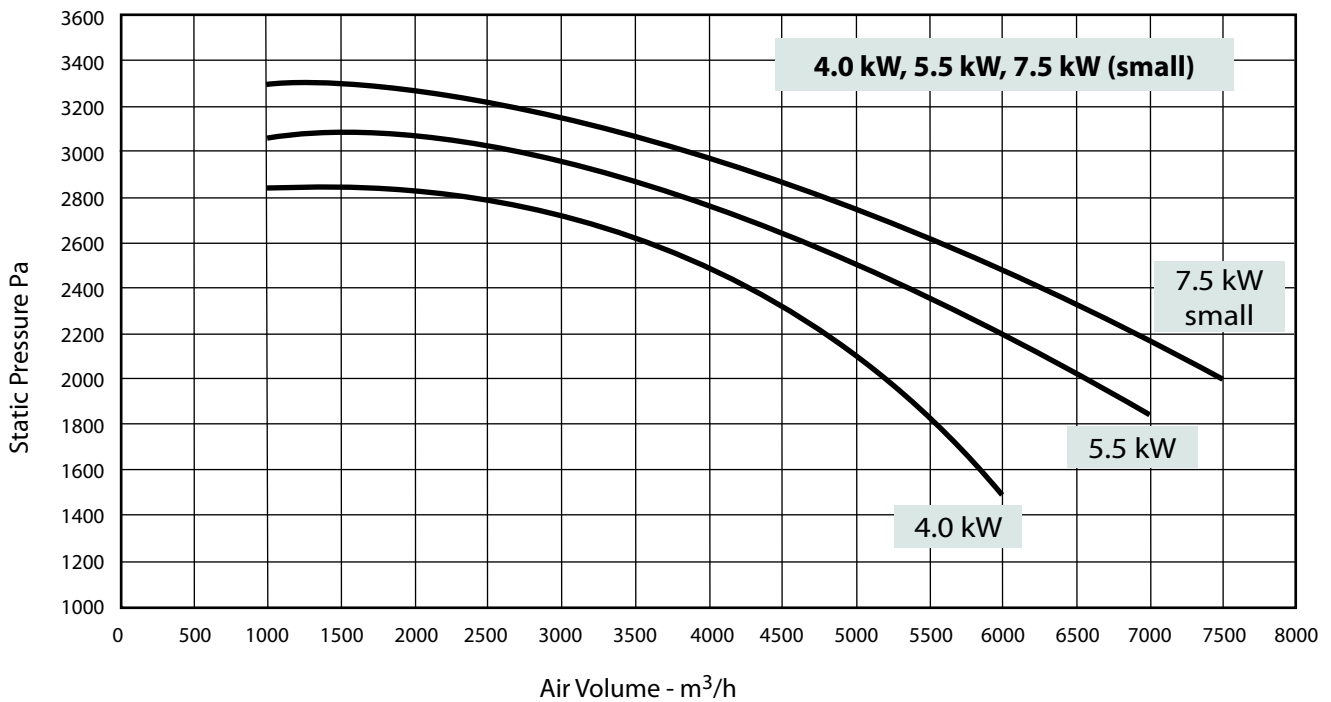
## Fan Performance

### Performance of standard integral fans from 0.75 kW to 18.5 kW

Fan performance, with open outlet, at running speed 2900/min.  
Detachable fan used on MJB and MJC.



Fan performance, with open outlet, at running speed 2900/min.  
Detachable fans used on MJB and MJC.



# MJC

## Handling potentially explosive dusts

MJB and MJC filter units comply with European ATEX Directive for materials with explosibility ratings of St1, St2 and St3 up to the value  $KSt = 500 \text{ bar} \cdot \text{m/sec}$



Filter units used for handling potentially explosive dusts must be fitted with protective devices to safely limit the effects of a dust explosion. The most common and least expensive is an explosion relief panel, which is classified under directive 94/9/EC (ATEX) as a Cat.2D protective system. It must ventilate to a safe area.

The Dantherm MJB bag filter and MJC cartridge filter typically make use of laminated, weather protected bursting panels, fully ATEX certified, cat.2D Ex, cert.no. INERIS 03 ATEX 0002 X.

In order to safely fit explosion panels of the correct size, the strength of the filter enclosure must be verified. The construction of the MJB and MJC has been independently tested at UK Health and Safety Laboratory under real explosive conditions to establish a proven value of reduced explosion pressure (Pred) of 0.2 bar for calculation of explosion vent area.

Compliance with ATEX Directive 94/9/EC is a legal requirement for manufacturers and suppliers.

Compliance with ATEX Directive 1999/92/EC is a legal requirement for owners and operators.



# MJC

## Integral Fans

MJC units may be fitted with space saving integral high efficiency radial fans. Single fans can deliver up to 14000m<sup>3</sup>/h but some larger units may be fitted with two fans. A floor mounted version of the same fan range is also available as an option.

Larger installations may be served by separately mounted Dantherm Comifab fans when appropriate. Combifab is a range of high efficiency low noise fans with three impeller types to suit clean air, dusty air or for waste transport duties.

For clean air extraction from an MJC filter unit, the Combifab Type R, with backward curved blades is the most suitable. Combifab fans may be directly or belt driven. with drive arrangements to suit the site and impeller speed. Variable speed inverter drives may be specified.

- Airflow volumes up to 70,000m<sup>3</sup>/h
- High efficiency up to 87%

A floor mounted Comifab fan will be a practical, cost effective solution if more than one integral fan would otherwise be required to meet the airflow volume demand.



## Cartridge Material

**At the heart of every MJC cartridge filter is the UniClean Patent pleated cartridge element.**

The overall dimensions, including pleat depth and spacing were designed uniquely for the MJC range and its smaller sisters MJCMini and SiloSafe. More than ten years' experience in many applications and the more recent introduction of the UniClean feature ensure maximum performance and long life.

The MJC range uses a **Type 40** with 4.0m<sup>2</sup> or a **Type 66** with 6.6m<sup>2</sup> per element.

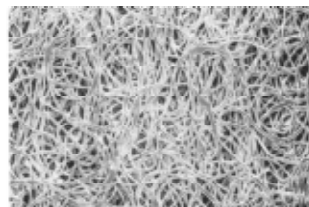
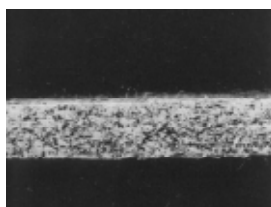
### Filter materials are:

- CA100** high quality thermal bonded polyester pleated fabric as standard.
- CA140** as CA100 but with metallised antistatic treatment.
- CA190** as CA100 but with ptfе dust release treatment.
- CA175** is 80% cellulose, 20% polyester material available to special Order.

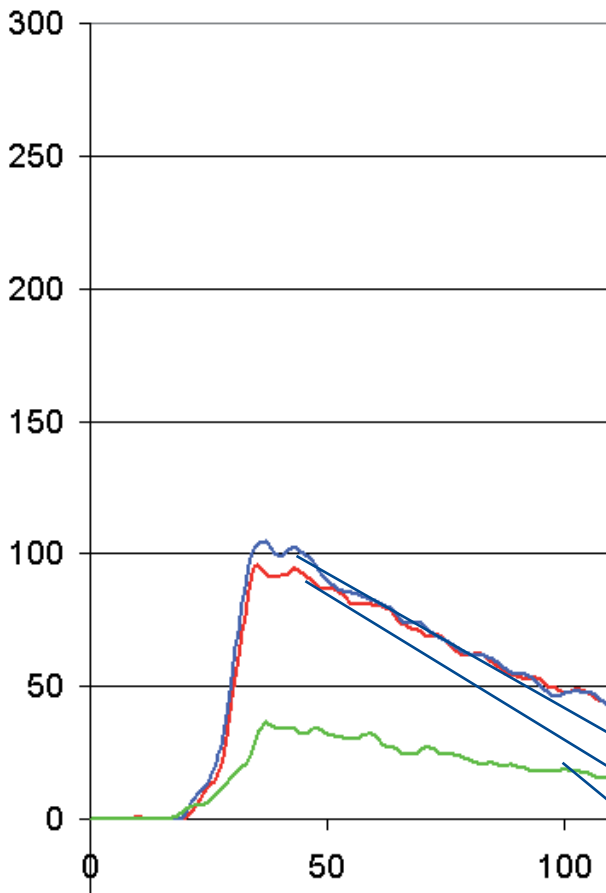
### Surface filtration

The filter media is typically around 1.7mm thick but contains many layers of random fibres. Filtration occurs at or very near the surface of the materials and its efficiency (BIA class U, S, G, and C) may be further enhanced by a surface layer of dust. For light dust loads, or very fine dust, it may be beneficial to pre-coat the filter by introducing used dust, or a special pre-coat material. Please ask for information.

Cross section CA100



Surface magnified x 200

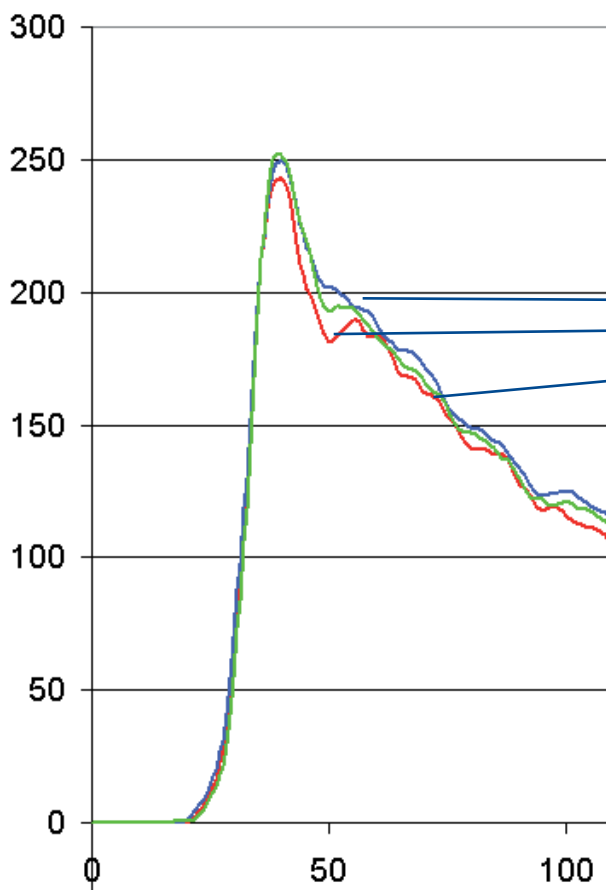


The graphs illustrate benefits achieved by this patented invention:

- Higher internal cleaning pressure reduces cleaning requirement and thus compressed air consumption, increasing cartridge life.
- Uniform cleaning of complete cartridge increases effective filter area and reduces differential pressure, saving fan power and energy costs.
- Lower compressed air pressure requirement; increased cartridge life

Typical comparative pulse cleaning pressure at top, middle and bottom of typical tubular pleated filter cartridge, without UniClean feature.

- Bottom of cartridge: good cleaning pressure
- Middle of cartridge: similar to bottom
- Top of cartridge: weak cleaning pressure



Comparative pulse cleaning pressure at top, middle and bottom of same type of tubular pleated filter cartridge, incorporating the patent UniClean feature. Not only was the cleaning uniform across the entire cartridge, but the peak pressure inside the cartridge was 20% higher.

- Bottom of cartridge: good cleaning pressure
- Middle of cartridge: similar to bottom
- Top of cartridge: similar to bottom

The Dantherm UniClean cartridge was the result of an exhaustive design project with the purpose of increasing the effective cleaning pressure within the cartridge and equalising its effect over the complete length of the cartridge. The UniClean device is a simple but very effective component integrated into the construction of the cartridge element.

# MJC Applications



## Dust control applications include:

- Shot/bead/sand blasting: machines and booths
- Bulk handling: dry granules, pellets and powders
- Powder coating: for surface finishing processes
- Weighing: bagging and out-loading
- Processes: in chemical and pharmaceutical industries
- Dust control: for wide range of processes in agriculture
- Building products, ceramics, metal products, plastics, quarried minerals, tobacco and many more



## World wide sales companies



## The world leader in air pollution control

Dantherm Filtration focuses on individual solutions for individual customer needs. We benefit from the experience and expertise of more than 30,000 air cleaning systems. And we deliver unbeatable reliability, low energy consumption, and compliance

with all mandatory requirements for a wide range of applications in many different industries all over the world.

Dantherm Filtration is part of the Dantherm Group - a leader in industrial air management, offering

industrial cooling, heating, dehumidification, ventilation, air filtration and mobile air management. The group has 2,400 employees and operates globally with production and sales companies in Europe, the US, and Asia.



### Dantherm Filtration A/S

Industrivej 13, Assens  
DK-9550 Mariager  
Tlf: +45 99 68 09 00  
Fax: +45 99 68 09 01