

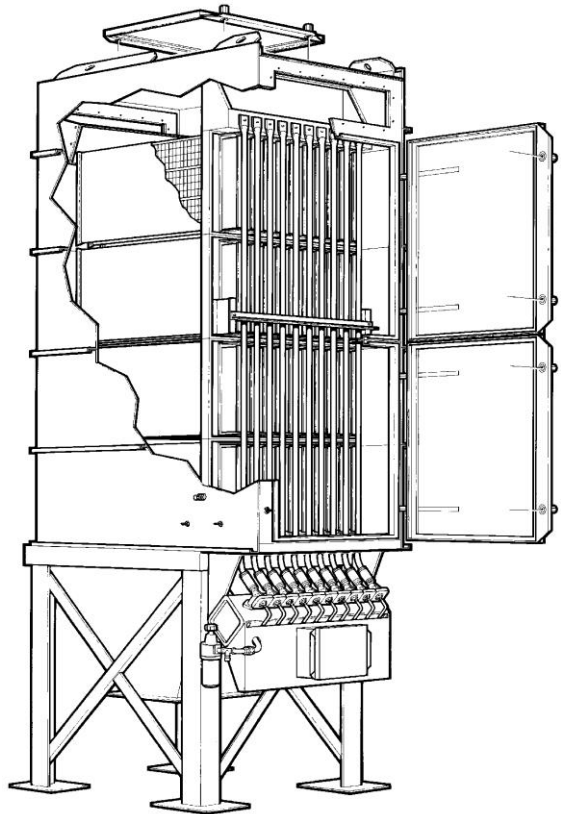
# Dalamatic® Dust Collectors

## Dalamatic Cased Product Overview

The Dalamatic Cased is an automatic, reverse-jet cleaned dust filter, designed to handle large quantities of dust-laden air, and is capable of continuous operation over extended periods. The reverse jet cleaning system, which functions during the normal course of operation, not only serves to maintain optimum filtering efficiency at all times, but enables the filter to operate at a constant rating – in that it maintains a uniform pressure drop across the filter.

The basis of the Dalamatic is a module comprising a group of filter elements mounted in a sealed frame (bagplate). The elements are slotted side by side into the frame and the individual sealing arrangement effectively separates the dirty (inlet) side of the filter from the clean (outlet) side.

The Dalamatic Cased filter range is based on modules each containing ten filter elements, each filter element having an effective filtration area of 1.0 m<sup>2</sup> (series DLM 10) or 1.5 m<sup>2</sup> (series DLM 15). The number of modules and the effective filtration area are indicated in the model number, i.e. a DLM 2/4/15 contains two banks of four tiered modules and consequently eighty filter elements having a total effective filtration area of 120 m<sup>2</sup>.



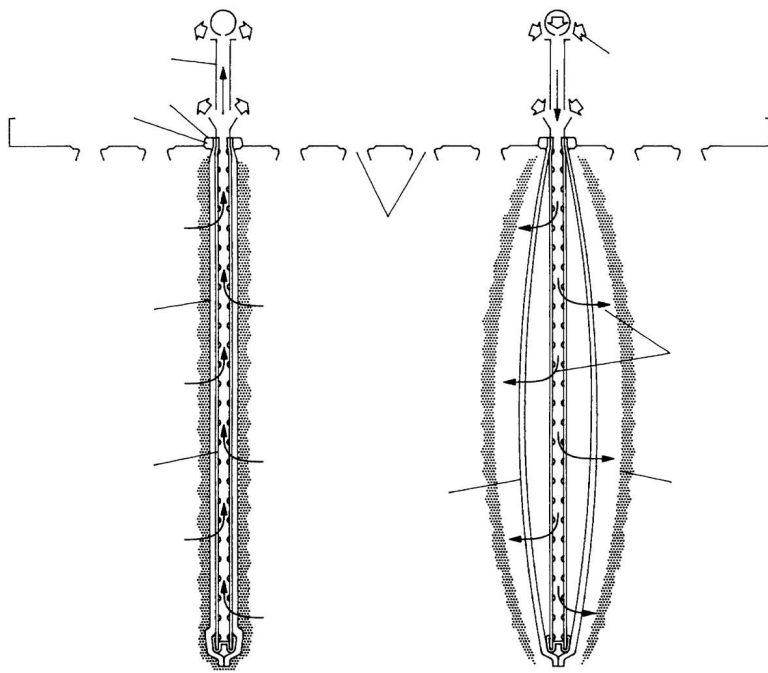
The filter assembly is contained in steel housing, with provision made for inlet and outlet ducts, and the whole is mounted on a steel framework, allowing adequate space below the hopper for the discharge of dust. Larger filters are assembled on site for suitable combination of sizes.

The Dalamatic can be supplied, if required, suitably equipped for installation in hazardous areas where there is risk of fire or explosion.

## Operation Explanation

**Normal Operation:** Dust-laden air is ducted into the dirty air plenum containing the filter elements, where it collects on the outer surfaces. A layer of dust builds up on the outside of the elements as the air itself penetrates the fabric. The clean air emerges from the outlet header of each filter element into the clean air chamber and from there is discharged, normally via the fan, into the atmosphere.

**Filter Cleaning:** At regular intervals, governed by the controller, each element in turn receives a short burst of compressed air from its respective jet tube. The jet tube has a series of small-diameter jet orifices positioned adjacent to the outlet header of each filter element. These orifices are of an optimum size and distance from the filter element, ensuring that a large volume of ambient air is induced by each injection of compressed air. This causes a brief,



powerful reversal of airflow through the filter element, flexing the fabric outwards and effectively dislodging the dust layer which then falls into the discharge hopper.

In this way, the pressure drop across the entire collector is kept at a virtually constant level, enabling the Dalamatric to operate continuously, twenty-four hours a day.

## Application Summary

The Dalamatric Cased collector is designed to handle a broad range of dust and airflow's while delivering reliable efficiency and extended filter life. It is suitable for both nuisance dust control and process dust control. The Dalamatric cased filter with envelope shaped filter bags is an alternative to the round bag pulse jet filter and has significant advantages in applications involving light density dust, free flowing non-agglomerating dust, fibrous dust, explosive dust, and installations where low headroom and floor space is a concern.

The Dalamatric collector is particularly suited to **explosive dust** because the collector has a proven explosion venting system verified during full-scale independently conducted explosion tests. The static grounding system meets or exceeds the recognized standards. The ability to install sprinkler heads over the top of the dirty filters with a sprinkler head in each bank ensures the filter will be thoroughly wetted should an explosion or fire occur.

The availability of **oleophobic** (fluorocarbon treated) felts and the exaggerated movement of the flat portion of the filter bag during pulsing make the Dalamatric particularly well suited to **hygroscopic dusts** that tend to form hard dense dust cakes after drying. The oleophobic treatment resists moisture penetrating the fibers and the exaggerated movement is very effective at shattering the hard dust cake.

The Dalamatric is the collector of choice for **fine fibrous dust** because of the downward movement of air between the bags and the availability of an 8-slot seal frame for extra wide spacing between the bags. Consult applications engineering for details on the wide spacing. Note, wide space collectors have only 80% of the media in a standard collector.

## Sizing and Selecting Criteria

The downward flow of air over the filter bags eliminates the can velocity concerns of upflow round bag collectors. Thus, the sizing criteria are airflow and filtration velocity from the published Air-To-Media Ratio Guides. To determine the size of collector needed, calculate the filter area required with the formula: Required filter area =  $m^3/hr \div$  air-to-media ratio. From the data sheets, you will note that many different models of the Cased Dalamatic collector can be selected to provide the required filtration area. Typically, the taller collectors are the most economical selection. However, headroom restrictions may dictate the selection of a shorter unit. Also, units handling very light density dust and fibrous dust should restrict the selection to the shorter units. Collectors applied on fibrous dusts such as paper dust, felt from rotary drum filters, and dust with similar characteristics should also use the shorter units, typically 4 tier or lower. Wide bag spacing is also encouraged for these fine fibrous dusts.

Because the Dalamatic is used on applications with various dust burdens, many dust discharge options are available such as dust bins, trough and pyramid hoppers. Selecting the proper dust discharge arrangement is part of the process. Ensure the dust discharge is large enough to handle the burden and remember that dust from a collector tends not to be a uniform discharge so oversize the discharge accordingly, usually at least 200% of the steady state rate.

## Features and Benefits

Features	Benefits
<b>Envelope shaped filters</b>	<ul style="list-style-type: none"> <li>• Maximum filter area in given size enclosure</li> <li>• Maximum flexing of media handles difficult dust</li> </ul>
<b>Vertical bagplate</b>	<ul style="list-style-type: none"> <li>• Less chance of corrosion because condensed moisture and acids can not pool on the sheet</li> </ul>
<b>Horizontally installed filter elements</b>	<ul style="list-style-type: none"> <li>• Clean side filter removal with minimum headroom</li> <li>• Allows top inlet and downward flow of air</li> <li>• Allows sprinklers to be installed above the filter bags for maximum wetting</li> </ul>
<b>Downward air pattern</b>	<ul style="list-style-type: none"> <li>• Low operating pressure drop</li> <li>• Higher air flow for given pressure drop</li> <li>• Can handle extreme low density dust, non-agglomerating dust and fibrous dust</li> </ul>
<b>Factory installed filter elements installed by professionals</b>	<ul style="list-style-type: none"> <li>• Ease of installation and low installation cost</li> <li>• Less damage in shipment and none are lost</li> <li>• Less chance of leaks due to improper installation</li> </ul>
<b>Painted using an 8 stage electrophoretic dip system</b>	<ul style="list-style-type: none"> <li>• Resists corrosion and reduces maintenance cost</li> <li>• Meets FDA requirements for dry non storage food contact</li> </ul>
<b>Controls located near bottom of unit</b>	<ul style="list-style-type: none"> <li>• In many installations, serviceable from grade or with stepladder eliminating costly walkways</li> </ul>
<b>Collectors constructed of standard modular components</b>	<ul style="list-style-type: none"> <li>• Quality from standardization</li> <li>• Short delivery times</li> </ul>
<b>Pre-engineered cleaning system for each model of collector</b>	<ul style="list-style-type: none"> <li>• Provides maximum cleaning and lowest pressure drop with minimum compressed air consumption</li> </ul>
<b>Cleaning system using standard printed circuit boards and valves</b>	<ul style="list-style-type: none"> <li>• Reliable components</li> <li>• Readily available components</li> </ul>
<b>Optional safety features</b> <ul style="list-style-type: none"> <li>• Top and rear explosion vents</li> <li>• Static grounding system</li> <li>• Sprinklers</li> <li>• Flameproof controls</li> </ul>	<ul style="list-style-type: none"> <li>• Maximum flexibility in locating collector</li> <li>• Minimizes ignition source for explosions</li> <li>• Minimizes danger from fire or explosion</li> <li>• Can locate collector in hazard rated areas</li> </ul>
<b>Various hopper options</b>	<ul style="list-style-type: none"> <li>• Can tailor collector to requirements of the application resulting in less secondary dust problems, less hopper bridging, and less maintenance time.</li> </ul>

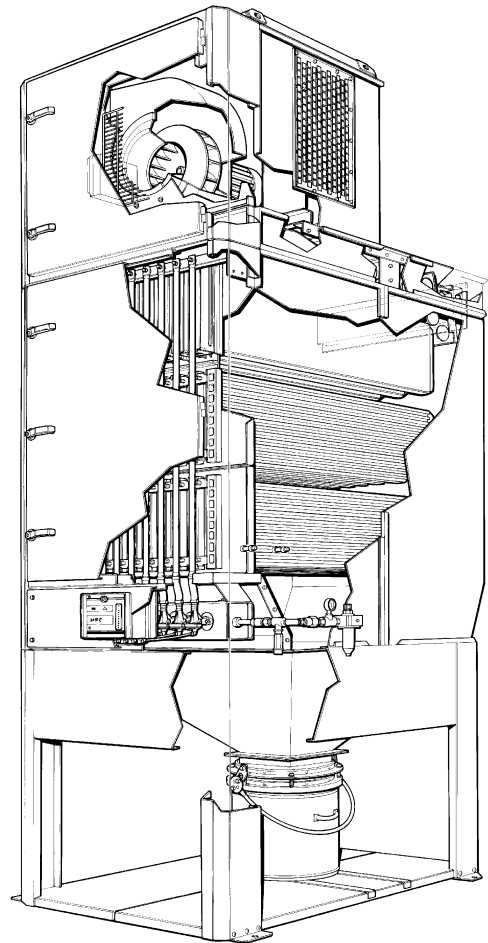
## Dalamatic Unit Product Overview

The Dalamatic Unit (F 2000 series) is a continuously rated filter capable of extended periods of operation by virtue of the reverse air filter cleaning system employed. This system, which functions during the normal course of operation, not only serves to maintain optimum filtering efficiency at all times, but enables the filter to operate at a constant rating in that it maintains a uniform pressure drop.

The basis of the F 2000 is a filter cell comprising a group of filter elements mounted in a seal frame (bagplate). The elements are slotted side by side into the frame and the individual element sealing arrangement effectively separates the dirty (inlet) side of the filter from the clean (outlet) side. Insertion and removal of filter elements is always done from the clean side.

The Dalamatic Unit is a variation of the DLM cased filter complete with its own fan and discharge arrangements.

There are six sizes of Dalamatic Unit. The style of collector and effective filtration area (in square meters) are designated in the model number. For example, a F2045 is a Dalamatic Unit with 45 m<sup>2</sup> (485 ft<sup>2</sup>) of filter area. All models are available with or without fan, and with rotary valve hopper or 'UMA' type dust container.

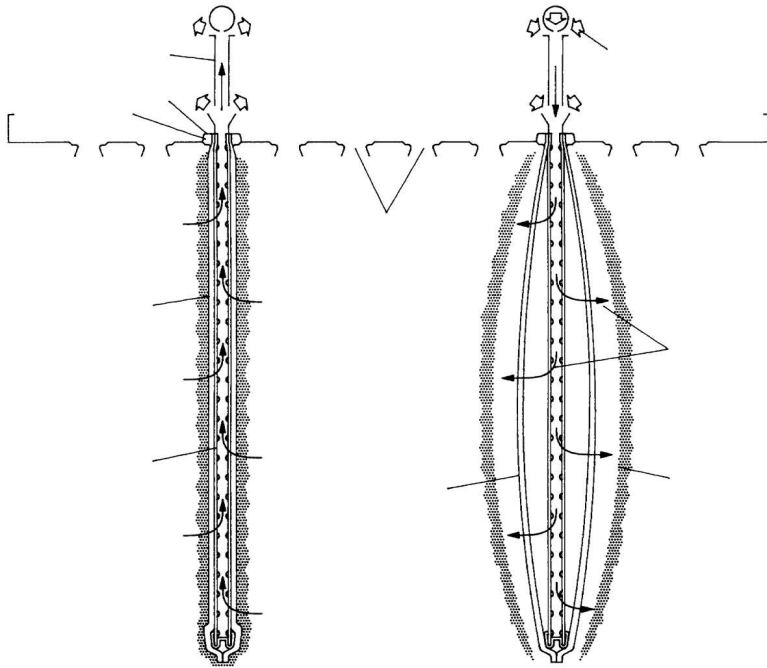


## Operation Explanation

**Normal Operation:** Dust-laden enters the dirty air plenum containing the filter elements and passes through the filter fabric, with the dust being retained on the outside of the fabric.

Clean air emerges from the outlet of each filter element into the clean air chamber and finally passes through the main outlet.

**Filter Cleaning:** At regular intervals, governed by the controller, each element in turn receives a short burst of compressed air from its respective jet tube (blow pipe). The jet tube has a series of small-diameter jet orifices positioned adjacent to the outlet header of each filter element. These orifices are of an optimum size and distance from the filter element, ensuring that a large volume of ambient air is induced by each injection of compressed air. This causes a brief, powerful reversal of airflow through the filter element, flexing the fabric outwards and effectively dislodging the dust layer which then falls into the discharge hopper. This double action effectively dislodges the bulk of the dust, which falls down into the discharge hopper. Continuous dust removal from the hopper may be obtained by means of a rotary valve.



In this way, the pressure drop across the entire collector is kept at a virtually constant level, enabling the Dalmatic Unit to operate continuously, twenty-four hours a day.

## Application Summary

The Dalmatic F 2000 is a unit collector version of the Dalmatic Cased collector meaning the Unit is available with integral fan, silencer and dust bins. The F 2000 is typically applied to nuisance dust applications and process applications involving airflow's below 6,800 m<sup>3</sup>/hr. The process applications are restricted to temperatures below 60°C because of the integral fan and silencer. The F

2000 is suitable for a wide range of dust burdens from light to heavy but is particularly well suited for applications where a unit collector is desired but the dust burdens are heavy. These include sand handling systems and carbon black systems. The F 2000 is well suited to the food industry because the flat interior panels have no ledges, the paint system meets the FDA requirements for dry non storage food contact, and the unit can be fitted with explosion vents, a necessity on most food applications.

When the Dalmatic F 2000 is applied to light dust burdens involving free flowing dust such as graphite and silica or applications with widely varying dust burdens, consider fitting the RJC + Controller. It reduces overpulsing which can lead to the classic puffing out the stack after each pulse. It also reduces compressed air consumption, reducing bag wear and increasing efficiency.

## Sizing and Selecting Criteria

Dalmatic F 2000 collectors are selected based on air to media ratios and on fan requirements. First determine the airflow and static requirements. Select a fan based on this information and the procedures and performance curves in the F 2000 data sheets. Calculate the required fabric area and select a collector that meets the fabric area requirement and can be fitted with the required fan. Required filter area = m<sup>3</sup>/hr ÷ air-to-media ratio.

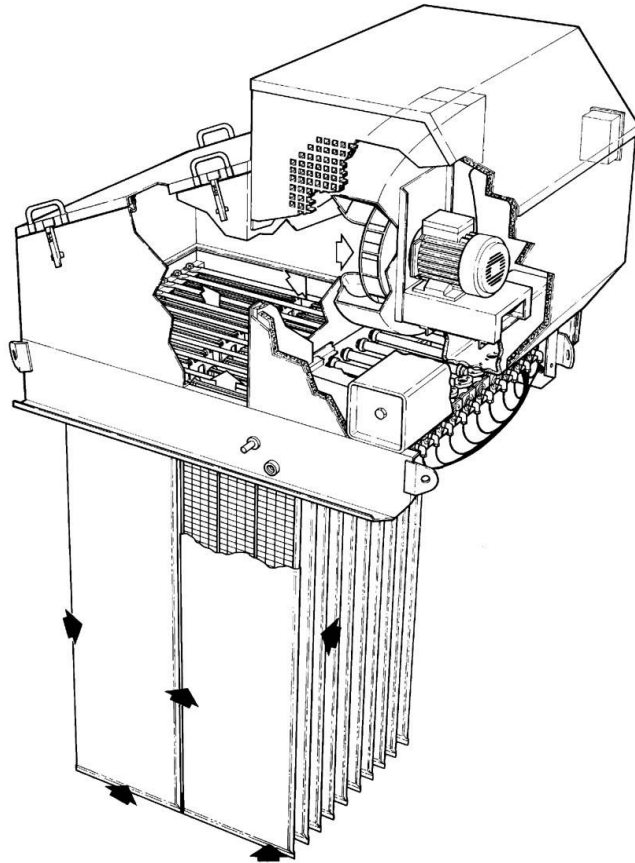
## Features and Benefits

Features	Benefits
<b>Integral fan and silencers</b>	<ul style="list-style-type: none"> <li>• Low cost packaged unit</li> <li>• Less floor space</li> <li>• Quiet operation</li> </ul>
<b>Envelope shaped filters</b>	<ul style="list-style-type: none"> <li>• Maximum filter area in given size enclosure</li> <li>• Maximum flexing of media handles difficult dust</li> </ul>
<b>Vertical bagplate</b>	<ul style="list-style-type: none"> <li>• Less chance of corrosion because condensed moisture and acids can not pool on the sheet</li> </ul>
<b>Horizontally installed filter elements</b>	<ul style="list-style-type: none"> <li>• Clean side filter removal with minimum headroom</li> <li>• Allows top inlet and downward flow of air</li> <li>• Allows sprinkler to be installed above the filter bags for maximum wetting</li> </ul>
<b>Downward airflow pattern</b>	<ul style="list-style-type: none"> <li>• Low operating pressure drop</li> <li>• Higher air flow for given pressure drop</li> <li>• Can handle extreme low density dust, non-agglomerating dust and fibrous dust</li> </ul>
<b>Factory installed filter elements installed by professionals</b>	<ul style="list-style-type: none"> <li>• Ease of installation and low installation cost</li> <li>• Less damage in shipment and none are lost</li> <li>• Less chance of leaks due to improper installation</li> </ul>
<b>Painted using an 8 stage electrophoretic dip system</b>	<ul style="list-style-type: none"> <li>• Resists corrosion and reduces maintenance cost</li> <li>• Meets FDA requirements for dry non storage food contact</li> </ul>
<b>Controls located near bottom of unit</b>	<ul style="list-style-type: none"> <li>• In many installations, serviceable from grade or with stepladder eliminating costly walkways</li> </ul>
<b>Collectors constructed of standard modular components</b>	<ul style="list-style-type: none"> <li>• Quality from standardization</li> <li>• Short delivery times</li> </ul>
<b>Pre-engineered cleaning system for each model of collector</b>	<ul style="list-style-type: none"> <li>• Provides maximum cleaning and lowest pressure drop with minimum compressed air consumption</li> </ul>
<b>Cleaning system using standard printed circuit boards and valves</b>	<ul style="list-style-type: none"> <li>• Reliable components</li> <li>• Readily available components</li> </ul>
<b>Various dust discharger options</b> <ul style="list-style-type: none"> <li>• Dust bins</li> <li>• Barrel top adaptors</li> <li>• Rotary valve</li> </ul>	<ul style="list-style-type: none"> <li>• Can tailor collector to requirements of the application resulting in less secondary dust problems, less hopper bridging and less maintenance time.</li> </ul>
<b>Optional Safety features</b> <ul style="list-style-type: none"> <li>• Top and rear explosion vents</li> <li>• Static grounding system</li> <li>• Sprinklers</li> <li>• Flameproof controls</li> </ul>	<ul style="list-style-type: none"> <li>• Maximum flexibility in locating collector</li> <li>• Minimizes ignition source for explosions</li> <li>• Minimizes danger from fire or explosion</li> <li>• Can locate collector in hazard rated areas</li> </ul>

## Dalamatic Insertable Product Overview

The Dalamatic Insertable is an automatic, reverse-jet cleaned, type of dust filter, designed to handle known quantities of dust-laden air, and is capable of continuous operation over extended periods by virtue of the reverse air filter cleaning system employed. This system, which functions during the normal course of operation, not only serves to maintain optimum filtering efficiency at all times, but enables the filter to operate at a constant rating in that it maintains a uniform pressure drop across the filter.

The basis of the Dalamatic is a module comprising a group of filter elements mounted in a sealed frame (bagplate). The elements are fitted side by side and the individual sealing arrangement effectively separates the dirty (inlet) side of the filter from the clean (outlet) side. Removal of the filter elements is always carried out from the clean side of the filter. The Dalamatic can be supplied, if required, suitably equipped for installation in hazardous areas where there is risk of fire or explosion.



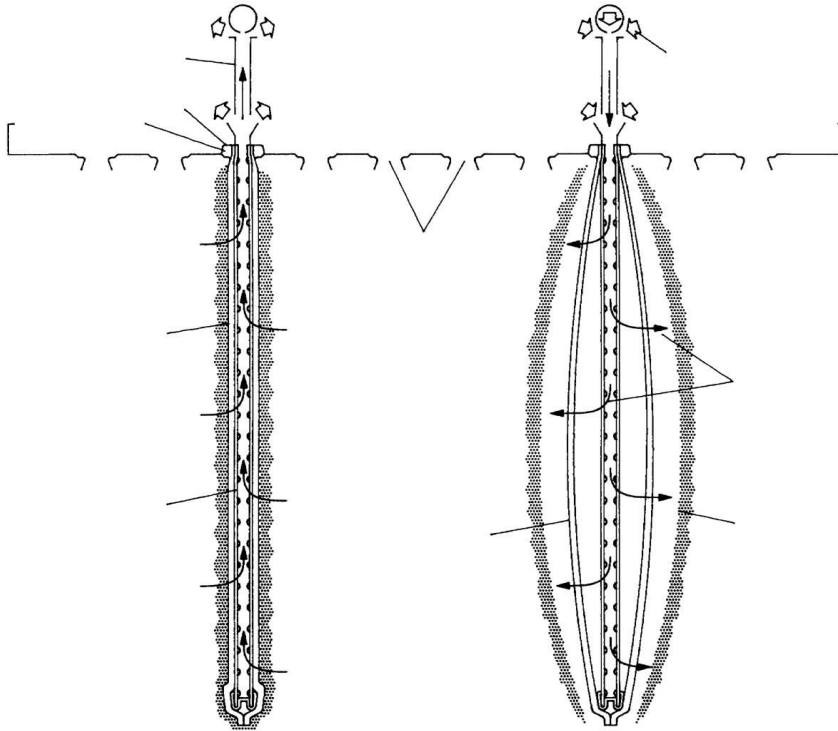
The Dalamatic Insertable filter range is based on six sizes of filter module, each containing a number of filter elements. These filter elements are available in three sizes, having an effective filtration area of 0.7 m<sup>2</sup>, 1.0 m<sup>2</sup>, 1.2 m<sup>2</sup> and 1.5 m<sup>2</sup> respectively. The style of collector, total effective filtration area (in square meters) and size of filter module (in square meters) are designed by the model number. For example, a DLM V30/15 is a Dalamatic Insertable collector with 30 m<sup>2</sup> total effective filter area utilizing 1.5 m<sup>2</sup> elements.

The dust filter is designed for applications in silos, bunkers, and conveyor transfer points. Variations of the Insertable are available for applications in pneumatic conveying systems, operating at pressures either above or below atmospheric pressure depending on filter type.

## Operation Explanation

**Normal Operation:** Dust laden air surrounds the filters and collects on the outer surfaces. A layer of dust builds up on the outside of the elements as the air itself penetrates the fabric. The clean air emerges from the outlet header of each filter element into the clean air chamber and from there is discharged, normally via the fan, into the atmosphere.





**Filter Cleaning:** At regular intervals, governed by the controller, each element in turn receives a short burst of compressed air from its respective jet tube. The jet tube has a series of small-diameter jet orifices positioned adjacent to the outlet header of each filter element. These orifices are of an optimum size and distance from the filter element, ensuring that a large volume of ambient air is induced by each injection of compressed air. This causes a brief, powerful reversal of airflow through the filter element, flexing the fabric outwards and effectively dislodging the dust layer which then falls usually back into the process where the Insertable is mounted.

In this way, the pressure drop across the entire collector is kept at a virtually constant level, enabling the Dalamatric to operate continuously, twenty-four hours a day.

## Application Summary

Dalamatric Insertable applications are limited only by the imagination. They are filters designed to be inserted into or placed on top of bins, silos and storage vessels to separate the product from the conveying air. The collected dust drops directly back into the silo. These units may utilize the positive pressure of the conveying air or may be fan powered to overcome resistance or to induce a draft in mechanically filled systems. The type B and W units are typically applied to positive pressure systems and the H and F are applied where suction fans are required. The Dalamatric Insertable can be a particularly effective bin vent on systems with extreme loading and on hygroscopic dust when used in conjunction with oleophobic media. It is also well suited to high temperatures when fitted with Nomex® bags and high temperature seals. Cement clinker storage is an excellent example because of the abrasion and heat.

The Dalamatric Insertable, as the name implies, can be inserted directly into a hood enclosure such as a belt transfer enclosure, a bucket elevator casing, a ribbon blender, a sand blast room, a dump hopper for a front end loader, or around the perimeter of a receiving hopper for a clam shell unloader.

Because of the reliability and ability to handle a wide range of dust, dust burdens and temperatures, the Dalamatric Insertable is an ideal collector to integrate into process machinery such as fluid bed dryers, mixers, mills and crushers. Use your imagination. After all it is the "Versatile Insertable".

Insertables are available with fan motors and electricals suitable for hazardous environments and with anti-static media and non-sparking fan wheel to meet the requirements of explosive and flammable dust.

## Sizing and Selecting Criteria

Determine the airflow as you would for a ducted system and calculate the required surface area using the published Air-To-Media Ratio Guides for the dust and application. Note that the air-to-media ratios for the Insertable differ from the Dalamatic Cased collectors and are generally higher because of the uniform airflow patterns typically experienced around Insertable filters. Required filter area =  $m^3/hr \div \text{air-to-media ratio}$ . Select the filter or filters that provide at or near the required filter area and, if applicable, are available with a fan that is capable of delivering 50 to 100 mm wg. Consult the product data sheets for fan performance. You will note that more than one model of the DLM V may be suitable. Select the model that best fits the space restrictions of the hood/enclosure. Remember, the DLM V can be installed with the filters hanging vertical, inserted horizontal or anywhere in-between. Don't limit your selection.

Note! Nomex is a registered trademark of E.I. Dupont de Nemours & Co., Inc.

## Features and Benefits

Features	Benefits
<b>Integral fan and silencers</b>	<ul style="list-style-type: none"> <li>• Low cost packaged unit</li> <li>• Less floor space</li> <li>• Quiet operation</li> </ul>
<b>Backward curved fan design</b>	<ul style="list-style-type: none"> <li>• High efficiency</li> <li>• Lower hp requirements</li> <li>• Quiet operation</li> <li>• No fear of overloading fan motor</li> </ul>
<b>Envelope shaped filters</b>	<ul style="list-style-type: none"> <li>• Maximum filter area in a given space</li> <li>• Maximum flexing of media to efficient cleaning and to handle difficult dust</li> </ul>
<b>Painted using an 8 stage electrophoretic dip system</b>	<ul style="list-style-type: none"> <li>• Resists corrosion and reduces maintenance cost</li> <li>• Meets FDA requirements for dry non storage food contact</li> </ul>
<b>Collectors constructed of standard modular components</b>	<ul style="list-style-type: none"> <li>• Quality from standardization</li> <li>• Short delivery times</li> </ul>
<b>Pre-engineered cleaning system for each model of collector</b>	<ul style="list-style-type: none"> <li>• Provides maximum cleaning and lowest pressure drop with minimum compressed air consumption</li> </ul>
<b>Cleaning system using standard printed circuit boards and valves</b>	<ul style="list-style-type: none"> <li>• Reliable components</li> <li>• Readily available components</li> </ul>
<b>Optional safety features</b> <ul style="list-style-type: none"> <li>• Static grounding system</li> <li>• Flameproof controls</li> <li>• Explosion proof fan motors and non-sparking fan construction</li> </ul>	<ul style="list-style-type: none"> <li>• Minimizes ignition source for explosions</li> <li>• Can locate collector in hazard rated areas</li> <li>• Safety</li> </ul>