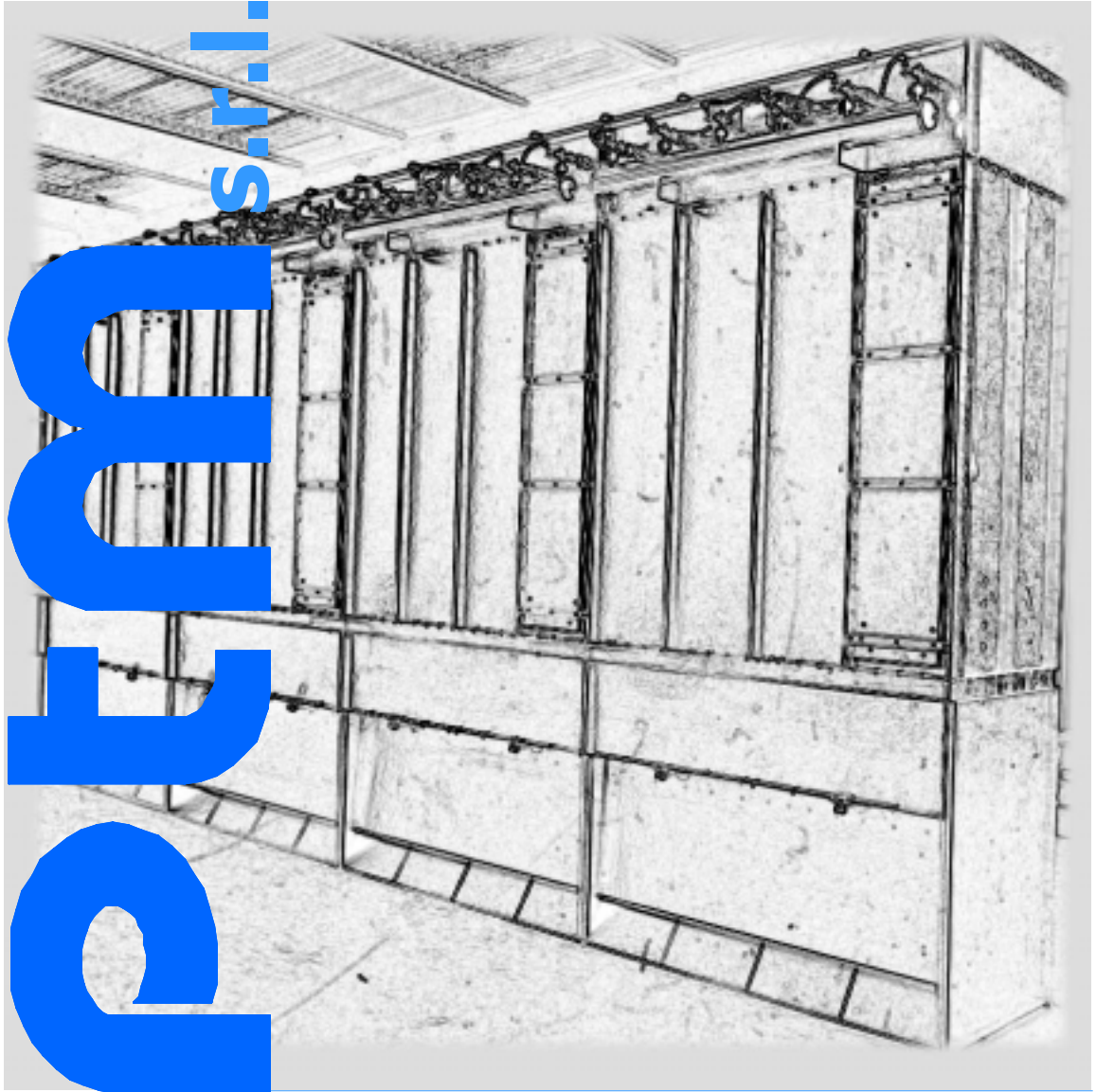


Rev. 00/00



Hopper Filters

FTM Series

FTM SERIES FILTERS

The problem of controlling dust emission in industrial environments is more and more pressing and the regulations on this subject are stricter and stricter day by day.

The plants for processing and the breakdown cereal and oleaginous seeds must conform to particularly strict rules, also as a result of the sanitation problems, that are typical of the agribusiness.

The raw-materials reception area is considered as a dust-emission point and, therefore, it must be equipped with adequate interception and damping systems.

The modular filters of *FTM Series* represent a solution to this particular problem. As a matter of fact, they are conceived to intercept and filter the dusty air directly over the reception hopper in the same moment when dust generates, while unloading a motor vehicle or a wagon.

The modular construction and the reduced overall dimensions (limited depth) make the application of the filters easier even on existing hoppers; therefore, they offer an effective and simple solution.



GENERAL DESCRIPTION

The *FTM Series* filters consists of a series of "base modules", that are on the longitudinal side of the protection grating of the reception hopper.

Every "base module" can be:

- filtering (with fan and hoses)
- spacing (without filtering mass and fan).

This makes it possible to make different filter models for every hopper, as a result of different combinations of filtering and spacing modules, according to the use conditions and the Purchaser's needs.

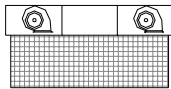
As far as 6.0-, 8.0-, 12.0-, 15.0-, 18.0-metres-long hoppers are concerned, some standard models are foreseen. Their main characteristics are reported in the Table 1, but different combinations can be studied and developed also for hoppers with particular size.

This project solution assures the clear flexibility of use, as well as other important advantages, such as:

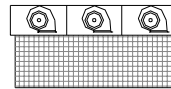
- the particularly homogeneous interception of dusty air along all the unload hopper
- the possibility to utilize the filter even in case of failure of one or more "base modules"
- the limitation of energy costs
- the elimination of the specific disposal of dumped dust.

The project also foresees the possibility to install a special version of a *FTM Series* filter, between two parallel hoppers, and to utilize it alternatively on each of them.

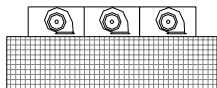
CHARACTERISTICS		FTM													
		621	630	830	840	1241	1242	1250	1260	1542	1552	1560	1570	1862	1880
Hopper length	mt.	6,0		8,0		12,0				15,0				18,0	
Filter length	mm.	6.380	6.380	6.380	8.480	10.580	12680	10.580	12.680	12.680	14.780	12.680	14.780	16.880	16.880
Filtering modules	nr.	2	3	3	4	4	4	5	6	4	5	6	7	6	8
Spacing modules	nr.	1	-	-	-	1	2	-	-	2	2	-	-	2	-
Filtering surface	m ²	87,4	131	131	174,7	174,7	174,7	218,4	262,1	174,7	218,4	262,1	305,8	262,1	349,4
Filtering ratio		4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5
Hoses	nr.	96	144	144	192	192	192	240	288	192	240	288	336	288	384
Solenoid valves	nr.	12	18	18	24	24	24	30	36	24	30	36	42	36	48
Fans	nr.	2	3	3	4	4	4	5	6	4	5	6	7	6	8
Sucked air (nominal)	m ³ /h	24.000	36.000	36.000	48.000	48.000	48.000	60.000	72.000	48.000	60.000	72.000	84.000	72.000	96.000
Installed power	kW	2x5,5	3x5,5	3x5,5	4x5,5	4x5,5	4x5,5	5x5,5	6x5,5	4x5,5	5x5,5	6x5,5	7x5,5	6x5,5	8x5,5
Compressed air consumption	NI/1'	40	60	60	80	80	80	100	120	80	100	120	140	120	160



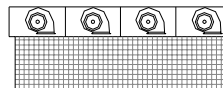
FTM 621



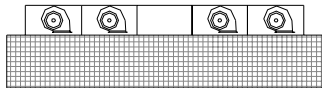
FTM 630



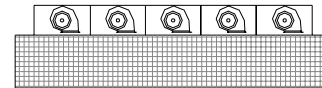
FTM 830



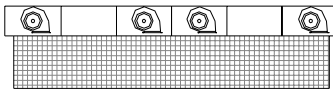
FTM 840



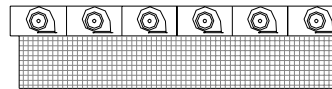
FTM 1241



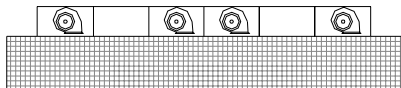
FTM 1250



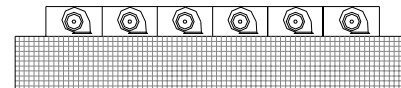
FTM 1242



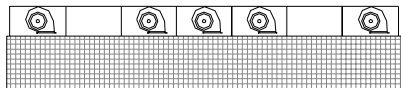
FTM 1260



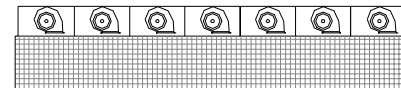
FTM 1542



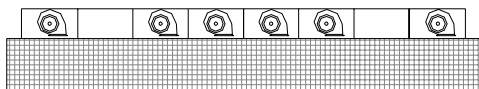
FTM 1560



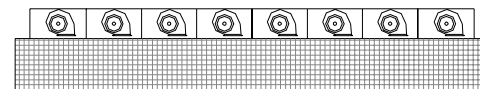
FTM 1552



FTM 1570



FTM 1862



FTM 1880

WORKING PRINCIPLE

The *FTM Series* filters are high-pressure filters and work by suction, thanks to a series of centrifugal fans, that have limited power and are mounted on board of the filtering modules.

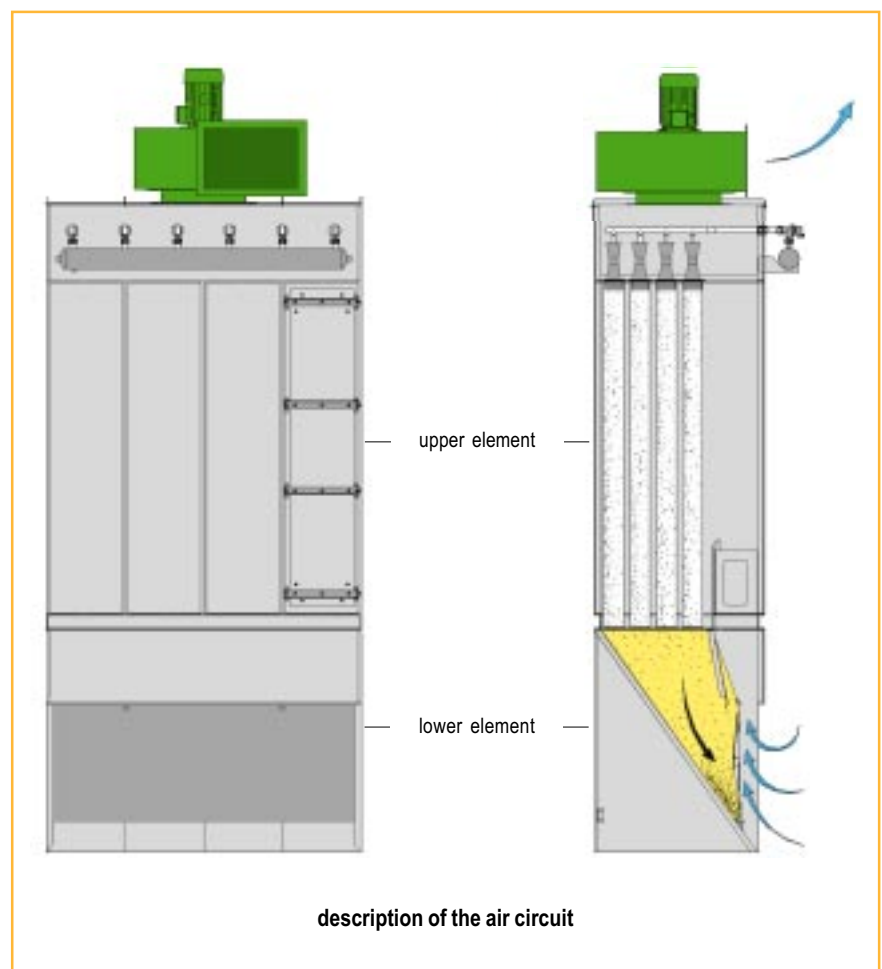
The air is collected through the lower element (front part) of the base module, that is to be placed on the longitudinal side of the hopper, to intercept the dust immediately close to the point where it generates during the unloading operations.

The presence of a fan on each filtering module and the possibility to adjust the air speed independently in every base module way assure the homogeneous and effective interception of dust along all the hopper.

The air, while passing through the series of hoses that are in the upper element of the filtering modules, is separated from the dust particles and is expelled in the atmosphere.

The hoses are periodically cleaned by means of cyclic injections of compressed air, that are controlled by a special electronic gearcase and a series of solenoid-valves. The high-efficiency Venturi connections assure the effective washing of the filtering mass.

The damped powder is collected in the lower element of the base module (rear part) and reintroduced directly in the hopper through gravity. This solution enables you to keep unchanged the product characteristics and to avoid, in the meantime, the costs of the specific disposal of the dust in the reception area or of the mechanical or pneumatic connections to a central collection point for waste.



FILTERING MODULE

Each filtering module, whose base size is 2,100x1,130 mm, consists of a lower and an upper elements, that are superposed.

The module is constructed with press-bent plate panels that are bolted to each other, hot galvanized or painted with epoxydic dust.

The lower element has an intermediate panel, that is partly fixed and partly mobile and separates the two areas:

- the front area, for the interception of dusty air
- the rear area, for the collection of damped dust and its reintroduction in the reception hopper.

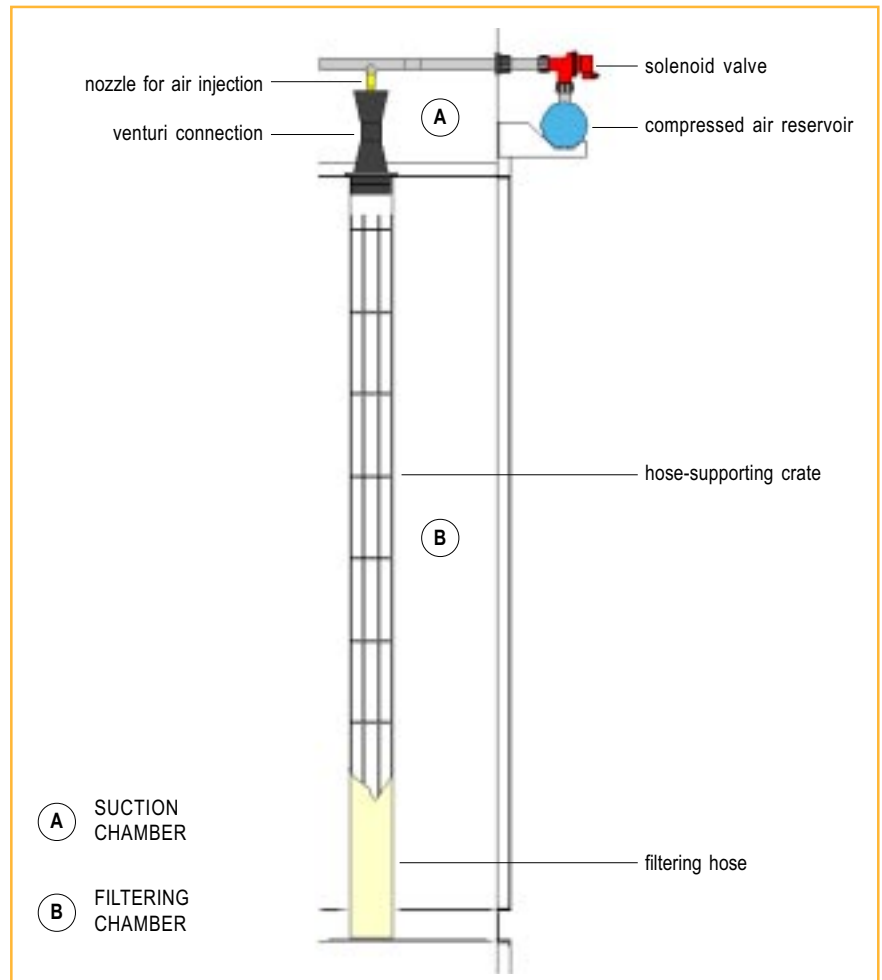
The mobile baffle makes it possible to easily adjust the speed of the air entry, in order to obtain the very uniform interception of the dust, independently from the hopper length.

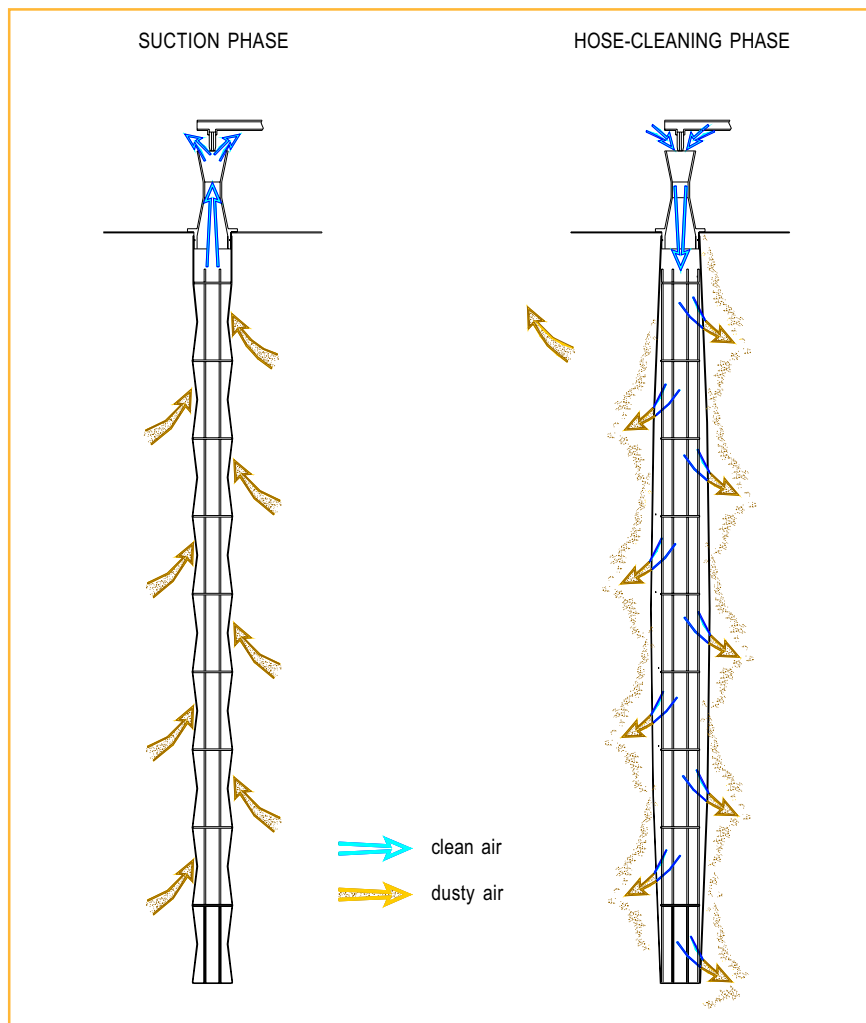
The upper element contains the filtering mass and the hoses washing system and has an independent electric fan.

The filtering mass consists of a series of 48 hoses in needle-felt polyester, whose main specifications are reported in the following Table; the hoses are mounted on crates in hot-galvanized steel wire.

MAIN SPECIFICATIONS OF THE FILTERING HOSES	
Hose	3440-3/01 LE K2
Size	123x2350 mm.
Surface	0,91 m ²
Utilized material	antistatic needle-felt polyester
Weight	400 gr/m ²
Thickness	1,50 mm.
Density	0,27 gr/cm ³
Volume of pores	81%
Theoretical size of pores	32 µm
Ultimate stress:	
lengthwise	80 daN/5 cm
crosswise	130 daN/5 cm
Ultimate elongation:	
lengthwise	22%
crosswise	23%
Max. working temperature	150°C

The powder deposits on the external side of every hose, that is constantly kept in suction pressure by the fan and perfectly stretched by the metal structure of the below crate.





The washing system of the hoses consists in cyclic injections of high-pressure compressed air, which create a shaking wave that can detach and drop the dust particles from the filtering fabric; this procedure interferes with the filtering process very little. For that aim, every filtering module has:

- a compressed-air receiver (with its distribution line to the Venturi connections)
- a group of no. 6 diaphragm pneumatic valves with integrated pilot, whose specifications are reported in the following Table
- a series of precision injectors
- a series of high-efficiency Venturi connections in plastic (standard execution) or aluminium (on demand).

MAIN SPECIFICATIONS OF SOLENOID VALVES

Type	VEP 308
Ø	1"
Body	in die-cast aluminium alloy with special coating
Diaphragm	no. 1 - high-performance with stainless steel cap
Electric pilot passage	4.3 mm
Coil	Encapsulated (class F insulation) with proof electric connector DIN 43650 (IP65)
Series tension	24V DC – 50 Hz
Absorbed power	10 W

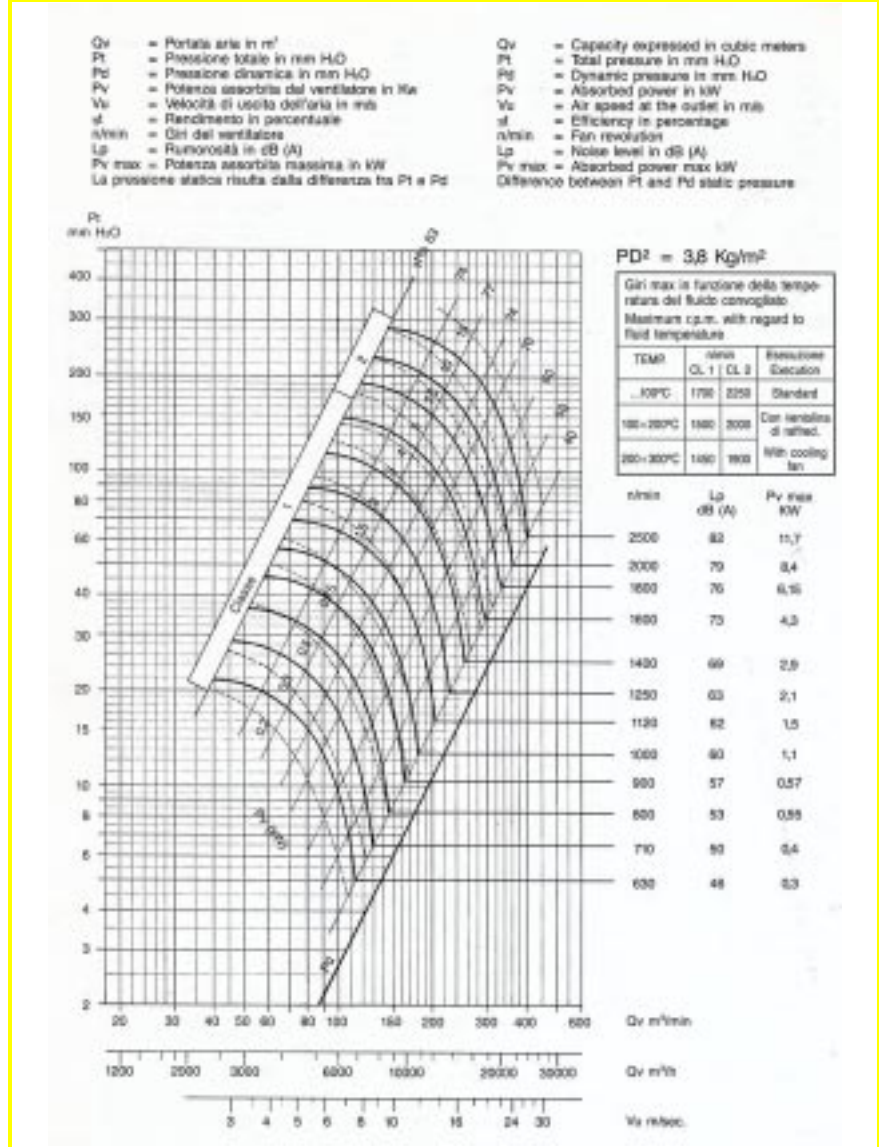
Besides, every *FTM Series* filter has an electronic control panel, with wholly static circuit, that has the function to activate the solenoid valves for air blowing in a predetermined sequence. In order to optimize the filter working and to reduce the compressed air consumption, this panel enables to adjust:

- the working sequence of the solenoid valves
- the blowing time

- the pause between the different blowing operations.

The suction of the dusty air is produced by a high-performance, centrifugal electric fan, that is mounted directly on the filtering module, whose specifications are reported in the following Table:

MAIN SPECIFICATIONS OF FANS	
Type	High-performance, centrifugal
Model	EMPU 565 132 S-4
Power	5.5 kW
Rev./min.	1,450
Working pressure	86 mm H ₂ O
Air flow rate	12,000 m ³ /h
Tension	380V – 50 Hz
Noisiness	71 dB – A scale



SPACING MODULE

The spacing module has the same base size of the filtering module (2100x1130 mm) and consists of a lower and an upper elements superposed too.

The lower element has the same structure and function of the filtering modules, in order to have always the possibility to adjust the dusty air speed along the whole hopper.

On the contrary, the upper element has only the same carpentry structure, whereas it has not the filtering mass, the hoses washing system and the electric fan.

UTILIZATION CONDITIONS

The interception of the dusty air in a difficult environmental situation like the reception areas is not easy to manage.

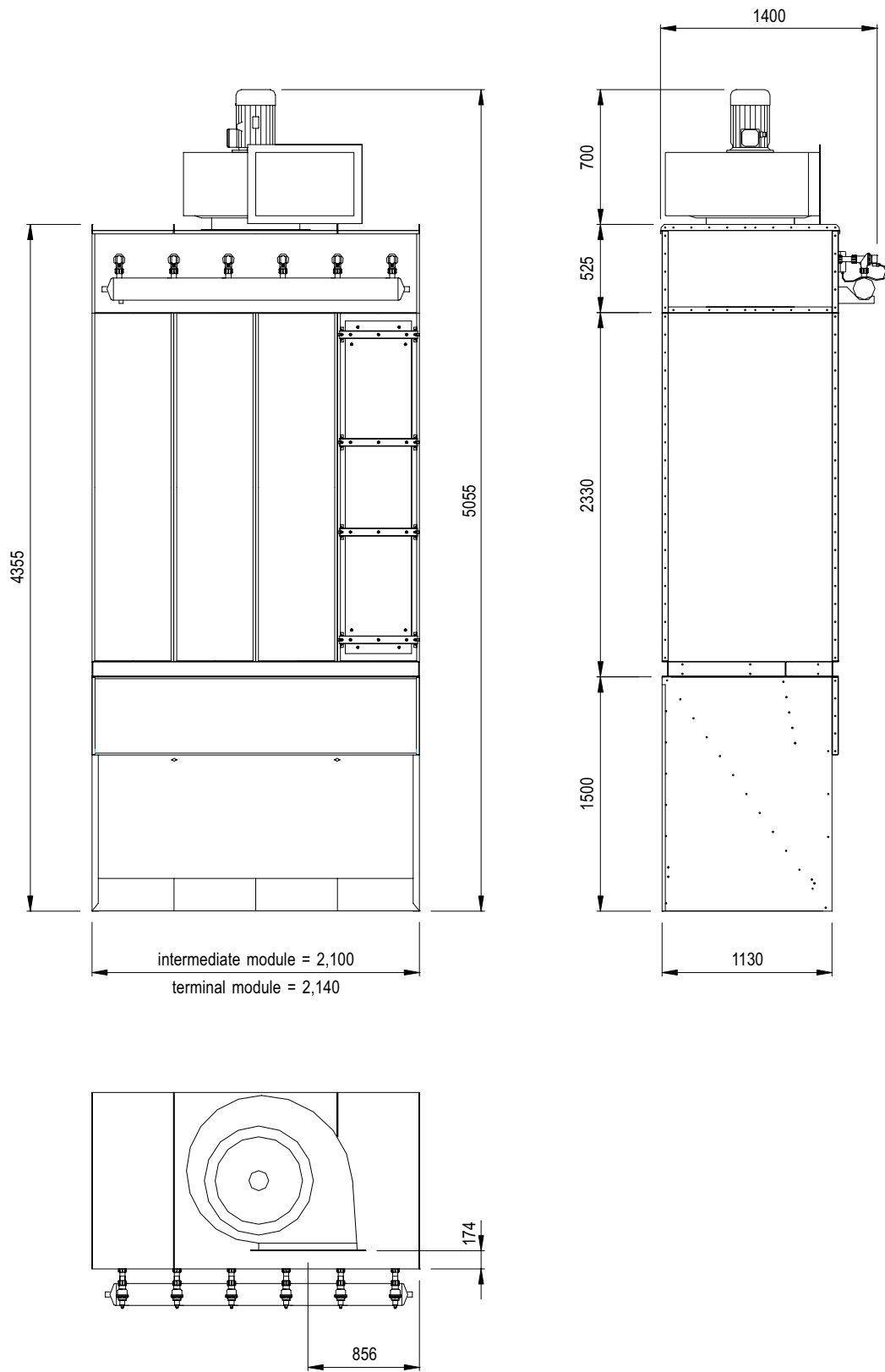
The size of the environment, the configuration of the reception hopper and its place in the room where the motor vehicles unload the product, the presence of doors which assure the effective isolation of the area during the unloading operations, the kind of product that is normally treated and, not last, the environmental conditions (air temperature and relative humidity, presence or absence of wind, etc.), lead to very variable situations that must be carefully considered at the moment of the choice of the most suitable *FTM Series* filter.

The modular construction of our *FTM Series* filters normally makes it possible to evaluate different alternatives to find the most suitable technical solution for every specific need.

In any case, our Technical Service is at your disposal to give you all the necessary support or to study any particular utilization.



OVERALL DIMENSIONS





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