

English

# AIR TREATMENT

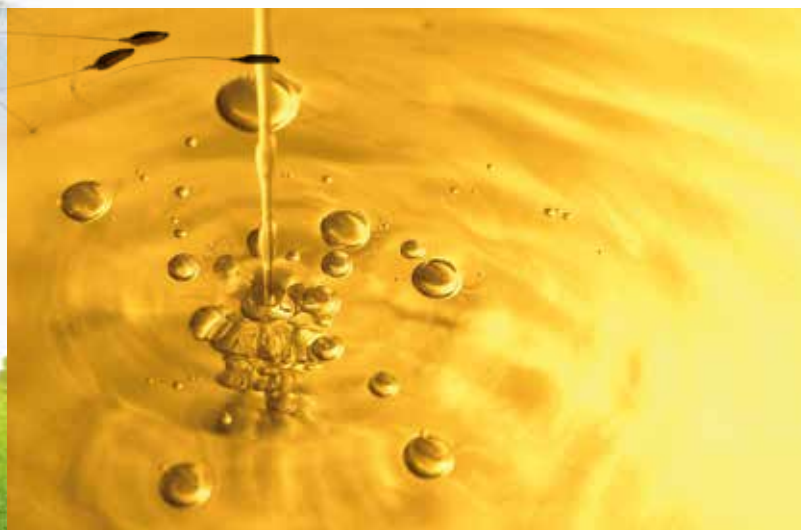
DRYING, FILTRATION AND STORAGE



## The Air Treatment

Atmospheric air always contains water vapour and impurities. For the final user it is necessary to get a compressed air supply, free from condensate and contaminating particles, such as oil and dust. If such contaminations should come in direct contact with the final product, the resulting costs would be extremely high and a solution that could have been practical and inexpensive at the design stage would then be very costly. The aim of Mattei's compressors is to provide **quality compressed air, clean and dry**,

i.e. free from any element that might reduce the plant's efficiency and reliability. According to the customer's compressed air use and field of application, these substances can have a different impact on the production process. Once the function of compressed air through the production process has been precisely identified, it is important to accurately and thoroughly select the best possible combination of air treatment accessories, in order to optimise the available resources and reduce waste.



## Dryers

A quality compressed air supply needs to be dry. The use of **Mattei's dryers** removes the condensate from the air, preventing any damage to the compressed air distribution system. The presence of water in a system can cause leaks in pipes and increase the risk of damage to machinery and pneumatic devices. Also some applications require dry air in order to ensure a better quality of the final products. Mattei offers direct expansion and thermal mass refrigeration dryers (**MD** and **EMD** Series) and absorption dryers (**DD & DDH** Series).

## Filters

The installation of Mattei's **FM Series** filters guarantees cleaner compressed air. Their function is to separate air impurities, through a multi-stage process. The line filters have specific functions, refining the purification operation, anti-dust filters, pre-filter and oil-removing filters. Mattei's filter range can be used in compressors with air flows **from 0.5 to 185m<sup>3</sup>/min and pressures up to 16 bar**. They can be used as adsorption dryer pre-filters, for coating plants, compressed air tools and precision pneumatic controls.

Thanks to efficient filtering it is possible to produce a compressed air supply free from impurities and therefore also suitable in applications where a high level of air purity is essential.



## Oil-Water Separator

The condensed water inside the compression chamber will contain particles of the oil used as compressor lubricant/coolant in addition to those airborne contaminants including hydrocarbons drawn in to the compressor from the atmosphere. To discharge the water into the drainage, according to the regulations required in the country of installation, the condensate will first have to be purified. Mattei's **MOS Series separators** are used to this end, because they are easy to install and are manufactured with recyclable materials. These accessories guarantee excellent performances and maximum reliability, thanks to the higher quality and long lifespan of the new cartridge filters. **Separators are available with or without pre-separator.**



## Condensate Treatment

Air contains water in the form of vapour, which varies depending on the climate and seasons. It's higher in the summer and lower during the colder months. The condensate caused as the compressed air cools compromises its quality. Indeed, as well as being a potentially aggressive agent, because of its PH value, the condensate contains elements, such as compressor residual oils, dirt and other air pollutants. Therefore it is necessary to use cyclone separators, into which water drops are swept away as a result of the turbulence and discharged through special drains. **Mattei's electronic condensate drains** have a timer control, are adjustable and equipped with a tap. Thanks to their compact size, they can be installed in whatever position is best suited for the customer's system and require only minimum maintenance. **The 200 model** also enables level control, avoids air leaks when the compressor is working and includes the malfunction indicator, to ensure long lifespan.

# COMPRESSED AIR FM FILTERS

## Compressed air Filtration

Mattei filters, with five filtering elements of different grades, allow you to achieve the highest compressed air quality standards, according to ISO 8573-1:2010.



**GRADE C4  
DUST FILTER**

It is suitable as a prefilter in a plant where compressed air is produced by compressors not equipped with an effective filtering and oil removing system.  
Maximum working temperature: 100 °C.

Removal of solid particles      micron  $\geq 10$



**GRADE C3**

It is suitable as initial protection for a compressed air system or a refrigerant dryer, for general application in pneumatic devices, as a prefilter for "C2" grade filters and as a post-filter for adsorption dryers. Maximum working temperature: 100 °C.

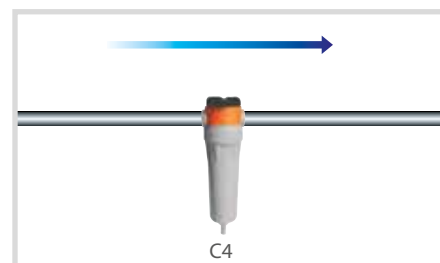
Removal of solid particles      micron  $\geq 5$

## Applications:

### FM/C4

In industrial applications where high air quality is not essential: as pre-filter for further filtration and placed after centrifugal separators and adsorption dryers.

**It removes 99% of liquid and solid particles up to 10 micron.**



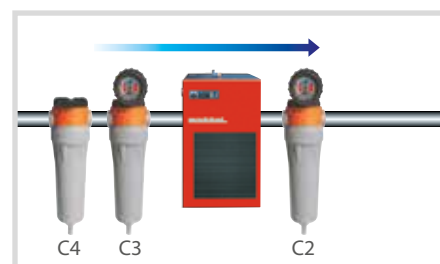
### FM/C4 - FM/C3 - REFRIGERANT DRYER - FM/C2

Ideal for pneumatic plants, packaging and painting systems, compressed air motors and vacuum pumps.

**Solid particles removal up to 1 micron.**

**Maximum oil carry-over 0,1 mg/m<sup>3</sup>.**

**Pressure dewpoint: +3°C.**



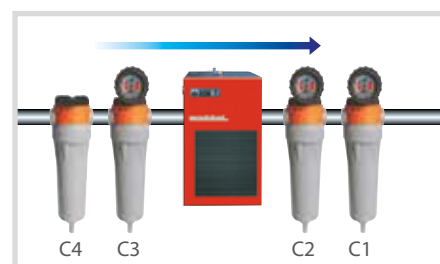
### FM/C4 - FM/C3 REFRIGERANT DRYER - FM/C2 - FM/C1

Suitable for pneumatic transportation, pneumatic tools operation, pneumatic control, instrumentation, packaging and painting systems.

**It removes solid particles up to 0,01 micron.**

**Maximum oil carry-over 0,01 mg/m<sup>3</sup>.**

**Pressure dewpoint: +3°C.**





**GRADE C2**  
**OIL REMOVING FILTER**

It is suitable to remove large oil quantities. Maximum working temperature 100 °C.

Removal of solid particles      micron  $\geq 1$   
Maximum liquid residue      mg/m<sup>3</sup> 0,1



**GRADE C1**  
**OIL REMOVING FILTER**

This filter is required for an effective retention of the oil residue, around 99,99%, and delivers technically oil free air. Maximum working temperature 100 °C.

Removal of solid particles      micron  $\geq 0,01$   
Maximum liquid residue      mg/m<sup>3</sup> 0,01



**GRADE CC**  
**ACTIVATED CARBON FILTER**

It is used to eliminate oil vapours and odours and for the final treatment of compressed air. The filtering element is made of activated carbon, with an external steel mesh. The adsorption principle removes vapours and residual odours of the oil retention process. A grade C1 filter should be always placed before it. Maximum working temperature 60 °C.

Maximum liquid residue      mg/m<sup>3</sup> 0,003

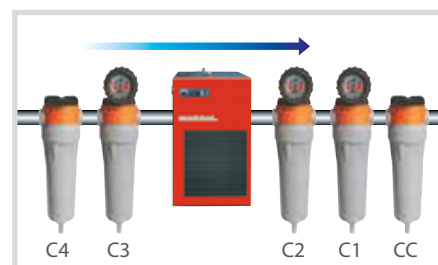
### **FM/C4 - FM/C3** **REFRIGERANT DRYER- FM/C2 - FM/C1 - FM/CC**

Ideal for oil odour and vapour free compressed air. Suitable for all the above applications as well as breweries, food and beverage plants, hospital applications, plating, electronic instruments, packaging, bottling, decompression chambers, pharmaceutical and refrigeration industries, etc.

**It removes solid particles up to 0,01 micron.**

**Maximum oil carry-over 0,003 mg/m<sup>3</sup>.**

**Pressure dewpoint: +3°C.**



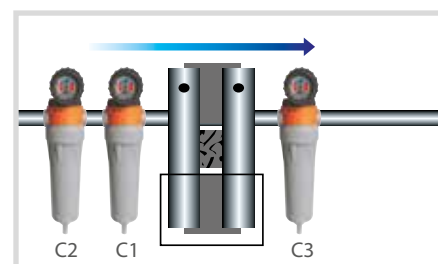
### **FM/C2 - FM/C1 - ADSORPTION DRYER- FM/C3**

Suitable for all the above applications with the addition of pneumatic controls, painting, pneumatic transportation, packaging, instrumentation or whenever a pressure dew point of -40°C is needed.

**It removes solid particles up to 0,01 micron.**

**Maximum oil carry-over 0,01 mg/m<sup>3</sup>.**

**Pressure dewpoint: -40°C.**

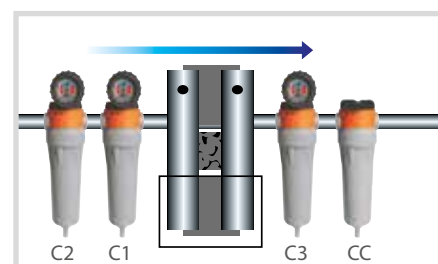


### **FM/C2 - FM/C1** **ADSORPTION DRYER - FM/C3 - FM/CC**

Dry, odourless and technically oil free compressed air. Suitable in all oil free processes such as food and beverage industry, hospital applications, pharmaceutical processes, plating and laboratories.

**Maximum oil carry-over 0,003 mg/m<sup>3</sup>.**

**Pressure dew point: -40°C**





# COMPRESSED AIR FM FILTERS

## PURE AIR GUARANTEED BY A SUPERIOR PRODUCT

In modern manufacturing processes compressed air plays the role of a safe, reliable and economic energy supply. The air delivered by compressors must be treated to obtain quality air. Otherwise, the life of pneumatic tools and the quality of finished products will be jeopardised.

Two different types of contaminants may seriously affect the quality of compressed air:

- 1) atmospheric contaminants
- 2) plant contaminants

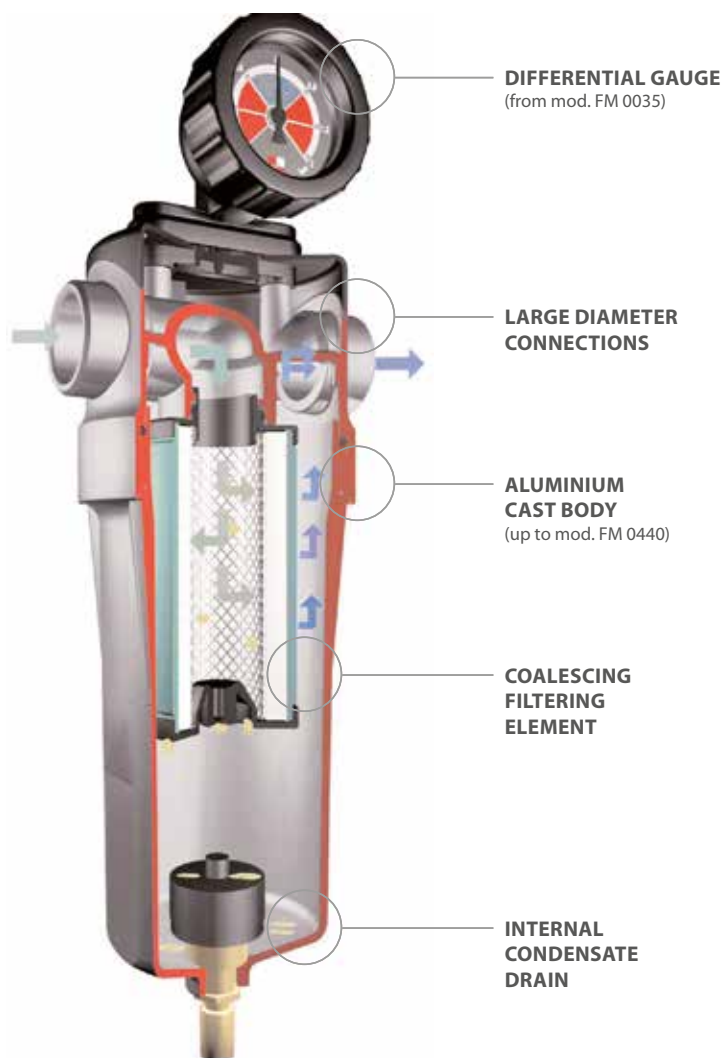
Regarding atmospheric pollution, a cubic metre of urban compressed air at 7 bar can contain one thousand million particles, including fine dust (combustion particles) gas and hydrocarbon vapour originating from industrial discharges. Contamination of the air system occurs because compressors and fittings can produce rust particles, waste and lubricating oil sludge. Even "oil free" compressors have this problem, as they compress gases, oil vapours and fine particles contained in the polluted atmosphere and then transfer them to the condensate in the air system.

Contaminants produce corrosive emulsions obstructing the pipelines, increasing the pressure losses (and consequently the manufacturing costs), such emulsions may clog and wear out pneumatic tools and sometimes also the air system is blocked. Mattei, a market leader in compressed air technology, supplies a wide range of high efficiency filters to eliminate impurities and contaminants in all industrial applications of compressed air. Particularly, Mattei filters ensure the air is up to 99,99% technically oil free by the use of specific materials.

Following filters are available:

- prefilters to eliminate rough impurities;
- fine filters to eliminate micro-drops of liquid and powdered particles;
- activated charcoal filters ensure the elimination of oil odours and vapours.

The first two filters are of a mechanic and coalescing type, while the third is an adsorption type.



## Accessories:



### DIFFERENTIAL GAUGE

Displays the exact saturation degree of the filter element.

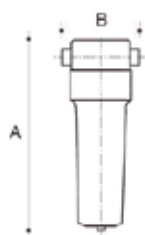


### DIFFERENTIAL PRESSURE INDICATOR

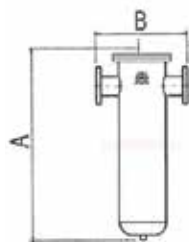
Two-tone visual indicator, regulated by the differential pressure, to visualise the clogging degree of the filtering element.

MODEL	P <sub>MAX</sub>		AIR DELIVERY		PIPE CONNECTIONS	DIMENSIONS (MM)				WEIGHT	
	bar	psig	m <sup>3</sup> /min	cfm	inch	B - WIDTH		A - HEIGHT		kg	lbs
FM 0005	16	232	0,56	20	Rp 3/8"	90	3,5	220	8,7	0,6	1,3
FM 0010	16	232	1,17	41	Rp 1/2"	90	3,5	220	8,7	0,6	1,3
FM 0018	16	232	1,8	64	Rp 3/4"	90	3,5	280	11,0	0,7	1,5
FM 0030	16	232	3	106	Rp 3/4"	90	3,5	280	11,0	0,7	1,5
FM 0035	16	232	3,4	120	Rp 1"	120	4,7	305	12,0	1,1	2,4
FM 0050	16	232	5	177	Rp 1"	120	4,7	305	12,0	1,2	2,6
FM 0072	16	232	7,2	254	Rp 1 1/2"	120	4,7	385	15,2	1,3	2,9
FM 0095	16	232	10,4	367	Rp 1 1/2"	120	4,7	385	15,2	1,4	3,1
FM 0125	16	232	12,8	452	Rp 2"	165	6,5	500	19,7	3,7	8,1
FM 0165	16	232	16,5	583	Rp 2"	165	6,5	500	19,7	3,8	8,4
FM 0190	16	232	19	671	Rp 2 1/2"	165	6,5	675	26,6	4,8	10,6
FM 0220	16	232	22	777	Rp 2 1/2"	165	6,5	675	26,6	4,9	10,8
FM 0280	16	232	28	989	Rp 3"	200	7,9	710	28,0	6,7	14,7
FM 0350	16	232	35	1236	Rp 3"	200	7,9	865	34,1	7,9	17,4
FM 0440	13	189	44	1554	Rp 3"	200	7,9	985	38,8	8,8	19,4
FM 0460	16	232	46	1624	DN 100	485	19,1	1265	49,8	125	275
FM 0700	16	232	70	2472	DN 125	630	24,8	1275	50,2	196	431,2
FM 0950	16	232	95	3355	DN 150	630	24,8	1380	54,4	210	462,0
FM 1250	16	232	125	4414	DN 150	676	26,6	1430	56,3	264	580,8
FM 1550	16	232	155	5473	DN 150	724	28,5	1500	59,1	314	690,8
FM 1850	16	232	185	6532	DN 200	724	28,5	1500	59,1	320	704,0

**FOR MODEL  
FROM FM 0005 TO FM 0440**



**FOR MODEL  
FROM FM 0460 TO FM 1850**



Performances refer to 1 bar (a) and to the following operating conditions: intake air at 25°C/60%RH, 7 bar working pressure in bar, 35°C compressed air inlet temperature.

**FLOW RATE CORRECTION FACTORS**

Pressure	bar	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		0,36	0,5	0,63	0,75	0,88	1	1,13	1,25	1,38	1,5	1,63	1,75	1,88	2	2,13

**PURITY CLASS AND MODEL**

Oil - Class ISO 8573.1:2010			Solids - Class ISO 8573.1:2010			<p>* Example of filter selection:</p> <p><b>FM 0050 C3</b> — Filter grade specification</p> <p>Filter Model/Size</p>
C4	purity class	-	C4	purity class	7	
C3	purity class	4	C3	purity class	3	
C2	purity class	2	C2	purity class	2	
C1	purity class	1	C1	purity class	1	
CC	purity class	N.A.	CC	purity class	N.A.	

# REFRIGERANT

## MD REFRIGERANT DRYERS

**ELECTRICAL ENERGY SAVING:** a reduced pressure drop through the dryer has a direct effect on reducing the running costs of the compressed air system of between 5 and 8%.

**CONTROL PANEL:** guarantee consistent performance also in intermittent working conditions.

**CONDENSER:** ensures maximum performance of the refrigerant circuit and the ability to operate with changes in the ambient conditions.

**ALU-DRY MODULE:** has a direct effect on reducing energy consumption.

**CONDENSATE DRAIN:** adjustable electronic condensate drain with timer.

**OPTIONAL:**



**"HOT GAS" BY PASS VALVE DETAILS**  
prevents the formation of ice inside the evaporator

**DIRECT EXPANSION**



Refrigerant	R134a up to MD25 model R407C from MD38 model
Compressed Air Inlet Temperature	+35°C
Working Pressure	7 bar
Maximum Working Pressure	14 bar
Pressure Dewpoint	+3°C
Protection Index	IP 22

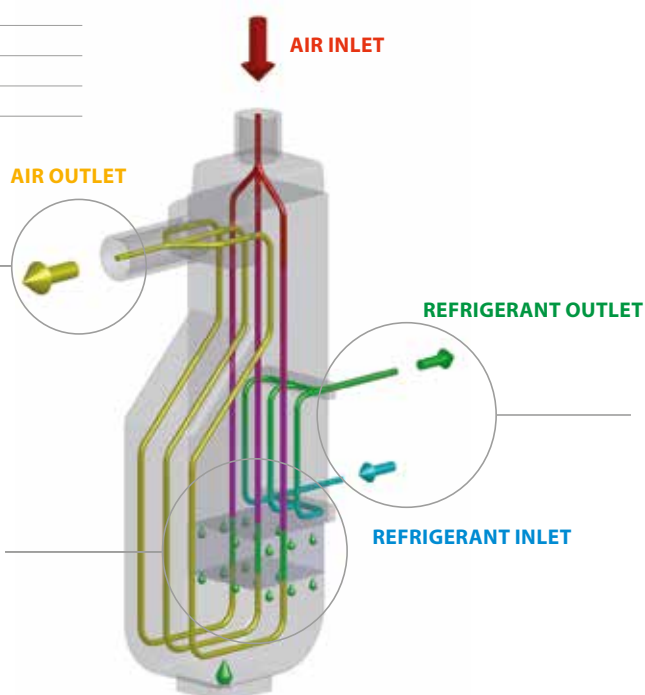
### AIR-TO-AIR HEAT EXCHANGER:

the counter flows of compressed air in the air-to-air heat exchanger ensure maximum heat transfer.

### DEMISTER CONDENSATE SEPARATOR:

The high efficiency condensate separator is located inside the heat exchanger module. No maintenance is required and the coalescing effect results in a high degree of moisture separation.

The large capacity separator is designed to hold condensate also with high humidity in compressed inlet air.




### AIR-TO-REFRIGERANT HEAT EXCHANGER:

The generous dimensions of the air-to-refrigerant plus the counter flow gas streams allow full and complete evaporation of the refrigerant (preventing liquid returning to the compressor).

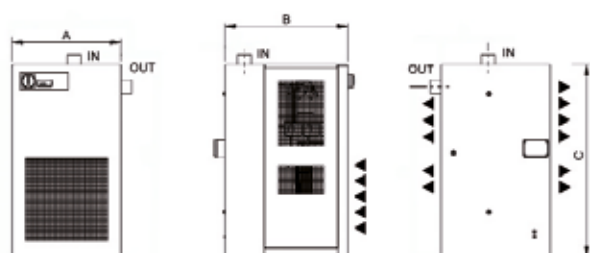
The large cross section of channels within the heat exchanger module leads to low velocities and reduced power requirements.



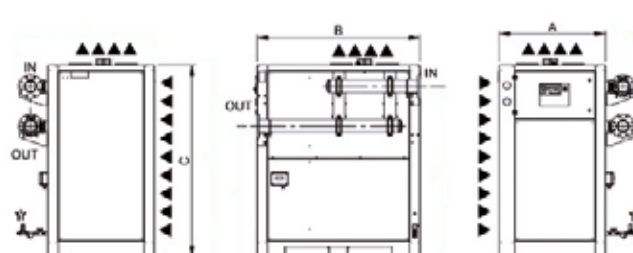
																
									DIMENSIONS (MM)							
									LENGTH		WIDTH		HEIGHT			
MODEL	FLOW-RATE		INSTALLED POWER		REFRIGERANT	POWER SUPPLY	SOUND LEVEL	CONNECTIONS	LENGTH		WIDTH		HEIGHT		WEIGHT	
MD	m³/min	cfm	KW (nom.)	FLA A.	Tipo	V/Hz/ph	dB(A)	Inch (IN-OUT)	mm	inch	mm	inch	mm	inch	kg	lbs
MD 6	0,6	21,2	0,16	1,4	R134a	230-240/50-60/1	<70	G 1/2" BSP-F	420	16,5	345	13,6	740	29,2	30	66
MD 9	0,9	31,8	0,18	1,5	R134a	230-240/50-60/1	<70	G 1/2" BSP-F	420	16,5	345	13,6	740	29,2	30	66
MD 15	1,5	53	0,23	2,3	R134a	230-240/50-60/1	<70	G 1/2" BSP-F	420	16,5	350	13,8	740	29,2	35	77
MD 20	2	70,6	0,31	3,1	R134a	230-240/50-60/1	<70	G 1" BSP-F	420	16,5	350	13,8	740	29,2	40	88
MD 25	2,5	88,3	0,46	3,5	R134a	230-240/50/1	<70	G 1" BSP-F	420	16,5	350	13,8	740	29,2	40	88
MD 38	3,8	134,2	0,69	5,3	R407C	230-240/50/1	<70	G 1 1/4" BSP-F	460	18,1	490	19,3	830	32,7	50	110
MD 49	4,9	173	0,75	5,9	R407C	230-240/50/1	<70	G 1 1/4" BSP-F	460	18,1	490	19,3	830	32,7	50	110
MD 68	6,8	240,1	0,7	8,8	R407C	230-240/50/1	<70	G 1 1/2" BSP-F	580	22,9	560	22,1	890	35,1	55	121
MD 83	8,3	293,1	0,84	8,9	R407C	230-240/50/1	<70	G 1 1/2" BSP-F	580	22,9	560	22,1	890	35,1	65	143
MD 110	11	388,4	1,1	9	R407C	230-240/50/1	<70	G 2" BSP-F	630	24,8	560	22,1	980	38,6	95	209
MD 150	15	529,7	1,45	11,2	R407C	230-240/50/1	<70	G 2 1/2" BSP-F	730	28,8	670	26,4	1110	43,7	145	319
MD 170	17	600,3	1,73	14,3	R407C	230-240/50/1	<70	G 2 1/2" BSP-F	730	28,8	670	26,4	1110	43,7	165	363
MD 185	18,5	653,2	2,2	6,8	R407C	400-415/50/1	<75	DN80-PN 16	1000	39,4	790	31,1	1470	57,9	240	528
MD 250	25	882,8	3	7,1	R407C	400-415/50/3	<75	DN80-PN 16	1000	39,4	790	31,1	1470	57,9	245	539
MD 350	35	1235,9	3,6	10,2	R407C	400-415/50/3	<75	DN80-PN 16	1000	39,4	790	31,1	1470	57,9	280	616
MD 410	41	1447,7	3,9	11,2	R407C	400-415/50/3	<75	DN80-PN 16	1000	39,4	790	31,1	1470	57,9	315	693
MD 480	48	1694,9	5,2	14,5	R407C	400-415/50/3	<80	DN100-PN 16	1210	47,7	1140	44,9	1750	69	465	1023
MD 620	62	2189,3	5,9	15,9	R407C	400-415/50/3	<80	DN100-PN 16	1210	47,7	1140	44,9	1750	69	540	1188
MD 810	81	2860,2	7,1	22,4	R407C	400-415/50/3	<80	DN100-PN 16	1210	47,7	1140	44,9	1750	69	620	1364
MD 900	90	3178	8,4	30,1	R407C	400-415/50/3	<80	DN150-PN16	1750	69	1300	51,2	1810	71,3	830	1826
MD 1200	120	4237,3	11,3	38,8	R407C	400-415/50/3	<85	DN200-PN16	2200	86,7	1400	55,2	1870	73,7	1055	2321
MD 1500	147,2	5197,7	16,8	47,8	R407C	400-415/50/3	<85	DN200-PN16	2200	86,7	1400	55,2	1870	73,7	1200	2640

Data refers to the following nominal conditions: Ambient temperature of 25 °C, with inlet air at 7 bar and 35 °C and 3 °C pressure Dew Point (-22 °C atmospheric pressure Dew Point).  
Max. working conditions: Ambient temperature 45 °C, inlet air temperature 55 °C and inlet air pressure 14 bar.

MD 6 ÷ 410



MD 480 ÷ 1500



# REFRIGERANT EMD DRYERS

**ENERGY SAVING:** the refrigerant compressor of EMD dryers adjusts to the load demand, allowing up to 80% energy saving under normal operating conditions.

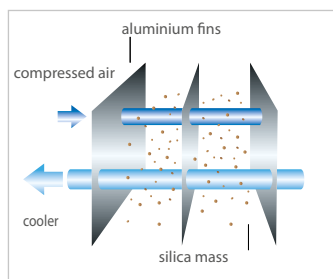
**HIGH RELIABILITY:** ensured by a simple refrigerant circuit and by thermostatically controlled dewpoint.

**SURE GUARANTEED QUALITY:** remarkably low and constant dewpoint.

**READY TO USE:** unlike traditional thermal mass systems, EMD dryers do not need pre-switching. They may be left 'on' without current leakage.

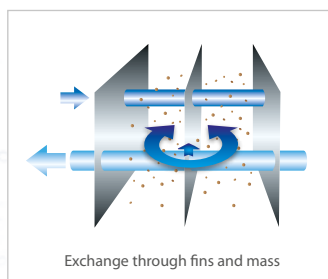
**ECOLOGICALLY SAFE:** the silica thermal mass and the refrigerating gas are absolutely nontoxic and easy to dispose of.

## THERMAL MASS



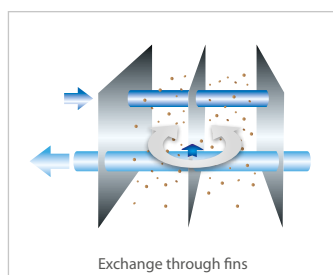
### TECHNOLOGY

The heat transfer from compressed air to the dryer occurs directly by means of aluminium connecting fins and indirectly through the silica thermal mass, in which the air and dryer pipes are immersed.



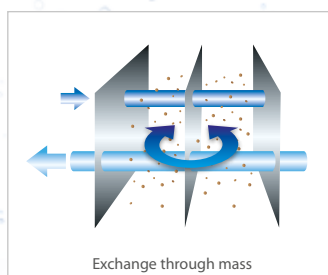
### PARTIAL LOAD

Under a typical use, compressed air is cooled indirectly, allowing compressor start and stop cycles, based on the load conditions.











### FULL LOAD

Under maximum operating conditions the best energy efficiency is obtained by direct cooling through the aluminium fins.



### STAND-BY

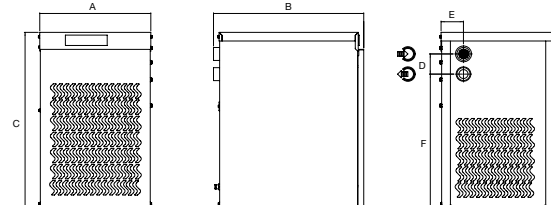
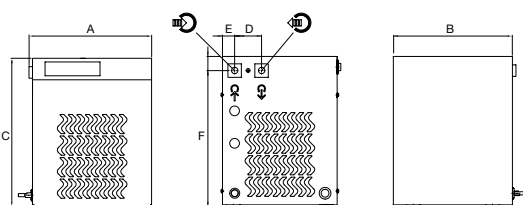
Under no load conditions the thermal mass is kept at the operating temperature. Energy consumption is reduced to a minimum and the dryer is ready to re-start immediately.

							 DIMENSIONS (MM)							
							A - LENGTH		B - WIDTH		C - HEIGHT			
MODEL	m³/min	cfm	KW (nom.)	Tipo	V/Hz/ph	Inch (IN-OUT)	mm	inch	mm	inch	mm	inch	kg	lbs
EMD 051	0,5	17,7	0,15	R134a	230/50/1	Rp 3/8"	319	12,6	298	11,7	390	15,4	18	39,6
EMD 071	0,7	24,7	0,18	R134a	230/50/1	Rp 3/8"	319	12,6	298	11,7	390	15,4	19	41,8
EMD 091	0,9	31,8	0,18	R134a	230/50/1	Rp 1/2"	359	14,1	298	11,7	415	16,4	22	48,4
EMD 121	1,2	42,4	0,19	R134a	230/50/1	Rp 1/2"	359	14,1	298	11,7	415	16,4	22	48,4
EMD 181	1,8	63,6	0,35	R134a	230/50/1	Rp 1"	380	15	514	20,3	625	24,6	35	77
EMD 261	2,6	91,8	0,47	R134a	230/50/1	Rp 1"	380	15	514	20,3	625	24,6	39	85,8
EMD 321	3,2	113	0,56	R134a	230/50/1	Rp 1"	380	15	514	20,3	625	24,6	42	92,4
EMD 401	4,0	141,2	0,74	R134a	230/50/1	Rp 1"	680	26,8	511	20,1	860	33,9	68	149,6
EMD 501	5,0	176,6	0,78	R134a	230/50/1	Rp 1 1/2"	680	26,8	511	20,1	860	33,9	75	165
EMD 601	6,0	211,9	0,84	R134a	230/50/1	Rp 1 1/2"	680	26,8	511	20,1	860	33,9	76	167,2
EMD 701	7,0	247,2	0,95	R134a	230/50/1	Rp 1 1/2"	755	29,7	555	21,9	995	39,2	93	204,6
EMD 801	8,0	282,5	1,10	R134a	230/50/1	Rp 1 1/2"	755	29,7	555	21,9	995	39,2	94	206,8
EMD 1001	10,0	353,1	1,53	R404A	230/50/1	Rp 2"	1031	40,6	799	31,5	1039	40,9	180	396
EMD 1201	12,0	423,7	1,84	R404A	230/50/1	Rp 2"	1031	40,6	799	31,5	1039	40,9	190	418
EMD 1401	14,0	494,3	2,11	R404A	230/50/1	Rp 2 1/2"	1170	46,1	939	37	1180	46,5	235	517
EMD 1651	16,5	582,6	2,24	R404A	400/50/3	Rp 2 1/2"	1170	46,1	939	37	1180	46,5	246	541,2

Data refers to the following nominal conditions: ambient temperature 25 °C, with inlet air at 7 bar and 35 °C and with a pressure dewpoint of 3 °C.  
Maximum working conditions: ambient temperature 50 °C, air inlet temperature 70 °C (EMD 051 - 801), 60 °C (EMD 1001 - 1651) and maximum working pressure 16 bar.

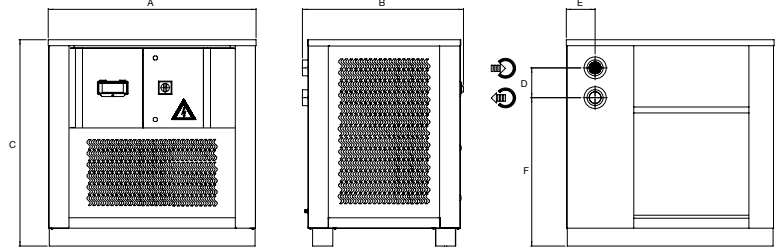
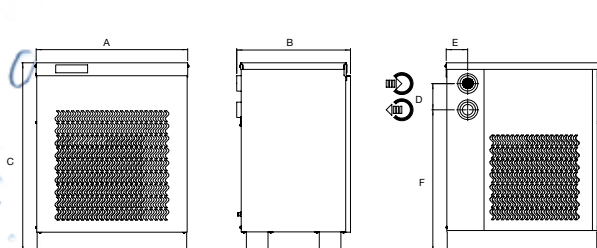
#### EMD 051 - 121

#### EMD 181 - 321



#### EMD 401 - 801

#### EMD 1001 - 1651



#### CORRECTION FACTOR FOR WORKING PRESSURE CHANGES

Inlet Air Pressure	barg	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Factor		0,71	0,82	0,9	0,96	1	1,04	1,07	1,09	1,11	1,13	1,15	1,16	1,18	1,19

#### CORRECTION FACTOR FOR AMBIENT TEMPERATURE CHANGES

Ambient Temperature	°C	20	25	30	35	40	45	50
Factor		1,05	1	0,95	0,89	0,84	0,78	0,72

#### CORRECTION FACTOR FOR INLET AIR TEMPERATURE CHANGES

Air Temperature	°C	30	35	40	45	50	55	60	65	70
Factor		1,23	1	0,81	0,66	0,57	0,52	0,48	0,44	0,4

#### CORRECTION FACTOR FOR DEWPOINT CHANGES

Dewpoint	°C	3	5	7	9
Factor		1	1,12	1,24	1,38



# ADSORPTION DD DRYERS

**HIGH-QUALITY COMPRESSED DRY AIR:** alumina-based technology. Alumina is an absorbent material that guarantees consistently high performance in delivering compressed air purity.

**ULTRA-COMPACT AND LIGHTWEIGHT DESIGN:** ease of installation and maintenance.

**HIGHLY EFFICIENT PLC CONTROL SYSTEM:** the removal of moisture and contaminant particles is rigorously controlled.

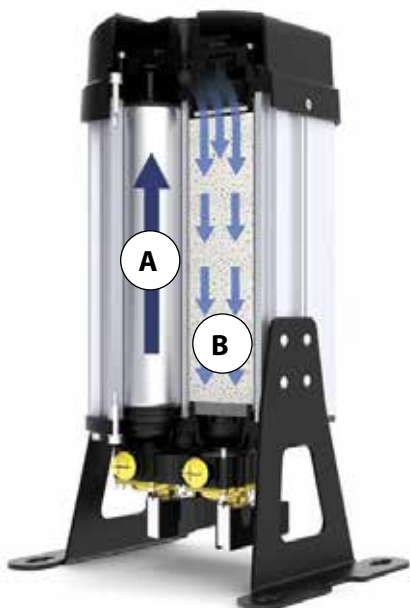
**COMPRESSOR SYNCHRONISATION:** starts and stops the dryer with a signal from the compressor, eliminating purge loss when drying is not required.

**ENERGY SAVING:** advanced design limits regeneration purge air usage to around 15%.

**UNINTERRUPTED FLOW OF COMPRESSED AIR WITH A CONSISTENT AIR PRESSURE:** at an optimum dew point set as standard to  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ).

**REDUCED NOISE LEVELS:** the new desiccant dryers are fitted with unique exhaust air silencers.

## ALUMINA - BASED TECHNOLOGY



### PRINCIPLES OF OPERATION

Heatless desiccant dryers are the most common due to their simplicity and hence low cost. A heatless twin tower dryer (see figure opposite) operates by removing moisture through adsorption onto a granular desiccant bed from the feed air (typically at 100 psig) as it flows up through a packed bed of desiccant, column A. Column B (having been previously used in drying the inlet air) is at atmospheric pressure and dry purge air from the outlet of column A is fed through a purge valve, expanded to near atmospheric pressure, and flowed in contra flow direction down through column B to effect the regeneration of its granular desiccant bed. When the desiccant in column A becomes saturated with water vapor (usually determined by a simple timer controller) the feed air is switched back to column B, after it has been pressurised, and the cycle continues.

											
			DIMENSIONS (MM)							WEIGHT	
			A - LENGTH		B - WIDTH		C - HEIGHT				
MODEL	CONNECTIONS	RATED FLOW		mm	inch	mm	inch	mm	inch	kg	lbs
DD	BSPP <sup>(1)</sup>	m <sup>3</sup> /min	scfm								
DD 10	3/8" <sup>(1)</sup>	0,1	3	432	17	229	9	254	10	8	17,6
DD 20	3/8" <sup>(1)</sup>	0,14	5	432	17	229	9	254	10	8	17,6
DD 30	3/8" <sup>(1)</sup>	0,3	10	635	25	229	9	254	10	13	28,7
DD 40	3/8" <sup>(1)</sup>	0,4	15	889	35	229	9	330	13	16	35,3
DD 50	1/2" <sup>(1)</sup>	0,7	24	1092	43	229	9	330	13	20	44,1
DD 60	1"	1	34	762	30	432	17	330	13	40	88,2
DD 70	1"	1,2	41	762	30	432	17	330	13	40	88,2
DD 80	1"	1,5	53	914	36	432	17	330	13	54	119,1
DD 90	1"	1,9	66	914	36	432	17	330	13	54	119,1
DD 100	1"	2,5	88	1092	43	432	17	330	13	64	141,1
DD 110	1"	3	106	1245	49	432	17	330	13	78	172
DD 120	1"	3,7	132	1499	59	432	17	330	13	95	209,4
DD 130	1"	5	177	1829	72	432	17	330	13	119	262,4
DD 2110	2"	6	212	1194	47	305	12	635	25	166	366
DD 2120	2"	7,8	276	1448	57	305	12	635	25	200	441
DD 2130	2"	11,3	400	1778	70	305	12	635	25	248	546,7
DD 3130	2"	15,9	560	1778	70	305	12	787	31	353	778,2
DD 4130	2 1/2"	21,2	750	1778	70	305	12	965	38	458	1009,7
DD 6120	2 1/2"	23,5	828	1448	57	305	12	1295	51	524	1155,2
DD 6130	2 1/2"	31,4	1110	1448	57	305	12	1295	51	668	1472,7

#### PRESSURE CORRECTION FACTORS <sup>(4)</sup>

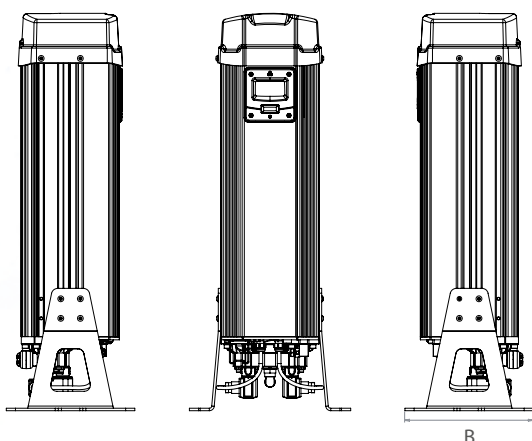
Inlet air pressure	barg	4	5	6	7	8	9	10	11	12	13	14	16
Correction factor		0,63	0,75	0,88	1	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,13

#### TEMPERATURE & DEW POINT CORRECTION FACTORS <sup>(4)</sup>

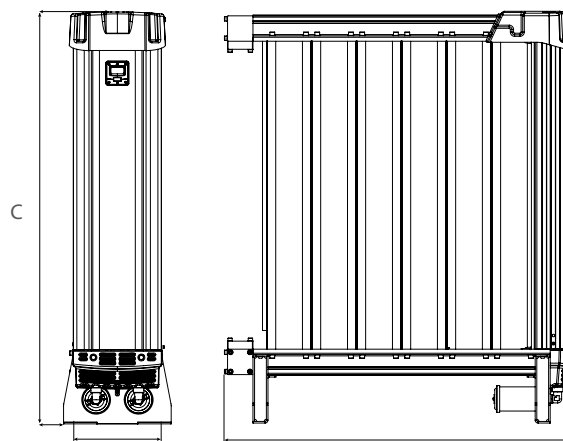
Inlet air temperature	°C	24	37	40	45	50	pressure dew point		-20	-40	-70
Factor		0,63	0,75	0,88	1	1,13	correction factor		1,10	1,00	0,70

(1) DD 010 to 050 have push to connect fittings on the inlet and outlet. All other models have BSPP threaded connections. | (2) at the inlet conditions of 7 barg and 38 °C and -40°C outlet pressure dew point. For all other conditions refer to the correction factors above | (3) We recommend installation of a condensate drainer and Mattei oil removing filter series "FM" grade "C1". | (4) ISO 8573.1:2010 (E)

#### DD 10 - 130



#### DD 2110 - 6130



# ADSORPTION DDH DRYERS

DEW POINT MONITORING AND CONTROL

COMPUTER CONTROL - DISPLAY STATUS

DISPLAY ALARMS - DISPLAY PRESSURE

REMOTE START/STOP - LOW PRESSURE ALARM

MINIMUM PRESSURE MONITORING VALVE

HIGH PRESSURE SWITCHES AND ALARMS

## HEATED DESICCANT AIR DRYERS











A centrifugal blower and high efficiency heater eliminates the use of valuable compressed air to be used for desiccant regeneration.

The completely automatic drying system uses blower to pull ambient air and pass it through the heater. This hot air stream flows opposite to drying flow direction. Hot air above 200 °C regenerates the moisture inside desiccant bed and strips it completely of all moisture.

The advanced control system monitors the dew point and adjusts the regeneration accordingly thereby providing valuable energy savings.





											
MODEL	CAPACITY	CONNECTION SIZE	PRESSURE DROP	MAX. WORKING PRESSURE	VOLTAGE	AVERAGE POWER	FUSE	ACTIVATED ALUMINA	DIMENSIONS (mm)		
DDH	m <sup>3</sup> /min	inch	mbar	bar	V/ph/Hz	kw	Amper	kg	A - WIDTH	B - LENGTH	C - HEIGHT
DDH 850	14	2"	≤ 130	10	400/3/50	9,4	40	264	1290	1180	2299
DDH 1000	17	2"	≤ 130	10	400/3/50	9,4	40	357	1200	1310	2415
DDH 1250	21	DN80	≤ 130	10	400/3/50	12	50	404	1610	1270	2468
DDH 1500	25	DN80	≤ 130	10	400/3/50	12	50	454	1610	1270	2563
DDH 1800	30	DN80	≤ 130	10	400/3/50	14,5	63	566	1563	1515	2479
DDH 2200	37	DN80	≤ 130	10	400/3/50	17,5	63	708	1563	1455	2789
DDH 2700	45	DN80	≤ 130	10	400/3/50	21,4	100	852	1615	1514	2836
DDH 3200	53	DN100	≤ 130	10	400/3/50	21,4	100	954	1710	1660	3054
DDH 3600	60	DN100	≤ 130	10	400/3/50	31,1	125	1070	1710	1660	3268
DDH 4400	73	DN100	≤ 130	10	400/3/50	36,1	125	1436	1975	2492	2910
DDH 5000	83	DN125	≤ 130	10	400/3/50	39,4	160	1670	2045	2560	3382
DDH 6300	105	DN150	≤ 130	10	400/3/50	49,4	200	2016	2090	2963	3328
DDH 7200	120	DN150	≤ 130	10	400/3/50	49,4	200	2446	2020	3363	3047
DDH 8800	147	DN150	≤ 130	10	400/3/50	72,3	260	2906	2020	3363	3341
DDH 10800	180	DN200	≤ 130	10	400/3/50	78,7	320	3354	2492	3481	3765

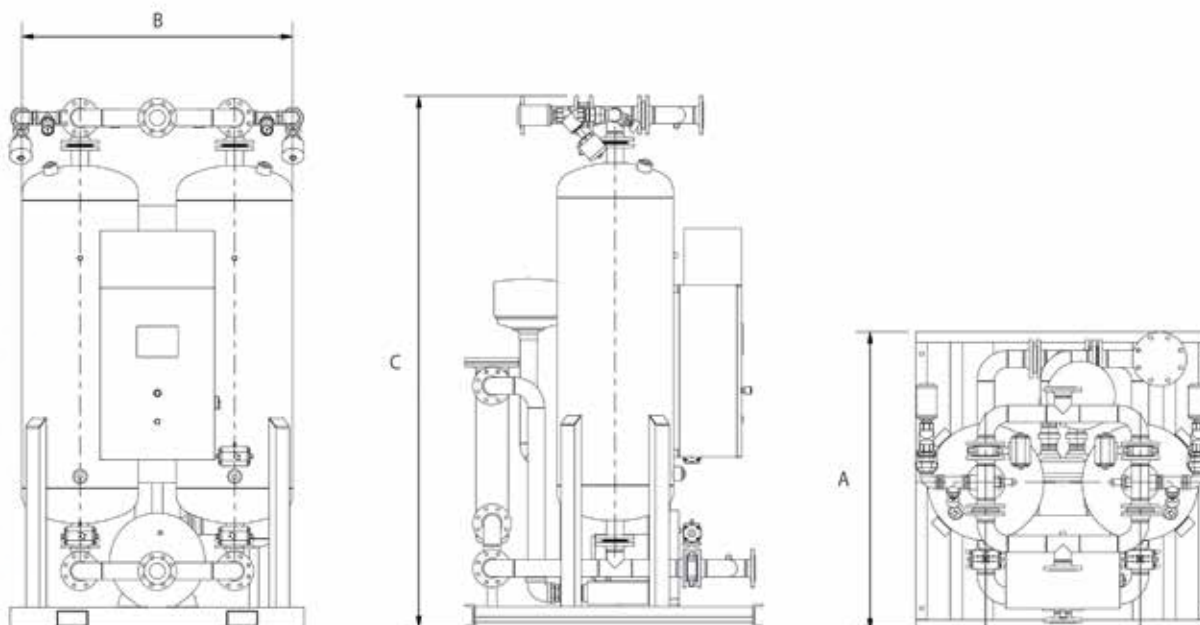
#### CORRECTION FACTOR

Bar	4.5	5	6	7	8	9	10
Factor Pressure F1	0.69	0.75	0.88	1	1.12	1.25	1.37

#### CORRECTION FACTOR

Inlet Temp. (°C)	20	25	30	35	40	45	-
Factor Inlet F2	1	1	1	1	0.80	0.73	-

#### DDH 850 - 10800



# OIL-WATER SEPARATORS

## MOS SEPARATORS

**FILTERING SYSTEM:** Both the pre-filter and the main filter are composed of high quality and efficient filtering material.

**FILTER ELEMENT SYSTEM:** The main element may be easily removed due to the useful handle. This allows the filter to be replaced without getting dirty.

**SIMPLE INSTALLATION:** Connection can be made in three different directions, with the advantage of a quick and simple installation.




**HEATER WITH THERMOSTAT:** If the unit is to be installed in a cold environment the MOS separator can be equipped with an optional heating system, to avoid the condensate freezing.

**ENVIRONMENT PROTECTION:** manufactured with recyclable materials and complying with regulations for waste disposal.



### PERFORMANCE AND WEATHER CONDITIONS

For suitable sizing of the systems and maximum efficiency please consider the world's different climatic areas. In fact, performance of MOS oil-water separator depends on the climatic area where it is operating, to choose the suitable model to be purchased it is essential to refer to the climate zones table.

	<b>COLD AND/OR DRY CLIMATE</b> Northern Europe, Canada, USA Northern states, Central Asia
	<b>TEMPERATE CLIMATE</b> Central and Southern Europe, Central America
	<b>WET-TROPICAL CLIMATE</b> Coast regions of South-East Asia, Amazonia, Oceania and Congo



PLEASE NOTE THERE IS NO MENTION OF Eastern Europe, Russia, African continent (apart from Congo).

	COMPRESSOR MAXIMUM PERFORMANCE (m³/min)				
	Turbine oil	VDL oil	VCL oil	PAO synthetic oil	Ester synthetic oil
<b>MOS 010</b>	2,4	2,4	1,9	1,9	1,6
	2,8	2,8	2,1	2,1	1,8
	2,1	2,1	1,6	1,6	1,4
<b>MOS 011</b>	4,9	4,9	3,8	3,8	3,2
	5,5	5,5	4,2	4,2	3,6
	4,2	4,2	3,2	3,2	2,8
<b>MOS 012 - 112</b>	7,3	7,3	5,6	5,6	4,8
	8,5	8,5	6,5	6,5	5,5
	6,2	6,2	4,8	4,8	4,0
<b>MOS 014 - 114</b>	14,6	14,6	11,3	11,3	9,6
	16,9	16,9	13,0	13,0	11,1
	12,5	12,5	9,6	9,6	8,2
<b>MOS 015 - 115</b>	29,3	29,3	22,5	22,5	19,1
	33,6	33,6	25,9	25,9	22,0
	24,9	24,9	19,1	19,1	16,3
<b>MOS 016 - 116</b>	58,5	58,5	45,0	45,0	38,3
	67,3	67,3	51,8	51,8	44,0
	49,7	49,7	38,3	38,3	32,5



#### OPERATING PRINCIPLE:

- 1** The oily condensate (under pressure) enters the expansion chamber (only for model with pre-separator).
- 2** Here the pressure is exhausted in the pre-separation container, without any turbulence.
- 3** Any solid particle is collected into a removable container.
- 4** Inside the pre-separation container the oil returns to the surface due to gravitational separation. Then the oil flows into the oil container.
- 5** The treated condensate reaches the filtering phase. The pre-filter retains much of the remaining oil as the condensate passes through it. It also removes any residual oil inside the filtering chamber.
- 6** The remaining oil particles are efficiently filtered by the main filter element.

The final result is clean water, ready for disposal directly in to the sewerage system. Replacing the filter is simple, quick and clean, due to the new technology of the element.

MODEL	RECEIVER VOLUME	FILLING VOLUME	CONDENSATE INLET	WATER OUTLET	OIL OUTLET	OIL COLLECTION CONTAINER	EMPTY WEIGHT	TEMPERATURE	INLET MAXIMUM WORKING PRESSURE	PRE-FILTER	MAIN FILTER
	l	l		pipe		l	Kg	Min - Max °C	bar	l	l
MOS 010	10	4,3	2 x 1/2"G	1/2"G	-	-	4	+5 a +60	16	2,5	2,6
MOS 011	18,6	11,7	2 x 1/2"G	1/2"G	-	-	6	+5 a +60	16	4,7	4,8
MOS 012	30,6	20,3	3 x 1/2"G (ø 10 mm) 1 x 1"G (ø 25 mm)	1/2"G	DN 25	5	12	+5 a +60	16	2,5	5,4
MOS 112	30,6	22,7	3 x 1/2"G (ø 10 mm) 1 x 1"G (ø 25 mm)	1/2"G	DN 25	5	14	+5 a +60	16	2,5	5,4
MOS 014	61,3	41,5	3 x 1/2"G (ø 10 mm) 1 x 1"G (ø 25 mm)	1"G	DN 25	5	16	+5 a +60	16	6,7	10,4
MOS 114	61,3	46,3	3 x 1/2"G (ø 10 mm) 1 x 1"G (ø 25 mm)	1"G	DN 25	5	19	+5 a +60	16	6,7	10,4
MOS 015	115,5	72,5	3 x 1/2"G (ø 13 mm) 1 x 1"G (ø 25 mm)	1"G	DN 40	10	32	+5 a +60	16	18,5	20,2
MOS 115	115,5	84,3	3 x 1/2"G (ø 13 mm) 1 x 1"G (ø 25 mm)	1"G	DN 40	10	37	+5 a +60	16	18,5	20,2
MOS 016	228,4	137,2	3 x 1/2"G (ø 13 mm) 1 x 1"G (ø 25 mm)	1"G	DN 40	20	42	+5 a +60	16	36,5	40,3
MOS 116	228,4	158,8	3 x 1/2"G (ø 13 mm) 1 x 1"G (ø 25 mm)	1"G	DN 40	20	53	+5 a +60	16	36,5	40,3

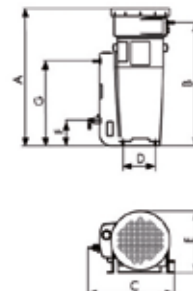
Models MOS 012-MOS 014-MOS 015-MOS 016 models are without pre-separator.  
Models MOS 112-MOS 114-MOS 115-MOS 116 models are with pre-separator.

MODEL	DIMENSIONS (MM)							
	A	B	C	D	E	F	G	H
MOS 010	530	470	310	100	230	110	330	-
MOS 011	600	540	390	140	260	110	370	-
MOS 012	-	730	350	-	390	320	340	200
MOS 112	710	-	350	550	-	320	340	200
MOS 014	-	900	410	-	470	420	460	240
MOS 114	880	-	410	600	-	420	460	240
MOS 015	-	1120	530	-	580	505	550	270
MOS 115	1090	-	530	770	-	505	550	270
MOS 016	-	1200	660	-	710	535	580	200
MOS 116	1160	-	660	940	-	535	580	200

MOS 010



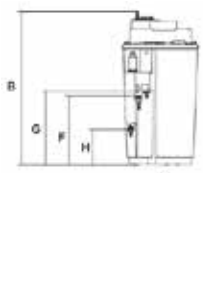
MOS 011



MOS 012 ÷ 016



MOS 112 ÷ 116












# SEPARATORS AND DRAINS

## CICLONE and DRAIN



### CICLONE CONDENSATE SEPARATOR











The **MATTEI CYCLONE** condensate separators are centrifugal. The high standards of design, production and assembly, the quality of the used materials ensure a high level of separation, including solid particles. They do not require maintenance.

												
MODEL	P <sub>MAX</sub>		AIR DELIVERY MAX		CONDENSATE DRAIN CONNECTION	CONNECTIONS	DIMENSIONS (MM)				WEIGHT	
	bar	psig	m³/min	cfm			inch	IN-OUT air	mm	inch		
CICLONE 1	16	232	1	35,3	Rp 1/8"	Rp 1/2"	90	3,5	220	8,7	0,6	1,3
CICLONE 3	16	232	3	105,9	Rp 3/8"	Rp 3/4"	90	3,5	280	11	0,7	1,5
CICLONE 5	16	232	5	176,6	Rp 3/8"	Rp 1"	120	4,7	310	12,2	1,1	2,4
CICLONE 10	16	232	9,5	335,5	Rp 3/8"	Rp 1 1/2"	120	4,7	390	15,4	1,3	2,9
CICLONE 17	16	232	16,5	582,6	Rp 3/8"	Rp 2"	170	6,7	500	19,7	3,6	7,9
CICLONE 24	16	232	24	847,5	Rp 3/8"	Rp 2 1/2"	170	6,7	680	26,8	4,5	9,9

### MATTEI CONDENSATE DRAINS

**MATTEI DRAIN** is a device with timer and adjustable that cyclically eliminates condensate water from the compressed air dryer. The drainer with timer is equipped with a test button allowing the operation of the device to be checked and has two LED's indicating there is electrical supply and the valve is under the draining phase. The drainers **MATTEI DRAINS 101, 200** and **202** are equipped with an integrated storage receiver, inside which there is a level control driven by an intelligent electronic circuit based on microprocessor logic. All functions of the drain are displayed on a control panel, which also includes a test button for manual drain.



			 MAX ABSORBED POWER	 CONDENSATE DRAIN CONNECTION	 COMPRESSOR CAPACITY	 DRYER CAPACITY	 FILTER CAPACITY	 POWERSUPPLY	 DIMENSIONS (MM)							
									LENGTH		WIDTH		HEIGHT			
MODEL	bar	psig	kW	inch	m³/h	m³/h	m³/h	V/Hz/ph	mm	inch	mm	inch	mm	inch	kg	lbs
MATTEI DRAIN	16	232	0,01	Rp 1/2"G_Rp 3/4"G	500	950	4750	230/50-60/1	110	4,3	50	2	90	3,5	0,4	0,9
MATTEI DRAIN 101	16	232	0,01	Rp 1/2" G	450	900	4500	230/50-60/1	140	5,5	70	2,8	140	5,5	0,6	1,3
MATTEI DRAIN 200	16	232	0,01	Rp 1/2" G	900	1800	9000	230/50-60/1	140	5,5	70	2,8	160	6,3	0,7	1,5
MATTEI DRAIN 202	16	232	0,01	Rp 1/2" G	1800	3600	18000	230/50-60/1	140	5,5	70	2,8	210	8,3	1,2	2,6

# STORAGE RECEIVERS



The installation of a storage receiver allows an improved pressure steadiness inside the air system, provides for possible peaks in the air demand, and optimises the operation of the linked compressor.

**MATTEI** vertical receiver are available in 2 versions:

- V** painted
- Z** galvanized

Upon request we can supply receiver with higher capacity.

#### KIT FOR UP 900 LITRE RECEIVERS - 11 BAR:

The kit includes:

- Declaration of conformity for the receiver and safety valve
- Safety valve approved by PED
- Gauge in compliance with EN 837

#### KIT FOR RECEIVERS FROM 1000 TO 5000 - 11 BAR:

The kit includes:








- Declaration of conformity for the receiver and safety valve
- Safety valve approved by PED
- Gauge in compliance with EN 837
- Condensate drain cock

#### KIT FOR RECEIVERS - 15 BAR:

The kit includes:

- Declaration of conformity for the receiver and safety valve
- Safety valve approved by PED
- Gauge in compliance with EN 837
- Condensate drain cock



											
MODEL	P <sub>MAX</sub>		RECEIVER CAPACITY	AIR IN-OUT CONNECTION	CONDENSATE DRAIN CONNECTION	DIMENSIONS (MM)				WEIGHT	
	bar(g)	psig				HEIGHT	DIAMETER	kg	lb		
			l	inch	inch	mm	inch	mm	inch		
S 500 11V	11	160	500	Rp 1"	Rp 1/2"	2100	82,74	600	23,64	120	264
S 500 11Z	11	160	500	Rp 1"	Rp 1/2"	2100	82,74	600	23,64	130	286
S 720 11V	11	160	720	Rp 1"	Rp 2"	2050	80,77	750	29,55	190	418
S 720 11Z	11	160	720	Rp 1"	Rp 2"	2050	80,77	750	29,55	210	462
S 900 11V	11	160	900	Rp 1 1/2"	Rp 2"	2250	88,65	800	31,52	200	440
S 900 11Z	11	160	900	Rp 1 1/2"	Rp 2"	2250	88,65	800	31,52	220	484
S 1000 11V	11	160	1000	Rp 2"	Rp 2"	2350	92,59	800	31,52	210	462
S 1000 11Z	11	160	1000	Rp 2"	Rp 2"	2350	92,59	800	31,52	230	506
S 1500 11V	11	160	1500	Rp 2"	Rp 2"	2450	96,53	1000	39,4	320	704
S 1500 11Z	11	160	1500	Rp 2"	Rp 2"	2450	96,53	1000	39,4	350	770
S 2000 11V	11	160	2000	Rp 2"	Rp 2"	2810	110,714	1100	43,34	380	836
S 2000 11Z	11	160	2000	Rp 2"	Rp 2"	2810	110,714	1100	43,34	420	924
S 3000 11V	11	160	3000	Rp 2"	Rp 2"	3000	118,2	1200	47,28	550	1210
S 3000 11Z	11	160	3000	Rp 2"	Rp 2"	3000	118,2	1200	47,28	600	1320
S 4000 11V	11	160	4000	Rp 3"	Rp 3"	3100	122,14	1450	57,13	830	1826
S 4000 11Z	11	160	4000	Rp 3"	Rp 3"	3100	122,14	1450	57,13	920	2024
S 5000 11V	11	160	5000	Rp 3"	Rp 3"	3600	141,84	1450	57,13	950	2090
S 5000 11Z	11	160	5000	Rp 3"	Rp 3"	3600	141,84	1450	57,13	1050	2310
S 500 15V	15	218	500	Rp 1"	Rp 1/2"	2100	82,74	600	23,64	135	297
S 500 15Z	15	218	500	Rp 1"	Rp 1/2"	2100	82,74	600	23,64	150	330
S 1000 15V	15	218	1000	Rp 2"	Rp 2"	2350	92,59	800	31,52	220	484
S 1000 15Z	15	218	1000	Rp 2"	Rp 2"	2350	92,59	800	31,52	245	539
S 1500 15V	15	218	1500	Rp 2"	Rp 2"	2450	96,53	1000	39,4	320	704
S 1500 15Z	15	218	1500	Rp 2"	Rp 2"	2450	96,53	1000	39,4	365	803
S 2000 15V	15	218	2000	Rp 2"	Rp 2"	2810	110,714	1100	43,34	400	880
S 2000 15Z	15	218	2000	Rp 2"	Rp 2"	2810	110,714	1100	43,34	440	968
S 3000 15V	15	218	3000	Rp 2"	Rp 2"	3000	118,2	1200	47,28	580	1276
S 3000 15Z	15	218	3000	Rp 2"	Rp 2"	3000	118,2	1200	47,28	630	1386



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