



**FILTREC**  
Technical Filtration



**FILTERS & PRODUCTS FOR  
COMPRESSORS, VACUUM PUMPS  
AND COMPRESSED AIR**



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**FILTERS AND PRODUCTS FOR COMPRESSORS**

**AIR-OIL SEPARATORS**

**FILTER HEADS & ADAPTERS**

**AIR FILTERS**

**SPIN-ON OIL FILTERS**

**FILTERS AND PRODUCTS FOR VACUUM PUMPS**

**DEMISTERS**

**VACUUM AIR FILTERS**

**SPIN-ON OIL FILTERS**

**FILTERS AND PRODUCTS FOR COMPRESSED AIR**

**COMPRESSED AIR FILTERS**

**ACCESSORIES**

**PRATICAL ADVICE**

**PREMATURE INCREASE IN PRESSURE DIFFERENTIAL**

**EXCESSIVE USE OF OIL**

**COLLAPSED SEPARATOR CAUSES**

**FLASH FIRES**





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## FILTERS & PRODUCTS FOR COMPRESSORS



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# AIR-OIL SEPARATORS

During the last century compressed air became associated with many industrial applications and compressor manufacturers focused their attention on rotary screw and vane compressor whose compression systems use lubricating oil as a coolant.

Hence the necessity of using air/oil separators.

Filtrec designs and manufactures separators specifically for installation in rotary screw and rotary vane compressors and they are available in vertical, horizontal and spin on configurations.

Their purpose is to separate the oil droplets from the compressed air, thereby producing cleaner air and allowing the oil to be scavenged and re-circulated in the compressor.

Filtrec separators are manufactured to satisfy OEM's needs in terms of:

- Physical principle of air/oil separation
- Element dimensions according to the compressor's performance and tank dimensions.
- Oil consumption to ensure a correct functional performance
- Use of high grade filtration and separation media to ensure the best quality of clean air needed for industrial applications.

Additionally it is very important to highlight that Filtrec separators can be used with all types of oils, whether standard, mineral based, synthetic or partially synthetic.

In order to decide which is the best separator to be used for a specific compressor, OEMs have to consider what level of separation needs to be achieved, in other words to target the minimum of parts per million of residual oil content required.

Then a technical solution is needed in order to reduce the oil concentration in the air.

Often OEMs need to consider a pre-separation system, which will reduce the PPM and increase the life of the air/oil separator.





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## CONSTRUCTION AND SEPARATION:

Corrosive resistant materials are used in the construction of the air/ oil separators. Careful welding procedures and the use of the latest twin pack adhesive ensure that the element has high mechanical strength and can endure operating temperature up to 120°C.

Normally, the air and oil mixture passes from the outside to the inside of the separator and the coalescing effect is carried out through a multi stage separation process resulting in the recovery of the oil and producing clean air.



Type	Pressure drop at nominal flow rate (bar)	General specifications
Single wrapped	0,16	low production costs, good performance and long life span
Double wrapped span	0,18	excellent performance on small dimensions or long life
Pleated	0,15	low pressure drop
Pleated + wrapped	0,17	low pressure drop and excellent separation levels
With pre-separation fleece	0,2	for applications showing high oil percentage before separation or under particular environmental conditions
Spin on	0,25	for easy maintenance and small flow rates



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## PRESSURE DROP - EFFICIENCY AND PERFORMANCE

At a nominal working pressure of 7 bar, the pressure drop on a new element varies between approximately 0.15 and 0.25 bar.

At other working pressures, the pressure drop is proportional to the air velocity across the separator (graph 2)

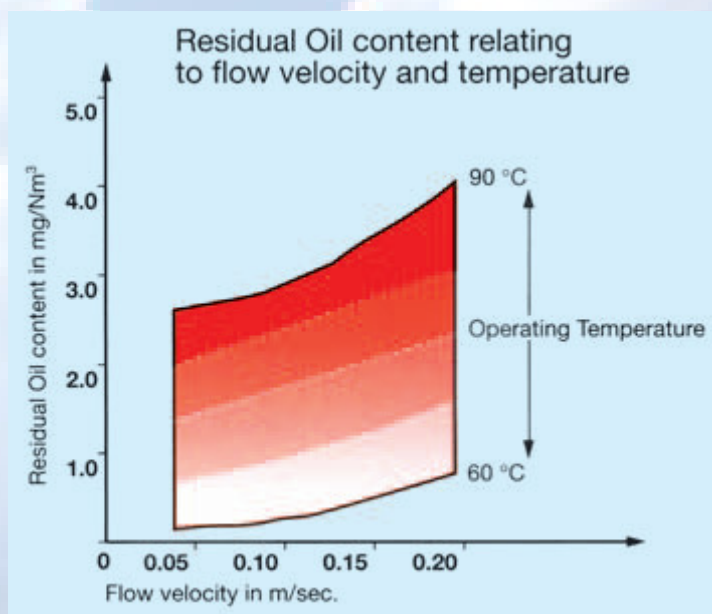
By using our separators, the oil carryover after separation is limited to about 1 to 3 ppm.

The life of the separator depends on many factors: the designs and regular maintenance of the compressor, clean environment, working temperature, quality of the air and oil filters.

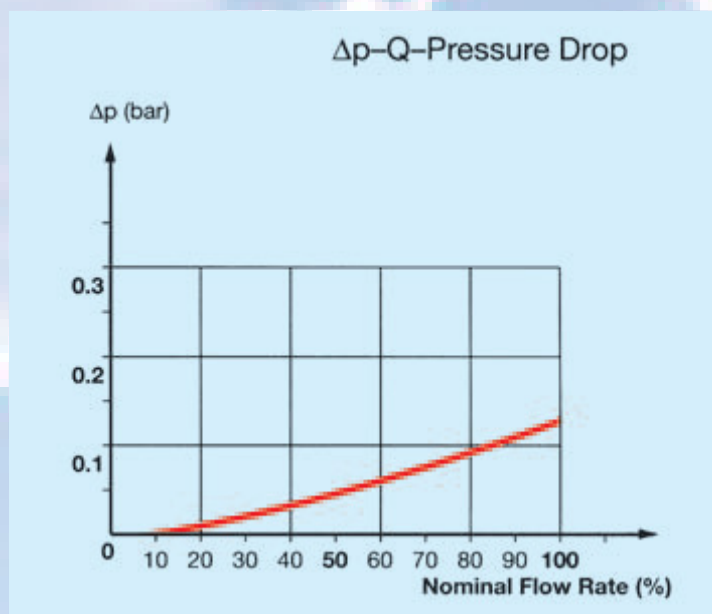
To ensure maximum separator efficiency, the joints must create a perfect seal.

Experience has shown that through correct installation and also using the correct type of oil, Filtrec separators can have a life expectancy of many thousands of hours.

Graph 1



Graph 2







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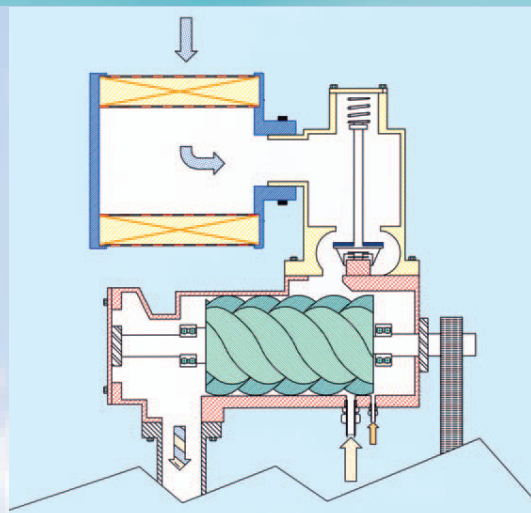
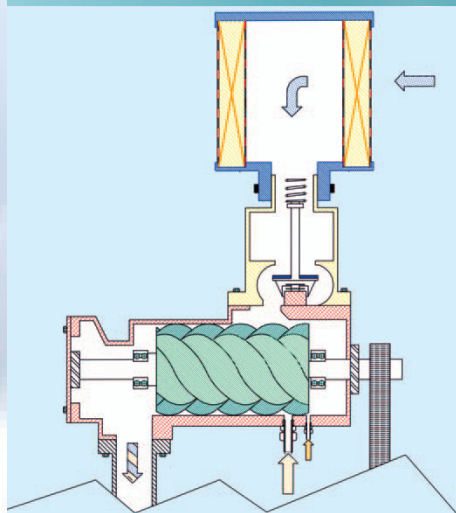
## AIR-FILTERS

Besides being able to provide a wide range of adaptable air cartridges, FILTREC can offer OEMs a series of air filters that do not require a housing.

These filters are recommended for 1 to 12 m<sup>3</sup>/min flow rates and can be installed vertically or horizontally.

This type of solution offers a low pressure drop and very simple installation and replacement procedures.

(On specific requests we can offer fibreglass or oiled cellulose filtering media).





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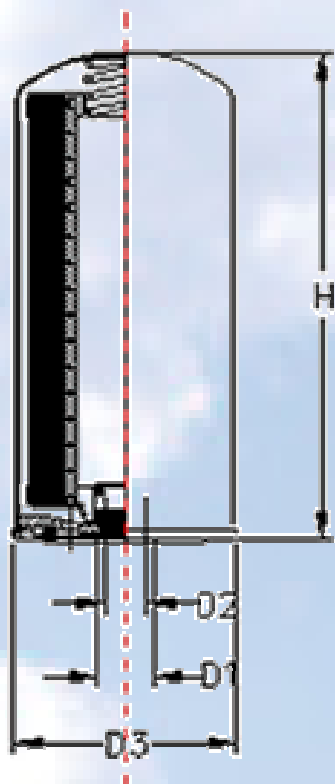
# SPIN-ON OIL FILTERS

Thanks to its experience in the hydraulic sector, FILTREC has developed a range of oil filters, especially suitable for screw and vane compressor applications, "bearing in mind,, that these filters will have to endure sudden changes and extreme limits in pressure and temperature.

The oil filters that FILTREC offers are usually of the spin-on type and can be provided with a by pass valve, if it is not already to be found on the heads or in the lubrication circuit.

Generally the most commonly used filtering media is made of cellulose, however fibreglass and metallic mesh versions are available on request.

Every batch undergoes stringent laboratory performance tests in terms of resistance to cyclic and maximum working pressure.







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## FILTERS & PRODUCTS FOR VACUUM PUMPS





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# DEMISTERS

The media used in our separators enables us to obtain excellent air/oil separation rates up to 1-3 mg/m<sup>3</sup>.

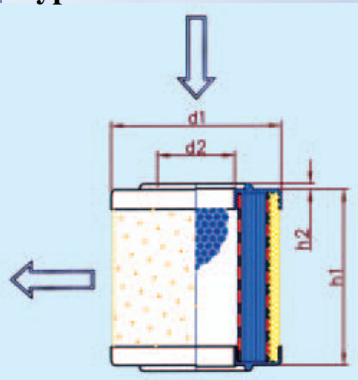
All oil separators are manufactured using materials to withstand high pressures and temperatures and to minimise moisture induced deterioration.

In order to achieve the best possible separation efficiency and long working life of the element it is essential that regular maintenance procedures are followed and joints are applied correctly, as well as the use of good quality air and oil filters.

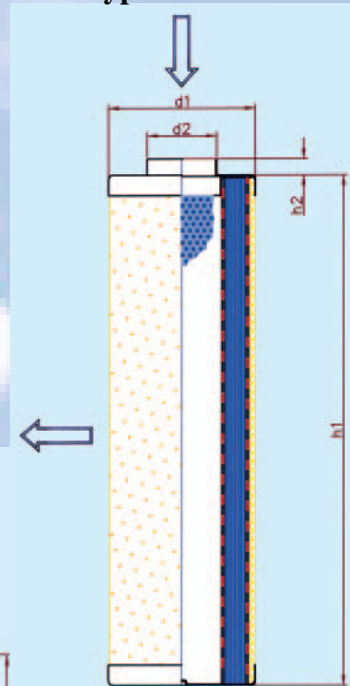


Some design configurations are shown below.

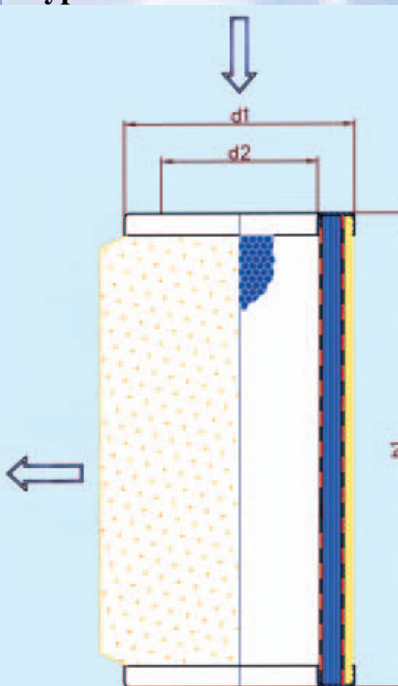
Type 1



Type 2



Type 3







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# VACUUM AIR FILTERS

**Filtrec offers a wide range of filters to suit most requirements in this field and the elements are usually interchangeable with those produced by other leading manufacturers.**

**Steel housings are treated with a special protective coating thereby guaranteeing a longer durability. They also undergo thorough tests to ensure the seals withstand high vacuum levels.**

**The elements have high dust retention and are available with paper media (having a normal filtration rate of 5 microns) as well as glass fibre media for special applications.**





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## FILTERS & PRODUCTS FOR COMPRESSED AIR







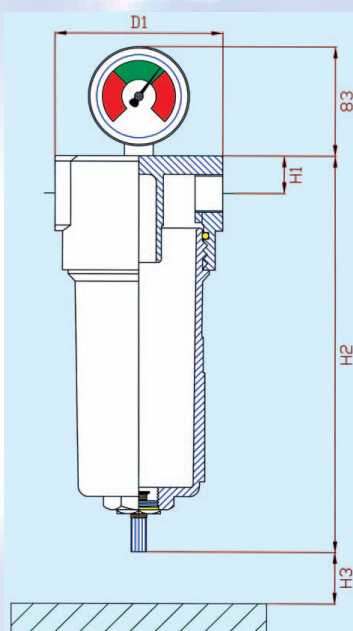
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# COMPRESSED AIR FILTERS

Due to the continuous demand of users of compressed air for clean, high quality air, Filtrec offers a range of coalescing filters specifically designed to suit most requirements.

Our established experience enables us to offer simple, efficient and high quality products at competitive prices.

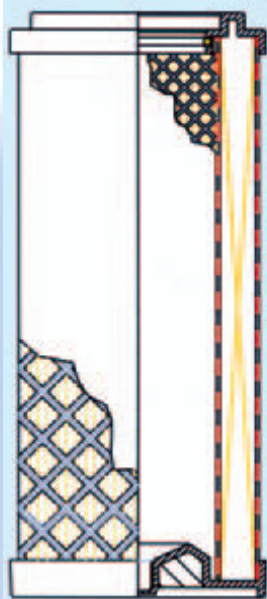
There are four series of elements available for various types of applications, depending on the level of filtration required.



Filtrec Ref	Capacity (m <sup>3</sup> /h at 7 bar)	Connections	D1 mm	H1	H2	H3	Max Operating Pressure (Bar)
ZSM9001	60	3/8	87	21	209	75	16
ZSM9002	78	1/2	87	21	209	75	16
ZSM1228	120	3/4	87	21	279	160	16
ZSM9004	198	1	130	43	315	135	16
ZSM1066	335	1	130	43	415	235	16
ZSM1048	510	1 1/2	130	43	515	335	16
ZSM1286	780	1 1/2	130	43	715	525	16
ZSM1430	1000	2	164	48	823	520	16
ZSM1107	1500	2	164	48	1073	770	16
ZSM9010	2760	3	250	74	1202	780	12

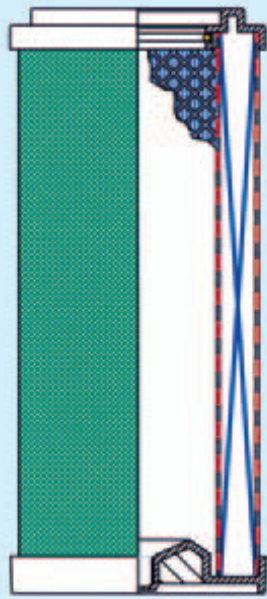


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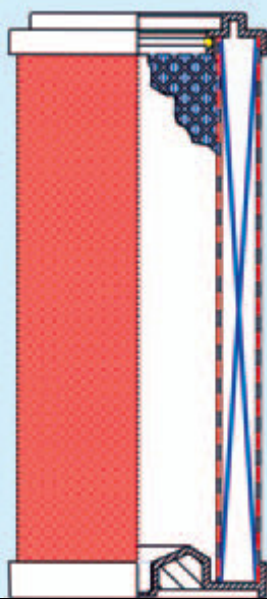
### PRE FILTERS "Series 1"

Coarse filtration and  
dust removal  
Air flow through filter  
element- out to in.



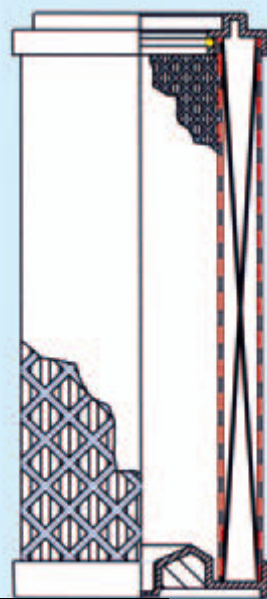
### FINE FILTERS "Series 2"

General purpose protection  
Particle removal down to 0.1  
micron.  
Maximum residual oil content  
down to 0.5 PPM.  
Air flow through filter  
Element; in to out.



### MICRO FILTERS "Series 3"

High efficiency  
Particle removal down  
to 0.01 micron.  
Maximum residual oil  
content down  
to 0,01 PPM.  
Air flow through filter  
element-in to out.



### ACTIVATED CARBON FILTER "Series 4"

Oil vapour and odour removal  
Particle removal below 0.01  
Micron.  
Maximum residual oil content  
down to 0.005 PPM.  
Air flow through filter element  
in to out.

Filtrec Ref	Pre filter (series 1)	Fine filter (series 2)	Micro filter (series 3)	Activated Carbon (series 4)
ZSM9001	ZSM1056	ZSM1060	ZSM1104	ZSM1342
ZSM9002	ZSM1293	ZSM1073	ZSM1327	ZSM1170
ZSM1228	ZSM1143	ZSM1290	ZSM1110	ZSM1088
ZSM9004	ZSM1325	ZSM1076	ZSM1200	ZSM1124
ZSM1066	ZSM1268	ZSM1215	ZSM1115	ZSM1235
ZSM1048	ZSM1116	ZSM1273	ZSM1137	ZSM1402
ZSM1286	ZSM1281	ZSM1093	ZSM1296	ZSM1040
ZSM1430	ZSM1098	ZSM1193	ZSM1438	ZSM1089
ZSM1107	ZSM1339	ZSM1162	ZSM1395	ZSM1086
ZSM9010	ZSM1192	ZSM1157	ZSM1267	ZSM1050

SERIES	Particle removal down to (micron)	Oil removal down to (mg/m3)	Nominal initial pressure drop (bar g)
1	3	-	0.03
2	0.1	0.5	0.05
3	0.01	0.01	0.06
4	0.01	0.005	0.12





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# ACCESSORIES

Cyclon kits, differential pressure gauges, manual, automatic condensate drains and technical specifications are available for all types.





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# PRACTICAL ADVICE

Our products regularly undergo stringent quality control and only very seldom the malfunctioning of the compressor has to be ascribed to the filter itself.

Here below are listed some of the most common causes which lead on to an improper functioning of the machine.

## Premature increase in pressure differential

This usually occurs when compressors work under the following conditions:

- a) Air intake filter and oil no longer efficient
- b) Unsuitable or heavily contaminated oil
- c) Water contamination-recognised by rust deposits in separator tank

To help in avoiding these problems, there should be frequent replacements of the Air and Oil filters and the oil should be changed completely at regular intervals. Check for deposits of 'varnish' which can quickly block a separator.

Compressor should not be run at excessively high temperatures.

## Excessive use of oil

This normally occurs under the following circumstances:

- a) Separator not changed at the appropriate time. If the separator has reached the end of its lifespan or has worked in arduous conditions and is not replaced, it can suffer structural damage (collapse) or media breakdown causing oil carry-over.
  - b) Blocked or malfunctioning scavenge tube. This situation increases the level of oil inside the separator and the amount of oil carry-over. To avoid this problem, the scavenge tube must be checked for correct length at every separator change and kept free from blockage.
  - c) Incorrect oil level in tank. Overfilling with oil alters the pre-separation process and increases the quantity of oil in the air/oil mist thereby reducing the efficiency of the separator. "Foaming" created by the oil can also create this situation.
  - d) Gaskets applied incorrectly or use of unsuitable or used gaskets. When installing a new separator the incorrect application of joints (bad seal) can cause heavy movements of oil thereby by-passing the separating system.
  - e) Inefficient separation system. In some instances, the design of the compressor separation system is inefficient.
- In these cases the manufacturers improve the separation efficiency by adding baffles or through modification of separations by adding pre-separation media to the outside of the element.



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## **Collapsed separator causes**

**This normally occurs under the following circumstances:**

**a) Separator excessively contaminated**

**b) Sudden surges caused by:**

- malfunctioning valves
- sudden release of air to atmosphere (mobile compressors)

**c) Rotary compressors working in parallel with reciprocating compressors without a suitable air receiver.**

## **Flash fires**

**These are very rare and are caused by several factors occurring simultaneously and not directly related to the Air/Oil separator.**

**It is good practice to ensure that the gaskets have a reliable form of grounding by the use of suitable materials (at least one or two metal staples or metal foil) so that there is contact between the element and the separator tank.**

### **FILTERS AND APPLICATIONS**

