



# DF COMPRESSED AIR FILTER



UltraPleat™  
Media  
Technology

# The DF Filter: unrivalled versatile

## Versatile Filtration Solutions for Compressed Air Applications

Compressed air next to electricity, is the most widely used energy source in the industry section. Hence, the following aspects have to be considered in high quality compressed air purification:

- Economic filtration
- Validated performance data according to ISO 12500-1 (oil aerosols), 12500-2 (oil vapours) and 12500-3 (particles)
- Reliable achievement of the compressed air quality to suit the application according to ISO 8573-1

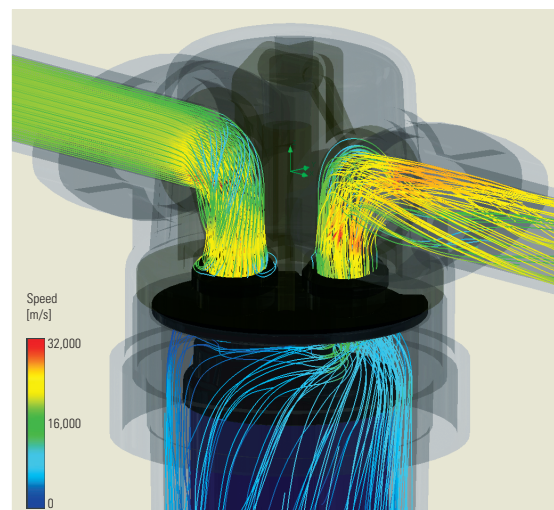


With the correct selection of the filtration level and flow rate, the right product for the filtration level required is always available

## Unrivalled high Performance

The DF-Filter was developed on the basis of world-wide experiences and innovative designs for highly efficient and economic filtration technology.

- A flow-optimised filter design guarantees minimum pressure loss
- The innovative filtration technology ensures high separation efficiency
- An intelligent overall concept for unrivalled efficiency



Flow-optimised air flow through the DF Filter

Computer-aided simulation was the basis for the turbulence-free design with optimised air flow through the filter housing and into the element. This ensures low pressure losses.

Compressed air quality class	Dirt (solid particles)			Water Pressure dew point °C	Oil Concentration mg/m <sup>3</sup>
	Maximum particle number per m <sup>3</sup> particle size, d in µm 0.10 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0		
0	Specified according to application and better than Class 1				
1	20,000	400	10	≤ -70	≤ 0.01
2	400,000	6,000	100	≤ -40	≤ 0.1
3	n.s.	90,000	1,000	≤ -20	≤ 1
4	n.s.	n.s.	10,000	≤ +3	≤ 5
5	n.s.	n.s.	100,000	≤ +7	> 5

Compressed air quality according to ISO 8573-1

n.s. = not specified

# New UltraPleat™ Technology

## The innovative UltraPleat Filtration Technology

With the new filtration technology UltraPleat it has succeeded, to reduce the differential pressure, which arises while filtering compressed air, up to 50 % compared to the former range – and this with consistently high filtration performance.

The UltraPleat filtration technology uses a new structure of coated high-tech fibres that are processed into a pleated filter medium with a high separation efficiency of liquid particles and a huge adsorption capacity for solid particles. The multilayer structure of the new filter medium was designed so that optimal aerodynamic conditions are achieved, simultaneously providing a filter surface that is over 400 % larger by comparison with wrapped filter media. For the separation of oil aerosols, an efficiency of up to  $\geq 99.9\%$  is achieved.

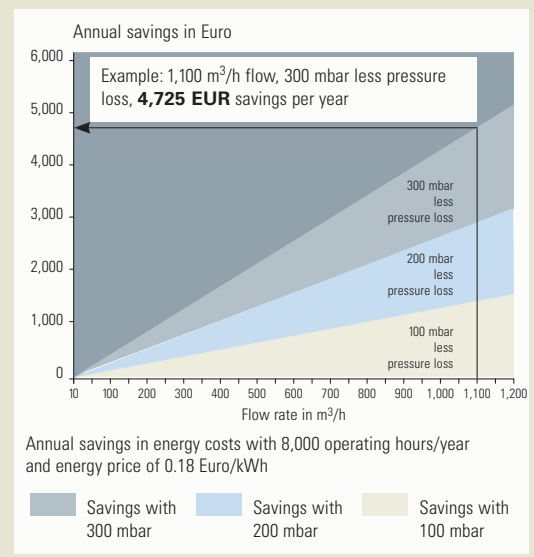


The new UltraPleat Technology is available for filter elements S and M

## Unrivalled Efficiency

The outstanding low differential pressure of the UltraPleat technology has great influence on the energy consumption and turns filter elements including the new filtration technology into real energy saving filters. For the compressed air users energy savings are increasing, therefore a contribution to the conservation of resources will be made – a completely clean business!

### Energy Cost Savings through Reduction of Differential Pressure



The economic efficiency is clearly indicated by a simple calculation showing the reduction in differential pressure:

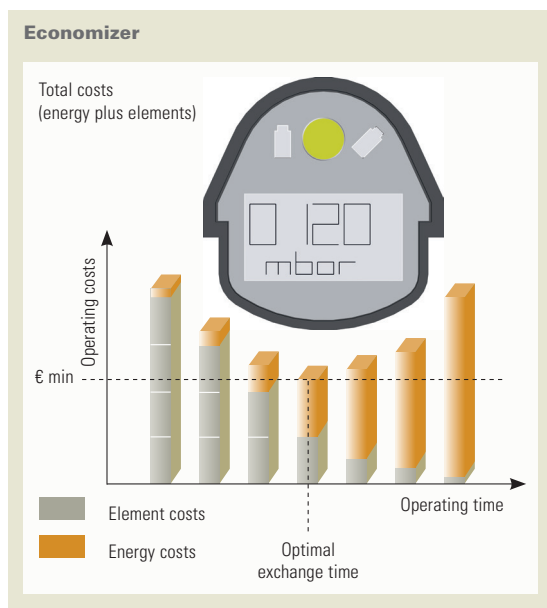
Just a 300 mbar lower differential pressure over 8,000 operating hours saves 4,725 Euro per year. (7 bar operating pressure, 110 kW installed power, 18 Eurocent/kWh).

This practical example shows that the investment in optimizing the compressed air system rapidly pays for itself.

# Cost saving due to Energy Efficiency

## The Economizer for an economical Filter Exchange

Further energy cost savings are achieved by the timely replacement of used filter elements. The most economic time for this action is determined by the Economizer. This continuously measures the differential pressure. The integrated micro-processor evaluates the measurement data and compares the higher energy costs caused by pressure loss with the costs of a new filter element. The most cost-effective replacement time for the filter element is calculated and LED's then signal that "Filter exchange" is necessary.



The Economizer shows the most economic time for a filter element exchange

Economic efficiency also means: The right filter element for each application. Every required compressed air quality can be achieved with the least possible pressure loss. The DF Filter offers, with its six different grades, all levels from prefilter via sub micro filter to active carbon filter and therefore everything that an efficient compressed air purification needs.

## Excellence with the Rating "Unrivalled"

With nine sizes, the DF Filter covers the performance range from 35 to 1,100 m<sup>3</sup>/h flow rate and therefore conventional compressor capacities between 2 and 110 kW.

Three versions are available:

- Standard: Economizer with float drain
- Plus: Economizer with float drain
- Superplus: Economizer with level-controlled condensate drain UFM-D



Modular DF Filter in three versions

## Unrivalled Compactness

The DF Filter is space-saving in every respect:

- The space requirement: up to 30 % less installation height, a few centimetres of ground clearance enables filter exchange
- The differential pressure display: integrated in filter head
- The filter combination: fits into the smallest spaces due to an intelligent adapter solution
- The wall mounting: adjustable

# Easy to use

## Unrivalled ease of Use

The DF Filter is unrivalled in its ease of use. This is evident both during installation and when the filter element is replaced. The filter bowl is rotated slightly via a bayonet lock and can be removed together with the filter element. The new element is just as easily inserted. The integrated condensate drain does not have to be disconnected from power and condensate feeds. The cover with integrated differential pressure display can be rotated – so that the display stays visible from the selected side.

## Unrivalled Flexibility

All filters can be either used as coalescence filters (flow through element from the inside to the outside) or as particulate filters (outside to inside). The essential clue: if requirements change, the filter head does not even have to be rotated.



The DF Filter is easy to open, because of the bayonet lock

Changing the coding clip inside the filter bowl allows the filter element to be rotated and so change the flow direction. The coalescence filter becomes a particulate filter in seconds – and vice versa. Wall supports available on request enable flexible wall mounting. The telescopic design of the support provides stageless adjustability. The combination of filter grades installed in series is provided through connection adapters. Easy to mount and space-saving to even fit into the smallest spaces.

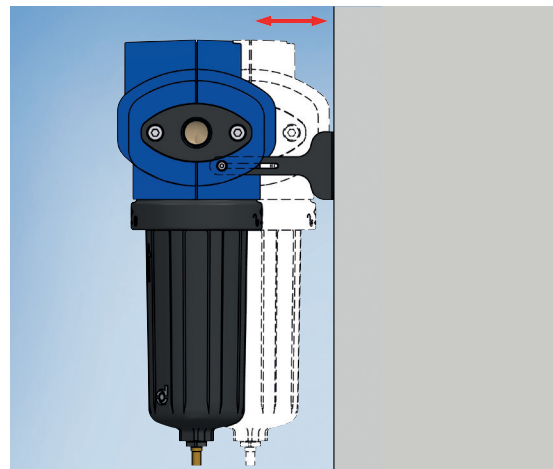


Possible installation in series with connection adapters

## Unrivalled Safety

Operating safety is paramount:

- High operating safety through a bayonet lock: The filter cannot be opened while it is under pressure.
- No inflation of coalescence drainage layer: It is completely fixed in place by the outer support sleeve. This ensures a constant flow cross-section between element and housing at all times.
- High quality corrosion protection: All filter housings are immersion-lacquered on the in and outside. This ensures long-term protection, particularly against aggressive condensates.



Wall supports enable flexible wall mounting

# The „All-in-One“ – Three-Stage Filter DF-T

## Unrivalled Efficient

Based on the proven DF Filter series the innovative three-stage filter DF-T(hree) was developed. It will be used for the purification of compressed air or gases when limited space is required. By combining of several purification stages in only one filter housing the DF-T is a very compact solution. It can be used as terminal filter, where the highest quality of compressed air is necessary and only small place for installation is available.

The “All-in-One“-Filter:

- Coalescence filter for the removal of oil aerosols and particles
- Activated carbon adsorber (packed bed) for the removal of oil vapours and other hydrocarbons
- High performance particle filter
- Achievement of the quality class 1 for oil aerosols and particles according to ISO 8573-1



Innovative solution in smallest places with the three-stage filter DF-T

The use of the new DF-T filters is as interesting for point of use filtration in sensitive applications, such as the food production, the pharmaceutical industry, in laser cutting machines, as well as environmental technology as in the central compressed air treatment for performances up to 110 m<sup>3</sup>/h. The filter can be used especially advantageously as a compact treatment unit for small compressors, in order to generate pure compressed air in a simple

way, for example in paint applications.

The three-stage filter thereby enables the optimum adjustment of the compressed air quality to the consumer profile as requested by the users.



Cross-section of an DF Filter with DF-T element

## Features

- Combination of sub micro filter, activated carbon adsorber and high performance particle filter (compressed air quality class 1 for oil aerosols and particles)
- Three purification stages in one filter (space savings up to 60 % to traditional solutions)
- Reliable monitoring of the service lifetime of the filter element as well as the differential pressure
- Flow-optimised design
- Perfectly meets the requirements for the use as a terminal filter: Size range, filtration grades, integrated monitoring functions and a reliable working pneumatic condensate drain
- Low pressure losses, thereby saving of energy costs
- Filter cannot be opened under pressure due to bayonet lock

# The DF-T – compact and save

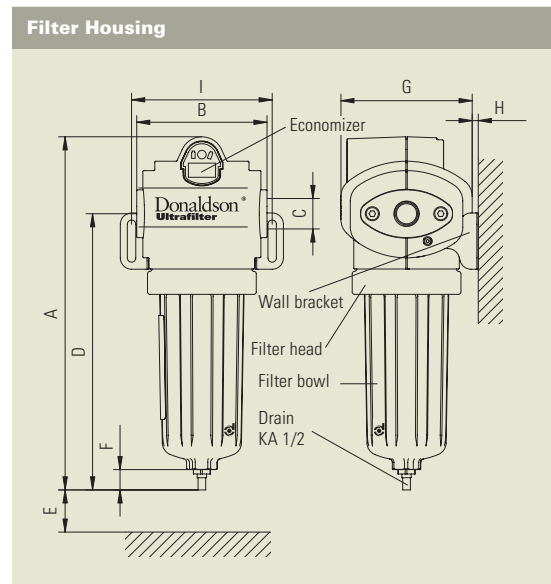
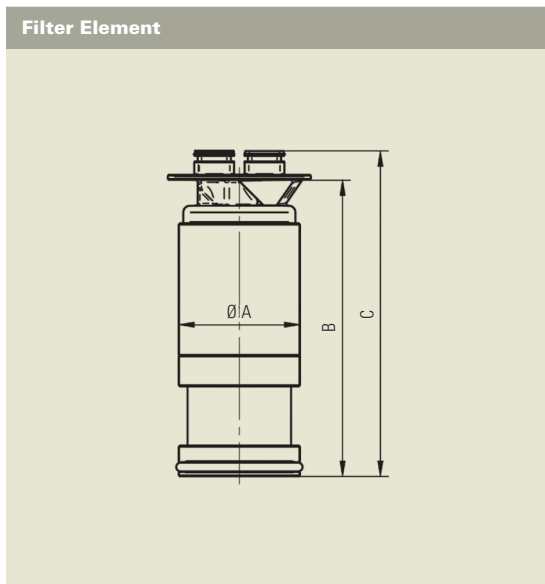
## Unrivalled Space Savings

The Economizer integrated in the filter housing supervises the service lifetime of the filter element and signals the necessary exchange at expiration of the specified time of use. Optional the Economizer supervises the differential pressure of the filter and signals with reaching the adjusted limit that an exchange of the filter element is rational. As the Economizer signals alarm at oil breakthrough it is an ideal solution to protect downstream equipment.

With three sizes the three-stage filter covers the performance range up to 110 m<sup>3</sup>/h flow rate at an operating pressure of 7 bar.



DF-T Filter elements



## Technical Data DF-T

Size	Flow rate*	Weight **	Housing type	Dimensions housing								Dimensions element			
				A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	A mm	B mm	C mm
0050	50	1,0	0120	341	103	G 1/2"	266	150	27	107	5/34	107	55	135,5	149
0080	80	2,0	0210	382	139	G 3/4"	300	180	27	140	5/53	150	75	157,5	174
0110	110	2,2	0320	442	139	G 1"	360	250	27	140	5/53	150	75	217,5	234

\*Nominal flow at 7 bar g, m<sup>3</sup>/h related to 1 bar abs. and 20 °C \*\*without filter element

# Unrivalled Variability

A-filter Activated carbon filter	V-filter Coalescence filter	UltraPleat M-filter Coalescence filter	UltraPleat S-filter Coalescence filter
Differential pressure: 0,13 bar <sup>A</sup> Residual oil content: 0,003 mg/m <sup>3</sup> <sup>C</sup>	Differential pressure: 0,11 bar <sup>A</sup> Residual oil content: < 0,2 mg/m <sup>3</sup> <sup>D</sup>	Differential pressure: 0,08 bar <sup>A</sup> Residual oil content: < 0,02 mg/m <sup>3</sup> <sup>D</sup>	Differential pressure: 0,10 bar <sup>A</sup> Residual oil content: < 0,01 mg/m <sup>3</sup> <sup>D</sup>
	Differential pressure: 0,12 bar <sup>B</sup> Residual oil content: < 0,2 mg/m <sup>3</sup> <sup>D</sup>	Differential pressure: 0,14 bar <sup>B</sup> Residual oil content: < 0,02 mg/m <sup>3</sup> <sup>D</sup>	Differential pressure: 0,18bar <sup>B</sup> Residual oil content: < 0,01 mg/m <sup>3</sup> <sup>D</sup>

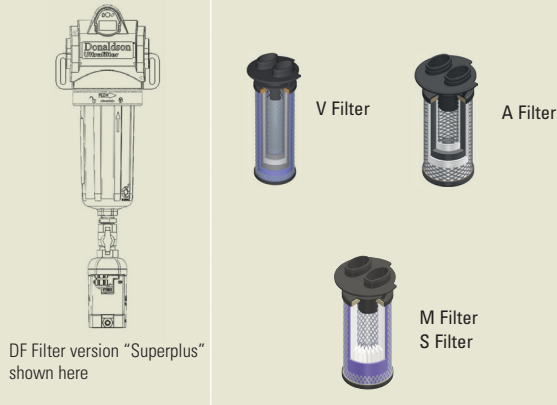
<sup>A</sup> related to nominal performance at 7 bar, dry condition

<sup>B</sup> related to nominal performance at 7 bar, wet filter

<sup>C</sup> when upstream connected an M- or S-filter

<sup>D</sup> related to an inlet concentration of 3 mg/m<sup>3</sup>

## Technical Data

	Filter type	Capacity*	Connection	Filter element
		nominal m <sup>3</sup> /h	G	Size
 <p>DF Filter version "Superplus" shown here</p>	0035	35	1/4"	0035
	0070	70	3/8"	0070
	0120	120	1/2"	0120
	0210	210	3/4"	0210
	0320	320	1"	0320
	0450	450	1 1/4"	0450
	0600	600	1 1/2"	0600
	0750	750	2"	0750
	1100	1100	2"	1100
	1450	1450	2 1/2"	1450

\*related to the intake compressor +20 °C, 1 bar abs., at 7 bar g operating pressure

Compressed Air Filtration · Filters for Sterile Air, Steam and Liquids · Refrigerant Drying · Adsorption Drying · Condensate Drains · Condensate Purification Systems · Process Air and Gas Processing

### Total Filtration Management

Donaldson offers a wide variety of solutions to reduce your energy costs, improve your productivity, guarantee production quality and help protect the environment.

### Total Filtration Service

A comprehensive range of services especially designed to keep your production at peak performance and at the lowest total cost of ownership.

Please contact us:

**Donaldson Europe B.V.**

Research Park Building No. 1303 · Interleuvenlaan 1

B-3001 Leuven · Belgium

Phone +32(0)16 38 38 11 · Fax +32(0)16 40 00 77

[CAP-europe@donaldson.com](mailto:CAP-europe@donaldson.com) · [www.donaldson.com](http://www.donaldson.com)



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