



Donaldson  
FILTRATION SOLUTIONS

# Compressed Air Filtration

## Three-Stage Filter DF-Three

DF-T

### MAIN FEATURES & BENEFITS

- Combination of sub micro filter, activated carbon adsorber and high performance particle filter (compressed air quality class 1 acc. to ISO 8573-1:2010)
- 3 purification stages in one filter (space savings up to 60% vs. traditional solutions)
- Use of the Economizer for monitoring / controlling of the element
- Intelligent overall concept meets the requirements for the use as a point-of-use filter
- Flow-optimized design (saving of energy costs)

DF-Three elements



T0050

T0110

T0080

### INDUSTRIES



- Chemical



- Food and beverage



- Paint and finish



- Environmental



- Machine building and plant engineering / construction

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Donaldson®  
Ultrafilter

## PRODUCT DESCRIPTION

The three-stage filters DF-T (DF-Three) are used for the purification of compressed air or gases in the industrial area of application. The filter element combines 3 purification stages in one filter (see fig.):

1. Coalescence filter for the removal of oil aerosols and particles,
2. Activated carbon adsorber (packed bed) for the removal of oil vapours and other hydrocarbons, to achieve compressed air quality class 1 acc. to ISO 8573-1:2010 for oil
3. High performance particle filter to achieve the quality class 1 acc. to ISO8573-1:2010 for particles.

Thus the three-stage filter is ideally suitable as point-of-use filter, where the highest quality of compressed air is necessary and only small place for installation is available.

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

By combining of several purification stages in only one filter housing the DF-Three is a very compact solution for limited space requirement and very easy service.

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



**The DF-T filter element is designed and developed for the following applications:**

- **Laser units:**  
Purification of cutting gas ore purging gas
- **Breathing air:**  
Removal of oil and particles as well as smells and odours
- **Downstream equipment:**  
Creation of oil and particle free compressed air for various downstream equipment applications, e.g. packaging machinery

## PRODUCT SPECIFICATIONS

Features	Benefits
Combination of sub micro filter, activated carbon adsorber and high performance particle filter (compressed air quality class 1 for oil and particles)	Reliable achievement of compressed air quality acc. to ISO 8573-1:2010
3 purification stages in one filter (space savings up to 60% vs. traditional solutions)	Reduced installation and maintenance effort, small space requirement - operation also possible at smallest installation space
Economizer	Reliable monitoring of service lifetime of the filter element as well as differential pressure. The optional adjustable differential pressure monitoring offers also the possibility to recognize external influences on the filter (e.g. oil breakthrough) and to release an alarm message. Ideal solution to protect downstream equipment
"Intelligent overall concept"	Size range, filtration grades, integrated monitoring functions and a reliable working pneumatic condensate drain perfectly meet the requirements for the use as a point-of-use filter
Flow-optimized design	Low pressure losses, thereby saving of energy costs
Bayonet fixing between filter head and filter bowl; element can be removed together with filter bowl; filter head with integrated differential pressure indicator can be rotated	Easy to use construction - simple installation and assembly, simplified filter replacement, service friendly
Filter cannot be opened under pressure due to bayonet lock	High safety during operation

## Filter performance data at nominal flow rate, defined by the following operation conditions

Inlet	Operating overpressure	7 bar
	Operating temperature <sup>1)</sup>	20°C
	Content of oil aerosol at inlet	3 mg/m <sup>3</sup>
	Moisture content	50% relative humidity, corresponds to a pressure dewpoint of approx. +10°C at 20°C operating temperature
Outlet	Compressed air quality class acc. to ISO 8573-1:2010 for oil	< 0.003 mg/m <sup>3</sup> , class 1
	Compressed air quality class acc. to ISO 8573-1:2010 for solid particles	Class 1
	Differential pressure in new condition, dry	330 mbar
	Service lifetime of activated carbon stage	2000 operating hours

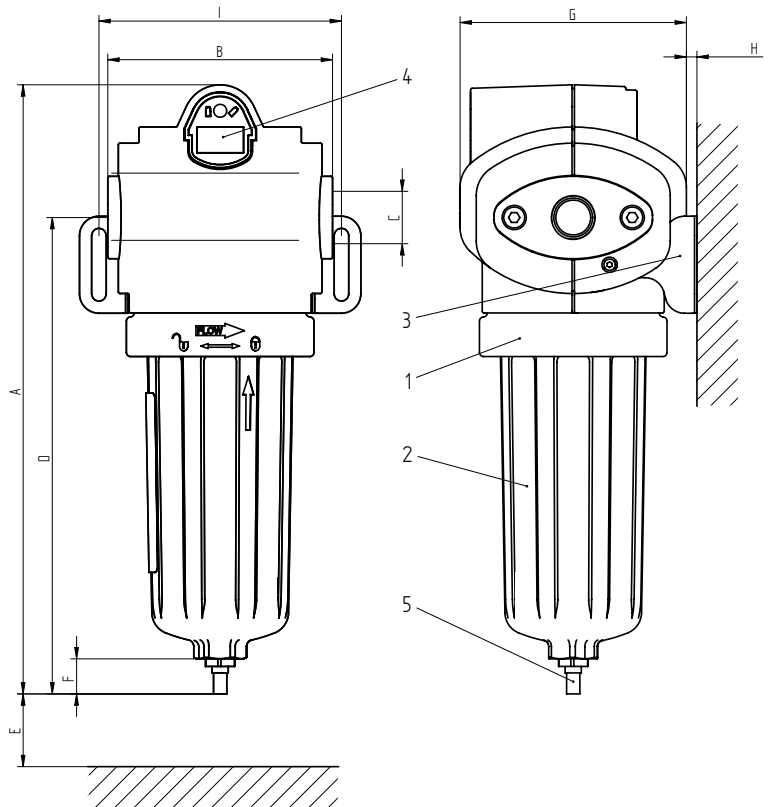
<sup>1)</sup> The recommended maximum operating temperature behaves 30°C, because with rising temperature the service lifetime of the filter will be reduced (at 30°C the service lifetime for a mineral oil ISO 46 amounts to approx. 1000 operation hours).

MATERIALS/ DIMENSIONS

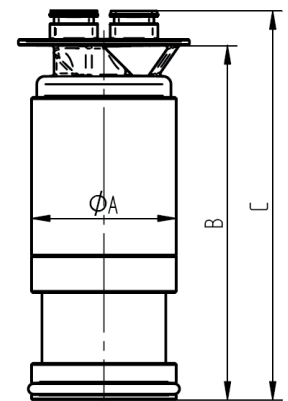
Pos.	Pcs.	Description
1	1	Filter head
2	1	Filter bowl
3	2	Wall bracket (Option)
4	1	Economizer
5	1	Drain KA 1/2

Materials filter housing	
Filter housing	Aluminium die cast
Economizer	Polymer
Float drain	Polymer
Sealings	Perbunan

Materials filter element	
Filter media coalescence filter and particle filter	Borosilicate fleece
Coalescence sleeve	Polyester fleece
Activated carbon stage	Activated carbon on basis of coconut shells (high adsorption capacity)
Liners	Stainless steel 1.4301 / 304
End caps	Fiber glass reinforced polymer, aluminium
Upper o-rings	Perbunan, silicone free and free of compound
Lower o-ring	Viton
Bonding	Polyurethane



Classification acc. to 2014 / 68 / EU for fluids group 2	
DF-T0050 - DF-T0110	Art. 4, par. 3
Max. operating pressure	16 bar
Test pressure	22.9 bar
Perm. operating temperature	+1°C / +65°C



Size	Flow rate*	Weight**	Housing type	Dimensions housing									Dimensions element		
				A mm	B mm	C	D mm	E mm	F mm	G mm	H min. / max. mm	I mm	A mm	B mm	C mm
DF-T	m³/h	kg	DF	A	B	C	D	E	F	G	H	I	A	B	C
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 rate at 7 bar ü, m³/h related to 1 bar abs. and 20°C

\*\* without filter element