



Donaldson
FILTRATION SOLUTIONS

Industrial Filtration

Membrane Dryers

VarioDry

FRL SF 0010 - SF 0150

MAIN FEATURES & BENEFITS

- 11 types with 10 m³/h up to 150 m³/h flow capacity
- SF Superplus with 2 prefilters, membrane module, activated carbon filter and pressure regulator
- Very low purge air consumption
- Compact design
- Diagonal cross wrapped fibres for high drying efficiency
- Easy to install, maintenance free membrane module
- No electrical power supply required
- Almost noiseless operation
- Does not contain silicone, can be used for painting application



Modular compressed air purification unit
FRL SF Superplus

INDUSTRIES



- Machine building and plant engineering / construction



- Paint and finish



- Food and beverage



- Chemical



- Energy / Environmental

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Donaldson®
Ultrafilter

PRODUCT DESCRIPTION

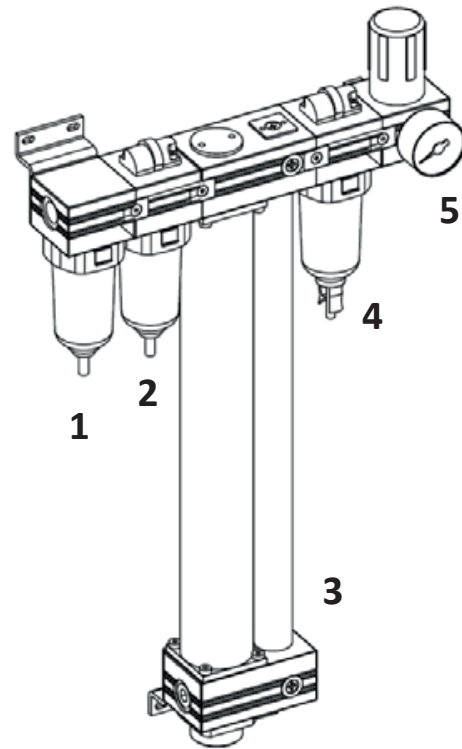
Membrane dryer module (VarioDry FRL Standard) or complete purification package (VarioDry FRL Superplus) consisting of membrane dryer module, 2-stage pre filtration, activated carbon after filter and pressure regulator.

Function description (VarioDry FRL Superplus)

In the first pre filtration / separator stage (1) bulk particulate and water droplets are retained in order to protect the following sub micro filter SMF (2). In this 2nd pre filtration stage (coalescence filter) oil aerosols are removed down to a level of 0,01 mg/m³ and the compressed air quality in terms of solid particulates downstream this filtration stage corresponds to Class 1 acc. to ISO8573-1. This 2-stage pre filtration ensures further a perfect protection of the following membrane dryer module (3) which may not be contaminated with liquid oil or solid particulates.

Depending on the inlet conditions the compressed air can be dried down to a pressure dewpoint of -40°C. In the following activated carbon filter (4) oil vapor, hydrocarbons as well as smells and odors are removed so the compressed air quality in terms of oil corresponds to Class 1 acc. to ISO 8573-1.

With the pressure regulator (5) the operating pressure for the downstream application can be adjusted individually according to the requirement of the application



The VarioDry FRL is designed and developed for following applications:

- **Downstream equipment:**
Creation of dry, oil-free and particulate-free compressed air for point of use applications e.g. packing machinery
- **Breathing air:**
Removal of oil and particles as well as smell and odours

PRODUCT SPECIFICATIONS

Features:	Benefits:
11 types with 10 m ³ /h up to 150 m ³ /h	Wide range of available models allow perfect adaption to customer application
SF Superplus with prefilters, membrane module, activated carbon filter and pressure regulator	2-stage pre filtration perfectly protects the membrane module and ensure long-life operation. The activated carbon afterfilter removes oil vapor and hydrocarbons to ensure highest compressed air quality for point of use applications. An integrated pressure regulator enables individual adjustment of operating pressure.
Very low purge air consumption	Economic operation with low energy consumption
Compact, lightweight design	Ideal for point-of-use application with low space requirement
Diagonal cross wrapped fibers	Special fiber architecture and alignment offer high surface area and best drying efficiency
Maintenance free membrane module	Low service and maintenance cost
Easy to install	Only connection to compressed air system required.
No electrical supply required	No electrical power consumption of controllers or valves; no electrical installation required
Silent operation	Operation in noise-sensitive areas possible.

Technical Data:	
Maximum operating pressure:	12.5 bar g
Maximum operating temperature:	60°C
Pressure drop:	approx 0.2 bar g
Prefiltration requirement (FRL VarioDry Standard):	max.1 µm particulates; 0,01 mg/m ³ oil content

PRODUCT SPECIFICATIONS

Inlet Conditions	Temperature = 35°C/ Pressure = 7 bar g							
Type	Dewpoint Reduction							
	20 K		35 K		55 K		75 K	
	m ³ /h inlet	m ³ /h outlet	m ³ /h inlet	m ³ /h outlet	m ³ /h inlet	m ³ /h outlet	m ³ /h inlet	m ³ /h outlet
SF 0010	10	9	6,4	5,4	4	3	2	1
SF 0015	15	14	9,6	8,1	5,9	4,4	3	1,5
SF 0020	20	18	12,8	10,8	7,9	5,9	4	2
SF 0025	25	23	16	13,5	9,9	7,4	5	2,5
SF 0035	35	32	22,4	18,9	13,8	10,3	7	3,5
SF 0050	50	45	32	27	19,8	14,8	10	5
SF 0065	65	59	41,6	35,1	25,7	19,2	13	6,5
SF 0080	80	72	51,2	43,2	31,6	23,6	16	8
SF 0100	100	90	64	54	39,5	29,5	20	10
SF 0125	125	113	80	67,5	49,4	36,9	25	12,5
SF 0150	150	135	96	81	59,3	44,3	30	15

CORRECTION FACTORS FOR DIFFERENT PRESSURES:

Operating pressure p _ü bar	5	6	7	8	9	10	11	12
Correction factor f _{pü}	0.57	0.78	1	1.21	1.42	1.64	1.85	2.06

Determination of the table value to the different types working pressure: $V_{Tab} = V_0 / f_{p0}$

V_{Tab} - Volume Flow table value

V₀ - Nominal volume Flow at operating pressure

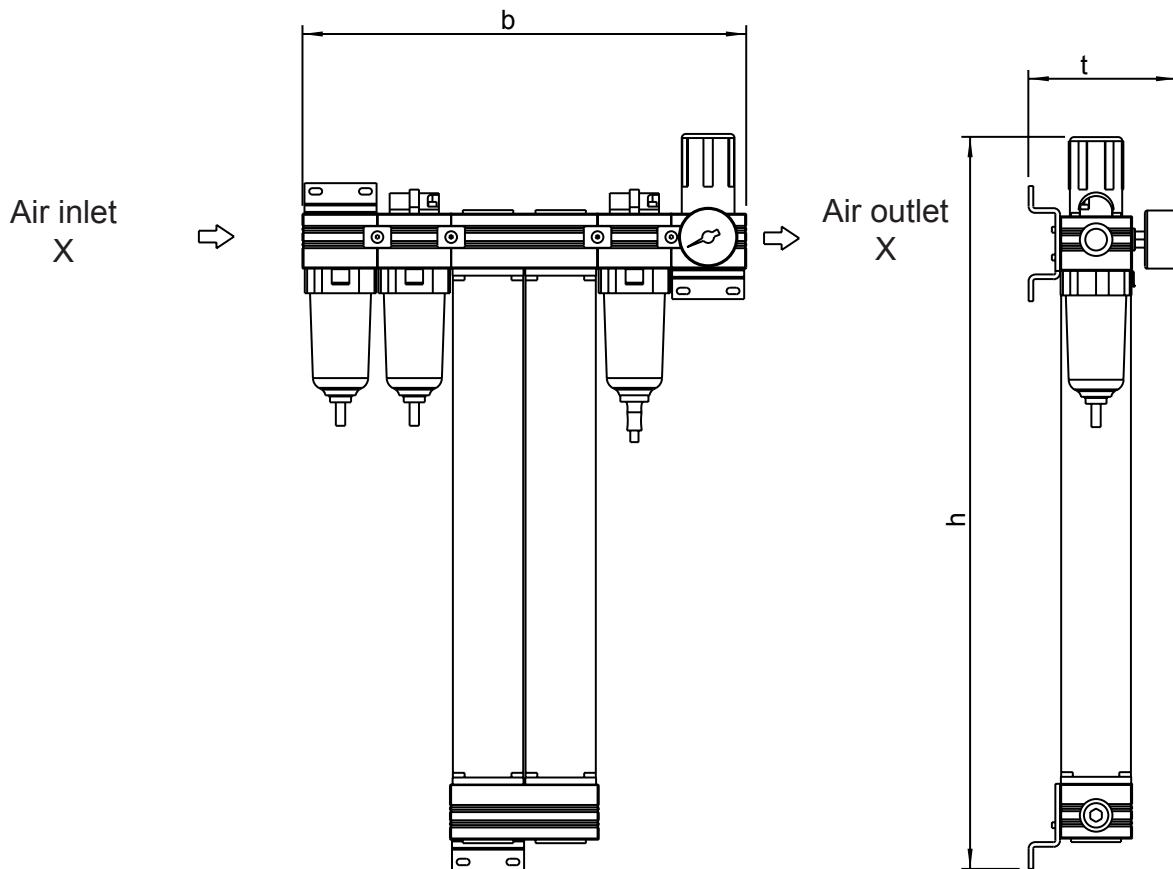
f_{p0} - Correction Factor (pressure)

Example: $\dot{V}_0 = 100 \text{ m}^3/\text{h}$, operating pressure = 10 bar (g)

$$\dot{V}_{Tab} = \frac{100 \text{ m}^3/\text{h}}{1,50} = 61 \text{ m}^3/\text{h}.$$

Calculated membrane dryer size: Type SF 0065

DIMENSIONS



Type FRL	Connection X G	Weight kg	Hight h mm	Width b mm	Depth t mm
SF 0010	1/2"	3.2	628	362	127
SF 0015	1/2"	3.4	628	362	127
SF 0020	1/2"	3.6	628	362	127
SF 0025	1/2"	3.8	628	362	127
SF 0035	1/2"	6.1	628	379	127
SF 0050	1/2"	6.7	628	379	127
SF 0065	1"	12.2	629	738	140
SF 0080	1"	15.8	629	828	140
SF 0100	1"	19.5	629	918	140
SF 0125	1"	22	629	1008	140
SF 0150	1"	22	629	1010	140