Industrial Filtration

Membrane Dryers

VarioDry SPN 0003 - 0063

MAIN FEATURES & BENEFITS

- Very low purge air
- Lightweight design
- Nine types with 3,0 m³/h up to 63 m³/h
- Dew point reduction down to -40°C or variable reduction
- Diagonal cross wrapped fibres
- Maintenance free
- Easy to install
- No electrical supply required
- Almost noiseless operation
- SPN Superplus with prefilters

VarioDry SPN
Vertical installation

INDUSTRIES

- Chemical, Pharmaceutical and Electrical

- Food- and Beverage

- Paint- and Finish, Engineering and Machine Building

- Enviromental and Energy

- PCB Assembly and CD Manufacturing

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Donaldson® Ultrafilter

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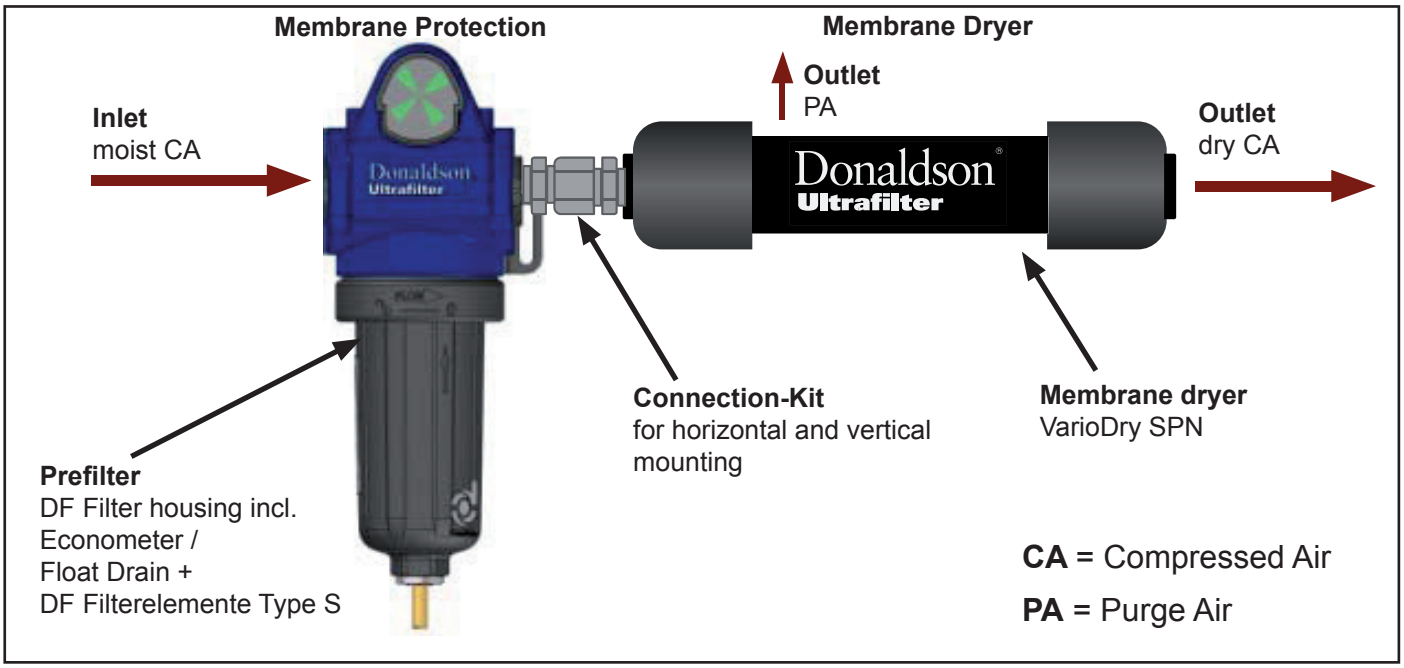
PRODUCT DESCRIPTION

VarioDry SPN Membrane Air Dryers are suitable for a wide variety of applications, various dew point reductions and challenging requirements. Ideal for „point-of-use“ drying of the compressed air, the VarioDry SPN Membrane Dryers dryer range combines highest efficiency and reliability in a very compact design.

How does VarioDry work?

The humid compressed air is a mixture of gases - the components nitrogen and oxygen - water vapour and traces of other gases.
This humid compressed air flows through a bundle of hollow fibres. The hollow fibres are composed of a membrane specifically designed to attract water vapour. This means that the water vapour on the inside of the hollows fibres are adsorbed and is then diffused through the very thin selective layer until the water vapour molecules have reached the outside of the membrane. Here, they are again desorbed and removed from the membrane.
Depending on the operational parameters, the water vapour is removed selectively from the compressed air so that the compressed air on the outlet of the membrane dryer shows only little residual water vapour.

The moving spirit for the described separation is the partial pressure difference between the inside and the outside of the hollow membrane fibres.
In practice, this means: the higher the pressure in the compressed air system, the better the operation of the membrane dryer.
In order to desorb the water vapour from the outside of the membrane, partial flow is taken from the dried compressed air, expanded to atmospheric pressure, conducted on the outside through the hollow fibre bundle in counterflow to the entering compressed air flow and led to the flushing air outlet. To ensure a long membrane life, we recommend filtering the compressed air before it reaches the membrane dryer.
Depending on the work load of the module, different drying grades of the compressed air can be obtained. A falling pressure dew point at the inlet also results in a falling pressure dew point outlet. In this way, the compressed air is perfectly dehumidified under all circumstances.
To ensure a long membrane life, pre filtration is required before the compressed air enters the membrane dryer. SPN Superplus already includes a high-efficiency filter for removal of oil and water aerosols as well as particulates down to the required purity level.



PRODUCT SPECIFICATIONS

Features:	Benefits:
Very low purge Air	Economic operation with low energy consumption
Compact, lightweight design	Ideal for point-of-use application with low space requirement
Nine types with 3,0 m³/h up to 63 m³/h	Wide range of available models allow perfect adaption to customer application
Dew point reduction down to -40°C or various pressure dew point reduction depending on conditions	Flexible use of dryer for various applications and operation conditions. Reliable achievement of specified pressure dewpoint.
Diagonal cross wrapped fibers	Special fiber architecture and alignment offer significant more surface area in same footprint (to maximize contact time)
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
Almost noiseless operation	Operation in noise-sensitive areas possible.
SPN Superplus with additionally prefilters	Pre filter DF with high-efficiency filter type S on SPN Superplus perfectly protects the membrane and ensure long-life operation.

Comparison of old (SP) and new (SPN) design:		
Dewpoint reduction:	old: max. -27°C	new: max. -40°C
Maximum volume flow:	old: max. 32 m³/h	new: max. 63 m³/h
Low purge air from 35 K dewpoint reduction:	old: 18 %	new: 15 %
Hollow fiber architecure:	old: parallel	new: diagonal crossed

Technical Data:	
Maximum operating pressure:	12.5 bar g
Maximum operating temperature:	60°C
Pressure drop:	0.2 bar g
Prefiltration requirement:	max.1 µm particle; 0,01 µm oil coalescing filter

PRODUCT SPECIFICATIONS

Inlet Conditions	35°C/ 7 barg pressure dewpoint reduction:							
Type	Dewpoint Reduction							
	20 K		35 K		55 K		75 K	
	m³/h inlet	m³/h outlet	m³/h inlet	m³/h outlet	m³/h inlet	m³/h outlet	m³/h inlet	m³/h outlet
SPN 0003	3.0	2.7	2.2	1.9	1.4	1.1	1.0	0.7
SPN 0006	6.0	5.5	4.3	3.7	2.8	2.2	2.0	1.4
SPN 0009	9.0	8.1	6.4	5.5	4.3	3.4	3.1	2.2
SPN 0012	12.0	10.8	8.5	7.3	5.7	4.5	4.1	2.9
SPN 0018	18.0	16.2	12.8	11.0	8.5	6.7	6.2	4.4
SPN 0024	24.0	21.6	17.0	14.6	11.3	8.9	8.2	5.8
SPN 0036	36.0	32.4	25.6	22.0	17.0	13.4	12.4	8.8
SPN 0048	48.0	43.2	34.1	29.3	22.7	17.9	16.4	11.6
SPN 0063	63.0	56.7	44.8	38.5	29.8	23.5	21.6	15.3

PERFORMANCE CORRECTIONS FACTORS FOR DIFFERENT PRESSURES:

Operating pressure bar g	4	5	6	7	8	9	10	11	12
Correction factor	0.41	0.56	0.76	1	1.22	1.48	1.76	1.86	2.22

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

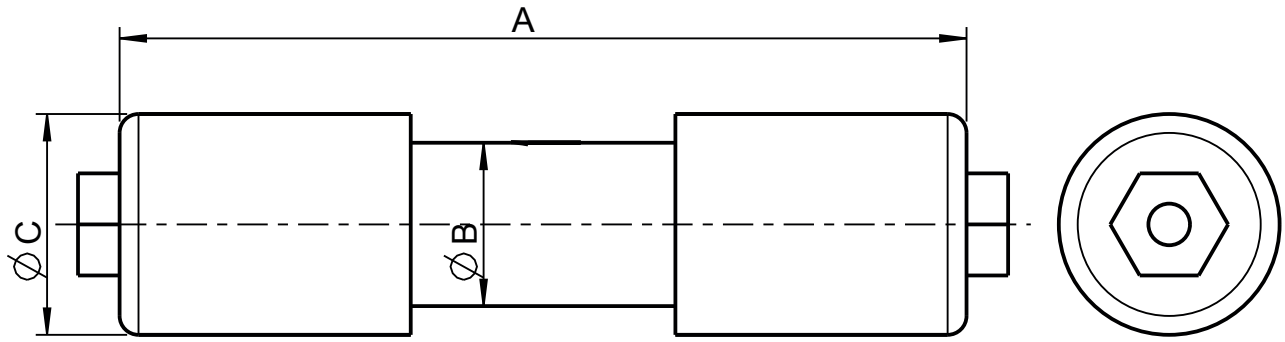
V_{Tab} - Volume Flow table value

V_0 - Nominal volume Flow at operating pressure

f_{p0} - Correction Factor (pressure)

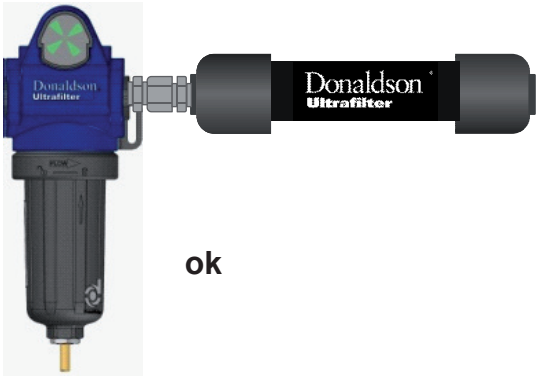
VarioDry SPN 0003 - 0063

DIMENSIONS/ MATERIALS



Type SPN	A mm	B mm	C mm	Connection	Material Shell	Material Endcaps
0003	224	43.2	58.4	G 1/4“	Aluminium	Nylon
0006	325	43.2	58.4	G 1/4“		
0009	427	43.2	58.4	G 1/4“		
0012	503	43.2	58.4	G 1/4“		
0018	312	61.0	81.3	G 1/2“		
0024	376	61.0	81.3	G 1/2“		
0036	465	61.0	81.3	G 1/2“		
0048	592	61.0	81.3	G 1/2“		
0063	411	88.9	109.2	G 1/2“		

INSTALLATION DETAILS:



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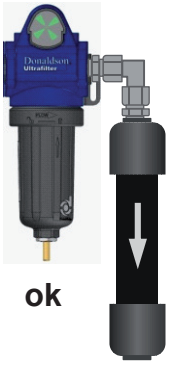

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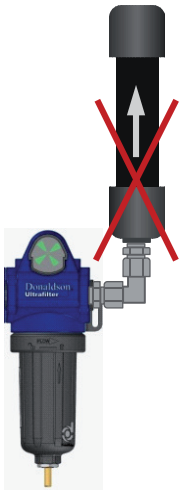

not recommended (condensate risk)