Membrane Compressed Air Dryer VarioDry

The ecological solution for high compressed air quality in small and mean volume flows.

Compressed air is an indispensable drive and process medium to almost all ranges of industrial production. However, the appropriate compressed air needed for production must be dry, free of oil and clean in order to prevent expensive breakdowns. Besides the proven technologies of refrigeration and desiccant drying, the innovative technology of membrane drying now offers new possibilities and advantages where the application is concerned.

The generation of membrane compressed air dryers VarioDry is convincing in its astonishing compact construction with only corrosion resistant synthetic materials being used. VarioDry runs almost noiseless without mechanically movable parts and does not require an electric supply. The versatile system runs without refrigerating agents, is space-saving and can be easily installed in various ranges of application.

How does VarioDry work?

The humid compressed air is a mixture of gases - the components N_2 and O_2 - 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 hollow fibres is absorbed, 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 desorbted 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 re-sidual 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.

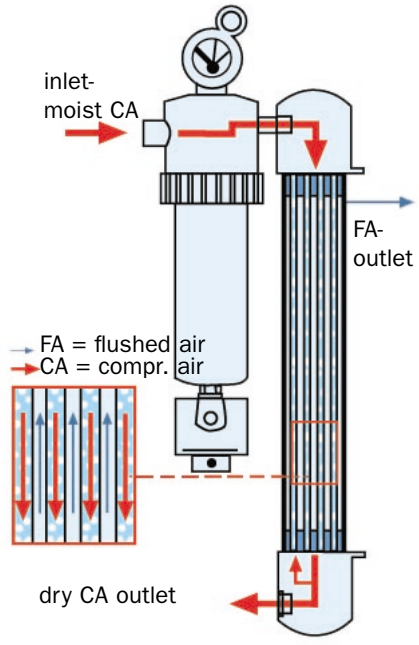
In practice, this means: the higher the pressure in the compressed air system, the better the operation of the membrane dryer.

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 hol-low 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 re-sults in a falling pressure dew point at the outlet. In this way, the compressed air is perfectly dehumidified under all circum-stances.

Function principle with connected filter



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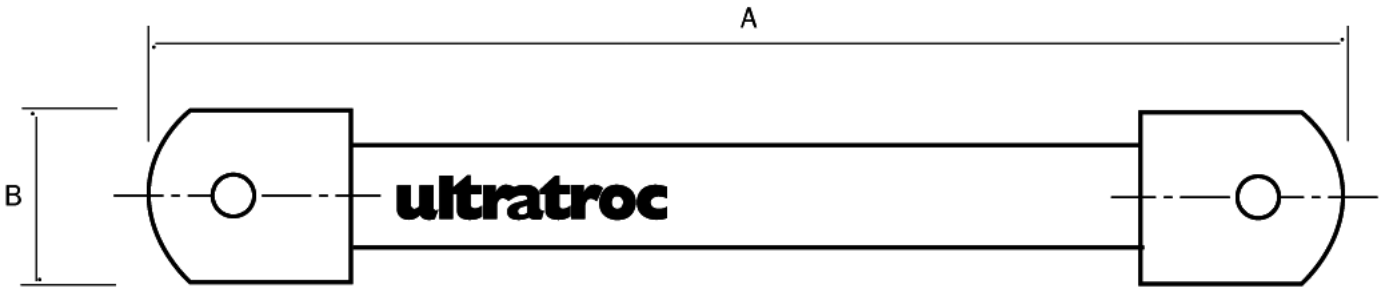
Construction features	Variable dryer capacity	Technical Features
Compact construction	Universal application, various possibilities of pressure dew point reduction depending on airflow	5 types with 1.6 to 32 m^3/h, higher capacity possible upon request
Only corrosion resistant solid synthetic materials are used		Low pressure drop < 0.1 bar
Free of CFC, PVC and silicone	Automatic pressure dew point adaptation in varying inlet parameters	Available for various pressure dew point reductions
No electrical supply required	Rapid reaction rate by highly hydrophillic membrane	Low purge air demand
Operates almost noiseless since mechanically movable parts are not installed	Dry compressed air available immediately	Ambient temperature up to +60 C
Low filtration needed: no abrasion of drying agent, no afterfilter		High water vapour selectivity, no change of O_2/N_2 ratio of compressed air, therefore perfectly suitable for medical applications
Integrated purge air throttle valve		
Large capillary diameter		Max. operating pressure: 16 bar gauge



Technical data

Membrane compressed air dryer VarioDry SP 5 - SP 32

Model	Pressure dew point reduction						Dimensions	Connect.	Weight
	20 K		35 K		55 K				
	V_1 (m^3/h)	V_2 (m^3/h)	V_1 (m^3/h)	V_2 (m^3/h)	V_1 (m^3/h)	V_2 (m^3/h)	Length/Ø mm	Inch	kg
SP 5	5.0	4.5	2.6	2.1	1.6	1.1	A 388/B 55	G 1/4	0.4
SP 10	10.0	9.0	6.0	5.0	4.0	3.0	A 495/B 70	G 3/8	0.7
SP 14	14.0	12.8	8.0	6.8	6.0	4.8	A 497/B 80	G 1/2	1.05
SP 20	20.0	18.2	12.0	10.2	8.0	6.2	A 497/B 80	G 1/2	1.1
SP 32	32.0	29.0	20.0	17.0	16.0	13.0	A 950/B 80	G 1/2	1.8

V_1 = compressed air inlet
V_2 = compressed air outlet

Reference data according to DIN ISO 7183
Pressure drop < 0.1 bar

Ambient Temperature: min. + 2 C - max. + 60 C · Inlet Temperature: min. + 2 C - max. + 60 C · Operating Pressure: min. 5 bar g - max. 16 bar g

Operating Pressure p_0 bar g	5	6	**7**	8	9	10	11	12	13	14	15	16
Correction value f_{p0}	0.57	0.78	**1.00**	1.21	1.42	1.64	1.85	2.06	2.28	2.49	2.70	2.92

Selection of the matching dryer (table value) for different operating pressures · $V_{Table} = V_0/f_{p0}$

V_{Table} - Volume Flow table value
V_0 - Nominal Volume Flow at Operating Pressure
f_{p0} - Correction Value (pressure)