Product data sheet
High pressure adsorption dryer DHM

Field of application

Adsorption dryers of the DHM series are designed for drying compressed air and nitrogen to pressure dew points of -25°C to -55°C (depending on the design) at operating pressures of up to 350 bar.

Features

The desiccant has a high drying capacity for moisture and a long service life of several years. This ensures permanently low and stable pressure dew points.
The valves and flow paths required for vessel chamber switch-over are completely installed in valve blocks. This integrated design eliminates the need for time-consuming piping installation and minimizes the leak potential. Airflow cross section sizes above average minimize the pressure loss.
The solenoid valve combination consists of 5 pilot-controlled diaphragm valves. Thanks to the individual control option for each valve, overlapping switch-over, and a defined flow path are ensured at any time. The non-return valve combination consisting of 4 non-return valves and one needle valve for adjusting the regeneration flow is also installed in a leak-free aluminium valve block. A silencer is used for the effective reduction of the expansion noise.
The valves of the DHM series are controlled through a type „C1“ processor control system with a 2-line clear text display and 3 operating keys. The control system is installed in a plastic housing with IP65 protection. The clear text display is used for direct and easy-to-understand indication of the operating state, errors, runtimes, service messages etc. If a pressure dew point sensor (option H) is connected, the cur-rent pressure dew point of the compressed air is also directly shown on the display and provided as a 4–20 mA signal. The pressure dew point measurement (option H) allows for dew-point-dependent operation of the dryer. Depending on the load of the dryer, the adsorption cycle may be extended, i.e. the switch-over frequency is adapted to the operating situation. This minimizes the regeneration air consumption and thus the energy costs are minimised.
In addition, the control system provides a compressor synchronising contact. It is used for the synchronous operation of the dryer and a compressor which additionally reduces the regeneration air consumption. This function can also be used in conjunction with dew point-dependent operation.
If a differential pressure monitoring system with alarm contact is fitted to the prefilter and after-filter (option), the alarm contacts can be connected to the control system, displayed and processed.
As standard, the dryer is provided with a prefilter (fine filter) which prevents solid and liquid contaminants from entering the dryer. This increases the service life of the dryer. An after-filter (general purpose filter) is also provided as a standard. It is used to prevent desiccant dust from entering the downstream system.
The filters are already fitted to the dryer by using high pressure stainless steel pipes and fittings.
The dryers comply with the requirements of the Pressure Equipment Directive 2014/68/EC and have the CE marking of this European directive.

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Filtrations-Separations-Technik

Basic data 100 bar

FST	Nom. volume flow (VN)*1	Min./Max. operating pressure	Min./Max. operating temperature	Connection	Height	Width	Depth	Weight
DHM 8/100	160 m³/h	30 – 100 bar	+2°C – +60°C	G 1/2“	1100 mm	715 mm	320 mm	149 kg
DHM 13/100	215 m³/h			G 1/2“	1250 mm	715 mm	320 mm	159 kg
DHM 18/100	270 m³/h			G 1/2“	1400 mm	715 mm	320 mm	168 kg
DHM 26/100	325 m³/h			G 1/2“	1550 mm	715 mm	320 mm	178 kg
DHM 31/100	415 m³/h			G 1/2“	1800 mm	715 mm	320 mm	194 kg
DHM 41/100	540 m³/h			G 3/4“	1750 mm	715 mm	320 mm	292 kg
DHM 52/100	635 m³/h			G 3/4“	1950 mm	715 mm	320 mm	314 kg
DHM 59/100	735 m³/h			G 3/4“	2150 mm	715 mm	320 mm	336 kg
DHM 66/100	860 m³/h			G 3/4“	2400 mm	715 mm	320 mm	364 kg

*1 – refers to 1 bar(a) and 20 °C at 7 bar operating pressure, inlet temperature 35 °C and pressure dew point at outlet -40 °C

Basic data 350 bar

FST	Nom. volume flow (VN)*1	Min./Max. operating pressure	Min./Max. operating temperature	Connection	Height	Width	Depth	Weight
DHM 8/350	300 m³/h	30 – 350 bar	+2°C – +60°C	G 1/2“	1100 mm	715 mm	320 mm	191 kg
DHM 13/350	400 m³/h			G 1/2“	1250 mm	715 mm	320 mm	218 kg
DHM 18/350	500 m³/h			G 1/2“	1400 mm	715 mm	320 mm	241 kg
DHM 26/350	600 m³/h			G 1/2“	1550 mm	715 mm	320 mm	264 kg
DHM 31/350	765 m³/h			G 1/2“	1800 mm	715 mm	320 mm	303 kg
DHM 41/350	1.260 m³/h			G 3/4“	1750 mm	715 mm	320 mm	402 kg
DHM 52/350	1.490 m³/h			G 3/4“	1950 mm	715 mm	320 mm	444 kg
DHM 59/350	1.720 m³/h			G 3/4“	2150 mm	715 mm	320 mm	483 kg
DHM 66/350	2.000 m³/h			G 3/4“	2400 mm	715 mm	320 mm	535 kg

*1 – refers to 1 bar(a) and 20 °C at 7 bar operating pressure, inlet temperature 35 °C and pressure dew point at outlet -40 °C

Volume flow conversion factors

Calculation of the converted volume flow

Converted volume flow VK	Nominal required volume flow VN_{min}
Please contact the technical support	

Product specific data

Specification	
Pressure dew points	-25 °C / -40 °C / -55 °C
Eletcrical connection	230 V 50/60 Hz, alternative 115 V 50/60 Hz or 24 V DC
Power consumption	< 50 Watt
Protection class	IP 65 (Nema 4)

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Purity classes according to ISO 8573-1

Contamination	
Solid particles*2	(Class 2)
Water content*2	Class 1–3*3
Total oil content*2	Class 1 *4

*2 – typical result, on the assumption that the suitable inlet concentrations and operating and marginal conditions are given

*3 – depending on the design

*4 – the oil vapour content is not taken into account, it may reduce the purity class

Maintenance rules

	Maintenance interval and maintenance activities
All sizes	• **Weekly:** – Check differential pressure on the prefilter and afterfilter (if installed) – Check function of the condensate drain on the prefilter (if installed) • **Annually:** – Replace filter elements on prefilter and afterfilter – Check expansion silencer, clean or replace, if required – Calibrate dew point sensor (option H) (interchange principle possible) • **Every 24 months:** – Replace seat and seals of control valves and non-return valves (maintenance kit art no.: SK-VVB/DHM420/24-03) – Replace desiccant*5*6 (art. no. SEDAFILL-DHM .. /...)

Materials

Component	
Vessel and screw taps	Stainless steel 304
Frame and supports	Carbon steel with 1-component powder coating on epoxy/polyester basis 80 µm
Desiccant support screen	Stainless steel 304
Preload spring	Stainless steel 304
Internal otlet filter	Aluminium end caps, stainless steel cloth 3 µm
Valve block housing	Aluminium AlMg , anodised
Valve seats	Stainless steel (1.4305,1.4401), brass (2.055.20)
Sealing materials	NBR, PEEK, Hostaform C/9.4002
Screws	8.8 steel, zinc-plated
Pipe connection dryer	None (flow paths are integrated in the valve block)
Pipe connection to pre- and afterfilter	Stainless steel tubes and fittings 316
Desiccant filling	Molecular sieve 4A
Mounted prefilter and afterfilters	See product data sheets for filter housing and filter elements

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Classification according to Pressure Equipment Directive 2014/68/EU for group 2 fluids

Model 100 bar	Volume	Category
DHM 8/100	6,42 litre	**II**
DHM 13/100	8,28 litre	**II**
DHM 18/100	10,13 litre	**III**
DHM 26/100	11,99 litre	**III**
DHM 31/100	15,08 litre	**III**
DHM 41/100	19,71 litre	**III**
DHM 52/100	23,08 litre	**III**
DHM 59/100	26,45 litre	**III**
DHM 66/100	30,66 litre	**IV**

Classification according to Pressure Equipment Directive 2014/68/EU for group 2 fluids

Model 350 bar	Volume	Category
DHM 8/350	3,30 Liter	**III**
DHM 13/350	4,26 Liter	**III**
DHM 18/350	5,21 Liter	**III**
DHM 26/350	6,16 Liter	**III**
DHM 31/350	7,75 Liter	**III**
DHM 41/350	12,78 Liter	**IV**
DHM 52/350	14,97 Liter	**IV**
DHM 59/350	17,16 Liter	**IV**
DHM 66/350	19,89 Liter	**IV**

Other directives

Sizes	
All sizes	EMC-Standard (inspection scope for control sysstem, solenoid valves and dew point measurement): Emmited interference acc.: EN EN 55011:2009/A1:2010 (limit value class: B) EN 61000-3-2:2014, EN 61000-3-3:2013 Interference resistence acc.: EN 61000-6-2:2005/AC:2005 Machine directive 2006/42/EG is not applicable.

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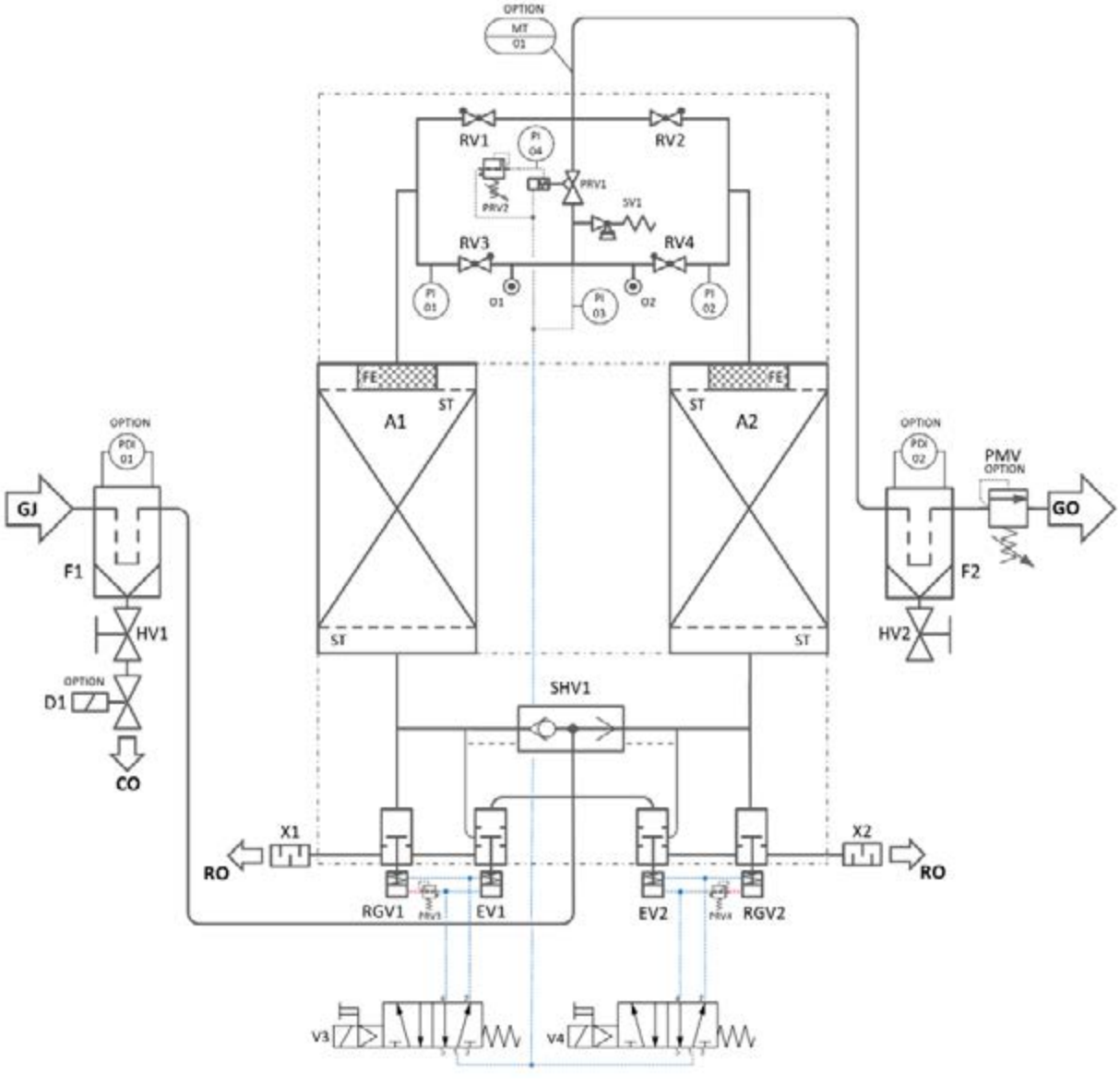
Flow diagram DPS (PID)



A	Dryer vessels	**X**	Exhaust silencer
F	Filter	**D**	Condensate drain
V	Valve	**O**	Orifice / throttle
HV	Manual shut-off valve	**PI**	Pressure gauge
RV	Non-return valve	**PDI**	Differential pressure gauge
PRV	Pressure reducing valve	**MT**	Pressure dew point transmitter
PMV	Pressure maintaining valve	**GJ**	Gas inlet
RGV	Regeneration valve	**GO**	Gas outlet
SHV	Shuttle valve	**RO**	Regeneration gas outlet
SV	Safety valve	**CO**	Condensate outlet
EV	Expansion valve		
ST	Sieve tray		

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