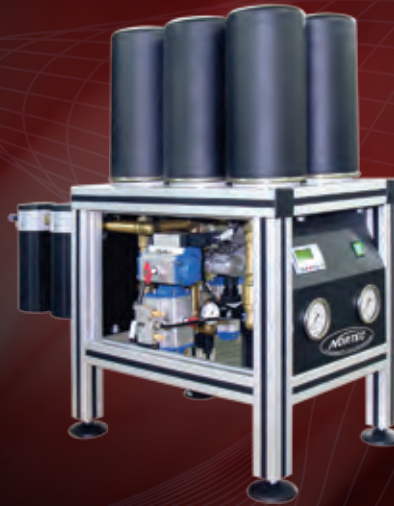


Heatless Desiccant Dryers



Nortec Heatless Desiccant Dryers

- ◆ **High Performance**
- ◆ **Better Efficiency**
- ◆ **State-of-the-art Technology**

The feature rich standard (HDD and MDA series) family of heatless desiccant dryers are ideal for those demanding applications requiring very dry air. The dryers offer dewpoints ranging from -40° F to -100° F. The heavy duty design can operate around the clock providing years of trouble free service with minimal maintenance.

Principle of Operation:

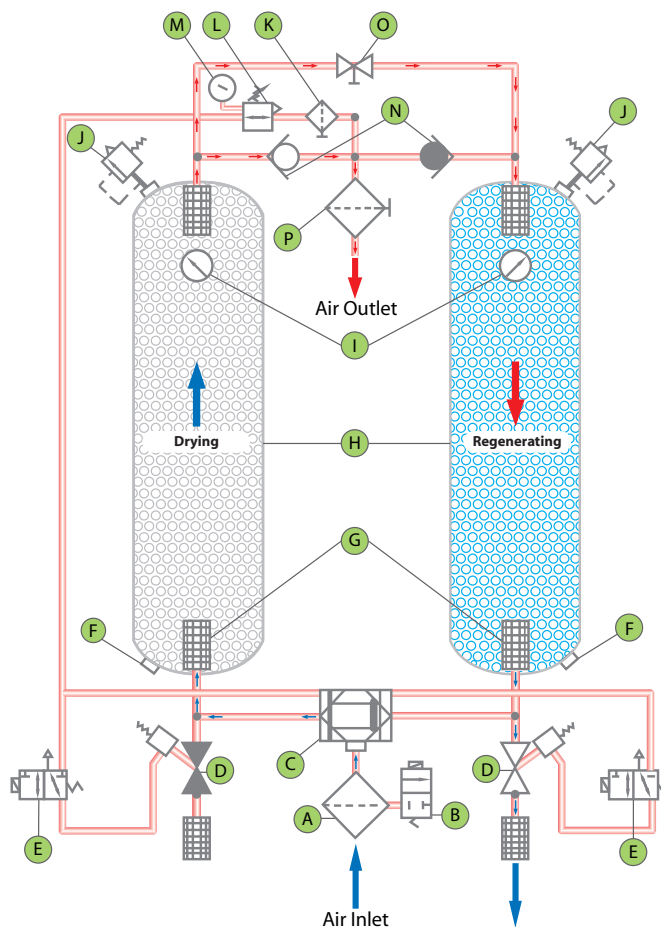
The twin tower design allows for continuous adsorption of water vapor from compressed air by using the X-PACK – a hygroscopic desiccant with high crush strength and a high surface/volume ratio. Drying is accomplished by passing compressed air through one desiccant bed adsorbing moisture while the other is being simultaneously regenerated with the expanded purge air.

Regeneration of desiccant is accomplished without the use of heat. The wet bed is dried by diverting a small portion of the super-dry air from the outlet at near atmospheric pressure. The purge flow rate is adjustable to suit the specific outlet conditions (desired dewpoint). The super dry air flows in a counter direction through the wet bed, sweeping all the water vapor previously adsorbed by the desiccant. The DDC-15 microprocessor controller monitors the automatic operation of the dryer and provides options for load management, fixed cycle and dewpoint based control.

Nortec ensures pressure equalization in the twin towers prior to switching. This prevents line surge and minimizes desiccant attrition. The tower being reactivated will be gradually re-pressurized at the end of its reactivation cycle before switchover takes place. Purge flow and de-pressurization are in downward direction, counter flow to the drying air flow.

Effects of Moisture:

Moisture and contaminants are found in all compressed air systems. This leads to rust and corrosion in pneumatic tools along with clogging and damage to pneumatic controls and devices. When freezing temperatures are encountered, condensation trapped in air systems will freeze, causing failure in pneumatic lines. To meet the critical needs of today's manufacturing and process methods, Nortec has introduced the new generation of Heatless Desiccant Dryers (HDD/MDA series) that provides dry compressed air in an economical, reliable, and efficient manner. The HDD/MDA series along with its standard high efficiency pre-filter and after filter, provides a total air treatment solution with outstanding reliability and performance.

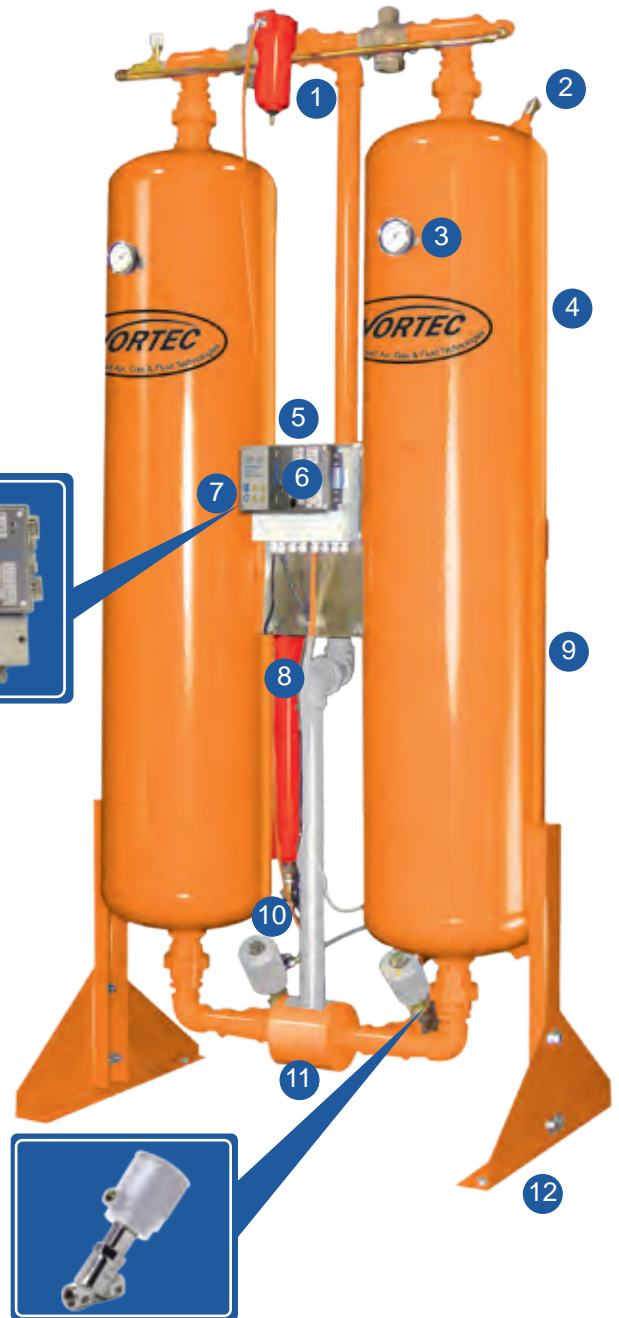


A	0.01 Micron Pre-Filter	I	Pressure Gauge
B	Programmable Drain Valve	J	Pressure Relief Valve
C	Bi-directional Inlet Piston Valve	K	Control Air Filter
D	Angle Body Purge Exhaust Valve	L	Control Air Pressure Regulator
E	Purge Pilot Valve	M	Pressure Gauge
F	Drain Port	N	Outlet Check Valve
G	Stainless Steel Inlet Diffuser	O	Purge Adjustment Valve
H	Pressure Vessels	P	1 Micron After Filter

Nortec Heatless Desiccant Dryers

Standard Features

- 1 Pilot air filter
- 2 Separate drain and fill port
- 3 Tower pressure gauge
- 4 ASME code construction and stamped pressure vessels (6" diameter and larger)
- 5 Front mounted control panel
- 6 NEMA 4 Electrical enclosure
- 7 On/Off Switch
- 8 Pre piped and mounted pre-filter and after filter
- 9 Optimal tower size
- 10 Purge Exhaust Piston Valve
- 11 Non-lubricated inlet valve
- 12 Structural steel frame with floor stand
- 13 Full charge of desiccant
- 14 Safety pressure relief valve for each tank
- 15 Fail safe design in case of power failure:
The bi-direction piston valve remains in the same position to ensure air flow through dryer without interruption
- 16 Field adjustable timer cycle, 4, 10 or 15 minutes
- 17 High efficiency angle body piston purge valve
- 18 Spring load check valves
- 19 Stainless steel inlet/outlet diffusers



Optional Features

- ▶ Energy saver demand cycle control
- ▶ NEMA 4x and explosion proof NEMA 7
- ▶ High pressure up to 10,000 PSIG
- ▶ Switching failure alarm
- ▶ Pneumatic control timer. Eliminates need for control electric power
- ▶ Optional voltage (230/208/1/50/60)
- ▶ High dew point alarm
- ▶ Dew point indicator
- ▶ Special finishes for severe environments, process industries, offshore drilling rigs, etc.
- ▶ -100° F pressure dew point

Nortec Heatless Desiccant Dryers

Model	Inlet Flow Capacity @100 PSIG CFM	Voltage	Inlet/Outlet Connections (inches)	Dimensions L x W x H (inches)	Weight (Lbs)	Pre-filter	After filter
80-HDD	80	120 V-1-60 Hz OR 208 V-1-60 Hz	¾" NPT	34x24x76	550	FTX-125	FTP-125
100-HDD	100		1 NPT	34x24x76	690	FTX-125	FTP-125
125-HDD	125		1 NPT	34x24x76	710	FTX-125	FTP-125
150-HDD	150		1 NPT	40x36x76	810	FTX-200	FTP-200
200-HDD	200		1 NPT	40x36x83	850	FTX-200	FTP-200
250-HDD	250		1 ½ NPT	44x40x83	1010	FTX-300	FTP-300
300-HDD	300		1 ½ NPT	44x40x85	1200	FTX-300	FTP-300
375-HDD	375		1 ½ NPT	46x42x85	1350	FTX-450	FTP-450
500-HDD	500		2 NPT	50x45x90	1460	FTX-650	FTP-650
650-HDD	650		2 NPT	50x45x90	1790	FTX-650	FTP-650
800-HDD	800		3 FLG	55x48x105	2150	FTX-900	FTP-900
1000-HDD	1000		3 FLG	55x48x105	2960	FTX-1500	FTP-1500
1250-HDD	1250		3 FLG	60x50x109	3470	FTX-1500	FTP-1500
1500-HDD	1500		3 FLG	60x50x109	4180	FTX-1500	FTP-1500
2000-HDD	2000		3 FLG	70x62x115	4980	FTX-3000	FTP-3000
2500-HDD	2500		4 FLG	70x62x115	5800	FTX-3000	FTP-3000
3000-HDD	3000	4 FLG	80x70x120	6400	FTX-3000	FTP-3000	
4000-HDD	4000	6 FLG	90x80x122	9100	FTX-5000	FTP-5000	
5000-HDD	5000	6 FLG	98x86x120	11800	FTX-5000	FTP-5000	

Operating conditions:

- ◆ **Maximum Working Pressure**
150 PSIG (10 BARG) standard
250 PSIG (17.3 BARG) optional.
- ◆ **Minimum Working Pressure**
50 PSIG
For pressure less than 50 PSIG
contact factory.
- ◆ **Maximum Inlet Temperature**
120° F (49° C)
Dewpoint will rise at 120° F inlet
temperature.
- ◆ **Minimum Ambient Temperature**
34° F (1.6° C) standard
-15° F (- 26° C) with optional low
ambient package.

How to find air flow capacity:

Air flow capacity = Nominal capacity of dryer x Factor F1 x Factor F2

Example: A 250-HDD has a nominal capacity of 250 SCFM. What is the maximum allowable flow through the dryer at following operating conditions?

Air Inlet Pressure: 110 PSIG (7.6 BARG) F1 = 1.04
Air Inlet Temperature: 105° F (40.5° C) F2 = 0.93

Air flow capacity = 250 x F1 x F2
Air flow capacity = 250 x 1.04 x 0.93 = 241.8 SCFM.

This is the maximum air flow rate that dryer can accept under those operating conditions.

How to select a suitable dryer for a given capacity:

Minimum std. air flow = Design air flow / Factor F1 / Factor F2

Example: Given the operating parameters below, find a suitable dryer.

Design flow rate: 950 SCFM
Inlet Air Pressure: 110 PSIG F1 = 1.04
Inlet Air Temperature: 105° F F2 = 0.93

Minimum std. air flow = 950/1.04/0.93 = 982.22

Therefore the model suitable for the conditions above is 1000-HDD.

Correction factor for Inlet Air Temperature

° F	70	80	90	100	105	110	115	120
° C	21	27	32	38	40	43	46	49
Factor F2	1.12	1.01	1.06	1	0.93	0.86	0.80	0.75

Correction factor for Inlet Air Pressure

Inlet Pressure	PSIG	50	60	70	80	90	100	110	120	130	140	150	175	200	225	250
	BARG	3.5	4.1	4.8	5.5	6.2	6.9	7.6	8.3	9.0	9.7	10.3	12.1	13.8	15.5	17.3
Factor F1		0.56	0.65	0.74	0.83	0.91	1.00	1.04	1.08	1.12	1.16	1.20	1.29	1.37	1.45	1.52

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Nortec Advantages:

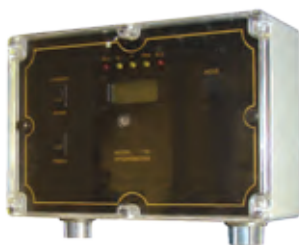
The performance of any desiccant dryer depends on the quality of its key components. Nortec uses the best available valves, controllers and desiccant. With accurately designed and sized components, the dryers are manufactured to provide you with years of trouble free operation.

Electronic Controller



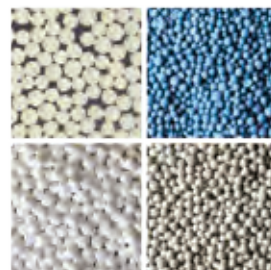
All Nortec heatless desiccant regenerative dryers are equipped with the state of the art PLC controllers that regulates and monitors the functioning of the dryer. Using its simple user interface, the operator is able to take advantage of all the features that the versatile controller has to offer – selection of dewpoint, monitoring the dryer, choosing the energy cycle, diagnostic operations and much more. In addition, the optional RS-232 serial port can be used to connect to a PC.

Dewpoint Meter



The digital dewpoint transmitters are compact, reliable and continuously monitor the dryer performance. With its available options, these monitors can be used as indicators, alarm units or as controllers. Its simple yet powerful interface, permits the user to choose between multiple units, output the data to a PC via the serial interface, set alarm levels and do field calibration of the sensor.

Desiccant



Nortec uses a mixture of adsorption media in its heatless range of desiccant dryers to achieve consistent dewpoint. Activated Alumina, Molecular Sieve and Silica Gel are used in varying ratios depending on the application. The long lasting, high crush strength media has a very high surface/volume ratio.

Butterfly Valve



These versatile valves are used by Nortec to provide you with precision control and complete bubble-tight shut off. The digitally controlled actuators provide easy PLC interface and feature fast response times. The tongue-and-groove seat design feature ensures complete isolation of flowing media from the body and stem. Rugged and reliable, these valves are designed to provide years of trouble free service.

Bidirectional piston valve



These non-lubricated, high quality, high performance, bi-directional piston valves are designed to handle the most severe conditions. They require no maintenance and come with a five year limited warranty.



Angle Body Piston Valve



These high-performance 2-way direct acting valves are designed for reliability and durability. It uses a profiled disc in conjunction with a high resolution compact positioner and linear feedback potentiometer to provide precise proportional flow. The stainless steel internals and a tough fiber composite actuator body, along with the use of oversized bearing and Viton seals makes it possible to consistently provide smooth piston movement for an extended time period.

Nortec Heatless Desiccant Dryers

Desiccant Dryer 10-45 CFM

Nortec Mini Desiccant Dryers are designed for continuous supply of dry compressed air. High quality valves and specially selected desiccant ensure low pressure drop.

Specifications:



Model	Capacity scfm	Connection Size	Voltage	Filter Type
MDA-15	15	3/8"	115~230/1/50~60 Hz	G24MX-MY-MP
MDA-25	25	1/2"	115~230/1/50~60 Hz	G48MX-MY-MP
MDA-40	40	1/2"	115~230/1/50~60 Hz	G48MX-MY-MP
MDA-60	60	3/4"	115~230/1/50~60 Hz	G100MX-MY-MP

Rated Operating Conditions:

<ul style="list-style-type: none"> ◆ Maximum Working Pressure 150 PSIG (10 BARG) standard ◆ Minimum Working Pressure 50 PSIG 	<ul style="list-style-type: none"> ◆ Maximum Inlet Temperature 120° F (49° C) ◆ Minimum Ambient Temperature 34° F (1.6° C) standard -15° F (- 26° C) with optional low ambient package.
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