



# nano



## twin tower desiccant compressed air dryers

flow capacity: 100 to 7750 scfm (170 to 13,000 Nm<sup>3</sup>/hr)



# **“We needed special options on our desiccant dryer. nano helped guide us to make informed decisions and built the perfect dryer for our company.”**

*a parts manufacturer - southwestern US*

Clean, dry compressed air is essential in every efficient and profitable manufacturing operation worldwide.

Ambient air contains high levels of moisture, dust, hydrocarbons and other contaminants and, when left untreated, the results are corrosion, bacteria, mold growth and freezing within your compressed air lines. This contamination can cause damage to downstream equipment and lead to increased maintenance, downtime and product spoilage.

While compressed air filters will remove solid particulate, liquids and aerosols, they cannot remove the moisture that remains in the form of vapor. This vapor can condense into liquid water throughout your compressed air system as the pressure and temperature of the compressed air changes.

## What you can expect from a nano D<sup>5</sup> twin tower desiccant compressed air dryer

- removal of water vapor by lowering the pressure dew point of your compressed air stream to -40°F/°C (-94°F/-70°C optional on HLA range) to ensure a continuous supply of dry air
- low pressure drop and consistent dew point performance
- designed for the most demanding applications
- flexibility to build a complete compressed air solution to match the requirements of the customer

**technologically  
advanced**

PLC controlled and the highest quality valves give the nano D<sup>5</sup> range the "brain and heart of a champion" product





# WHICH DRYER IS RIGHT FOR YOU

## HLA heatless

use expanded dry purge air to regenerate desiccant beds

- lowest initial investment
- require the most purge air at 15%
- -40°F/°C dew point as standard for ISO class 2 applications
- -94°F/-70°C dew point available as option for ISO class 1 applications



## EHA externally heated

use an electric heater to heat the dry purge air to regenerate the desiccant beds

- mid-priced initial investment
- excellent ROI
- use less purge air than heatless at approximately 6-8%
- -40°F/°C dew point as standard for ISO class 2 applications



## BPA blower purge

use a combination of an ambient blower and heater followed by dry purge air to regenerate the desiccant beds

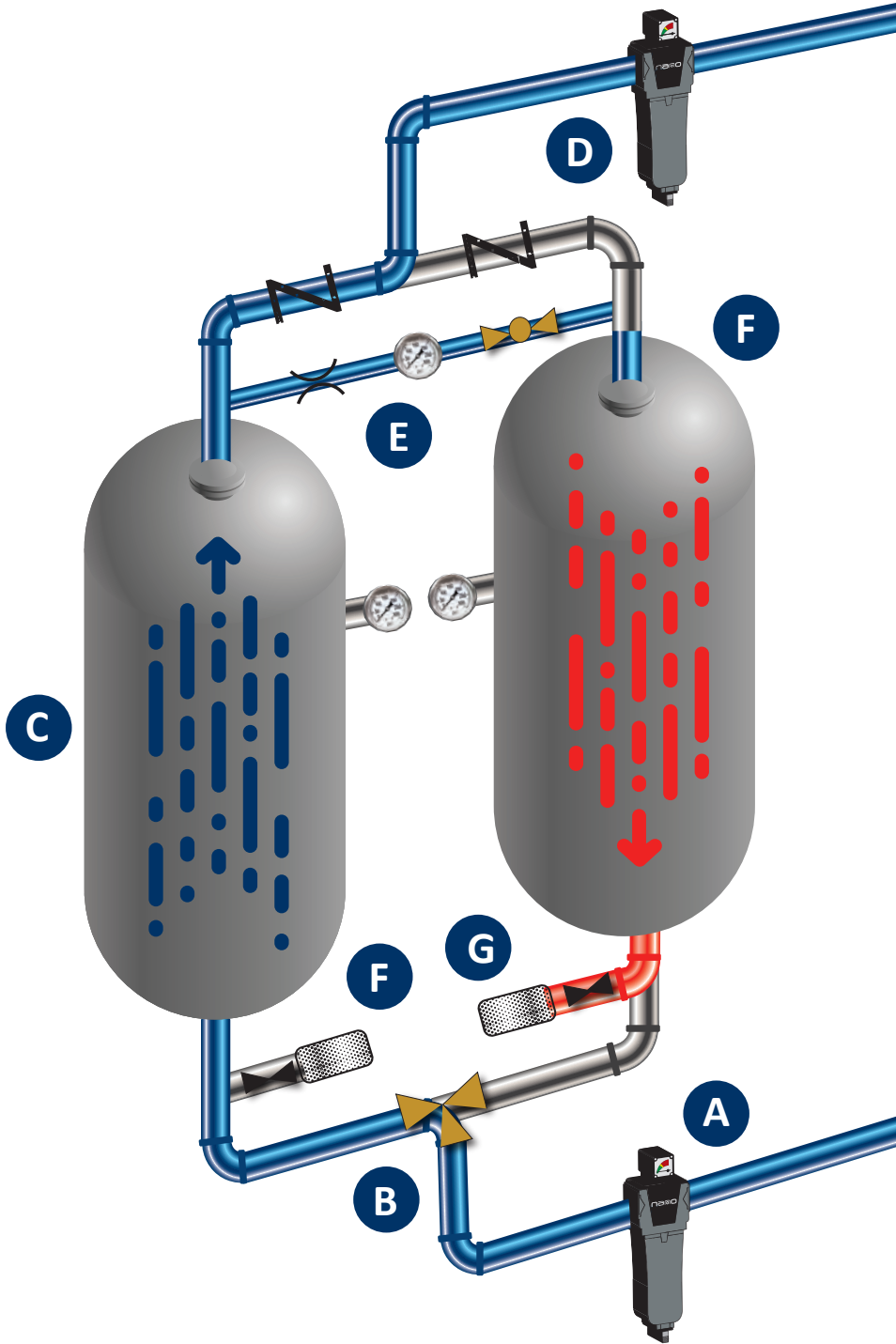
- higher initial investment
- fastest ROI
- further reduces (or even eliminates) purge air usage to approximately 0-2% averaged over 4-hour cycle for dry air cooling
- dry air cooling can be turned off allowing zero air loss operation
- -40°F/°C dew point as standard for ISO class 2 applications

# HOW IT WORKS

In a twin tower desiccant air dryer, one tower is on-line drying the compressed air while the other is off-line regenerating, which means it is eliminating the water vapor it has collected so it can be used to dry again. The two towers switch back and forth so one is always drying while the other is regenerating or in standby.

The nano D<sup>5</sup> twin tower desiccant dryers remove moisture from your compressed air system in the same way and to the same exacting standards of performance and reliability. The difference is how they regenerate and the amount of compressed air and/or power required to do so.

- A** 0.01 micron pre-filter removes all particulate, liquid water and oil aerosols to 0.01 ppm
- B** clean, saturated air enters the inlet valve which directs it to one of the desiccant towers
- C** compressed air travels through tower A for 5 minutes and moisture vapor is adsorbed to -40°F/°C pdp or better
- D** a final filter removes particulate to 1.0 micron or better
- E** ~15% purge air expands through an orifice and regenerates tower B (HLA)
- F** after 3.5 minutes, the purge exhaust valve closes and tower B repressurizes and is ready for adsorption to begin
- G** at the 5-minute mark (fixed cycle), tower A exhaust valve opens to regenerate. A PLC controls all operations
- H** compressed air is expensive but nano dryers can be fitted with an energy savings device to save air and save money. By measuring actual pressure dew point, the PLC will extend the dryer cycle reducing compressor energy, wasted purge air and valve wear and tear



# FEATURES

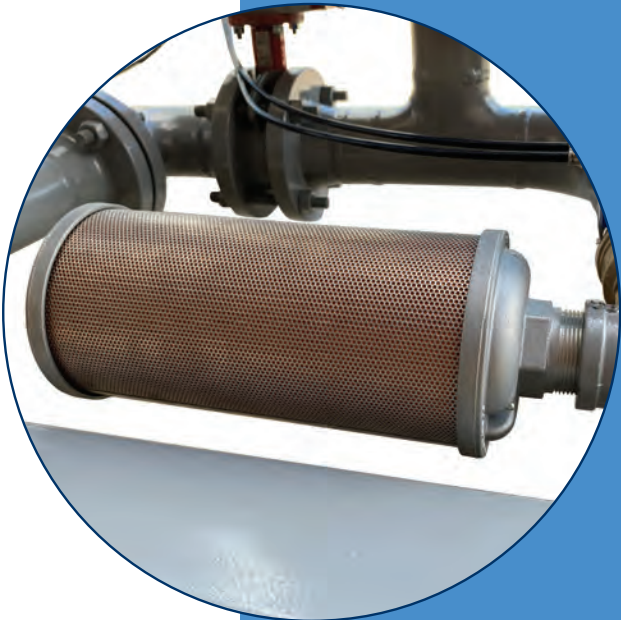
## PLC controlled operation

- the dryer is operated by a robust and reliable PLC control system offering valuable features including 'power on', 'hours run' and 'service required indicators'
- memory retention built into the PLC enables the controller to pick up where it left off in the drying cycle, ensuring consistently clean and dry air downstream
- compressor synchronization is a standard energy saving feature which starts and stops the dryer with a signal from the compressor or point-of-use equipment to eliminate purge loss when drying is not required
- NEMA4x control panel



## low noise exhaust mufflers

- specifically designed to minimize the noise of depressurization and purge exhaust
- high flow design extends service life



## low watt density heater (EHA & BHA models)

- regeneration circuit is fully insulated for maximum efficiency
- specifically designed for a long and dependable operating life in harsh industrial environments

## regenerative blower (BPA models)

- field proven high efficiency blower combines reliable performance and a long operating life in all operating conditions
- regenerative design for lower noise levels than typical blowers



## secondary heater contactor (EHA & BPA models)

- provides protection against overheating in the event of a primary contactor failure



# FEATURES

## pneumatically operated 3-way valves

- three-way valves with stainless steel internals and Teflon® seats ensure reliable field proven performance
- used for inlet valves on models HLA 50 to HLA 800

## high performance butterfly valves

- pneumatic actuators ensure precise proportional control and a bubble tight seal; no soft seals
- rugged stainless steel disk, made in the USA construction and Teflon® seats combined with a low pressure drop design
- used for inlet valves on models HLA 1000 and up and all EHA and BPA models



## stainless steel spring check valves

- metal on metal seats for reliable operation, even high temperature operation
- provide worry-free operation and minimal maintenance

## precision purge control valve

- with visual setting indication, purge flow is field adjustable
- allows operator to easily adjust the purge flow to match the operating conditions for optimal energy savings
- pressure gauge and ball valve included



## high quality construction

- ASME coded pressure vessels
- UL/cUL compliant
- activated alumina desiccant made in the USA
- L leg bracket for easy fork lift placement



UPGRADE

energy saving dew point control option

- with this option, a dew point sensor is incorporated into the dryer providing the ultimate in energy and power savings
- outlet dew point is constantly monitored allowing the cycle time to be adjusted depending on the actual moisture load saving valuable purge air on all styles of dryers
- saves additional energy on heated dryers by reducing heater on-time and blower run-time
- easily field retrofit; includes dew point display
- the -ES option reduces valve actuation, increases service life and includes an extended 5-year valve warranty



validated compressed air filter packages

- nano F<sup>1</sup> pre and after filtration packages
- nano F<sup>2</sup> flanged filters are floor mounted or skid mounted on models above 1500 scfm
- 3-valve and 7-valve bypasses available for single pre- and after-filter packages
- 9-valve bypasses available for dual pre- and after-filter packages



other options include

- low ambient kits for outdoor environments
- special paint finishes
- enhanced corrosion allowances for harsh ambient conditions
- NEMA7 explosion-proof designs
- rental packages with air driven controls and after cooler available
- custom designs to comply with specifications welcome



HLA HEATLESS SPECIFICATIONS

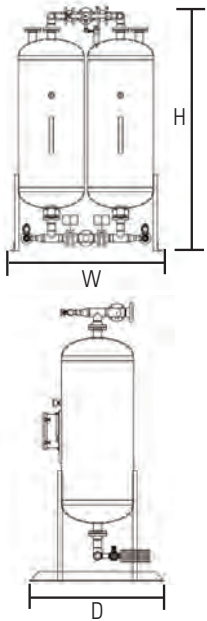
dryer model	inlet & outlet <sup>(1)</sup>	rated flow <sup>(2)</sup>		dimensions			approx. weight <sup>(3)</sup>	recommended filtration <sup>(4)</sup>	
		NPT (F) / FLG	scfm	Nm³/h	W	D	H	lbs	pre filter
HLA 50	¾"	50	85	26.5	26.5	59.3	190	NF0085M01	NF0085M1
HLA 70	¾"	70	119	27.5	30	52.9	270	NF0085M01	NF0085M1
HLA 100	1"	100	170	27.5	30	64.2	300	NF0135M01	NF0135M1
HLA 150	1"	150	255	31.5	33	54.1	415	NF0175M01	NF0175M1
HLA 200	1 ½"	200	340	40	40	61.2	540	NF0290M01	NF0290M1
HLA 250	1 ½"	250	425	40.8	46	73.3	590	NF0290M01	NF0290M1
HLA 350	1 ½"	350	595	44	42	64	735	NF0400M01	NF0400M1
HLA 500	2"	500	850	48	42	78.9	1100	NF0700M01	NF0700M1
HLA 650	2"	650	1150	52	46	75.5	1600	NF0700M01	NF0700M1
HLA 800	2 ½"	800	1359	52	46	85.8	2000	NF0850M01	NF0850M1
HLA 1000	3"	1000	1699	59.2	48	103.3	2650	NF1000M01	NF1000M1
HLA 1250	3"	1250	2124	66.7	49	105.5	3000	NF1250M01	NF1250M1
HLA 1500	3"	1500	2549	72.8	56	96.6	3500	NF1500M01	NF1500M1
HLA 2000	4"	2000	3398	72.8	56	111.1	4600	NFZ2500M01	NFZ2500M1
HLA 2500	4"	2500	4247	99	57.5	115.5	5100	NFZ2500M01	NFZ2500M1
HLA 3000	4"	3000	5097	99	57.5	125	6500	NFZ3500M01	NFZ3500M1

specifications	standard	optional
maximum particle size (ISO class) <sup>(5)</sup>	class 2 (1 micron)	class 1 (0.01 micron)
maximum water content (ISO class) <sup>(5)</sup>	class 2 (-40°F pdp)	class 1 (-94°F pdp)
minimum/ design /maximum operating pressure range <sup>(6)</sup>	70 psig / 100 psig / 150 psig	-
minimum / design/ maximum ambient temperature	38°F / 100°F / 120°F	-
minimum / design / maximum inlet temperature	38°F / 100°F/ 120°F	-
power supply requirements	115V/1Ph/60Hz	230V/1Ph/60Hz & 12 VDC

pressure correction factors <sup>(7)</sup>									
operating pressure (psig)	60	70	80	90	100	110	130	140	150
correction factor	0.65	0.74	0.83	0.91	1.00	1.04	1.12	1.16	1.20

temperature correction factors <sup>(7)</sup>									
inlet temperature (°F)	70	80	90	100	105	110	115	120	
correction factor	1.12	1.10	1.06	1.00	0.93	0.86	0.80	0.75	

(1) 3" and below are NPT(F) threaded. 4" and above are flanged. All units with 3" piping and above will be ANSI welded pipe  
(2) in compliance with ADF 100 specifications for compressed air dryers: Inlet temperature: 100°F, ambient temperature: 100°F, inlet pressure dew point: -40°F. For all other conditions refer to the correction factors or contact support@n-psi.com  
(3) approx. weight for all models does not include desiccant installed  
(4) recommended for all applications and includes NPT pre and after filters mounted on the dryers. For flanged, consult factory (add -F2 suffix)  
(5) per ISO 8573.1:2010  
(6) maximum working pressure for all models is 150 psig. For higher pressures, contact support@n-psi.com  
(7) be used as a rough guide only. All applications should be confirmed by nano. Contact nano for sizing assistance  
(8) all models are UL/cUL compliant  
(9) all models have ASME coded pressure vessels. For other approvals, consult support@n-psi.com  
(10) for sizes above 3000 scfm and pressure below 60 psig, please contact support@n-psi.com  
(11) technical specifications subject to change without notice. Direct inquiries to support@n-psi.com or contact 704.897.2182



# EHA EXTERNALLY HEATED SPECIFICATIONS

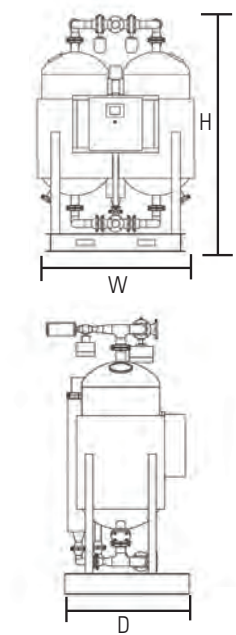
dryer model	inlet & outlet <sup>(1)</sup>	rated flow <sup>(2)</sup>		heater	dimensions			approx. weight <sup>(3)</sup>	recommended filtration <sup>(4)</sup>	
	NPT (F) / FLG	scfm	Nm³/h	kW	W	D	H	lbs	pre filter	after filter
EHA 100	1"	100	170	2	44	42	42	700	NF0135M01	NHT0150M01
EHA 175	1 ½"	175	297	3	40	42	42	825	NF0290M01	NHT0300M1
EHA 250	1 ½"	250	425	4.5	44	42	42	900	NF0290M01	NHT0300M1
EHA 350	2"	350	595	6	48	42	42	1500	NF0450M01	NHT0450M1
EHA 500	2"	500	849	10	49.8	40	40	2400	NF0700M01	NHT0650M1
EHA 700	2"	700	1189	15	51	49.8	49.8	2900	NF0700M01	NHT1000M1
EHA 850	3"	850	1444	18	71	58.3	58.3	3350	NF1000M01	NHT1000M1
EHA 1000	3"	1000	1699	18	71	58.3	58.3	3800	NF1000M01	NHT1000M1
EHA 1350	3"	1350	2294	25	70.8	53.7	53.7	5000	NF1500M01	NHT1600M1
EHA 1700	4"	1700	2888	30	83.1	56.7	56.7	5500	NFZ2500M01	NFZ2500M1HT
EHA 2100	4"	2100	3568	38	83.1	56.7	56.7	7200	NFZ2500M01	NFZ2500M1HT
EHA 2400	4"	2400	4077	50	83.1	55.7	55.7	8750	NFZ2500M01	NFZ2500M1HT
EHA 3100	6"	3100	5267	60	102.4	68	68	11000	NFZ3500M01	NFZ3500M1HT
EHA 3800	6"	3800	6456	67	108.4	71	71	14200	NFZ4000M01	NFZ4000M1HT
EHA 4300	6"	4300	7306	75	108.4	71	71	16300	NFZ5000M01	NFZ5000M1HT
EHA 5000	6"	5000	8495	100	116	83	83	17600	NFZ5000M01	NFZ5000M1HT

specifications	standard	optional
maximum particle size (ISO class) <sup>(5)</sup>	class 2 (1 micron)	class 1 (0.01 micron)
maximum water content (ISO class) <sup>(5)</sup>	class 2 (-40°F pdp)	-
minimum/ design /maximum operating pressure range <sup>(6)</sup>	80 psig / 100 psig / 150 psig	58 to 250 psig
minimum / design/ maximum ambient temperature	38°F / 100°F / 120°F	-
minimum / design / maximum inlet temperature	38°F / 100°F/ 120°F	-
power supply requirements	460VAC/60Hz	-

pressure correction factors <sup>(7)</sup>									
operating pressure (psig)	60	70	80	90	100	110	130	140	150
correction factor	0.65	0.74	0.83	0.91	1.00	1.04	1.12	1.16	1.20

temperature correction factors <sup>(7)</sup>									
inlet temperature (°F)	70	80	90	100	105	110	115	120	
correction factor	1.12	1.10	1.06	1.00	0.93	0.86	0.80	0.75	

(1) 3" and below are NPT(F) threaded. 4" and above are flanged. All units with 3" piping and above will be ANSI welded pipe  
(2) in compliance with ADF 100 specifications for compressed air dryers: Inlet temperature: 100°F, ambient temperature: 100°F, inlet pressure dew point: -40°F. For all other conditions refer to the correction factors or contact support@n-psi.com  
(3) approx. weight for all models does not include desiccant installed  
(4) recommended for all applications and includes NPT pre and after filters mounted on the dryers. For flanged, consult factory (add -F2 suffix)  
(5) per ISO 8573.1:2010  
(6) maximum working pressure for all models is 150 psig. For higher pressures, contact support@n-psi.com  
(7) be used as a rough guide only. All applications should be confirmed by nano. Contact nano for sizing assistance  
(8) all models are UL/cUL compliant  
(9) all models have ASME coded pressure vessels. For other approvals, consult support@n-psi.com  
(10) for sizes above 5000 scfm and pressure below 60 psig, please contact support@n-psi.com  
(11) technical specifications subject to change without notice. Direct inquiries to support@n-psi.com or contact 704.897.2182



# BPA BLOWER PURGE SPECIFICATIONS

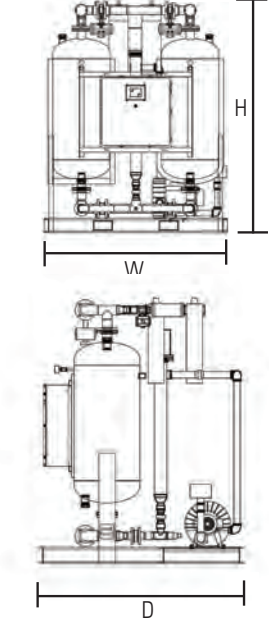
dryer model	inlet & outlet <sup>(1)</sup>	rated flow <sup>(2)</sup>		heater	blower	dimensions			approx. weight <sup>(3)</sup>	recommended filtration <sup>(4)</sup>	
	NPT (F) / FLG	scfm	Nm³/h	kW	hp	W	D	H	lbs	pre filter	after filter
BPA 250	1 ½"	250	425	4.5	1.5	44	56	64	1200	NF0290M01	NHT0300M1
BPA 350	2"	350	595	6	3	44	56	78.9	1850	NF0450M01	NHT0450M1
BPA 500	2"	500	849	10	2.75	50	60	87.4	2750	NF0700M01	NHT0650M1
BPA 700	2"	700	1189	15	3.42	51	62	97.4	3650	NF0700M01	NHT1000M1
BPA 850	2 ½"	850	1444	18	4.6	71	67	95	4200	NF0850M01	NHT1000M1
BPA 1000	3"	1000	1699	18	6.16	71	70	106.8	4800	NF1000M01	NHT1000M1
BPA 1350	3"	1350	2294	25	10	70.8	70	105.5	6300	NF1500M01	NHT1600M1
BPA 1700	4"	1700	2888	30	15	83.1	89	95.5	7000	NFZ2500M01	NFZ2500M1HT
BPA 2100	4"	2100	3568	38	15	83.1	93	106	9000	NFZ2500M01	NFZ2500M1HT
BPA 2400	4"	2400	4077	50	15	83.1	95	114	11000	NFZ2500M01	NFZ2500M1HT
BPA 3100	6"	3100	5267	60	15	102.4	95	117.5	13700	NFZ3500M01	NFZ3500M1HT
BPA 3800	6"	3800	6456	67	15	108.4	95	115.5	17800	NFZ4000M01	NFZ4000M1HT
BPA 4300	6"	4300	7305	75	15	116	100	120	20500	NFZ5000M01	NFZ5000M1HT
BPA 5000	6"	5000	8495	100	15	116	100	121.5	22300	NFZ5000M01	NFZ5000MHT
BPA 6250	8"	6250	10618	125	30	122	107	129.8	25500	NFZ7500M01	NFZ7500M1HT
BPA 7750	CF	CF	CF	CF	CF	CF	CF	CF	CF	NFZ8500M01	NFZ8500M1HT

specifications	standard	optional
maximum particle size (ISO class) <sup>(5)</sup>	class 2 (1 micron)	class 1 (0.01 micron)
maximum water content (ISO class) <sup>(5)</sup>	class 2 (-40°F pdp)	-
minimum/ design /maximum operating pressure range <sup>(6)</sup>	80 psig / 100 psig / 150 psig	58 to 250 psig
minimum / design/ maximum ambient temperature	38°F / 100°F / 120°F	-
minimum / design / maximum inlet temperature	38°F / 100°F/ 120°F	-
power supply requirements	460VAC/60Hz	575V/60Hz or 380 VAC/50Hz

pressure correction factors <sup>(7)</sup>									
operating pressure (psig)	60	70	80	90	100	110	130	140	150
correction factor	0.65	0.74	0.83	0.91	1.00	1.04	1.12	1.16	1.20

temperature correction factors <sup>(7)</sup>									
inlet temperature (°F)	70	80	90	100	105	110	115	120	
correction factor	1.12	1.10	1.06	1.00	0.93	0.86	0.80	0.75	

(1) 3" and below are NPT(F) threaded. 4" and above are flanged. All units with 3" piping and above will be ANSI welded pipe  
(2) in compliance with ADF 100 specifications for compressed air dryers: Inlet temperature: 100°F, ambient temperature: 100°F, inlet pressure dew point: -40°F. For all other conditions refer to the correction factors or contact support@n-psi.com  
(3) approx. weight for all models does not include desiccant installed  
(4) recommended for all applications and includes NPT pre and after filters mounted on the dryers. For flanged, consult factory (add -F2 suffix)  
(5) per ISO 8573.1:2010  
(6) maximum working pressure for all models is 150 psig. For higher pressures, contact support@n-psi.com  
(7) be used as a rough guide only. All applications should be confirmed by nano. Contact nano for sizing assistance  
(8) all models are UL/cUL compliant  
(9) all models have ASME coded pressure vessels. For other approvals, consult support@n-psi.com  
(10) for sizes above 7750 scfm and pressure below 60 psig, please contact support@n-psi.com  
(11) technical specifications subject to change without notice. Direct inquiries to support@n-psi.com or contact 704.897.2182



# EXPERIENCE. CUSTOMER. SERVICE.

Leading edge technology and hundreds of years of *experience*...nano-purification solutions, your world-class manufacturer of state-of-the-art compressed air and gas solutions to industry.

Our commitment at nano is to work alongside our *customers* and provide unique solutions with the highest quality products to solve your specific challenges.

A wealth of experience and leading edge products are only part of the equation. nano recognize that world-class customer *service* is the most important component to any successful business.



## DESIGN

Our experienced team of design engineers are always looking for new and unique technologies and products to bring you the highest level of performance and lowest overall operating cost.

## RESEARCH & DEVELOPMENT

Our R&D team endeavor to provide solutions that go beyond developing an existing product. They are continually researching new technologies which can provide unique advantages over competitive offerings.



## MANUFACTURE

The reliable and energy saving nano D<sup>5</sup> range of twin tower desiccant air dryers are manufactured to the highest standards of build quality to ensure equipment reliability and high levels of performance.

## ENVIRONMENTALLY FRIENDLY

Through both product development and manufacturing, we strive to produce high quality products compliant to both local and global environmental legislation. Reduction of carbon footprint through energy saving products and use of environmentally friendly components are our commitment to you.



copyright PURIFICATION SOLUTIONS LLC  
publication reference n-psi-D5-01-us



nano-purification solutions llc  
charlotte, north carolina  
united states

nano-purification solutions penn  
new bethlehem, pennsylvania  
united states

nano-purification solutions  
st. catharines, ontario  
canada

nano-purification solutions ltd  
gateshead, tyne and wear  
united kingdom

nano-purification solutions GmbH  
krefeld, germany

tel: 704.897.2182  
fax: 704.897.2183  
email: support@n-psi.com  
web: www.n-psi.com

[www.n-psi.com](http://www.n-psi.com)