PURIFICATION SOLUTIONS

D-Series[1]

ultra-high purity compressed air dryers

flow capacity: 3 - 177 scfm (5 - 301 Nm^3/hr)

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Leading edge technology and more than 100 years of **experience**...nano-purification solutions, your world-class provider of state-of-the-art compressed air and gas solutions to industry.

Our commitment at n-psi 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. n-psi realize that world-class customer **service** is the most important component to any successful business.

Experience.Customer.Service...**n-psi**

Clean and Dry

Clean and dry compressed air is essential in every efficient and profitable manufacturing and process operation worldwide. nano-purification solutions' vast experience includes food, beverage, chemical, laboratory, medical and natural gas applications.

n-psi understands your needs and has created the nano range of high-performance, energy-saving compressed air and gas purification products to provide clean and dry compressed air and gases at an affordable price with unrivaled reliability.

Design

Our experienced team of design engineers are world leading specialists in the design of new and unique industrial compressed air treatment products and compressed air dryers.

Research & Development

A core element of our capabilities - founded on cumulative decades of practical engineering expertise - our R&D team is continually looking for improved performance and reliability.

Manufacture

Ultra-high purity compressed air dryers are manufactured at our state of the art facility to the highest standards of build quality to ensure equipment reliability and high levels of performance.

nano D-Series[1] compressed air dryers

Clean and dry compressed air is easily achieved with the new range of nano D-Series[1] ultra-high purity compressed air dryers.

D-Series[1] dryers reliably give you:

- More for your money - everything needed for installation is in the box
- Moisture & particulate protection of your production process
- Lower life cycle costs - low energy costs and simplified maintenance
- Built in dewpoint monitoring (optional)
- Space saving - can be easily wall mounted
- Safe and quiet operation
- 3 - 177 scfm (5 - 301 Nm^3/hr) at pressures of 100 psig (7 barg)
- Peace of mind - The most reliable product of its kind

Designed for use at the point of application, nano dryers are an effective solution to the problems of contaminated compressed air.

Reliability is built in...and backed by our 5 year product warranty!

benefits - get more for your money

Guaranteed Performance

- The nano D-Series[1] dryers have been 100% function and performance tested at the factory to ensure the highest standard of performance, delivering compressed air purity in accordance with ISO8573:1 – 2001, Class 2 dirt (1 micron) and Class 2 water (-40° C pressure dewpoint).

Reliable Operation

- High efficiency moisture removal and reliable operation with PLC controlled solenoid valves
- Integral volumetric flow limiter prevents overflow ensuring consistent dewpoint performance
- Condensate is automatically removed every cycle to eliminate possible carry over

Quiet Depressurization

- Unique exhaust air silencers significantly reduce noise levels

Energy Saving Design

- Integrated inlet & outlet filtration eliminates the need for external filter housings*
- Advanced design limits regeneration purge air usage to approximately 15%
- Energy saving dewpoint monitoring option can save up to 60% during reduced inlet moisture loading

PLC Controls and Digital Display

- A clear digital display provides a full view of PLC operation and monitoring data

High Quality Construction

- 100% tested for leaks, proper operation and dewpoint performance

Easy to Install

- Easy to install & ready for use - package includes a power cable and everything else you need for either floor or wall mounting.

Easy to Maintain

- Patented, combined filter and desiccant cartridges
- Two service kits cover all your maintenance needs
- Built in inlet and outlet filters
- No special tools required
- No handling of loose desiccant
- No handling of contaminants
- Replace cartridges is less than 15 minutes

Warranty

- Peace of mind - a 5 year warranty comes standard with every D-Series[1] dryer

** An upstream coalescing filter may be required in some applications.*

D-Series[1] nano dryers – in detail

Patented combined filter & desiccant cartridges

- Water separation, inlet and outlet filtration and desiccant are all integrated into a single cartridge (eliminates up to 3 external filters and drains).
- Built in inlet filter improves flow distribution and lowers pressure drop.
- Snow storm filled desiccant provides maximum adsorption capacity.
- Easy to replace cartridges simplify maintenance requirements.

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.
- The PLC remembers where it stopped in the drying cycle to ensure consistently clean and dry air downstream.
- A standard energy saving feature 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.

Energy saving dewpoint control option

- With this option, a dewpoint sensor is incorporated into the dryer providing the ultimate in energy savings.
- The outlet dewpoint is constantly monitored, allowing the cycle time to be adjusted depending on the actual moisture load - saving valuable purge air.

Floor or wall installation

- Can be floor or wall mounted - simply by rotating the feet 90°.

Optimum dewpoint performance

- Air velocity (and therefore air to desiccant contact time) is carefully controlled via a pressure maintaining device to ensure optimum dewpoint performance.

Constant flow and pressure

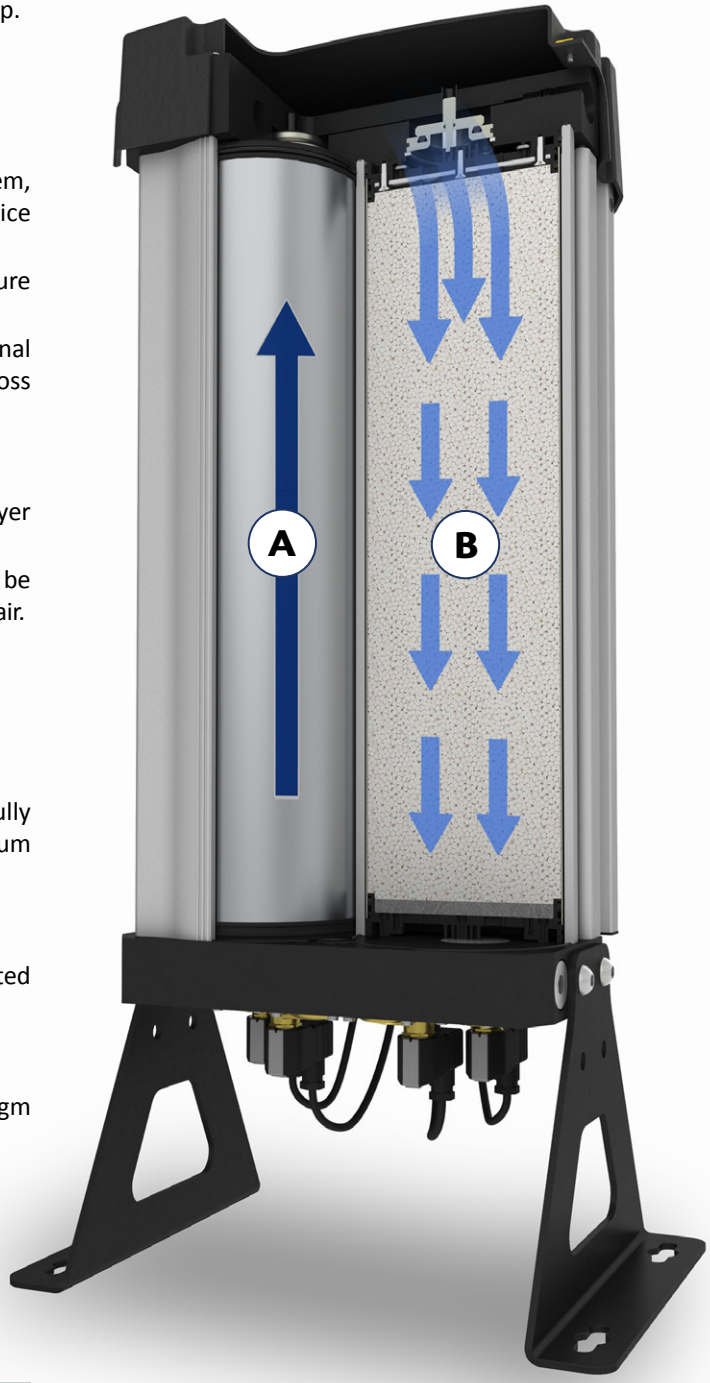
- Pressure is equalized before switching columns to ensure uninterrupted compressed air at all times with no changes in pressure.

Reliable high performance valves

- Three way ball valves (NDL-010 to 050) or solenoid operated diaphragm valves (NDL-060 to 130) provide proven performance and reliability.

Maximum corrosion protection

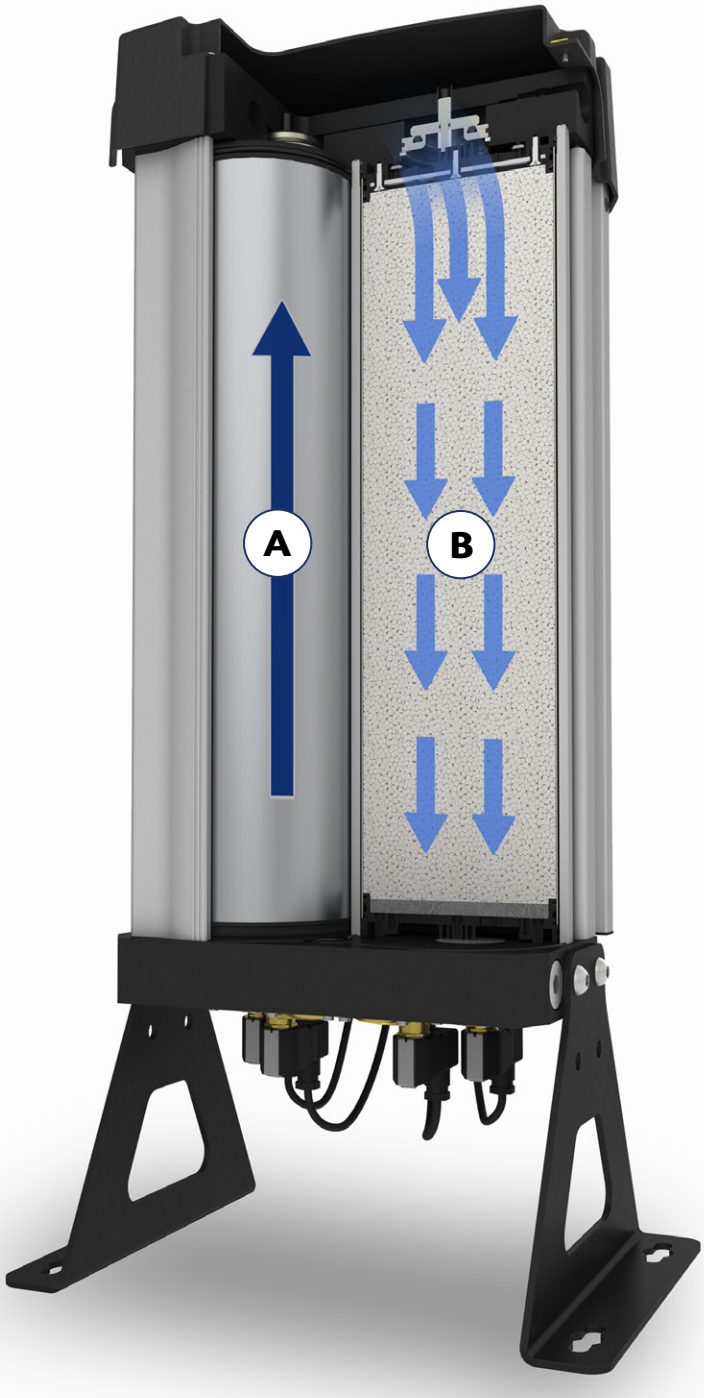
- Anodized extruded high tensile aluminum columns provide maximum protection for corrosive environments.



Unique patented cartidge design.

Flexible piping & installation options.

Mount on the floor or wall.



The advanced nano D-Series[1] dryers use the pressure swing adsorption principle to efficiently dry compressed air. They use a heatless twin tower configuration (see diagram opposite) housed in a modular design. Each column contains a unique (and patented) desiccant cartridge which incorporates inlet and outlet filtration.

Wet air from the compressor after-cooler enters the dryer and is directed into column **A**. Bulk liquids (water) and particles are removed by the filtration/separation stage, which is located on the inlet to the cartridge. Water is retained within the dryer until the column is regenerated, when it will be vented to atmosphere as it is depressurised. Following the filtration stage, air passes through the desiccant bed where any remaining moisture is adsorbed. Finally, the dry air passes through a particle filter, which retains any remaining desiccant particles that may have been carried through the system (<1 micron / ISO8573.1 class 2 for dust).

Simultaneously, a small amount of dry air is counter-flowed down through cartridge **B** and exhausted to atmosphere, removing the moisture and regenerating the desiccant.

The dryer is controlled by a PLC which periodically switches the solenoid valves when the compressor is running, reversing the function of each column and therefore ensuring the continuous supply of dry air.

Scan this tag with your mobile device to download a technical paper describing the performance limitations of typical twin tower desiccant dryers, and how the unique design of the nano D1 overcomes them to provide effective and efficient dehydration of compressed air.

PLC controller with clear text display.

sizing & specifications

Model	Maximum Rated Flow		Inlet & Outlet Connections	Dimensions inches (mm)				Approximate Weight	Model with Energy Saving Dewpoint Sensor	Service Kit (Desiccant Cartridges)
	Inlet [1]	Outlet [2]								
	scfm (Nm³/hr)			A	B	C	D	lbs (kg)		
NDL-010	3 (5.1)	2.4 (4.1)	3/8" Push to Connect	17 (447)	9 (241)	6 (160)	10 (252)	18 (8.3)	NDL-010-ES	NDK-010
NDL-020	5 (8.5)	4 (6.8)		17 (447)	9 (241)	6 (160)	10 (252)	18 (8.3)	NDL-020-ES	NDK-020
NDL-030	10 (17)	8 (14)		25 (647)	9 (241)	6 (160)	10 (252)	28 (13)	NDL-030-ES	NDK-030
NDL-040	15 (26)	12 (20)		35 (897)	9 (241)	13 (330)	10 (252)	36 (16)	NDL-040-ES	NDK-040
NDL-050	24 (41)	19 (33)	1/2" Push to Connect	43 (1097)	9 (241)	13 (330)	10 (252)	43 (19)	NDL-050-ES	NDK-050
NDL-060	34 (58)	27 (46)	1" NPT	30 (734)	17 (440)	12 (295)	13 (335)	88 (40)	NDL-060-ES	NDK-060
NDL-070	41 (70)	33 (56)		30 (734)	17 (440)	12 (295)	13 (335)	88 (40)	NDL-070-ES	NDK-070
NDL-080	53 (90)	42 (71)		36 (914)	17 (440)	12 (295)	13 (335)	119 (54)	NDL-080-ES	NDK-080
NDL-090	66 (112)	53 (90)		36 (914)	17 (440)	12 (295)	13 (335)	119 (54)	NDL-090-ES	NDK-090
NDL-100	88 (150)	70 (119)		43 (1089)	17 (440)	12 (295)	13 (335)	141 (64)	NDL-100-ES	NDK-100
NDL-110	106 (180)	85 (144)		49 (1239)	17 (440)	12 (295)	13 (335)	172 (78)	NDL-110-ES	NDK-110
NDL-120	132 (224)	106 (180)		59 (1489)	17 (440)	12 (295)	13 (335)	209 (95)	NDL-120-ES	NDK-120
NDL-130	177 (301)	142 (241)		72 (1839)	17 (440)	12 (295)	13 (335)	262 (119)	NDL-130-ES	NDK-130

Notes:

(1) Maximum Rated Inlet Flow assumes an inlet air pressure of 100 psig (7.0 barg) and temperature of 100°F (37.7°C).

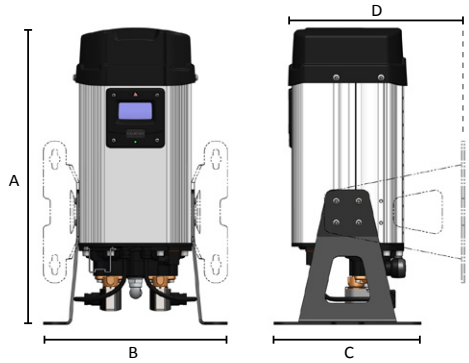
(2) Outlet flow is inlet flow minus average purge & depressurization loss over time.

- For rated flows at other inlet conditions or for -100°F (-70°C) dewpoint applications go to: www.n-psi.com.
- If the dryer is to be installed downstream of an oil lubricated compressor, we recommend installing a nano F1 M01 (0.01 micron) coalescing filter immediately upstream of the dryer.

specifications	
ISO8573 – 1: 2001 Quality Classes	Dirt: Class 2 (1 micron) Water: Class 2 (-40°F / -40°C Pressure Dewpoint)
Allowable working pressure	58 to 232 psig (4 to 16 barg)
Allowable inlet temperature	34.7 to 122°F (1.5 to 50°C)
Power supply	100 – 240VAC / 50 – 60Hz

correction factors	To calculate the maximum rated flow for any model at operating conditions other than those above: Rated Flow (from table above) x K1 x K2 x K3 (from tables below) = Rated Flow at new conditions [1]												
Inlet air pressure (psig)	60	75	90	100	115	130	145	160	175	190	205	220	232
K1	0.63	0.75	0.88	1	1.13	1.25	1.38	1.50	1.63	1.75	1.88	2.00	2.13
Inlet air temperature (°F)	75	100	104	113	122	Pressure dewpoint (°F)					-4	-40	-100
K2	1	1	0.97	0.88	0.73	K3					1.10	1	0.70

(1) To be used as a rough guide only. All applications should be confirmed by n-psi. Contact us for sizing assistance.



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