

nano

-POROUS SYSTEMS LTD



# D-Series<sup>1</sup>

ultra-high purity  
compressed air dryers

Flow Capacity: 5-41 Nm<sup>3</sup>/hr (3-24 scfm)

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nano-porous systems limited is one of the world's leading companies specialising in the design and manufacture of industrial compressed air treatment products and dryers.

The business, which is based in the North East of England, has an extremely experienced team of product design and development engineers, led by Colin Billiet – the former Chief Executive of the domnick hunter Group Plc.

Working with customers to determine their precise needs, applying our knowledge and experience, n-psl provides 'state of the art' high quality products with innovative features and benefits. Products are manufactured at our UK Gateshead facility which is accredited to ISO9001:2008. This demonstrates our commitment to continual quality improvement and business excellence.



## Clean and Dry

Clean and dry compressed air – an essential requirement in efficient and profitable manufacture and process operations throughout the food, beverage, chemical, laboratory, pharmaceutical, manufacturing, brewing and process industries.

nano-porous systems limited understand your needs for this and have developed the nano range of ultra-high purity compressed air dryers to give you just that - clean and dry compressed air at an affordable price with unrivalled equipment reliability you can count on!



## Design

Our extremely experienced team of design engineers at nano-porous systems limited are world leading specialists in the design of novel industrial compressed air treatment products and air dryers.



## Research and 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 UK Gateshead facility to the highest standards of build quality to ensure equipment reliability and high levels of performance.

# D-Series<sup>1</sup> nano dryers – in detail

## Patented filter / desiccant cartridge (one per column)

- Water separation, inlet and outlet filtration integrated into cartridge (eliminates up to 3 external filters and drains).
- Snow storm filled to maximise performance.
- Inlet filtration facilitates good flow distribution, lowering pressure loss.
- Simplified maintenance procedures.

## PLC control

- Robust, reliable control system, offering a number of features including indicators for 'power on', 'service required' and 'hours run'.
- Memory retention – starts dryer where it left off in drying cycle to prevent wet air downstream.
- The energy saving feature starts and stops dryer with a compressor or point-of-use equipment to eliminate purge loss when off.

## Energy saving option

- With this option, a dewpoint sensor is incorporated within the dryer design, providing the ultimate in energy saving.
- Constant monitoring of the outlet dewpoint enables load dependant control for adsorption. Cycle times are adjusted to the actual water load with varying inlet conditions; saving regeneration (purge) air.

## Mounting feet

- Can be rotated through 90° for wall mounting.

## Pressure maintaining device

- Ensures desiccant bed velocities are controlled at all times (important to maintain dewpoint performance).

## Top end re-pressurisation

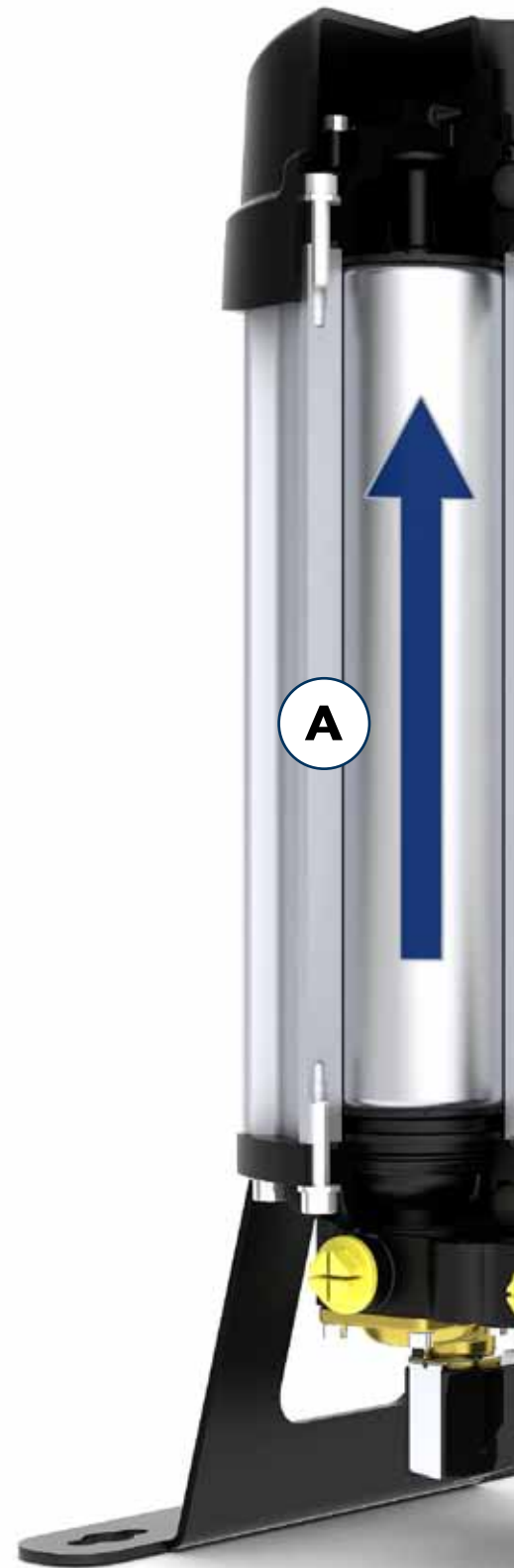
- Ensures uninterrupted compressed air at all times (with no pressure dips).

## Unique 3-way ball valve

- Maintains pressure within the dryer when compressor is off-line – important to maintain a constant dewpoint on restart (avoids ingress of moisture onto the desiccant beds when off-line).

## High tensile extruded aluminium column

- With twin dryer chambers (Anodised for corrosion protection).



Quick release outlet connector.



Atmospheric exhaust silencer.



Wall mountable base.

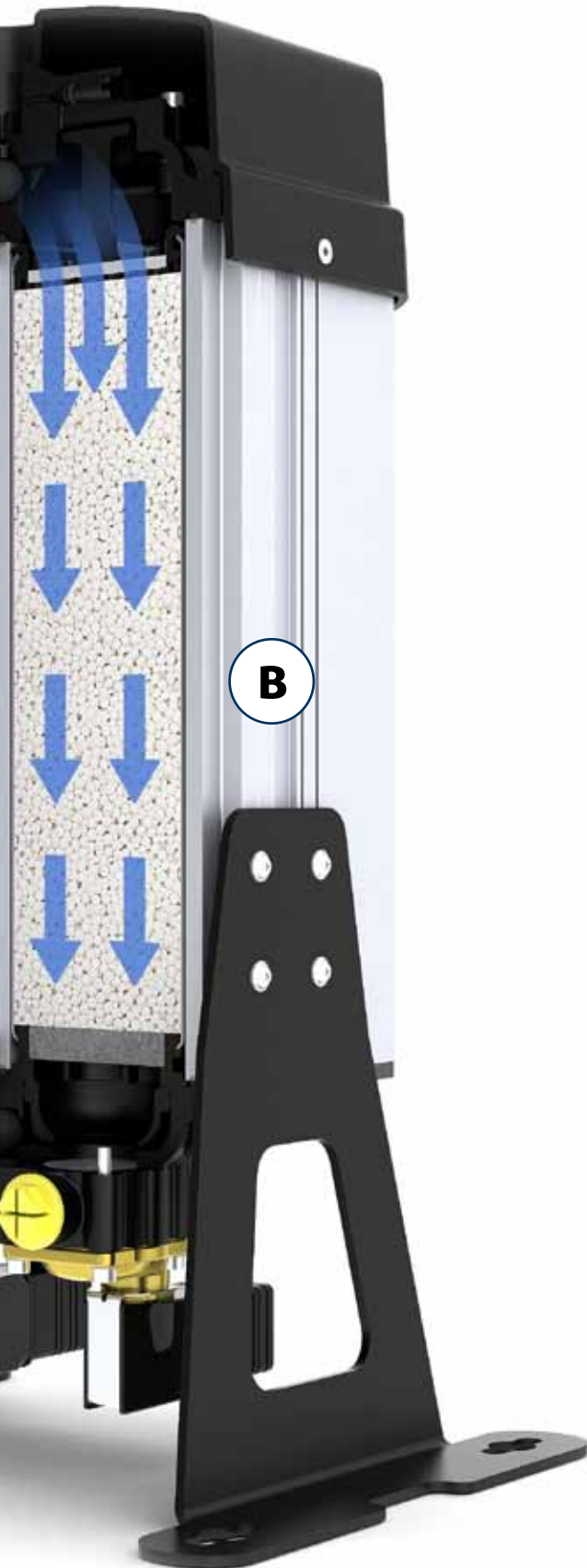
## How D-Series<sup>1</sup> dryers work

D-Series<sup>1</sup> 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.



PLC controller with clear text display.

# nano D-Series<sup>1</sup> dryers

Clean and dry compressed air is easily achieved with the new range of D-Series<sup>1</sup> ultra-high purity compressed air dryers.

nano dryers reliably give you:

- More for your money - everything to install is in the box
- Protection of your production process
- Lower life costs - low energy costs and simplified maintenance
- Built in dewpoint monitoring (optional)
- Space saving - can be easily wall mounted
- Safe and quiet operation
- 3 - 24 scfm (5 - 41 Nm<sup>3</sup>/hr) at pressures of 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 designed in...

Backed by our 5 year product warranty!



## D-Series<sup>1</sup> - Benefits you get - More for your money

### Guaranteed Performance

- D-Series<sup>1</sup> dryers give you the highest standard of performance of purity and deliver air in accordance with ISO8573:1 – 2001, Class 2 dirt (1 micron) and Class 2 water (-40° C pressure dewpoint)
- 100% function and performance tested

### Reliability

Built in reliability gives you:

- High efficiency water separation – timed solenoid valve operation
- Integral volumetric flow limiter prevents overflow eliminating moisture and loss of dew point
- Collected condensate removed every dryer cycle
- Reduced purge air loss

### Quiet Operation

- Novel exhaust air silencer significantly reduces noise levels <60dB(a)

### Control and Display

- Clear PLC display
- Full operational and monitoring data on view

### Energy Saving Design

- Integrated 2 stages of filtration (inlet & outlet) eliminate external filter housings\*
- Purge air for regeneration is only 15%
- Dew point monitoring can save up to 60% of compressor energy

### High Quality Build

Every D-Series<sup>1</sup> dryer is:

- Pressure tested and checked for zero leaks
- 100% function tested
- 100% tested for dew point performance

### Simple Installation

Easy to install – ready to use, everything is in the box  
Complete package includes:

- Mounting feet for vertical and wall mounting
- Power cables – 3 types suitable for global use 100-250VAC 50 & 60 Hz

### Easy to Maintain

Unique factory built filtration and adsorption cartridge makes servicing simple:

- 12,000 hours and 5 year service kits
- Built in inlet and outlet filters
- No special tools are required
- Handling of loose desiccant/contaminates avoided
- Less than 15 minutes required for maintenance

### Warranty

- A 5 year warranty comes as standard with every D-Series<sup>1</sup> dryer

\* (coalescing filters may be required for oil removal)

# nano D-Series<sup>1</sup> dryers

Model	Flow Rate		Connections	Dimensions mm (inches)				Weight (approx)	Model with Energy Savings (includes dewpoint sensor)	Service Kit (12,000 hrs or 2 years)
	Inlet	Outlet*		A	B	C	D	Kg (Lbs)		
	Nm <sup>3</sup> /hr (scfm)									
NDL-010	5.1 (3)	4.1 (2.4)	8mm (5/16") push fit (inlet & outlet)	447 (17)	241 (9)	160 (6)	252 (10)	8.3 (18.2)	NDL-010-ES	NDK-010
NDL-020	8.5 (5)	6.8 (4)		447 (17)	241 (9)	160 (6)	252 (10)	8.3 (18.2)	NDL-020-ES	NDK-020
NDL-030	17 (10)	13.6 (8)		647 (25)	241 (9)	160 (6)	252 (10)	12.8 (28.2)	NDL-030-ES	NDK-030
NDL-040	25.5 (15)	20 (12)		897 (35)	241 (9)	330 (13)	252 (10)	16.4 (36.1)	NDL-040-ES	NDK-040
NDL-050	40.8 (24)	32.6 (19.2)		1097 (43)	241 (9)	330 (13)	252 (10)	19.3 (42.5)	NDL-050-ES	NDK-050

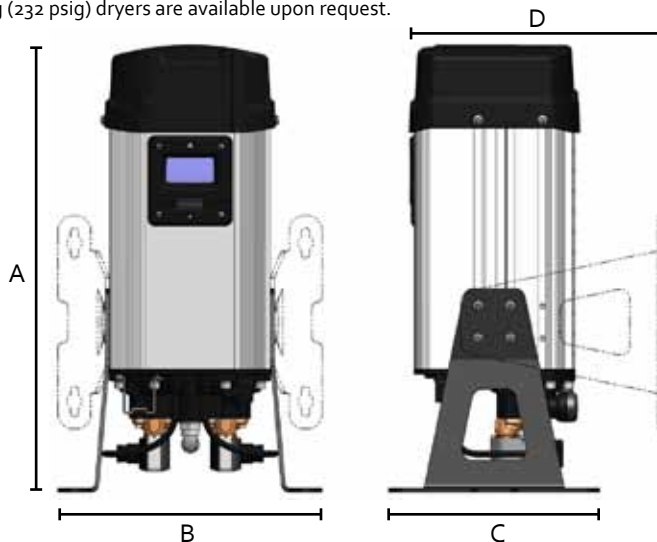
## Notes:

- \* Includes 15% average purge loss.
- Flow rates are based on an air inlet pressure of 7.0 barg (100 psig) and temperature of 37.7°C (100°F).
- For flow rates and dryer performance at other inlet conditions or -70°C (-100°F) dewpoint requirements, please see: [www.compressedairtreatment.com](http://www.compressedairtreatment.com)
- Where the air source is from an oil lubricated compressor, we recommend that a 1 micron coalescing filter be installed on the inlet to the dryer.

## Specification

ISO8573 – 1: 2001 Quality Classes	Class 2: Dirt: 1µ Class 2: Water: -40°C (-40°F) PDP
Minimum working pressure	4 barg (58 psig)
Maximum working pressure**	12 barg (174 psig)
Power supply	100 – 240VAC / 50 – 60Hz
Minimum inlet temperature	1.5°C (34.7°F)
Maximum inlet temperature	50°C (122°F)

\*\* 16 barg (232 psig) dryers are available upon request.



Service Kit

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