

# nano



## R<sup>4</sup> direct expansion refrigerated compressed air dryers

flow capacity: 18 - 5872 scfm (30 - 9990 Nm<sup>3</sup>/hr)

# R<sup>4</sup> direct expansion refrigerated compressed air dryers

flow capacity: 18 - 5827 scfm (30 - 9900 Nm<sup>3</sup>/hr)

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 recognise that world-class customer **service** is the most important component to any successful business.

Experience. Customer. Service... **nano**



## clean and dry

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

nano understand your needs and has created the nano R<sup>4</sup> range of high-performance, energy-saving compressed air and gas purification products to provide clean and dry compressed air at an affordable price with unrivaled reliability.



## 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 R<sup>4</sup> refrigeration air dryers are manufactured in a state of the art facility to the highest standards of build quality to ensure reliability and high levels of performance.

# nano direct expansion dryers – R<sup>4</sup> features and benefits in detail



## refrigerant gauge standard

Refrigerant gauge is located above the controller for ease of troubleshooting



## CAREL microprocessor

Functionality monitoring text display includes dew point, high and low pressure and drain operation



## robust construction

Powder coated aluminum panels are corrosion resistant

## stainless steel heat exchanger

With a patented design, corrosion resistant construction and integrated moisture separator, the large surface area heat exchanger is truly unique and efficient. Models NDX 1750 and larger use a multi-module SSX design

## automatic expansion valve

The TXV ensures stable dew point performance even in changing ambient conditions

## environmentally friendly

R134a and R407C refrigerants are recognised as both efficient and safe

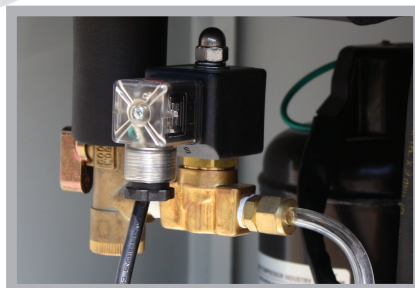
## easy installation and start-up

Small footprint, lightweight and ready to go out of the box



## digital scroll compressor

Many of the NDX utilise scroll compressors. Scrolls minimise power consumption, noise, vibration and moving parts while maximising reliability and resistance to liquid refrigerant returns



## adjustable timer drain standard

Timed solenoid drain is fully adjustable and extremely reliable



## oversized condenser for high ambient temperatures

Oversized condenser uses a high pressure fan switch to protect refrigeration circuit and to provide visual high and low pressure alarms



# nano direct expansion dryers – R<sup>4</sup> characteristics

## technical features

### limited energy costs

High-performance design with its stainless steel heat exchanger, ensuring an extremely limited pressure drop of 150 - 200 mbar at the nominal flow rate of the dryers (ISO 8573.1 - 2010 standard humidity class 4).

### optimised design

Dryers in the NDX range have a small footprint, allowing easy housing under working platforms or in a small compressor room. The feet of the device provide sufficient ground clearance to protect all internal components.

### plug & play product

A ready to use direct expansion refrigeration dryer with all the components directly integrated, making it very easy to use. The NDX dryers come with a power cable, which allows commissioning without having to open the dryer.

### optimised air circulation

The fan mounted directly in its own housing on the condenser allows for optimal efficiency of the refrigerating capacity available, even at high ambient temperatures.

### electronic controller

Dryers in the NDX range are equipped with an electronic digital controller from the NDX 0055 upwards, which controls the dryer and allows reliable control and display of the dew point.

## advantages

### energy savings

From the NDX 0340 model upwards, R<sup>4</sup> refrigeration dryers are equipped with digital scroll compressors, which adapt their refrigeration production according to the thermal load to be dissipated.

### simplified maintenance

Easy access from the top and side panels of the device allows for optimal maintenance of the dryer. The refrigeration design of the NDX dryers ensures direct access to all components. Technical diagnosis is facilitated by the presence of pressure taps within the refrigeration circuit, and low pressure gauge in each model.

### record durability & high strength

Its reinforced bodywork, painted in oven-baked epoxy, ensures a long service life even in the most corrosive and dusty environments. Its high-efficiency condenser, equipped with robust fins, cooled by the air without hindrance, allows the possibility of cleaning and great stability over time.

### guaranteed performance

Manufactured and tested in our factories and complying with ISO 8573.1 - 2010, humidity class 4, our dryers allow for optimal use over time. The digital controller ensures proper operation and a precise pressure dew point, for process protection downstream of the dryer.

### efficient design

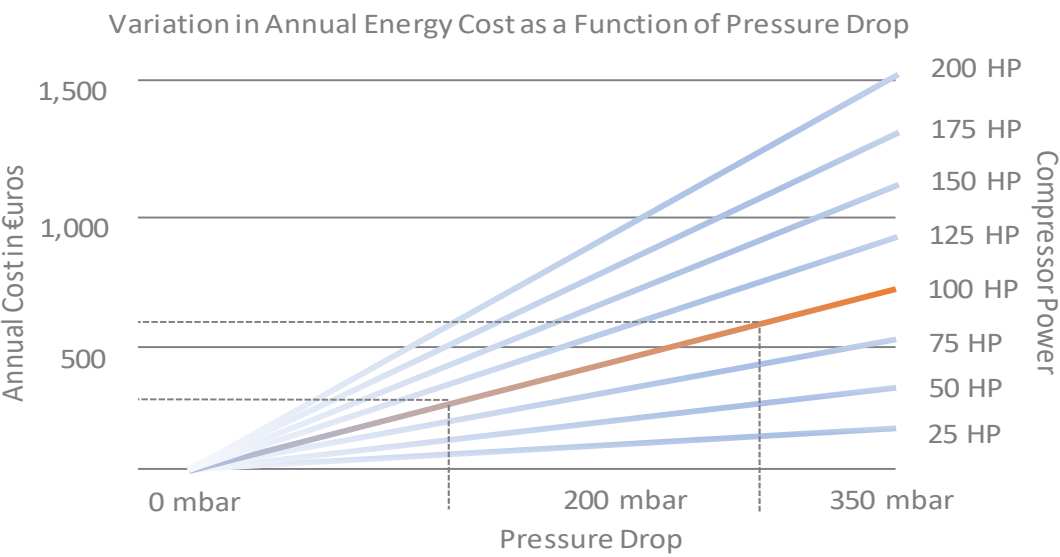
Thanks to its efficient design and the use of low GWP (Global Warming Potential) refrigerants, the high-performance refrigeration compressors provide worry-free operation, even at high temperatures (+43°C).

feature	NDX 0015 - 0045	NDX 0055 - 0175	NDX 0215 - 0550	NDX 0725 - 1150	NDX 1350 - 4750
Low pressure gauge	●	●	●	●	●
Low pressure switch	●	●	●	●	●
Fan pressure switch	●	●	●	●	●
High pressure switch			●	●	●
High pressure gauge				●	●
Digital controller		●	●	●	●
3-in-1 heat exchanger	●	●	●	●	●
High performance condenser	●	●	●	●	●
Hermetic compressor	●	●	●		
Digital scroll compressor				●	●

# nano direct expansion dryers – R<sup>4</sup> energy efficiency

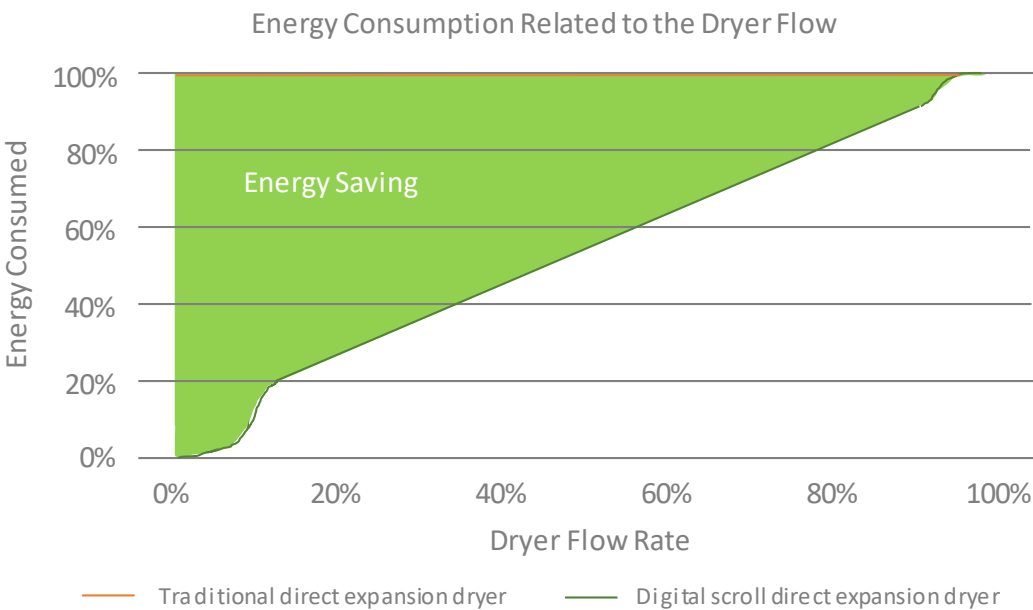
## pressure drop

The low pressure loss (150-200 mbar) on the brazed stainless steel plate heat exchanger allows a reduction in the volume and flow of compressed air to be produced in order to supply the user's process. In this way, the low energy consumption allows a significant reduction in the energy required upstream to produce the compressed air.



## digital scroll compressor

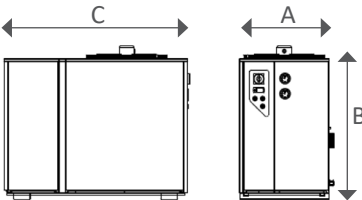
In response to the demand for a dew point of +3°C (humidity class 4), R<sup>4</sup> refrigeration dryers allow considerable energy savings thanks to the use of scroll digital compressors from the NDX 0725 upwards. With this technology, the amount of cooling is adapted to the heat load to be dissipated, thus aligning energy consumption to the flow rate of air to be treated.



# nano R<sup>4</sup> sizing & specifications

model	inlet & outlet <sup>(1)</sup>	rated flow <sup>(2)</sup>		absorbed power <sup>(3)</sup>	dimensions (mm)			approx. weight	power supply (V/Ph/50Hz)		recommended filtration
	BSPP/FLG	scfm	Nm³/h	kW	A	B	C	kg	230/1	400/3	
NDX 0015	½"	18	30	0.21	382	430	450	25	●		NFB 0025 (grade)
NDX 0020	½"	25	43	0.22	382	430	450	28	●		NFB 0025 (grade)
NDX 0030	½"	35	59	0.23	382	430	450	32	●		NFB 0035 (grade)
NDX 0045	½"	54	92	0.28	382	430	450	35	●		NFB 0070 (grade)
NDX 0055	¾"	70	119	0.29	382	480	502	38	●		NFB 0070 (grade)
NDX 0085	¾"	105	178	0.56	382	480	502	42	●		NFB 0125 (grade)
NDX 0110	1"	167	284	0.52	393	650	723	65	●		NFB 0175 (grade)
NDX 0135	1½"	213	363	0.58	393	650	723	69	●		NFB 0280 (grade)
NDX 0175	1½"	264	449	0.81	404	761	875	89	●		NFB 0280 (grade)
NDX 0215	1½"	315	535	1.00	404	761	875	101	●		NFB 0325 (grade)
NDX 0250	2"	427	726	1.37	452	882	1190	115	●		NFB 0450 (grade)
NDX 0340	2"	583	990	1.61	452	882	1190	135	●		NFB 0700 (grade)
NDX 0470	2½"	699	1188	2.01	452	882	1190	145	●		NFB 0700 (grade)
NDX 0550	2½"	893	1518	2.48	452	882	1190	180	●		NFB 1000 (grade)
NDX 0725	2½"	1165	1980	2.83	588	1005	1204	323		●	NFB 1250 (grade)
NDX 0950	3"	1398	2376	3.92	588	1005	1204	350		●	NFB 1500 (grade)
NDX 1150	3"	1670	2838	4.63	588	1005	1204	400		●	CF
NDX 1350	DN100	2370	4026	5.66	1004	1615	1852	650		●	CF
NDX 1750	DN150	2797	4752	7.84	1004	1615	1852	780		●	CF
NDX 2000	DN150	3069	5214	9.26	1004	1615	1852	820		●	CF
NDX 2500	DN200	4234	7194	11.32	1200	1900	2580	1400		●	CF
NDX 3500	DN250	4700	7986	15.72	1200	1900	2580	1630		●	CF
NDX 4750	DN250	5827	9900	18.52	1200	1900	2580	1850		●	CF

specifications	NDX 0015 to 0250	NDX 0340 to 4750
design operating pressure range	0 to 16 barg	0 to 13 barg
maximum inlet temperature	60°C	60°C
maximum ambient temperature	43°C - 50°C depending on refrigerant (contact support for details)	



pressure correction factors <sup>(4)</sup>													
inlet air pressure (barg)	4	5	6	7	8	9	10	11	12	13	14*	15*	16*
correction factor	0.72	0.82	0.92	1.00	1.06	1.08	1.11	1.14	1.18	1.19	1.21	1.23	1.26

inlet temperature correction factors <sup>(4)</sup>									
inlet air temperature (°C)	25	30	35	40	45	50	55	60	
correction factor	1.32	1.18	1.00	0.85	0.70	0.61	0.56	0.49	

ambient temperature correction factors <sup>(4)</sup>							
ambient temperature (°C)	20	25	30	35	40	43	
correction factor	1.18	1.00	0.96	0.90	0.84	0.78	

\*Only available on NDX 0015 to NDX 0060

- (1) ½" to 3" are BSPP threaded connections, 4" and up are supplied with PN16 flanged connections
- (2) inlet temperature: 35°C ambient temperature: 25°C, inlet pressure: 7 barg, pressure dew point: +3°C, and pressure drop not to exceed 350 mbar. For all other conditions refer to the correction factors above or contact sales@n-psi.co.uk
- (3) nominal absorbed power at rated operating conditions using 230/1/50 or 400/3/50 power supply (as applicable). For absorbed power at other voltages or conditions, contact sales@n-psi.co.uk
- (4) to be used as a rough guide only. All applications should be confirmed by n-psi sizing software. Contact sales@n-psi.co.uk for sizing assistance

\*2 year warranty with pre-filtration and corrosion resistant piping system installed

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2  
YEAR  
WARRANTY



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