next generation

nano

C[1]

precision controlled industrial process chillers

cooling capacity: 6824 - 1,255,668 BTU /hr (0.6 - 104.6 tons)

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C¹

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 and process cooling equipment 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.

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

improved productivity & reduced costs

Process chillers are used in a variety of industrial applications to improve processes, reduce operating costs and increase productivity. Utilization of process chillers is becoming increasingly prevalent due to more stringent environmental water quality standards.

nano realize the importance of chilled water in industry and have developed the C¹ line of precision controlled industrial process chillers to meet the increasing demand for high quality complete packaged solutions which meet various industrial applications.

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 endeavors 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 C¹ industrial process chillers are manufactured in a state of the art facility to the highest standards of build quality to ensure reliability and high levels of performance.

C[1] industrial process chillers

Chilled water is used in a wide range of applications to cool or cure anything from plastic injection molded parts to food ingredients. Oftentimes, production quality can be increased and time decreased through use of closed loop cooling systems.

The advanced nano C[1] industrial process chillers benefit from the experience of a design that has been perfected over 50 years and repeatedly proven through tens of thousands of units in operation around the world. Designed together with industrial users, these chillers have stood the test of time in virtually every industry and application.

The C[1] operates in a closed circuit (open circuit optional), offering precise water temperature control and rapid response to changes in ambient and thermal load. This design also eliminates the waste, corrosion and bacterial growth associated with open circuit systems.

In addition, energy efficient and reliable compressors combined with a unique, oversized, patented, NO FROST in-tank evaporator provide the lowest operating costs available on the market today.

benefits - more for your money

optimum energy efficiency

lower electricity consumption compared to other machines on the market

quality components

CAREL microprocessor, Copeland Scroll™ compressors

easy to install

adapts to any installation constraints, both inside and outside

space saving design

fully packaged into a simple compact design, NCS will fit into the smallest spaces

easy start-up

fully integrated packaged solution with expansion tank and bypass

total accessibility

all panels can be removed to facilitate maintenance

environmentally friendly

closed water circuit, cycling chiller using environmentally-friendly refrigerant boasts lowest electricity consumption on the market

manufacturing quality

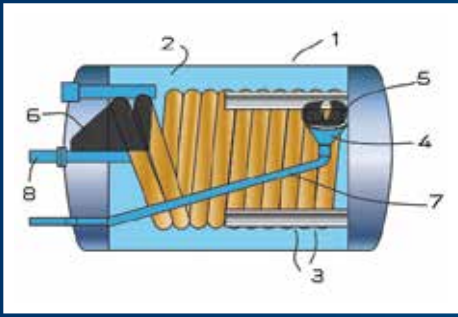
meeting strict ISO 9001 certified specifications

nano chillers – C[1] in detail

air-cooled condenser
fitted with axial cooling fan with balanced aluminum blades and an air-cooled condenser in copper pipes and aluminum vanes. Reduces noise levels and improves ventilation air flow

CAREL microprocessor
the CAREL digital microprocessor continuously indicates water outlet temperature, operating instructions and various adjustable parameters and alarms

integrated bypass
an integral centrifugal pump mounted within the chiller enclosure and a storage tank to avoid the risk of short cycles on all models. The standard adjustable bypass valve and integrated pressure gauge allows the water supply flowing out of the unit to be regulated (standard on models NCS 0015 to 1402 US)



NO FROST evaporator
patented tube in flexible shell heat exchanger is integral to the buffer vessel and protects against damage which can occur with improper setup or maintenance *(1 external shell, 2 buffer tank, 3 flexible shell, 4 gas distributor, 5 feeding circuits, 6 return circuits, 7 inlet gas pipe, 8 outlet gas pipe)*

ventilation grill

includes a standard cleanable mesh panel filter to protect condenser

robust construction

aluminum sections and panels in plastic coated galvanized steel all mounted on an epoxy coated steel structural base (aluminum or stainless steel panels available as option)

energy efficent & reliable compressor

C[1] features Copeland Scroll™ compressors as standard on models NCS 0015 to 1502 US. Scrolls minimize power consumption, noise, vibration and moving parts while maximizing reliability and resistance to liquid refrigerant returns

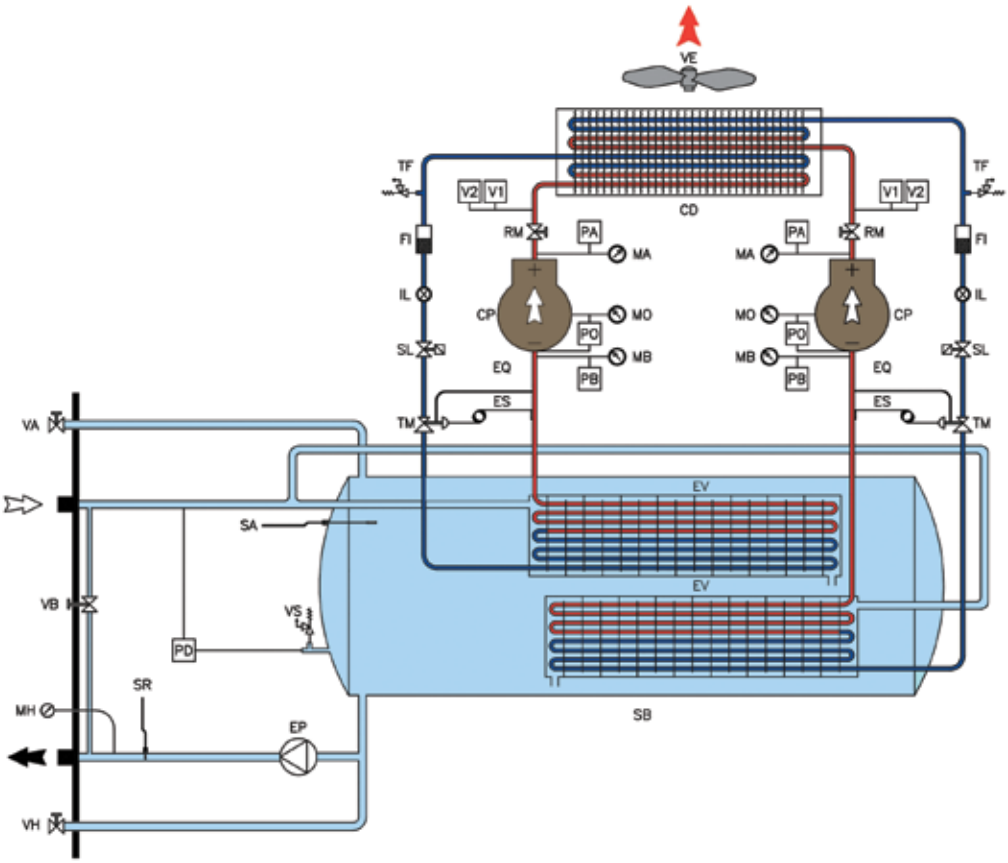
integral pump

integrated pump standard on all models

how it works

typical dual refrigeration circuit

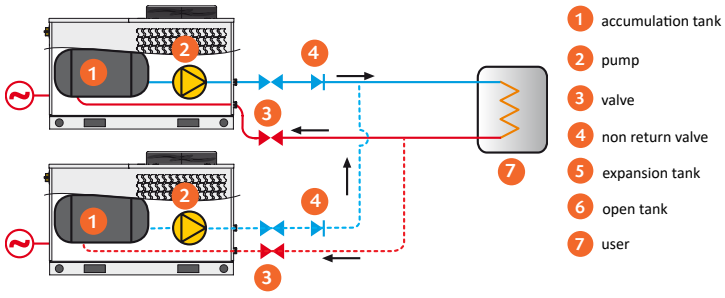
CP	compressor
RM	pressure relief valve
PA	high pressure switch
MA	high pressure gauge
V1	1st stage fan pressure controller
V2	2nd stage fan pressure controller
CD	condenser
VE	fan
TF	relief valve
FI	filter/dryer
IL	sight glass
SL	liquid solenoid valve
TM	thermostatic expansion valve
EQ	equalization
ES	thermal bulb
EV	NO FROST evaporator
PB	low pressure switch
MB	low pressure gauge
PO	oil pressure switch
MO	oil pressure gauge
VA	air bleed valve
VB	bypass valve
MH	water pressure gauge
VH	drain valve
SA	anti-freeze sensor
SR	regulating sensor
PD	water pressure differential cut-out
VS	water pressure relief valve
EP	pump
SB	tank



**models NCS 0002 to NCS 0351 US contain only one refrigeration circuit*

typical configurations

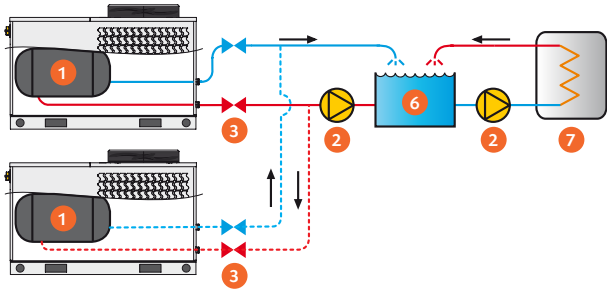
closed circuit installation (standard)



1. accumulation tank
2. pump
3. valve
4. non return valve
5. expansion tank
6. open tank
7. user

Expansion tanks are required for all closed circuit installations. When multiple chillers are installed in parallel, the expansion tanks must be automatic.

open circuit installation (optional)



Expansion tanks are not required for open circuit installations. Open circuits also typically use an external pump so, the internal pump may not be required.

standard features


3 bar pump


closed expansion tank

3 bar pump
dynamic condensation control
phase monitor
crankcase heater
closed expansion tank
condenser air filter

options


centrifugal fan


duplex pump skid

5 bar pump or higher
centrifugal fan
EC fan
remote control panel
RS 485 interface
PICO controller
duplex pump skid


refrigerant and oil gauges


aluminum panels

non-ferrous
automatic overpressure bypass valve
open expansion tank
refrigerant and oil gauges *(standard on models NCS 0251 US and above)*
casters
aluminum panels
stainless steel panels

more capabilities


free cooling chillers


high capacity process chillers

free cooling chillers
high capacity process chillers
cooling towers
dry fluid coolers
heat exchangers

nano C [1] sizing & specifications

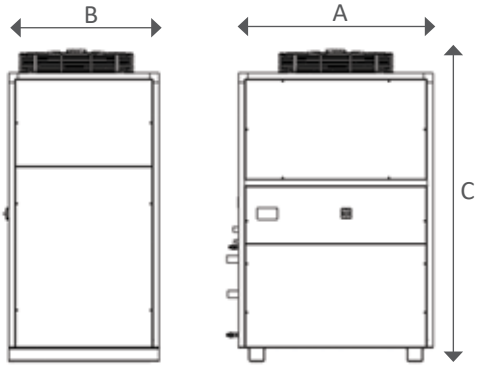
model	water inlet & outlet	cooling capacity [1]		total installed power [2]	water pump	tank capacity	dimensions (inches)			approx. weight
	NPT	BTU/h	tons	kW	hp	gal	A	B	C	lbs
NCS 0002 US	½"	6,824	0.6	1.3	0.5	6	29	22	35	187
NCS 0004 US	½"	12,966	1.1	2.1	0.5	6	29	22	35	220
NCS 0006 US	½"	19,108	1.6	2.9	0.5	6	29	22	35	238
NCS 0015 US	½"	23,885	2.0	4.3	0.8	8	33	26	55	352
NCS 0020 US	½"	32,893	2.7	5.4	0.8	8	33	26	55	374
NCS 0031 US	1"	43,675	3.6	6.6	0.8	16	39	31	70	550
NCS 0051 US	1"	56,983	4.7	8.4	0.8	16	39	31	70	594
NCS 0061 US	1"	65,854	5.5	9.4	0.8	42	50	39	81	990
NCS 0081 US	1½"	73,702	6.1	10.5	1.5	42	50	39	81	1078
NCS 0101 US	1½"	100,999	8.4	13.8	1.5	42	50	39	85	1122
NCS 0121 US	1½"	123,520	10.3	16.7	1.5	42	50	39	85	1144
NCS 0151 US	1½"	146,040	12.2	19.0	1.5	42	50	39	85	1177
NCS 0201 US	1½"	201,999	16.8	26.5	3.0	77	76	39	85	1562
NCS 0251 US	1½"	247,039	20.6	33.3	3.0	77	76	39	85	1892
NCS 0351 US	2"	292,079	24.3	37.9	3.0	122	102	39	85	2222
NCS 0401 US	2"	335,755	28.0	45.3	4.0	122	102	39	85	2464
NCS 0502 US	3"	379,430	31.6	51.7	4.0	132	139	39	88	3960
NCS 0602 US	3"	477,700	39.8	63.9	5.4	132	139	39	88	4136
NCS 0652 US	3"	552,767	46.1	73.9	5.4	132	139	39	91	4224
NCS 0802 US	4"	671,510	56.0	87.5	5.4	243	154	79	76	4840
NCS 1002 US	4"	758,860	63.2	100.6	10.0	243	154	79	76	4840
NCS 1202 US	4"	955,400	79.6	124.0	10.0	264	197	79	88	5676
NCS 1402 US	4"	1,105,534	92.1	147.4	10.0	264	197	79	88	5940
NCS 1502 US	4"	1,255,668	104.6	159.4	10.0	264	197	79	88	6028

for larger sizes and other voltages, consult factory

specifications		0002 - 0006	0015 - 1502
power supply [3]	voltage/phases	230V/1Ph/60Hz	460V/3Ph/60Hz
refrigerant	type	R410A	R410A
inlet water temperature [1]	minimum	32°F	32°F
	maximum	86°F	86°F
outlet water temperature [1]	minimum	32°F	32°F
	maximum	68°F	68°F
ambient temperature [1]	minimum	23°F	23°F
	maximum	108°F	108°F

additional specifications available, consult factory

correction factors [4]							
water outlet temperature (°F)	30	35	40	45	50	55	60+
correction factor	0.68	0.79	0.91	1	1.10	1.19	1.27
ambient temperature (°F)	75	80	85	90	95	100	105
correction factor	1.18	1.14	1.11	1.04	1	0.96	0.92
evaporator ΔT (°F) [5]	7	9	10	12	14	16	18
correction factor	0.993	1	1.003	1.009	1.015	1.021	1.025
condenser ΔT (°F) [6]	10	12.5	15	17.5	20	22.5	25
correction factor	1	0.99	0.98	0.97	0.96	0.95	0.93
propylene glycol (%)	0	10	20	30	40	45	50
correction factor	1	0.99	0.98	0.97	0.96	0.95	0.93



(1) assumes 45°F cooling water supply, 55°F cooling water return and 95°F ambient temperature. For all other conditions refer to the correction factors
(2) total nominal absorbed power by (all) compressor(s) at rated inlet conditions using 230/1/60 or 460/3/60 power supply as applicable
(3) all models are 60 Hz. Protection class IP55 standard except for NCS 0002 - 0006 US IP44 standard. Contact support@n-psi.com for 50Hz electrical options
(4) to be used as a guide only. All applications should be confirmed by nano. Contact support@n-psi.com for sizing assistance
(5) assumes no change to condenser inlet water temperature
(6) assumes no change to evaporator outlet water temperature

- *standard water temperature control is +/- 3.5°F. Close temperature control is available*
- *crankcase heater included as standard*

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1 YEAR WARRANTY

nano PURIFICATION SOLUTIONS