PNEUMATECH®

Refrigerated Air Dryers

Range AD–10 to AD–250

Bulletin A-12

PNEUMATECH®

Pneumatech is proud to introduce this new range of reliable and innovative refrigerated air dryers. These dryers are a cost effective solution to remove all traces of condensation and the resultant corrosion from your compressed air system. They are tested to the stringent CAGI ADF-100 standards so you can be assured that you will get a dryer that performs for years to come.

FEATURES	BENEFITS
Integrated Air-to-Air heat exchanger on all models	Eliminates condensation on outside of pipes More efficient-lowers refrigeration kW at full load
Hot Gas Bypass valve on even the smallest units in the range	Precise dewpoint control across a wide range of flows
No-air-loss electronic drain on all models	No loss of expensive compressed air during drain discharge
Aluminum HX w/integrated water separator (AD-75 to 250) Stainless steel plate & frame HX (AD-10 to 50)	High performance & reliability in a compact design Reduces components Reduces pressure drop
Environmentally safe refrigerants—R-134a (AD-10 to 50) & R-404a (AD-75 to 250)	Minimal ozone depletion potential—meets Montreal Protocol
UL and cUL listed	Units suitable for all municipalities and Canada
Inlet and outlet connections on the back of each unit	Ease of Installation
Lockable on/off switch	Can prevent unauthorized start-up as part of lockout/tagout routine
Reliable components	Minimal maintenance and long intervals between service calls
Service friendly design	Easy access to key components

AD–10

AD–75

AD–100

AD–250

Model	Capacity scfm (nm³/hr)*	Std. Electrics V - Ph - C	Full Load kW @ ADF-100*	Pressure Drop PSID (bar)	Refrigerant	Max Inlet Press PSIG (bar)
AD-10	10 (17)	115 - 1 - 60 230 - 1 - 60	0.152 0.150	1.45 (0.10)	R-134a	232 (16)
AD-15	15 (26)	115 - 1 - 60 230 - 1 - 60	0.188 0.183	2.18 (0.15)	R-134a	232 (16)
AD-25	25 (42)	115 - 1 - 60 230 - 1 - 60	0.258 0.263	2.90 (0.20)	R-134a	232 (16)
AD-35	35 (59)	115 - 1 - 60 230 - 1 - 60	0.318 0.321	2.90 (0.20)	R-134a	232 (16)
AD-50	50 (26)	115 - 1 - 60 230 - 1 - 60	0.359 0.341	2.90 (0.20)	R-134a	232 (16)
AD-75	75 (127)	115 - 1 - 60 230 - 1 - 60	0.734 0.659	2.90 (0.20)	R-404a	203 (14)
AD-100	100 (170)	115 - 1 - 60 230 - 1 - 60	0.854 0.841	2.18 (0.15)	R-404a	203 (14)
AD-125	125 (212)	115 - 1 - 60 230 - 1 - 60	1.031 1.005	2.90 (0.20)	R-404a	203 (14)
AD-150	150 (255)	230 - 1 - 60	1.490	1.45 (0.10)	R-404a	203 (14)
AD-200	200 (340)	230 - 1 - 60	1.629	2.90 (0.20)	R-404a	203 (14)
AD-250	250 (425)	230 - 1 - 60 460 - 3 - 60	1.877 2.170	3.60 (0.25)	R-404a	203 (14)

* Capacity and kW ratings are at full load at CAGI ADF-100 standard conditions of 100°F / 38°C ambient, 100°F / 38°C inlet and 100 psig / 7 bar delivering a pressure dewpoint of 39°F / 3.9°C ± 2°F / 1.1°C.

CAPACITY CALCULATION

Inlet Pressure						
psig/bar	85/6	**100/7**	115/8	145/10	188/13	232/16
C1	0.97	**1**	1.03	1.07	1.12	1.16

Inlet Temperature						
°F/°C	75-95/24-35	**100/38**	105/40	115/46	122/50	131/55
C2	1.06	**1**	0.95	0.79	0.67	0.57

Ambient Temperature				
°F/°C	95/35	**100/38**	105/40	115/46
C3	1.03	**1**	0.95	0.93

Example: Which dryer will handle the following conditions for a PDP of +39°F/+3°C:

Actual Flow	**85 SCFM/144.4NM³/hr.**
Inlet Pressure	**145 PSIG/10 bar**
Inlet Temperature	**115°F/46°C**
Ambient Temperature	**100°F/38°C**

1) Correction factors for the table: C1 = 1.07, C2 = 0.79, C3 = 1

2) Calculate the actual flow conditions: $\text{Nominal Flow} = \frac{\text{Actual Flow}}{\text{C1 x C2 x C3}} = \frac{85}{1.07 \times 0.79 \times 1} = 100.5$

3) Select an AD – 100 for this application

Max Inlet Temp °F (°C)	Max Amb Temp °F (°C)	Connections Air-In	Water	Drains	Dimensions L Unit-In (mm) Ship-In (mm)	W Unit-In (mm) Ship-In (mm)	H Unit-In (mm) Ship-In (mm)	Approx. Shipping Wt. Lbs. (Kgs.)
131 (55)	115 (46)	0.5 NPT (M)	N/A	10 mm	20.09 (510) 21.60 (550)	13.78 (350) 15.70 (400)	19.05 (484) 24.60 (625)	57.2 (26)
131 (55)	115 (46)	0.5 NPT (M)	N/A	10 mm	20.09 (510) 21.60 (550)	13.78 (350) 15.70 (400)	19.05 (484) 24.60 (625)	59.4 (27)
131 (55)	115 (46)	0.5 NPT (M)	N/A	10 mm	20.09 (510) 21.60 (550)	13.78 (350) 15.70 (400)	19.05 (484) 24.60 (625)	70.4 (32)
131 (55)	115 (46)	0.5 NPT (M)	N/A	10 mm	20.09 (510) 21.60 (550)	13.78 (350) 15.70 (400)	19.05 (484) 24.60 (625)	74.8 (34)
131 (55)	115 (46)	0.5 NPT (M)	N/A	10 mm	20.09 (510) 21.60 (550)	13.78 (350) 15.70 (400)	19.05 (484) 24.60 (625)	74.8 (34)
131 (55)	115 (46)	1.0 NPT (F)	N/A	10 mm	20.28 (515) 23.20 (590)	14.57 (370) 16.90 (430)	30.08 (764) 37.00 (940)	112.2 (51)
131 (55)	115 (46)	1.5 NPT (F)	N/A	10 mm	22.64 (575) 25.60 (650)	18.11 (460) 20.20 (515)	31.06 (789) 38.50 (980)	134.2 (61)
131 (55)	115 (46)	1.5 NPT (F)	N/A	10 mm	22.64 (575) 25.60 (650)	18.11 (460) 20.20 (515)	31.06 (789) 38.50 (980)	149.6 (68)
131 (55)	115 (46)	1.5 NPT (F)	N/A	10 mm	23.82 (605) 26.70 (680)	22.83 (580) 25.00 (635)	35.39 (899) 42.30 (1075)	198.0 (90)
131 (55)	115 (46)	1.5 NPT (F)	N/A	10 mm	23.82 (605) 26.70 (680)	22.83 (580) 25.00 (635)	35.39 (899) 42.30 (1075)	198.0 (90)
131 (55)	115 (46)	1.5 NPT (F)	N/A	10 mm	23.82 (605) 26.70 (680)	22.83 (580) 25.00 (635)	35.39 (899) 42.30 (1075)	198.0 (90)

INSTRUMENT PANEL

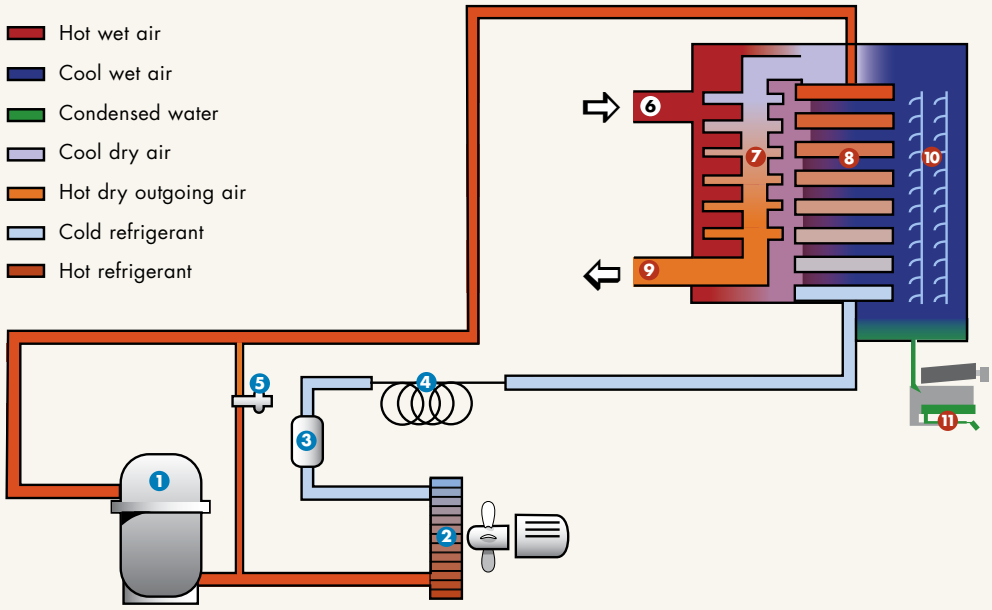
Lockable On/Off Switch:

Refrigeration Suction Pressure Gauge: Allows for easy servicing and monitoring of the operation of the dryer.

Power On Light: Illuminates when unit is turned on.

Hi-Temperature Alarm: Malfunction light will illuminate if the compressor shuts off for any reason.

FLOW DIAGRAM



Refrigerant Circuit

1 Refrigerant Compressor
Takes refrigerant gas and compresses it to a high pressure and temperature.

2 Condenser
Cools the refrigerant and changes it to liquid form. In this state, it will provide the BTU's necessary to cool the compressed air to the stated dewpoint.

3 Refrigerant Filter
Protects the Thermal Expansion Device (4) from particulate matter.

4 Thermal Expansion Device
Reduces the refrigerant pressure, lowering its temperature and increasing its ability to cool the compressed air in the Air-to-Refrigerant Heat Exchanger (8). The refrigerant is now almost all liquid. It will change back to the gaseous state as it cools the compressed air

5 Hot Gas Bypass Valve
Adjusts the amount of refrigerant passing through the Air-to-Refrigerant Heat Exchanger (8), eliminating the chance of condensate freezing inside. Also helps ensure a stable pressure dewpoint.

Air Circuit

6 Air Inlet
Hot saturated air enters the dryer from the compressor. This should be 100% saturated air with no residual liquid.

7 Air-to-Air Heat Exchanger
As the air exits the dryer it cools the incoming air. There are two benefits. First, air exiting is re-warmed, so pipes downstream do not sweat. Second, the air entering the dryer is pre-cooled, which decreases the load on the refrigeration circuit.

8 Air-to-Refrigerant Heat Exchanger
Allows for the cooling of the compressed air by the cold refrigerant liquid (changing the refrigerant to a gaseous state to be returned to the Compressor (1)), forcing water vapor in the compressed air stream to condense. The more effective this heat transfer, the cooler the air becomes, condensing more water vapor.

9 Air Outlet
Where cooled compressed air (approximately 80°F / 26.7°C), with a pressure dewpoint of 39°F / 4°C, exits the dryer to the piping system.

10 Water Separator
Separates the condensed water vapor from the cooled compressed air stream, where it will to be collected in the "silent zone" for removal. Efficient separation is critical to assure the pressure dewpoint is equal to the lowest temperature achieved in the Air-to-Refrigerant Heat Exchanger (8).

11 No Air-loss Electronic Drain
Condensed water droplets are evacuated from the separator through an electronic demand drain without the loss of expensive compressed air from the system.

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PNEUMATECH®

Refrigerated Air Dryers

Range AD-300 to AD-600

FEATURES & BENEFITS

Integrated air-to-air heat exchanger
- Eliminates condensation on outside of pipes
- More efficient – lowers refrigeration kW at full load

Hot gas bypass valve
- Precise dewpoint control

No-air-loss electronic drain on all models
- No loss of expensive compressed air during drain discharge

Aluminum HX with integrated water separator
- High performance & reliability in a compact design
- Reduces components
- Reduces pressure drop

Environmentally safe R-404a refrigerant
- Minimal ozone depletion potential – meets Montreal protocol

cULus listed
- Most municipalities in the US and Canada approve cULus listed units

Inlet and outlet connections on the back of each unit
- Ease of installation

Lockable on/off switch
- Can prevent unauthorized start-up as part of lockout/tagout routine

Reliable components
- Minimal maintenance and long intervals between service calls

Service friendly design
- Easy access to key components

INSTRUMENT PANEL

Refrigeration Suction Pressure Gauge:
Allows for easy servicing and monitoring of the operation of the dryer.

Lockable On/Off Switch:
Prevents unauthorized start-up.

Power On Light:
Illuminates when unit is turned on.

Hi-Temperature Alarm:
Malfunction light will illuminate if the compressor shuts off.

Specifications

MODEL	Nominal Capacity scfm (nm³/hr)*	Full Load kW @ ADF-100*	Pressure Drop PSID (bar)	CONNECTIONS Air	CONNECTIONS Water	Drain Tube ID in (mm)	DIMENSIONS L in (mm)	DIMENSIONS W in (mm)	DIMENSIONS H in (mm)	Approx. Ship Wt. lbs. (kgs.)
AD-300	300 (510)	2.287	3.6 (0.25)	2" NPT (F)	N/A	0.39 (10)	28.93 (735)	35.35 (898)	39.84 (1012)	282.19 (128)
AD-360	360 (612)	2.637	4.3 (0.30)	2" NPT (F)	N/A	0.39 (10)	28.93 (735)	35.35 (898)	39.84 (1012)	321.87 (146)
AD-500	500 (850)	3.176	4.3 (0.30)	2" NPT (F)	N/A	0.39 (10)	28.93 (735)	35.35 (898)	39.84 (1012)	348.33 (158)
AD-600	600 (1020)	4.300	4.3 (0.30)	2" NPT (F)	N/A	0.39 (10)	28.93 (735)	35.35 (898)	39.84 (1012)	363.76 (165)

*Capacity and kW ratings are at full load at CAGI ADF-100 standard conditions of 100°F / 38°C ambient, 100°F / 38°C inlet and 100 psig / 7 bar delivering a pressure dewpoint of 39°F / 3.9°C ± 2°F / 1.1°C.

Standard Electical Power Supply: 460V-3Ph-60Hz and 230V-3Ph-60Hz
Refrigerant Type: R-404a
Max. Inlet Pressure: 188 PSIG (13 bar)
Max. Inlet Temperature: 140°F (60°C)
Max. Ambient Temperature: 115°F (46°C)

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