Aircel

Desiccant Air Dryers

ABP Series

Blower Purge Desiccant Air Dryer

70 - 8,000 scfm

Since 1994, Aircel has been delivering quality, industry leading compressed air dryers and accessories for production lines and facilities all over the world.

Our precise engineering and designs provide reliable products that will protect your operations for years to come.

Based in Maryville, Tennessee, Aircel is a multi-industry manufacturing leader. Aircel's highly-specialized, engineered products and technologies are powering facilities all over the world. Our products serve industries such as textile, food and beverage, automotive, production, PET market, breathing air, pneumatic instrumentation, and more.

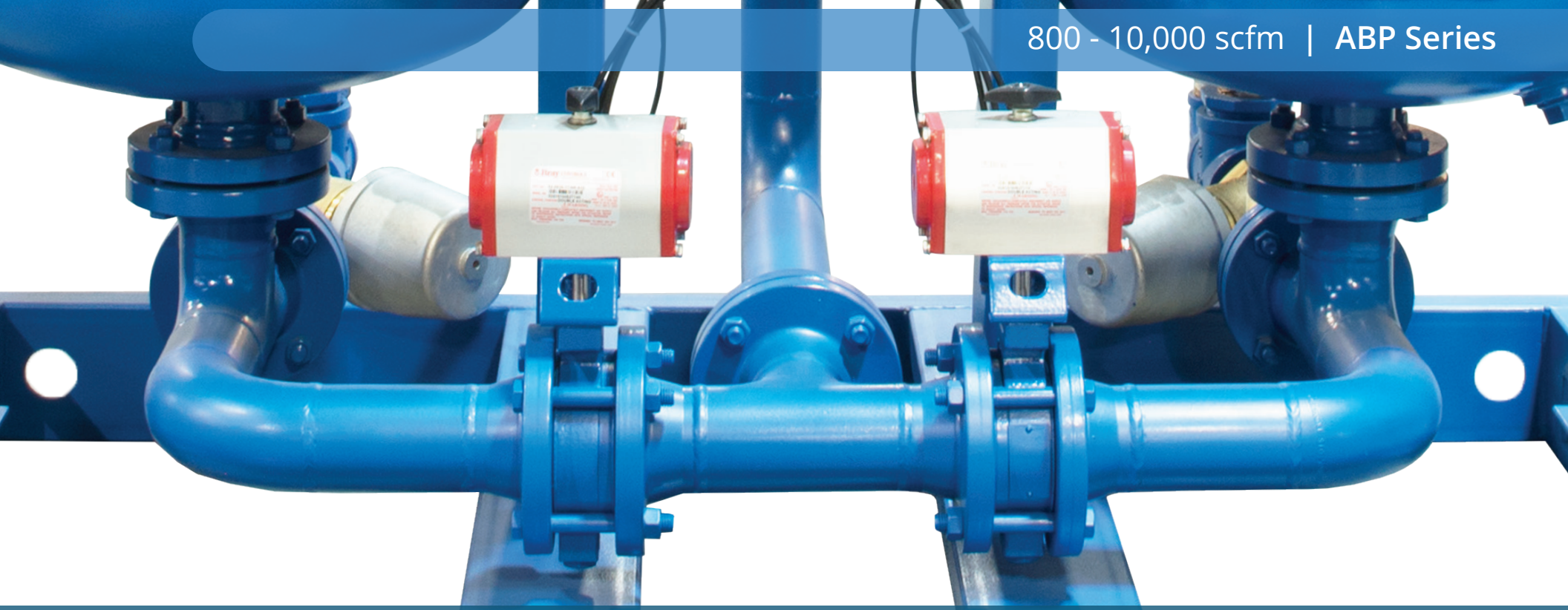
ABP Series Blower Purge

Heated Desiccant Dryer

800 - 10,000 scfm

The ABP Series was created with energy savings and efficient usability in mind. A high efficiency blower brings in ambient air for the regeneration cycle while the Energy Management System and unique Parallel Cooling Mode work seamlessly to create maximum energy savings to the bottom line. Easily link your control system to the 7" Allen-Bradley™ touch screen to monitor and access the controller data through your plant's overall control system.

- ISO 8573.1 Class 2 (-40°F/-40°C) dew point performance
- 2% average purge consumption
- Making use of the blower to draw in ambient air rather than relying solely on compressed air greatly reduces energy consumption and purge loss



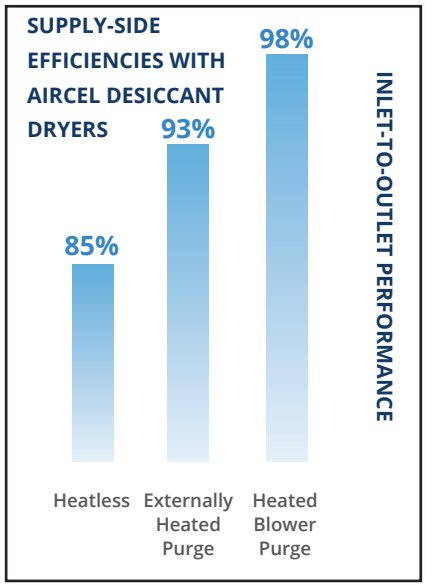
What Makes the ABP Different?

For added energy savings, the ABP Series uses a high-efficiency blower to take in ambient air required during the heat regeneration cycle to desorb moisture from the desiccant. **No compressed air is used during this phase.**

Dry compressed air is used during the dry air cooling regeneration period for reduced heat and dew point spike at tower switchover. This amounts to an **average process air use of 2% of the rated capacity of the dryer**.

Aircel's unique **Parallel Cooling Mode** further reduces the heat and dew point spike prior to tower switchover. During the parallel cooling mode, both inlet valves are open for a 10 minute period and divert half-load to each tower, further cooling the previously regenerated desiccant bed with a larger volume of air.

- 10 minute duration
- At the end of the regeneration period, both inlet valves open, sending air into both towers
- Minimizes temperature and dew point spikes associated with heated dryers
- Maximum savings with accurate dew point control



Thermal Relief Valves
ASME UV stamped set at 150 psi

Desiccant Fill Port
For easy desiccant replacement of premium grade activated alumina with high moisture capacity

Mounted Pre and After Filter
- 1 micron pre-filter
- High temperature after filter

Regulated and Filtered Pilot Air
Ensures reliable pneumatic control operation

Aircel Programmable Controller (APC)
- NEMA 4 steel enclosure
- Outlet dew point reading
- Dryer operation status
- MicroLogix 1100 PLC Controller
- 7" LCD color touch screen
- UL 508A control assembly

Pressure Control (not shown, behind control box)
Accurate stainless tower transducers that are reliable and rugged with safety alarms

Energy Management System with Outlet Dew Point Sensor
Standard digital readout and adjustable alarms

Desiccant Drain Port
For easy desiccant removal

Pilot Solenoid
Highly reliable and long lasting

High Efficiency Blower
- Utilizes atmospheric air for regeneration
- Easy maintenance and a rugged construction with TEFC premium motor that includes filtered air intake

Tower Pressure Gauges (other side)
Large, easy-to-read 3.5" display

High Temperature Tubing
UV resistant and easy component replacement

NEMA 4 Immersion Heater
Incoloy sheath material that is highly corrosion and heat resistant with low-watt density

ASME Carbon Steel Vessels
150 psi at 450°F

Angle Body Depressurization Valve
Highly durable valve

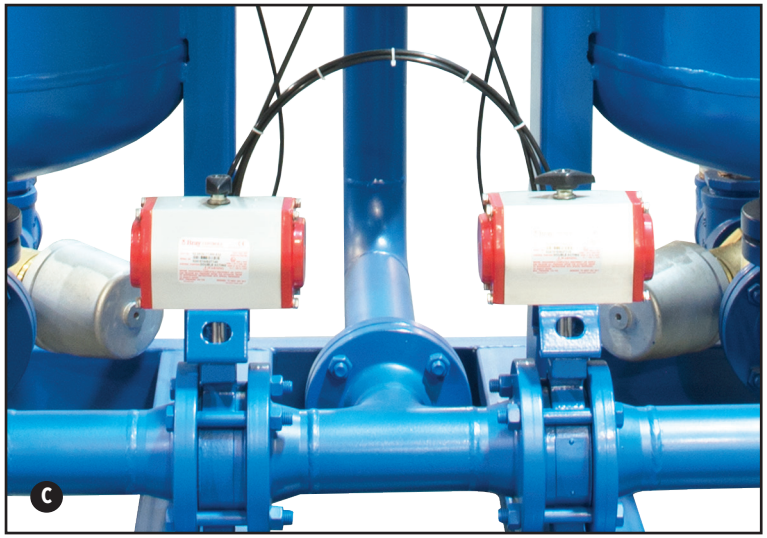
Purge Exhaust Mufflers
For low noise with built-in safety relief valve

Rugged Steel Frame
Mounted on durable platform

High Performance Butterfly Valve
Highly reliable with long-life and consistent operation designed to reduce seal wear and leakage

Additional Standard Features

- Purge air consumption reduced down to an average of 2%
- Fail-safe design: failure of power causes the purge exhaust valves to close, drying air flow is uninterrupted
- Stainless steel desiccant supports and air diffusers to prevent channeling
- Counter-current down flow regeneration, upflow drying, and downflow depressurization
- Ambient air used for heat regeneration, no compressed air used
- 10 minutes of parallel flow with both desiccant chambers online at switch-over to reduce the temperature and moisture spikes



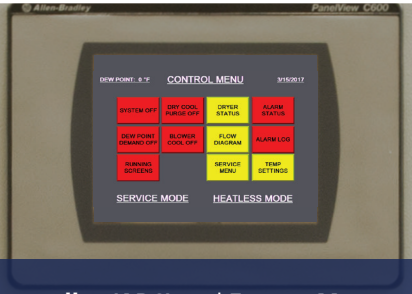
A **Maximize Energy Savings** · The standard **Energy Management System (EMS)** control incorporates an integral air outlet dew point sensor to continually monitor the outlet moisture content. This extends the drying time if the outlet dew point is below a preset adjustable set point, saving a tremendous amount of energy as well as valve wear and tear during low loading conditions. Energy saving is achieved since the overall regeneration time and dry air cooling time is reduced. *(See page 6 for more)*

B **Automatic Controls & Flexible Programming**· The Aircel ABP Series utilizes the Allen-Bradley™ MicroLogix 1100 PLC Controller for automatic control and flexible programming. This addition sets a higher standard of configurations and capabilities that exceed other blower purge dryers on the market. *(See page 7 for more)*

C **Parallel Cooling Mode** · Aircel's unique Parallel Cooling Mode opens both inlet vavles for 10 minutes prior to tower switchover, diverting half-load to each tower. This cools the previously regenerated desiccant bed faster and more efficiently than regular cooling alone. *(See page 3 for more)*

D **Filtration Standard** · Each ABP Series dryer comes standard with high quality pre and after filters to further ensure the cleanest air available in a blower purge.

Maximum Savings with Accurate Dew Point Control



The **Aircel Programmable Controller (APC)** and **Energy Management System (EMS)** is standard on the ABP Series. This energy-saving control reduces purge air and optimizes dryer performance by monitoring the dry air outlet dew point with a sensor. This control panel automatically adjusts the regeneration cycle; maintaining dew point and extending the drying cycle. Switching is less frequent, reducing dryer maintenance and fully utilizing desiccant capacity. This addition will improve reliability and performance while sustaining a constant dew point. The end result is an overall purge reduction and significant energy savings.

The Aircel ABP Series utilizes the Allen-Bradley™ 1100 PLC Controller for automatic control and flexible programming. **This addition sets a higher standard of configurations and capabilities that exceeds other blower purge dryers in the market.** With built-in Ethernet connection, you can access, monitor, and program from any available connection. An embedded web server is also included to configure controller data on a web page.

- 4 hour NEMA cycle or up to 16 hours with Demand Cycle Control
- The Energy Management System (EMS) continually monitors outlet dew point, maintaining -40°F
- Demand Cycle Control extends drying per tower to up to 16 hours, saving purge consumption as well as blower and heater usage, saving energy and money

Standard Control Features

- Aircel unique backup heatless mode operation
- NEMA 4 steel enclosure
- UL 508a control assembly
- Allen-Bradley™ MicroLogix 1100E PLC controller
- 7" LCD color touch screen
- Outlet dew point reading (using EMS sensor)
- On-screen display of dryer operation status
- Service mode of operation
- 10/100 MB/s with built-in peer-to-peer messaging
- Communication through RS-232/RS-486 combo port
- UL, CE, C-Tick, and Class 1 Div 2 certified controller
- Data logging - time based or event triggered
- Supports DHCP
- Add up to four 1762 I/O modules
- Backup heatless mode operation
- Early heat/cool termination for energy savings
- Heater backup safety contactor

Standard Control Alarms

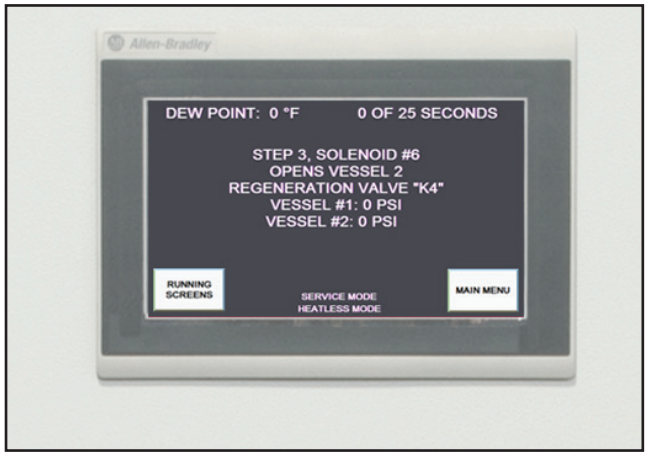
- Failure-to-switch (pressure control safety)
- High dew point
- Dew point sensor failure
- Regeneration thermocouple failure
- Loss of system pressure
- Blower not running
- Blower motor overload
- Heater outlet low temperature
- Heater outlet high temperature
- Heater over temperature
- Vessel 1 repressurization failure
- Vessel 2 repressurization failure
- Vessel 1 depressurization failure
- Vessel 2 depressurization failure
- Regeneration pressure equal
- Parallel pressure not equal

Standard Control Readout

- Heater sheath temperature (°F)
- Regeneration outlet temperature (°F)
- Heater outlet temperature (°F)
- Vessel 1 pressure
- Vessel 2 pressure
- Outlet dew point

Optional Controls (consult factory)

- Digital flow meter
- Valve inlet position switches
- Valve regeneration outlet position switches
- Condensate drain alarm
- High air inlet temperature alarm
- Inlet temperature
- Vessel bed thermocouple temperature (°F)
- Filter differential pressure alarm



APC On Screen Features

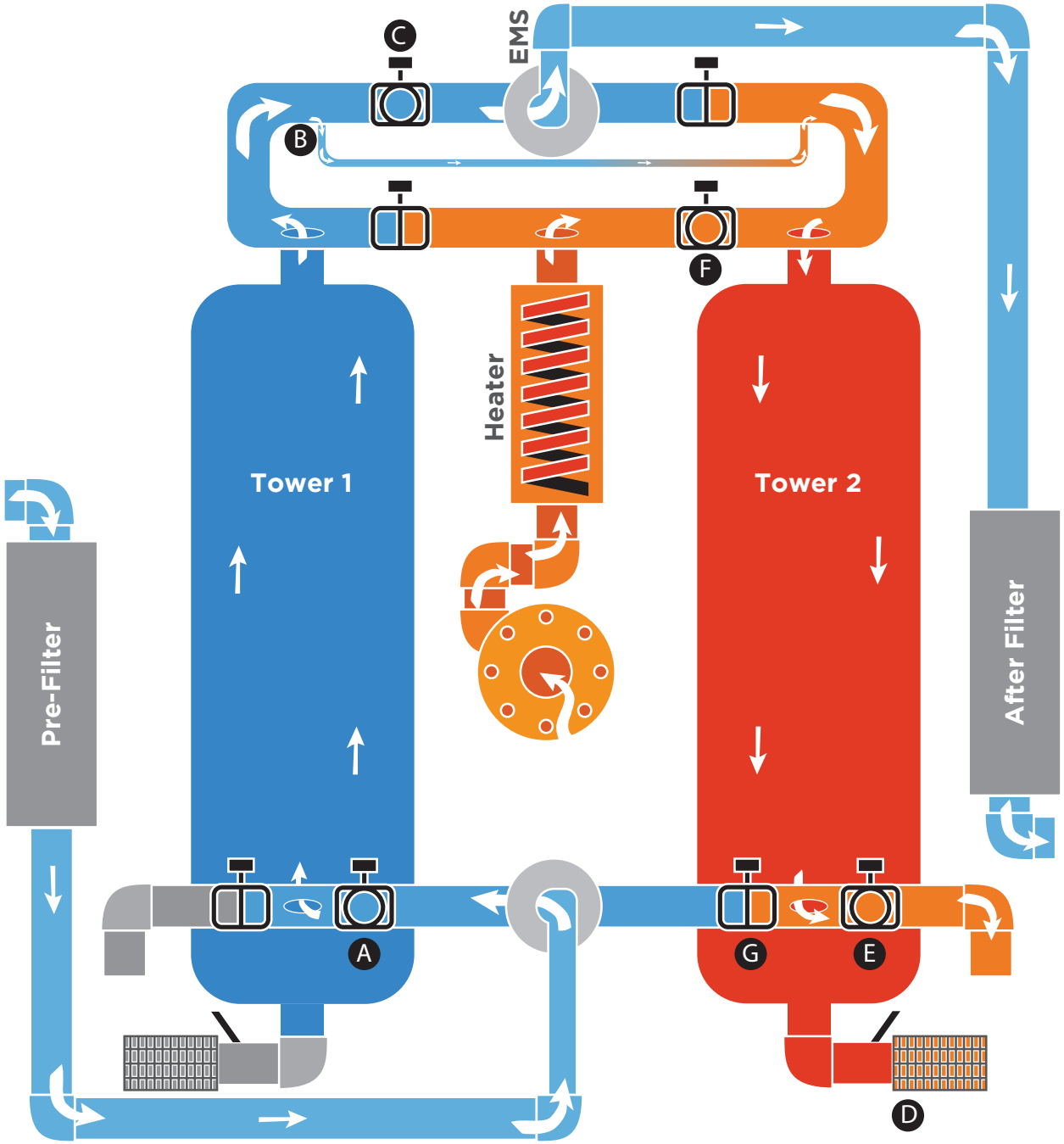
Main Control Menu	Provides easy road map for on-screen navigation
Flow Diagram	Visual piping and instrumentation diagram with real time data: active objects, temperature, pressure, and dew point
Interactive Service Menu	User step-by-step service screens
Operation Screens	Step-by-step, real time process data
Alarm Banner	Provides immediate pop-up display
History Log	Captures triggered alarm with time and date stamp
Alarm Status Screen	Indicates all alarm states
Settings Screen	Provides user access to various control set points
Control Push Buttons	Touch system control, EMS power control
Dryer Status	Days of operation, hours of energy savings, system timers, and mode of operation

Superior Control with Energy Management

The standard **Energy Management System (EMS)** control incorporates an integral air outlet dew point sensor to continually monitor the outlet moisture content, which is then displayed on the system color touch screen. **The EMS extends the drying time if the outlet dew point is below a preset adjustable set point, saving a tremendous amount of energy as well as valve wear and tear during low loading conditions.** Energy saving is achieved since the overall regeneration time and dry air cooling time is reduced. The EMS control also provides an outlet high humidity alarm.

Even more energy savings are realized with the early Heat Regeneration Termination Feature. This feature terminates the heat regeneration early if the temperature at the regeneration outlet reaches a specified temperature, then automatically switches to cooling mode. **This feature eliminates unnecessary heater and blower usage, saving significant energy.**

Aircel has many other features built into the ABP Series controls such as Backup Heatless Mode Operation, Heater Safety Backup Contactor, High Performance Butterfly Valves, Angle Body Piston Valves, Failure-to-Switch Alarm using pressure transducers and many other unique features.

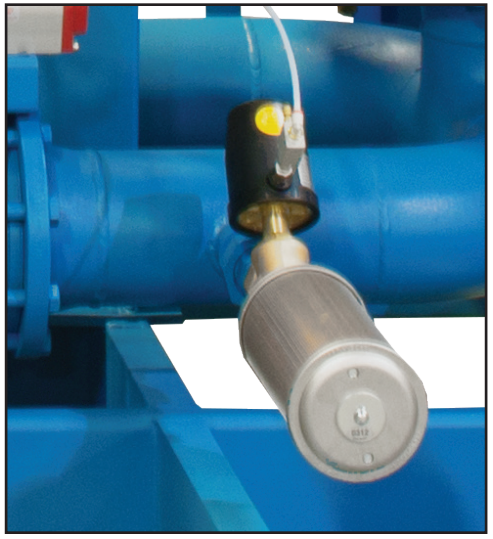


- Compressed air flows through the pre-filter to remove oil and then enters the on-line Tower 1 through valve (A).
- Air moves upward, where the desiccant removes moisture from the airstream and lowers the dew point. The majority of clean, dry compressed air exits valve (C) and cycles through the after filter to the rest of the system.
- Tower 2 (shown in regeneration mode) depressurizes to atmosphere through an angle seat valve and muffler (D).
- Valves (E & F) open and the heater turns on.
- The high efficiency blower pulls in ambient air, moving it through the immersion heater and check valve. The ambient airstream passes through valve (F) and flows downward through the moist desiccant in Tower 2, collecting water vapor before exiting valve (E) and exhausting to atmosphere.
- Once Tower 2 exhausts, and the regeneration tower reaches its set point, the heater turns off. This happens regardless of whether the cycle is finished as an energy savings feature of the EMS.
- A small amount of air exits Tower 1 through a slipstream (B), where it will join Tower 2 to repressurize and cool the tower.
- Ten minutes prior to vessel switchover, the Parallel Cooling Mode will begin (not pictured). Valve (E & H) will close and valves (A & G) will open, allowing incoming air to flow through both towers. This minimizes dew point spikes associated with heated dryers. Parallel Cooling Mode requires no purge air.
- At the end of Parallel Cooling Mode, valve (G) will open, valve (A) will close, and place tower 2 online (not pictured). The EMS Settings will determine if this is at a fixed time interval or Demand Control Cycle based on outlet dew point sensor readings.
- Operations will switch and Tower 1 will be regenerated.

Aftermarket Parts & Service

Aircel's aftermarket and service teams will assist you with the information necessary to ensure your air is pure for years to come. From the vital data about your dryer's capabilities and details on how to install parts into your dryer, as well as pricing and ordering information, you have the convenience of ordering the products you need when you need them.

For manuals, drawings, spare parts including service kits, and technical support for your dryer, please contact your Aircel representative.



Model Number	Capacity	Voltage	Connection (FLG)	Heater kW (full load)	Blower HP	FLA	Weight (lbs)	Dimensions (in.) Height	Width	Depth
ABP 800	800		3"	18	5	31.3	3,600	100	87	60
ABP 1,000	1,000		3"	22	5	36.3	4,500	100	90	60
ABP 1,200	1,200		3"	27	7.5	46	5,400	105	98	61
ABP 1,400	1,400		3"	32.5	10	55.9	6,800	106	105	70
ABP 1,600	1,600		4"	37	10	61.5	7,500	107	106	81
ABP 2,000	2,000		4"	45	10	71.6	9,000	116	106	81
ABP 2,500	2,500		4"	52	15	87.4	10,700	116	128	83
ABP 3,000	3,000	460-3-60	6"	64	15	102.4	13,400	127	131	111
ABP 3,500	3,500		6"	78	15	120	15,600	120	134	105
ABP 4,000	4,000		6"	90	15	135.1	17,900	128	147	106
ABP 5,000	5,000		6"	110	20	166.2	22,300	138	163	109
ABP 6,000	6,000		8"	120	25	185.7	26,800	147	169	118
ABP 7,000	7,000		8"	150	25	223.4	31,300	C/F	C/F	C/F
ABP 8,000	8,000		8"	175	30	260.7	35,800	C/F	C/F	C/F
ABP 10,000	10,000		8"	200	30	292.1	44,700	C/F	C/F	C/F

Capacity rated in accordance with CAGI ADF 200 @ 100 psig, 100°F inlet, 100°F ambient and a PDP of -40°F

Operating pressure: 60 to 135 psig
Ambient air temperature: 38°F to 120°F
Inlet air temperature: 40°F to 120°F

For larger capacities and custom dryer options, please contact an Aircel factory representative

Capacity Correction Factors

To Size the Dryer Capacity for Actual Conditions

Adjusted Capacity = scfm x C1 x C2
Example:
Dryer Model: **ABP-1200**
Standard Capacity: **1,200 scfm**
Actual Operating Conditions:
80°F ambient: C1 = 1.15
90 psig system pressure: C2 = 0.91

Adjusted Capacity: 1,200 scfm x 1.15 x 0.91 = 1,256 scfm

To Size the Dryer Model for Actual Conditions

Adjusted Capacity = scfm / (C1 x C2)
Example:
Given Flow: **1,200 scfm**
Actual Operating Conditions:
80°F inlet: C1 = 1.15
130 psig system pressure: C2 = 1.27

Adjusted Capacity: 1,200 scfm / (1.15 x 1.27) = 822 scfm
Selected Dryer Model: ABP-1,000

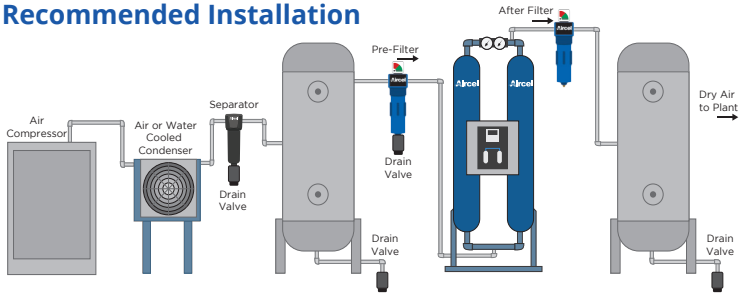
Correction Factors for Differing Inlet Air Temperature (C1)

Inlet Temperature (°F)	70	80	90	**100**	105	110	120
Correction Factor	1.2	1.15	1.1	**1**	0.9	0.8	0.6

Correction Factors for Differing System Air Pressure (C2)

System Pressure (psig)	60	70	80	90	**100**	110	120	130	140	150
Correction Factor	0.65	0.73	0.82	0.91	**1**	1.09	1.18	1.27	1.35	1.44

Recommended Installation



Aircel

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