



HRE-2000

HRE Series Features

- Corrosion resistant finish.
- NEMA 4 electrical enclosures.
- Allen Bradley PLC control system.
- Common alarm / pilot light.
- Switching Alarm (using pressure switch logic).
- High performance butterfly and stainless steel valves.
- Highly reliable angle body piston valves for depressurization.
- Zero Purge loss available. (See HRS-L Series)

Regenerative compressed air dryers use desiccant to adsorb water vapor from the compressed airstream. In the twin tower design one tower dries the air from the compressor while the desiccant in the other tower is being regenerated to provide continuous operation. These dryers are typically referred to as “heatless” or “heated”. Heatless dryers do not use any source of heat for regeneration other than the heat given off during the drying phase. This is known as the “Heat of Adsorption”. Heated dryers, on the other hand, utilize an external heat source for regeneration and require little or no process air.

The **Aircel HRE Series Dryers (600 - 10,000 scfm)** utilize externally heated atmospheric air for regeneration of the desiccant bed. This significantly reduces the use of compressed purge air for regeneration resulting in an overall reduction in the cost of operation. Process air is only consumed during depressurization of the offline tower and during cool-down of the regenerating bed. This amounts to an average process air use of 2% of the rated capacity of the dryer.

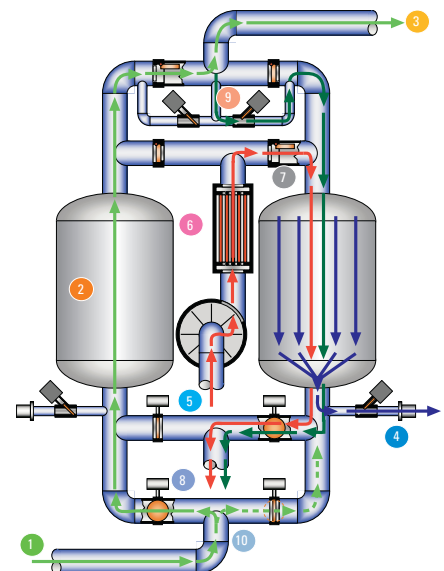
HRE Series Benefits

- Purge air consumption reduced down to an average of 2%.
- Built in energy management controls (heating and cooling cycles are terminated early when set temperature is reached, saves energy and further reduces cost of operation).
- Low pressure drop design for energy savings.
- Maximum desiccant volume for long life.
- High quality components for reliable service and long life.
- Unique HRE parallel flow to reduce or eliminate dew point and temperature spikes.
- Small footprint saves valuable floor space.

HRE SERIES How it Works

- 1 Wet compressed air, controlled by butterfly valves, enters the base of the on-line vessel (prefilter recommended).
- 2 As the compressed air passes through the desiccant bed, moisture is removed, lowering the dew point to -40° F.
- 3 Dry compressed air exits the top of the vessel, passes through a check valve and flows downstream to the use point (afterfilter recommended).
- 4 When the desiccant bed becomes saturated with moisture, it goes off-line and depressurizes to ambient through an angle-seat globe valve. A muffler attenuates the noise of depressurization.
- 5 After the off-line vessel has depressurized, a blower draws in ambient air for regeneration.
- 6 The ambient air is heated to 400° F, giving it the energy required to initiate and accomplish desorption, after which it passes through a check valve and enters the top of the regenerating vessel.

- 7 As the hot ambient air passes through the desiccant bed, water molecules are released from the surface of the desiccant and enter the airstream.
- 8 Hot regeneration air passes through a butterfly valve and exits to atmosphere.
- 9 At the end of the heating phase of the cycle, the desiccant bed, although regenerated, remains hot. The temperature of the bed must be lowered to minimize dew point and temperature spikes in the process air when the bed goes back on-line. This is accomplished by allowing a slipstream of dry process air, controlled by an angle-seat globe valve, to flow from the on-line vessel into the off-line vessel. This slipstream is also used to repressurize the off-line vessel after it has been cooled.
- 10 Unique to the Aircel HRE is our parallel running period 10 minutes prior to vessel switchover. During this period, the incoming flow of wet compressed air is directed through both vessels. This step further reduces or eliminates the dew point and temperature spikes associated with heated dryers while minimizing the loss of purge air used during the initial cool-down. This step is not required with HRS-L dryers.



HRE SERIES TECHNICAL SPECIFICATIONS



HRE SERIES Model Comparison

Models	Capacity ¹ (scfm)	Connection (in. FLG/ANSI)	Heater kW	Blower HP	Full Load Amps	Voltage (Standard)	Dimensions (inches)			Weight (lbs)
							Height	Width	Depth	
HRE-600	600	3 FLG	16	5	27	460V/60 Hz/3Ph	103	93	50	2,685
HRE-800	800	3 FLG	24	7.5	40	460V/60 Hz/3Ph	104	93	50	3,580
HRE-1000	1000	3 FLG	27	7.5	44	460V/60 Hz/3Ph	118	98	52	4,475
HRE-1200	1200	4 FLG	37	10	53	460V/60 Hz/3Ph	119	101	60	5,370
HRE-1600	1600	4 FLG	45	10	69	460V/60 Hz/3Ph	120	115	71	7,160
HRE-2000	2000	4 FLG	52	10	77	460V/60 Hz/3Ph	122	117	73	8,950
HRE-2500	2500	6 FLG	64	15	98	460V/60 Hz/3Ph	122	136	79	10,740
HRE-3000	3000	6 FLG	78	15	115	460V/60 Hz/3Ph	122	138	79	13,427
HRE-3500	3500	6 FLG	90	15	130	460V/60 Hz/3Ph	132	161	82	15,665
HRE-4000	4000	6 FLG	100	20	148	460V/60 Hz/3Ph	140	152	86	17,902
HRE-5000	5000	6 FLG	120	20	172	460V/60 Hz/3Ph	147	174	93	22,377
HRE-6000	6000	8 FLG	170	25	215	460V/60 Hz/3Ph	CF*	CF*	CF*	26,852
HRE-7000	7000	8 FLG	200	25	275	460V/60 Hz/3Ph	CF*	CF*	CF*	31,327
HRE-8000	8000	8 FLG	230	25	295	460V/60 Hz/3Ph	CF*	CF*	CF*	35,805
HRE-10000	10000	10 FLG	280	25	340	460V/60 Hz/3Ph	CF*	CF*	CF*	44,755

Optional Features

- NEMA 4X (corrosive protection) electrical construction.
- NEMA 7 (explosion proof) electrical construction.
- -100°F pressure dew point.
- Low ambient temperature package.
- Dew point monitor.
- Demand cycle control with dew point monitor.
- Pre-piped filters and by-pass valve packages.
- Visual moisture indicator.
- High outlet temperature alarm.
- Low ambient temperature alarm.

* Consult Factory.

¹ Capacity based on -40°F pdp, 100 psig operating pressure, 100°F inlet temperature and 100°F ambient temperature according to CAGI ADF 200. Due to a continuous program of product improvement, specification and dimensions are subject to change without notice.

HRE SERIES Capacity Correction Factors

To Size the Dryer Capacity for Actual Conditions

$$\text{Adjusted Capacity} = \text{scfm} \times C1 \times C2$$

To calculate the capacity of a given dryer based on non-standard operating conditions, multiply the standard capacity by the appropriate correction factor(s).

EXAMPLE: Dryer Model: HRE-600
Standard Capacity: 600 scfm
Actual Operating Conditions: 80°F ambient temperature: C1 = 1.15
90 psig system pressure: C2 = 0.91
Adjusted Capacity = 600 scfm x 1.15 x 0.91 = **628 scfm**

To Select the Dryer Model for Actual Conditions

$$\text{Adjusted Capacity} = \text{scfm}/C1/C2$$

To choose a dryer based on a given flow at non-standard operating conditions, divide the given flow by the appropriate correction factor(s).

EXAMPLE: Given Flow: 600 scfm
Actual Operating Conditions: 80°F ambient temperature: C1 = 1.15
130 psig system pressure: C2 = 1.27
Adjusted Capacity = 600 scfm / 1.15 / 1.27 = **410 scfm**
Selected Dryer Model: **HRE-600**

The Compressed Air & Gas Institute (CAGI) has developed standards to protect users of compressed air & gas equipment. ADF 200 is the current standard for desiccant compressed air dryers. ADF 200 specifies the dryers performance to be rated at -40°F pressure dew point, 100°F inlet temperature, 100°F

ambient temperature, and 100 psig system pressure. To adjust the dryer capacity from these "CAGI conditions" to your specific application, please use the correction factors below for differing inlet air temperatures (C1) and system pressures (C2).

Capacity correction factors for inlet air temperature (C1)

Ambient Temperature (°F)	70	80	90	100	105	110
Correction Factor	1.2	1.15	1.1	1	0.9	0.8

Capacity correction factors for 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