



aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



ZHA & ZBA Series

Heat Reactivated Desiccant Dryers



Heat Reactivated Desiccant Air Dryers

ZHA & ZBA Series

Parker Zander externally heated and blower purge desiccant air dryers ...

... use the adsorption method to remove moisture from compressed air. A nominal pressure dewpoint of -40°F (-40°C) is achieved by directing the flow of saturated compressed air over a bed of desiccant.

... desiccant

The most commonly used desiccant is activated alumina, a spherically shaped, hygroscopic material, selected for its consistent size, shape

and extreme surface to mass ratio. This physically tough and chemically inert material is contained in two pressure vessels commonly referred to as “dual” or “twin” towers. As the saturated compressed air flows through the bed of the “on-line” tower, its moisture content adheres to the surface of the desiccant.

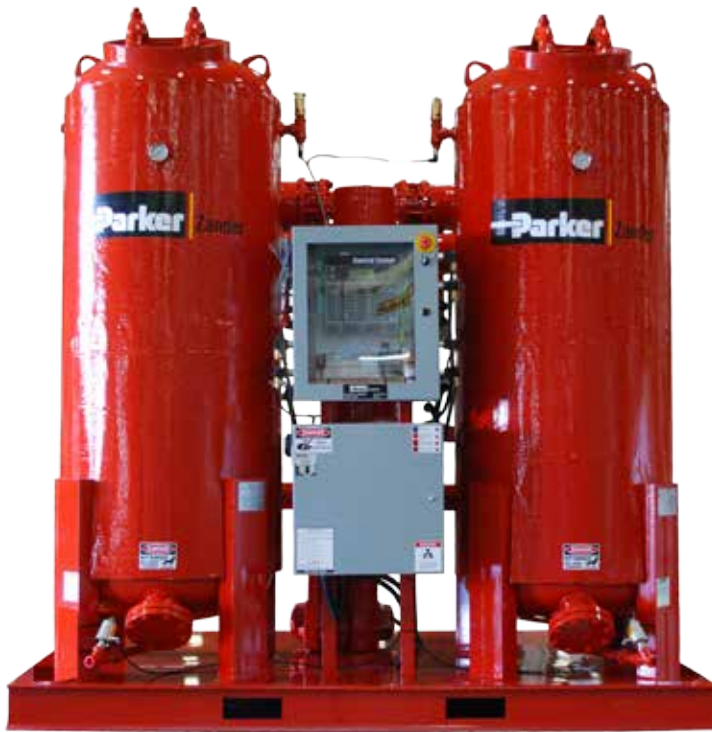
The dry compressed air is then discharged from the vessel into the distribution system.

... controller

A master controller cycles the flow

of compressed air between the towers. While one tower is “on-line” drying, the other tower is “off-line” regenerating. Regeneration, sometimes referred to as “purging”, is the process of stripping the accumulated moisture from the “off-line” bed.

Both types of Parker Zander heat reactivated dryers combine heat with either a small portion of the dried compressed air or with forced ambient air to affect regeneration. The heated, low pressure purge air flows gently through the regenerating bed, adsorbing the moisture that accumulated on the surface of the desiccant during the drying cycle and exhausting it to the atmosphere.



ZBA5000



ZHA1000

Heat Reactivated Desiccant Air Dryers

ZHA & ZBA Series

How it works ...

... Parker Zander's patented multi-port regeneration system (ZHA Series) affects superior desiccant bed regeneration and, as a result, provides better and more consistent performance.

The Multi-Port Regeneration System injects heated purge air at precise points up and down the towers' length providing a more balanced distribution of heat. This system prevents the desiccant on top from prematurely deteriorating while providing the bottom of the chamber with enough heated purge air to allow complete regeneration on every cycle.

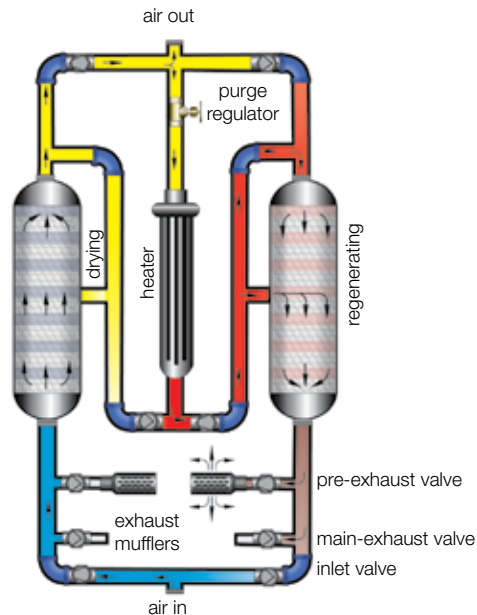
... energy savings

The energy saving temperature monitoring system senses the exiting purge air temperature. When the purge air temperature increases to a pre-set point at which the desiccant bed is fully heated and regenerated, the heater is turned off. Parker Zander's Primary Blowdown System is standard on all ZHA Series and ZBA Series heat reactivated air dryers 1000 scfm and larger. It improves performance and efficiency while increasing desiccant life. The depressurization stage also strips moisture from the bottom of the tank through a purge muffler.

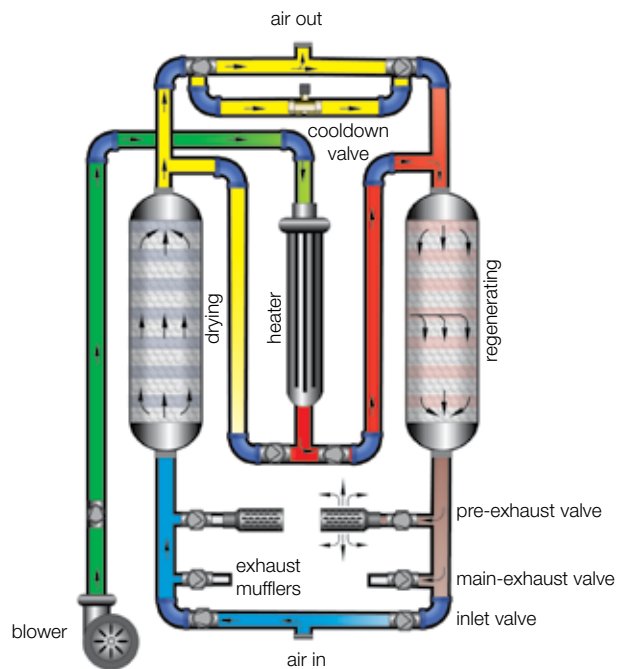
Once depressurization is complete, the system switches to the main exhaust where final regeneration is accomplished with low pressure purge air. By eliminating the main exhaust mufflers, back pressure is also eliminated which allows for more thorough regeneration and less maintenance.

... up flow versus down flow drying

In the event of prefilter/auto drain failure, up flow drying protects the desiccant bed from contamination of bulk liquids and oil since they stay on the bottom of the tank and get discharged during blowdown. When down flow drying, liquids and oil will gravity drain through the entire bed to the bottom of the tank.



ZHA Externally Heated with Patented Multi-Port



ZBA Series Blower Purge

Heat Reactivated Desiccant Air Dryers

ZHA & ZBA Series

Operational Status ...

The sequence annunciator indicates the status of each tower. LED's indicate which tower is "on-line" drying, "off-line" regenerating as well as the regeneration stages.

... digital readout

The eco-Demand Center features a backlit four line character display that monitors operation and status. Regenerating countdowns and time remaining are included.

... ThermaLoc™ (10 Year Extended Warranty on Heater Elements)

The eco-Demand Center also controls Parker Zander's "ThermaLoc™" heater protection system. ThermaLoc™ ensures maximum reliability and eliminates the safety concerns often associated with heat reactivated dryers. Heaters are protected by a totally redundant dual shutdown system that utilizes independent contactors. In addition to the redundant temperature controllers, the system monitors pressure and shuts the heater down in the event of low line pressure. Blower purge dryers have controls to prevent the heater from energizing if the blower is not running.

... dual mode heatless back up system

Allows the dryer to function in either the primary heated mode or the auxiliary heatless mode. Should the system experience a temporary overload or a heater failure, the dryer can easily be switched over to operate in the heatless mode. This way the dryer will remain "on-line" until such time as service can be conveniently scheduled. The Dual Mode Back Up System offers unparalleled flexibility, eliminates downtime and prevents business interruptions.

... manual stepping

Allows the operator to quickly and safely step the dryer through a complete 8 hour cycle, in a matter of minutes.



Heat Reactivated Desiccant Air Dryers

ZHA & ZBA Series

Components ...

1 Non-Lubricated Valves

Dryers up to 800 scfm are equipped with our time-proven and dependable non-lubricated switching valves. These independent, air operated valves are specifically designed for compressed air service. They are resistant to desiccant dust and can be maintained without being removed from the dryer.



2 Butterfly Actuated Valves (5 Year Extended Warranty)

High Performance Butterfly Actuated Switching Valves are standard on dryers 1000 scfm and larger. These premium, air operated butterfly valves are specifically designed for compressed air. They provide more opening and closing force compared to other types of valves. An indicator shows the "opened/closed" position of the valve and service can be performed without disturbing dryer piping.



3 Tower insulation

The tower, heater, and purge lines are insulated to increase dryer performance and efficiency by reducing radiant heat loss. It also keeps the unit within the safety parameters set forth by OSHA. Insulation suitable for indoor service is standard on all Parker Zander Heat Reactivated Dryers (Insulation suitable for outdoor service is an available option).



Equipment ...

- Failure to Switch Alarm
- Contacts for Common Alarm
- Systems Sequence Annunciator
- Auxiliary Cooldown
- Heater, Blower Flow Interlock (ZBA Models)
- Blower Silencer (ZBA Models)
- Compressor Surge Protection
- eco-Demand Center
- Redundant Heater Control System (ThermaLoc™)
- Cycle Stepping
- Dual Mode, Heatless Backup
- Fail-Safe Operation
- Control Air Filter
- Long Life and Low Watt Density Heater
- Independent Switching Valves
- Moisture Indicator
- Purge Flow Indicator
- Full Instrumentation
- Indoor Tower Insulation
- Separate Tower Fill/Drain Ports
- Power Saver Exhaust Termination (early regeneration)
- Pressure Equalization
- Stainless Steel Diffuser Screens
- Standby Mode
- Structural Steel Base (1000 scfm & larger)
- Cushioned Seat Check Valves
- High Performance Butterfly Valves (1000 scfm & Larger)
- ASME Coded Vessels
- Actuator Valve Limit Switch*
- Pre and After Set Filters
- Outdoor Insulation*
- ModBus
- All NEMA Classifications*
- Non-Yellow Metals*
- Pressure to 1000 psi g (69 bar g)*
- Star Watch®*
- Non-Standard Voltages*
- ecotronic*
- Ethernet connection*
- RS485 connection*

***Optional Equipment**

Heat Reactivated Desiccant Air Dryers

ZHA & ZBA Series

Complete Air Treatment ...

Without proper filtration, desiccant air dryers will not work. Desiccant dryers are designed to adsorb vapor from compressed air; they are not designed for liquid. When liquid, especially oil, is allowed to enter the desiccant chamber, it coats the desiccant material preventing any further adsorption. Oil coated desiccant can not be regenerated, and must be replaced.

The coalescing pre-filter is installed at the dryer inlet. It protects the dryer by removing liquids and reducing the contamination level of the compressed air to .01 PPM by weight. The element is DOP rated at 99.9+% efficient in the 0.3 to 0.6 micron range. An integrated digital indicator is provided to determine element condition. A float is provided on all

systems to ensure proper drainage. To protect downstream equipment from desiccant dust a particulate after-filter is installed at the dryer discharge. The after-filter element is designed to remove solid particulates from compressed air. The hybrid pleated filter media provides high dirt retention, low pressure drop, and long element life. The element is 99+% effective in removing particles 1.0 micron and larger. An integrated digital element condition indicator is also provided.

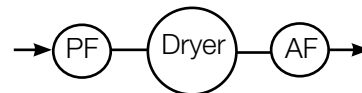
Most field problems experienced with desiccant air dryers are the result of improper filter selection, installation, maintenance, and/or draining of condensate. Considering

the importance of filtration to dryer performance, Parker Zander recommends that all desiccant dryers be ordered as a complete, factory assembled Air Treatment System. The Parker Zander package includes: properly sized, factory installed coalescing pre-filter and particulate after-filter (Automatic Float Drain standard), and color change indicators.

In-line cast filters are used on systems 250 through 800 scfm and two stage fabricated severe duty filters are used on systems 1000 scfm and larger. Mist eliminators are available as extra protection.

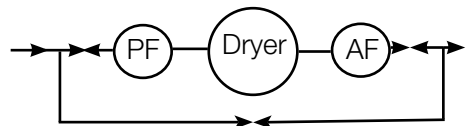


Package Schematic



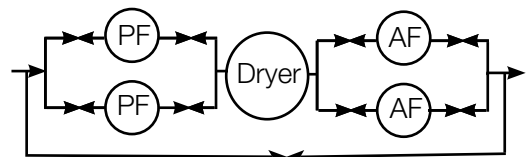
Standard Offering/Supply:

Includes dryer with factory installed pre-filter and after-filter (250-800 scfm, 1000+ scfm filters shipped loose)



Option 1:

Includes dryer with factory installed pre-filter and after-filter with system bypass



Option 2:

Includes dryer with factory installed dual selectable pre and after-filters with system bypass

Heat Reactivated Desiccant Air Dryers

ZHA & ZBA Series

ecotronic ...

The **eco**-Demand Center is designed to accommodate Parker Zander's optional ecotronic. ecotronic automatically adjusts energy use to actual moisture load. Moisture loading is affected by inlet temperature, pressure, relative humidity, and flow. These conditions vary throughout the day and rarely combine in such a manner as to produce maximum moisture loads.

An inlet temperature reduction of just 20°F (-7°C) will reduce the moisture load by almost 50%. Desiccant dryers are normally sized for "worst case" operation with the cycle fixed to accommodate maximum moisture loads. Because the fixed cycle does not compensate for fluctuating loads, dryers not equipped with ecotronic waste energy by regenerating more often than necessary. ecotronic eliminates this unnecessary use of energy by delaying regeneration until the total design moisture load is achieved. The system monitors actual moisture loading and limits the number of purge cycles accordingly.

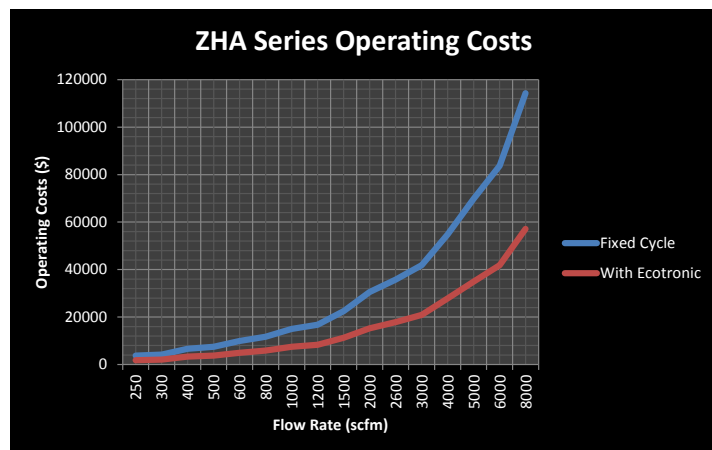
Digital dewpoint control provides for additional energy savings by allowing the operator to select higher dewpoints when appropriate. At \$0.08 per KWH, ecotronic would save \$6,730 annually when used with a 1000 scfm externally heated dryer operating at 75% load for 8,000 hours, at an average inlet temperature of +80°F (27°C). The moisture probe is contained in and protected by a rugged, stainless steel housing with a 80 micron sintered metal guard and a pressure rating of 3000 psi g. This housing increases the sensor's ability to withstand reasonable shock and vibration.

The housing also contains an electronics package for continuous self calibration, temperature

compensation, and signal stabilization. Due to less frequent cycling, switching valves and desiccant will last longer and require less maintenance.

The ecotronic ceramic sensor is made from state-of-the-art metallized ceramic and replaces traditional materials such as aluminum, silicon and hygroscopic salts. This fast response sensor is made from a ceramic tile that is plated and vapor deposited to form a surface that is very sensitive to small changes in water vapor pressure.

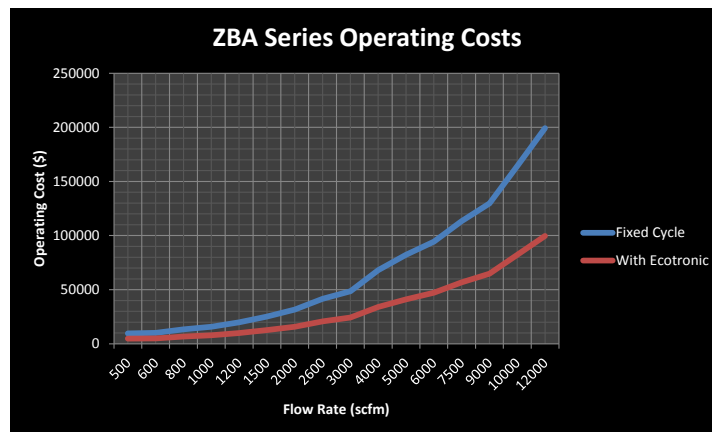
The proprietary coating processes make the ceramic sensor inherently faster to respond than other impedance or capacitive sensors currently available. The ceramic sensor features the latest digital technology with calibration data stored directly in the sensor's memory, and is equipped with a built-in thermistor for automatic temperature compensation. ecotronic is traceable to the National Institute of Standards and Technology. A certificate of traceability is available.



Assumptions:

50% Load
8% Purge Flow Rate

Local kW Cost: \$0.08
Operation Hours: 24
Operating Days: 365



Assumptions:

50% Load
3% Purge Flow Rate

Local kW Cost: \$0.08
Operation Hours: 24
Operating Days: 365

Heat Reactivated Desiccant Air Dryers

ZHA & ZBA Series

eco-Demand Center ...

Parker Zander's eco-Demand Center for Heat Reactivated Desiccant Air Dryers features a complete complement of data acquisition functions. All Parker Zander Heated Desiccant Dryers are remotely accessible by RemoteWatch™ software which can be downloaded at <http://divapps.parker.com/divapps/pdf/Starwatch/>. Star Watch® activated dryers can monitor and analyze every moment of operation, 24-7; it can be done wirelessly.

When Star Watch® is active on an installation, it is like having a Parker Zander factory technician in your plant, advising your process engineer. The easy to use eco-Demand Center affords superior dryer control along with digital telemetry for remote analysis of performance.



... temperature (thermocouple)

- Purge Air
- "Special" (fail-safe) Heater Over Temperature
- Left Exhaust
- Right Exhaust
- Dryer Inlet
- Dryer Outlet

... pressure (Transducer signals can be either 4-20 ma or 1-5 volt DC)

- Inlet
- Left Tower
- Right Tower
- Purge
- Pre-Filter (psi d)
- After-Filter (psi d)

... dewpoint (Energy Management) - optional

- ecotronic ("Fast Response" Digital Readout with Power Save feature)
- Flow Meter



Heat Reactivated Desiccant Air Dryers

ZHA & ZBA Series

-40°F (-40°C) with Activated Alumina Desiccant

Model	Flowrate* @ 100 psi g scfm (m ³ /min)	Heater (kW)	Dimensions in (mm)**			Weight		Dryer Connection Size	Pre-Filter	After-Filter
			Height (H)	Width (W)	Depth (D)	lbs	kg			
ZHA250	250 (7.1)	3	85 (2159)	40 (1016)	22 (558)	1180	535	1 1/2" NPT	GL12XLD-N	JC0350-FH
ZHA300	300 (8.5)	4	87 (2209)	43 (1092)	27 (686)	1370	621	1 1/2" NPT	GL12XLD-N	JC0350-FH
ZHA400	400 (11.3)	6	88 (2235)	47 (1194)	27 (686)	1400	635	2" NPT	GL13XLD-N	JC0450-FH
ZHA500	500 (14.1)	6	89 (2261)	50 (1270)	27 (686)	2060	934	2" NPT	GL14XLD-N	JC0625-FH
ZHA600	600 (17)	9	92 (2337)	52 (1321)	28 (711)	2350	1066	2" NPT	GL14XLD-N	JC0625-FH
ZHA800	800 (23)	9	93 (2362)	63 (1600)	35 (889)	3035	1377	2 1/2" NPT	GL17XLD-N	JC0800-FH
ZHA1000	1000 (28)	13	102 (2591)	74 (1880)	41 (1041)	4195	1903	3" Flg	GL19XLD-N	JC1008-FH
ZHA1200	1200 (34)	13	113 (2870)	74 (1880)	41 (1041)	5215	2365	3" Flg	GL19XLD-N	JC1008-FH
ZHA1500	1500 (42)	18	113 (2870)	78 (1981)	60 (1524)	7765	3522	4" Flg	DH-TF19XPDF-1	FT3-801-HT
ZHA2000	2000 (57)	25	110 (2794)	78 (1981)	60 (1524)	8565	3885	4" Flg	DH-TF30XPDF-1	FT4-1201-HT
ZHA2600	2600 (74)	25	112 (2845)	96 (2438)	60 (1524)	11562	5244	4" Flg	DH-TF30XPDF-1	FT4-1201-HT1
ZHA3000	3000 (85)	30	112 (2845)	96 (2438)	60 (1524)	12002	5444	6" Flg	DH-TF40XPDF-1	FT6-1201-HT
ZHA4000	4000 (113)	38	CF	CF	CF	CF	CF	6" Flg	DH-TF50XPDF-1	FT6-1201-HT1
ZHA5000	5000 (142)	50	CF	CF	CF	CF	CF	6" Flg	DH-TF60XPDF-1	FT8-1803-HT
ZHA6000	6000 (170)	60	CF	CF	CF	CF	CF	6" Flg	DH-TF60XPDF-1	FT8-1803-HT
ZHA8000	8000 (226)	60	CF	CF	CF	CF	CF	6" Flg	DH-TF60XPDF-1	FT8-1803-HT

*Referenced to 68°F (20°C) and 14.5 psi a (1 bar a).

**Dimensions for Models ZHA250 to ZHA800 include mounted filters. Dimensions for ZHA1000 to ZHA6000 do not include filters.

Notes

- *Grade XL & ZL filters ARE included in base unit price. Filters supplied mounted on Models ZHA250 - ZHA800. Models ZHA1000 to ZHA8000 have filters shipped loose.
- **ecotronic includes: energy saving purge cycle control with high humidity alarm and digital dewpoint display.
When ordering Ecotronic, use /DS as suffix. (Example: ZHA500DS)
- Above information should be used as a guideline. Flows are at 100 psi g inlet pressure, 100°F inlet temperature and 100°F ambient temperature.
For specific applications, please consult Parker Zander Technical Services at fafquotes@parker.com.
- Weight includes desiccant (shipped loose Models ZHA2000 and up).
- For sizing at other temperatures and pressures, please consult factory.

Heat Reactivated Desiccant Air Dryers

ZHA & ZBA Series



Technical Data

Flow Range @ 100 psi g (7 bar g):	-	250 scfm to 6000 scfm
Dewpoint:	-	-40°F [-40°C] Standard
Maximum operating pressure:		Models: ZHA500 - ZHA1500: 150 psi g (10.3 bar g) Models: ZHA2000 - ZHA6000: 135 psi g (9.3 bar g)
Minimum operating pressure:		80 psi g (5.5 bar g) [Lower minimum pressures available. Consult factory.]
Maximum inlet temperature:		120°F (49°C)
Minimum inlet temperature:		50°F (10°C)
Dewpoint control optional		
Standard electrical supply:		Model ZHA250: 240V/1Ph/60Hz Model ZHA300 - ZHA8000: 460V/3Ph/60Hz, (575V/3Ph/60Hz Optional)



Correction Factors

To obtain dryer capacity at new conditions, multiply nominal capacity x C1 x C2.

Temperature Correction Factor CFT													
Maximum Inlet Temperature (C1)	°F	80	85	90	95	100	105	110	115	120			
	°C	27	29	32	35	38	41	43	46	49			
	CFT	1.17	1.17	1.17	1.15	1.00	0.87	0.76	0.66	0.58			
Pressure Correction Factor CFP													
Minimum Inlet Pressure (C2)	psi g	80	85	90	95	100	105	110	115	120	125	130	135
	bar g	5.51	5.86	6.21	6.55	6.89	7.24	7.58	7.93	8.27	8.62	8.96	9.31
	CFP	0.83	0.87	0.91	0.96	1.00	1.04	1.09	1.13	1.17	1.22	1.26	1.31

Heat Reactivated Desiccant Air Dryers

ZHA & ZBA Series

-40°F (-40°C) with Activated Alumina Desiccant

Model	Flow-rate* @ 100 psi g (scfm)	Heater Blower (kW)	HP	Dimensions in (mm)**			Weight		Dryer Connection Size	Pre-Filter	After-Filter
				Height (H)	Width (W)	Depth (D)	lbs	kg			
ZBA500	500	12	2	89 (2261)	50 (1270)	27 (686)	2840	1288	2" NPT	GL14XLD-N	JC0625-FH
ZBA600	600	12	2	92 (2337)	52 (1321)	28 (711)	3420	1551	2" NPT	GL14XLD-N	JC0625-FH
ZBA800	800	18	5	93 (2362)	64 (1646)	35 (889)	4490	2037	2 1/2" NPT	GL17XLD-N	JC0800-FH
ZBA1000	1000	18	5	102 (2591)	74 (1879)	41 (1041)	5700	2585	3" Flg	GL19XLD-N	JC1008-FH
ZBA1200	1200	25	5.5	113 (2870)	74 (1879)	41 (1041)	6300	2858	3" Flg	GL19XLD-N	JC1008-FH
ZBA1500	1500	30	7.5	113 (2870)	78 (1981)	60 (1524)	7165	3250	4" Flg	DH-TF19XPDF-1	FT3-801-HT
ZBA2000	2000	30	7.5	112 (2845)	114 (2896)	66 (1676)	9850	4468	4" Flg	DH-TF30XPDF-1	FT4-1201-HT
ZBA2600	2600	50	10	112 (2845)	132 (3353)	72 (1829)	12210	5538	4" Flg	DH-TF30XPDF-1	FT4-1201-HT1
ZBA3000	3000	60	10	112 (2845)	132 (3353)	72 (1829)	12650	5738	6" Flg	DH-TF40XPDF-1	FT6-1201-HT
ZBA4000	4000	75	15	114 (2896)	168 (4267)	84 (2134)	18910	8577	6" Flg	DH-TF50XPDF-1	FT6-1201-HT1
ZBA5000	5000	100	15	114 (2896)	156 (3962)	92 (2337)	21590	9793	6" Flg	DH-TF60XPDF-1	FT8-1803-HT
ZBA6000	6000	115	20	112 (2845)	146 (3708)	92 (2337)	24890	11290	6" Flg	DH-TF80XPDF-1	FT8-1803-HT
ZBA7500	7500	135	25	CF	CF	CF	CF	CF	8" Flg	DH-TF100XPDF-1	FT8-2004-HT
ZBA9000	9000	150	30	CF	CF	CF	CF	CF	8" Flg	DH-TF100XPDF-1	FT8-2404-HT

*Referenced to 68°F (20°C) and 14.5 psi a (1 bar a).

**Dimensions for Models ZBA500 to ZBA800 include mounted filters. Dimensions for ZBA1000 to ZBA9000 do not include filters.

Notes

- *Grade XL & ZL filters ARE included in base unit price. Filters supplied mounted on Models ZBA500 - ZBA800. Models ZBA1000 to ZBA9000 have filters shipped loose.
- **ecotronic includes: energy saving purge cycle control with high humidity alarm and digital dewpoint display.
When ordering ecotronic, use /DS as suffix. (Example: ZBA9000DS)
- Above information should be used as a guideline. Flows are at 100 psi g inlet pressure, 100°F inlet temperature and 100°F ambient temperature.
For specific applications, please consult **Parker Zander** Engineering Department at fafquotes@parker.com.
- Weight includes desiccant (shipped loose Models ZBA2000 and up).
- For sizing at other temperatures and pressures, please consult factory.

Technical Data

Flow Range @ 100 psi g (7 bar g):	-	500 scfm to 9000 scfm
Dewpoint:	-	-40°F (-40°C) Standard
Maximum operating pressure:		Models: ZBA500 - ZBA1500: 150 psi g (10.3 bar g) Models: ZBA2000 - ZBA12000: 135 psi g (9.3 bar g)
Minimum operating pressure:		80 psi g (5.5 bar g) [Lower minimum pressures available. Consult factory.]
Maximum inlet temperature:		120°F (49°C)
Minimum inlet temperature:		50°F (10°C)
Dewpoint control optional		
Standard electrical supply:		460V/3Ph/60Hz, Control power 115V/1Ph/60Hz [575V/3Ph/60Hz Optional]



Correction Factors

To obtain dryer capacity at new conditions, multiply nominal capacity x C1 x C2.

Temperature Correction Factor CFT													
Maximum Inlet Temperature (C1)	°F	80	85	90	95	100	105	110	115	120			
	°C	27	29	32	35	38	41	43	46	49			
	CFT	1.17	1.17	1.17	1.15	1.00	0.87	0.76	0.66	0.58			
Pressure Correction Factor CFP													
Minimum Inlet Pressure (C2)	psi g	80	85	90	95	100	105	110	115	120	125	130	135
	bar g	5.51	5.86	6.21	6.55	6.89	7.24	7.58	7.93	8.27	8.62	8.96	9.31
	CFP	0.83	0.87	0.91	0.96	1.00	1.04	1.09	1.13	1.17	1.22	1.26	1.31

Worldwide Filtration Manufacturing Locations

North America

**Compressed Air Treatment
Filtration & Separation/Balston**
Haverhill, MA
978 858 0505
www.parker.com/balston

**Finite Airtek Filtration
Airtek/domnick hunter/Zander**
Lancaster, NY
716 686 6400
www.parker.com/faf

Finite Airtek Filtration/Finite
Oxford, MI
248 628 6400
www.parker.com/finitefilter

**Engine Filtration &
Water Purification
Racor**
Modesto, CA
209 521 7860
www.parker.com/racor

Holly Springs, MS
662 252 2656
www.parker.com/racor

Beaufort, SC
843 846 3200
www.parker.com/racor

Racor – Village Marine Tec.
Gardena, CA
310 516 9911
desalination.parker.com

Parker Sea Recovery
Carson, CA
310 637 3400
www.searecovery.com

**Hydraulic Filtration
Hydraulic Filter**
Metamora, OH
419 644 4311
www.parker.com/hydraulicfilter

Laval, QC Canada
450 629 9594
www.parkerfarr.com

**Process Filtration
domnick hunter Process Filtration**
Oxnard, CA
805 604 3400
www.parker.com/processfiltration

Madison, WI
608 824 0500
www.scilog.com

Phoenixville, PA
610 933 1600
www.parker.com/processfiltration

**Aerospace Filtration
Velcon Filtration**
Colorado Springs, CO
719 531 5855
www.velcon.com

Europe

**Compressed Air Treatment
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