

# Hydrobloc® HB Series

Heatless Desiccant Compressed Air Dryers



**Solutions In Compressed Air**

A **FLAIR** Company

# The Greatest Value In Heatless Desiccant Compressed Air Dryers

## Hydrobloc® Compressed Air Dryers

**Deltech** continues the tradition of offering to the industry the finest quality compressed air drying and filtration equipment with the Hydrobloc® HB Series heatless regenerative desiccant dryer system.

### Features and Benefits

The complete Hydrobloc® HB Series provides a continuous supply of high-quality compressed air with -40°F or -100°F (optional) pressure dew point to a wide range of applications. With models ranging from 5 scfm up to 3,250 scfm, the Hydrobloc® HB Series Heatless Desiccant Dryer will meet your requirements.

**Hydrobloc® HB Series 5-26 scfm** models include many of the standard features of the larger scfm dryers.

### Standard Features

#### Hydrobloc® HB Series 5-26 scfm

- Proprietary shuttle valves
- Cast aluminum valve manifold
- NEMA 4 electrical construction
- -40°F Pressure dew point
- Solid State Timer
- Tower indicating and power on lights
- Purge exhaust valves
- Purge exhaust muffler
- In line piping connections
- Wall mount bracket
- One set of spare muffler cores
- Electrical Power: 115/1/60 and 115/1/50

To enhance the standard features of the Hydrobloc® HB Series 5-26 scfm models Deltech offers the following options:

### Optional Features

- -100°F Pressure dew point
- Pneumatic controls
- Moisture indicator
- Panel mounted vessel pressure gauges
- Inlet/outlet air pressure gauges



**Hydrobloc® HB Series  
5 to 26 scfm**

*For more information  
refer to pages 4-5.*



**Hydrobloc® HB Series  
55 to 3,250 scfm**

*For more information  
refer to pages 6-10.*

## Through the Complete Line of Hydrobloc® HB Series

**Hydrobloc® HB Series 55-3,250 scfm** desiccant dryers, including standard prefilter and afterfilter, are shipped fully assembled, interconnected and skid mounted (weldment filters on Models HB1710 and larger are shipped loose and includes interconnecting piping and drain valves). Our complete drying system ensures that filter sizing and performance match the dryer and eliminates the additional costs associated with installing and piping the filters separately.

### Standard Features Hydrobloc HB Series 55-3,250 scfm

- D Series high efficiency coalescing prefilter
- D Series particulate removal afterfilter
- Panel mounted vessel pressure gauges
- Panel mounted purge flow indicator
- Purge air mufflers with spare cores
- NEMA Type 4 enclosure
- ASME code vessels
- Pressure relief valve
- Desiccant fill and drain ports
- Adjustable purge air control
- Solid state timer
- Tower indicating and power on lights

### Customize Your HB Series Desiccant Dryer

A number of options are available to enhance the operation and performance of your Hydrobloc® desiccant dryer.

#### Optional Features

- -100°F Pressure dew point
- NEMA Type 7 (Class I, Division II, Group C & D)
- Dew point monitor
- 50-cycle operation
- No-Loss drain
- Adsorption filters

### Option Packages

#### Option A

- DEC (Deltech Electronic Controller)
- Failure-to-switch alarm and light (*includes remote-alarm contacts*)
- Moisture indicator
- Inlet and outlet pressure gauges

#### Option B

- Includes Option A
- Compu-Save computer purge control Energy Management System
- High humidity alarm and light (*includes remote-alarm contacts*)

Deltech D Series provide the highest filtration efficiency with minimal maintenance requirements and low pressure drop



#### Highest Efficiency Coalescing Prefilter Benefits:

- Removes liquid and aerosol mists through unique layering of four-media element
- Transport layer potted into endcaps prevents liquid carryover
- Removes particulate contaminants down to 0.01 micron
- Patented Snap-Lock element design makes replacement easy
- Lens-enhanced, top-mounted differential pressure gauge shows at a glance when it's time to change filter element



#### Particulate Removal Afterfilter Benefits:

- Removes particulate contaminants down to 1.0 micron absolute
- Element construction virtually eliminates release of fibers into air stream
- Incorporates pleated design to achieve maximum effective element life
- Patented Snap-Lock element design makes replacement easy
- Lens-enhanced, top-mounted differential pressure gauge shows at a glance when it's time to change filter element

# Hydrobloc HB

## Hydrobloc®: The Greatest Value And Dependability In Heatless Desiccant Compressed Air Dryers

### Hydrobloc® HB Series 5-26 scfm Compressed Air Dryers

For the most advanced technology with user friendly design, Deltech Hydrobloc® compressed air dryers offer the best value in the industry.

The Hydrobloc® sets the standard by providing compressed air drying to pressure dew points as low as -100°F, using non-lubricated shuttle valves for minimal maintenance and offering replacement desiccant cartridges which are easily installed. A standard 230 psig rating is part of the Hydrobloc's® high performance.

Air leaks are virtually non-existent with the modular cast aluminum manifold, and state-of-the-art electronic control monitoring to assure proper operation. Providing the best options for diverse needs consistently and constantly keeps Hydrobloc® on the leading edge.

When value, service and quality are the considerations, Deltech Hydrobloc® is the answer.



### Simple Controls

- Solid state timer provides reliable and precise control of the dryer
- Lighted schematic indicates which tower is drying
- Power-on light

### Switching Valve Design

- Proprietary non-lubricated shuttle valves; no check valves
- Fewest moving parts
- Minimum maintenance; no routine maintenance of shuttle valves

### Replaceable Desiccant Cartridges

- Self-contained cartridge make desiccant replacement simple, fast and mess-free
- Long desiccant life due to low air velocity and slow pressurization prior to switch over

### Easy Match Of Capacity And Requirements

- 5 models ranging from 5 to 26 scfm
- Standard 230 psig rating



*Replaceable desiccant cartridge allows quick, easy desiccant replacement.*

# Hydrobloc® HB Series 5-26 scfm Sizing and Specifications

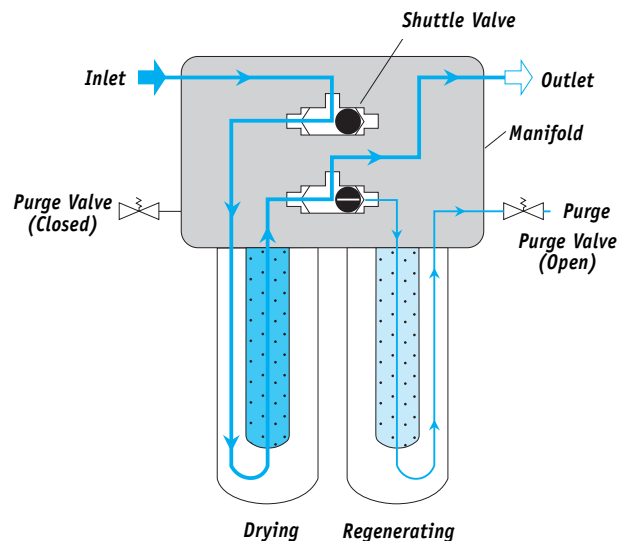


**Hydrobloc®** dryers utilize the same twin-tower design found in higher-flow desiccant compressed air dryers. One tower is drying incoming compressed air while the second is being regenerated with a small flow of purge air.

Compressed air saturated with moisture enters the cast manifold at the inlet connection. The inlet shuttle valve directs this air to the bottom of the on-line, drying, tower. The air enters the bottom of the desiccant cartridge and flows upward. As it does so, water vapor is removed by the desiccant beads. Dried air at either  $-40^{\circ}\text{F}$  pdp or  $-100^{\circ}\text{F}$  pdp (optional) flows out of the cartridge at the top of the tower and then into the manifold where the outlet shuttle valve directs this dried air to the dryer outlet connection.

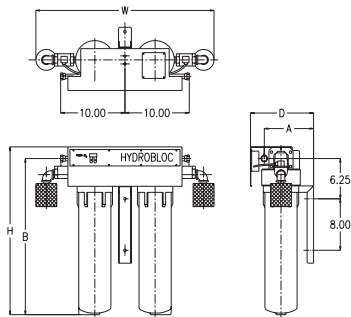
A small portion of the dried air passing through the outlet shuttle valve is redirected through an orifice where it is reduced to atmospheric pressure. This low-pressure purge air flows downward through the off-line, regenerating, desiccant tower where it desorbs moisture from the desiccant beads. The purge air is then discharged to the atmosphere through the purge valve and muffler.

A solid state timer opens and closes the respective purge valves to pressurize or depressurize either tower at the appropriate time. The resulting change in pressure causes the shuttle valves to change their flow direction and direct the inlet air to the proper tower, the purge air to the regenerating tower and the dried process air to the dryer outlet. This cycle repeats itself allowing for an uninterrupted flow of dry compressed air to the point of use.



## Operating Conditions:

- Maximum inlet air temperature:  $120^{\circ}\text{F}$  ( $49^{\circ}\text{C}$ )
- Maximum operating pressure: 230 psig (15.9 barg)
- Minimum operating pressure: 80 psig (5.5 barg)
- Power consumption: 30 watts



## Specifications

Model	Capacity (scfm)	Dimensions (inches)					Connections Inlet,Outlet (inches)	Approx. Ship. Wt. (lbs)
		H	W	D	A	B		
HB31	5	18.50	20.25	8.75	6.75	16.75	1/2	70
HB41	8	24.75	20.25	8.75	6.75	23.00	1/2	75
HB51	14	27.00	28.25	10.00	7.75	25.25	1/2	120
HB61	19	27.00	28.25	10.00	7.75	25.25	1/2	140
HB71	26	38.25	28.25	10.00	7.75	35.25	1/2	175

## Dryer Sizing Chart

Model	Inlet Flow (scfm) at Operating Pressure (psig)																	
	80		90		100		110		125		150		175		200		230	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
HB31	3.6	3.0	4.4	3.7	5.3	4.5	5.8	4.9	6.5	5.5	7.6	6.5	8.2	6.9	8.7	7.2	9.3	7.6
HB41	5.4	4.5	6.7	5.6	8.0	6.8	8.7	7.4	9.7	8.3	11.5	9.8	12.3	10.3	13.1	11.0	14.0	11.4
HB51	9.5	7.8	11.7	9.8	14.0	11.9	15.2	12.9	17.1	14.5	20.1	17.1	21.6	18.1	23.0	19.0	24.5	20.0
HB61	12.7	10.4	15.5	13.0	18.6	15.8	20.2	17.2	22.7	19.3	26.7	22.7	28.7	24.0	30.5	25.3	32.6	26.6
HB71	17.7	14.5	21.7	18.1	26.0	22.1	28.3	24.0	31.7	26.9	37.3	31.7	40.1	33.6	42.6	35.3	45.5	37.1

Performance data obtained and presented in accordance with CAGI standard No. ADF 200. "Dual Stage Regenerative Desiccant Compressed Air Dryers—Method for Testing and Rating." Rating conditions are  $100^{\circ}\text{F}$  ( $38^{\circ}\text{C}$ ) inlet temperature, 100 psig (6.9 bar) inlet pressure, 100% relative humidity,  $80^{\circ}\text{F}$  ( $27^{\circ}\text{C}$ ) ambient temperature and 5 psi (0.35 bar) pressure drop.

Purge air as a percentage of rated flow increases for dryers rated for  $-100^{\circ}\text{F}$  pressure dew point. To determine the new inlet capacity multiply the standard inlet flow by 0.63.

# Hydrobloc® HB Series 55-3,250 scfm

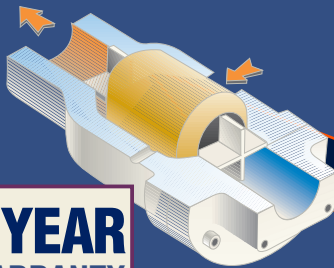
## How it Works

**Deltech Hydrobloc® HB Series** heatless dryers provide a continuous supply of dry compressed air by automatically cycling the flow of air through two desiccant beds. While one bed is adsorbing moisture from inlet air, the other bed is being regenerated by a portion of the dried air. Cycling is controlled by a Solid State Controller (standard) or DEC Controller (optional). Hydrobloc® dryers operate on a standard 10-minute NEMA cycle with -40°F pdp as standard.

### Switching Valve ensures the highest reliability in desiccant compressed air dryers

The key to the reliability of the **Hydrobloc®** dryer is the proprietary airflow switching valve. Based on its superior design and proven performance, this switching valve is covered by a five-year replacement warranty.\* This valve is used on models HB55 through HB3250.

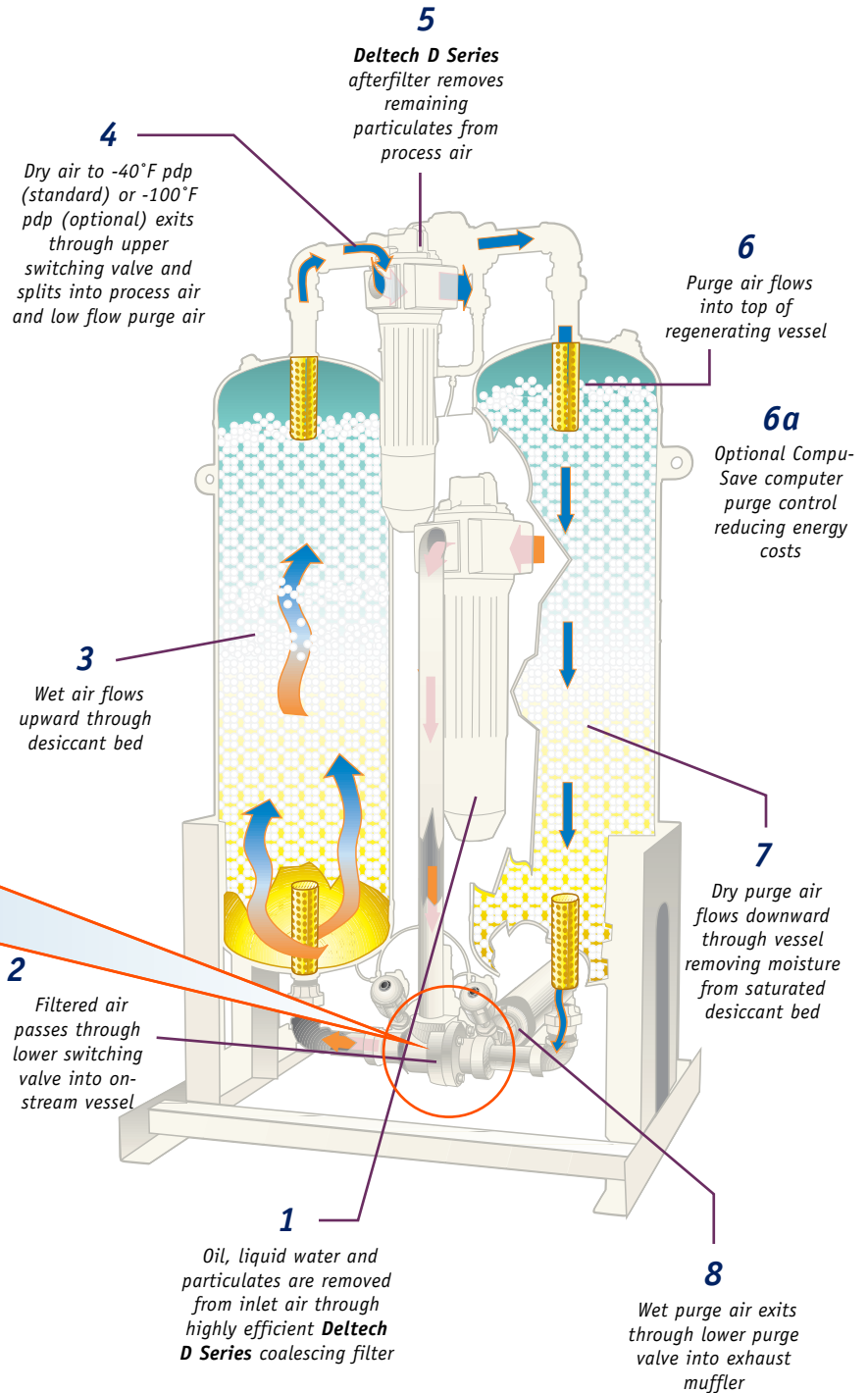
Specially designed to meet the rigorous operating demands of continuous-service desiccant dryers, the switching valve has only one moving part and requires no lubrication.



**5 YEAR WARRANTY**

Proprietary switching valve controls air flow through desiccant vessels. The non-lubricated switching valve, working in conjunction with two solenoid-operated purge valves, replaces up to 13 separate valves used in other designs. The valve design and use of non-corroding materials of construction ensure reliable switching for the life of the dryer.

\* Dryer must be protected by properly sized Deltech prefilter. Parts and labor covered through first year of warranty, parts only in second through fifth years.



# Compu-Save Computer Purge Control A Breakthrough in Energy Management Systems

## State-of-the-Art DEC Controller and **COMPU-SAVE**

- The latest in process control and sensory technology
- Provides reliable and consistent operation
- NEMA 4 Standard
- Power on, left and right chamber drying indication
- Supply voltage 115V/1Ph/60Hz



### Included in Option A

#### Hydrobloc® DEC Controller

The Hydrobloc® DEC (Deltech Electronic Controller) is a solid state logic center that provides accurate time cycle control and superb reliability. Unlike cam timers which are subject to wear and slip, this NEMA 4 controller utilizes electronically controlled valves that switch the dryer at special pre-designed intervals. Failure to switch indicator alerts prior to desiccant saturation.

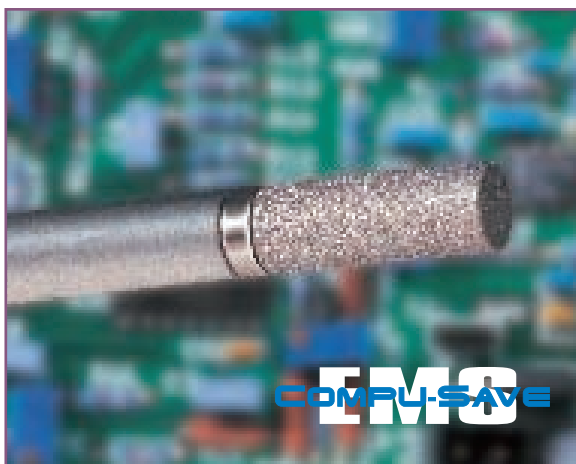
### Included in Option B

#### Deltech Compu-Save Energy Management System

You will benefit from utilizing Compu-Save when:

- Your dryer operates less than 24 hours per day
- Inlet air conditions fluctuate
- The dryer is operating at less than full capacity

The optional Deltech Compu-Save Energy Management System automatically adjusts dryer operation to compensate for changes in operating conditions. Air samples are periodically taken from within each vessel and passed over a state-of-the-art capacitance probe which senses both temperature and relative humidity. The dew point of the air within the desiccant bed is then precisely determined. While the dryer continues to operate on a fixed drying cycle, the regeneration cycle will not be initiated until a predetermined set point has been reached. Purge air consumption is reduced to an absolute minimum.



# Hydrobloc® HB Series 55-3,250 scfm Sizing and Energy Savings

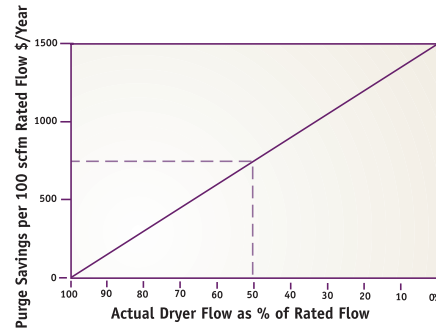


To calculate annual savings, determine rated and actual flow and follow the example. Assume the installation of a 600 scfm dryer with reserve capacity for planned expansion:

- Rated flow: 600 scfm
- Actual flow: 300 scfm (50% of rated flow)
- Annual purge savings per 100 scfm: \$710 (see chart)
- Total annual savings: \$710/100 scfm x 600 scfm = \$4260

If a dryer is operating at reduced demand intermittently (e.g., during work breaks or second shift), determine annual savings as in the example then multiply annual savings by the percentage of time the dryer operates at reduced demand.

For dryer operating at standard conditions of 100°F, 100 psig and 100% R.H. inlet air and -40°F dpd at 15% purge. Assume dryer usage at 365 days/year and air cost at \$0.18/1000scfm.



## How to Select a Deltech Hydrobloc® HB Series dryer

If inlet conditions differ from standard (see Dryer Sizing Chart below), dryer capacity will be affected. Use the chart below to select the most economical HB Series dryer for your application. You will need to know the inlet pressure, temperature and flow.

Example: Select an HB Series dryer to dry 240 scfm of air to 110 psig inlet pressure, and 115°F inlet temperature and provide a constant -40°F pressure dew point.

1. Locate 115°F on the Temperature Correction Factor table and choose the factor 0.632.
2. Take your inlet flow and divide by the correction factor (240 scfm ÷ 0.632 ≈ 380 scfm). This shows you need a dryer capable of handling 380 scfm at the dryer inlet air pressure.
3. Locate 110 psig on the Dryer Sizing Chart below.
4. Read down the column until you locate inlet air flow conditions of 380 scfm or higher.
5. Read across to the left to find the dryer model number. In this case, you would select Model HB350
6. The model HB350 will meet -40°F consistently. If your system does not require consistent -40°F dew point all year around you may use the outlet dew point chart. If the dew point is acceptable disregard the temperature correction factor and use the dryer sizing chart to size the dryer accordingly.

## Dryer Sizing Chart

Model	Inlet Air Pressure (psig)										
	30	40	50	60	70	80	90	100	110	125	150
	Average Inlet Air Flow (scfm)										
HB55	21	26	31	36	41	45	50	55	60	67	79
HB100	39	48	56	65	74	83	91	100	109	122	144
HB160	62	76	90	104	118	132	146	160	174	195	230
HB200	78	95	113	130	148	165	183	200	217	244	287
HB275	107	131	155	179	203	227	251	275	299	335	395
HB350	136	167	197	228	258	289	319	350	381	426	503
HB475	185	227	268	309	351	392	434	475	516	579	682
HB600	234	286	338	391	443	495	548	600	652	731	862
HB800	312	382	451	521	591	661	730	800	870	974	1149
HB1000	390	477	564	651	738	826	913	1000	1087	1218	1436
HB1200	468	572	677	782	886	991	1095	1200	1305	1462	1723
HB1450	565	691	818	944	1071	1197	1324	1450	1576	1766	2082
HB1710	666	815	965	1114	1263	1412	1561	1710	1859	2083	2455
HB2010	783	959	1134	1309	1484	1660	1835	2010	2185	2448	2886
HB2250	877	1073	1269	1465	1662	1858	2054	2250	2446	2740	3231
HB2600	1013	1240	1467	1693	1920	2147	2373	2600	2827	3167	3733
HB3250	1267	1550	1833	2117	2400	2683	2967	3250	3533	3958	4667

Temperature Correction Factor (Maintain -40°F dew point)	
Inlet Temperature (°F)	
Temp	Correction
105	0.883
110	0.758
115	0.632
120	0.519

Outlet Dew Point	
Inlet Temp (°F)	Outlet Dew Point
100	-40°F
105	-35°F
110	-30°F
115	-25°F
120	-20°F

# Hydrobloc HB

## Deltech Hydrobloc® HB Series heatless desiccant compressed air dryers designed and built with confidence

Deltech's **Hydrobloc® HB Series 55-3,250** scfm heatless desiccant compressed air dryers offer the compressed air user the highest reliability in the industry. Our commitment to bring the best technology to the marketplace is once again demonstrated with our Hydrobloc® dryers.

### Basic Design Features

- Rated at 150 psig at 450°F design pressure
- Stainless steel desiccant support screens
- White machinery enamel, shot blasted primed surfaces
- Separate desiccant fill and drain ports

### Highest Reliability

- Shuttle valve life-tested to more than 500,000 cycles—equivalent to 10 years of continuous operation on standard -40°F pdp (5 year replacement warranty)
- Continuous air flow, even with loss of electric power to the dryer
- Dew point maintained for up to eight hours after loss of electric power to the dryer

### Minimal Maintenance

- Activated Alumina for superior quality, hardness, drying capabilities, and long desiccant life
- Upflow drying minimizes effects of accidental slugging with water
- Muffler cores replace quickly and easily to prevent back pressure in purge exhaust line
- Gauge mounted on top of filter shows at a glance when it's time to replace the filter element
- Patented Snap-Lock technology makes filter element replacement easy

### Unmatched Performance

- Dependable -40°F pdp standard; -100°F pdp optional
- ISO 8573.1 standards rating comply with class 2-2-1 with -40°F pdp dew point and 2-1-1 with -100°F pdp dew point option
- Desiccant dryer protection based on a history of over 40 years of dryer design
- Controlled contact time—minimum 5 seconds—ensures required moisture adsorption
- Deltech D Series prefilter and afterfilter (supplied as standard equipment F-01 filter package) ensures the highest filtration for maximum drying efficiency

### Operating Economy

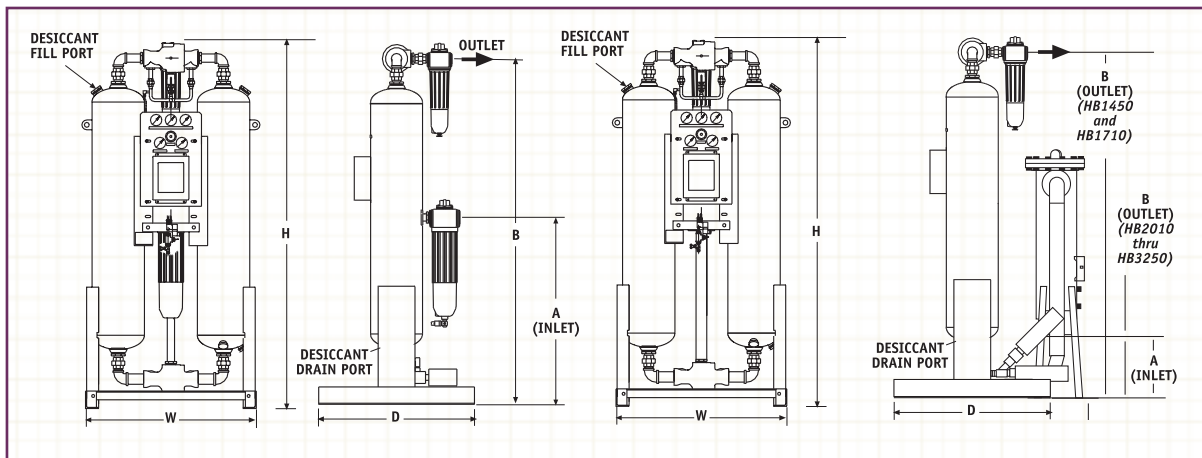
- Field adjustable purge flow to match user needs standard on all dryers
- Optional Compu-Save computer purge control available to further improve operating economy

# Hydrobloc HB

## Operating Conditions:

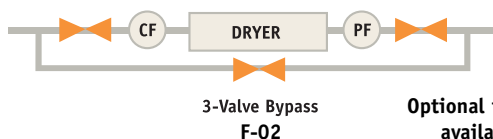
- Standard inlet operating conditions: 100 psig, 100°F, 100% relative humidity
- Inlet air temperature: 40°F-120°F • Ambient air temperature: 40°F-120°F
- Outlet air: -40°F pressure dew point @ standard inlet operating conditions
- Purge rate: 15% @ standard inlet operating conditions

Relief valves set at 165 psig on standard models

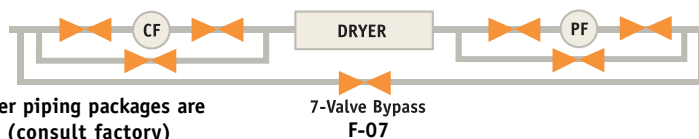


Models HB55-HB1200

Models HB1450-HB3250



Optional filter piping packages are available (consult factory)



## Specifications

Model <sup>a</sup>	Flow Capacity <sup>b</sup>		ASME Code Stamp	Standard D Series Filters		Dimensions (inches)					Drain Connections (inches NPT)	
	-40°F pdp	-100°F pdp		Prefilter	Afterfilter	H	W	D	A	B	Inlet	Outlet
HB55	55	40	UM	D-0050-CF	D-0050-PF	71	33	27	36.06	64.44	3/4	1/2
HB100	100	75	UM	D-0100-CF	D-0100-PF	73	35	31	36.75	66.38	1	3/4
HB160	160	120	UM	D-0175-CF	D-0170-PF	74	36	31	38.31	67.56	1-1/4	1
HB200	200	150	UM	D-0250-CF	D-0170-PF	89	42	38	40.06	82.25	1-1/2	1
HB275	275	220	UM	D-0400-CF	D-0300-PF	86	42	38	43.06	79.63	2	1-1/4
HB350	350	275	UM	D-0400-CF	D-0300-PF	87	46	48	43.25	79.38	2	1-1/4
HB475	475	360	U	D-0600-CF	D-0405-PF	90	48	48	48.13	82.19	2-1/2	1-1/2
HB600	600	475	U	D-0600-CF	D-0510-PF	94	51	54	56.13	86.69	2-1/2	2
HB800	800	630	U	D-1000-CF	D-0850-PF	113	72	51	67.19	103.75	3	2-1/2
HB1000	1,000	800	U	D-1000-CF	D-0850-PF	114	73	58	68.00	105.31	3	2-1/2
HB1200	1,200	960	U	D-1200-CF	D-1020-PF	115	75	61	68.13	106.50	3	2-1/2
HB1450	1,450	1,170	U	D-1500-CF	D-1225-PF	116	84	69	20.00	107.25	3 FLG	3
HB1710	1,710	1,360	U	D-2000-CF	D-1450-PF	117	84	70	20.00	108.50	4 FLG	3
HB2010	2,010	1,600	U	D-2000-CF	D-2000-PF	132	88	83	20.00	20.00	4 FLG	4 FLG
HB2250	2,250	1,800	U	D-2400-CF	D-2000-PF	133	90	83	20.00	20.00	4 FLG	4 FLG
HB2600	2,600	2,080	U	D-3000-CF	D-2400-PF	136	91	88	21.00	20.00	4 FLG	4 FLG
HB3250	3,250	2,630	U	D-4000-CF	D-3000-PF	140	95	90	21.00	21.00	4 FLG	4 FLG

<sup>a</sup> Consult factory for larger flow models.

<sup>b</sup> Performance data obtained and presented in accordance with CAGI Standard No. ADF 200, "Dual Stage Regenerative Desiccant Compressed Air Dryers—Methods for Testing and Rating" of 100°F inlet air temperature, 100 psig inlet air pressure, 100°F inlet pressure dew point and 80°F ambient air temperature. Maximum pressure drop across dryer (without filters) is 5 psig. Initial pressure drop for filters is 1 psid each. Pressure dew point at standard rating conditions is -40°F. ISO 8573.1 standards rating comply with class 2-2-1 at -40°F dew point, and 2-1-1 at -100°F dew point (option).

Dimensions based on -40°F dewpoint and F01 standard mounted filter package, optional -100°F and filter bypass options dimensions may vary consult factory for details.

ISO 9001



CRN REGISTERED



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