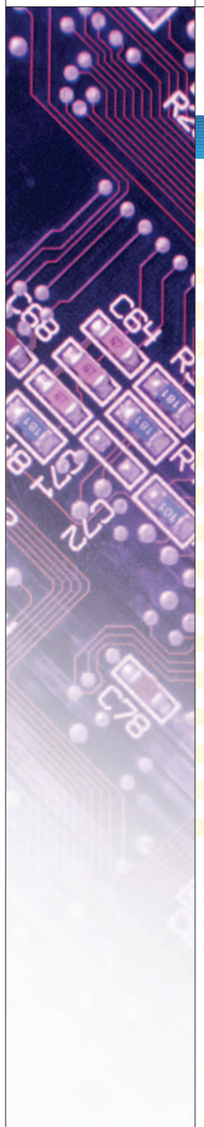
DESICCANT AIR DRYERS

Quincy COMPRESSOR
The Science of Compressed Air



AVAILABLE EQUIPMENT

Available Equipment	Heatless QDTH	Heated Purge QDHP	Blower Purge QDBP
Sequence Annunciator	Standard	Standard	Optional
Information Center	Standard	Standard	Not Applicable
Q-Sorb Enhanced Desiccant	Standard	Standard	Standard
Micro Processor	Standard	Standard	Standard
Demand Control	Optional	Optional	Optional
MicroBurst Regeneration System	Optional	Optional	Not Applicable
Digital Dewpoint Readout	Optional	Optional	Optional
Adjustable Dewpoint	Optional	Optional	Optional
Communications Port	Optional	Optional	Optional
*Dry Contacts for Remote Alarm	Optional	Optional	Optional
NEMA 4	Standard	Standard	Standard
NEMA 7-9	Optional	Optional	Optional
cUL 508	Optional	Optional	Optional
Stainless-Steel Diffuser Screens	Standard	Standard	Standard
Pressure Equalization	Standard	Standard	Standard
Exhaust Mufflers	Standard	Standard	Standard
Pressure Gauges	Standard	Standard	Standard
ASME Vessels	Standard	Standard	Standard
Control Air Filter	Standard	Standard	Standard
Diaphragm Switching Valves	Standard	Standard	Not Applicable
Premium Butterfly or Ball Switching Valves	Optional	Optional	Standard
Purge Flow Meter	Optional	Optional	Optional
Manual Cycle Test Mode	Standard	Standard	Standard
Moisture Indicator	Optional	Optional	Optional
Factory Packages	Optional	Optional	Optional
Control Transformer	Standard	Not Applicable	Not Applicable
Power Failure Program Protection	Standard	Standard	Standard
Low Watt Density Heaters	Not Applicable	Standard	Standard
Heater Thermostat	Not Applicable	Standard	Standard
High Humidity Alarm	Optional	Optional	Optional
Failure to Switch Alarms	Optional	Optional	Optional
Heater Failure Alarm	Not Applicable	Optional	Optional
Low Dewpoint Control	Optional	Optional	Optional
Heavy-Duty Paint	Optional	Optional	Optional
Certified Drawings	Optional	Optional	Optional
Stainless-Steel Control Tubing	Optional	Optional	Optional

*(Included with optional alarms)

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Member of CAGI Compressed Air and Gas Institute www.cagi.org

Know Pressure Compressed Air Challenge

Quincy COMPRESSOR
The Science of Compressed Air

Desiccant Air Dryers

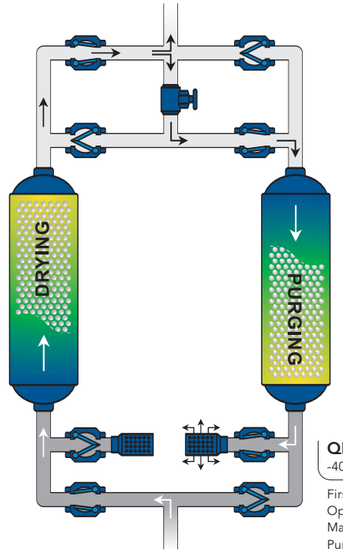
HEATLESS
HEATED PURGE
BLOWER PURGE

DESICCANT AIR DRYERS

QDTH–HEATLESS, QDHP–HEATED PURGE, QDBP–BLOWER PURGE

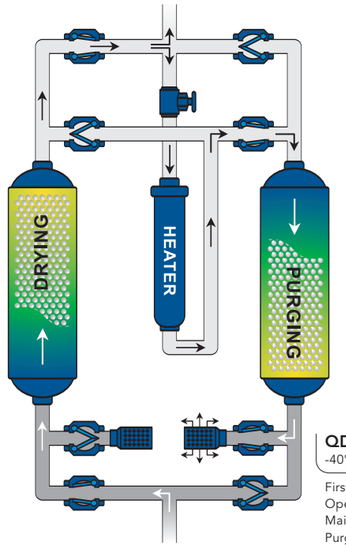
- -40°F to -100°F Pressure Dewpoint
- Enhanced Q-Sorb Desiccant
  - Longer Life
  - Lower Pressure Drop
  - Less Dusting
- Sequence Annunciator
- NEMA 4 Standard
- Microprocessor Control
- Demand Control Option
- MicroBurst Regeneration System (QDHP Heated Purge Only)
- Extended Warranty Option

FLOW SCHEMATICS



QDTH Heatless
-40°F to -100°F Dewpoint

First Cost:	Low
Operating Cost:	Medium to High
Maintenance:	Low
Purge:	15%



QDHP Heated Purge
-40°F to -100°F Dewpoint

First Cost:	Medium
Operating Cost:	Low
Maintenance:	Low
Purge:	3.5% to 7%

OPERATION & DESIGN

Quincy desiccant air dryers purify compressed air by adsorbing water vapor. Pressure dewpoints of -40ºF to -100ºF are attained by directing the flow of wet compressed air through a bed of highly adsorbent desiccant.

Quincy desiccant dryers are supplied with “Q-Sorb”, an enhanced formula of activated alumina. This high performance desiccant provides better uniformity, more efficient use of available surface area, less dusting, longer life and lower pressure drop. It is available only from Quincy and Quincy associates.

The Q-Sorb desiccant is contained in two pressure vessels, commonly referred to as “dual” or “twin towers”.

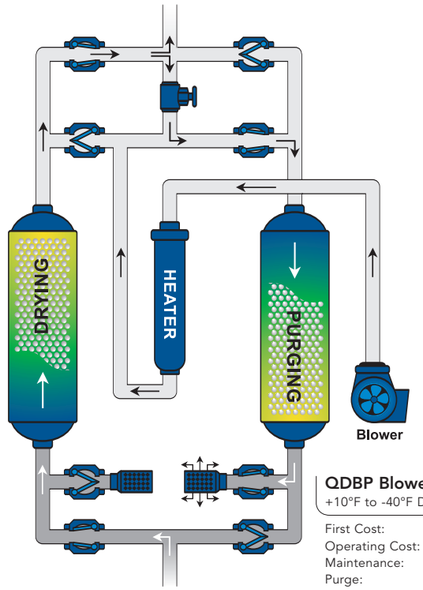
As the compressed air passes through the on-line, or drying vessel, the trapped moisture adheres to the surface of the desiccant material. The dry compressed air then exits the vessel and is directed to the afterfilter for final polishing. The dry air then enters the compressed air distribution system.

An Electronic Control Processor (ECP) switches the air flow from tower to tower. While one tower is on-line and drying, the other tower is off-line, regenerating the wet desiccant. Regeneration, also referred to as purging, uses air to strip away the moisture collected on the desiccant while the tower was on-line.

Heatless dryers use a small portion of the dried compressed air to purge the off-line tower. Heated Purge dryers, also referred to as Externally Heated, use an even smaller portion of the dried compressed air that is heated for regeneration. Blower Purge dryers combine heat with forced ambient air for regeneration.

To regenerate the off-line tower, low pressure, dry purge flows through the regenerating bed. Moisture that had adhered to the surface of the desiccant during the on-line cycle is attracted to the air. The moisture is desorbed by the air and carried out of the tower. Each tower has an exhaust valve where the wet air is discharged into the atmosphere.

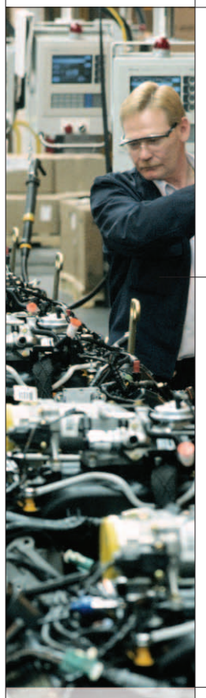
Quincy desiccant dryers are designed for maximum performance. Moisture load, velocity, contact time and cycle time determine the amount of desiccant required and the size of the vessels. Bed fluidization, or destruction of the desiccant caused by rapid and inconsistent air flow, is prevented by keeping air flow velocities below 50 feet per minute. This means air is in contact with the desiccant for at least 4.5 seconds, which balances drying and pressure drop.



QDBP Blower Purge
+10°F to -40°F Dewpoint

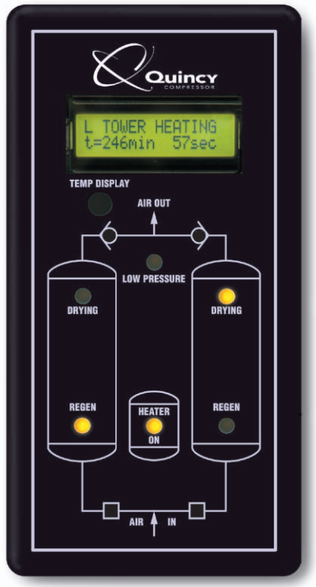
First Cost:	High
Operating Cost:	Low
Maintenance:	Medium
Purge:	1.75 Avg.

DESICCANT AIR DRYERS

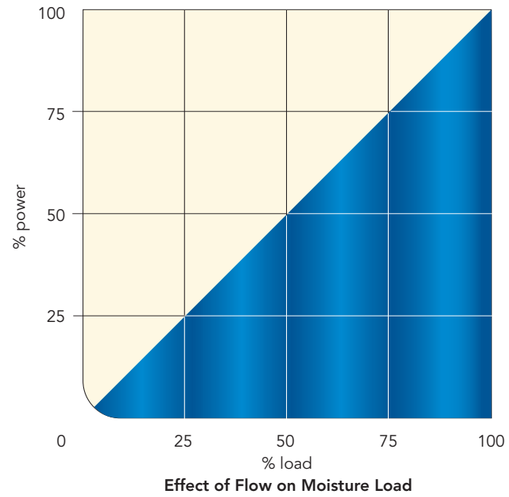


ELECTRONIC CONTROL PROCESSOR

- Information Center
- Visual Display
- Manual Test Mode
- -40°F to -100°F Dewpoint
- Protected Program



OMNIPOINT DIGITAL DEMAND CONTROL



Effect of Flow on Moisture Load

- Saves Energy
- Digital Dewpoint Readout
- Adjustable Dewpoint
- Dry Contacts
- Optional RS 232 or RS 485 Communication Port
- NIST Traceable
- High Speed Ceramic Sensor

Dewpoint

ELECTRONIC CONTROL PROCESSOR

All dryer functions are managed by Quincy's Electronic Control Processor. On Heatless dryers the controller can be set for a standard 10-minute cycle to deliver a -40ºF dewpoint, or a 5-minute Short Cycle that will provide dewpoints from -80ºF to -100ºF.

Heated Purge dryers are programmed for an 8-hour operating cycle. A manual test mode is provided to allow the operator to quickly step the dryer through a complete cycle. The LCD Information Center displays tower sequence, timing cycle, function alarms, and optional equipment operation. The integral LED Sequence Annunciator visually indicates which tower is on-line drying, and whether the off-line regenerating tower is purging, heating, repressurizing or cooling. The information center also displays the function of the optional demand control and failure to shift, high humidity and low pressure alarms.

Blower Purge dryers are programmed for an 8-hour operating cycle. Dryer operation and all control functions are managed by an on board PLC programmed for optimum dryer performance. Optional Sequence Annunciator lights are available.

Inlet Temp °F	100	95	90	85	80	75	70
Factor	1.0	.87	.75	.65	.55	.47	.40

Effect of Temperature on Moisture Load

Probe

OMNIPOINT DIGITAL DEMAND CONTROL

Quincy's OmniPoint Digital Demand Control option significantly reduces energy consumption by automatically regulating purge in response to actual moisture load. Inlet temperature, pressure flow, and relative humidity determine moisture load. These conditions change throughout the day and almost never combine in a manner that would produce maximum moisture loads. For example, a dryer operating 20ºF cooler than design point would have to deal with only 50% of its design moisture loading. Normal dryer controls fix the cycle for worst case moisture loading. Because loads and conditions fluctuate throughout the day, fixed cycle operation wastes energy by regeneration more often than is necessary.

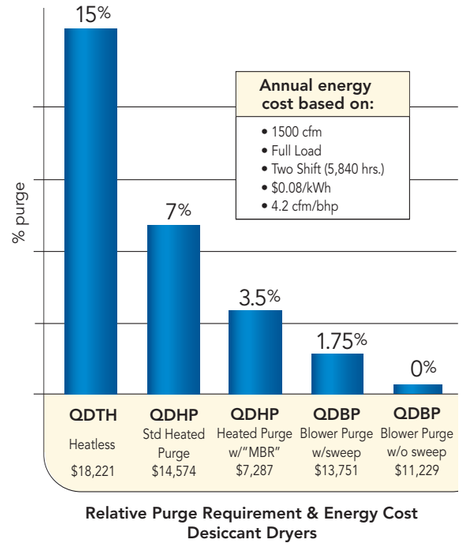
Quincy's OmniPoint Digital Demand Control delays regeneration until the total design saturation point is achieved. A sensor samples moisture load and signals the controller to adjust the purge cycle. The sensor is protected from normal wear and tear by a rugged stainless-steel enclosure and sintered metal guard. Calibration data is stored directly in the sensor's memory.

The instrument automatically compensates for fluctuating ambient temperatures. Dry contacts for remote monitoring of high humidity and failure to switch alarms are included. A scaled 4 to 20mA linear output is also provided as standard equipment. Additional dry contacts and RS232 or RS485 communications port are available. The entire OmniPoint system is certifiable and traceable to the National Institute of Standards and Technology. OmniPoint Digital Demand Control can provide annual energy savings as high as $6,700 on 1000 cfm heated purge dryers and up to $10,000 on 1000 cfm heatless dryers. OmniPoint Digital Demand Control reduces cycling frequency, resulting in longer desiccant life, longer valve life and less overall maintenance. The panel mounted dewpoint display provides an up-to-the-minute performance readout and the adjustable dewpoint control can save additional energy by allowing for higher dewpoint settings.

DESICCANT AIR DRYERS

MICROBURST REGENERATION FULL LOAD ENERGY SAVER

- Average Purge 3.5%
- 50% Energy Savings
- Fast Payback
- PLC Control
- Full Purge Default Mode
- Digital Dewpoint Readout
- Hour Meters



Relative Purge Requirement & Energy Cost Desiccant Dryers

MICROBURST REGENERATION

The Quincy MicroBurst Regeneration (MBR) system is the only Full Load Energy Saver available for use with Heated Purge desiccant air dryers.

The Quincy MBR cuts purge requirements in half and significantly reduces heater "on" time. When equipped with the Quincy MBR, Quincy Heated Purge dryers use 50% less energy. Assuming an energy cost of $0.08 per kWh, a standard QDHP 1500 running fully loaded for two shifts would cost $14,574 annually for electricity. With the Quincy MBR that cost would be reduced to $7,287. Typical payback is as quick as 5 months, depending on the size of the dryer and local power costs.

The Quincy MBR system combines a series of precisely timed, short "bursts" of heated purge with timed periods of heated purge and dwell to regenerate the off-line tower. The microburst rapidly depressurizes the regenerating tower. A short period of low pressure heated purge follows the microburst. The tower is then refilled with heated purge and held until the next microburst release. The heated microbursts and rapid depressurization quickly desorb moisture that had adhered to the surface of the desiccant during the drying cycle. The "Burst/Purge/Dwell/Burst" sequence completely regenerates the off-line tower while using only half as much purge as a standard system. The Quincy MBR makes Quincy's QDHP the best overall value for most mid to large flow installations.

All Quincy MBR functions are managed by a dedicated PLC. If for any reason the system should detect a deteriorating dewpoint, the PLC will shift to the standard constant purge mode until full performance recovery has been achieved. When the system senses full recovery the Quincy MBR will automatically shift back to full operation. The default mode ensures a reliable dewpoint.

The Quincy MBR includes a digital dewpoint monitor and two hour meters to record both dryer and heater run time.

For fluctuating loads, the most comprehensive and energy efficient operation is achieved by combining MicroBurst Regeneration with the Digital Demand Control. This combination includes a third hour meter to record "Demand Hold Time".

PAGES 6-7

The Science of Compressed Air

Q-SORB ENHANCED DESICCANT

- Enhanced Formula
- Improves Adsorption
- Lower Pressure Drop
- More Efficient
- Longer Life
- Higher Crush Strength
- Reduced Channeling
- Less Dusting
- Direct Replacement

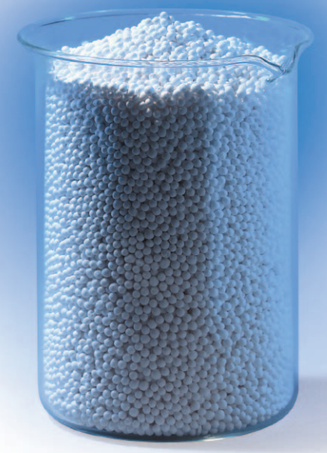
Q-SORB DESICCANT

All Quincy desiccant air dryers are supplied with Quincy Q-Sorb desiccant.

Quincy's exclusive Q-Sorb desiccant is the first significant improvement in activated alumina in many years. It is not available anywhere except Quincy and Quincy associates.

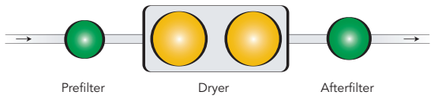
Q-Sorb is an enhanced formula of activated alumina that significantly reduces operating costs. The uniform size of the beads minimize channeling and allow more efficient use of the entire tower area. Its higher crush strength and low abrasion characteristics reduce desiccant dusting. Reducing desiccant dust results in longer afterfilter element life, longer desiccant life and lower pressure drop. The greater surface area improves adsorption capacity yielding lower dewpoint potential and more consistent performance.

Q-Sorb is a direct replacement for all activated alumina commonly used in desiccant air dryers. It is affordable and will improve the efficiency of any desiccant dryer.

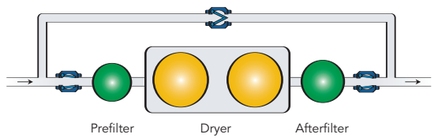


DESICCANT AIR DRYERS

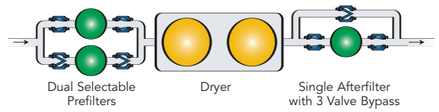
SYSTEM PACKAGES



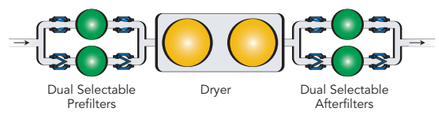
Package A:
Includes Dryer with Mounted Filters



Package B:
Includes Dryer with Mounted Filters and 3 Valve Bypass



Package C:
Includes Dryer with Dual Selectable Prefilters,
Single Afterfilter and 7 Valve Bypass



Package D:
Includes Dryer with Dual Selectable Prefilters,
Dual Selectable Afterfilters and 8 Valves

SYSTEM PACKAGES

Desiccant air dryers are designed to remove water vapor from compressed air. It is very important to protect the desiccant bed from liquid, especially oil. Should the desiccant bed be exposed to oil laden air, the desiccant beads would become coated and would be unable to adsorb any more water vapor. In severe cases of bed contamination, the desiccant must be replaced. A properly sized coalescing prefilter equipped with an element condition indicator and reliable drain must be properly installed upstream of the dryer to protect the desiccant from liquid contamination. A properly sized particulate afterfilter must also be installed immediately downstream of the dryer to protect downstream equipment from abrasive desiccant dust.

Quincy offers several factory filter packages that optimize filter selection and component placement. These factory mounted filter packages ensure total system integrity and reduce installation costs.

Quincy COMPRESSOR
The Science of Compressed Air

PACKAGE FILTRATION

- Coalescer - .008 ppm
  99.97% DOP
  1.25 psid, Dry
- Particulate -3 Micron Absolute
  .25 psid Dry

PACKAGE FILTRATION

Quincy factory packages optimize system performance and reliability by integrating our high efficiency desiccant dryers with selected high performance compressed air coalescers and particulate filters.

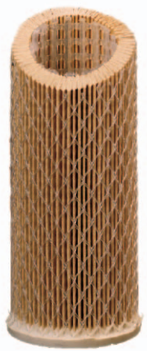
PREFILTER

The factory selected coalescing prefilter is installed at the dryer inlet. The filter protects the dryer from liquid contamination. The standard grade coalescing prefilter includes an electronic condensate drain and element condition indicator. The filter assembly combines a deep bowl housing design with a micro-glass fiber element to remove 99.97% of the liquid contaminates down to .01 micron. This reduces the contaminant level of the compressed air to .008 ppm by weight. Coalescing is a process that uses the principles of Directed Impaction, Interception and Diffusion to remove submicronic liquid contaminants.

Aerosols and mists flow through the micro-glass matrix, come in contact with one another and grow into droplets heavy enough to be affected by gravity. Gravitational settling pulls the droplets to the bottom of the housing where they are removed through the drain valve.

AFTERFILTER

To protect downstream equipment from the harmful effects of desiccant dust, Quincy has selected a high efficiency afterfilter specifically designed to remove particulates from compressed air. The high capacity interceptor element is made of pleated cellulose. The element provides high dirt retention, low pressure drop and is 100% efficient in removing particles 3 micron and larger. The filter is equipped with an element condition indicator and electronic drain.



Aluminum housings are used on prefilters 35 cfm through 1000 cfm and afterfilters 35 cfm through 1250 cfm. Steel housings are used on larger filters. Element condition indicators and electronic drains are standard.

DESICCANT AIR DRYERS

SWITCHING VALVES

STANDARD SWITCHING VALVES

Standard independent switching valves are specifically designed for compressed air service. They are simple, reliable, and time proven. With cast-iron bodies, stainless-steel and brass internal hardware, these non-lubricated, air operated, diaphragm valves are resistant to desiccant dust, require little maintenance and can be serviced in place. For resilience and long life, Heatless dryers use Buna-N seats and seals. To accommodate higher operating temperatures, Heated Purge and Blower Purge dryers use Viton seats and seals.

PREMIUM SWITCHING VALVES

All Quincy QDTH, QDHP and QDBP Desiccant dryers 35 cfm and larger are available with our optional premium switching valves.

These high performance valves carry a Five-Year Warranty. On average, they last 10 times longer than other valves, are more positive requiring less force to open and close, and are dirt resistant. 35 cfm through 250 cfm use premium ball valves and 300 cfm and larger use a non-lubricated, wafer style butterfly valve with integrally mounted actuators.

CORRECTION FACTORS

Inlet Pressure Capacity Correction

Inlet psig	Factors QDTH	QDHP	QDBP
50	0.56	0.56	0.56
60	0.65	0.65	0.65
70	0.74	0.74	0.74
80	0.83	0.83	0.83
90	0.91	0.91	0.91
100	1	1	1
110	1.09	1.09	1.09
120	1.18	1.18	1.18
130	1.27	1.27	1.27
140	1.37	1.37	1.37
150	1.43	1.43	1.43

Inlet Temperature Capacity Correction

Inlet Temp	Factors QDTH	QDHP	QDBP
90	1.35	1.35	1.35
95	1.16	1.16	1.16
100	1	1	1
105	1	0.85	0.85
110	1	0.74	0.74
115	1	0.64	0.64
120	1	0.55	0.55

Example
Capacity Correction for a 1000 cfm Heated Purge Dryer
Operating at 120 psig & 110°F

Corrected Capacity = (Rated Capacity) X (Pressure Correction) X (Temperature Correction)
1000 X 1.18 X .74
873 scfm

OR

Dryer Required = (Rated Capacity) / (Pressure Correction) / (Temperature Correction)
1000 / 1.18 / .74
1145 scfm

Quincy COMPRESSOR
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SPECIFICATIONS & ENGINEERING DATA

Heatless

Model	cfm @ 100 psig	m3/hr 7 bar	Purge cfm	Design psig at 450°F	Power Supply Nema 4	Q-Sorb Lbs/Tower	Dimensions *Basic Dryer L In.	W In.	H In.	*Approx Wt. lb.	Air Conn. In/Out
QDTH 35	35	60	5.25	150	115/1/60	23	35	20	68	400	3/4" NPT
QDTH 50	50	85	7.5	150	115/1/60	33	35	20	66	425	3/4" NPT
QDTH 75	75	127	11.25	150	115/1/60	50	42	20	63	450	1" NPT
QDTH 100	100	170	15	150	115/1/60	65	42	22	77	545	1" NPT
QDTH 150	150	255	22.5	150	115/1/60	100	46	24	79	590	1 1/2" NPT
QDTH 200	200	340	30	150	115/1/60	130	48	26	75	790	1 1/2" NPT
QDTH 250	250	425	37.5	150	115/1/60	165	56	28	82	850	1 1/2" NPT
QDTH 300	300	510	45	150	115/1/60	195	56	28	99	1030	2" NPT
QDTH 350	350	595	52.5	150	115/1/60	230	60	30	85	1225	2" NPT
QDTH 400	400	680	60	150	115/1/60	265	64	25	85	1300	2" NPT
QDTH 500	500	850	75	150	115/1/60	340	64	34	85	1500	2" NPT
QDTH 650	650	1105	97.5	150	115/1/60	410	68	42	100	2020	2" NPT
QDTH 750	750	1274	112.5	150	115/1/60	460	80	37	100	2400	2 1/2" FLG
QDTH 1000	1000	1699	150	150	115/1/60	725	85	44	92	2680	2 1/2" FLG
QDTH 1250	1250	2124	187.5	150	115/1/60	850	92	46	108	3240	3" FLG
QDTH 1500	1500	2549	225	150	115/1/60	1020	92	54	91	3780	3" FLG
QDTH 1800	1800	3059	270	150	115/1/60	1150	103	50	109	4750	4" FLG
QDTH 2100	2100	3568	315	150	115/1/60	1375	110	60	99	5600	4" FLG
QDTH 2600	2600	4418	390	150	115/1/60	1650	112	60	113	6800	4" FLG
QDTH 3100	3100	5268	465	150	115/1/60	1950	114	60	138	7600	6" FLG

Heated Purge

Model	cfm @ 100 psig	m3/hr 7 bar	Design psig at 450°F	Nominal Purge cfm	Reduced Purge MicroBurst Regeneration	Heater Kw	Power Supply Nema 4	Q-Sorb Lbs./Tower	Dimensions *Basic Dryer L In.	W In.	H In.	*Approx Wt. lb.	Air In/Out
QDHP 35	35	60	150	2	1.2	0.75	460/3/60	24	34	20	68	270	3/4" NPT
QDHP 50	50	85	150	4	1.8	0.75	460/3/60	35	43	22	66	300	3/4" NPT
QDHP 75	75	127	150	5	2.6	1.25	460/3/60	54	43	24	64	460	1" NPT
QDHP 100	100	170	150	7	3.5	1.25	460/3/60	65	43	24	78	540	1" NPT
QDHP 150	150	255	150	11	5.3	2	460/3/60	105	46	28	80	700	1 1/2" NPT
QDHP 200	200	340	150	14	7.0	2.5	115/1/60	140	53	29	76	880	1 1/2" NPT
QDHP 250	250	425	150	18	8.8	3	115/1/60	175	53	29	88	1030	1 1/2" NPT
QDHP 300	300	510	150	21	10.5	3	115/1/60	215	56	32	83	1360	2" NPT
QDHP 350	350	595	150	25	12.3	4	115/1/60	250	56	32	93	1510	2" NPT
QDHP 400	400	680	150	28	14.0	5	115/1/60	285	60	36	86	1630	2" NPT
QDHP 500	500	850	150	35	17.5	6	115/1/60	355	64	37	85	1960	2" NPT
QDHP 650	650	1105	150	46	22.8	7.5	115/1/60	450	68	42	100	2300	2" NPT
QDHP 750	750	1274	150	53	26.3	9	115/1/60	520	82	46	96	2670	2 1/2" FLG
QDHP 1000	1000	1699	150	70	35.0	10.5	115/1/60	725	86	47	92	3200	2 1/2" FLG
QDHP 1250	1250	2124	150	88	43.8	15	115/1/60	890	87	48	108	3600	3" FLG
QDHP 1500	1500	2549	150	105	52.5	18	115/1/60	1050	93	58	91	4600	3" FLG
QDHP 1800	1800	3059	150	126	63.0	24	115/1/60	1250	104	62	109	5000	4" FLG
QDHP 2100	2100	3568	150	147	73.5	24	115/1/60	1500	109	60	100	6000	4" FLG
QDHP 2600	2600	4418	150	182	91.0	30	115/1/60	1800	111	60	114	6800	4" FLG
QDHP 3100	3100	5268	150	217	108.5	35	115/1/60	2200	120	74	138	9230	6" FLG

Blower Purge

Model	cfm @ 100 psig	m3/hr 7 bar	Nominal Sweep cfm	Design psig at 450°F	Blower hp	Heater Kw	Power Supply Nema 4	Q-Sorb Lbs./Tower	Dimensions *Basic Dryer L In.	W In.	H In.	*Approx Wt. lb.	Air In/Out
QDBP 350	350	594.7	5	150	2.5	9	460/3/60	280	63	46	86	1525	2" NPT
QDBP 400	400	679.7	6	150	2.5	9	460/3/60	300	65	48	88	1150	2" NPT
QDBP 500	500	849.6	8	150	5	12.5	460/3/60	375	74	50	101	2500	2" NPT
QDBP 650	650	1104.5	10	150	5	15	460/3/60	490	74	46	101	3450	2" NPT
QDBP 750	750	1274.4	11	150	5	18	460/3/60	570	80	56	96	3850	2 1/2" FLG
QDBP 1000	1000	1699.2	15	150	7.5	24	460/3/60	750	90	66	108	4450	2 1/2" FLG
QDBP 1250	1250	2124	19	150	7.5	27	460/3/60	950	97	68	96	5200	3" FLG
QDBP 1500	1500	2548.8	23	150	10	30	460/3/60	1125	97	68	110	5525	3" FLG
QDBP 1800	1800	3058.6	27	150	10	40	460/3/60	1350	112	82	108	6700	4" FLG
QDBP 2100	2100	3568	32	150	15	50	460/3/60	1575	142	72	130	9100	4" FLG
QDBP 2600	2600	4418	39	150	15	65	460/3/60	1950	160	86	114	10600	4" FLG
QDBP 3100	3100	5268	47	150	20	80	460/3/60	2325	170	90	126	11850	6" FLG

* Note: Dimensions and shipping weights are approximate and are for basic dryers. Dimensions and weights will vary with optional equipment.
Basic dryer pressure drop 2 to 3 psid.
Package pressure with new/wet filters 5 to 7 psid