

Gardner Denver

EXTERNALLY HEATED DESICCANT AIR DRYERS

DHP Series



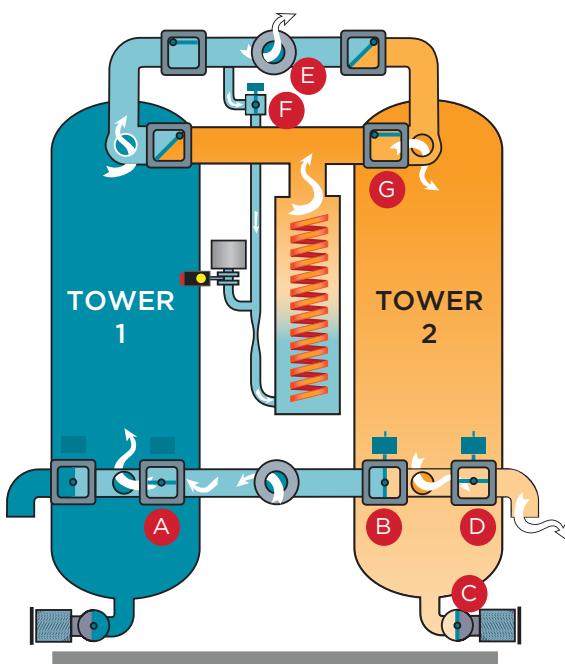
Critical Performance

Gardner Denver DHP

Gardner Denver DHP externally heated series is designed for applications that were previously forced to accept a -40°F pressure dew point when simple protection against seasonal freezing is the issue. The standard design delivers ISO 8573.1 dew points between Class 2 and Class 3 automatically. Class 2 (-40°) dew points protect against freezing during low ambient conditions and class 3 (-4°F) dew points keep your air system bone dry during the heat of summer. Applications that require class 2 (-40°) dew points year round simply need to select controller A or B.

ISO 8573.1 AIR QUALITY STANDARDS

QUALITY CLASSES	SOLIDS MAX. PARTICLE SIZE IN MICRONS	MOISTURE DEW POINT		OIL LIQUID & GAS	
		°C	°F	MG/M ³	PPMW/W
0	as specified	as specified		as specified	
1	0.1	-70	-94	0.01	0.008
2	1	-40	-40	0.1	0.08
3	5	-20	-4	1	0.8
4	15	3	38	5	4
5	40	7	45	>5	>4
6	—	10	50	—	—



Shown with optional Free-Air Supercharger

Functionality

Moist, filtered compressed air enters the pressurized on-line desiccant filled drying Tower 1 through the shiftmatic valve (A). Up-flow drying enables the desiccant to strip the air stream of moisture. Clean, dry compressed air exits through the shiftmatic valve (B) to feed the air system. Tower 2 (when in regeneration mode) depressurizes to atmosphere through muffler (C) when valve (D) opens. A portion of dry compressed air (purge air) is diverted before exiting (B) and passes through off-line Tower 2 and exits at valve (D) to desorb the moisture from the desiccant. Once desorbed, valve (D) closes and Tower 2 is repressurized. At tower shift-over, valve (E) will open, causing the shiftmatic valve (A&B) to shift. Tower 2 will be placed on-line to dry the bed. Operations will switch and Tower 1 will be regenerated.

Whereas the standard design operates on a fixed time interval basis, Energy Management System (EMS) versions manage the drying and regeneration cycles with precision for systems with variable air demands. The on-line tower will continue to dry the air stream until the “moisture front” is detected. Only then will the switchover sequence begin. In regeneration mode the Energy Management System is engaged and a portion of dry purge air exits valve to be injected into the Y-axis of the Energy Management System. The purge draws ambient air into the X-axis to desorb the desiccant at better than 1:1 amplification. Sensors detect the retreat of the moisture front, disengages the Energy Management System, eliminates the purge air usage and, initiates the repressurization cycle. The dry, pressurized off-line Tower will remain ready and isolated until sensors detect that the on-line drying Tower is saturated. Then, the switchover will occur and the process will repeat.



The **DHP Series** provides **reliable** performance to meet your operation **demands.**

Take Control

Standard Controls:

Standard regenerative dryer operates with one tower on drying the incoming air, while tower two is recovering. The standard is designed to deliver ISO 8573.1 dew points between Class 2 and Class 3 automatically. Class 2 (-40°F) dew points protect against freezing during low ambient conditions and Class 3 (-4°F) dew points keep your air system bone dry during the heat of summer.

A Controls:

Energy Management System (EMS), monitors humidity and temperature for maximum energy savings. Sensor alarms for “over range” and “under range” conditions. High humidity alarm, Logic controls the A3 purge technology to synchronize the engagement cycles of the EMS to mirror plant air demands. Controller A is precision engineered with venture amplifier that uses ambient air to boost the bed regeneration flow capacity. Consistent -40°F dew point.

B Controls:

Includes all of the features of the A controller plus, precision dew point transmitter, dew point displayed by vacuum fluorescent text.

	CONTROLLER MODEL		
	STANDARD	OPTION A	OPTION B
PRESSURE DEW POINT			
ISO CLASS 3 / -4°F (-20°C)	G	—	—
ISO CLASS 2 / -40°F (-40°C)	S	G	G
FREE-AIR SUPER-CHARGER			
VENTURI BLOWER	—	X	X
EMS CONTROL			
AUTOMATIC ENERGY SAVINGS	—	X	X
VACUUM FLUORESCENT TEXT			
DIGITAL DEW POINT MONITORING	—	—	X
2 LINE, 16 CHARACTERS (HIGH VISIBILITY IN DARKNESS OR SUNLIGHT)	X	X	X
LANGUAGES			
ENGLISH, SPANISH, FRENCH	X	X	X
POWER RECOVERY			
AUTOMATIC RESTART AFTER POWER LOSS	X	X	X
REMOTE INDICATION OF ALARM	X	X	X
DRY CONTACTS			
POWER ON	X	X	X
HEATER ON	X	X	X
OVERLAY WITH CIRCUIT GRAPHICS & LED INDICATORS ALARM LEDS WITH TEXT DISPLAY			
TOWER STATUS (DRYING SWITCHOVER HEAT, COOL, ETC.)	X	X	X
TOWER SWITCH SWITCHOVER, FAILURE (LOW HEATER TEMP/HIGH HEATER TEMP)	X	X	X
SENSOR OVER-RANGE AND UNDER-RANGE (TEMP. HUMIDITY DEW POINT)	X	X	X
SERVICE REMINDER	X	X	X

DHP Options

Tower Insulation

Provides insulation to the vessel shell and hot piping insulated from heater to vessels.

Mounted Filter Packages

First option includes a mounted Grade E pre-filter and FHT afterfilter with drain valves.

Second option includes mounted Grade E pre-filter and FHT afterfilter with external drain (models 900 3200), with a 3-way by-pass piping.



Specifications

DHP 300-3,200 SCFM

MODEL	INLET FLOW @100 PSIG 100° F SCFM	HEATER RATED OUTPUT KW	AVERAGE KW STANDARD CONTROLS	DIMENSIONS INCHES			SHIPPING WEIGHT LBS**	PREFILTER CONNECTIONS INCHES	FIL PREFILTER GRADE "E"	FHT AFTERFILTER	REPLACEMENT DESICCANT (LBS)
				H	W	D					
DHP 300	300	4.5	2.00	98	48	59	1400	1½" NPT	FIL24E21DG	FHT400	420
DHP 400	400	6.0	2.67	105	53	67	1800	1½" NPT	FIL26E23DG	FHT400	708
DHP 500	500	6.0	3.34	105	53	70	1800	2" NPT	FIL28E25DG	FHT600	708
DHP 600	600	8.0	4.01	108	55	71	2000	2" NPT	FIL30E25DG	FHT600	906
DHP 750	750	10.0	5.01	114	60	87	2400	3" FLG	FIL30E25DG	FHT1200	1180
DHP 900	900	12.0	6.01	114	60	87	2400	3" FLG	FIL34E27DG	FHT1200	1180
DHP 1050	1050	14.0	7.01	113	64	84	2900	3" FLG	FIL36E27DG	FHT1200	1420
DHP 1300	1300	16.0	8.68	118	66	85	3400	3" FLG	FIL38E27DG	FHT1800	1846
DHP 1500	1500	19.0	10.00	116	80	97	5100	3" FLG	FIL38E27DG	FHT1800	2518
DHP 1800	1800	23.0	12.00	116	80	97	5100	3" FLG	FIL38E27DG	FHT1800	2518
DHP 2200	2200	27.5	14.70	124	85	110	7800	4" FLG	FIL40E29DG	FHT2400	3734
DHP 2600	2600	32.0	17.40	124	85	110	7800	4" FLG	FIL42E29DG	FHT3000	3734
DHP 3200	3200	39.0	21.40	121	97	126	9000	6" FLG	FIL44E31DG	FHT4800	4754

Performance data per CAGI Standard ADF 200 for Dual-Stage Regenerative Desiccant Compressed Air Dryer. Rating conditions are 100° F (37.8° C) inlet temperature, 100 psig (6.9 bar) inlet pressure, 100% relative humidity, 100° F (37.8° C) ambient temperature, and 5 psi (0.35 bar) pressure drop. *Submit "request to quote" form for larger model quotes. **Weight includes .25 inch alumina bed support

TABLE 2

PRESSURE PSIG (KGF/CM²)	INLET TEMPERATURE °F (°C)						
	60 (15.6)	70 (21.1)	80 (26.7)	90 (32.2)	100 (37.8)	110 (43.3)	120 (48.9)
60 (4.2)	1.03	1.01	0.99	0.80	0.58	0.43	0.32
70 (4.9)	1.10	1.08	1.07	0.94	0.68	0.50	0.37
80 (5.6)	1.17	1.15	1.14	1.08	0.79	0.58	0.43
90 (6.3)	1.24	1.22	1.20	1.18	0.89	0.66	0.49
100 (7.0)	1.30	1.28	1.26	1.24	1.00	0.74	0.55
110 (7.7)	1.36	1.34	1.32	1.30	1.11	0.82	0.61
120 (8.4)	1.42	1.40	1.38	1.36	1.22	0.90	0.67
130 (9.1)	1.48	1.46	1.44	1.42	1.33	0.99	0.74
140 (9.8)	1.53	1.51	1.49	1.47	1.44	1.07	0.80
150 (10.6)	1.58	1.56	1.54	1.52	1.50	1.16	0.87

IPGG rated electrical enclosure
 Controllers - NEMA 4/4x

Operating Parameters

- Maximum Working Pressure 150 psig
- Minimum Operating Pressure 60 psig
- Maximum Inlet Air Temperature 120° F
- Minimum Inlet Air Temperature 40° F
- Minimum Ambient Temperature 40° F
- Maximum Ambient Temperature 120° F

Inlet Flow

Inlet flow capacities shown in the Specifications Table have been established at an inlet pressure of 100 psig (7 kgf/cm²) and a saturated inlet temperature of 100° F (38° C). To determine maximum inlet flow at other conditions, multiply the inlet flow from the table by the multiplier from Table 2 that corresponds to your operating conditions.

Dew Point

Outlet pressure dew point at rated inlet conditions of 100 psig (7 kgf/cm²) and 100° F (38° C) saturated. Dew point varies slightly at other conditions.

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