

Gardner Denver

EXTERNALLY HEATED DESICCANT AIR DRYERS

DHP Series



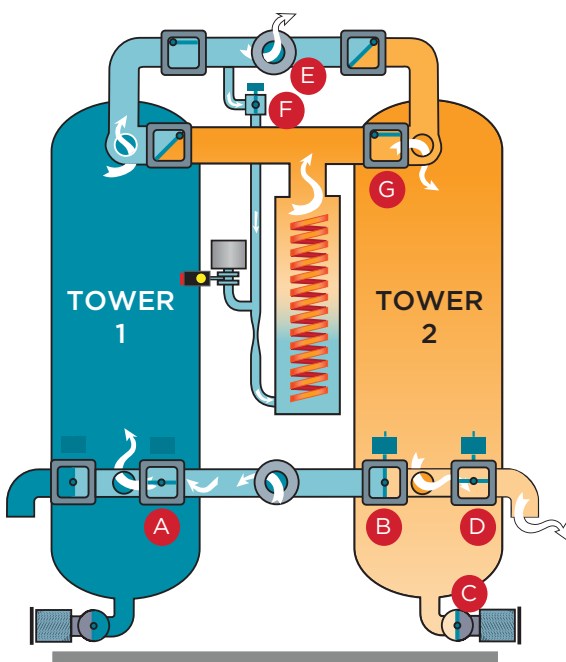
Critical Performance

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 | 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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