

Gardner
Denver

AIR TREATMENT | BREATHING AIR PURIFIERS

DBS Series



Optimal Performance and Operation

The DBS series breathing air purifier from Gardner Denver will provide the clean, dry air necessary to keep your workers safe. It is designed to be used as an addition to your plant air source by converting compressed air to breathable air for those individuals working in and around a hazardous process. At the core of the process is a heatless regenerative desiccant dryer with a fixed 10-minute dryer cycle that will deliver consistent ISO 8573-1: 2010 Class 2 outlet pressure dew point quality air.

Gardner Denver's breathing air purifiers can handle flow capacities from 15 to 940 scfm (25 to 1597nm³/h) and will remove contaminants through a six stage filtration process in order to meet OSHA, CGA, ANSI and CSA breathing air standards. The DBS series breathing air purifier from Gardner Denver is the complete solution for your breathing air treatment processes.

Six Stage Filtration

STAGE 1

General purpose filter that removes solid and liquid contaminants down to 1.0 micron.

STAGE 2

High Efficiency oil removal filter that captures liquid aerosols and sub-micronic particles down to 0.01 micron.

STAGE 3

Pressure-swing regenerative desiccant dryer that removes water vapor to ensure the effectiveness of the catalyst bed.

STAGE 4

Dried air travels through a catalytic converter reducing CO concentrations by converting CO to CO₂.

STAGE 5

Particulate removal filter collects contaminants 1.0 micron and larger from the purified air stream.

STAGE 6

Activated carbon filter removes oil vapor, trace odors and other gases normally absorbable by activated carbon.



Features and Options

Filtration & Monitoring

- Pre-filtration removes solids and oils
- After-filters collect remaining particles and adsorb vapor
- CO catalyst converter
- Air sample ports for optional analyzer installation
- Moisture Indicator by visual change of color

Pressure Gauges

- Left / right tower
- Inlet / outlet purifier
- Purge pressure

Options

- NEMA 7 electrical rating
- Copper, brass or stainless steel instrument tubing and fittings
- SSPC-SP10 sandblast & epoxy paint
- Breathing air analyzers

Standard Controller

- NEMA 4 / 4X with critical LED indicators
- Soft on / off switch with two power recovery modes
- Switching failure alarms
- Adjustable service indications
- Tower / valve status LEDs
- Voltage free common alarm contacts
- RS-232 communications port

Advanced Optional Controls

- Vacuum fluorescent text display
- Automatic SensaTherm energy savings
- Calibration-free temperatures sensors
- High inlet temperature & low inlet pressure alarms



Purifier shown with optional
Carbon Monoxide Monitor



Potential Environments Requiring DBS Breathing Air

Petrochemical

Oil and Gas Industries select DBS breathing air purifiers to ensure the protection of their employees from the inhalation of hazardous fumes, gases and vapors.

Asbestos Abatement

Asbestos was a commonly used insulation material. DBS breathing air purifiers provide suitable breathing air to workers in asbestos abatement applications.

Paint Spray

Automotive body shops utilize atomized paint to spray vehicles and employees are exposed to airborne paint emissions. The use of a DBS series purifier ensures protection throughout the process.

Protective Coatings

Various manufacturing facilities utilize compressed air to apply protective coatings. When breathing air is supplied by DBS, airborne compounds will not adversely affect the workers.

Confined Spaces

Industries such as: Mining, Vats, Tanks, Boilers, Ships' Hulls and Grain Storage are environments with stale, contaminated air that is unsuitable for breathing. Quality of breathing is critical for these industries and DBS breathing air provides the solution.



Safety in the Workplace

Maintain Health and Safety Requirements

The DBS Series from Gardner Denver delivers breathing air quality in accordance to international standards:

OSHA: CFR1910.134 (*Occupational Safety & Health Association*)

CSA: Z180.1-00 (*Canadian Standards Association*)

CGA: G-7 (*Compressed Gas Association*)

ANSI: Z88.2-1080 (*American National Standards Institute*)

The performance of the DBS series breathing air system is subject to excessive intake of air contaminants and it is important that breathing air systems are routinely monitored for proper operation. The DBS series can be monitored using the following air analyzing options:

Recommended Option: Carbon Monoxide (CO) Monitor

- Digital readout of CO concentration
- Visual and audible alarm
- Adjustable high and low alarms with indication
- Contacts for remote alarm
- Push-to-test button
- Alarm silence switch
- Simple calibration
- Multiple alarm capabilities
 - CO and oxygen
 - CO and dew point
 - CO, oxygen and dew point



Quality Breathing Air

PURIFICATION CAPABILITIES

| CONTAMINANTS MG/M ³ | MAXIMUM ALLOWABLE CONCENTRATION | | PURIFIER OUTLET RATED CONDITIONS |
|-----------------------------------|---------------------------------|--------------------|-------------------------------------|
| | OSHA ¹ | CSA | |
| Carbon Monoxide (CO) | 10 | 5 | 95% Conversion ⁵ |
| Carbon Dioxide (CO ₂) | 1000 | 500 | ² |
| Oil (Condensed Hydrocarbons) | 5 | 1 | 0 |
| Oil Vapor (Gaseous Hydrocarbons) | N/A | N/A | <.02 ³ |
| Odor | Lack of noticeable odor | No pronounced odor | None ⁴ |

¹ OSHA Standard references CGA pamphlet G-71, Grade D and is generally consistent with those published by ANSI

² CO is converted to CO₂ by the purifier and added to the concentration of CO₂ already present (normal atmospheric air contains 314 mg/m³ of CO₂). Although some CO₂ is adsorbed in the desiccant beds, high concentrations of CO in the system and/or high concentrations of CO₂ at the compressor intake could result in exceeding allowable CO₂ limits.

³ Will remove only those gaseous hydrocarbons normally adsorbed by activated carbon. Outlet concentration is expressed as methane equivalent - Activated carbon will not remove methane.

⁴ Will remove only those odors normally adsorbed by activated carbon.

⁵ 95% conversion example (200 mg/m³ @ inlet = 10 mg/m³ @ outlet).

CAPACITY CORRECTION FACTORS

| INLET PRESSURE | | 100° F | 105° F | 110° F | 115° F | 120° F |
|----------------|------|--------|--------|--------|--------|--------|
| PSIG | BAR | 38° C | 40° C | 43° C | 46° C | 49° C |
| 60 | 4.2 | 0.65 | 0.64 | 0.62 | 0.6 | 0.58 |
| 70 | 4.9 | 0.74 | 0.73 | 0.71 | 0.69 | 0.66 |
| 80 | 5.6 | 0.83 | 0.81 | 0.8 | 0.77 | 0.74 |
| 90 | 6.3 | 0.91 | 0.89 | 0.87 | 0.85 | 0.81 |
| 100 | 7.0 | 1.00 | 0.98 | 0.96 | 0.93 | 0.89 |
| 110 | 7.7 | 1.04 | 1.02 | 1.00 | 0.97 | 0.93 |
| 120 | 8.4 | 1.08 | 1.06 | 1.04 | 1.00 | 0.96 |
| 130 | 9.1 | 1.12 | 1.10 | 1.08 | 1.04 | 1.00 |
| 140 | 9.8 | 1.16 | 1.14 | 1.11 | 1.08 | 1.03 |
| 150 | 10.5 | 1.20 | 1.18 | 1.15 | 1.12 | 1.07 |

To adjust DBS capacity for conditions other than rated, use the correction factors (multipliers) for inlet air temperature and pressure shown in the capacity correction factors table.

Example: What is the capacity of a 205 scfm (348 nm³/h) model when the compressed air at the inlet is 130 psig (9 bar) and 110° F (43° C)?

Answer: 205 scfm (348 nm³/h) (rated flow from product specifications table) x 1.08 (correction factor from inlet air temperature and pressure) = 221 scfm (375 nm³/h).

DBS SERIES SPECIFICATIONS

| MODEL | INLET FLOW ¹ | | OUTLET FLOW ¹ | | VOLTAGES V/PH/HZ | IN / OUT CONNECTION IN | DIMENSIONS | | | | | | WEIGHT | |
|---------|-------------------------|--------------------|--------------------------|--------------------|--------------------------------------|------------------------------|------------|-------|----|------|----|------|--------|------|
| | SCFM | NM ³ /H | SCFM | NM ³ /H | | | H | | W | | D | | LBS | KG |
| | | | | | | | IN | MM | IN | MM | IN | MM | | |
| DBS 15 | 18 | 31 | 15 | 26 | | 0.50 | 49 | 1244 | 35 | 889 | 35 | 889 | 440 | 200 |
| DBS 25 | 30 | 51 | 25 | 42 | | 0.50 | 49 | 1244 | 35 | 889 | 35 | 889 | 450 | 204 |
| DBS 35 | 42 | 71 | 35 | 59 | | 0.75 | 49 | 1244 | 35 | 889 | 35 | 889 | 455 | 206 |
| DBS 50 | 60 | 102 | 50 | 85 | | 1.00 | 64 | 1626 | 35 | 889 | 35 | 889 | 560 | 254 |
| DBS 75 | 90 | 15 | 75 | 127 | | 1.00 | 79 | 2006 | 37 | 940 | 35 | 889 | 700 | 318 |
| DBS 95 | 114 | 194 | 95 | 161 | | 1.00 | 57 | 1448 | 50 | 1270 | 41 | 1041 | 820 | 372 |
| DBS 135 | 162 | 275 | 135 | 229 | 85-264/1/47-63 AC 11.5-28 V DC | 1.00 | 57 | 1448 | 50 | 1270 | 41 | 1041 | 820 | 372 |
| DBS 205 | 246 | 418 | 205 | 348 | | 1.50 | 75 | 1905 | 56 | 1422 | 43 | 1092 | 1190 | 540 |
| DBS 305 | 366 | 622 | 305 | 518 | | 2.00 | 65 | 1651 | 62 | 1575 | 51 | 1295 | 1405 | 637 |
| DBS 375 | 450 | 765 | 375 | 637 | | 2.00 | 73 | 1854 | 66 | 1676 | 51 | 1295 | 1560 | 708 |
| DBS 490 | 590 | 1002 | 490 | 833 | | 2.00 | 103 | 22612 | 55 | 1383 | 70 | 1765 | 1650 | 748 |
| DBS 625 | 750 | 1274 | 625 | 1062 | | 2.00 | 107 | 2718 | 63 | 1580 | 75 | 1905 | 2800 | 1270 |
| DBS 775 | 930 | 1580 | 775 | 1317 | | 3.00 | 112 | 2841 | 62 | 1572 | 85 | 2153 | 3275 | 1485 |
| DBS 940 | 1130 | 1920 | 940 | 1597 | | 3.00 | 115 | 2921 | 66 | 1673 | 82 | 2065 | 3750 | 1701 |

¹ Flow Capacity rated at CAGI conditions: 100 psig (7.0 bar) and 100° F (38° C) saturated inlet

Excessive contamination of intake air to the compressor will adversely affect performance of the purifier. DBS Breathing Air Purifiers remove moisture, solid particles, oil aerosols and mists, carbon monoxide and hydrocarbon vapors commonly present in compressed air. Once filtered through the DBS Series purifier, the compressed air can be safely used by devices such as: masks, hoods and helmets.



The leader in every market we serve
by continuously improving all business processes
with a focus on innovation and velocity

**Gardner
Denver**[®]


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