

**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 1597m<sup>3</sup>/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 CO<sub>2</sub>.

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

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

<sup>2</sup> CO is converted to CO<sub>2</sub> by the purifier and added to the concentration of CO<sub>2</sub> already present (normal atmospheric air contains 314 mg/m<sup>3</sup> of CO<sub>2</sub>). Although some CO<sub>2</sub> is adsorbed in the desiccant beds, high concentrations of CO in the system and/or high concentrations of CO<sub>2</sub> at the compressor intake could result in exceeding allowable CO<sub>2</sub> limits.

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

<sup>4</sup> Will remove only those odors normally adsorbed by activated carbon.

<sup>5</sup> 95% conversion example (200 mg/m<sup>3</sup> @ inlet = 10 mg/m<sup>3</sup> @ 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 nm<sup>3</sup>/h) model when the compressed air at the inlet is 130 psig (9 bar) and 110° F (43° C)?

**Answer:** 205 scfm (348 nm<sup>3</sup>/h) (rated flow from product specifications table) x 1.08 (correction factor from inlet air temperature and pressure) = 221 scfm (375 nm<sup>3</sup>/h).

## DBS SERIES SPECIFICATIONS

MODEL	INLET FLOW <sup>1</sup>		OUTLET FLOW <sup>1</sup>		VOLTAGES V/PH/HZ	IN / OUT CONNECTION IN	DIMENSIONS						WEIGHT	
	SCFM	NM <sup>3</sup> /H	SCFM	NM <sup>3</sup> /H			H		W		D		LBS	KG
DBS 15	18	31	15	26	85-264/1/47-63 AC 11.5-28 V DC	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		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

<sup>1</sup> 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.



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by continuously improving all business processes  
with a focus on innovation and velocity

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Denver**<sup>®</sup>


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