



Respiratory Safety

The Intrinsically Safe Breather Box® Portable Grade-D Breathing Air Filtration

Issue: Breathing air quality standards for Type C/CE airline respirators have been developed by ANSI/Compressed Gas Association (CGA) G-7.1 - 1989, and adopted by OSHA under their respiratory standard 29 CFR, 1910.134. The standard requires airline respirator wearers must be supplied with Grade-D air quality while working in a hazardous or potentially hazardous location.

Application: The Breather Box® provides portable Grade-D filtered air to operate airline respirators. The Intrinsically Safe Breather Box® has different models to serve 1 to 8 workers. Connected to a mobile or plant compressor, the Breather Box® provides Grade-D air to operate any airline respirator. **The Intrinsically Safe Breather Box® is designed for use in hazardous locations.**

Recommendation: The Breather Box® is a portable Grade-D filtration system designed to provide breathing air for a specific number of workers. Air Systems' portable and fixed breathing air filtration systems meet or exceed OSHA 1910.134, Canadian Z180.1 Breathing Air Standards and British Standard BS-EN 12021:1999 "Respiratory Protective Devices" for Grade-D air. Sizing the filtration system, determining the size Breather Box® or panel to order, is based on the flow (CFM) requirements of the respirators being worn and number of workers.

Should the work environment be a hazardous location as defined by the National Electrical Code (NEC), an Intrinsically Safe Breather Box® Model should be used.



BB50-COIS
Intrinsically Safe Breather Box®



Air quality must meet or exceed the following requirements as stated in ANSI/Compressed Gas Association (CGA) G-7.1 - 1989, and adopted by OSHA under their respiratory standard 29 CFR, 1910.134.

Air Quality Must Meet the Following Requirements:

- Oxygen: 19.5%-23.5% (20%-22% Canada)
- Hydrocarbon (condensed oil): 5 mg/m³ maximum (<1 mg/m³ in Canada)
- Carbon Monoxide (CO): 10 ppm maximum (5 ppm in Canada)
- Carbon Dioxide (CO₂): 1000 ppm maximum (500 ppm in Canada)
- Odor: No noticeable odors, tastes, or smells
- Water Content:
 - High pressure cylinder air** must have a dew point of at least -50°F (-45.6°C) at 1 atmosphere (14.7 psi).
 - Low pressure breathing air** must have a dew point of at least 10°F (5.56°C) below the ambient temperature at 1 atmosphere (14.7 psi)
 - Canada:** 5°C below lowest temperature, 27 ppm maximum water vapor
- Total Volatile Hydrocarbons (Canada): 5 ppm maximum

Federal OSHA refers to the National Electrical Code (NEC) as the "Bible" for hazardous locations

Class I (NEC-500-5)

Those areas in which flammable gasses or vapors may be present in the air in sufficient quantities to be explosive or ignitable.

Typical Class I Locations

- Petroleum refineries, gasoline storage and dispensing areas
- Industrial firms that use flammable liquids in dip tanks for parts cleaning or other operations
- Petrochemical companies that manufacture chemicals from gas or oil
- Dry cleaning plants where vapors from cleaning fluids can be present
- Companies that have spraying areas where they coat product with paint or plastics
- Aircraft hangers and fuel servicing areas
- Utility gas plants and operations involving storage and handling or liquefied petroleum gas or natural gas

Division I (NEC-800-5, 6, 7)

Division 1 tells us whether the hazard is present continuously.

All Class 1 hazards fall under Groups A, B, C, or D where Group A is the most volatile (Acetylene) and Group D would be the least flammable (Propane). All Class II hazards fall under Groups E, F, and G where Group E is conductive and explosive metal dust, Group F is carbon (coal) dust, and Group G is flour and grain dust. Class 3 hazards consist of textile and wood fibers.



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The Intrinsically Safe Breather Box® Portable Grade-D Air Filtration

Product Features:

- **1ST Stage Filter** - Filter change indicator, automatic drain, removes liquids and particulate to 5.0 micron particle size
- **2ND Stage Filter** - Filter change indicator, automatic drain, provides oil coalescing and ultra-fine particulate filtration that is 99.99% efficient at 0.01 micron particle size
- **3RD Stage Filter** - Filter change indicator, manual drain, charcoal removes organic vapors and objectionable odors
- In-Line Carbon Monoxide (CO) Monitor CSA certified Intrinsically Safe for Class 1, Division 1, Groups C and D environments - optional CO/O₂ monitor
- 2-year Warranty on Sensor and CO Monitor
- Filter Change Indicator provided on all 3 filters
- Dual 9-Volt Battery
- Safety Relief Valve set at 125 psi on outlet pressure
- 0 - 160 psi Pressure Gauge
- Visual Flowmeter to Verify Air Flow to Monitor with adjustable flow rate, 50 -100 cc
- External CO Warning LED Lights and Audible Alarm (95 dBA)
- Maximum Inlet Pressure - 150 psi
- All respirator couplings provided with safety lock feature
- All portable and fixed units are available with CSA approved intrinsically safe monitor for work in hazardous locations



**All Breather Box® Units Are Designed
To Flow The NIOSH Maximum
Capacity Per Worker, 15 CFM**

**Intrinsically safe, CSA approved models
available for Class I, Division 1,
Groups C and D environments.
Units are DC (9-Volt) operation only**

Portable Grade-D Air Filtration with Intrinsically Safe (IS) CO Monitor

Item No.	Description
BB15-COIS	15 cfm Breather Box®, Intrinsically Safe, 48 cfm flow capacity, 1 coupling
BB30-COIS	30 cfm Breather Box®, Intrinsically Safe, 48 cfm flow capacity, 3 couplings
BB50-COIS	50 cfm Breather Box®, Intrinsically Safe, 79 cfm flow capacity, 4 couplings
BB100-COIS	100 cfm Breather Box®, Intrinsically Safe, 123 cfm flow capacity, 4 couplings

CSA Approved for Class I, Division 1, Groups C and D environments (9 VDC operation only)

CO Monitor Calibration Kit - Small Cylinders

Item No.	Description
BBK-20	Calibration kit for CO monitor - 20 ppm CO, zero air, regulator, tubing, and hard case, 17 liter size disposable cylinders
BBK-10	Calibration kit for CO monitor - 10 ppm CO, zero air, regulator, tubing, and hard case, 17 liter size disposable cylinders, for Canadian CO monitor settings

Kit details and components available on page 22



**BB50-COIS
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www.AirSystems.com