Models
BB50-COAAP & BB100COAAP
AUTO-AIR PNEUMATIC BREATHER BOX™

Manual No. AABOX017
(Rev 0 March 2004)

Operating Manual

BREATHING AIR QUALITY POSITION STATEMENT

The responsibility for the quality of breathing air rests with the user. Compliance with federal, state, or local regulations are the responsibility of the user and this recommendation does not supersede any existing rules, regulations, or laws which may apply. Breathing air filtration products meet or exceed CGA Grade-D specifications for air quality as adopted by Federal OSHA. Compressor air quality standards meet or exceed OSHA 1910.134 requirements. When the components are used in accordance with the manufacturer's instructions and recommendations, the "system" meets or exceeds federal regulations presently in force. It is incumbent upon the user to comply with any changes in the regulations or law which may occur in future situations.

The air supply compressor should be located in a safe, clean ambient air environment. This "safe" location should be tested periodically using proper instruments to ensure clean ambient air quality on a consistent basis. Total system Grade-D air quality should be tested monthly. If the compressor is moved, retesting air quality is recommended. Should the location or environment significantly change, the air quality should be retested. The compressor filters and oil level should be checked daily and changed when contaminated or when the maximum number of "run" hours is achieved.

This series of air filtration units should be used according to the manufacturer's recommendations. The standard filtration package is not explosion-proof and should be located in a non-explosive environment. (An intrinsically safe model is available, please contact the factory for information.) The carbon monoxide monitor should be calibrated monthly or if the accuracy of the monitor is in question. System air quality should be tested for, but not limited to, the following Grade-D air components:

CO - Carbon Monoxide
O_2 - Oxygen
CO_2 - Carbon Dioxide
H_2O - Water (Moisture Content)
Hydrocarbons (Oil Mist)
Total Particulates

The maximum allowable level of these air quality components varies depending on Grade-D or E requirements. Contact sales for a copy of the latest standards.

Our Breathing Air compressors and filtration systems meet all of the following federal specifications when used and serviced in accordance with our instructions.

Federal OSHA 29 CFR 1910.134
"Compressor Operations for Breathing Air"

Army Corps of Engineers EM385-1-1,
paragraph 07b-11-4,
"Compressed Breathing Air"

FILTRATION EFFICIENCY

1st Stage	Particulate/Bulk Liquid Separation	Auto Drain and Filter change indicator. Removes 95% bulk particulate and liquids @ 5 microns
2nd Stage	Oil Coalescing and Ultra Fine Particulate	Auto Drain and Filter change indicator. Removes oil and particulate to 99.9998% @ 0.01 microns
3rd Stage	Activated Charcoal	Manual Drain and Filter change indicator. Removes organic vapors, odors, and tastes. Less than 0.003 ppm/wt remaining oil content

OVERVIEW

This Grade-D filtration unit has been designed for work in hazardous locations where the worker needs additional egress air to escape harmful gases and chemicals that may be present. IDLH atmospheres require that the worker wear a pressure demand airline respirator with a minimum of five minutes of escape air. However, this five minutes of escape air may not be sufficient time to safely egress from the area. The Auto-Air Breather Box™ is attached to a secondary supply source of air. In the event of primary air loss, the Auto-Air system will automatically switch to the reserve air. Audible and visual alarms sound to signal the worker that they are on the backup air system and that they should egress the hazardous work area.

Any size reserve air cylinder system can be attached to the Auto-Air Breather Box™, depending on the number of workers and length of time required to safely egress.

Plant or mobile compressors provide the primary air supply to the system. Continuous carbon monoxide monitoring is provided to meet federal, state, and local regulations.

The Auto-Air Breather Box™ series will supply Grade-D breathing air provided this unit is used according to this instruction manual. The carbon monoxide monitor continuously receives 50 - 100cc of filtered air and monitors for the presence of carbon monoxide.

The outgoing pressure regulator(s) is adjustable to conform to the particular respirator to determine the correct pressure. Refer to the NIOSH data sheet found with each respirator in use. Always adjust the outgoing pressure with the complete respirator(s) and desired hose length(s) in place.

Note: Always operate the Auto-Air Breather Box™ in the upright position. Failure to comply may result in one or all of the following:

- Auto drains will not function properly. This may result in the contamination of the CO monitor and cause water to be passed on through respirator hose and into worker's mask.
- Auto drains may become clogged, clean or replace auto drains. (See Maintenance Instructions)
- Filters may accumulate moisture and/or contamination; replace if necessary.

SPECIFICATIONS

|	
Size:	26.5" L x 21" H x 9" D (67cm x 53cm x 23cm)
# of Outlets:	4
Weight:	38.8 lbs. (17.6kg)
Maximum Air Flow (cfm):	MODEL BB50-COAAP: 50 scfm @ 110psi MODEL BB100COAAP: 100 scfm @ 110psi
Maximum Inlet Pressure:	150psi (10.3 bar)
Maximum Outlet Pressure:	125psi (8.6 bar)
Relief Valve:	125psi (8.6 bar)
Monitoring:	Inline continuos monitoring of Carbon Monoxide
Voltage:	9-Volt

SETUP & OPERATION PROCEDURE

1. Secure a primary air source of sufficient airflow and output pressure. The number and type of respirators being used determine the flow rate and pressure required.
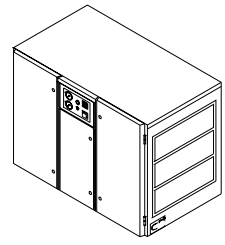
2. Secure a reserve (backup) air supply of sufficient capacity to achieve the desired time for all workers to egress from the hazardous area. The reserve air supply should be able to produce a sufficient flow rate and output pressure based on the flow rate and pressure required by the number and type of respirators being used for a specific duration. Adjust the reserve air supply to the proper discharge pressure for the respirators in use. *NOTE: Reserve air must be at least Grade-D breathing air .*
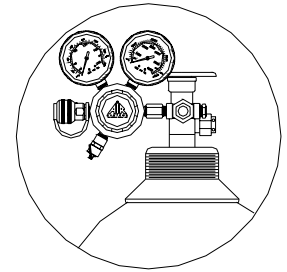
3. Check CO monitor for fresh 9-volt batteries and turn on unit. See monitor section for further information on calibration, testing, and usage.
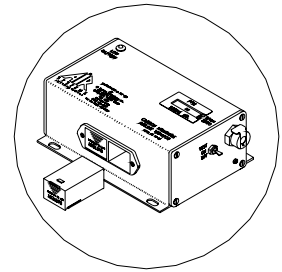
4. Connect the air sample hose from the flowmeter to the sample inlet port on the CO monitor (right side).
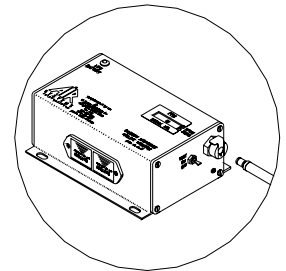
5. Connect remote alarm(s) to be used into the remote alarm port.
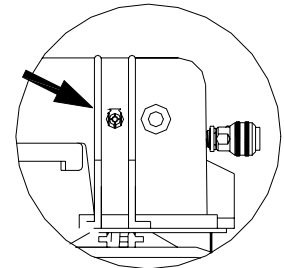
6. Close the flowmeter by turning the control knob fully clockwise, the reserve air alarm regulator by turning the knob fully counterclockwise, and the manifold pressure regulator by turning the knob clockwise.

BB50-COAAP

BB100-COAAP

MAIN PRESSURE REGULATOR

MAIN PRESSURE REGULATOR

FLOWMETER

FLOWMETER

ALARM REGULATOR

IN → OUT

IN → OUT
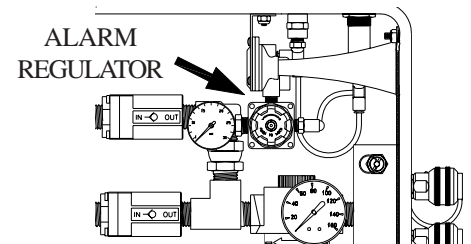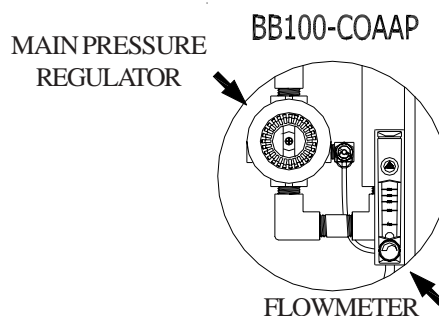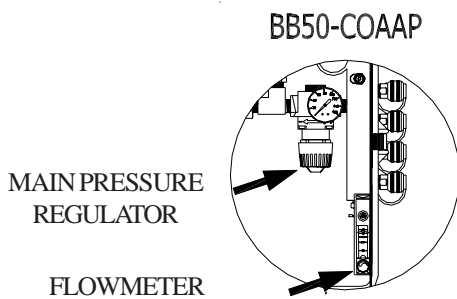
7.   Install desired respirators and lengths of hose to the quick connect outlet couplings.


RED
INDICATOR
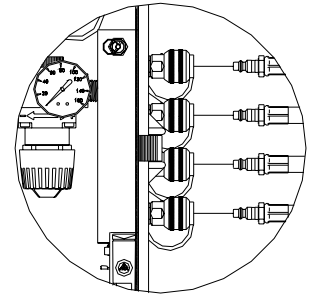
8.   Connect the reserve airline to the reserve air inlet. Adjust the reserve air pressure to the minimum operation pressure required by the respirator manufacturer. Confirm the proper operation of the optional remote alarm (Model 50-ALMP). Adjust the reserve air alarm regulator clockwise to obtain the desired sound rating for the horn.
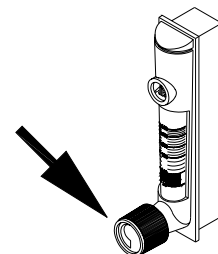
RESERVE AIR
INLET
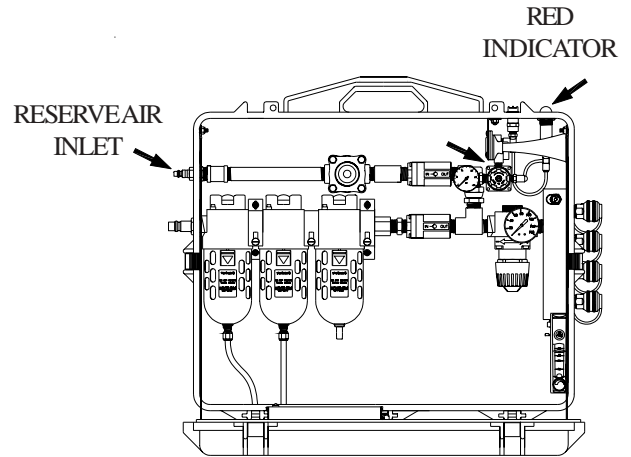
9.   Connect primary air to unit at the inlet quick connect plug (1/2" Hansen) and adjust primary pressure regulator to the proper discharge pressure for the respirators in use by turning the regulator knob clockwise.. Confirm proper operation of reserve air directional valve. The presence of sufficient primary air pressure will cause the directional valve to shift out of the reserve air position and all audible and visual alarm indicators will deactivate.
      Note: A 3-5 second delay in turning off the alarms may occur once the system is repressurized. Primary air inlet pressure must be at least 10psi above reserve air inlet pressure.
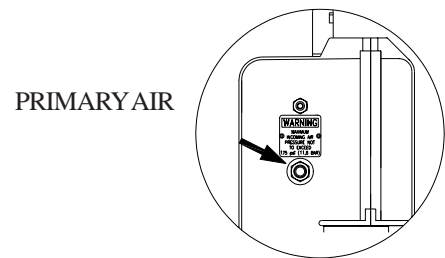
      SEE CHART FOR DIFFERENT ALARM POINT SETTINGS, PAGE 7.

PRIMARY AIR

10.   Adjust CO monitor air sample flow rate by turning the flowmeter control knob counterclockwise until the internal float hovers in the green bar area (approximately 50-100 cc/min).

SHUTDOWN

1. Make sure all workers have egressed the work area.
2. Depressurize both the main and reserve air supply lines. Close reserve air cylinder valves.
3. Bleed system pressure by pulling the ring out on the relief valve or relieve pressure through the manual drain located at the base of the filter.
4. Turn off the CO monitor.

SYSTEM MAINTENANCE

> ⚠ *CAUTION: Always depressurize the system before performing service.*
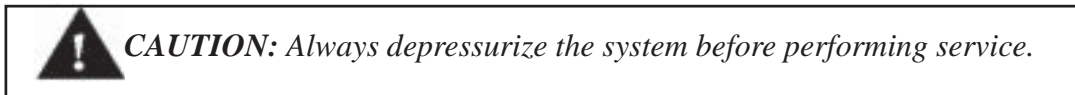
Filter Housing/Bowls: Periodic cleaning of the polycarbonate bowls may become necessary. Remove the auto drains. Clean the bowls with a mild soapy solution. Reinstall into the filter housing.

Auto Drains: The automatic drains are designed to remove bulk liquid contaminants. The drains (1st & 2nd stages only) will automatically drain the liquids after the level has reached 1/3 of the bowl capacity. For periodic cleaning, use a mild soapy solution.

Filter Change: The filtration system consists of a filter change indicator which will gradually change from green to orange when filter life is spent. (Not available on BB15 series)
Note: Air must be flowing through the filtration unit before the filter change indicators will function.

Drain Lines: Make sure the auto drain tubes are placed in the holes at the bottom of the box to allow the liquids to drain outside of the box.

Calibration: Monitor calibration should be done monthly or whenever the reading may be questionable. A calibration date sticker should be affixed for future reference. To obtain an accurate calibration, we recommend the use of Air Systems' calibration kits.

Part Number:

BBK-20   Calibration kit for CO monitor, 20ppm CO, zero air, regulator and case - 17 liter size.

BBK-10   Canadian Calibration kit for CO monitor, 10ppm CO, zero air, regulator and case - 17 liter size.

BBK-20103   Calibration kit for CO monitor, 20ppm CO, zero air, regulator and case - 103 liter size.

To assure sensor accuracy, calibration of the monitor is required. If you cannot obtain an accurate calibration sensor replacement may be necessary. ***Consult Repair Service Department before ordering.***

Part Number:

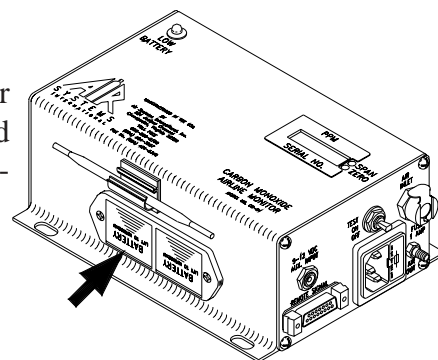**CO-91NS**   New Replacement Sensor

Battery Replacement: Replace 9-volt batteries when the amber "LOW BATTERY" light illuminates. If the monitor is not used for 90 days, check the 9-volt battery condition and replace if necessary.

MONITOR BATTERY REPLACEMENT

These batteries continuously provide a required bias voltage to the CO sensor and power the monitor in the event of AC power loss. If AC and DC power are removed for a period of 2 hours or more, a 1 hour restabilization period is required on the sensor as eratic readings may occur.
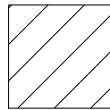
Batteries approved for use are:
1. Panasonic Industrial Alkaline Battery - 9 VDC Model No. 6AM - 6PI 9V
2. Duracell Alkaline Battery - 9 VDC Model No. MN1604B2
3. Eveready Battery (Energizer) Alkaline 9VDC - Model No. 6LR61-6AM6-9V
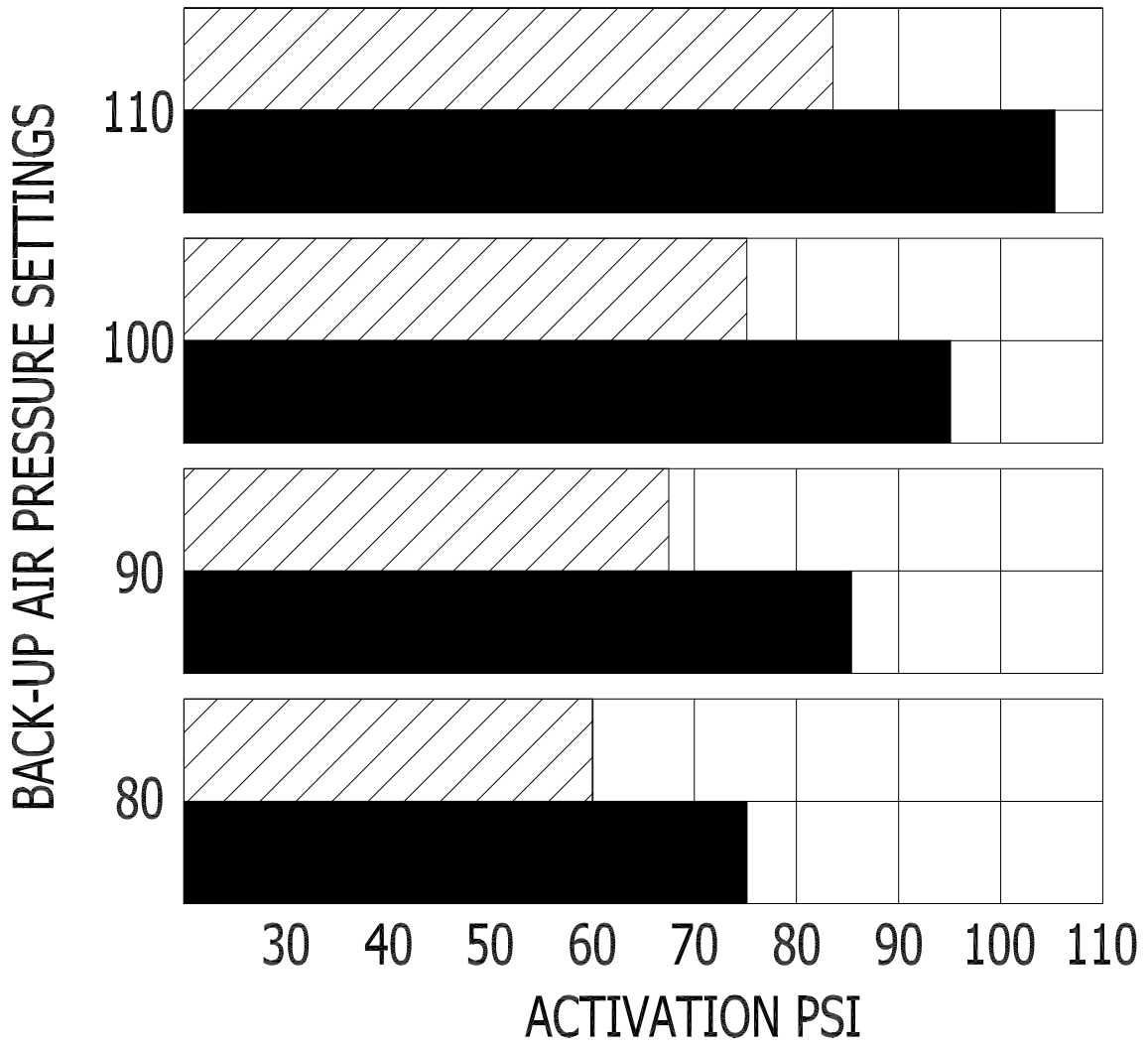
NOTE: THIS CHART IS BASED ON THE PRIMARY
AIR PRESSURE BEING SET @ 10 PSI
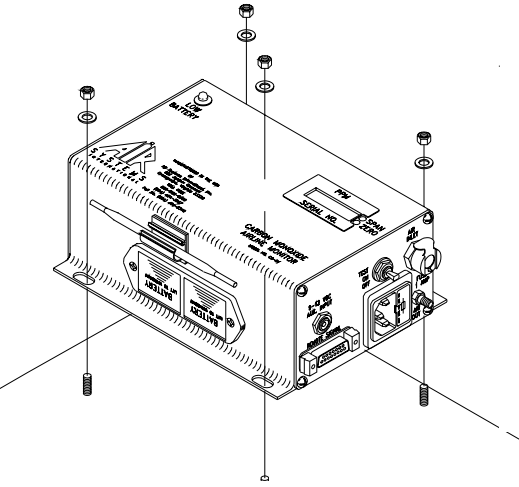ABOVE BACK—UP AIR PRESSURE.

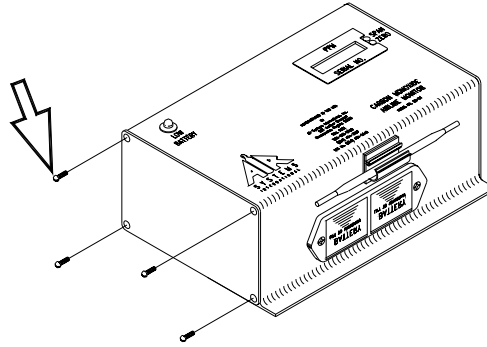BACK—UP AIR ACTIVATION

RESET TO PRIMARY AIR PRESSURE

SENSOR REPLACEMENT

Replacement sensors are shipped with a metal spring installed between the electrodes. **<u>Do not</u>** remove the clip until the sensor is to be installed into the monitor.
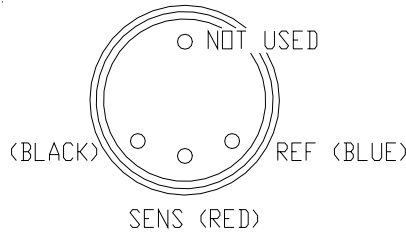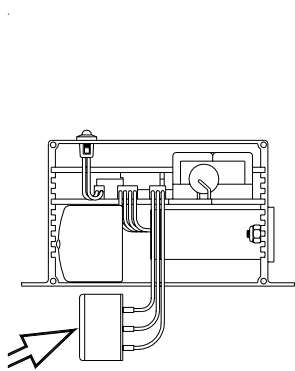

STEP 1)
Disconnect all external connections. Remove CO monitor from the unit.

STEP 2)
Remove the four screws from the monitor's left end plate.
Note: Alarm location may vary.
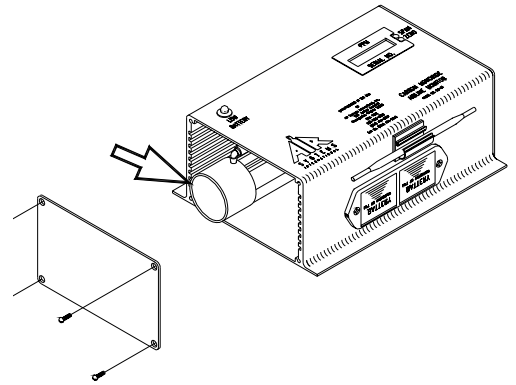
STEP 3)
Remove end plate to gain access to the sensor cup from outside the housing.


```
            O  NOT USED

(BLACK)   O       O   REF (BLUE)
              O

        SENS (RED)
```

```
   SENSOR CONNECTIONS
    ARE AS FOLLOWS:
   RED LEAD - SENSING
  BLUE LEAD - REFERENCE
  BLACK LEAD - CONTROL
```

STEP 4)
Remove sensor from sensor cup and remove leads . Take the new sensor and remove the metal spring. Reattach leads to the proper colored terminals on the new sensor. Install new sensor into sensor cup.
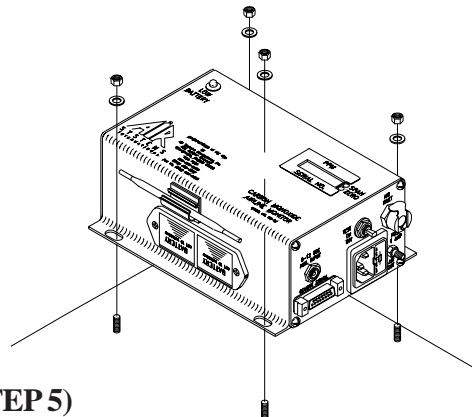
STEP 5)
Reassemble monitor and install back into system. Connect all external connections. Allow monitor to stabilize 30 minutes to 1 hour and recalibrate.

CALIBRATION PROCEDURE

Do not use inert gases to zero the monitor. This will cause premature failure of the sensor.

CO Zero Adjustment

To zero the instrument, follow the steps below. Zero calibration gas should be used to properly "zero" the instrument and assure that a valid calibration is achieved. If zero adjustment cannot be made as indicated, sensor replacement may be necessary. *After each monitor adjustment outlined in the following steps, allow time for the changes to stabilize.*

1. Place the "on/off/test" switch to the "on" position.
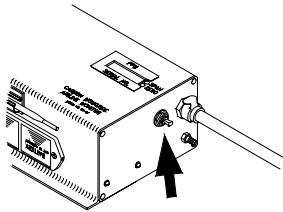
2. Allow 30 seconds for the readout to stabilize. The green indicator light will illuminate.
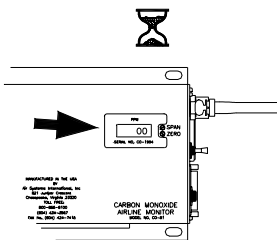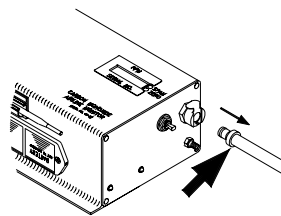
3. Hold the "on/off/test" switch in the "test" position.   The following will occur:
   - Audible alarm will sound
   - Green indicator LED will flash
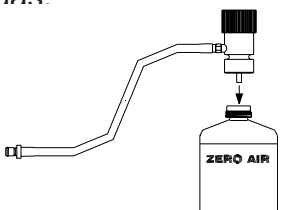   - Amber low battery indicator LED will illuminate
   - Red lamp on
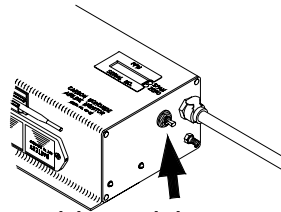
This test ensures the circuitry is operable and the continuity to the sensor is proper. Release the switch.
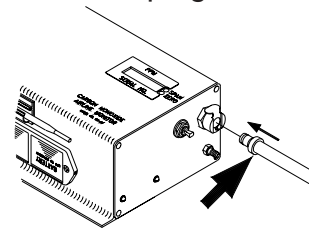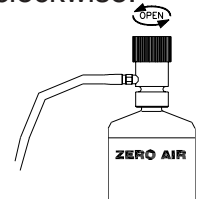
4. Remove air sample inlet tube.

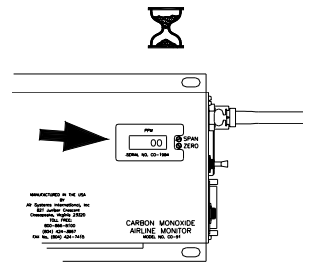5. Install regulator on the zero air cylinder reference gas.

6. Attach the clear tubing with male plug to the monitor air sample inlet.
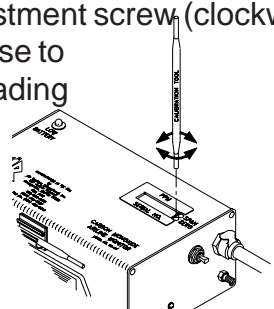
7. Open gas regulator fully by turning the knob at least two (2) turns counterclockwise.
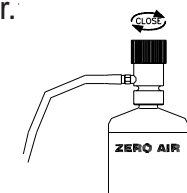
8. Allow digital readout to stabilize approximately 15 - 30 seconds.

9. Adjust "zero" pot adjustment screw (clockwise to increase, counterclockwise to decrease) until a "00" reading is obtained.
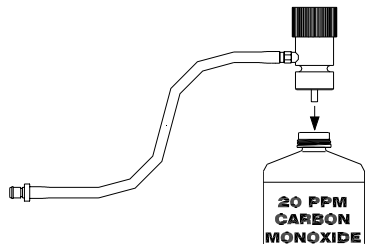
10. Turn off the regulator and disconnect the tubing from the zero air regulator.
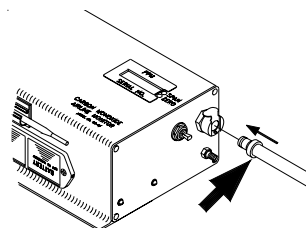
CO SPAN ADJUSTMENT

Use only 10 - 20 ppm CO gas for calibration. Using a higher concentration may decrease accuracy at lower scale readings. Note: 10ppm gas must be used to satisfy Canadian calibration requirements.
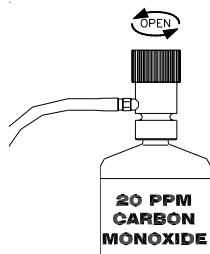
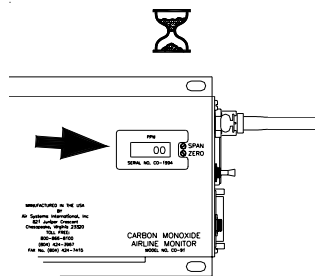1. Install regulator to the CO calibration gas cylinder.

2. Connect the plug to the monitor.

3. Open gas regulator fully by turning the knob at least two (2) turns counterclockwise.

4. Allow digital display to stabilize approximately 15 - 30 seconds.

5. Adjust the "span" pot adjustment screw (clockwise to increase, counterclockwise to decrease) until the digital display reads the same concentration (ppm) as printed on the calibration gas cylinder.
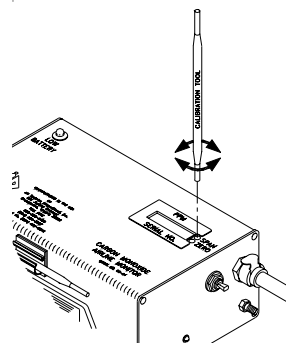
6. Turn regulator off and repeat "zero" adjustment procedure above. Display should return to a "00" reading.
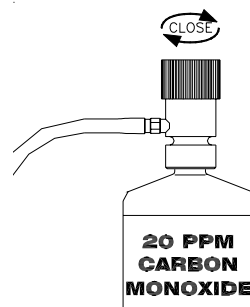
THE MONITOR IS NOW CALIBRATED AND SHOULD BE RECALIBRATED MONTHLY OR IF ACCURACY IS QUESTIONABLE. CHECK LOCAL REQUIREMENTS AND RECALIBRATE AS REQUIRED.

MODEL BB50-COAAP
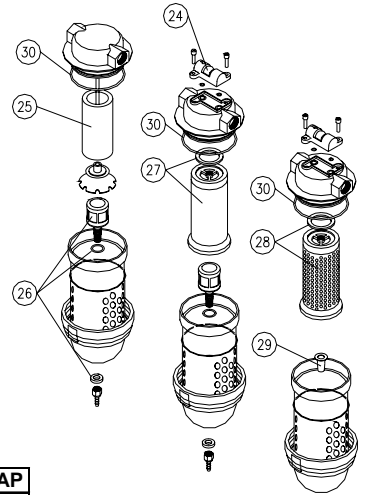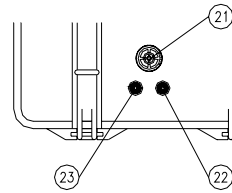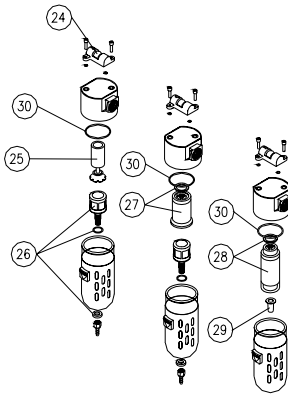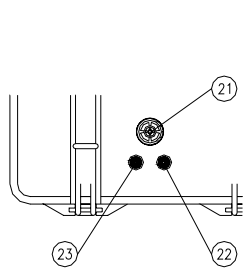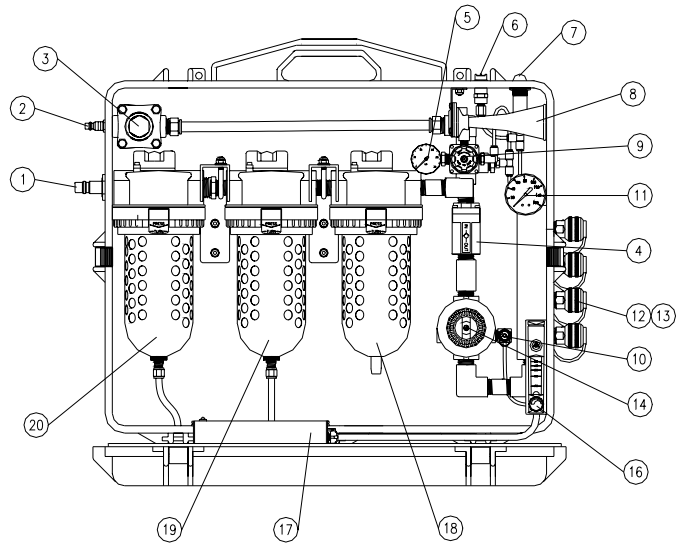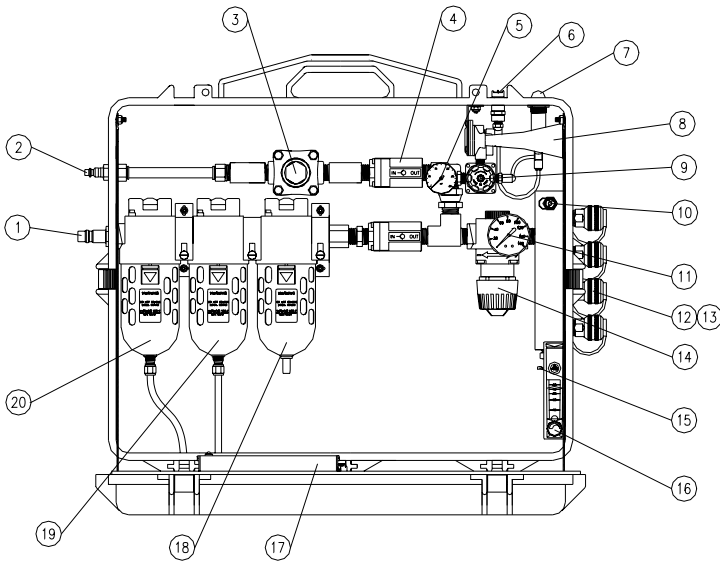
MODEL BB100COAAP

ITEM #	DESCRIPTION	BB50-COAAP	BB100-COAAP
1	PRIMARY AIR INLET PLUG	QDH5PL8M	QDH5PL8M
2	BACK-UP AIR INLET PLUG	QDH3PL6M	QDH3PL6M
3	2 WAY VALVE	PSVLV077	PSVLV077
4	CHECK VALVE	PSVLV017	PSVLV017
5	HORN PRESSURE GAUGE	GA1515B	GA1515B
6	PNEUMATIC REMOTE ALARM PORT	QDCSL2M	QDCSL2M
7	BACK-UP AIR INDICATOR	GA15RED	GA15RED
8	PNEUMATIC HORN	GAMLHORN	GAMLHORN
9	HORN PRESSURE REGULATOR	WL013A	WL013A
10	RELIEF VALVE	VR4125BR	VR4125BR
11	PRESSURE GAUGE	GA20160B	GA20160B
12	RESPIRATOR COUPLING, HANSEN	QDH3SL6M	QDH3SL6M
12A	RESPIRATOR COUPLING, SCHRADER	QDSSL6M	QDSSL6M
13	DUST CAP, HANSEN	QDH3DCAP	QDH3DCAP
13A	DUST CAP, SCHRADER	QDSDCAP	QDSDCAP
14	PRESSURE REGULATOR	WL014	WL015
15	DRAIN COCK	BR2DCM	N/A
16	FLOWMETER	WL033NS	WL033NS
17	CO MONITOR	CO-91IS	CO-91IS
18	"D" FILTER ASSEMBLY	WL009	WL018
19	"C" FILTER ASSEMBLY	WL008	WL017
20	"A" FILTER ASSEMBLY	WL007	WL066
21	HIGH CO AUDIBLE ALARM	ELLS004	ELLS004
22	"NORMAL" INDICATOR	MONC005	MONC005
23	HIGH CO INDICATOR	MONC004	MONC004
24	FILTER CHANGE INDICATOR	WL056	WL056
25	"A" FILTER ELEMENT	BB50-A	BB100-A
26	AUTO-DRAIN ASSEMBLY	WL024	WL024
27	"C" FILTER ELEMENT	BB50-C	BB100-C
28	"D" FILTER ELEMENT	BB50-D	BB100-D
29	MANUAL DRAIN	WL153	WL153
30	0-RING	WL091	WL113

Warranty Disclaimer

Air Systems' manufactured equipment is warranted to the original user against defects in workmanship or materials under normal use for one year after date of purchase. Any part which is determined by Air Systems to be defective in material or workmanship will be, as the exclusive remedy, repaired or replaced at Air Systems' option. This warranty does not apply to electrical systems or electronic components. Electrical parts are warranted, to the original user, for 90 days from the date of sale. During the warranty period, electrical components will be repaired or replaced at Air Systems' option.

NO OTHER WARRANTY, EXPRESSED OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER MATTER IS GIVEN BY AIR SYSTEMS IN CONNECTION HEREWITH. UNDER NO CIRCUMSTANCES SHALL THE SELLER BE LIABLE FOR LOSS OF PROFITS, ANY OTHER DIRECT OR INDIRECT COSTS, EXPENSES, LOSSES OR DAMAGES ARISING OUT OF DEFECTS IN, OR FAILURE OF THE PRODUCT OR ANY PART THEREOF.

The purchaser shall be solely responsible for compliance with all applicable Federal, State and Local OSHA and/or MSHA requirements. Although Air Systems International believes that its products, if operated and maintained as shipped from the factory and in accordance with our "operations manual", conform to OSHA and/or MSHA requirements, there are no implied or expressed warranties of such compliance extending beyond the limited warranty described herein. Product designs and specifications are subject to change without notice. **Rev 2 12/98**

Air leaks are not covered under warranty except when they result from a defective system component, i.e. an on/off valve or regulator or upon initial delivery due to poor workmanship. Air leaks due to poor delivery or damage will be covered under delivery claims. Minor air leaks are part of routine service and maintenance and are the responsibility of the customer just as are filters and oil changes.