

**⚠ WARNING**

**THIS MANUAL CONTAINS IMPORTANT SAFETY INFORMATION.**

**1. Read, understand and follow ALL Warnings and Instructions in this User Manual BEFORE using this product. Improper use may result in carbon monoxide poisoning, serious injury or death.**

**2. COVX is only authorized for use with Bullard's NIOSH approved 88VX Series Airline Respirator, TC-19C-293. DO NOT USE COVX WITH ANY OTHER RESPIRATOR.**

**3. Do NOT install the COVX in any location inside the 88VX respirator helmet that is not identified by Bullard in this User Manual. Installing the COVX in a non-approved location could negatively impact the protection of the helmet and cause serious injury or death.**

**FAILURE TO FOLLOW ALL INSTRUCTIONS AND WARNINGS IN THIS USER MANUAL COULD CAUSE CARBON MONOXIDE POISONING, SERIOUS INJURY OR DEATH.**



**ⓘ NOTE:**

For technical assistance or questions contact Bullard Customer Service at:  
Toll-Free 877-BULLARD (285-5273) or 859-234-6616  
Online at [www.bullard.com](http://www.bullard.com) or e-mail [info@bullard.com](mailto:info@bullard.com)

## TABLE OF CONTENTS

Safety Alerts .....	2	Performing a Default Operation .....	26
<b>Introduction</b> .....	2	<b>Calibration, Fresh-Air Adjustment, Bump</b>	
Scope of Manual .....	2	<b>Test &amp; Storage</b> .....	27
Specifications .....	3	Calibration Schedule .....	27
Certifications .....	3	Performing Fresh-Air Adjustment with 0PPM Test Gas .....	28
Description of Operation .....	4	Preparing Calibration-Connector Regulator	
Components and Functions .....	4	Valve for Calibration.....	29
<b>Set Up</b> .....	7	Connecting Calibration Cup to COVX .....	30
Installation .....	7	Removing the Calibration Cup from the COVX.....	31
Turning ON and Startup Procedure .....	8	Performing a Bump Test .....	31
Setting the Date and Time .....	9	Calibrating the COVX .....	33
Performing a Fresh-Air Adjustment .....	10	Storing the COVXCK and Test Gas .....	34
Turning Off the COVX .....	11	<b>Maintenance</b> .....	34
<b>Alarms</b> .....	11	Replacing the Lithium Battery .....	34
Alarm Indications .....	12	Replacing the Sensor .....	35
Alarm Indications Table .....	13	Replacing the Charcoal Filter .....	37
Responding to CO Alarms .....	14	Replacing the Hydrophobic Filter .....	38
Resetting the COVX After an Alarm .....	17	<b>Troubleshooting</b> .....	38
Alarm Setpoints .....	17	<b>Replacement Parts</b> .....	40
<b>Maneuvering Through Modes</b> .....	18	System Replacement Parts .....	40
Measuring Mode .....	18	COVX Monitor Replacement Parts .....	41
User Mode .....	19	<b>Warranty &amp; Return Authorization</b> .....	42
Display Mode .....	22		
Maintenance Mode .....	25		

## SAFETY ALERTS

The COVX manual references safety alert signal words based on ANSI Z535.4-2011 to alert the user to potentially hazardous situations that may be encountered while operating equipment. ANSI defines the following signal words as:



**The safety alert symbol is used to alert the user to potential physical injury hazards. Abide by any safety messages that follow this symbol to avoid possible injury or death.**

### NOTICE

**Notice indicates information that is considered important, but not hazard related, and if not avoided, could result in property damage.**

### ⚠ CAUTION

**Caution indicates a hazardous situation that, if not avoided, could result in moderate injury.**

### ⚠ WARNING

**Warning indicates a hazardous situation that, if not avoided, could result in serious injury or death.**

## 1. INTRODUCTION

A Bullard Personal Airline Respirator CO Monitor is labeled as COVX on the back of the device. Bullard's COVX device is the only personal airline respirator CO monitor authorized for use with Bullard's NIOSH approved 88VX Supplied Air Respirator System. COVX is not authorized for use with any other Bullard respirator system. Firmware adjustments have been made to the COVX device to accurately display 1 PPM incremental readings in the 10PPM range. Only the Bullard COVX device is approved to be used with the COVX Holder.

### 1.1 Scope of Manual

- 1.1.1** These instructions cover operation, maintenance, troubleshooting and replacement parts for the COVX Personal Airline Respirator CO Monitor.
- 1.1.2** The monitor detects the presence of carbon monoxide (CO) inside the 88VX supplied air respirator helmet. The alarm setpoint is 10 parts per million (ppm). By default the monitor displays the real time concentration of CO (ppm).
- 1.1.3** The monitor can also display the PEAK level of CO, short term exposure limit (STEL), and time weighted average (TWA). Instructions to toggle through the PEAK CO concentrations, STEL, and TWA are found in Section 4.3.
- 1.1.4** All respirator users and those responsible for maintenance and calibration of the COVX unit must read and understand this manual before using the respirator helmet with the COVX unit or operating the COVX unit.

# COVX Personal Airline Respirator CO Monitor User Manual

## COVX Specifications / Alarm Points

Target Gas	Carbon Monoxide (CO)
Detection Range	0 to 2000 ppm
Display Increment	0 - 300 ppm ..... 1 ppm
	310 - 2000 ppm ..... 10 ppm
CO Sensor Type	Electromechanical
CO Test Gas	10 ppm
Warning Alarm	10 ppm
Alarm Point	10 ppm
Alarm Point, High	10 ppm
Equipment Voltage	3.7 V
Operating Temperature Code	T4
Ambient Temperature	-20 °C to +60 °C
Current Rating	610 mA

## COVX Certifications

<b>Regulatory</b>	<ul style="list-style-type: none"> <li>• IECEx: Ex ia IIC T4 Ga Certificate Number IECEx DEK 18.0082</li> </ul>
-------------------	---

**▲ WARNING**

The COVX detects carbon monoxide, which can be life threatening. When using the COVX, follow all instructions and warnings in this manual to assure proper and safe operation of the monitor and to minimize the risk of personal injury. Carbon monoxide poisoning can result in serious injury or death.

## Description of Operation

- 1.1.5** The COVX In-Helmet Carbon Monoxide Monitor detects the presence of carbon monoxide inside the Bullard 88VX supplied air respirator helmet.
- 1.1.6** CO concentration is displayed in parts per million (ppm). The current maximum exposure limit in the United States for carbon monoxide levels in Grade D compressed breathing air is 10 ppm. If CO concentrations inside the 88VX helmet reach the exposure limit, three alarms occur. The audible alarm alternates between a high and low tone at a rate of approximately once per second, the LED lights flash at a rate of twice per second, and the vibrator pulses at a rate of twice per second. If an alarm occurs, follow an established procedure for responding to alarms. It should include, but not be limited to, immediately leaving the work environment and removing the 88VX respirator helmet when it is safe to do so.
- 1.1.7** The COVX offers a range of features, including:
- Digital liquid crystal display (LCD)
  - Visual, audible, and vibrating alarms that alert the user to CO concentrations, malfunction, low battery, and other conditions noted in this manual
  - Low battery alarm
  - Sensor malfunction/fail alarm
  - Current time display
  - Up to 4,000 hours of operation on a single battery
  - PEAK is the highest CO concentration since the monitor was last turned on. Refer to Section 4.3.3 for additional information on the PEAK screen.
  - STEL (Short Term Exposure Limit) is the average reading over a period of 15 minutes. Refer to Section 4.3.4 for additional information on the STEL screen.
  - TWA is the time weighted average over a period of the last 8 hours. Refer to Section 4.3.5 for additional information on the TWA screen.

## Components and Function

Items required to operate and maintain the COVX monitor are shown in Figure 1. Features and components indicated in Figure 2 are needed to perform routine functions.

- 1.1.8** In addition to the COVX monitor, the following equipment is required to operate and maintain the COVX monitor:
- COVXCK (10 ppm calibration compressed CO, impurity free test gas (0 ppm)) 0.5 LPM fixed flow knob regulator, tubing, calibration cup)
  - COVXHOLDER

# COVX Personal Airline Respirator CO Monitor User Manual

**1.1.9 Case:** The COVX's sturdy, high impact plastic case is dust proof, water resistant, and radio frequency (RF) shielded.

The digital LCD display is visible through the clear window on the front of the case. During normal operation (Measuring Mode), it displays:

- CO concentration (ppm)
- Remaining battery life
- Current time
- A pulsing heart symbol, indicating the COVX monitor is in normal operating status

In other modes, the LCD displays functions necessary to operate and maintain the monitor. *Refer to menu modes in Section 4.0 for additional information.*

Below the LCD are two black control buttons: AIR and POWER/MODE. The operator uses these buttons to make selections and adjustments through various menus. *Refer to Section 1.1.16 for additional information on button functions.*

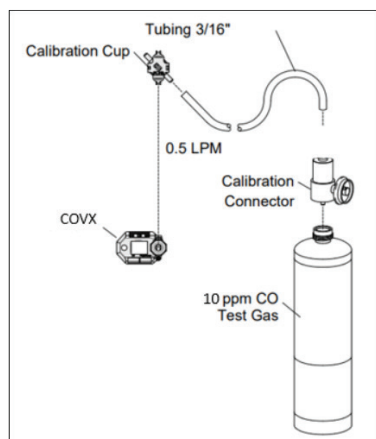


Figure 1

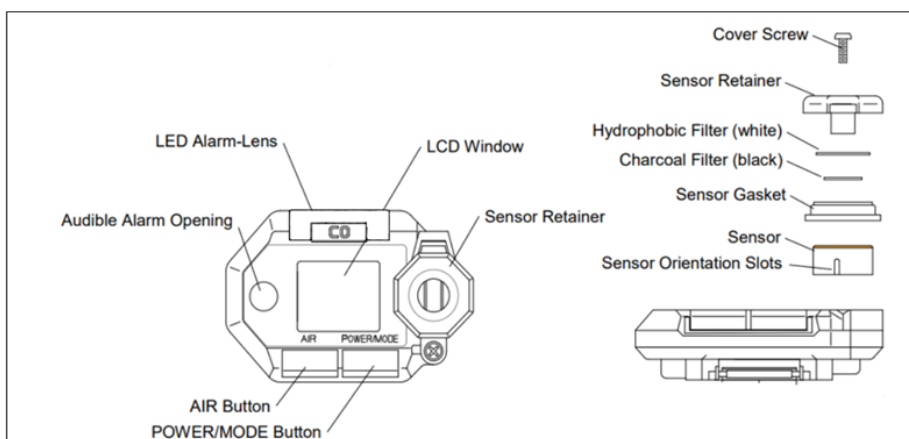


Figure 2

**1.1.10 Sensor Retainer:** The sensor retainer is located on the right side of the case and allows access to the filters, sensor gasket, and sensor.

**1.1.11 Sensor:** The sensor is held in the socket by the sensor retainer.

**1.1.12 Sensor Gasket:** The sensor gasket fits over and seals around the sensor.

**1.1.13 Charcoal Filter (black):** A black charcoal filter is placed into a recess in the filter gasket over the CO sensor. The charcoal filter scrubs hydrogen sulfide and certain hydrocarbons out of the sample collected to avoid false CO readings. If false or unrealistically elevated CO readings are noticed, especially in the presence of hydrogen sulfide, change the charcoal filter. *Refer to Section 6.3: "Replacing the Charcoal Filter" for additional information.*

**1.1.14 Hydrophobic Filter (white):** The white, circular, hydrophobic filter sits in the larger recess on the filter gasket, on top of the charcoal filter.

**1.1.15 LCD:** A digital LCD (liquid crystal display) is visible through the clear plastic window on the front of the case. The LCD shows information for each of the COVX's operating modes. Once the monitor is ON, pressing and releasing either the POWER/MODE or AIR buttons turns on the LCD backlight for 30 seconds.

**NOTE:**  
Under ambient light conditions, the display screen is easily seen without the backlight.

**1.1.16 Control Buttons:** Two control buttons, AIR and POWER/MODE, are located below the LCD screen. Functions performed by pressing the control buttons are summarized in the table in Figure 3.

Button	Function(s)
AIR	<ul style="list-style-type: none"> <li>• Turns on LCD backlight</li> <li>• Resets alarm condition</li> <li>• Enters User Mode and Maintenance Mode, when used with POWER/MODE</li> <li>• Activates the demand zero function to adjust the COVX's fresh-air reading</li> <li>• Scrolls through parameter options</li> </ul>
POWER/MODE	<ul style="list-style-type: none"> <li>• Turns the COVX on and off</li> <li>• Turns on the LCD backlight</li> <li>• Enters and scrolls through Display Mode</li> <li>• Enters instructions into the COVX's microprocessor</li> <li>• Resets alarm condition</li> <li>• Enters User Mode and Maintenance Mode when used with AIR</li> </ul>

Figure 3

**NOTE:**  
Important points to remember:

1. The AIR button scrolls through items on the menus, similar to a cursor. Once the menu item is selected, use the POWER/MODE button to enter the selection.
2. To reverse the direction of scroll. (i.e. from increasing to decreasing, or vice versa):
  - a. Press and hold the AIR button.
  - b. Immediately press the POWER/MODE button and then release both buttons.

**NOTE:**  
Each screen displays for 20 seconds. If a button is not pressed within 20 seconds, the COVX automatically returns to Measuring Mode.

# COVX Personal Airline Respirator CO Monitor User Manual

---

**1.1.17 Alarm Lights:** Two red LED alarm lights are located above the LCD. The LEDs alert the user to CO gas, low battery, and failure alarms. During the startup sequence, the LED lights flash once.

**1.1.18 Audible Alarm:** An opening on the top left side of the COVX housing allows the audible alarm's sound to exit the case. The alarm sounds for CO gas alarms, unit malfunctions, low battery voltage, and as a feedback indicator of button presses during various display options. The audible alarm beeps twice at the conclusion of the COVX startup sequence. Refer to Section 3.1 for alarm indications.

**1.1.19 Vibrating Alarm:** A vibrating motor inside the COVX case vibrates for CO gas alarms, unit malfunctions, and as a feedback indicator during normal use of the various modes of the COVX. The vibrating alarm vibrates briefly during the startup sequence of the COVX.

## WARNING

**Do NOT use the COVX monitor if any one of the three alarms (light, sound or vibration) fails to function during startup. Failure to follow this instruction could cause death or serious injury.**

**1.1.20 Lithium Battery:** A user replaceable CR2450 3.0-volt lithium coin battery (reorder as COVXBATTERY5PK) powers the COVX. The battery icon located in the upper right corner of the LCD shows remaining battery life. When the COVX detects low battery voltage, a low battery warning is activated. When battery voltage is too low for Measuring Mode, the COVX sounds a dead battery alarm. (The gas reading disappears, LEDs flash approximately once per second, and the audible alarm double pulses approximately once per second until battery is depleted and the unit shuts off).

## WARNING

**To prevent ignition of a hazardous or explosive atmosphere, the battery must only be changed in a non-hazardous and non-explosive environment. Failure to follow this instruction could cause death or serious injury.**

## 2. SETUP – INSTALLATION, STARTUP AND OPERATION

### 2.1 Installation

This section explains the initial installation of the COVX to the inside of the respirator helmet. If your 88VX respirator helmet already has hook installed, skip to Section 2.1.3.

## WARNING

**COVX monitor must only be installed inside the 88VX helmet in accordance with these installation instructions. Do NOT place the COVX monitor in any other location inside the helmet. Installation and removal of the COVX monitor should only occur in a non-contaminated, fresh-air environment. Failure to follow these instructions could cause death or serious injury.**

- 2.1.1** The hook strip can be adhered onto the interior of the 88VX respirator helmet to the left or right side of the front window as shown in Figures 4A and 4B. If your 88VX respirator helmet has a warning label in the space where it is instructed to adhere the hook strip, then the provided new warning label must be installed into the helmet, in the precise location identified in Figure 4B.
- 2.1.2** Clean the helmet surface with isopropyl alcohol, let dry, apply heavy pressure at room temperature for 5 seconds across the entire hook strip surface (multiple presses likely needed), and then let cure at room temperature for 12-24 hours. Hook adhesive is not to be used below 0° F (-18° C).
- 2.1.3** Insert the COVX into the COVXHOLDER. Ensure the LCD screen is visible through the mesh, as shown in Figure 5.
- 2.1.4** Before powering on the COVX, ensure the placement of the COVX inside the 88VX respirator helmet. Attach the back side of the COVXHOLDER, with the COVX installed, to the hook strip installed in the interior of the 88VX. Ensure the mesh side of the COVXHOLDER is facing the interior of the 88VX respirator helmet, and that the LED screen is visible through the mesh. See Figure 6 below.
- 2.1.5** Don (put on) the 88VX respirator helmet to ensure the COVX is positioned accurately and is not interfering with any portion of the 88VX respirator user.
- 2.1.6** After ensuring the fit, remove the 88VX respirator helmet. Remove the COVX from the COVXHOLDER and prepare it for operation, per Section 2.2.

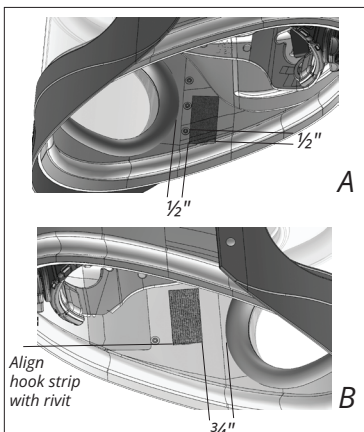


Figure 4

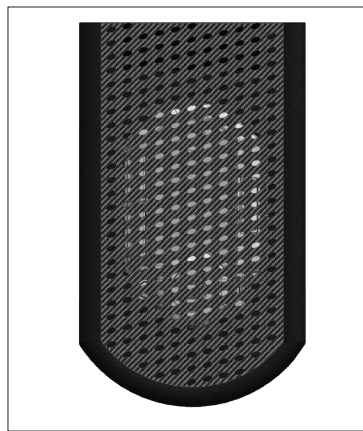


Figure 5

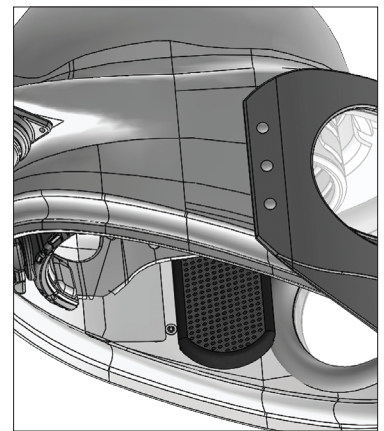


Figure 6

## 2.2 Turning ON and Startup Procedure

This section explains how to turn on the COVX and prepare it for operation.

- 2.2.1** Press and hold the POWER/MODE button briefly until the audible alarm beeps. Release the button when the audible alarm beeps.
- 2.2.2** The COVX monitor goes through a startup sequence when powered on: the LCD segments turn on, the LCD backlight turns on, and the COVX monitor beeps and vibrates. Next the COVX cycles through calibration status, date/time, remaining battery life, target gas, and alarm set point screens.

# COVX Personal Airline Respirator CO Monitor User Manual

**2.2.3** After the startup sequence, the COVX enters Measuring Mode (normal operating mode). The COVX beeps, the LCD screen shows CO, remaining battery life, a pulsing heart symbol (to indicate normal operating status), CO concentration (ppm), and the date and time (when set according to Section 2.3).

## ⚠ WARNING

**If the COVX monitor is in low battery warning, change the battery as soon as possible. Do not use the COVX monitor inside the 88VX respirator helmet if the dead battery warning is alarmed. The monitor does not detect carbon monoxide when it is in dead battery alarm, which can result in carbon monoxide poisoning, serious injury or death.**

## 2.3 Setting the Date and Time

When using COVX for the first time, check the current date and time displayed and verify it is correct, shown in Figure 7. If it is not correct, set the time as follows:

**2.3.1** With the COVX turned OFF, press and hold the AIR and POWER/MODE buttons. Release both buttons when an audible beep occurs. BUMP is displayed on the LCD.

**2.3.2** Press and release the AIR button repeatedly to scroll until DATE appears on the LCD.

**2.3.3** Press and release the POWER/MODE button to enter the selection. The date and time will be displayed on the LCD with the year flashing.

**2.3.4** Use the AIR button to adjust the year. To reverse the direction of scroll (i.e from increasing to decreasing, or vice versa):

- a. Press and hold the AIR button.
- b. Immediately press the POWER/MODE button and then release both buttons.

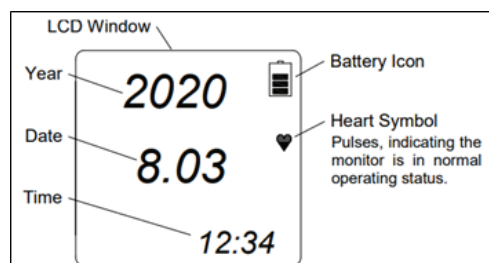


Figure 7

**2.3.5** Press and release the POWER/MODE button to save the changes. The month begins to flash.

**2.3.6** Use the AIR button to adjust the month. Press and release the POWER/MODE button to save changes. The day begins to flash.

**2.3.7** Repeat the process to set the day, hour, and minute. The time is displayed in military time, with the hours going from 0 to 24.

2.3.8 When the date and time are set to the desired values, use the AIR button to scroll to START. Press and release the POWER/MODE button to begin the COVX's startup sequence.

**NOTE:**

If no button is pressed within 20 seconds, the COVX will automatically return to Measuring Mode.

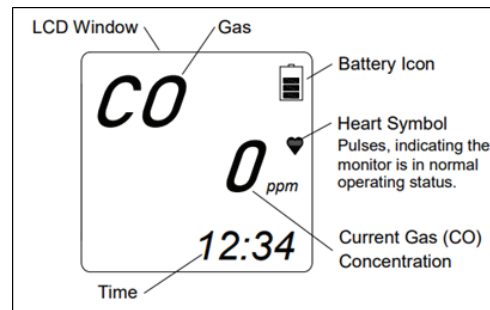


Figure 8

## 2.4 Performing a Fresh-Air Adjustment

Before using the COVX, set the fresh-air baseline to ensure accurate carbon monoxide gas readings. Fresh-air adjustments must be done in a fresh-air environment, free of toxic or combustible gases and with normal oxygen content (20.9%). The usual method is to set it in fresh ambient air. If fresh, ambient air cannot be assured, set the fresh-air baseline with impurity free (0 ppm) test gas, as described in Section 5.2.

### **WARNING**

**Failing to ensure the fresh-air adjustment is done in a clean air environment may result in improper readings which could result in serious injury or death.**

- 2.4.1 Ensure the monitor is in a fresh-air environment, free of toxic or combustible gases, and having a normal oxygen content of 20.9%.
- 2.4.2 Turn on the COVX by pressing and holding the POWER/MODE button until the audible alarm beeps.
- 2.4.3 The COVX will go through a startup sequence, as detailed in Section 2.2.2.
- 2.4.4 After the startup sequence, the COVX goes into Measuring Mode (normal operating mode). The audible alarm beeps, and the LCD display is as shown in Figure 8.
- 2.4.5 Enter User Mode (refer to Section 4.2.1). While in User Mode, press and release the AIR button repeatedly to scroll to GasCal.
- 2.4.6 Press and release the POWER/MODE button to enter selection.
- 2.4.7 Press and release the POWER/MODE button to enter the AIR menu. The text "AIR" appears on the screen.

# COVX Personal Airline Respirator CO Monitor User Manual

**2.4.8** Press and hold the AIR button. While pressing the AIR button, the LCD displays HOLD, a prompt to continue to hold the AIR button.

**2.4.9** When the fresh-air baseline has been set, the LCD displays "Adj", and a prompt to RELEASE the AIR button appears, as shown in Figure 9. The monitor audibly beeps once and the screen displays 0 ppm, as shown in Figure 8.

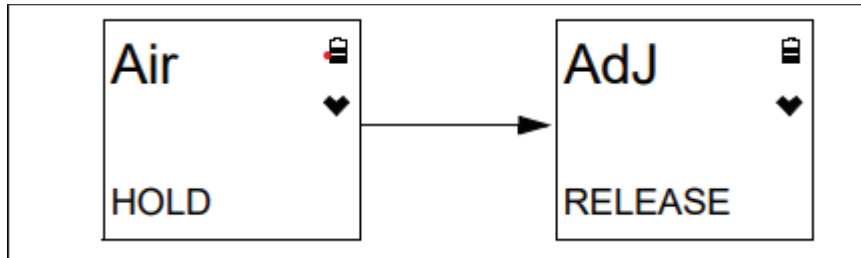


Figure 9

## 2.5 Turning OFF the COVX

**2.5.1** If the 88VX respirator helmet is being worn, doff (take off) the 88VX respirator helmet. Remove the COVXHOLDER (with the COVX monitor inside) from inside the 88VX respirator helmet.

**2.5.2** Remove the COVX from inside the COVXHOLDER. Press and hold the POWER/MODE button on the COVX monitor.

**2.5.3** Continue to hold the POWER/MODE button, "OFF" will appear on the LCD screen, and the COVX monitor will audibly beep for approximately 5 seconds. Release the POWER/MODE button when "OFF" disappears from the LCD screen, and the LCD is blank. The monitor is powered off.

**2.5.4** Always remove the monitor at the end of each shift, turn it off, and store it in a non-contaminated, fresh-air environment.

### **▲ WARNING**

**Failure to remove and store the monitor in a non-contaminated, fresh-air environment may compromise the function of the monitor and could cause death or serious injury.**

## 3. ALARMS

This section covers alarm indications. It also explains how to respond to an alarm condition and how to reset the COVX after an alarm has occurred.

### **▲ WARNING**

**Failure to respond to an alarm as instructed in this manual could result in overexposure to carbon monoxide (CO) which may result in death or serious injury.**

**ⓘ NOTE:**

False alarms may be caused by Radio Frequency (RF) or electromagnetic (EMI) interference. Keep the COVX away from RF and EMI sources, such as radio transmitters, or large motors.

### 3.1 Alarm Indications

#### 3.1.1 Audible Alarms

- Gas Alarms: Alternating high-low tone – chirps occurring approximately once per second.
- Fault Alarms: Double-pulsing tone – occurring approximately once per second.

**ⓘ NOTE:**

In addition to the audible alarms, the COVX monitor vibrates, and the LEDs flash when any type of alarm condition or fault condition is experienced.

# COVX Personal Airline Respirator CO Monitor User Manual

## 3.2 Alarm Indications Table

Refer to the table in Figure 10 for Alarm Types and Alarm Indicators.

ALARM TYPE	VISUAL INDICATIONS	OTHER ALARM INDICATIONS
<b>WARNING</b> Concentration of CO rises above the Warning setting (10 ppm)	<ul style="list-style-type: none"> <li>Gas reading flashes</li> <li>Warning appears at the bottom of the LCD</li> <li>Alarm LEDs flash approximately once per second</li> <li>Backlight turns on</li> </ul>	<ul style="list-style-type: none"> <li>Alternating high-low tone-chirps about once per second</li> <li>Vibrator pulses once per second</li> </ul>
<b>ALARM</b> Concentration of CO rises above alarm setting (10 ppm)	<ul style="list-style-type: none"> <li>Gas reading flashes</li> <li>Alarm appears at the bottom of the LCD</li> <li>Alarm LEDs flash approximately twice per second</li> <li>Backlight turns on</li> </ul>	<ul style="list-style-type: none"> <li>Alternating high-low tone-chirps about twice per second</li> <li>Vibrator pulses twice per second</li> </ul>
<b>ALARM HIGH</b> Concentration of CO rises above Alarm High setting (10 ppm)	<ul style="list-style-type: none"> <li>Gas reading flashes</li> <li>Alarm H appears at the bottom of the LCD</li> <li>Alarm LEDs flash approximately twice per second</li> <li>Backlight turns on</li> </ul>	<ul style="list-style-type: none"> <li>Alternating high-low tone-chirps about twice per second</li> <li>Vibrator pulses twice per second</li> </ul>
<b>TWA or STEL</b> Concentration of CO rises above the TWA alarm setting (35 ppm) or the STEL alarm setting (200 ppm)	<ul style="list-style-type: none"> <li>Gas reading flashes</li> <li>TWA or STEL appears at the bottom of the LCD</li> <li>Alarm LEDs flash approximately once per second</li> <li>Backlight turns on</li> </ul>	<ul style="list-style-type: none"> <li>Alternating high-low tone-chirps about twice per second</li> <li>Vibrator pulses twice per second</li> </ul>
<b>OVER RANGE</b> An over range condition indicates an extreme CO concentration	<ul style="list-style-type: none"> <li>Gas reading is replaced with a flashing □ □ □</li> <li>Gas name and units flash</li> <li>OVER appears at the bottom of the LCD</li> <li>Alarm LEDs flash approximately twice per second</li> <li>Backlight turns on</li> </ul>	<ul style="list-style-type: none"> <li>Alternating high-low tone-chirps about twice per second</li> <li>Vibrator pulses twice per second</li> </ul>
<b>LOW BATTERY WARNING</b>	<ul style="list-style-type: none"> <li>The last bar in the battery icon disappears and the battery icon starts flashing</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
<b>DEAD BATTERY ALARM</b>	<ul style="list-style-type: none"> <li>Alarm LEDs flash approximately once per second</li> <li>Gas reading disappears</li> <li>FAIL BATTERY appears on the LCD</li> </ul>	<ul style="list-style-type: none"> <li>Double pulsing tone occurring about once per second</li> </ul>
<b>SENSOR FAILURE</b>	<ul style="list-style-type: none"> <li>FAIL SENSOR appears on the LCD</li> <li>Alarm LEDs flash approximately once per second</li> </ul>	<ul style="list-style-type: none"> <li>Double pulsing tone occurring about once per second</li> </ul>
<b>SYSTEM FAILURE</b>	<ul style="list-style-type: none"> <li>FAIL SYSTEM and an error code appear on the LCD</li> <li>Alarm LEDs flash once per second</li> </ul>	<ul style="list-style-type: none"> <li>Double pulsing tone occurring about once per second</li> </ul>
<b>CLOCK FAILURE</b>	<ul style="list-style-type: none"> <li>FAIL 050 CLOCK appears on the LCD</li> <li>Alarm LEDs flash approximately once per second</li> </ul>	<ul style="list-style-type: none"> <li>Double pulsing tone occurring about once per second</li> </ul>

Figure 10

### 3.3 Responding to Alarms

This section describes appropriate responses to gas, over range, battery, sensor failure, clock failure, and system failure alarms. Follow an established procedure for responding to alarms. It should include, but not be limited to, immediately leaving the work environment and removing the 88VX respirator helmet as soon as it is safe to do so.

#### 3.3.1 Responding to CO Gas Alarms

**3.3.1.1** Follow an established procedure for responding to carbon monoxide gas alarms. It should include, but not be limited to, immediately leaving the work environment and removing the 88VX respirator helmet as soon as it is safe to do so.

**3.3.1.2** Reset the alarm by pressing and releasing the POWER/MODE button one time, after the CO reading falls below the low alarm point (10 ppm).

**3.3.1.3** It is recommended to confirm the CO gas concentration with another gas detecting device.

#### 3.3.2 Responding to an Over Range Alarm

##### **WARNING**

**An over range condition may indicate an extreme CO concentration, or a concentration that could be considered explosive. Failure to properly respond to an over range alarm can lead to death or serious injury.**

**3.3.2.1** An over range alarm could indicate CO gas is above the detection limit of 2000 ppm. The CO concentration reading is replaced by blinking symbols ( □ □ □ ).

**3.3.2.2** Reset the alarm using the POWER/MODE button once the alarm condition is cleared.

**3.3.2.3** Calibrate the COVX as described in Section 5.7. It is recommended to confirm the CO gas concentration with another gas detecting device.

**3.3.2.4** If the Over Range alarm continues, or if the COVX is not able to be successfully calibrated, the sensor may need to be replaced. *See Section 6.2: "Replacing the Sensor" for additional information.*

**3.3.2.5** If the Over Range alarm continues after replacing the sensor following the instructions in Section 6.2, contact Bullard Customer Service.

# COVX Personal Airline Respirator CO Monitor User Manual

---

## 3.3.3 Responding to Battery Alarms

### WARNING

The COVX is NOT functional during a dead battery alarm. If the battery of the COVX is dead, follow an established procedure for responding to alarms. It should include, but not be limited to, immediately leaving the work environment and removing the 88VX respirator helmet as soon as it is safe to do so.

Do NOT use the 88VX respirator helmet until the battery is replaced. Breathing compressed air while the monitor is not functional can result in carbon monoxide poisoning, serious injury or death.

- 3.3.3.1** The COVX is fully functional during a low battery warning. However, only a limited amount of operating time remains. The amount of time depends on how often the LCD backlight is used and how often the monitor responds to alarm conditions. Replace the battery as soon as possible when a low battery warning occurs. Refer to Section 6.1 “Replacing the Lithium Battery” for additional information.

### WARNING

Failure to timely replace the battery when a low battery warning is indicated may result in a dead battery. This could allow dangerous levels of carbon monoxide to go undetected and lead to carbon monoxide poisoning, serious injury or death.

### NOTE:

Alarms and the LCD backlight consume battery power and reduce the amount of operating time remaining.

- 3.3.3.2** If the battery of the COVX is dead, replace the battery. Refer to Section 6.1 “Replacing the Lithium Battery” for additional information.
- 3.3.3.3** If the COVX has been without battery for more than 5 minutes, the date and time will need to be reset. When a new battery is installed, the COVX automatically turns on and displays the DATE/TIME screen. Refer to Section 2.3 “Setting the Date and Time” for additional information. Once the date and time is set, the COVX will automatically begin its startup sequence.
- 3.3.3.4** If it is required to change the battery, calibrate the COVX as described in Section 5.7 after the startup sequence completes.

## 3.3.4 Responding to a Sensor Failure Alarm

- 3.3.4.1** Follow an established procedure for responding to alarms. It should include, but not be limited to, immediately leaving the work environment before removing the 88VX respirator helmet.
- 3.3.4.2** Attempt to stop the sensor failure alarm by pressing and releasing either the POWER/MODE button or the AIR button.
- 3.3.4.3** If the sensor failure alarm is successfully stopped, perform a calibration as described in Section 5.7.

**3.3.4.4** If the sensor failure alarm continues, replace the sensor as described in Section 6.2.

**3.3.4.5** If the Sensor Failure alarm continues after replacing the sensor, contact Bullard Customer Service.

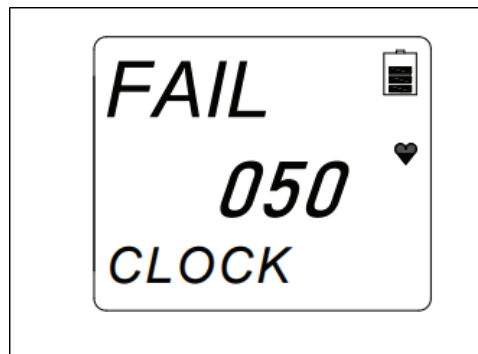
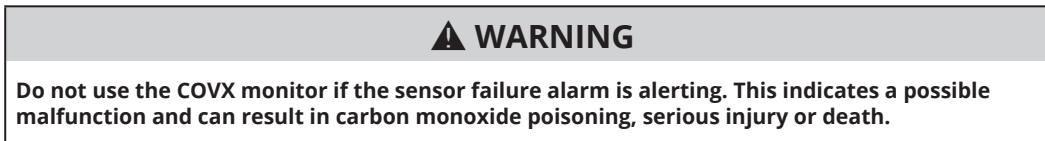


Figure 11

### 3.3.5 Responding to Clock Failure Alarm

A clock failure alarm occurs if the monitor's internal clock malfunctions.

**3.3.5.1** Attempt to stop the clock failure alarm by pressing and releasing either the POWER/MODE button or the AIR button.

**3.3.5.2** If the error code is 050, press and release the POWER/MODE button to continue into Measuring Mode if the instrument must be used temporarily, as shown in Figure 11.

**3.3.5.3** Attempt to set the date using the DATE menu item in User Mode. *Refer to Section 2.3: "Setting the Date and Time" for additional information.*

**3.3.5.4** If the date cannot be set correctly, contact Bullard Customer Service.

### 3.3.6 Responding to a System Failure Alarm

**3.3.6.1** If a system failure alarm occurs, the system failure will display an error code similar to that shown in Figure 12.

**3.3.6.2** If the System Failure error code is anything other than 031, as shown in Figure 12, the COVX cannot be used. Contact Bullard Customer Service as soon as possible.

**3.3.6.3** If the error code is 031, press and release the POWER/MODE button to continue into Measuring Mode if the COVX must be used temporarily.

# COVX Personal Airline Respirator CO Monitor User Manual

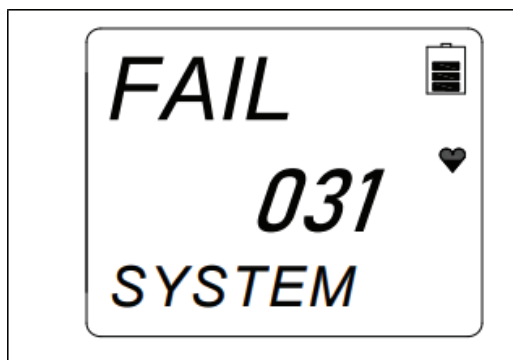


Figure 12

## 3.4 Resetting the COVX After an Alarm

**3.4.1** The COVX remains in an alarm state until the alarm condition passes, and the POWER/MODE button is pressed.

### NOTE:

Although the gas concentration may have fallen below the alarm point, the alarm indicators will continue until the alarm is reset using the POWER/MODE button.

**3.4.2** To reset a CO gas alarm, after the CO reading falls below the low alarm point (10 ppm), press and release the POWER/MODE button once.

## 3.5 Data Logging

**3.5.1** The COVX logs Measuring Mode gas readings, alarm data, and calibration data to its internal memory. Logged data can be downloaded to a computer via the infrared communications port on the front of the unit. The data logging capacity depends on how often the COVX stores data and how often the COVX is turned on and off. For a complete description of the data storage capacity, Data Logging requirements and program, see the COVX Data Logging User Instructions available online at [www.bullard.com](http://www.bullard.com).

### WARNING

**There is no data logging function if the COVX is operated after a 031 System Failure. Contact Bullard Customer Service as soon as possible.**

## 3.6 Alarm Set Points

There are six alarm points on the COVX. The alarm points, and their approved factory settings, are summarized below.

**3.6.1** F.S. (FULL SCALE): Is triggered when CO concentrations exceed the scale maximum of 2000 ppm.

**3.6.2** The WARNING, ALARM and ALARM HIGH are alarms set to trigger when the instantaneous CO concentration measurement reaches a preset value. They have been preset to a setpoint of 10PPM. This is the maximum exposure limit for Grade D compressed air in the United States, used to supply breathing air to the 88VX.

**3.6.3 TWA ALARM:** TWA stands for Time Weighted Average. It is the average reading of CO concentration over the previous 8 hour period. The alarm triggers when the TWA reaches 35 ppm. This is the NIOSH recommended exposure limit for the time weighted average concentration of carbon monoxide (NIOSH Pocket Guide).

**3.6.4 STEL ALARM:** STEL stands for Short Term Exposure Limit. It is the average reading of CO concentration over the previous 15 minute period. The alarm triggers when the STEL reaches 200 ppm. This is the OSHA recommended permissible exposure limit for the short term exposure limit, and the NIOSH recommended relative exposure limit ceiling value for carbon monoxide. (NIOSH Pocket Guide, OSHA).

## 4. MANEUVERING THROUGH MODES

This section helps the user maneuver through the COVX menu items. The menu item under each mode is listed in sequential order.

### 4.1 Measuring Mode

Measuring Mode is the normal operating mode used to detect CO and observe any alarm indications. The monitor must be in Measuring Mode before it is placed in the 88VX respirator helmet.

#### WARNING

The COVX is not operational as a carbon monoxide monitor unless it is in Measuring Mode. The COVX must be in Measuring Mode before it is placed in the 88VX respirator helmet. Failure to ensure the COVX is in Measuring Mode can result in carbon monoxide poisoning, serious injury or death.

#### 4.1.1 Entering Measuring Mode

**4.1.1.1** Begin with the COVX turned OFF. (Press and hold the POWER/MODE button until the screen is blank).

**4.1.1.2** Turn on the monitor by pressing and holding the POWER/MODE button until the COVX beeps.

**4.1.1.3** After the startup sequence, the COVX goes into Measuring Mode (normal operating mode) when the alarm beeps and the LCD screen is as shown in Figure 13.

#### NOTE:

The CO gas concentration shown in the illustration is for reference ONLY. The number displayed on the LCD will be the actual CO gas concentration reading. After an initial calibration per Section 5.7, the COVX is ready for use.

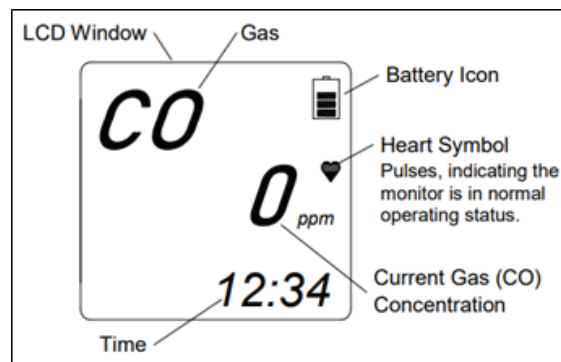


Figure 13

# COVX Personal Airline Respirator CO Monitor User Manual

---

## 4.2 User Mode

User Mode is used to do bump tests, calibrate, and make minor screen adjustments to the COVX. *Refer to Section 5.6 for additional information and instructions on how to perform a bump test.*

### WARNING

**The COVX is not operational as a carbon monoxide monitor while in User Mode. The COVX must be in Measuring Mode before it is placed in the 88VX respirator helmet. Failure to ensure the COVX is in Measuring Mode can result in carbon monoxide poisoning, serious injury or death.**

### 4.2.1 Entering User Mode

4.2.1.1 Begin with the COVX turned OFF.

4.2.1.2 Press and hold the AIR button, then press and hold the POWER/MODE button. Release both buttons as soon as the monitor beeps.

### 4.2.2 Tips for Using User Mode

4.2.2.1 The AIR button scrolls through items on the menus, similar to a cursor. Once the menu item is selected, use the POWER/MODE button to enter the selection.

4.2.2.2 To reverse the direction of change. (i.e from increasing to decreasing, or vice versa)

a. Press and hold the AIR button.

b. Immediately press the POWER/MODE button and then release both buttons.

4.2.2.3 To enter an item and save changes (reference Figure 15) press and release POWER/MODE button.

4.2.2.4 To exit an entered item without saving a change, press and hold the AIR and POWER/MODE buttons simultaneously for several seconds.

4.2.2.5 To cycle through each of the User Mode menus, press the POWER/MODE button and release it as soon as the alarm beeps.

4.2.2.6 The first screen to appear will be BUMP, as shown in Figure 14.

4.2.2.7 To scroll to the next menu item (GAS CAL), press and release the POWER/MODE button.

4.2.2.8 Refer to the table in Figure 15 for a sequential list of the items found in User Mode, the User Manual sections that the menu items' instructions can be found in, and descriptions of the menu items.

## 4.2.3 Display Firmware Version

4.2.3.1 Enter User Mode per Section 4.2.1.

4.2.3.2 Press and release the AIR button and scroll to ROM/SUM.

4.2.3.3 Press and release the POWER/MODE button. The screen will display ROM as the top value, and SUM as the bottom value.

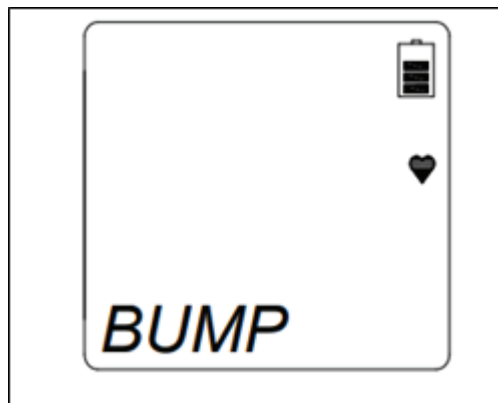


Figure 14

# COVX Personal Airline Respirator CO Monitor User Manual

## **⚠ WARNING**

Do NOT change any setting labeled "DO NOT ADJUST". Improperly adjusting these settings could allow exposure to an unsafe level of carbon monoxide which could cause serious injury or death.

<b>Sequential List of User Mode Menu Items</b>			
<b>Number of Times POWER/MODE button (beeps) is pressed and released to reach menu item</b>	<b>User Mode Menu Items</b>	<b>Description</b>	<b>Section in Which Adjustments are Found</b>
ONE	BUMP	Perform a bump test	Refer to Section 5.6
TWO	GAS CAL	Perform a calibration	Refer to Section 5.7
THREE	CAL SET	Adjusts calibration parameters	DO NOT ADJUST
FOUR	BUMP SET	Adjusts bump testing parameters	DO NOT ADJUST
FIVE	ALARM-P	Adjusts alarm set points	DO NOT ADJUST
SIX	LUNCH	Resets TWA and STEL readings at startup	DO NOT ADJUST
SEVEN	BEEP	Sets confirmation beep parameters	DO NOT ADJUST
EIGHT	BL TIME	Adjusts how long the backlight is illuminated	DO NOT ADJUST
NINE	KEY.TONE	Sets whether or not the alarm beeps when a button is pressed	Factory setting is ON DO NOT ADJUST
TEN	DISP.SET	Sets User ID, Station ID, and Alarm Volume	Factory setting is ON DO NOT ADJUST
ELEVEN	E-CAL	A-CAL item appears in the GAS CAL menu. E-CAL factory setting is off	Factory setting is ON DO NOT ADJUST
TWELVE	DATE	Sets the Date and Time	Refer to Section 2.3
THIRTEEN	PASS W	When set to ON, password is required to enter User Mode	Factory setting is ON DO NOT ADJUST
FOURTEEN	ROM/SUM	Shows the firmware version and firmware checksum	Refer to Section 4.2.7 to display firmware version
FIFTEEN	START	Enters Measuring Mode from User Mode	Press and release POWER/MOD

Figure 15

## 4.3 Display Mode

Display Mode is used to view and change settings of allowable menu items noted in the table in Figure 16. Refer to the table for a list of the menu items found in Display Mode, a description of the menu items' function, and the User Manual section where the menu items' instructions can be found.

### 4.3.1 Entering Display Mode

#### 4.3.1.1 To enter Display Mode with the COVX turned ON:

- a. While in Measuring Mode (normal operating mode) press and hold the POWER/MODE button.
- b. Release the POWER/MODE button as soon as the audible alarm beeps. The COVX is now in Display Mode.

### 4.3.2 Tips for Using Display Mode

**4.3.2.1** The AIR button scrolls through items on the menus, similar to a cursor. Once the menu item is selected, use the POWER/MODE button to enter the selection.

**4.3.2.2** To reverse the direction of change. (i.e. from increasing to decreasing, or vice versa):

- a. Press and hold the AIR button.
- b. Immediately press the POWER/MODE button and then release both buttons.

 **NOTE:**

Each screen displays for 20 seconds. If a button is not pressed within 20 seconds, the COVX automatically returns to Measuring Mode.

**4.3.2.3** To cycle through each of the following Display Mode menus, press the POWER/MODE button and release it as soon as the alarm beeps. Refer to the Table in Figure 16 for additional information.

 **NOTE:**

Menu items shown with "No Adjustment" have factory settings that should not be adjusted. **DO NOT PUSH BUTTONS THAT CAN CHANGE THE COVX'S FUNCTION.** If an operator accidentally enters an unfamiliar menu, refer to Section 4.4.1 to return the COVX to factory settings.

# COVX Personal Airline Respirator CO Monitor User Manual

<b>Sequential List of Display Mode Menu Items</b>			
<b>Number of Times POWER/ MODE button (beeps) is pressed and released to reach menu item</b>	<b>Display Mode Menu Items</b>	<b>Description</b>	<b>Section in Which Adjustments are Found</b>
ONE	PEAK	Displays PEAK (highest) CO concentration since the monitor was last turned on	DO NOT ADJUST
TWO	STEL	Displays Short Term Exposure Limit. This reading is the average CO concentration over the previous 15 minute period	DO NOT ADJUST
THREE	TWA	<ul style="list-style-type: none"> <li>• Displays the time weighted average</li> <li>• This reading is the average CO concentration over the previous 8 hour period</li> </ul>	DO NOT ADJUST
FOUR	dISP (CAL DATA LCD screen cycles through CAL.DATA, YES/AIR and NO/MODE)	Shows date of last calibration. Factory is set to ON	DO NOT ADJUST
FIVE	DATE and TIME	Displays Year, Date, and Time	Set per Section 2.3
SIX	TEMP	Displays ambient temperature in Celsius	Not adjustable
SEVEN	dISP (ALARM-P LCD screen cycles through ALARM-P, YES/AIR and NO/MODE)	View alarm set points	DO NOT ADJUST
EIGHT	HI (Alarm Beep Volume)	<ul style="list-style-type: none"> <li>• Sets the buzzer volume</li> <li>• Factory set to HIGH</li> </ul>	DO NOT ADJUST
NINE	Returns to Measuring Mode		

*Figure 16*

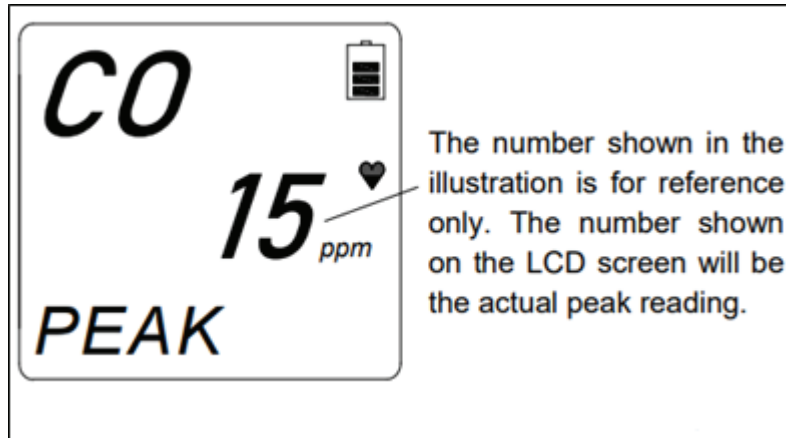


Figure 17

### 4.3.3 Displaying the PEAK Screen

The PEAK screen displays the highest CO concentration detected since the COVX was turned ON.

**4.3.3.1** PEAK readings are automatically cleared when the COVX is turned OFF (or cleared as described in Section 3.4) and restarted.

**4.3.3.2** Ensure the COVX is in Display Mode, as noted in Section 4.3.

**4.3.3.3** Press and release the POWER/MODE until PEAK appears in the lower left corner of the LCD screen, as shown in Figure 17.

**4.3.3.4** To clear the PEAK reading, perform the following operations while remaining in Display Mode.

**4.3.3.5** When PEAK appears on the screen, press and hold the AIR button, "HOLD" text will appear (as shown in the left image on Figure 18) and keep holding until "RELEASE" text is shown on the screen, then release (as shown in the right image of Figure 18).

**4.3.3.6** The PEAK reading will be reset and the display will return to the PEAK screen.

**4.3.3.7** After 20 seconds, the COVX will return to Measuring Mode (normal operating mode).

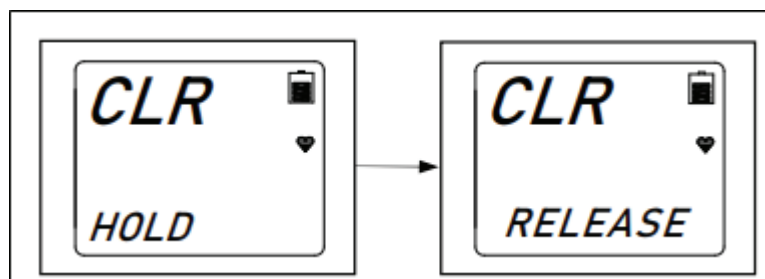


Figure 18

# COVX Personal Airline Respirator CO Monitor User Manual

---

## 4.3.4 Displaying the STEL Screen

**4.3.4.1** The STEL screen displays the Short Term Exposure Limit (STEL) reading. The STEL reading represents the average CO concentration reading over the previous 15 minutes. There are no changes or resets on the STEL menu.

**4.3.4.2** STEL readings are automatically cleared when the COVX is turned OFF (or cleared as described in Section 3.4) and restarted.

**4.3.4.3** Ensure the COVX is in Display Mode, as noted in Section 4.3.

**4.3.4.4** Press and release the POWER/MODE button repeatedly until STEL appears in the lower left corner of the LCD screen.

## 4.3.5 Displaying the TWA Screen

**4.3.5.1** The TWA Screen displays the time weighted average reading. The TWA reading represents the average CO concentration reading over the previous 8 hours. If 8 hours have not elapsed since the last time the TWA reading was cleared, the average is still calculated over an 8 hour period. Missing readings have an assigned value of 0.

**4.3.5.2** TWA readings are automatically cleared when the COVX is turned OFF and begins collecting new TWA readings when the COVX is turned ON.

**4.3.5.3** Ensure the COVX is in Display Mode, as noted in Section 4.3.

**4.3.5.4** Press and release the POWER/MODE button repeatedly until TWA appears in the lower left corner of the LCD screen.

## 4.4 Maintenance Mode

 **NOTE:**

Maintenance Mode changes settings that operationally affect the COVX.

 **WARNING**

Do NOT change Maintenance Mode settings without instruction from Bullard. Changing settings without proper guidance can lead to false or no alarms, resulting in carbon monoxide poisoning, serious injury or death.

 **WARNING**

The COVX is not operational as a carbon monoxide monitor while in Maintenance Mode. The COVX must be in Measuring Mode before it is placed in the 88VX respirator helmet. Failure to ensure the COVX is in Measuring Mode can result in carbon monoxide poisoning, serious injury or death.

#### 4.4.1 Return to Factory Default Settings

The only function advised to use in Maintenance Mode is to default to factory settings when menu items have been unintentionally changed. These changes are identified when menu items on the COVX screen do not match menu items in the user instructions.

#### 4.4.2 Entering Maintenance Mode

**4.4.2.1** Ensure the COVX is turned OFF (Press and hold the POWER/MODE button until the LCD screen is blank).

**4.4.2.2** Press and hold the AIR and POWER/MODE buttons simultaneously. Continue to hold the buttons down after the first beep.

**4.4.2.3** Release both buttons after the second beep. The LCD screen should be as shown in Figure 19 with first digit on the left flashing.

**4.4.2.4** The factory set password is 3000.

**4.4.2.5** Enter the password by pressing the AIR button multiple times as required to select the correct number, and then press and release the POWER/MODE button to save it and move onto the next number until all of the numbers are entered.

**4.4.2.6** To reverse the direction of change. (i.e. from increasing to decreasing, or vice versa):

- a. Press and hold the AIR button.
- b. Immediately press the POWER/MODE button and then release both buttons.

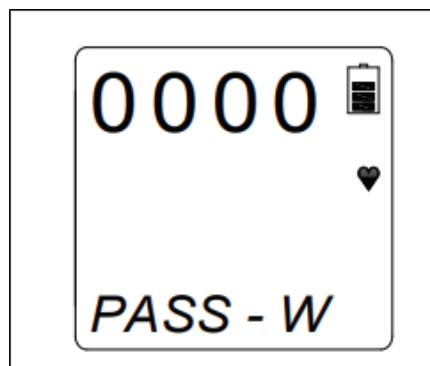


Figure 19

#### 4.5 Performing a Default Operation (M.DEF)

Performing a default operation in Maintenance Mode returns all parameters to their factory settings.

**4.5.1** Enter Maintenance Mode per Section 4.4.

**4.5.2** Press and release the AIR button 16 times and scroll to "M.DEF".

# COVX Personal Airline Respirator CO Monitor User Manual

---

**4.5.3** Press and release the POWER/MODE button. The screen will alternate between "M.DEF", "YES.MODE", and "NO.AIR".

**4.5.4** Press and release the POWER/MODE button to select "YES" and perform a default operation. A default operation in Maintenance Mode returns all parameters to their factory settings.

**4.5.5** The COVX will prompt the user to ask if they are sure they want to perform a default operation by alternating between "SURE?", "YES.MODE", and "NO.AIR".

**4.5.6** Press and release the POWER/MODE button to select "YES". The COVX will beep twice, briefly display "PASS", and return to M.DEF screen.

**4.5.7** To return to Measuring Mode (normal operating mode), press and release the AIR button, and press and release the POWER/MODE button. The COVX will begin the startup sequence and enter Measuring Mode.

## WARNING

**Do not perform calibration or maintenance in an explosive or hazardous environment. Failure to follow this instruction could cause death or serious injury.**

## 5. CALIBRATION, FRESH-AIR ADJUSTMENTS, BUMP TEST, AND STORAGE

This section covers:

- Calibration Schedule
- Performing Fresh-Air Adjustments
- Preparing the Calibration Connector for Calibration
- Connecting Calibration Cup to COVX
- Removing Calibration Cup from COVX
- Performing a Bump Test
- Calibrating the COVX
- Storing the COVXCK

### 5.1 Calibration Schedule

**5.1.1** Once the date and time are set per Section 2.3, the COVX displays a reminder that a bump test and/or calibration are due. Factory settings are as follows:

- Bump Test reminder is set for 30 days.
- Calibration reminder is set for 90 days.

**5.1.2** The following initial calibration schedule should be followed

- Perform a bump test daily for the first week of operation (Refer to Section 5.6).
- Calibrate weekly for the first month of operation (Refer to Section 5.7).
- Follow bump test and calibration reminder schedules thereafter.
- Bump test the COVX before use inside the 88VX respirator helmet if the monitor was out of service for longer than 1 week.

## 5.2 Performing Fresh-Air Adjustment with 0PPM Test Gas

Fresh-air adjustments must be done in a clean fresh-air environment, free of toxic or combustible gases and with normal oxygen content (20.9%). The usual method listed in Section 2.4 is to set it in fresh ambient air. If fresh, ambient air cannot be assured, set the fresh-air baseline with impurity free (0 ppm) test gas. The following equipment from the COVXCAL is required to set a fresh-air baseline:

- Impurity-free test gas (0 ppm)
- Calibration connector with 0.5 LPM fixed-flow regulator
- Flexible tubing
- Calibration Cup

**5.2.1** Ensure the COVX is turned OFF.

**5.2.2** Prepare the calibration connector regulator valve and impurity-free test gas per Section 5.3.

**5.2.3** Turn ON the COVX by pressing and holding the POWER/MODE button until the alarm beeps. Allow the COVX to finish its startup sequence.

**5.2.4** Navigate to User Mode per Section 4.2.1. While in User Mode, press and release the AIR button repeatedly to scroll to "GAS CAL". Press and release the POWER/MODE button. The "AIR" item appears. Press and release the POWER/MODE button to enter the AIR menu.

**5.2.5** Open the regulator knob by turning it all the way clockwise.

**5.2.6** Press and hold the AIR button. While pressing the AIR button, the LCD screen displays "HOLD", a prompt to continue pressing the AIR button.

**5.2.7** When the fresh-air baseline has been set, the LCD screen displays "Adj", the COVX beeps once, and the LCD screen displays "RELEASE", a prompt to release the AIR button. After releasing the AIR button, the LCD screen displays 0 ppm, as shown in Figure 20.

**5.2.8** The COVX is now in Measuring Mode (normal operating mode). After an initial calibration per Section 5.7, the COVX is ready for use.

**5.2.9** Close the regulator knob by turning it all the way counterclockwise.

**5.2.10** Remove the calibration cup by gently prying the retaining clips off of the COVX while lifting up on the calibration cup. Refer to Section 5.5 for additional information on removing the calibration cup.

**5.2.11** Unscrew the calibration connector regulator from the test gas cylinder. The test gas cylinder has a positive seal, whereas the calibration connector regulator valve does not. If the connector is not removed from the test gas cylinder, over time the cylinder could empty.

**5.2.12** Refer to Section 5.8 for information on storing the COVXCK and test gas.

# COVX Personal Airline Respirator CO Monitor User Manual

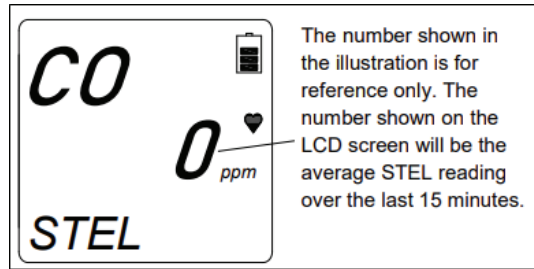


Figure 20

## 5.3 Preparing Calibration-Connector Regulator Valve for Calibration

The following materials are required to prepare the calibration connector and test gas:

- Calibration Test Gas Cylinder (10 ppm)
- Impurity-free test gas (0 ppm)
- Calibration connector with 0.5 LPM fixed-flow rate
- Flexible tubing
- Calibration Cup

**5.3.1** Slide one end of the clear tubing onto the barbed end of the calibration connector with the regulator valve.

**5.3.2** Slide the other end of the tubing onto the inlet barb of the calibration cup.

### NOTE:

The calibration cup (shown in Figure 21) has directional flow. The flow direction arrow shows the direction of the airflow. The tube connects to the barb on the back end of the flow arrow, as shown. The outlet barb (on the front end of the flow arrow) remains open.

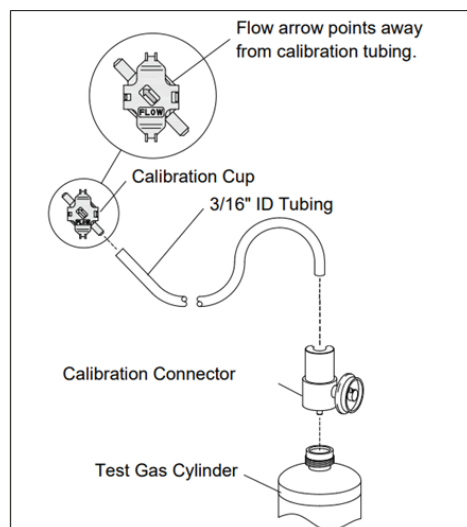


Figure 21

**5.3.3** Ensure the regulator knob is CLOSED.

**5.3.4** Screw the calibration connector with the knob regulator onto the test gas cylinder.

**NOTE:**

Test gas can be 10 ppm CO used to calibrate the COVX, or it can be impurity free air used to set the fresh-air baseline, depending on if the user is performing a fresh-air adjustment, bump test, or calibration.

**WARNING**

Always use the 0.5 LPM (liters per minute) fixed flow calibration connector regulator valve equipped on the COVXCAL when calibrating the COVX. Use of a different flow rate will adversely affect the accuracy of the calibration. Failure to follow this instruction could cause death or serious injury.

## 5.4 Connecting Calibration Cup to COVX

**5.4.1** Prepare the calibration connector regulator valve for calibration per Section 5.3. Ensure the regulator knob is CLOSED.

**5.4.2** Prior to attaching the calibration cup onto the COVX, ensure it is correctly positioned, as shown in Figure 22. The calibration cup's flow arrow must point up and to the left as shown.

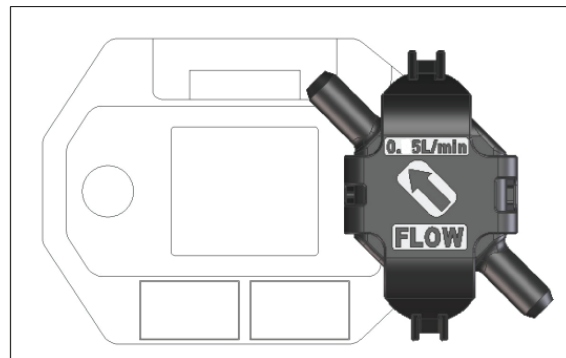


Figure 22

**5.4.3** To attach the calibration cup, hook the calibration cup's lower retaining clip under the lower slot as shown in Figure 23.

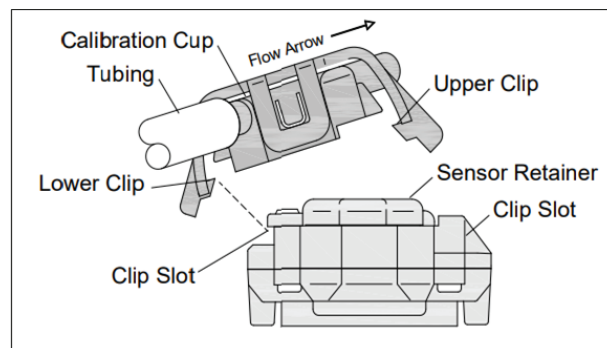


Figure 23

**5.4.4** Gently press the other end of the cup onto the COVX until it snaps in place as shown in Figure 24. Do not force the calibration cup onto the COVX. If the calibration cup does not snap easily into place, confirm that the cup is oriented correctly on the COVX (Flow arrow points up and to the left of the COVX) as shown in Figure 22.

# COVX Personal Airline Respirator CO Monitor User Manual

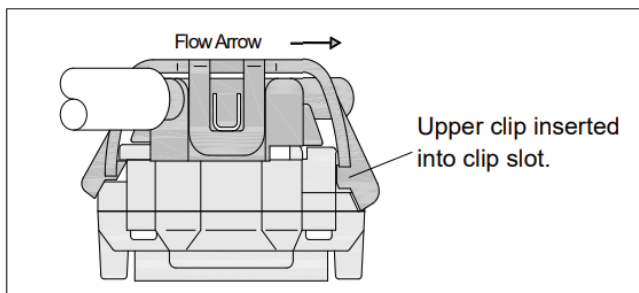


Figure 24

## 5.5 Removing the Calibration Cup from the COVX

**5.5.1** Ensure the connector's regulator is CLOSED.

**5.5.2** To remove the calibration cup from the COVX, gently pry the upper retaining clip off of the COVX while lifting up on the cup as shown in Figure 25.

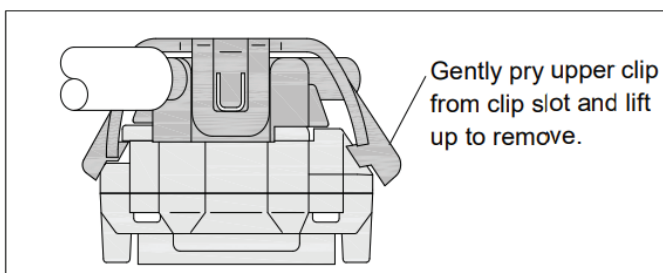


Figure 25

**5.5.3** Unscrew the calibration connector from the test gas cylinder. The test gas cylinder has a positive seal, whereas the calibration connector valve does not. If the connector is not removed from the test gas cylinder over time, the cylinder could empty.

**5.5.4** Refer to Section 5.8 for information on storing the COVXCK and test gases.

## 5.6 Performing a Bump Test

A bump test is a fast way to determine if the COVX is calibrated within 1 ppm of the test gas. If the bump test fails, calibration is immediately and automatically started. Perform the bump test in a well vented, fresh-air environment. Refer to Section 5.7 for additional information.

The following materials are required to perform a bump test on the COVX:

- Calibration Test Gas Cylinder (10 ppm)
- Calibration connector with 0.5 LPM fixed-flow regulator, flexible tubing and calibration cup assembled as described in Section 5.3

**5.6.1** Ensure the fresh-air baseline was set per Section 5.2.

**5.6.2** Prepare the calibration connector regulator valve and 10 ppm CO test gas per Section 5.3. Ensure the regulator is CLOSED.

- 5.6.3** With the COVX OFF, press and hold the AIR and POWER/MODE buttons. Release both buttons when the monitor beeps. "BUMP" is displayed on the LCD. The COVX is now in User Mode.
- 5.6.4** Press and release the POWER/MODE button once. The calibration value (10 ppm) is displayed on the right side of the LCD screen.
- 5.6.5** Connect the calibration cup to the front of the monitor over the sensor retainer. (The sensor retainer is located on the right side of the LCD screen). The calibration cup's arrow must point up and to the left, as shown in Figures 22 and 23. Gently press the cup onto the COVX until it snaps into place. Refer to Section 5.4 for additional information on connecting the calibration cup to the monitor.
- 5.6.6** Open the regulator by turning the knob clockwise.
- 5.6.7** Press and release the POWER/MODE button once. The gas reading will flash and the monitor will count down from 30 seconds in the lower right corner of the LCD. The bottom of the screen will alternate between "APLY" and "BUMP".
- 5.6.8** Once the countdown reaches zero, the bump test is performed.
- 5.6.9** If the bump test passes, the LCD will display "P" (passed) and "BMP/CAL", as shown in Figure 26. Proceed to Section 5.6.17.

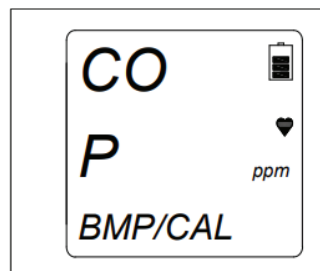


Figure 26

- 5.6.10** If the bump test failed, a calibration is immediately and automatically started. Continue to apply the calibration gas. "AUTO CAL" will appear at the bottom of the LCD screen and a countdown will appear at the top. Refer to Section 5.7 for additional information on Calibrating the COVX.
- 5.6.11** If "AUTO CAL" passes, close the regulator knob.
- 5.6.12** Remove the calibration cup by gently prying the retaining clips off of the COVX while lifting up on the calibration cup. Refer to Section 5.5 for additional information on removing the calibration cup.
- 5.6.13** Press and release the POWER/MODE button to return to User Mode.
- 5.6.14** If the COVX failed the calibration, the LED's will flash and the alarm will sound a double pulsing tone until the POWER/MODE button is pressed and released, which returns to the BUMP menu (User Mode). Refer to Section 7.0 "Troubleshooting" for additional information.

# COVX Personal Airline Respirator CO Monitor User Manual

---

**5.6.15** Press and release the AIR button repeatedly to scroll to "START".

**5.6.16** Press and release the POWER/MODE button to start the startup sequence and return to Measuring Mode. The bump test is complete.

**5.6.17** Refer to Section 5.8 for additional information on removing and storing the connector and test gas.

## 5.7 Calibrating the COVX

Perform the bump test in a well vented, fresh-air environment. The following materials are required to perform a calibration on the COVX:

- Calibration Test Gas Cylinder (10 ppm)
- Calibration connector with 0.5 LPM fixed-flow regulator flexible tubing, and calibration cup, assembled, as noted in Section 5.3

**5.7.1** Ensure the fresh-air baseline was set per Section 5.2.

**5.7.2** Prepare the calibration connector, regulator, and 10 ppm test gas per Section 5.3. Ensure the regulator is CLOSED.

**5.7.3** With the COVX turned OFF, press and hold the AIR and POWER/MODE buttons simultaneously. Release both buttons when the monitor beeps. "BUMP" is displayed on the LCD screen. The COVX is now in User Mode.

**5.7.4** Press and release the AIR button once to scroll to "GAS CAL". Press and release the POWER/MODE button.

**5.7.5** Press and release the AIR button once to scroll to "A-CAL".

### NOTE:

If "E-CAL" displays instead of "A-CAL", the monitor is in the incorrect mode. *Refer to Section 4.4 to return the COVX to factory default settings.*

**5.7.6** Press and release the POWER/MODE button once. The calibration value (10 ppm) displays on the right side of the screen.

**5.7.7** Press and release the POWER/MODE button again. The gas reading will start to flash. The bottom of the LCD screen will alternate between displaying "APPLY" and "A-CAL".

**5.7.8** Connect the calibration cup to the front of the monitor over the sensor retainer. (The sensor retainer is located to the right of the LCD screen). The calibration cup's flow arrow must point up and to the left, as shown in Figures 22 and 23. Gently press the calibration cup onto the COVX until it snaps into place. *Refer to Section 5.4 for additional information on connecting the calibration cup to the COVX.*

**5.7.9** Open the regulator.

**5.7.10** Allow the 10 ppm test gas to flow for one minute.

**5.7.11** Press and release the POWER/MODE button once. The monitor begins calibration.

**5.7.12** If the calibration was successful, the LCD will briefly display "PASS" and the COVX returns to the "A-CAL" menu.

- 5.7.13** If the calibration failed, the LCD screen will display "FAIL", the LEDs will flash, and the alarm will sound. Press and release the POWER/MODE button to clear the failure. The monitor returns to the A-CAL menu. Refer to Section 7.0 "Troubleshooting" for additional instructions.
- 5.7.14** Close the regulator.
- 5.7.15** Remove the calibration cup by gently prying the retaining clips off of the COVX while lifting up on the calibration cup. Refer to Section 5.5 for additional information on removing the calibration cup.
- 5.7.16** Press the AIR button once to scroll to "ESCAPE".
- 5.7.17** Press and release the POWER/MODE button to return to User Mode. The COVX returns to Measuring Mode if no buttons are pushed within 20 seconds.
- 5.7.18** Press and release the AIR button 13 times to scroll to START.
- 5.7.19** Press and release the POWER/MODE button once to start the startup sequence and return to Measuring Mode. The calibration is complete.
- 5.7.20** Refer to Section 5.8 for information on storing the COVXCK and test gas.

## 5.8 Storing the COVXCK and Test Gas

- 5.8.1** Remove the calibration cup from the COVX per Section 5.5.
- 5.8.2** Unscrew the calibration connector from the regulator from the test gas cylinder. The test gas cylinder has a positive seal, whereas the calibration connector regulator does not. If the connector is not removed from the test gas cylinder, over time the cylinder could empty.
- 5.8.3** Place the COVXCK equipment and test gas inside the container, and store it upright, in a clean, dry place.

## 6. MAINTENANCE

### WARNING

Regularly scheduled calibration and maintenance is essential for proper operation and accurate readings on the COVX. Maintenance should be performed in a fresh-air, non-explosive and non-hazardous environment, by personnel properly trained to complete it. Improper service could result in malfunction of the COVX and cause death or serious injury.

### NOTE:

There are no serviceable parts within the COVX case. DO NOT remove the four screws holding the upper and lower case together or try and separate the case.

## 6.1 Replacing the Lithium Battery

### WARNING

To prevent ignition of a hazardous atmosphere, the COVX battery must only be changed in a non-hazardous and non-explosive environment. Failure to follow this instruction could cause death or serious injury.

# COVX Personal Airline Respirator CO Monitor User Manual

The battery icon has three bars visible when the battery has full power. As the battery charge decreases, the bars disappear. Obtain a replacement CR2450 3.0 Volt lithium coin battery when there is one bar remaining on the battery icon. Replace the battery when the lowest battery level indication bar disappears and the battery icon begins to flash, indicating that the battery is in low battery warning.

**6.1.1** Ensure the COVX is turned OFF.

**6.1.2** From the back of the COVX, use a small Phillips head screwdriver to unscrew the battery cover screw and swing the cover away from the COVX to remove it as shown in Figure 27.

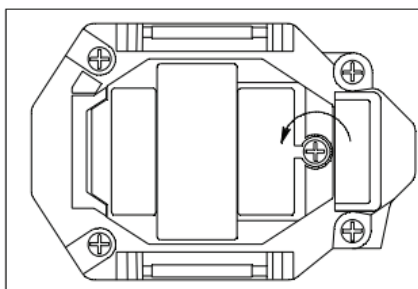


Figure 27

**6.1.3** Carefully remove and properly dispose of the old CR2450 3.0 Volt lithium coin battery.

**6.1.4** Carefully install the new CR2450 3.0 Volt lithium coin battery, noting the polarity indicators on the underside of the battery cover inside the COVX battery compartment. The negative (-) side of the battery goes into the COVX monitor, as shown in Figure 28.

**6.1.5** Re-install the battery cover and screw.

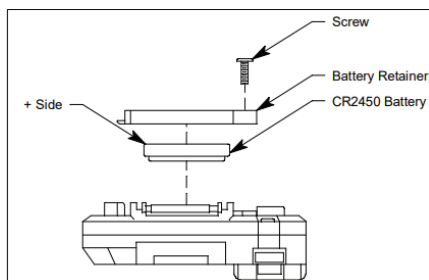


Figure 28

**NOTE:**

If the COVX has been without a battery for more than 5 minutes, the date and time are reset and need to be set again. When the new battery is installed, the COVX will turn on automatically and display the Date/Time screen. Reset the date and time per Section 2.3: Setting the Date and Time. Once the date and time have been set, the COVX will begin its startup sequence. If the date and time are not set within 30 seconds of arriving on the Date/Time screen, the COVX will automatically begin its startup sequence.

## 6.2 Replacing the Sensor

**NOTE:**

Replace the sensor in a clean, non-hazardous environment. New hydrophobic and charcoal filters should be used each time the sensor is replaced. Reorder these replacement filters as COVXFILTERKIT. Ensure a new hydrophobic filter and charcoal filter are available before starting the change out process.

6.2.1 Ensure the COVX is turned OFF.

6.2.2 Use a small Phillips head screwdriver to unscrew the sensor-retainer screw.

6.2.3 Remove the sensor retainer.

6.2.4 Remove the sensor gasket and both filters (White hydrophobic filter, and black charcoal filter). The filters may fall out. The sensor may be exposed.

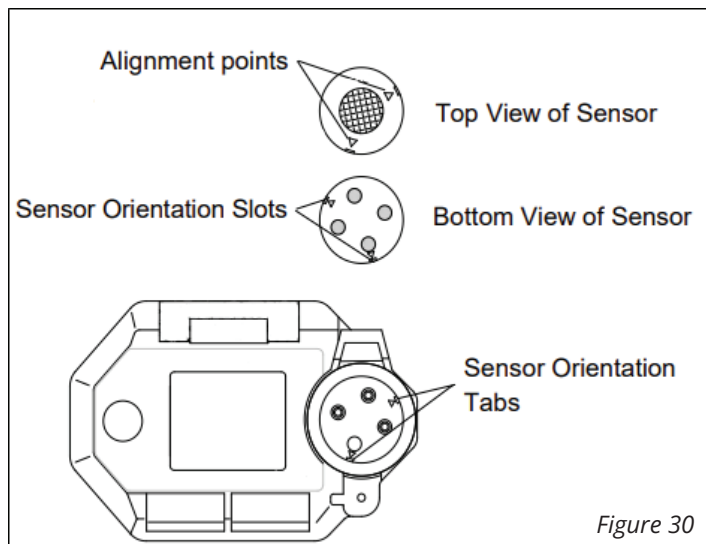
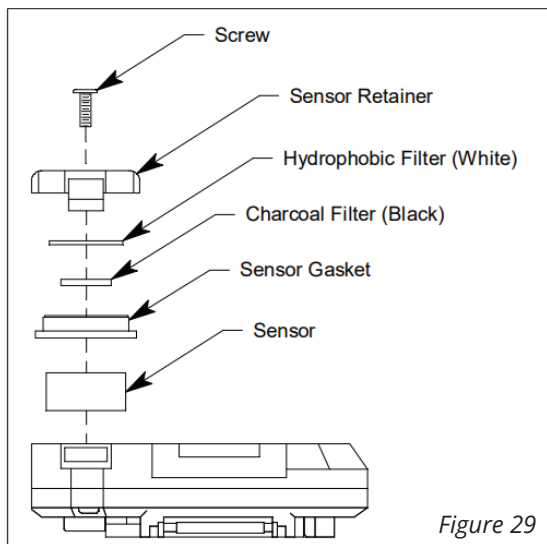
6.2.5 Remove the old sensor by pulling it straight upwards out of the sensor socket.

**NOTE:**

The bottom of the sensor is slotted and can only be inserted into the socket one way, as shown in Figure 29. Before removing the sensor, note the orientation of the old sensor alignment points, as shown in Figure 30. The new sensor will insert with the same orientation.

**NOTICE**

**Do not force the sensor into the socket. When correctly oriented, the sensor easily fits into the socket. Forcing it into place when oriented incorrectly could damage the sensor or the socket.**



6.2.6 Carefully insert the replacement sensor. Ensure the sensor face with the colored ring is facing upward and that the sensor's orientation slots are aligned correctly with the tabs within the socket as shown in Figure 30. Do not force the sensor into its socket. If the sensor is aligned correctly, it will easily set into the socket.

6.2.7 Place the wide side of the sensor gasket over the sensor and push it into the recess as shown in Figure 29.

6.2.8 Install a new charcoal filter (black). It should be seated and recessed in the center of the sensor gasket and should not overlap the edge of the sensor gasket. Follow the filter replacement instructions in Section 6.3 below.

# COVX Personal Airline Respirator CO Monitor User Manual

---

**6.2.9** Install a new hydrophobic filter (white). It should be seated and recessed in the center of the sensor gasket and should not overlap the edge of the sensor gasket.

**6.2.10** Reinstall the sensor retainer and tighten its screw.

**6.2.11** Calibrate the new sensor as described in Section 5.7: Calibrating the COVX.

## 6.3 Replacing the Charcoal Filter

**NOTE:**

Replace the charcoal filter (black) in a clean, non-hazardous environment.

**6.3.1** Ensure the COVX is turned OFF.

**6.3.2** Use a small Phillips head screwdriver to unscrew the sensor-retainer screw.

**6.3.3** Remove the sensor retainer.

**6.3.4** The hydrophobic filter (white) and the sensor gasket should stay on the sensor.

**6.3.5** Remove the hydrophobic filter (white).

**6.3.6** Remove the old charcoal filter (black) from the center of the sensor gasket.

**6.3.7** Install the new charcoal filter (black). It should be seated and recessed in the center of the sensor gasket.

**6.3.8** Reinstall the hydrophobic filter (white). It should be seated and recessed in the sensor gasket and should not overlap the edge of the sensor gasket.

**6.3.9** Reinstall the sensor retainer and tighten its screw.

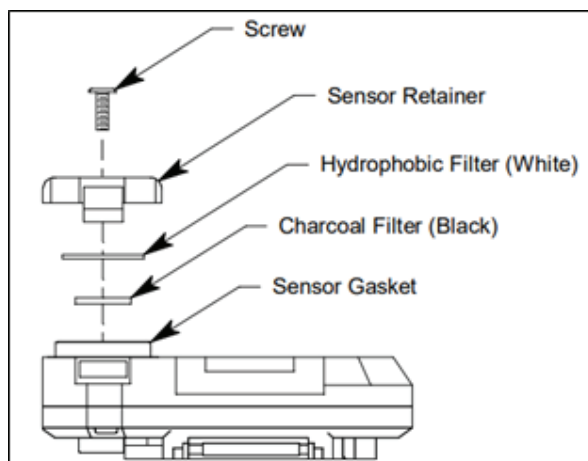


Figure 31

## 6.4 Replacing the Hydrophobic Filter

**NOTE:**

Replace the hydrophobic filter (white) in a clean, non-hazardous environment.

**6.4.1** Ensure the COVX is turned OFF.

**6.4.2** Use a small Phillips head screwdriver to unscrew the sensor-retainer screw.

**6.4.3** Remove the sensor retainer.

**6.4.4** The hydrophobic filter (white) and the sensor gasket should stay on the sensor.

**6.4.5** Remove the old hydrophobic filter (white).

**6.4.6** Remove the charcoal filter (black) from the center of the sensor gasket. It is recommended to change the charcoal filter (black) when changing the hydrophobic filter (white).

**6.4.7** Install the new charcoal filter (black). It should be seated and recessed in the center of the sensor gasket.

**6.4.8** Install the new hydrophobic filter (white). It should be seated and recessed in the sensor gasket and should not overlap the edge of the sensor gasket.

**6.4.9** Reinstall the sensor retainer and tighten its screw.

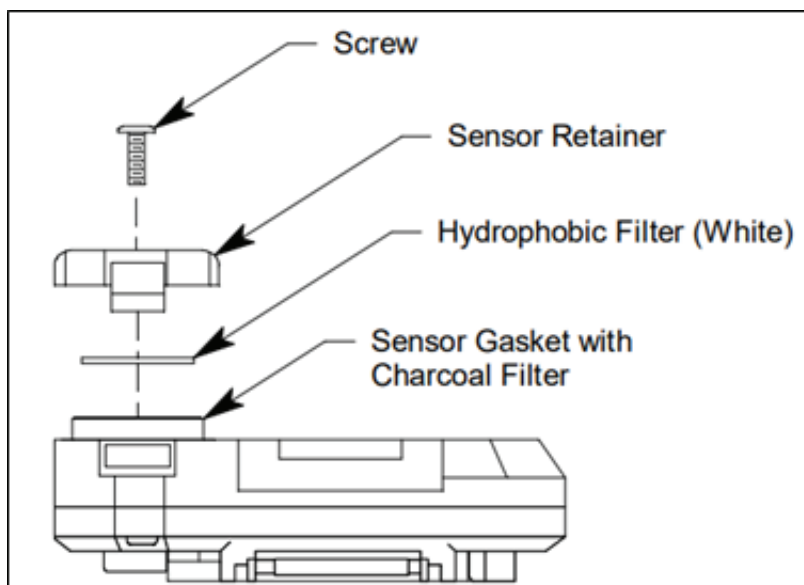


Figure 32

## 7. TROUBLESHOOTING

The troubleshooting table describes error messages, symptoms, probable causes, and recommended action for obstacles encountered with the COVX. Refer to the table in Figure 33 for additional information.

# COVX Personal Airline Respirator CO Monitor User Manual



**NOTE:**

If the COVX does not display menu items that are noted in this section (Section 7.0: Troubleshooting), repeat the recommended action. If after repeating the recommended action process the COVX still does not display the correct menu item, return the COVX to factory settings per Section 4.4. If the COVX continues to display incorrect menu items, contact Bullard's customer service department for assistance. See Bullard's Limited Warranty and Return Authorization Process on page 42.

Symptom	Potential Cause	Recommended Action
LCD screen is blank	COVX may have been turned off	1. To turn on the COVX, press and briefly hold POWER/MODE
	Battery was inserted backwards	1. Reinstall the battery to the correct orientation, as noted in Section 6.1
	Battery may need to be replaced	1. Check the battery icon for remaining battery life 2. Replace the battery, if necessary, as noted in Section 6.1
	Battery cover may not be completely closed	1. Ensure the battery cover is closed completely and that the screw is tightened 2. If difficulties continue, contact Bullard Customer Service for further instruction.
LCD screen shows an abnormally high reading of CO on the COVX (secondary gas detection instrument), but other primary gas detection instruments do not	Charcoal filter (black) may need to be replaced	1. Replace the charcoal filter (black) as noted in Section 6.3
	COVX may need to be recalibrated	1. Recalibrate the COVX as noted in Section 5.7 2. If difficulties continue, replace the sensor, as noted in Section 6.2, and attempt to calibrate the COVX again.
	Sensor may need to be replaced	1. Recalibrate the COVX as noted in Section 5.7 2. If difficulties continue, replace the sensor, as noted in Section 6.2, and attempt to calibrate the COVX again.
Calibration fails	Calibration gas values may not match the cylinder test gas concentration	1. Ensure the test gas from the COVXCAL, and gas value in the COVX are 10 ppm. Refer to Sections 5.6 and 5.7 for additional information. 2. Ensure the COVX has been properly set up for calibration 3. If the fail condition continues, replace the sensor as noted in Section 6.2 4. If difficulty continues, contact Bullard Customer Service for further instruction.
	The sample gas is not reaching the sensor due to a bad connection	1. Inspect calibration kit tubing for leaks, bad connections, or other sources of obstruction
	The calibration gas cylinder may be out of gas, or is expired	1. Verify the calibration test gas cylinder contains an adequate supply of test gas 2. Verify the calibration test gas cylinder is not outdated, or exceeding its shelf life
	Sensor may need to be replaced	1. If the fail condition continues, replace the sensor as noted in Section 6.2 2. If difficulties continue, contact Bullard Customer service for further instruction
Heart symbol at the top right of the LCD screen stays steadily on, or disappears	Microprocessor error has occurred	1. Contact Bullard Customer Service for further instruction.
Monitor does not display menu items as noted within these instructions	Factory settings accidentally changed	1. Return to factory default settings per Section 4.4 2. If difficulties continue, contact Bullard Customer Service for further instruction.

Figure 33

## 8. REPLACEMENT PARTS

### ⚠ WARNING

Only use the replacement parts and components that are authorized by Bullard and identified in this User Manual. Using non-approved parts and components could damage the product and render it unsafe for use.

### 8.1 System Replacement Parts

Item	Part	Bullard Part Number
1, 7, 8	COVX CO Monitor with Monitor Holder	COVX
2	COVXCK Calibration Kit with COVX Monitor	COVXWITHCK
3	Test Gas, 10 ppm CO 0 ppm, impurity free	COVXCK
4	Calibration Connector with Fixed Flow Regulator	COVXCK
5	Calibration Cup	COVXCALCUP or COVXCK
6	Calibration Tubing	COVXCK
7	Hook and Loop Material	COVXHOLDER5PK
8	COVX Holder	COVXHOLDER5PK
N/A	Regulator Only	CABCALREG

Figure 34

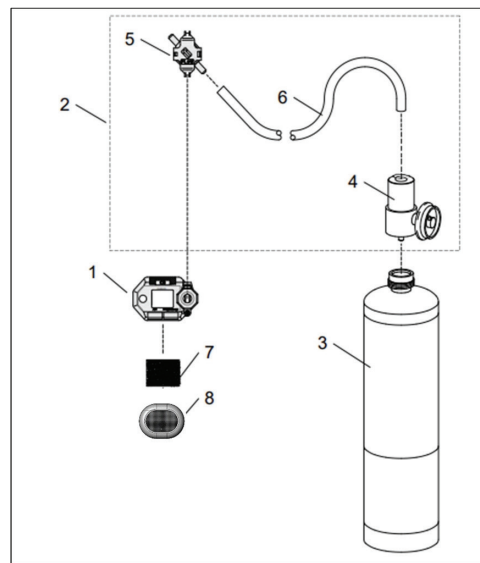


Figure 35

# COVX Personal Airline Respirator CO Monitor User Manual

## 8.2 COVX Monitor Replacement Parts



**NOTE:**

Ensure a new hydrophobic filter (white) AND a new charcoal filter (black) are installed each time the CO Sensor is replaced.

Item	Bullard Part Number	Part
1	COVXREPCOSEN	CO Sensor
2, 4, 5, 6, 7	COVXFILTERKIT	<ul style="list-style-type: none"> <li>• Sensor Retainer</li> <li>• Sensor Gasket</li> <li>• Hydrophobic Filter (white), EACH</li> <li>• Charcoal Filter (black), Pack of 5</li> <li>• Screws (sensor retainer &amp; battery retainer)</li> </ul>
7, 8	COVXBATTERY5PK	<ul style="list-style-type: none"> <li>• Screws (sensor retainer &amp; battery retainer)</li> <li>• CR2450 3.0 Volt Lithium Coin Battery</li> </ul>
3	Not a reorderable part	Battery Retainer

Figure 36

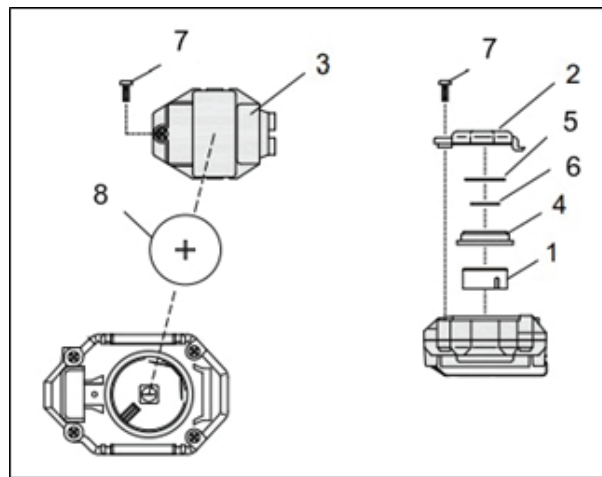


Figure 37



## LIMITED WARRANTY

Bullard warrants to the original purchaser that the COVX monitor will be free of defects in material and workmanship under normal use and service for a period of one (1) year from the date of purchase. This includes the instrument and the original sensor. Replacement parts have a 1-year limited warranty against defects in material workmanship under normal use and service.

Bullard's obligation under this warranty is only to repair or replace, at Bullard's discretion, items returned within the warranty period and determined by Bullard to be defective, subject to the following limitations:

- a) COVX monitor must be returned to the Bullard factory with shipping charges prepaid.
- b) COVX monitor must not be altered from its original factory configuration.
- c) COVX monitor must not have been misused, intentionally or negligently abused, or damaged in transport.
- d) A copy of the purchaser's original invoice showing the date of purchase is required to validate warranty coverage.

## WARRANTY EXCLUSIONS DISCLAIMERS

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT ANY IMPLIED WARRANTY IS REQUIRED BY LAW, IT IS LIMITED IN DURATION TO THE EXPRESS WARRANTY PERIOD ABOVE. NEITHER BULLARD NOR ITS DISTRIBUTORS SHALL BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY NATURE, INCLUDING WITHOUT LIMITATION, LOST PROFITS, BUSINESS INTERRUPTION, OR ANY OTHER DAMAGE WHETHER BASED IN CONTRACT, TORT, OR OTHERWISE.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above exclusion or limitation may not apply to you. This warranty gives you specific legal rights and you may also have other rights that vary from state to state.

THIS LIMITED WARRANTY EXPRESSLY EXCLUDES ROUTINE PRODUCT MAINTENANCE AND SOFTWARE UPDATES. ANY MISUSE, ALTERATION, MODIFICATION, REPAIR, ATTEMPTED REPAIR, IMPROPER MAINTENANCE, NEGLIGENCE, ABUSE OR FAILURE TO FOLLOW THE PRODUCT INSTRUCTIONS, DAMAGE OR ANY OTHER IMPROPER CARE OR HANDLING OF THE PRODUCT VOIDS THIS LIMITED WARRANTY.

The foregoing is the only warranty made by Bullard. No representative, dealer or any other person is authorized to make any warranty, representation, condition or promise on behalf of Bullard with respect to this product. No terms or conditions other than those stated herein or provided by law, and no agreement or understanding, oral or written, in any way purporting to modify this warranty shall be binding upon Bullard, unless made in writing and signed by an authorized employee of Bullard.

## Return Authorization

The following steps must be completed before Bullard will accept any returned goods. Please read carefully.

Follow the steps outlined below to return goods to Bullard for repair or replacement under warranty or for paid repairs:

1. Contact Bullard Customer Service by telephone or in writing at:  
Bullard 1898 Safety Way  
Cynthiana, KY 41031-9303  
Toll-free: 877-BULLARD (285-5273)  
Phone: 859-234-6616

In your correspondence or conversation with Bullard's Customer Service, describe the problem as completely as possible. For your convenience, the representative will try to help you correct the problem over the phone.

2. Verify with your customer service representative that the product should be returned to Bullard. Customer Service will provide you with written permission and a return authorization number as well as the labels you will need to return the product.
3. Before returning the product, decontaminate and clean it in accordance with the instructions in the user manual to remove any hazardous materials which may have settled on the product during use. Laws and/or regulations prohibit the shipment of hazardous or contaminated materials. Products suspected to be contaminated will be professionally discarded at the customer's expense.
4. Ship returned products, including those under warranty, with all transportation charges pre-paid. Bullard cannot accept returned goods on a freight collect basis.
5. Returned products will be inspected upon delivery to the Bullard facility. Bullard Customer Service will contact you with a quote for required repair work which is not covered by warranty. If the cost of repairs exceeds the stated quote by more than 20%, your customer service representative will call you for authorization to complete repairs. After repairs are completed and the product has been returned to you, Bullard will invoice you for actual work performed.

### California Proposition 65 WARNING

Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

# COVX Personal Airline Respirator CO Monitor User Manual

---

**Bullard Center**  
2421 Fortune Drive  
Lexington, KY 40509 • USA  
877.BULLARD (285.5273)  
Tel: +1.859.234.6616

**Americas Operations**  
1898 Safety Way  
Cynthiana, KY 41031 • USA  
877.BULLARD (285.5273)  
Tel: +1.859.234.6616

**Bullard GmbH**  
Dieselstrasse 8a  
53424 Remagen • Germany  
Tel: +49.2642.999980

**Bullard AsiaPacific**  
51 Changi Business Park  
Central 2  
#03-04 The Signature  
Singapore 486066  
Tel: +65.6745.0556



©2026 Bullard.  
All rights reserved.

60810012945C (0526)

