



Breathing Air Assembly 380-4SA446 and 350-4SA447

MASTER PNEUMATIC, INC.

6701 - 18 Mile Rd | Sterling Heights, MI 48314 | Phone: (586) 254-1000 | Fax: (586) 254-6055 | Email: mp@masterpneumatic.com

You have just purchased a quality Breathing Air Assembly from Master Pneumatic. With care in its installation and maintenance, you can expect it to have a long and economical service life. Before using this assembly read and follow all instructions. Save for future reference.

This unit will assist in the effort to allow the end user to achieve "Grade D" breathing air as defined by the Compressed Gas Association commodity specification: G-7.1 (www.cganet.com). The monitor will detect and alert to the presence of carbon monoxide if the level is 10ppm or greater as stated in OSHA title 29, section 1910.134(d)(1) & (2) ANSI/CGA standard G-7.1



FAILURE TO COMPLY WITH ALL INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.

THIS UNIT DOES NOT REMOVE CARBON MONOXIDE OR CONVERT CO TO CO2, OR REMOVE OTHER TOXIC GASES.

INSTALLATION



1. **ENVIRONMENT MUST NOT CONTAIN COMBUSTIBLE GAS OR VAPORS.**
2. 110 VAC electrical service is required.
3. Operational Temperature: 40°F - 120°F (4°C - 49°C).
4. Supply Pressure: 80 psi to 150 psi (5.5 - 10.3 BAR).
5. Locate assembly so alarms are readily noted by user and essential calibration & maintenance may be easily performed.
6. For installation/maintenance use of Krytox grease is recommended.
7. It is absolutely necessary to ensure pressure gauges and/or pipe plugs are installed into all ports of regulators.
8. Depressurize and lockout air line pressure before and during installation.
9. Assembly's Shutoff Valve may be locked in closed position with customer supplied padlock (.280 dia. shank, or less).
10. Orientate assembly so that air flows in direction of the arrows embossed on top of the caps.
11. The assembly must be installed vertically with drain mechanisms to bottom.
12. Locate and store small round magnet. Magnet is necessary for calibration.
13. Read and follow "MMP Mini Monitor" manual in it's entirety. Prior to installation, user selectable functions must be changed if a change is desired. Factory defaults are as follows:
 1. CO Alarm point 10 PPM.
 2. Low Pressure Alarm set to activate every 6 seconds if air pressure is not detected.
 3. Radio Frequency 10 second delay function is inactive.
14. Monitor is factory installed on Breathing Air Assembly. Be careful not to crimp or pinch sample line tubing.





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OPERATION

1. Read and follow all instructions contained within this document and “MMP Mini Monitor” manual.
2. Inspect for and replace any damaged parts immediately before using Breathing Air Assembly.
3. Before use check to ensure that all connections are air tight.
4. Before use visually inspect filters to ensure elements are installed and liquids are absent from bowls.
 - A. Install filter elements if needed.
 - B. If liquids are present, manually drain by turning drain knob clockwise.
 - C. Return knob to full counter-clockwise position to reinstate proper function of drain.
5. Remove padlock from shutoff valve, if installed.
 - A. Engage slow-start position by pressing slide upward until detent is reached. (The detent position allows inlet air to build up downstream while safely allowing parts to move into their normal working positions before full line pressure is applied. Detent position can be felt as a click)
 - B. Holding the override button down firmly, lift slide up until full open position is reached.
6. Pressure Regulation (M/P recommends 60 +/- 10 psi). When adjusting, always reset from a pressure lower than final desired setting. For example: Lowering pressure from 80psi to 60psi should be done by decreasing pressure to 40psi then increasing to desired 60psi.
 - * To increase regulator pressure: Pull out on adjusting knob, turn clockwise.
 - * To decrease regulator pressure: Pull out on adjusting knob, turn counter-clockwise.
 - * To lock in regulator pressure : Push in on adjusting knob.
7. First power up of CO Monitor must be calibrated to atmospheric pressure for your location per “MMP Mini Monitor” manual instructions.

WARNING

CO Monitor Calibration or bump test to be performed monthly per “MMP Mini Monitor” manual.

WARNING

Filter elements to be changed immediately when operator detects an unusual odor or taste, or when pressure differential gauge displays “red”, or quarterly, whichever comes first.

DANGER

IF ALARM SOUNDS
IMMEDIATELY STOP AND REMOVE MASK OR HOOD,
LEAVING AIR ON AND GO TO A SAFE AREA.



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MAINTENANCE

LOCKOUT VALVE - For ease of movement lubricate internal parts by applying Krytox grease to both sides of slide.

FILTERS - 1. Depressurize and lockout air pressure.

2. Remove Bowl Assembly by turning bowl and bowl ring or shatterguard counter-clockwise.
3. Remove lower bowl Baffle (cap on bottom of filter element) by turning counter-clockwise.
4. The Filter Element can now be removed and replaced. Do NOT clean elements, they must be replaced.
5. Remove Manual and Internal Float Drains (manual drain on adsorber, float drain on filter and coalescent)
 - A. Turn drain Knob counter-clockwise until it stops. Push drain Knob up to expose drain Clip. Remove drain Clip and pull off drain Knob.
 - B. Remove drain Nut from bottom of bowl by turning counterclockwise. The drain assembly can now be removed from bowl. Manual drain is ready for cleaning. Float drain must be disassembled:
 - a. Unsnap Baffle (cap on top of drain assembly) from housing.
 - b. Unsnap Lever from hinge.
 - C. Remove and inspect valve seal for dirt. Clean if needed.
 - c. Unsnap Housing from Drain Stem assembly.
 - d. Remove Piston and bronze Element from assembly.
 - e. Clear valve orifice and piston bleed hole of any debris by blowing out with clean, compressed air.
6. Bowl and Drain parts may be cleaned with soap and water. Rinse thoroughly.
7. When re-assembling lubricate all o-rings and seals with Krytox grease. Be sure they are correctly located.
 - A. Torque lower bowl Baffle (cap on bottom of filter element) maximum 5 in-lbs.
 - B. Torque Drain Nut 5-15 in-lbs.
 - C. Torque Bowls:
 - * For Series 380 torque Bowl Ring 30-50 in-lb. When bowl ring is fully in place there will be a gap between it and the filter head of 0.020" - 0.040".
 - * For Series 350 torque Shatterguard 75-125 in-lb. Tab must be aligned within notch on head.
8. If the filter cannot be repaired by cleaning with soap and water, the parts should be replaced.

REGULATORS - 1. Depressurize and lockout air pressure.

2. Reduce spring load to zero by turning adjusting Knob counter-clockwise.
3. Remove dome from head by turning counter-clockwise. Main spring and other parts will be removed with dome.
4. Diaphragm assembly can now be removed. Visually inspect for defects. If necessary replace.
5. To remove Valve Assembly:
 - A. For series R56M, CO Monitor Regulator, unscrew valve seat from bottom of head. Remove valve assembly & parts. For series R380 or R350, Breathing Air Regulator, remove cap on top of head by turning counter-clockwise. Remove valve assembly and parts.
 - B. Visually inspect valve assembly and parts for defects. Replace if necessary.
6. Clean all parts with soap and water. Rinse thoroughly.
7. When re-assembling lubricate all o-rings and seals with Krytox grease. Be sure they are correctly located.
 - * For series R56 torque valve seat 3-5 in-lbs, do not over tighten. Torque Dome 90-100 in-lbs.
 - * For series R380 insure washer is between diaphragm assembly and dome. Torque dome 190-210 in-lbs using a strap wrench. Torque cap 55-65 in-lbs.
 - * For series R350 insure spacer is between diaphragm assembly and dome. Torque dome 200 in-lbs.

CONNECTORS (CLAMPS and BRACKETS) - Torque screws 30-40 in-lbs. Do not over tighten.

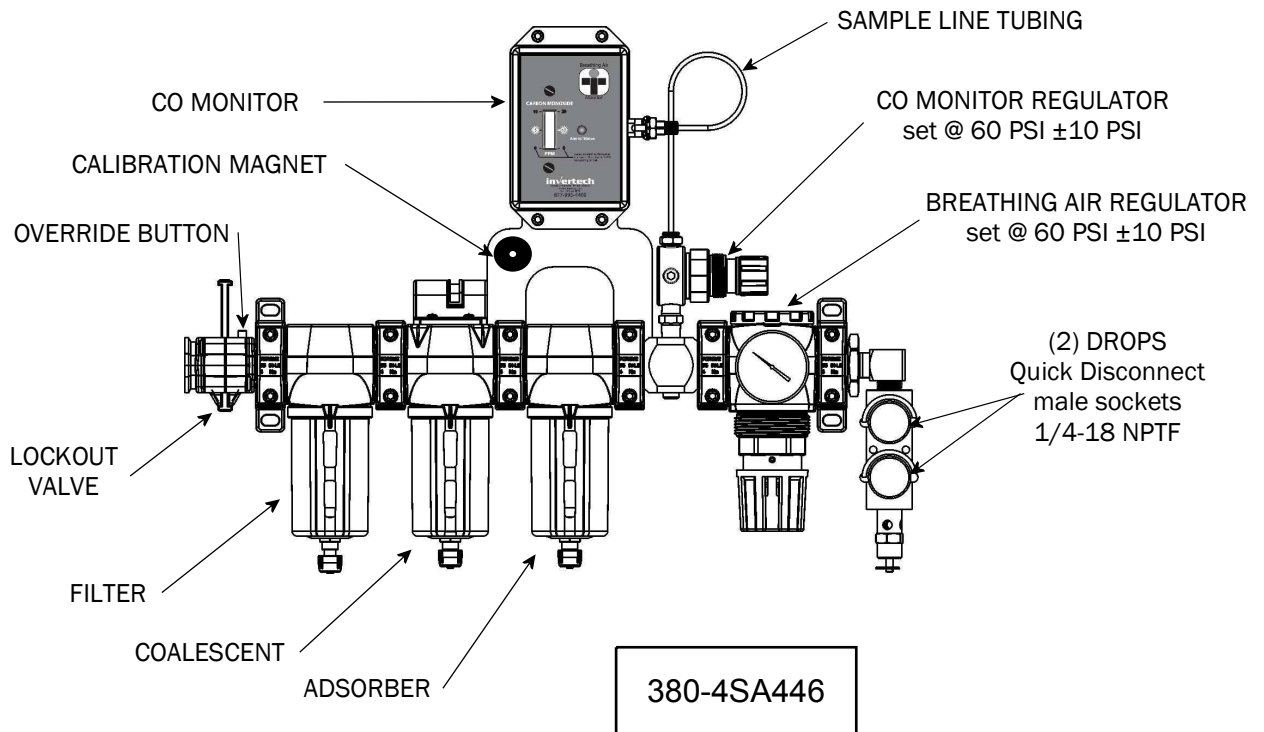
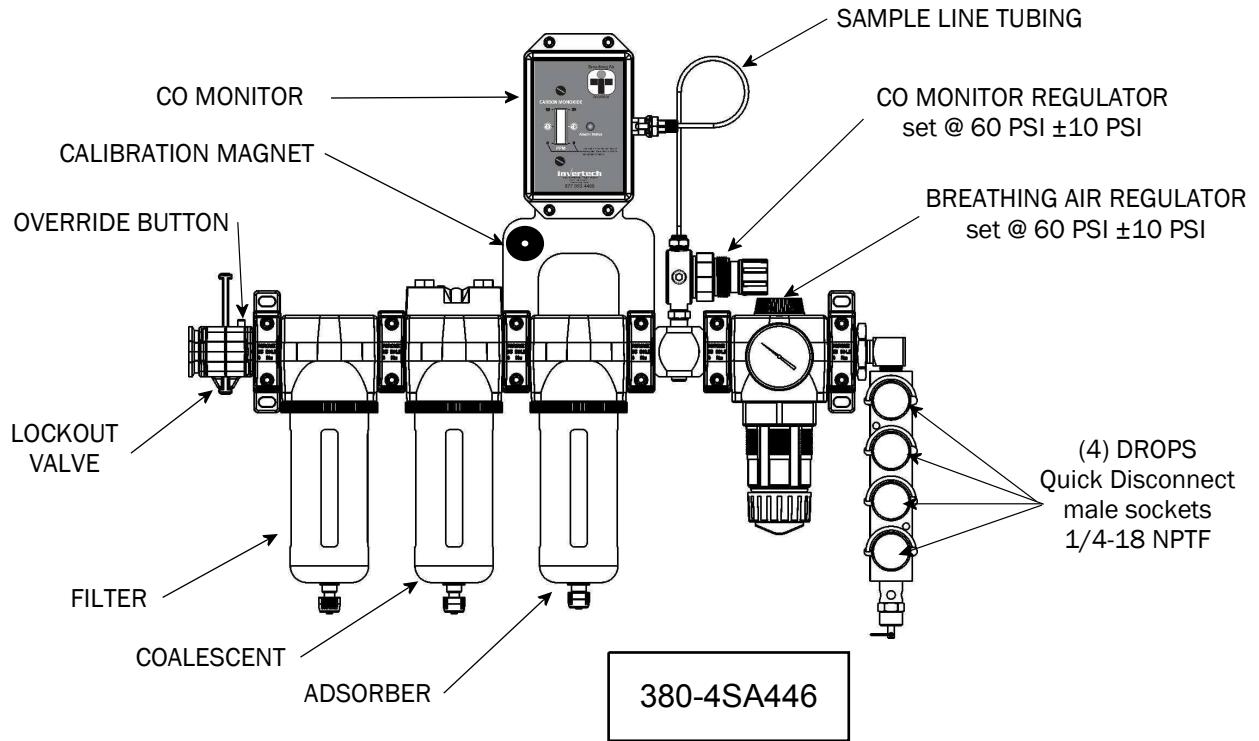


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BREATHING AIR ASSEMBLIES





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CALIBRATION PARTS/GAS for 380 & 350 assemblies

	PART NUMBER
Calibration Regulator Kit for CO Monitor - Calibration regulator and connection	118-137
Calibration Gas Kit (2) 10 PPM Carbon Monoxide bottles, (1) Impurity free air bottle and (1) CGA600 connection	118-138

CONNECTORS and OPTIONAL MONITOR ACCESSORIES for 380 & 350 assemblies

	PART NUMBER
Coupler Socket - 1/4" quick disconnect male, steel	118-131
Coupler Plug- 1/4" X 1/4" nptf industrial interchange male, steel	118-139
Remote Horn, Strobe and Stand - 100 dB @ 10 foot	118-140
25 foot Cable for use with 118-140 remote horn, etc.	118-141
50 foot Cable for use with 118-140 remote horn, etc.	118-142
Remote Horn with 25 foot Attached Cable - 100 dB @ 10 foot	118-146
Remote Horn with 50 foot Attached Cable - 100 dB @ 10 foot	118-147
Remote Relay Box (no horn, no cable)	118-143
Remote Relay Box with 25 foot Cable (no horn)	118-149
Remote Small Horn (no cable) - 100 dB @ 10 inches	118-148
25 foot Cable for use with 118-148 remote small horn	118-144
50 foot Cable for use with 118-148 remote small horn	118-145

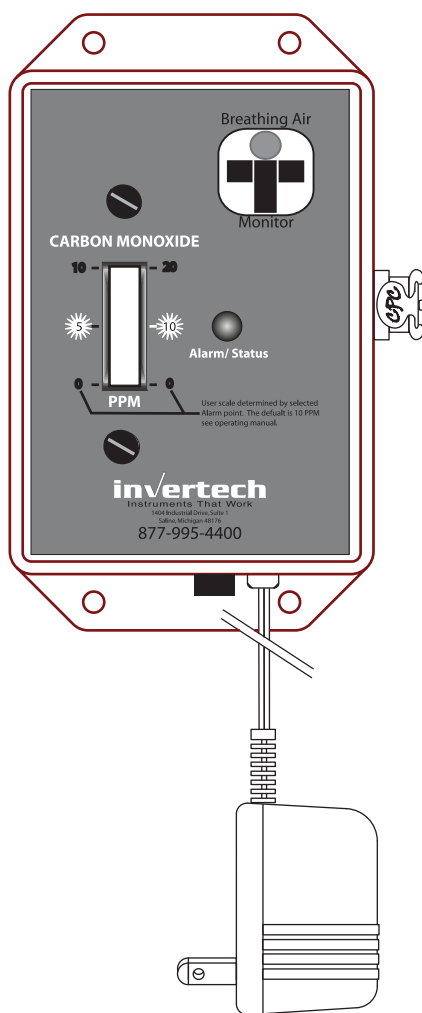
REPLACEMENT PARTS and KITS for 380-4SA446 with 4 drops

380 ELEMENT KITS	PART NUMBER
FILTER (G2-F5A380-4C*) - 5um polyethylene element kit	A115-106PE5
COALESCENT (G2-FC5A380-4C*) - 0.3um borosilicate glass element kit	A115-117
ADSORBER (G2-FC380-4C*E9) - activated carbon element kit	A115-117E9
380 BOWL KITS	
FILTER (G2-F5A380-4C*) & COALESCENT (G2-FC5A380-4C3) - float drain and bowl assembly kit	G2-AF5A115-109
ADSORBER (G2-FC380-4C*E9) - manual drain and bowl assembly kit	G2-AF115-109
380 REGULATOR KITS	
BREATHING AIR REGULATOR (G2-R380-4SR46*) - valve assembly kit	G2-A116-101
BREATHING AIR REGULATOR (G2-R380-4SR46*) - diaphragm assembly kit	A37-03
CO MONITOR REGULATOR(G2-R56M-2SR45*) - valve assembly kit	A33-533
CO MONITOR REGULATOR (G2-R56M-2SR45*) - diaphragm assembly kit	A10R-58

REPLACEMENT PARTS and KITS for 350-4SA447 with 2 drops

350 ELEMENT KITS	PART NUMBER
FILTER (G2-F5A350-4C*) - 5um polyethylene element	A60F-03PE5
COALESCENT (G2-FC5A350-4C*) - 0.3um borosilicate glass element kit	A60F-23
ADSORBER (G2-FC350-4C*E9) - activated carbon element kit	A60F-29E9
350 BOWL KITS	
FILTER (G2-F5A350-4C*) & COALESCENT (G2-FC5A350-4C3) - float drain and bowl assembly kit	G2-AF5A125-02
ADSORBER (G2-FC350-4C*E9) - manual drain and bowl assembly kit	G2-AF125-02
350 REGULATOR KITS	
BREATHING AIR REGULATOR (G2-R350-4SR46*) - valve assembly kit	G2-A60R-11
BREATHING AIR REGULATOR (G2-R350-4SR46*) - diaphragm assembly kit	A127-03
CO MONITOR REGULATOR (G2-R56M-2SR45*) - valve assembly kit	A33-533
CO MONITOR REGULATOR (G2-R56M-2SR45*) - diaphragm assembly kit	A10R-58

- Read and follow ALL instructions before using this equipment.
- Failure to comply with ALL instructions can result in serious injury or death.
- In the event that the user or any assistant of the user of this equipment cannot read or cannot completely understand the warnings and information contained in these instructions the employer of the user or his assistant must thoroughly educate and train them in the proper operation and safety procedures of this equipment.



Mini-Monitor

Keep this manual for future reference !

For further information contact:

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INTRODUCTION

The Mini-Monitor is designed to be a cost effective instrument for the monitoring of Carbon Monoxide in compressor supplied breathing air systems. This instrument can be used in both portable and fixed monitoring applications. Features include microprocessor calibration, bar graph display and available optional remote alarm output connector which can operate Invertech's remote alarm and strobe assembly in addition to other future accessories. This manual of instructions and illustrations covers the set-up, operation, maintenance, and replacement parts. The Mini-Monitor is an essential component of the respiratory safety effort and statutory compliance program. It is necessary that the instrument be properly installed, set-up, calibrated, and maintained. All personnel involved with the use, calibration, and maintenance of the instrument must read and be familiar with the content of this manual.

SAFETY ALERTS

This manual uses safety alert signal words, based on ANZI Z535.4-1998, to alert the user of a potentially hazardous situation while operating this equipment. Definition of the signal words are as follows.



This is the safety alert symbol. It is used to alert the users of this equipment of potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

CAUTION

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

 **CAUTION**

CAUTION when it appears with the symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

 **WARNING**

WARNING when it appears with the symbol indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

 **DANGER**

DANGER when it appears with the symbol indicates an imminent hazardous situation which, if not avoided, will result in death or serious injury.

PACKAGE COMPONENTS

- A** . Power Module
- B** . MMP - Instrument
- C** . MMP Monitor Installation and Operation Manual CD
- D** . Monitor connector w/1/8" barbed Tubing connector
- E** . Calibration Magnet

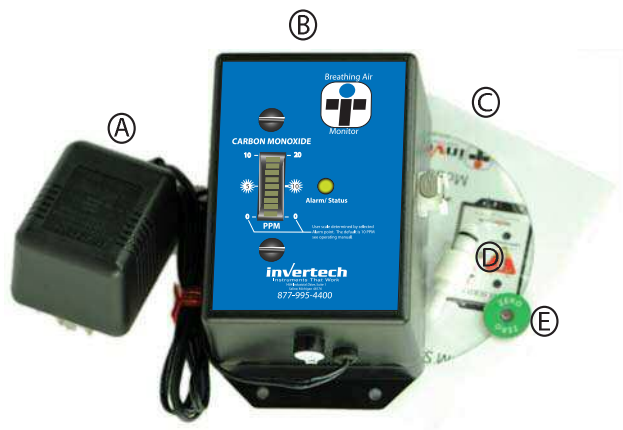


Figure 1

INSTALLATION CONSIDERATIONS

To optimize the installation of the Mini-Monitor, it is important to consider the following conditions relative to the location and operational features of the instrument.

- Sample pressure to the instrument must be between 40 and 80 psi, recommend 50 to 70 psi. To meet this requirement, there may be the need for additional hardware or components not supplied such as pressure reducing regulators; please review the available accessories on page 10.
- Location should ensure that alarms are readily noted by user.
- Sample line to the compressor sample point should be kept short to limit volume.
- If installation includes a filtration system, the instrument sample should be taken after the filters.
- Electrical service is required
- Instrument environment should be 40°F - 120°F.



- Environment must not contain combustible gas or vapors.
- Ready access for calibration and maintenance is essential.
- Review User selectable Functions below before installation.

USER SELECTABLE FUNCTIONS

The Mini-Monitor has three user selectable functions listed below:

- 1** . Alarm point - 5 or 10 PPM (Parts Per Million) Carbon monoxide, factory default 10 PPM.
- 2** . LOW pressure alarm - Horn activates once every 6 seconds and LED flashes YELLOW. Factory default is active, if air pressure is turned off and the monitor is left ON regularly it may be best to de-activate this feature.
- 3** RF (Radio Frequency) delay function - When active, the alarm is delayed by 10 seconds if an alarm occurs in order to ensure it is not caused by an RF spike. The factory default for this function is inactive.

To change any of the user selectable functions, follow the procedure outlined on the following page.

USER SELECTABLE FUNCTION SETUP

With the instrument positioned as shown in number (1) rotate the instrument so that the right side is facing forward as shown in number (2). Place the instrument face down on a flat surface as shown in number (3). Using a Phillips screwdriver remove the four screws. Holding the top and bottom parts of the instrument together carefully flip the instrument over as shown in number (4). Rotate the top cover of the instrument up and slightly over the bottom section as shown in number (5). The mode select jumpers location and ID are shown in the enhanced view.

A - RF Delay shown in the inactive position. Placing the shunt across both posts will activate this function and delay any alarm for 10 seconds.

B - 5 PPM or 10 PPM alarm point. Shown in the 10 PPM alarm point position. Placing the shunt across both posts will change the alarm point to 5 PPM.

C - LOW pressure alarm With the shunt attached to only one post or removed completely as shown the LOW pressure alarm is active and the unit will sound the horn every 6 seconds and the LED will flash YELLOW if no pressure is applied to the instrument or the internal flow assembly is plugged. Placing the shunt across both posts will de-activate the LOW pressure alarm; the horn will not activate but the LED will still flash YELLOW if air pressure is removed.

After installation is completed, verify all functions work as selected.

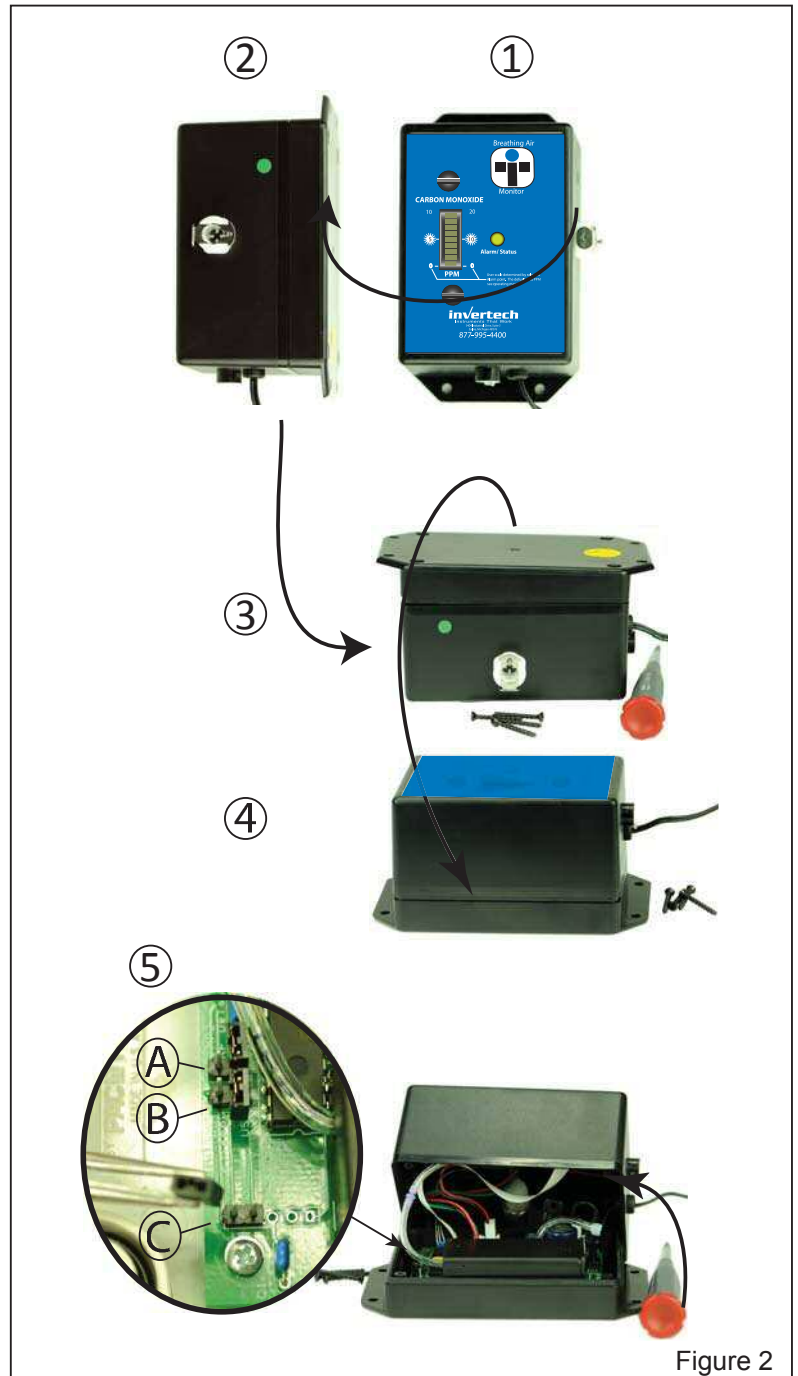


Figure 2

INSTALLATION

With the location selected mount the monitor and run the sample tubing to the sample point on the compressor or filtration package. The optional tubing connector, if used, requires a ¼ NPT threaded port. Be sure to leave a little bit of a loop in the tubing at the monitor so that the sample tubing can be disconnected for the calibration process, figure 3. Secure the tubing with tie wraps or cable clamps so as not to expose it to excessive abuse. Do not crimp, pinch or crush sample tubing when tie wrapping or clamping.

- A. Instrument mounting flange
- B. Sample line tubing
- C. Tubing clips or tie wraps
- D. To compressor or filter panel

CAUTION

The point of attachment for the sample tubing at the Compressor Filtration panel should be between 40 – 80 PSI, free of particulate and moisture condensation. If not, the use of a drip leg and/or filter regulator is recommended.

ILLUSTRATIONS OF TYPICAL INSTALLATION

Instrument Mounting

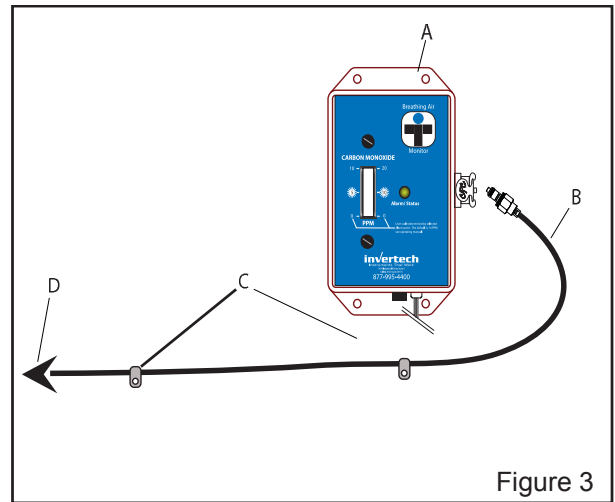


Figure 3

Installation with Filtration Panel

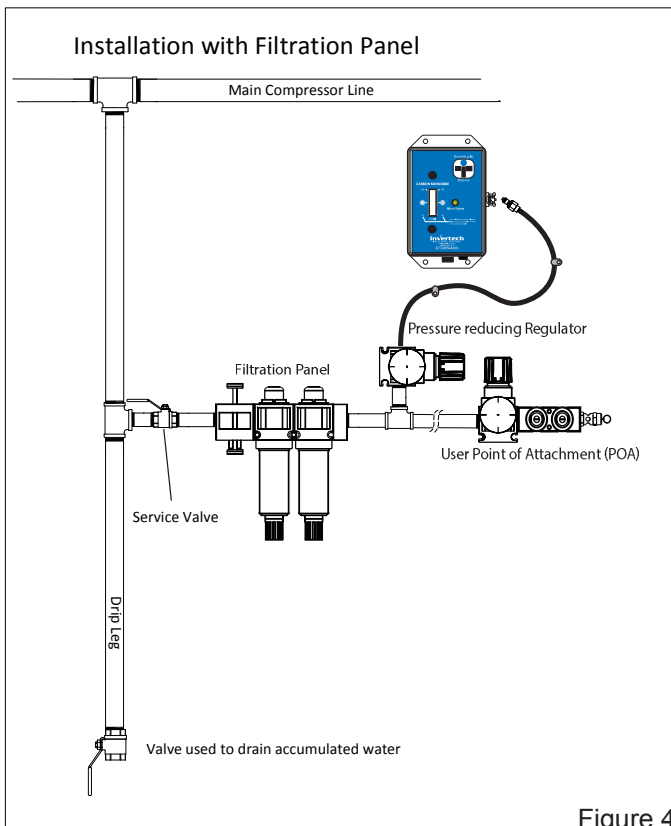
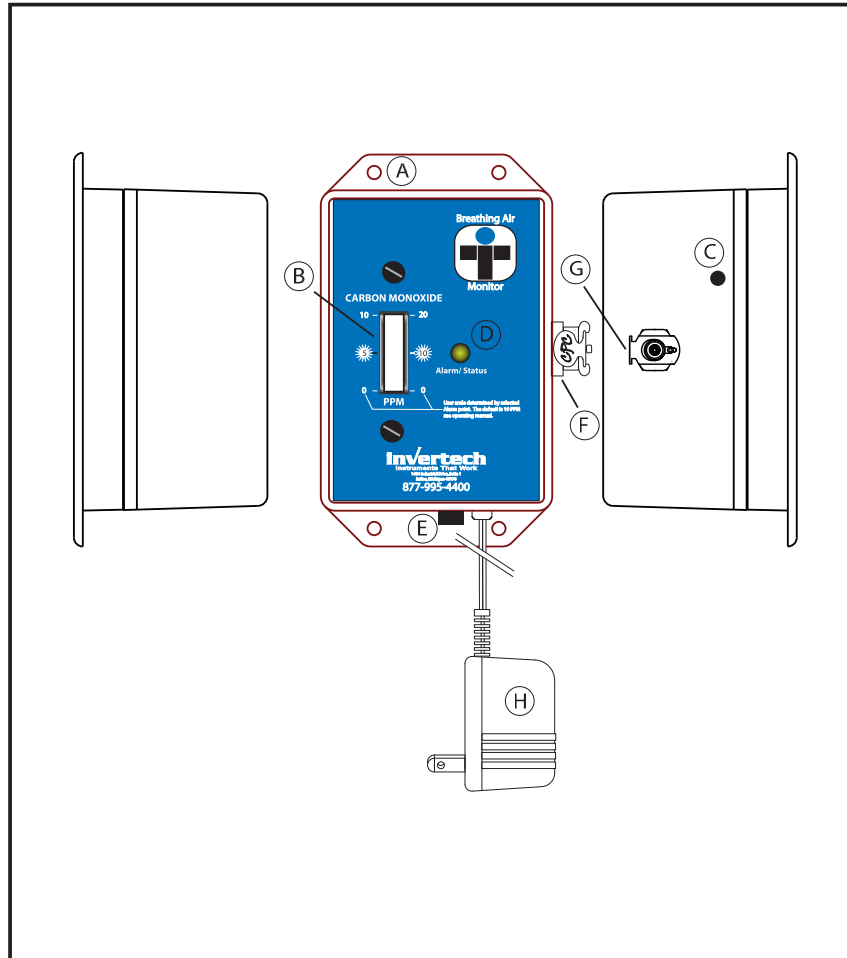


Figure 4

Instrument Features/Layout



- A. MOUNTING HOLES 4 EACH
- B. DISPLAY BARGRAPH
- C. CALIBRATION LOCATOR MARKER
- D. ALARM/ STATUS INDICATOR LED
- E. ALARM HORN
- F. SAMPLE LINE/ CALIBRATION CONNECTOR
- G. ENCLOSURE VENT
- H. POWER MODULE

Figure 5

FIRST POWER-UP/PRESSURE SWITCH CALIBRATION:

The Mini-Monitor incorporates an absolute pressure sensor that must be calibrated to the atmospheric pressure at your location. Follow the outline below to calibrate the pressure sensor:

Have the calibration magnet available.

Apply pressure to the instrument (40 to 80 psi).

Apply power to the instrument.

Allow the instrument to run through its start-up and warm-up period, approximately 2.5 minute. After warm-up, the instrument will be running properly with the Alarm/Status indicator blinking green every few seconds or the light will be yellow and the horn will be sounding every few seconds. In either case, the pressure sensor must be calibrated as shown and described below:

- 1 Detach the sample line from the input connector. The Alarm/ Status indicator should flash YELLOW.
- 2 Hold the magnet as shown in figure 7, make sure the green ZERO part of the magnet is facing out.
- 3 Hold the magnet over the DOT or CAL location indicator. When the unit beeps once move the magnet away from the CAL locator. The status indicator light should be flashing **GREEN-RED-GREEN**.

After a short period, the instrument horn should beep once, the status indicator should be yellow, and the horn will then beep every few seconds. Re-attach the sample line to the instrument. The status indicator should flash green every 6 seconds. The pressure switch is now calibrated to your atmospheric pressure.

CALIBRATION/ GAS CHECK

In an ideal environment, the best scenario for the instrument would be powered up and running 24/7. In cases where this is not practical, the instrument should be operational on the system with air supplied for at least one (1/2) hour prior to doing a calibration/Function test. The function test is a simple process that is used to verify that the instrument is responding to gas properly without doing the actual calibration; this can also be referred to as a bump test.

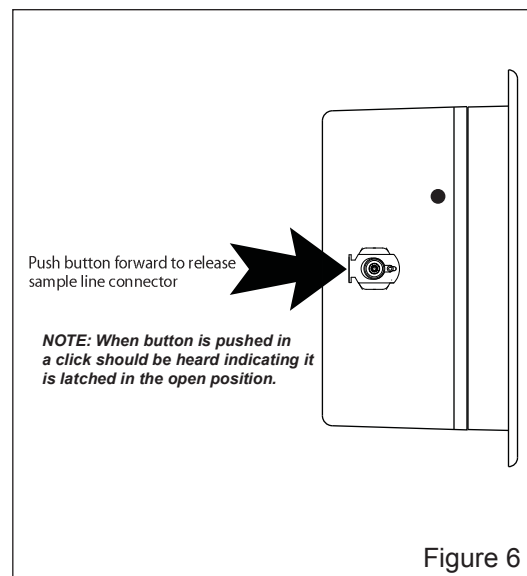


Figure 6

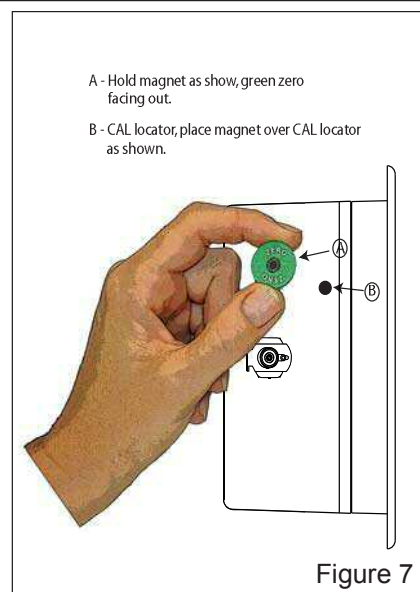


Figure 7

⚠ WARNING

A Calibration or bump test should be done at least once every 30 days or anytime there is any question whether the instrument is functioning properly or not.

Calibration/Verification process can be divided into three procedures:

Gas response/Bump Test

Function: This procedure verifies that the instrument responds to a known concentration of Carbon Monoxide (10 PPM).

Gas calibration

Function: This procedure will adjust the gain of the instrument to its optimum point with the 10 PPM Carbon monoxide calibration gas applied.

Zero Calibration /Gas Calibration

Function: This procedure will adjust both the ZERO and GAS response to their optimum set point.

Review the following instructions and illustrations for each of the procedures:**CALIBRATION/BUMP TEST EQUIPMENT NEEDED**

Calibration regulator assembly, figure 8.

Calibration Magnet, figure 9.

Calibration Test Gas 10 PPM (Parts Per Million) balance air, not supplied.

Calibration Test gas ZERO air (Impurity Free Air), not supplied

GAS RESPONSE/BUMP TEST

1 Ensure the CALIBRATION REGULATORS control knob is in the full CLOCKWISE position. Attach the bottle of test gas to the calibration regulator assembly.

2 Remove sample line from the input connector by pressing in the input connector release every few seconds.

3 Attach the CALIBRATION REGULATOR to the instrument input connector and ensure the input connector button locks back into place.

4 Turn the CALIBRATION regulator assembly control knob full COUNTER-CLOCKWISE.

After approximately one minute or less, the instrument display should be reading within acceptable range of 9 to 11 PPM as shown in figure 10.

Note: If the display does not indicate as describe, proceed to the procedure on gas calibration

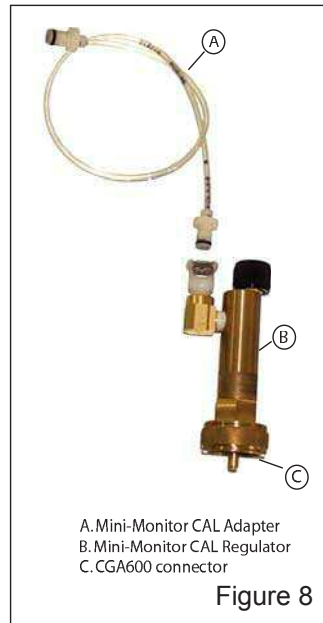
ZERO CALIBRATION/GAS CALIBRATION

The instrument should be turned on and operating on air at least 30 minutes prior to performing this procedure. The zero calibration on this instrument can be done with or without zero calibration gas (impurity free air) due to the instruments zero protection software. The zero calibration will fail if the air being applied does not measure within the proper range. If the compressor supplied air does not zero calibrate, you will have to use zero air calibration gas to zero calibrate the instrument. Outlined below are both ZERO calibration procedures with and without zero calibration test gas.

ZERO CALIBRATION WITHOUT ZERO GAS

1 With the compressor sample line attached, place the GREEN ZERO CAL side of the calibration magnet facing out over the calibration indicator location until the instrument beeps once then move the magnet away, figure 11. The STATUS LED will be flashing GREEN-RED-GREEN, indicating the instrument is in the ZERO calibration mode. If the ZERO calibration is successful, the instrument will beep once and return to flashing green every 6 seconds. If the zero calibration fails, the instrument will beep rapidly 8 times, the LED will flash RED-GREEN, and the horn will then beep every 6 seconds. If this occurs, follow the procedure for ZERO calibration with ZERO AIR calibration gas.

Calibration Regulator Assembly



A. Mini-Monitor CAL Adapter
B. Mini-Monitor CAL Regulator
C. CGA600 connector

Figure 8

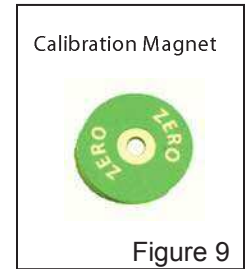


Figure 9

Acceptable Display Range

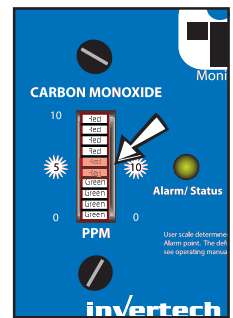


Figure 10

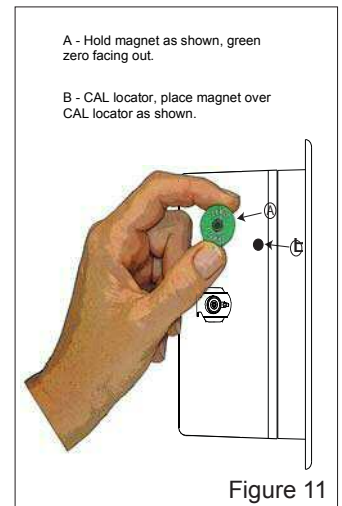


Figure 11

A - Hold magnet as shown, green zero facing out.
B - CAL locator, place magnet over CAL locator as shown.

ZERO CALIBRATION WITH ZERO AIR TEST GAS

- 1 Ensure the CALIBRATION REGULATOR'S control knob is in the full CLOCKWISE position. Attach the bottle of ZERO AIR test gas to the calibration regulator assembly.
- 2 Remove sample line from the input connector by pressing in the input connector release button, see figure 12. Note the **STATUS** indicator will turn yellow and the horn will sound every few seconds. Connect the calibration regulator to the instruments input connector.
- 3 Turn the calibration regulator assembly control knob full COUNTER-CLOCKWISE and allow the gas to flow for approximately one minute.
- 4 Place the GREEN ZERO CAL side of the calibration magnet facing out over the calibration indicator location until the instrument beeps once, then move the magnet away, figure 11. The STATUS LED will be flashing GREEN-RED-GREEN, indicating the instrument is in the ZERO calibration mode. If the ZERO calibration is successful, the instrument will beep once and return to flashing green every 6 seconds. If you are going to do a 10PPM gas calibration, follow the procedure outlined in the next section.

If the zero calibration fails, the instrument will beep rapidly 8 times, the LED will flash RED-GREEN, and the horn will beep every 10 seconds. If this occurs, end the calibration procedure and contact the manufacturer or distributor

GAS CALIBRATION (10 PPM)

- 1 Ensure the CALIBRATION REGULATOR'S control knob is in the full CLOCKWISE position. Attach the bottle of 10 PPM test gas to the calibration regulator assembly.
- 2 Remove sample line from the input connector by pressing in the input connector release button, see figure 12. Note the **Status** Indicator will turn yellow and the horn will sound every few seconds. Connect the calibration regulator to the instruments input connector.
- 3 Turn the calibration regulator assembly control knob full COUNTER CLOCKWISE and allow the gas to flow for approximately one minute.

4 Hold the CALIBRATION MAGNET with the RED GAS CAL facing out, see figure 13. Hold the magnet over the CALIBRATION INDICATOR location until the unit beeps once, then move the magnet away. The status indicator will be flashing **GREEN-YELLOW-GREEN**, indicating that the instrument is calibrating the sensor. If the calibration is successful, the instrument will beep once then return to normal operation and the STATUS INDICATOR light will be flashing RED.

5 Turn off the CALIBRATION REGULATOR full CLOCKWISE, remove the regulator from the input connector and re-attach the sample line.

If the calibration fails, the instrument will beep rapidly 8 times and the statue indicator light will be flashing RED, GREEN and will beep once every few seconds, if this occurs, follow the procedure outlined in ZERO calibration with ZERO air test gas/ GAS calibration.

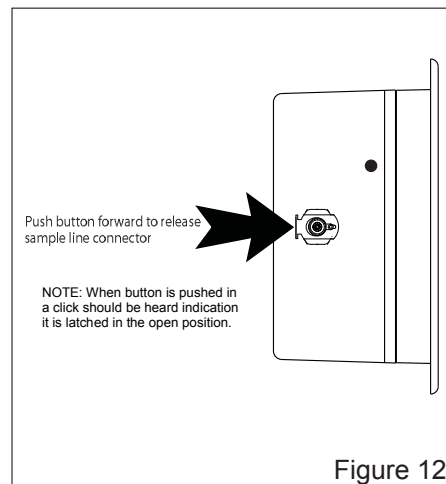


Figure 12

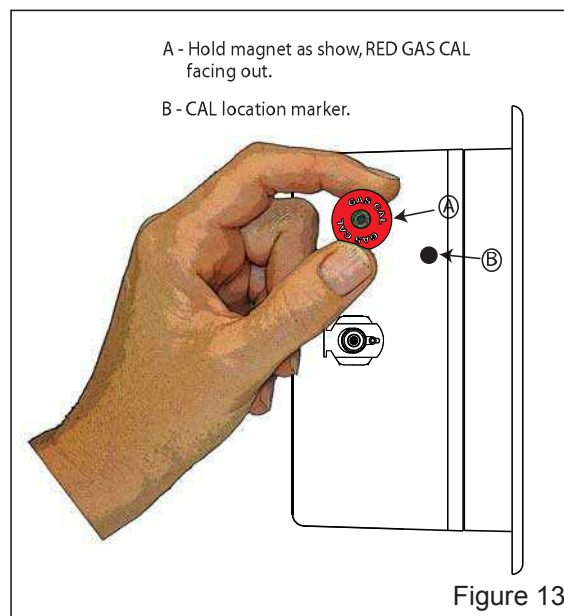


Figure 13

STATUS LED MESSAGE CODES

Description	Audible	Horn Rate	LED COLOR
Startup/ Warm-up	yes	6 Second	Red
Calibration Needed	Yes	6 Second	Red-Green
Zero Calibration	No		Green-Red-Green
Gas Calibration	No		Green-Yellow-Green
Gas Alarm	Yes	1 Second	Red
Normal Operation	No		Green
Standby No Pressure	Yes	6 Second	Yellow

TROUBLESHOOTING CHART

Problem	Cause	Possible
Horn beeps every 6 seconds, LED flashes YELLOW.	Indicates the input pressure to the monitor is incorrect. It could be too low or too high.	<p>Check and verify the input pressure to the monitor is correct, between 40 and 80 PSI. (50-70 preferred)</p> <p>Calibrate the pressure sensor to local atmospheric pressure outlined in this manual.</p> <p>If above procedures do not solve the issue there may be a plugged internal orifice. Contact the Factory.</p>
Horn beeps every 6 seconds, LED flashes RED-GREEN.	Sensor is not operating within allowable limits.	<p>Follow the procedures outlined for ZERO calibration with impurity free air followed by the GAS calibration.</p> <p>If above procedures do not solve the issue, Contact the Factory.</p>

SENSOR REPLACEMENT

The sensor can be field-replaced, however it does require the instrument software to be reset followed by several very specific calibration procedures. Please contact the manufacturer or distributor to help determine the best solution.