

3M Carbon Monoxide Monitor and Retrofit Carbon Monoxide Monitor Kit W-2808/37027

User Instructions

(Keep these instructions for reference)



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GENERAL SAFETY INFORMATION

Intended Use

The 3M™ Carbon Monoxide (CO) Monitor and the 3M™ Retrofit Carbon Monoxide (CO) Monitor Kit are designed to provide continuous, direct read CO monitoring for compressed air used with supplied air respirators.

List of Warnings and Cautions within these *User Instructions*

WARNING

- These products are designed for carbon monoxide monitoring. **Misuse may result in sickness or death.** For proper use, see supervisor or *User Instructions*, or call 3M in U.S.A., 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.
- The impedance of any connected load device at the REM ALARM (remote alarm) jack must be greater or equal to 12 ohms, when operating from internal batteries or AC adapter. Failure to do so may damage the carbon monoxide monitor **and result in sickness or death.**
- The intrinsic safety of the carbon monoxide monitor is voided when remote alarm is used.
- The intrinsic safety of the carbon monoxide monitor is voided when the 110-120 volt AC adapter is used.
- Your employer must provide breathing air that meets at least the requirements of the specification for Grade D breathing air, as described in the Compressed Gas Association Commodity Specification G-7.1-1997 in the United States. In Canada refer to CSA standard Z180.1, for the quality of the compressed breathing air. **Failure to do so may result in sickness or death.**
- Use of equipment described in these *User Instructions* must be in accordance with applicable health and safety standards, or pursuant to the recommendations of an industrial hygienist.
- Each person using this equipment must read and understand the information in these *User Instructions*. Use of this equipment by untrained or unqualified persons, or use that is not in accordance with these *User Instructions*, may adversely affect product performance and **result in sickness or death.**

CAUTION:

- Observe proper polarity when inserting batteries. Polarity is marked on the inside of the drawers.
 - The sensor in the carbon monoxide monitor contains a small amount of sulfuric acid. Always wash hands thoroughly after handling sensor cell. Sulfuric acid is poisonous and can cause severe burns. Do not allow acid to contact skin or eyes. If eyes are exposed to acid, flush thoroughly and seek immediate medical attention.
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USE INSTRUCTIONS AND LIMITATIONS

Important

Before use, each person using this equipment must read and understand these *User Instructions*. Keep these instructions for reference.

Use For

Monitoring for carbon monoxide level in compressed air intended for respiratory protection systems.

Do Not Use For

Monitoring other compressed gas streams.

General Description

These *User Instructions* apply to the 3M™ CO Monitor mounted inside some of the 3M™ Portable Compressed Air Filter and Regulator Panels and the 3M™ Retrofit CO Monitor Kit W-2808/37027. The retrofit kit includes the 3M CO monitor and accessories to attach the CO monitor to a 3/8-inch port on a filter and regulator panel that does not currently have CO monitoring capability, such as the 3M™ Compressed Air Filter and Regulator Panel W-2806/07006.

The 3M carbon monoxide monitor is designed to provide continuous, direct read CO monitoring for compressed air used with supplied air respirators. An internal microprocessor controls the indication and alarm functions in response to the signals of an electrochemical CO sensor. It continuously monitors a compressed air sample introduced to its sensor at an approximate rate of 1.0 standard cubic foot per hour (scfh) and gives an alarm when the CO in the sample reaches a preset level (10 ppm in USA; 5 ppm in Canada).

The CO monitor is a battery powered unit utilizing two 9 volt alkaline batteries. It is designed to be intrinsically safe when used on battery power. The CO monitor is CSA certified intrinsically safe for Class I, Div. I, Groups A,B,C, and D Hazardous Locations when utilizing two 9 volt alkaline batteries to power the monitor.

The components of the monitor are assembled into a black powder-coated aluminum housing 6" H x 4" W x 2" D overall. A hose barb, with plastic sample tube attached for introducing the sample gas, extends from the bottom. Available at the front face are the OFF/ON/TEST switch, the display (LCD), SPAN and ZERO adjustments.

The left side contains the indicating lights, the alarm buzzer, and the remote alarm jack.

Accessible on the right side are the two battery drawers and the auxiliary power jack. (Fig. 1)

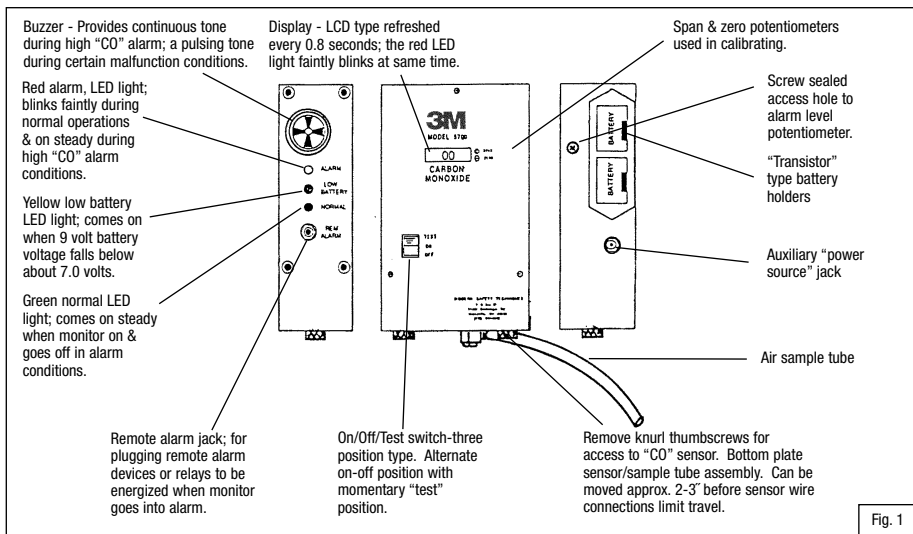


Fig. 1

Front Panel On/Off/Test Switch

This switch is a three-position type with alternate ON and OFF positions, and a momentary TEST position. Switch is located at the lower left side.

Display

Display is a centrally located LCD type and is refreshed every 0.8 seconds; the red ALARM light faintly blinks at the same time.

Span and Zero Adjustments

Located to the right of the display are two miniature multi-turn slotted-shaft potentiometers, accessible through holes in the panel with a small screwdriver.

Left Side

The next five items are aligned toward the rear from the center of the left side panel and from top to bottom are:

Buzzer

Buzzer is at the top of the side panel. It provides a continuous tone during high CO alarm, a pulsing tone during certain malfunction conditions.

Alarm Light

Red ALARM light blinks faintly during normal operation and is on steadily during the high CO alarm condition.

Low Battery Light

Yellow LOW BATTERY light comes on when battery voltage falls to where the instrument will not function properly (about 7 volts DC). Batteries should be replaced at this time.

Normal Light

The green NORMAL light acts as a pilot light and glows when the instrument is turned on. At the same time the red ALARM light flickers faintly at intervals of about one second.

Remote Alarm (REM ALARM)

A miniature size phone jack is provided for plugging in a remote alarm device so that the alarm sound can be repeated at a distance from the instrument. The outer shell of the jack is grounded to the case, and is negative. This jack will be energized at voltage about 8.5 volts DC when operating from "fresh" internal batteries or about 8.9 volts DC when operating from AC adapter whenever instrument is in alarm condition.

WARNING

The impedance of any connected load device at the REM ALARM (remote alarm) jack must be greater or equal to 12 ohms, when operating from internal batteries or AC adapter. Failure to do so may damage the carbon monoxide monitor **and result in sickness or death.**

Bottom

A rectangular opening in the bottom allows clearance for the sensor that is mounted to the upper face of the bottom plate. The bottom plate is held in place by two knurled thumbscrews. The sample inlet fitting and tubing extends from the outer face of the bottom plate.

Right Side

These items are aligned toward the rear of the right side panel.

There are two battery compartment drawers near the top. They contain the two 9 volt alkaline batteries, connected in parallel, which power the instrument.

Auxiliary Power Jack

A 2.5 mm pin jack is located near the bottom for operating the instrument from the AC adapter. The AC adapter will power the instrument as long as power is supplied to it. The outer shell of the jack is grounded to the case and is negative.

SPECIFICATIONS

Sensor –	Electrochemical/CO specific
Readout –	Direct read LCD
Range –	0-199 ppm
Alarm –	85 dBA at 10 ppm CO (5 ppm Canada)
Sensor Life –	Approximately 30 months
Sensor Replacement –	User allowed to replace sensor
Intrinsic Safety –	Class I, Div I, Group A, B, C, D (when operated on battery power)
Power –	9 volt DC alkaline batteries (2 each)
Aux. Alarm Output –	Maximum output current draw is 300 milliampere
Aux. Power Sources –	120 volt AC - 7.5 volt DC adapter
Operating Temperature Range –	0-110° F (17-43° C) (ambient temperature)

WARNING

- The impedance of any connected load device at the REM ALARM (Remote Alarm) jack must be greater or equal to 12 ohms, when operating from internal batteries or AC adapter. Failure to do so may damage the carbon monoxide monitor and **result in sickness or death.**
- The intrinsic safety of the carbon monoxide monitor is voided when remote alarm is used.
- The intrinsic safety of the carbon monoxide monitor is voided when the 110-120 volt AC adapter is used.

PRODUCTS, ACCESSORIES AND PARTS

3M™ Carbon Monoxide Monitor

The 3M CO monitor is factory mounted inside some of the 3M™ Portable Compressed Air Filter and Regulator Panels. Consult the *User Instructions* for your 3M™ Portable Compressed Air Filter and Regulator Panel.

3M™ Retrofit Carbon Monoxide Monitor Kit W-2808/37027*

The 3M retrofit kit allows the 3M CO monitor to be used with filter and regulator panels that do not currently have CO monitoring capability, such as the 3M compressed air filter and regulator panel W-2806/07006*. The 3M retrofit CO monitor kit is comprised of a 3M CO monitor, mounting bracket, flow meter, and hardware connections to attach the monitor to an available 3/8-inch port on a filter and regulator panel.

* 37027 is an automotive product number for W-2808.

* 07006 is an automotive product number for W-2806.

3M™ Accessories and Parts

529-04-49	Calibration Kit, Small	529-05-16	Span Gas Cylinder, 3.6 cubic feet of gas
529-04-48	Calibration Kit, Large		(replacement Span gas for large kit, 529-04-48)
529-04-50	Adapter, 110-120 Volt		
529-05-18	Zero Gas Cylinder, 0.6 cubic feet of gas	529-05-20	Remote Alarm Audible, 119 dBA
	(replacement Zero gas for small kit, 529-04-49)	529-05-21	Remote Alarm, Strobe Light, 150,000 CP (Requires 529-04-50)
529-05-19	Span Gas Cylinder, 0.6 cubic feet of gas	529-05-23	Y-Plug Adapter
	(replacement Span gas for small kit, 529-05-49)	529-05-22	Carbon Monoxide Sensor
529-05-17	Zero Gas Cylinder, 3.6 cubic feet of gas		
	(replacement Zero gas for large kit, 529-04-48)		

3M™ Adapter, 110-120 Volt AC (for CO Monitor)

This accessory will supply operating power to the instrument as long as it is plugged into an active 115 volt AC outlet, whether or not batteries are installed. The adapter will convert the 115 volt AC to 7.5 volt DC, 650 mA.

1. Plug the adapter into an active, fused (1 amp) 115 volt 50/60 Hz outlet.

Note: To prevent unnecessary electrical interference, the outlet should be on a dedicated circuit free of any intermittent heavy electrical loads, such as pumps, compressors or heaters.

2. Plug adapter cord connector into socket on the lower right-hand side of the monitor.

3. Adapter will power the instrument as long as the 115 volt AC source remains active.

4. Since the adapter voltage is slightly higher than that of the internal batteries, the adapter will supply the power. Blocking diodes protect the internal interface.

WARNING

The intrinsic safety of the carbon monoxide monitor is voided when the 110-120 volt AC adapter is used.

ASSEMBLY

The following instructions apply only if you are using the 3M™ Retrofit CO Monitor Kit W-2808/37027. (Fig. 2 and 3)

1. Secure the mounting bracket to a surface close to the filter and regulator panel with #8 x 1/2" self tapping screws.
2. Secure the monitor to the mounting bracket with #6-32 x 1/2" screws and #6 lock washers. Screw holes are located on the left side of the monitor.
3. The CO monitor is supplied with a 2-foot sample tube attached to the hose barb located on the monitor's bottom plate.
4. Use the supplied 90° st. elbow, 2 1/2" pipe nipple, and 3/8" x 1/8" reducing bushing to connect the bottom of the flow meter to an available port, just prior to the compressed hose connections, on the filter and regulator panel. If you are installing the flow meter on the 3M compressed air filter and regulator panel W-2806/07006, you will need to remove the plug from the CO sampling port located above the quick disconnect outlets on the panel.

Note: If your panel is wall-mounted, you may have to remove the panel from the wall to attach the flow meter.

6. Pull up the black tube lock collar at the top of the flow meter and insert the free end of the plastic sample tube. Push down on the lock collar to secure the sample tube.

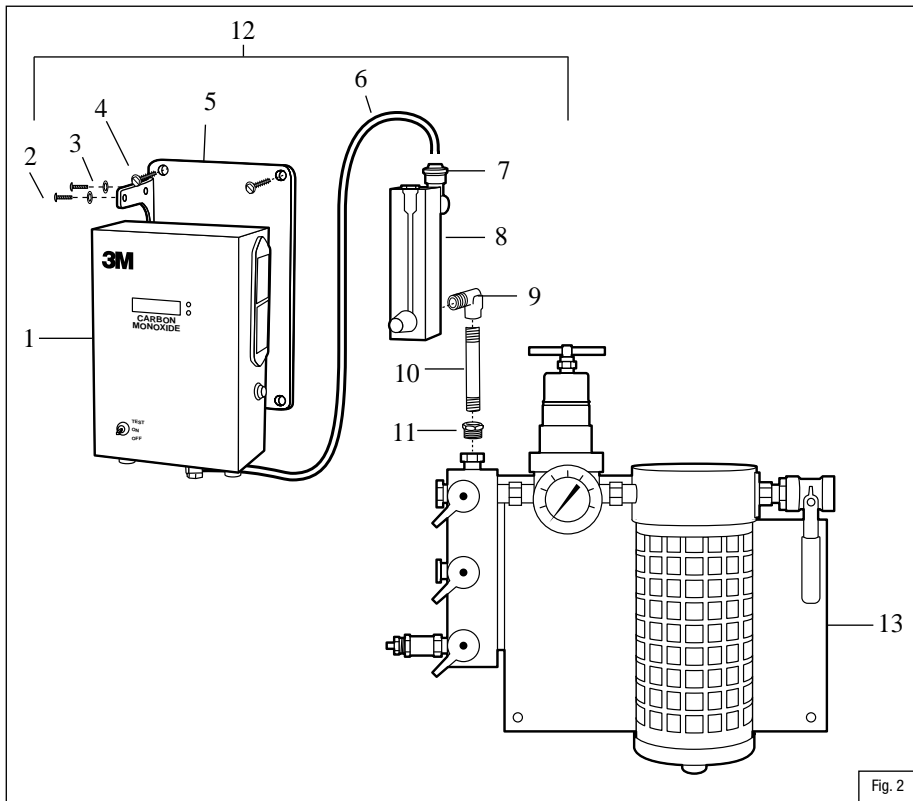


Fig. 2

Item Number	Product Number	Description	Quantity Required
1	---	CO monitor	1
2	---	#6-32 x 1/2" screw	4
3	---	#6 lock washer	4
4	---	#8 x 1/2" self tapping screw	4
5	---	Mounting bracket	1
6	---	2-foot sample tube	1
7	---	Tube lock collar	1
8	---	Flow meter	1
9	---	90° st. elbow	1
10	---	2-1/2" pipe nipple	1
11	---	3/8" x 1/8" reducing bushing	1
12	W-2808/37027	3M™ Retrofit CO Monitor Kit-includes items 1-11	
13	W-2806/07006	3M™ Compressed Air Filter and Regulator Panel (Sold Separately)	

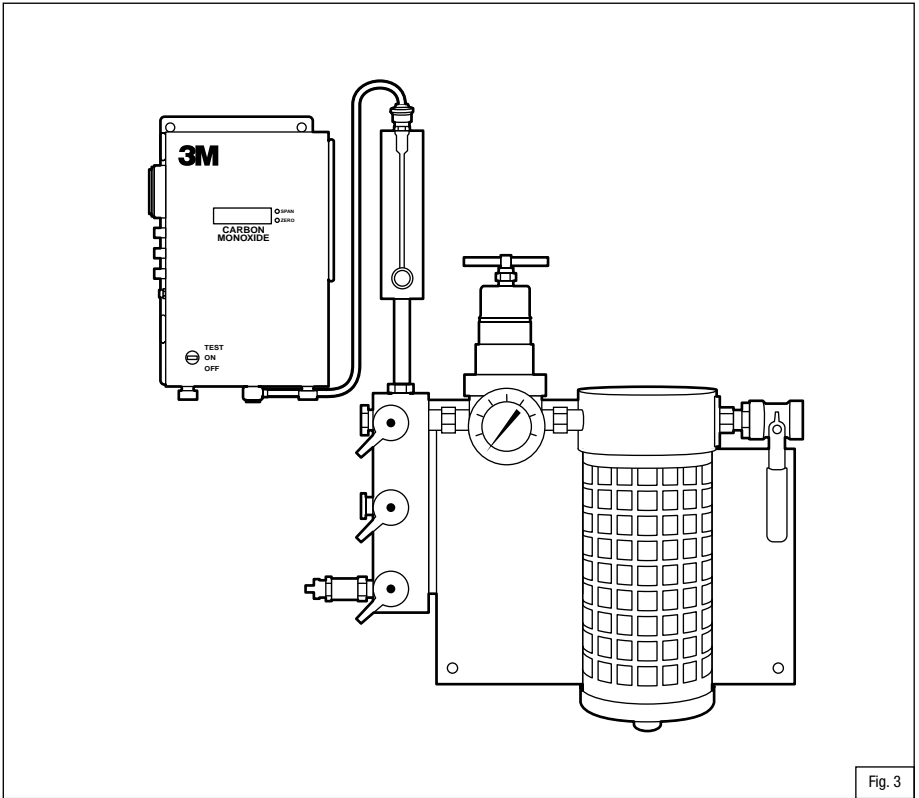


Fig. 3

Assembled 3M™ Retrofit Kit W-2808/37027 attached to 3M™ Compressed Air Filter and Regulator Panel W-2806/07006 (sold separately).

SET UP PROCEDURES AND PERFORMANCE CHECK

1. Turn instrument on and allow 5 minutes to stabilize. Verify that the yellow LOW BATTERY light is off.
2. Push up and hold switch in the test position.
 - The red ALARM light will come on verifying the CO alarm circuit operation.
 - The yellow LOW BATTERY light will also come on, verifying the low battery detection circuit.
 - Green NORMAL light will blink several times, then come on steady verifying continuity of the detector circuits.
 - The buzzer will sound and the REM ALARM jack will be energized.
 - The display will show an upscale reading.
 - Release the switch. Indicators will return to normal and display may first show a negative indication (-XX), then return close to 00.
3. Remove the plastic sample tube from the black tube lock collar on top of the flow meter. Introduce a sample of zero air to the sample tube (see *User Instructions* for the 3M™ Calibration Kit 529-04-48 or 529-04-49). The sample flow should be between 0.5 and 1.5 scfh.
4. Verify that the green NORMAL light is on, the red ALARM light is flickering about once a second and the display is showing 00 (zero), (see Calibration and Adjustment section of this *User Instruction*).
5. Remove the zero air sample and introduce a known sample of 50 to 150 ppm CO to the sample inlet tube (see *User Instructions* for the 3M™ Calibration Kit 529-04-48 or 529-04-49). The sample flow should be between 0.5 and 1.5 scfh.
6. Verify that the display readings rise upscale and the alarm light and buzzer operate (see Calibration and Adjustment section of this *User Instruction*).
7. Remove the CO sample.
8. Reconnect the sample tube to the black tube lock collar on top of the flow meter.
9. After adjusting the regulator on the air purification panel to the proper setting for your respiratory protection, adjust the flow meter knob so that the black floating ball is within the green boxed area etched on the flow meter body. Counterclockwise rotation of flow meter's knob will increase sample airflow to the monitor.
10. Instrument is now ready for normal use. Turn OFF when not in use.

Monitor Calibration Frequency

The CO monitor should be calibrated prior to use and every two weeks for the first month. After the first month, calibrate the monitor monthly if it is used on a continuous basis (daily or weekly). If the monitor is used on a non-continuous basis the monitor should be calibrated prior to each use.

Note: If monitor's alarm is energized, always check calibration to be sure monitor is not malfunctioning and/or out of calibration producing a false alarm/reading.

OPERATING INSTRUCTIONS

The following instructions are intended to serve as a guideline for the use of the 3M™ Carbon Monoxide Monitor. It is not to be considered all-inclusive, nor is it intended to replace the policy and procedures for each facility.

WARNING

- Your employer must provide breathing air that meets at least the requirements of the specification for Grade D breathing air, as described in the Compressed Gas Association Commodity Specification G-7.1-1997 in the United States. In Canada refer to CSA standard Z180.1, for the quality of the compressed breathing air. **Failure to do so may result in sickness or death.**
- Use of equipment described in these *User Instructions* must be in accordance with applicable health and safety standards, or pursuant to the recommendations of an industrial hygienist.
- Each person using this equipment must read and understand the information in these *User Instructions* before use. Use of this equipment by untrained or unqualified persons, or use that is not in accordance with these *User Instructions*, may adversely affect product performance and **result in sickness or death.**

If you have any doubts about the applicability of the equipment to your job situation, consult an industrial hygienist or call 3M's Occupational Health and Environmental Safety Division Technical Service Department 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.

Normal Operation

- The monitor will analyze the compressed air and show CO content on the display, in parts per million (ppm).
- The green NORMAL light will glow continuously and the red ALARM light will flicker about every second.
- When the CO concentration reaches the alarm point (10 ppm for USA, 5 ppm for Canada) the red ALARM light will come on steady, the green NORMAL light will go off, the buzzer will sound a steady tone, and the REM ALARM jack will be energized.
- When the CO concentration drops below the alarm setting, the indicators will automatically return to normal.

Calibration

Calibrate the monitor in the temperature range in which it will be used. After each adjustment in the following steps, allow time for the changes to stabilize. Recheck all adjustments. Turn monitor on and allow at least 5 minutes warm-up before calibration and adjustments are made.

Zero Adjustment

Remove sample tube from the black tube lock collar on top of the flow meter. Introduce a sample of zero air to the sample tube (see *User Instructions* for the 3M™ Calibration Kit 529-04-48 or 529-04-49). The sample flow should be between 0.5 and 1.5 scfh.

Verify that the green NORMAL light is on, the red ALARM light is flickering about once a second and the display is showing "00". If the display is showing other than "00", adjust the ZERO potentiometer (next to the display) so that the reading is "00". Clockwise adjustment increases reading. Notice that the display jumps from 00 to +02 or to -02 (monitor does not display -01 or +01). Try to set the potentiometer midway between the two extremes. Remove the zero air sample.

Span Adjustment

Introduce a known sample of 50 to 150 ppm CO to the sample tube (see *User Instructions* for the 3M™ Calibration Kit 529-04-48 or 529-04-49). The sample flow should be between 0.5 to 1.5 scfh.

Verify that the green NORMAL light is off, the red ALARM light is on full bright and the stabilized reading, after approximately one minute, is equal to the known concentration of CO. If the display is showing a difference, adjust the SPAN potentiometer (next to the display) to obtain proper value. Turn clockwise to increase reading. If the span adjustment cannot be made as indicated, the sensor needs to be replaced; make sure this is not happening due to an empty span gas cylinder. See Replacement Part section of this *User Instruction*.

Remove the known sample of CO and reconnect the sample tube to the black tube lock collar on top of the flow meter. The instrument is now properly adjusted for use.

REPLACEMENT PART INSTRUCTIONS

Batteries

Check batteries each time instrument is turned on by noting that the green NORMAL light is on and the yellow LOW BATTERY light is off. If the yellow light is on, the batteries need replacing. Two 9 volt alkaline batteries will power the monitor continuously for approximately 30-35 hours.

Batteries are contained in drawers on the right-hand side.

To replace the batteries:

Pull the small slot in the drawer face toward the front of the monitor to unlatch the drawer and pull the drawer out of the housing.

Pry battery out of drawer with fingers and replace with a fresh 9 volt alkaline battery, providing for proper polarity by placing minus (-) terminal uppermost in holder. Place bottom of fresh battery against spring and press into place.

CAUTION:

Observe proper polarity when inserting batteries. Polarity is marked on the inside of the drawers.

Push drawer back into housing until it latches in place. Drawers inserted incorrectly will not latch.

Repeat above steps for the second battery. (It is possible to operate with only one battery, but operating hours will be greatly reduced).

3M™ Carbon Monoxide Sensor 529-05-22

To replace sensor: (Fig. 4)

Remove the two knurled thumbscrews at bottom.

Pull the bottom plate off the housing as far as the wiring will allow.

Remove the 2 screws holding the wire connectors' circuit board/sensor cell in flow block.

An o-ring is located under the sensor at the bottom of the flow block cavity – DO NOT LOSE.

Pull the wire connectors' circuit board from the sensors' pins carefully so as not to damage the circuit board.

Discard old sensor cell. It contains a small amount of sulfuric acid. Dispose of sensor according to local regulations.

CAUTION:

The sensor in the carbon monoxide monitor contains a small amount of sulfuric acid. Always wash hands thoroughly after handling sensor cell. Sulfuric acid is poisonous and can cause severe burns. Do not allow acid to contact skin or eyes. If eyes are exposed to acid, flush thoroughly and seek immediate medical attention.

The wire connectors' circuit board relates to the 3 pins on the sensor as shown in figure 4. The fourth pin is used as a guide pin to install circuit board to sensor. Carefully press circuit board evenly on sensors' 4 pins. New sensors have a shorting wire/spring between the sensing and reference pins, remove and discard.

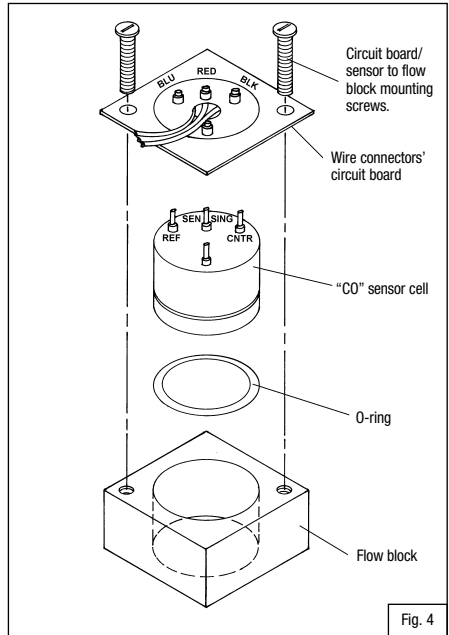
<u>Wire Color</u>	<u>Detector Terminal</u>
Black	CNTR
Blue	REF
Red	SENSING

Be sure flow block cavity and o-ring are dry and clean of oils, dirt etc. The o-ring must be positioned evenly in the bottom of the flow block cavity. Push the sensor into block against o-ring and evenly tighten the 2 screws that hold the circuit board/sensor to flow block. Tighten screws lightly to assure good seal with o-ring. Do not overtighten screws or damage to circuit board/sensor may occur.

Replace the bottom plate and secure it with thumbscrews.

Make sure the inlet sample swivel elbow is firmly tightened.

Allow at least one hour for stabilization, then calibrate as in Calibration and Adjustment section of this *User Instruction*.



TROUBLESHOOTING

Low battery

As the battery voltage declines toward the end of its life, the following indications occur:

- a) At 7.0 volts, the amber LOW BATTERY light will come on. Battery replacement is recommended at this point, but continued operation is still possible.
- b) At 6.4 volts, the buzzer will beep at intervals of about 7 seconds.
- c) At 5.8 volts, the buzzer will beep at 1-second intervals and the display will go to --. This malfunction indication will continue until the battery is completely dead.

Problem	Potential Cause	Corrective Action
CO monitor's LED red and green lights blink on/off along with the alarm buzzer and display shows 'SC'	The sensor has internal failure Poor connection between sensor pins and circuit board connections	Turn monitor off and after a few seconds turn monitor back on. Try to calibrate the monitor. If the monitor will not calibrate, replace the sensor. Unplug-Plug circuit board from sensor pins to make better contact connection. Try to calibrate monitor. If monitor will not calibrate or 'SC' appears again, replace sensor.
CO monitor display will not move from zero '00' when the sensor is exposed to a known sample of CO	SPAN adjustment may be set to zero Span gas cylinder empty The sensor has lost sensitivity Circuit malfunction	Recalibrate the monitor Replace the cylinder Replace the sensor Repair is needed
The CO monitor cannot be calibrated	The span gas and/or zero gas bottle(s) may be empty The sensor has lost sensitivity	Replace the empty span and/or zero gas bottle(s) Replace the sensor
The span adjustment cannot be made when the span gas is applied (i.e. the reading will not reach the span gas value)	The span gas bottle may be empty The sensor has lost sensitivity	Replace the empty span gas bottle Replace the sensor
With zero gas flowing through the monitor after approximately one-minute display reads minus one (-1) to the far left	Zero potentiometer may be turned <u>counterclockwise</u> all the way The sensor has lost sensitivity	Adjust the zero potentiometer <u>clockwise</u> until zero '00' reached Replace the sensor

Problem	Potential Cause	Corrective Action
With span gas flowing through the monitor after approximately one-minute display reads one (1) to the far left	Span potentiometer may be turned <u>clockwise</u> all the way The sensor has lost sensitivity	Adjust the zero potentiometer <u>counterclockwise</u> to 199 and then turn down to value of span gas Replace the sensor
When calibrating the CO monitor you cannot move display off zero '00' with zero potentiometer	Monitor may have been adjusted '00' using the span potentiometer	Turn the span potentiometer screw several full revolutions <u>clockwise</u> until the display reads the value of the span gas then start the calibration procedure over again
Display goes below 0 (i.e. display indicates a -02, -1, SC)	Zero misadjust Sensor has internal failure Circuit malfunction	Recalibrate the monitor Replace the sensor Repair is needed
Monitor display numbers wander and alarm periodically	Monitor is powered by the 110-120 volt AC adapter and walkie-talkies are being used near the monitor Large voltage spikes are present in the AC circuit Ambient temperatures exceed 110° F (43° C)	Do not use walkie-talkies in the area Isolate by using dedicated line Decrease ambient temperature

IMPORTANT NOTICE

Warranty

3M warrants its Carbon Monoxide Monitor for a period of one (1) year and its Carbon Monoxide Sensor for a period of two (2) years from the original shipping date, to be free from defects in material and workmanship in normal service and under normal conditions. This warranty is void if the Carbon Monoxide Monitor or Carbon Monoxide Sensor has been damaged by accident, misuse, neglect, improper service, or other causes not arising out of defects in material or workmanship. This warranty does not include replaceable items, such as filter elements, which are considered part of a regular maintenance program. Any implied warranties arising out of the sale of 3M's Carbon Monoxide Monitor and its Carbon Monoxide Sensor, including but not limited to the implied warranties of merchantability and fitness for a particular purpose, are limited in duration to the above one (1) and two (2) year periods respectively. 3M shall not be liable for loss of use of any of its products or incidental or consequential costs, expenses, or damages incurred by the purchaser or any other user.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS, IMPLIED, OR STATUTORY, INCLUDING WARRANTY OF MERCHANTABILITY.

Remedy

Should the Carbon Monoxide Monitor or the Carbon Monoxide Sensor fail in normal service under normal conditions through no fault of the purchaser or any other user during the warranty period, return the Carbon Monoxide Monitor or Carbon Monoxide Sensor to a 3M authorized warranty repair service center. No charges will be made for repair or replacement. Each repaired unit is warranted for sixty (60) days or the remaining portion of the original equipment's warranty, whichever is longer. **THE FOREGOING CONSTITUTES THE SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ANY AND ALL OTHER REMEDIES WHICH MAY BE AVAILABLE.**

This warranty becomes void immediately should any repair of or alterations to the warranted equipment be made without authorization by 3M.

FOR MORE INFORMATION

In United States, contact:

Internet: www.3M.com/occsafety

Technical Assistance: 1-800-243-4630

For other 3M products:

1-800-3M-HELPS or 1-651-737-6501

In Canada, contact:

Internet: www.3M.com/CA/occsafety

Technical Assistance: 1-800-267-4414

For other 3M products:

1-800-364-3577



3M Occupational Health and Environmental Safety Division

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