

## FOR MORE INFORMATION

### In United States, contact:

Internet: [www.3M.com/occsafety](http://www.3M.com/occsafety)

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

### In Canada, contact:

Internet: [www.3M.com/CA/occsafety](http://www.3M.com/CA/occsafety)

Technical Assistance: 1 800 267-4414

### For other 3M products:

1 800 364-3577

# 3M Portable Compressed Air Filter and Regulator Panel 256-02-00, with Carbon Monoxide Filtration and Monitor

*User Instructions*

*(Keep these User Instructions for reference)*



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## GENERAL SAFETY INFORMATION

### Intended Use

The 3M™ Portable Compressed Air Filter & Regulator Panel 256-02-00, with Carbon Monoxide (CO) Filtration and Monitor is intended to filter and regulate compressed air to be used with supplied air respiratory protection systems.

### List of Warnings and Cautions within these *User Instructions*

## ⚠ WARNING

The 3M™ Portable Compressed Air Filter & Regulator Panel 256-02-00, with Carbon Monoxide (CO) Filtration and Monitor is intended to filter and regulate compressed air to be used with supplied air respiratory protection systems. **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 3M™ Portable Compressed Air Filter and Regulator Panel 256-02-00, with CO Filtration and Monitor should not be used when the air entering the filtering system is oxygen deficient. These units will not increase the oxygen content of oxygen deficient air. **Use with oxygen deficient air may result in sickness or death.**

The panel should not be used in an Immediately Dangerous to Life or Health atmosphere (IDLH) unless it is used in conjunction with a back-up escape system or a Self-Contained Breathing Apparatus/Supplied Air Respirator (SCBA/SAR), where applicable.

To meet NIOSH requirement 42 CFR 84, subpart 84.150 for minimum and maximum airflow (4-15 cfm, 113-425 lpm), the air control valves approved for use with the 3M respirators must be operated within the supply pressure ranges and hose lengths stated in their *User Instructions*. **Failure to do so may adversely affect respirator performance and result in sickness or death.**

You must comply with OSHA standard 29 CFR 1910.134, which states that, "Airline couplings shall be incompatible with outlets for other gas systems to prevent inadvertent servicing of airline respirators with nonrespirable gases or oxygen." In Canada, refer to the requirements of CSA standard Z180.1. **Failure to do so may result in sickness or death.**

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, table for the quality of compressed breathing air. **Failure to do so may result in sickness or death.**

There is no assurance that by using the 3M™ Portable Compressed Air Filter and Regulator Panel 256-02-00, with Carbon Monoxide Filtration and Monitor the filtered compressed air will meet the requirements of Grade D breathing air. In Canada, refer to the requirements of CSA standard Z180.1.

The line pressure must be kept within safe limits, 125 psig (8.75 kg/cm<sup>2</sup>) maximum. Dirt, oil and water, unless trapped or filtered out, may continue downstream in concentrated form and adversely affect the performance of the respirator and **may 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.

## ⚠ WARNING

Carbon monoxide monitor will alarm if carbon monoxide concentrations exceed the preset level (10 ppm USA; 5 ppm Canada). If alarm should sound, remove respirator or activate SCBA and immediately move to a safe, breathable atmosphere. Have the proper qualified personnel examine the equipment and make the appropriate corrections before using again. **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, respirator selection tables contained in such publications as ANSI Z88.2-1992, CSA Standard Z94.4, or pursuant to the recommendations of an industrial hygienist. The employer must have a written respirator program in place which is in accordance with the OSHA respiratory protection standard found in 29 CFR 1910.134 prior to using any respirator. In Canada, follow CSA Standard Z94.4 or the requirements of the authority having jurisdiction in your region.

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.**

Do not use for respiratory protection when atmospheric concentrations of contaminants are unknown or immediately dangerous to life or health, unless used in conjunction with a back-up escape system or a self-contained breathing apparatus/supplied air respirator (SCBA/SAR).

Leave work areas immediately if:

- Any part of the system becomes damaged.
- Air flow into the respirator is reduced or stops.
- Breathing becomes difficult.
- Dizziness or other distress occurs; or
- You taste or smell contaminants or an irritation occurs.

Never alter or modify this assembly.

Not for use in any way other than in accordance with the use and maintenance instructions in this manual.

Do not use if any parts are missing or damaged.

Air supply piping, fittings, and compressors must have the capacity to deliver sufficient air volume to operate each air regulating valve at the recommended pressure.

Serious injury could result if the AIR SAMPLE METERING VALVE is not properly adjusted. Proper sample airflow to CO monitor is required for monitor to give correct CO level readout.

**Failure to do so may result in sickness or death.**

Always turn off air supply and bleed air pressure before disassembling the 3M filter and regulator panel with CO filtration or **serious injury could result.**

## IMPORTANT

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

### Do Not Use For

Filtering and regulation of air sources when airborne contaminant concentrations are unknown or immediately dangerous to life or health (IDLH), unless used in conjunction with a back-up escape system or a self-contained breathing apparatus/supplied air respirator (SCBA/SAR), where applicable.

## General Description

A complete 3M Portable Compressed Air Filter and Regulator Panel with CO Filtration and Monitor will operate as follows. (Fig. 1)

1. Air entering the *four-stage filtration system* at the inlet (A) is usually contaminated with oil, water, dirt, rust, scale and vaporous hydrocarbons.
2. As the air passes through the *first stage of the prefilter* (B), particulate matter 3.0 microns and larger are trapped and retained.
3. The air then enters the *second stage of the prefilter* (C) which traps particulate matter larger than 0.3 microns and coalesces liquid aerosols with an efficiency rating of 99.97%. The liquid contaminants are trapped in the lower chamber of the prefilter and expelled through the automatic *float drain* (D).
4. The *third stage* (E) contains a bed of odor absorbing activated charcoal.
5. The *fourth stage* (F) contains a low temperature catalyst which converts approximately 60% of any carbon monoxide to carbon dioxide.
6. The air is then passed through the *air pressure regulator* (G), which is used to adjust the air pressure going to the respirators.
7. A sample of the filtered air is taken at (H) and passed through the *carbon monoxide monitor* (I).
8. The *carbon monoxide monitor* continuously checks the carbon monoxide concentration and digitally displays the amount present in ppm (parts per million). An audio and visual alarm will alert operators if carbon monoxide concentrations exceed a preset level (10 ppm USA; 5 ppm Canada).

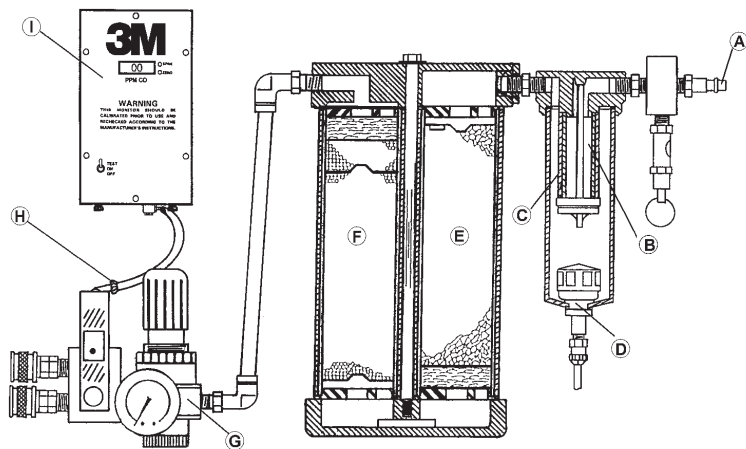


Fig. 1

## ⚠ WARNING

The 3M™ Portable Compressed Air Filter and Regulator Panel 256-02-00, with CO Filtration and Monitor should not be used when the air entering the filtering system is oxygen deficient. These units will not increase the oxygen content of oxygen deficient air. **Use with oxygen deficient air may result in sickness or death.**

## SPECIFICATIONS

Inlet pressure (max.)	125 psig static (8.6 bar)
Rated air flow (max.)	50 scfm (1416 L/min)
Inlet pressure (recommended)	90-120 psig (6.2-8.3 bar)
Outlet pressure range	0-125 psig (0-8.6 bar)
Operating temperature range	68-150°F (20-65°C) (compressed air temperature at inlet of panel) 0-110°F (-17-43°C) (ambient air temperature)
Dimensions	23.25"L x 20.75"W x 9"D (590mm x 5276mm x 229mm)
Weight (includes monitor)	31 lbs. (14.1kg.)

## 3M Respirator Capacity

The 3M filter and regulator panel with CO filtration is supplied with quick-disconnects at the outlet for connection of up to four (4) supplied air respirators. The actual number of respirators that may be connected to the filter and regulator panel is dependent on the inlet pressure to the panel and the airflow and pressure requirements of the respiratory protection. (Fig. 2) As the air passes through the panel there is resistance to flow called pressure drop. The more airflow through the filter and regulator panel, the greater the pressure drop. The air control devices approved for use with the 3M respirators must be operated within the supply pressure ranges and hose lengths stated in their *User Instructions*. Use Figure 2 along with information on the maximum airflow consumption, supply pressure ranges, and approved hose lengths as stated in the *User Instructions* for the 3M air control device to determine the number of respirators of a specific type that may be connected to the panel.

3M™ Portable Compressed Air Filter and Regulator Panel 256-02-00, with Carbon Monoxide Filtration and Monitor

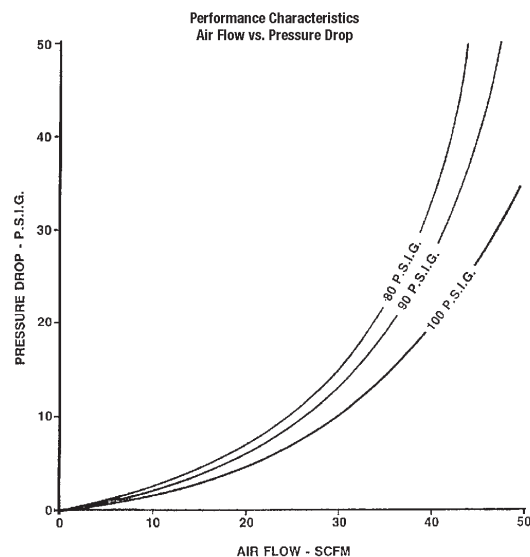


Fig. 2

## Discussion on Respirable Air

Many older compressed air systems may have air that is unfit for human use without secondary air treatment. This is due largely to the presence of objectionable oil vapors and odors. Rules and regulations governing air quality when using compressed air for respiration are quite specific. Precautions must be observed when using compressed air for breathing purposes.

### **⚠ WARNING**

To meet NIOSH requirement 42 CFR 84, subpart 84.150 for minimum and maximum airflow (4-15 cfm, 113-425 lpm), the air control valves approved for use with the 3M respirators must be operated within the supply pressure ranges and hose lengths stated in their *User Instructions*. **Failure to do so may adversely affect respirator performance and result in sickness or death.**

You must comply with OSHA standard 29 CFR 1910.134, which states that, "Airline couplings shall be incompatible with outlets for other gas systems to prevent inadvertent servicing of airline respirators with nonrespirable gases or oxygen." In Canada, refer to the requirements of CSA standard Z180.1. **Failure to do so may result in sickness or death.**

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, table for the quality of compressed breathing air. **Failure to do so may result in sickness or death.**

There is no assurance that by using the 3M™ Portable Compressed Air Filter and Regulator Panel 256-02-00, with Carbon Monoxide Filtration and Monitor the filtered compressed air will meet the requirements of Grade D breathing air. In Canada, refer to the requirements of CSA standard Z180.1.

The line pressure must be kept within safe limits, 125 psig (8.75 kg/cm<sup>2</sup>) maximum. Dirt, oil and water, unless trapped or filtered out, may continue downstream in concentrated form and adversely affect the performance of the respirator and **may result in sickness or death.**

Oil mist from the compressor lubricating oil must not be present when the air reaches the air control device. Excessive amounts of water vapor and any particulate matter should also be removed as they may affect performance of the air control devices.

Where large amounts of aerosols of oil, water and other liquids are present, an optional coalescing prefilter, such as the 3M™ W-3012 Coalescing Filter Assembly, may be installed on the input side of the filter and regulator panel with CO filtration.

#### **NOTE: Carbon monoxide**

Although it is theoretically possible that oil lubricated compressors can create carbon monoxide (CO) if the compressor overheats, studies have shown that the location of the compressor's air intake is the most likely source of carbon monoxide contamination.<sup>1</sup> According to OSHA regulation [29 CFR (1910.134)(i)], periodic CO monitoring, rather than continuous CO monitoring with an alarm, is acceptable if the oil lubricated compressor is equipped with a high temperature alarm and automatic shut-down. In Canada, follow CSA Z180.1 regarding oil lubricated compressors.

<sup>1</sup>Formation of carbon monoxide in air compressors, Am. Ind. Hyg. Assoc. J (40), June 1979, pp. 548-551

## PRODUCTS, ACCESSORIES AND PARTS

### 3M™ Portable Compressed Air Filter and Regulator Panel 256-02-00, with Carbon Monoxide Filtration and Monitor

- |                               |                               |
|-------------------------------|-------------------------------|
| 1 Case                        | 14 Manifold Bracket           |
| 2 Inlet Block                 | 15 Bracket Bolts (3 each)     |
| 3 Pressure Relief Valve       | 16 Manifold Bolts (5 each)    |
| 4 Hex Nipple – 3/8"           | 17 Manifold Washer (5 each)   |
| 5 Prefilter                   | 18 Tubing St. Elbow (2 each)  |
| 6 Tube Locking Collar         | 19 Tubing                     |
| 7 Drain Tube                  | 20 Air Regulator              |
| 8 Base                        | 21 Outlet Block               |
| 9 Aluminum Tube Third Stage   | 22 1/8" Hex Pipe Plug         |
| 10 Aluminum Tube Fourth Stage | 23 Close Nipple – 1/8"        |
| 11 Base Bracket               | 24 Air Sample Metering Valve  |
| 12 Manifold                   | 25 Air Sample Hose Connector  |
| 13 Carbon Monoxide Monitor    | 26 Pressure Gauge, 0-160 psig |

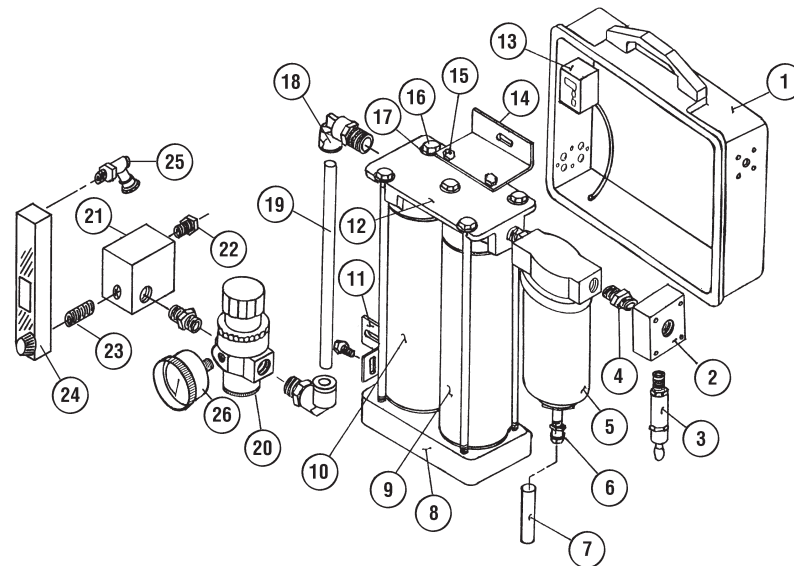


Fig. 3

## Replacement Parts

Part No.	Description
523-01-28	Replacement filter kit
529-05-22	Carbon monoxide sensor

## Accessories

Part No.	Description
529-05-16	Span Gas Cylinder, 3.6 cubic feet of gas (replacement Span gas for large kit, 529-04-48)
529-05-17	Zero Gas Cylinder, 3.6 cubic feet of gas (replacement Zero gas for large kit, 529-04-48)
529-05-18	Zero Gas Cylinder, 0.6 cubic feet of gas (replacement Zero gas for small kit, 529-04-49)
529-05-19	Span Gas Cylinder, 0.6 cubic feet of gas (replacement Span gas for small kit, 529-05-49)
529-05-20	Remote Alarm Audible, 119 dBA
529-05-21	Remote Alarm, Strobe Light, 150,000 CP (requires 529-04-50)
529-05-23	Y-Plug Adapter
529-04-48	Calibration Kit, Large
529-04-49	Calibration Kit, Small
529-04-50	Adapter, 110-120 Volt

## Set Up Procedures

The 3M filter and regulator panel, with CO filtration when used in accordance with the following instructions, will remove or reduce selected contaminants from compressed air lines. (Fig. 4)

### **WARNING**

The 3M™ Portable Compressed Air Filter and Regulator Panel 256-02-00, with Carbon Monoxide Filtration and Monitor should not be used when the air entering the filter is oxygen deficient. These units will not increase the oxygen content of oxygen deficient air. **Use with oxygen deficient air may result in sickness or death.**

The 3M filter and regulator panel with CO filtration will remove approximately 60% of the carbon monoxide from the air source.

The filter and regulator panel can be wall mounted right in the case. Simply drill holes in the back of case to allow for installation of screws or bolts. Use washers on the screws or bolts to prevent the screws from pulling out from the unit.

The user's supply line to the inlet of the filter and regulator panel should be a minimum of 1/2" I.D. The air supply entering the filter and regulator panel should meet the following criteria to insure maximum efficiency of the filter system:

- Temperature range should be 68-150°F (20-65°C)
- Large amounts of aerosols of oil, water, and other liquids should be removed prior to entering the filter and regulator panel (greater than 50 ppm - oil and water aerosols plus solids).
- The relative humidity of the incoming air should be greater than 20% and less than 70%.  
Avoid installing the filter and regulator panel after a desiccant dryer.

Conditioning equipment may be necessary prior to the filter and regulator panel to control the air temperature and bulk liquid removal.

The filter and regulator panel must be installed a minimum of 25 feet away from the compressor. The actual distance required from the compressor shall be determined by the temperature of the air. The air supply temperature at the filter should be 68-150°F (20-65°C) for maximum efficiency. Conditioning equipment may be necessary, prior to the filter, to achieve this temperature range. (Fig. 4)

The filter and regulator panel is used to adjust the air pressure supplied to the air control devices of a respiratory protection system. Consult instructions on your particular air control device for pressure requirements.

The filter and regulator panel comes with a 3M™ Carbon Monoxide Monitor designed to provide continuous, direct read CO monitoring. The carbon monoxide monitor in the filter and regulator panel is CSA certified intrinsically safe for Class 1, Div. I, Groups A, B, C & D Hazardous Locations when utilizing the two 9 volt batteries to power the monitor. See the carbon monoxide monitor *User Instructions*. If the optional AC power adapter is used, the power cable can be routed out through an existing vent hole or an additional hole can be drilled for this cord.

The filter and regulator panel with CO filtration is supplied with an industrial interchange plug (3/8" body size, 3/8" MPT) at the inlet and four (4) industrial interchange quick-disconnects (1/4" body size, 3/8" MPT) at the outlet.

The filter cartridges have an average life expectancy of one (1) to two (2) months (or approximately 160-320 hours, depending on the quality of the air in your compressed air lines) under normal conditions. The frequency of filter change will depend on the quality of the incoming compressed air and how much the panel is used. All three (3) filters should be changed at the same time.

### **WARNING**

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.

Carbon monoxide monitor will alarm if carbon monoxide concentrations exceed the preset level (10 ppm USA; 5 ppm Canada). If alarm should sound, remove respirator or activate SCBA and immediately move to a safe, breathable atmosphere. Have the proper qualified personnel examine the equipment and make the appropriate corrections before using again. **Failure to do so may result in sickness or death.**

The carbon monoxide alarm will sound to alert the operator that a problem has developed. The monitor alarm will sound due to one or more of the following conditions:

1. Filter cartridge life is exhausted. Carbon monoxide levels exceeding a predetermined alarm set level are passing through the 3M filter and regulator panel with CO filtration. To correct the condition, replace all three (3) filter cartridges as outlined in these instructions. Flush system with compressed air for a minimum of five (5) minutes and calibrate the Carbon Monoxide as outlined in the monitor's *User Instructions*.
2. Monitor is out of calibration. Calibrate per the carbon monoxide monitor *User Instructions*.
3. Monitor sensor may be bad. See carbon monoxide monitor *User Instructions* for replacement procedure.



4. Carbon Monoxide levels exceeding the removal capacity of the system may be present. The low temperature catalyst can convert about 60% of any CO in the compressed air stream. CO amounts above 20 ppm can lead to unconverted CO above the preset alarm point of 10 ppm. In Canada these values would be 10 ppm and 5 ppm preset alarm. Test the carbon monoxide concentration present in the compressed air system to determine if the input level of CO exceeds the 3M air purification panel's capacity. Should the input levels exceed the system's rated capacity, determine the generating source of the carbon monoxide and try to eliminate the cause.

**NOTE:** The amber-colored indicator light will light when a low battery condition exists. When this condition occurs, replace batteries. See carbon monoxide monitor *User Instructions*.

## OPERATING INSTRUCTIONS

The following instructions are intended to serve as a guideline for the use of the 3M™ Portable Compressed Air Filter and Regulator Panel 256-02-00, with CO Filtration and Monitor. It is not to be considered all-inclusive, nor is it intended to replace the policy and procedures for each facility. (Fig. 4 and 5)

## ⚠ WARNING

Use of equipment described in these *User Instructions* must be in accordance with applicable health and safety standards, respirator selection tables contained in such publications as ANSI Z88.2-1992, CSA Standard Z94.4, or pursuant to the recommendations of an industrial hygienist. The employer must have a written respirator program in place which is in accordance with the OSHA respiratory protection standard found in 29 CFR 1910.134 prior to using any respirator. In Canada, follow CSA Standard Z94.4 or the requirements of the authority having jurisdiction in your region.

Carbon monoxide monitor will alarm if carbon monoxide concentrations exceed the preset level (10 ppm USA; 5 ppm Canada). If alarm should sound, remove respirator or activate SCBA and immediately move to a safe, breathable atmosphere. Have the proper qualified personnel examine the equipment and make the appropriate corrections before using again. **Failure to do so may result in sickness or death.**

The 3M™ Portable Compressed Air Filter and Regulator Panel 256-02-00, with CO Filtration and Monitor should not be used when the air entering the filtering system is oxygen deficient. These units will not increase the oxygen content of oxygen deficient air. **Use with oxygen deficient air may result in sickness or death.**

The panel should not be used in an Immediately Dangerous to Life or Health atmosphere (IDLH) unless it is used in conjunction with a back-up escape system or a Self-Contained Breathing Apparatus/Supplied Air Respirator (SCBA/SAR), where applicable.

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.**

Do not use for respiratory protection when atmospheric concentrations of contaminants are unknown or immediately dangerous to life or health, unless used in conjunction with a back-up escape system or a self-contained breathing apparatus/supplied air respirator (SCBA/SAR).

## ⚠ WARNING

Leave work areas immediately if:

- Any part of the system becomes damaged.
- Air flow into the respirator is reduced or stops.
- Breathing becomes difficult.
- Dizziness or other distress occurs; or
- You taste or smell contaminants or an irritation occurs.

Never alter or modify this assembly.

Not for use in any way other than in accordance with the use and maintenance instructions in this manual.

Do not use if any parts are missing or damaged.

Air supply piping, fittings, and compressors must have the capacity to deliver sufficient air volume to operate each air regulating valve at the recommended pressure.

If you have any doubts about the applicability of the equipment to your job situation, consult an industrial hygienist or contact 3M OH&ESD Technical Service toll free in U.S.A., 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.

## Carbon Monoxide Monitor

Depending on power option used on monitor, either install batteries and/or optional power source and turn monitor on for five (5) minute warm-up. Check audible/visual alarms now by pushing toggle switch up to "TEST" position (refer to monitor *User Instructions*). The two nine (9) volt batteries will power the monitor continuously for 30-35 hours. After warm-up period/testing, check the monitor's calibration.

Calibrate the carbon monoxide monitor as per the calibration instructions in the CO monitor *User Instructions*.

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

Avoid extreme temperature changes; monitor performs best at ambient temperature range 0-110°F (-17-43°C). Always calibrate monitor in the temperature range in which it will be used.

## 3M™ Portable Compressed Air Filter and Regulator 256-02-00, with Carbon Monoxide Filtration and Monitor

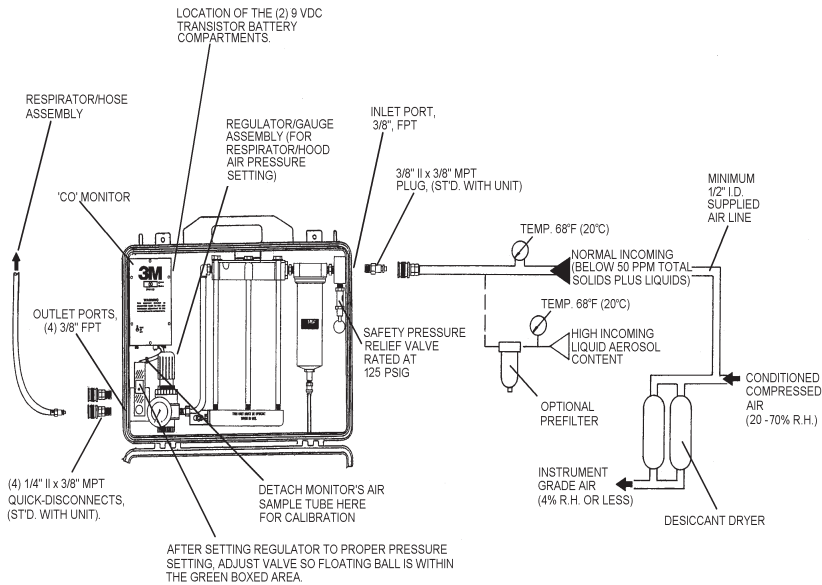


Fig. 4

Remove any large volumes of oil/water from supplied air line prior to connecting the system. Purge air through the system for a minimum of five (5) minutes on initial start-up.

**NOTE:** If excessive oil/water is present, install a separate coalescing prefilter such as the 3M™ Coalescing Filter Assembly W-3012 prior to the system inlet. (Fig. 4)

**DO NOT** install model 3M™ Portable Compressed Air Filter and Regulator Panel 256-02-00, with CO Filtration and Monitor in a compressed air system where the compressed air has less than 20% R.H. The fourth stage carbon monoxide filter will not function correctly.

Install the industrial interchange plug into the threaded inlet to the panel. Install all four (4) industrial interchange quick disconnects into the four (4) threaded outlets from the panel.

Connect the inlet air supply and outlet compressed air hoses.

Pressurize the system and set the regulator to the appropriate pressure required by the respirator air control device.

## ⚠ WARNING

To meet NIOSH requirement 42 CFR 84, subpart 84.150 for minimum and maximum airflow (4-15 cfm, 113-425 lpm), the air control valves approved for use with the 3M respirators must be operated within the supply pressure ranges and hose lengths stated in their *User Instructions*. **Failure to do so may adversely affect respirator performance and result in sickness or death.**

Adjust air sample metering valve's adjustment knob (Fig. 5) so the black floating ball is within the *green boxed area* etched on valve body. Proper air sample is now being metered to the CO monitor. Periodically check to be sure ball is floating freely in this area by turning adjustment knob and noting movement of ball.

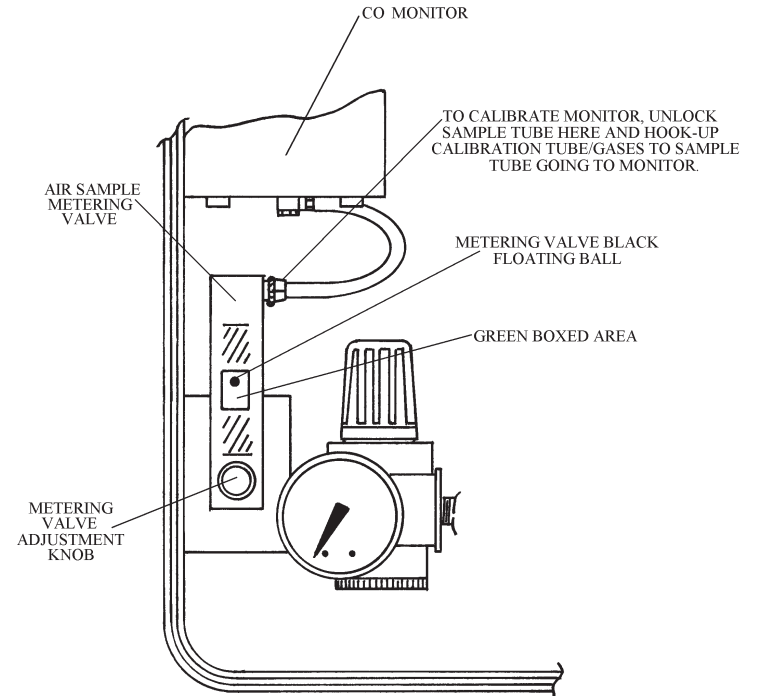


Fig. 5

## ⚠ WARNING

Serious injury could result if the AIR SAMPLE METERING VALVE is not properly adjusted. Proper sample airflow to CO monitor is required for monitor to give correct CO level readout. **Failure to do so may result in sickness or death.**



## REPLACEMENT PART INSTRUCTIONS

### ⚠ WARNING

Always turn off air supply and bleed air pressure before disassembling the 3M filter and regulator panel with CO filtration or **serious injury could result**.

To replace the filter cartridges, follow these steps. All three (3) filter cartridges should be replaced each time the filter cartridges are changed.

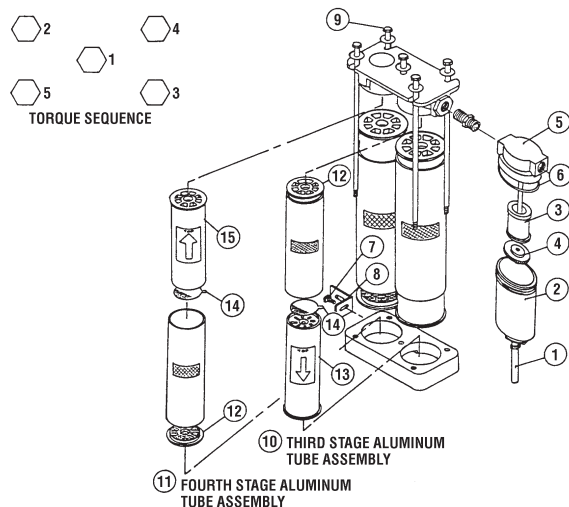


Fig. 6

### Prefilter-Combined First and Second Stages

1. Pull plastic drain tube (1) up through the case.
2. Unscrew prefilter bowl assembly (2) from manifold (5) and clean bowl assembly in mild soap and water, blowing dry with low pressure compressed air.
3. Remove two-stage prefilter element (3) by unscrewing end cap retaining nut (4) and pulling prefilter element down over center rod of manifold.
4. Discard clogged prefilter element.
5. Inspect manifold for dirt and contaminants, clean as required, and inspect O-ring (6) located inside manifold for any cuts or cracks. Replace O-ring, if required, to prevent air leakage.
6. Install new two-stage prefilter element by sliding new element over center rod on manifold so that rod protrudes from end of element and element is squarely seated against manifold with rod centered in element.
7. Screw end cap retaining nut onto threaded portion of rod until end cap retaining nut is seated properly against end of prefilter element and element has come solidly against shoulder in manifold.

8. Apply a light film of petroleum jelly on beveled edge of prefilter bowl assembly and screw bowl assembly into manifold until tight. **NOTE:** Be sure O-ring is properly seated in manifold to prevent cutting O-ring. **HAND TIGHTEN ONLY!**
9. Guide drain tube back through hole in bottom of case.

### Air Scrubber-Third and Fourth Stages

1. Loosen screw (7) from bracket (8).
2. Loosen five (5) manifold bolts (9) enough to allow the third and fourth stage filter tube assemblies to move freely.
3. Remove front two (2) corner bolts with washers.
4. Slide out old third (10) and fourth (11) stage filter tube assemblies.
5. Remove old third stage filter cartridge (13) and cap gasket (12) from the third stage aluminum tube.
6. Clean the aluminum tube in mild soap and water and wipe dry.
7. Refill the third stage aluminum tube by sliding the new third stage filter cartridge into the aluminum tube from the bottom. Make sure that the flow direction arrow on the new third stage filter cartridge is pointing **DOWN** for proper operation.
8. Remove sealing label (14) and install new cap gasket on the **TOP** of the third stage aluminum filter tube assembly.
9. Slide the new third stage aluminum filter tube assembly into the air scrubber on the **inlet side**.
10. Remove old fourth stage filter cartridge (15) and cap gasket from the fourth stage aluminum tube.
11. Clean the aluminum tube in mild soap and water and wipe dry.
12. Refill the fourth stage aluminum tube by sliding the fourth stage filter cartridge into the aluminum tube from the top. Make sure that the flow direction arrow on the new fourth stage filter cartridge is pointing **UP** for proper operation.
13. Remove sealing label and install new cap gasket on the **BOTTOM** of the fourth stage aluminum filter tube assembly.
14. Slide the new fourth stage aluminum filter tube assembly into the air scrubber on the **outlet side**.
15. Tighten manifold bolts in sequence from center outward to 100 inch-pounds (11 Nm). (Fig. 6) Repeat sequence and torque bolts to 250 inch-pounds (28 Nm). Recheck for proper torque limit.
16. Tighten screw on bracket to prevent any damage from occurring when transporting the filter and regulator panel.

Remove any large volumes of oil/water from the supplied air line prior to connecting the system. Purge air through the system for a minimum of five (5) minutes prior to use of the newly installed filters.

**NOTE:** Dispose of used filter cartridges in landfill according to local, state and federal regulations.

### Final Check and Calibration

Pressurize system and check for leaks. Re-tighten necessary parts to stop any leakage. Flush system with compressed air for a minimum of five (5) minutes. Calibrate the carbon monoxide monitor as outlined in the CO monitor *User Instructions*.

## Storage

Prior to storage of the unit, check for moisture in the third and fourth stage filters. If moisture is present, dry the system and replace the filters. Dry filters can be left in the unit prior to storage.

## RECORD KEEPING

Record all periodic air quality checks; monitor calibration dates, filter cartridge change intervals and any other service performed on either unit.

## TROUBLESHOOTING

Use the table below to help identify possible causes and corrective action for problems you may experience.

Problem	Possible Causes	Corrective Action
You smell or taste contaminants or an irritation occurs.	Misuse, improper assembly or malfunction of equipment.	Leave work area immediately and contact your supervisor. Do not use until the cause is identified and corrected.
	Filter cartridges may be used up.	Replace filter cartridges.
Airflow too low.	Clogged particulate filter.	Replace all filter cartridges.
	Pressure too low.	Raise inlet pressure or adjust regulator.

## IMPORTANT NOTICE

### Warranty

3M warrants its Portable Compressed Air Filter and Regulator Panel with Carbon Monoxide Filtration and 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 3M filter and regulator panel 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 filter and regulator panel 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 3M filter and regulator panel 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 air filter and regulator panel 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.