"Save Your Breath With"

MODERN SAFETY TECHNIQUES

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SERVICE MANUAL
MODEL BA1000AA-S1
BREATHING AIR PANEL

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WARNING: Do not attempt to operate this equipment without first reading and understanding the service manual enclosed with this device.

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8/02

GENERAL OPERATION MANUAL

WARNING: The MST Breathing Air Panel Model BA1000AA-S1:

1) ___ WILL NOT remove Carbon Monoxide.
2) ___ SHOULD NOT be used when the air entering the filtering system is oxygen deficient. The MST Breathing Air Panel will not increase the oxygen content of the air.
3) ___ SHOULD NOT be used in an Immediately Dangerous to Life and Health Atmosphere (IDLH) unless it is used in conjunction with a Back-Up Escape system or a supplied air Self-Contained Breathing Apparatus (SCBA), where applicable.
4) ___ SHOULD NOT have air inlet pressure greater than 150 PSIG static (10.4bar). Personal injury could result.
5) ___ SHOULD NOT have air outlet pressure that exceeds Manufacturers' Respirator/Hose Assembly pressure requirements. Personal injury could result.
6) CARBON MONOXIDE MONITOR will alarm if Carbon Monoxide levels exceed requirement for Grade "D" Breathing Air set forth by OSHA/CSA. If alarm should sound, remove respirator or activate SCBA and immediately move to safe breathable atmosphere. Have the proper qualified personnel examine the equipment and make the appropriate corrections before using again.

The MST Breathing Air Panel is a Four Stage Filtration System designed to remove or reduce select contaminates found in compressed air lines. The Breathing Air Panel can be connected directly to shop air from a standard compressed air source to help provide breathing quality air to face masks, helmets, hoods and other supplied air breathing apparatus.

GENERAL FILTER SYSTEM DESCRIPTION

(Refer to Figure No.1)

Air entering the MST Breathing Air Panel at the inlet **(A)** is usually contaminated with oil, water, dirt, rust, scale and gaseous Hydrocarbons. As the air passes through the First Stage **(B)**, particulate and liquid contaminates will be trapped-coalesced out (0.7 micron max solids and liquids down to 2.0 microns at an efficiency rating of 95%). The liquids are trapped and expelled through the Automatic Float Drain **(C)**. The Differential Pressure Gauge (DPG) at **(D)** will indicate when element requires changing. The Second Stage **(E)** traps and retains particulate matter down to 0.3 microns. As air enters the Third Stage **(F)**, liquid contaminates are coalesced down to 0.75 microns with an efficiency rating of 99.97% (meets Underwriters Laboratories Specification UL 586 for High Efficiency, Particulate, Air Filter Units). The liquids are trapped and expelled through the Automatic Float Drain **(G)**. The "DPG" at **(H)** will indicate when element requires changing. The Fourth Stage **(I)** contains odor absorbing activated charcoal which collects various Hydrocarbons (such as oil fumes, benzene, etc.). Any liquids (should not be any) are trapped and expelled through Automatic Float Drain at **(J)**. The "DPG" at **(K)** will indicate when all filters require replacement. A sample of the filtered air is taken at **(L)** and passed through the Carbon Monoxide Monitor **(M)**. The Carbon Monoxide Monitor continuously checks the carbon monoxide levels per OSHA/CSA requirements and digitally displays the amount present in PPM (Parts Per Million). An audible alarm will alert operators if levels of carbon monoxide exceed OSHA/CSA requirements.

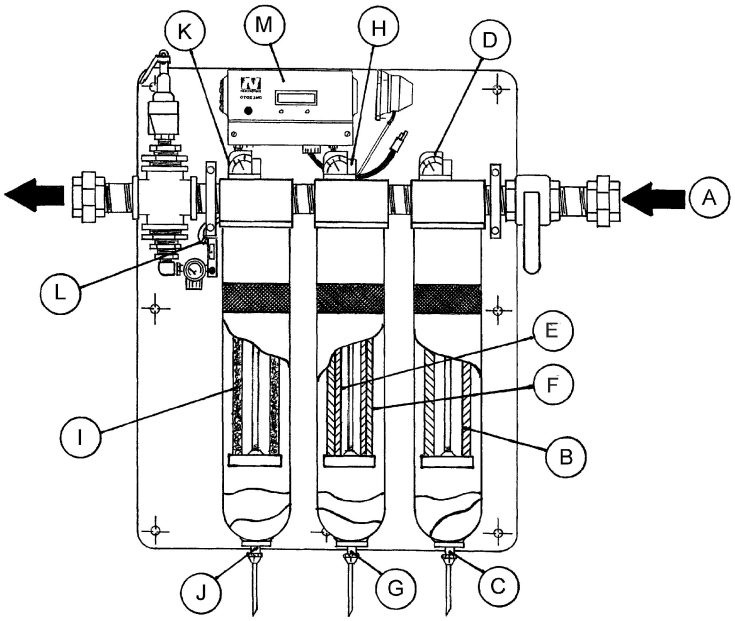

FIGURE NO.1

GENERAL INSTRUCTIONS

(Refer to Figure No. 2)

The MST BA1000AA-S1 Breathing Air Panel, a compressed air purifier, when used in accordance with the following instructions, will remove or reduce selected contaminants from compressed air lines.

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WARNING: The MST Breathing Air Panel BA1000AA-S1 should not be used when the air entering the filter is oxygen deficient (air with a low oxygen content). The MST Breathing Air Panel will not increase the oxygen content of oxygen deficient air.

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MST, Inc. strongly recommends that a complete safety program be initiated to ensure that the respiratory air is in compliance with all OSHA standards and other applicable laws regulating the use of supplied air respiratory systems. MST, Inc. recommends that the air quality be tested upon installation and periodically re-tested to ensure that the minimum requirements for breathing air are maintained.

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WARNING: The MST Breathing Air Panel BA1000AA-S1 will not remove Carbon Monoxide.

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This system is to be used only by trained qualified personnel in accordance with a respirator program as outlined in OSHA Regulation 29 CFR 1910.134(b). MST, Inc. will not assume any liability for accidents or personal injury resulting from the improper use of this equipment.

The air supply entering The MST Breathing Air Panel must meet the following criteria to ensure maximum efficiency of the MST filter system:

1) Temperature range should be between 35-150ºF (2-65ºC). Conditioning equipment may be necessary, prior to the filter, to achieve this temperature range.

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WARNING: **Maximum pressure supplied to this unit IS NOT to exceed 150 PSIG. Personal injury could result.**

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MODEL BA1000AA-S1
GENERAL UNIT

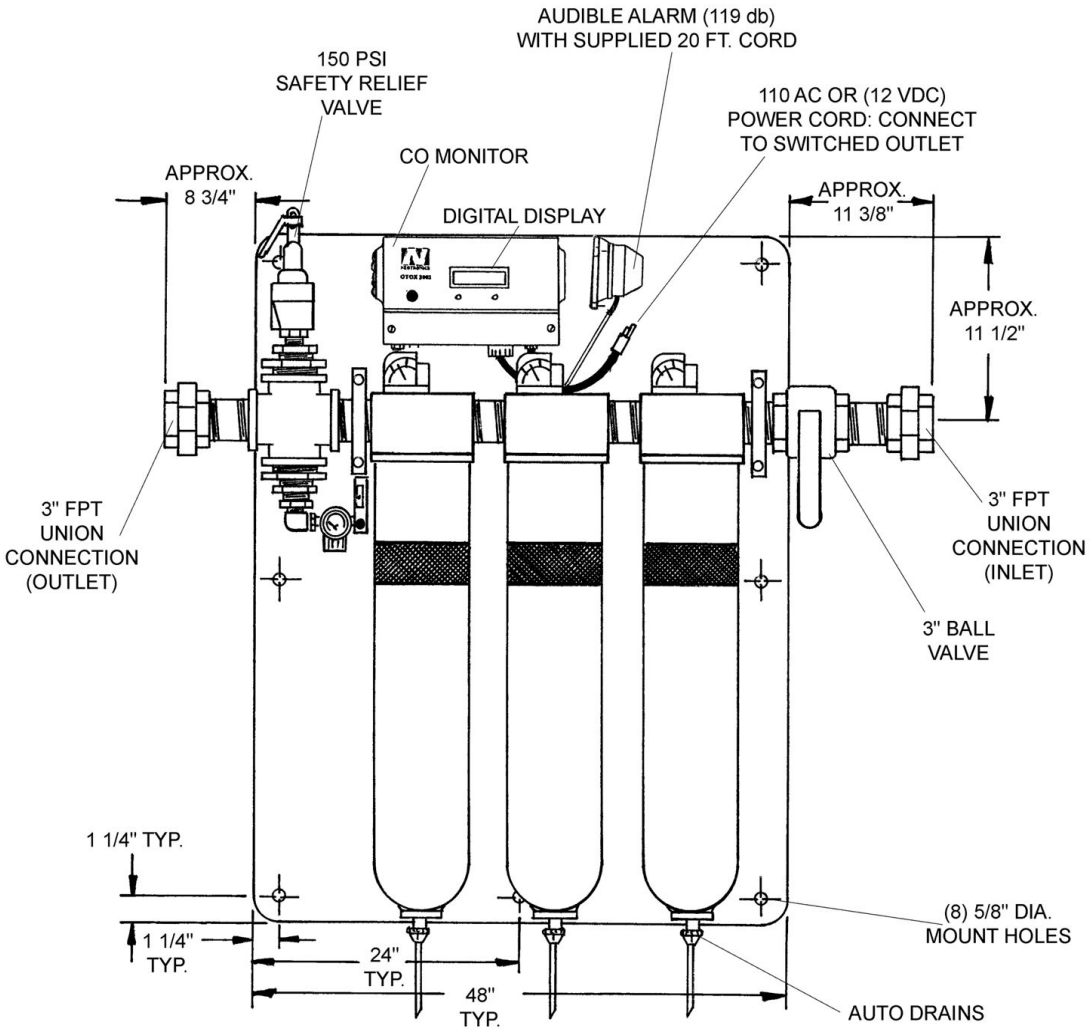

FIGURE NO. 2

AIR SAMPLE TO MONITOR ADJUSTMENT

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WARNING : SERIOUS INJURY could result if the AIR SAMPLE METERING VALVE is not properly adjusted. Proper sample air flow to 'CO' monitor is required for monitor to give correct 'CO' level readout.

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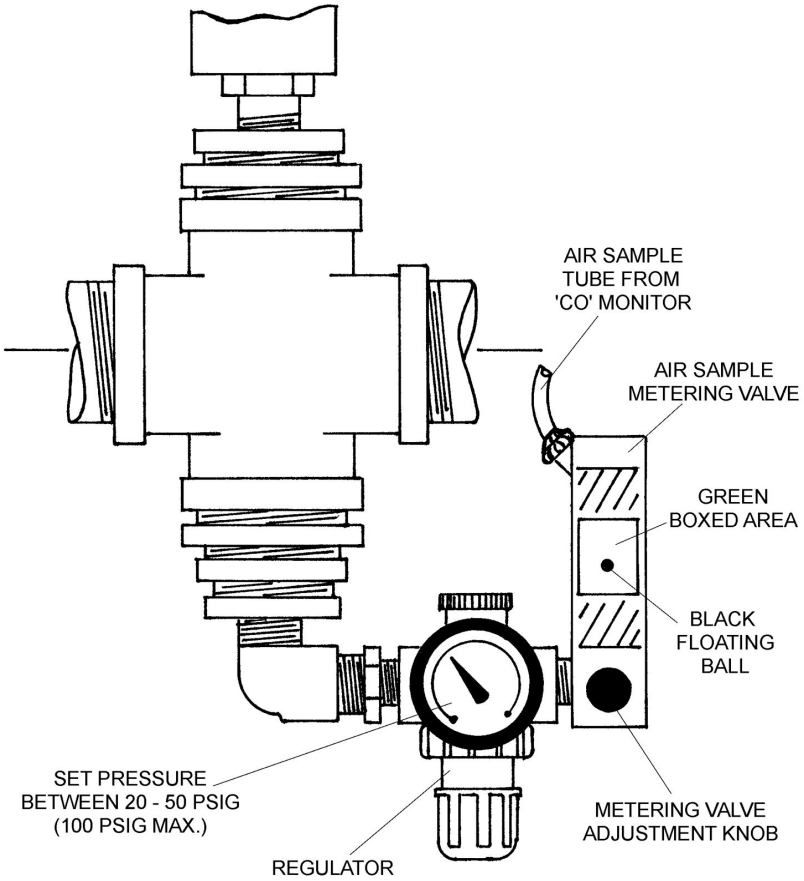
AIR SAMPLE METERING VALVE ADJUSTMENT

A) Pressurize system and set regulator between 20-50 psig (100 psig max.).

B) Adjust Air Sample Metering Valve's adjustment knob 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 in this area.



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WARNING: DO NOT Exceed mask and hose assembly manufacturer's requirements for outlet pressure. Personal injury could result.

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The filter cartridges used in the Breathing Air Panel Model BA1000AA-S1 have an average life expectancy of (6) six months, (depending on the quality of the air in your compressed air lines) under normal conditions. If liquid is being expelled out from the Fourth Stage Automatic Float Drain, MST, Inc. recommends changing all (3) filter cartridges.

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WARNING: If the Monitor's alarm should sound, remove mask or hood immediately and move to a safe breathable atmosphere. Have a proper qualified personnel examine the equipment and make the appropriate corrections before using again.

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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:

A) Carbon Monoxide levels exceeding a pre-determined alarm set level is passing through the Breathing Air Panel. The Breathing Air Panel does not remove or reduce the Carbon Monoxide content in the compressed air. Examine the air compressor, the air compressor intake air quality, and the complete system. Have the proper qualified personnel make the appropriate corrections before using again.

B) Monitor out of Calibration. Calibrate Carbon Monoxide Monitor as outlined in the Neotronics Monitor Model OTOX 2002 Information Manual.

SERVICE INSTRUCTIONS

(Refer to Figure No.3)

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WARNING: Always turn off air supply and bleed air pressure before disassembling unit or SERIOUS INJURY COULD RESULT.

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To replace all or individual filter cartridges in the Breathing Air Panel Model BA1000AA-S1, follow these steps:

1. FIRST STAGE ELEMENT REPLACEMENT

Element change is required when the Differential Pressure Gauge indicates a 6-10 PSID, 12 PSID max.

A) First unscrew Bowl Assembly **(1)**. A strap wrench may be required to break bowl, O-ring/manifold seal. Clean bowl ass'y in mild soap and water and blow dry with low pressure air.

B) Remove Coalescing Element **(2)** by unscrewing End Cap Retaining Nut **(3)**.

C) Inspect the Filter Manifold **(4)** for dirt/contaminates and clean as required. Inspect O-ring **(5)** for cuts etc. and replace if required. Clean and apply light film of petroleum jell on O-ring before re-installing.

D) Install new Coalescing Element and tighten End Cap Retaining Nut. Be sure Element is seated squarely on Manifold's boss and End Cap.

E) Apply light film of petroleum jell on Bowl's beveled edge and threads to provide good seal. HAND TIGHTEN ONLY to Manifold.

F) Dispose of used Coalescing Element according to local, state and federal regulations.

2. PREFILTER SECOND/THIRD DUAL STAGE ELEMENT REPLACEMENT

Prefilter Dual Stage Element change is required when the Differential Pressure Gauge indicates an 8-10 PSID.

A) Replace the Prefilter Dual Stage Element **(6)** using the above "First Stage Element" replacement instructions.

B) Dispose of used Prefilter Dual Stage Element according to local, state and federal regulations.

3. FOURTH STAGE ADSORBER ELEMENT REPLACEMENT

The Adsorber Element change is required when the Differential Pressure Gauge indicates ANY PRESSURE DROP, or if any odor is detected by operator.

NOTE: If any liquids are being expelled out of the Fourth Stage Auto Drain, replace All 3 Elements.

A) Replace the Adsorber Element **(7)** using the above "First Stage Element" replacement instructions.

B) Dispose of used Adsorber Element according to local, state and federal regulations.

4. FINAL CHECK
   A) Pressurize system and check for leaks.
   B) Flush system with compressed air for five (5) minutes.
   C) Calibrate Carbon Monoxide Monitor as outlined in Neotronics Monitor Model OTOX Information Manual.

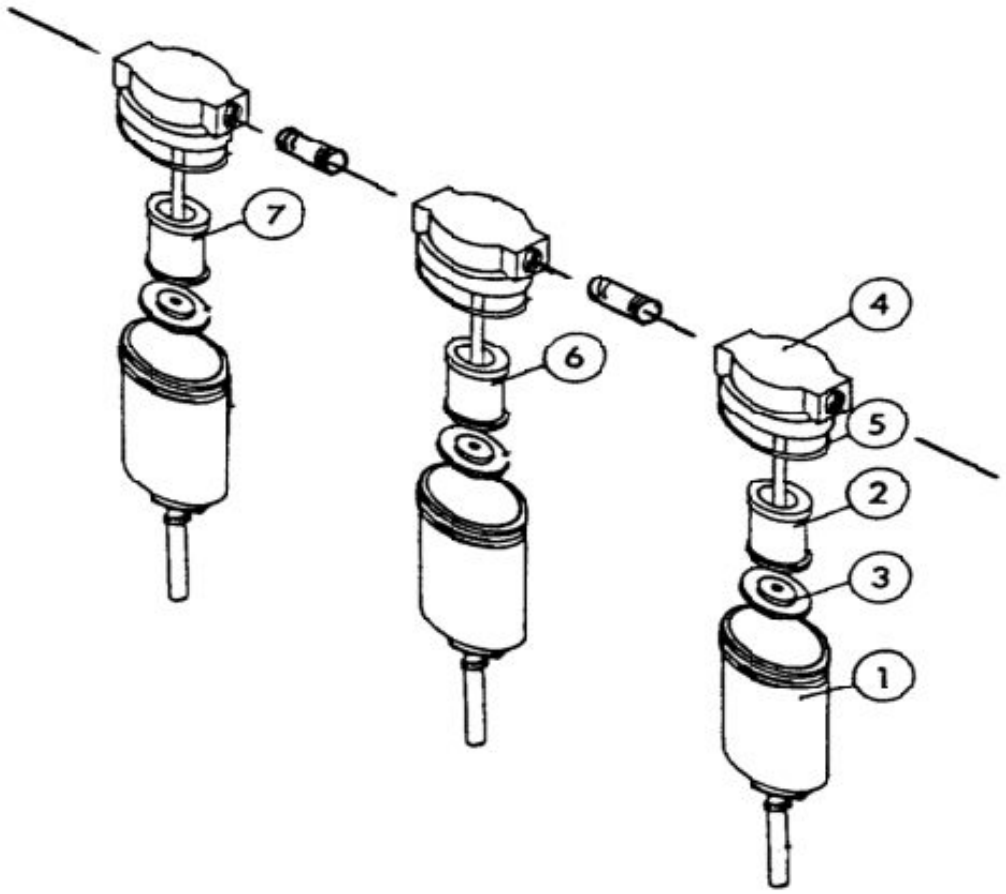

FIGURE NO.3

RECORD KEEPING

Record all periodical air quality checks, filter cartridge change intervals and any other service performed on the MST Breathing Air Panel.

MST INC. SHALL NOT BE LIABLE FOR ANY INJURY, LOSS OR DAMAGE, (DIRECT OR CONSEQUENTIAL), ARISING OUT OF THE USE OF OR THE INABILITY TO USE THIS PRODUCT, BEYOND THE REPLACEMENT Of DEFECTIVE MATERIALS OR WORKMANSHIP. USER OF SUPPLIED AIR RESPIRATORS SHOULD EVALUATE THEIR OWN PARTICULAR APPLICATION AND PERFORM THEIR OWN TESTS FOR AIR QUALITY TO DETERMINE THE SUITABILITY FOR USE OF THIS PRODUCT.

For further information, or questions about service or maintenance care of this unit, contact your local distributor or MST, Inc. at (800) 542-6646.

MST, INC.
SERVICE RECORD
BREATHING AIR PANEL MODEL BA1000AA-S1

DATE OF SERVICE	SERVICE PERFORMED

SPECIFICATIONS
BREATHING AIR PANEL
MODEL BA1000AA-S1

INLET/OUTLET PRESSURE (MAX.)	150 PSIG STATIC (10.4 BAR)
RATED AIR FLOW (MAX.)	1000 SCFM (472.0 L/s)
OPERATING PRESSURE	100 PSIG DYNAMIC (6.9 BAR)
OUTLET PRESSURE RANGE	0-125 PSIG (0-8.6 BAR)
OPERATING TEMP.RANGE	35-150^{O}F (2-65^{O}C)
OUTSIDE DIMENSIONS	68 1/8"L X 50"W X 10 7/8"D (1732mm X 1271mm X 277mm)
WEIGHT (INCLUDING MONITOR)	212 Lbs (96.3 kg.)
REPLACEMENT FILTER ELEMENTS	FIRST STAGE ELEMENT 80461 SECOND/THIRD STAGE ELEMENT 80462 FOURTH STAGE ELEMENT 80504

BREATHING AIR PANEL
MODEL BA1000AA-S1 PARTS

1) 80455, (1) 3" Ball Valve
2) S603-114, (6), 3" Nipple X 6" Long
3) 80453, (1), Coalescing, 1000 SCFM
4) 80051, (3), Tube Locking Collar
5) S710-005,(3), Drain Tube
6) 80454, (1), Prefilter, 1000 SCFM
7) 80503, (1), Adsorber, 1000 SCFM
8) 80422, (3), Differential Pressure Gauge
9) 80558, (2), Mounting - Bracket Ass'y
10) Bolts, (4), ½-13 X 8" SHCS
11) Washers, (4), ½" Hi-Collar, Lock
12) 80550, (1), 3" Brass Cross
13) S638-021, (2), 3" x 2" Brass Bushing
14) S638-019, (2), 2" x 1 1/4" Brass Bushing
15) 80551, (1), 150 Pressure Relief Valve
16) S638-020, (1), 1 1/4" x ½" Br. Bushing
17) S623-004,(1), ½" x 90° St. Elbow
18) S608-006, (1), ½" x 3/8" Hex Nipple
19) 80091, (1), Gauge, 0 - 160 PSI
20) 80112, (1), Regulator
21) S623-003, (1), St. Elbow 3/8" x 90°
22) S608-012, (1), 3/8" x 1/8" Hex Nipple
23) 80213, (1), Flowmeter
24) 80261, (1), 90° Tube Lock Collar
25) 8008403,(1), Audible Alarm (119 db)
26) 80077, (1), 'CO' Monitor
27) 80572, (1), Board,48" x 48" x 3/4" THK
28) 80456, (2), 3" Brass Union