

Breathing Air Distribution System

part no.
488113

instructions

WARNING

THIS MANUAL MUST BE CAREFULLY READ BY ALL PERSONS WHO HAVE OR WILL HAVE THE RESPONSIBILITY FOR USING OR SERVICING THE PRODUCT. Like any complex piece of equipment, the Breathing Air Distribution System from MSA will perform as designed only if it is used and serviced according to the instructions. OTHERWISE, IT COULD FAIL TO PERFORM AS DESIGNED, AND PERSONS WHO RELY ON THIS PRODUCT COULD SUSTAIN SEVERE PERSONAL INJURY OR DEATH.

The warranties made by MSA with respect to the product are voided if the product is not installed, used, and serviced in accordance with the instructions in this manual. Please protect yourself and your employees by following the instructions. Please read and observe the WARNINGS and CAUTIONS inside. We encourage our customers to write or call for a demonstration of this equipment prior to use, or for any additional information relative to use or repairs. Call 1-800-MSA-2222 during regular working hours, or 1-800-MSA-5555 after working hours or during emergencies.

Manufactured by



MINE SAFETY APPLIANCES COMPANY
PITTSBURGH, PENNSYLVANIA, U.S.A. 15230

Table of Contents and Description

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DESCRIPTION

The Breathing Air Distribution System is a four-outlet, air-distribution system which permits up to four air-line respirators to be connected to a single air source.

The Breathing Air Distribution System may be used in portable or stationary operation. The system consists of:

- air filter (with HEPA particulate filter and organic vapor elements)
- pressure regulator (with pressure relief mechanism)
- pressure gauge (0-100 psig)
- 4-outlet manifold
- protective carrying case constructed of Type 304 stainless steel to resist corrosion

The Breathing Air Distribution System weighs approximately 40 pounds.

The air source inlet is a 1/2" NPT fitting. The four outlet fittings have extended collars so that disposable hose covers may be attached, such as is done in asbestos-abatement, nuclear and hazmat applications. A gasket provides a seal between the case halves. The base of the case is pre-drilled to accept four 1/4" bolts for permanent mounting.

All internal components are connected with zero-clearance unions using O-rings. This design feature permits disassembly of individual parts, such as the air-line filter or regulator, without having to remove other components. All unions are made of carbon steel, plated with electroless nickel to resist corrosion. No pipe threads are used inside the unit except for the pressure gauge and drain tube on the air-line filter. These connections are nylon for ease in sealing.

An external condensate drain valve, located in the inlet end of the case top, permits purging without opening the case. System air pressure is used to force moisture out of the system.

The filter bowl is plated with 0.0005" thick electroless nickel to prevent corrosion. Replacement filter elements are available. See Accessories, page 4.

A high-volume pressure regulator is used in the Breathing Air Distribution System. The regulator adjustment is external; a sealed shaft passes through the case wall and terminates in an adjusting knob on the front of the case. To adjust pressure, turn the air source on, then adjust the knob until the manifold pressure gauge reads the required pressure.

The manifold is machined aluminum, which is then anodized. A nylon plug seals the end hole used to form the inner passage. O-ring seals are used on all air flow connections to the manifold.

The pressure gauge is designed for operation in the 0-100 psig range, and displays system pressure in increments of 10 psi. A washer seals the back of the gauge against the outside of the case. The gauge has an internal seal to prevent contaminated air from entering the case.

A pressure relief valve is mounted in the inlet end of the case cover to prevent case over-pressurization. The valve opens at 1 1/2 to 2 inches of water column pressure. The regulator is a self-relieving type, so any minor leakage creates a pressure inside the case which is higher than the pressure of the outside air. This internal positive pressure helps protect the inner components and the air supply from contaminants.

AIR SOURCE

The air source connected to the Breathing Air Distribution System must meet the air quality requirements of ANSI Z86.1-1973 (Compressed Gas Association Specification G-7.1 for Type 1, Class D Gaseous Air). Copies of the specification are available from the American National Standards Institute or the Compressed Gas Association. The air source must be free of carbon monoxide (CO), and some means of monitoring CO may be required. Contact MSA for more information on air-line CO monitors.

WARNING

The Breathing Air Distribution System from MSA does not remove carbon monoxide (CO). A continuous carbon monoxide monitor may be required for your installation (see 29 CFR Part 1910.134). Failure to follow this precaution may result in severe personal injury or death.

The air source must supply the proper flow at the proper pressure to all respirators connected to the system. The air flow and pressure requirements for a specific respirator may be found in the respirator's NIOSH approval. This approval is included in the instructions supplied with each respirator from MSA.

INSTALLATION

1. Locate the Breathing Air Distribution System in the work area. The case may be bolted in place if desired, using the four, 1/4" diameter holes provided. The system also can be wall-mounted using the P/N 488124 Wall Bracket Kit, or used as a portable unit (P/N 488118 Carrying Bar Kit).

WARNING

Do not install this assembly where it will be exposed to direct heat sources above 250°F. Failure to follow these precautions may cause assembly components to fail or malfunction, resulting in severe personal injury or death.

2. Connect the user-supplied air source to the 1/2" NPT inlet.

NOTE

The air source plumbing must be 5/8" inside diameter (id) or larger so that air flow to the Breathing Air Distribution System is not restricted.

3. Apply pipe-sealing tape to all tapered-thread connections:
 - a. Wrap 1 to 1 1/2 turns of tape in a clockwise direction (looking into the threaded end of the fitting).

Operation

- b. Start at the second thread. Do not put tape on the first thread. Pieces of tape can break off and reduce air flow.
- c. Tighten using wrenches.
4. A shut-off valve may be inserted between the air source and the Breathing Air Distribution System. This will permit the air source to be shut off when necessary (to change filter elements, for example).
5. Place a pipe union between the shut-off valve and the filter if the Breathing Air Distribution System will be moved from one location to another.
6. Install a quick-disconnect socket on each of the four manifold outlets. Apply pipe-sealing tape to each threaded fitting before installing the socket (see step 3, above). Tighten each socket using wrenches. Use the chart below to select the proper socket for your installation.

Manufacturer	Material	Part No.
Snap-Tite	Aluminum	66272
Snap-Tite	Brass	630305
Snap-Tite	Stainless Steel	629673
Duff-Norton	Brass	630308
Hansen	Brass	630311
Hansen	Stainless Steel	628768
Foster	Steel	628770
Foster	Brass	629980
Schrader	Steel	55597
Cejn Locking	Brass Chrome Plated	631870
Snap-tite Locking	Aluminum Hard-coat Anodized plus adapter	479032 628232

OPERATION

1. Attach a quick-disconnect plug to the inlet of the air-supply hose. Be sure there is an O-ring in the air-supply hose fitting. Tighten using wrenches (Figure 1).



Figure 1

NOTE

All O-ring connections must be tightened using wrenches. Apply pipe-sealing tape to all tapered pipe-thread connections and tighten using wrenches.

2. Insert the air-supply hose quick-disconnect plug into the manifold outlet quick-disconnect socket (Figure 2). Pull on the air-supply hose to be sure that the socket has snapped into place.

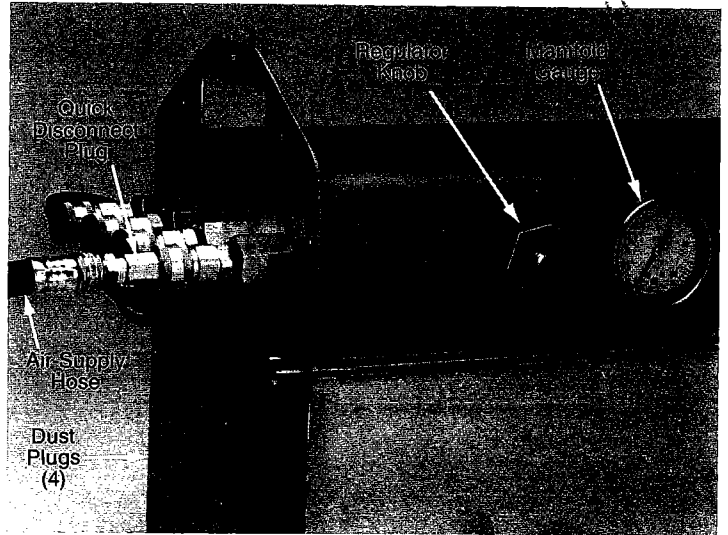


Figure 2

3. Install the dust plugs (Figure 2) in all unused outlets.
4. Connect each air-supply hose to its respirator as specified in the respirator instructions.

NOTE

All respirators connected to the manifold must be approved to operate in the same pressure range.

5. Turn the air source on so that air is flowing to the respirator(s). Do not don the respirator(s). The manifold pressure gauge must read within the pressure range specified in the instructions for the respirator(s).

WARNING

Do not connect more than four respirators to the manifold. Do not connect respirators that require different inlet pressures to the same manifold. The Breathing Air Distribution System has a maximum rated capacity of 40 standard cubic feet per minute (scfm). Any additional demand may result in an insufficient supply of air to all respirators and may cause severe personal injury or death.

6. Adjust the regulator knob until the manifold gauge (Figure 2) indicates the proper pressure.

USING THE BREATHING AIR DISTRIBUTION SYSTEM

1. The respirator(s) may now be donned and used according to the instructions provided with the respirator(s).

Maintenance, Accessories and Parts List

2. Check the manifold pressure gauge reading periodically. Keep the reading in the range specified by NIOSH for the respirator(s).
 - a. If the reading changes, adjust the pressure regulator until the manifold pressure gauge reads within the specified range.

CAUTION

Do not use the regulator with an inlet pressure above 125 psig.

- b. Stop operation immediately if the manifold pressure cannot be brought within this range.
- c. Inspect the system for restrictions, such as a partially-closed valve or a clogged filter element.

MAINTENANCE

1. Periodically drain condensate. The Breathing Air Distribution System uses the air source pressure to force moisture out. To drain:
 - a. Stop operation of all respirators connected to the system.
 - b. With the air source turned on, open the **external** petcock (Figure 3). Air pressure from the air source will blow condensate out of the system.



Figure 3

- c. Close the petcock.
- d. Check the manifold pressure gauge to be sure system pressure is within the range specified for the respirator(s) in use.

WARNING

Do not perform this procedure while airline respirator users are connected to the distribution system. Do not operate the Breathing Air Distribution System with the petcock open (or partly open). The petcock must be fully closed during use. If the petcock is not fully closed, air pressure and flow will drop. Failure to follow this precaution may result in inadequate air flow to the respirator(s) and may cause severe personal injury or death.

2. Breathing Air Distribution System (Internal Parts)
Normal operation of the Breathing Air Distribution System will not require access to the inside of the

case. However, the case must be opened to install replacement filter elements or to repair system components. The case top is held in position by four cap screws, lockwashers and nuts.

Components within the case are connected by zero-clearance fittings. This design permits individual parts to be removed for maintenance without disturbing unaffected components.

3. Replace filter elements when odor becomes noticeable or when manifold pressure drops below the range specified in the respirator instructions. See the Accessories list below. Follow the filter replacement instructions, provided with the filter kit.

ACCESSORIES

Quick-Disconnects — Sockets are available to permit easy connection of air-supply hose. See page 3.

P/N 488118 Carrying Handle — permits one-handed carrying. The handle consists of a 1/2" diameter bar grip covered with 5/8" neoprene rubber.

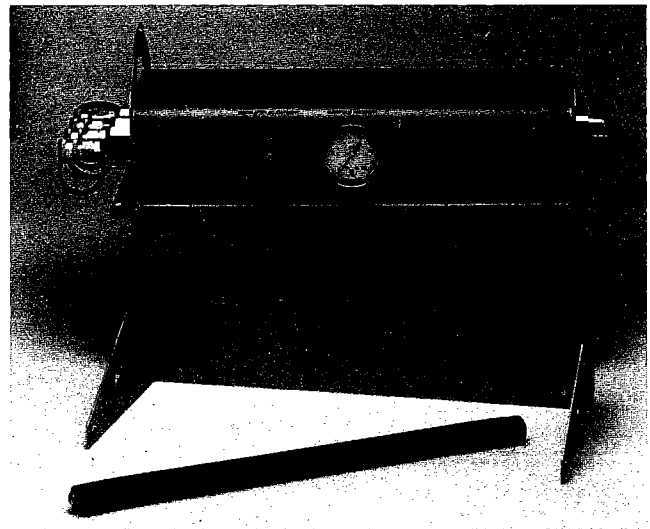
P/N 488124 Wall Bracket Kit — permits the system to be mounted to a vertical surface.

P/N 484923 Filter Kit — contains the following components:

- | | | |
|---|-------|--------------------|
| 2 | 46727 | Chemical Cartridge |
| 1 | 79030 | HEPA Filter |
| 2 | 89774 | Cartridge Gasket |
| 1 | 89775 | Cartridge Gasket |
| 1 | 62726 | O-ring |

REPLACEMENT PARTS

Part No.	Qty.	Description
488113	1	Breathing Air Distribution System
488027	1	Bottom Case Assembly
488020	1	Case Gasket
488025	1	Top Case Assembly
488031	1	Regulator Assembly
488040	1	Filter Assembly
634417	1	Drain Petcock
484678	1	Pressure Relief Valve
634443	1	Pressure Gauge



Breathing Air Distribution System with optional carrying handle and wall bracket.