

Constant-Flow Air-Line Respirator

INSTRUCTIONS FOR USE AND CARE

WARNING

This manual, including the warning and cautions inside, must be read and followed carefully by all persons use or maintain this product, including those who have any responsibility involving its selection, application, service or repair. This respirator will perform as designed only if used and maintained according to the instructions. Otherwise, it could fail to perform as designed, and persons who rely on this product could sustain serious personal injury or death.

See separate insert for NIOSH approval information (P/N 10087846).

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. For any additional information relative to use or repair, write or call 1-800-MSA-2222 during regular working hours.

For More Information, call 1-800-MSA-2222 or Visit Our Website at www.MSAnet.com



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INTRODUCTION

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NIOSH APPROVAL INFORMATION CAUTIONS AND LIMITATIONS

- A- Not for use in atmospheres containing less than 19.5 percent oxygen.
- B- Not for use in atmospheres immediately dangerous to life or health.
- C- Do not exceed maximum use concentrations established by regulatory standards.
- D- Air-line respirators can be used only when the respirators are supplied with respirable air meeting the requirements of CGA G-7.1 Quality Verification Level (Grade) D or higher quality.
- E- Use only the pressure ranges and hose lengths specified in the User's Instructions.
- J- Failure to properly use and maintain this product could result in injury or death.
- M- All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA and other applicable regulations.
- N- Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer.
- O- Refer to User's Instructions, and/or maintenance manuals for information on use and maintenance of these respirators.
- S- Special or critical user's instructions and/or specific use limitations apply. Refer to User's Instructions before donning.

S - SPECIAL USER INSTRUCTIONS

1. The respirator must be supplied with respirable air through the length of air supply hose and at the air inlet pressure indicated in the tables.

a. Low Pressure Constant Flow Assembly

| Low Pressure Constant Flow Assembly | |
|-------------------------------------|-------------------|
| 3/8" Hose Length | Inlet Pressure |
| 8 feet - 50 feet | 10 psig - 15 psig |

b. High Pressure Constant Flow Assembly

| High Pressure Constant Flow Assembly | |
|--------------------------------------|-------------------|
| 3/8" Hose Length | Inlet Pressure |
| 8 feet - 300 feet | 35 psig - 40 psig |

2. The maximum number of hose sections that may be used in making up the maximum length of hose is as follows: When connecting hoses using Locking Quick-Disconnects, only one section of 8 ft. or 15 ft. hose may be used.
 - a. 3/8" Low Pressure (10 psig-15 psig) Constant Flow Assembly may use a maximum of 2 sections of 3/8" air supply hose in making up the maximum length of hose.
 - b. 3/8" High Pressure (35 psig-40 psig) Constant Flow Assembly may use a maximum of 12 sections of 3/8" non-coiled air supply hose in making up the maximum length of hose. A maximum of 6 sections of coiled hose may be used.

⚠ WARNING

1. **DO NOT use when concentrations of contaminants are unknown or immediately dangerous to life or health. Use self-contained breathing apparatus.**
2. **DO NOT use in environments from which the wearer cannot escape without respiratory equipment. Air-line respirators provide no protection if the air supply fails. Use self-contained breathing apparatus.**
3. **This device may not seal properly with your face if you have a beard, gross sideburns or similar physical characteristics (see NFPA-1500 and ANSI Z88.2). An improper facial seal may allow contaminants to leak into the facepiece, reducing or eliminating respiratory protection. Do not use this device if such conditions exist. The face-to-facepiece seal must be tested before each use. Never remove the facepiece except in a safe, non-hazardous, non-toxic atmosphere.**
4. **Under no circumstances should the apparatus be used as an underwater device.**
5. **Use only the air source pressure and hose length specified for the applicable assembly.**

Failure to follow this warning can result in serious personal injury or death.

DESCRIPTION

DESCRIPTION

The Constant Flow Air-line Respirator is a Type C, supplied-air respirator approved by the National Institute for Occupational Safety and Health (NIOSH) for use in atmospheres not immediately dangerous to life or health (non-IDLH). The respirator with the constant-flow inlet coupling is a constant-flow air-line respirator, which supplies a continuous flow of respirable air to the facepiece from an external source.

The Constant Flow Air-line Respirator is approved in the following configurations:

- 3/8" Low Pressure (10 psig-15 psig) Constant Flow Air-Line
- 3/8" High Pressure (35 psig-40 psig) Constant Flow Air-Line

The Constant Flow Air-Line Respirator consists of 6 major components:

1. Advantage 4100 Facepiece
2. Breathing Tube Adapter
3. Breathing Tube
4. Valve Connector/Connection
5. Air-Supply Hose
6. Support Belt

AIR SOURCE

The Constant Flow Air-Line Respirator requires a pressure-regulated source of clean respirable compressed air. The purity of the air supply is the responsibility of the user. The respirator is approved only when the air supplied to the respirator meets the requirements of the Compressed Gas Association Specification G-7.1-1989 for Quality Verification Level (Grade D) Breathable Air.

Be sure that the inlet pressure is set to agree with the flow control device and hose length being used.

▲ WARNING

The air source must provide at least 4 cubic feet per minute (cfm) to each respirator, and keep the inlet pressure at the correct range for the specific flow control device selected. If the pressure at any point in the supply system is higher than 125 psig, a pressure

release mechanism must be installed. Failure to follow this warning can result in serious personal injury or death.

Prior to the use of the external cartridge holder and cartridge, the respirator must be supplied with respirable air meeting the requirements of CGA G-7.1 Grade D or higher quality. Use of the external cartridge holder and applicable cartridge is not to assist in providing the required quality level of respirable air. If the cartridge holder (469595) and filter cartridge (459315 or 814922) are utilized as approved in the NIOSH matrix, make the connection in the following manner:



1. Install filter cartridge in the cartridge holder.

- a. Unscrew the bezel ring (1).
 - b. Separate the holder halves (2) and (3).
 - c. Thread the filter cartridge into the holder (2) until firmly seated on cartridge gasket (4).
 - d. Place the holder halves together and tighten bezel ring to ensure a good seal at the holder gasket.
2. Connect the cartridge holder (with filter cartridge installed).
 - a. Connect the external threaded fitting to the breathing tube.
 - b. Connect the internal threaded fitting to valve or connector outlet.
 - c. Check for leaks with a commercial leak test solution or soapy water. Tighten connections as required, using wrenches or slip-joint pliers.

ASSEMBLING THE RESPIRATOR

ASSEMBLING THE RESPIRATOR

The respirator assembly may be assembled with standard tools and materials, following good work practices. Assembly tips:

1. All tapered pipe connections should be wrapped with pipe-thread sealing tape (applied one thread back from the end).
2. Open-end wrenches or slip-joint pliers should be used to tighten all threaded connections, unless specifically noted otherwise.
3. Test all threaded connections under pressure with a commercial leak-test solution or soapy water. If a leak is detected, locate the source, correct it and re-test.
4. Tighten all connections with proper tools.

⚠ WARNING

Check all hose connections to be sure fittings are secure. This must be done to ensure a continuous flow of air. Failure to follow this warning can result in serious personal injury or death.

AIR-SUPPLY HOSE

The Constant Flow Air-Line Respirator can be used with a wide range of MSA air-supply hoses, which can be interconnected up to a maximum length as indicated in “Special User Instructions.”

3/8” Air-Supply Hose

| PART NUMBER | HOSE LENGTH (FT.) | MATERIAL |
|-------------|-------------------|--------------------|
| 481071 | 25 | NEOPRENE |
| 455020 | 15 | NEOPRENE |
| 455021 | 25 | NEOPRENE |
| 455022 | 50 | NEOPRENE |
| 481051 | 25 | POLYVINYL CHLORIDE |
| 471511 | 15 | POLYVINYL CHLORIDE |
| 471512 | 25 | POLYVINYL CHLORIDE |
| 471513 | 50 | POLYVINYL CHLORIDE |
| 484225 | 100 | POLYVINYL CHLORIDE |
| 491513 | 25 | COILED NYLON |
| 491514 | 15 | COILED NYLON |
| 491515 | 25 | COILED NYLON |
| 474043 | 50 | COILED NYLON |

Note: The working length of coiled hose is approximately one-half the actual length.

⚠ CAUTION

MSA air-supply hoses have various temperature limitations. Do not use when inlet-air temperatures exceed the limits specified for each hose material.

INTERCONNECTING HOSES

MSA offers both threaded and locking type quick-disconnects to interconnect hoses. Locking quick-disconnects connect easily by pushing the plug and socket together. To separate, the plug and socket must be pushed together, then retract the sleeve from the plug.

⚠ CAUTION

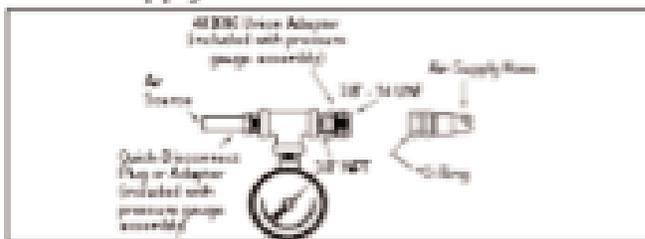
- **DO NOT use non-locking quick-disconnects or unapproved connections to interconnect air-supply hoses.**
- **3/8” Hoses must be connected with the approved 3/4-16 UNF threaded connectors attached to the hose or the approved 3/8” locking type quick-disconnects.**
- **1/2” Hoses must be connected with the approved 7/8-14 UNF threaded connectors attached to the hose.**

The following diagrams illustrate possible assemblies which may be used to interconnect air-supply hoses and to connect the air supply to the air source.

1/2” Air-Supply Hose – Coupled Sections Threaded Connection Attached to Hose



1/2” Air-Supply Hose to Air Source



| Pressure Gauge Assy. Part No. | Air Source Fitting Used on Assembly |
|-------------------------------|-------------------------------------|
| 484559 | Snap-Tite Plug |
| 484560 | CEJN (locking Type) Plug |
| 484561 | Adapter 1/2 to 1/2 NPT |

DONNING

DONNING THE RESPIRATOR

Inspect the respirator for damaged or missing parts following the instructions provided with the facepiece. Also follow the donning procedure outline in the instructions provided with the facepiece. After donning the respirator, the facepiece must be subjected to a tightness test without detection of leakage before each use.

TEST FOR TIGHTNESS

Test the respirator facepiece for tightness by placing the palm of your hand over the breathing tube coupling nut or place your thumb over the breathing tube opening inside the coupling nut. Inhale gently so that the facepiece collapses slightly and hold your breath for ten seconds. The facepiece will remain collapsed if the assembly is gas tight. If the facepiece does not remain collapsed, readjust the head harness straps and re-test. If any leakage is detected, investigate the condition and correct. The facepiece must be subjected to a tightness test without detection of leakage before each use.

MAINTENANCE

The entire respirator assembly must be kept in good condition to function properly. When any part shows evidence of failure or wear, it should be replaced immediately. Proper replacement parts must be used in order to maintain the respirator assembly approval.

Cleaning and Disinfecting

The facepiece and breathing tube assembly (with the valve removed) should be cleaned and disinfected after each use with Confidence Plus® Cleaning Solution from MSA. Take care to clean the exhalation valve and all other parts that exhaled air contact.

CAUTION

Cleaning and disinfecting at the recommended 110°F temperature will avoid possible overheating and distortion of parts of the respirator assembly, which would require replacement.

STORAGE

Store only undamaged respirators for further use. When not in use, store the respirator in cool, dry, and clean ambient air.

Do not distort the facepiece during storage.

When disposing of the respirator or its components, do so in accordance with local, state, and federal regulations.

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