

Operating Manual
PremAire System



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⚠ WARNING!

These instructions must be provided to users before use of the product and retained for ready reference by the user. Read this manual carefully before using or maintaining the device. The device will perform as designed only if it is used and maintained in accordance with the manufacturer's instructions. Otherwise, it could fail to perform as designed, and persons who rely on this device could sustain serious injury or death.

The warranties made by MSA with respect to the product are voided if the product is not installed and used 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 additional information relative to use or repair, call 1-800-MSA-2222 during regular working hours.

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The Safety Company

1000 Cranberry Woods Drive
Cranberry Township, PA 16066
USA
Phone 1-800-MSA-2222
Fax 1-800-967-0398

For your local MSA contacts, please go to our website www.MSAsafety.com

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1 Introduction

1.1 NIOSH Cautions and Limitations

WARNING!

Read and obey all NIOSH approval limitations.

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

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 Grade D or higher quality.

E - Use only the pressure ranges and hose lengths specified in the User's Instructions.

I - Contains electrical parts which have not been evaluated as an ignition source in flammable or explosive atmospheres by MSHA/NIOSH.

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 Users Instructions, and/or maintenance manuals for information on use and maintenance of these respirators.

S- Special or critical Users Instructions and/or specific use limitations apply. Refer to user instructions before donning.

1.2 S - Special or Critical User Instructions

1. Approved for use at temperatures above 25°F (-32°C).
2. The PremAire Supplied-Air Respirator System will perform as designed only if used and maintained according to these instructions.
3. Users must wear suitable protective clothing and precautions must be taken so that the respirator is not worn in atmospheres that may be harmful to the device.
4. DO NOT alter, modify, or substitute any components without the approval of MSA. Such alterations may void the NIOSH approval of the respirator.
5. Inspect the respirator regularly and maintain it according to the instructions. Repairs must only be made by properly trained personnel.
6. Leave the area immediately if:
 - a. breathing becomes difficult
 - b. dizziness or other distress occurs
 - c. you taste or smell contaminants.
7. Use strictly in accordance with instructions, labels and limitations pertaining to this device.
8. This device may not provide a satisfactory face seal with certain physical characteristics (such as beards or sideburns) as outlined in ASTM F3387, resulting in leakage in connection with the facepiece, which voids or limits the protection. If such a condition exists, the user assumes all risks of death or serious bodily injury, which may result.
9. DO NOT use the PremAire System for firefighting.
10. DO NOT use the PremAire System for underwater applications.
11. Thoroughly check out the respirator on receipt and prior to use.

12. DO NOT use compressed oxygen with the PremAire System.
13. Unless equipped with a pressure-demand facepiece and the Escape-Cylinder option, the PremAire Respirator MUST NOT be used and relied upon for respiratory protection when the atmosphere contains concentrations of contaminants which are unknown or IDLH.
14. Never alter or modify this device, except as directed by MSA during installation of NIOSH approved kits. Use only MSA replacement parts. If other than the proper MSA parts are used, the NIOSH approval will be voided.
15. Use only the listed hose lengths and air-pressure range specified in these instructions.
16. This approval applies only when the respirator is supplied with respirable air through the acceptable length of air supply hose within the acceptable pressure ranges:
 - a. UltraElite® Facepieces are approved for use with 8 to 300 ft (2 to 91 m) of air supply hose within the pressure range of 60 to 100 psi.
 - b. Advantage® 4000 Facepieces are approved for use with 8 to 300 ft (2 to 91 m) of air supply hose within the pressure range of 70 to 100 psi.
 - c. G1 Facepieces are approved for use with 9.5 in to 300 ft (24 cm to 91 m) of air supply hose within the pressure range of 70 to 110 psi.

NOTE: A maximum of 12 sections of straight air-supply hose may be used in making up the maximum working length of hose. When using coiled hose, a maximum of six sections may be used and each section is considered 50 feet long. Hose sections vary from 9.5 in to 100 ft (24 cm to 30 m) lengths.

NOTE: The purity of air is the responsibility of the user. The respirator is approved only when the air supplied meets the requirements of the Compressed Gas Association Specification G-7.1 for quality verification level (Grade) D air or equivalent specifications.
17. When using Ultra EliteFacepieces at temperatures below 32°F, nose cup is required. A nose cup must always be used with the Advantage 4000 and G1 Facepieces.
18. Use with adequate skin protection when worn in gases and vapors that poison by skin absorption (for example, hydrocyanic acid gas).

⚠ WARNING!

- DO NOT disconnect when pressurized. Release all pressure from regulator by opening the bypass valve. Removing the regulator when pressurized may result in serious personal injury, death, or damage to equipment.
- Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer.
- Particles and contaminants can enter an airline respirator system when air-supply hoses are disconnected and/or reconnected in a contaminated atmosphere. This could result in serious injury or death depending on the toxicity of the contaminant involved. It is the responsibility of the user to determine the potential risk and to take the necessary precautions which may include a requirement that NO disconnection or reconnection of air-supply hoses be permitted in a contaminated atmosphere. If in doubt DO NOT disconnect and/or reconnect.

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

1.3 S - Special User's Instructions for Vortex Tube

WARNING!

- The Vortex Tube option is designed for use with chemical protective splash garments and coveralls. Whenever working with toxic liquids, gases or vapors, such clothing must be worn to help prevent poison by skin absorption.
- The body-cooling capacity of the vortex tube will depend on the size of the individual, the work to be performed, the insulating properties of the suit and the ambient air temperature. Although the vortex tube provides body-cooling capability, it does not make a PremAire Respirator suitable for use in extreme-heat applications, such as blast-furnace work. The ability to use the respirator in a hot area depends largely on the heat-resistance properties and limits of the protective garment being worn. Be sure you know these limits before entering the work area.
- PremAire Respirators equipped with a vortex tube do not remove carbon monoxide from the supplied air. A continuous carbon monoxide air-line monitor may be required for your applications (see Title 29 CFR Part 1910.134).

Failure to follow these warnings can result in serious personal injury or death.

1. Vortex Tube cooling is only one element of a heat-stress control program, which must be managed by the employer. All elements of an employers' heat-stress program must be known and followed, or the user may suffer serious personal injury or death.
2. Vortex tubes must be used with a source of air that conforms to the requirements of the Compressed Gas Association Specification G-7.1 for Quality Verification (Grade) D Breathable Air.
3. The vortex tube does not supply breathing air to the user, nor is it designed as an emergency-escape device. Thus, PremAire Respirators equipped with a vortex tube must not be used in atmospheres classified as immediately dangerous to life or health (IDLH), or atmospheres containing less than 19.5 percent oxygen, unless the respirator is equipped with an emergency-escape air cylinder.
4. Inlet air should have a dew point of less than 0°F (-18°C) a temperature between 60°F/140°F (15°C/60°C). High dew point or air temperatures below 60°F (15°C) may cause moisture to freeze in the Vortex Tube and reduce air flow. Temperatures above 140°F (60°C) may damage the Vortex Tube.

1.4 Important Notice for Respirator Users and Respiratory Protection Program Administrators

1. An adequate respiratory protection program must include knowledge of hazards, hazard assessment, selection of proper respiratory protective equipment, instruction and training in the use of equipment, inspection and maintenance of equipment, and medical surveillance. [See OSHA regulations. Title 29 CFR, Part 1910.134 (c).
2. This respirator may be used only after proper instruction and training in its use as specified in OSHA regulations Title 29 CFR Part 1910.134.
3. Do not mark the respirator, i.e., with stamps, labels, paint, or other method. Use of such markings may interfere with apparatus use or may constitute a flammability hazard.
4. Be sure that other equipment does not interfere with the respirator facial seal, the user's ability to operate the respirator, or other necessary means of mobility.

1.5 Reference

For more information on the respirator use and performance standards, consult the following publications:

- ANSI Standard, Z88.5, Practices for Respiratory Protection for the Fire Service and, ANSI Standard Z88.2, Practices for Respiratory Protection. American National Standards Institute, 1430 Broadway, New York, New York 10018.
- ANSI Z88.2, Latest edition, Practices for Respiratory Protection, American National Standards Institute, <https://webstore.ansi.org/Info/Sdolist> (This standard is superseded by ASTM F3387)
- ASTM F3387, Latest edition, Standard Practices for Respiratory Protection, ASTM International <https://www.astm.org/Standards/F3387.htm?> (ASTM F3387 formerly known as ANSI Z88.2)
- OSHA Safety and Health Standards (29 CFR 1910) (see specifically Part 1910.134), available from the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402. Compressed Gas Association, Inc., 1725 Jefferson Davis Hwy., Suite 1004, Arlington, VA 22202.

1.6 Contact Information

For product concerns, contact your local MSA authorized repair center or distributor, who will provide the necessary information to MSA for issue resolution. To report any serious concerns or to inquire about the products, use the following contact information:

MSA North America Corporate Center	MSA Canada	MSA de Mexico, S A De C V
1000 Cranberry Woods Drive Cranberry Township, PA 16066	16435 118th Avenue Edmonton AB T5V 1H2	Fraccionamiento Industrial Avenida Del Conde #6 76240 El Marques, Queretaro
Phone 1-800-MSA-2222 Fax 1-800-967-0398	Phone 1-800-MSA-2222 Fax 1-800-967-0398	Phone 01 800 672 7222 Fax +52-44 2227 3943


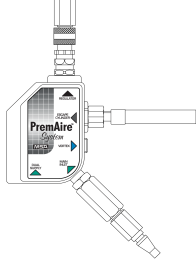
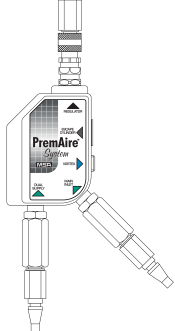
2 Description

2.1 PremAire System Options

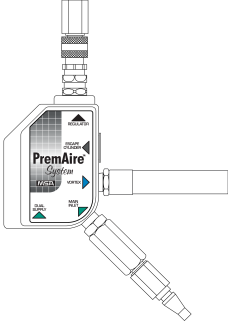
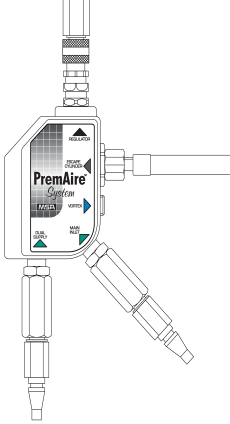
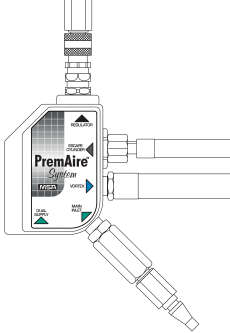
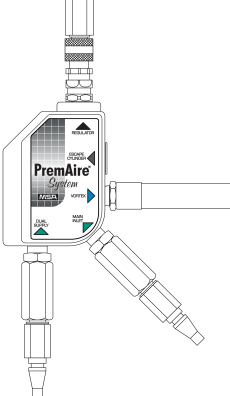
The PremAire Respirator is a pressure-demand, Type C supplied-air respirator as defined by 42 CFR Part 84, Subpart J. The respirator's unique waist mounted manifold serves as the air distribution center for the system.

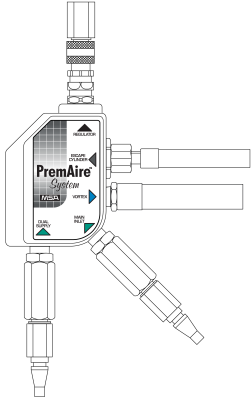
[Table 1](#) is a list of all possible PremAire System configurations.

Table 1 PremAire System Quick Reference Chart

	Respirator	Description	Approved for IDLH Use	
1	Pressure-Demand Supplied-Air Respirator**	Baseline configurations for use of the PremAire Manifold as a Supplied-Air Respirator.	No	
2	Pressure-Demand Supplied-Air Respirator with Emergency-Escape Air Cylinder*	Supplied Air Respirator configuration with the addition of an emergency escape cylinder.	Only when used with a pressure-demand facepiece	
3	Pressure-Demand Supplied-Air Respirator with Dual-Supply Option**	Dual-Supply configuration allowing for connection from one pressurized continuous air source to another without losing continuity of flow.	No	

2 Description

	Respirator	Description	Approved for IDLH Use	
4	Pressure-Demand Supplied-Air Respirator with Vortex Tube**	Supplied Air Respirator configuration with the addition of the Vortex Tube to provide bodily cooling or warming.	No	
5	Pressure-Demand Supplied-Air Respirator with Emergency-Escape Air Cylinder and Dual-Supply Option*	Dual-Supply configuration with the addition of an emergency escape cylinder.	Only when used with a pressure-demand facepiece	
6	Pressure-Demand Supplied-Air Respirator with Emergency-Escape Air Cylinder and Vortex Tube*	Supplied Air Respirator configuration with the addition of an emergency escape cylinder and Vortex Tube heating/cooling	Only when used with a pressure-demand facepiece	
7	Pressure-Demand Supplied-Air Respirator with Dual-Supply Option and Vortex Tube**	Dual-Supply configuration with the addition of the Vortex Tube for bodily cooling or warming.	No	

	Respirator	Description	Approved for IDLH Use	
8	Pressure-Demand Supplied-Air Respirator with Emergency-Escape Air Cylinder, Dual-Supply Option and Vortex Tube*	Dual Supply configuration with the addition of an emergency escape cylinder and Vertex Tube heating/cooling.	Yes	

*Approved for use in IDLH atmospheres

**NOT approved for use in IDLH atmospheres.

IDLH means conditions that pose an immediate threat to life or health or conditions that pose an immediate threat of severe exposure to contaminants, such as radioactive materials, which are likely to have adverse cumulative or delayed effects on health [Title 42 CFR, Part 84].

Non-IDLH means any hazardous atmosphere which may produce physical discomfort immediately, chronic poisoning after repeated exposure, or acute adverse physiological symptoms after prolonged exposure. [Title 42 CFR Part 84].

2.2 PremAire System Supplied-Air Respirator

The PremAire System Supplied-Air Respirator is a supplied-air respirator that utilizes a manifold to allow for multiple configurations using a combination of self-contained breathing apparatus (SCBA) for escape, dual supply lines and other accessories.

The PremAire System Supplied-Air Respirator utilizes a pressure-demand regulator mounted at the facepiece. This mask-mounted regulator (MMR) maintains a slight positive pressure within the facepiece while regulating and reducing the air supply to a breathable pressure. The positive pressure of air inside the facepiece, whether the wearer is inhaling or exhaling, is to prevent contaminant from entering the facepiece, should there be a slight face-to-facepiece leakage.

The respirator is suitable for use with a large, compressed air cylinder of breathable air or a bank of cylinders set up in a cascade fashion. Alternatively, the PremAire Respirator can be used with a compressor system designed and configured to supply respirable breathing air to the respirator, within the NIOSH approved pressure range.

In normal use, the PremAire System Respirator is connected to an air supply of a type and duration selected by the user and will provide respiratory protection as long as the user remains connected to the air supply. The respirator allows the wearer to work within the limits of the approved air-supply hose. The escape cylinder is not to be used for entry. The escape cylinder should not be used to switch from one airline to another. However, should the primary air supply/supplies fail or be interrupted, the emergency escape cylinder enables the wearer to egress from the potentially IDLH atmosphere.

WARNING!

DO NOT use the PremAire Respirator in an IDLH atmosphere UNLESS equipped with the emergency escape cylinder and a pressure-demand facepiece. This is because if the air supply should fail, the user has no adequate means to escape from an IDLH atmosphere to fresh air.

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

2.3 PremAire Respirator Dual-Supply Option

The Dual-Supply option lets workers connect from one pressurized continuous air source to another without losing continuity of air flow through the use of a manifold containing two air-supply inlets: a “MAIN” inlet and a “DUAL-SUPPLY” inlet. The Dual-Supply option works on the same principle as the PremAire Supplied-Air Respirator. Whether a worker is using the “MAIN” inlet of the manifold, the “DUAL-SUPPLY” inlet, or both inlets simultaneously, the respirator will provide respiratory protection as long as the user remains connected to one of the two air sources.

For use in IDLH environments, the Dual-Supply option can be coupled to PremAire Respirators equipped with an emergency-escape air cylinder. Escape cylinders must only be used for emergency egress purposes.

The Dual-Supply configuration may also be used in conjunction with an emergency-escape cylinder, for use in IDLH environments. Escape cylinders must only be used for emergency egress purposes.

2.4 Pressure-Demand Emergency-Escape Cylinder

The pressure-demand emergency-escape air cylinder allows you to work in an IDLH (Immediately Dangerous to Life or Health) atmospheres by providing either a 5-minute or 10-minute emergency-escape cylinder. Cylinder placement is on either the left or right hip. In the air-supplied mode of operation, the respirator allows the wearer to work within the limits of the approved air-supply hose. However, should the primary air supply fail or be interrupted, the emergency escape cylinder enables the wearer to egress from the potentially IDLH atmosphere. It is only approved for IDLH conditions using a pressure-demand Facepiece. When working in IDLH environment, the National Institute for Occupational Safety and Health (NIOSH) requires escape cylinder for any person using a supplied-air respirator.

The cylinder valve assembly includes a handwheel to open and close the cylinder air supply, a recessed/protected pressure gauge to measure cylinder contents, a cylinder fill port with check valve to pressurize the cylinder, a high pressure relief device to protect the cylinder from over-pressurization, and a first stage regulator valve to reduce cylinder pressure to a suitable intermediate pressure.

WARNING!

- DO NOT enter any area which requires an escape greater than the service life of the cylinder. Cylinder life varies with the work rate of the individual and may be shorter with heavy work loads.
- The emergency-escape air cylinder must not be used to provide respiratory protection while entering the working area. Entry must be made only when connected to the primary air source through the air-supply hose.
- Only PremAire Respirator configurations that include an emergency escape cylinder are approved for used in IDLH conditions. IT IS ONLY APPROVED FOR IDLH CONDITIONS USING A PRESSURE DEMAND FACEPIECE.
- The emergency escape cylinder valve must be fully opened to ensure adequate airflow through the respirator.

Failure to follow these warnings can result in serious personal injury or death.

2.5 Vortex Tube

The Vortex Tube option for PremAire Respirators helps improve worker comfort and productivity by providing temperature control for workers who must wear chemical splash suits in addition to their PremAire Respirator. The Vortex Tube option is designed for use with a wide range of chemical-resistant splash coveralls, including one- and two-piece garments available from MSA. It is not designed for use with total-encapsulating suits.

Depending on work requirements, users can choose between two vortex tube models: a “cool-only” version that reduces the temperature of air flowing into the protective garment by as much as 60°F (15°C); and a “warm/cool” model that provides the same cooling capability, but also allows workers in cold environments to increase the temperature of air flowing into the garment by as much as 60°F (15°C).

The Vortex Tube capability gives users a limited means of controlling body temperature when wearing protective clothing. In operation, the single air-supply hose feeds the “MAIN” inlet of the PremAire manifold, where the air path is then split in two: one path flows to the facepiece; a second path flows to the belt mounted vortex tube. Inside the vortex tube, the rapid expansion of air produces both cool and warm air. With the “cool-only” version, hot air is vented through the vortex tube’s exhaust port while cool air is directed into the suit. With the “warm/cool” version, the worker can use either the cool or warm air for temperature control.

NOTE: When used with PremAire Respirators equipped with an emergency-escape air cylinder, air flow to the vortex tube will automatically shut off when the emergency escape cylinder is used. This prevents loss of cylinder air through the vortex tube when exiting an IDLH atmosphere.

NOTE: Vortex Tube Kits with a 6-inch connection hose are compatible with all PremAire Respirator configurations except those with an emergency-escape air cylinder positioned on the LEFT HIP. Vortex Tube Kits with 12-inch hose must be used when combined with the "Left Hip" emergency-escape cylinder option.

2.6 Second Stage Regulator

The second stage regulator is a pressure-demand regulator. The release buttons stop air flow. To stop airflow, push the buttons in. To restart the regulator, inhale sharply. The regulator attaches to the facepiece with either a Slide-To-Connect or Push-To-Connect connector.

2.7 Facepiece

The PremAire System Respirator is compatible with MSA UltraElite, Advantage 4000, and G1 Facepieces.

2.8 Air Source

The purity of the air supply is the responsibility of the user. The respirator is approved only when the air supplied meets the requirements of the Compressed Gas Association Specification G-7.1 for quality verification level (Grade) D air or equivalent specifications.

2.9 Air-Supply Hose and Pressure Gauge

The PremAire System can be used with a wide range of MSA air-supply hoses, which can be interconnected up to a maximum length of 300 feet. A maximum of 12 sections of air-supply hose may be used in making up the maximum 300 feet working length of hose. Each section of coiled hose is considered 50 feet in length (maximum 6 sections).

MSA air-supply hoses have various recommended temperature ranges.

WARNING!

DO NOT use the PremAire System whenever ambient air or inlet-air temperatures are outside the temperature ranges specified below for each hose material.

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

Hose Material	Temperature Ranges
Polyvinyl Chloride	32°F/120°F (0°C - 49°C)
Neoprene	-25°F/212°F (-32°C - 100°C)
Nylon	-20°F/180°F (-29°C - 82°C)

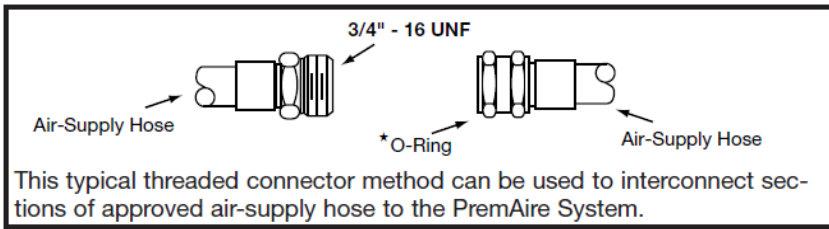
2.10 Inlet Pressure Gauge

To ensure accurate readings, the inlet pressure-gauge assembly must be installed at the air source.

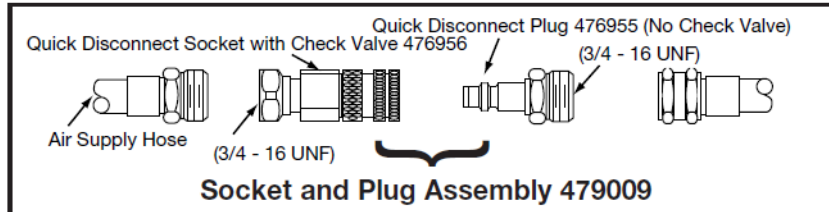
2 Description

2.11 Interconnecting Air-Supply Hoses

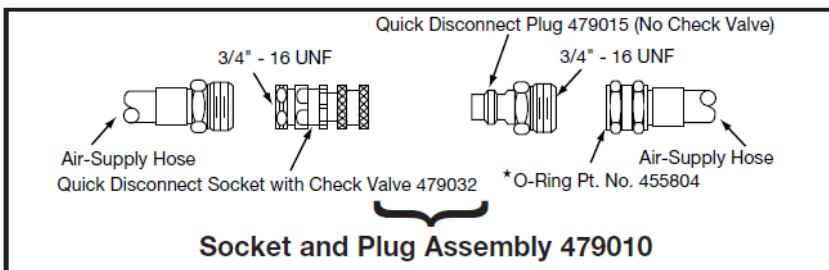
MSA air-supply hoses can be interconnected up to a maximum length of 300 feet without voiding the NIOSH approval. MSA offers both threaded and locking-type quick-disconnects.



CEJN - Chrome



SNAP-TITE - Aluminum



Locking quick-disconnects easily connect by pushing the plug and socket together. To separate, push the plug and socket together, then pull the sleeve from the plug.

WARNING!

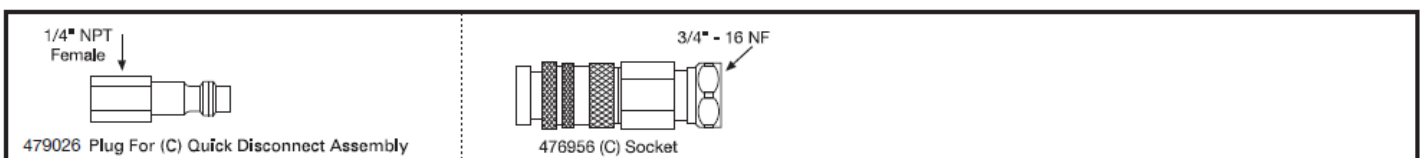
Hoses must only be interconnected with either the threaded connector (3/4 -16 UNF) or the locking-type quick-disconnects listed above. Do NOT use non-locking quick-disconnects to interconnect air-supply hoses.

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

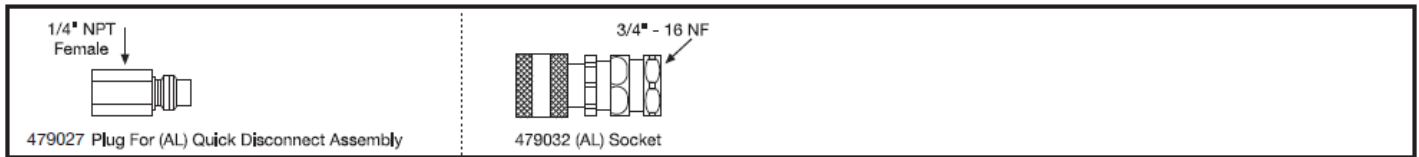
Table 2 Quick Disconnects Table Chart

LOCKING TYPES

CEJN - Chrome (C)

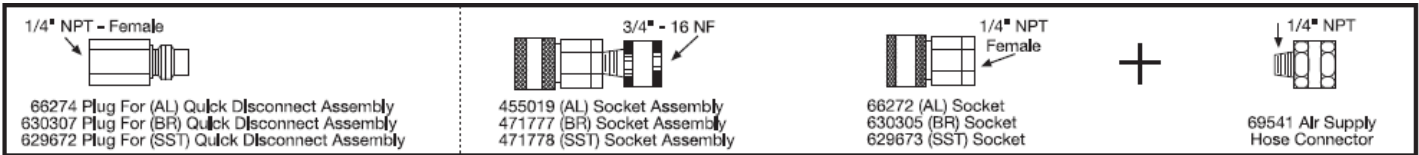


SNAP-TITE - Aluminum (AL)

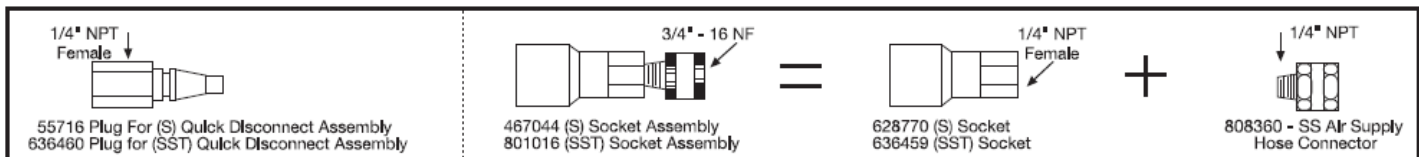


NON-LOCKING TYPES

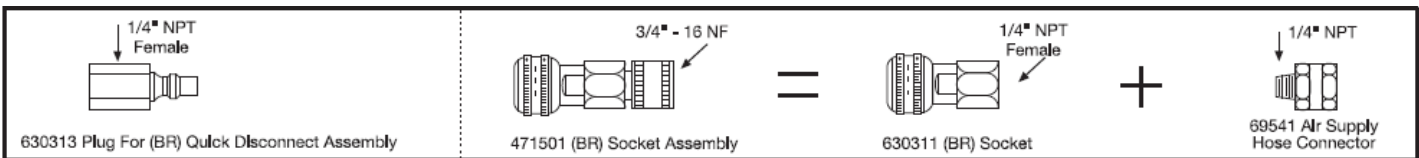
SNAP-TITE - Aluminum (AL) Brass (BR) Stainless Steel (SST)



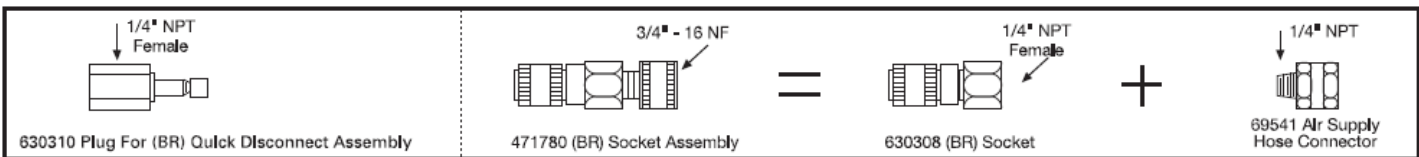
FOSTER - Steel (S) Stainless Steel (SST)



HANSEN - Brass (BR)

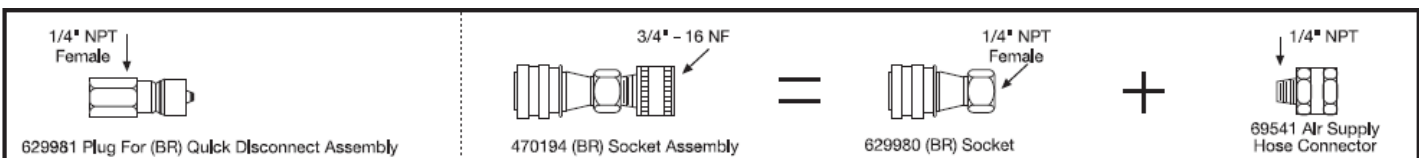


DUFF-NORTON - Brass (BR)

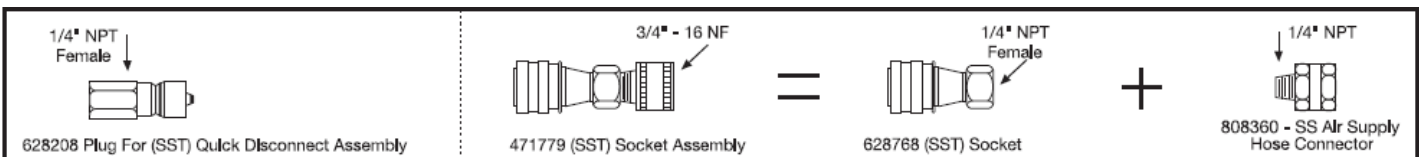


NON-LOCKING TYPES - WITH CHECK VALVE IN PLUG

FOSTER - Brass (BR)



HANSEN - Stainless Steel (SST)



3 Size Selection

Regardless of facial dimensions and respirator sizing charts, an actual respirator fit test, either qualitative or quantitative must be performed to ensure the correct respirator size selection.

1. Fit test the respirator size relative to your facial features and dimensions. The safety administrator or program manager might assist in selecting the initial size to try.
2. Carefully don the mask and conduct a negative pressure seal test. See [5 Donning](#)
3. If the facepiece does not pass the negative pressure seal test or feels uncomfortable, try the next nearest size relative to your face.

Passing the negative pressure seal test does not verify the size is correct. The size selected must be verified by successfully passing a Respirator Fit Test, either qualitative or quantitative. If the respirator passes a negative pressure seal test but DOES NOT pass a Respirator Fit Test, try the next nearest size.

Once the proper size is selected, the respirator must pass a negative pressure seal test every time the facepiece is donned to ensure fit before using the respirator.

If facepiece leaks from somewhere other than the facial seal, find and correct the condition, then repeat the test.

The facepiece must also pass the negative pressure seal test before the user attempts to enter a toxic atmosphere.

The facepiece will not furnish protection unless all inhaled air is drawn through the SCBA.

3.1 Respirator Fit Test

WARNING!

The user must perform a respirator fit test (Quantitative Test or Qualitative Test) and follow all warnings and limitations specified.

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

A qualitative or quantitative respirator fit test must be carried out routinely for each wearer of this respirator to determine or confirm the amount of protection that the respirator provides.

Quantitative Test

If a quantitative fit test is used, a fit factor of at least 500, based on ambient aerosol fit test methods of equivalent, is required before any type of respirator is assigned to an individual.

Qualitative Test

If a qualitative fit test is used, only validated protocols are acceptable. The individual must pass a test designed to assess a fit factor of at least 500.

Use Quik Check Kit (P/N 805078) to perform fit testing and following instructions provided with the kit. The fit test kit includes an adapter and instructions. Canister sold separately. Be sure the probe does not contact the face during fit testing. Failure to do so can result in false protection factor readings.

4 Functional Tests

WARNING!

If the respirator does not function properly for all functional checks as described in Functional Tests, the respirator must be removed from service and the condition must be checked and corrected by an MSA trained and certified repair-person before using.

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

1. Check that the facepiece can hold a negative pressure.
 - a. Sanitize the regulator outlet before and after testing.
 - b. Check that the cylinder valve and second stage shut-off are closed and the system is not pressurized.
 - c. Hold the facepiece against the face to create an effective seal. Attach the regulator to the facepiece.
 - d. Inhale until the facepiece begins to collapse against the face, and hold breath for approximately 10 seconds. Negative pressure should be maintained and the facepiece should remain collapsed against the face for the entire 10 seconds.
 - e. Do not use the apparatus if negative pressure cannot be maintained in the facepiece.

2. Check Function of Regulator

- a. Push the release buttons on the regulator to ensure the regulator is shut off.

NOTE: The FireHawk Second Stage Regulator has 2 side release buttons. The G1 Second Stage Regulator has 2 release buttons on the top and bottom of the regulator.
- b. If the regulator is equipped with a bypass valve, ensure the bypass valve is fully closed (clockwise).
- c. Connect the air-supply hose to the "MAIN" inlet of the PremAire manifold. Verify that no air flows from the regulator.
- d. If the regulator is equipped with a bypass valve, open the bypass knob (counterclockwise). Ensure that air flows from the regulator.
- e. Close the bypass knob (clockwise).
- f. Attach the regulator to the facepiece. Ensure proper attachment by pulling on the regulator.
- g. Don the facepiece or hold the facepiece against the face to create an effective seal.
- h. Inhale sharply to start air flow. Breathe normally.
- i. Ensure proper regulator response. The regulator should NOT make any unusual sounds including whistling, chattering, clicking, rattling, or popping.
- j. Remove facepiece from the face. Ensure that air flows freely.
- k. Push the regulator release buttons. Ensure that airflow stops.

NOTE: If the regulator does not function properly, the SCBA must be removed from service.

WARNING!

DO NOT disconnect when pressurized. Release all pressure from the regulator by opening the bypass valve.

Removing the regulator when pressurized can result in serious personal injury, death, or damage to equipment.

3. Check Function of Manifold

- a. Connect an approved, pressurized air-supply hose to the "MAIN" inlet of the PremAire Manifold. Ensure the air supply hose is pressurized to the required NIOSH-approved pressure range:
 - UltraElite Facepieces: 60-100 psi
 - Advantage 4000 Facepiece: 70-100 psi
 - G1 Facepiece: 70-110 psi
- b. Don the facepiece and attach the regulator. Ensure proper attachment by pulling on the regulator.
- c. Breathe normally through the facepiece.
- d. Connect a second air-supply hose to the "DUAL SUPPLY" inlet of the manifold. Ensure the air supply hose is pressurized to the required pressure range.

NOTE: The two air-supply hoses must be connected to different air sources.
- e. Disconnect from the primary air source. Continue breathing through the facepiece to ensure the respirator is providing proper air flow.

4. Check Function of Cylinder & First Stage Regulator

- a. Disconnect any air-supply hoses from the manifold.
- b. Ensure the first stage regulator hose is attached to the PremAire Manifold and that the first-stage regulator is tightly attached to the cylinder valve.
- c. Push the release buttons on the regulator to ensure the regulator is shut off.
- d. If the regulator is equipped with a bypass valve, ensure the bypass valve is fully closed (clockwise).
- e. Slowly open the cylinder to pressurize the respirator. Verify that the cylinder valve is opened fully.
- f. Verify that there are no leaks from the cylinder valve or first-stage reducer.
- g. Shut the cylinder valve completely (counterclockwise).
- h. Depressurize the system by opening the bypass valve.

5. Check Vortex Tube Function

- a. Attach the vortex tube to the PremAire System manifold.
- b. Connect an approved, pressurized air-supply hose to the "MAIN" inlet of the PremAire Manifold. Ensure the air supply hose is pressurized to the required NIOSH-approved pressure range:
 - UltraElite Facepieces: 60-100 psi
 - Advantage 4000 Facepiece: 70-100 psi
 - G1 Facepiece: 70-110 psi
- c. Ensure air flows from the vortex tube

5 Donning

5.1 Preparation

WARNING!

- If the respirator does not function properly as described in this section, the respirator must be removed from service and must be checked and corrected for proper operation by an MSA trained or certified repair person before using.
- Never remove the facepiece except in a safe, non-hazardous, non-toxic atmosphere.
- Wear impermeable protective clothing to prevent exposure to gases and vapors that can poison by skin absorption.

Failure to follow these warnings can result in serious personal injury or death.

The respirator must have passed all visual inspection and functional tests (see previous sections) before use.

1. Check inlet pressure to ensure supplied air source is within the required NIOSH-approved pressure ranges:
 - UltraElite Facepieces: 60-100 psi
 - Advantage 400 Facepieces: 70-100 psi
 - G1 Facepieces: 70 - 110 psi

CAUTION!

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

Failure to follow this caution can result in minor or moderate injury.

2. If using an emergency escape cylinder, ensure the cylinder is FULL and that the cylinder band assembly is attached and securely retaining the cylinder.



3. If using a vortex tube, attach the vortex tube assembly to the pass-through fitting located in the wall of the protective garment.

NOTE: Be sure the quick-connect fitting and plug snap into place. Gently tug on the connection to ensure it is tight. Cool (warm) air should begin to flow into the protective suit immediately.

5.2 Donning the Apparatus



1. Remove the facepiece from the case.
2. Fasten the waist-strap and pull it tight for a snug fit. The waist-strap end must be tucked in and lay flat across the body.

5.3 Donning the Facepiece

⚠ WARNING!

- DO NOT use a cover lens in a high-temperature environment. High temperatures may distort the cover lens. Or, moisture trapped between a cover lens and the facepiece lens may condense and distort vision. Always remove the cover lens before donning the facepiece.
- This device may not seal properly with your face if you have a beard, gross sideburns, or similar physical characteristics (see ASTM F3387). 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-toxic atmosphere.
- Ensure that the top of the facepiece seal directly contacts the user's forehead. Ensure that there is no hair between the facepiece's seal and the user's skin.
- DO NOT wear eyeglasses under the facepiece. The temples or sidebars on eyeglasses will prevent an air-tight seal. If you must wear glasses, install the spectacle kit.
- Before using a spectacle kit, an optometrist must inspect the spectacle kit and prescribe the correct lenses to fit into the lens frame on the spectacle kit

Failure to follow these warnings can result in serious personal injury or death.



1. Spread the harness with both hands.



2. Position the chin into the chin cup.



3. Pull the head straps over your head.

NOTE: Ensure that the harness is sitting correctly and is not twisted.



4. Adjust facepiece and tighten the straps firmly and evenly.

5.4 Facepiece Fit Check

⚠ WARNING!

- If the facepiece does not pass a negative pressure leak test, remove the facepiece from service and return it to an MSA trained and certified repair technician.
- Perform a negative pressure leak test before each use and before going into a toxic atmosphere.

Failure to follow these warnings can result in serious personal injury or death.

In order to check the facepiece-to-face tightness, a negative pressure leak test must be performed before each use.



1. Seal the inlet connector with the palm of your hand.



2. Test tightness.
 - a. Inhale and hold breath for 10 seconds. *The facepiece must stay collapsed on face.*
 - b. Exhale. *The exhalation valve should open and release the pressure inside the facepiece.*
3. If necessary, retighten the straps and repeat steps 1 and 2.

NOTE: If the leak test fails the facepiece must not be used.

5.5 Vortex Tube Connection Check

1. Pressurize the respirator from an approved air source.
2. Check to be sure air flows from the vortex tube. If there is a problem with the air flow, check that the system's inlet pressure is within the required NIOSH-approved range:
 - UltraElite Facepieces: 60 to 100psi
 - Advantage 4000 Facepieces: 70 to 100 psi
 - G1 Facepieces: 70 to 110 psi

⚠ CAUTION!

Stop operation immediately if the system pressure cannot be brought within the specified range. Inspect the system for restrictions, such as a partially-closed valve or a clogged airline filter.

Failure to follow this caution can result in minor or moderate injury.

6 During Use

WARNING!

Before use, product operability must be verified through Inspections (Section 9) & Functional Checks (Section 11). The product must not be used if:

- Functional checks are unsuccessful,
- Any part shows evidence of damage, wear or any other adverse condition as explained in [4 Functional Tests](#),
- Proper servicing / maintenance has not been made, or
- Genuine MSA parts have not been used.

Leave a contaminated area immediately if:

- Breathing becomes difficult
- Dizziness or other distress occurs
- You taste or smell the contaminant
- You experience nose or throat irritation
- Respirator not functioning according to the instructions or training.

DO NOT use this product as a self-contained underwater breathing apparatus. This will result in a rapid loss of air which could result in serious injury or loss of life.

Return to a safe atmosphere immediately if discoloration, crazing, blistering, cracking, or other deterioration of the facepiece lens material is observed.

Misuse or abuse of the respirator or the equipment which are attached, or using this equipment in a manner or situation not intended by the manufacturer, may result in personal injury or death to user persons dependent on the user or damage to the equipment.

Failure to follow these warnings can result in serious personal injury or death.

1. Connect the air-supply hose to the "Main" inlet of the PremAire manifold.

NOTE: If using the Dual-Supply Capability, when the first length of air-supply hose has reached its maximum limit, connect to a second air-supply hose (pressurized by a different, approved air source) using the "Dual-Supply" inlet on the manifold. Only after the second air-supply hose has been connected can a worker disconnect from the first airline.

6.1 Installing the Regulator

Only use approved facepiece/regulator combinations, as outlined in [Table 3](#) :

Table 3 Approved Facepiece / Regulator combinations

Facepiece	Regulator
G1	G1
Advantage 4000	Firehawk Push-to-Connect
Ultra Elite Push-to-Connect	Firehawk Push-to-Connect
Ultra Elite Slide-to-Connect	Firehawk Slide-to-Connect

6.1.1 Installing the Firehawk Regulator - Slide-to-Connect

WARNING!

DO NOT use a Firehawk slide-to-connect regulator with an Advantage 4000 Facepiece or a G1 Facepiece.

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

1. Push the release buttons on the regulator to ensure the regulator is shut off.
2. Open the bypass knob (counterclockwise), and ensure that air flows from the regulator.
3. Close the bypass knob (clockwise).

⚠ WARNING!

There must be a continuous flow of air when the bypass knob is opened. If not, do not use the regulator.

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



4. Grasp and orient the regulator so that the red bypass knob is pointing to the right and slide button is on top.



5. Slide the regulator onto the rail of the facepiece cover. Slide the regulator down the rail until the regulator stops.



6. Insert the regulator into the facepiece inlet by pushing inward.
7. Ensure proper engagement by pulling on the regulator to verify that the regulator is securely attached to the facepiece.

⚠ WARNING!

DO NOT use the respirator unless the regulator is connected properly. A regulator that is not installed correctly can separate from the facepiece unexpectedly. Return the respirator to an MSA trained or certified repairperson to correct the condition.

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

8. Inhale sharply to start to airflow.

6.1.2 Installing the Firehawk Regulator - Push-to-Connect

1. Grasp the Firehawk Regulator and insert the regulator into the facepiece by pushing inward. Check proper engagement by pulling on the regulator to ensure that the regulator is securely attached to the facepiece.

⚠ WARNING!

DO NOT use the air mask unless the regulator is connected properly. A regulator that is not installed correctly can separate from the facepiece unexpectedly. Return the air mask to an MSA trained or certified repairperson to correct the condition.

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

2. Inhale sharply to start the airflow.

6.1.3 Installing the G1 Regulator

⚠ WARNING!

DO NOT use a G1 Regulator with an Ultra Elite or Advantage 4000 Facepiece.

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

1. Push the release buttons on the regulator to ensure the regulator is shut off.
2. Open the bypass knob (counterclockwise) and ensure that air flows from the regulator.
3. Close the bypass knob (clockwise).

⚠ WARNING!

There must be a continuous flow of air when the bypass knob is opened. If not, do not use a respirator.

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



4. Grasp the regulator and insert it into the facepiece by pushing inward. If properly aligned, the bypass knob will show on the right side of the user's facepiece.



5. Check proper engagement by pulling on the regulator to ensure that the regulator is securely attached to the facepiece.

⚠ WARNING!

DO NOT use the respirator unless the regulator is connected correctly. A regulator that is not installed correctly can separate from the facepiece unexpectedly. Return the respirator to an MSA trained or certified repairperson to correct the condition.

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

- Inhale sharply to start the airflow.

⚠ WARNING!

If the respirator does not function properly as described in this section, the respirator must be removed from service and must be checked and corrected for proper operation by an MSA trained or certified repairperson before using.

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

6.2 Adjusting Vortex Tube

6.2.1 Adjusting Cool-Only Vortex Tube



- To reduce cooling, turn the adjusting knob (located at the bottom of the vortex tube) clockwise until it stops.

- To increase cooling, turn the adjusting knob counterclockwise until it stops (approximately 1-1/2 turns).
- The adjusting knob can be stopped at any point between the extreme settings to attain a temperature that is comfortable to the user.

NOTE: The adjusting knob will vary air flow into the suit, but will not affect air flow to the facepiece.

6.2.2 Adjusting Warm/Cool Vortex Tube



- To adjust air temperature, rotate the shaft on the side of the vortex tube left or right to control air temperature.

NOTE: Refer to the label on the vortex tube to determine the shaft position for warm or cool air.

NOTE: The adjustment will vary the flow of the air into the suit, but will not affect air flow to the facepiece.

7 Cold Weather Operation

WARNING!

- Before going into a hazardous environment, make sure there is no water, moisture, or dampness on or in any of the respirator components. Any moisture on or in the respirator components can freeze and result in a malfunction of the respirator. Make sure all components operate correctly.
- Before going into a hazardous environment, make sure there is no water or ice on the inner surfaces and components of the regulator, regulator buttons, and bypass valve. Make sure the buttons and bypass valve operate correctly.
- DO NOT use a regulator that has water contamination on the inner surfaces or components. Remove the regulator from service, and dry all surfaces and components fully. Make sure all regulator components are fully dry before returning the regulator to service.

Failure to follow these warnings can result in serious personal injury or death.

- Any water on or in the respirator components can freeze and restrict airflow. To keep moisture from entering the regulator, keep the regulator in the regulator keeper when it is not in use.
- When the respirator is away from heat, water spray can freeze on the regulator surface. Ice can build up and bind the side buttons or the bypass valve. Before entering or re-entering a hazardous atmosphere, make sure there is no ice on the side buttons or bypass valve, and that they operate correctly.
- Periodically make sure there is no ice on the bypass valve.
- When cleaning the respirator, make sure water does not enter the facepiece or regulator.
- Thoroughly dry the facepiece and facepiece mounted regulator after cleaning and disinfecting. Obey the Confidence Plus Cleaning Solution instructions.

Moisture can cause problems in the respirator if it freezes. However, moisture can cause freezing problems even if the surrounding air is above freezing. Air flowing from the cylinder through the pressure reducer and regulator decreases from cylinder pressure to close to atmospheric pressure very quickly. This causes the air to expand and creates a cooling effect. Although the surrounding temperature may be warmer than 32° F (0° C), the temperature inside the regulator may be lower.

8 Doffing

WARNING!

- If you are working in a contaminated atmosphere, or you are exposed to contaminants while in the work area, take the proper precautions to decontaminate the facepiece and head harness before doffing the facepiece. You must determine the potential risk and take the necessary precautions.
- Obey the decontamination and disposal procedures set by the applicable authorities.
- DO NOT examine the respirator before it is cleaned if there is a risk of exposure to contaminants.
- Never remove the facepiece except in a safe, non-hazardous, non-toxic atmosphere.

Failure to follow these warnings can result in serious personal injury or death.

When protective equipment has been decontaminated, discard it as required by federal, state, and/ or local laws.

NOTE: When ready to leave the work area, proceed to an area not requiring respiratory protection. Remain connected to the air-supply hose until this "safe" area is reached. Then remove the facepiece. The air-supply hose can then be disconnected.

8.1 Removing the Regulator

8.1.1 Removing the Firehawk Regulator - Slide-to-Connect

WARNING!

DO NOT use a Firehawk slide-to-connect regulator with an Advantage 4000 Facepiece or a G1 Facepiece.

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



1. Grasp the top of the regulator.



2. Push the side release buttons and pull the regulator down and out of the facepiece.



3. Slide the regulator up the cover rail until the regulator slide button is free of the cover rail.

8.1.2 Removing the Firehawk Regulator - Push-to-Connect

1. Grasp the top of the regulator.
2. Push the side release buttons and pull the regulator out of the facepiece.

8.1.3 Removing the G1 Regulator

⚠ WARNING!

DO NOT use a G1 Regulator with an Ultra Elite Advantage 4000 Facepiece.

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



1. Grasp the regulator release buttons.



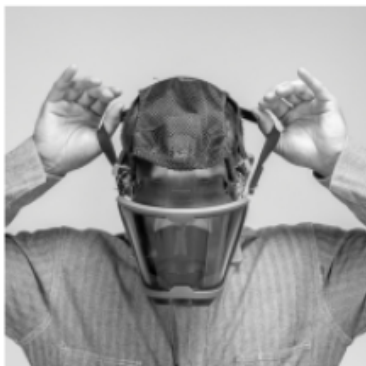
2. Push the release buttons and pull the regulator out of the facepiece.

3. Open the regulator bypass valve or press the purge button (if equipped) to vent system pressure. Close the bypass valve.
4. Stow the regulator in the regulator keeper when not in use.

8.2 Removing the Facepiece



1. Loosen the head harness by pulling the buckles forward using your fingers.



2. Grip the chin straps and pull the head harness forward over the head.



3. Grip the front of the facepiece (as shown) and pull the facepiece away from the user.

8.3 Removing the Belt

To remove the belt, press the belt buckle release button IN.

8.4 Charging the Cylinders

⚠ WARNING!

1. Prior to recharging, cylinders must be examined externally for evidence of high heat exposure, corrosion, or other evidence of significant damage.
2. Remove the cylinder from service if cylinder shows evidence of exposure to high heat or flame: e.g., paint turned to a brown or black color, decals charred or missing, gauge lens melted, or elastomeric materials distorted.
3. To maintain approval, container must be fully charged with respirable air that meets the requirements of the Compress Gas Association specification G-7.1 for Quality Verification Level (Grade) D air or an equivalent specification.
4. DO NOT use unless the cylinder is filled to the full pressure approved.
5. DO NOT alter, modify, or substitute any components without approval of the manufacturer.
6. Inspect the cylinder frequently. Maintain the cylinder according to manufacturer's instructions. Repair only to be performed by properly trained personnel.

Failure to follow these warnings can result in serious personal injury or death.

8.5 Safety Precautions for MSA Self-Contained Breathing Apparatus Cylinders

Breathing apparatus cylinders should be fully recharged as soon as possible after use.

Cylinders should not be stored partially charged for two reasons:

1. If used partially charged, the duration of the apparatus is reduced.
2. The pressure relief device is only designed to protect a fully charged cylinder from the effects of a fire.

For maximum safety, the cylinders should be stored full or at a pressure above ambient but less than 100 psig.

9 Cleaning and Disinfecting

Additional information of value when performing external and internal inspections of cylinders may be found in the latest editions of CGA Publication C-6.1: "Standards for Visual Inspection of High Pressure Aluminum Compressed Gas Cylinder", and/or CGA Publication C-6.2: "Guidelines for Visual Inspection and Requalification of Fiber Reinforced High Pressure Cylinders" available from the Compressed Gas Association, Inc., 1725 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102.

If there is any doubt about the suitability of the cylinder for recharge, it should be returned to a certified hydrostatic test facility for expert examination and testing.

Always check to be sure the retest date is within the prescribed period and that the cylinder is properly labeled to indicate its gaseous service. New labels are restricted items which are not available except through certified hydrostatic test facilities.

When replacing cylinder valves or after the retesting of cylinders, make sure the proper cylinder valve, burst disc, and o-ring are installed prior to cylinder recharging. Establish the service pressure of the cylinder. All cylinders that are not 3AA type shall be filled to the designated service pressure only (as found on the DOT approval label or stamping). For cylinders manufactured under a U.S. DOT exemption (i.e., DOT-E-####), the exemption should be consulted and is available from the Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, U.S. Department of Transportation, 400 7th Street, SW, Washington, D.C. 20590-0001.

Remove the dust cap from the cylinder and valve assembly fill port. Appropriately connect the filling system to the fill port and refill. Terminate the filling when the pressure reaches the service pressure and allow the cylinder to cool to room temperature. If necessary, top-off the cylinder such that the service pressure is attained with the cylinder at a temperature of 70°F. Appropriately disconnect the filling system from the fill port. Apply a leak detecting solution to the fill port check valve to determine if there is leakage. Replace the fill port dust cap. If there is no leakage, the cylinder and valve assembly is ready for service.

9 Cleaning and Disinfecting

Depending on the cleaning policy adopted, either a designated person or the user should clean the respirator after each use to limit exposure to possible contamination that may be present on the unit after use. ANSI standards suggest that users should be trained in the cleaning procedure. Confidence Plus® Cleaning Solution (P/N 10009971) from MSA is recommended. It cleans and disinfects in one operation. It retains its germicidal efficiency in hard water to inhibit the growth of bacteria. It will not deteriorate rubber, plastic, glass, or metal parts. Refer to the label to prepare the Confidence Plus Cleaning Solution. If the Confidence Plus Cleaning Solution is not used, wash in a mild cleaning solution, rinse thoroughly. Submerge the facepiece in a germicide solution for the manufacturer's recommended time.

WARNING!

- Cleaning and disinfecting at or below 110°F (38°C) temperature will reduce the potential for avoid possible overheating and distortion of parts which would require replacement.
- DO NOT use any cleaning substances that can or might attack attach any part of the apparatus.
- DO NOT use alcohol because it may deteriorate rubber parts.
- DO NOT use cleaning products that contain hydrocarbons or solvents such as nitro-thinner.
- DO NOT use radiant heat such as the sun or radiators to dry cleaned parts.
- If a drying cabinet is used, make sure the temperature is not more than 140° F (60° C).
- If not rinsed thoroughly, cleaning agent residue may irritate the wearer's skin.
- Ensure there is no water, moisture, or dampness on or in the facepiece and regulator before returning it to service.
- Failure to clean and decontaminate the respirator correctly after each use can cause overexposure to contamination and result in illness, disease, or death.

Failure to follow these warnings can result in serious personal injury or death.

NOTE: If a decontamination procedure, created by a certified health and/or safety professional, has been established for the application in which this respirator is used, that procedure should take precedence.

9.1 Cleaning and Disinfecting the Facepiece

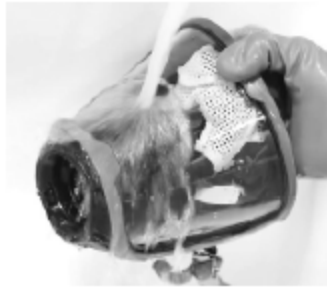


1. Remove the facepiece mounted regulator from the facepiece.

2. Prepare a bucket or sink with Confidence Plus® Cleaning Solution as described on the container.
3. The head harness can be removed to separate cleaning or as part of the facepiece.



4. Submerge the facepiece in Confidence Plus Cleaning Solution for a minimum of 30 seconds. A soft brush or sponge can be used to clean the soiled facepiece.



5. Rinse the facepiece and components in clean, warm (110°F / 43°C) water (preferably running and draining).



6. Be sure to clean and rinse the pressure-demand exhalation valve by pressing in on the stem with a blunt object and flushing it with clean water.

7. Operate the exhalation valve by hand to be sure it works properly
8. Make sure there is no water, moisture or dampness on or in the facepiece before returning it to service.
9. Perform a tightness test before putting the facepiece back in service.

10 Visual Inspection

If the apparatus is soiled (i.e., dirt accumulation) use a sponge damp with a mild soap solution or use a soft/medium bristle brush to remove deposits, in a well-ventilated area, from the following components:

- Waist belt and buckles
- Airline hose
- Manifold
- Cylinder

NOTE: Put a cover on the regulator outlet to prevent water, dirt, or debris from going into the regulator.

Make sure there is no water, moisture or dampness on or in any of the components before returning the respirator to service. Use the inspection procedures [10 Visual Inspection](#) in to examine the entire respirator as it is reassembled.

10 Visual Inspection

Conduct visual inspections upon receipt, daily, and after each use.

Inspect the entire respirator after it is cleaned and disinfected.

WARNING!

DO NOT inspect the respirator before cleaning if there is danger of contacting hazardous contaminants. Clean and disinfect first, then inspect.

Failure to follow this warning can result in inhalation or skin absorption of the contaminant and cause serious personal injury or death.

WARNING!

- If the respirator exhibits any of the conditions listed in the Inspections section or if the respirator does not function properly for all tests as described in this section, the respirator must be removed from service and the condition must be checked and corrected by an MSA trained and certified repairperson before using.
- Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer.

Failure to follow these warnings can result in serious personal injury or death.

If there is no MSA Service Center in your area, return the unit to MSA for service. Call 1-800-MSA-2222 for instructions.

Inspect the entire apparatus after it is cleaned and disinfected. ASTM F3387 and OSHA 19 CFR 1019.134, describe the levels of inspection procedures which are to be performed. Refer to these documents or to an inspection program prepared by a health professional in establishing an inspection program.

10.1 Component Inspection

1. Facepiece
 - a. Inspect the facepiece for rubber deterioration, dirt, cracks, tears, holes, or tackiness.
 - b. Check the harness headstraps for breaks, loss of elasticity, or missing buckles and straps. Check the strap serrations for signs of wear.
 - c. Inspect the lens for cracks, scratches, and a tight seal with the facepiece rubber.
 - d. The exhalation valve must be clean and operate easily. The valve must move off the seat and return when released.
 - e. Inspect the facepiece coupling for damage. When using an Ultra Elite Facepiece, be sure the spider gasket, O-ring, and valve disc are present. When using the G1 facepiece, the inhalation valve must be in place.
 - f. Inspect the nose cup to ensure the check valves are in place and the nose cup is secure to the component housing.

2. Carrier and Harness

- a. Inspect all harness components for cuts, tears, abrasions, or signs of heat or chemical-related damage.
- b. Check that the tee nuts, washers, and screws, if any, are secure.
- c. Inspect the cylinder carrier components for cuts, tears, abrasion or signs of heat or chemically-related damage. Verify that the carrier securely retains the cylinder.

3. Regulator

- a. Ensure that no moisture or debris is present inside the regulator.
- b. Ensure that O-rings and seal rings are present and free of debris or damage.

4. Intermediate and Supply Hoses

- a. Inspect the airline hose for signs of cuts, tears, voids, abrasion, tackiness, brittleness, or signs of heat or chemically-related damage.
- b. Inspect the end fittings and ferrules for signs of cuts, voids, abrasion, cracks, splitting, oxidation, signs of heat, or chemically-related damage.

5. Manifold

- a. Inspect the check valves to ensure they are present and that the "flow" arrows point toward the PremAire manifold.

WARNING!

For dual-supply operation, two check valves must be in place; one connected to the "MAIN" inlet of the manifold and one to the "DUAL-SUPPLY" inlet. If only one check valve is used, breathing air may exit the "unchecked" port and not reach the user, resulting in serious personal injury or death.

6. Cylinder and Valve Assembly (if equipped)

- a. Inspect the cylinder valve for signs of damage. Look for broken or bent parts on the handwheel and pressure gauge.
- b. Inspect the cylinder body for cracks, dents, weakened areas, corrosive agent, broken or peeling fibers, or signs of heat-related damage. If the cylinder is damaged, return it to an MSA Service Center. Call 1-800-MSA-2222 for instructions.
- c. Check the hydrostatic test date on the cylinder approval sticker located on the cylinder neck. Cylinders must be tested every five years.
- d. Ensure the needle and gauge face on the cylinder valve gauge are clearly visible and that the gauge stem is not bent. Ensure the rubber boot is present and secure around the gauge face.
- e. Inspect the high pressure relief device. Verify that the relief holes are clear and free of debris or other contamination.
- f. Inspect the valve assembly seal ring to verify that it is present and properly seated. Inspect the seal ring for rubber deterioration, dirt, cracks, tears, holes, or tackiness.
- g. Inspect the hose connections. Verify that the hoses are properly secured.
- h. Inspect the first stage regulator and hose for signs of damage. Verify that the first stage regulator is properly secured to the cylinder.
- i. Do all inspections and tests for cylinders in accordance with Department of Transportation (DOT) regulations. DOT regulations require that composite cylinders be retired from service after the fifteenth year. Please note this does not include cylinder valve assembly which may be reused. Aluminum cylinder service life is indefinite if proper inspection and hydrotest procedures are followed and they indicate that the cylinder may remain in service. Contact an MSA distributor or sales associate for additional information regarding this policy.

For external and internal inspections of the cylinders, refer to the latest edition of CGA-C.62, Standard for Visual Inspection and Requalification of Fiber Reinforced High Pressure Cylinders.

11 Safekeeping and Storage

NOTE: OSHA 29 CFR 1910.134 recommends checking cylinder pressure weekly. For maximum safety the cylinders should be stored full or empty (pressure above ambient but less than 100 psig).

7. Vortex Tube

- a. Verify the following components are present and free of damage, dirt and debris:
 - vortex tube
 - bulkhead adapter
 - muffler assembly
 - support bracket
 - connection hose

8. Inspection of Modified Protective Clothing

NOTE: PremAire Respirators equipped with a vortex tube can be used various MSA splash-resistance coveralls.

- a. Temporarily don the protective suit and PremAire Respirator equipped with the Vortex Tube.
- b. Ensure the vortex tube is on the wearer's left side and about waist-high. Remove the respirator and garment.
- c. Ensure the muffler and bulkhead assembly is inside the suit.
- d. Check that the inner washer is flat against the inner suit material, and that no foreign objects are trapped between the washer and the suit material.
- e. Check the large washer and the adapter nut over the bulkhead assembly on the outside of the suit.
- f. Check that the muffler is in the desire "air-flow" position.

NOTE: The muffler assembly is used to direct the flow of air inside the suit. It also helps reduce the level of noise generated by air entering the garment.

- g. Check the thread of the elbow male fitting into the female "pass-through".
- h. Check the connection of the vortex tube quick-disconnect plug to the blue connection hose.
- i. If using another manufacturer's garment with "pass-through" fittings, locate the "pass-through" assembly and note the type and size of fitting used.

NOTE: To maintain NIOSH approval, the "pass-through" fitting must have a 1/4" or 3/8" NPT female thread to accept the male fitting of the connecting hose or elbow fitting.

9. Record Keeping

Immediately following completion of inspection, the date and initials of the designated inspector should be recorded. When the inspection data has been recorded, the respirator is ready for functional tests.

11 Safekeeping and Storage

11.1 Preparation for Storage

1. Clean and disinfect the respirator as described in [9 Cleaning and Disinfecting](#).
2. Inspect the entire apparatus as you reassemble it, following the instructions in [1 Visual Inspection](#).
3. Ensure the respirator is thoroughly dried before storing.
4. If the emergency-escape cylinder is less than FULL, recharge it before storing. Cylinder air must be at least CGA Quality Verification Level (Grade) D respirable air.

NOTE: Breathing apparatus cylinders should be recharged as soon as possible after use. Cylinders should not be stored partially charged for two reasons:

- If used without recharge, the service life of the respirator is reduced.
- If the cylinder burst disc vents excess pressure if a full cylinder is over exposed to fire or heat. If the cylinder is not full, it may be damaged before the burst disc vents.

11.2 Storage

WARNING!

DO NOT store the respirator near substances that can attack respirator components, causing them to fail to perform as designed.

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

The PremAire Respirator must be stored in a cool, dry place away from direct sunlight. Heat and sunlight will shorten the life of rubber parts.

12 Flow Test and Overhaul Requirements

The PremAire Respirator must be flow tested and overhauled at the intervals determined by use. PremAire Respirators must be flow tested annually using an MSA-approved flow test device.

Table 4 Required Overhaul and Flow Test Frequency

Average Combination Supplied Air Respirator Use*	Second Stage Regulator and Cylinder and Valve Assembly Overhaul Frequency	Flow Test Frequency
Thirty (30) minutes or more of airline use or one (1) or more cylinder(s) per day.	every 3 years	every year
Thirty (30) minutes of every year airline use or one (1) cylinder every other day.	every 8 years	
Up to thirty (30) minutes of airline or one (1) cylinder per week.	every 15 years	

*The unit of combination supplied air respirator use is defined as thirty (30) minutes of airline use or the consumption (or partial consumption) of one escape cylinder. If combination supplied air respirator use cannot be determined, overhaul every three (3) years.

12.1 Retiring a Combination Supplied-Air Respirator

Base the decision to retire a combination supplied-air respirator on performance data. Retire combination supplied-air respirators that do not meet specified performance levels.

