PremAire®
Cadet Escape

Open-Circuit, Pressure-Demand, Escape, Self-Contained Breathing Apparatus or Combination, Open-Circuit, Pressure-Demand, Escape, Self-Contained Breathing Apparatus and Type C, Supplied-Air Respirator

OPERATION AND INSTRUCTIONS

⚠ WARNING

This manual must be carefully read and followed by all persons who have or will have the responsibility for using or servicing this respirator. This respirator will perform as designed only if used and service according to the instructions; otherwise it could fail to perform as designed and persons who rely on the respirator could sustain serious personal injury or death.

This respirator is certified by the National Institute of Occupational Safety and Health (NIOSH).

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 additional information relative to use or repair 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

MSA The Safety Company

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

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Doc. 10063148

INTRODUCTION

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NIOSH APPROVAL INFORMATION
CAUTIONS AND LIMITATIONS

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.

S – SPECIAL OR CRITICAL USER'S INSTRUCTIONS

Approved for use at temperatures above -25°F.

Approved only when the respirator is supplied with respirable air through an air supply hose with a minimum length of 8 feet and a maximum length of 300 feet within a pressure range of 70-90 psig. A maximum of 12 sections of straight or uncoiled air supply hose may be used in making up the working length of hose. When using coiled hose, a maximum of six sections may be used and each section is considered to be 50 feet long. Hose sections vary from 8 feet to 100 feet lengths. The air-line connection to the apparatus is to be made through approved Quick-Disconnects only. 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.

Approved only when the compressed-air container is fully charged with air meeting the requirements of the Compressed Gas Association Specification G-7.1 for quality verification level (Grade) D air or equivalent specifications. The cylinder shall meet applicable DOT specifications.

Use with adequate skin protection when worn in gases and vapors that poison by skin absorption (for example: hydrocyanic-acid gas).

In making renewals or repairs, parts identical with those furnished by the manufacturer under the pertinent approval shall be maintained.

NIOSH Approval Information is included as a supplement to these instructions (P/N 10074329).

IMPORTANT NOTICE FOR 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, Subpart I, Par. 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, Subpart 1, Par. 1910.134 (b) (3).
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 flam-

mability hazard.
4. Be sure that no other equipment interferes with the respirator facial seal, the user's ability to operate the respirator, or other necessary means of mobility.

For more information on respirator use and performance standards, please 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, NY 10018.

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.

⚠ WARNING

1. **Read and observe all NIOSH and other approval limitations as they apply to using the breathing apparatus.**
2. **DO NOT use the respirator as an underwater device.**
3. **This system must be supplied with respirable [Quality Verification Level (Grade) D, see ANSI/CGA G-7.1] or higher quality air; and a dew point not to exceed -65°F (24ppm v/v) [Compressed Gas Association Specification G-7.1 for Quality Verification Level (Grade) D Gaseous Air].**
4. **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.**
5. **Return to a safe atmosphere immediately if discoloration, crazing, blistering, cracking or other deterioration of the lens material is observed.**
6. **Users must wear suitable protective clothing and precautions must be taken so that the respirator is not exposed to atmospheres that may be harmful.**
7. **Take into account the following factors which may affect the duration or the service life.**
   a. **the degree of physical activity of the user;**
   b. **the physical condition of the user;**
   c. **the degree that the user's breathing rate is increased by excitement, fear, or other emotional factors;**
   d. **the degree of training or experience which the user has had with this or similar equipment;**
   e. **whether or not the cylinder is fully charged;**
   f. **the presence in the compressed air of carbon dioxide concentrations greater than the .04% level normally found in atmospheric air;**
   g. **the atmospheric pressure; if used in a pressurized tunnel or caisson at 2 atmospheres (15 psig gauge) the duration will be one-half as long as when used at 1 atmosphere; at 3 atmospheres the duration will be one-third as long;**
   h. **the condition of the apparatus.**
8. **DO NOT modify the respirator.**

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

⚠ WARNING

Particles and contaminants can enter a supplied-air 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.

DESCRIPTION

OPERATING PRINCIPLES

The PremAire Cadet Escape Respirator is a combination supplied-air respirator with self-contained breathing apparatus (SCBA) for escape.

The PremAire Cadet Escape 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. This is accomplished by using a diaphragm that senses the breathing demands of the user in a controlled feedback state. The positive pressure of air inside the facepiece, whether the wearer is inhaling or exhaling, is to prevent contaminants from entering the facepiece, should there be slight face-to-facepiece seal leakage.

The respirator is suitable for use with a large, compressed air cylinder of breathable air or a bank of cylinders set up in cascade fashion. Alternatively, the PremAire Cadet Escape 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 Cadet Escape 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 fail or be interrupted, the emergency-escape cylinder enables the wearer to egress from the potentially IDLH atmosphere.

CYLINDER AND VALVE ASSEMBLY

The cylinder and valve assembly consists of a cylinder and a combination cylinder valve and first stage regulator valve. The cylinders are available in 5, 10, and 15 minute rated service time durations. The cylinders are available in aluminum or carbon fiber material options.

The 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, an intermediate pressure relief valve to protect the second stage regulator from over-pressurization, and a first stage regulator valve to reduce cylinder pressure to a suitable intermediate pressure. The first stage regulator valve incorporates a downstream design and dual springs to provide maximum reliability.

ATTACHMENT HOSE

The attachment hose is used to connect the air supply hoses to the cylinder and valve assembly. The attachment hose includes a large sintered filter to remove particulate from the supplied air source. The attachment hose includes a check valve to prevent loss of air through the hose when the cylinder valve is open (SCBA mode). MSA approved quick-disconnects are fitted to the end of the attachment hose.

SECOND STAGE REGULATOR

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

FACEPIECE

The facepiece is available in two types; the Ultra Elite® Facepiece and Advantage® 4000 Facepiece. Each facepiece type is available in three sizes. Each facepiece type is available with a rubber head harness or net head harness.

The Ultra Elite and Advantage 4000 Facepieces include a low-resistance, pressure-demand exhalation valve designed for easy cleaning. An inhalation check valve in the inlet housing keeps moisture and contaminants out of the mask mounted regulator.

The Ultra Elite Facepiece is available with either push-to-connect or slide-to-connect regulator inlet connections. The Advantage 4000 Facepiece is only available with a push-to-connect regulator inlet connection.

The Ultra Elite Facepiece has a speaking diaphragm for clear, short-range communication.

CARRIER AND HARNESS ASSEMBLY

The carrier and harness assembly consists of a cylinder carrier, a waist belt, a shoulder strap, and attachment hose strain relief strap.

The carrier and harness assembly is available in nylon or Kevlar materials.

DESCRIPTION

The cylinder carrier is available in standard and bag versions. The standard version includes metal clamps and fabric straps. The bag version includes a single bag with draw string. Cylinder carriers are removable from the harness using quick release hardware.

The waist belt is available in two sizes, standard and large. The waist belt includes a side-release buckle with single adjustment. The shoulder strap includes a large adjustment buckle.

A shoulder pad accessory is available.

The harness assembly includes a stand-by mount to stow the second stage regulator when the respirator is not in use.

OPERATION

Thoroughly inspect this respirator on receipt and before use. This respirator is to be used only by trained and qualified personnel. Read and understand these instructions before attempting to use this equipment.

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.

AIR SUPPLY HOSE

The PremAire Cadet Escape Respirator can be used with a wide range of MSA air supply hoses with a minimum length of 8 feet and a maximum length of 300 feet. The minimum air supply pressure is 70 psig and the maximum air supply pressure is 90 psig. A maximum of 12 sections of straight or uncoiled air supply hose may be used in making up the working length of hose. When using coiled hose, a maximum of six sections may be used and each section is considered to be 50 feet long. Hose sections vary from 8 feet to 100 feet lengths. The air-line connection to the apparatus is to be made through approved quick-disconnects only.

⚠ WARNING

MSA air supply hoses have temperature limitations. DO NOT use the PremAire Cadet Escape Respirator whenever ambient or inlet-air temperatures exceed the limits specified below for each hose material. Failure to follow this warning can result in serious personal injury or death.

HOSE MATERIAL	RECOMMENDED LIMITS
Polyvinyl Chloride	32˚F to 120˚F
Neoprene	-25˚F to 212˚F
Nylon (Coiled)	-20˚F to 180˚F

INLET PRESSURE GAUGE

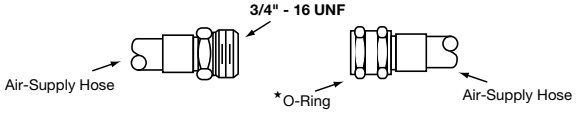
To ensure accurate pressure readings, the inlet pressure gauge must be located at the air source.

SUPPLY HOSE–TO–SUPPLY HOSE CONNECTIONS

Use MSA-approved couplings only for supply hose connections.

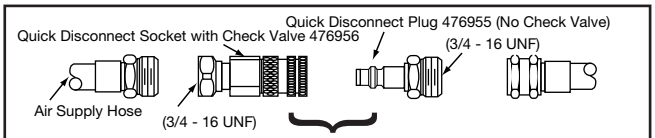
⚠ CAUTION

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



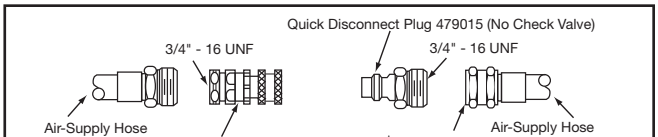
This typical threaded connector method can be used to interconnect sections of approved air-supply hose to the PremAire System.

CEJN - Chrome



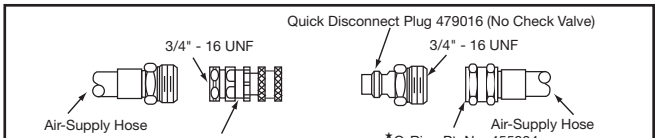
Socket and Plug Assembly 479009

SNAP-TITE — Aluminum



Socket and Plug Assembly 479010

SNAP-TITE — Stainless Steel



Socket and Plug Assembly 479011

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

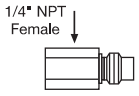
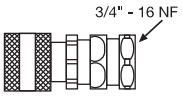
SUPPLY HOSE–TO–ATTACHMENT HOSE CONNECTIONS

Attachment hose connections are to be made through approved MSA couplings only.

Quick Disconnects Table Chart

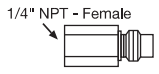
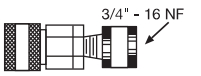
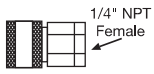
LOCKING TYPES

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

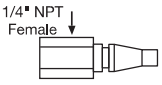
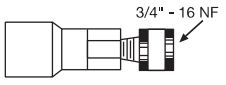
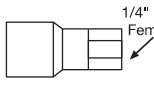
 479027 Plug For (AL) Quick Disconnect Assembly 479029 Plug For (Brass) Quick Disconnect Assembly 479028 Plug For (SST) Quick Disconnect Assembly	 479032 (AL) Socket 479034 (Brass) Socket 479033 (SST) Socket
CEJN 479026 Plug For (Chrome) Quick Disconnect Assembly	476956 (Nickel) Socket

NON-LOCKING TYPES

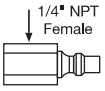
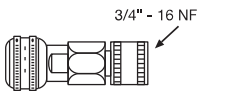
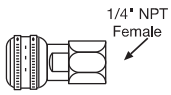
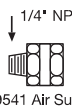
SNAP-TITE — Aluminum (AL), Brass (BR), Stainless Steel (SST)

 66274 Plug For (AL) Quick Disconnect Assembly 630307 Plug For (BR) Quick Disconnect Assembly 629672 Plug For (SST) Quick Disconnect Assembly	 455019 (AL) Socket Assembly 471777 (BR) Socket Assembly 471778 (SST) Socket Assembly	 66272 (AL) Socket 630305 (BR) Socket 629673 (SST) Socket	 69541 Air Supply Hose Connector

FOSTER — Steel (S) Stainless Steel (SST)

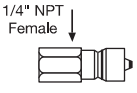
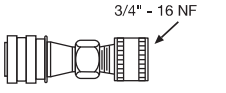
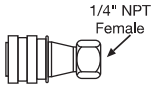
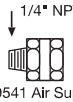
 55716 Plug For (S) Quick Disconnect Assembly 636460 Plug for (SST) Quick Disconnect Assembly	 467044 (S) Socket Assembly 801016 (SST) Socket Assembly	 628770 (S) Socket 636459 (SST) Socket	 808360 - SS Air Supply Hose Connector

HANSEN — Brass (BR)

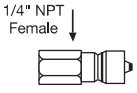
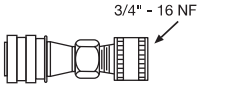
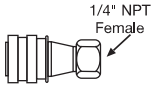
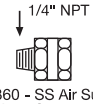
 630313 Plug For (BR) Quick Disconnect Assembly	 471501 (BR) Socket Assembly	 630311 (BR) Socket	 69541 Air Supply Hose Connector

NON-LOCKING TYPES — WITH CHECK VALVE IN PLUG

FOSTER — Brass (BR)

 629981 Plug For (BR) Quick Disconnect Assembly	 470194 (BR) Socket Assembly	 629980 (BR) Socket	 69541 Air Supply Hose Connector

HANSEN — Stainless Steel (SST)

 628208 Plug For (SST) Quick Disconnect Assembly	 471779 (SST) Socket Assembly	 628768 (SST) Socket	 808360 - SS Air Supply Hose Connector

OPERATION

DONNING THE RESPIRATOR

1. Remove the respirator from its storage location/case.
2. Check that the cylinder is fully pressurized.

⚠ CAUTION

DO NOT use a partially full cylinder. If the cylinder is not full, escape service time is decreased.

⚠ WARNING

DO NOT enter any area that requires an escape time 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. Failure to follow this warning can result in serious personal injury or death.

3. Connect the air supply hoses to each other.
4. Connect air supply hoses to the air source.

DONNING THE CARRIER AND HARNESS, RIGHT HIP VERSION

1. Hold the shoulder strap with the left hand. Slide shoulder strap over head so that the shoulder strap is positioned over the left shoulder and the cylinder is positioned on the right hip.

2. Adjust the shoulder strap by pulling the strap down.

Note: The cylinder should be positioned at or just below waist level.

3. Connect the waist belt buckle.
4. As necessary, slide the waist belt buckle toward the cylinder to properly position the belt.

5. Adjust the waist strap by pulling the strap to the left.

6. Tuck in loose ends of shoulder strap and waist belt.

DONNING THE FACEPIECE WITH RUBBER HEAD HARNESS

1. Loosen all harness straps fully.

2. Insert chin into the lower part of the facepiece, then pull the harness back over the head.

3. Tighten the lower straps first by pulling them straight back, not out.

4. Tighten the temple straps in the same manner. Ensure that the facepiece tabs are not tucked under the facepiece seal.

5. Pull the harness toward the neck and adjust straps as necessary.

6. If present, tighten the top strap for best visibility and fit.

DONNING THE FACEPIECE WITH NET HEAD HARNESS

1. Loosen all harness straps fully. Grip the bottom straps.

2. Insert chin into the lower part of the facepiece, then pull the harness back over the head.

3. Pull the back of harness downward until centered at the back of the head.

4. Tighten the lower straps first by pulling them straight back, not out. Tighten the facepiece until the mask is snug against the face.

5. Tighten the temple straps in the same manner. Ensure that the facepiece tabs are not tucked under the facepiece seal.
6. Make sure the back of the harness is centered on the back of the head and faceseal is providing uniform pressure on the face at all points. Adjust straps as necessary.

FACEPIECE FIT CHECK

⚠ WARNING

Check the inhalation valve by inhaling. If sufficient flow of air is not received, do not use facepiece. The facepiece must be repaired or replaced. Failure to follow this warning can result in serious personal injury or death.

OPERATION

1. Check for facepiece fit by holding the palm of one hand over the inlet connection and inhaling. Hold breath at least 10 seconds. The facepiece should collapse and stay collapsed against the face.

If it does not, adjust the facepiece and test again. If adjustment does not provide a proper seal, do not use the facepiece.

2. Test the exhalation valve, take a deep breath and hold it. Block the inlet connection with the palm of one hand and exhale. If the exhalation valve is stuck, a heavy rush of air may be felt around the facepiece.

Note: It may be necessary to exhale sharply to open the valve. If this does not release the valve, do not use the facepiece.

⚠ WARNING

This device may not seal properly with your face if you have a beard, gross sideburns or similar physical characteristics (see ANSI Z88.2). An improper face-to-facepiece seal may allow contaminants to leak into the facepiece, reducing or eliminating respiratory protection. Do not use this device if a proper face-to-facepiece seal can not be achieved. The face-to-facepiece seal must be tested before each use. Never remove the facepiece except in a safe, non-hazardous non-toxic atmosphere. Failure to follow this warning can result in serious personal injury or death.

CONNECTING THE AIR SUPPLY HOSE TO THE ATTACHMENT HOSE

1. Verify that the cylinder valve knob is completely closed (clockwise).

⚠ WARNING

- **DO NOT open the cylinder valve knob unless in an emergency escape application. Doing so while connected to an air source could result in depleted cylinder pressure and decreased escape time.**
- **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.**

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

2. Push the Firehawk Regulator release buttons to shut off the regulator.

3. While pressing the release buttons, pull the regulator out of the stand-by mount.

4. Connect the air supply hose to the attachment hose.

5. Pull on the quick-disconnect plug and socket to verify that the hoses are securely attached.

6. Listen and inspect for air leakage from the Firehawk Regulator, cylinder and valve assembly, and hose connections.

⚠ WARNING

DO NOT use the respirator if it exhibits leakage. 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.

7. Check for bypass operation. Grasp the red knob and turn it counter-clockwise. Listen for airflow. Turn the knob clockwise to close the bypass.

INSTALLING THE FIREHAWK PUSH-TO-CONNECT REGULATOR

1. Grasp regulator and orient regulator so that the bypass knob is pointing to the right.

2. Insert regulator into facepiece adapter by pushing inward.

3. Ensure the regulator locks into the facepiece.
4. Check proper engagement by pulling on the regulator to ensure regulator is securely attached to 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.

5. Inhale sharply to start the airflow.
   a. Check the bypass again by turning the red knob counter-clockwise until increased airflow is felt. Close the bypass.

⚠ WARNING

The respirator must deliver air flow on demand. If it does not, do not use the respirator. The respirator must be checked and the condition corrected by an

MSA trained or certified repairperson before using it. Failure to follow this warning can result in serious personal injury or death.

Note: If the respirator passes all tests, the unit is ready to use. These tests must be performed before entering the hazardous atmosphere every time. If the unit fails to meet any of the tests, the condition(s) must be corrected before using the apparatus.

INSTALLING THE FIREHAWK SLIDE-TO-CONNECT REGULATOR

1. Grasp regulator and orient regulator so that the bypass knob is pointing to the right.

2. Slide regulator onto rail (fast track) of facepiece cover. Slide regulator down the rail cover until regulator stops.

3. Insert regulator into facepiece adapter by pushing inward.

4. Ensure the regulator locks into the facepiece.
5. Check proper engagement by pulling on the regulator to ensure regulator is securely attached to facepiece.

OPERATION

⚠ 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.

6. Inhale sharply to start the airflow.
   a. Check the bypass again by turning the red knob counter-clockwise until increased airflow is felt. Close the bypass.

⚠ WARNING

The respirator must deliver air flow on demand. If it does not, do not use the respirator. The respirator must be checked and the condition corrected by an MSA trained or certified repairperson before using it. Failure to follow this warning can result in serious personal injury or death.

Note: If the respirator passes all tests, the unit is ready to use. Perform these tests before entering the hazardous atmosphere every time. If the unit fails to meet any of the tests, the condition(s) must be corrected before using the apparatus.

STANDARD OPERATION

1. Don the apparatus and check for proper operation as described in the Donning section of this manual.
2. Breathe normally.

⚠ WARNING

- **DO NOT open the cylinder valve knob unless in an emergency escape application; doing so while connected to an air source could result in depleted cylinder pressure and a decreased escape time.**
- **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.**

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

⚠ CAUTION

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.

EMERGENCY OPERATION

If the air supply is interrupted:
1. Completely open the cylinder valve by turning it counter-clockwise.
2. Disconnect the attachment hose from the air supply hose.
3. Immediately return to fresh air.

⚠ CAUTION

If the bypass valve is used when breathing from the emergency-escape air cylinder, the respirator service time will be reduced.

REMOVING THE RESPIRATOR

DISCONNECTING THE FIREHAWK PUSH-TO-CONNECT REGULATOR

1. Grasp top of regulator.

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

3. Disconnect the attachment hose from the air supply hose.
4. Open the bypass to vent system pressure. Close the bypass.
5. Stow the regulator in the stand-by belt mount.

DISCONNECTING THE FIREHAWK SLIDE-TO-CONNECT REGULATOR

1. Grasp top of regulator.

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

Note: Regulator can hang on cover rail in a standby mode.

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

4. Disconnect the attachment hose from the air supply hose.
5. Open the bypass to vent system pressure. Close the bypass.
6. Stow the regulator in the stand-by belt mount.

REMOVING THE RESPIRATOR

REMOVING THE FACEPIECE

1. Fully loosen the facepiece head harness straps.

2. Pull the facepiece up and away from the face.

REMOVING THE CARRIER AND HARNESS

1. Disconnect the waist belt buckle by pressing in on both tabs.

2. Loosen the shoulder adjustment buckle by lifting the buckle tab up.

3. Slide the carrier and harness up and over the head.

Note: Complete the cleaning, disinfecting, and inspection procedures outlined in this manual. Ensure complete apparatus is clean and dry. Ensure that facepiece head harness straps and harness adjustment straps are fully extended. Place the complete apparatus in the storage case or suitable storage location so it can be reached easily for emergency use. (See storage instructions.)

CHARGING THE CYLINDERS

⚠ WARNING

1. **Remove 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.**
2. **Use this device only after receiving proper training in its use. Use in accordance MSA apparatus instructions.**
3. **To maintain approval, container must be fully charged with respirable air meeting the requirements of the Compress Gas Association specification G-7.1 for Quality Verification Level (Grade) D air or 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 frequently. Maintain according to manufacturer's instructions. Repair only by properly trained personnel.**

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

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.

Prior to recharging, cylinders must be examined externally for evidence of high heat exposure, corrosion, or other evidence of significant damage.

REMOVING THE RESPIRATOR

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 label 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.

Note: When refilling a PremAire Cadet Escape Respirator cylinder and valve assembly, do not open the cylinder valve knob. The high pressure fill port is directly exposed to cylinder pressure. The fill port is independent of the cylinder valve knob position. The fill port includes a check valve that prevents cylinder air from escaping through the fill port when the filling attachment is removed.

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.

STORAGE

Do not store the respirator or spare cylinder and valve assemblies within or near an area where the respirator can or might be exposed to any substances that will attack any part of the respirator, causing the respirator NOT to perform as designed and approved.

COLD WEATHER OPERATION

SUGGESTED PROCEDURES FOR COLD WEATHER OPERATION

Moisture can cause problems in respirators if it freezes. However, moisture can cause freezing problems even if the surrounding air is above freezing. This is due to air flowing from the cylinder through the regulator drops from cylinder pressure to close to atmospheric pressure very quickly. As it does so it expands, causing the air and the regulator to become colder. Although the surrounding temperature may be warmer than 32°F, the temperature inside the regulator may be lower. Any water inside could turn to ice and restrict airflow.

1. To keep moisture from entering the Firehawk Regulator. Stow the regulator in the stand-by mount.
2. When the respirator is away from heat, water spray can freeze on the regulator surface. Ice can build up and freeze the buttons and bypass valve. Before entering or re-entering a hazardous atmosphere, make sure the buttons and bypass valve are ice-free and operating properly. Periodically, check the bypass to be sure it is ice-free.
3. NIOSH certification requires a nosecup at temperatures below 32°F. The nosecup reduces lens fogging and must be used whenever freezing conditions are encountered.
4. During cleaning, be careful to keep water from entering the regulator.
5. Thoroughly dry the facepiece and mask mounted regulator after cleaning and disinfecting. Follow Confidence Plus® Cleaning Solution Instructions.

CLEANING AND DISINFECTING

Depending on the cleaning policy adopted, either a designated person or the user should clean each device after each 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 label for user instructions.

⚠ CAUTION

- **DO NOT use any cleaning substances that can or might attack any part of the apparatus.**
- **Alcohol should not be used as a germicide because it may deteriorate rubber parts.**
- **If not rinsed thoroughly, cleaning agent residue may irritate the wearer's skin.**

1. Preparing Solution
   a. Follow the instructions with the Confidence Plus Cleaning Solution.
   b. If the Confidence Plus Cleaning Solution is not used, wash in a mild cleaning solution, rinse thoroughly, and submerge in a germicide solution for the manufacturer's recommended time.
2. Clean and Disinfect the Facepiece
   a. Remove the mask mounted regulator from the facepiece.
   b. Thoroughly wash the facepiece (and nosecup) in the cleaning solution. A soft brush or sponge can be used to clean the soiled facepiece.
   c. Rinse the facepiece and components in clean, warm (110°F), water (preferably running and drained).
   d. Clean the pressure demand exhalation valve by pressing in on the stem with a blunt object and flushing with clean water.
   e. Allow the facepiece to air dry. Do not dry the parts by placing them near a heater or in direct sunlight. The rubber will deteriorate.
   f. Operate the exhalation valve by hand to be sure it works properly.

Note: Do not force-dry the parts by placing them in a heater or in direct sunlight. The rubber will deteriorate. When the facepiece is thoroughly dry, store the facepiece in the plastic bag that it was shipped in.

3. In general, only the facepiece requires cleaning and disinfecting after each use. If the apparatus is soiled use a sponge damp with mild soap solution or use a soft/medium bristle brush to remove deposits that may interfere with normal operation of:
   a. Carrier and harness assembly
   b. Cylinder and valve assembly
   c. Firehawk Second Stage Regulator (Cover outlet of the regulator to prevent water, dirt or debris from entering)
4. Inspect the entire apparatus during reassembly. Follow the inspection instructions.
5. Thoroughly dry the facepiece and regulator after cleaning and disinfecting. The facepiece can trap water that could enter the regulator.

VISUAL INSPECTION AND FUNCTIONAL CHECKS

INSPECTION

Inspect the entire respirator after it is cleaned and disinfected. ANSI Standards Z88.2 and Z88.5, describe three 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. Detailed repair procedures are located in MSA User's Maintenance Instructions.

⚠ WARNING

- **If the respirator does not meet any of the following inspections, it must be removed from service.**
- **DO NOT inspect the air mask before cleaning if there is danger of contacting hazardous contaminants. Clean and disinfect first, then inspect.**
- **DO NOT use any cleaning substances that can or might attack any part of the apparatus.**

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

COMPONENT INSPECTION (AFTER EACH USE AND MONTHLY)

1. Facepiece
   a. Inspect the facepiece for rubber deterioration, dirt, cracks, tears, holes, or tackiness.
   b. Check the head harness straps for breaks, loss of elasticity, missing buckles or straps. Check the straps 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 adapter for damage. Also check to be sure the inhalation check valve is present.
2. Cylinder and Valve Assembly
   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.
   - 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.

   a. If the cylinder is less than FULL, recharge it before storing it. Cylinder air must be at least CGA Quality Verification Level (Grade) D respirable air.
   b. Inspect the cylinder valve for signs of damage.
   c. Inspect the cylinder body for cracks, dents, weakened areas, corrosive agent, causing the fibers to break or peel, 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.
   d. Check the hydrostatic test date on the cylinder approval sticker located on the cylinder neck. Aluminum and carbon fiber cylinder must be tested every five years.
   e. Be sure that the gauge needle and face are clearly visible through the lens.
   f. Inspect the high pressure relief device. Verify that the relief holes are clear and free of debris or other contamination.
   g. Inspect the intermediate pressure relief valve. Verify that the relief holes are clear and free of debris or other contamination.
   h. 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.
   i. Inspect the hose connections. Verify that the hoses are properly secured.
   j. Inspect the fill port. Verify that the fill port dust cap is present and properly secured.

It is also essential that the required inspections and tests be performed on all SCBA 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.

Note: ANSI Z88.5 recommends checking cylinder pressure weekly. For maximum safety the cylinders should be stored full or empty (pressure above ambient but less than 100 psig).

3. Carrier and Harness
   a. Inspect all harness components for cuts, tears, abrasion or signs of heat or chemically-related damage.
   b. 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.
4. Record Keeping
   Following inspection, the date and initials of the designated person should be recorded on an inspection tag. A more detailed record of the operations performed can be noted on an inspection and maintenance log. Inspection tags and inspection and maintenance logs are available from MSA. When the inspection data has been recorded, the breathing apparatus is stored in a ready position.

VISUAL INSPECTION AND FUNCTIONAL CHECKS

FUNCTIONAL CHECKS (AFTER EACH USE AND MONTHLY)

1. Check that the regulator and facepiece can hold a negative pressure.
   a. Verify that the cylinder valve is closed.
   b. Hold the facepiece against the face to create an effective seal.
   c. Attach the regulator to the facepiece and inhale until the facepiece begins to collapse against the face. Hold breath for about 10 seconds. The negative pressure should be maintained and the facepiece should remain collapsed against the face for the entire 10 seconds.
   d. Do not use the apparatus if negative pressure cannot be maintained in the facepiece. Return the regulator and facepiece to a certified repairperson.
2. Check second stage regulator operation.
   a. Push the regulator release buttons.
   b. Verify that the regulator bypass knob is fully closed (clockwise).
   c. Slowly open the cylinder valve to pressurize the respirator. Verify that the cylinder valve is completely opened.
   d. Check the pressure gauge to verify that the cylinder is full. Regulator functional checks must be conducted with a full cylinder.
   e. Open the regulator bypass knob (counter-clockwise). Verify that air flows from the regulator. Close the bypass knob (clockwise).
   f. Attach the regulator to the facepiece. Verify proper regulator attachment by pulling on the regulator.
   g. Hold the facepiece against the face to create an effective seal.
   h. Inhale sharply to start air flow. Breathe normally. Verify proper regulator response. The regulator should not make any unusual sounds including: whistling, chattering, or popping.
   i. Remove the facepiece from the face. Verify that air flows freely. Push the regulator release buttons. Verify that air flow stops.
   j. If the regulator fails to meet any of the above checks, remove the apparatus from service. Return the regulator to a certified repairperson.
3. Check the attachment hose quick-disconnect plug.
   A. Verify that no air flows through the plug when the cylinder valve knob is open.
4. After completing the functional checks, recharge the cylinder and valve assembly before storing it.

APPENDIX

CONVERTING THE CARRIER AND HARNESS FROM RIGHT HIP MOUNT TO LEFT HIP MOUNT (STANDARD CARRIER)

Note: The PremAire Cadet Escape Respirator is designed for use with the cylinder located on the right hip. The respirator will be most comfortable for most users in this configuration.

1. As necessary, disconnect the attachment hose from the air supply hose.
2. Disconnect the strain relief strap from the shoulder strap snap hook (strap with buckle).
3. Disconnect the cylinder carrier from the shoulder strap and pull strap (strap without buckle).

4. Loosen the hose clamps.

5. Rotate the straps 180°. The straps should be equally spaced on either side of the pressure gauge.

6. Tighten the hose clamps

7. Unweave the waist belt strap from the male waist belt buckle.

8. Unweave the waist belt from the shoulder strap and pull strap.

9. Connect the pull strap to the cylinder carrier D-ring to the right of the pressure gauge (when looking at the gauge).
10. Connect the shoulder strap to the remaining cylinder carrier D-ring.
11. Weave the waist belt through the pull strap.
12. Weave the waist belt through the shoulder strap.

13. Weave the waist belt strap through the waist belt buckle.

14. Connect the strain relief strap to the shoulder strap snap hook.

APPENDIX

CONVERTING THE CARRIER AND HARNESS FROM RIGHT HIP MOUNT TO LEFT HIP MOUNT (BAG CARRIER)

Note: The PremAire Cadet Escape Respirator is designed for use with the cylinder located on the right hip. The respirator will be most comfortable for most users in this configuration.

1. As necessary, disconnect the attachment hose from the air supply hose.
2. Disconnect the strain relief strap from the shoulder strap snap hook (strap with buckle).
3. Disconnect the cylinder carrier from the shoulder strap and pull strap (strap without buckle).

4. Rotate the bag 180˚ so that the gauge face is opposite the bag logo.

5. Unweave the waist belt strap from the male waist belt buckle.

6. Unweave the waist belt from the shoulder strap and pull strap.

7. Connect the pull strap to the cylinder carrier D-ring to the right of the pressure gauge (when looking at the gauge).
8. Connect the shoulder strap to the remaining cylinder carrier D-ring.
9. Weave the waist belt through the pull strap.
10. Weave the waist belt through the shoulder strap.

11. Weave the waist belt strap through the waist belt buckle.

12. Connect the strain relief strap to the shoulder strap snap hook.

APPENDIX

DONNING THE CARRIER AND HARNESS, LEFT HIP VERSION

Note: The PremAire Cadet Escape Respirator is designed for use with the cylinder located on the right hip. The respirator will be most comfortable for most users in this configuration. If a left hip mounted cylinder is desired, refer to the Converting the Carrier and Harness from Right Hip Mount to Left Hip Mount sections in this manual.

1. Hold the shoulder strap with the right hand. Slide shoulder strap over head so that the shoulder strap is positioned over the right shoulder and the cylinder is positioned on the left hip.

2. Adjust the shoulder strap by pulling the strap down. The cylinder should be positioned at or just below waist level.

3. Connect the waist belt buckle.
4. As necessary, slide the waist belt buckle toward the front cylinder to properly position the belt.

5. Adjust the waist strap by pulling the strap to the right.

6. Tuck in loose ends of shoulder strap and waist belt.

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

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