AirHawk® II Air Mask

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 air mask. This air mask will perform as designed only if used and serviced according to the instructions; Otherwise it could fail to perform as designed, and persons who rely on the air mask could sustain serious personal injury or death.

This Self-Contained Breathing Apparatus (SCBA) 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 any additional information relative to use or repair, write or call 1-800-MSA-2222 during regular working hours.

See separate insert for NIOSH approval information: P/N 10024128.

For air-line use refer to User's Instructions P/N 10046412.

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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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 on the pressure gauges 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 USERS INSTRUCTIONS

Approved for use at temperatures above -25°F. Approved only when the compressed-air container is fully charged with air meeting the requirements of the Compressed Gas Association Specification G-7 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 10024128).

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 air mask may be used only after proper instruction and training in its use as specified in NFPA-1500 and OSHA regulations Title 29 CFR, Part 1910. 134, Subpart 1, Par. 1910. 134 (b) (3).
3. This air mask must be secured by a positive mechanical means if stowed within an enclosed seating area of fire department vehicles, or in a compartment with a positive latching door. The method of holding the air mask in place must be designed to minimize injury to persons in the vehicle in the event of accident, rapid deceleration, or acceleration.
4. Do not mark the air mask, i.e., with stamps, labels, paint or other method. Use of such markings may interfere with apparatus use or may constitute a flammability hazard.
5. Be sure that no other equipment interferes with the air mask facial seal, or with the users hands, or other necessary means of mobility.

For more information on self-contained breathing apparatus use and performance standards, please consult the following publications:

INTRODUCTION

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 air mask as an underwater device.**
3. **This system must be supplied with respirable [Quality Verification Level (Grade) D, see ANSI/CGA G-7.1-1989] 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 air mask 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 psi 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.**

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

BEFORE USE

Thoroughly inspect this air mask on receipt and before use.

This air mask is to be used only by trained and qualified personnel.

Read and understand these instructions before attempting to use this equipment. If you have any questions, call toll free 1-800-MSA-2222.

NOTES

DESCRIPTION

DESCRIPTION

The air masks from MSA are pressure-demand, self-contained breathing apparatus (air mask) certified by the National Institute for Occupational Safety and Health (NIOSH) for use in atmospheres immediately dangerous to life or health:

``Immediately dangerous to life or health" 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 84.2, (Q)]

⚠ WARNING

- **This air mask is not compliant with National Fire Protection Association (NFPA) Standard 1981. The air mask should not be used for firefighting applications where NFPA compliance is required.**
- **This air mask is not NIOSH approved for use against CBRN live agents. If NIOSH CBRN Agent Approval is required, use a NIOSH CBRN Agent approved FireHawk® Air Mask.**
- **This air mask must be equipped with an Ultra Elite® Hycar Facepiece (model numbers 7-935-7. 7-935-8, and 7-935-9) and a CBRN regulator (model numbers 10060982 or 10060983) when exposure to CBRN live agents is possible. DO NOT use a silicone facepiece or a regulator that is not identified as CBRN regulator against CBRN live agents.**

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

The AirHawk II Air Mask consists of the following major sub-assemblies.

- first stage regulator
- second stage regulator
- air cylinder and valve
- Audi-Larm™ Audible Alarm
- carrier and harness
- facepiece

FIRST STAGE REGULATOR

The first stage regulator is a pressure reducer that keeps the pressure to the mask mounted regulator at approximately 80 to 100 psig throughout the entire operating pressure range of the cylinder. The regulator has a redundancy feature to minimize the possibility of a first stage failure. The regulator uses a large sintered filter which is easy to replace. The filter captures particulates that may be in the air stream.

SECOND STAGE REGULATOR

This is a pressure-demand regulator, which keeps a positive pressure in the facepiece all the time. 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 a Push-To-Connect connector or slide connector. The regulator delivers large flow rates accurately and quickly.

AirHawk II Air Mask with the FireHawk® MMR (model numbers 10060982 and 10060983) are considered by MSA to be “CBRN hardened.” They can be identified by Firehawk Regulator model number and the CBRN marking on the underside of the regulator housing. air mask with these regulator models have passed CBRN live agent testing, but are not CBRN-approved by NIOSH since they are not certified as NFPA compliant.

AIR CYLINDER AND VALVE

Capacity Cubic Ft.	Pressure psig	Rated Svc* Life (Min.)
45	2216	30
45	4500	30
66	4500	45
88	4500	60

*as approved by NIOSH

The air cylinder and valve consists of a tank and a cylinder valve assembly. The cylinder valve includes a valve body, cylinder valve inlet tube, handwheel, safety disc (burst disc), and pressure gauge. The pressure gauge shows the air pressure in the cylinder continuously. The gauge is calibrated in 100 psig increments. For example, a gauge reading of 20 is read as 20 x 100 or 2,000 psig. A handwheel is used to open and close the cylinder valve.

AUDI-LARM AUDIBLE ALARM

The audible alarm sounds when there is approximately 25% of the air mask’s rated service time remaining. The alarm also sounds when the cylinder valve is first opened, providing an audible indication that the alarm is functioning.

Cylinder	Approx. Remaining Service Time
30-min. 2216 psig	7 min.
30-min. 4500 psig	7 min.
45-min. 4500 psig	11 min.
60-min. 4500 psig	14 min.

DESCRIPTION

CARRIER AND HARNESS

The carrier consists of a backplate, a cylinder strap with buckle to hold the cylinder, and a harness, consisting of shoulder straps, chest strap (optional), adjustable pull-straps waist-strap, shoulder pads (optional) and belt mounted regulator retainer.

LUMBAR PAD (OPTIONAL)

The lumbar pad with a flared design is designed to provide a cushion between the wearer and harness. The flared design evenly distributes cylinder weight across the wearer's hips.

RESCUE BELT (OPTIONAL)

The MSA Fire Service Rescue Belt is a personal escape system integrated into the carrier and harness assembly. The system is designed to provide the user with a mean of escape from an elevated position. Care and use instructions are provided in User Instructions P/N 10052748 (P/N 10115063 for Rescue Belt II).

FACEPIECE

Two facepieces are available in three sizes.

- The Ultra Elite Facepiece
- The Advantage® 4000 Facepiece

Only Ultra Elite Hycar Facepieces (model numbers 7-935-7, 7-935-8, and 7-935-9) have been tested against and meet CBRN live agent test requirements. **Silicone facepieces are NOT CBRN-approved.**

The facepieces have 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 has a speaking diaphragm for clear, short-range communication.

DONNING

DONNING THE AIR MASK

1. Remove the facepiece from the case.

⚠ CAUTION

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.

2. Ensure that the Audi-Larm coupling nut is hand-tight (no tools).

3. Check that the cylinder is fully pressurized.

⚠ CAUTION

If the cylinder is not full, the service time is reduced accordingly & should not be used.

⚠ WARNING

DO NOT use an air mask with a loose Audi-Larm coupling nut. Using an air mask with a loose coupling nut can cause o-ring failure which can result in sudden loss of cylinder pressure. Always hand-tighten the coupling nut before using the air mask. Failure to follow this warning can result in serious personal injury or death.

4. Reach inside the right shoulder straps and grasp the pressure gauge, slide left arm through left shoulder straps.
5. Bend forward slightly, rest it on your back.
6. Attach the chest strap (optional).
7. Fasten the waist-strap and pull it tight for a snug fit.
8. As you straighten up, pull the shoulder strap tabs out. Hike the unit up for a comfortable fit.
9. The shoulder straps and waist-strap ends must be tucked in and lay flat across the body.

REGULATOR AND AUDIBLE ALARM CHECKS TESTING

1. Grasp the mask mounted regulator and push the top release button.

2. Check that the red bypass knob is fully closed (clockwise).

3. Reach behind and open the cylinder valve fully. Listen for the alarm to sound briefly.

4. As the pressure rises from 50 to 200 psig, the alarm sounds automatically, indicating that the alarm is functional.

⚠ WARNING

If the alarm fails to sound, do not use the apparatus. The air mask must be checked and corrected for proper operation by an MSA trained or certified repairperson before using. Failure to follow this warning may result in serious personal injury or death.

5. No air should flow from the regulator. If it does, repeat steps 1 and 2.

6. Check the gauge and cylinder gauges. Gauges must be within 220 psig for 2216 psig; 450 psig for 4500 psig.

⚠ CAUTION

If your readings do not agree with these values, return the air mask to an MSA trained or certified repairperson.

DONNING

7. Check for bypass operation. Grasp the red knob and turn it counter-clockwise. Listen for airflow, then turn it OFF. Close cylinder valve fully.

8. Check for air leaks. Open cylinder valve fully to pressurize system, then close the cylinder valve and watch the harness pressure gauge.
9. If the needle drops more than 100 psi in 10 seconds, there is a leak. Do not use the apparatus until the leak is found and corrected.
10. Crack the bypass valve slowly to bleed off pressure until gauge needle drops below:
    550 psig - approximately (low-pressure system) or,
    1125 psig – approximately (high-pressure system)
    The alarm will sound. The alarm must continue to sound until pressure is less than 200 psig. Close the bypass fully.

⚠ WARNING

If the alarm fails to sound, do not use the apparatus. The air mask must be checked and corrected for proper operation by an MSA trained or certified repairperson before using. Failure to follow this warning may result serious personal injury or death.

Note: Before donning, check that the regulator sealing ring is seated properly in its groove, and that it is not torn, gouged, or nicked.

DONNING THE FACEPIECE

⚠ WARNING

Do not wear eye glasses under the facepiece. The temples or sidebars on eye glasses will prevent an airtight seal. if you must wear glasses, install the spectacle kit. Failure to follow this warning can cause inhalation of contaminated air, resulting in serious respiratory injury or death.

⚠ CAUTION

When using the Advantage 4000 Facepiece, ensure the inalation valve disc is laying flat against the adapter orifice.

1. Extend the facepiece straps fully. Place neckstrap around your neck and don the facepiece by inserting your chin first.
2. Pull the head harness completely over your head and tighten the lower (neck) straps.

Ultra Elite Facepiece

3. Tighten the lower (neck) harness straps first, by pulling them straight back, not out. Tighten the temple straps the same way. Tuck in the ends of the straps so that they lay flat across the head.

Advantage 4000 Facepiece

4. Push headband pad towards neck, retighten the straps (if necessary) for best visibility and fit. Tuck in the ends of the straps so they lie flat across the head.

FACEPIECE FIT CHECK

⚠ CAUTION

Check the inhalation valve, inhale. If you do not receive sufficient flow of air, do not use facepiece. The facepiece must be repaired or replaced.

1. To check for facepiece fit, hold the palm of your hand over the inlet connection and inhale. Hold your breath at least 10 seconds. The facepiece should collapse and stay collapsed against your face. If it does not, readjust the facepiece and test again. **If this does not correct the leak, do not use the facepiece.**

Ultra Elite Facepiece

DONNING

Advantage 4000 Facepiece

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

Ultra Elite Facepiece

Advantage 4000 Facepiece

Note: You may need 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 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. Failure to follow this warning can result in serious personal injury or death.

3. Open the cylinder valve fully.

INSTALLING PUSH-TO-CONNECT MASK MOUNTED REGULATOR

1. Grasp regulator and orient regulator so that red 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 you feel increased airflow. Close the bypass.

⚠ WARNING

There must be a continuous flow of air when the bypass knob is opened. If not, do not use the apparatus. 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 Air Mask passes all tests, the unit is ready to use. Remember, you must perform these tests every time before you enter the hazardous atmosphere. If the unit fails to meet any of the tests, the condition(s) must be corrected before using the apparatus.

NSTALLING SLIDE MASK MOUNTED REGULATOR

1. Grasp regulator and orient regulator so that red bypass knob is pointing to the right and slide button is on top.
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 facepiece.
5. 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.

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

⚠ WARNING

There must be a continuous flow of air when the bypass knob is opened. If not, do not use the apparatus. 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 air mask passes all tests, the unit is ready to use. Remember, you must perform these tests every time before you enter the hazardous atmosphere. If the unit fails to meet any of the tests, the condition(s) must be corrected before using the apparatus.

PRECAUTIONS DURING USE

Periodically check the pressure indicated on the remote pressure gauge. It continually displays the cylinder pressure. When the needle reaches the red zone, the alarm will begin sounding. When the alarm starts sounding or when the pressure reaches approximately 25% of the rated service pressure, return to fresh air.

The alarm activates when cylinder pressure drops below approximate values:

550 psig approximately for low-pressure
1125 psig approximately for high pressure

when the alarm activates, immediately return to fresh air.

Note: Air mask service life is reduced greatly when the bypass is used.

- Reduced air flow: **Immediately** open the bypass. **Immediately** return to fresh air.
- Air mask free-flows: **Immediately** return to fresh air.
- Audible alarm sounds: **Immediately** return to fresh air.

REMOVING THE APPARATUS

REMOVING THE APPARATUS
DISCONNECTING THE PUSH-TO-CONNECT REGULATOR

1. Grasp top of regulator.

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

3. Close the cylinder valve fully. Open the bypass to release system pressure. Close the bypass.

4. Stow the regulator with red bypass knob pointing to the right in the STAND-BY belt mount.

5. To remove the facepiece, fully loosen the harness straps and pull the facepiece up and away from your face.
6. To remove the carrier harness, press the belt buckle release buttons IN.
7. Disconnect the chest strap (if used).
8. To loosen the shoulder straps, grasp the release tabs. Push them out and away from your body.
9. Slip your right arm out of the shoulder strap first, then remove the harness.

Note: Be sure to replace the cylinder with a full one. Complete Inspection and Cleaning and Disinfecting Procedures are 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.)

DISCONNECTING THE SLIDE 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 stand-by mode.

3. Slide regulator up rail until regulator slide button is free of cover rail.
4. Close the cylinder valve fully. Open the bypass to release system pressure. Close the bypass.
5. Stow the regulator with red bypass knob pointing to the right in the STAND-BY belt mount.
6. To remove the facepiece, fully loosen harness straps and pull the facepiece up and away from your face.
7. To remove the carrier harness, press the belt buckle release button IN.
8. Disconnect the chest strap (if used).
9. To loosen the shoulder straps, grasp the release tabs. Push them out and away from your body.
10. Slip your right arm out of the shoulder pad first, then remove the harness.

Note: Be sure to replace the cylinder with a full one. Complete Inspection and Cleaning and Disinfecting Procedures are 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.)

CHANGING THE CYLINDER WITH BAND AND LATCH

⚠ WARNING

Be careful not to drop cylinder or bump valve knob. An unsecured cylinder can become an airborne projectile under its own pressure if the valve is opened even slightly. Failure to follow this warning can result in serious personal injury or death.

REMOVING THE APPARATUS

1. Be sure there is no pressure in the system before replacing a cylinder. Disconnect the Audi-Larm Alarm Assembly coupling nut.
2. Lift and turn the latch wing to loosen the cylinder clamp.
3. Slide out the empty cylinder and install one that is fully charged. Be sure that the adjustable cylinder band and latch is in the proper slot before you insert a new cylinder. Make sure that the lock tab on the carrier is fully engaged in the appropriate cylinder band slot position.
4. Slide the fully charged cylinder into the carrier, with gauge facing out, turn the latch wing clockwise to tighten fully. Fold over the latch wing toward backplate, locking latch wing in place.

Note: Be sure to tighten the latch wing fully each time a cylinder is installed.

5. To check that the cylinder is secure, place one hand on the backplate and grasp the cylinder valve with the other. Try to pull the cylinder and valve down and out away from the carrier. Make sure that the band and latch holds the cylinder securely in the carrier.

Note: If the cylinder feels loose, re-check that the band and latch is in the proper slot; that the lock tab is fully engaged in the slot; and that the latch wing is fully tightened and flipped over with the label side OUT. Do not use the air mask if the cylinder is not held securely in the carrier.

6. Check that the O-ring is inside the Audi-Larm Alarm Assembly coupling nut. If the O-ring is damaged it must be replaced before the alarm is used.

7. Thread the Audi-Larm Alarm Assembly coupling nut to the cylinder valve and hand-tighten (no tools).

CHANGING THE CYLINDER WITH BUCKLE AND STRAP

⚠ WARNING

Be careful not to drop cylinder or bump valve knob. An unsecured cylinder can become an airborne projectile under its own pressure if the valve is opened even slightly. Failure to follow this warning can result in serious personal injury or death.

1. Be sure there is no pressure in the system before replacing a cylinder. Disconnect the alarm Assembly coupling nut.
2. Lift over center buckle to loosen the cylinder strap.
3. Slide out the empty cylinder and install one that is fully charged. Be sure that the adjustable cylinder buckle is properly installed.
4. Slide the fully charged cylinder into the carrier, with gauge facing out. Close the over center buckle to tighten the cylinder strap.
5. To check that the cylinder is secure, place one hand on the back plate and grasp the cylinder valve with the other. Try to pull the cylinder and valve down and out away from the carrier. Make sure that the strap and buckle hold the cylinder securely in the carrier.

NOTE: If the cylinder feels loose, re-check that the strap and buckle are properly adjusted. Open cylinder buckle. Tighten cylinder strap by pulling on top (outer) strap. It will be necessary to reposition the black plastic slide during adjustment. Tighten cylinder strap until cylinder buckle is approximately 45 degrees from vertical. Close the cylinder buckle. Do not use the air mask if the cylinder is not held securely in the carrier. **DO NOT over-tighten the cylinder strap; otherwise it will damage the center buckle assembly.**

6. Check that the O-ring is inside the Alarm Assembly coupling nut. If the O-ring is damaged it must be replaced before the alarm is used.
7. Thread the alarm Assembly coupling nut to the cylinder valve and hand-tighten (no tools).

CHARGING CYLINDERS

Always check to be sure the hydrostatic test 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 only available through certified hydrostatic test facilities.

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.

REMOVING THE APPARATUS

When replacing cylinder valves or after retesting of cylinders, make sure the proper cylinder valve, burst disc, and gasket are installed prior to cylinder recharging. Establish the service pressure of the cylinder. Type 3AA (steel) cylinders that bear a plus (+) sign after the latest retest date may be recharged to a pressure 10% greater than the stamped service pressure, i.e., a cylinder stamped 3AA2015 with a plus (+) sign after the latest test date may be recharged to 2216 psig (this applies to steel cylinders only). Steel cylinders without a plus (+) sign stamped after the latest test date must be removed from service. All other cylinders which are not type 3AA shall be filled to the designated service pressure only (as found on the DOT approval label or stamping). Appropriately connect the cylinder to the filling recharge system and refill. Terminate the filling when the pressure reaches service pressure and allow the cylinder to cool to room temperature.

If necessary, top-off the cylinder such that service pressure is attained with the cylinder at a temperature of 70°F. Close the valves on the cylinder and the recharge system and remove the cylinder. Apply a soap solution to determine if there is any leakage between the cylinder and the valve. If there is no leakage, the cylinder is now ready for re-use.

STORAGE

Do not store the apparatus or spare cylinders within or near an area where the apparatus can or might be exposed to any substances that will or might attach any part of the apparatus, causing the apparatus NOT to perform as designed and approved.

⚠ WARNING

Be careful not to drop cylinder or bump valve knob. An unsecured cylinder can become an airborne projectile under its own pressure if the valve is opened even slightly. Failure to follow this warning can result in serious personal injury or death.

Do not store the apparatus with an empty or partly filled cylinder. Always install a fully-charged cylinder so that the apparatus is ready for use. Complete Inspection and Cleaning and Disinfecting Procedures are outlined in this manual. Ensure the complete apparatus is clean and dry. Ensure the facepiece head harness adjustment straps are fully extended. Place the complete apparatus in the storage case or suitable storage location so it can be easily reached for emergency use.

NOTES

COLD WEATHER OPERATION

SUGGESTED PROCEDURES FOR COLD WEATHER OPERATION

Moisture can cause problems in Air Masks 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 mask-mounted regulator. Stow the regulator in the STAND-BY belt mount.
2. When the Air Mask is away from heat, water spray can freeze on the regulator surface. Ice can build up and freeze the buttons, bypass valve, and the release tabs. Before entering or re-entering a hazardous atmosphere, make sure the buttons, release tabs, and bypass valve are ice-free and operating properly. Periodically, check the bypass to be sure it is ice-free.
3. Moisture can enter through the cylinder valve or coupling nut when cylinders are replaced on the Air Mask. When replacing cylinders, be careful to prevent moisture or contamination from entering the system. Remove any ice from these fittings. Wipe the coupling nut threads and cylinder valve threads dry before disconnecting the cylinder. Water can contaminate the system and freeze.
4. NIOSH certification requires a nosecup at temperatures below 32°F. The nosecup reduces lens fogging and must be used whenever freezing conditions are encountered.
5. Thoroughly dry the facepiece and mask mounted regulator after cleaning and disinfecting. Follow Confidence Plus® Cleaning Solution Instructions.

NOTES

CLEANING AND DISINFECTING

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 (i.e. heavy smoke residue, or dirt accumulation) 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. Harness (straps and buckles)
   b. Cylinder carrier
   c. Cylinder (coupling nut, gauge, outlet connection)
   d. Audi-Larm audible alarm
   e. MMR remote gauge lens
   f. First stage regulator
   g. MMR second stage regulator. Cover outlet of the MMR second stage regulator to prevent water, dirt or debris from entering.
4. Inspect the entire apparatus as you re-assemble it. Follow the Inspection Instructions.
5. Thoroughly dry the facepiece and regulator after cleaning and disinfecting. The facepiece can trap water which could enter the regulator.

NOTES

INSPECTION

Inspect the entire air mask 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 the MMR User's Maintenance Instructions.

⚠ WARNING

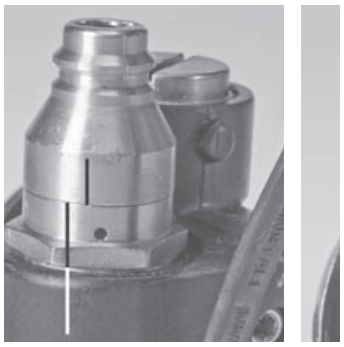
If the air mask does not meet any of the following inspections, it must be removed from service. Do not inspect the air mask before cleaning if there is danger of contacting hazardous contaminants. Clean and disinfect first, then inspect. Failure to follow this warning can cause inhalation or skin absorption of the contaminant and result in serious personal injury or death.

COMPONENT INSPECTION (AFTER EACH USE AND MONTHLY)

1. Don the air mask following the instruction procedures. These steps make up the Air Mask Functional Test.
2. If all steps are performed successfully, remove the air mask and inspect it following the steps below.
3. Facepiece
   a. Inspect the facepiece for rubber deterioration, dirt, cracks, tears, holes, or tackiness.
   b. Check the harness headstraps 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 coupling for damage. Also check to be sure the spider gasket, and valve disc are present.
4. Cylinder and Remote Gauges
   a. Be sure you can see both gauge needles and face clearly through the lens. Also be sure the gauge stem is not bent.
   b. Inspect the gauge hose for any visible damage.
5. Audi-Larm Audible Alarm
   a. Check that the alarm is undamaged and clean.
   b. Ensure that the Audi-Larm Coupling nut is hand-tight (no tools).
6. Quick-Fill and URC Coupling Inspection
   Inspect the URC and Quick-Fill coupling for tightness of the coupling halves and tightness of the coupling to the air mask. Perform both inspections simultaneously.
   a. Close the cylinder valve and relieve system pressure. (See **DISCONNECTING THE FIREHAWK PUSH-TO-CONNECT REGULATOR or DISCONNECTING THE SLIDE-TO-CONNECT FIREHAWK REGULATOR** for instructions).
   b. Use a fine-tip ink marker and a ruler or straight edge to draw a line on the male coupling. Make sure the line extends across the joint and coupling hex flats onto the Audi-Larm or Quick Fill manifold body.

   c. Put the dust cover on the coupling.
   d. Grasp the dust cover by hand and, using maximum effort, attempt to loosen the coupling at the joint by turning the dust cover counterclockwise. **Do not use tools.**
   e. If the line does not line up across the joint...

   ...or across the joint where the coupling attaches to the air mask, remove the air mask from service until a replacement coupling is installed. If the line does line up, the coupling is sufficiently tight and the air mask may be returned to service.



7. Cylinder
   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 apparatus 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.

It is also essential that the required inspections and tests be performed on all air mask 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. Please contact your MSA distributor or sales associate if you have questions or if you need 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).

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. The valve may be opened slightly to be sure it operates properly. Be sure to fully close the valve.
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. Fiberglass and Kevlar composite cylinders must be tested every three years. Steel cylinders and carbon fiber cylinders must be tested every five years. Aluminum cylinder life is indefinite if proper inspection and hydro test procedures are followed and they indicate that the cylinder may remain in service.

8. Harness
   a. Inspect all harness components for cuts, tears, abrasion or signs of heat or chemically-related damage.
9. Carrier
   a. Inspect the cylinder strap and buckle to be sure it holds the cylinder securely. Operate the latch to be sure that it opens and closes properly and that it holds the cylinder securely.
   b. Inspect back plate for cracks, weakened areas or signs of heat or chemically related damages.
10. Rescue Belt
    a. Detailed inspection instructions for the Rescue Belt are provided under a separate manual, (P/N 10052748 (P/N 10115063 for the Rescue Belt II).
11. 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.

FUNCTIONAL TESTS

FUNCTIONAL CHECKS
(AFTER EACH USE AND MONTHLY)

1. Check that the regulator works properly. The regulator outlet should be sanitized before and after testing.
   a. Check that the cylinder valve and buttons are closed and that the system is not pressurized.
   b. Gently inhale through the regulator outlet and hold your breath for about 10 seconds. If the negative pressure is maintained, there is no leakage.
   c. Gently exhale through the regulator outlet for about 10 seconds. If the positive pressure is maintained, there is no leakage.
   d. Do not use the apparatus if airflow through the regulator is detected in either test. Return the regulator to a certified repairperson.
2. Inspect the buttons and bypass valve.
   a. With the regulator pressurized, operate each valve to be sure it operates. Venting of pressure relief valves (or a continuing flow of air through the regulator when the user is not inhaling) indicates that the regulator needs to be repaired.
   b. Listen to the regulator. Any unusual sounds such as whistling, chattering, clicking, or rattling mean that the regulator should be checked further.
   c. If any of these symptoms occur, the apparatus must be removed from service. Return the regulator to a certified repairperson.
3. Audi-Larm Audible Alarm
   a. Check that the function of the audible warning device be checked by observing the regulator gauge pressure at which the alarms sounds. Perform this test with a minimum cylinder pressure of 1,200 psig for the Low Pressure Air Mask, and 2,000 psig for the High Pressure Air Mask.
   b. Pressurize the system by opening the cylinder valve for a moment, then close it. The alarm must sound indicating it is functioning.
   c. Open bypass slowly.
   d. Watch the drop in pressure on the shoulder gauge and the point at which the whistle must begin to sound. Nominal gauge readings at which the alarm starts to sound are listed below.
      550 psig approximately (low pressure system)
      1125 psig approximately (high pressure system)
   e. The alarm must continue until the air pressure is approximately 200 psig or less. If the whistle does not function properly, the apparatus must be removed from service.

⚠ WARNING

Do not disconnect the regulator coupling nut when pressure is shown on the regulator gauge. Release all pressure from the regulator by opening the bypass valve. Removing the coupling nut with the regulator pressurized may result in serious personal injury, death, or damage to equipment.

   f. Open the bypass valve slowly to release trapped air. Close bypass valve.
   g. Unscrew the regulator coupling nut from the cylinder valve. It is hand-tight and should not require tools.
   h. Inspect the coupling nut for thread damage. Also be sure there is an O-ring and that it is not damaged.
   i. Replace the O-ring if it is damaged.

FLOW TEST AND OVERHAUL REQUIREMENTS

FLOW TEST AND OVERHAUL REQUIREMENTS

The air mask Regulator and alarm must be flow tested and overhauled at specific time intervals. These maintenance procedures must be performed by a trained repairperson or at a Certified Service Center. Contact your MSA sales representative or call the MSA Customer Service Center at 1-800-MSA-2222. They will supply the information you need to meet these requirements.

The required replacement/overhaul schedule for self-contained breathing apparatus from MSA is based on apparatus usage on an individual basis. The frequency required for air mask overhaul depends upon how often the apparatus is used. MSA breathing apparatus must be overhauled based on the actual level of usage, rather than on time alone.

Overhaul is covered in the Regulator Disassembly and Repair sections and includes installation of the Regulator overhaul kits.

MSA breathing apparatus must be flow tested every year using an MSA approved flow test device.

The following table summarizes MSA's required frequency for overhaul and flow testing.

Average Air Mask Usage*	Recommended Overhaul Frequency	Recommended Flow Test Frequency
1 cylinder per day or greater	Every 3 years	Every year
1 cylinder every other day	Every 8 years	Every year
1 cylinder per week or less	Every 15 years	Every year

A decision to retire an air mask should be based on a air mask's performance data and whether that data meets the specified level of performance as defined in maintenance requirements from MSA.

*The unit of air mask use is defined as the consumption of one 30 min. cylinder of air. Example: If three cylinders of air are used, the air mask would be considered to have been used three times.If an assessment of a air mask's usage cannot be estimated or determined, then the air mask shall be overhauled every three years.

NOTES

Mine Safety Appliances Company

SCBA Lifetime Warranty
and Terms of Sale

1. **Express Warranty**—Air Masks and/or components furnished under this order carry a Lifetime Warranty against material defects and/or faulty workmanship, with the exception of those components specifically identified herein. MSA shall be released from all obligations under this warranty in the event repairs or modifications are made by persons other than its own or authorized service personnel or if the warranty claim results from abuse, misuse, or normal wear and tear of the product. No agent, employee or representative of MSA may bind MSA to any affirmation, representation or modification of the warranty concerning the goods sold under this contract. MSA makes no warranty concerning components or accessories not manufactured by MSA, but will pass on to the Purchaser all warranties of manufacturers of such components. *THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTEES, EXPRESS, IMPLIED OR STATUTORY, AND IS STRICTLY LIMITED TO THE TERMS HEREOF: MSA SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.*

Product Description	Warranty Period	Routine Air Mask Maintenance
Air Mask (less Cylinder)	Lifetime	MSA requires that the air mask be maintained as specified in the Operations and Instructions Manual; however, the warranty coverage is for material defects and/or faulty workmanship only, and is not dependent on performing routine maintenance. The material and labor costs of overhaul procedures and other routine maintenance are the responsibility of the purchaser and are not covered by the warranty.
Air Mask Cylinder	Until end of service life as controlled by gov't. reg/DOT	
Air Mask Replacement Parts	Lifetime	
Air Mask Critical Repair Parts	Lifetime	

2. **Exceptions**—The products below are excluded from MSA's Lifetime Warranty:

Product Description	Exception	Warranty Period
Facemask Blank, Breathing Tube, Harness, & Nose Cup	Rubber Product	5 Year Limited/Age Deterioration
Electronic Speech Communication	Manufacturer's Warranty	1 Year
ICM® Unit 2000 & ICM Unit 2000 Plus	MSA Limited Warranty	2 Years
Non-Rechargeable Batteries	Expendable and/or Consumable Parts	N/A

3. **Exclusive Remedy**—It is expressly agreed that the Purchaser's sole and exclusive remedy for breach of the above warranty, for any tortious conduct of MSA, or for any other cause of action, shall be the repair and/or replacement, at MSA's option, of any equipment or parts thereof, that after examination by MSA are proven to be defective. Replacement equipment and/or parts will be provided at no cost to the Purchaser, F.O.B. Purchaser's named place of destination. Failure of MSA to successfully repair any nonconforming product shall not cause the remedy established hereby to fail of its essential purpose.

4. **Exclusion of Consequential Damages—**Purchaser specifically understands and agrees that under no circumstances will MSA be liable to Purchaser for economic, special, incidental, or consequential damages or losses of any kind whatsoever, including but not limited to, loss of anticipated profits and any other loss caused by reason of the non-operation of the goods. This exclusion is applicable to claims for breach of warranty, tortious conduct or any other cause of action against MSA.

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Corporate Headquarters
P.O. Box 426
Pittsburgh, PA 15230 USA
Phone (412) 967-3000
www.MSAnet.com

U.S. Customer Service Center
Phone 1-800-MSA-2222

Fire Service Customer Service:
Phone 1-877-MSA-FIRE
Fax 1-800-967- 398

MSA International
Phone (412) 967-3354
FAX (412) 967-3451

MSA Canada
Phone 1-800-267-0672
Fax 905-238-4151

MSA Mexico
Phone 52 (2)1 22 57 30
Fax 52 (5)3 59 43 30