

FireHawk[®] M7 Responder[®] 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).

**This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:
(1) This device may not cause harmful interference and (2) this device must accept any interference that may cause undesired operation.**

Changes and modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The warranties made by MSA with respect to the product are voided if the product is not installed, used and serviced in accordance with the instructions in this manual. Please protect yourself and your employees by following the instructions. Please read and observe the WARNINGS and CAUTIONS inside. For any additional information relative to use or repair, write or call 1-800-MSA-2222 during regular working hours.



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

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INTRODUCTION

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NIOSH APPROVAL INFORMATION CAUTIONS AND LIMITATIONS

- 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 User's Instructions and/or specific use limitations apply. Refer to user instructions before donning.

S - SPECIAL OR CRITICAL USER'S INSTRUCTIONS

1. 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.
2. Do not alter this air mask. Altering will void the Intrinsic-Safety rating and may affect the Intrinsic-Safety of the device. Misuse or abuse of the heads-up display system (FireHawk M7 Responder HUD), FireHawk M7 Control Module, or FireHawk M7 Power Module or using this equipment in a manner or situation not intended by the manufacturer, may result in damage to the FireHawk M7 Responder HUD, FireHawk M7 Control Module, or FireHawk M7 Power Module, may result in personal injury or death to user or persons dependent on the user. Always inspect the FireHawk M7 Responder HUD for damage before use.

- If damage is found, immediately remove the device from service. The FireHawk M7 Responder HUD, FireHawk M7 Control Module, and FireHawk M7 Power Module are approved intrinsically-safe and conform to UL/ANSI 913 for use in Class I, Div. I, Groups C and D hazardous locations, temperature rating T3.
3. Use the air mask 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.
 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. The mouth-bit can be inserted or removed from the nosecup prior to use. See the "Preparing the Respirator for Use" section for proper procedure.

WARNING

Follow instruction in the "Preparing the Respirator for Use" section before inserting or removing the mouth-bit in the nosecup. Failure to follow this warning can result in serious personal injury or death.

WARNING

The nosecup must be installed when using the FireHawk M7 Responder Air Mask. Failure to follow this warning can result in serious personal injury or death.

6. For more information on the air mask use and performance standards, refer to the following publications:
NFPA Standard 1500, Fire Department Occupational Safety and Health Programs (Chapter 5). Above publication is available from the following: National Fire Protection Association, Batterymarch Park, Quincy, MA 22269.

ANSI Standard Z88.5, Practices for Respiratory Protection for the Fire Service; and, ANSI Standard

INTRODUCTION

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.

Note: The FireHawk M7 Responder HUD, FireHawk M7 Control Module, and FireHawk M7 Power Module have been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency and, if not installed in accordance with instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this

equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION

The FireHawk M7 Responder HUD, FireHawk M7 Control Module, and FireHawk M7 Power Module contain electrical parts which have not been evaluated as an ignition source in flammable or explosive atmospheres by MSHA/NIOSH.

INSTRUCTIONS FOR USE AND CARE

WARNING

1. Read and follow all NIOSH and other approval limitations.
2. Do not use the carrier and harness assembly as a vertical raising or lowering device.
3. Do not use the air mask as an underwater device.
4. 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].
5. 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.
6. Return to a safe atmosphere immediately if discoloration, crazing, blistering, cracking, or other deterioration of the facepiece lens material is observed.
7. 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 to it.
8. 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; the service life of the air mask is based on 1 atmosphere of pressure.
 - h. the condition of the air mask.

Failure to follow all warnings, instructions, and established protective measures can result in serious personal injury or death.

IMPORTANT NOTICE FOR RESPIRATOR USERS AND RESPIRATORY PROTECTION PROGRAM ADMINISTRATORS

- a. An adequate respiratory protection program must include knowledge of hazards, hazard assessment, selection of proper respiratory protective equipment, instruction and training in the use of equipment, inspection and maintenance of equipment, and medical surveillance. [See OSHA regulations, Title 29 CFR, Part 1910.134 (c).]
- b. This SCBA 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.
- c. Quantitative fit testing should be conducted to determine proper facepiece size prior to using the respirator. The drink tube can be used for conducting quantitative fit tests with the Ultra Elite Responder Facepieces. The facepiece donning instructions must be carefully followed when using the respirator and when conducting fit tests.

WARNING

Follow the instructions in the "Respirator Fit Test" section. Failure to do so can result in false protection factor readings.

- d. The Firehawk Second Stage Regulator must be flow tested every year and overhauled on a periodic basis. An overhaul kit (MSA P/N 10048942) is available.

CONTACT INFORMATION

In the event of a product concern, contact your local MSA authorized repair center or distributor, who will provide the necessary information to MSA for issue resolution. To report any serious concerns, or to speak with a certification organization, use the following contact information:

Manufacturer

MSA Customer Service
Phone: 1-800-MSA-2222

Certifying Agencies

National Institute of Occupational Safety and Health (NIOSH)
Phone: 412-386-6686

DESCRIPTION

DESCRIPTION

FireHawk M7 Responder Air Masks from MSA are pressure-demand, self-contained breathing apparatus (SCBA) 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)].

The FireHawk M7 Responder Air Mask consists of the following components.

- PR14™ First Stage Regulator
- Firehawk Responder Second Stage Regulator
- Cylinder and Valve Assembly
- Audi-Larm™ Audible Alarm with URC Assembly
- FireHawk M7 Carrier and Harness Assembly
- Ultra Elite® Responder Facepiece
- Lens Plug
- FireHawk M7 Responder HUD
- FireHawk M7 Control Module
- FireHawk M7 Power Module

Optional FIREHAWK M7 RESPONDER AIR MASK COMPONENTS

- Clear Command® Communications System
- FireHawk M7 Telemetry Module
- ExtendAire System
- ExtendAire II System
- Quick-Fill System
- Rescue Belt

FIREHAWK M7 RESPONDER AIR MASK COMPONENTS

PR14 FIRST STAGE REGULATOR

The PR14 First Stage Regulator reduces the pressure from the cylinder and valve assembly to an intermediate pressure, which is in turn further reduced by the Firehawk Responder Second Stage Regulator to a pressure that is respirable by the user.

The PR14 First Stage Regulator incorporates a downstream design and dual springs.

The regulator incorporates a large, easily replaceable, sintered filter to capture particulates that may be in the air stream.

FIREHAWK RESPONDER SECOND STAGE REGULATOR

The Firehawk Responder Regulator is a pressure-demand regulator, which maintains a positive pressure in the facepiece while the air mask is in use.

The Firehawk Responder Regulator attaches to the facepiece via a push-to-connect feature.

The FireHawk Responder Regulator includes a pneumatic plug that connects to the Ultra Elite Responder facepiece. When the SCBA is pressurized, the pneumatic plug activates the pressure-demand exhalation valve.

The Firehawk Responder Regulator has a quick-connect connection to the intermediate pressure hose.

CYLINDER AND VALVE ASSEMBLY

Capacity Cubic Ft.	Pressure psig	Rated Svc* Life (Min.)
45	4500	30
88	4500	60
45	2216	30
45	2216	30
60	3000	30
66	4500	45

*As approved by NIOSH

The cylinder valve includes a metal valve body, threaded connection for filling and attachment of the Audi-Larm Alarm, handwheel, safety disc (burst disc), and pressure gauge.

The pressure gauge continuously shows the air pressure in the cylinder.

The handwheel is used to open and close the cylinder valve.

AUDI-LARM ALARM WITH URC ASSEMBLY

The Audi-Larm Alarm rings when there is approximately 25% of the air mask's rated service time remaining and when the cylinder valve is first opened, providing an audible indication that the alarm is working properly.

A high pressure hose delivers air at cylinder pressure from the Audi-Larm Alarm to the PR14 First Stage Regulator.

DESCRIPTION

Cylinder	Remaining Service Time (Approx.)	End of Service Time Indicator Pressure (Approx)
30 min. 2216 psi	7 minutes	530 psi
30 min. 3000 psi	10 minutes	750 psi
30 min. 4500 psi	7 minutes	1125 psi
45 min. 4500 psi	11 minutes	1125 psi
60 min. 4500 psi	14 minutes	1125 psi

Note: The remaining service time calculations are based on a 40 LPM (liters per minute) NIOSH breathing rate.

All FireHawk M7 Responder Air Masks are equipped with an Audi-Larm Alarm that includes a URC Assembly (Universal Rescue Connection). The URC Assembly is a male quick-fill inlet for use by Rapid Intervention Crews for emergency filling of the SCBA or during transfill operations. Also included with the URC Assembly is a pressure relief valve for protection of the cylinder burst disc.

FIREHAWK M7 CARRIER AND HARNESS ASSEMBLY

⚠ WARNING

DO NOT use this carrier and harness assembly as a vertical raising or lowering device. Failure to follow this warning can result in serious personal injury or death.

The carrier consists of a backplate, a cylinder band with latch to hold the cylinder, and a harness, consisting of shoulder pads, chest strap (optional), adjustable pull straps, waist belt, waist belt mounted regulator retainer, swiveling lumbar pad (optional), and Rescue Belt (optional).

ULTRA ELITE RESPONDER FACEPIECE

The facepiece includes a dual-mode exhalation valve. When the facepiece is not connected to the FireHawk M7 Responder regulator, the exhalation valve operates as a demand exhalation valve. When the facepiece is connected to a pressurized FireHawk M7 Responder regulator, the exhalation valve operates as a pressure-demand exhalation valve.

The facepiece has a low-resistance, pressure-demand exhalation valve.

An inhalation check valve in the inlet housing keeps moisture and contaminants out of the Firehawk Responder Regulator.

The facepiece has a speaking diaphragm for clear communication.

The facepiece has a nose cup with a drink tube and can be used with the Speed-ON® Head Harness.

The facepiece has a plug for the side port that must be attached during use.

DO NOT use this facepiece without the facepiece plug installed. Failure to follow this warning can result in serious personal injury or death.

⚠ WARNING

FIREHAWK M7 RESPONDER HUD

The FireHawk M7 Responder HUD, located on the Ultra Elite Facepiece allows a user to see cylinder pressure in one quarter cylinder increments, PASS pre-alarms, battery status, and telemetry information (optional) while wearing the air mask.

FIREHAWK M7 CONTROL MODULE (PASS DEVICE)

The FireHawk M7 Control Module is the user's interface with the air mask.

The FireHawk M7 Control Module is equipped with an analog gauge as well as an LCD to provide the user vital information: numeric and iconic cylinder pressure, battery status, thermal alarm (optional), and time remaining.

If the air mask is equipped with the optional FireHawk M7 Telemetry Module, the radio link status and evacuation alarms are displayed.

The integrated PASS motion sensor is housed within the FireHawk M7 Control Module.

FIREHAWK M7 POWER MODULE (PASS DEVICE)

The FireHawk M7 Power Module on the lower portion of the backplate houses the batteries, serves as the cylinder stop, emits audible PASS alarms, and has buddy lights.

The FireHawk M7 Power Module is linked to the FireHawk M7 Control Module via the power cable.

DESCRIPTION

OPTIONAL FIREHAWK M7 RESPONDER AIR MASK COMPONENTS

CLEAR COMMAND COMMUNICATION SYSTEM

The Clear Command Communication System is an electronic speech projection system available with either an amplifier or an amplifier with radio interface connection.

FIREHAWK M7 TELEMETRY MODULE

The FireHawk M7 Telemetry Module provides the firefighter with two-way communication with Incident Command. The firefighter's vital statistics such as cylinder pressure, service time remaining, PASS alarm, low battery alarm, and thermal alarm are transmitted back to Incident Command. Also, the firefighter has the ability to be evacuated remotely by Incident Command. The radio transmitter is located inside of the FireHawk M7 Power Module.

EXTENDAIRE SYSTEM

The ExtendAire System, located at the end of the intermediate pressure line, enables two users to share a common air supply during emergency escape. The users can couple the Firehawk Responder Second Stage Regulator from one user to the intermediate pressure manifold of the other user. Both users will receive intermediate pressure air from the donor's first stage regulator and cylinder. The duration of the remaining air supply will be reduced by at least half.

The SCBA is approved by NIOSH **without** inter-connecting two users to one apparatus. NIOSH does not certify "buddy breathers". Therefore, the attachment of the receiver's regulator to the donor's apparatus voids the NIOSH approval for both air masks.

EXTENDAIRE II SYSTEM

The ExtendAire II System is housed in a pouch on the user's left side and enables two users to share a common air supply during emergency escape. The hose has a manifold on one end which allows the user to connect to another user's ExtendAire II System during emergency escape. The ExtendAire II System connects directly to an intermediate pressure air port on the FireHawk First Stage Regulator. Both users will receive intermediate pressure air from the donor's cylinder and any remaining air from the receiver's cylinder. The duration of the remaining air supply will be reduced by at least half.

⚠ CAUTION

The SCBA is approved by NIOSH without inter-connecting two users to one apparatus. NIOSH does not certify "buddy breathers". Therefore, the attachment of the receiver's ExtendAire II System to the donor's apparatus voids the NIOSH approval for both air masks.

RESCUE BELT

The MSA Fire Service Rescue Belt is a personal escape system integrated into a FireHawk M7 Carrier and Harness Assembly. The system is designed to provide the user a means of escape from an elevated position. Use of the Rescue Belt must be in accordance with the user's fire department procedures. Care and use instructions are provided under a separate manual, PN 10052748 (P/N 10115063 for Rescue Belt II).

VISUAL INSPECTION AND FUNCTIONAL TESTS

INSPECTION

Conduct the Following: Before Use, After Each Use, and Monthly

Thoroughly inspect this air mask upon 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.

Inspect the entire air mask after it is cleaned and disinfected. NFPA-1500, as well as 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.

⚠ WARNING

If the air mask exhibits any of the conditions listed in the Component Inspection section or if the air mask does not function properly as described in the Functional Tests section, the air mask must be removed from service. Failure to follow this warning can result in serious personal injury or death.

⚠ WARNING

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.

⚠ WARNING

Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer. Failure to follow this warning can result in serious personal injury or death.

COMPONENT INSPECTION

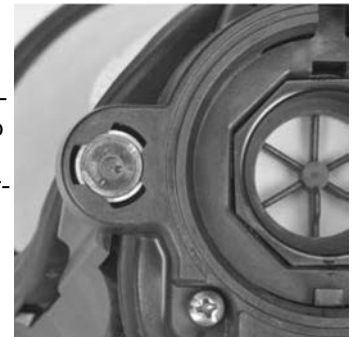
1. Facepiece
 - a. Inspect the facepiece, drink tube, and nose cup for rubber deterioration, dirt, cracks, tears, holes, or tackiness.
 - b. Inspect the head harness straps for tears, loss of elasticity, or missing buckles or straps.
 - c. Inspect the lens for cracks, scratches, and a tight seal with the facepiece rubber.
 - d. Ensure the exhalation valve is clean and operates easily. The valve must move off the seat and return when released.
 - e. Inspect the facepiece inlet for damage. Ensure the spider gasket and valve disc are present.

- f. Inspect the lens receptacle and lens plug.



- g. Ensure that the o-ring is in place and free of cracks, tears, dirt, and distortion.
 - i. Check the threads to ensure they are not rounded or nicked.
 - ii. Inspect the lens plug for cracks or other signs of damage which could allow contaminants to enter the housing.

- h. Inspect the pneumatic receptacle oring to be free of cracks, tears, dirt, and distortion.



- i. Inspect the facepiece rubber behind the FireHawk M7 Responder HUD and/or Clear Command Communication System bracket (optional) for holes or tears.
2. FireHawk M7 Responder HUD
 - a. Inspect the FireHawk M7 Responder HUD for cracks or other signs of damage which could allow contaminants to enter the housing.
 - b. Ensure that moisture or debris is not present in the battery compartment.
 - c. Ensure the battery compartment o-ring on the battery cap is free of debris and not damaged or missing.
 - d. Reassemble the FireHawk M7 Responder HUD to the bracket on the Ultra Elite Responder Facepiece.
 3. Clear Command Communication System
 - a. Remove the amplifier housing from the facepiece and inspect the housing for cracks or other signs of damage.
 - b. Ensure that the battery compartment is free of moisture or debris.
 - c. Reassemble the amplifier housing on the facepiece.
 - d. Depress the on/off button on the unit and then release it.
 - e. Look through the facepiece lens. The red LED should be illuminated at the top of the amplifier unit.

VISUAL INSPECTION AND FUNCTIONAL TESTS

- f. Scrape a fingernail lightly across the voicemitter microphone grille of the voicemitter microphone assembly.
 - g. Listen for this sound reproduced in the amplifier speaker.
 - h. Depress and release the on/off button again to turn the unit OFF. The LED on the amplifier unit should be OFF.
4. Firehawk Responder Second Stage Regulator
 - a. The FireHawk M7 Responder Air Mask is equipped with a quick-connect second stage intermediate pressure hose, inspect the rubber washer for deterioration, dirt, cracks, tears, or tackiness.
 - b. Ensure that the Firehawk Responder Regulator sealing ring is seated properly in its groove on the outlet of the regulator and that it is not torn, gouged, or nicked.
 - c. Ensure that the FireHawk Responder Regulator pneumatic plug is free of dirt and not damaged.
 5. PR14 First Stage Regulator
 - a. Inspect the regulator mounting bracket (attached to the backplate) for cracks, weakened areas, or signs of heat or chemical related damage.
 - b. Inspect the regulator mounting bracket screws to ensure they are secure.
 - c. Inspect the regulator mounting bracket to ensure that it holds the regulator securely.
 - d. Inspect the pressure relief valve. Ensure that the relief holes are clear and free of debris or other contaminants. Ensure that the pressure relief valve is properly secured.
 - e. Inspect the hose connections. Ensure that the hoses are properly secured.
 6. Audi-Larm Alarm
 - a. Unthread the Audi-Larm Alarm coupling nut from the cylinder valve. Inspect the coupling nut for thread damage.
 - b. Ensure there is an o-ring present and not damaged. Replace the o-ring if it is damaged.
 - c. Ensure that the bell is properly aligned and that the screws are tight. If the bell is loose, remove the alarm from service.
 - d. Inspect the relief valve for damage. Ensure the relief valve label is not damaged and that the relief valve ports are not showing. If damaged, remove the air mask from service and replace the relief valve.
 - e. Ensure that the Audi-Larm Coupling nut is hand-tight (no-tools).

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.

1. Close the cylinder valve and relieve system pressure. (See Disconnecting the Firehawk Push-to-Connect Regulator or Disconnecting the Slide-To-Connect Regulator for instructions).

2. 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.



3. Put the dust cover on the coupling.
4. 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.**

5. 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. High Pressure Hose
 - a. Inspect the high pressure hose between the Audi-Larm Alarm and the PR14 First Stage Regulator. Look for cuts or severe abrasions. If damage is present, replace the hose.
8. Cylinder and Valve Assembly
 - a. Air mask 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 air mask 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.

VISUAL INSPECTION AND FUNCTIONAL TESTS

- b. If the cylinder is less than FULL (within 10% of rated service pressure), recharge it before storage. Cylinder air must be at least CGA Quality Verification Level (Grade) D respirable air. MSA recommends breathing air quality in accordance with NFPA 1989.
- c. Inspect the cylinder valve for signs of damage. The valve may be opened slightly to ensure it operates properly. Be sure to fully close the valve.
- d. Inspect the cylinder body for cracks, dents, weakened areas, corrosive agents 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.
- e. Check the hydrostatic test date on the cylinder approval sticker located on the cylinder neck. Fiberglass composite cylinders must be tested every three years. Carbon-wrapped and aluminum 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. Aluminum cylinder life is indefinite if proper inspection and hydro test procedures are followed and they indicate that the cylinder may remain in service.
- f. Ensure the needle and gauge face on the cylinder valve gauge are clearly visible and that the gauge stem is not bent.

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. This does not include cylinder valve assemblies that may be reused. Steel and aluminum cylinder service life is indefinite if proper inspection and hydrostatic test procedures are followed and they indicate that the cylinder may remain in service. Contact an MSA distributor or sales associate for more 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 psi).

- 9. FireHawk M7 Carrier and Harness
 - a. Operate the latch wing on the cylinder band to ensure that it opens and closes properly and that it holds the cylinder securely. If the cylinder band and latch is locked, the latch wing should not turn.
 - b. Inspect the back plate for cracks, weakened areas, or signs of damage due to heat or chemical related damage.
 - c. Inspect all harness components for cuts, tears, abrasions, or signs of damage due to heat or chemical related damage.

- 10. Rescue Belt
 - Detailed instructions for the Rescue Belt are provided under a separate manual. P/N 10052748 (P/N 10115063 for the Rescue Belt II).
- 11. ExtendAire II System
 - a. Inspect the hose for any visible signs of damage.
 - b. Inspect the hose connections. Ensure that the hoses are properly secured.
 - c. Inspect the pressure relief valve. Ensure that the relief holes are clear and free of debris and other contaminants. Ensure that the pressure relief valve is properly secured.
 - d. Inspect the quick-connect fittings. Ensure that the openings are clear and free of debris and other contaminants. Ensure that the quick-connect fittings are properly secured.
 - e. Inspect the dust cover for rubber deterioration, dirt, cracks, tears, or tackiness.
 - f. Inspect the pouch and hose restraint for cuts, tears, abrasions, or signs of damage from heat or chemical exposure. Ensure that the pouch is properly secured and the hose and manifold are properly stowed.
- 12. FireHawk M7 Control Module
 - a. Inspect the gauge hose and power cable for any visible signs of damage.
 - b. Inspect for external cracks in the housing and ensure the rubber cover is not damaged.
 - c. Ensure the buttons are not damaged or missing.
 - d. Ensure the gauge hose and power cable are securely attached to the FireHawk M7 Control Module.
 - e. Check both lens covers for dirt or moisture. If present, refer to the Cleaning and Disinfecting section (item 3e).
- 13. FireHawk M7 Power Module
 - a. Inspect the FireHawk M7 Power Module housing for external cracks and ensure that the FireHawk M7 Power Module, battery tube, and cylinder stop are securely attached to the backplate.
 - b. Inspect the piezo emitters on both sides of the FireHawk M7 Power Module. Ensure that the emitter covers are not obstructed by dirt or debris.
 - c. Ensure that the power cable is securely attached to the FireHawk M7 Power Module. The fitting on the power cable should not be able to be unthreaded by hand.
 - d. Remove the cap from the battery tube. Ensure that the o-ring is properly installed on the battery cap, if o-ring is missing, it must be replaced.
 - e. Inspect the inside of the battery tube. Ensure that the battery terminals are not corroded and that the tube is free of moisture and debris.
 - f. Replace the battery cap on the battery tube.
- 14. Record Keeping
 - a. Following inspection, the date and initials of the designated inspector should be recorded on an inspection tag. A more detailed record of the operations performed can be noted on an inspection and

VISUAL INSPECTION AND FUNCTIONAL TESTS

maintenance log, available from MSA. When the inspection data has been recorded, the air mask is ready for use.

⚠ WARNING

All repair and replacement of subassemblies must be carried out by an MSA certified repair technician. Failure to follow this warning will void NIOSH certifications and can result in serious personal injury or death.

FUNCTIONAL TESTS

Conduct the Following: Before Use, After Each Use, and Monthly

1. Check that the Firehawk Responder Regulator and facepiece can hold a negative pressure.
 - a. Close the cylinder valve and purge any air from the system using the bypass knob on the Firehawk Responder Regulator.
 - b. Hold the facepiece against the face to create an effective seal.
 - c. Attach the Firehawk Responder Regulator to the facepiece and inhale until the facepiece begins to collapse against the face. (See “Installing the FireHawk Responder Regulator” Section for instruction on installing FireHawk Responder Regulator). Hold breath for approximately 10 seconds. Negative pressure should be maintained and the facepiece should remain collapsed against the face for the entire 10 seconds.
 - d. Do not use the air mask if negative pressure cannot be maintained in the facepiece. Return the Firehawk Responder Regulator and facepiece to a certified repairperson.
2. Check Firehawk Responder Regulator operation.

Note: Firehawk Responder Regulator functional checks must be conducted with a full cylinder. Check the pressure gauge on the cylinder valve to verify that the cylinder is full.

- a. Push the release buttons on the side of the regulator.
- b. Ensure that the regulator bypass knob is fully closed (clockwise).
- c. Slowly open the cylinder valve to pressurize the air mask. Ensure that the cylinder valve is completely opened.
- d. Open the Firehawk Responder Regulator bypass knob (counter-clockwise). Ensure that air flows from the regulator. Close the bypass knob (clockwise).
- e. Attach the regulator to the facepiece. Ensure proper regulator attachment by pulling on the regulator.
- f. Don the facepiece or hold the facepiece against the face to create an effective seal.
- g. Inhale sharply to start air flow. Breathe normally.

- Ensure proper regulator response. The regulator should not make any unusual sounds including whistling, chattering, or popping.
- h. Remove the facepiece from the face. Ensure that air flows freely. Push the regulator release buttons. Ensure that air flow stops.
 - i. If the regulator fails to meet any of the above checks, remove the air mask from service. Return the regulator to a certified repairperson.
3. FireHawk M7 Responder HUD, FireHawk M7 Control Module, FireHawk M7 Power Module, and Audi-Larm Alarm
 - a. Verify proper function of the FireHawk M7 Responder HUD, FireHawk M7 Control Module, FireHawk M7 Power Module, and Audi-Larm Alarm by observing the FireHawk M7 Control Module gauge and display when the alarms ring and tone. Perform this test with a minimum cylinder pressure of 1200 psi for 2216 psi air masks, 1800 psi for 3000 psi air masks, and 2000 psi for 4500 psi air masks.
 - b. Pressurize the system by opening the cylinder valve. Listen for the FireHawk M7 Power Module to sound and for the Audi-Larm Alarm to ring briefly.
 - c. Look through the facepiece lens at the LED display of the FireHawk M7 Responder HUD, the LEDs must illuminate and show cylinder pressure (See “FireHawk M7 Responder HUD Functionality” Section for information on HUD LED patterns).
 - d. Ensure that the alarm button on the FireHawk M7 Control Module and the buddy lights on the FireHawk M7 Power Module are slowly flashing green.
 - e. Allow the FireHawk M7 Control Module to remain motionless for approximately 20 seconds. Listen for the FireHawk M7 Power Module to sound the low volume repeated tones of the PASS pre-alarm. Verify that the alarm button on the FireHawk M7 Control Module and the buddy lights of the FireHawk M7 Power Module are slowly flashing red. Also verify that the orange LED is displayed in the FireHawk M7 Responder HUD. Ensure that the FireHawk M7 Control Module remains motionless until the full PASS alarm activates. Listen for the FireHawk M7 Power Module to sound the loud PASS alarm. Look for the alarm button on the FireHawk M7 Control Module and the buddy lights on the FireHawk M7 Power Module to rapidly flash red.
 - f. Reset the PASS alarm by pressing the reset button (yellow) on the side of the FireHawk M7 Control Module two times within approximately one second.
 - g. To check the manual activation of the PASS alarm, press and hold the alarm button on the front of the FireHawk M7 Control Module for approximately three seconds. Listen for the PASS alarm to be emitted from the FireHawk M7 Power Module.
 - h. Reset the PASS alarm. Press the reset button (yellow) on the FireHawk M7 Control Module two times

VISUAL INSPECTION AND FUNCTIONAL TESTS

within approximately one second.

- i. Allow the FireHawk M7 Control Module to remain motionless until the PASS pre-alarm sounds. Shake the FireHawk M7 Control Module to reset the alarm.
- j. Disconnect the Firehawk Responder Regulator from the facepiece.
- k. Close the cylinder valve fully.
- l. Slowly crack the bypass valve on the Firehawk Responder Regulator to bleed off pressure until the FireHawk M7 Control Module pressure reading drops below the following values:
 - o 530 psi - approximately (2216 psi system)
 - o 750 psi - approximately (3000 psi system)
 - o 1050 psi - approximately (4500 psi system)A single flashing red LED must display in the FireHawk M7 Responder HUD at the appropriate pressure listed above. The Audi-Larm Alarm will ring and the alarm button on the FireHawk M7 Control Module and buddy lights on the FireHawk M7 Power Module will flash red at this time.
- m. The alarms should continue until the air pressure is 200 psi or less. If the Audi-Larm Alarm, FireHawk M7 Control Module, FireHawk M7 Power Module, or

FireHawk M7 Responder HUD does not function properly, the air mask must be removed from service.

- n. When the system pressure falls below 200 psi, turn the FireHawk M7 Control Module off (sleep mode) by pressing the reset button (yellow) two times within approximately one second.
- o. Open the bypass valve slowly to release any remaining pressure in the system. Close the bypass valve.

WARNING

DO NOT disconnect the Audi-Larm Alarm coupling nut when pressure is shown on the FireHawk M7 Control Module gauge or display. Release all pressure from the air mask by opening the Firehawk Responder Regulator bypass valve. Removing the coupling nut with the air mask is pressurized can result in serious personal injury, death, or damage to equipment.

SIZE SELECTION

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

Fit test the respirator size relative to your facial features and dimensions. The Safety Administrator or Program Manager might assist in selecting the initial size to try.

Carefully don the mask and conduct a negative pressure seal test. See donning instructions for procedure.

If the facepiece does not pass the negative pressure seal test or feels uncomfortable, try the next nearest size relative to your face.

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

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

If other than facial seal leakage is detected, the condition must be investigated and corrected before another test is made.

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

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

RESPIRATOR FIT TEST

⚠ WARNING

The user must perform a respirator fit test (Quantitative Test or Qualitative Test) and follow all warnings and limitations specified. Failure to do so can result in serious personal injury or death.

A qualitative or quantitative respirator fit test must be carried out routinely for each wearer of this respirator to determine or confirm the amount of protection that the respirator provides. The fit test method chosen may impact the maximum use concentration.

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

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

⚠ WARNING

When this facepiece is used with the FireHawk M7 Responder APR, a fit factor of at least 2000 is required for Quantitative or Qualitative test. Failure to do so can result in serious personal injury or death.

Respirator fit tests are explained fully in the American National Standard Practices for Respiratory Protection, ANSI Z88.2-1992 which is published by the American National Standards Institute, 11 West 42nd Street, New York, New York, 10036 and Occupational Safety and Health Standards, OSHA 1910.134, which is published by the Occupational Safety and Health Administration, 200 Constitution Avenue, NW, Washington DC, 20210.

Using the Drink Tube for Fit Testing

The drink tube can be used for fit testing.

Use Fit Test Kit P/N 10082555

1. Select one elbow and one clear tube.
2. Slide one end of the clear tube onto the elbow barb. Ensure the clear tube fully engages the elbow barb.
3. Rotate the elbow and clear tube so that the clear tube points away from the body (toward the Facepiece lens).
4. Remove the drink tube coupler from the drink tube.
5. Connect the open end of the drink tube to the fit tester.
6. Perform fit test.

⚠ WARNING

Be sure the mouth bit does not contact the face during fit testing. Failure to do so can result in false protection factor readings.

PREPARING THE RESPIRATOR FOR USE

CHECKPOINTS BEFORE USE

1. Check that all parts of the respirator are complete and undamaged. See the Visual Inspection and Functional Test section for Inspection Procedures.

INSTALLING/REMOVING MOUTH-BIT AND NOSECUP

⚠ WARNING

The nosecup must always be installed when using the FireHawk M7 Responder Air Mask. Failure to follow this warning can result in serious personal injury or death.

This facepiece was designed with the option of being used with or without the mouth-bit.

Removing the mouth-bit from the nosecup:

1. Remove the nosecup from the facepiece.

2. Push and hold the stem of the mouth-bit to the left side of the mask just underneath the APR lens receptacle.



3. Place the nosecup in the facepiece and position it so its rubber ring faces toward the plastic retainer ring.

4. Starting at the top, stretch and push the rubber ring of the nosecup under the plastic retainer ring of the speaking diaphragm assembly.



5. Continue stretching the nosecup ring and work it into place.

6. Be sure that the nosecup does not get caught on the lens retainer.



7. Stretch the oval opening in the nosecup around the lip on the exhalation valve in the component housing.

Inserting the drink tube into the nosecup:

1. Place the nosecup in the facepiece and position it so its rubber ring faces toward the plastic retainer ring.

2. Locate the "X" cut in the nosecup and slide the mouth-bit through the "X". Push the nosecup down the drink tube until it stops.



3. Starting at the top, stretch and push the rubber ring of the nosecup under the plastic retainer ring of the speaking diaphragm assembly.
4. Continue stretching the nosecup ring and work it into place.

5. Be sure that the nosecup does not get caught on the lens retainer.



6. Stretch the oval opening in the nosecup around the lip on the exhalation valve in the component housing.
7. Don the facepiece to ensure the mouth-bit is accessible to use.

PREPARING THE RESPIRATOR FOR USE

⚠ WARNING

The nose cup can get caught on the lens retainer causing the inhalation valve to be in the open position. Verify the inhalation valve is not stuck in the open position prior to use. Failure to follow this warning can result in serious personal injury or death.

INSTALLING LENS PLUG

1. Ensure the o-ring inside the lens receptacle is in place and free of cracks, tears, dirt, and distortion.
2. Thread the lens plug into the lens receptacle hand tight.

⚠ WARNING

The lens plug must be installed during use as a Self-Contained Breathing Apparatus (SCBA). Failure to follow this warning will void NIOSH certifications and can result in serious personal injury or death.

DONNING

DONNING THE AIR MASK

1. Remove the facepiece from the case or bag.

⚠ WARNING

DO NOT use a cover lens in a high-temperature environment, such as firefighting. 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. Failure to follow this warning can result in serious personal injury or death.

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



⚠ 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 firmly hand-tighten the coupling nut before using the air mask. Failure to follow this warning can result in serious personal injury or death.

3. Ensure that the cylinder is fully pressurized.
4. Reach the right arm inside the right shoulder straps and grasp the FireHawk M7 Control Module. Slide the left arm through the left shoulder straps.
5. Bend forward slightly; resting the carrier on the back.
6. Attach the chest strap buckle (optional).
7. Fasten the waist belt and pull it tight for a snug fit. Most of the air mask weight should be carried on the hips.
8. Stand up straight. Pull the shoulder strap pull tabs out to tighten the shoulder straps. Additional adjustments to the waist belt may be needed.
9. The shoulder straps and waist strap ends must be tucked in and lay flat across the body.

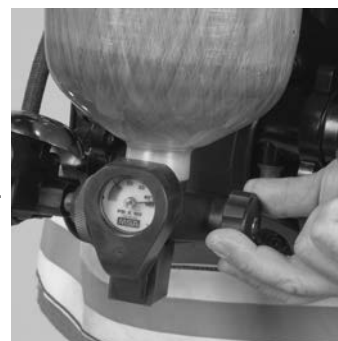
BEFORE USING THE AIR MASK

1. Grasp the Firehawk Responder Regulator and push the side buttons.

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



3. Reach behind and fully open the cylinder valve.



⚠ WARNING

Be sure that you are opening the cylinder valve and not removing battery cover. Failure to follow this warning can result in serious personal injury or death.

⚠ WARNING

Listen for any hiss or pop sounds from the Audi-Larm Alarm, if heard, do not use the air mask. Return it to an MSA trained or certified repairperson. Failure to follow this warning can result in serious personal injury or death.

4. As the system pressure rises from 50 to 200 psi, both visible and audible alerts activate automatically, indicating that the air mask is functioning properly. Such alerts include a brief ring from the Audi-Larm Alarm, a chirp from the FireHawk M7 Power Module, and the start-up sequence of the FireHawk M7 Responder HUD LEDs.

⚠ WARNING

DO NOT use the air mask if the Audi-Larm Alarm fails to ring, the FireHawk M7 Power Module fails to sound, or the FireHawk M7 Responder HUD fails to light, 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 can result in serious personal injury or death.

DONNING

- No air should flow from the Firehawk Responder Regulator. If it does, repeat steps 1 and 2.



- Check the pressure gauge and display on the FireHawk M7 Control Module and the LED display on the FireHawk M7 Responder HUD. These pressure indicators should be within 110 psi for 2216 psi systems, 150 psi for 3000 psi systems, 225 psi for 4500 psi systems.

⚠ CAUTION

DO NOT use the air mask if the pressure readings do not agree with the cylinder pressure indicated on the cylinder valve gauge. Return it to an MSA trained or certified repairperson.

- Check the Firehawk Responder Regulator's bypass operation. Grasp the red knob and turn it counterclockwise. Listen for airflow and then turn it to the off position.



- Fully close the cylinder valve.
- Listen for air leaks and watch the pressure gauge and display on the FireHawk M7 Control Module for 10 seconds.

⚠ WARNING

DO NOT use the air mask if the pressure drops more than 100 psi in ten seconds, the air mask must be repaired; otherwise, reduced service life may result.

- Crack the Firehawk Responder Regulator bypass valve slowly to bleed off pressure until the FireHawk M7 Responder HUD and FireHawk M7 Control Module displays drop below:
 - 530 psi-approximately (2216 psi system)
 - 750 psi-approximately (3000 psi system)
 - 1125 psi-approximately (4500 psi system)

At these pressures the FireHawk M7 Responder HUD should display a flashing red LED, the Audi-Larm Alarm

should ring continuously, and the alarm button on the FireHawk M7 Control Module and the buddy lights on the FireHawk M7 Power Module should be flashing red.

- When the system pressure falls below 200 psi, turn the FireHawk M7 Control Module off by depressing the reset button (yellow) two times within approximately one second.

⚠ WARNING

DO NOT use the air mask if the Audi-Larm Alarm fails to ring or fails to continuously ring down to pressures of 200 psi, or if the FireHawk M7 Control Module or FireHawk M7 Responder HUD fails to light properly. 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 can result in serious personal injury or death.

Note: The FireHawk M7 Responder HUD will automatically turn itself OFF approximately 60 seconds after the air mask has been depressurized. A single red LED will flash until the device turns off.

DONNING THE FACEPIECE

⚠ WARNING

DO NOT wear eyeglasses under the facepiece. The temples or sidebars on eyeglasses will prevent an airtight seal. If you must wear glasses, install an approved spectacle kit listed on the NIOSH approval label. Failure to follow this warning can cause inhalation of contaminated air, resulting in serious respiratory injury or death.

Note: Before donning, ensure that the Firehawk Responder Regulator sealing ring is seated properly in its groove on the outlet of the regulator and that it is not torn, gouged, or nicked.

- Loosen all the harness straps. Grip the bottom straps.



DONNING

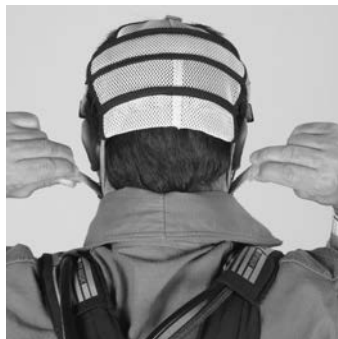
2. Insert chin into the lower part of facepiece, then pull the harness back over the head.



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



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



5. Tighten the two side temple straps in the same manner as described in step 4. Ensure that the facepiece tabs are not tucked under the face seal.



6. Ensure the back of the harness is centered on the back of the head and that the facepiece seal provides uniform pressure on the face at all points. Readjust the straps if needed.



FACEPIECE FIT CHECK

Note: Check the inhalation valve by inhaling. If the facepiece does not provide sufficient flow of air, do not use facepiece. The facepiece must be repaired or replaced.

1. Check facepiece fit,
 - a. Detach the FireHawk Responder Regulator from the intermediate pressure line.
 - b. Connect the regulator to facepiece (See “Installing the Push-to-Connect FireHawk Responder Regulator” Section for instruction on installing FireHawk Responder Regulator).
 - c. Take a deep breath and hold it for at least 10 seconds. The facepiece should collapse and stay collapsed against the face. Remove the regulator after the test is performed. If it does not, readjust the facepiece and test again. **If this does not correct the leak, do not use the facepiece.**
2. Test the exhalation valve.
 - a. Take a deep breath and hold it.
 - b. Connect the regulator to facepiece.
 - c. Exhale. If the exhalation valve is stuck, a heavy rush of air around the facepiece may be noticed. A sharp exhalation of air may be needed to open the valve. Remove the regulator after the test is performed. If this does not release the valve, do not use the facepiece.

⚠ WARNING

This device may not seal properly to the face if a beard, gross sideburns or similar physical characteristics (see NFPA-1500 and ANSI Z88.2) exist. 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.

DONNING

3. Open the cylinder valve fully. Push in on the side buttons of the Firehawk Responder Regulator to stop air flow.
4. Listen for any hissing or popping sounds from the Audi-Larm Alarm. If heard, return the air mask to an MSA trained or certified repairperson.

INSTALLING THE FIREHAWK RESPONDER REGULATOR

1. Before installing the FireHawk Responder Regulator, be sure the regulator is attached to the intermediate pressure line and the cylinder is turned on.



2. Grasp the FireHawk Responder regulator. Orient bypass knob with pneumatic plug to the right. Insert the regulator with pneumatic plug into the facepiece by pushing inward.

⚠ WARNING

DO NOT use the air mask unless the regulator is connected properly. A regulator that is not installed correctly can separate from the facepiece unexpectedly. Return the air mask to an MSA trained or certified repairperson to correct the condition. Failure to follow this warning can result in serious personal injury or death.

3. Inhale sharply to start the airflow.
4. Check the bypass again by turning the red knob counter-clockwise until increased air flow is felt. Close the bypass.

⚠ WARNING

There must be a continuous flow of air when the bypass knob is opened. If not, do not use the air mask. The air mask must be checked and the condition corrected by an MSA trained or certified repairperson before it can be used. Failure to follow this warning can result in serious personal injury or death.

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

USING THE AIR MASK

PRECAUTIONS DURING USE

Periodically check the pressure indicated on the FireHawk M7 Control Module.

- Air flow in the air mask is reduced: Immediately open the Firehawk Responder Regulator bypass. Immediately return to fresh air.
- Air mask free-flows: Immediately return to fresh air.
- Audi-Larm Alarm Rings: Immediately return to fresh air.
- FireHawk M7 Responder HUD low pressure indicator lights and flashes red: Immediately return to fresh air.
- FireHawk M7 Control Module alarm button flashes red: Immediately return to fresh air.

Periodically check the pressure indicated on the FireHawk M7 Responder HUD and FireHawk M7 Control Module during use. The FireHawk M7 Control Module continually displays the cylinder pressure while the FireHawk M7 Responder HUD indicates when each quarter of the total cylinder pressure has been reached for 20 seconds. When the needle on the FireHawk M7 Control Module gauge reaches the red zone on the gauge face the Audi-Larm Alarm will begin ringing, the FireHawk M7 Responder HUD will display a single flashing red LED, and the alarm button on the FireHawk M7 Control Module and buddy lights on the FireHawk M7 Power Module will flash red. When the Audi-Larm Alarm starts ringing or when the pressure reaches approximately 25% of the rated service pressure, return to fresh air.

The FireHawk M7 Responder HUD, FireHawk M7 Control Module, and Audi-Larm Alarm indicate when cylinder pressure drops below these approximate values:

- 530 psi-approximately (2216 psi system)
- 750 psi-approximately (3000 psi system)
- 1125 psi-approximately (4500 psi system)

When the FireHawk M7 Responder HUD, FireHawk M7 Control Module, or Audi-Larm Alarm indicates 25% cylinder pressure, immediately return to fresh air.

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

Note: See NIOSH Approval Label, inserted in the Users Instructions for complete list of CAUTIONS and LIMITATIONS for the Respirator.

⚠ WARNING

Misuse or abuse of the FireHawk M7 Responder HUD, the FireHawk M7 Control Module, FireHawk M7 Power Module, or the equipment to which they are attached, or using this equipment in a manner or situation not intended by the manufacturer, may result in damage to the equipment or may result in personal injury or death to user or persons dependent on the user.

⚠ CAUTION

- **Always inspect the FireHawk M7 Responder HUD, FireHawk M7 Control Module, and FireHawk M7 Power Module for damage before use. If damage is found, immediately remove the device from service.**
- **DO NOT alter these components. Altering will void the Intrinsic-Safety rating and may affect the Intrinsic-Safety of the device.**

FIREHAWK M7 RESPONDER HUD

FIREHAWK M7 RESPONDER HUD FUNCTIONALITY

1. The FireHawk M7 Responder HUD allows the user to see the cylinder pressure while wearing the air mask. The FireHawk M7 Control Module wirelessly transmits a signal to the FireHawk M7 Responder HUD (on the facepiece) while the air mask is in use. The FireHawk M7 Responder HUD displays the cylinder pressure in one quarter cylinder increments, by an LED pattern.
 - As each quarter cylinder pressure has been reached, a unique LED pattern will be displayed for approximately 20 second before extinguishing. After extinguishing, one LED will flash every 15 seconds to indicate the system is in SCBA Mode. The display can be refreshed by pressing and holding the mode button (green) on the FireHawk M7 Control Module for approximately three seconds.
 - When 25% of the rated service pressure has been reached, a single flashing red LED will be displayed and will continue to flash until the unit is turned off or the cylinder has be refilled.
 - The FireHawk M7 Responder HUD must be within approximately 18 inches of the FireHawk M7 Control Module to properly receive the signal being transmitted.
2. The FireHawk M7 Responder HUD has a buddy light that flashes red when the air mask has reached 25% of the rated service pressure. This buddy light is not visible to the user while the air mask is in use.
3. When the user of the air mask remains motionless for approximately 20 seconds, the PASS pre-alarm will begin to sound. During this pre-alarm, the FireHawk M7 Responder HUD will display an orange LED, and this LED will extinguish when full PASS alarm has been reached or the pre-alarm has been reset.
4. When an evacuation command has been sent to the user (if the optional FireHawk M7 Telemetry Module is in use), the FireHawk M7 Responder HUD will display an alternating red and orange LED until the evacuation has been confirmed.
5. The FireHawk M7 Responder HUD has a photo sensor that automatically adjusts the brightness of the LEDs based on the intensity of the ambient light measured outside of the facepiece.
6. The FireHawk M7 Responder HUD indicates a low battery condition by single flashing yellow LED. When

USING THE AIR MASK

the FireHawk M7 Power Module reaches a low battery condition, a double flash of the yellow LED will be displayed in the FireHawk M7 Responder HUD. If both the FireHawk M7 Responder HUD and FireHawk M7 Power Module have reached a low battery condition, the FireHawk M7 Responder HUD will display an alternating single and double flash of the yellow LED. If this condition exists, return to fresh air, and replace the batteries immediately. See Replacing Batteries in the FireHawk M7 Responder HUD.

- The FireHawk M7 Responder HUD will flash a single green LED every 15 seconds when the air mask is pressurized.

Refer to Chart 1 for a full description of all FireHawk M7 Responder HUD LED patterns.

Replacing the Batteries in the FireHawk M7 Responder HUD

⚠ WARNING

Replace the batteries in the FireHawk M7 Responder HUD when the low battery LED flashes. Use only recommended battery types. Change the batteries in a non-hazardous area only. Failure to follow this warning can result in serious personal injury or death.

- Unthread the battery cap (counter-clockwise) on the FireHawk M7 Responder HUD battery tube.

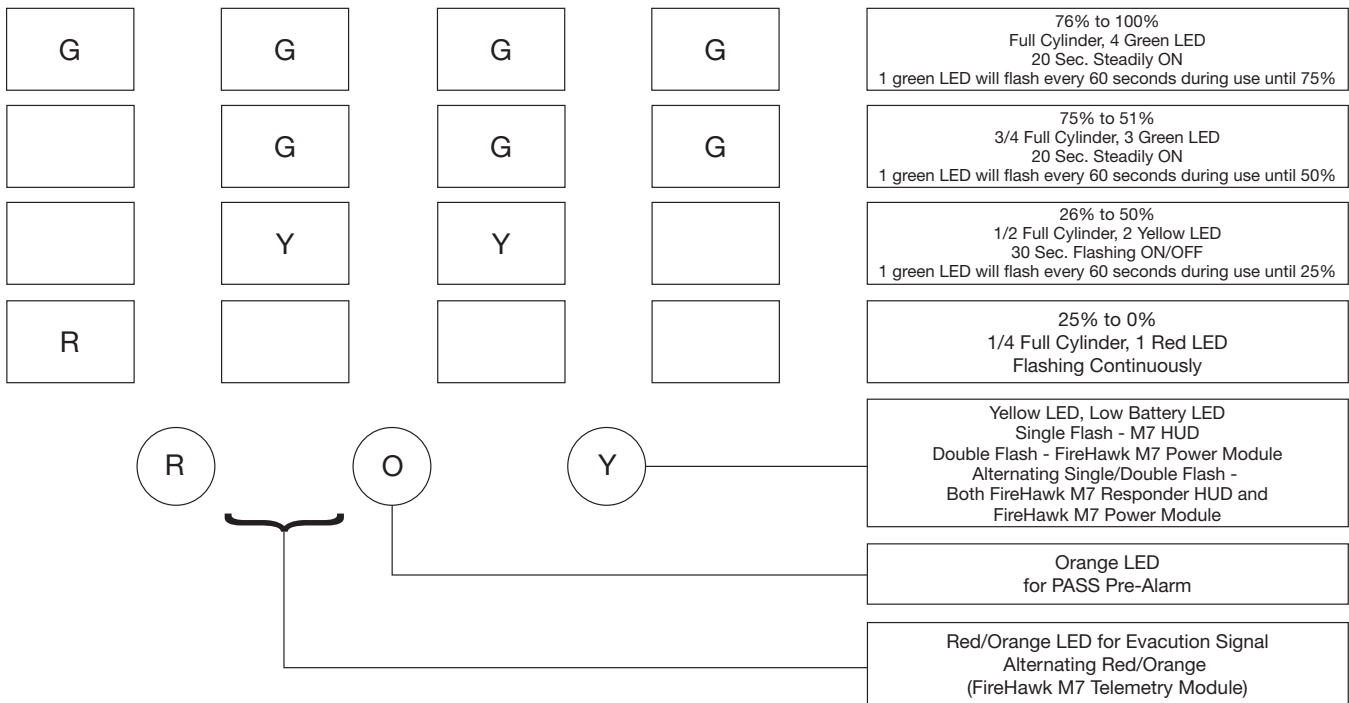
- Remove the battery cartridge from the FireHawk M7 Responder HUD.
- Remove the batteries and discard.
- Inspect the battery cartridge for signs of damage such as corrosion on the battery terminals or cracks in the cartridge. If the battery cartridge is damaged, replace the cartridge immediately.
- Insert three AAA alkaline batteries in the appropriate locations on the cartridge. Follow the notations on the cartridge to ensure proper battery orientation.

⚠ WARNING

Use only Rayovac 824 LR03, Rayovac Ultrapro 4R03, Energizer E92, Energizer Industrial EN92, Duracell MN2400, or Duracell Procell PC2400 alkaline batteries in the FireHawk M7 HUD. Use of other batteries, or a combination of batteries from different manufacturers, will affect the performance of unit and void the Intrinsic Safety Approval.

- Insert the battery cartridge into the battery tube on the FireHawk M7 Responder HUD.
- Before installing the battery cap, verify that the o-ring is in place and free of damage and debris. If the o-ring is missing or damaged, replace battery cap. Failure to do so may allow moisture or contaminants into the battery tube and cause the device to not function properly.
- Thread the battery cap on to the battery tube of the FireHawk M7 Responder HUD (clockwise). Hand-tighten cap until snug. Do not over-tighten battery cap.

Chart 1: FireHawk M7 HUD LED Patterns



USING THE AIR MASK

- As the battery cap makes contact with the battery cartridge, verify that the FireHawk M7 Responder HUD display turns on and goes through its start up sequence before turning off. The yellow LED should not be flashing.

Battery Disposal/Recycling

Dispose of or recycle batteries in accordance with all applicable federal, state, and local regulations.

⚠ WARNING

DO NOT dispose of the batteries in fire. They may explode. Failure to follow this warning can result in serious personal injury or death.

Assembly of the FireHawk M7 Responder HUD to the Facepiece Bracket

Note: Assemble the FireHawk M7 Responder HUD to the facepiece bracket before donning the air mask. With the facepiece lying on its side:

- Align the metal tab on the FireHawk M7 Responder HUD with the metal plate on the front edge of the bracket.
- Rotate the FireHawk M7 Responder HUD so that the tab falls into the slot behind the thumbscrew.
- Thread the thumbscrew into the tab to finger-tight.

⚠ CAUTION

DO NOT use a screwdriver to tighten the thumbscrew.

Functional Tests

Note: Refer to the Visual Inspection and Functional Test section of this manual.

⚠ WARNING

Always test the FireHawk M7 Responder HUD and the entire air mask to be sure that the system operates properly before entering any hazardous atmosphere. DO NOT use this device unless it passes all inspection and functional tests. Failure to follow this warning can result in serious personal injury or death.

FIREHAWK M7 CONTROL MODULE FUNCTIONALITY

- The FireHawk M7 Control Module is assembled to the gauge line hose and is connected to the FireHawk M7 Power Module by the power cable. The FireHawk M7 Control Module serves as the user interface with the air mask and it also serves as the wireless transmitter for the FireHawk M7 Responder HUD.
- The FireHawk M7 Control Module has three control buttons.
 - The RESET/OFF button (yellow) on the side of the FireHawk M7 Control Module resets the PASS device from the full alarm mode. It also shuts the unit off after the cylinder valve has been closed and all pressure is bled from the system. When the optional FireHawk M7 Telemetry Module is used, the Reset button allows the user to confirm an evacuation command.
 - The center lighted ALARM button (green/red) activates the full PASS alarm with or without air pressure.
 - The top MODE button (green) will refresh the display in the FireHawk M7 Responder HUD, activate the backlight on the display of the FireHawk M7 Control Module, set the FireHawk M7 Responder HUD to continuous display mode, and toggle the FireHawk M7 Control Module digital display mode between pressure remaining and calculated service time remaining. When the FireHawk M7 Control Module is OFF, the mode button (green) can be used to scan an ID Tag into the unit (when optional FireHawk M7 Telemetry Module is used).
- The FireHawk M7 Control Module turns on automatically when the user opens the air mask cylinder valve. As the system pressure reaches approximately 200 psi, both visible and audible alarms activate automatically, indicating that the unit is functional (audible alarms are emitted from the FireHawk M7 Power Module located on the backplate). The unit remains in monitor mode until the user closes the cylinder valve, purges the system pressure, and presses the reset button (yellow) on the side of the FireHawk M7 Control Module two times within approximately one second.
- While the air mask is in use, if the user is motionless for approximately 20 seconds, the PASS (FireHawk M7 Control Module and FireHawk M7 Power Module) enters pre-alarm. During pre-alarm, the FireHawk M7 Power Module sounds 3 progressively louder tones and the alarm button on the center of the FireHawk M7 Control Module and buddy lights on the FireHawk M7 Power Module slowly flash red. Also, during the PASS pre-alarm, an orange LED will be displayed in the FireHawk M7 Responder HUD. Movement of the FireHawk M7 Control Module cancels the PASS pre-alarm.
- If the user remains motionless for 30 seconds (approximately), the PASS enters full alarm. During full PASS alarm, the FireHawk M7 Power Module repeatedly sounds two high-pitched tones followed by a buzz. During full PASS alarm the alarm button on the FireHawk M7 Control Module and the buddy lights on the FireHawk M7 Power Module rapidly flash red.
- The PASS can be set into full alarm at any time (even without air pressure) by pressing and holding the alarm button on the FireHawk M7 Control Module.
- The PASS function uses red and green LEDs behind the alarm button of the FireHawk M7 Control Module and buddy lights on the FireHawk M7 Power Module to display its status visually:

USING THE AIR MASK

- o Green LEDs start to flash when the cylinder valve is opened and shows that the device is operational.
- o Red LEDs flash slowly when the device is in PASS pre-alarm and flash rapidly when the device is in full PASS alarm.
- o Red LEDs flash when the cylinder pressure is at or below 25% of the rated service pressure.
- The four C alkaline batteries in the FireHawk M7 Power Module supply the FireHawk M7 Control

Module with power. The system notifies the user when the batteries need to be replaced by emitting an audible beep (1 beep every 5 seconds) from the FireHawk M7 Power Module, displaying an empty battery icon on the display of the FireHawk M7 Control Module, and by a double flashing yellow LED on the FireHawk M7 Responder HUD.

- The FireHawk M7 Control Module has a data logging feature that records information about the air mask while

Chart 2: Audible/Visible Indicators, FireHawk M7 Power Module

ACTION		VISIBLE/AUDIBLE INDICATOR		VISIBLE INDICATOR, CONTROL MODULE
		without Thermal Alarm	with Thermal Alarm	
automatic activation with the system pressurized		single rising tone with bee-bop	single rising tone with bee-bop	green/red LED flash front panel
manual activation		start-up single rising tone with bee-bop (also full alarm)	start-up single rising tone with bee-bop (also full alarm)	green/red LED flash front panel - red light flashing
sensing mode (with or without pressure)		none	none	green LED flashed
pre-alarm (with or without pressure)	first 4 seconds (approx.)	low volume, intermittent, quick tones	low volume, intermittent, quick tones	red LED flashes
	second 4 seconds (approx.)	medium volume, repeating sustained tones	medium volume, repeating sustained tones	
	last 4 seconds (approx.)	high volume, alternating quick and sustained tones	high volume, alternating quick and sustained tones	
full alarm (with or without pressure)		full volume sequence of quick tones, sustained tones, and a buzz	full volume sequence of quick tones, sustained tones, and a buzz	red LED flashes
deactivation of full alarm	first push of reset button	Bee	Bee	red LED flashes
	second push of reset button			green LED flashes
deactivation of pre-alarm (with shake or move unit)		none	none	green LED flashes
low battery		1 beep every 5 seconds	1 beep every 5 seconds	empty battery icon on display
thermal alarm activation (see thermal alarm activation curve)		N/A	1 beep every 3 seconds	flashing thermometer icon on display
radio link with base station*	link is established	none	none	radio link indicator icon in upper left corner of display
	out of range	none	none	radio link indicator icon disappears
evacuation signal received*		continuous beep beep	continuous beep beep	flashing "running man" icon appears on display
redundant alarm (cylinder pressure is below 25% of rated service pressure)		none	none	red LED flashes

*Action only available when the M7 Telemetry Module is used.

USING THE AIR MASK

the FireHawk M7 Control Module is turned on. This data log memory can be accessed using the FireHawk M7 Control Module Reader/ID Tag Writer interface.

- The FireHawk M7 Control Module contains an internal real time clock. This clock can be reset using the FireHawk M7 Control Module Reader/ID Tag Writer interface. By default, the internal clock is set to Eastern Standard Time.

USING THE FIREHAWK M7 CONTROL MODULE

Note: Refer to Chart 2 for the various audible and visual indicators.

FIREHAWK M7 CONTROL MODULE THERMAL ALARM

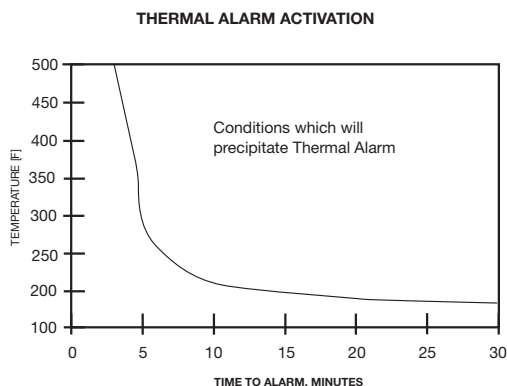
The FireHawk M7 Control Module can monitor temperature conditions if the thermal alarm option is activated. If the user is exposed to more than a pre-set limit of time/temperature, the thermometer icon on the FireHawk M7 Control Module display will flash and the FireHawk M7 Power Module will sound a tone every 3 seconds.

⚠ WARNING

Although this thermal alarm provides an indication that the time-temperature curve is exceeded, the curve may not represent the threshold to injury due to variations in individuals and the protective clothing worn. Use this alarm as a reference only to increasing time-temperature. Do not use as a substitute for standard operating procedures regarding escape from time-temperature extremes. Failure to do so can result in serious personal injury or death.

Chart 3 shows the FireHawk M7 Control Module thermal alarm activation curve. The time/temperature limits correspond to this graph. The thermal alarm sounds if the pre-set limit exceeds the curve displayed on the graph. The alarm will self-cancel depending on the severity of conditions. This may occur even though the temperature is above the thermal curve.

Chart 3: FireHawk M7 Control Module Thermal Alarm Activation Curve



Note: This chart was generated from data obtained in a laboratory setting and is for reference only. Conditions are highly variable in an actual use scenario. Users of the FireHawk M7 Control Module with the thermal alarm option should develop procedures for the use of this feature.

DURING USE

Note: Refer to Chart 2 for the various audible and visual indicators for the FireHawk M7 Control Module and FireHawk M7 Power Module.

Pressure Display

1. Periodically check the pressure indicated on the FireHawk M7 Control Module display. It will display either remaining cylinder pressure (default) or calculated remaining service time.
2. When the pressure reaches 25% of the rated service pressure, the alarm button on the FireHawk M7 Control Module will flash red and the FireHawk M7 Responder HUD will display one flashing red LED.
3. When the pressure reaches approximately 25% of the rated service pressure, return to fresh air.

Changing the FireHawk M7 Control Module Display Mode

1. Press the top mode button (green) once. This will momentarily refresh FireHawk M7 Responder HUD display as well as light the FireHawk M7 Control Module display.
2. While the FireHawk M7 Control Module display is still lit, press the top mode button (green) again. This will toggle the display from remaining cylinder pressure to calculated remaining service time.

⚠ WARNING

The FireHawk M7 Control Module has the ability to display calculated remaining service time counting down to 0 psi (default) or 25% of the rated service pressure. The user must determine which option has been selected for the FireHawk M7 Control Module in service. Failure to follow this warning can result in serious personal injury or death.

⚠ WARNING

Actual time remaining may be less than the calculated time displayed. Increases in breathing rate may reduce remaining time more than expected. Use time indicator as general guide only. The time displayed is based on the continuation of the average breathing rate over the last three minutes. Increases in the breathing rate after checking the displayed time may result in less remaining time than anticipated. Failure to follow this warning can result in serious personal injury or death.

USING THE AIR MASK

Turning ON the Continuous Pressure Display Mode for the FireHawk M7 Responder HUD

⚠ CAUTION

In Continuous Pressure Display Mode, the life of the batteries in the FireHawk M7 Responder HUD will be shortened.

Note: The Continuous Pressure Display Mode can only be activated when the system is pressurized.

1. Push the top mode button (green) on the FireHawk M7 Control Module and hold the button in for 3 seconds or until the FireHawk M7 Power Module sounds a single beep. The LEDs will appear in the FireHawk M7 Responder HUD.
2. The FireHawk M7 Responder HUD will continuously show the cylinder pressure. Turning OFF the Continuous Pressure Display Mode for the FireHawk M7 Responder HUD

Note: The Continuous Pressure Display Mode will deactivate if low battery in the FireHawk M7 Responder HUD is reached.

1. With the FireHawk M7 Responder HUD in Continuous Pressure Display Mode, push the mode button (green) on the FireHawk M7 Control Module and hold the button in for 3 seconds or until the FireHawk M7 Power Modules sounds a single beep.
2. The FireHawk M7 Responder HUD will revert to default mode showing only cylinder pressure status at each 25% increment of full cylinder pressure.

Low Battery Warnings

⚠ WARNING

Replace the batteries in the FireHawk M7 Power Module when the low battery warning sounds. Use only recommended battery types. Change the batteries in a non-hazardous area only. Failure to follow this warning can result in serious personal injury or death.

Note: There are unique Low Battery Warnings for the FireHawk M7 Responder HUD and the FireHawk M7 Power Module which are each displayed by the FireHawk M7 Responder HUD and on the FireHawk M7 Control Module display.

1. If there is a low battery in the FireHawk M7 Responder HUD, one yellow LED will flash in the FireHawk M7 Responder HUD.
2. If there is a low battery in the FireHawk M7 Power Module, a double flash of the yellow LED will be displayed.
3. If there are low batteries in the FireHawk M7 Responder HUD and FireHawk M7 Power Module, the yellow LED on the FireHawk M7 Responder HUD will alternate single and double flashes of the yellow LED.

Replacing the Batteries in the FireHawk M7 Power Module

⚠ WARNING

DO NOT dispose of the batteries in fire. They may explode. Failure to follow this warning can result in serious personal injury or death.

⚠ WARNING

Use only Rayovac 814 LR14, Rayovac Ultrapro LR14, Duracell MN1400, or Duracell Procell PC1400 alkaline batteries in the FireHawk M7 Power Module. Use of other batteries, or a combination of batteries from different manufacturers, will affect the performance of unit and void the Intrinsic Safety Approval.

1. Unthread the battery cap on the FireHawk M7 Power Module by rotating the battery cap in the counter-clockwise direction.
2. Remove the four C batteries from the battery tube of the FireHawk M7 Power Module.
3. Insert the four C batteries following the diagrams inside the battery tube.
4. Verify that the o-ring on the battery cap is held in place, free of damage and debris, and not twisted in the gasket retention groove in the battery cap.
5. Install the battery cap on the FireHawk M7 Power Module battery tube. Tighten the battery cap by rotating it clockwise until it is fully seated. Failure to fully seat the battery cap may prevent the battery tube from being water tight.
6. Dispose of, or recycle batteries, in accordance with all applicable federal, state, and local regulations.

Turning OFF the FireHawk M7 Control Module after Doffing the Air Mask

⚠ CAUTION

Turn off the FireHawk M7 Control Module off after doffing air mask; otherwise, batteries will be drained. The FireHawk M7 Control Module does not shut off automatically.

1. Upon returning to fresh air, close the cylinder valve completely and release all pressure from the air mask.
2. When the pressure falls below 200 psi, turn the FireHawk M7 Control Module off by pressing the reset button (yellow) two times within approximately one second.
 - a. The FireHawk M7 Power Module will beep once when the reset button is pressed once. Pressing the reset button a second time will then sound three beeps (“bee-bop-bop”) to indicate that the unit is turned off. The lights on the FireHawk M7 Control Module and FireHawk M7 Power Module will stop flashing.

COLD WEATHER OPERATION

Suggested Procedures for Cold Weather Operation

Moisture can cause problems in the air mask if it freezes. However, moisture can cause freezing problems even if the surrounding air is above freezing. Air flowing from the cylinder through the first and second stage regulators drops from cylinder pressure to close to atmospheric pressure very quickly. This causes the air to expand and creates a cooling effect. Although the surrounding temperature may be warmer than 32°F, 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, keep the Firehawk Responder Regulator in the belt mounted regulator holder when not in use.
2. When the air mask is away from heat, water spray can freeze on the Firehawk Responder Regulator surface. Ice can build up and bind the side buttons or the bypass valve. Before entering or re-entering a hazardous atmosphere, ensure the side buttons 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, ensure moisture or contamination does not enter the system. Remove any ice from these fittings. Wipe the coupling nut threads and cylinder valve threads before installing a new cylinder. Water can contaminate the system and freeze.
4. NIOSH certification requires a nose cup be used at all times. The nose cup reduces lens fogging.
5. When cleaning the air mask, ensure water does not enter the facepiece or Firehawk Responder Regulator.
6. Thoroughly dry the facepiece and mask mounted regulator after cleaning and disinfecting. Follow Confidence Plus® Cleaning Solution instructions.

Note: Fresh batteries must be installed in the FireHawk M7 Responder HUD and FireHawk M7 Power Module prior to storage of the air mask at cold temperatures for an extended period of time.

AUDI-LARM ALARM WITH URC ASSEMBLY OPERATION

URC (UNIVERSAL RESCUE CONNECTION) ASSEMBLY

The URC Assembly is a male quick-fill inlet for use by Rapid Intervention Crews for emergency filling operations. The system also includes an automatically resetting pressure relief valve. The air mask can also be equipped with a shoulder mounted Quick-Fill System, unless using a 3000 psi URC Assembly, the 3000 psi URC Assembly can not be used with Quick-Fill System. For additional information on using the Quick-Fill System, refer to the Quick-Fill System section of the manual.

The URC Assembly may be used for transfill operations as described in this manual. Only qualified, trained personal Standard Operating Procedures should be developed for use of the URC Assembly.

PRECAUTIONS FOR USING THE URC ASSEMBLY

1. The URC Assembly can only be used to fill approved air mask cylinders.
 2. The URC Assembly is not to be used as a "Buddy Breather" such that two users are sharing the air supplied by one air mask cylinder simultaneously doing so will void NIOSH approval.
 3. The user is responsible for the air supply, which must meet the requirements of Compressed Gas Association Specification ANSI/G-7.1, Quality Verification Level (Grade) D Gaseous Air or better, with a moisture dew point of not greater than -65°F (24ppm water vapor, normal). In fire service applications, MSA recommends breathing air quality in accordance with NFPA 1989. Pressures at the inlet of the quick-fill hose must not exceed that of the air mask (2216 psi or 4500 psi).
 4. Using the 3000 psi URC Assembly to fill cylinders: The cylinder can only be filled to 2216 psi. If the pressure exceeds 2216 psi a relief valve in the URC Assembly will vent at approximately 2525 psi or as low as 2400 psi. A 3000 psi cylinder can only be filled to 3000 psi by using a secondary air supply; the 3000 psi URC Assembly cannot be used for filling a 3000 psi cylinder.
 5. The user also is responsible for connecting the quick-fill hose to an appropriate secondary air supply.
 6. The cylinder must be inspected for damage before charging.
 7. If filling cylinders in fresh air using the URC Assembly topping off the cylinder is recommended after the cylinder has cooled from initial fill. Topping off a cylinder after it has cooled will ensure proper service time.
- **DO NOT use the URC Assembly as a "Buddy Breather" such that two users are sharing the air**

WARNING

supplied by one approved air mask cylinder simultaneously; doing so will void NIOSH approval.

- **The URC Assembly must be used by trained Rapid**

Intervention Crews only using procedures developed for rapid intervention.

- **DO NOT install a Quick-Fill System and 3000 psi URC assembly on the same air mask. Combining these assemblies on the same air mask will not allow the relief valve in the 3000 psi URC Assembly to open as designed. Failure to follow this warning can result in serious personal injury or death.**
- **DO NOT transfill (be a donor) using a 3000 psi URC Assembly. The 3000 psi URC Assembly has a check valve that does not allow cylinders to transfill (be a donor).**
- **Using the 3000 psi URC Assembly to fill cylinders: The cylinder can only be filled to 2216 psi. If the pressure exceeds 2216 psi a relief valve in the URC Assembly will vent at approximately 2525 psi or as low as 2400 psi. A 3000 psi cylinder can only be filled to 3000 psi by using a secondary air supply; the 3000 psi URC Assembly cannot be used for filling a 3000 psi cylinder.**
- **DO NOT lubricate the URC Assembly fittings. Do not permit oil, grease, or other contaminants to come in contact with the quick-fill fittings.**
- **The hose assemblies and fittings are designed to be used with Quality Verification Level (Grade) D or better air as defined by ANSI/CGA G-7.1. TRANS-FILLING AIR FROM A SECONDARY AIR SUPPLY. In fire service applications, MSA recommends breathing air quality in accordance with NFPA 1989.**

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

Note: The URC Assembly may be used for transfill operations as described in this manual. Standard operating procedures should be developed for use of the URC Assembly.

The URC Assembly must be used only by qualified, trained personnel who have carefully read and understood these instructions, cautions, and warnings. NIOSH approvals of SCBA from MSA are maintained while transfilling air only if appropriate hose assemblies from MSA are used. URC Assembly or hose assemblies and fittings are rated for a maximum working pressure of 4500 psi. NIOSH approval is maintained only when using the following hose assemblies: 485331, 802687, 802688, 802689, 802690, and 48332, for filling cylinders in IDLH atmospheres.

FILLING INSTRUCTIONS FOR USING THE URC ASSEMBLY

A secondary air supply stores compressed breathing air until needed to refill air mask air cylinders. When transfilling, the secondary air supply pressure must be greater than air mask cylinder pressure. Examples of air supplies include: cascade air cylinder refilling systems; high pressure compressor systems with a fixed reservoir; or a portable air system such as the RescueAire™ System.

AUDI-LARM ALARM WITH URC ASSEMBLY OPERATION

⚠ WARNING

DO NOT connect a high pressure air mask to a secondary air supply with a pressure greater than 4500 psi. The high pressure air mask is rated for a maximum working pressure of 4500 psi. Failure to follow the above warnings can result in serious personal injury or death.

Note: Rapid Intervention Crews should use a separate air supply such as MSA's RescueAire portable air supply system to fill the air mask in an IDLH atmosphere.

1. Connect the quick-fill hose to the secondary air supply.
 - a. Turn the air supply on.

⚠ CAUTION

If there are leaks from either female fitting, or along the hose, depressurize the hose and correct the problem. Such leakage can result in increased fill time.

2. Attach the quick-fill hose to the URC Assembly.
 - a. Remove the rubber dust cap from the male inlet fitting on the URC Assembly. Be sure that the cylinder valve is fully opened.
 - b. Remove the rubber dust cap from the female fitting on the quick-fill hose.
 - c. Push the female fitting of the hose onto the male fitting of the URC Assembly until it snaps in place. Pull on the hose to be sure the connection is secure. Filling immediately begins when the female fitting fully engages with the URC Assembly.
 - d. After approximately 45-60 seconds, the pressure between the secondary air supply and the air mask cylinder will be equal.

⚠ WARNING

If serious leakage is noticed from either of the two female fittings, or anywhere along the hose, disconnect the female fittings and return to fresh air immediately. Failure to follow this warning can result in serious personal injury or death.

Note: If the secondary air supply does not have a sufficient volume of air, the air mask cylinder will not reach full service pressure.

3. Compare the cylinder pressure gauge or the FireHawk M7 Control Module reading to the secondary air supply pressure gauge reading. If the readings are the same, pressure is equal.
4. To disconnect the quick-fill hose after transfilling, pull the gray sleeve back. The hose fitting and the URC Assembly will separate. A hiss or pop may be heard as the fittings separate and the high pressure air is sealed off.
5. Immediately install the dust cover on the URC

Assembly.

6. The air mask cylinder is ready for service if the cylinder pressure gauge needle is on the appropriate color band.

TRANSFILLING BETWEEN AIR MASKS

Note: The air mask with the higher pressure reading is the donor. The air mask with the lower pressure is the receiver. Transfilling between users of air mask should be performed only during life-threatening emergencies or simulated training exercises. Both donor and receiver must return to fresh air immediately following the procedure.

⚠ WARNING

DO NOT transfill if the donor's audible alarm is ringing or FireHawk M7 HUD /FireHawk M7 Control Module are flashing. Failure to follow this warning can result in shorter escape time to return to fresh air, causing serious personal injury or death.

The audible alarm begins ringing and heads-up display system begins flashing to indicate that the pressure in the cylinder has been reduced to 25% of its rated working pressure. Remaining service time must be used for escape to fresh air. If the donor's audible alarm begins ringing or FireHawk M7 HUD/FireHawk M7 Control Module begins flashing during transfilling, the donor should disconnect and preserve his escape time.

1. If the donor's alarm is not ringing and FireHawk M7 HUD/FireHawk M7 Control Module are not flashing and you have sufficient air to transfill to a receiver, (greater than 1000 psi for 2216 psi air masks and greater than 2000 psi for 4500 psi air masks), follow these steps.
 - a. Remove the 3 foot emergency transfill hose from its protective pouch.
 - b. Remove the rubber dust cover from both female fittings on the transfill hose assembly.
 - c. Remove the rubber dust cover from the URC fitting.
 - d. Push the female fittings on to the male fittings until they click in place. Pull on the hose to be sure it snapped in place.

⚠ WARNING

If serious leakage is noticed from either of the two female fittings, or anywhere along the hose, disconnect the female fittings and return to fresh air immediately. Failure to follow this warning can result in serious personal injury or death.

- e. After approximately 45-60 seconds, pressure between the air mask cylinders will be equal.
- f. Disconnect the transfill hose from the air mask by pulling the gray sleeve back on both ends. A hiss or

AUDI-LARM ALARM WITH URC ASSEMBLY OPERATION

pop may be heard as the fittings separate and the high pressure air is sealed off.

- g. Immediately install the dust cover on the URC fitting. The dust cover prevents dirt, water, and debris from entering the fitting, and acts as a redundant seal.

URC ASSEMBLY LEAKAGE

1. When transfilling in fresh air and the dust cover will not stay on the male fitting because air is leaking, correct the condition before using the air mask.
2. When transfilling in a contaminated atmosphere and the dust cover will not stay on the male fitting because air is leaking:
 - a. Immediately reconnect the quick-fill hose to seal off the leak and return to fresh air.

- b. If the hose will not reconnect, reach behind and close the cylinder valve. Air pressure in the regulator will drop, and the leak will slow down.
- c. Quickly replace the protective dust cap on the male fitting. This will form a redundant seal.
- d. Open the cylinder valve and return to fresh air immediately. The dust cover prevents dirt, water, and debris from entering the fitting, and acts as a redundant seal.

EMERGENCY TRANSFILL HOSE STORAGE

1. Preparing the Emergency Transfill Hose for storage:
 - a. Press in on the center of the quick-disconnect dust cap to release any pressure in the transfill hose.
 - b. Roll up the hose and place it in its protective pouch.

HYDRATION SYSTEM

USE OF HYDRATION SYSTEM

WARNING

Some canteens may not be leak tight. Canteens used with the hydration system **MUST BE used after returning to an uncontaminated area. Failure to follow this warning can result in serious personal injury or death.**

1. Return to an uncontaminated area before using the hydration system.
2. Grasp the knurled surface of the tube and pull the tube out of its holder.
3. Hold the tube with its inlet end up.
4. Push the tube inlet into the "NATO" canteen inlet.
5. Turn the canteen upside down. Its contents will flow by gravity.
6. Grasp the exhalation valve cover and press in at the top while pushing out at the bottom of the cover. This positions the drink tube outlet toward your lips.
7. After drinking, disengage the tube from the canteen and stow it in the holder.

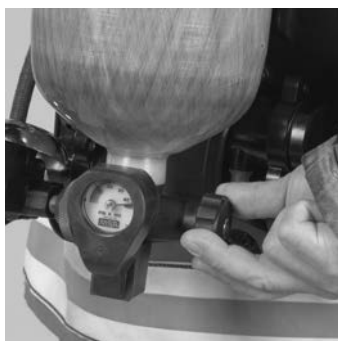
REMOVING THE AIR MASK

DISCONNECTING THE FIREHAWK RESPONDER REGULATOR

1. Grasp the top of the regulator.



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



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

4. When the pressure falls below 200 psi, turn the FireHawk M7 Control Module off by depressing the reset button (yellow) two times within approximately one second.

Note: The FireHawk M7 Responder HUD will automatically turn itself OFF, approximately 60 seconds after the air mask has been depressurized. (A single red LED will flash until the FireHawk M7 Responder HUD turns off)

5. Stow the Firehawk Responder Regulator in the belt mounted holder when it is not in use.
6. To remove the facepiece, fully loosen the harness straps and pull the facepiece up and away from the face.
7. To remove the carrier and harness, press the waist belt buckle release button IN.
8. Disconnect the chest strap buckle (if used).
9. To loosen the shoulder straps, grasp the pull tabs and push them out and away from the body.
10. Slip the right arm out of the shoulder strap first, then remove the harness.

Note: Be sure to replace the cylinder with a fully charged one. Complete Inspection and Cleaning and Disinfecting Procedures outlined in this manual. Ensure that the complete SCBA is clean and dry. Ensure that facepiece head harness straps and harness adjustment straps are fully

extended. Place the complete air mask in the storage case or suitable storage location so that it can be easily reached for emergency use. (See storage instructions.)

CHANGING THE CYLINDER

⚠ WARNING

DO NOT drop the cylinder or bump the cylinder 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. Ensure there is no pressure in the system before replacing a cylinder.
2. Close the cylinder valve.
3. Turn the Firehawk Responder Regulator bypass counter-clockwise until air no longer discharges from the regulator.
4. Close the bypass by turning the knob clockwise.

5. Disconnect the Audi-Larm Alarm coupling nut.



6. Lift and turn the latch wing to loosen the cylinder clamp.
7. Slide the empty cylinder out of the carrier and install a fully charged cylinder. Be sure that the adjustable cylinder band and latch is in the proper slot before inserting a new cylinder.
8. Slide the fully charged cylinder into the carrier, with gauge facing out. Turn the latch wing clockwise 180 degrees until it stops. Fold the latch wing toward backplate, locking latch wing in place.

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

9. To check that the cylinder is secure, place one hand on the backplate and grasp the cylinder valve with the other hand. 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, remove the cylinder and check that the latch engages with the proper slot on the band. Re-install the cylinder and ensure that the latch wing is fully tightened and flipped over. Do not use the air mask if the cylinder is not held securely in the carrier.

REMOVING THE AIR MASK

10. Before installing the Audi-Larm Alarm, check that the o-ring inside the Audi-Larm Alarm coupling nut is present and free of damage. If the o-ring is damaged, it must be replaced before the alarm is used.



11. Thread the Audi-Larm Alarm coupling nut on to the cylinder valve thread form and handtighten (no tools).

CHARGING CYLINDERS

A lightweight SCBA cylinder can become airborne solely under the thrust of air from an inadvertently opened cylinder valve. If a cylinder is removed from a horizontal shelf by grasping the handwheel, the weight of the cylinder can cause the cylinder to rotate downward causing the valve to open slightly.

▲ WARNING

- **Never carry a cylinder by the handwheel.**
- **Avoid dropping the cylinder or bumping the handwheel.**
- **Use the handwheel only to open and close the cylinder valve.**

A valve could partially open causing the cylinder to become an airborne projectile under its own pressure and result in serious personal injury or death.

▲ 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 with this label and MSA apparatus instructions.**
3. **To maintain NIOSH approval, the cylinder must be fully charged with respirable air meeting the requirements of the Compressed Gas Association specification G-7.1 1989 for Quality Verification Level (grade) D air or equivalent specification.**
4. **Do not use unless the cylinder is filled to the maximum working pressure.**
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 these warnings 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:

1. If used partially charged, the duration of the air mask 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 psi.

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

Additional information of value when performing external and internal inspections of cylinders may be found in the latest editions of CGA Publication C-6: "Standards for Visual Inspection of Steel Compressed Gas Cylinders", CGA Publication C-6.1: "Standards for Visual Inspection of High Pressure Aluminum Compressed Gas Cylinders", and/or CGA Publication C-6.2: "Guidelines for Visual Inspection and Requalification of Fiber Reinforced High Pressure Cylinders" available from the Compressed Gas Association, Inc., 1725 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102.

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

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

When replacing cylinder valves or after the retesting of cylinders, make sure the proper cylinder valve, burst disc, and o-ring are installed prior to cylinder recharging. Determine the maximum service pressure of the cylinder. Type 3 AA (steel) cylinders that bear a plus (+) sign after the latest retest date may be recharged to a pressure, i.e. a cylinder stamped 3AA2015 with a plus (+) sign after the test date may be recharged to 2216 psi. (this applies to steel cylinders only). Steel cylinders without the plus (+) sign stamped after the latest test date must be removed

REMOVING THE AIR MASK

from service. All other cylinders which are not 3AA type shall be filled to the designated service pressure only (as found on the DOT approval 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.

Appropriately connect the cylinder to the filling system and refill. Terminate the filling when the pressure reaches the maximum 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. Close the valves on the cylinder and the filling system and remove the cylinder. Apply a leak solution to determine if there is any leakage between the cylinder and the valve. If there is no leakage, the cylinder is ready for use.

STORAGE

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

Prior to storing the air mask in a jumpseat, ensure there is no interference between the air mask and the seat.

WARNING

DO NOT drop the cylinder or bump the 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 air mask for extended periods with the batteries installed in the electronic components if the air mask is not intended for service. If the air mask is in service, ensure that the batteries in the electronic components have an adequate charge. Do not store the air mask with an empty or partially filled cylinder. Always install a fully-charged cylinder so that the air mask is ready for use. Complete Inspection and Cleaning and Disinfecting Procedures outlined in this manual. Ensure the entire air mask is clean and dry. Ensure the facepiece head harness adjustment straps are fully extended. Place the complete air mask in the storage case or suitable storage location so it can be easily reached for emergency use.

For prolonged storage of the air mask, remove the batteries from all electronic components to prevent battery corrosion. Store the units in a cool, dry place.

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 the label for user instructions.

⚠ CAUTION

- **DO NOT use any cleaning substances that can or might attack any part of the air mask.**
 - **DO NOT use alcohol 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. Unthread the thumb screw of the FireHawk M7 Responder HUD and remove the FireHawk M7 Responder HUD from the facepiece bracket.
 - c. Remove the Clear Command Communication System (if used).
 - d. Thoroughly wash the facepiece, drink tube, and nose cup in the cleaning solution. A soft brush or sponge can be used to clean the soiled facepiece.
 - e. Rinse the facepiece and components in clean, warm (110°F) water (preferably running and draining).
 - f. Clean the pressure-demand exhalation valve by pressing in on the stem with a blunt object and flushing it with clean water.
 - g. 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.

- h. 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 in which it was shipped.

3. In general, only the facepiece requires cleaning and disinfecting after each use. If the air mask 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 (band and latch assembly)
 - c. Cylinder (handwheel, gauge, outlet connection)
 - d. Audi-Larm Alarm (bell and coupling nut connection)
 - e. FireHawk M7 Responder HUD/FireHawk M7 Control Module/FireHawk M7 Power Module

Note: If the lens covers exhibit moisture or dirt, remove the lens covers to clean properly. The covers can be cleaned by wiping them off with a mild soap solution. Rinse the cover and dry completely before installing.

- f. FireHawk M7 Control Module Gauge and LCD Cover Lens
- g. First Stage Regulator (PR14)
- h. Firehawk Responder Second Stage Regulator. Cover the outlet of the Firehawk Responder Regulator to prevent water, dirt, or debris from entering.
4. Inspect the entire air mask as it is reassembled. Follow the Inspection Instructions.
5. Re-attach the FireHawk M7 Responder HUD
 - a. Insert the FireHawk M7 Responder HUD into the facepiece bracket.
 - b. Finger-tighten the thumbscrew.
6. Re-attach Clear Command Communication System (if used).
7. Thoroughly dry the facepiece and Firehawk Responder Regulator after cleaning and disinfecting. The facepiece can trap water, which could enter the regulator.

FLOW TEST AND OVERHAUL REQUIREMENTS

FLOW TEST AND OVERHAUL REQUIREMENTS

The Firehawk Responder Regulator and Audi-Larm 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 1-877-MSA-3473. They will supply the information needed to meet these requirements.

Annual flow tests are stated as a requirement in NFPA 1852, Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA), 2002 Edition, which further emphasizes their importance. Although this standard relates to SCBA used in the fire service, MSA requires that a flow test be performed at least annually on all fire service and non-fire service SCBA and combination respirators that use a pressure demand regulator.

The required replacement/overhaul schedule for MSA air masks 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 air masks must be overhauled based on the actual level of usage of the air mask, rather than on time alone.

MSA air masks must be flow tested every year using an MSA approved flow test device. The table below summarizes MSA's required frequency for overhaul and flow testing.

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

If an assessment of the air mask's usage cannot be estimated or determined, then the air mask shall be overhauled every three years.

Average Air Mask Usage	Regulators and Audi-Larm Alarm Overhaul Frequency	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

*The unit of air mask use is defined as the consumption of one entire cylinder of air. Example: If three cylinders of air are used, the air mask would be considered to have been used three times.

M7 TELEMETRY MODULE

FIREHAWK M7 TELEMETRY MODULE

The FireHawk M7 Telemetry Module is designed to allow the air mask to communicate with a remote base station while in use. The FireHawk M7 Responder Air Mask with FireHawk M7 Telemetry Module installed will transmit vital statistics such as cylinder pressure, temperature alarm (if thermal alarm is enabled), service time remaining, and PASS alarm to the base station. The base station also has the ability to send an evacuation command to the air mask. The FireHawk M7 Telemetry Module uses a special version of the FireHawk M7 Control Module and FireHawk M7 Power Module.

All basic functions of the air mask are the same as those described in the During Use section of this manual except for the following differences:

- **Turning the FireHawk M7 Control Module On:** When the FireHawk M7 Control Module is activated in the presence of a remote base station, the air mask automatically begins to log on to that base station. When the air mask is successfully logged on to the base station, a radio link indicator will appear on the display of the FireHawk M7 Control Module.
- **Evacuation Signal:** The air mask has the ability to receive an evacuation signal from the remote base station after it has been successfully logged on to the base station. When an evacuation signal has been sent by the base station, the “running man” icon will appear, and flash, on the display of the FireHawk M7 Control Module and a unique audible alarm will be emitted from the FireHawk M7 Power Module. The evacuation signal must be manually confirmed by the user by pressing the reset button (yellow) button twice within approximately one second. This confirms the evacuation signal by sending a confirmation signal back to the base station. Once the evacuation signal has been manually confirmed by the user, the “running man” icon will stop flashing and remain on the display until the FireHawk M7 Control Module has been turned off.
- **PASS Alarm:** The PASS alarm will sound and function normally with the FireHawk M7 Telemetry Module. When the air mask emits a full PASS alarm, a signal is automatically sent to the base station to alert Incident Command.
- **Thermal Alarm:** When the air mask is exposed to temperature conditions that warrant a thermal alarm, a signal is automatically sent to the base station to alert Incident Command.
- **Low Battery:** When the FireHawk M7 Power Module reaches a low battery condition, a signal is automatically sent to the base station to alert Incident Command. A signal is not sent to the base station if the FireHawk M7 Responder HUD has a low battery condition.
- **Data Log:** The data logging feature of the FireHawk M7 Control Module logs the status of the radio link to

the base station as well as any evacuation signals that the air mask has received.

- **Radio Link Indicator:** The FireHawk M7 Control Module has a radio link indicator located in the upper left portion of the display. When this icon is displayed, the air mask is logged on to a base station and within range. When the radio link indicator is not shown, the FireHawk M7 Control Module has not been logged on to a base station or is out of the range of the base station.
- **Turning the FireHawk M7 Control Module Off:** To turn the FireHawk M7 Control Module off, press the reset button (yellow) twice within approximately one second. If the air mask is logged on to the base station, there will be a delay between the two presses of the reset button (yellow) and the actual shutdown of the device. Before the FireHawk M7 Control Module completely turns off, the base station must remove the air mask from its registry. This causes the slight delay between pressing the reset button (yellow) and the actual shutdown of the device.

ID Tag (PN 10083875), for use with FireHawk M7 Telemetry Module

When the FireHawk M7 Telemetry Module is used with the FireHawk M7 Responder Air Mask, an ID Tag is used to assign a firefighter’s name to the air mask. The name assigned to the air mask will be displayed for that air mask on the base station SCBA monitoring software. The name ID Tag must be scanned into the FireHawk M7 Control Module at the start of each shift (every 24 hours by default).

Note: The ICM Link program can be used to change this default to allow a name ID to be permanently assigned to the air mask until a new name ID Tag has been scanned.

A team ID Tag can also be used to assign a team/truck and position to the air mask. If a team ID Tag has been scanned into the FireHawk M7 Control Module but a name ID Tag has not been scanned, the team ID will be displayed on the SCBA monitoring software to provide accountability even if the firefighter forgot to scan the name ID Tag. Once a team ID Tag has been scanned into the FireHawk M7 Control Module, the team ID will remain with the air mask until another team ID Tag has been scanned. If a team ID has not been assigned to the air mask, the FireHawk M7 Control Module serial number will be displayed as the firefighter’s ID when logged onto the base station.

A base station ID can be used to assign a specific base station ID to an air mask. When more than one base station is present and actively monitoring at an incident, an air mask with an assigned base station will search for the preferred base station first to log on to, and if it does not find the assigned base station within 20 seconds, it will search for the first available base station and log on to it. If a base station ID has not been assigned to the air mask,

FIREHAWK M7 TELEMETRY MODULE

it will log on to the first base station that it finds once the unit has been turned on. Once a base station ID tag has been scanned into the FireHawk M7 Control Module, this base station ID will remain with the air mask until another base station ID tag has been scanned. The ID Tag has a space for the user to place a label in which the ID information can be written on the outside of the ID Tag for easy identification. This space is located on the side of the ID Tag opposite the approval label.

Before using the ID tag, inspect for damage or cracks in the case. If damage is found, discard and replace the ID tag.

Scanning the ID Tag into the FireHawk M7 Control Module

1. Prior to pressurization of the air mask and during inspection, the user can “tag in” to the air mask. The most recent ID Tag data that is stored in the FireHawk M7 Control Module will be used as the identification for the air mask on the MSA Accountability System Software. If no ID Tag data has been assigned to the air mask, the FireHawk M7 Control Module serial number will be used as its identification on the base station PC screen.

Note: The air mask must not be pressurized and FireHawk M7 Control Module must be turned off to scan the ID Tag.

2. Take the ID Tag and place the attachment clip between your fingers on your left hand. The ID Tag should lie in your palm.



3. Move the FireHawk M7 Control Module over top of the ID Tag.



4. Press and hold the green mode button with the thumb for 2 seconds for the word “TAG” to display.



5. At that point, the word will change to “OK” within a few seconds confirming the tagging process is complete.



⚠ WARNING

DO NOT use the tag to press the mode button, place it on top of the FireHawk M7 Control Module, or next to the FireHawk M7 Control Module. The tagging instructions must be followed to have the ID Tag within range of the short range radio to complete the tagging process. If the tag is not, the PASS device can lockup showing the word “TAG” or “DATA” and cannot be shutoff. To fix the lockup, the batteries must be removed for 10 seconds and then reinstalled.



6. The word “TAG” will display for 10 seconds if the mode button is not pressed again. If the mode button is pressed again after the word “TAG” appears, then the PASS will enter data mode showing the word “DATA”. To get back into tag mode, press the mode button again to enter sleep mode and repeat the previous steps.

Note: The “data” mode is used to change the device settings or read the data log while using the FireHawk M7 Interface Software.

FIREHAWK M7 TELEMETRY MODULE

Using the Base Station with the FireHawk M7 Telemetry Module

The FireHawk M7 Telemetry Module is designed to work in conjunction with a remote base station unit. This base station unit must be connected to a personal computer or laptop before use. Refer to FireHawk M7 FireHawk, Incident Command Module Software instructions (PN 10068929) for more information.

⚠ WARNING

Follow the PC or notebook computer manufacturer's recommendations for exposure to environmental conditions to prevent damage to the system. Failure to do so may cause system failure and the loss of monitoring capability on the PC or notebook computer.

Using the FireHawk M7 Responder Air Mask with FireHawk M7 Telemetry Module

Logging the Air Mask on to the Base Station

1. Turn on the FireHawk M7 Control Module on by opening the cylinder valve or by pressing and holding the alarm button.
2. A helmet icon representing the user of the air mask will appear on the base station PC screen.
3. When the base station has established contact with the air mask and all initial information has been obtained, the signal strength indicator will appear in the upper left corner of the FireHawk M7 Control Module display.
4. Periodically check the status of the radio link indicator on the display of the FireHawk M7 Control Module. If the radio link indicator begins to flash, this means that the air mask is out of range from the base station. The indicator will stop flashing when the air mask returns within range of the base station.

⚠ CAUTION

If the signal strength indicator does not appear on the FireHawk M7 Control Module display, the base station has not logged the unit on and can not monitor the status of that firefighter.

Logging the Air Mask off of the Base Station

1. Once the user has returned to fresh air the FireHawk M7 Control Module may be turned off.
2. Close the cylinder valve and purge the remaining air from the system using the Firehawk Responder Regulator bypass. When the pressure falls below 200 psi, turn the FireHawk M7 Control Module off (sleep mode) by pressing the reset button twice in approximately one second. (When the air mask is logged on to a base station, there may be a delay between the two rapid presses of the reset button and the actual shutdown of the FireHawk M7 Control Module. Before the FireHawk M7 Control Module completely turns off, the base station must log off the air mask and send out a final confirmation signal.

Evacuation Signal

If the air mask is logged on to the base station, the incident command will have the ability to send an evacuation signal to the air mask. When an evacuation signal is sent to the air mask, the FireHawk M7 Power Module will begin to beep repeatedly and a flashing "running man" icon will appear on the FireHawk M7 Control Module display. The evacuation alarm will continue to sound until the reset button on the FireHawk M7 Control Module has been pressed twice within approximately one second. This confirms the evacuation by sending a confirmation signal back to the incident command.

ACCESSORIES

ACCESSORIES

The air mask may be equipped with the following accessories:

1. Spectacle Kit
2. Quick-Fill System
3. Extendaire System
4. Communication System
5. Rescue Belt
6. Waist Belt Extender
7. Chest Strap

WARNING

Refer to the NIOSH Approval Matrix for a complete list of approved accessories. If you must wear corrective eyewear, install an approved spectacle kit, listed on the NIOSH approval label. Know the contaminant(s) in the environment before entering. Failure to follow this warning can result in serious personal injury or death.

SPECTACLE KIT

Spectacle kits are available for the Ultra Elite Responder Facepiece (P/N 804638 or P/N 493581). The kit includes the support assembly, a rubber block, and the spectacle frame. Prescription lenses can be obtained locally or through MSA.

Adjusting the Spectacles

1. To move the spectacles closer to your face, pull the frame prongs out of the rubber block.
2. To move the spectacles farther from your face, push the frame prongs into the rubber block.

3. To move the spectacles up or down, slide the rubber block up or down on the support arms.



QUICK-FILL SYSTEM OPERATION

PRECAUTIONS FOR USING QUICK-FILL SYSTEM

1. The Quick-Fill System can only be used to fill approved air mask cylinders.
2. The Quick-Fill System is not to be used as a "Buddy Breather" such that two users are sharing the air supplied by one air mask cylinder simultaneously doing so will void NIOSH approval.
3. The user is responsible for the air supply, which must meet the requirements of Compressed Gas Association Specification ANSI/G-7.1, Quality Verification Level (Grade) D Gaseous Air or better, with a moisture dew point of not greater than -65°F (24ppm water vapor, normal). In fire service applications, MSA recommends breathing air quality in accordance with NFPA 1989. Pressures at the inlet of the quick-fill hose must not exceed that of the air mask (2216 psi or 4500 psi).
4. The user also is responsible for connecting the quick-fill hose to an appropriate secondary air supply.
5. The cylinder must be inspected for damage before charging.
6. If filling cylinders in fresh air using the Quick-Fill System, topping off the cylinder is recommended after the cylinder has cooled from initial fill. Topping off a cylinder after it has cooled will ensure proper service time.

⚠ WARNING

- **DO NOT use the Quick-Fill System as a "Buddy Breather" such that two users are sharing the air supplied by one approved air mask cylinder simultaneously; doing so will void NIOSH approval.**
- **The quick-fill hose assemblies and fittings are designed to be used with Quality Verification Level (Grade) D or better air as defined by ANSI/CGA G-7.1. TRANSFILLING AIR FROM A SECONDARY AIR SUPPLY. In fire service applications, MSA recommends breathing air quality in accordance with NFPA 1989.**
- **DO NOT lubricate the quick-fill fittings.**
- **DO NOT permit oil, grease, or other contaminants to come in contact with the quick-fill fittings.**
- **DO NOT install a Quick-Fill System on a 3000 psi air mask. This combination will not allow the relief valve in the 3000 psi URC Assembly to open as designed.**

⚠ WARNING

DO NOT use the Quick-Fill® System, URC Assembly, or ExtendAire™ System accessories if there is any possibility that the environment contains a CBRN warfare agent. These air mask accessories are not approved for use in atmospheres containing CBRN warfare agents. Failure to follow this warning can result in serious personal injury or death.

The Quick-Fill System must be used only by qualified, trained personnel who have carefully read and understood these instructions, cautions, and warnings. NIOSH approvals of SCBA from MSA are maintained while transfilling air ONLY if appropriate quick-fill hose assemblies from MSA are used. Quick-fill hose assemblies and fittings are rated for a maximum working pressure of 4500 psi.

NIOSH approval is maintained only when using the following hose assemblies: 485331, 802687, 802688, 802689, 802690, and 48332, for filling cylinders in IDLH atmospheres.

FILLING INSTRUCTIONS FOR QUICK-FILL SYSTEM

A secondary air supply stores compressed breathing air until needed to refill air mask air cylinders. When transfilling, the secondary air supply pressure must be greater than air mask cylinder pressure. Examples of air supply includes: cascade air cylinder refilling systems; high pressure compressor systems with a fixed reservoir or a portable air system such as the MSA RescueAire™ System.

The following hoses can be used to connect to a secondary air supply.

Order MSA P/N	Description
485391	Male stainless steel quick-disconnect with SAE-10 thread, complete with dust cover (for use as a fitting for customized refilling systems).
485532	25-FOOT QUICK-FILL HOSES Note: Female quick-disconnect fittings include dust covers.
487906	With two female quick-disconnects
487907	With a female quick-disconnect on one end and a SAE-4 fitting on the other.
487908	With a female quick-disconnect one end and a CGA-347 (4500 psig) outlet on the other.
487908	With a female quick-disconnect on one end and a CGA-346 (2216 psig) outlet on the other.
487909	With a female quick-disconnect on one end and a CGA-347 (4500 psig) coupling nut on the other.
487910	With a female quick-connect on one end and a CGA-346 (2216 psig) coupling nut on the other.

QUICK-FILL SYSTEM OPERATION

1. To connect the quick-fill hose to the secondary air supply.
 - a. Turn the air supply on.

⚠ CAUTION

If there are leaks from either female fitting, or along the hose, depressurize the hose and correct the problem. Such leakage can result in increased fill time.

2. Attach the quick-fill hose to the shoulder mounted quick-fill fitting.
 - a. Remove the rubber dust cap from the male quick-fill fitting. Be sure that the cylinder valve is fully opened.
 - b. Remove the rubber dust cap from the female fitting on the quick-fill hose.
 - c. Push the female fitting of the hose onto the male quick-fill fitting until it snaps in place. Pull on the hose to be sure the connection is secure. Filling immediately begins when the female fitting fully engages with the male fitting.
 - d. After approximately 45-60 seconds, the pressure between the secondary air supply and the air mask cylinder will be equal.

Note: If the secondary air supply does not have a sufficient volume of air, the air mask cylinder will not reach maximum service pressure.

3. Compare the cylinder pressure gauge or FireHawk M7 Control Module reading to the secondary air supply pressure gauge reading. If the readings are the same, pressure is equal.
4. To disconnect the quick-fill hose after transfilling, pull the gray sleeve back. The hose fitting and the male fitting will separate. A hiss or pop may be heard as the fittings separate and the high pressure air is sealed off.
5. Immediately install the dust cover on the male fitting.
6. The air mask cylinder is ready for service if the cylinder pressure gauge needle is on the corresponding color band.

TRANSFILLING BETWEEN AIR MASKS

Note: The air mask with the higher pressure reading is the donor. The air mask with the lower pressure is the receiver. Transfilling between users of air mask should be performed only during life-threatening emergencies or simulated training exercises. Both donor and receiver must return to fresh air immediately following the procedure.

⚠ CAUTION

DO NOT transfill if the donor's audible alarm is ringing or FireHawk M7 HUD /FireHawk M7 Control Module are flashing. Failure to follow this warning can result in

shorter escape time to return to fresh air, causing serious personal injury or death.

The audible alarm begins ringing and heads-up display system begins flashing to indicate that the pressure in the cylinder has been reduced to 25% of its rated working pressure. Remaining service time must be used for escape to fresh air. If the donor's audible alarm begins ringing or FireHawk M7 HUD/FireHawk M7 Control Module begins flashing during transfilling, the donor should disconnect and preserve his escape time.

1. If the donor's alarm is not ringing and FireHawk M7 HUD/FireHawk M7 Control Module are not flashing and you have sufficient air to transfill to a receiver, (greater than 1000 psi for 2216 psi air masks and greater than 2000 psi for 4500 psi air masks), follow these steps.
 - a. Remove the 3 foot emergency transfill hose from its protective pouch.
 - b. Remove the rubber dust cover from both female fittings on the quick-fill hose assembly.
 - c. Remove the rubber dust cover from the male Quick-Fill System fitting.
 - d. Push the female fittings on to the male fittings until they click in place. Pull on the hose to be sure it snapped in place.

⚠ WARNING

If serious leakage is noticed from either of the two female fittings, or anywhere along the hose, disconnect the female fittings and return to fresh air immediately. Failure to follow this warning can result in serious personal injury or death.

- e. After approximately 45-60 seconds, pressure between the air mask cylinders will be equal.
- f. Disconnect the quick-fill hose from the air mask by pulling the gray sleeve back on both ends. A hiss or pop may be heard as the fittings separate and the high pressure air is sealed off.
- g. Immediately install the dust cover on the quick-fill male fitting. The dust cover prevents dirt, water, and debris from entering the fitting, and acts as a redundant seal.

QUICK-FILL FITTING LEAKAGE

1. When transfilling in fresh air and the dust cover will not stay on the male fitting because air is leaking, correct the condition before using the air mask.
2. When transfilling in a contaminated atmosphere and the dust cover will not stay on the male fitting because air is leaking:
 - a. Immediately reconnect the quick-fill hose to seal off the leak and return to fresh air.
 - b. If the hose will not reconnect, reach behind and close the cylinder valve. Air pressure in the regulator

QUICK-FILL SYSTEM OPERATION

will drop, and the leak will slow down.

- c. Quickly replace the protective dust cap on the male fitting. This will form a redundant seal.
- d. Open the cylinder valve and return to fresh air immediately. The dust cover prevents dirt, water, and debris from entering the fitting, and acts as a redundant seal.

QUICK-FILL SYSTEM HOSE STORAGE

1. Preparing the Quick-Fill System hose for storage:
 - a. Press in on the center of the quick-disconnect dust cap to release any pressure in the quick-fill hose.
 - b. Roll up the hose and place it in its protective pouch.

EXTENDAIRE SYSTEMS

GENERAL INFORMATION

Two air masks equipped with an ExtendAire System can share a common air supply during emergency escape. Users can couple the ExtendAire block of one air mask to a ExtendAire block of a second air mask by using a rescue hose (P/N 812973). When connecting two ExtndAire Systems, two ExtendAire II Systems, or one ExtendAire System and one ExtendAire II Systems, both users will receive intermediate pressure air from the donor's first stage regulator and cylinder. The duration of the remaining air supply will be reduced by at least half.

The SCBA is approved by NIOSH **without** inter-connecting two users to one apparatus. NIOSH does not certify "buddy breathers". Therefore, the attachment of the receiver's regulator to the donor's apparatus voids the NIOSH approval for both air masks.

Air Hose: When used as a combination apparatus, the device shall be supplied with respirable air through air supply hose with a minimum length of 8 feet and maximum length of 300 feet within the pressure range of 85-90 psi. 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. 1989 quality verification level (Grade) D for Gaseous Air.

⚠ WARNING

Use this emergency escape breathing system for life threatening emergencies and simulated training exercises only. All other adequate means of escape must be considered before using this device.

- **During use the air supply, and consequently the service time, is reduced approximately in half. Before connecting two users make sure the air supply is sufficient for both users to escape; otherwise do not use the system.**
- **DO NOT use the system if the donor's audible alarm is ringing.**
- **The NIOSH Approval for both apparatus are void when this device is used, due to the difficulty in maneuvering during escape. Exercise extreme care while connected together. Mobility and range of motion will be limited when donor's and receiver's air masks are connected.**
- **Maintain slack in the air lines during maneuvering and while connected together. DO NOT pull on the hoses. Pulling on the rescue hose could separate hoses from fittings resulting in air leaks.**

If the above measures cannot be followed or to provide greater escape protection, use the Quick-Fill System. It maintains approval while transfilling and does not exhibit the above hazards.

DO NOT use the Quick-Fill System, URC Assembly, or ExtendAire System accessories if there is any possibility that the environment contains a CBRN warfare agent. These air mask accessories are not approved for use in atmospheres containing CBRN warfare agents. Failure to follow this warning can result in serious personal injury or death.

EMERGENCY ESCAPE BREATHING SYSTEMS: INSTRUCTIONS FOR USE

The ExtendAire System use Snap-Tite quick-disconnects.

The Snap-Tite quick-disconnect has two significant features.

1. It is single action to connect. The coupler is pushed firmly over the plug to engage.
2. It is a locking type that requires two actions to disconnect.
 - a. Push the two sides of the quick-disconnect towards each other. (The plug should advance into the coupler end approximately 1/8".)
 - b. Slide the coupler's outer sleeve away from the plug. Pull the plug out of the coupler. Ensure that unused quick-disconnect plugs and couplers are protected by dust caps.

⚠ WARNING

DO NOT install or attempt to use any hose assembly or fitting other than those supplied by MSA for the ExtendAire Systems. Failure to follow this warning can result in serious personal injury or death.

PREPARATION FOR USE

BEFORE ENTERING A TOXIC ATMOSPHERE

1. Don the apparatus as described in the donning section.
 - a. ExtendAire System — Ensure proper engagement of the Snap-Tite quick-disconnect coupling on the intermediate pressure hose (at the manifold tee).
 - b. ExtendAire II System — Ensure manifold and hose are fully contained in the ExtendAire II System pouch and that both snaps are fastened.

EXTENDAIRE SYSTEMS

PROVIDING OR OBTAINING EMERGENCY BREATHING SUPPORT

⚠ WARNING

Follow these procedures to connect and disconnect the emergency escape breathing system hardware. Individual development of operating procedures and sufficient training is required to use this equipment in actual emergency conditions. Failure to follow this warning can result in serious personal injury or death.

ExtendAire System Hose Connection Procedure

1. Remove the dust cap from the quick-disconnect on the donor's receiver's ExtendAire block.
2. Connect the rescue hose (P/N 812973) into the donor's ExtendAire manifold block.
 - a. Push the socket of the hose firmly over the plug on the manifold block.

⚠ WARNING

Perform the following disconnect and connect steps quickly. The receiver will not have a supply of breathable air while the receiver's second stage regulator hose is disconnected. Failure to follow this warning can result in serious personal injury or death.

3. Connect the rescue hose to receiver's ExtendAire manifold block.
 - a. Push the coupler of the hose firmly over the plug on the manifold block.
 - b. Check that the hose is properly routed and not tangled with any other part of the apparatus (i.e. neck strap, chest strap, etc.)
 - c. Check for full engagement of the quick-disconnect fittings to assure that the socket does not separate from the plug. The donor's air mask will supply air for emergency escape to the two individuals. The duration of the remaining air supply will (at least) be reduced in half.

ExtendAire System Disconnection Procedure

1. Upon reaching a safe, non-toxic atmosphere, a staging area or performing other emergency egress procedures, uncouple the receiver's hose at the quick-disconnect.
2. Replace the dust cap on the quick-disconnect fittings.

⚠ WARNING

The receiver's facepiece or regulator must be removed upon disconnection from the donor's air supply. Failure to follow this warning can result in serious personal injury or death from suffocation.

ExtendAire II System Connection Procedure

1. Pull on the pouch opening of both the donor's and receiver's pouches.
2. Fully remove the manifold and hose from each pouch.
3. Remove the dust caps from both manifolds.
4. Connect the receiver's manifold to the donor's manifold.
 - a. Push the coupler on the receiver's manifold firmly over the plug on the donor's manifold.
 - b. Check that the hoses are properly routed, not kinked, and not tangled with any other part of the apparatus (i.e. second stage regulator hose, neck strap, chest strap, etc.)
 - c. Check for full engagement by pulling at the quick-disconnect and assure that the coupler does not separate from the plug. The apparatus of the donor will supply air for emergency escape of the two individuals. The duration of the remaining air supply will (at least) be reduced in half.

ExtendAire II System Disconnection Procedure

1. Upon reaching a safe, non-toxic atmosphere, a staging area or performing emergency egress procedures, uncouple the receiver's manifold at the quick-disconnect.
2. Replace the dust caps on the quick-disconnects.
3. Coil the hose neatly, insert into the pouch, and close the pouch by fastening the snaps.

Mine Safety Appliances Company

FireHAWK M7 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 WARRANTIES, 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 S.A.R. 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, Hoses & Nose Cup	Rubber Product	5 Year Limited/Age Deterioration
Clear Command Communications	MSA Limited Warranty	1 Year
FireHawk M7 Air Mask Electronics - Control Module HUD, Power Module, Communications Module	MSA Limited Warranty	3 ½ 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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