BlackHawk™ MMR Air Mask

Low/High Pressure

OPERATION AND INSTRUCTIONS

⚠ WARNING

THIS MANUAL MUST BE CAREFULLY READ AND FOLLOWED BY ALL PERSONS WHO HAVE OR WILL HAVE THE RESPONSIBILITY FOR USING OR SERVICING THIS AIR MASK. This Air Mask will perform as designed only if used and serviced according to the instructions; OTHERWISE IT COULD FAIL TO PERFORM AS DESIGNED, AND PERSONS WHO RELY ON THE AIR MASK COULD SUSTAIN SERIOUS PERSONAL INJURY OR DEATH.

This Self-Contained Breathing Apparatus (SCBA) is certified by the National Institute of Occupational Safety and Health (NIOSH).

The Nightfighter™ Heads-Up Display System 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.

See separate insert for NIOSH approval information: P/N 10046412

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

MSA The Safety Company

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

TAL 017 (L) Rev. 6

Prnt. Spec. 10000005389(A) Mat. 10041214
Doc. 10000014745

INTRODUCTION

TABLE OF CONTENTS

NIOSH APPROVAL INFORMATION
CAUTIONS AND LIMITATIONS

D- Air-line respirators can be used only when the respirators are supplied with respirable air meeting the requirements of CGA G-7.1 Grade D or higher quality.
E- Use only the pressure ranges and hose lengths specified in the User's Instructions.
I- Contains electrical parts which have not been evaluated as an ignition source in flammable or explosive atmospheres by MSHA/NIOSH.
J- Failure to properly use and maintain this product could result in injury or death.
M- All approved respirators shall be selected, fitted, used and maintained in accordance with MSHA, OSHA and other applicable regulations.
N- Never substitute, modify, add or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer.
O- Refer to User's Instructions, and/or maintenance manuals for information on use and maintenance of these respirators.
S- Special or critical User's Instructions and/or specific use limitations apply. Refer to User's Iinstructions before donning.

S - SPECIAL OR CRITICAL USER'S INSTRUCTIONS

Approved for use at temperatures above -25°F. Approved only when the compressed-air container is fully charged with air meeting the requirements of the Compressed Gas Association Specification G-7 for quality verification level (grade) D air or equivalent specifications. The cylinder shall meet applicable DOT specifications.

When NightFighter Heads-Up Display System is used as a gauge (not in conjunction with standard pneumatic gauge), Continuous Operations Mode must be used to maintain NIOSH approval.

Do not alter this NightFighter Heads-Up Display System. Altering will void the Intrinsic-Safety rating and may affect the Intrinsic-Safety of the device.

Misuse or abuse of the NightFighter Heads-Up Display System, or the equipment to which it is attached, or using this equipment in a manner or situation not intended by the manufacturers, may result in damage to the NightFighter Heads-Up Display System, or equipment connected to the NightFighter Heads-Up Display System. This may result in personal injury or death to user or persons dependent on the user.

Always inspect the NightFighter Heads-Up Display System for damage before use. If damage is found, immediately remove the device from service.

Note: The NightFighter Heads-Up Display System is for use with an Ultra Elite Facepiece. It cannot be used without the proper installation of the Receiver and Bracket and Transmitter Kit from MSA.

Note: The NightFighter Heads-Up Display System Transmitter may be replaced by an ICM Tx Unit which performs the same basic tasks as the NightFighter Heads-Up Display System Transmitter. Refer to the users instructions for the ICM Tx Unit and NightFighter Heads-Up Display System Receiver (PN 10058881).

Note: The NightFighter Heads-Up Display System has 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.

Approval is maintained while transfilling air only if MSA Quick-Fill Hose Assembly 485331 or 485332 is used. Include 488703 cylinder charging system hose if using with encapsulated suit.

Do not attempt to transfill air (using Quick-Fill URC or Quick-Fill connectors) if donor's NightFighter Heads-Up Display System is flashing.

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

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

NIOSH Approval Information is included as a supplement to these instructions (P/N 10041487).

IMPORTANT NOTICE FOR RESPIRATORY PROTECTION PROGRAM ADMINISTRATORS

1. An adequate respiratory protection program must include knowledge of hazards, hazard assessment, selection of proper respiratory protective equipment, instruction and training in the use of equipment, inspection and maintenance of equipment, and medical surveillance. [See OSHA regulations, Title 29 CFR, Part 1910. 134, Subpart I, Par. 1910. 134 (c).]
2. This 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, Subpart 1, Par. 1910. 134 (b) (3).
3. This SCBA must be secured by a positive mechanical means if stowed within an enclosed seating area of fire department vehicles, or in a compartment with a positive latching door. The method of holding the SCBA in place must be designed to minimize injury to persons in the vehicle in the event of accident, rapid deceleration, or acceleration.
4. Do not mark the SCBA, i.e., with stamps, labels, paint, or other methods. Use of such markings may interfere with apparatus use or may constitute a flammability hazard.
5. Be sure that no other equipment interferes with the SCBA facial seal, or with the users hands, or other necessary means of mobility.

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

ANSI Standard Z88.5, Practices for Respiratory Protection for the Fire Service; and, ANSI Standard Z88.2, Practices for Respiratory Protection.

American National Standards Institute, 1430 Broadway, New York, NY 10018.

OSHA Safety and Health Standards (29 CFR 1910) (see specifically Part 1910. 134), available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Compressed Gas Association, Inc., 1725 Jefferson Davis Hwy., Suite 1004, Arlington, VA 22202.

⚠ WARNING

1. **Read and observe all NIOSH and other approval limitations as they apply to using the breathing apparatus.**
2. **Do not use the air mask as an underwater device.**
3. **This system must be supplied with respirable [Quality Verification Level (Grade) D, see ANSI/CGA G 7.1-1989] or higher quality air; and a dew point not to exceed -65°F (24ppm v/v) [Compressed Gas Association Specification G-7.1 for Quality Verification Level (Grade) D Gaseous Air].**
4. **This device may not seal properly with your face if you have a beard, gross sideburns, or similar physical characteristics (see NFPA-1500 and ANSI Z88.2). An improper facial seal may allow contaminants to leak into the facepiece, reducing or eliminating respiratory protection. Do not use this device if such conditions exist. The face-to-facepiece seal must be tested before each use. Never remove the facepiece except in a safe, non-hazardous, non-toxic atmosphere.**
5. **Return to a safe atmosphere immediately if discoloration, crazing, blistering, cracking, or other deterioration of the lens material is observed.**
6. **Users must wear suitable protective clothing and precautions must be taken so that the air mask is not exposed to atmospheres that may be harmful.**
7. **Take into account the following factors which may affect the duration or the service life.**
   a. **the degree of physical activity of the user;**
   b. **the physical condition of the user;**
   c. **the degree that the user's breathing rate is increased by excitement, fear, or other emotional factors;**
   d. **the degree of training or experience which the user has had with this or similar equipment;**
   e. **whether or not the cylinder is fully charged;**
   f. **the presence in the compressed air of carbon dioxide concentrations greater than the .04% level normally found in atmospheric air;**

g. the atmospheric pressure; if used in a pressurized tunnel or caisson at 2 atmospheres (15 psi gauge) the duration will be one-half as long as when used at 1 atmosphere; at 3 atmospheres the duration will be one-third as long;
h. the condition of the apparatus.

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

BEFORE USE

Thoroughly inspect this air mask on receipt and before use.

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

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

DESCRIPTION

DESCRIPTION

The 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)]

This air mask, when equipped with the Ultra Elite Hycar facepiece and CBRN regulator, is considered "CBRN hardened" for applications when NIOSH approval for use against these live agents is not required. This air mask has been tested and passed the NIOSH CBRN (chemical, biological, radiological, and nuclear) live agent test requirements.

⚠ WARNING

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

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

BlackHawk MMR breathing apparatus consists of the following major sub-assemblies.

- first stage regulator
- second stage regulator
- air cylinder and valve
- NightFighter Heads-Up Display System
- carrier and harness
- facepiece

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 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.

SECOND STAGE REGULATOR

This is a pressure-demand regulator, which keeps a positive pressure in the facepiece all the time. The release button on top of the regulator stops air flow. To stop air flow, push the button IN. To restart the regulator, inhale sharply. The regulator attaches to the facepiece with a push-to-connect connector or slide connector. The regulator delivers large flow rates accurately and quickly.

Blackhawk SCBA with the Firehawk MMR model numbers 10060982 and 10060983 are considered by MSA to be "CBRN hardened". They can be identified by the Firehawk Regulator model number and the CBRN marking on the underside of the regulator housing. SCBA with these regulator model numbers have passed CBRN live agent testing, but are not CBRN-approved by NIOSH, since they are not certified as NFPA compliant. MSA has chosen not to seek NFPA compliance due to the requirement for a redundant low-pressure warning device, a potential safety concern in revealing the position of the user during tactical operations.

AIR CYLINDER AND VALVE

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

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

*as approved by NIOSH

DESCRIPTION

QUICK-FILL SYSTEM (OPTIONAL)

The Quick-Fill System is a shoulder mounted male quick-fill inlet for 2216psig emergency filling of SCBA. Also included with the 2216psig Quick-Fill System is a pressure relief valve for protection of the cylinder burst disc. The Quick-Fill System may also be used for transfill operations.

CARRIER AND HARNESS

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

LUMBAR PAD (OPTIONAL)

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

FACEPIECE

The facepiece is available in three sizes. The facepiece has a low-resistance, pressure-demand exhalation valve designed for easy cleaning. An inhalation check valve in the inlet housing keeps moisture and contaminants out of the mask mounted regulator. The facepiece has a speaking diaphragm for clear, short range communication.

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

NIGHTFIGHTER HEADS-UP DISPLAY SYSTEM

NightFighter Heads-Up Display System is approved intrinsically safe and conforms to UL/ANSI 913 for use in Class I, Div. I, Groups A thru D hazardous locations, temperature rating T4.

- The NightFighter Heads-Up Display System allows a user to clearly and easily see air cylinder volume while wearing a NFPA compliant SCBA.
- The NightFighter Heads-Up Display System allows a user to transfer the receiver from Ultra Elite Facepiece to another NFPA 1981, 2002 Edition Ultra Elite Facepiece

Note: The NightFighter Heads-Up Display System can only be used with an Ultra Elite Facepiece.

- The NightFighter Heads-Up Display System consists of three (3) separate assemblies.
  - o Bracket assembly attached to an Ultra Elite Facepiece.
  - o Receiver mounted on the bracket assembly.
  - o Transmitter assembled to the gauge line. (See Installation Instruction P/N 10035581).
- The NightFighter Heads-Up Display System's Receiver shows the user the air cylinder content in one quarter cylinder increments, from a full cylinder to an empty cylinder, by a LED light logic pattern.
- The NightFighter Heads-Up Display System's Transmitter is assembled to the gauge line hose. The transmitter sends a signal to the receiver (on the facepiece) of the air cylinder content.
- The NightFighter Heads-Up Display System's Receiver has seven (7) LED light patterns. (See Chart).
- The NightFighter Heads-Up Display System's Receiver has a light sensor that automatically adjusts the brightness of the LED based on the ambient light levels measured outside of the facepiece.
- The NightFighter Heads-Up Display System's Receiver will indicate a low battery by a Yellow LED light for the receiver and transmitter. (See Chart).

The NightFighter Heads-Up Display System operates using two (2) standard AAA alkaline batteries in the transmitter and two (2) standard AA batteries in the receiver. The NightFighter Heads-Up Display System notifies the user when the batteries need to be replaced.

⚠ WARNING

Use only Duracell MN2400, Energizer E92, or Eveready A92 AAA alkaline batteries in the TRANSMITTER. Use of other batteries, or a combination of batteries from different manufacturers, will affect performance of unit and will void the Intrinsic Safety approval.

⚠ WARNING

Use only Duracell MN1500 or Energizer E91 AA alkaline batteries in the RECEIVER. Use of other batteries, or a combination of batteries from different manufacturers, will affect performance of unit and will void the Intrinsic Safety approval.

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

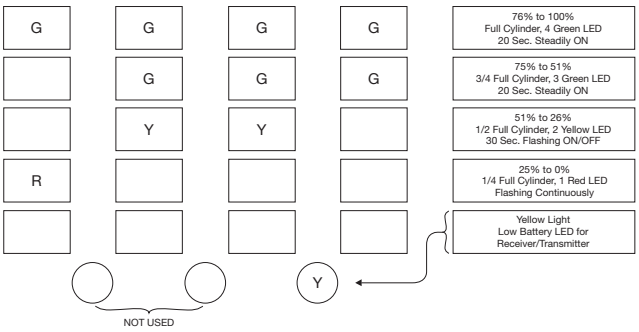
Note: For older versions of the Nightfighter RECEIVER containing AAA Alkaline batteries, use only Duracell MN2400, Energizer E92, or Eveready A92. Use of other batteries, or a combination of batteries from different manufacturers, will affect performance of unit and will void the Intrinsic Safety approval.

DESCRIPTION

Note: With system pressurized, quick press the operation button on the transmitter. The transmitter will show current pressure for ONLY 10 seconds.

- The LED lights in the receiver will automatically adjust for the brightness outside of the facepiece.
- The receiver will indicate a Yellow LED light, after going through the start-up sequence, if a low battery condition is detected in the receiver or transmitter (See Low Battery Warnings).

NightFighter Heads-Up Display System Chart



The Nightfighter Heads-Up Display System illuminates a Red LED when there is approximately 25% of the SCBA's rated service time remaining. The Nightfighter Heads-Up Display System also illuminates when the cylinder valve is first opened, providing a visual indication that the alarm is functioning.

Cylinder	Approx. 25% Remaining Service Time
30-min. 2216 psig	7 min.
30-min. 4500 psig	7 min.
45-min. 4500 psig	11 min.
60-min. 4500 psig	14 min.

*as approved by NIOSH

⚠ WARNING

This air mask does not have an audible alarm indicator for low cylinder pressure. The NightFighter Heads-Up Display System illuminates a Red LED light as an indicator that the cylinder pressure is low. Failure to return to fresh air when the red light illuminates may result in serious personal injury or death.

Low Battery Warnings

Note: There are different low battery warnings.

- If there is a low battery in the receiver, single Yellow LED flash.
- If there is a low battery in the transmitter, double short Yellow LED flashes.
- If there are low batteries in the receiver and transmitter, the Yellow LED will alternate single and double flashes.

The receiver will show air cylinder volume in 25% tank increments from full to empty. (See Chart).

NOTES

DONNING

DONNING THE AIR MASK

1. Remove the facepiece from the case.

⚠ WARNING

Do NOT use a cover lens in a high-temperature environment. High temperatures may distort the cover lens. Or, moisture trapped between a cover lens and the facepiece lens may condense and distort vision. Always remove the cover lens before donning the facepiece.

2. Check that the cylinder is fully pressurized.

⚠ CAUTION

Do NOT use a partially full cylinder. If the cylinder is not full, the service time is reduced accordingly. Do refill cylinder valve before using the air mask.

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

NIGHTFIGHTER HEADS-UP DISPLAY SYSTEM AND REGULATOR CHECKS

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

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

3. Reach behind and open the cylinder valve fully.

Note: The NightFighter Heads-Up Display System Receiver and Transmitter must be no more than15 inches apart, otherwise the receiver's LEDs may not function.

⚠ WARNING

Test the NightFighter Heads-Up Display System for damage and be sure the system operates properly before each use of the SCBA. Do NOT use this device unless it passes all operational tests. Failure to follow this warning can result in serious personal injury or death.

4. Looking through the facepiece lens at the NightFighter Heads-Up Display System Receiver, the LEDs must illuminate in accordance with the NightFighter Heads-Up Display System start-up sequence.

NightFighter Heads-Up Display System Start-up Sequence

- Four Green LEDs for 20 seconds, Steadily ON.
- Three Green LEDs for 20 seconds, Steadily ON.
- Two Yellow LEDs for 30 seconds, Flashing Continuously.
- One Red LED, Flashing Continuously.
- Yellow LED for Low Battery.

Note: If the NightFighter Heads-Up Display System continues to show a Yellow LED after going through the start-up sequence, it is necessary to replace the receiver and/or transmitter batteries prior to using the SCBA (See Low Battery Warnings and Battery Replacement).

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

6. Check for bypass operation. Grasp the red knob and turn it counter-clockwise. Listen for air flow. Close the bypass.

⚠ WARNING

There must be a continuous flow of air when the bypass knob is opened. If not, do not use the apparatus. The SCBA must be checked and corrected for proper operation by an MSA trained or certified repairperson before using it. Failure to follow this precaution may result in serious personal injury or death.

LEAK AND NIGHTFIGHTER HEADS-UP DISPLAY SYSTEM CHECKS

Note: Continuous Operations Mode can only be activated when SCBA is pressurized.

1. Place NightFighter Heads-Up Display System into Continuous Operations Mode. Press and hold Operation Button on transmitter for 3 seconds. Once LEDs come on, release button.
2. Close the cylinder valve fully.
3. Watch the NightFighter Heads-Up Display System Receiver for 60 seconds. The LED light pattern must not change.

⚠ WARNING

If the NightFighter Heads-Up Display System Receiver's LED light pattern changes, do not use the apparatus. The SCBA must be checked and corrected for proper operation by an MSA trained or certified repairperson before using. Failure to follow this precaution may result in serious personal injury or death.

4. Crack the bypass valve slowly to bleed off pressure.
5. Watch the NightFighter Heads-Up Display System Receiver while bleeding off pressure. The LEDs must illuminate in accordance with the NightFighter Heads-Up Display System decreasing pressure sequence.

NightFighter Heads-Up Display System Decreasing Pressure Sequence

- Four Green LEDs, Steadily ON.
- Three Green LEDs, Steadily ON.
- Two Yellow LEDs, Flashing Continuously.
- One Red LED, Flashing Continuously.

⚠ WARNING

If the NightFighter Heads-Up Display System fails to illuminate in the decreasing pressure sequence, do not use the SCBA. The SCBA must be checked and corrected for proper operation by an MSA trained or certified repairperson before using. Failure to follow this precaution may result in serious personal injury or death.

Note: The NightFighter Heads-Up Display System will automatically turn itself OFF, approximately 60 seconds after the apparatus is depressurized. (The single Red LED will flash at this time).

DONNING THE FACEPIECE

⚠ WARNING

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

1. Extend the facepiece straps fully. Place neckstrap around your neck and don the facepiece by inserting your chin first.

2. Pull the head harness completely over your head.

3. Tighten the lower (neck) harness straps first, by pulling them straight back, not out.

4. Tighten the temple straps the same way. Tuck in the ends of the straps so that they lay flat across the head.

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

FACEPIECE FIT CHECK

⚠ WARNING

Check the inhalation valve, inhale. If you do not receive sufficient flow of air, do not use facepiece. The facepiece must be repaired or replaced. Failure to follow this precaution can result in serious personal injury or death.

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

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

Note: You may need to exhale sharply to open the valve. If this does not release the valve, do not use the facepiece.

⚠ WARNING

This device may not seal properly with your face if you have a beard, gross sideburns, or similar physical characteristics (see 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.

3. Open the cylinder valve fully.

4. Place NightFighter Heads-Up Display System into Continuous Operations Mode. Press and hold Operation Button on transmitter for 3 seconds. Once LEDs come on, release button.

Note: The Continuous Operations Mode will deactivate if a low battery condition is present.

INSTALLING PUSH-TO-CONNECT MASK MOUNTED REGULATOR

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

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

2. Insert regulator into facepiece adapter by pushing inward.

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

⚠ WARNING

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

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

⚠ WARNING

There must be a continuous flow of air when the bypass knob is opened. If not, do not use the apparatus. The SCBA must be checked and corrected for proper operation by an MSA trained or certified repairperson before using it. Failure to follow this precaution may result in serious personal injury or death.

Note: If the air mask passes all tests, the unit is ready to use. Remember, you must perform these tests every time before you enter the hazardous atmosphere. If the unit fails to meet any of the tests, the condition(s) must be corrected before using the apparatus.

PRECAUTIONS DURING USE

- Be sure the NightFighter Heads-Up Display System is in Continuous Operations Mode.
- Periodically check the pressure on the NightFighter Heads-Up Display System.
- When the NightFighter Heads-Up Display System starts flashing a Red LED, immediately return to fresh air.

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

• Reduced air flow:	**Immediately** open the bypass. **Immediately** return to fresh air.
• Air mask free-flows:	**Immediately** return to fresh air.
• NightFighter Heads-Up Display System flashes a return to Red LED:	**Immediately** return to fresh air.

INSTALLING SLIDE MASK MOUNTED REGULATOR

1. Grasp regulator and orient regulator so that red bypass knob is pointing to the right and slide button is on top.
2. Slide regulator onto rail (fast track) of facepiece cover. Slide regulator down the rail cover until regulator stops.
3. Insert regulator into facepiece adapter by pushing inward.
4. Ensure the regulator locks into facepiece.
5. Check proper engagement by pulling on the regulator to ensure regulator is securely attached to facepiece.

⚠ WARNING

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

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

⚠ WARNING

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

Note: If the air mask passes all tests, the unit is ready to use. Remember, you must perform these tests every time before you enter the hazardous atmosphere. If the unit fails to meet any of the tests, the condition(s) must be corrected before using the apparatus.

REMOVING THE APPARATUS

REMOVING THE APPARATUS

DISCONNECTING THE PUSH-TO-CONNECT REGULATOR

1. Grasp top of regulator.

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

3. Close the cylinder valve fully. Open the bypass to release system pressure. Close the bypass.
4. The NightFighter Heads-Up Display System will automatically turn itself OFF, approximately 60 seconds after the apparatus is depressurized. (The single Red LED light will flash at this time.)

5. Stow the regulator with red bypass knob pointing to the right in the stand-by belt mount.

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

Note: Be sure to replace the cylinder with a full one. Complete Inspection and Cleaning and Disinfecting procedures outlined in this manual. Ensure complete apparatus is clean and dry. Ensure that facepiece head harness straps and harness adjustment straps are fully extended. Place the complete apparatus in the storage case or suitable storage location so it can be reached easily for emergency use. (See storage instructions.)

DISCONNECTING THE SLIDE REGULATOR

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

Note: Regulator can hang on cover rail in a stand-by mode.

3. Slide regulator up cover rail until regulator slide button is free of cover rail.
4. Close the cylinder valve fully. Open the bypass to release system pressure.
5. The Nightfighter Heads-Up Display System will automatically set itself OFF, approximately 60 seconds after the apparatus is depressurized. (The single Red LED light will flash at this time.)
6. Stow the regulator with red bypass knob pointing to the right in the stand-by belt mount.
7. To remove the facepiece, fully loosen the harness straps and pull the facepiece up and away from your face.
8. To remove the carrier harness, press the belt buckle release button IN.
9. Disconnect the chest strap (if used).
10. To loosen the shoulder straps, grasp the release tabs. Push them out and away from your body.

11. Slip your right arm out of the shoulder pad first, then remove the harness.

Note: Be sure to replace the cylinder with a full one. Complete Inspection and Cleaning and Disinfecting Procedures outlines in this manual. Ensure complete apparatus is clean and dry. Ensure that facepiece head harness straps and harness adjustment straps are fully extended. Place the complete apparatus in the storage case or suitable storage location so it can be reached easily for emergency use. (See storage instructions.)

CHANGING THE CYLINDER
REMOVING THE SHROUD

1. Unsnap the bottom two retaining straps.
2. Extend bottom left side of shroud and remove shroud from first stage regulator.
3. Slide shroud off the cylinder valve handwheel.
4. Fold shroud over the top of cylinder, exposing the cylinder fully.

CYLINDER CHANGE OUT

⚠ WARNING

Be careful not to drop cylinder or bump valve knob. An unsecured cylinder can become an airborne projectile under its own pressure if the valve is opened even slightly.

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

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

⚠ CAUTION

Do NOT over-tighten the cylinder strap; otherwise it will damage the center buckle assembly.

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

RE-ATTACHING THE SHROUD

1. Slide shroud down over cylinder.
2. Slide cylinder valve handwheel through the bottom slot of shroud.
3. Extend bottom left side of shroud over first stage regulator.
4. Snap the bottom two retaining straps.

CHARGING CYLINDERS

⚠ WARNING

1. **Remove from service if cylinder shows evidence of exposure to high heat or flame: e.g., paint turned to a brown or black color, decals charred or missing, gauge lens melted, or elastomeric materials distorted.**
2. **Use this device only after receiving proper training in its use. Use in accordance with this label and MSA apparatus instructions.**
3. **To maintain NIOSH approval, container 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 full pressure approved.**
5. **Do not alter, modify or substitute any components without approval of the manufacturer.**
6. **Inspect frequently. Maintain according to manufacturer's instructions. Repair only by properly trained personnel.**

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

REMOVING THE APPARATUS

SAFETY PRECAUTIONS FOR MSA SELF-CONTAINED BREATHING APPARATUS CYLINDERS

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

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

For maximum safety, the cylinders should be stored full or at a pressure above ambient but less than 100psig. Prior to recharged, 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 form the Compressed Gas Association, Inc., 1725 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102.

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

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

When replacing cylinder valves or after the retesting of cylinders, make sure the proper cylinder valve, burst disc, and O-ring are installed prior to cylinder recharging.

Establish the service pressure of the cylinder. All cylinders 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 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 apparatus or spare cylinders within or near an area where the apparatus can or might be exposed to any substances that will or might attack any part of the apparatus, causing the apparatus NOT to perform as designed and approved.

⚠ WARNING

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

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

To store the NightFighter Heads-Up Display System components, be sure that the unit is in the OFF (LED is not illuminated) position. Remove the batteries to prevent battery corrosion. Store units in a cool, dry place.

BATTERY REPLACEMENT

In continuous service, battery life will vary depending on user conditions. The battery is not rechargeable.

⚠ WARNING

Use only Duracell MN2400, Energizer E92, or Eveready A92 AAA alkaline batteries in the TRANSMITTER. Use of other batteries, or a combination of batteries from different manufacturers, will affect performance of unit and will void the Intrinsic Safety approval. Failure to follow this warning can result in serious personal injury or death.

1. Unfasten transmitter shroud strap(s).
2. Slide shroud off transmitter to expose battery door screws.

3. Loosen the screws to open battery door.
4. Insert two AAA batteries according to the battery orientation noted inside the compartment.
5. Close the battery door and tighten the screws.
6. Slide shroud over transmitter and fasten strap(s).

⚠ WARNING

Use only Duracell MN1500 or Energizer E91 AA alkaline batteries in the RECEIVER. Use of other batteries, or a combination of batteries from different manufacturers, will affect performance of unit and will void the Intrinsic Safety approval. Failure to follow this warning can result in serious personal injury or death.

Note: For older versions of the Nightfighter RECEIVER containing AAA Alkaline batteries, use only Duracell MN2400, Energizer E92, or Eveready A92. Use of other batteries, or a combination of batteries from different manufacturers, will affect performance of unit and will void the Intrinsic Safety approval.

1. Loosen the screws to open the battery door in the receiver.
2. Insert two AA batteries according to the battery orientation noted inside the receiver compartment.
3. Inspect the battery cover gasket is free of debris and not damaged or missing.
4. Close the battery door and tighten the screws.

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

⚠ WARNING

Do not dispose of the battery in fire. It may explode. Failure to follow this warning can result in serious personal injury or death.

QUICK-FILL SYSTEM OPERATION

QUICK-FILL SYSTEM OPERATION

The Quick-Fill is a male quick-fill inlet for use by Rapid Intervention Crews for emergency filling operations. The 2216psig system also includes an automatically-resetting pressure relief valve.

Note: The Quick-Fill may be used for transfill operations as described in this manual. Standard operating procedures should be developed for use of Quick-Fill System.

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 4500psig.

⚠ WARNING

For transfilling operations using the Quick-Fill System, do not use any transfilling hose assembly or fittings other than those supplied by MSA specifically for the Quick-Fill System. Use of any other transfilling hose assembly and/or fitting may result in serious personal injury or death, and will void NIOSH approval.

Do not lubricate the Quick-Fill fittings. Do not permit oil, grease, or other contaminants to come in contact with the Quick-Fill fittings. 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 SOURCE

A secondary air source stores compressed breathing air until needed to refill SCBA air cylinders. Secondary air source pressure must be greater than air mask cylinder pressure. Examples of air sources include: Cascade air cylinder refilling systems; high pressure compressor systems with a fixed reservoir; and an SCBA air cylinder which is not installed on an SCBA.

⚠ WARNING

Do not connect a Quick-Fill System equipped Low Pressure SCBA to an unregulated secondary air source with a pressure greater than 2216psig. The Quick-Fill System equipped low pressure air mask is rated for a maximum working pressure of 2216psig. As an additional safety feature, the SCBA has a pressure relief valve which automatically vents at 2500psig. Do not connect a High Pressure SCBA to a secondary air source with a pressure greater than 4500psig. The high pressure air mask is rated for a maximum working pressure of 4500psig.

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

The user is responsible for the air source, 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). Pressures at the inlet of the Quick-Fill System hose must not exceed that of the SCBA (2216psig or 4500psig). The user also is responsible for connecting the Quick-Fill hose to an appropriate secondary air source.

1. To connect the Quick-Fill System hose to Quick-Fill System fitting installed on the air source):
   a. Push the female fitting on the male fitting until it snaps in place. Pull on the hose to be sure the fitting snapped into place.
   b. Turn the air source on.

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. To attach the Quick-Fill System hose to the SCBA:
   a. Remove the rubber dust cap from the male inlet fitting on the SCBA. Be sure that the cylinder valve is fully opened.

Note: The shut-off button may be either open or closed, depending on whether the SCBA is donned.

   b. Remove the rubber dust cap from the female fitting on the Quick-Fill System hose.
   c. Push the female fitting on the male fitting until it snaps in place. Pull on the hose to be sure the fitting snapped into place. Transfilling begins when the female fitting is snapped on the SCBA.

Note: If the secondary air source does not have a sufficient volume of air, the SCBA cylinder will not reach full service pressure. After approximately 45-60 seconds, pressure between the secondary air source and the SCBA cylinder will be equal.

⚠ CAUTION

Cylinder temperature will increase by approximately 45°F. The pressure gauge may show FULL immediately after transfilling, but cylinder pressure may decrease by as much as 190psig after the cylinder cools to room temperature. Actual service time may be reduced accordingly.

3. Compare the SCBA pressure gauge reading to the secondary air source pressure gauge reading. If the readings are the same, pressure is equal.
4. To disconnect the Quick-Fill System hose after transfilling, pull the gray sleeve back. The hose fitting and

the SCBA 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 SCBA male fitting.
6. The SCBA cylinder is ready for service if the cylinder pressure gauge is on the corresponding color band.

EMERGENCY OPERATIONS

1. If you are transfilling in fresh air and the dust cover will not stay on the SCBA male fitting because air is leaking, correct the condition before using the SCBA.
2. If you are transfilling in a contaminated atmosphere and the dust cover will not stay on the SCBA male fitting because air is leaking:
   a. Immediately reconnect the Quick-Fill System hose to seal off the leak and return to fresh air.
   b. If you cannot reconnect the hose, 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 SCBA male regulator 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.

TRANSFILLING BETWEEN SCBA FROM MSA (EMERGENCY BREATHING SYSTEM)

Note: The SCBA with the higher pressure reading is the donor. The SCBA with the lower pressure is the receiver. Transfilling between users of SCBA 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 NightFighter Heads-Up Display System is flashing. Failure to follow this warning may result in shorter escape time to return to fresh air, causing serious personal injury or death.

NIGHTFIGHTER HEADS-UP DISPLAY SYSTEM RECEIVER PRESSURE READING

The NightFighter Heads-Up Display System Red LED 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 NightFighter Heads-Up Display System Red LED begins flashing during transfilling, the donor should disconnect and preserve his escape time.

1. If the donor's NightFighter Heads-Up Display System is not flashing and you have sufficient air to transfill air to a receiver, (greater than1000psig for Low Pressure SCBA and greater than 2000psig for High Pressure SCBA), 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 System hose assembly.
   c. Remove the rubber dust cover from the male quick-fill 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 may result in serious personal injury or death.

   e. After approximately 30-60 seconds, pressure between the SCBA cylinders will be equal.
   f. Disconnect the Quick-Fill System hose from both SCBA 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.

EMERGENCY OPERATIONS

1. If the dust cover will not stay on the SCBA or Quick-Fill male fitting because air is leaking:
   a. Immediately reconnect the Quick-Fill System hose to seal off the leak and return to fresh air.
   b. If you can not reconnect the hose, 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 SCBA male fitting. This will form a redundant seal.
   d. Open the cylinder valve and return to fresh air immediately.
2. Preparing the Quick-Fill System for Storage:
   a. Press in on the center of the quick-disconnect dust cap to release any pressure in the Quick-Fill System hose.
   b. Roll up the hose and place it in its protective pouch.

Note: Only persons trained in MSA Maintenance are authorized to repair or disassemble the Quick-Fill System. If repairs are required, contact your nearest MSA office. Call 1-800-MSA-2222.

COLD WEATHER OPERATION

SUGGESTED PROCEDURES FOR COLD WEATHER OPERATION

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

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

NOTES

CLEANING AND DISINFECTING

CLEANING AND DISINFECTING

Depending on the cleaning policy adopted, either a designated person or the user should clean each device after each use. ANSI standards suggest that users should be trained in the cleaning procedure. Confidence Plus Cleaning Solution (P/N 10009971) from MSA is recommended. It cleans and disinfects in one operation. It retains its germicidal efficiency in hard water to inhibit the growth of bacteria. It will not deteriorate rubber, plastic, glass, or metal parts. Refer to label for user instructions.

⚠ CAUTION

Do NOT use any cleaning substances that can or might attack any part of the apparatus.

⚠ CAUTION

Do NOT use alcohol as a germicide because it may deteriorate rubber parts.

⚠ CAUTION

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 NightFighter Heads-Up Display System Receiver and slide the receiver from facepiece bracket.
   c. Thoroughly wash the facepiece (and nosecup) in the cleaning solution. A soft brush or sponge can be used to clean the soiled facepiece.
   d. Rinse the facepiece and components in clean, warm (110°F), water (preferably running and drained).
   e. Clean the pressure demand exhalation valve by pressing in on the stem with a blunt object and flushing with clean water.
   f. 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.
   g. Operate the exhalation valve by hand to be sure it works properly.

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

3. In general, only the facepiece requires cleaning and disinfecting after each use. If the apparatus is soiled (i.e. heavy smoke residue or dirt accumulation) use a sponge damp with mild soap solution or use a soft/medium bristle brush to remove deposits that may interfere with normal operation of:
   a. Harness (straps, buckles, and shrouds)
   b. Cylinder carrier
   c. Cylinder (hand-wheel, gauge, outlet connection)
   d. NightFighter Heads-Up Display System
   e. First stage regulator
   f. MMR second stage regulator. Cover outlet of the MMR second stage regulator to prevent water, dirt, or debris from entering.
4. Inspect the entire apparatus as you re-assemble it. Follow the Inspection Instructions.
5. Re-attach NightFighter Heads-Up Display System Receiver onto facepiece bracket.
   a. Slide receiver onto facepiece bracket.
   b. Finger tighten thumb screw.
6. Thoroughly dry the facepiece and regulator after cleaning and disinfecting. The facepiece can trap water which could enter the regulator.

NOTES

INSPECTION

INSPECTION

Inspect the entire SCBA 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. Detailed repair procedures are located in MMR Users Maintenance Instructions.

⚠ WARNING

If the air mask does not function properly during any of the following inspections, it must be removed from service.

Do not inspect the air mask before cleaning if there is danger of contacting hazardous contaminants. Clean and disinfect first, then inspect. Failure to follow this precaution may cause inhalation or skin absorption of the contaminant and result in serious personal injury or death.

COMPONENT INSPECTION (AFTER EACH USE AND MONTHLY)

1. Don the air mask following the instruction procedures. These steps make up the Air Mask Functional Test.
2. If all steps are performed successfully, remove the air mask and inspect it following the steps below.
3. Facepiece
   a. Inspect the facepiece for rubber deterioration, dirt, cracks, tears, holes, or tackiness.
   b. Check the harness headstraps for breaks, loss of elasticity, or missing buckles or straps. Check the straps for signs of wear.
   c. Inspect the lens for cracks, scratches, and a tight seal with the facepiece rubber.
   d. The exhalation valve must be clean and operate easily. The valve must move off the seat and return when released.
   e. Inspect the facepiece coupling for damage. Also check to be sure the spider gasket and valve disc are present.
   f. Inspect the NightFighter Heads-Up Display System Receiver module. Check for cracks or other signs of damage which could allow contaminants to enter the module housing.
4. Cylinder Gauge
   a. Be sure you can see gauge needle and face clearly through the lens. Also be sure the gauge stem is not bent.
   b. Inspect the gauge hose for any visible damage.
5. NightFighter Heads-Up Display System
   a. Check that the NightFighter Heads-Up Display System goes through LED light patterns when cylinder valve is opened. This test assures that the NightFighter Heads-Up Display System is operating.
6. High Pressure Hose
   a. Check the high pressure hose between the NightFighter Heads-Up Display System Transmitter and first stage regulator. Check for cuts or severe abrasions. If present, replace the hose, the hose fitting should be tight.
7. Cylinder
   Breathing apparatus cylinders should be recharged as soon as possible after use. Cylinders should not be stored partially charged for two reasons:
   - If used without recharge, the service life of the apparatus is reduced.
   - The cylinder burst disc vents excess pressure if a full cylinder is over exposed to fire or heat. If the cylinder is not full, it may be damaged before the burst disc vents.

It is also essential that the required inspections and tests be performed on all SCBA cylinders in accordance with Department of Transportation (DOT) regulations. DOT regulations require that composite cylinders be retired from service after the fifteenth year. Please note this does not include cylinder valve assembly which may be reused. Aluminum cylinder service life is indefinite if proper inspection and hydrotest procedures are followed and they indicate that the cylinder may remain in service.

Please contact your MSA distributor or sales associate if you have questions or if you need additional information regarding this policy.

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

   a. If the cylinder is less than FULL, recharge it before storing it. Cylinder air must be at least CGA Quality Verification Level (Grade) D respirable air.
   b. Inspect the cylinder valve for signs of damage. The valve may be opened slightly to be sure it operates properly. Be sure to fully close the valve.
   c. Inspect the cylinder body for cracks, dents, weakened areas, corrosive 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. Call 1-800-MSA-2222 for instructions.
   e. Check the hydrostatic test date on the cylinder approval sticker located on the cylinder neck. Fiberglass and Kevlar composite cylinders must be tested every three years. Steel cylinders and carbon fiber cylinders must be tested every five years.
8. Harness
   Inspect all harness components and shrouds for cuts, tears, abrasions, or signs of heat or chemical- related damage.

9. Carrier
   a. Inspect the cylinder strap and buckle to be sure it holds the cylinder securely. Operate the over center latch to be sure that it opens and closes properly and that it holds the cylinder securely.
   b. Inspect back plate for cracks, weakened areas, or signs of heat or chemical-related damages.
10. Record Keeping

Following inspection, the date and initials of the designated person should be recorded on an inspection tag. A more detailed record of the operations performed can be noted on an inspection and maintenance log. Inspection tags and inspection and maintenance logs are available from MSA. When the inspection data has been recorded, the breathing apparatus is stored in a ready position.

FUNCTIONAL TEST

FUNCTIONAL CHECKS
(After Each Use and Monthly)

1. Check that the regulator works properly. The regulator outlet should be sanitized before and after testing.
   a. Check that the cylinder valve and buttons are closed and that the system is not pressurized.
   b. Gently inhale through the regulator outlet and hold your breath for about 10 seconds. If the negative pressure is maintained, there is no leakage.
   c. Gently exhale through the regulator outlet for about 10 seconds. If the positive pressure is maintained, there is no leakage.
   d. Do not use the apparatus if air flow through the regulator is detected in either test. Return the regulator to a certified repairperson.
2. Inspect the buttons and bypass valve.
   a. With the regulator pressurized, operate each valve to be sure it operates. Venting of pressure relief valves (or a continuing flow of air through the regulator when the user is not inhaling) indicates that the regulator needs to be repaired.
   a. Listen to the regulator. Any unusual sounds such as whistling, chattering, clicking, or rattling mean that the regulator should be checked further.
   b. If any of these symptoms occur, the apparatus must be removed from service. Return the regulator to a certified repairperson.
3. NightFighter Heads-Up Display System
   a. MSA recommends that the function of the NightFighter Heads-Up Display System warning device be checked by observing the NightFighter Heads-Up Display System's Receiver goes through LED light patterns. This test should be performed with a full cylinder.
   b. Pressurize the system by opening the cylinder valve for a moment, then close it. The NightFighter Heads-Up Display System's Receiver goes through LED light patterns indicating it is functioning.
   c. Open bypass slowly.
   d. The NightFighter Heads-Up Display System should continue to flashes a Red LED light until the apparatus depressurizes. If the NightFighter Heads-Up Display System does not function properly, the apparatus must be removed from service.

⚠ WARNING

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

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

NOTES

FLOW TEST AND OVERHAUL REQUIREMENTS

FLOW TEST AND OVERHAUL REQUIREMENTS

Your SCBA must be flow tested and overhauled at specific time intervals. These Maintenance Procedures must be performed by a trained repairperson or at a Certified Service Center. Contact your MSA sales representative or call the MSA Customer Service Center at 1-800-MSA-2222. They will supply the information you need to meet these requirements.

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

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

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

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

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

*The unit of SCBA use is defined as the consumption of one 30 min. cylinder of air. Example: If three cylinders of air are used, the SCBA would be considered to have been used three times.

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

Mine Safety Appliances Company

SCBA Lifetime Warranty
and Terms of Sale

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

Product Description	Warranty Period	Routine Air Mask Maintenance
SCBA (less Cylinder)	Lifetime	MSA requires that the SCBA 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.
SCBA Cylinder	Until end of service life as controlled by gov't. reg/DOT	
SCBA Replacement Parts	Lifetime	
SCBA Critical Repair Parts	Lifetime	

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

Product Description	Exception	Warranty Period
Facemask Blank, Breathing Tube, Harness, & Nose Cup	Rubber Product	5 Year Limited/Age Deterioration
Electronic Speech Communication	Manufacturer's Warranty	1 Year
NightFighter System		
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.

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

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

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

ID 0105-44-MC/ Apr 2000