BMR® Air Mask

NFPA 1981 - 2002 Edition Compliant

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 SCBA. 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.

⚠ WARNING

The 3000psi Operating System is not compatible with a 2216psi Air Cylinder.

This Self-Contained Breathing Apparatus (SCBA) is certified by the National Institute of Occupational Safety and Health (NIOSH) and is specifically designed to comply with National Fire Protection Association (NFPA) standards for use in firefighting applications.

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.

MSA Safety Products Division • ISO 9001 CERTIFIED Quality System • MSA Instrument Division

For More Information: Call (1-800-MSA-2222) or Visit Our Website at (www.MSAnet.com)

MSA Be Sure. Choose MSA.

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

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INTRODUCTION

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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 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 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 Instructions before donning.

S - SPECIAL OR CRITICAL USER INSTRUCTIONS

Approved for use as a combination apparatus for respiratory protection during entry into and escape from oxygen deficient atmospheres, gases, and vapors when not more than 20 percent of the rated capacity of the self-contained air supply is used during entry.

When used as a combination apparatus, the device shall be supplied with respirable air through 8 to 300 feet of air supply hose within the pressure range of 85-90 pounds per square inch gauge. A maximum of 12 sections of air supply hose may be used in making up the maximum working length of hose. Each section of coiled hose is considered 50 feet in length (max.: 6 sections). With the Hansen Quick-Disconnect, the cylinder shall be closed in the supplied-air mode. With the Foster Quick-Disconnect, the cylinder shall be open in the supplied-air mode.

If the supplied-air fails, disconnect air supply hose (open cylinder valve if required), and proceed to fresh air immediately.

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-7.1 for quality verification level (grade) D air or equivalent specifications. The cylinder shall meet applicable DOT specifications.

Approval is maintained while transfilling air only if MSA's Quick-Fill Hose Assembly 485331 or 485332 is used. Include 488703 Quick-Fill Hose if using with encapsulated suit. An apparatus equipped with the Quick-Fill System is not approved for use with the 7-1008-1 cylinder and valve assembly.

⚠ WARNING

An air mask using the 3000psi URC Assembly without Quick-Fill System can receive (be a receiver) cylinder pressure through the 3000psi URC Assembly. Do not use air mask with Quick-Fill System and 3000psi URC Assembly on the same air mask. Air mask with Quick-Fill System and 3000psi URC Assembly on same air mask will not allow the relief valve in the 3000psi URC Assembly to open as designed. Failure follow this warning can result in serious personal injury or death.

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 unit. 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 manufacturer, may result in damage to the NightFighter Heads-Up Display System, or equipment connected to the NightFighter Heads-Up Display System, may result in personal injury or death to user or persons dependent on the user.

INTRODUCTION

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 must be used with an Ultra Elite® Facepiece.

Do not attempt to transfill air (using URC Assembly or Quick-Fill connectors) if donor's audible alarm is ringing.

⚠ WARNING

Do not transfill (be a donor) using a 3000psi URC Assembly. The 3000psi URC Assembly has a check valve that does not allow cylinders to transfill (be a donor). Using the 3000psi URC Assembly to fill cylinders, the cylinder can only be filled to 2216psig. If the pressure exceeds 2216psig a relief valve in the URC Assembly will vent at approximately 2525psig or as low as 2400psig. A 3000psi cylinder can only be filled to 3000psig by using a scondary air source. The 3000psi URC Assembly cannot be used for filling a 3000psig cylinder. Failure follow this warning can result in serious personal injury or death.

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 815811).

Before you begin, get the appropriate illustrated Parts List for your SCBA.

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 method. Use of such markings may interfere with apparatus use or may constitute a flammability hazard.
5. Be sure that no other equipment interferes with the SCBA facial seal, the user's hands, or other necessary means of mobility.

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

NFPA Standard 1500, Fire Department Occupational Safety and Health Programs (Chapter 5) and NFPA 1981 Standard, on Open-Circuit SCBA's for Fire Service. Above publications are 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 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.

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 T1.

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.

⚠ WARNING

1. **Read and follow all NIOSH and other approval limitations.**
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 bdioxide 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 (15psi 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.

⚠ WARNING

The 3000psi Operating System is NOT compatible with a 2216psi Air Cylinder.

⚠ WARNING

Do not transfill (be a donor) using a 3000psi URC Assembly. The 3000psi URC Assembly has a check valve that does not allow cylinders to transfill (be a donor). Using the 3000psi URC Assembly to fill cylinders, the cylinder can only be filled to 2216psig. If the pressure exceeds 2216psig a relief valve in the URC Assembly will vent at approximately 2525psig or as low as 2400psig. A 3000psi cylinder can only be filled to 3000psig by using a scondary air source. The 3000psi URC Assembly cannot be used for filling a 3000psig cylinder. Failure follow this warning can result in serious personal injury or death.

⚠ WARNING

An air mask using the 3000psi URC Assembly without Quick-Fill System can receive (be a receiver) cylinder pressure through the 3000psi URC Assembly. Do not use air mask with Quick-Fill System and 3000psi URC Assembly on the same air mask. Air mask with Quick-Fill System and 3000psi URC Assembly on same air mask will not allow the relief valve in the 3000psi URC Assembly to open as designed. Failure follow this warning 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 BMR Low Pressure and BMR High Pressure Air Masks and their Dual-Purpose models are pressure-demand, self-contained breathing apparatus (SCBA) with NightFighter Heads-Up Display System, URC Assembly (Universal Rescue Connector) and ICM certified by the National Institute for Occupational Safety and Health (NIOSH) for use in atmospheres immediately dangerous to life or health (IDLH):

> "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 serious 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)] additionally, the air mask is designed to comply with the NFPA-1981 standard.

A self-contained breathing apparatus consists of the following sub-assemblies:

- pressure demand regulator
- air cylinder and valve
- facepiece and breathing tube
- Audi-Larm™ Audible Alarm with URC Assembly
- carrier and harness
- NightFighter Heads-Up Display System or ICM® Unit Gauge

PRESSURE DEMAND REGULATOR

The regulator is a two-stage device. A balanced first stage provides a uniform pressure to the second stage admission valve. The second stage provides air at a breathable flow rate to the user.

The regulator has two distinctly-shaped, hand-operated valves. The gold, knurled knob operates the main-line valve. This valve lets air flow from the regulator to the facepiece.
The red, hex-head knob operates the bypass valve. The valve knob's distinctive red color and hex shape permit quick identification. The bypass valve is used only if the main-line valve fails or the regulator fails while the apparatus is in use.

The regulator body is color-coded: black for low pressure and gray for high pressure.

The Dual-Purpose air mask regulator (supplied with a Foster or Hansen connector) allows the user to receive air from either the cylinder or a secondary air source. With no air-supply hose connected to the regulator, the user receives air from the air mask cylinder. When an external air-supply hose is connected to the regulator, the user receives air from the air source. **If the air supply from this line is interrupted, the user must disconnect the air supply hose to receive air from the air mask cylinder.**

Dual-Purpose conversion kits allow the user to combine air masks with the capabilities of an air-line respirator, all in one unit. The NIOSH certifications for Dual-Purpose apparatus allow the wearer to:

- enter or exit a dangerous area (such as emergency rescue) using only the cylinder;
- work within an area for a limited time using cylinder air;
- work within an area for an extended time using air from the air-supply hose.

AIR CYLINDER AND VALVE

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

* as approved by NIOSH

The air cylinder and valve consists of a tank and a cylinder valve assembly. The cylinder valve includes a valve body, cylinder valve inlet tube, handwheel, safety disc (burst disc), and pressure gauge.

The pressure gauge shows the air pressure in the cylinder continuously. The gauge is calibrated in 100 psig increments. For example, a gauge reading of 20 is read as 20 x 100 or 2,000 psig. A handwheel is used to open and close the cylinder valve.

FACEPIECE AND BREATHING TUBE

The facepieces are available in three sizes.

The facepiece lens is super-hardcoated to meet the requirements of NFPA 1981. This process gives the clear polycarbonate lens superior abrasion and chemical protection. The facepiece has a low-resistance, pressure-demand exhalation valve designed for easy cleaning. An inhalation check valve in the inlet housing keeps moisture out of the mask mounted regulator. The facepiece has a speaking diaphragm for clear, short range communication.The facepiece is offered with the standard five-point adjustment rubber head harness. A SpeeD-ON™ Head Harness is also available. This harness is made of flame and heat resistant (FHR) materials, and features a five-point suspension. Five "points" use self-adjusting, elasticized straps.

The breathing tube carries air from the regulator to the facepiece. The regulator end of the tube has a metal coupling nut and an insert to guide the coupling nut into the regulator outlet. The facepiece end of the breathing tube has a threaded insert to match the facepiece coupling nut.

AUDI-LARM AUDIBLE ALARM WITH URC ASSEMBLY

The Audi-Larm Audible Alarm rings when there is approximately 25% of the SCBA's rated service time remaining. The alarm also rings when the cylinder valve is first opened, providing an audible indication that the alarm is properly "cocked."

A high pressure hose delivers air at cylinder pressure from the alarm to the first stage regulator.

Cylinder	Approx. Remaining Service Time
30-min. 2216psig	7 min.
30-min. 4500psig	7 min.
45-min. 4500psig	11 min.
60-min. 4500psig	14 min.
30-min. 3000psig	10 min.

⚠ WARNING

The 3000psi Operating System is NOT compatible with a 2216psi Air Cylinder.

URC ASSEMBLY

All NFPA approved SCBA are equipped with an Audi-Larm body that includes a URC Assembly (Universal Rescue Connection) Fitting. The URC Assembly is a male quick-fill inlet for use by Rapid Intervention Crews for emergency filling of SCBA. Also included with the URC Assembly is a pressure relief valve for protection of the cylinder burst disc.

CARRIER AND HARNESS

The carrier and harness consists of a backplate, a cylinder band and latch to hold the cylinder, and a harness, consisting of shoulder pads, a chest strap (optional), adjustable pull-straps, and a waist-strap.

NIGHTFIGHTER HEADS-UP DISPLAY SYSTEM/PRESSURE GAUGE/ICM 2000 UNIT/ICM 2000 PLUS UNIT GAUGE

The NightFighter Heads-Up Display System/Pressure Gauge/ICM 2000 Unit/ICM 2000 Plus Unit are multi-mode, battery-powered, low pressure warning devices which gives audible and visible warning that air cylinder pressure has reached a pre-set level (approximately 25% of service time is remaining).

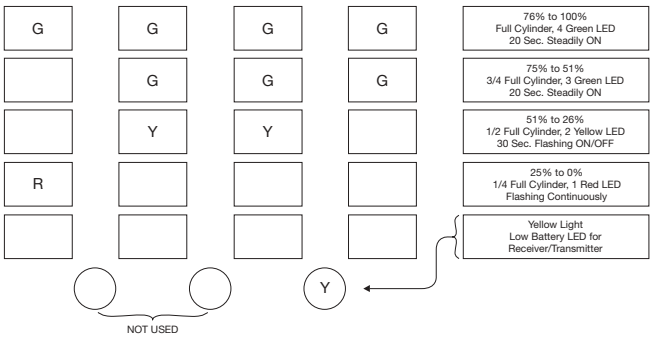
NIGHTFIGHTER HEADS-UP DISPLAY SYSTEM

- 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:
- Bracket assembly attached to an Ultra Elite Facepiece.
- Receiver mounted on the bracket assembly.
- 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 volume 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 for that automatically adjusts the brightness of the LED based on to 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 on following page).

DESCRIPTION



Note: With system pressurized, quick press the Operation Button. 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).

The NightFighter Heads-Up Display System operates using four (4) standard AAA alkaline batteries and notifies the user when the batteries need to be replaced, two (2) batteries for receiver and two (2) batteries for transmitter.

⚠ CAUTION

Use only Duracell NEDA 24A or Eveready NEDA 24AC AAA alkaline batteries. Use of other batteries will void the Intrinsic Safety approval.

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).

ICM 2000 PLUS UNIT/ICM 2000 UNIT

The ICM 2000 Plus Unit and ICM 2000 Unit Gauge attaches to the SCBA gauge hose. See installation instructions for proper installation procedures.

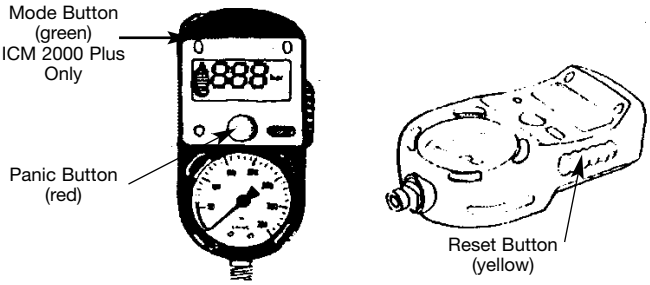
The ICM 2000 Plus Unit and ICM 2000 Unit Gauge are also a multi-mode, battery-powered, low pressure warning device which give audible and visible warning that air cylinder pressure has reached approximately 25% of service life. There are two warning indicators:

- The pressure gauge face and the digital display blink
- An audible alarm repeats single tone bursts

Note: The visual warning indicators in conjunction with the air mask audible alarm with URC Assembly (ringing bell) provide compliance with the NFPA 1981 Standard. The audible alarm with URC Assembly feature (repeated tones alarm) incorporated with the NightFighter Heads-Up Display System/Pressure Gauge/ICM 2000 Plus Unit and ICM 2000 Unit provide additional user low pressure warning.

Follow the procedures for the NightFighter Heads-Up Display System and ICM 2000 Unit/ICM 2000 Plus Unit Gauge.

The ICM 2000 Plus Unit and ICM 2000 Unit Gauge turns on automatically when the user opens the SCBA cylinder valve. The GREEN light on the unit flashes to signal that it is activated and operating.



The ICM 2000 Plus Unit Gauge has 3 control buttons. The ICM 2000 Unit Gauge has 2 control buttons.

The RESET/OFF yellow button resets the device from the full alarm mode. It also shuts the unit off after the cylinder valve is closed and all air pressure is bled from the unit. The center red (alarm) button activates the full alarm mode with or without air pressure.

The ICM 2000 Plus Unit Gauge mode button (green) will change the digital display window. See the During Use section for details.

NOTES

DONNING

DONNING THE AIR MASK

- Remove the facepiece from the case.

⚠ 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.

- Check that the cylinder is fully pressurized.
- Testing the NightFighter Heads-Up Display System and ICM Unit Gauge.

Note: The NightFighter Heads-Up Display System Receiver and Transmitter must be no more than 15 inches apart, otherwise the receiver's LED lights may not function.

⚠ WARNING

Test the NightFighter Heads-Up Display System or ICM Unit Gauge for damaged parts before each use of the SCBA. Do NOT use this device unless it passes all operational tests indicated below. Failure to follow this warning can result in serious personal injury or death.

- Open SCBA cylinder valve fully to pressurize the NightFighter Heads-Up Display System, then close the cylinder valve.
- Looking through the facepiece lens at the LED panel, all LED's must illuminate at the top of the Receiver.

The receiver must go through all LED light patterns when system is pressurized.

- NightFighter Heads-Up Display System Startup sequence:
- Four Green LED's for 20 seconds, Steadily ON
- Three Green LED's for 20 seconds, Steadily ON.
- Two Yellow LED's for 30 seconds, Flashing.
- One Red LED flashing.
- Yellow LED for Low Battery.

CONTINUOUS OPERATIONS MODE

Note: Continuous Operations Mode can only be used when system is pressurized.

- Push Operation Button on the Transmitter and hold button in for 3 seconds. Once LED lights come on release button.
- Receiver will show last air cylinder content reading. LED lights will stay on to show air cylinder content drop.

⚠ CAUTION

In this Continuous Operations Mode, the LIFE of the batteries will be shortened.

Turning Continuous Operations Mode OFF

- The Continuous Operations Mode will deactivate if low battery condition is present.
- Push Operation Button on the transmitter, holding the button in for 3 seconds. Release button once LED lights go off.
- Receiver will show last air cylinder content reading. LED lights will go to Automatic Intermittent Mode showing only air cylinder content drop in the percentage mode.

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

ICM UNIT GAUGE

The PASS function uses RED and GREEN light-emitting diodes (LEDs) to display its status visually:

GREEN	LEDs start to flash when the cylinder valve is opened and shows that the device is operational.
RED	LEDs flash slowly when the device is in pre-alarm; LEDs flash rapidly when the device is in full alarm.

⚠ CAUTION

Do NOT use a partially full cylinder. If the cylinder is not full, the service time is reduced accordingly.

- Reach inside the right shoulder straps, slide left arm through left shoulder straps.
- Bend forward slightly, rest it on your back.
- Attach the chest strap (optional).
- Fasten the waist-strap and pull it tight for a snug fit.
- As you straighten up, pull the shoulder strap tabs out. Hike the unit up for a comfortable fit.
- The shoulder straps and waist-strap ends must be tucked in and lay flat across the body.
- Position the belt mounted regulator so the main line valve and bypass valve are easily reached.

USING THE NIGHTFIGHTER HEADS-UP DISPLAY SYSTEM, ICM UNIT GAUGE, AUDI-LARM ALARM, AND URC ASSEMBLY

1. Make sure both the main-line valve and bypass valve are closed. Just turn them clockwise (away from your body).

2. Place the rubber outlet cover over the regulator opening. Use your left hand to hold the cover in place to be sure that the outlet cover is not leaking.
3. Reach behind and open the cylinder valve fully. Listen for the audible alarm with URC to ring briefly as pressure in the system increases.

⚠ WARNING

The 3000psi Operating System is NOT compatible with a 2216psi Air Cylinder.

4. Turn the main-line valve counter-clockwise for full air flow.

⚠ CAUTION

Listen for any hiss or pop sounds from the Audi-Larm Alarm with URC Assembly, do not use the SCBA. Return it to an MSA trained or certified repairperson.

5. As the pressure rises from 50 to 200 psig, both visible and audible alarms activate automatically, indicating that the alarms are functional and "cocked." When the system is fully pressurized, the alarms enter the Monitor (normal) Mode.

⚠ WARNING

If the alarm with URC Assembly fails to ring, ICM Unit Gauge, or NightFighter Heads-Up Display System fails to light and tone, 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.

6. Check the Pressure Gauge, NightFighter Heads-Up Display System, ICM and Cylinder Gauges. It should be within 110psig for 2216psig; 150psig for 3000psig; 225psig for 4500psig.

⚠ CAUTION

If your readings do not agree with these cylinder values, do not use the SCBA. Return it to an MSA trained or certified repairperson.

7. With the rubber outlet cover still in place, close the cylinder valve.
8. Check for air leaks. Open cylinder valve fully to pressurize system, then close the cylinder valve and watch the pressure gauge, NightFighter Heads-Up Display System or ICM Gauge.

⚠ CAUTION

If the needle drops more than 100psi in 10 seconds, do not use the SCBA. The SCBA must be repaired. Otherwise, reduced service life may result.

Very slowly uncover the regulator outlet to bleed off pressure until the NightFighter Heads-Up Display System or ICM Unit Gauge drops below:

530psig – approximately (low pressure system),
750psig – approximately (3000psi system), or
1175psig – approximately (high pressure system)

The NightFighter Heads-Up Display System will illuminate, ICM Unit Gauge and Audi-Larm Alarm with URC Assembly will sound.

Note: The NightFighter Heads-Up Display System will automatically turn itself OFF, approximately 60 seconds after the apparatus is depressurized. (A single Red LED light will flash at this time). When the pressure falls below 200 psig, turn the ICM Unit Gauge off.

⚠ WARNING

If the Audi-Larm Alarm with URC Assembly fails to ring, ICM Unit Gauge or NightFighter Heads-Up Display System fails to light or tone, or fails to continuously ring to 200psig, 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.

DONNING THE FACEPIECE

⚠ WARNING

Do not wear eyeglasses 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 harness head straps on the facepiece so the end-tabs are at the buckles.
2. Place the neckstrap around your neck.
3. Hold the facepiece by the straps and putyour chin in first.
4. Then, pull the harness back over your head.
5. Tighten the lower (neck) harness straps first, by pulling them straight back, not out. Tighten the temple straps the same way. Tuck in the ends of the straps so that they lay flat across the head.
6. Push headband pad towards neck and repeat step. If necessary, tighten the front strap for best visibility and fit. Tuck in the ends of the straps so they lay flat across the head.

SPEED-ON HEAD HARNESS

USING THE SPEED-ON HEAD HARNESS

1. Loosen the neck straps so the end-tabs are at the buckles.
2. Insert your chin into the facepiece.
3. Pull the harness "net" over the crown of your head.
4. Tighten the neck straps. If necessary, tighten the temple or front strap adjustments. Tuck in the straps so that they lay flat across the head.

FACEPIECE FIT CHECK

1. To check the inhalation valve, inhale. If you do not receive sufficient flow of air, remove and replace the facepiece.
2. Block off the breathing tube with either the palm of your hand or by placing your thumb over the opening inside the breathing tube coupling nut.
3. Breathe in and hold your breath for 10 seconds. If the seal is good, the facepiece will collapse and remain collapsed against your face.
4. If the facepiece does not remain collapsed, or you notice any leakage, readjust the straps and test again.

If this does not correct the leak, do not use the facepiece.

5. Test the exhalation valve by exhaling. If the valve is stuck, you will feel a heavy rush of air around the facepiece.

Note: You may need a sharp exhalation at first to "crack" 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. Failure to follow this warning can result in serious personal injury or death.

Note: If the apparatus passes all tests, the unit is ready to use. Remember, you must perform these tests everytime 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.

DONNING DUAL-PURPOSE AIR MASK

Dual-Purpose air masks combine a self-contained breathing apparatus with the capabilities of an air-line respirator in one unit.

1. Follow all of the donning steps as described so far in this manual.
2. Make sure the air-line source is (Grade D or of a higher quality) breathable air, with an inlet pressure between 85-90psig. Air-supply hose must be between 8-300 ft. in length and must be from MSA. A maximum of twelve sections of air-supply hose may be used.
3. Turn on the primary air source for use with the air-line.
4. Remove the attached dust cap. Connect the air-line adapter socket to the male quick-disconnect plug on the Dual-Purpose regulator. Pull on the adapter to be sure that the socket has snapped into place.

Note: If a Foster Quick-Disconnnect is used, the air-line will supply the regulator with air. The regulator will no longer demand air from the cylinder when the air-line adapter is connected to the regulator. If a Hansen Quick-Disconnnect is used, the main-line valve also must be closed.

⚠ WARNING

NIOSH limitations for this device require that not more than 20 percent of cylinder air be used during entry before connecting to the air-line.

EMERGENCY OPERATION
(Dual-Purpose Apparatus with Foster Connection)

1. Slide your left hand along the air-supply hose to the regulator and remove the quick-disconnect socket from the regulator. Air will begin to flow from the cylinder. Attach the dust cap.
2. If the air still does not flow, open the regulator bypass valve.
3. Adjust the valve for a comfortable flow of air.
4. Close the main-line valve.
5. Leave the contaminated area immediately.

EMERGENCY OPERATION
(Dual-Purpose Apparatus with Hansen Connection)

The main-line valve is always closed when using the air-line (you must open the main-line valve to receive air from the cylinder).

SPEED-ON HEAD HARNESS

FINAL HOOK-UP

1. Open the cylinder valve fully.
2. Connect the breathing tube to the regulator while fully opening the main-line valve. Test the complete system for air flow from the cylinder to the facepiece by breathing normally. Pull firmly on the breathing tube to assure a secure connection to the regulator. The regulator should follow your breathing pattern and supply air only during inhalation.
3. Slowly "crack" the bypass valve to make sure it delivers a continuous flow of air.
4. Close the bypass valve.

⚠ 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.

5. If the unit checks out, you are ready to enter a hazardous atmosphere. Remember, you must make 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.**

USING THE AIR MASK

USING THE AIR MASK

Periodically check the pressure indicated on the NightFighter Heads-Up Display System or ICM Unit pressure gauge. It continually displays the cylinder pressure. When the needle reaches the red zone, the Audi-Larm Alarm with URC Assembly will begin ringing and NightFighter Heads-Up Display System or ICM Unit Gauge will begin to light or tone. When the bell starts ringing or when the pressure reaches approximately 25% of the rated service pressure, return to fresh air.

NightFighter Heads-Up Display System, ICM Unit Gauge, and Audi-Larm Alarm with URC Assembly activate when cylinder pressure drops below approximate values:

530psig – approximately (low pressure system),
750psig – approximately (3000psi system), or
1175psig – approximately (high pressure system)

when the NightFighter Heads-Up Display System, ICM Unit Gauge or Audi-Larm Alarm activates, immediately return to fresh air.

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

Precaution During Use

Periodically check the pressure indicated on the remote gauge.

⚠ WARNING

The 3000psi Operating System is NOT compatible with a 2216psi Air Cylinder. Failure to follow this warning can result in serious personal injury or death.

- Reduced air flow: **Immediately** open the bypass. **Immediately** return to fresh air.
- Air mask free-flows: **Immediately** return to fresh air.
- Audi-Larm Alarm with URC Assembly Rings: **Immediately** return to fresh air.
- NightFighter Heads-Up Display System Low Volume Indicator Lights and Flashes: **Immediately** return to fresh air.
- ICM Unit Gauge: **Immediately** return to fresh air. Lights and Flashes

NOTES

REMOVING THE AIR MASK

REMOVING THE AIR MASK

1. Close the cylinder valve and disconnect the breathing tube.
2. When the pressure falls below 200psig, turn the NightFighter Heads-Up Display System or ICM Unit Gauge off. The remaining air in the system is released automatically if the main-line valve is left open.

Note: 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).

3. When the Audi-Larm assembly stops ringing, close the main-line valve.

Note: If using the SpeeD-ON Head Harness, the lower straps must be fully loosened before removing the facepiece.

4. To remove the facepiece, fully loosen the harness straps and pull the facepiece up and away from your face.
5. Place the facepiece in a clean area.
6. To remove the carrier harness, press the belt buckle release button IN.
7. Disconnect the chest strap (if used).
8. To loosen the shoulder straps, grasp the release loops. Push them out and away from your body.
9. Slip your right arm out of the shoulder pad first (to prevent damage to the regulator), 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.

CHANGING THE CYLINDER WITH BAND AND LATCH

⚠ WARNING

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

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

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

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

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

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

CHANGING THE CYLINDER WITH BUCKLE AND STRAP

⚠ WARNING

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

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

REMOVING THE AIR MASK

Note: If the cylinder feels loose, re-check that the strap and buckle are propler 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 vertical. Close the cylinder buckle. Do not use the air mask if the cylinder is not held securely in the carrier.

⚠ CAUTION

Do NOT overtighten the cylinder strap; otherwise it will damage the center buckle assembly.

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

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.

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 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 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. 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 2216psig. (this applies to steel cylinders only). Steel cylinders without the plus (+) sign stamped after the latest test date must be removed 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 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.

REMOVING THE AIR MASK

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 comply with this warnings can result in serious personal injury or death.

Do not store the alarms for extended periods with the batteries installed. Do not store the apparatus with an empty or partly filled cylinder. Always install a fully-charged cylinder so that the apparatus is ready for use. Complete Inspection and Cleaning and Disinfecting procedures 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. For prolonged storage, remove the batteries to prevent battery corrosion. Store units in a cool, dry place.

INSTALLING THE BATTERIES

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

⚠ WARNING

Use only Duracell NEDA 24A or Eveready NEDA 24AC AAA alkaline batteries. Use of other batteries will void the intrinsic safety approval.

1. Loosen the screws to open battery door.
2. Insert two AAA batteries according to the battery orientation noted inside the compartment.
3. 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 precaution can result in serious personal injury or death.

NOTES

EMERGENCY OPERATION / COLD WEATHER OPERATION

EMERGENCY OPERATION
(Standard SCBA)

You must know what to do automatically if the regulator fails to function or if damaged! To receive air from the cylinder to the facepiece under emergency conditions:

1. Open the bypass valve slowly. This will give you a constant flow of air directly from the cylinder through a separate bypass port in the outlet of the regulator.
2. Close the main-line valve (clockwise) to prevent air leakage through damaged parts.
3. Adjust the bypass valve for a controlled air flow from the cylinder to the facepiece.
4. Return to fresh air immediately! Your air supply is greatly reduced in such an emergency.

SUGGESTED PROCEDURES FOR COLD WEATHER OPERATION

Moisture can cause problems in air masks if it freezes. Although most likely to occur in cold weather, moisture can freeze even if the surrounding air is above freezing. Air pressure drops rapidly from cylinder pressure to nearly atmospheric as it flows from the cylinder through the regulator. As its pressure drops, the air expands and gets colder. The surrounding air may be above freezing, but the temperature inside the regulator may be lower. Moisture inside may freeze and reduce air flow.

1. To prevent moisture from entering the regulator, keep the breathing tube connected. If it is disconnected, cover the regulator immediately with the rubber outlet cover supplied with each new air mask.
2. Use the ring and neckstrap supplied with each new air mask. They keep the facepiece upside down around the user's neck. Water does not collect in the facepiece. If not used correctly, the facepiece can act as a funnel, catching and directing water into the regulator.
3. When the air mask is away from heat, water spray can freeze on the regulator surface. Ice can build up and cover the cap vent holes. If they are completely blocked, the regulator will not operate. Ice also can freeze the main-line and bypass valves. Before entering or re-entering a hazardous atmosphere, make sure the vent holes are open, and that both the main-line and bypass valves are ice-free and operating properly. During use, periodically check the bypass valve to ensure that it is operating properly.
4. Moisture can collect on the cylinder valve and coupling nut when cylinders are changed. The Quick-Fill System from MSA can reduce this problem. (Keep the dust cover in place on the Quick-Fill coupling). Water can contaminate the system or freeze the coupling nut to the cylinder valve. Remove ice on these fittings. Dry the coupling nut and cylinder valve before unthreading them.
5. ANSI/NFPA-1500 requires cylinder air to be a minimum of Grade D (CGA G7.1) with a water vapor concentration of less than 24 ppm. Tests show that if air with a low moisture content (less than 24 ppm) is used, the SCBA performs well at the NIOSH-approved - 25° F surrounding temperature. Low dew point air also prevents cylinder corrosion.
6. NIOSH certification requires a nosecup at temperatures below 32° F. The nosecup reduces lens fogging and must be used whenever freezing conditions are encountered.
7 Thoroughly dry the facepiece **and** regulator after cleaning and disinfecting. The facepiece can trap water which could enter the regulator.
8. During clean-up at the station, disconnect the regulator from the facepiece before cleaning and disinfecting.
9. Be careful to keep water from entering the air mask facepiece or regulator when washing fire trucks.

NOTES

QUICK-FILL SYSTEM OPERATION

QUICK-FILL SYSTEM OPERATION

The Quick Fill System may be used for transfill operations as described in this manual. Standard operating procedures should be developed for use of the Quick Fill System, unless using a 3000psi URC Assembly, the 3000psi URC Assembly can not be used with Quick Fill system.

⚠ WARNING

The 3000psi Operating System is NOT compatible with a 2216psi SCBA Cylinder. Failure to follow the above warnings may result in serious personal injury or death.

⚠ WARNING

Do not use the Quick-Fill System with 3000 psig cylinders. Failure to follow the above warnings may result in serious personal injury or death.

⚠ WARNING

Do not install a Quick-Fill System and 3000psi URC assembly on the same Air Mask. Combining there assemblies on the same Air Mask will not allow the relief valve in the 3000psi URC Assembly to open as designed. Failure to follow this precaution may result in serious personal injury or death.

⚠ WARNING

The Quick-Fill System is not to be used as a "Buddy Breather" such that two (2) users are sharing the air supplied by one (1) approved SCBA cylinder simultaneously; doing so will void NIOSH approval. Failure to follow the above warnings may 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 System hose assemblies from MSA are used. Quick-Fill System hose assemblies and fittings are rated for a maximum working pressure of 4500 psig.

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

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

⚠ WARNING

Do not Transfill (be a Donor) using a 3000psi URC Assembly. The 3000psi URC Assembly has a Check Valve that does not allow cylinders to Transfill (be a Donor). Failure to follow this precaution may result in serious personal injury or death.

⚠ WARNING

Using the 3000psi URC Assembly to fill cylinders, the cylinder can only be filled to 2216psig. If the pressure exceeds 2216psig a Relief Valve in the URC Assembly will vent at approximately 2525psig or as low as 2400psig. A 3000psig cylinder can only be filled to 3000psig by using a secondary air source; the 3000psi URC Assembly can not be used for filling a 3000psig cylinder. Failure to follow this precaution may result in serious personal injury or death.

⚠ WARNING

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

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.

QUICK-FILL SYSTEM OPERATION

⚠ WARNING

Do not connect a Quick-Fill System equipped Low Pressure SCBA to an unregulated secondary air source with a pressure greater than 2216 psig. The Quick-Fill System equipped Low Pressure Air Mask is rated for a maximum working pressure of 2216 psig. As an additional safety feature, the SCBA has a pressure relief valve which automatically vents at 2525 psig. Failure to follow the above warnings may result in serious personal injury or death.

⚠ WARNING

Do not connect a High Pressure SCBA to a secondary air source with a pressure greater than 4500 psig. The High Pressure Air Mask is rated for a maximum working pressure of 4500 psig. Failure to follow the above warnings may result in serious personal injury or death.

PRECAUTIONS FOR USING QUICK-FILL SYSTEM

1. The Quick-Fill System can only be used to fill approved SCBA cylinders.
2. The Quick-Fill System is not to be used as a "Buddy Breather" such that two (2) users are sharing the air supplied by one (1) SCBA cylinder simultaneously doing so will void NIOSH approval.
3. 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 (2216 psig or 4500 psig).
4. Using the 3000psi URC Assembly to fill cylinders, the cylinder can only be filled to 2216psig. If the pressure exceeds 2216psig.a Relief Valve in the URC Assembly will vent at approximately 2525psig. or as low as 2400psig. A 3000psig cylinder can only be filled to 3000psig by using a secondary air source; the 3000psi URC Assembly can not be used for filling a 3000psig. cylinder.
5. The user also is responsible for connecting the Quick-Fill hose to an appropriate secondary air source.
6. The cylinder must be inspected for damage before charging.
7. 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.

FILLING INSTRUCTIONS FOR QUICK-FILL SYSTEM

1. To connect the Quick-Fill System hose.
   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.

⚠ 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. 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.
   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 male fitting.

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

3. Compare the SCBA pressure gauge or ICM Unit 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 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 SCBA cylinder is ready for service if the cylinder pressure gauge is on the corresponding color band.

QUICK-FILL SYSTEM OPERATION

QUICK-FILL SYSTEM EMERGENCY OPERATIONS

1. If you are 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 SCBA.
2. If you are 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 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 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.

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 audible alarm is ringing or NightFighter Heads-Up Display /ICM Unit Gauge are flashing. Failure to follow this warning may result in shorter escape time to return to fresh air, causing serious personal injury or death.

The audible alarm begins ringing and NightFighter Heads-Up Display 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 NightFighter Heads-Up Display /ICM Unit Gauge begins flashing during transfilling, the donor should disconnect and preserve his escape time.

1. If the donor's alarm is not ringing or NightFighter Heads-Up Display /ICM Unit Gauge are not flashing and you have sufficient air to transfill air to a receiver, (greater than1000 psig for Low Pressure SCBA and greater than 2000 psig 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 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 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 the 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 System male fitting. The dust cover prevents dirt, water, and debris from entering the fitting, and acts as a redundant seal.

QUICK-FILL SYSTEM EMERGENCY OPERATIONS

1. If the dust cover will not stay on the 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 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.

NOTES

URC ASSEMBLY OPERATION

URC ASSEMBLY OPERATION

All NFPA 1981-2002 approved SCBA are equipped with a URC Assembly (Universal Rescue Connection) fitting. 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 SCBA can also be equipped with a shoulder-mounted quick-fill system, unless using a 3000psi URC Assembly, the 3000psi URC Assembly can not be used with Quick-Fill System.

⚠ WARNING

The URC Assembly is not to be used as a "Buddy Breather" such that two (2) users are sharing the air supplied by one (1) approved SCBA cylinder simultaneously; doing so will void NIOSH approval. Failure to follow the above warnings may result in serious personal injury or death.

⚠ WARNING

The URC Assembly must be used by trained Rapid Intervention Crews only using procedures developed for rapid intervention. Improper use 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 or Quick Fill System.

⚠ WARNING

Do not install a Quick-Fill System and 3000psi URC assembly on the same Air Mask. Combining there assemblies on the same Air Mask will not allow the relief valve in the 3000psi URC Assembly to open as designed. Failure to follow this precaution may result in serious personal injury or death.

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 Quick-Fill hose assemblies from MSA are used. URC Assembly or Quick-Fill hose assemblies and fittings are rated for a maximum working pressure of 4500 psig.

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

⚠ WARNING

Do not Transfill (be a Donor) using a 3000psi URC Assembly. The 3000psi URC Assembly has a Check Valve that does not allow cylinders to Transfill (be a Donor). Failure to follow this precaution may result in serious personal injury or death.

⚠ WARNING

Using the 3000psi URC Assembly to fill cylinders, the cylinder can only be filled to 2216psig. If the pressure exceeds 2216psig a Relief Valve in the URC Assembly will vent at approximately 2525psig or as low as 2400psig. A 3000psig cylinder can only be filled to 3000psig by using a secondary air source; the 3000psi URC Assembly can not be used for filling a 3000psig cylinder. Failure to follow this precaution may result in serious personal injury or death.

⚠ WARNING

For Filling Operations using the URC Assembly, do not use any transfilling hose assembly or fittings other than those supplied by MSA specifically for the URC Assembly or Quick-Fill System. Use of any other transfilling hose assembly, fitting, or cylinder may result in serious personal injury or death, and will void NIOSH approval. Failure to follow the above warnings may result in serious personal injury or death.

⚠ WARNING

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

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 High Pressure SCBA to a secondary air source with a pressure greater than 4500 psig. The High Pressure Air Mask is rated for a maximum working pressure of 4500 psig. Failure to follow the above warnings may result in serious personal injury or death.

URC ASSEMBLY OPERATION

PRECAUTIONS FOR USING URC ASSEMBLY

1. The URC Assembly can only be used to fill approved SCBA cylinders.
2. The URC Assembly is not to be used as a "Buddy Breather" such that two (2) users are sharing the air supplied by one (1) SCBA cylinder simultaneously doing so will void NIOSH approval.
3. 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 (2216 psig or 4500 psig).
4. Using the 3000psi URC Assembly to fill cylinders, the cylinder can only be filled to 2216psig. If the pressure exceeds 2216psig.a Relief Valve in the URC Assembly will vent at approximately 2525psig. or as low as 2400psig. A 3000psig cylinder can only be filled to 3000psig by using a secondary air source; the 3000psi URC Assembly can not be used for filling a 3000psig. cylinder.
5. The user also is responsible for connecting the Quick-Fill hose to an appropriate secondary air source.
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.

FILLING INSTRUCTIONS FOR USING THE URC ASSEMBLY

For Rapid Intervention Crews:

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

1. To connect the URC Assembly to the Quick-Fill System hose (P/N 485391 URC Assembly or 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.

⚠ 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. To attach the Quick-Fill System 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 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. Filling begins when the female fitting is snapped on the URC Assembly.

⚠ 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.

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

3. Compare the SCBA pressure gauge or ICM Unit 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 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 male fitting.
6. The SCBA cylinder is ready for service if the cylinder pressure gauge is on the corresponding color band.

URC ASSEMBLY EMERGENCY OPERATIONS

⚠ WARNING

NIOSH Does NOT approve the use of the URC Assembly to transfer air from the cylinder of one SCBA to another SCBA. Failure to follow the above warnings may result in serious personal injury or death.

URC ASSEMBLY OPERATION

1. If you are in fresh air and the dust cover will not stay on the URC Assembly because air is leaking, correct the condition before using the SCBA.
2. If you are filling the URC Assembly in a contaminated atmosphere and the dust cover will not stay on the URC Assembly 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 URC Assembly 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.

The audible alarm with URC Assembly begins ringing and NightFighter™ Head-Up Display 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.

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

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.

⚠ CAUTION

DO NOT use any cleaning substances that can or might attach any part of the apparatus.

⚠ CAUTION

Alcohol should not be used as a germicide because it may deteriorate rubber parts.

⚠ CAUTION

If not rinsed thoroughly, the cleaning agents may irritate the wearer's skin.

PREPARING SOLUTION

1. Follow the instructions with the Confidence Plus Cleaning Solution.
2. 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 manufacturing recommended time.
3. Remove the breathing tube from the facepiece. DO NOT lose the gasket inside the breathing tube coupling nut.
4. Unthread the thumb screw of NightFighter Heads-Up Display System receiver and slide the receiver from facepiece bracket.
5. Thoroughly wash the facepiece in the Confidence Plus Cleaning Solution. A soft brush or sponge can be used to clean the soiled facepiece.
6. Rinse the facepiece thoroughly in-side and out in plain warm water (110° F). Thoroughly dry the facepiece.

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.

7. Use rubber stopper (P/N 50998) to close both ends of the breathing tube. Thoroughly wash the outside of the breathing tube in Cleaner-Disinfectant Liquid Solution, thoroughly rinse the outside of the breathing tube with plain warm water (110° F).

Note: The inside of the breathing tube should be cleaned and disinfected annually or as needed, to remove any contaminant from inside it. If washing the inside of breathing tube, use Confidence Plus Cleaning Solution. Thoroughly rinse inside of breathing tube in plain warm water (110° F).

8. Stretch the breathing tube slightly to remove water from the corrugations (inside or outside). Hang it up to dry **thoroughly** inside and outside.

Note: Do not force-dry the parts by placing them near a heater or in direct sunlight, the rubber will deteriorate.

9. To clean the pressure demand exhalation valve (long disc stem), open the valve by pressing in on the stem and flush the valve with clean water. Air-dry the exhalation valve thoroughly. Do not exceed 120° F.
10. In general, only the facepiece requires cleaning and disinfecting after each use. If the apparatus is soiled (i.e. heavy smoke residue or dirt accumulation) use a sponge damp with mild soap solution or use a soft/medium bristle brush to remove deposits that may interfere with normal operation of:
    a. Harness (straps and buckles)
    b. Cylinder carrier (band & latch assembly)
    c. Cylinder (hand-wheel, gauge, outlet connection)
    d. Audi-Larm Alarm with URC Assembly (bell or coupling nut connection)
    e. NightFighter Heads-Up Display System or ICM Unit Gauge
11. Inspect the entire apparatus as you re-assemble it. Follow the Inspection Procedures.
12. Re-attach NightFighter Heads-Up Display System Receiver.
    a. Slide receiver onto facepiece bracket.
    b. Finger-tighten thumb screw.
13. Thoroughly dry the facepiece and regulator after cleaning and disinfecting. The facepiece can trap water which could enter the regulator.

NOTES

INSPECTION

Inspect the entire 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 Users Maintenance Instructions. (P/N 817371)

⚠ WARNING

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

Do not inspect the apparatus 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, and 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. Look for cracks or other signs of damage, which could allow contaminants to enter the module housing.
4. Cylinder Gauges
   a. Be sure you can see both gauge needles and face clearly through the lens. Also be sure the gauge stem is not bent.
   b. Inspect the gauge hose for any visible damage.
5. Audible Alarm with URC Assembly/NightFighter Heads-Up Display System/ICM Unit Gauge
   a. Check that the alarm rings briefly and the NightFighter Heads-Up Display System flashes or ICM Unit Gauge tones when the cylinder valve is opened. This test assures that the alarms are operating.
   b. Check that the bell is in the proper alignment and on tightly.
   c. If the bell is loose, remove the alarm from service.
   d. Unscrew the Audi-Larm Alarm with URC Assembly coupling nut from the cylinder valve. Inspect the coupling nut for thread damage. Also be sure there is an O-ring and that it is not damaged. Replace the insert O-ring if it is damaged.
   e. Check Audi-Larm Alarm with URC Assembly and URC Assembly's Relief Valve for any damage.
   f. Check the relief valve for damage. Check for missing label, loose label, and if relief valve ports are showing. If any damage, remove air mask from service and return to MSA.
6. High Pressure Hose
   a. Check the high pressure hose between the alarm and the first stage regulator. Look for cuts or severe abrasions. If present, replace the hose. The hose fitting should be tight.
7. Cylinder
   a. 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 re-used. Steel and 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.

d. Check the hydrostatic test date on the cylinder approval sticker located on the cylinder neck. Composite cylinders must be tested every three years. Steel cylinders must be tested every five years.

8. Harness
   a. Inspect all harness components for cuts, tears, abrasions, or signs of heat or chemical-related damage. Check that the tee nuts, washers, and screws, if any, are secure.
9. Carrier
   a. Inspect the cylinder band and latch to be sure it holds the cylinder securely. Operate the latch wing to be sure 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 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.

Breathing Tube

1. Inspect the entire breathing tube closely for cracks, tears, cuts, perforations, any deterioration, or other signs of wear. If any of these conditions exist, the breathing tube must be removed from service and replaced.

The following additional inspection points should be followed closely.

a. Closely examine the base and crest of each corrugation, especially the first several corrugations at each end of the breathing tube. Due to the added flexing of the end corrugations, they can be exposed to more wear than the middle corrugations.

b. The molding process used to make the breathing tube leaves a mark along the base of each corrugation. The marks are rough in appearance when compared to the smooth surface on the remainder of the tube. These marks are acceptable; however, examine them closely to make sure there are no cracks, tears, cuts, perforations, any deterioration, or other signs of wear in the areas where these marks are located. See the figures for additional clarification.

Acceptable Breathing Tube

2. Check the breathing tube for leaks as follows:
   - Close one end with a solid rubber stopper (P/N 50998).
   - Close the other end with a rubber stopper which has a 1/8 inch hole in it (P/N 630386).
   - Stretch the breathing tube 10-12 inches beyond its normal length and cover the hole in the stopper with your finger.
   - With the hole still covered, release the tension on the breathing tube. The air inside the tube will compress to about 3psi.
   - Submerge the breathing tube in water. Bubbles will indicate leaks. Replace the breathing tube should it exhibit any of the above inspection conditions or if it leaks.

Deteriorating Breathing Tube

Regulator

1. Be sure the diaphragm cap is hand-tight. Check that the cap is not dented or deformed. Be sure that the small air holes around the outer edge of the cap are not blocked.
2. Check the redundant alarm gauge or ICM Unit Gauge reading with the cylinder gauge. It should be within 220psig for 2216psig cylinders; 300psig for 3000psig cylinders; or 450psig for 4500psig cylinders.
3. Check the regulator outlet. Look for stripped or damaged threads.

DOT-CFFC

- Fiber glass wrapped cylinders must be tested every three years per DOT-CFFC.
- Carbon fiber wrapped cylinders must be tested every five years per DOT-CFFC.
- Steel and Aluminum cylinders must be tested every five years.

MONTHLY INSPECTION

Check the hydrostatic test date on the cylinder approval sticker.

FUNCTIONAL TESTS

FUNCTIONAL CHECKS
After Each Use and Monthly

1. Check that the diaphragm works properly. The regulator outlet should be sanitized before and after testing.
   a. Check that the cylinder and regulator valves 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 main-line valve and bypass valve.
   a. With the regulator pressurized, open and close each valve to be sure it operates. Venting of pressure relief valves (or a continuing flow of air through the regulator when the user is not inhaling) indicates that the regulator needs to be repaired.
   b. Listen to the regulator. Any unusual sounds, such as whistling, chattering, clicking, or rattling mean that the regulator should be checked further.
   c. If any of these symptoms occur, the apparatus must be removed from service. Return the regulator to a certified repairperson.
3. NightFighter Heads-Up Display System and Audible Alarm with URC Assembly
   a. MSA recommends that the function of the Audi-Larm Alarm with URC Assembly, ICM Unit and NightFighter Heads-Up Display System warning device be checked by observing the Pressure Gauge or ICM Unit Gauge at which the alarms ring and tone. This test should be performed with a minimum cylinder pressure of 1200psig for the Low Pressure SCBA,, 1800psig for 3000psi System, and 2000psig for the high pressure SCBA.
   b. Pressurize the system by opening the cylinder valve for a moment, then close it. The alarms should ring or tone, indicating they are cocked and armed.
   c. Open main-line slowly.
   d. Watch the drop in pressure on the Pressure Gauge or ICM Unit Gauge and the point at which the Audi-Larm Alarm with URC Assembly begins to ring and the NightFighter Heads-Up Display System Receiver begins to flash. Nominal gauge readings at which the alarm should start to ring and tone or flash are listed below.

      530psig – approximately (low pressure system),
      750psig – approximately (3000psi system), or
      1175psig – approximately (high pressure system)

   e. The alarms should continue until the air pressure is approximately 200psig or less. If the Audi-Larm Alarm with URC Assembly, ICM Unit Gauge or NightFighter Heads-Up Display System does not function properly, the apparatus must be removed from service.
4. Audi-Larm Alarm with URC Assembly Body
   a. Check that the bell is on tightly and is in the proper alignment.
   b. Check URC Assembly and relief valve for damage or leaks.
   c. Close the cylinder valve completely. Be sure that nothing blocks the regulator outlet.

⚠ WARNING

Do not disconnect the Audi-Larm 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.

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

NOTES

FLOW TEST AND OVERHAUL REQUIREMENTS

FLOW TEST AND OVERHAUL REQUIREMENTS

Your SCBA Regulator and Audi-Larm Alarm Assembly 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 of the SCBA, rather than on time alone.

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

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

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

Product Description	Exception	Warranty Period
Facemask Blank, Breathing Tube, Harness, & Nose Cup	Rubber Product	5 Year Limited/Age Deterioration
Electronic Speech Communication	Manufacturer's Warranty	1 Year
Redundant Alarm		
DragonFly™ Pass		
NightFighter™ Heads-Up Display System	MSA Limited Warranty	
ICM™ 2000 & ICM 2000 Plus	MSA Limited Warranty	2 Years
Non-Rechargeable Batteries	Expendable and/or Consumable Parts	N/A

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

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

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