

# Product Information News

## MMR SECOND STAGE REGULATOR VALVE CORE

MSA has changed its recommended rebuilding of the MMR Second Stage Regulator's bypass sleeve assembly during the annual inspection. Based upon recent engineering testing, combined with MSA's field use data, the annual rebuild of the bypass sleeve is no longer required. The bypass sleeves must be rebuilt only if the bypass sleeve is loose.

This change affects the MMR™ Air Mask NFPA 1981-2002 Edition Compliant (P/N 1004187) and MMR™ Air Mask Low/High Pressure (P/N 814335). Operation and Instructions manuals The following warning is being added as part of performing the Donning procedures in the Operation and Instructions manuals.

### **⚠ WARNING**

If the red knob (bypass) will not lock and continues to rotate, do not use the SCBA. The condition must be corrected by an MSA trained and certified repairperson before using the SCBA. Failure to follow this precaution may result in serious personal injury or death.

The following warning is also being added to the Functional Checks section of Operation and Instructions manuals.

### **⚠ WARNING**

If the SCAB fails to perform properly when conducting any of the following Functional Checks, do not use it. The condition must be corrected by an MSA trained and certified repairperson. The SCBA must perform for all functional checks before using it. Failure to follow this precaution may result in serious personal injury or death.

When rebuilding loose bypass sleeves, Urethane Adhesive (P/N 603571) or Loctite Assure™ #425 (P/N 602706) adhesives may be used following the Certified Maintenance Instructions. However Urethane Adhesive (P/N 603571) may be less desirable due to its limited shelf life.



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



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

# DONNING FOR NFPA

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

1. Grasp the mask-mounted regulator and push the slide button.



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



3. Reach behind and open the cylinder valve fully. Listen for the audible alarm with URC Assembly to ring briefly as pressure in the system increases.



### ⚠ CAUTION

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

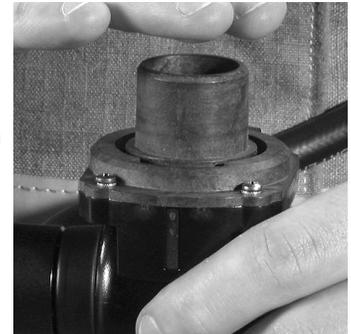
4. As the pressure rises from 50 to 200psig, both visible and audible alarms activate automatically, indicating that the alarms are functional and "cocked." When the system is fully pressurized, the alarms enter the Monitor (normal) Mode.

### ⚠ 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.

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



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

### ⚠ WARNING

Do not use a 2216psi Air Cylinder on a 3000psi operating system. Such a configuration is not approved by NIOSH. Failure to follow this precaution may result in serious personal injury or death.

### ⚠ 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. Check for bypass operation. Grasp the red knob and turn it counter-clockwise until it locks. Listen for air flow, and then turn it OFF. Close cylinder valve fully.



### ⚠ WARNING

If the red knob (bypass) will not lock and continues to rotate, do not use the SCBA. The condition must be corrected by an MSA trained and certified repairperson before using the SCBA. Failure to follow this precaution may result in serious personal injury or death.

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 Unit Gauge.

# FUNCTIONAL CHECKS FOR NFPA

**PERFORM THE FOLLOWING FUNCTIONAL CHECKS AFETR EACH USE AND MONTHLY.**

## **▲ WARNING**

**If the SCAB fails to perform properly when conducting any of the following Functional Checks, do not use it. The condition must be corrected by an MSA trained and certified repairperson. The SCBA must perform for all functional checks before using it. Failure to follow this precaution may result in serious personal injury or death.**

1. Check that the regulator works properly. The regulator outlet should be sanitized before and after testing.
  - a. Check that the cylinder valve and slide button are closed and that the system is not pressurized.
  - b. Gently inhale through the regulator outlet and hold your breath for about 10 seconds. If the negative pressure is maintained, there is no leakage.
  - c. Gently exhale through the regulator outlet for about 10 seconds. If the positive pressure is maintained, there is no leakage.
  - d. Do not use the apparatus if airflow through the regulator is detected in either test. Return the regulator to a certified repairperson.
2. Inspect the slide button, and bypass valve.
  - a. With the regulator pressurized, operate 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 1,200psig for the Low Pressure SCBA, 1800psig for 3000psi system and 2,000psig for the High Pressure SCBA.

- b. Pressurize the system by opening the cylinder valve for a moment, and then close it. The alarms should ring or tone, indicating they are cocked and armed.
  - c. Open bypass 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)
    - 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 bypass valve slowly to release trapped air. Close bypass 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.



## DONNING FOR NON-NFPA

8. Check the redundant alarm gauge. Gauge must be within 220psig for 2216psig; 300psig for 3000psig; 450psig for 4500psig.

### ⚠ CAUTION

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

9. Check for bypass operation. Grasp the red knob and turn it a    turn (counter-clockwise) until it locks in. Listen for air flow, then turn it OFF. Close cylinder valve fully.



### ⚠ WARNING

If the red knob (bypass) will not lock and continues to rotate, do not use the SCBA. The condition must be corrected by an MSA trained and certified repairperson before using the SCBA. Failure to follow this precaution may result in serious personal injury or death.

10. Crack the bypass valve slowly to bleed off pressure until the redundant alarm gauge needle drops below:  
530psig - nominal (low pressure system) or  
1175psig - nominal (high pressure system)  
The redundant alarm and audi-alarm will sound and the gauge will illuminate and continue until you turn the redundant alarm OFF.
11. When the pressure falls below 200psig, turn the alarm off (Sleep Mode) by pressing the alarm switch 2 times in rapid succession. An extended single tone will sound indicating the unit has been turned off. The Audi-Larm should continue to ring until pressure is less than 200psig.
12. Check for air leaks. Open cylinder valve fully to pressurize system, then close the cylinder valve and watch the harness pressure gauge.
13. If the needle drops more than 100psi in 10 seconds, there is a leak. Do not use the apparatus until the leak is found and corrected.

### ⚠ WARNING

If the Audi-Larm fails to ring, or redundant alarm fails to light and 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.

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

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



2. Pull the head harness completely over your head and tighten the lower (neck) straps.



3. Tighten the lower (neck) harness straps first, by pulling them straight back, not out. Tighten the temple straps the same way. Tuck in the ends of the straps so that they lay flat across the head.
4. Push headband pad towards neck and repeat step 5. 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.

## 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.

# FUNCTIONAL CHECKS FOR NON-NFPA

**PERFORM THE FOLLOWING FUNCTIONAL CHECKS AFETR EACH USE AND MONTHLY.**

## **▲ WARNING**

**If the SCAB fails to perform properly when conducting any of the following Functional Checks, do not use it. The condition must be corrected by an MSA trained and certified repairperson. The SCBA must perform for all functional checks before using it. Failure to follow this precaution may result in serious personal injury or death.**

1. Check that the regulator works properly. The regulator outlet should be sanitized before and after testing.
  - a. Check that the cylinder valve and shut-off button 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 shut-off button and bypass valve.
  - a. With the regulator pressurized, operate each valve to be sure it operates. Venting of pressure relief valves (or a continuing flow of air through the regulator when the user is not inhaling) indicates that the regulator needs to be repaired.
  - b. Listen to the regulator. Any unusual sounds, such as whistling, chattering, clicking, or rattling mean that the regulator should be checked further.
  - c. If any of these symptoms occur, the apparatus must be removed from service. Return the regulator to a certified repairperson.
3. Redundant Alarm and Audible Alarm
  - a. MSA recommends that the function of the Audi-Larm and Redundant Alarm warning device be checked by observing the regulator gauge pressure at which the alarms ring and tone. This test should be performed with a minimum cylinder pressure of
    - 1,200psig for the low pressure air mask and
    - 2,000psig for the high pressure air mask.
  - a. Pressurize the system by opening the cylinder valve for a moment, then close it. The alarms should ring and tone, indicating they are "cocked."

- b. Open bypass slowly.
  - c. Watch the drop in pressure on the redundant alarm gauge and the point at which the Audi-Larm begins to ring and the redundant alarm begins to tone. Nominal gauge readings at which the alarm should start to ring and tone are:
    - 530psig - nominal (low pressure system)
    - 1175psig - nominal (high pressure system)
  - d. The alarm should continue until the air pressure is approximately 200psig or less. If the Audi-Larm or Redundant Alarm does not function properly, the apparatus must be removed from service.
4. Test Mode of Redundant Alarm only verifies functioning audible and visible alarm indicators. Also checks battery voltage. Accessed from Sleep Mode by pressing alarm switch 3 times in rapid succession. Switches to low battery alarm if battery voltage is low. Test Mode is not available during a low pressure alarm. See Redundant Alarm Operations Chart.
  5. Audi-Larm Body
    - a. Check that the bell is on tightly and is in the proper alignment.
    - b. 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.**

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

### **Monthly Inspection**

Check the hydrostatic test date on the cylinder approval sticker located on the cylinder neck. The cylinder must be tested every 3 years for composite or carbon fiber cylinders; 5 years for steel and aluminum cylinders.

## DISASSEMBLY AND REPAIR

### MMR SECOND STAGE REGULATOR VALVE CORE SECOND STAGE REGULATOR DISASSEMBLY AND REPAIR

- Place two drops of Urethane Adhesive (P/N 603571) or Loctite Assure #425 (P/N 602706) on the large threads of the bypass sleeve.



#### **CAUTION**

Hold the valve body hex, not the base and lever assembly, ensuring the base and lever will not change calibration.

**Note:** Make certain that the bypass sleeve O-ring remains in its groove on the end of the bypass sleeve during reassembly.

- Place a 1" open-end wrench on the hex flats of the valve and lever assembly.
- Place a  $\frac{1}{2}$  inch crow's foot on inch lbs torque wrench. Place the  $\frac{1}{2}$  inch crow's foot on hex flats of slide. Torque the slide into the valve and lever assembly to a torque of 40 +/- 5 inch lbs.
- Install the valve core.

### INSTALLING THE VALVE CORE

- Place transparent tape over the exposed threads of the valve core to protect the O-ring.
- Place a thin film of Christo-Lube™ lubricant on the **new** valve core O-ring.



- Roll the O-ring in place in the groove closest to the valve body. Remove all tape.

#### **CAUTION**

Do not push the top lever while installing the valve core. This could damage the pad seal and affect operation.

- Line up the slot on the valve body with the lug inside the regulator housing. Press the valve core gently into the housing.



**Note:** Resistance will develop when the O-ring is forced into its seat. The valve core is seated when it will not rotate.

- Screw on the bypass locknut. Using the inch-pound torque wrench and the large spanner wrench, **tighten to 35-45 inch pounds.**



- Place two drops of urethane adhesive (P/N 603571) or loctite Assure #425 (P/N 602706) on the exposed threads of the valve core. Do not permit thread sealant to contact the regulator housing.



- Install the bypass cap.
- Install the **new** retaining ring **flat-side down** to secure the bypass cap.
- Install the intermediate-pressure hose and bypass handwheel.
- Install the diaphragm, and adjust static pressure.
- Install the shut-off assembly and check the static pressure setting.



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