

Inspection

MAINTENANCE AND REPAIR

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INSPECTION

Inspect the entire air mask after it is cleaned and disinfected. NFPA-1500, as well as ANSI Standards Z88.2 and Z88.5, describe three levels of inspection procedures which are to be performed. Refer to these documents, or to an inspection program prepared by a health professional in establishing an inspection program. Detailed repair procedures are located in other tabs within this Maintenance Procedures Manual.

▲ 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 warning can cause inhalation or skin absorption of the contaminant and result in serious personal injury or death.**

COMPONENT INSPECTION (AFTER EACH USE and MONTHLY)

1. Don the air mask following the instruction procedures. These steps make up the Air Mask Functional Test.
2. If all steps are performed successfully, remove the air mask and inspect it following the steps below.
3. Facepiece
 - a. Inspect the facepiece for rubber deterioration, dirt, cracks, tears, holes, or tackiness.
 - b. Check the harness headstraps for breaks, loss of elasticity, or missing buckles or straps. Check the straps for signs of wear.
 - c. Inspect the lens for cracks, scratches, and a tight seal with the facepiece rubber.
 - d. The exhalation valve must be clean and operate easily. The valve must move off the seat and return when released.
 - e. Inspect the facepiece coupling for damage. Also check to be sure the spider gasket and valve disc are present.
 - f. Inspect the NightFighter® Heads-Up Display System receiver module. 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® Audible 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 relief valve for any damage.
 - f. Check relief valve label for damage. Check for missing or loose label. Ensure that relief valve ports are showing. If any damage, remove air mask from service and replace relief valve.
6. High Pressure Hose
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. Quick-Connect Second Stage Intermediate Hose.
Inspect rubber washer for deterioration, dirt, cracks, tears, or tackiness.
8. Cylinder
Breathing apparatus cylinders should be recharged as soon as possible after use. Cylinders should not be stored partially charged for two reasons:
 - If used without recharge, the service life of the apparatus is reduced.
 - The cylinder burst disc vents excess pressure if a full cylinder is over exposed to fire or heat. If the cylinder is not full, it may be damaged before the burst disc vents.

It is also essential that the required inspections and tests be performed on all air mask cylinders in accordance with Department of Transportation (DOT) regulations. DOT regulations require that composite cylinders be retired from service after the fifteenth year. Please note this does not include cylinder valve assembly which may be reused. 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

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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. Carbon and steel cylinders must be tested every five years.
9. **Harness**
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.
10. **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.
11. **PR14™ First Stage Regulator**
 - a. Inspect the regulator mounting bracket for cracks, weakened areas, or signs of heat or chemical-related damage.
 - b. Inspect the regulator mounting bracket screws to verify that they are secure.
 - c. Inspect the regulator mounting bracket to verify that it holds the regulator securely.
 - d. Inspect the regulator seal ring to verify that it is present and properly seated. Inspect the seal ring for rubber deterioration, dirt, cracks, tears, holes, or tackiness.
 - e. Inspect the pressure relief valve. Verify that the relief holes are clear and free of debris or other contamination. Verify that the pressure relief valve is properly secured.
 - f. Inspect the hose connections. Verify that the hoses are properly secured.
12. **Regulator**
 - a. Compare the redundant alarm gauge or ICM Unit reading with the cylinder gauge. It should be within 220 psig for 2216 psig cylinders; 300 psig for 3000 psig cylinders; or 450 psig for 4500 psig cylinders.
13. **Record Keeping:**
Following inspection, the date and initials of the designated person should be recorded on an inspection tag. A more detailed record of the operations performed can be noted on an inspection and maintenance log. Inspection tags and inspection and maintenance logs are available from MSA. When the inspection data has been recorded, the breathing apparatus is stored in a ready position.

FUNCTIONAL CHECKS (AFTER EACH USE AND MONTHLY)

1. Check that the regulator and facepiece can hold a negative pressure.
 - a. Close the cylinder valve.
 - b. Don the facepiece or hold the facepiece against your face to create an effective seal.
 - c. Attach the regulator to the facepiece and inhale until the facepiece begins to collapse against your face. Hold your breath for about 10 seconds. The negative pressure should be maintained and the facepiece should remain collapsed against your face for the entire 10 seconds.
 - d. Do not use the apparatus if negative pressure can not be maintained in the facepiece. Return the regulator and facepiece to a certified repair person.
2. Check second stage regulator operation.
 - a. Push the regulator release buttons.
 - b. Verify that the regulator bypass knob is fully closed (clockwise).
 - c. Slowly open the cylinder valve to pressurize the air mask. Verify that the cylinder valve is completely opened.
 - d. Check the pressure gauge to verify that the cylinder is full. Regulator functional checks must be conducted with a full cylinder.
 - e. Open the regulator bypass knob (counter-clockwise). Verify that air flows from the regulator. Close the bypass knob (clockwise).
 - f. Attach the regulator to the facepiece. Verify proper regulator attachment by pulling on the regulator.
 - g. Don the facepiece or hold the facepiece against your face to create an effective seal.
 - h. Inhale sharply to start air flow. Breathe normally. Verify proper regulator response. The regulator should not make any unusual sounds including: whistling, chattering, or popping.
 - i. Remove the facepiece from the face. Verify that air flows freely. Push the regulator release buttons. Verify that air flow stops.
 - j. If the regulator fails to meet any of the above checks, remove the apparatus from service. Return the regulator to a certified repair person.
3. **NightFighter Heads-Up Display System and Audible Alarm with URC Assembly:**
 - a. Check the Audi-Larm with URC Assembly, ICM Unit, and NightFighter Heads-Up Display System warning functions. Observe the pressure gauge or ICM Unit gauge reading when the alarms ring and tone. This test requires the following cylinder pressures: low pressure air mask: 1,200 psig high pressure air mask: 2,000 psig
 - b. Open the cylinder valve for a moment, then close it. The alarms should ring or tone, indicating they are cocked and armed.
 - c. Open the bypass slowly.

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4. Observe the readings on the pressure gauge or ICM Unit gauge:
 - a. Note the point where the Audi-Larm Alarm with URC Assembly begins to ring
 - b. Note the point where the NightFighter Heads-Up Display System Receiver begins to flash.
 - c. Approximate pressure gauge readings at which the alarm should start to ring and tone or flash are:
 - 530 psig approximately (low pressure system)
 - 750 psig approximately (3000 psig system)
 - 1175 psig approximately (high pressure system)
 - d. Watch the drop in pressure on the pressure gauge or ICM Unit gauge and the point at which the Audi-Larm with URC Assembly begins to ring and the NightFighter Heads-Up Display System Receiver begins to flash. Approximate pressure gauge readings at which the alarm should start to ring and tone or flash are:
 - 530 psig approximately (low pressure system)
 - 750 psig (3000 psig system)
 - 1175 psig approximately (high pressure system)
 - e. The alarms should continue until the air pressure is approximately 175 psig or less. If the Audi-Larm with URC Assembly, ICM Unit Gauge or NightFighter Heads-Up Display System does not function properly, the apparatus must be removed from service. Locate the source of the problem and repair the regulator. See the REGULATOR REPAIR Tab section in this binder.
6. 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 can result in serious personal injury, death, or damage to equipment.

- d. Open the bypass valve slowly to release trapped air. Close the 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 threads for damage. Also be sure there is an o-ring installed, and that it is not damaged.
 - g. Replace the o-ring if it is damaged. See the AUDI-LARM REPAIR section in this binder.
7. Alternate function check. Perform the complete SCBA test using the PosiChek³.