PremAire® System
and
Combination Breathing Apparatus

LEAK TESTING

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TAL 502 (L) Rev. 0

Prnt. Spec. 10000005389 (I) Mat. 10064381
Doc. 10064381

LEAK TESTING

SECOND STAGE

Leak Testing should be performed when the apparatus fails any of the inspection steps; following disassembly; or, as part of a regularly-scheduled maintenance procedure. The apparatus must hold system pressure without leaks to provide adequate protection. The component leak test procedure is the first step in trouble-shooting. These tests ensure that you do not have a leak. Leak testing quickly identifies components which need repair or replacement. Use P/N 600920 leak test solution, or prepare a soapy water solution. Be sure to use enough soap to produce bubbles.

⚠ WARNING

Do not tighten fittings or connectors when the system is pressurized. Close the source or cylinder valve. Be sure nothing blocks the regulator outlet. Relieve pressure from the system by slowly opening the bypass valve. Failure to follow this precaution may cause fittings or connectors to rupture, resulting in serious personal injury or death.

SECOND STAGE REGULATOR

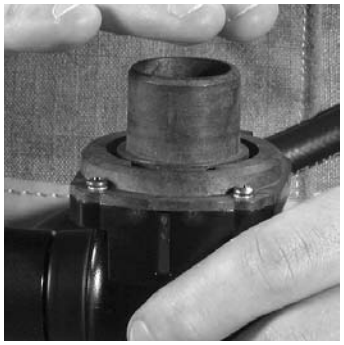
1. Grasp the mask-mounted regulator and push the shut-off button IN.

Note: Shut-off button may be stored IN.

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

3. Connect a pressurized air-supply to manifold inlet.

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



5. Check for bypass operation. Grasp the red knob and turn it 1/4 turn (counter-clockwise) until it locks in. Listen for air flow, then turn it OFF. Close cylinder valve or air source fully.

SECOND STAGE HOSE

Apply leak test solution to both hose end and fittings at each joint. If bubbles appear, see Second Stage Hose section.

MANIFOLD BLOCK

1. Apply leak-test solution to hose connections and quick-disconnect fittings at the manifold inlet and the manifold mask-mounted regulator outlet.
2. If bubbles appear at any of these joints, the leak must be corrected. See repair instructions.
3. Crack the bypass valve slowly to bleed off pressure.

⚠ WARNING

If the function or connection fails, do not use the apparatus. The apparatus 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.

LEAK TESTING

EMERGENCY-ESCAPE CYLINDER FIRST-STAGE REGULATOR

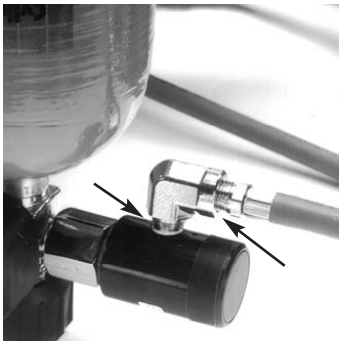
Note: Return the regulator to an MSA CARE Repair Center where indicated for Disassembly and Repair.

1. Open the cylinder valve fully.

2. Apply leak test solution to the first-stage regulator cap. If bubbles appear, Return to an MSA CARE Repair Center.

3. Apply leak test solution to the connection between the first-stage regulator and the cylinder valve outlet. If bubbles appear, securely tighten the regulator coupling to the cylinder valve outlet.

4. Apply leak test solution across the vent holes in the regulator body. If bubbles appear. Return to an MSA CARE Repair Center.



5. Apply leak test solution to the elbow and hose joint, and the full length of the hose to the manifold. If bubbles appear, see repair instructions.

EMERGENCY-ESCAPE CYLINDER VALVE

⚠ WARNING

Close the emergency-escape cylinder valve. Be sure nothing blocks the mask-mounted regulator outlet. Depressurize the first-stage regulator and hose assembly. Failure to follow this precaution may cause fittings or connectors to rupture, resulting in serious personal injury or death.

Outlet Port (coupling nut connection)

1. Be sure that the cylinder is FULL and the valve handwheel is completely closed.

2. Draw a bubble of leak test solution across the valve outlet port. Use your fingers to cover the two bleed hoes on the threads.

3. If the bubble expands, there is an air leak through the valve. Return to an MSA CARE Repair Center.

Pressure Gauge

1. Apply leak test solution to the pressure-gauge fitting. If bubbles appear. Return to an MSA Repair Center.

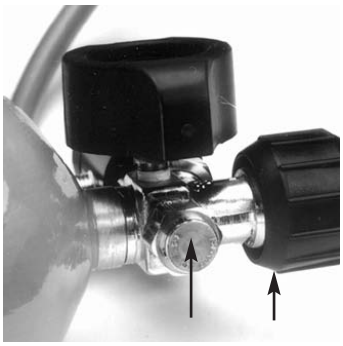
Cylinder Neck

1. Apply leak test solution to the cylinder neck. If bubbles appear, the cylinder must be taken out of service. Return to an MSA Repair Center.

LEAK TESTING

Cylinder Handwheel and Safety Plug

1. Apply leak test solution the cylinder handwheel and safety plug. If bubbles occur at the cylinder handwheel or at the safety plug. Return to an MSA CARE Repair Center.



After All Components are Leak Tested

1. Be sure the air source is completely closed.
2. All repair procedures assume that the air source assembly is disconnected from the manifold.
3. Be sure that nothing blocks the regulator outlet. Open the bypass valve to relieve pressure in the system.
4. Use a clean, lint-free cloth to wipe all components of PremAire Respirator dry.

COMBINATION BREATHING APPARATUS LEAK TESTING

Note: The cylinder must be disconnected from the apparatus to perform this test.

Outlet Port

1. Ensure that the cylinder valve handwheel is completely closed.

2. Draw a bubble of leak test solution across the outlet port.
3. If the bubble expands, there is an air leak through the valve and the cylinder must be taken out of service.

Pressure Gauge

1. Remove the rubber gauge guard.
2. Apply leak-test solution to the pressure gauge stem, cover, and bezel.
3. If a bubble appears, remove the cylinder from service. The pressure gauge must be replaced.

Cylinder Neck

1. Apply leak-test solution to the cylinder neck.
2. If bubbles appear, remove the cylinder from service.

Cylinder Handwheel and Safety Plug

1. Apply leak-test solution to the cylinder handwheel and safety plug.
2. If bubbles appear, the remove the cylinder from service. The valve must be repaired.

Leak-Testing the Complete Apparatus

1. Unscrew the regulator cap and remove the spring and diaphragm. Also, remove the breathing tube from the regulator.
2. Connect the coupling nut to the cylinder and tighten. Open the cylinder valve.
3. Coupling Nut Leak-Test

   a. Apply leak-test solution to the front and back of the coupling nut.
   b. If bubbles appear, relieve pressure and further tighten the air coupling nut.
   c. Re-apply leak-test solution.
   d. Continuation of bubbles indicates a leak. Close the cylinder valve, relieve the system pressure, and remove the apparatus from service.

Regulator Body (High Pressure Regulator) Leak-Test

1. Apply leak-test solution to the pipe threads on the other side of the coupling nut (the side that threads into the regulator housing).

2. Apply leak-test solution where the elbow threads into the regulator.
3. Apply leak-test solution around the joint at the top of the regulator.
4. If leaks appear at any of these places, remove the regulator from service.

Hose Assembly Leak-Test

1. Apply leak-test solution to both hose end-fittings.
2. Apply leak test solution to all joints at the lateral pipe fitting, check valve, elbows, and quick-disconnect plugs.
3. If leaks appear at these places, remove the hose from service.

COMBINATION BREATHING APPARATUS LEAK TESTING

Regulator (Low Pressure) Admission Valve Leak-Test

1. Draw a bubble over the regulator outlet. Place a finger over the aspirator holes. Do not depress the lever arms.
2. The bubble must not expand or burst for at least 15 seconds. A leak indicates that the admission valve must be replaced. Remove the regulator from service.

Air-Line Inlet Leak-Test (Quick-Disconnect Plug)

1. Apply leak-test solution across the ends of the quick-disconnect plugs. If bubbles appear, the quick-disconnect check valve is leaking. Remove the regulator from service.

Reassemble the regulator cap, spring and diaphragm

1. Check that the lever assembly is positioned correctly: Small arm on top.
2. Hold the regulator cap and place the spring in the hub. Place the diaphragm hub on top of the spring.
3. Press the diaphragm ring into the cap. Insert the assembly and screw the cap into the regulator body and hand-tighten.

Breathing Tube Leak-Test

1. Stretch the breathing tube 10-12 inches beyond its normal length.
2. Connect the ends of the tube and thread hand-tight.
3. Slowly release the tension on the breathing tube. The air inside the breathing tube will compress to about 3 psi.
4. Submerge the breathing tube in water. Bubbles will indicate leaks. If the breathing tube leaks remove it from service.

Regulator Diaphragm Leak-Test

1. Check that the diaphragm works properly. The regulator outlet should be cleaned and disinfected before and after testing.
2. Check that the cylinder valve is closed, the air-line source disconnected, and that the unit is not pressurized.
3. Gently inhale through the regulator outlet and hold your breath for about 10 seconds. If a positive pressure is maintained, there is no leakage.
4. Gently exhale through the regulator outlet for about 10 seconds. If a positive pressure is maintained, there is no leakage.
5. Do not use the apparatus if air flow through the regulator is detected in either test. Return the regulator to a CARE Certified repair person.
6. Thread the breathing tube on the regulator. After all components have been leak-tested, use a clean, lint-free cloth to wipe the apparatus dry. Following leak-testing, you should perform the apparatus Function Test (see Inspection Procedures).