

Functional Testing of MAXON Shut-off Valves

Recommended Leak Testing



CAUTION: Valve leak testing should only be attempted by individuals trained or licensed for handling gas combustion systems. Failure to handle combustible gases in a safe, approved manner can create hazards including fire or explosion leading to injury or death.

Instructions provided by the company and/or individuals responsible for the manufacture and / or overall installation of complete system incorporating MAXON valves take precedence over these provided by MAXON. If MAXON instructions conflict with any codes or regulations, contact MAXON before attempting this procedure.

Refer to the appropriate product specification pages for operating sequence applying to your specific valve. Never operate valve until all essential allied equipment is inoperative and any necessary purges of flammable gases or vapors is completed. Failure of valve to operate normally indicates that it is not powered or supply air pressure is not adequate. Check this first!

NOTE: Leak testing may often be confused with commercially-available valve proving systems. The degree of leakage detectable between these methods is not equal. At no time should regular valve leakage tests be replaced by leak proving systems due to the inherent hazard of high leakage levels allowed by these systems.

Test Guideline

Each valve should be checked with available line pressure. Absolute zero leakage may not be obtained in the field depending upon service, age and cycling frequency. Any valve that exceeds the allowable leakage, as set forth by your local codes or insurance requirements, should be removed from service. Possible relevant standards to be referenced include but are not limited to:

NFPA 85, NFPA 86, International Fluid Control Institute, CSA, AGA, EC Equipment Directives, specific equipment manufacturers using the MAXON valves

The procedure described in this document may not be appropriate for all areas, situations or installations. Consult with your insurance carrier, local authority for gas codes, or other relevant compliance agency for testing requirements.

Contact MAXON for service or replacement.

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Suggested leak test procedure for double blocking shut-off valves (without vent line)

NOTE: This procedure is a suggested procedure commonly used in the USA. For other markets, other test procedures may be preferable.

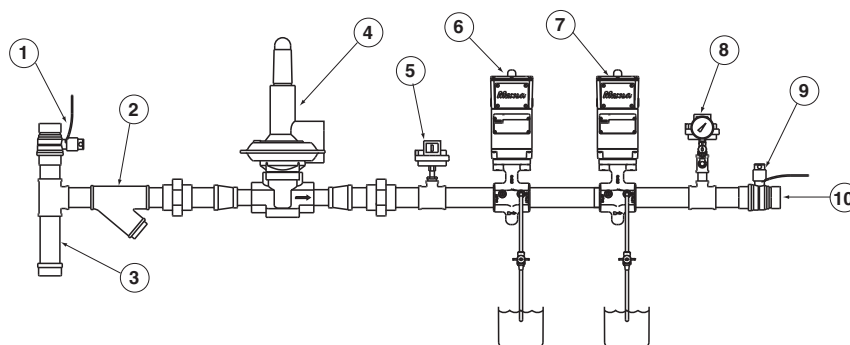
- (a) Shut down combustion system per manufacturer's recommended procedure.
- (b) Close manual valves A and B.
- (c) Visually inspect to verify that shut-off valves #1 and #2 are closed.
- (d) Remove the 1/4" pipe plug from downstream side of shut-off valve #1. Install leak test apparatus.
- (e) Safely vent any trapped gas pressure between valve #1 and valve #2.
- (f) Open manual shut-off valve A, then close leak test apparatus. Insert tube into a container of water just below the surface.
- (g) Open test apparatus and test valve #1 for leakage

As a guideline, valve should be tested for 2 minutes per inch of pipe diameter. Large diameter pipes or long piping runs between shut-off valves may need additional testing time.

If valve testing indicates leakage in excess of applicable standards, perform pre-operational exercising as outlined in Valve Cycling section on Page 10-35.1-1 and retest the valve. If valve continues to exceed allowable leakage limit, remove from service and contact MAXON.

Example of a gas piping diagram for leak test without vent line

- 1) Manual valve A
- 2) Strainer
- 3) Drip leg
- 4) Gas pressure regulator
- 5) LGP switch
- 6) Shut-off valve #1
- 7) Shut-off valve #2
- 8) HGP switch
- 9) Manual valve B
- 10) To combustion system



- (h) Secure test apparatus on valve #1 and reinstall pipe plug in the test port.
- (i) Remove the 1/4" pipe plug from downstream side of shut-off valve #2. Install leak test apparatus.
- (j) With an auxiliary or other power supply connected to valve #1, cycle valve #1 open leaving valve #2 shut.
- (k) Open test apparatus to test valve #2 for leakage as described in (g).
- (l) Secure test apparatus on valve #2 and reinstall pipe plug in the test port.
- (m) Restore combustion system to operational condition. Be sure to remove all auxiliary power supplies and jumpers that may have been used during testing. Open manual valves A and B and resume operation according to equipment manufacturer's recommended practices.

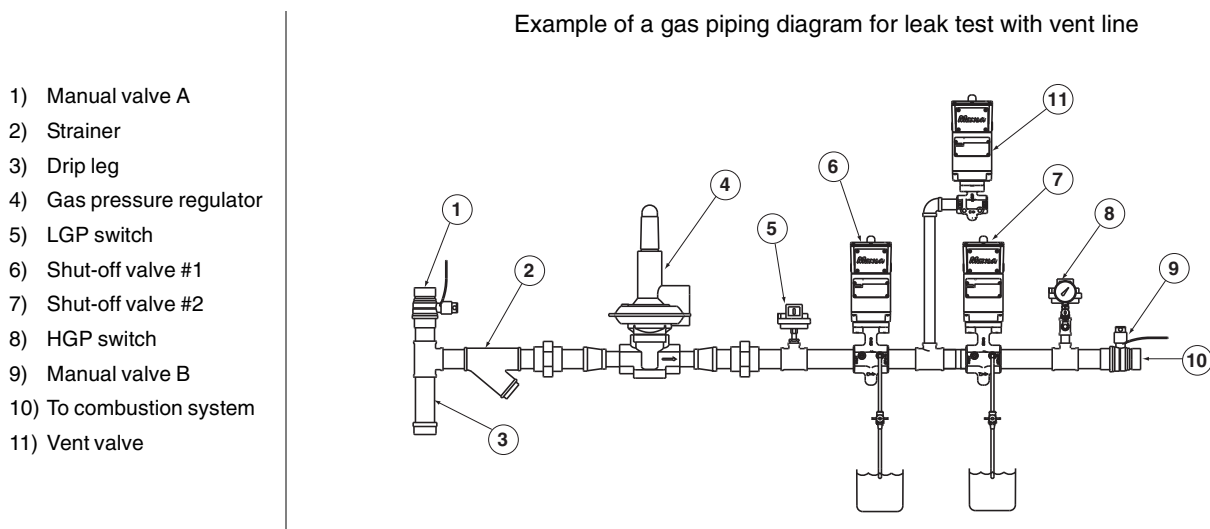
Suggested leak test procedure for double blocking shut-off valves (with vent line)

NOTE: This procedure is a suggested procedure commonly used in the USA. For other markets, other test procedures may be preferable.

- (a) Shut down combustion system per manufacturer's recommended procedure.
- (b) Close manual valves A and B.
- (c) Visually inspect to verify that shut-off valves #1 and #2 are closed.
- (d) Remove the 1/4" pipe plug from downstream side of shut-off valve #1. Install leak test apparatus.
- (e) Vent valve will safely remove any gas between shut-off valve #1 and shut-off valve #2. With an auxiliary or other power source connected to the vent valve, power the vent valve closed.
- (f) Open manual shut-off valve A, then close leak test apparatus. Insert tube into a container of water just below the surface.
- (g) Open test apparatus and test valve #1 for leakage

As a guideline, valve should be tested for 2 minutes per inch of pipe diameter. Large diameter pipes or long piping runs between shut-off valves may need additional testing time.

If valve testing indicates leakage in excess of applicable standards, perform pre-operational exercising as outlined in Valve Cycling section on Page 10-35.1-1 and retest the valve. If valve continues to exceed allowable leakage limit, remove from service and contact MAXON.



- (h) Secure test apparatus on valve #1 and reinstall pipe plug in the test port.
- (i) Remove the 1/4" pipe plug from downstream side of shut-off valve #2. Install leak test apparatus.
- (j) With an auxiliary or other power supply connected to valve #1, cycle valve #1 open leaving valve #2 shut.
- (k) Open test apparatus to test valve #2 for leakage as described in (g).
- (l) Secure test apparatus on valve #2 and reinstall pipe plug in the test port.
- (m) Remove the 1/4" pipe plug from downstream side of vent valve. Install leak test apparatus.
- (n) With an auxiliary or other power supply connected to shut-off valve #1 and vent valve, cycle valve #1 open and cycle vent valve shut leaving valve #2 shut.
- (o) Open test apparatus to test vent valve for leakage as described in (g).
- (p) Secure test apparatus on vent valve and reinstall pipe plug in the test port.
- (q) Restore combustion system to operational condition. Be sure to remove all auxiliary power supplies and jumpers that may have been used during testing. Open manual valves A and B and resume operation according to equipment manufacturer's recommended practices.