

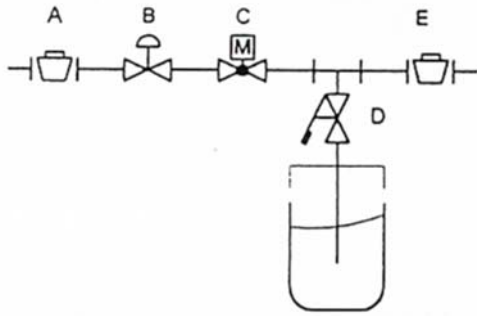
Eddy's Boilerhouse News

TIP OF THE MONTH FOR THE MAINTENANCE DEPARTMENT

By Eddy Emerson

LEAK TESTING OF AUTOMATIC GAS VALVES

Arizona State Boiler Code (R20-5-417/B5/c) and ASME CSD-1 (CM-130.e.7 & Table CM-1) requires that all **safety valves** (automatic gas shut off valves) be tested for tightness at least once a year.



This test is done to check the tightness of gas safety shutoff valves. It is recommended that this test be performed by qualified personnel, and is included in scheduled inspections and preventative maintenance programs (i.e. annual boiler inspection).

1. De-energize the control system to assure that there is no power to the safety shutoff valve (C).
2. Close the upstream manual gas cock (A).
3. Remove the leak test tap plug and connect the test valve and fittings (D).
4. Make sure manual test petcock (D) is closed and in the leak test tap port.
5. Close the downstream manual gas cock (E).
6. Open the upstream manual gas cock (A).
7. Make sure the safety shutoff valve is in the fully closed position. If not, run valve to the fully closed position and de-energize the system.
8. Immerse a ¼ inch tube, ½ inch into a jar of water.
9. Slowly open the test petcock (D).

10. When the rate of bubbles coming through the water stabilizes, count the number of bubbles appearing during a ten-second period. Each bubble that appears during a ten-second period represents a flow rate of approximately 0.001 cfh.

11. Check valve manufactures data for allowable leakage.

Example – Honeywell V5055 Valve

Pipe Size (inches)	Allowable Leakage (cc/hr) ¹	Number of bubbles per 10 sec.
¾ to 1-½	458	16
2 to 3	752	26
4	1003	35

After the Test:

1. Close the upstream manual gas cock (A).
2. Close the test pet cock (D), remove the test apparatus, and replace the leak test tap plug.
3. Open the upstream manual gas cock (A) and energize the safety shutoff valve (C).
4. Test with soap bubbles to assure that there are no leaks at the test port.
5. De-energize the safety shutoff valve (C).
6. Open the down stream manual as cock (E).
7. Restore the system to normal operation.
8. If two-safety shutoff valves are utilized each valve is to be checked for tightness.

¹

Based on air at standard conditions, test pressures provided by ANSI Z21.21, section 2.4.2 and a maximum of 235 cc/hr per inch of seal-off diameter. Seal-off diameter is not to be confused with pipe size.

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