

Valve Train Leak Test

IMPORTANT SAFETY TEST INFORMATION

⚠️ WARNING

**Explosion Hazard.
Can cause serious injury or death.**

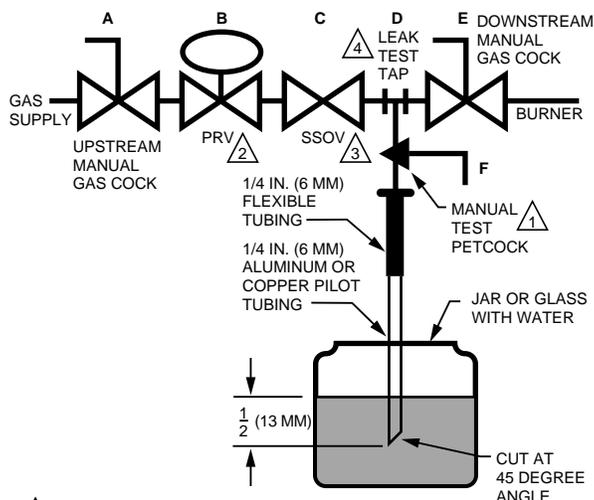
1. Do not put the system in service until you have satisfactorily completed the following Valve Leak Test, all applicable tests described in the Checkout section of the instructions for the flame safeguard control, and any other tests required by the burner manufacturer.
2. All tests must be performed by a trained, experienced flame safeguard control technician.
3. Close all manual fuel shutoff valves as soon as trouble occurs.

After the installation is completed, cycle the valve(s) several times with the manual fuel shutoff cock closed. Make sure the valve(s) and actuator(s) function properly. Also perform the Valve Leak Test before putting the valve(s) into service.

VALVE LEAK TEST (FIG. 1)

This is a test for checking the closure tightness of the gas safety shutoff valve. It should be performed only by trained, experienced flame safeguard control technicians during the initial startup of the burner system, or whenever the valve or valve bonnet is replaced (see Service Information section). It is recommended that this test also be included in the scheduled inspection and maintenance procedures. For a periodic inspection test, follow steps 1, 3, 4, 5, 8, 9, 10, 12, 13, 16 and 17.

1. De-energize the control system to assure no power goes to the valve actuator (C, Fig. 1).
2. Close the upstream main gas cock (A).
3. Make sure the manual test petcock (F) is closed in the leak test tap assembly (D).
4. Remove the leak test tap plug and connect the test apparatus to the leak tap (D).
5. Close the downstream manual gas cock (E).
6. Open the upstream manual gas cock (A).
7. Run the valve to its fully open position (through the safety system); then immediately de-energize the system to close the valve.
8. Immerse a 1/4 in. (6 mm) tube vertically (1/2 in. (13 mm) into a jar of water.
9. Slowly open the test petcock (F).



- ⚠️ 1 CAN ALSO BE A PERMANENT PETCOCK.
- ⚠️ 2 PRV = PRESSURE REGULATING VALVE.
- ⚠️ 3 SSOV = SAFETY SHUTOFF VALVE.
- ⚠️ 4 ONLY USE ONE OF THE DOWNSTREAM TAPS ON THE SSOV. M9547E

Fig. 1. Valve leak test.

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

To meet U.S. requirements, be sure leakage does not exceed the rates in Table 1.

Table 1. Allowable Leakage Rates.

Valve Size (in.)	Allowable Leakage (cc/hr) ^a	Number of bubbles (per 10 sec.)
3/4, 1, 1-1/4, 1-1/2, 2	458	16
2, 2-1/2, 3	752	26

^a Based on air at standard conditions, test pressures provided by ANSI Z21.21, Section 2.42 and a maximum of 235 cc/h/in of seal-off diameter (not pipe size).

NOTE: For international leak test requirements, contact the appropriate approval agency.



AFTER THE TEST

11. Close the upstream manual gas cock (**A**).
12. Close the test petcock (**F**), remove the test apparatus, and replace the leak test tap (**D**).
13. Open the upstream manual gas cock (**A**) and energize the valve actuator through the safety system.
14. Test with rich soap and water solution to make sure there is no leak at the test tap (**D**) or any pipe adapter/valve mating surfaces.
15. De-energize the valve.
16. Open the downstream manual gas cock (**E**).
17. Restore the system to normal operation. If two or more safety shutoff valves are used, check each valve for closure tightness.

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