Test Procedure for Spill-Resistant Vacuum Breaker Assemblies using a Differential Pressure Gauge Test Kit

Check Valve and air inlet valve (SVBA)

Performance Criteria: The check valve is internally loaded and drip tight in the direction of flow with 1.0 psid. The air inlet valve should initially open at 1.0 psid or greater and continue to open fully.

Test Objective, Method, and Reporting Requirements for Check Valve and Air Inlet Valve:

Note: Once the test gauge is elevated when testing an SVBA, it should remain elevated while testing the check valve and air inlet valve opening point.

Test the check valve for tightness in the direction of flow and determine the static pressure drop across the check valve using a differential pressure gauge test kit. Determine the initial opening point of the air inlet valve using a differential pressure gauge test kit. This is accomplished by

Check Valve Testing

- Connecting the differential pressure gauge to the upstream side of the check valve (there is only one test cock on this assembly).
- Holding the center line of test gauge at the vent valve outlet (vent screw) while testing both the check valve and air inlet valve.
- Closing the shut-off valves on the SVBA to isolate the pressure within the assembly.
- Reducing water downstream of the check valve to atmosphere.
- Observing the differential pressure gauge reading when flow from the vent valve ceases and the gauge reading has stabilized.
- The check valve should hold tight at 1.0 psid or greater.
- The test gauge continues to remain elevated for the air inlet valve test.

Record the differential pressure gauge reading on the test report form as the Check Valve pressure drop.

Air Inlet Valve Testing

- With the test gauge still elevated, reduce pressure on the upstream side of the check valve by draining water from assembly through the differential pressure gauge.
- The air inlet valve should initially open at 1.0 psid or greater.
- Record the initial opening point of air inlet valve.
- With test kit lowered, close the high bleed valve and remove the test gauge hose from the test cock. When flow ceases from test cock, observe that the air inlet valve continued to fully open.

Record the initial opening psid of the air inlet valve. Observe or note that the air inlet valve continued to open fully. (Table B-4.)

Observe and verify that the SVBA

- Is designated as an approved assembly by the administrative authority.
- Is properly installed 12 in. above the highest downstream outlet.

Table B-4 PVBA/SVBA test reporting

Check valve #1 [≥1.0 psid]	Pressure drop: Valve tight?	__ __ . __ psi yes ____, no ____
Air inlet [≥1.0 psid]	Opened at: Air inlet fully opened	__ __ . __ psi yes ____, no ____

Table B-5 Approved minimum test result values

Assembly Type ▼	◄ ASSEMBLY COMPONENT ► Check Valve #1 Holds at:	Check Valve #2 Holds at:	Relief Valve Opens at:	Air Inlet Valve Opens at:
RPBA/RPDA	Tight ≥ 5.0 psid	Tight (no psid determined)	≥ 2.0 psid	n/a
DCVA/DCDA	≥ 1.0 psid	≥ 1.0 psid	n/a	n/a
PVBA	≥ 1.0 psid	n/a	n/a	≥ 1.0 psid and fully open
SVBA	≥ 1.0 psid	n/a	n/a	≥ 1.0 psid and fully open

NOTE: n/a indicates the assembly does not have that component.

- Provides the correct protection for the potential hazard (the water supplier has the responsibility to verify proper assembly was installed for protection from the degree of hazard).
- Is correctly installed with approved clearances for testing and maintenance.
- Test results are properly documented on the test report form:
  - — Check valve holds tight at 1.0 psid or greater.

Air inlet valve initially opens at 1.0 psid or greater and continues to fully open.

Verify with the *administrative authority* whether a type of test kit or specific manufacturer and model of test equipment requires approval.

In the Pacific Northwest, approved test procedures use a differential pressure gauge to obtain test results for each component of an assembly. The values recorded must be greater than or equal to the minimum values shown in Table B-5. All components of an assembly must meet or exceed these values to pass the performance test.

Backflow Assembly Test Equipment

Backflow assembly test procedures are performed using test equipment commonly called "test kits." Administrative authorities may specify which type of test kit is approved for testing assemblies such as a duplex or differential pressure gauge. Manufacturers produce test kits that can be analog (Figure B-3) or electronic/digital (Figure B-4). The most common type of test kit approved for use in testing backflow prevention assemblies is the differential pressure gauge. This test kit comes in several models:

- Two valve
- Three valve
- Five valve

Some agencies may grant approval of specific test equipment manufacturers and models. Examples of test equipment manufacturers include:

Acugauge	Gage-It
Ames	Mid-West

In the Pacific Northwest, differential pressure gauge test kits are approved for testing. Annual accuracy verification of test kits is required.