NEW ENGLAND WATER WORKS ASSOCIATION
3 VALVE TEST KIT FIELD TESTING PROCEDURE
SPILL-RESISTANT PRESSURE VACUUM BREAKER

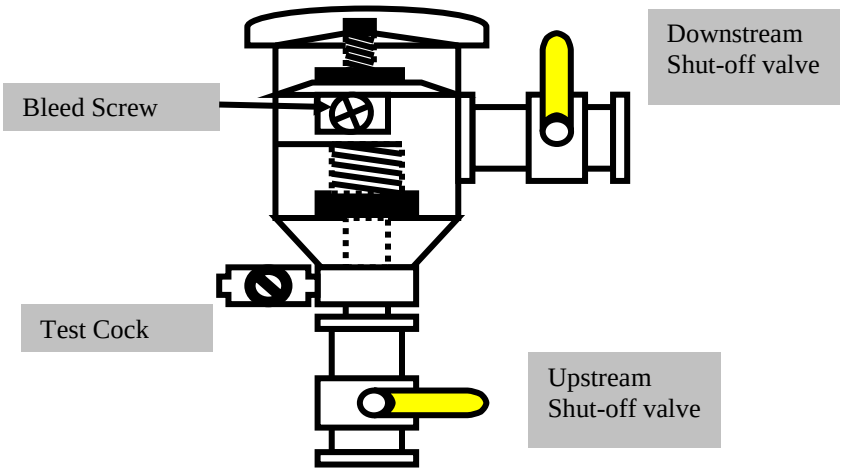
This field test procedure evaluates the operational performance characteristics as specified by nationally recognized industry standards of the independently-operating internal spring loaded check valve and air inlet valve while the assembly is in a no-flow condition. This field test procedure utilizes a three valve differential pressure test kit to measure the static differential pressure across the check valve and determine the opening point of the air inlet valve. This field test procedure will reliably detect weak or broken check valve springs and validate the test results by determining that a no-flow condition exists. This test procedure will work with all three valve differential pressure test kits.

Prior to initiating the test, the following preliminary testing procedures shall be followed:

1. The device has been identified.
2. The direction of flow has been determined.
3. The test cocks have been numbered and the canopy is removed.
4. A test adapter has been installed and "blown-out".
5. Permission to shut down the water supply has been obtained.
6. The downstream shut-off valve has been shut off.

This test procedure will examine the spill resistant pressure vacuum breaker assembly for the following performance characteristics using a three valve differential pressure gauge with a range of 0 – 15 PSID.

1. The check valve has a minimum differential pressure across it of 1 PSID.
2. The device is in a no-flow condition at the time of the test.
3. The air inlet valve opens at least 1 PSID above atmospheric pressure.
4. Optional – The downstream shut-off valve is tight.



SPILL RESISTANT PRESSURE VACUUM BREAKER
3 VALVE FIELD TEST PROCEDURE

Step 1: Test the check valve to determine that it has a minimum differential pressure across it of 1 PSID (Figure 1)

1. Verify that upstream shut-off valve is open.
2. Close the downstream shut-off valve.
3. Orientate the test kit valves – high and low control valves closed; vent control valve open.
4. Connect the high hose to the test cock.
5. Open the test cock. The test kit needle should peg to the extreme right of the gauge.
6. Open high control valve to bleed air from the hose; close the high control valve.
7. Close the upstream shut-off valve.
8. Raise test kit and end of the low pressure hose to the elevation of the test cock.
9. Slowly unscrew the bleed screw until it starts to drip.
10. When dripping from the bleed screw stops, and the needle on the test kit stabilizes, record the differential pressure. It must be 1 PSID or greater. : If water continues to flow from the bleed screw, the upstream shut-off valve may be leaking. The differential pressure gauge reading is the apparent reading. This gauge reading cannot be validated until it is confirmed that the device is under a no-flow condition.
11. Close the bleed screw.

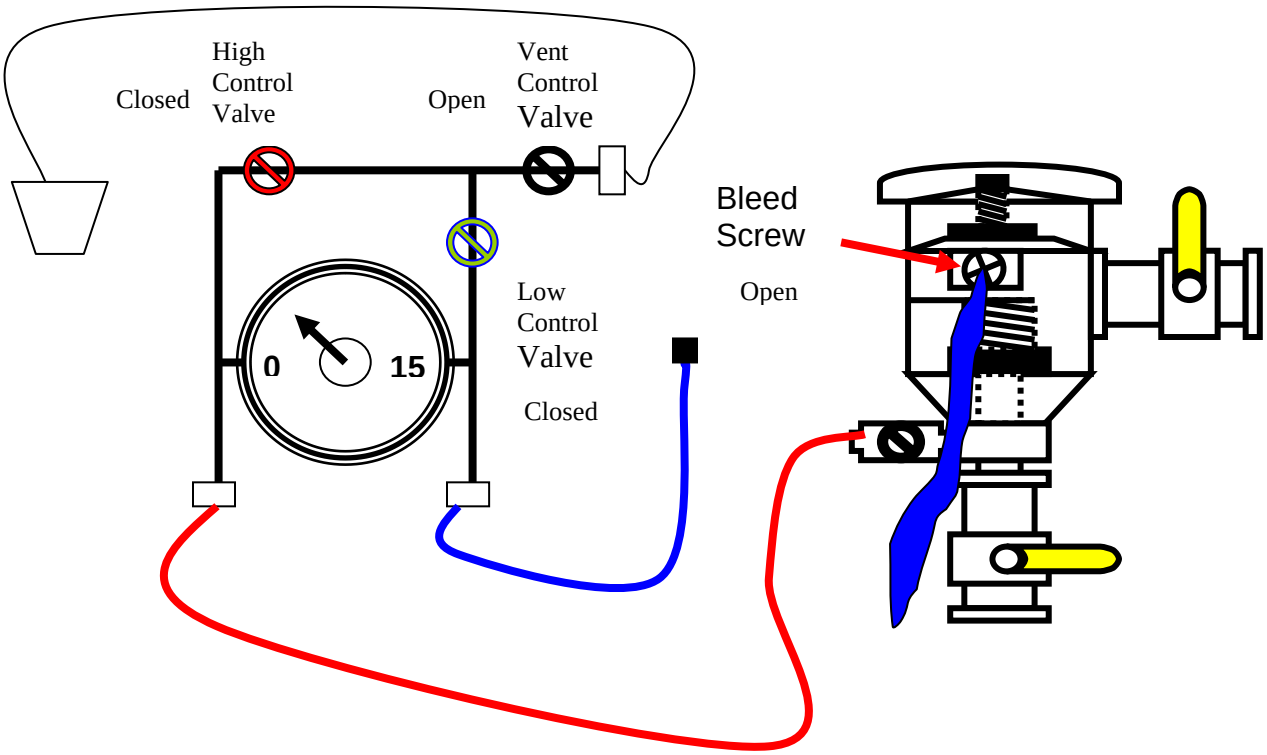


Figure 1

Step 2: Tightness Validation Test -- Test the device to determine if the device is under a no-flow condition and validate differential pressure reading. (Figure 2)

1. With the high pressure hose still connected to the test cock, open the upstream shut-off valve to pressurize the device. The test kit needle should peg to the extreme right of the gauge. The downstream shut-off valve is still closed.
2. Open the high control valve to bleed air from the hose; close the high control valve.
3. Close the upstream shut-off.
4. Observe needle on the test kit. If the needle remains steady the downstream shut-off valve is holding tight and/or the device is under a no-flow condition. If needle starts to descend, the downstream shut-off valve is considered leaking (See NOTE A).
5. Record data.
6. Proceed to Step 3 if a no-flow condition exists.

NOTE A: If the device is in a flow condition the differential reading taken are invalid. The device does not fail the test, since it cannot be tested in a flow condition. To perform the test of the device, a non-flow condition shall be achieved, either through the repair of the downstream shut-off valve, the operation of an additional shut-off valve downstream or by another means of validating that the device is under a no-flow condition. To determine the condition of the downstream shut-off valve a demand downstream must be created during the no-flow test. If during a created demand the needle on the test kit continues to hold steady, the downstream shut-off valve is considered tight.

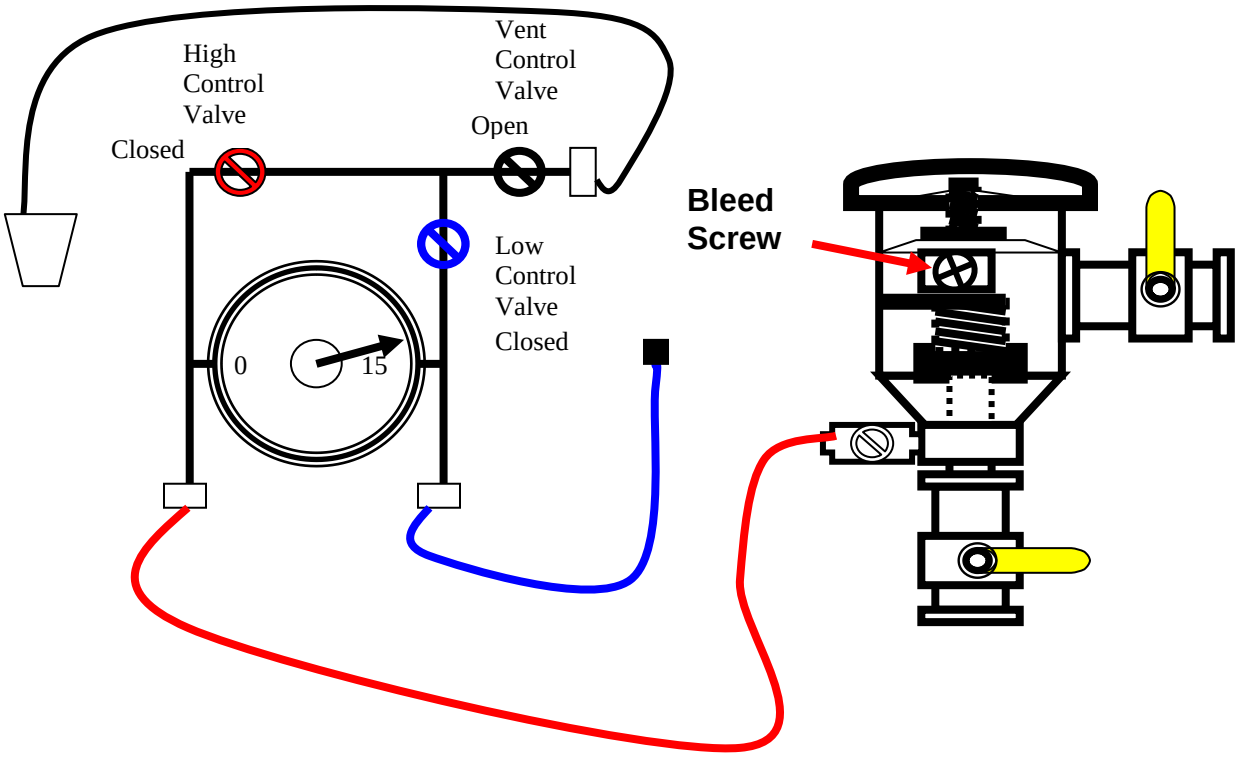


Figure 2

Step 3: Determine if the air inlet valve opens at least 1 PSID above atmospheric pressure. (Figure 3)

1. Both shut-off valves are still closed and the canopy is removed.
2. The high pressure hose is still connected to the open test cock.
3. The test kit valves are positioned as follows: High and low control valves are closed; vent control valves open.
4. Hold the test kit and end of the low pressure hose at the same level as the center of the assembly.
5. Slowly unscrew the bleed screw until it starts to drip.
6. Slowly open the high control valve ¼ turn while simultaneously observing the air inlet valve. (Lightly placing an object on top of the air inlet may be helpful in determine the opening point.)
7. Read the test kit needle at the point where the air inlet valve opens (pops). It should be equal to or greater than 1 PSID. A reading of less than 1 PSID is cause for failure. If the air inlet valve does not open, the upstream shut-off valve may be leaking.
8. Observe that the air inlet valve to determine that it is open completely.

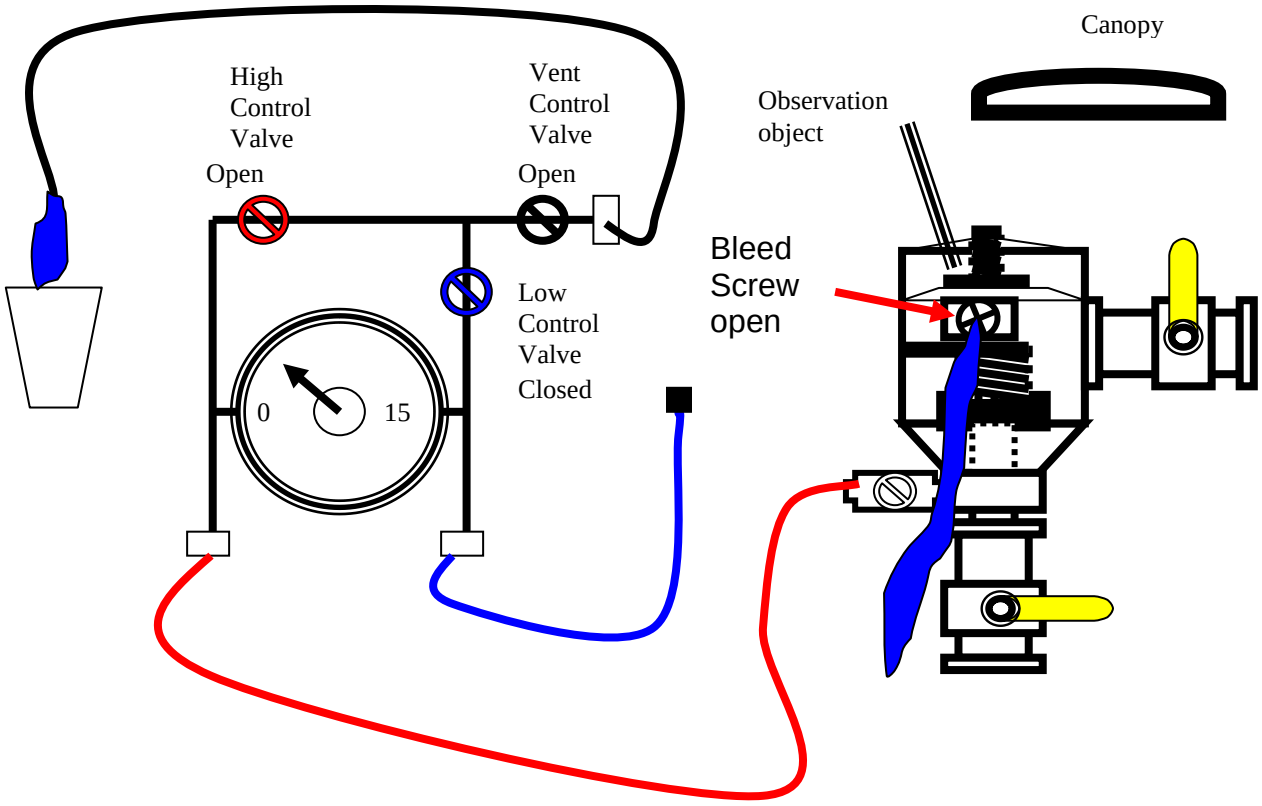


Figure 3

Downstream Shut-off Valve Tightness: To determine the tightness of the downstream shut-off valve, a demand downstream of the backflow prevention device assembly shall be created while performing the no-flow test. If the needle on the test kit remains steady during a demand condition, the downstream shut-off valve is considered holding tight. If under a demand condition the needle on the test kit drops to zero, the downstream shut-off valve is considered leaking. If there is no water demand downstream of the backflow prevention device assembly, the tightness validation of the downstream shut-off valve may not be possible, since a leaking downstream shut-off valve with a no-flow condition will emulate a tight downstream-shut off valve.

Concluding Procedures This completes the standard field test for a Spill-Resistant Pressure Vacuum Breaker. Before removal of the test equipment, the tester should ensure that the bleed screw and test cock are closed, and the downstream and upstream shut-off valves are open, thereby reestablishing flow. All test data should be recorded on appropriate forms and submitted to the appropriate parties.