Testing PVB's

"When it comes to testing Pressure Vacuum Breaker's what are the steps and why should we go to this expense?"

Lorne Haveruk, Principal, DH Water Management, is one of the country's leading Irrigation Consultants focused on all aspects of irrigation water resource management (design, project management, and education about rainwater, ground water, stormwater, reuse, and conventional systems.) To view more of our products, forms, articles, books and training opportunities, go to www.dhwatermgmt.com. To contact the author directly email lorne1@dhwatermgmt.com

Why do we need to test our backflow prevention devices? Good question and the answer is a legal one as well as one of maintenance and assurance that the device is ready to continue to protect our potable water supplies.

PVB assemblies are used to protect against health hazard and non-health hazard backsiphonage conditions in industrial plants, cooling towers & laboratories, laundries, swimming pools and lawn sprinkler systems.[1]

Depending upon your jurisdiction – You may be required to test backflows

Property owners must:

- Install a backflow assembly if there is an existing or potential cross connection.
- Test the assembly after installation, annually, and if the assembly is moved or repaired, also a requirement of the State Plumbing Code. A State-certified backflow tester must perform the test, and send copies of the test report to the local water provider. The assembly must function properly to pass the test.
- Repair the assembly if it is not functioning properly. A certified tester must retest the assembly after a repair.
- The Water providers can deny or discontinue water service if a property owner fails to follow the law

Local water providers must:

- Set up and maintain backflow assembly records for water services located inside their distribution system.
- Enforce all state and local laws regarding backflow assembly installation. This includes ensuring that owners test the assemblies each year.
- Send an annual report to DHS.

Irrigation Systems:

Plumbing permits are required for irrigation systems. All irrigation systems supplied by privately owned water systems require a plumbing permit before installation. Piping and plumbing materials upstream of the backflow prevention assembly must meet State Plumbing Code standards.[2]

Winterizing backflow assemblies

Injecting compressed air through backflow assemblies may be the greatest cause of irrigation system backflow assembly damage. Injecting compressed air through a backflow assembly stresses internal components and coats the inside of the assembly with diesel oil. Pressure vacuum breaker assemblies without downstream air injection ports required poppet and/or bonnet repair six times more often than PVBs that had downstream air injection ports. Pressure vacuum breaker assemblies without downstream air injection ports required check replacement or repair three times more often than PVBs with downstream air injection ports.[3]

TESTING PRESSURE VACUUM BREAKERS

1) Tester and hoses must be at the same elevation as the vacuum breaker

2) Remove canopy so vent opening may be visually checked

3) Bleed test ports to clean out any debris

4) Close shut-off valve #2

5) Close shut-off valve #1. If vent opens, shut-off valve #2 is leaking and must be repaired before testing can be done.(Report leaking or tight shut-off valve #2 on test form)

6) Open test port #1. If water drains from test port and vent opens, check valve is leaking. (Report leaking or tight check valve on form) If water drains from test port and vent does not open, shut-off valve #1 is leaking. Repairs must be made before continuing test. (Report leaking or tight shut-off valve #1 on form)

7) Close test port #1

8) Open shut-off valve #1

9) Close all valves on tester

10) Attach high hose to test cock #1

11) Open test port#1. Gauge should go to 15 PSI or higher

12) Bleed air from tester

13) Close shut-off valve #1

14) Open test port #2. (Vent will open) Gauge should drop to no lower than 1.0 PSI. (Report check valve spring loading on form)

15) Close test ports #1 and #2 and remove high hose

16) Attach high hose to test port #2

17) Open shut-off valve #1

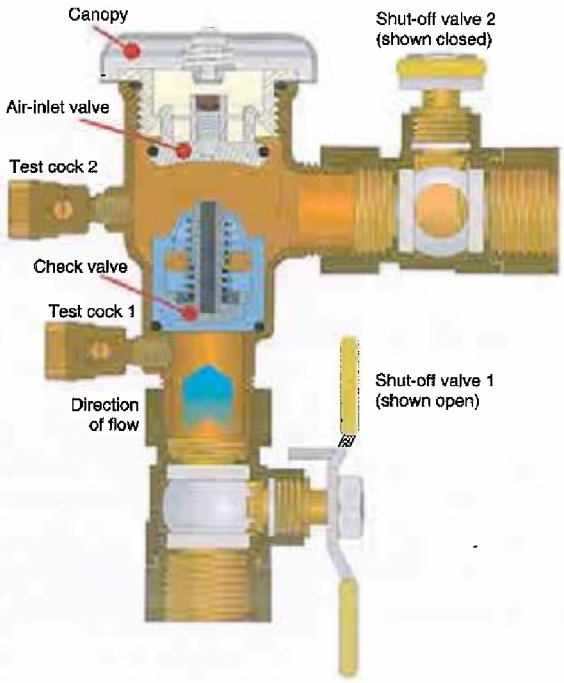
18) Open test port #2

19) Bleed air from tester

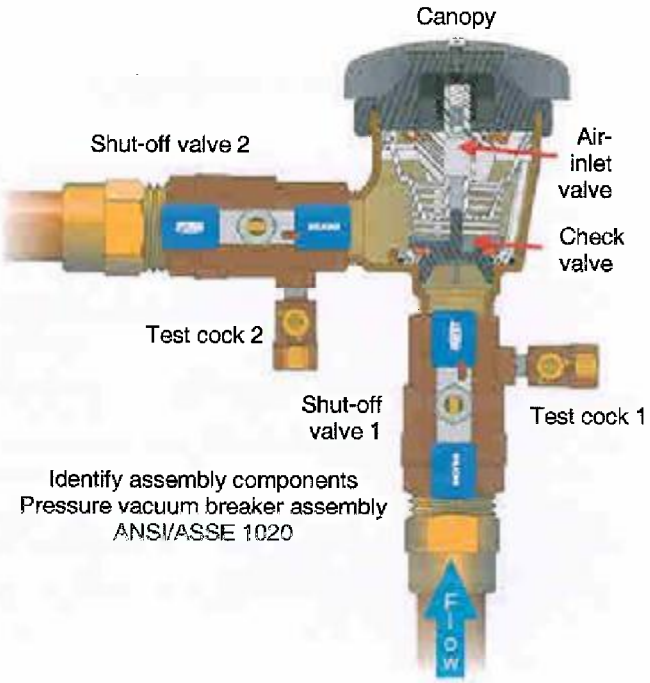
20) Close shut-off valve # 1

21) Slowly bleed down pressure. Vent must be open at 1 PSI or higher (Report air inlet spring loading on form)

22) Close all valves on tester, close test port #2, remove test equipment and return device to original condition.[4]



Pressure type vacuum breaker assembly
(ANSI/ASSE 1020)
Identify assembly components.



Identify assembly components
Pressure vacuum breaker assembly
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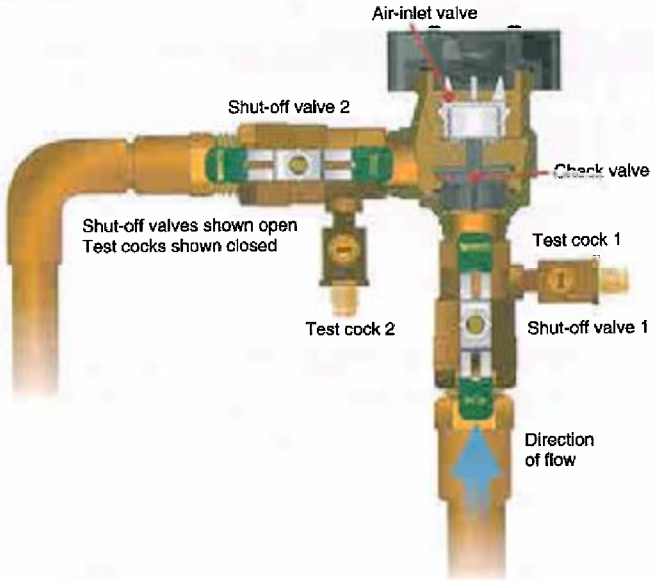

Test Kits

The Mid-West Instrument Backflow Test Kit Accessories 830-0001 and 830-0003 are designed for use with the USC field test procedures for double check valve assemblies, pressure vacuum breaker assemblies and spill resistant pressure vacuum breakers per the USC Manual of Cross-Connection Control. Training schools and municipalities that have multiple testers using the same test kit prefer the 830 because of its protection in the case. Individual testers buying a kit for their own personal use prefer the 845 because of its lightweight and portability. Proper test results can only be obtained when backflow prevention assemblies are in a static "no flow" condition during field-testing. The 830-0001 and 830-0003 compensate for leaky number 1 shut-off valves, allow for trouble shooting of shut-off valve conditions, and improve the accuracy of test results.[5]

We can see that there is a lot involved in testing a PVB and other backflow prevention devices. A professional is required; permits for connections even for private water supplies to potential cross connections are now law in some states – and spreading as the protection of water along with the environment has taken center stage in a big way in the past few years. As populations increase, weather changes to drier in some locations to wetter in others, water will be a hot topic if it already is not. I am pleased to see that water is finally receiving the respect due for many years – it is just a shame that it takes a crisis to wake up the powers to be.

References:

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3. Winterizing your sprinkler system, http://www.compsysforturf.com/PVBCCSFT.pdf
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5. Backflow Test Kits, http://www.backflowtestkits.com/fabqs.pdf