

# CROSSTALK

Summer 2016

## Testing the Double Check Valve Assembly



The USC Foundation's *Manual of Cross-Connection Control, Tenth Edition* includes field test procedures for backflow prevention assemblies, one of which is the double check valve backflow prevention assembly (DC). The field test procedure found in the manual for the DC allows the backflow prevention assembly tester to get an accurate reading for the check valves even when a shutoff valve may be leaking. This is accomplished by observing the amount of water discharging from the downstream test cock. However, the wording used to describe what to look for has confused some testers.

The word *drip* that is used throughout the DC field test procedure and troubleshooting section of the manual has caused some confusion amongst testers. The field test procedures and diagnostics mention on more than one occasion the phrase "no more than a drip." And, determining what the Foundation means by a drip is what puzzles some testers.

A drip is not a single drop, instead a drip means the act of dripping, or to let drops fall. So, this means drops are falling from the vertical tube when a drip is mentioned in the DC field test procedures and diagnostics.

For example, when testing the first check valve of the DC, the tester attaches the high pressure side of the Field Test Kit to the bleed-off valve arrangement of the No. 2 test cock. A vertical tube is attached to the No. 3 test cock, if needed to see the level of water in the body of the assembly. If the No. 1 shutoff valve is leaking, water will continue to flow from the vertical tube (or No. 3 test cock) when the No.

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# New Members

Below is a list of those who have become members of the USC Foundation since the last *Cross Talk*.

**Bar1 Testing Co.**

Brown Book Shop

**Carlos Alvarez**

David Frederick

**IES Waterworks**

Leo Villanueva

**MEI-Doty Bros Inc.**

Michael Crump, Jr.

**Platinum X Construction**

Professional Water Consulting

**PRP, LLC.**

Scripps Ranch Landscape

**Seattle Area Pipe Trades**

SF Airport

**Stanley Chun**

Trevor Strasser

**Vepo, LLC.**

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# USC Foundation Membership Benefits



Widney Alumni House

## Membership Discounts



**MORE THAN 25%** OFF Manual Orders



**MORE THAN 25%** OFF Training Courses



**35-65%** OFF Seminars & Webinars

## Additional Benefits



*Cross Talk* quarterly subscription



Up to 3 complimentary *Webinars* or *Webinars on Demand*



Free copy of each new edition of the *Manual of Cross-Connection Control*



2016 *USC List of Approved Backflow Prevention Assemblies* book (At member's request)



Email notifications of new updates to the *USC List of Approved Backflow Prevention Assemblies*



*Special Notices* mailed exclusively to members as published

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# TRAINING DATES FOR 2017

With the end of the year fast approaching, the USC Foundation has announced its training course and webinar dates for next year. Highlighting next year's calendar is the availability of a fourth *Course for the Training of Cross-Connection Control Program Specialists* and the introduction of two new webinar topics. The Foundation is in the planning stages of making available hands-on special events that will interest backflow prevention assembly testers and cross-connection control specialists.

The Specialist course is an essential course for those interested in administrating a cross-connection control program. The course attracts attendees from across the world. Recently, attendees from North America, South America, Europe, Asia and Australia attended courses. And, with courses at or near capacity for the past couple of years, the Foundation has added a fourth Specialist course for this upcoming year. With the availability of four courses throughout 2017, the Foundation hopes to accommodate everyone who may be interested in attending a course.



Attendees participate in a site survey on the USC campus

In 2017, the Foundation will be hosting five live webinars. As webinar attendance continues to exceed seminar attendance the Foundation has decided to discontinue its in-person seminars to focus on delivering a better webinar

presentation. Additionally, all webinars will be three hours long to accommodate the majority of attendees. And, all webinars will continue to be eligible for continuing education units (CEU's). These three hour webinars will provide 0.3 CEUs which is equivalent to three contact hours.

The first live webinar for 2017 will be held February 7th and addresses a new topic: The USC Approval Program. The webinar will review the requirements and procedures for a backflow prevention assembly to successfully complete the USC Approval Program. Also, once on the *USC List of Approved Backflow Prevention Assemblies*, types of modifications that will and will not invalidate the USC approval will be discussed.

The other new webinar for 2017 will be held August 10th and address irrigation systems. The webinar will explain how the different types of irrigation systems affect the type of backflow protection required and the importance of properly protecting the potable water system from the potential hazards found in irrigation systems. Other webinars for 2017 include: Regulations & Plumbing Codes, Grey Water Systems & Recycled Water Shutdown Test and Cross-Connection Control Surveys.

Also in 2017, the Foundation is planning to host two special events for those interested in hands-on participation. First, for those interested in reviewing the field test procedures according to the Manual of Cross-Connection Control, Tenth Edition; a one-day hands-on training event is in the planning stages. The event will provide attendees with access to

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# BACKFLOW PREVENTION AND RECYCLED WATER

As states, like California, continue to battle a drought and the demand for potable water continues to grow; recycled, or reclaimed water systems have become more prominent and a larger part of water supply systems. Using recycled water helps reduce the demand for freshwater by supplying treated wastewater for different purposes like irrigation or industrial use. And, like potable water systems, backflow prevention assemblies may be found on recycled water systems and should be treated accordingly.

All piping, valves and outlets that deliver recycled water are generally color coded in purple to differentiate them from potable water systems. Recycled water systems should be completely separate from potable water systems. On properties where dual plumbed systems exist, tests are required periodically to ensure that the two systems are not interconnected (i.e. cross-connected) and have not become so since the last test.

Occasionally purple colored backflow prevention assemblies may be spotted in areas that have recycled water. The purple backflow prevention assemblies are not being used to protect the potable water system from the recycled water system, instead they are being used to protect the quality of the recycled water system from compromise.

While recycled water is not considered potable water, it takes extensive treatment to produce the recycled water. This water is delivered to customers for irrigation, flushing toilets, cooling, industrial uses, firefighting, etc. For some of these purposes the water must maintain a certain quality. Therefore, backflow prevention assemblies are often installed on recycled water lines to prevent recycled water from be-

coming degraded to the point that it could not be used for the purposes of another customer.

For example, if recycled water serves an industrial plant that uses the water in an industrial process bringing the water into contact with hazardous chemicals and these chemicals backflow into the recycled water distribution system; the recycled water distribution sys-



tem would be compromised and may deliver hazardous chemicals to other recycled water customers. If one of those customers is a golf course, using the recycled water for irrigation, toxic chemicals from the industrial plant would then be disbursed onto the golf course as irrigation water. And, the toxic chemicals would damage or kill the grass on the course.

Therefore, backflow prevention assemblies installed on recycled water systems are not used

# ASSEMBLIES FOR SYSTEMS

to protect the public health but to protect the integrity of the recycled water distribution system.

Even though backflow prevention assemblies on recycled water systems are not protecting the potable water systems, they still need to be field tested to ensure they are working properly. The requirements for field testing do not fall under the regulations that backflow prevention assembly testers, or cross-connection control program specialists normally follow. However, the water supplier may have specific requirements for these assemblies on their recycled system. When a backflow prevention assembly tester is being asked to field test one of the backflow prevention assemblies installed on recycled water systems, the tester should only use a field test kit that is used exclusively to test assemblies on recycled water systems. These field test kits are generally painted purple to help ensure they are used only on recycled water systems. Once a field test kit is used with recycled water, it must only be used for assemblies on recycled water systems and never used on potable water supplies again.

Similar to recycled water systems being required to be separate from potable water systems; backflow prevention assemblies being used for recycled water systems must be identified by being color coded purple to differentiate them from potable backflow prevention assemblies. And, field test kits used on purple assemblies should be color coded in purple as well. For more questions about assemblies and field test kits used on recycled water systems please contact the Foundation office. ■



# ADDITIONS TO TEST COCKS

A backflow prevention assembly's test cocks are one of the more accessible parts found on an assembly. Generally, test cocks are readily accessible to anyone. That being the case the backflow prevention assembly testers and cross-connection control specialists may find an array of additions to the test cocks, and in some cases additional test cocks to an assembly, that may or may not invalidate the USC Approval.



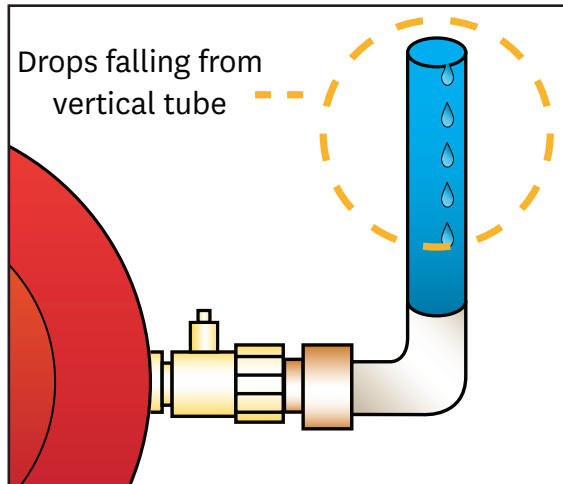
The USC Foundation identifies an assembly as a unit from shutoff valve to shutoff valve. So, any modifications upstream of the No. 1 shutoff valve or downstream of the No. 2 shutoff valve are not considered a modification that may invalidate the USC Approval. For more information regarding modifications a memo may

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## testing the dc : continued

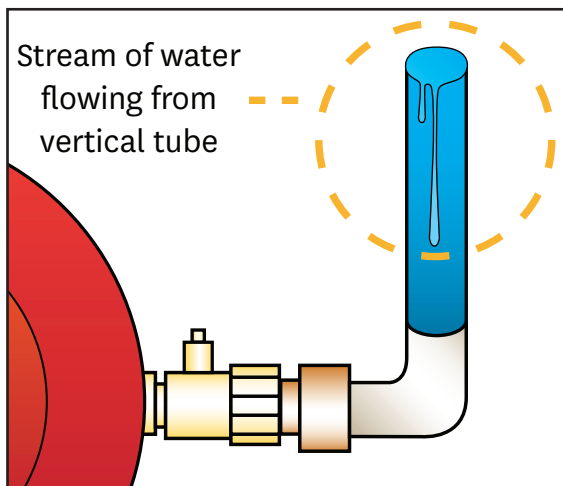
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1 shutoff valve is closed. And, in order to compensate for this leak and still get an accurate reading for the No. 1 check valve, the tester is instructed to open the bleed off valve arrangement.



Example of a "broken stream" or drops

Section 9.3.3.2 of the Tenth Edition then states, "If the water continues to flow from the bleed-off valve, and the bleed-off valve can be adjusted so there is a drip from the No. 3 test cock, proceed to step T<sub>2</sub>," in which case, the tester records the value at which the first check valve is holding.



May indicate a leaking shutoff valve

To ensure that a drip from the vertical tube provides the sought after results the Foundation conducted a series of tests. While testing a leaking check valve, water was allowed to

drip from a vertical tube on the downstream test cock at various flow rates. It was determined that the accuracy of the field test was maintained, as long as individual drops are falling as opposed to water flowing continuously. In other words, when the leak on the vertical tube is a continuous stream an accurate reading cannot be obtained, but if the stream slows to a "broken stream" or individual drops are falling one after another, the reading on the field test kit is accurate. The tester should attempt to reduce the drip to as slow as possible.

The word "drip" may be found elsewhere in the DC field test procedures and diagnostics; so, it is important that the tester understand what visual sign the Foundation uses to record an accurate reading for the check valves. If you have any more questions about the DC field test procedures or diagnostics, please contact the Foundation office. ■

## training dates for 2017: continued

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assemblies as Foundation staff review the procedures step-by-step with additional diagnostic scenarios. Second, for those interested in cross-connection control surveys the Foundation is planning to host a one-day event where attendees will be able to join Foundation staff and walk through a facility discovering cross-connections and learning what can be done to control them.

With the addition of new webinars, special events and more training course dates the Foundation looks forward to a productive year. For more information about upcoming training dates please visit the Foundation's website at [fccchr.usc.edu](http://fccchr.usc.edu). And, to be notified as soon as the special event dates are announced please sign up for the Foundation's training course notification list by visiting [fccchr.usc.edu/requestcourses](http://fccchr.usc.edu/requestcourses). ■

## additions to test cocks: continued

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be found on the Foundation's website by visiting the 'Frequently Requested Documents' page at [fccchr.usc.edu/frd](http://fccchr.usc.edu/frd).

An assembly is a convenient place to gain access to a water supply. In some cases, testers and specialists have identified additional test cocks before or after the shutoff valves. If an additional test cock is found

before the No. 1. Shutoff valve or after the No. 2 shutoff valve of an assembly, that modification does not invalidate the USC Approval. But, if an additional test cock is found on the assembly, that is, between the upstream side of the No. 1 shutoff valve and the downstream side of the No. 2 shutoff valve, the USC Approval is invalidated. For example, an additional test cock added after the downstream shutoff valve of a USC Approved DC would not affect the USC Approval.

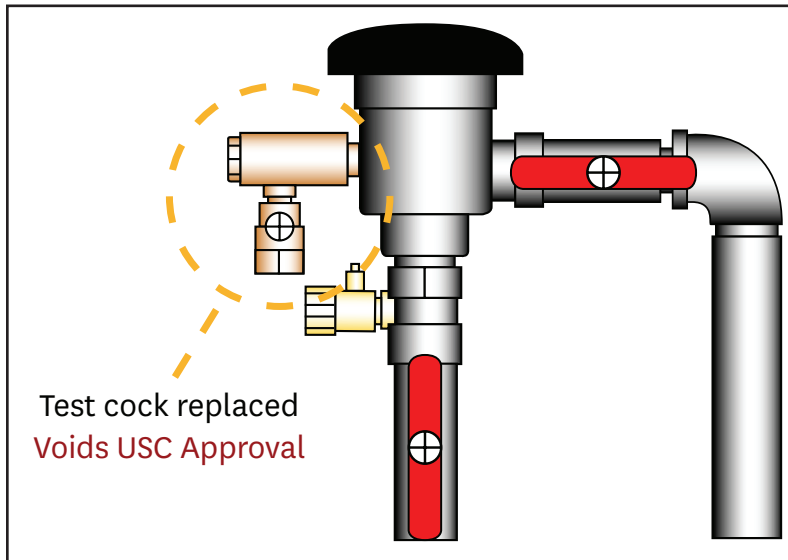
Connections to test cocks found on USC Approved assemblies may or may not affect their approvals depending upon where the connections are made. The test cock is an integral part of the assembly. When an assembly is sub-

mitted to the USC Foundation Approval Program, the unit as a whole, (i.e. shutoff valve to shutoff valve)

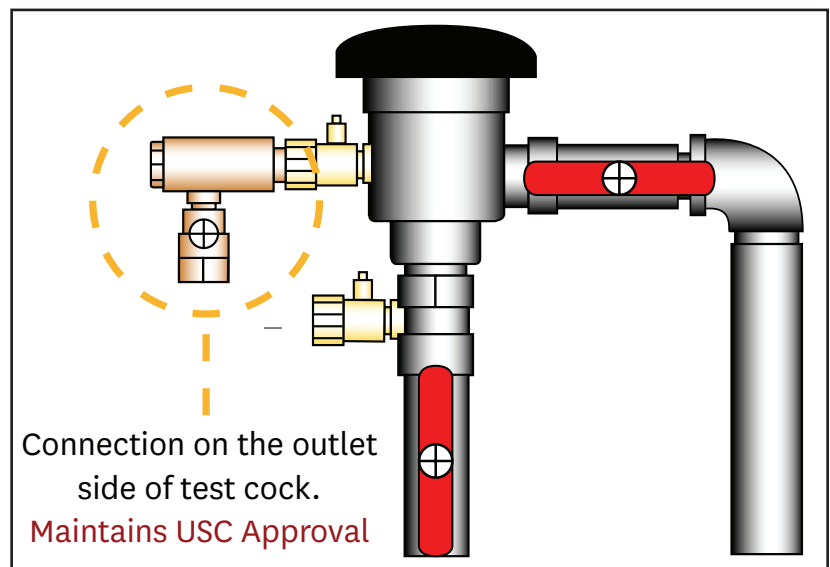
is evaluated. Therefore, if a test cock is removed or altered the USC Approval is voided. So, any additions must be installed on the outlet of the test cock.

For example, if a freeze relief valve, a valve that senses water temperature and opens to discharge near freezing water to avoid damage to the assembly, is installed on a USC Approved Pressure Vacuum Breaker Backflow Prevention Assembly (PVB), it must be installed on the outlet of a test cock to maintain the assembly's approval. But, if the existing test cock is removed from the PVB and replaced with a freeze relief valve, that invalidates the USC Approval.

It is important to understand that every assembly on the USC List has been evaluated as a complete unit. So, removing or altering test cocks changes the design of the unit and therefore its USC Approval is voided. Any connections must be made on the outlet of the test cock of any USC Approved assembly for the assembly to maintain its approval. For more information about what may invalidate a USC Approval please see the memo on the Foundation's website or contact the office. ■



Example of a freeze relief valve installed on a PVB



Example of a freeze relief valve installed on a PVB

# Upcoming Training Courses

all courses in Los Angeles, CA

## Tester

9-13 January 2017

13-17 March 2017

10-14 July 2017

16-20 October 2017

## Specialist

23-27 January 2017

24-28 April 2017

24-28 July 2017

30 Oct. - 3 Nov. 2017

## Webinars

15 November 2016

Assembly Repair and Lead Free Issues

7 February 2017

The USC Approval Program

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## Upcoming Events

Western Washington  
Cross-Connection Prevention  
Professionals Group  
Tacoma, WA  
19 October 2016

CA/NV Section AWWA  
Annual Fall Conference  
San Diego, CA  
24-27 October 2016

ABPA Southern California Chapter  
Annual Conference  
San Bernardino, CA  
16 November 2016

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