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UNIVERSITY
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CALIFORNIA

Foundation for
Cross-Connection
Control and
Hydraulic Research

CROSS TALK

Autumn 2004

Using the List of Approved Assemblies

The *List of Approved Assemblies* is one of the major benefits of Membership in the Foundation. The purpose of the List is to assist the Members of the Foundation in their cross-connection control program. So, any employee of the Member agency/company may use the List. When the Members use it within their own organization or with their own customers it is permissible to reproduce those portions of the List, which are needed. The List is copyrighted, however, and the University would not like to see Members freely distribute copies to others in the industry.

In many cases a Member agency needs to pass on the information contained in the List to others as part of the official capacity of the agency. For example, a water agency is a member and requires a customer to install a USC Approved reduced pressure principle assembly (RP). It is permissible in this case for the agency to provide their customer with the data regarding the approved reduced pressure principle assemblies.

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Field Test Kits

The 10th Edition of the Manual of Cross-Connection Control will contain a standard for Field Test Kits. Although the standard has not been



finalized yet, this will open up the opportunity for the approval of field test kits. Many have contacted the Foundation with concerns over the new approval of these test kits. The concern is

whether or not the gages that are currently being used will meet the requirements of the field test kits under the Tenth Edition of the Manual.

At this point it is not possible for us to determine if a particular gage would be acceptable under the Tenth Edition. There are a couple of reasons for this. First of all, the standard for field test kits has not been finalized at this point.

The Manual Review Committee is still discussing some of the options and, until these issues are resolved, the final details of the field test kit standard cannot be known.

The Manual Review Committee has discussed some details of the field test kit standard. One item is the requirement for accuracy of +/- 0.2 psid. One

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Inside Cross Talk

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Foundation Membership

The Foundation's Membership Program provides many benefits to the Members of the Foundation. These include: a twenty percent discount on Foundation Training Courses for any employee of the Member company/organization, the *List of Approved Backflow Prevention Assemblies*, printed quarterly, and access to the up-to-the-minute version of the List for those Members with Internet access.

Members are encouraged to call the Foundation with technical questions. The Foundation's Engineering Staff is available to assist Members with the various aspects of field testing backflow preventers, installing backflow preventers and administering their cross-connection control program.

Below is a list of those who've become members of the Foundation this past quarter:

Azmo Mechanical Inc.
Backflow Prevention Services
Clean Sewer Lines, Hawaii, Inc.
Coastside County Water
Devine Construction
Eastwind Mechanical Club
Eric Bodyfelt
Jim White
Kenneth Hampton
Marina Coast Water District
Oak Ridge Fire Department
OTCO
R.F. Korea
Ray's Backflow Testing
Roto-Rooter Services Company
San Juan Water District
Southland Industries
University of California, San Diego
Val-Matic Corporation
Water Education Systems
West Maui Land Company
Woodfin Sanitary Water

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The Foundation accepts Purchase Orders via mail or fax and credit card orders (Visa, MasterCard, Discover) via telephone and the Web.

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Field Test Kits

question is whether this will be required for both ascending and descending readings or only descending readings. This question has yet to be resolved by the committee. Also, the question of durability has been discussed and a means of determining the durability of field test kits has not been decided upon.



Once the standard is finalized and published in the Tenth Edition, it will still take some time to evaluate field test kits. Once field test kits are evaluated the gages in compliance with the standard can be placed on a list of approved field test kits.



The concern of many is that they may be purchasing field testing equipment at this point in time, but don't want to be stuck with some equipment

that will not be approved in the next year or two. This is an unfortunate situation, but unavoidable since it is impossible to predict which gages will meet a standard, which hasn't been published yet.

It should be noted, that since there is currently no USC standard for field test kits, there are not any administrative authorities requiring USC approval of field test kits.

As with most standards, it is likely that those administrative authorities requiring the USC approved field test kits, will phase this requirement in over time. It is very unlikely that any jurisdiction will start requiring USC approved field test kits as soon as a list of approved test field kits is available. So, although this may be a concern for many, this is not likely to be critical for the next few years. ■

Frozen Shut Off Valves

The use of resilient seated shut off valves in approved backflow assemblies has significantly improved the field testing of the assemblies. Having a tight shut off valve has made the job of the field tester considerably easier. Most of the manufacturers of the 2" and the smaller assemblies have selected the fully ported ball valves. These valves have shown themselves to be effective due to the flow characteristics and also the effective shut off capabilities. However, there have been some reports of problems with these valves in actual use.

The problem has not been directly with the sealing of the shut off valves, but rather with damage due to freezing on those shut off valves being used in cold climates. Freezing water inside the valves has damaged or

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Working Together for Safe Water on Cable Television

Educating the public on the topic of backflow and cross-connection has become one of the Foundation's more important subjects. The Foundation has several training tools, including videos and computer presentations, to aid the general public in understanding the basic concepts of backflow. One of the Foundation's more popular tools is the general introductory video *Working Together for Safe Water*.



The *Working Together for Safe Water* video is available in VHS and DVD format. The video is an introduction to the basic concepts of backflow and cross-connection control. The combination of live footage and animation helps to explain these concepts in terms that everyone will understand and enjoy.



Over the years the Foundation has received several requests for broadcasting *Working Together for Safe Water* on local cable television. Using the video on city-run television stations to educate

the public on backflow has been done. The Foundation is more than happy to comply with any requests it receives concerning broadcasting *Working Together for Safe Water*.

The Foundation must receive a written request from the sponsoring agency which contains the following:

1. The date(s) and station the video will air on.
2. A commitment not to duplicate the video.
3. A commitment to show the video in its entirety.
4. A commitment to return the video promptly.

The Foundation does have 3/4-inch video copies suitable for airing on cable systems.

The video is ideal as an introduction to the concepts of backflow for students or employees of agencies involved in cross-connection control. It is also ideal for water consumers who may not understand the reason for backflow prevention requirements.

Our spokesman will describe the hydraulics involved in



backflow through examples and animation. He will also explain the differences in types of backflow preventers and their applications, as well as the importance of a defensible cross-connection control program. ■



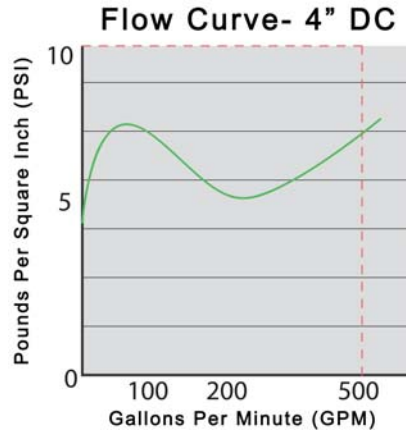
The video is an introduction to the basic concepts of backflow and cross-connection control. The combination of live footage and animation helps to explain these concepts in terms that everyone will understand and enjoy.

Using an Over Sized Backflow Preventer

Periodically, the Foundation office receives an inquiry regarding the oversizing of backflow prevention assemblies in a system. The term “oversizing,” means using a backflow preventer of a larger size than the piping leading into and away from the backflow preventer. For example, one has a two-inch water line and desires to put a four-inch backflow prevention assembly in the two-inch line. Although, this isn’t really a problem for the backflow preventer—it will provide backflow protection; the reasoning behind this decision must be questioned.

The interest in using an over sized assembly usually arises from the desire to provide more flow or pressure to the customer. The thought is that if a larger assembly is used, the assembly doesn’t have to work as hard, therefore the pressure loss will be less. The problem is, this simply may not be true.

comparison can be done with RP’s), the respective pressure loss versus flow rate curves of these assemblies may look something like those in the figures.



Although the maximum allowable pressure loss of any sized double check valve assembly is 10 psi (as referenced in Table 10-1, pg 192 Manual), the flow characteristics (i.e., the shape of the curve) vary with the different models and sizes. For our example, the customer is designing their water use at a nominal flow rate of 100 gpm (gallons per minute). If the flow curves from the above figures are superimposed on top of each other (flow characteristics of the two-inch assembly are shown in green and the

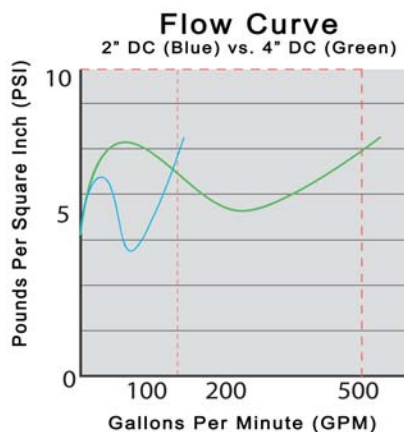
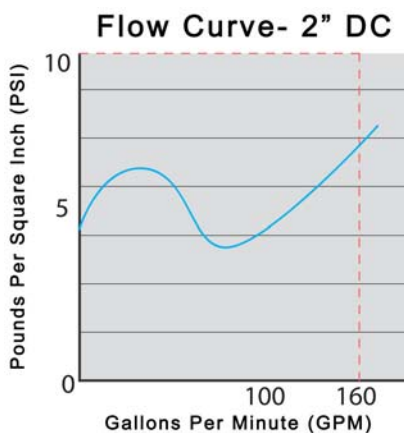
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simply may not be true.



Looking at the example of the four-inch double check valve assembly versus the two-inch double check valve assembly (Note: a similar

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Using the List of Approved Assemblies

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The best way to provide the Approval information is using the Excel version of the List.

Type	Manufacturer	Model	Size	Orientation(s)	Manual Approved	Renewed	Shutoffs	W-Spare Parts Only	Notes
DC	Ames	2000B	1/2	H	9	16-Jun-1997	16-Jun-2003	(v).xx	N
DC	Ames	2000B	1/2	VU	9	16-Jun-1997	16-Jun-2003	(v).xx	N
DC	Ames	2000B	3/4	H	8	5-Apr-1993	5-Apr-2002	(v).xx	N
DC	Ames	2000B	3/4	VU	8	27-Aug-1996	27-Aug-2002	(v).xx	N
DC	Ames	2000B	1	H	9	18-May-1998	18-May-2001	(v).xx	N
DC	Ames	2000B	1	VU	9	18-May-1998	18-May-2001	(v).xx	N

The top of each column in the Excel version of the list can act as filters to filter the exact information needed. The Member can choose which type of assembly (DC, RP, DCDA, RPDA, AVB, PVB, or SVB) at the top of the column. Then only those particular assemblies show on the List. This can be printed and handed out to the customer. With the Excel version of the List being available it is much easier for a Member to “make their own specific List” and distribute it to their end user. It also provides concise information for the customer. The filters may also be used in combination with one another. Should the Member have a customer that needs to install a 2” double check valve assembly installed vertically and approved under the 9th edition of the Manual or later, all of this information can be filtered on the Excel sheet. The Member can have a list of all the approved assemblies matching the criteria, by just clicking at the top of each applicable column and selecting the appropriate variable (e.g., size-2”, orientation-vertical up, edition of the Manual-9, and type of assembly-DC). This can then be printed for the customer and they have exactly what they need for their purposes.

What is not permissible is for a Member to reproduce the List and distribute it indiscriminately. Basically, it is permissible for the Member agency to get the information into the hands of the end user in the official

capacity of the agency. It is not permissible to provide the list to other agencies so they could, in turn, provide it to their customers.

We hope this information helps you to carry out your cross-connection

control program more effectively. Should you have any further questions, please contact our office. ■

Frozen Shut Off Valves

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destroyed the operation of the valve. Even with the winterizing of a water line, that is the water being drained out of the water line itself, the ball valves may be left in the fully opened or fully closed position. When this is done there may be a small volume of water trapped between the outside of the ball and the body. With this trapped volume of water freezing, the resulting damage can be significant. Seals or components may be distorted and in extreme cases the body housing itself could be cracked. As seen in the figure, with the valve in the opened (see figure on page 7) or closed position, the small pocket of water is trapped in place.

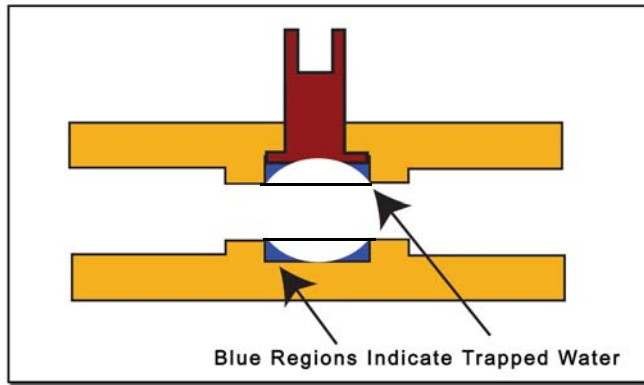
Where winterizing of a water line is necessary, it is highly recommended that the ball valve be left in a partially opened position. Leaving the valve at a 45 degree angle will leave this

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With the Excel version of the List being available it is much easier for a Member to “make their own specific List” and distribute it to their end user.

Frozen Shut Off Valves

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pocket unsealed and the trapping of water will be significantly reduced, thus eliminating any damage to the valve. Ideally backflow preventers on cold water application should be kept in an area protected from the harsh environment. However, this is not always the case. With winter approaching, many will be winterizing portions of their systems including backflow preventers and their shut off valves. When this is done, it is advisable to leave the ball valves in the partially open position, in order to minimize the potential for trapping water in the ball valve. This should help prevent freeze damage to the ball valves. ■

Using an Oversized Backflow Preventer

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four-inch assembly shown in blue), we can directly compare the two curves.

At the desired flow rate of 100 gpm it can be seen that the pressure loss of the two-inch assembly is several psi less than the four-inch assembly. For our example the four-inch assembly only provides a lower pressure loss when the rate of flow exceeds the 160 gpm rated flow of the two-inch. Two-inch water meters typically have a safe maximum operating capacity of 160 gpm, so if flow rates greater than this are needed, then a larger service line and water meter should be utilized.

Although the specifics may vary with each manufacturer, assemblies, in general, behave in the manner shown on these curves. At the lower flow rate the four-inch check valves may just be in the opening phase of the flow (signified by the rising slope in the flow curve), thus having a higher pressure loss. In addition, should the check valves only open a small amount, there is a higher likelihood of wire-drawing (i.e., high velocity erosion) the seats.

So, although over sizing backflow prevention assemblies may not affect the ability of the assembly to prevent backflow, it will rarely, if ever, provide a benefit. ■

Ideally backflow preventers on cold water application should be kept in an area protected from the harsh environment.

Training Courses

Tester Course

Los Angeles, CA
10-14 January 2005

Los Angeles, CA
16-20 May 2005

Los Angeles, CA
11-15 July 2005

Specialist Course

Los Angeles, CA
24-28 January 2005

Incline Village, NV
7-11 March 2005

Los Angeles, CA
25-29 July 2005

Upcoming Events

ABPA- Oregon Chapter Conference

•Wilsonville, OR
20 January 2005

Backflow Industry Product Fair

•Los Angeles, CA
22 March 2005

ABPA Annual Conference and Tradeshow

•Orlando, FL
8-11 May 2005



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