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Foundation for
Cross-Connection
Control and
Hydraulic Research

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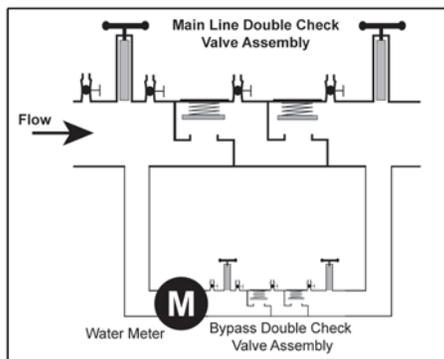
CROSS

Summer 2004

New Backflow Preventers

Although the Tenth Edition of the Manual is still under revision, there are several items that have been discussed by the Manual Review Committee and approved for publication. One of these items is the creation of a new type of backflow prevention assembly. Actually, there will be two new types of backflow prevention assemblies: the double check detector assembly, II; and the reduced pressure principle detector assembly, II. The Standard for the DCDA-II and the RPDA-II will be published in Chapter 10 of the *Manual of Cross-Connection Control*, 10th Edition.

The DCDA-II will consist of a main-line double check and, like the double check detector assembly; a bypass arrangement will be part of the assembly. The difference is in the bypass arrangement. With the DCDA, the bypass arrangement is plumbed from the region between the No. 1 shutoff valve and the No. 1 check valve to the region between the No. 2 check valve and the No. 2 shutoff valve. The

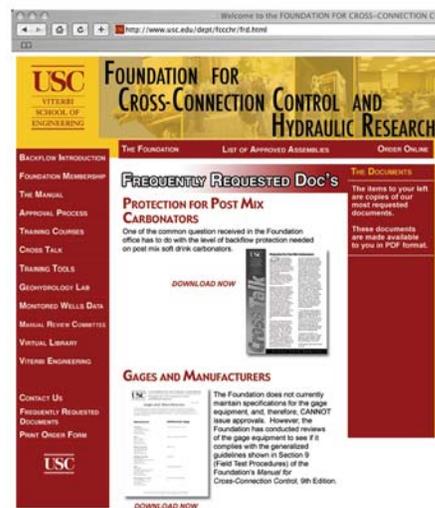


DCDA

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Frequently Requested Documents

Over the years the Foundation has been dedicated to supplying its members with up-to-date information in the area of backflow and cross-connection control. The Foundation website (www.usc.edu/fccchr) has become an effective means for the Foundation to communicate any crucial information with its members.



On the Foundation website, members can find a link, located on the left hand side of the Foundation homepage, entitled 'Frequently Requested Documents' (www.usc.edu/fccchr/frd.html). There, members can find some of the more important documents pertaining to backflow training and cross-connection control. Lately, the Foundation has received several requests for the *Prevalence of*

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Foundation's 60th Anniversary
New Backflow Preventers • Frequently Requested Documents

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:

Apache Junction Water Company
Armour Plumbing & Well Service, Inc.
BackFlow Prevention Services
Canniff Plumbing
Cape Environmental Management
CNC Engineering
Mount Airy, City of
Old Faithful Fire Sprinklers, Inc.
Pinedale County Water District
Plumbers & Pipefitters JATC
Prescott, City of
Richard Wun
RMB Residential / Com. Service
RWPSID2 Inc. - Russellville
Texas Health Resources - Corporate
Texas Health Resources - Dallas Campus
The Sea Ranch Water Company
URS Corporation

Contacting the Foundation

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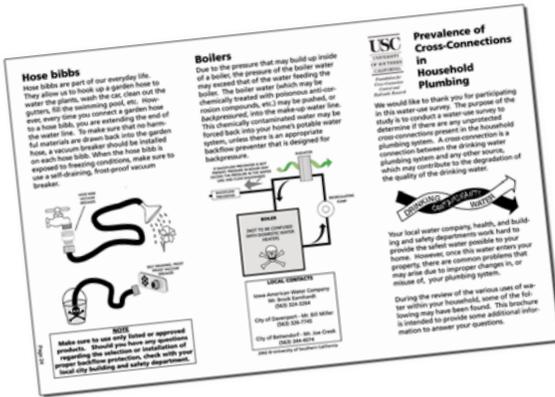
The Foundation accepts Purchase Orders via mail or fax and credit card orders (Visa, MasterCard, Discover) via telephone and the Web.

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Frequently Requested Documents

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Cross-Connections in Household Plumbing Systems study that it conducted in conjunction with the US Environmental Protection Agency (EPA). The Foundation received a grant in 2001 from the EPA to assess the prevalence of cross-connections in household plumbing systems. On-site surveys were conducted in 188 homes in the US Mid West. The surveys indicated that 9.6% of the homes were found to have direct cross-connections to a health hazard. On average, 73% of water uses were unprotected, constituting cross-connections. The entire study can be found on the Foundation's website.



gauge equipment to see if it complies with the generalized guidelines shown in Section 9 (Field Test Procedures) of the Foundation's *Manual for Cross-Connection Control*, 9th edition. That list can be found on the Foundation's 'Frequently Requested Documents' portion of the website.

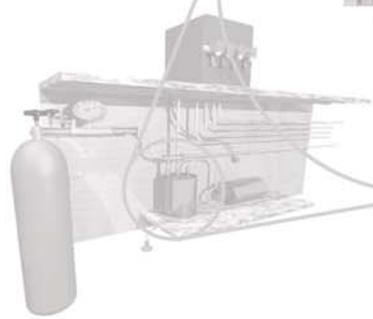
In addition to studies and specifications, members can also find information on hosting a Foundation training course. All members are welcome to submit a request for a training course to be taught by the Foundation at any designated area of the member's choosing. If the request is possible, the Foundation will be more than happy to comply. It is

important to remember that there are several guidelines that must be met before conducting a course and those can be found on the website. There are two different sets of guidelines, one for those interested in hosting a Tester Training Course and another for those interested in hosting a Specialist Training Course.

All the above-mentioned documents are available in PDF (Adobe Acrobat) format and are free-of-charge. The Foundation encourages all its members to visit the website and if there are any particular documents you would like to become available, you are welcome to e-mail us at fcchh@usc.edu.

The Foundation does not currently maintain specifications for gage equipment and, therefore, cannot issue approvals. However, the Foundation has conducted reviews of the

To eliminate copper alloy in the water line to the carbonator, some jurisdictions have been requiring a stainless steel bodied RP as the backflow protection



4. RP is installed in compliance with local administrative authority requirements. If these criteria are met there is no reason to require a stainless steel assembly. A bronze reduced pressure principle assembly should provide adequate backflow protection and the potential of carbonated water causing in contact with the assembly is minimal.

UNIVERSITY OF SOUTHERN CALIFORNIA
Foundation for Cross-Connection Control and Hydraulic Research

Gages and Manufacturers

The Foundation does not currently maintain specifications for the most equipment (MAGNET) used approvals. However, the Foundation has conducted reviews of the use of it, comply with the generalized guidelines shown in Section 9 of the Foundation's *Manual for Cross-Connections Control*, Ninth Edition. The current gages acceptable are listed below.

Manufacturer	Differential
ITT Baker 300 Lombard Street Road Cincinnati, OH 45211 Duke PO Box 16407 Irvine, CA 92713 (714) 801,2340 FAX (714) 352-9308	Model 220 (Steel) only, 240, Model 15, 700, 100, 1000, 10000
Cleveland, OH 44102 12100 20th Avenue FAX 410-293-0228	
Mid West Instrument 1000 13th Street St. Louis, MO 63103	Model 850
Alora PO Box 800 3525 Old County Road, Suite 101 Newbury Park, CA 91320 Crosby Engineering Company 915 Chestnut Street North Andover, MA 01845 (800) 668-1811 FAX (508) 794-1800	Pickman Model ASRP-4 Model 15, 30, KEIP 18000

In addition to studies and specifications, members can also find information on

hosting a Foundation training course

UNIVERSITY OF SOUTHERN CALIFORNIA
Survey Form

Survey Location
Name: _____ No. _____
Street Address: _____
City: _____ State: _____ Zip: _____
Phone: (____) _____ FAX: (____) _____
Contact person upon arrival to the site: _____
Arrival Time: _____ am/pm Departure Time: _____
Service Connection(s) & Number: _____ Water Meter Size: _____
 Domestic 5/8" 1" 1 1/2"
 Fire 5/8" 1" 1 1/2"
Building Height - Number of Stories: One Two Three
Basement: Yes No

Water Usage	Cross-Connection? No Yes - Direct or Indirect	Dir	Ind	Protection: AG, AVB, PVE, SVB, RP, DC, DuCl, DCAP (1)	Imp. Appr.
<input type="checkbox"/> Auxiliary water supply	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Water well - pressure tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Storage tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Fire Sprinkler System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Anti-freeze	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Storage tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Irrigation System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Chemical injection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Booster Pumps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The Foundation's 60th Anniversary

With the continued support of its members, the Foundation, part of the University of Southern California, will be celebrating its 60th Anniversary. In 1944 the Board of Trustees of the University of Southern California established the Foundation and it has been in continuous operation since that day. The Foundation's membership program has grown to more than 900 members and it has become one of the world's foremost authorities in the backflow field.

In 1943, during World War II, a supply ship was discovered to have harbor water in its potable water tanks. An investigation revealed that this was caused by a cross-connection between the city water supply and the harbor water. A group of concerned individuals, believing that the unbiased efforts of an educational institution would better serve the ultimate aim of protecting potable water supplies, approached the University of Southern California asking that research be done in this area. After several conferences, this group worked out an agreement with the University; and, one of their members, who wished to remain anonymous, gave the University the sum of \$25,000 with which to establish a laboratory and employ a team of researchers.

For the next 20 years the Foundation made great strides in the field of cross-connection control. The Foundation began work in a laboratory located on the University campus. It was during these early days that the first Beeco, Crane, Hersey and Grinnell units were evaluated. In 1948, *Paper No. 5*, the Foundation's

first publication, included testing procedures and specifications for double check valve assemblies and reduced pressure principle assemblies was published. In 1960, the *Manual of Cross-Connection Control, Recommended Practice* was published.

In 1964, Professor E. Kent Springer was named Director of the Foundation and would continue to be for the next 20 years. During the late 1960's the Manual, in particular Section 10 covering the Specifications, was thoroughly reviewed by a committee representing water utilities, health departments and manufacturers, as well as the Foundation. This resulted in some major changes that were incorporated into the 4th Edition of the Manual which was renamed the *Manual of Cross-Connection Control*.

With an ever-growing number of state, local and other agencies becoming involved in the Foundation, the Southern California Water Utilities Association helped the Foundation establish the membership program in



*First Membership Check
by SCWUA to the Foundation*

1967, ensuring a financial base for continued operations.

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First Edition of Cross Talk (circa 1967)

After the on-campus laboratory was torn down to make room for new engineering buildings at the University, the Foundation, in 1968, moved to an old pumping station previously run by the Los Angeles Department of Water and Power and makes its home there today.

The laboratory facility is where much of the Foundation's work takes place. This is where all the controlled evaluations of the backflow prevention assemblies are conducted. Not only can it be used to evaluate backflow prevention assemblies, but also to conduct specialized research, which may require the laboratory's specialized systems and large water flow capacity.

For the next 15 years the Foundation would publish three more editions of the Manual and begin offering the *Course for the Training of Backflow Prevention Assembly Testers*, focusing on helping students become proficient with testing several different types of backflow preventers.

In 1985, USC Professor J.J. Lee Ph.D., P.E. became the Director of the Foundation and continues to be to this day. The Manual has been

updated three more times since then and the Foundation eagerly awaits the release of the 10th edition of the



Prof. Springer and Prof. Lee at the Foundations 50th Anniversary Party

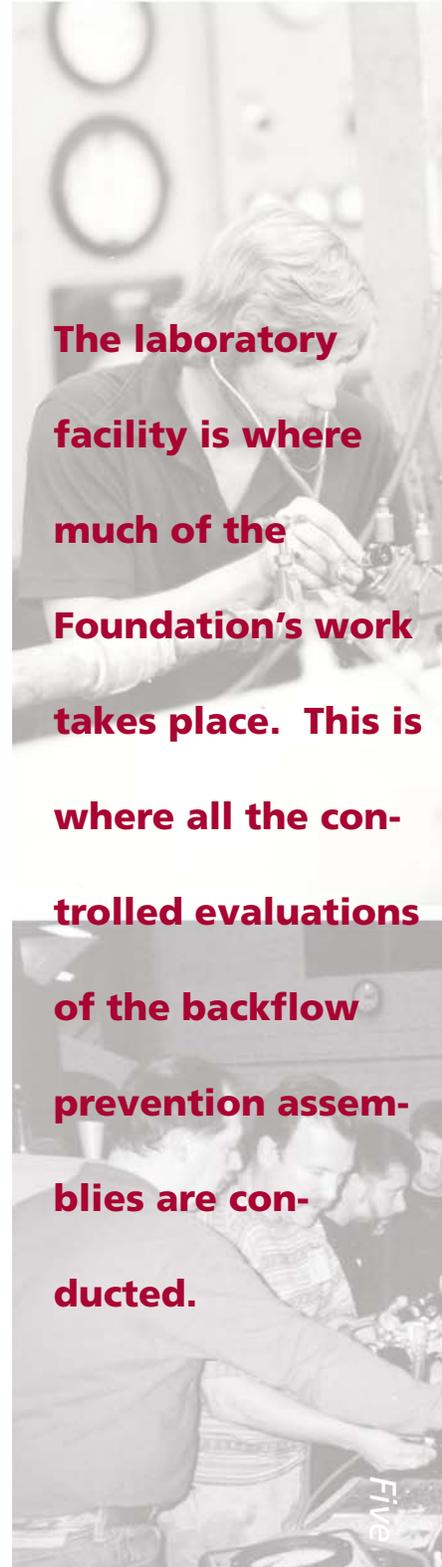
Manual expected to be ready for 2005.

The Foundation also developed the *Course for the Training of Cross-Connection Control Program Specialists*, specializing in the administrative process of running a successful cross-connection control program.

In 1989 the Foundation released the video *Working Together for Safe Water*, an introduction to the fundamentals of backflow and cross-connection control. Eight years later the Foundation released the training video *Field Testing Backflow Preventers* and it has become one of the more popular training tools offered by the Foundation.

At the Foundation, one of our continuing goals is to provide our members with the most comprehen-

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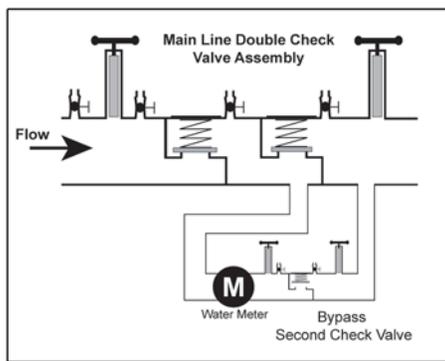


to open the mainline assembly.

Backflow Preventers

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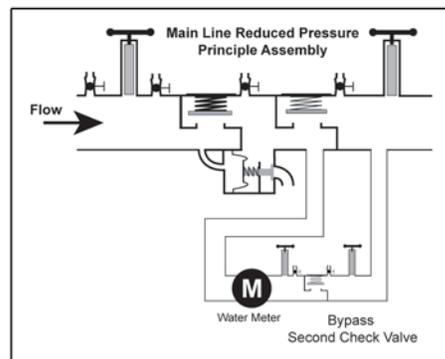
bypass arrangement with the DCDA includes a double check valve assembly and an acceptable water meter. It is required that all water flowing through the assembly up to at least three gallons per minute flow exclusively through the bypass arrangement, registering accurately on the water meter. Once flow reaches some point above three gallons per minute, the meter will no longer register the total flow through the DCDA.



DCDA II

Thus the water is going through two check valves providing double check valve level of protection. Once the water flows increase, water will start flowing through the mainline assembly, still providing the same level of protection (i.e., that of a double check), since water will be flowing through both of the check valves in the mainline body.

The RPDA-II follows suit with the DCDA-II. With the RPDA-II, water will still be required to flow through the No. 1 check valve and past the relief valve and then through either the mainline second check valve or the bypass second check valve. The level of backflow protection is exactly the same as it would be for a reduced pressure principle assembly.



RPDA II

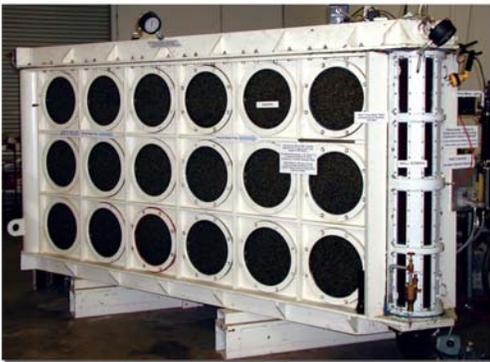
Since the same level of protection exists in both the DCDA-II and the RPDA-II as with the DCDA and RPDA respectively, one may wonder, “why create another assembly?” There are a couple of reasons. It is technologically possible to have the overall pressure loss across the assembly lower, since a lower pressure will now be needed to open the mainline assembly. Also, as is visible from the illustrations of the assemblies, the DCDA-II and the RPDA-II use only a single check valve in the bypass, thus they should be less expensive to manufacture. These will be good scenarios for the customer: the assembly should be less expensive (relatively), while providing the same level of protection and a slightly lower pressure loss.

These assemblies may not be available in the very near future. Once the 10th Edition of the Manual is published, manufacturers would need to submit these assemblies for evaluation. The evaluation includes a laboratory and one year field evaluation, so even if everything went perfectly, no DCDA-II or RPDA-II would be approved until, at least, one year after the publication of the 10th Edition. ■

60th Anniversary

continued from page five

sive knowledge of water resources possible. In the summer of 2001, the Foundation opened a Geohydrology Laboratory. The centerpiece of this lab is a well/aquifer model donated to the University of Southern California by the Roscoe Moss Company. The



Well/Aquifer Model Donated to the University of Southern California

opening of the Geohydrology Lab marked a step forward for the Foundation. Now, we are able to examine water resource issues from start to finish, from the time water is in the ground until it comes out of the faucet.

In 2002, the Foundation redesigned its website (www.usc.edu/fccchr) to aid its members further in having access to the latest information in backflow and cross-connection control. On the Foundation website, members can receive the latest updates to the *List of Approved Backflow Prevention Assemblies*. In addition, all of the Foundation's products can be purchased on the website and have access to the most recent reports and studies of the Foundation. Visitors can also find the latest activities of the Manual Review Committee and send comments to the committee regarding the 10th Edition of the Manual. Questions can also be directed to the Foundation's technical

staff via the website. The website has become an essential tool in effectively communicating information between the Foundation and its members.

The Foundation encourages its members to visit the website for more information on any 60th Anniversary events that are planned for the coming year. Through research, development and testing, the Foundation will continue to seek out causes of backflow and devise and evaluate systems by which it may be prevented. ■

FOUNDATION news & notes

The Foundation's Henry Chang was appointed as Chairman of the Certification Committee for the American Backflow Prevention Association.

The ABPA Certification Committee is charged with the responsibility to evaluate training needs in the



backflow industry and develop guidelines and need-to-know criteria as appropriate. Including, but not limited to, the responsibility for recommending and developing policy and procedures that determine the technical aspects of the American Backflow Prevention Association's Voluntary Backflow Prevention Assembly Tester Certification Program. ■

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Training Courses

Tester Course

Honolulu, HI
4-8 October 2004

Los Angeles, CA
10-14 January 2005

Los Angeles, CA
11-15 July 2005

Specialist Course

Sandusky, OH
1-5 November 2004

Los Angeles, CA
24-28 January 2005

Los Angeles, CA
25-29 July 2005

Upcoming Events

*ABPA Hawaii Chapter
Pacific Rim Conference*
•Honolulu, HI
29 Sept.- 1 Oct. 2004

*SCWUA Field Trip to
Foundation Laboratory*
•Los Angeles, CA
26 August 2004

*BCA Football Classic
USC vs. Virginia Tech*
•Landover, MD
28 August 2004

*CA/NV AWWA
Fall Conference*
•Sacramento, CA
12-15 October 2004



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