

Testing the PVB

The continual effectiveness of a pressure vacuum breaker (PVB) can only be determined by regular field testing. Documenting that the air inlet valve and the check valve work properly is the goal of the in situ field test. The backflow prevention assembly tester must be capable of making this assessment.

While performing the field test procedures (*Manual of Cross-Connection Control - Eighth Edition*, Section 9.4) it is required that the tester maintain their differential pressure gage at the same elevation as the PVB being tested. The caption of Figure 9.5 of the manual states:

For both of the following tests the differential pressure gage must be held at the same level as the assembly being tested. Be sure that hoses not being used are also kept at this level.

It is vital to the accuracy of the field test that these directions are closely followed. However, many testers have taken these instructions a step too far. Rather than maintaining just the gage head at the proper elevation, some testers try to hold the entire length of the

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Your Cross-Connection Control Program

A comprehensive cross-connection control program has various aspects. This article discusses the five main points necessary for the maintenance of a viable cross-connection control program. These five points are:

- Legal Authority
- Acceptable Backflow Preventers
- Certified Testers and Program Specialists
- Record Keeping
- Continuing Education

This article is written for those having responsibility for protecting potable water systems. The basic premise is that water purveyors have the responsibility of protecting their water from contamination or pollution. The information, however, is useful to all involved in cross-connection control.

Legal Authority: A local ordinance must be established which gives the water purveyor (or health agency) the legal authority to implement and maintain a cross-connection control program. This legal document should include: purpose of ordinance, definitions, and various requirements. When referring to other publications such as the *Manual of Cross-Connection*


Control or the Foundation's *List of Approved Backflow Prevention Assemblies*, reference should be made to "the latest edition." This will prevent the agency from having to pass an entire new piece of legislation each time a new edition of the *List* or *Manual* is published.


The *Manual of Cross-Connection Control-Eighth Edition* contains a model ordinance in Section 8. This can be modified to fit any agency's requirement for a legal document.

Backflow Preventers: The agency must be specific as to which backflow preventers will meet its

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Highlights

 A Defensible Cross-Connection Control Program

 Testing the PVB

 Manual Revisions

2 Welcome!

...New Members

The Foundation continues to see a growth in Membership. This growth allows the Foundation to provide better service while maintaining the Membership fee schedule. Following is a list of the most recent additions to the Foundation's Membership Program. Thank you for your support of the Foundation and welcome to the Membership Program.

Abbott Plumbing
Accurate Backflow Testing
Allied Plumbing and Heating
City of Atlantic Beach
Rick Beale
Benicia Plumbing
Brian A. Mack Plumbing and Fire
City of Corcoran
Crescenta Valley County Water District
Cullins Hauge Plumbing Company
Dial Corp.
The Drain Machine
DynCorp
ELTEC Industrial Systems
City of Escalon

Fisher Manufacturing Company
City of Fort Bragg
G & M Plumbing
GE Government Services
Gonzalez Utilities Association, Inc.
Harrison Enterprises
Hydro-Designs, Inc.
City of Imperial
JAC Plumbers & Pipefitters
Richard Jennings
KOR-US
Kern Turf Supply, Inc.
La Cresta Enterprises
Lawson Landscape Maintenance
Village of Lincolnshire

J. T. McDonald
Monterey Bay Aquarium
Morden-Phillips Backflow Prevention
Town of New Paltz
Nasser Nijem
Orange Research
Park Water Co.
Peterson Plumbing & Mechanical
Phase Research
Pleasant Valley County Water District
City of New York Plumbing Industry
R & R Plumbing, Heating,
& Air Conditioning
R. D. Plumbing
R. W. Daniels Landscape Contracting
Ralphs Grocery Company
City of Roswell
SOCLA/Flomatic Valves
City of Santa Barbara
Schlumberger Industries
George Shinn
South Shore Fire Sprinkler
South Mesa Water
South Montebello Irrigation District
Tahoe City Public Utility District
Thiokol Corporation
Triangle Plumbing and Heating
United Association Local 290
University of California, San Diego
University of the Pacific
W. E. Bragg Plumbing
City of Whitefish
City of Wilmington
Yochim Plumbing
Young's Landscaping

Tester Course

The Foundation Laboratory

6 - 10 January 1992
11 - 15 May 1992
13 - 17 July 1992
5 - 9 October 1992

Incline Village, NV

3 - 7 August 1992

Las Vegas, NV

3 - 7 February 1992

Non-Members \$750.00
Members \$600.00

Program Specialist Course

USC Campus

13 - 17 January 1992
20 - 24 July 1992

Incline Village, NV

23 - 27 March 1992

Non-Members \$800.00
Members \$640.00

Courses will be added throughout the year as additions are made. Please contact the Foundation office for information on courses in your area or for an application for the next USC Training Course. You may also send a hard copy of a purchase order or a check to the Foundation office to reserve a space.

Foundation for Cross-Connection Control
and Hydraulic Research
University of Southern California
KAP-200 University Park MC-2531
Los Angeles, California 90089-2531

A Purchase Order may also be sent via FAX to the Foundation office at (213) 740-8399



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Ninth Edition Being Prepared

The *Manual of Cross-Connection Control* is currently under revision by the Manual Review Committee. Several items are currently being considered for incorporation into the Ninth Edition. These include:

ASSEMBLY SPECIFICATIONS

- A life cycle test for backflow preventers in addition to the current laboratory and field evaluation which would:
 - ✓ Open and close check valves
 - ✓ Apply backpressure
 - ✓ Dump the relief valve

Ranges of 5000 to 100,000 cycles are being considered.

- Alternatives for the testcocks are being reviewed. Performance requirements for "test ports" are being considered.
- Requiring replaceable check valve and relief valve seats for all RP's, DC's and PVB's is under consideration.
- Increasing operating temperature and pressure requirements.

FIELD TESTING

An expanded section on troubleshooting for the field test procedures will be added. The Manual Review Committee is also considering adding specifications for gage equipment used in field testing.

Additionally, the section on suggested installation guidelines will be expanded.

Many more additions and changes are under consideration. Should you have any comments, suggestions, or recommendations please send them to the Manual Review Committee care of the Foundation office at:

Manual Review Committee
Foundation for Cross-Connection
Control and Hydraulic Research
University of Southern California
KAP-200 University Park MC-2531
Los Angeles, CA 90089-2531

The Ninth Edition of the *Manual of Cross-Connection Control* will be printed and made available as soon as the Manual Review Committee has completed the revisions. This is not expected to take place until mid 1992.

Administering a Program

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requirements. Should the agency adopt the Foundation's *List of Approved Backflow Prevention Assemblies* it should be referenced in the legal document. It should also be understood that the Foundation's *List* is very specific. Any modifications to an assembly will invalidate the Foundation's Approval. Additionally, an assembly tested in the horizontal orientation is only Approved for horizontal use. If it is installed vertically, the Foundation's Approval is invalidated. The agency should have a policy regarding modifications such as: relocation of shut-off valves and vertical installations. The agency may wish to grant variances in specific instances. This decision will need to be made on a local basis. Should variances be granted in respect to vertical installations, the agency should be aware that the operation of the assembly has not been tested in such an orientation by the Foundation. By design, certain backflow preventers will not operate as intended if installed vertically. For example, all reduced pressure principle backflow prevention assemblies are designed to have the relief valve port at the lowest point in the body of the assembly. This will allow any water or substance between the check valves to drain to atmosphere should backflow occur. If the assembly is installed vertically, the water or substance may become pooled between the two check valves and could be siphoned upstream into the potable supply if the check valves were to become fouled. This, in essence, makes the relief valve of no use.

Manual

The Eighth Edition of the Manual of Cross-Connection Control is available for order. The prices are as follows for each copy of the Manual.

Non-Member - \$37.00 each
Non-Member (in quantities of 10 or more) - \$29.60 each
Member - \$27.75 each

California residents must add appropriate sales tax. To order please send a check or a hard copy of a purchase order to:

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Manuals may also be ordered by sending a Purchase Order via FAX to the Foundation office at (213) 740-8399. All Manual orders are processed within 3 days of receipt. There is an extra charge should UPS Blue Label, or Next Day Air shipment be required.

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Administering a Program

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Many agencies will take the Foundation's *List* as a starting point and create their own list, perhaps eliminating assemblies which were approved under an earlier specification, etc. Whatever basis the agency uses, it is important to have installation requirements included for the backflow preventers.

Certification:

Certification is an important part of any cross-connection control program. The testers which test backflow preventers under the administrative authorities jurisdiction must be able to show competency in testing backflow prevention assemblies. These prospective testers should not only be able to pass a written examination covering the various aspects of testing, but they should also be required to physically test each type of backflow preventer used in the system (i.e., reduced pressure principle assembly, double check valve assembly, and the pressure vacuum breaker assembly). This practical examination should be conducted on a one on one basis with the tester and a proctor. The tester should not be allowed to use notes of any kind during the examinations.

The tester should be able to follow the correct procedures for testing the assemblies, and be able to detect what, if anything, is wrong with the assembly. This includes each portion of the assembly tested (i.e., the first check, second check, relief valve and shut-off valves for the RP).

Recertification at regular intervals (typically two or three years) is critical. It must be documented that the tester continues to maintain his or her testing and troubleshooting skills.

Record Keeping:

Record Keeping is crucial to any cross-connection control program. An Administrative Authority operating a cross-connection control program must be able to demonstrate that each assembly under its jurisdiction is tested upon installation and on a periodic basis (at least annually). Accurate records should be kept in order to show that the program is continually maintained. Should a backflow incident occur, the records may prove to be an important aspect in proving the administrative authority's competence in administering the program.

Cross-Connection Control Informational Brochures Available

The informational brochure entitled *Working Together for Safe Water* is designed for distribution to the water user. It can be used to explain the basic concepts of cross-connection control, helping the water user understand why they may need to install a backflow preventer or comply with periodic testing requirements. The brochures come with the name, address and telephone number of the ordering agency. This enables you to distribute these brochures to your customers. When they have questions regarding cross-connection control, they can contact you directly for more information. The rates for ordering this full colour brochure are as follows:

Quantity	Member Rate	Non-Member Rate
500	\$115.00	\$145.00
1000	\$190.00	\$240.00
2500	\$375.00	\$475.00

To request a sample of the brochure with an order form contact the Foundation office at:

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(213) 740-2032

Or you may FAX your request to (213) 740-8399.

Records should include basic information about the backflow preventers and their locations. Degree of hazard, manufacturer of backflow preventer, model, size, serial number, location on premises, type of business occupying premises, installation date, last test date, field test results, and tester certification number, are a few of the items needed for accurate records. Most agencies will have all of this information combined in a comprehensive data base. This will allow for the generation of letters notifying the owner of the required field test. In addition, a confirmation of the tester's certification can be made as information is entered into the data base system.

Working Together for Safe Water on Film/Video

VHS Video:

Non-Members \$80.00
Members \$60.00

Contact the Foundation office for an order form or send a hard copy of a purchase order or a check to the Foundation office to receive a copy of the Film/Video. California residents must add appropriate sales tax.

16mm Film:

Non-Members \$200.00
Members \$150.00

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Administering a Program

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Continuing Education:

Continuing education of all of those involved in cross-connection control is very important. This includes the water agency personnel, health department personnel, plumbing authority, certified testers, and the water user. Of course the level of continuing education may vary. The consumer, for example, may need only to understand the basics of cross-connection control. They should have this basic understanding in order to be convinced of the need for a backflow preventer or annual testing. In this case, the film/video *Working Together for Safe Water* may be sufficient. Perhaps the Foundation's informational brochure by the same title

could serve as reinforcement of the information on the film. Certified testers, on the other hand, may need to attend a training course initially and attend update seminars periodically, to keep abreast of the most current testing methods. Administrators of a program may benefit by attending a Program Specialist Course which covers the various aspects of administering a cross-connection control program.

Although a complete comprehensive cross-connection control program may be very detailed and complex, the five items mentioned above are the basic points needed for a strong and defensible program. Of course, each program

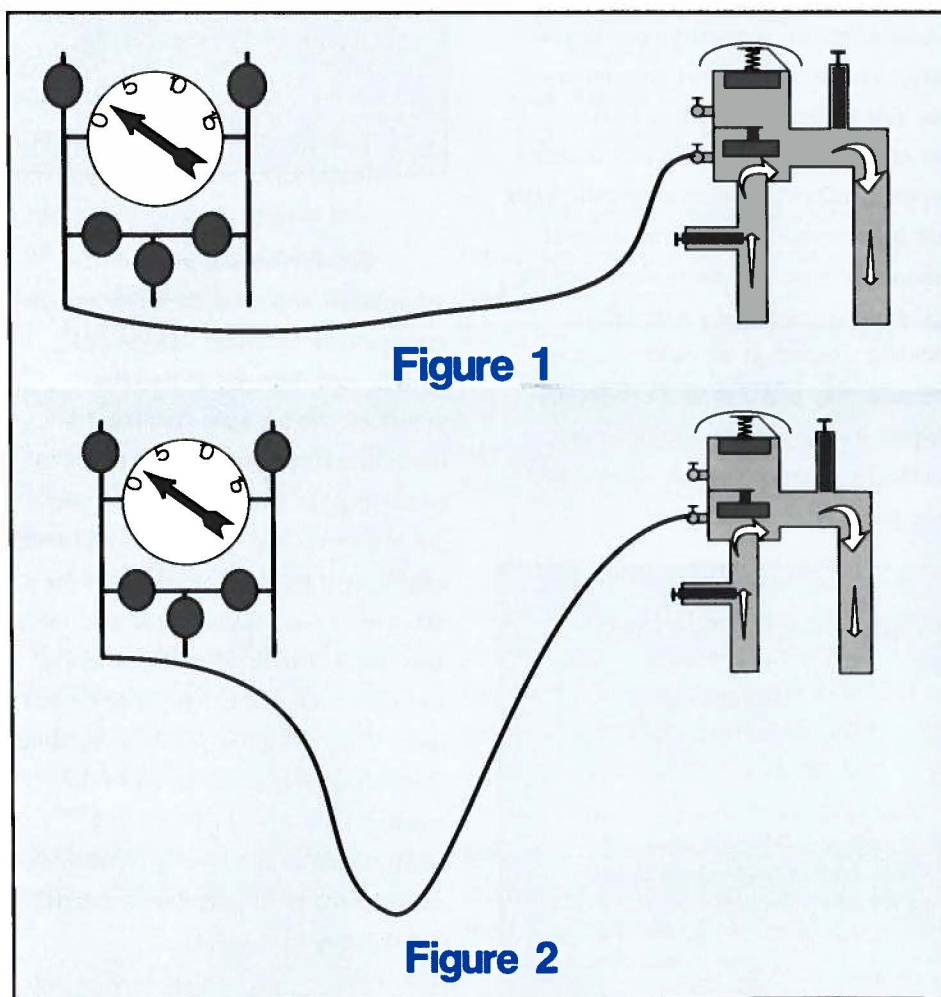
should be modified to meet the specific needs of the administrative authority overseeing the program. The Foundation's *Short Course for the Training of Cross-Connection Control Program Specialists* is designed to train those attending in each of the areas mentioned above. Much more detail is provided in the Five-Day Course than could be put forth in this article. This training course is offered twice each year at USC and at additional times across the country. Please see the training schedule on page 2.

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high side hose at the same elevation. (See Figure 1.) This is not necessary. As long as the gage head is at the proper elevation, the high side hose can be left to droop down. (See Figure 2.)

Now what should be done with the low side hose? Is it important? Yes, it is. With some gage equipment the low side hose can be disconnected easily. With other equipment, this is not the case. If the low side hose can be removed, then the test results won't be affected. But, for the gages where the hose can not be easily detached, the tester must be sure to position the low side hose properly. It is normally recommended that the low side hose be fully wrapped around the gage head, or in the gage's protective box. This will insure that water left in the low side hose will not adversely affect the gage readings.



Calendar⁶ of Events

This calendar lists activities which the Foundation plans on participating in over the next few months. For more information contact the Foundation office.

23 - 27 September 1991 - Program Specialist Short Course, Monterey, CA

2 - 4 October 1991 - CA/NV Section American Water Works Association Fall Conference, Anaheim, CA

23 November 1991 - Trojan Football, USC vs. UCLA

2 - 6 December 1991 - Tester Short Course, San Diego, CA

6 - 10 January 1992 - Tester Short Course, Foundation Laboratory, Los Angeles, CA

13 - 17 January 1992 - Program Specialist Course, USC Campus, Los Angeles, CA

15 January 1992 - Western States Symposium Association Meeting, Phoenix, AZ

3 - 7 February 1992 - Tester Short Course, Las Vegas, NV

19 - 20 February 1992 - TREEO Cross-Connection Control Conference, Gainesville, FL

2 - 6 March 1992 - Program Specialist Short Course, San Diego, CA

23 - 27 March 1992 - Program Specialist Short Course, Incline Village, NV



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