

# **VILLAGE OF BUCHANAN**

## **CROSS CONNECTION CONTROL GUIDE BOOKLET**

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# VILLAGE OF BUCHANAN

## CROSS CONNECTION CONTROL PROGRAM INFORMATION

### **PURPOSE**

The purpose of this booklet is to instruct the users of the public water supply system on how to comply with the New York State Department of Health requirements for Cross Connection Control. The requirements are outlined in Part 5 of the State Sanitary Code; Section 5-1.31 entitled "Cross Connection Control". The code requirements are summarized in the following paragraphs.

### **WATER SUPPLIER RESPONSIBILITY**

The supplier of water is responsible for protecting the public water supply from potential contamination caused by its customers. The supplier is required to determine the degree of hazard that a facility poses to the water supply system and if necessary to require that an acceptable backflow prevention containment device be installed, tested, operated and maintained and that adequate records of maintenance and repair are kept.

### **CUSTOMER RESPONSIBILITY**

The customer has the primary responsibility of preventing contaminants from entering the potable water piping system and subsequently, the public water supply system. The customer, as requested by the supplier of water, is required by New York State Public Health Law, Part 5, Section 5-1.31, to submit plans, applications, etc. for the installation of protective devices, to the supplier and the Health Department for approval. The customer shall also test, maintain and keep repair records for any backflow prevention device(s) installed to provide containment. The water customer shall have the primary responsibility of preventing contaminants from entering the facilities potable water system and subsequently, the public water supply system. The customer shall also prevent cross connections between the potable water piping system and any other system within the facility.

### **NOTICE**

Any customer receiving a written notice from the Village of Water Department concerning installing a backflow prevention device has ninety (90) days to comply with the requirements of the notice. If the requirements set forth in the notice have not been met to the satisfaction of the Water Department, the Water Department may discontinue service to the premises.

### **PROCEDURE**

The following is recommended instructions for complying with a notice requiring the installation of a backflow prevention device.

1. If your facility requires a backflow prevention device, than the services of either a Professional Engineer or Registered Architect must be retained. This is a requirement of the New York State Education Law. A list of qualified Professional Engineers and Registered Architects is located in Appendix C. The engineer or architect shall investigate the site and design and layout the necessary cross connection control equipment. The Water Department and/or Village Engineer will provide the engineer or architect with any assistance needed to complete the necessary plans and forms for submission to the County Health Department for approval.

2. The Westchester County Department of Health forms enclosed in Appendix B should be completed and returned to the Health Department. Five sets of the forms, reports, plans, etc. required by the Health Department shall be sent to the Water Department for review and filing.
3. The Village of Buchanan Water Department requires the actual installation of the device to be made by a licensed master plumber, certified in the installation of backflow prevention devices.
4. Once installed, the device must be tested by a New York State Department of Health certified tester and the Design Engineer or Architect must certify that the installation was completed in accordance with the approved plans. The testing and installation certification must be submitted to both the Village of Buchanan Water Department and the Westchester County Department of Health using the New York State Department of Health form (DOH-1013) located in Appendix C.

**PLANS & SPECIFICATIONS**

**A. PREPARATION**

"The New York State Education Law pertaining to Professional Engineers and Land Surveyors" Article 145ff, Section 7200, requires that a project involving the safeguarding of life, health and property must be designed by a Registered Professional Engineer (P.E.) of the State of New York. The design of backflow prevention device installations is such a project. There is an exception to the P.E. requirement for design: An architect licensed in this State may design the installation. The installation of the device must be made by a licensed plumber. It is the responsibility of the customer to obtain all necessary plumbing permits.

**B. SUBMISSION AND APPROVAL**

The following forms and procedures should be submitted & followed:

- |        |             |  |
|--------|-------------|--|
| Forms: | 1. DOH-347  | New York State Department of Health Application for Approval of Backflow Prevention Device(s).                     |
|        |             | "Certificate of Resolution For Authorization" or Letter of Authorization from the owner or officer of corporation. |
|        | 2. GEN-237  | New York State Department of Health Certificate of Approval for Backflow Prevention Device(s).                     |
|        | 3. DOH-1013 | Report of Testing and Maintenance of Backflow Prevention Device.   |

**C. PROCEDURE:**

- |                     |    |  |
|---------------------|----|--|
| Water Customer      | 1. | Notifies the <b>Village of Buchanan</b> Official of intent to make and maintain a service connection to the public water supply system.  |
| Village of Buchanan | 2. | Investigates conditions at the site of proposed service connection and requests technical advice from Westchester County Department of Health Engineer (WCDOHE), if necessary. |
|                     | 3. | Requests Water Customer to submit plans, specifications and application (Form DOH347) for proposed connection.   |

- |                     |       |   |
|---------------------|-------|---|
| Water Customer      | 4.    | Submits plans, specifications and application (Form DOH-347) (5 copies of each), to the <b>Village of Buchanan</b> with \$65.00 application fee for each backflow device. Make check payable to: Westchester County Department of Health.   |
| Village of Buchanan | 5.    | Reviews submission, transmits with recommendations for approval to WCDH, in quadruplicate.  |
|                     | 5(a). | Disapproves and returns submission to Water Customer for correction and re-submittal.   |
| WCDOHE              | 6.    | Reviews submission, transmits with recommendations for approval to Bureau of Public Water Supply (BPWS), in quadruplicate.  |
|                     | 6(a). | Disapproves and returns submission for corrections and re-submittal.  |
| BPWS                | 7.    | Evaluates application, plans and specifications and recommends approval of application. Sends letter of approval, Certificate of Approval (Form GEN-237), and copy of approved plans to the <b>Village of Buchanan</b> , Engineer/Architect & owner.  |
|                     | 7(a). | Disapproves and returns submission for modification and re-submittal.   |
| Water Customer      | 8.    | All devices must be installed and tested within 90 of the D.O.H.approval date. All testing must be done by a certified tester, certified by New York State Board of Health. One copy of the test must be sent to the NYS WCDOH and one copy to the Village of Buchanan.                                 |
| Water Customer      | 9.    | Disassembles and overhauls RPZ or DCV every five years.   |
| Water Customer      | 10.   | Submits reports of inspection, testing, disassembly and overhaul to the <b>Village of Buchanan</b> and WCDOH Engineer within 30 days of completion. One copy of each device tested must be sent to the WCDOH and one copy of each device tested to the Village of Buchanan. See: Testing & Maintenance. |
| Village of Buchanan | 11.   | Inspect devices after installation and maintain initial and annual test reports (DOH1013).  |

## **TESTING & MAINTENANCE**

### **A. TESTING**

Backflow prevention devices must be tested and inspected to ensure continued reliability. Tests must be made after initial installation and after each repair. The device must be tested on a yearly basis after the initial test is performed. A yearly test will be considered as the minimum. The testing is to be done by a certified backflow prevention device tester, certified by the State of New York. Copies of all test reports must be sent to the Westchester County Department of Health and the Village of Buchanan.

## REQUEST TO INSTALL AND COMPLETED WORKS FOR A BACKFLOW PREVENTION DEVICE

### REQUEST TO INSTALL A BACKFLOW PREVENTION DEVICE

- Description:** Prior to the installation of a backflow prevention device, approval must be secured from the Westchester County Department of Health.
- Applicable Codes:** Part 5, Subpart 5-1 Section 5-1.31 of the New York State Sanitary Code and Chapter 873, Article VII, Section 873.707.1 of the Laws of Westchester County.
- Fees:** Chapter 873, Article XXI, Section 873.2117 of the Laws of Westchester County.  
\$65.00 per device
- Submittal:** The submittal shall be forwarded to the Westchester County Department of Health, 145 Huguenot Street, 7<sup>th</sup> Floor, New Rochelle, New York 10801, Attention: Paul Kutzy, P.E., Assistant Commissioner. When requesting approval of a project pursuant to the above provision, the following list services as the minimum filing requirements:
1. Form DOH-347 "*Application for Approval of Backflow Prevention Devices*", completed in its entirety, plans, Engineer's Report, and specifications, in quadruplicate, are forwarded to the local water purveyor who in turn forwards the submittal to the Westchester County Department of Health. Plans and Engineer's Report must bear the original seal and signature of a Professional Engineer or Architect, licensed and registered in the State of New York.
  2. A separate application is required for each backflow prevention device.
  3. The application, Form DOH-347, must be accompanied by a Certificate of Resolution if the owner is a corporation, or a Letter of Authorization for all others. Either document must clearly authorize the design Engineer or Architect by name.
  4. The service water demand must be indicated in the Engineer's Report and the proposed device must be capable of satisfying this demand.
  5. All plans must be prepared pursuant to Title VIII, Article 142, Section 7209.2 of the New York State Education Law.
  6. Piping for the device(s) must be shown in plan and profile views, clearly labeled, dimensioned and detailed.
  7. Bypass piping without cross connection protection is prohibited. If a bypass is necessary, a backflow prevention device must be installed on such.
  8. The backflow preventer must be a minimum of thirty inches (30") above the floor level or eighteen inches (18") from the floor to the bottom of the discharge port (whichever is greater). Devices must be installed so that there is access for servicing and testing. Any devices installed at greater than 5'-0" off the floor must include an OSHA approved safety platform for test procedure, and this must be noted on the drawings – A device cannot be installed closer than twenty-four inches (24") from the ceiling.

9. A minimum of thirty inches (30") is required in front of the backflow preventer. A minimum of eight inches (8") is required behind the backflow preventer. Devices in parallel must be thirty inches (30") apart.
10. Vertical installation of backflow preventers will be accepted if the device is approved by the State for that type of configuration. The flow direction must be denoted on the plans.
11. Reduced Pressure Zone Devices must be installed with an air gap. The air gap shall be twice (2X) the diameter of the discharge (relief valve) port. The air gap and discharge port size must be clearly noted on the drawing. All waste discharges must drain in general to a sanitary sewer or disposed of in an approved manner, which will be reviewed on a case-by-case basis. When the discharge pipe is to be connected directly to a sanitary sewer line, a P-Trap and Backwater Check Valve must be provided.
12. RPZ discharge piping and receptacles must meet the sizing criteria as delineated in the "Supplement to the 1981 Cross Connection Control Manual" for catastrophic failure. If this is not possible, then a discharge sensor alarm, and automatic shutoff valve may be required. All special circumstances are reviewed on a case-by-case basis.
13. Adequate provisions must be made for heat and light and such shall be noted on the plans.
14. Valves must be situated on both sides of the backflow prevention device. A strainer must be placed on the feed side of all devices other than fire services utilizing Double Check Valves. These items must be clearly noted on the plans.
15. Site plan showing building address, location, cross streets, water service, water main location and device location within the premises is required.
16. If a building or facility has more than one backflow preventer, they may all be included on one plan, provided they are clearly located and identified. If they are all of the same make, model #, and size one typical detail may suffice, otherwise a separate detail for each shall be provided.
17. **For Devices Installed in Pits:** A pit must be capable of being drained by gravity to grade. The discharge piping must be of sufficient size and set at adequate grade to take the entire discharge of the RPZ. The end of the discharge pipe shall be adequately supported and screened to prevent the entrance of small animals and rodents.

Revised 02/2000

**ISSUANCE OF COMPLETED WORKS APPROVAL  
FOR INSTALLATION OF BACKFLOW PREVENTION DEVICE**

- Description:** Within ninety (90) days of receiving approval for the installation of a backflow prevention device, Notification of a Completion of Works must be given to the Westchester County Department of Health.
- Applicable Codes:** Part 5, Subpart 5-1 Section 5-1.31 of the New York State Sanitary Code and Chapter 873, Article VII, Section 873.707.1 of the Laws of Westchester County.
- Fees:** Chapter 873, Article XXI, Section 873.2117 of the Laws of Westchester County.  
\$-0-
- Submittal:** The submittal shall be forwarded to the Westchester County Department of Health, 145 Huguenot Street, 7<sup>th</sup> Floor, New Rochelle, New York 10801, Attention: Paul Kutzy, P.E., Assistant Commissioner. When requesting Approval of Works pursuant to the above provisions, the following serves as the minimum requirement:
1. The Completed Works Approval Form DOH-1013 (Gen 213A) must be executed by the Certified Tester and a Registered Design Engineer/Architect after the device is installed.



## **APPENDIX A**

# DEFINITION OF TERMS

The following definitions will help you to understand the terminology used in cross connection control:

**ACCEPTABLE BACKFLOW PREVENTION DEVICE** is an acceptable air gap, reduced pressure zone device or double check valve assembly as used to contain potential contamination within a facility.

**ACCEPTABLE DEVICES** are those devices or assemblies found to be acceptable for containment control in New York State in accordance with the Department of Health requirements.

**AESTHETICALLY OBJECTIONABLE FACILITY** is one in which substances are present, which if introduced into the public water supply system could be a nuisance to other water customers, but would not adversely affect human health. Typical examples of such substances are: food grade dyes, hot water, stagnant water from fire lines in which no chemical additives are used, etc.

**AIR GAP SEPARATION** means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supply water to a tank, plumbing fixture, or other device and the flood level rim of the receptacle. The differential distance shall be at least double the diameter of the supply pipe. In no case shall the air gap be less than one (1") inch.

**BACKFLOW** means a flow condition, induced by a differential in pressure that caused the flow of water or other liquids and/or gases into the distribution pipes of a public water supply from any source other than its intended source.

**BACKPRESSURE** means the resulting backflow of contamination, polluted water, or water of questionable quality from a plumbing fixture or other customer source(s) into a public water supply system main due to a temporary negative or sub-atmospheric pressure within the public water supply system.

**BACKSIPHONAGE** means the backflow of contaminated or polluted water, or water of questionable quality from a plumbing fixture or other customer source(s) into a public water supply system due to a greater pressure within the customer's water system.

**CONTAINMENT** means cross connection control which isolates the customer's entire facility from the public water system so as to provide the protection necessary to prevent contamination of the public water supply in the event of backflow from the customer's facility.

**CROSS CONNECTION** means a physical connection through which a water supply could be contaminated.

**DEGREE OF HAZARD** means whether a facility is rated as hazardous, aesthetically objectionable or non-hazardous.

**DOUBLE CHECK VALVE ASSEMBLY (DCVA), ACCEPTABLE** means two single independently acting check valves, including tightly closing shutoff valves located at each end of the assembly and suitable connections for testing the watertightness of each check valve.

**HAZARDOUS FACILITY** is one in which substances may be present which if introduced into the public water system would or may endanger or have an adverse effect on the health of other water customers. Typical examples: laboratories, sewage treatment plants, chemical plants, hospitals, mortuaries, etc.

**NON-HAZARDOUS FACILITY** is one that does not require the installation of an acceptable backflow prevention device.

**PLUMBING CONTROL** is prevention and elimination of cross connections within the customer's water systems by enforcement of building or plumbing codes.

**REDUCED PRESSURE ZONE (RPZ) DEVICE, ACCEPTABLE** means a minimum of two independently acting check valves, together with an automatically operated pressure differential relief valve located between the two check valves. During normal flow and at the cessation of normal flow, the pressure between these two checks shall be less than the upstream (supply) pressure. In case of leakage of either check valve, the differential relief valve, by discharging to the atmosphere, shall operate to maintain the pressure between the check at less than the supply pressure. The unit must include tightly closing shutoff valves located at each end of the device, and each device shall be fitted with properly located test cocks.

## **APPENDIX B**

# Application for Approval of Backflow Prevention Devices

**PRINT OR TYPE ALL ENTRIES EXCEPT SIGNATURES**  
Please completed items 1 through 12a + Block and Lot Numbers

Block #	Lot #	FOR DEPARTMENT USE ONLY Log No.
---------	-------	------------------------------------

1. Name of Facility	2. City, Village, Town	3. County
4. Location of Facility <small>Street</small>	City	state zip
4a. Phone Numbers	5. Contact Person	
5. Approx. Location of Device(s)	6. Mfg. Model #	Size of Device(s)

# of Fire Services	# of Domestic Services	# of Combined Services	Total # of Services	Total # of Buildings
7. Name of Owner	Title	Phone Number	8. Nature of works <input type="checkbox"/> Initial Device Installation <input type="checkbox"/> Replace Existing Device	
Full Mailing Address Address <small>street</small>			8a. <input type="checkbox"/> New Service <input type="checkbox"/> Existing Service	
City state zip			8b. <input type="checkbox"/> New Building <input type="checkbox"/> Existing Building <input type="checkbox"/> Major Renovations	
Owner's Signature		Date	M / D / Y	

9. Name of Design Engineer or Architect	10. NYS License #
Address <small>Street</small>	<input type="checkbox"/> PE <input type="checkbox"/> RA <input type="checkbox"/> Other
City	10a. Telephone Number(s)
State Zip	Date
Original Ink signature and seal required on all copies	M / D / Y
Signature	

11. Water System Pressure (psi) at Point of Connection Max Avg Min	12. Estimate Installation Cost	12a. Estimate Design Cost
13. Degree of Hazard <input type="checkbox"/> Hazardous <input type="checkbox"/> Aesthetically Objectionable		
List of processes or reasons that lead to degree of hazard checked: _____ _____		

14. Public water supply name	Name of supplier's designate representative
Mailing Address <small>street</small>	Title
City state zip	Signature
Telephone No. ( )	M / D / Y

Note: All applicants must be accompanied by plans, specifications and an engineer's report describing the project in detail. The project must first be submitted to the water supplier, who will forward it to the local public health engineer. This form must be prepared in quadruplicate with four copies of all plans, specifications and descriptive literature.

# Report on Test and Maintenance of Backflow Prevention Device

## PART A

Please use a separate form for each device.

For the year \_\_\_\_\_  
 Initial test - Complete entire form  
 Annual test - Complete Part A only

Public Water Supply		Account No.		County	Block	Lot
Facility Name _____ Address _____ Street City Zip				Location of Device _____ _____		
Device Information	Manufacturer	Type <input type="checkbox"/> RPZ <input type="checkbox"/> DCV	Model	Size (in inches)	Serial Number	
	Check Valve No. 1		Check Valve No. 2	Differential Pressure Relief Valve	Line Pressure _____ psi	
Test before repair	Leaked <input type="checkbox"/> Closed tight <input type="checkbox"/>		Leaked <input type="checkbox"/> Closed tight <input type="checkbox"/>	Opened at _____ psid	Date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> M D Y	
	Pressure drop across first check valve _____ psid					
Describe repairs and materials used					Repaired by Name _____ Lic # _____ Date repaired: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> M D Y	
					Date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> M D Y	
Final test	Closed tight <input type="checkbox"/> Pressure drop across first check valve _____ psid		Closed tight <input type="checkbox"/>	Opened at _____ psid	Date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> M D Y	
Water Meter Number		Meter Reading		Type of Service: (check one) <input type="checkbox"/> Domestic <input type="checkbox"/> Fire <input type="checkbox"/> Other _____		

Remarks (Describe deficiencies: bypasses, outlets before the device, connections between the device and point of entry, missing or inadequate airgaps, etc.)

Certification: This device  meets, •  does NOT meet, the requirements of an acceptable containment device at the time of testing  
 I hereby certify the foregoing data to be correct.

Print Name \_\_\_\_\_ Certified Tester No. \_\_\_\_\_ Signature \_\_\_\_\_ Expiration Date \_\_\_\_\_

Property owner's (or owner's agent) certification that test was performed:

Print Name \_\_\_\_\_ Title \_\_\_\_\_ Signature \_\_\_\_\_ Telephone \_\_\_\_\_

## PART B

Certification that installation is in accordance with the approved plans. (To be completed by the design engineer or architect or water supplier.)

I hereby certify that this installation is in accordance with the approved plans.

Name	Title	Date	NYS DOH Log #
License Number	Phone ( )	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> m d y	_____
Representing	Describe minor installation changes		
Address			
City State Zip			
Signature			

**INSTRUCTIONS FOR COMPLETING DOH-1013 (9/91)  
REPORT ON TEST AND MAINTENANCE OF BACKFLOW PREVENTION DEVICE**

**PART A - To Be Completed by Certified Tester**

- Indicate the test year and whether initial or annual test.
- Complete public water supply name, customer account number (if available) and county.
- Complete block and lot (if available) for New York City Metropolitan area tests.
- Complete facility name, address and specific location of device (e.g., meter room, etc.)
- Complete device information including manufacturer, type, model, size and serial number.
- Complete section "Test Before Repair" and indicate:
  - Whether check valve #1 leaked or closed tight. For RPZ devices, the pressure drop across the check valve must be at least 5.0 psid.
  - Whether check valve #2 leaked or closed tight.
  - Opening of RPZ differential pressure relief valve - must be at least 2.0 psid or device must be failed and/or repaired.
  - Complete water system line pressure in psi and indicate test date.
- Describe any repairs and materials used and the name and license number of the repairer and indicate repair date.
- Complete "final test" section only if repairs have been made.
- Indicate the water meter number/meter reading and the type of service (describe "other" e.g., boiler feed, irrigation line, etc.)
- Complete the Remarks section if there are any deficiencies.
- Complete the certification indicating if the device meets or does not meet the requirements at the time of testing - print and sign your name and indicate certificate number and expiration date.
- Have the property owner (or owner's agent) certify that test was performed.

**PART B - To Be Completed By Design Engineer, Architect or Water Supplier for initial Tests Only**

- Complete name, title, license number, phone number, company name and address.
- Sign and date form and indicate NYSDOH (or local health department/water supplier).
- Describe minor installation changes.

After completion, submit copies of test reports to the supplier of water, customer, State or local health department and retain copies for the tester's personal records.

**CERTIFICATE OF RESOLUTION  
FOR AUTHORIZATION**

The undersigned, \_\_\_\_\_ of \_\_\_\_\_

Name of Corporation \_\_\_\_\_, a corporation

Duly organized and validly existing under the laws of (State) \_\_\_\_\_

Hereby certifies that the following resolution was duly adopted by the Board of Directors, of said Corporation at a meeting duly called and held on the \_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_\_

Be it resolved that the Board of Directors, or President, if there is no Board of Directors, of (Name of Corporation) \_\_\_\_\_

With Offices at: \_\_\_\_\_

Hereby authorized (Name if person authorized): \_\_\_\_\_

To execute and deliver to the Westchester County Department of Health, for and on behalf of said Corporation, and application for a permit to operate (type of operation): \_\_\_\_\_

To execute and deliver any and all additional documents which may be appropriate or desirable in Connection therewith.

The undersigned further certifies that said resolution has not been revoked, rescinded or modified and remains in full force and effect on the date hereof.

In **WITNESS WHEREOF**, the undersigned has duly executed this certificate on this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_.

**OFFICER'S SIGNATURE:** \_\_\_\_\_

**TITLE:** \_\_\_\_\_



**ACKNOWLEDGEMENT**

**STATE OF** \_\_\_\_\_ )

**COUNTY OF** \_\_\_\_\_ ): ss:

On this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_, before me personally came \_\_\_\_\_ to me known, and known to me to be the \_\_\_\_\_ of the corporation referred to in the within Certificate of Resolution, who being by duly sworn did depose and say that (s)he is \_\_\_\_\_ of said corporation and that (s)he signed his/her name hereto.

\_\_\_\_\_  
Notary Public

\_\_\_\_\_  
County



**SAMPLE LETTER OF AUTHORIZATION FOR INDIVIDUAL, PARTNER OR LLC**

Date: \_\_\_\_\_

Westchester County Department of Health  
Bureau of Environmental Quality  
145 Huguenot Street  
New Rochelle, New York 10801

Re: (address of property)

Dear Sir or Madam:

This is to certify that I have authorized the installation of a backflow prevention device, at the address indicated above, as designed by \_\_\_\_\_, P.E. (R.A.)

Very truly yours,

\_\_\_\_\_  
(owner)

(notary seal and signature)

## **APPENDIX C**

**NEW YORK STATE DEPARTMENT OF HEALTH  
BUREAU OF PUBLIC WATER SUPPLY PROTECTION  
GUIDELINES FOR DESIGNING  
BACKFLOW PREVENTION ASSEMBLY INSTALLATIONS  
SUPPLEMENT TO THE 1981 CROSS CONNECTION CONTROL MANUAL  
JANUARY 1992**

**PURPOSE**

The purpose of these guidelines is to augment and/or clarify those guidelines outlined in the January 1981 Cross Connection Control Manual. These guidelines reflect accepted design considerations based on experience in implementing cross connection control programs and policies set forth by the American Water Works Association, Environmental Protection Agency, USC Foundation for Cross Connection Control and Hydraulic Research and state and local health departments. Pending revisions to the manual, these guidelines should clearly outline what an acceptable design and installation constitutes. They are to be reasonably interpreted and will be updated as new design solutions and technologies are offered.

**GENERAL INSTALLATION DETAILS**

**I. CLEARANCES**

All double check valve (DCV) and reduced pressure zone (RPZ) backflow prevention assemblies are designed for in-line service and must be installed to prevent freezing, flooding and mechanical damage with adequate space to facilitate maintenance and testing. Ideally, the installation should not require platforms, ladders or lifts for access. Adequate clearances from floors, ceilings and walls must be provided to access the test cocks and to allow the repair and/or removal of the relief valve and check valves; as follows:

- All assemblies shall be installed with a centerline height from 30 inches min. to 60 inches max. above the floor. Any installation at a greater height shall be provided with a fixed platform, a portable scaffold or a lift meeting OSHA standards.

- All RPZ devices must have an 18-inch minimum clearance between the bottom of the relief valve and the floor to prevent submersion and provide access for servicing the relief valve.
- A minimum of 12 inches of clear space shall be maintained above the assembly to allow for servicing check valves and for operation of shut-off valves.
- A minimum of 30 inches of clear space shall be maintained between the front side of the device and the nearest wall or obstruction.
- At least 8 inches clearance should be maintained from the backside of the device to the nearest wall or obstruction. This clearance may need to be increased for models that have side mounted test cocks or relief valves that would be facing the back wall.

## **II. MISCELLANEOUS**

- All assemblies shall be adequately supported and/or restrained to prevent lateral movement. Pipe hangers, braces, saddles, stanchions, piers, etc., should be used to support the device and should be placed in a manner that will not obstruct the function of or access to the relief valve or check's.
- Strainers are recommended prior to each backflow prevention assembly on non-fire fighting water lines. No strainer is to be used in a fire line without the approval of the insurance underwriters or the authority having jurisdiction.
- The assembly should be sized hydraulically, taking into account both the volume requirements of the service and the head loss of the assembly. The head loss of the assembly is not necessarily directly proportional to flow. (refer to the manufacturers head loss curves).
- Before selection and installation, refer to manufacturer literature for temperature ranges. All assemblies must be protected from freezing temperatures and if installed where temperatures will reach 110 degrees F or above, a hot water type assembly must be used. Consult manufacturer specifications for recommendations.

- Thermal water expansion and/or water hammer downstream of the assembly can cause excessive pressure. To avoid possible damage to the system and assembly, use water hammer arresters, surge protectors or expansion tanks as appropriate.
- All approved assemblies must include resilient seated, full flow shut off valves integral to the assembly. Unless otherwise approved by the BPWSP, these shut off valves shall be mounted directly to the assembly and shall be supplied by the assembly manufacturer.
- Water lines should be thoroughly flushed before installing the assembly. Most test failures on new installations are the result of debris fouling one of the check valves or the relief valve.
- All assemblies must be installed horizontally unless specifically designed for vertical installation. (Ref. Technical Reference PWS-14).
- Parallel installations should be considered at those facilities where water service cannot be interrupted. Manifold installations may also be used on any water line larger than 10 inches.
- Assemblies shall not be installed in areas containing corrosive, toxic or poisonous fumes or gases, which could render the assembly inoperable or pose a safety hazard to personnel.
- Because of the inherent design of a reduced pressure backflow assembly, fluctuating supply pressure on an extremely low flow or static flow condition may cause nuisance dripping and potential fouling of the assembly. While not effective in all cases, the installation of a soft seated check valve immediately ahead of the RPZ will often hold the pressure constant to the assembly in times of fluctuating supply pressure.
- Where the distance between the water meter and the device is greater than 10-feet, all exposed piping should be stenciled "Feed Line To Backflow Preventer - DO NOT TAP" at 5-foot intervals.

## DRAINAGE

Drainage for backflow prevention assemblies shall be provided for all installations of DCV or RPZ to accommodate discharge during testing and/or draining of the unit and for RPZ relief valve discharges, as follows:

- For RPZ devices, drainage capacity shall be sized to accommodate both intermittent discharges and a catastrophic failure of the relief valve. Refer to manufacturers flow curves to determine maximum discharge rate based on supply pressure or on-site pressure; whichever is greater.
- Discharge from relief valves must be readily detectable to maintenance personnel either visually or by means of water level alarms, flow indicator lights, etc.
- All drainage from RPZ's must be by gravity drains. Sump pumps are not allowed unless they are sized to accommodate the maximum discharge rate and connected to emergency power supplies.
- An air gap must be maintained between the RPZ relief valve opening and any discharge piping. The air gap must be at least twice the dimension for the effective opening of the relief valve; but in no case less than 1-inch.
- Manufacturer's air gap fittings must be utilized provided that they maintain a proper air gap and do not enclose or cover the relief valve. These fittings are only sized to handle intermittent and low flow discharges. Additional drainage capacity may be required to accommodate a catastrophic relief valve failure.
- Discharge piping from relief valves shall be terminated a minimum of one inch above any floor drain or other receiving receptacle.
- Discharge piping connected to a storm sewer shall be equipped with backwater check valve.
- Discharge piping connected to a sanitary sewer shall be trapped and equipped with a backwater check valve.
- Discharge piping from pits or other structures must be terminated above grade in an area not subject to flooding (generally one (1) foot above the 100-year flood elevation). The terminal end

of the discharge piping must have a rodent screen and may need to be supported by a headwall.

Flap valves should also be considered to prevent entry of cold air.

- All exterior drains shall be kept free of snow during winter.

## **VAULT/PIT INSTALLATIONS**

Primarily due to considerations for access, safety and gravity drainage, it is preferred that backflow prevention devices not be installed in pits. Where pit installations are proposed, however, they shall be designed:

- To be watertight with watertight access doors extending a minimum of 6-inches above grade and located to allow natural light into the pit during testing/maintenance.
- With stairways, ladders or step irons.
- For crane access for installing and removing large assemblies.
- With adequate horizontal and vertical clearances to allow access to the device.
- With a full flow screened gravity drain terminating above grade for all RPZ installations as detailed in the drainage requirements.
- With sump pumps or gravity daylight drains for all DCVA installations.
- With floors pitched to the drain.
- With adequate ground cover to prevent freezing.
- With surface grading to divert runoff away from the entranceway.
- Semi-buried pits or berm installations may be necessary to satisfy gravity drainage requirements.

## **ABOVE GRADE INSTALLATIONS - PROTECTIVE ENCLOSURES**

An above grade installation is generally necessary to provide gravity drainage for RPZ devices. The additional benefits of improved access and enhanced safety are also realized with an above grade installation. Two companies, "Hot Box" and "Hydrocowl", have designed prefabricated insulated enclosures that provide heat, gravity drainage and removable access panels for servicing and testing. As an alternate, wood frame, fiberglass, steel, masonry or precast concrete structures may be utilized. All enclosures shall be designed:

- With a floor elevation that is at least 6-inches above finished grade.
- To provide adequate clearances around the device to access the test cocks, shutoff valves, check valves and relief valve.
- With electric heaters or heat trace wire for any water service used year round.
- With provisions for natural or artificial light.
- With full flow gravity drains according to the drainage requirements.
- With security measures such as locking doors and panels, flow alarms or flow indicator lights, power indicator lights, etc.

## **INSTALLATION WITHIN A BUILDING**

Where containment at the property line cannot be achieved or is waived based on extenuating circumstances, installation within a building is often desirable as the unit can be installed in a mechanical room or other area that has heat and light. Access and drainage considerations must also be satisfied and the devices should be located to avoid electrical panels, areas of excessive heat, etc.

1. Above grade installations shall be provided with adequate clearances and discharge can be directed to floor drains or through a sidewall above grade via screened louvers, scuppers, pipe sleeves with flap valves, etc., in accordance with the drainage requirements.



2. Below grade or basement installations are acceptable for DCVA's. RPZ's are only allowed below grade where one or more of the following conditions can be met:
  - Where an adequate gravity drainage system is provided to accommodate a relief valve failure.
  - Where water level alarms are installed to detect flow from the device and automatically closing valves.
  - Where sump pumps are sized to accommodate a relief valve failure and are to be connected to emergency power.

In any of the above cases, the property owner must be made aware of the potential for water damage in the event of a discharge.

### **SUBMISSION AND APPROVAL OF PLANS**

In accordance with Section 10 of the Cross Connection Control manual, the submission of plans and specifications for the installation of backflow prevention assemblies must include the following:

1. A site plan (to scale or with dimensions) of the facility containing a general location map, name and address of facility, property lines, buildings, the size and location of public water main(s) and all fire and domestic water services, meter pits, yard piping and hydrants, pumper connection(s), interconnections, and the location of the proposed backflow preventer(s).
2. A plumbing floor plan (plan view) or partial floor plan indicating water services, name and address of facility, water meter layout, proposed backflow preventer(s), booster pump system, floor drain(s) and all nearby objects (examples: electrical panels, boilers, chillers, storage tanks, fire pumps, fire sprinkler risers, etc.). The plan must be drawn to scale or with dimensions indicated from walls and all nearby objects.
3. A vertical cross section(s) of the proposed installation with elevations from floor, ceiling, outside grade and all nearby objects.
5. All drawings must include the name and address of the facility, be stamped and signed by the designer and have a clear space for approval stamps.

## ENGINEER'S REPORT

An engineering report must be included with the plan submittal. The report must describe the project in detail. Items that should be included or described in the report include:

1. General use of water within the facility;
2. Size and description of all fire and domestic water services;
3. Number of floors within the facility;
4. Actual or estimated maximum flow demand;
5. Pressures - existing and after the installation of the backflow preventer;
6. Description of the fire fighting system - indicate the A.W.W.A. Manual M-14 class of sprinkler service;
7. Description of the proposed installation of the backflow preventer - indicate the location of backflow preventer, drainage, lighting, heating, access to unit, square footage of the floor level where the backflow preventer is to be located;
8. Description of the existing or proposed booster pump system, answering the following questions:
  1. After the installation of the proposed backflow preventer(s), will the Net Positive Suction Head (NPSH) required for the proper operation of the booster pump system be adequate?
  2. After the installation of the backflow preventer(s) in the suction line to the booster pump system, will the booster pump system operate properly at peak demand to deliver adequate pressure to the highest elevation and/or most remote fixture unit or any other operation requiring a certain pressure? Note: The New York State Uniform Fire Prevention and Building Code Part 902.4c requires the minimum pressure at water outlets at all times to be as follows:  
  
Fixture - non flush valve - 8 psi  
  
Fixture - flush valve - 15 psi

3. Does the booster pump system have a pressure cutoff switch in the suction line? What is the pressure setting of the switch? An existing or proposed cutoff switch must be set at the following setting:

For a cutoff switch where the backflow preventer is located upstream of the booster pump(s) - set at 10 psi.

For a cutoff switch where the backflow preventer is located downstream of the booster pump(s) - set at 20 psi.

9. The need for dual backflow preventers. Does the facility need a continuous water supply?
10. The elevation and location of the 100 year flood plain in relation to the facility. A reduced pressure zone (RPZ) backflow preventer must generally be installed 1 foot above the 100-year flood plain elevation.
11. An inventory of any existing containment devices to include the make, model, size and serial number of the device. Current annual test reports must also be submitted. The degree of hazard for these services must be determined to insure that the device provides the correct protection.

### **CERTIFIED TESTING AND COMPLETED WORKS APPROVAL**

After an approval of plans has been issued and the assembly has been installed, it must be tested by a certified tester. The designer (or water supplier) is then responsible to certify that the installation was done in accordance with approved plans; or describe any changes or submit "As Built" plans as appropriate.

The initial test results and certification are then submitted to the water supplier and approving agent for issuance of a Completed Works Approval. Form DOH1013 has been designed for both the certified test results and the designer's certification of the installation. After issuance of the Completed Works Approval, a certified tester must test the assembly at least annually with the results reported to the water supplier.

# ENVIRONMENTAL HEALTH MANUAL

NEW YORK STATE DEPARTMENT OF HEALTH  OFFICE OF PUBLIC HEALTH CENTER FOR ENVIRONMENTAL HEALTH  TECHNICAL REFERENCE	ITEM NO: PWS-14 DATE: 9/1/04 Bureau of Water Supply Protection
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## PURPOSE

The purpose of this Technical Reference is to provide a list of approved backflow prevention assemblies for containing potential contamination as required by Section 5-1.31 of the State Sanitary Code. This list is made available to regulatory agencies, water purveyors, consulting engineers, manufacturers, certified testers, contractors and the general public.

## POLICY

1. The New York State Department of Health, Bureau of Water Supply Protection (BWSP) will approve only those backflow prevention assemblies that have been evaluated in accordance with either of the following evaluation procedures:

a. Laboratory and Field Evaluation

Each make, model and size of assembly shall successfully complete the Laboratory and Field Evaluation phases of the Foundation for Cross Connection Control and Hydraulic Research (FCCC&HR) approval program. Upon completion of the evaluation, the manufacturer shall submit a copy of the Certificate of Approval issued by the FCCC&HR.

b. Laboratory Evaluation Only

Each make, model and size of assembly shall undergo a laboratory evaluation by a qualified independent testing laboratory and shall comply with the latest editions of each of the following standards, as applicable:

- FCCC&HR Manual of Cross-Connection Control, Section 10 - Specifications of Backflow Prevention Assemblies.
- American Society of Sanitary Engineering (ASSE) Standards:
  - i. 1013 - Reduced Pressure Principle Backflow Preventer
  - ii. 1015 - Double Check Backflow Prevention Assembly
  - iii. 1047 - Reduced Pressure Detector Assembly Backflow Preventer
  - iv. 1048 - Double Check Detector Assembly Backflow Preventer
- American Water Works Association (AWWA) Standards:
  - i. C510 - Double Check Valve Backflow Prevention Assembly
  - ii. C511 - Reduced Pressure Principle Backflow Prevention Assembly

Upon completion of the evaluation, the manufacturer shall submit copies of the Laboratory Evaluation Report, ASSE Certificate of Authorization and AWWA Certificate of Compliance.

## ENVIRONMENTAL HEALTH MANUAL

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In addition to the requirements of 1a or 1b above, the manufacturer shall submit copies of the sales literature and installation/maintenance literature for each model and size assembly. Sample or cutaway units may also be requested for small diameter assemblies.

All information shall be submitted to the following address:

New York State Department of Health  
Bureau of Water Supply Protection - Design Section  
Flanigan Square  
547 River Street, 4<sup>th</sup> Floor  
Troy, NY 12180-2216  
(518) 402-7676

2. All approved assemblies must include resilient seated, full-flow shut off valves integral to the assembly. Unless otherwise approved by the BWSP, these shut off valves shall be mounted directly to the assembly and shall be supplied by the assembly manufacturer.
3. All approved assemblies are designed for horizontal installation. Certain assemblies on this list are also specifically designed with provisions for vertical inlet/outlet piping in accordance with the manufacturers recommendations.

To be approved for vertical installation, where vertical refers to the device orientation, the assembly must undergo testing in a vertical position in accordance with the requirements of 1a or 1b above. Those assemblies that are approved for vertical installation are appropriately designated on the attached list.

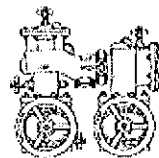
4. The BWSP maintains and periodically updates the list of Approved Backflow Prevention Assemblies. Pages 4-11 reflect currently approved assemblies as of the date of printing. This list supersedes all previous approvals.
5. Previously approved assemblies that are out of production or for which only spare parts are available may not appear on this list. Where such assemblies are currently installed, however, they may remain in service provided that they are appropriate for the degree of hazard. When these assemblies demonstrate repeated test failures, require frequent maintenance or if spare parts cannot be readily obtained, they must be replaced by a currently approved assembly.
6. The BWSP reserves the right to remove from the list any assembly that demonstrates deficient or unsatisfactory operation.

# ENVIRONMENTAL HEALTH MANUAL

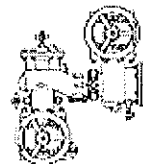
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7. The following is a partial list of typical manufacturers abbreviations that may appear with the approved model/series designation:

- AG, AGD, AGF - air gap, drain, fitting
- B - full port, resilient seated ball valves
- BB - bronze body
- BF - butterfly valves
- EL - vent elbow
- FAE - flanged adapter ends
- FDA - FDA epoxy coating
- FS - flanged strainer
- FSC - FDA epoxy coated flanged strainer
- HW - hot water unit with stainless steel check valves
- M - manifold, modification
- NRS - non-rising stem shutoffs
- OS&Y - outside stem and yoke shutoffs
- QT - quarter turn resilient seated ball valves
- R, RW - resilient seated or resilient wedge shutoffs
- S - strainer
- SS - stainless steel
- U - union connections
- V - approved for vertical installation in accordance with manufacturers instructions
- XL - high temperature service with removable plastic check seats
- N-Shape - See diagram below for an example (please note that this diagram is not intended to represent any specific manufacturer or device)



- Z-Shape - See diagram below for an example (please note that this diagram is not intended to represent any specific manufacturer or device)



The BWSP should be contacted with any questions regarding this list.

## ENVIRONMENTAL HEALTH MANUAL

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### REDUCED PRESSURE PRINCIPLE ASSEMBLIES

<u>Company</u>	<u>Model/Series</u>	<u>Size (In Inches)</u>
AMES	4000-RP	4.0, 6.0, 8.0, 10.0
	4000 SS	0.75, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 6.0
	4000B	0.5, 0.75, 1.0, 1.25, 1.5, 2.0
	4000BM2	1.0
	Colt 400	2.5, 3.0, 4.0
	Maxim 400	2.5, 3.0
	Colt 400N	2.5 (↑↓o), 3.0 (↑↓o), 4.0 (↑↓o)
	Colt 400Z	2.5 (↑↑o), 3.0 (↑↑o), 4.0 (↑↑o)
	Maxim 400N	2.5 (↑↓o), 3.0 (↑↓o)
	Maxim 400Z	2.5 (↑↑o), 3.0 (↑↑o)
BUCKNER	24000	0.75, 1.0, 1.25, 1.5, 2.0
CLA-VAL	RP-2	0.75, 1.0, 1.25, 1.5
	RP-4	2.0, 2.5, 3.0, 4.0, 6.0, 8.0, 10.0
	RP4V	4.0
	RP6LW	0.75, 1.0, 1.25, 1.5, 2.0
	RP6VW	0.75, 1.0, 1.5, 2.0
	RP7L (W/Y)	2.5, 3.0, 4.0, 6.0, 8.0, 10.0
	RP8L (W/Y)	2.0, 3.0, 4.0, 6.0, 8.0, 10.0
	RP8N (W/Y) - N Shape	2.5, 3.0, 4.0, 6.0, 8.0, 10.0
	RP8V (W/Y) - Z Shape	2.5, 3.0, 4.0, 6.0, 8.0, 10.0
CONBRACO	40-200	0.25, 0.375, 0.5, 0.75, 1.0, 1.25, 1.5, 2.0, 2.5, 3.0, 4.0, 6.0, 8.0, 10.0
	40-200-A2S	0.75, 1.0
FEBCO	825Y	0.75, 1.0, 1.25, 1.5, 2.0
	825YA	0.75, 1.0, 1.5, 2.0
	825YD	2.5, 3.0, 4.0, 6.0, 8.0, 10.0
	845	0.75, 1.0
	860	0.5, 0.75, 1.0, 1.25, 1.5, 2.0, 2.5, 3.0, 4.0, 6.0, 8.0
	880 - N Shape	2.5, 3.0, 4.0, 6.0, 8.0, 10.0
	880V - Z Shape	2.5, 3.0, 4.0, 6.0, 8.0, 10.0

NOTE: All assemblies are approved for horizontal installation. The following symbols denote devices which are also approved for vertical installation (where vertical refers to the orientation of the device rotated 90 degrees (up or down) from the horizontal) or with vertical inlet/outlet piping:

- |                           |  |
|---------------------------|--|
| ↑ - vertical up only      | ↑↓o - vertical up inlet and vertical down outlet |
| ↓ - vertical down only    | ↑↑o - vertical up inlet and vertical up outlet   |
| ↑↓ - vertical up and down |  |

## ENVIRONMENTAL HEALTH MANUAL

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FLOMATIC	RPZ IIE RPZE RPZ RPZII	0.5, 0.75 0.75, 1.0, 1.5, 2.0 0.75, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 6.0, 8.0 0.5, 0.75
HERSEY/GRINNELL (BEECO)	FRP-2 6CM	0.75, 1.0, 1.25, 1.5, 2.0 2.5, 3.0, 4.0, 6.0, 8.0, 10.0
ORION WATTS	BRP 009 009QT U009A U009AQT 909  909QT 909M1QT 990 994 957 995QT 957N 957Z U009M2AQT 009M2QT 009M3QT	0.75, 1.0, 1.5, 2.0, 3.0, 4.0 0.5, 0.75, 1.0, 1.25, 1.5, 2.0, 2.5, 3.0 0.25, 0.375, 0.5 0.75, 1.0, 1.5, 2.0 0.75 0.75, 1.0, 1.25, 1.5, 2.0, 2.5, 3.0, 4.0, 6.0, 8.0, 10.0 0.75 (↑), 1.0 (↑) 1.25, 1.5, 2.0 4.0, 6.0, 8.0 2.5, 3.0, 4.0, 6.0 2.5, 3.0, 4.0 0.5, 0.75, 1.0, 1.25, 1.5 2.5(↑i↓o), 3.0(↑i↓o), 4.0(↑i↓o) 2.5(↑i↑o), 3.0(↑i↑o), 4.0(↑i↑o) 1.0, 1.5, 2.0 1.0, 1.25, 1.5, 2.0 0.75
WILKINS	975XL 975  975XLU 975XLMS 975MS 975BMS 975XLBMS 975XLSE  975XLSE	0.25, 0.375, 0.5, 0.75, 1.0, 1.25, 1.5, 2.0 0.75, 1.0, 1.25, 1.5, 2.0, 2.5, 3.0, 4.0, 6.0, 8.0, 10.0  0.75, 1.0, 1.5, 2.0 0.75, 1.0, 1.25, 1.5, 2.0 2.5, 3.0, 4.0, 6.0, 8.0, 10.0 2.5, 3.0, 4.0, 6.0, 8.0, 10.0 0.75, 1.0, 1.25, 1.5, 2.0 0.75 (↑i↓o), 1.0 (↑i↓o), 1.25 (↑i↓o), 1.5 (↑i↓o), 2.0 (↑i↓o) 0.75 (↑i↑o), 1.0 (↑i↑o), 1.25 (↑i↑o), 1.5 (↑i↑o), 2.0 (↑i↑o)

NOTE: All assemblies are approved for horizontal installation. The following symbols denote devices which are also approved for vertical installation (where vertical refers to the orientation of the device rotated 90 degrees (up or down) from the horizontal) or with vertical inlet/outlet piping:

↑ - vertical up only

↑i↓o - vertical up inlet and vertical down outlet

↓ - vertical down only

↑i↑o - vertical up inlet and vertical up outlet

↑↓ - vertical up and down



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WILKINS (cont.)	975XLSEU	0.75 (↑i↑o), 1.0 (↑i↑o), 1.25 (↑i↑o), 1.5 (↑i↑o), 2.0 (↑i↑o)
	375	2.5, 3.0, 4.0, 6.0, 8.0
	375A	4.0, 6.0, 8.0
	375DA	2.5, 3.0
	475	2.5 (↑i↓o), 3.0 (↑i↓o), 4.0 (↑i↓o), 6.0 (↑i↓o), 8.0 (↑i↓o)
	475V	2.5 (↑i↑o), 3.0 (↑i↑o), 4.0 (↑i↑o), 6.0 (↑i↑o), 8.0 (↑i↑o)
	975XLV	0.75 (↑i↑o), 1.0 (↑i↑o)
	975XLV	0.75 (↑i↓o), 1.0 (↑i↓o),

NOTE: All assemblies are approved for horizontal installation. The following symbols denote devices which are also approved for vertical installation (where vertical refers to the orientation of the device rotated 90 degrees (up or down) from the horizontal) or with vertical inlet/outlet piping:

↑ - vertical up only  
 ↓ - vertical down only  
 ↑↓ - vertical up and down

↑i↓o - vertical up inlet and vertical down outlet  
 ↑i↑o - vertical up inlet and vertical up outlet

## ENVIRONMENTAL HEALTH MANUAL

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### DOUBLE CHECK VALVE ASSEMBLIES

<u>Company</u>	<u>Model/Series</u>	<u>Size (In Inches)</u>	
AMES	2000-DCA	4.0, 6.0, 8.0, 10.0	
	2000 SE	2.5, 6.0 (↑), 8.0 (↑)	
	2000 SS	0.75 (↑), 1.0 (↑) 1.5, 2.0, 2.5 (↑), 3.0 (↑), 4.0(↑), 6.0 (↑), 8.0, 10.0	
	2000B	0.5 (↑), 0.75 (↑) 1.0, 1.25 (↑), 1.5 (↑), 2.0 (↑)	
	2000CIV	4.0, 6.0, 8.0, 10.0	
	2001 SS	3.0 (↑), 4.0 (↑)	
	Colt 200a	2.5 (↑), 3.0 (↑), 4.0 (↑)	
	Maxim 200a	2.5 (↑), 3.0 (↑)	
	Colt 200Na	2.5(↑i↓o), 3.0(↑i↓o), 4.0(↑i↓o)	
	Maxim 200Na	2.5(↑i↓o), 3.0(↑i↓o)	
	BUCKNER CLA-VAL	24100	0.75, 1.0, 1.25, 1.5, 2.0
		D-2	0.75, 1.0, 1.25, 1.5
		D-4	2.0, 2.5, 3.0, 4.0, 6.0, 8.0, 10.0
		DC6LW	0.75 (↑), 1.0, 1.5, 2.0
DC7L (W/Y)		2.5, 3.0 (↑), 4.0 (↑), 6.0 (↑), 8.0, 10.0	
DC8L (W/Y)		4.0 (↑), 6.0 (↑), 8.0 (↑)	
DC8N (W/Y) - N Shape		2.5, 3.0, 4.0 (↑), 6.0 (↑), 8.0	
DC8V (W/Y) - Z Shape		2.5, 3.0, 4.0, 6.0, 8.0	
CONBRACO	40-100	0.75, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 6.0, 8.0, 10.0	
	DC (a/k/a 4S-100)	0.5 (↑), 2.5 (↑), 3.0 (↑), 4.0 (↑), 6.0(↑), 8.0 (↑),10.0 (↑)	
	40-106-A2	1.25	
	40-106-997	1.25	
	FEBCO	805Y	0.75 (↑), 1.0, 1.5, 2.0
805YD		2.5, 3.0 (↑), 4.0 (↑), 6.0 (↑), 8.0, 10.0	
850		0.5 (↑), 0.75 (↑), 1.0 (↑), 1.25 (↑), 1.5 (↑), 2.0 (↑), 2.5 (↑), 3.0 (↑), 4.0 (↑), 6.0 (↑),	
851		8.0 (↑)	
870		4.0 (↑), 6.0 (↑), 8.0	
870V		4.0 (↑), 6.0 (↑), 8.0 (↑)	
870 - N Shape		2.5, 3.0, 10.0	
870V - Z Shape		2.5, 3.0	

NOTE: All assemblies are approved for horizontal installation. The following symbols denote devices which are also approved for vertical installation (where vertical refers to the orientation of the device rotated 90 degrees (up or down) from the horizontal) or with vertical inlet/outlet piping:

- |                            |   |
|----------------------------|---|
| ↑ - vertical up only       | ↑i↓o - vertical up inlet and vertical down outlet |
| ↓ - vertical down only     | ↑i↑o - vertical up inlet and vertical up outlet   |
| ↑ ↓ - vertical up and down |   |



## ENVIRONMENTAL HEALTH MANUAL

NEW YORK STATE DEPARTMENT OF HEALTH  OFFICE OF PUBLIC HEALTH CENTER FOR ENVIRONMENTAL HEALTH  TECHNICAL REFERENCE	ITEM NO: PWS-14 DATE: 9/1/04 Bureau of Water Supply Protection  SUBJECT: Approved Backflow Prevention Assemblies  Page 9 of 11
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### DOUBLE CHECK DETECTOR ASSEMBLIES

<u>Company</u>	<u>Model/Series</u>	<u>Size (In Inches)</u>
AMES	3000 DCDA	4.0, 6.0, 8.0, 10.0
	3000 SE	2.5, 6.0(↑), 8.0(↑)
	3000 SS	2.5 (↑),, 3.0 (↑), 4.0 (↑), 6.0 (↑), 8.0, 10.0
	3000B	2.0
	3000CIV	4.0 (↑), 6.0 (↑), 8.0 (↑), 10.0 (↑)
	3001 SS	3.0 (↑), 4.0 (↑)
CLA-VAL	DD7LY	3.0, 4.0 (↑), 6.0 (↑), 8.0, 10.0
	DD8LY	4.0 (↑), 6.0 (↑), 8.0 (↑)
	DD8NY - N Shape	4.0 (↑), 6.0 (↑), 8.0
	DD8VY - Z Shape	4.0, 6.0, 8.0
CONBRACO	40-600	3.0, 4.0, 6.0, 8.0, 10.0
	DCDA (a/k/a 4S-600)	2.5 (↑), 3.0 (↑), 4.0 (↑), 6.0 (↑), 8.0(↑), 10.0(↑)
FEBCO	806YD	3.0, 4.0 (↑), 6.0 (↑), 8.0, 10.0
	856	2.5, 3.0, 4.0 (↑), 6.0 (↑), 8.0 (↑)
	876	2.5, 3.0, 4.0 (↑), 6.0 (↑), 8.0, 10.0
	876V	2.5, 3.0, 4.0 (↑), 6.0 (↑), 8.0 (↑)
HERSEY/GRINNELL (BEECO)	DDC-II	3.0, 4.0, 6.0, 8.0, 10.0
WATTS	007 DCDA	2.0 (↑), 2.5 (↑), 3.0
	709 DCDA	3.0 (↑ ↓), 4.0 (↑ ↓), 6.0 (↑), 8.0 (↑), 10.0 (↑)
	774 DCDA	3.0, 4.0 (↑), 6.0 (↑), 8.0, 10.0
	774 XDCDA	6.0 (↑), 8.0 (↑)
	775 DCDA	3.0 (↑), 4.0 (↑)
	757a - DCDA - BF	2.5 (↑), 3.0 (↑), 4.0 (↑)
	757a - DCDA - GV	2.5 (↑), 3.0 (↑), 4.0 (↑)

NOTE: All assemblies are approved for horizontal installation. The following symbols denote devices which are also approved for vertical installation (where vertical refers to the orientation of the device rotated 90 degrees (up or down) from the horizontal) or with vertical inlet/outlet piping:

↑ - vertical up only  
 ↓ - vertical down only  
 ↑ ↓ - vertical up and down

↑↓o - vertical up inlet and vertical down outlet  
 ↑↑o - vertical up inlet and vertical up outlet

## ENVIRONMENTAL HEALTH MANUAL

NEW YORK STATE DEPARTMENT OF HEALTH OFFICE OF PUBLIC HEALTH CENTER FOR ENVIRONMENTAL HEALTH  TECHNICAL REFERENCE	ITEM NO: PWS-14 DATE: 9/1/04 Bureau of Water Supply Protection
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WILKINS	950DA	2.5 (↑), 3.0 (↑), 4.0 (↑), 6.0 (↑), 8.0 (↑), 10.0 (↑)
	350DA	4.0 (↑), 6.0 (↑)
	350ADA	4.0 (↑), 6.0 (↑), 8.0 (↑)
	450DA	4.0 (↑↓o), 6.0 (↑↓o)

NOTE: All assemblies are approved for horizontal installation. The following symbols denote devices which are also approved for vertical installation (where vertical refers to the orientation of the device rotated 90 degrees (up or down) from the horizontal) or with vertical inlet/outlet piping:

↑ - vertical up only  
 ↓ - vertical down only  
 ↑ ↓ - vertical up and down

↑i↓o - vertical up inlet and vertical down outlet  
 ↑i↑o - vertical up inlet and vertical up outlet

## ENVIRONMENTAL HEALTH MANUAL

NEW YORK STATE DEPARTMENT OF HEALTH  OFFICE OF PUBLIC HEALTH CENTER FOR ENVIRONMENTAL HEALTH  TECHNICAL REFERENCE	ITEM NO: PWS-14 DATE: 9/1/04 Bureau of Water Supply Protection  SUBJECT: Approved Backflow Prevention Assemblies Page 11 of 11
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### REDUCED PRESSURE DETECTOR ASSEMBLIES

<u>Company</u>	<u>Model/Series</u>	<u>Size (In Inches)</u>
AMES	5000 CIV 5000 RPDA	2.5, 3.0, 4.0, 6.0, 8.0, 10.0 4.0, 6.0, 8.0, 10.0
CLA-VAL	18 RD7LY	10.0 2.5, 3.0, 4.0, 6.0, 8.0, 10.0
CONBRACO	40-700	3.0, 4.0, 6.0, 8.0, 10.0
FEBCO	826YD	2.5, 3.0, 4.0, 6.0, 8.0, 10.0
HERSEY/GRINNELL (BEECO)	6CM-RPDA	4.0, 6.0, 8.0, 10.0
WATTS	909 RPDA	2.5, 3.0, 4.0, 6.0, 8.0, 10.0
WILKINS	375DA 375ADA 475DA 475DAV 975DA 975MS	4.0, 6.0, 8.0 4.0, 6.0, 8.0 4.0 (↑↓o), 6.0 (↑↓o) 4.0 (↑↑o), 8.0 (↑↑o) 2.5, 3.0, 4.0, 6.0, 8.0, 10.0 8.0, 10.0

NOTE: All assemblies are approved for horizontal installation. The following symbols denote devices which are also approved for vertical installation (where vertical refers to the orientation of the device rotated 90 degrees (up or down) from the horizontal) or with vertical inlet/outlet piping:

↑ - vertical up only  
 ↓ - vertical down only  
 ↑ ↓ - vertical up and down

↑↓o - vertical up inlet and vertical down outlet  
 ↑↑o - vertical up inlet and vertical up outlet

**NEW YORK STATE REGISTERED  
PROFESSIONAL ENGINEERS AND ARCHITECTS**

The following is a list of Professional Engineers and Architects practicing in this area that are familiar with cross connection control devices. This list is provided for your convenience only. You may utilize any Professional Engineer or Registered Architect licensed by the State of New York. This listing is presented in alphabetical order and should not be construed as an endorsement of any of these engineers or architects.

John Annunziata, P.E. 24 Chesley Road White Plains, NY 10605 (914) 949-0270	Ralph Mastromonaco, P.E. 13 Dove Court Croton-on-Hudson, NY 10520 (914) 271-4762	Dolph Rotfeld Engineering 200 White Plains Road Tarrytown, NY 10591 (914) 631-8600
John Delano, P.E. Badey & Watson 3063 Route 9 Cold Spring, NY 10516 (845) 265-9217	George W. McNally, P.E. 107 Shedd Place Buchanan, NY 10511 (914) 736-5535	P. Anthony Sarubbi, P.E. 100 Stevens Avenue Mt. Vernon, NY 10550 (914) 664-6677
John Carey, R.A. 415 Bedford Road Pleasantville, NY 10570 (914) 769-1111	R. Joseph Morgan, P.E. 35 Blossom Terrace Larchmont, NY 10538 (914) 834-2507	Benedict Salanitro, P.E. 517 Linden Street Mamaroneck, NY 10543 (914) 381-8055
Edward Cassidy, P.E. P.O. Box 728 Croton Falls, NY 10519 (845) 276-3844	William Morgenroth, P.E. 24 Cypress Point Drive Purchase, NY 10577 (914) 428-8592	Site Design Consultants Joe Riina 251-F Underhill Avenue Yorktown Heights, NY 10598 (914) 962-4488
Dan Coppelman, P.E. 113 Smith Avenue Mt. Kisco, NY 10549 (914) 241-2235	Rudolph C. Petruccelli, P.E. 392 Columbus Avenue Valhalla, NY 10595 (914) 948-3629	Michael Sterlacci, P.E. 12 Marshall Place Ossining, NY 10562 (914) 762-1252
James Hahn Engineering Millbrook Office Centre Rt. 22 & Milltown Road Brewster, NY 10509 (845) 279-2220	Edwin Polese, P.E. P. O. Box 91 South Salem, NY 10590-0091 (914) 763-3658	Werner E. Tietjen, P.E. 68 Purchase Street Rye, NY 10580 (914) 967-9506
John Hock, P.E. 5 South Van Dyke Avenue Suffern, NY 10901 (845) 357-2805	Thomas Quartuccio, P.E. 1 Lounsbury Road Croton-on-Hudson, NY 10520 (914) 271-3851	Samuel Vierra, R.A. 15 Neperan Road Tarrytown, NY 10591 (914) 524-9054

## Certified Backflow Testers - Westchester County

In New York State, individuals who test backflow prevention devices for the purpose of protecting the public water supply are required to hold a valid certification issued pursuant to 10 NYCRR Section 5-1.31. Below is a current list of New York State certified backflow prevention device testers. For more information on contacting any of these individuals, please contact your County Health Department or State District Office, or email the Bureau of Water Supply Protection.

- View the list of counties.
- View all certified backflow testers

City	Name	Certification Number	Expiration
Ardsley	James A. Macri	456	3/31/2010
Bedford Hills	Christopher R. Spano	4990	5/31/2011
Bedford Hills	Robert M. Spano	2674	11/30/2012
Briarcliff Manor	Philip A. Rainaldi	1048	3/31/2012
Bronx	Anthony L. Schiavo	4157	7/31/2010
Bronx	Harry A. Fontana	2886	6/30/2012
Bronx	John B. Mulligan	6353	3/31/2010
Bronx	Maurizio Taormina	7019	2/28/2012
Bronx	Robert Sfarra	5213	3/31/2012
Bronxville	Anthony R. Laporta	6897	10/31/2011
Bronxville	Roland Laporta	8395	10/31/2012
Buchanan	George W. McNally	4194	6/30/2012
Cold Spring	William S. Dalton	6367	5/31/2010
Cortlandt Manor	Jeffrey S. Wynans	4397	11/30/2011
Cortlandt Manor	Joe Forgione	5650	9/30/2010
Cortlandt Manor	John Fay	7415	4/30/2010
Cortlandt Manor	Michael T. Galasso	2737	12/31/2009
Cortlandt Manor	Patrick T. Brown	7185	6/30/2012
Cortlandt Manor	Vincent S. Corrente	6270	12/31/2009
Crompond	David J. Rotundo	772	6/30/2011
Croton-on-Hudson	John M. Donnelly	8369	8/31/2012
Croton-On-Hudson	Randall G. Herlihy	7648	12/31/2010
Dobbs Ferry	Edmond F. Manley	7290	12/31/2009
Dobbs Ferry	Edward L. Marji	4608	5/31/2012
Eastchester	James A. Romagnoli	2145	2/28/2012
Elmsford	Albert A. Martinello, Jr.	3372	1/31/2011
Elmsford	Angela M. Pepe	8255	5/31/2012
Granite Springs	Steven M. Horvath	6032	10/31/2012
Harpersfiled	John H. Keating, Jr.	4318	6/30/2012
Harrison	George C. Fekete	2140	3/31/2010
Harrison	John S. Quadagno	4003	1/31/2012
Harrison	Robert C. Beckett	8039	11/30/2011
Hawthorne	James P. Sementa	8168	2/28/2012
Irvington	Joseph Clarke	4537	1/31/2012



Mahopac	Christopher DeGasperi	8315	7/31/2012
Mamaroneck	Steve P. Pirzinger	8038	11/30/2011
Mamaroneck	Terrance P. O' Neill	5209	3/31/2012
Mamaroneck	Vincent Marano	6621	5/31/2011
Montrose	Michael E. Pidgeon	4610	5/31/2012
Mount Kisco	Thomas J. Farmer	3979	11/30/2011
Mount Vernon	Vincent Roblesi	8172	2/28/2012
Mt. Kisco	James Dolan	5459	1/31/2010
Mt. Kisco	John R. Hobby	5436	12/31/2012
Mt. Vernon	Garth Beckford	8368	8/31/2012
Mt. Vernon	John D. Royce	2915	6/30/2010
New Rochelle	Barnett M. Troodler	7225	7/31/2012
New Rochelle	Christopher M. Bonanno	4519	12/31/2011
New Rochelle	Giuseppe Catalano	8082	12/31/2011
New Rochelle	Joseph V. Bonanno	3955	12/31/2011
New Rochelle	Patrick P. Calabro	7990	10/31/2011
New Rochelle	Stephen Mauriello	5868	6/30/2011
New Rochelle	Steven A. Salierno	6193	10/31/2012
New York	Trifone N. Demarinis	6404	4/30/2010
New York City	Luke M. Butterfield	2080	11/30/2011
Ossining	Augustine G. Donovan, Jr.	3686	6/30/2011
Ossining	Dominick J. Savino	3919	11/30/2011
Ossining	Garfield G. McGregor	5357	10/31/2012
Ossining	George Bassolino,III	1812	3/31/2012
Ossining	Gregory J. Indusi	5181	7/31/2012
Ossining	Jaime M. Faiella	7655	12/31/2010
Ossining	Louis Caraisco	3914	11/30/2011
Peekskill	James R. Olsen	5370	3/31/2010
Peekskill	Michael J. Alfano	882	12/31/2010
Peekskill	Yamil D. Castillo	7373	3/31/2010
Pelham	John P. Pfeiffer	1350	6/30/2011
Pelham Manor	Nicholas Milo	8287	6/30/2012
Pleasantville	Emile H. Munier, III	6276	12/31/2012
Port Chester	Dominic L. Bencivenga	6377	4/30/2010
Port Chester	Leo N. Dragani	4189	6/30/2012
Poughkeepsie	Kurt R. Mansfield	6368	8/31/2010
Putnam	John F. Alexander	4290	7/31/2012
Rye	Howard L. Chumsky	2680	11/30/2012
Rye	Michael Mastrogiacomo	5287	3/31/2011
Rye Brook	Edward J. Lipowiecki	6339	2/28/2010
Scarsdale	Joseph V. Bonanno	8169	2/28/2012
Shrub Oak	Thomas A. Rubino	6247	10/31/2012
Sleepy Hollow	Gary E. McLean	3515	11/30/2011
Suffern	John G. Hock	2220	3/31/2012
Thornwood	Sean M. Kearns	7291	12/31/2009
Thornwood	Steve C. Buglione	3695	6/30/2011
Tuckahoe			

	James Troncone	3947	12/31/2011
Tuckahoe	Peter G. Moeller	6881	10/31/2011
Tuckahoe	Philip V. Loria	5183	1/31/2012
Valhalla	Arthur O. Klock	2973	4/30/2010
Valhalla	Bevin E. Carsten	4520	2/28/2010
Valhalla	Dino Troiani	3920	6/30/2012
Valhalla	Hans D. Krauter	2663	11/30/2012
Walden	Arthur D. DeRonda	6837	8/31/2011
Wappinger Falls	Dominic J. Bagala	3339	1/31/2011
West Harrison	Anthony Scavone	4202	6/30/2012
West Harrison	Anthony Scavone	7497	5/31/2010
West Harrison	Lawrence J. Dema	8037	11/30/2011
White Plains	Johnny Green	7825	5/31/2011
White Plains	Louis Amadio	201	7/31/2011
White Plains	Lynne D. Biddle	8430	10/31/2012
White Plains	Percy H. Johnson	6822	7/31/2011
White Plains	Sundan Seward	7224	7/31/2012
Yonkers	Antonio Calvi	3564	5/31/2011
Yonkers	Antonio Pereira	1571	10/31/2011
Yonkers	David P. Antenucci	2977	5/31/2010
Yonkers	Domenic J. Bucci	8099	12/31/2011
Yonkers	James T. Blanchard	4183	6/30/2012
Yonkers	Jeffrey J. Pagano	1233	10/31/2012
Yonkers	Joseph H. Caverly	926	10/31/2011
Yonkers	Kevin R. Kushnir	5917	10/31/2011
Yonkers	Richard F. Carbonaro	1035	6/30/2012
Yonkers	Ruthven G. Hunte	5886	6/30/2011
Yonkers	Salvatore J. Gruppuso	785	8/31/2011
Yorktown Heights	Thomas Pellicone	7884	5/31/2011
Yorktown Hts.	Joe V. DeFeo	7829	5/31/2011

Questions or comments: [h2ocert@health.state.ny.us](mailto:h2ocert@health.state.ny.us)  
Revised: November 2009