One-Day Tester Recertification
Schedule

8:00-10:00 AM

- Review cross connection requirements as outlined in OAR 333-061-0070
- Review cross connection hazards and methods of protection
- Review installation standards for backflow assemblies
- Review assembly approved requirements
- Review safety for testers and OSHA regulations

10:00-10:15 Break

10:15-12:00
Individual evaluation and retention of pertinent backflow criteria necessary to be recertified in accordance with OAR 333. Standard practices, State and OSHA regulations, safety and device installation are all included in this evaluation.

12:00-12:30 Lunch

12:30-2:45
Validation of competency on:

- Reduced Pressure Backflow Assembly (RPBA)
- Double Check Valve Assembly (DCVA)

The competency of individual licensed backflow device tester is evaluated. This first evaluation is on both the RPBA and DCVA in accordance with AWWA procedures and in conformance with the Foundation of Cross-Connection Control and Hydraulic Research (FCCHR) device(s) approval format.

2:45-3:00 Break

3:00-4:00
Validation of competency on:

- Pressure Vacuum Breaker Assembly (PVBA)
- Spill-Resistance Vacuum Breaker Assembly (SVBA)

The competency of individual licensed backflow device tester is evaluated. This evaluation is on both the PVBA and SVBA in accordance with AWWA procedures and in conformance with the Foundation of Cross-Connection Control and Hydraulic Research (FCCHR) device(s) approval format.

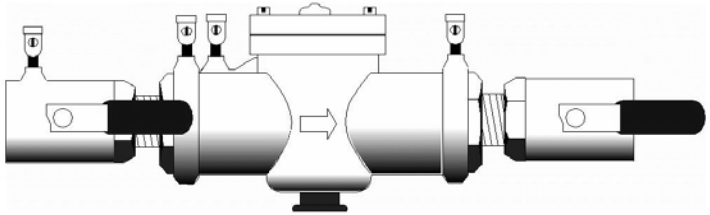
Backflow Tester Re-certification
1 day Renewal Course
(OAR 333-061-0074)

Oregon Backflow Training OBT

"The First State of Oregon Recognized Backflow Training Program with over 27 years of Superior training!!"

503-594-3345

http://www.clackamas.edu/WET/Backflow/



Water & Environmental Technology
CLACKAMAS COMMUNITY COLLEGE

Backflow Tester Re-certification
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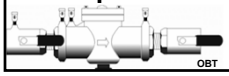


Water & Environmental Technology CLACKAMAS COMMUNITY COLLEGE

Objectives

1. Understand Requirements for Completion of Renewal Process

2. Understand hands on (USC 10th edition CCM) and written in new OARs (333-061-0070 through 333-061-0073) for function/test procedure/installation of backflow prevention assemblies.

3.0 Understand the role of being a safe tester in the State of Oregon

Oregon Administrative Rules (OAR)

Tester Certification Renewal (333-061-0071 to 333-061-0073)

A. 0.5 CEU of Training
- -Backflow Assembly Installation/Operation
- -Hands on demonstration of test procedures
  **USC 10th EDITION*
- -Diagnosis of two failure conditions for each assembly
- -Review Backflow Tester Safety Issues

B. 75% score on 33 question exam

C. 90% score on hands on exam

Oregon Administrative Rules (OAR)

- Proof of yearly test gauge calibration will be required for certification renewal.
- All test gauges shall be tested for accuracy and calibrated once every twelve months, in the same month every year, as determined by the Backflow Assembly Tester
- Differential Pressure Gauge!
- "You renew your license every two years but you gauge every year"

A differential pressure gauge is used to test the following

Assemblies?

1. RPBA's
2. DCVA's
3. PVBA's
4. SRVBA's
4. All of the above

Verification of gauge accuracy is good for:

1. 12 months, assuming you haven't dropped it or mishandled it. If so recalibrate immediately
2. The life of the gauge
3. Two years
4. Gauges in Oregon do not need to be calibrated

NIIO

- Notify-safety, liability
- Identify- liability
- Inspect- liability
- Observe- safety hazard, facility hazard, walk the line, liability

ROLE OF A TESTER?

A. When do you test a assembly (33-061-0070)?

-Annually, at time of installation, after repair, or relocation, if water purveyors insists, after backflow incident

B. When do you repair a assembly?

BE CAREFUL!!! TALK WITH WATER PURVEYOR!!

-REPAIR IS HANDLED BY: Journeyman plumber **or**

-Install and repair can be handled by a landscape construction professional that has an irrigation plus backflow license and the individual responsible for repair must have a current DHS tester certification card (M. Snyder, 4/7/09).

-Install and repair can also be handled by a landscape construction professional with an ALL PHASE plus backflow license (note: the individual responsible for repair must have a current DHS tester card) (M. Snyder, 4/7/09).

-Landscape construction professional must either own or be employed by a licensed landscape contracting business (contractor) (M. Snyder, 4/7/09) .

ROLE OF A TESTER?

WATER PURVEYOR= GOOD PAPERWORK!

C. Enforcement of Cross Connection Regulations = Water Supplier

E. How can a tester lose his/her license (OAR 333-061-0072)?

-Falsifying a report,

-False information,

-Lost license in another state,

-Failed to properly test an assembly,

-Let someone test using their card

-No longer have a valid Construction Contractor's Board registration or a Landscape Contractor's Board license(ORS-448.279)

-Using a non calibrated gauge

What are the primary responsibilities of the backflow assembly tester?

1. Only certified individuals can test backflow assemblies
2. Fill out and complete three copies of a test report and turn one into water purveyor within 10 days (OAR).
3. Repairs may now be handled by journeyman plumbers or a licensed landscape professional with a backflow license
4. All of the above

As a tester you encounter a leaky #1 and leaky #2 check of an RP Assembly on a high hazard line (arsenic). You should?

1. Repair the assembly within 15 days
2. Repair the assembly within 30 days
3. Repair the assembly before its next annual test cycle
4. Talk with the purveyor (document the conversation in writing on test report) and determine what their ordinance states.

According to OAR (333-061-007); What edition of the USC Foundation For Cross Connection Control Manual is used for hands on testing procedures ?

1. 5th, 6th, 7th or 8th edition
2. 7th edition
3. 9th edition
4. 10th edition

Who is responsible for inspecting and eliminating cross connections in a community water system at the point of service (OARs pg 24 #1)?

1. Department of Consumer and Business Services, Building Codes Division
2. Local County Health Department.
3. Water Purveyor/suppliers
4. National Fire Protection Association section 13
5. All of the above

How long does a tester have to hand in a CLEAN, NEAT ORGANIZED, tester report to a water purveyor (one copy kept by tester, one copy goes to client, and one copy goes to the purvey)?

1. Within 10 working days
2. After 30 working days
3. After 6 working months
4. After 8 working months

Backflow

Backpressure-

- Elevated Piping
- Potable Water connections to pumps: Discharge side of pump
- Thermal Expansion-Boilers.

Backsiphonage-

- Water main break, Fire Fighters
- Potable Water connections to pumps: Suction side of pump
- Venturi Effect

Backpressure can be caused by elevated piping, the discharge side of a pump and thermal expansion?

1. True
2. False

Backsiphonage can be caused by a water main break, the suction side of a pump, or the Venturi effect?

1. True
2. False

Backflow Assemblies

6. Backflow Preventer- means a assembly, assembly or method to prevent backflow into the potable water system.

7. Approved Backflow Prevention Assembly- means a Reduced Pressure Principle Backflow Prevention Assembly, Reduced Pressure Principle-Detector Backflow Prevention Assembly, Double Check Valve Backflow Prevention Assembly, Double Check-Detector Backflow Prevention Assembly, Pressure Vacuum Breaker Backsiphonage Prevention Assembly, or Spill-Resistant Pressure Vacuum Breaker Backsiphonage Prevention Assembly,

Make, model, orientation, and size listed by DHS

Assemblies listed in the currently approved DHS backflow prevention assemblies list were approved by the University of Southern California, Foundation for Cross-Connection Control and Hydraulic Research

Dukes of Hazard

The degree of hazard dictates what assembly is to be installed.

<u>Low Hazard/pollutant/non-health</u>

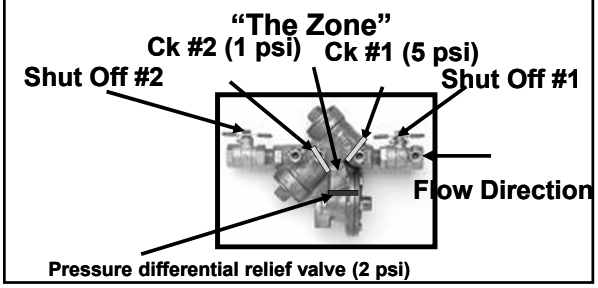
Fire systems (w/out chemical injection), irrigation systems, hose bibs, etc (DHS, pg 30).

<u>High hazard/contaminant/health</u>

•Car wash, mortuary, chemical plants, laboratories, wastewater plants, etc (DHS, pg 29).

Reduced Pressure Backflow Assemblies (RPBA)

<u>Parts and Components</u> Two spring loaded approved check valves separated by a pressure differential relief valve installed between two shutoff valves.



Reduced Pressure Principle Backflow Prevention Assembly (RPBA)

<u>Protection</u>

•non-health (low) hazard or health (high) hazard

<u>Conditions</u>

•backsiphonage or backpressure conditions.

Simplified RP Test 10th edition Procedure

1. NIIO
2. Close ALL Gauge Knobs then Flush Test Cocks (Open TC#4 then 3,2,1, close 1-4)
3. Hook-up Gauge (R2D2, 3G) and Bleed
4. Close #2 Shut-off; shut off bleed from test cocks, look at Gauge "**IS CHECK #1 HOLDING"**
5. Perform Test #1 OF Relief Valve (Record Reading)
6. Bleed Vent Hose; Hook-up Vent Hose and BLEED Gauge (re-establish the zone)
7. Perform Test #2 "**BIG EVENT**" Check #2 (record tight or leak)
8. Re-Establish Zone
9. Read and Record Check #1 (below 5 psi fail assembly)

The purpose of the number one test on an RPB assembly is to:

1. **determine the zone differential pressure drop**
2. **determine the proper operation of the differential pressure relief valve**
3. **determine the proper operation of the number 1 check**
4. **determine the proper operation of the number 2 check**

Which of the following gauge readings indicates failure of the relief valve when testing?

1. **3.8 psid**
2. **1.5 psid**
3. **2.0 psid**
4. **6.0 psid**

According to the 10th edition, which of the following gauge readings indicates failure of the #1 check when testing. If this value is determined during the third test you must fail the assembly!!

1. 5.8 psid
2. 4.5 psid
3. 7.0 psid
4. 6.0 psid

A steady discharge of water from the relief valve of a RPB assembly can be a defect in the second check valve with backpressure backflow occurring, leaky first check, or a broken relief valve—Please hook up the gauge and test assembly?

1. True
2. False

When testing the RPBA a leaking #2 shut-off with flow through the assembly will:

1. Make it difficult to dump/test the relief valve
2. Require a bypass/jumper hose to be used
3. Cause the apparent drop across the #1 check to be inaccurate
4. All of the above

An RPB assembly is constantly discharging from the relief port. What is the proper response?

According to the 10th edition you are to hook up your gauge and perform a test on the assembly.

Determine the problem via proper testing procedures.

OLD WAY OF TROUBLESHOOTING

1. Faulty #2 check w/ backpressure—Close #2 shutoff.
2. Faulty #1 Check-Open test cock #4. (drip go away?)
3. Faulty relief valve (still dripping after #1 and #2 above)

During test one of relief valve the gauge remains high and will not drop when low side needle valve opened to the ¼ turn max?

GAUGE READS HIGH
= YOU HAVE FLOW
—Shutoff valves….

If #2 Shut OFF Leaks-Hook Jumper TC#1 to TC#4
-CREATE CROSS CONNECTION-DANGEROUS!
Get In Get Out!
-Hook up gauge and ASSESS (NOT TEST)
-Relief valve, check #1, check #2

During test one of relief valve the gauge remains high and will not drop?

If #2 Shut OFF Leaks-Hook Jumper TC#1 to TC#4
-CREATE CROSS CONNECTION-DANGEROUS! Use gauge.

1. Exercise shut off valve
2. Close low needle valve
3. Flush hose via TC#1 and then hook up and slowly open TC #4
4. Observe gauge reading, open low side needle valve no more then ¼ turn.
5. Record Relief valve opening point or diagnose RV problems.
6. Close low side needle valve
7. Open low side bleed valve allow gauge to peg close low side bleed valve. If gauge is stabilized record #1 check value and mark #2 check tight.

What happens when you have Back pressure during test 2?

The test gauge reading is observed to go up when the bypass needle valve is opened. Needle on gauge gets hammered upwards.

CLOSE #2 TC, observe readings, gauge stable or drops no backpressure. Gauge goes up BP! Close #4TC and record the #2 check as tight (if RV did not discharge), and use the #1 check apparent value when SO #2 closed and bleed stopped as the value for the #1 check pressure drop

Things to say during a Proctored "Hands On" Exam

If when you Close Shut Off #2, and complete your bleed, Check one "DOES NOT HOLD". What do you do?
-"I cannot complete the test on the assembly"
-Can get Approximate Relief Valve Opening Point

If test #1 fails on the RP assembly do you stop your test procedure?
-No "I CAN KEEP GOING" you can still get good data!

If test #2 of the #2 check fails. Do you need to check it twice?
-HELL YES!!—IT MAYBE DISC COMPRESSION!

If test #2 of the #2 check fails, you can accurately perform a test #3 of the number one check?
-No WAY!--LIABILITY

If check valve number one on a reduced pressure principle backflow prevention assembly is leaking, you can complete tests: #1, #2 and #3 on that assembly ?

1. True
2. False

If the #2 check fails during test #2 on an RP you must check it twice (may have disc compression)!!!!!!!!

1. Reestablish the zone.
2. Leaving the black or vent valve open
3.

1. True
2. False

Can an RPB assembly with a number 2 check that has failed twice (you reestablished the zone for the second test of it) be considered a passable assembly--?

1. yes
2. no

According to the 10th edition, a value of less than 5 psi for (test #3) of the number 1 check on an RPBA requires that you fail the overall assembly?

1. True
2. False

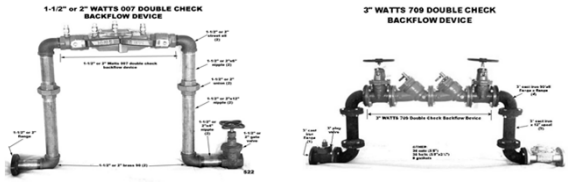
An RPBA must have 12 inches of clearance below the relief valve?

1. True
2. False

A Double Check Valve Backflow Prevention Assembly (DCVBPA)

Definition means an assembly of two independently acting approved check valves, including tightly closing resilient seated shutoff valves attached at each end of the assembly and fitted with properly located resilient seated test cocks. This assembly is designed to protect against a non-health hazard.

Parts and Components Two spring loaded or weighted approved check valves installed between two shutoff valves.



A Double Check Valve Backflow Prevention Assembly (DCVBPA)

Protection

- non-health (low) hazard only!!!

Conditions

- backsiphonage or backpressure conditions.

Simplified DCVA Test Procedure

1. NIIO/Close ALL Gauge Knobs then Flush Test Cocks
2. Sight Tube to TC #3 (Fill)
3. Hook-up Red Hose& Bleed Valve (TC#2) /Bleed Gauge
4. "Is Gauge at level of assembly?",Close #2 Shut-off; Then #1 Shut Off
5. Open TC #3 All the way (Record Check #1 Reading)
6. OPEN SO #1
7. Move Sight Tube to TC #4 (Fill)
8. Hook-up Red Hose & Bleed Valve (TC#3)/Bleed Gauge
9. "Is Gauge at level of assembly?" Close #1 Shut-off.
10. Open TC #4 All the way (Record Check #2 Reading)

OBT: Rule of Thumb for a Double Check Valve Backflow Prevention Assembly (DC) Test

Rule #1

- When you touch any shutoff valve have the gauge at the proper location!

Rule #2

- Before you touch the bleed valve arrangement record a value.

Rule #3

- Water drops down and out of the sight tube, remove the sight tube and take the reading.

During the #1 test on a DCVA, the following conditions occur. What is the proper response?

a. Flow from the #3 test cock sight tube can be adjusted to a slight drip with bleed valve arrangement.
-leaky #1 shutoff

b. Flow from the #3 test cock sight tube cannot be adjusted to a slight drip with bleed valve arrangement .
-Excessive shutoff leaks (maybe shutoff #1 or #2)

c. Flow stops from the bleed valve, but continues from the sight tube. -use that recorded value!!!

d. Water recedes from the #3 test cock sight tube.
-take away the sight tube and lower the gauge to the test cock/centerpoint of assembly level….
shut off #2 is leaking out the backside

What do you do if you are testing a vertical 6" DCVA and the water recedes out the site tube during the #2 test on the second check?

1. Fail the assembly, the #1 s/off is leaking.
2. Use the reading on the gauge as the #2 check value.
3. Follow the water down the tube with the gauge and remove sight tube while lowering the gauge to the centerline of the check.
4. Fail the #2 check.

A DCVA works well against backpressure and backsiphonage and high hazard conditions?

1. True
2. False

A leak in the #1 shut off valve of a DCVA will?

1. Water can be removed with a bleed valve
2. Cause a higher gauge reading
3. Water flows from the sight tube
4. All of the above

You must install a bleed valve arrangement as part of the 10th edition test procedure when testing a double check valve assembly, pressure type vacuum breaker and spill resistant vacuum breaker?

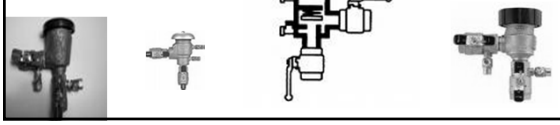
After flushing a PVB put on the bleed valve compensator

1. True
2. False

Pressure Vacuum Breaker (PVB)

Definition- means an assembly consisting of an independently operating, internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. This assembly is to be equipped with properly located resilient seated test cocks and tightly closing resilient seated shutoff valves attached at each end of the assembly. This assembly is designed to protect against a non-health hazard or a health hazard under backsiphonage conditions only.

Parts and Components One spring loaded check valve and an atmospheric vent.



Pressure Vacuum Breaker (PVB)

Protection

•non-health (low) hazard or health (high) hazard

Conditions

•Have absolutely no means of imposing backpressure by a pump or other means. The downstream side of the pressure vacuum breaker backsiphonage prevention assembly or spill-resistant pressure vacuum breaker backsiphonage prevention assembly may be maintained under pressure by a valve

•Be used to protect against backsiphonage only, not backpressure.

A vacuum breaker does not work for backpressure

Simplified PVBA Test Procedure

1. **Close ALL Gauge Knobs then Flush Test Cocks**
2. **Flush and put Bleed Valve on TC#1**
3. **Hook-up Red Hose TC #2 & Bleed Gauge**
4. **"Is Gauge at level of air inlet?" Close #2 Shut-off; Then #1 Shut Off**
5. **Open High side bleed valve less then ¼ turn (record air inlet opening point)**
6. **Drain water by removing hose- State: "THE AIR INLET HAS FULLY OPENED!"**
7. **OPEN SO #1**
8. **Hook-up Red Hose onto Bleed Valve (TC#1)/Bleed Gauge**
9. **"Is Gauge at level of TC#2?" Close #1 Shut-off**
10. **Open TC #2 All the way, Slow drip (Record Check #1 Reading)**

PVB Problems

- **Check #1 fails, air inlet fails, leaky shutoffs**
- **Leaky shut off #1 steps.**
- **Open no more than ¼ turn gauge reads high we have flow.**
- **Close high side needle valve and exercise shutoff valves**
- **Open test cock #1 divert the flow**
- **Open the high side needle valve and record air inlet opening point or stop test if leak is too excessive.**
- **Continue to the check valve test by moving hose to TC#1.**
- **Use bleed valve (one quarter turn at a time to divert leak) and get slow drip.**
- **Record condition of check #1**

PVB Problems

- **Check #1 fails, air inlet fails, leaky shutoffs**
- **Leaky shut off #2 diagnosed when SO#1 closed and gauge starts to drop before opening the high side bleed valve ¼ turn. The faster the drop the worse the leak.**
- **If you can-- determine the Air Inlet value and record SO#2 leaking.**
- **If gauge drops so quickly you cant get a reading of air inlet then SO#2 is leaking excessively.**

A pressure type vacuum breaker works well to protect against backpressure?

1. **True**
2. **False**

When performing the #1 test on the Pressure Vacuum Breaker the air inlet opens below 1.0 psid (0.5 psid). Does the assembly pass and if not, what is the likely failure or cause?

1. **Cannot determine the pass/fail. PVB's do not have an air inlet valve**
2. **Passing result. No failure or cause for worry.**
3. **Failing result. The assembly will prevent backpressure**
4. **Failing result. Likely a dirty or damaged air inlet disc**

Simplified SRVBA Test Procedure

1. Close ALL Gauge Knobs then Flush Test Cock and vent screw
2. Hook-up Red Hose & Bleed Valve (TC#1)/Bleed Gauge
3. **Bleed water into top of air inlet**
4. "**Is Gauge at level of assembly?"** Close #2 Shut-off; Then #1 Shut Off
5. **Fully remove vent screw record check #1 value**
6. Crack high side bleed valve no more then ¼ turn (record air inlet opening point)
7. Remove hose & State: "**THE AIR INLET HAS FULLY OPENED!"**
8. Restore service

Atmospheric Vacuum Breaker (AVB)

Definition- means a non-testable device consisting of an air inlet valve or float check, a check seat and an air inlet port. ***This device is designed to protect against a non-health hazard or a health hazard under a backsiphonage condition only***

Parts and Components One atmospheric vent valve (very common device!).



Atmospheric Vacuum Breaker (AVB)

Protection

•non-health (low) hazard or health (high) hazard

Conditions

•Be used to protect against backsiphonage only, not backpressure.

You must place the gauge at the same level of the site tube (DCVA) or at ideal level depending on what you are testing (air inlet or check level) in a PVB & SRVB assembly before closing any shutting off valves?

1. True

2. False

All reduced pressure principle backflow assemblies, double check valve assemblies, and pressure type vacuum & SRVB breakers should be tested while calling out numbers at a 0.2 psi rate of speed to get accurate test results?

1. True

2. False

Summary

Assembly	High Health Haz	Low Non-Health Haz	Back pressure	Back siphonage	Install	Remark
A/G	X	X	X	X	Twice the diameter, no case less than 1 inch separation	System pressure lost Easily bypassed
RP	X	X	X	X	Above ground,,need A/G, space for maintenance	Size hydraulically
DCVA		X	X	X	space for maintenance	Size hydraulically
PVB	X	X		X	12 " above highest use, space for maintenance	No backpressure
AVB	X	X		X	6 " above highest use, NO SHUT OF VALVES Allowed Downstream	No backpressure

A/G=Air Gap; RP =Reduced Pressure Backflow Assembly; DCVA=Double Check Valve Assembly; PVB=Pressure Vacuum Breaker; AVB=Atmospheric Vacuum Breaker

Tester's and Safety!

Permit Required Confined Spaces

"A confined space is defined as space that employees can enter, has a limited means of entering and exiting, and is not designed for continuous employee occupancy (OAR 437-00201910.146)**"**
***hazardous atmosphere, can trap you=TED KRAUSE**

Test before you enter- **Before every entry, you must test the atmosphere inside the confined space for oxygen content, flammable gasses and vapors, and any other potential toxic air contaminants.**

- **Tester Role in Confined Spaces**
- **Your Life is at Stake---**
- **IDENTIFY IF IT'S A CONFINED SPACE**
- **YOU MAY NEED A PERMIT-Get Trained!!**

Tester's Role in Safety!

Safety

- **CONFINED SPACE ENTRY!**
- **First aid**
- **MSDS reports (hazardous chemicals)**
- **Electrical Safety**
- **Lockout-Tagout (LOTO)- is a safety procedure which is used to ensure that dangerous machines are properly shut off and not started up again prior to the completion of maintenance or servicing work (1910.146(c)(7)).**

What characteristics define a confined space?

1. Large enough egress to enter
2. Can trap or entrap you
3. Not intended for regular occupancy
4. Use a sensor before entry
5. All of the above

What steps/measurements should *ALWAYS* be conducted first before entering a confined space?

1. Monitor collect data on the atmosphere of the vault/pit
2. Use a 100 cfm fan blower to ventilate the space
3. Notify OSHA
4. Ensure an attendant is watching

The objectives for today's material for the 1 day renewal: to become familiar with the role of a tester in the State of Oregon, understand use/function/test procedures/installation of backflow prevention assembly and tester safety has been met?

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly Disagree

333-061-0070

Cross Connection Control Requirements

(1) Water suppliers shall undertake cross connection control programs to protect the public water systems from pollution and contamination.

(2) The water supplier's responsibility for cross connection control shall begin at the water supply source, include all public treatment, storage, and distribution facilities under the water supplier's control, and end at the point of delivery to the water user's premises.

(3) Water suppliers shall develop and implement cross connection control programs that meet the minimum requirements set forth in these rules.

(4) Water suppliers shall develop a procedure to coordinate cross connection control requirements with the appropriate local administrative authorityies having jurisdiction.

(5) The water supplier shall ensure that inspections of approved air gaps, approved devices, and inspections and tests of approved backflow prevention assemblies protecting the public water system are conducted:
  (a) At the time of installation, any repair or relocation;
  (b) At least annually;
  (c) More frequently than annually for approved backflow prevention assemblies that repeatedly fail, or are protecting health hazard cross connections, as determined by the water supplier;
  (d) After a backflow incident; or
  (e) After an approved air gap is re-plumbed.

(6) Approved air gaps, approved devices, or approved backflow prevention assemblies, found not to be functioning properly shall be repaired, replaced or re-plumbed by the water user or premises owner, as defined in the water supplier's local ordinance or enabling authority, or the water supplier may take action in accordance with subsection (9)(a) of these rules.

(7) A water user or premises owner who obtains water from a water supplier must notify the water supplier if they add any chemicals or substance to the water.

(8) Premises isolation requirements:
  (a) For service connections to premises listed or defined in Table 42 (Premises Requiring Isolation), the water supplier shall ensure an approved backflow prevention assembly or an approved air gap is installed;
    (A) Premises with cross connections not listed or defined in Table 42 (Premises Requiring Isolation), shall be individually evaluated. The water supplier shall require the installation of an approved backflow prevention assembly or an approved air gap commensurate with the degree of hazard on the premises, as defined in Table 43 (Backflow Prevention Methods);
    (B) In lieu of premise isolation, the water supplier may accept an in-premises approved backflow prevention assembly as protection for the public water system when the approved backflow prevention

assembly is installed, maintained and tested in accordance with these rules.

(b) Where premises isolation is used to protect against a cross connection, the following requirements apply;

(A) The water supplier shall:

(i) Ensure the approved backflow prevention assembly is installed at a location adjacent to the service connection or point of delivery;

(ii) Ensure any alternate location used must be with the approval of the water supplier and must meet the water supplier's cross connection control requirements; and

(iii) Notify the premises owner and water user, in writing, of thermal expansion concerns.

(B) The premises owner shall:

(i) Ensure no cross connections exist between the point of delivery from the public water system and the approved backflow prevention assemblies, when these are installed in an alternate location; and

(ii) Assume responsibility for testing, maintenance, and repair of the installed approved backflow prevention assembly to protect against the hazard.

(c) Where unique conditions exist, but not limited to, extreme terrain or pipe elevation changes, or structures greater than three stories in height, even with no actual or potential health hazard, an approved backflow prevention assembly may be installed at the point of delivery; and

(d) Where the water supplier chooses to use premises isolation by the installation of an approved backflow prevention assembly on a one- or two-family dwelling under the jurisdiction of the Oregon Plumbing Specialty Code and there is no actual or potential cross connection, the water supplier shall:

(A) Install the approved backflow prevention assembly at the point of delivery;

(B) Notify the premises owner and water user in writing of thermal expansion concerns; and

(C) Take responsibility for testing, maintenance and repair of the installed approved backflow prevention assembly.

(9) In community water systems, water suppliers shall implement a cross connection control program directly, or by written agreement with another agency experienced in cross connection control. The local cross connection program shall consist of the following elements:

(a) Local ordinance or enabling authority that authorizes discontinuing water service to premises for:

(A) Failure to remove or eliminate an existing unprotected or potential cross connection;
(B) Failure to install a required approved backflow prevention assembly;
(C) Failure to maintain an approved backflow prevention assembly; or
(D) Failure to conduct the required testing of an approved backflow prevention assembly.

(b) A written program plan for community water systems with 300 or more service connections shall include the following:
(A) A list of premises where health hazard cross connections exist, including, but not limited to, those listed in Table 42 (Premises Requiring Isolation);
(B) A current list of certified cross connection control staff members;
(C) Procedures for evaluating the degree of hazard posed by a water user's premises;
(D) A procedure for notifying the water user if a non-health hazard or health hazard is identified, and for informing the water user of any corrective action required;
(E) The type of protection required to prevent backflow into the public water supply, commensurate with the degree of hazard that exists on the water user's premises, as defined in Table 43 (Backflow Prevention Methods);
(F) A description of what corrective actions will be taken if a water user fails to comply with the water supplier's cross connection control requirements;
(G) Current records of approved backflow prevention assemblies installed, inspections completed, backflow prevention assembly test results on backflow prevention assemblies and verification of current Backflow Assembly Tester certification; and
(H) A public education program about cross connection control.

(c) The water supplier shall prepare and submit a cross connection control Annual Summary Report to the Authority, on forms provided by the Authority, before the last working day of March each year.

(d) In community water systems having 300 or more service connections, water suppliers shall ensure at least one person is certified as a Cross Connection Control Specialist, unless specifically exempted from this requirement by the Authority.

(10) Fees: Community water systems shall submit to the Authority an annual cross connection program implementation fee, based on the number of service connections, as follows:

Service Connections —	Fee:
15-99 —	$30.
100-999 —	$75.
1,000-9,999 —	$200.

10,000 or more — $350.

(a) Billing invoices will be mailed to water systems in the first week of November each year and are due by January first of the following year;
(b) Fees are payable to Oregon Health Authority by check or money order;
(c) A late fee of 50 percent of the original amount will be added to the total amount due and will be assessed after January 31 of each year.

(11) In transient or non-transient non-community water systems, the water supplier that owns or operates the system shall:
(a) Ensure no cross connections exist, or are isolated from the potable water system with an approved backflow prevention assembly, as required in section (12) of this rule;
(b) Ensure approved backflow prevention assemblies are installed at, or near, the cross connection; and
(c) Conduct an annual cross connection survey and inspection to ensure compliance with these rules, and test all backflow assemblies annually. All building permits and related inspections are to be made by the Department of Consumer and Business Services, Building Codes Division, as required by ORS 447.020.

(12) Approved backflow prevention assemblies and devices required under these rules shall be approved by the University of Southern California, Foundation for Cross-Connection Control and Hydraulic Research, or other equivalent testing laboratories approved by the Authority.

(13) Backflow prevention assemblies installed before the effective date of these rules that were approved at the time of installation, but are not currently approved, shall be permitted to remain in service provided the assemblies are not moved, the piping systems are not significantly remodeled or modified, the assemblies are properly maintained, and they are commensurate with the degree of hazard they were installed to protect. The assemblies must be tested at least annually and perform satisfactorily to the testing procedures set forth in these rules.

(14) Tests performed by Authority-certified Backflow Assembly Testers shall be in conformance with procedures established by the University of Southern California, Foundation for Cross Connection Control and Hydraulic Research, Manual of Cross-Connection Control, 10th Edition, or other equivalent testing procedures approved by the Authority.

(15) Backflow prevention assemblies shall be tested by Authority-certified Backflow Assembly Testers, except as otherwise provided for journeyman plumbers or apprentice plumbers in OAR 333-061-0072 of these rules (Backflow Assembly Tester Certification). The Backflow Assembly Tester must produce three copies of all test reports. One copy must be maintained in the Tester's permanent records, one copy must be provided to the water user or property owner, and one copy must be provided to the water supplier.
(a) Test reports must be provided within 10 working days; and

(b) The test reports must be in a manner and form acceptable to the water supplier.

(16) All approved backflow prevention assemblies subject to these rules shall be installed in accordance with OAR 333-061-0071 and the Oregon Plumbing Specialty Code.

(17) The Authority shall establish an advisory board for cross connection control issues consisting of not more than nine members, and including representation from the following:

(a) Oregon licensed Plumbers;
(b) Authority certified Backflow Assembly Testers;
(c) Authority certified Cross Connection Specialists;
(d) Water Suppliers;
(e) The general public;
(f) Authority certified Instructors of Backflow Assembly Testers or Cross Connection Specialists;
(g) Backflow assembly manufacturers or authorized representatives;
(h) Engineers experienced in water systems, cross connection control or backflow prevention; and
(i) Oregon certified Plumbing Inspectors.

Table 42

Premises Requiring Isolation* By an Approved Air Gap **or** Reduced Pressure Principle Type Of Assembly Health Hazard
Agricultural (for example, farms, dairies)
Beverage bottling plants**
Car washes
Chemical plants
Commercial laundries and dry cleaners
Premises where both reclaimed and potable water are used
Film processing plants
Food processing plants
Medical centers (for example, hospitals, medical clinics, nursing homes, veterinary clinics, dental clinics, blood plasma centers)
Premises with irrigation systems that use the water supplier's water with chemical additions (for example, parks, playgrounds, golf courses, cemeteries, housing estates)
Laboratories
Metal plating industries
Mortuaries
Petroleum processing or storage plants
Piers and docks
Radioactive material processing plants and nuclear reactors
Wastewater lift stations and pumping stations
Wastewater treatment plants
Premises with piping under pressure for conveying liquids other than potable water and the piping is installed in proximity to potable water piping
Premises with an auxiliary water supply that is connected to a potable water supply

Premises where the water supplier is denied access or restricted access for survey
Premises where the water is being treated by the addition of chemical or other additives

* Refer to OAR 333-061-0070(8) premises isolation requirements.
** A Double Check Valve Backflow Prevention Assembly could be used if the water supplier determines there is only a non-health hazard at a beverage bottling plant.

Table 43

Backflow Prevention Methods Used For Premises Isolation	
DEGREE OF IDENTIFIED HAZARD	
Non-Health Hazard (Pollutant)	Health Hazard (Contaminant)
Backsiphonage or Backpressure	Backsiphonage or Backpressure
Air Gap (AG)	Air Gap (AG)
Reduced Pressure Principle Backflow Prevention Assembly (RP)	Reduced Pressure Principle Backflow Prevention Assembly (RP)
Reduced Pressure Principle-Detector Backflow Prevention Assembly (RPDA)	Reduced Pressure Principle-Detector Backflow Prevention Assembly (RPDA)
Double Check Valve Backflow Prevention Assembly (DC)	
Double Check-Detector Backflow Prevention Assembly (DCDA)	

Stat. Auth.: ORS 448.131
Stats. Implemented: ORS 448.131, 448.278,

333-061-0071
Backflow Prevention Assembly Installation and Operation Standards

(1) Any approved backflow prevention assembly required by OAR 333-061-0070 shall be installed in a manner that:
  (a) Facilitates its proper operation, maintenance, inspection, and in-line testing using standard installation procedures approved by the Authority, such as, but not limited to, University of Southern California, Manual of Cross-Connection Control, 10th Edition, the Pacific Northwest Section American Water Works Association, Cross Connection Control Manual, 7th Edition, or the local administrative authority having jurisdiction;
  (b) Precludes the possibility of continuous submersion of an approved backflow prevention assembly, and precludes the possibility of any submersion of the relief valve on a reduced pressure principle backflow prevention assembly; and
  (c) Maintains compliance with all applicable safety regulations and the Oregon Plumbing Specialty Code.
(2) For premises isolation installation:
  (a) The approved backflow prevention assembly shall be installed at a location adjacent to the service connection or point of delivery; or

(b) Any alternate location must be with the advance approval of the water supplier and must meet the water supplier's cross connection control requirements; and

(c) The premises owner shall ensure no cross connections exist between the point of delivery from the public water system and the approved backflow prevention assembly.

(3) Bypass piping installed around any approved backflow prevention assembly must be equipped with an approved backflow prevention assembly to:

(a) Afford at least the same level of protection as the approved backflow prevention assembly being bypassed; and

(b) Comply with all requirements of these rules.

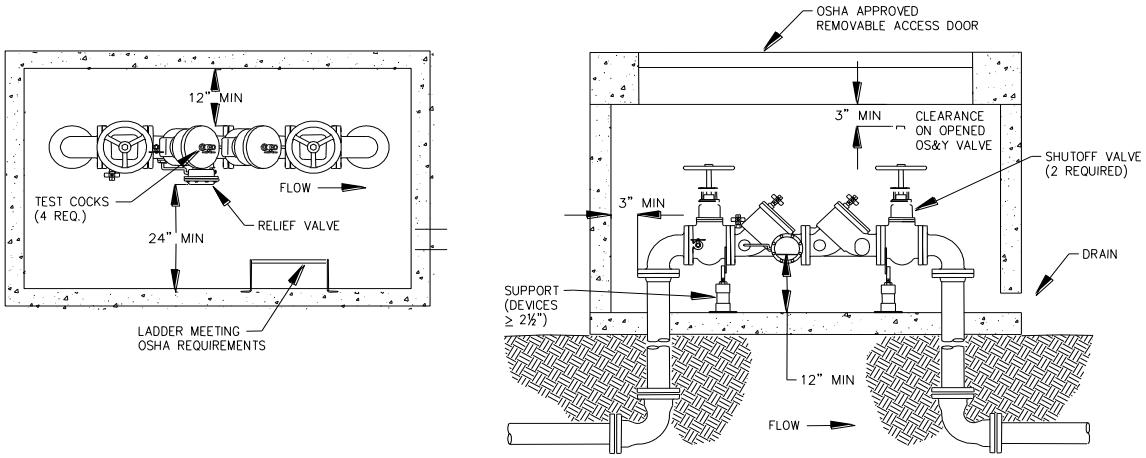
(4) All Oregon Plumbing Specialty Code approved residential multi-purpose fire suppression systems constructed of potable water piping and materials do not require a backflow prevention assembly.

(5) Stand-alone fire suppression systems shall be protected commensurate with the degree of hazard, as defined in Table 43 (Backflow Prevention Methods).

(6) Stand-alone irrigation systems shall be protected commensurate with the degree of hazard, as defined in Table 43 (Backflow Prevention Methods).

(7) A Reduced Pressure Principle Backflow Prevention Assembly (RP) or Reduced Pressure Principle-Detector Backflow Prevention Assembly (RPDA):

Figure 1



(a) Shall conform to bottom and side clearances when the assembly is installed inside a building. Access doors may be provided on the top or sides of an above-ground vault;

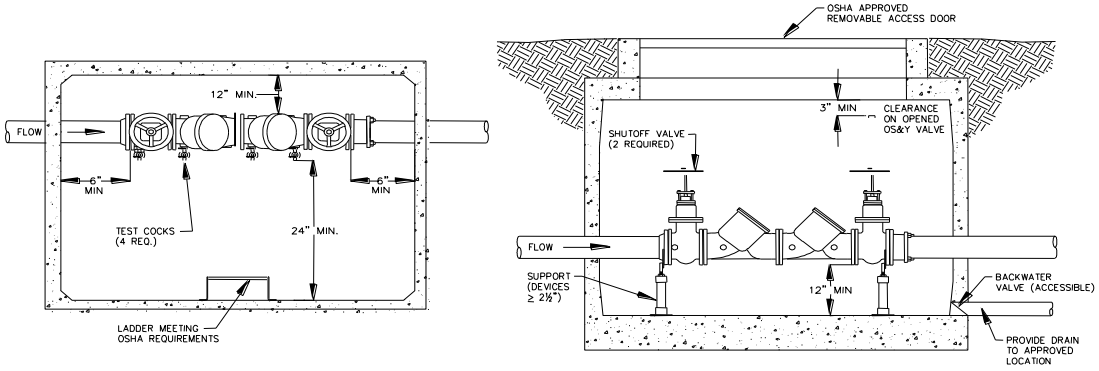
(b) Shall always be installed horizontally, never vertically, unless they are specifically approved for vertical installation;

(c) Shall always be installed above the 100 year (1 percent) flood level unless approved by the appropriate local administrative authority having jurisdiction;

(d) Shall never have extended or plugged relief valves;
(e) Shall be protected from freezing when necessary;
(f) Shall be provided with an approved air gap drain;
(g) Shall not be installed in an enclosed vault or box unless a bore-sighted drain to daylight is provided;
(h) May be installed with reduced clearances if the pipes are two inches in diameter or smaller, are accessible for testing and repairing, and approved by the appropriate local administrative authority having jurisdiction;
(i) Shall not be installed at a height greater than five feet unless there is a permanently installed platform meeting Oregon Occupational Safety and Health Administration (OR-OSHA) standards to facilitate servicing the assembly; and
(j) Be used to protect against a non-health hazard or health hazard for backsiphonage or backpressure conditions.

(8) A Double Check Valve Backflow Prevention Assembly (DC) or Double Check Detector Backflow Prevention Assembly (DCDA):

Figure 2



(a) Shall conform to bottom and side clearances when the assembly is installed inside a building;
(b) May be installed vertically as well as horizontally provided the assembly is specifically listed for that orientation in the Authority's Approved Backflow Prevention Assembly List.
(c) May be installed below grade in a vault, provided that water-tight fitted plugs or caps are installed in the test cocks, and the assembly shall not be subject to continuous immersion;
(d) Shall not be installed at a height greater than five feet unless there is a permanently installed platform meeting Oregon Occupational Safety and Health Administration (OR-OSHA) standards to facilitate servicing the assembly;
(e) May be installed with reduced clearances if the pipes are two inches in diameter or smaller, provided that they are accessible for testing and

repairing, and approved by the appropriate local administrative authority having jurisdiction;

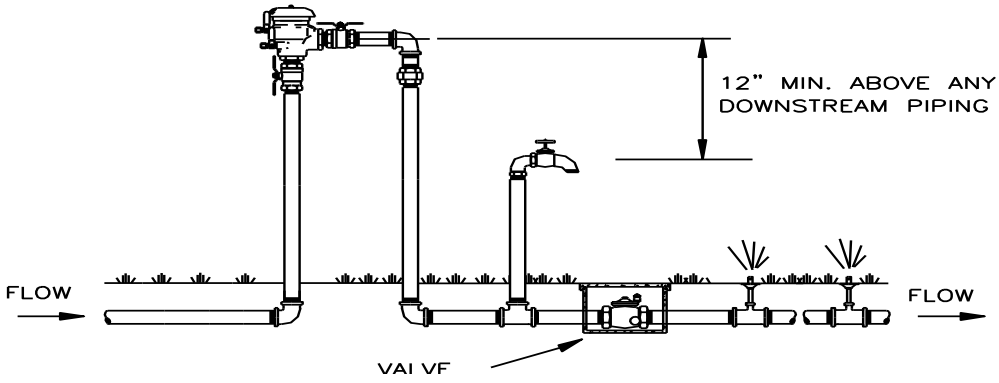
(f) Shall have adequate drainage provided except that the drain shall not be directly connected to a sanitary or storm water drain. Installers shall check with the water supplier and appropriate local administrative authority having jurisdiction for additional requirements;

(g) Shall be protected from freezing when necessary; and

(h) Be used to protect against non-health hazards under backsiphonage and backpressure conditions.

(9) A Pressure Vacuum Breaker Backsiphonage Prevention Assembly (PVB) or Spill-Resistant Pressure Vacuum Breaker Backsiphonage Prevention Assembly (SVB) shall:

Figure 3



(a) Be installed where occasional water discharge from the assembly caused by pressure fluctuations will not be objectionable;

(b) Have adequate spacing available for maintenance and testing;

(c) Not be subject to flooding;

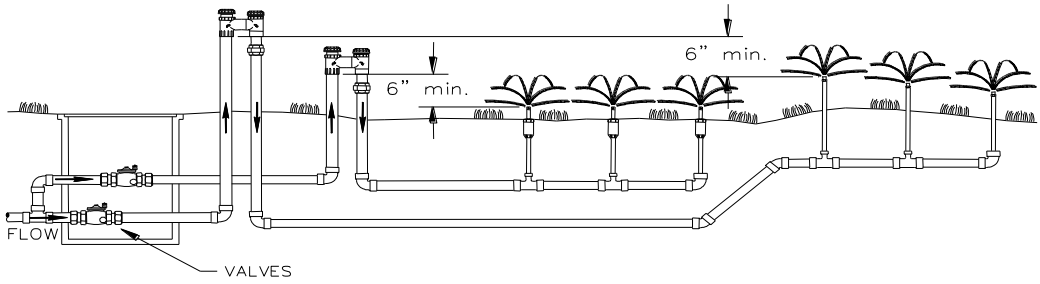
(d) Be installed a minimum of 12 inches above the highest downstream piping and outlets;

(e) Have absolutely no means of imposing backpressure by a pump or other means. The downstream side of the pressure vacuum breaker backsiphonage prevention assembly or spill-resistant pressure vacuum breaker backsiphonage prevention assembly may be maintained under pressure by a valve; and

(f) Be used to protect against backsiphonage only, not backpressure.

(10) An Atmospheric Vacuum Breaker (AVB) shall:

Figure 4



(a) Have absolutely no means of shut-off on the downstream or discharge side of the atmospheric vacuum breaker;
(b) Not be installed in dusty or corrosive atmospheres;
(c) Not be installed where subject to flooding;
(d) Be installed a minimum of six inches above the highest downstream piping and outlets;
(e) Be used intermittently;
(f) Have product and material approval under the Oregon Plumbing Specialty Code for non-testable devices.
(g) Not be pressurized for more than 12 hours in any 24-hour period; and
(h) Be used to protect against backsiphonage only, not backpressure.

Stat. Auth.: ORS 448.131
Stats. Implemented: ORS 448.131, 448.278