CROSS CONNECTION CONTROL AND BACKFLOW PREVENTION

Starting and Maintaining a Program for your Water System

BACKFLOW PREVENTION TYPES

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BACKFLOW PREVENTION

METHODS TO PROTECT CROSS CONNECTIONS AND PREVENT BACKFLOW
BACKFLOW PREVENTION TYPES

- BACKFLOW PREVENTION ASSEMBLIES
- BACKFLOW PREVENTION DEVICES
- AIR GAPS
BACKFLOW ASSEMBLIES
BACKFLOW ASSEMBLIES

- In line testable
  - Tested annually by a certified Backflow Assembly Tester
- In line repairable
- Isolation valves and test ports
BACKFLOW ASSEMBLY

TYPES

- Reduced Pressure Zone Backflow Assembly
- Double Check Valve Backflow Assembly
- Pressure Vacuum Breaker Backflow Assembly
- Spill Proof Vacuum Breaker Backflow Assembly
REDUCED PRESSURE ZONE (RPZ) BACKFLOW ASSEMBLY
MAINTAINING AS AN ASSEMBLY

ISOLATION VALVES (2)

TEST PORTS (4)

RELEIF PORT (1)
REDUCED PRESSURE ZONE BACKFLOW ASSEMBLY

• Approved For:
  • Approved for Backpressure and Backsiphonage
  • Health and Non Health hazards

• Common Applications
  • Landscape irrigation systems
  • Boilers
  • Chemicals
REDUCED PRESSURE ZONE (RPZ) BACKFLOW ASSEMBLY

• Installation Criteria
  • Installed horizontally only (unless 3rd party approved for vertical installation)
  • 12 inch clearance between relief port and grade line
  • May NOT be installed in a pit or a vault
  • Shall not be directly connected to a drain line
REDUCED PRESSURE ZONE
BACKFLOW ASSEMBLY
DOUBLE CHECK VALVE
BACKFLOW ASSEMBLY
MAINTAINING AS AN ASSEMBLY

ISOLATION VALVES (2)

TEST PORTS (4)
DOUBLE CHECK VALVE BACKFLOW ASSEMBLY

- Approved For:
  - Approved for Backpressure and Backsiphonage
  - Non Health hazard only
- Common Applications
  - Food service applications
  - Dairy
  - Bottling plants
  - Multi-story buildings
  - Fire suppression systems without hazardous chemical additives (class 1 & 2)
DOUBLE CHECK VALVE BACKFLOW ASSEMBLY

Installation Criteria

- Installed horizontally (unless 3rd party approved for vertical installation)
- May be installed in a pit or a box
- Be installed to facilitate repairs and testing (12 inches of clearance around assembly)
IMPROPER INSTALLATIONS

Buried

Vertical position
PRESSURE VACUUM BREAKER BACKFLOW ASSEMBLY

MAINTAINING AS AN ASSEMBLY

TEST PORTS (2)

ISOLATION VALVES (2)

CANOPY
PRESSURE VACUUM BREAKER (PVB)
SPILL RESISTENT VACUUM BREAKER (SVB)

- Approved For:
  - Approved for Backsiphonage
  - Approved Health and Non Health hazard

- Common Applications
  - Landscape sprinkling systems
  - Janitorial chemical dispenser
  - Food service
  - Wash down hoses
PRESSURE VACUUM BREAKER (PVB)
SPILL RESISTENT VACUUM BREAKER (SVB)

- Installation Criteria
  - **MUST BE INSTALLED VERTICALLY**
  - INSTALLED 12 INCHES ABOVE ALL DOWN STREAM PIPING AND WATER USE
  - **SHALL NOT BE IN A PIT OR BELOW GRADE**
  - **SHALL NOT BE SUBJECTED TO BACKPRESSURE**
PRESSURE VACUUM BREAKER (PVB)
IMPROPER INSTALLATIONS
All backflow prevention assemblies must be tested annually by a Utah certified Backflow Assembly Tester.
BACKFLOW ASSEMBLY TESTING

Using 10th Edition USC Testing Procedures

• TEST VALUE REQUIREMENTS
  • Reduced Pressure Zone (RPZ)
    • #1 Check – 5.0 psid or above
    • #2 Check – Recorded as Closed Tight or Leaked
  • Relief Port Opening point – 2.0 psid or above
  • Double Check Valve (DC)
    • #1 Check – 1.0 psi or above
    • #2 Check – 1.0 psi or above
BACKFLOW ASSEMBLY TESTING
Using 10th Edition USC Testing Procedures

• TEST VALUE REQUIREMENTS
  • Pressure Vacuum Breaker (PVB)
    • Air Poppit – Opens at 1.0 psi or above
    • Check Valve – 1.0 psi or above
  • Spill Proof Vacuum Breaker (SVB)
    • Check Valve – closes 1.0 psi or above
    • Air Poppit – Opens 1.0 psi or above
BACKFLOW DEVICES
BACKFLOW DEVICES

- Self Contained
- Non-testable (Visual Inspection only)
- Generally Not In line repairable
- NO Isolation valves and test ports
BACKFLOW DEVICE TYPES

- Atmospheric Vacuum Breakers
- Hose Bib Vacuum Breakers
- Dual Check Valves
- Dual Check Valve with Atmospheric Vent
ATMOSPHERIC VACUUM BREAKER (AVB)

- Approved Use
  - Health and Non-Health
  - Backsiphonage ONLY
ATMOSPHERIC VACUUM BREAKER (AVB)

Installation Criteria

- Vertical Position ONLY (Air inlet up)
- NO MORE than 12 hours continuous pressure in a 24 hour period
- 6 inches above any downstream piping and water usage
- Not subjected to backpressure
- NO downstream valves
- No pits
ATMOSPHERIC VACUUM BREAKER (AVB)

Flow

6" (150mm) minimum above highest point of water. (suggested)
HOSE BIB VACUUM BREAKER

• Approved Uses
  • Health and Non-health Hazards
  • Back siphonage
  • Low head backpressure
  • Threaded hose Connections ONLY
  • Non-Removable

• Maintenance
  • Drain for winter
  • Remove hoses when not in use
DUAL CHECK VALVE

- Approved uses
  - Approved for residential meter pit installations ONLY
  - Non-health
  - Water purveyor typically installs and maintains as secondary protection
  - Recommended 10 percent be tested or replaced each year by the water purveyor
Dual Check Valves
THERMAL EXPANSION

- Must address thermal expansion!
  - MUST notify the customer of the dangers of thermal expansion
  - Thermal Expansion Tanks are installed by customer
THERMAL EXPANSION TANK
THERMAL EXPANSION TANK
Air gap means a physical separation between the discharge end of a drinking water supply pipe and a receiving vessel.
AIR GAPS

- Ultimate backflow protection
- Approved for Health and non-health
- High health hazard air gaps shall be inspected annually
- Physical Separation
  - 2 X pipe diameter
  - 1 inch minimum
  - Next to an obstruction
    - 3 X pipe diameter or
    - 1.5 inch minimum
AIR GAPS

Potable Water Supply Line

Air Gap – 2 X pipe diameter

Overflow Rim

Outlet
AIR GAP
DETERMINING WHICH TYPE OF BACKFLOW PREVENTION TO USE
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