THE IMPORTANCE OF TESTING BACKFLOWS:

How to Keep America's Water Supply Safe

backflow PARTS DEPOT

Your Complete Source For Backflow Repair Parts & Plumbing Supplies

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BackflowPartsDepot.com

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Introduction

Protecting America's public drinking water is extremely important. With laws in place and standard safety procedures that companies are expected to follow, most Americans have access to safe drinking water. However, people aren't perfect and systems have been known to break down. Plus, harmful contaminants can infiltrate even the strongest of backflow systems.

The fact is: only 1% of the world's water is actually *drinkable*.

Because of this, **it is crucial to test backflows to keep public water safe**. You need to not only know how to test backflows with test gauges but how to *repair* backflows with the correct parts and processes. This guide will ensure you not only understand how backflow systems work, but how to protect them and prevent breakdowns. Plus, we'll cover system repairs and servicing.

But first...

What IS backflow? Backflow is the undesirable reversal of flow of nonpotable water or other substances through a cross-connection and into the piping of a public water system or consumer's potable water system. In layman's terms, backflow happens when the normal flow of water is reversed from its intended direction in any pipeline or plumbing system.

There are two types of backflow: backpressure backflow and backsiphonage.

It's important to note that backflow into a public water system can pollute or contaminate the water in that system, making the water in that system unusable or unsafe to drink. Each water supplier has a responsibility to provide water that is usable and safe to drink under all foreseeable circumstances.

Most consumers don't consider that the water in their homes or businesses may be unsafe. Generally, people have absolute faith that water delivered to them through a public water system is always safe to drink– especially in developed countries like the United States. Because of this, each water supplier must take reasonable precautions to protect its public water system against backflow.

It's important for those in the industry to become certified in the Backflow Prevention Assembly. This is a person who has *demonstrated competence as evidenced by a certification that is recognized by the approving authority to field test and repair backflow prevention assemblies.*

For more information, resources, and parts to purchase – including test gauges and more – please refer to the Index. Of course, the team at Backflow Parts Depot is happy to assist you with any questions and/or concerns you may have.

https://backflowpartsdepot.com

Backflow Training School

If you've not yet completed training and are still looking to earn a certificate in backflow testing and repair, please consider Murray Backflow School.

Patrick Murray, a pioneer in the Plumbing industry for over 30 years has designed a State of the Art Training Facility to provide the best in Backflow and Service Plumbing Repairs Training. Patrick is the head instructor, and has trained the Backflow Parts Depot team of skilled Technicians/Instructors who are licensed and sought after experts in the industry.

Murray Training School is certified through Florida Construction Industry Licensing Board #0005446.

CEU Approval #0621991

Our 40-hour course consists of class/lecture time as well as hands on training to incorporate techniques for testing all backflows. Murray Training School prides itself on teaching students at their own pace, and provides one on one training. We have 40+ different Backflows from ¾" to 6" RP, Double Checks, PVB and SPVB for you to learn backflow repair.

In this course, you will be given the Sales Model that has been VERY successful in the South Florida Backflow market.

Every student who passes the course test and practical receives a certificate of completion, and leaves the course ready to test/repair backflows and increase their income!

Long after your course is complete, we are always here to give you the very best technical support, as if we were right there on the job with you!

For more information and to sign-up, check out our website:
https://backflowpartsdepot.com/murray-training-school/#aboutus

Terminology

Now that you're certified, or at least planning to earn your certification in backflow testing and repair, here are a few other terms you should be familiar with before continuing on:

Backflow Preventer: A backflow preventer is a means or mechanism to prevent backflow. The basic means of preventing backflow is an air gap, which either eliminates a cross-connection or provides a barrier to backflow. The basic mechanism for preventing backflow is a mechanical backflow preventer, which provides a physical barrier to backflow. The principal types of mechanical backflow preventer are the reduced-pressure principle assembly, the pressure vacuum breaker assembly, and the double check valve assembly. A secondary type of mechanical backflow preventer is the residential dual check valve.

Backpressure Backflow: Backpressure backflow is backflow caused by a downstream pressure that is greater than the upstream or supply pressure in a public water system or consumer's potable water system. Backpressure (i.e., downstream pressure that is greater than the potable water supply pressure) can result from an increase in downstream pressure, a reduction in the potable water supply pressure, or a combination of both. Increases in downstream pressure can be created by pumps, temperature increases in boilers, etc.

Reductions in potable water supply pressure occur whenever the amount of water being used exceeds the amount of water being supplied, such as during water line flushing, fire fighting, or breaks in water mains.

Backsiphonage: Backsiphonage is backflow caused by a negative pressure (i.e., a vacuum ~ or partial vacuum) in a public water system or consumer's potable water system. The effect is similar to drinking water through a straw. Backsiphonage can occur when there is a stoppage of water supply due to nearby fire fighting, a break in a water main, etc.

Cross-Connection: A cross-connection is any temporary or permanent connection between a public water system or consumer's potable (i.e., drinking) water system and any plumbing fixture or any tank, receptor, equipment, or device, through which it may be possible for non-potable, unclean, polluted, and contaminated water, or other substances to enter any part of the potable water system under many conditions. Garden hoses are the main reason for cross-connections to happen.

An example is the piping between a public water system or consumer's potable water system and an auxiliary water system, cooling system, or irrigation system. There are varied risks associated with cross-connections and the threats to public health. There are many cases of cross-connection problems which have compromised public health.

Direct Cross-Connection: A continuous, enclosed mechanical or (cross-connection) that allows the flow of nonportable water into a potable water piping system.

Indirect Cross-Connection: A temporary cross-connection between a non-potable water piping system into a potable water piping system.

Common Contaminants

Having a proper backflow protection and prevention system in place is crucial due to the common contaminants that riddle our water supplies. Many people don't think twice when turning on their faucets, completely unaware of bacteria and other residuals that may be lurking in their water supply. This is why it's so important to have proper backflow systems in place and to know how to repair these systems should they break down.

According to the United States Environmental Protection Agency (EPA), *drinking water sources may contain a variety of contaminants that, at elevated levels, have been associated with increased risk of a range of diseases in humans, including acute diseases such as gastrointestinal illness, developmental effects such as learning disorders, endocrine disruption, and even cancer. Because children tend to take in more water relative to their body weight than adults do, they're more likely to have higher exposure to drinking water contaminants.*

Common drinking water sources include surface water, such as rivers, lakes, and reservoirs; and groundwater aquifers, which are subsurface layers of porous soil and rock that contain large collections of water. Groundwater and surface water are not isolated systems and are continually recharged by each other as well as by rain and other natural precipitation.

Contaminants that may be present in drinking water include microbial contaminants, such as viruses and bacteria from sewage treatment, plants, livestock operations, and wildlife. Inorganic contaminants, such as salts and metals which can result from stormwater and wastewaters. Fertilizer, livestock manure, and human sewage are also significant contributors of nitrates and nitrites in groundwater sources of drinking water.

Additionally, pharmaceutical residuals are often found in our drinking water sources. When cities send out their quarterly water reports, they usually include a request asking homeowners NOT to flush unwanted medications down the toilet. DO NOT FLUSH OLD PILLS!

According to the EPA, people who rely on well water need to be aware of other potentially harmful contaminants, including radionuclides. These are radioactive forms of elements such as uranium and radium. They can be released into the environment from uranium mining and milling, coal mining, and nuclear power production. Radionuclides may also be naturally present in groundwater in some areas. Drinking water with radionuclides can cause toxic kidney effects and increase the risk of cancer.

Many people think bottled water is a safer alternative but – no matter the brand name – even these can be expected to contain large amounts of contaminants as well.

Due to the above contaminants, diarrhea is more prevalent throughout the developing world largely due to the lower levels of access to safe drinking water and sanitation, along with poorer overall health, hygiene, and nutritional statutes.

In fact, according to the World Health Organization (WHO), an estimated 829,000 people die each year from diarrhea as a result of unsafe drinking-water, sanitation, and hand hygiene. Yet diarrhea is largely preventable, and the deaths of 297,000 children aged under 5 years could be avoided each year if these risk factors were addressed. Where water is not readily available, people may decide handwashing is not a priority, thereby adding to the likelihood of diarrhea and other diseases.

Case Study: Human Blood in Public Water Supply

"Health Department officials cut off the water supply to a funeral home located in a southern city, after it was determined that human blood had contaminated the fresh water supply. The Chief Plumbing Inspector received a telephone call advising that blood was coming from drinking fountains within the building. Plumbing and county health department inspectors went to the scene and found evidence that the blood had been circulating in the water system within the building. They immediately order the building cut off from the water system at the meter.

Investigation revealed that the funeral home had been using a hydraulic aspirator to drain fluids from the bodies of human 'remains' as part of the embalming process. The aspirator directly connected to the water supply system at a faucet outlet located on a sink in the 'preparation' (embalming) room. Water flow through the aspirator created suction that was utilized to draw body fluids through a hose and needle attached to the suction side of the aspirator. The contamination of the funeral home potable water supply was caused by a combination of low water pressure in conjunction with the simultaneous use of the aspirator. Instead of the body fluids flowing into the sanitary drain, they were drawn in the opposite direction– into the potable water supply of the funeral home!"

- **US EPA Office of Water, Cross-Connection Control Manual, June 1989**

Modern Sanitation Crises & Efforts

In 2020, people around the world were faced with an ongoing pandemic due to COVID-19, an infectious disease caused by a newly discovered coronavirus. According to WHO, COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. Clean water and proper hygiene quickly became more important than ever. **And backflow assemblies will become so much more important as we move forward.**

As COVID-19 stay-at-home orders lift in many parts of the country, people are walking right into the lion's den. Employees headed back to their individual jobs may face a whole new danger in their workplace from the air conditioning system or from plumbing systems, toilets, drinking fountains and water heaters; the water may be contaminated with Legionella bacteria. (HVAC cooling towers have been known to grow Legionella.)

The water that's inside of a building's plumbing and fire systems must NOT be able to migrate back into the public infrastructure.

It's important to note that Legionnaires' Disease risk may grow as Coronavirus lockdowns lift. Legionella is a species of bacteria that is found in the water supply. It was first detected in 1976 in American Legion convention in Philadelphia. Many people were hospitalized and many more died.

When plumbing systems shut down, water becomes stagnant and chlorine and other disinfectants dissipate. When the water is not in regular use, its temperatures can range between 77- and 108-degrees F, creating ideal breeding conditions for bacteria. As the cold water warms up and the warm water cools down, Legionella and other bacteria begin to grow much faster than normal. People develop Legionella disease when they breathe in contaminated droplets of water (also known as aerosol). **It is imperative that the water in these buildings will not be able to BACKFLOW into the city's infrastructures!**

Researchers found that "during the Flint water crisis in 2015, nearly 21 million Americans—about 6%—were getting water from systems that violated health standards. And looking back over time, the number of violations generally increased from 1982 to 2015—spiking in the years following the addition of a new regulation, the team reports today in the Proceedings of the National Academy of Sciences. For instance, after a rule about coliform bacteria was enacted in 1990, the number of violations doubled within 5 years. Such spikes don't mean that the water suddenly got worse, Allaire says, just that previously accepted levels of a contaminant were now considered too high."

In the water we drink? Bacteria are everywhere in our environment, including in surface waters and groundwater. Some of these bacteria can be harmful to human health. Drinking water with disease-causing bacteria, viruses, or parasites (collectively called pathogens) can make you sick. It is not practical to test drinking water for every type of pathogen, but it is simple to test drinking water for coliform bacteria. The presence of coliform bacteria can indicate there may be harmful pathogens in the water.

Water management programs and backflow systems can prevent programs that lead to outbreaks!

Many people don't realize how incredibly important the modern-day water crisis is. That's why YOU are such an invaluable part of the equation in protecting our water supplies and making sure people have access to clean, safe, healthy water.

Today, we classify the *quality water in certain categories, including:*

Contaminated: An impairment of the quality of the potable water that creates an actual hazard to the public health through poisoning or through the spread of disease by sewage, industrial fluids, or waste.

Polluted: An impairment of the quality of the potable water to a degree that does not create a hazard to the public health but which does adversely and unreasonably affect the aesthetic qualities of such potable water for domestic use.

Matt Damon, an American actor, producer, and screenwriter, has made great efforts and strides in bringing awareness to this cause around the world. In 2020, Damon worked in part to create a Netflix Documentary called Brave Blue World.

Brave Blue World explores the technologies and innovations that have the potential to solve the world's water crisis. The film highlights scientific and technological advancements that have been taking place to ensure the world's population has access to clean water and safe sanitation services and the environment is protected.

Narrated by actor Liam Neeson, Brave Blue World features scientists, engineers and activists from around the world, including actor Matt Damon, co-founder of global non-profit Water.org, and actor and musician Jaden Smith, co-founder of non-profit 501CThree.

In addition to non-profit organizations that work tirelessly to bring clean water to every person in the world, there have been several laws set in place to keep our population safe.

Water Safety Laws

In the United States, there have been many laws set in place to prevent unnecessary illness and death among the population.

The **Safe Drinking Water Act** (SDWA) was established to protect the quality of drinking water in the U.S. This law focuses on all waters actually or potentially designed for drinking use, whether from above ground or underground sources.

The Act authorizes EPA to establish minimum standards to protect tap water and requires all owners or operators of public water systems to comply with these primary (health-related) standards. The 1996 amendments to SDWA require that EPA consider a detailed risk and cost assessment, and best available peer-reviewed science, when developing these standards.

State governments, which can be approved to implement these rules for EPA, also encourage attainment of secondary standards (nuisance-related). Under the Act, EPA also establishes minimum standards for state programs to protect underground sources of drinking water from endangerment by underground injection of fluids.

For example, in 1975, Florida passed the Florida Safe Drinking Water Act. This law gives Florida EPA the authority to write administrative rules which define the law; administrative code can be modified without approval of the legislature.

Additionally, in January of 2014, the Reduction of Lead in Drinking Water Act (RLDWA) was a national mandate requiring that every pipe, fixture, and fitting used to convey water for potable use contains less than 0.25% of lead by weight. It's important to look for "LEAD FREE (LF)" on labels, boxes, and tags.

Each state may or may not have its own regulations related to backflow prevention and cross-connection control, and the department that enforces these regulations also varies from state to state.

Enforcement of cross-connection regulations may be the sole responsibility of the health authority (local or state health department), of environmental regulatory agencies, or of plumbing officials (plumbing inspectors, building inspectors or code enforcement personnel).

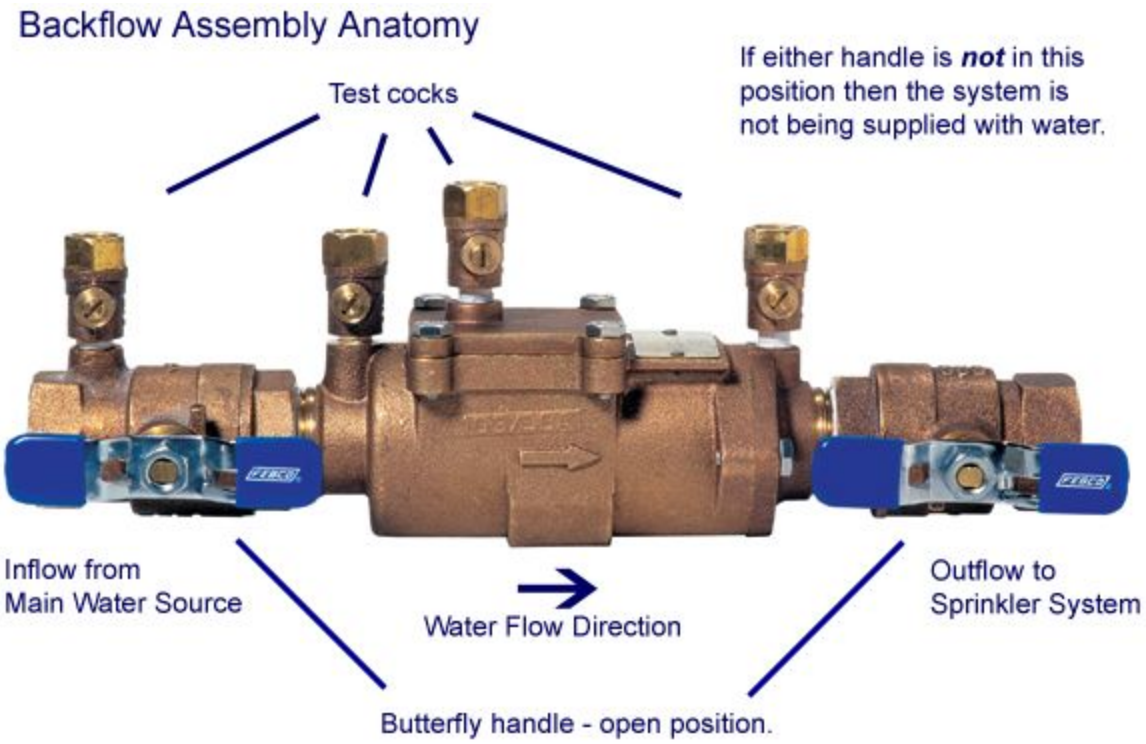
Usually, the water purveyor will be involved in the implementation of this program. Fortunately, states like Florida have their own statewide Environmental Protection Agency (EPA). You can learn about YOUR state's individual EPA by clicking on this link: https://www.epa.gov/home/epa-your-state.

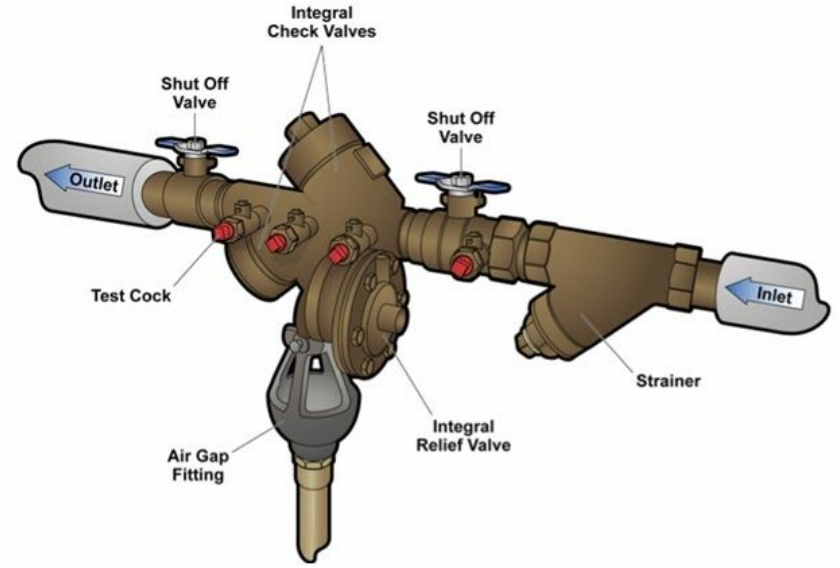
No matter what state you live in or how lenient the water safety laws may be, it's critical to remember that when testing backflows, it's YOUR job to pass or fail it. In South Florida, where Backflow Parts Depot is based, there is a 50% to 60% failure rate from year to year. Please remember you are there to TEST BACKFLOWS – not pass them.

How Backflow Systems Work

According to *Plumbing Today,* backflow prevention systems are devices installed onto a pipe that only allow water to flow in one direction. Think of it as a one-way gate that allows water from the city's public water supply to flow into your home's piping but stops water if and when it ever tries to flow backwards into the main water supply.

It's recommended that you have a backflow preventer installed anywhere incoming water and wastewater might be cross-connected.





Backflow Protection & Prevention

We've covered a lot so far in terms of water safety and common contaminants and pollutants. Luckily, we can protect our water supplies by implementing backflow protection and prevention systems. Types of backflow protection may be categorized as either:

Containment Protection: The jurisdiction of the water supplier typically stops at the water meter or where the control of the water quality is lost. The supplier does not have control over the potable water system and possible modification made to the system. However, the supplier is responsible for the quality of the water provided to its users. As a result of these two factors-lack of monitoring/control over the integrity of the potable water system and water quality responsibility –suppliers frequently require a backflow prevention assembly at the service connection. This type of protection is known as containment.

OR

Isolation Protection (as well as backflows in parallel): Controlling a cross-connection at its point of use is a practice known as isolation. The users of a potable water system are protected from fixture or appliance cross-connection hazards through the enforcement of the plumbing code. The code instructs that each cross-connection must be identified and controlled through the use of a mechanical backflow preventer or a physical air gap separation.

Now, let's consider acceptable forms of **backflow protection**:

1. **Air Gap**: Theory of backflow protection
2. **Air Gap Separation**: Theory of backflow protection
3. **Reduced Pressure (RP)**: Mechanical device & highest mechanical form of protection
4. **Double Check Valve Assembly (DC)**: Mechanical device
5. **Pressure Vacuum Breaker (PVB)**: Mechanical device
6. **Dual Check**: Mechanical device
7. **Atmospheric Vacuum Breaker (AVB)**: Mechanical device

Now, let's break these protections and preventions down even further…

Air Gap: An air gap is essentially a siphon breaker, providing protection from backsiphonage. It is impossible to have backpressure in an air gap, due to the fact that there is no physical connection. Air gaps are typically installed on individual plumbing fixtures and appliances as isolation protection. An air gap was commonly used by water departments as containment protection. Most codes tell us that the minimum air gap should be no less than 1" or at least two times the pipe size and three times the pipe size if closer than 6" to a corner.

Air Gap Separation: The best way to prevent backflow is the installation of an air gap separation. An air gap separation is the distance between the discharge of a potable water pipe outlet and the flood level rim of any sink or vessel. When properly installed and maintained, it is physically impossible to have contaminated water entering the supply through the air gap. An air gap is considered a HIGH HAZARD application.

Reduced Pressure Backflow: The reduced pressure principle backflow prevention assembly is referred to as the RP, RPPZ, RPZ, and other acronyms. The RP is the best mechanical backflow protection available today. It is considered as a proper protection for high- or low- hazard application, backpressure or backsiphonage backflow, and containment or isolation protection. There are several manufacturers of RP's & RPDF including: Wilkins, Watts -AMES, ARI, Febco, Hersy-Beepco, and Apollo-Conbraco. Some of the larger brands have multiple Rp's that they make. There are three (3) main styles of RP's:

1. *Horizontal*
2. *Y pattern*
3. *N pattern*

Double Check Valve Assembly (DC): A DC is a mechanical backflow preventer that consists of two independently acting, spring-loaded check valves. It includes shutoff valves at each end of the assembly and is equipped with test cocks. A DC is effective against backpressure backflow and backsiphonage but should be used to isolate only nonhealth hazards.

Pressure Vacuum Breaker (PVB): A PVB is a mechanical backflow preventer that consists of an independently acting, spring-loaded check valve and an independently acting, spring-loaded, air inlet valve on the discharge side of the check valve. It includes shutoff valves at each end of the assembly and is eqipped with test cocks. A PVB may be used to isolate health or nonhealth hazards but is effective against backsiphonage only.

Dual Check (DC): This device is intended for cold water service with limited hot water usage. The device consists of two (2) independently acting check valves.

Atmospheric Vacuum Breaker (AVB): An AVB consists of an air inlet valve, a check seat, and an air inlet port(s). If installed properly, the air inlet opens allowing air into the body of the device which compensates for any vacuum and separates the downstream non-potable water from the upstream potable water.

REMEMBER: A backflow assembly should be installed downstream of the buildings water meter as a containment assembly backflow, so it will be used to protect the entire building or property. Backflows are also installed on the downstream side of the containment assembly as an Isolation assembly to protect a particular room, drinking fountain, bathroom, soda machine or medical device.

A backflow assembly is also used to protect fire irrigation systems and lawn sprinkler systems. There are several types of backflows. Backflows are used at different levels (high and low) of protection. Some backflows are testable, and some are non-testable.

Laboratory Faucet Backflow Preventer: This standard applies to devices that are designed to protect the potable water distribution system from pollutants or contaminants which enter the potable water system by backflow. It is designed to be downstream of the faucet shut-off valve. This backflow preventer is designed for two (2) independently acting check valves, force-loaded or biased to a normally closed position and between the check valves, a means for automatically venting to atmosphere, force-loaded or biased to a normally open position.

Backflow Preventer with Intermediate: This standard applies to devices that are designed to protect the potable water distribution system from contaminants that may enter the system by backflow. The backflow preventer with intermediate atmospheric vent's design shall consist of (2) independently operating checks valves separated by (intermediate chamber) with a means for automatically venting to the atmosphere. The checks valves are forced-loaded to a normally closed position and the venting means is force-loaded to a normally open position. This device is intended to operate under continuous pressure and is typically seen on Boilers and Cooling Towers.

Knowing backflows by sight will save you time and money in the field. *If you want to learn more about how a backflow works, click here to check out an informational video.*

It is imperative that when testing a backflow you stick to a strong value system!

Backflows must be tested annually. *Why?* Because mechanical backflow preventers have internal seals, springs, and moving parts that are subject to fouling, wear, or fatigue. Also, mechanical backflow preventers and air gaps can be bypassed. Therefore, all backflow preventers have to be tested periodically to ensure that they are functioning properly. A visual check of air gaps is sufficient, but mechanical backflow preventers have to be tested with properly calibrated gauge equipment.

If a backflow passes, pass it, tag it, and write your report. Then, be sure to turn the report in as soon as possible. The customer might have received a turnoff letter; that leaves the customer limited time to get their test reports recorded at the Authority Having Jurisdiction (AHJ) or else they may face a fine or even a possible water turn off.

But if a backflow fails, you *must* fail it. When a backflow fails it must be retested as soon as your repair has been completed.

The care and maintenance (cleanliness) of your gauge is very important to assure accurate test numbers. Always keep in mind your gauge is not a tool– it's an instrument. Check out these high-quality gauges offered by Backflow Parts Depot.

Backflow System Repairs

No matter how strong a backflow system is, inevitably parts breakdown due to natural causes and other damage. Below are some considerations to make before repairing a backflow system.

Depending on what part of the country you're in, this will determine the depth of the infrastructure; the closer the infrastructure is to ground level will affect the temperature of the water. In combination of the temperature and lack of quality of the water, this will break down the rubber parts much quicker. Due to this breakdown, sometimes debris can travel through the water supply and get wedged into the backflow device.

Of course as in anything we touch or repair, the age of the backflow assembly should be considered before any repair work is done. The backflow rubber kit may be worn out due to high water usage. Or perhaps the rubber kit has started to deteriorate due to the poor quality of the water supply.

When testing backflows, always listen to the gauge. If the gauge tells you the backflow assembly fails, you must fail it. Keep in mind: you're NOT there to pass the backflow but you're there to TEST the backflow.

Now, if a backflow fails, it's time to talk to your customer about why their backflow failed and what must be done to rectify the problem. Pricing the repair before you inform your customer about the failed backflow is always a good idea. Customers tend to get a little nervous when a tech stands in front of them with a calculator.

Flat rate pricing historically is an easier method to sell rather than by P&L. Availability of the parts will also play a big role in how you sell this job.

Field Testing

Testing is how you'll determine whether or not a backflow is in good shape. Here's what you need to know:

Field-Testing Equipment
To collect accurate data in the field about the operation of a backflow prevention assembly, a certified tester must adhere to a proper field-test procedure. The field-test equipment is used to test backflow prevention assemblies and must be capable of providing accurate data. The water supplier or administrative authority must verify that the field-test equipment used can perform the field-test procedure that is accepted in its jurisdiction and that the accuracy of the equipment is maintained. To ensure the ability of the test equipment to provide accurate data, the accuracy of the field-test equipment shall be verified at least annually.

Remember: In receiving your *Backflow & Repair Certificate*, you are now accepting the responsibility of protecting the water that Americans drink. Take a quick moment to think about that. You will be held accountable for your testing results!

When in the field, you must consider hydraulics and science, like the **Venturi Effect**.

Giovanni Venturi discovered that when fluid velocity increases through a piping restriction, a jet effect is created that can produce a negative gauge pressure that may result in a siphon. A piping connection at the point of the siphon may allow backflow to accrue through an uncontrolled cross-connection. There are several reasons why a ‘Venturi’ can start. You must be aware of this when you go out into the field.

Closed Systems

Now that we have installed a backflow assembly, we have closed any pathways for thermal expansion to escape. So thermal expansion will either find a weak link in the system or find its way into the sanitary system. But if it finds its way into the sanitary system that means a faucet was opened. When that faucet was opened that meant that there was a danger of a scalding incident that could have happened.

Now that you created this problem by installing a backflow, you will be held responsible for not preventing this problem. You will have assumed the responsibility of any and all monetary damages done by your negligence in not completing your job. Your job doesn’t end when the backflow is installed, you must check to see if a CLOSED SYSTEM has happened by installing a backflow.

Thermal Expansion

You need to be familiar with this term when testing and repairing backflow systems. This term is used to describe the circumstance of water expanding in volume as it is heated.Before major controls were placed upon city water suppliers, it was possible for thermal expansion to build-up in the water heater system to flow back into the city's water infrastructure. So that created a simple and efficient system for relieving excess pressure building up in the water heaters or system.

However, when a check valve or backflow preventer is installed, a “closed system” has been created. To solve this problem, you can use a Pressure Relief Valve (PRV) or a Thermal Expansions Tank. The best place to install the PRV is on the downstream side of the backflow. Then, the PRV can protect the entire forced water system.

When installing a backflow, the Water Heater Relief Valve needs to be inspected! Most manufacturers recommend that this valve gets exercised every 6 months and replaced every 5 years. Very important that you make sure that it is functioning before you leave after installing or repairing a backflow. If not, congratulations– you just made a BOMB!

Performance Requirements for Dual Check Valve Type Backflow Preventers for Carbonated Beverage Dispensers: This standard applies to devices that prevent carbon dioxide gas and carbonated water from backflowing into the potable system. The device consists of two (2) independently acting check valves internally force-loaded to a normally closed position.

The device shall be permitted to be equipped with a supplementary check valve installed downstream of the independently acting check valves.

- Low Hazard
- Backpressure/Backsiphonage
- Operate under continuous pressure conditions
- Typically seen on Beverage Machines
- Recommended for Non Carbonated Dispensers

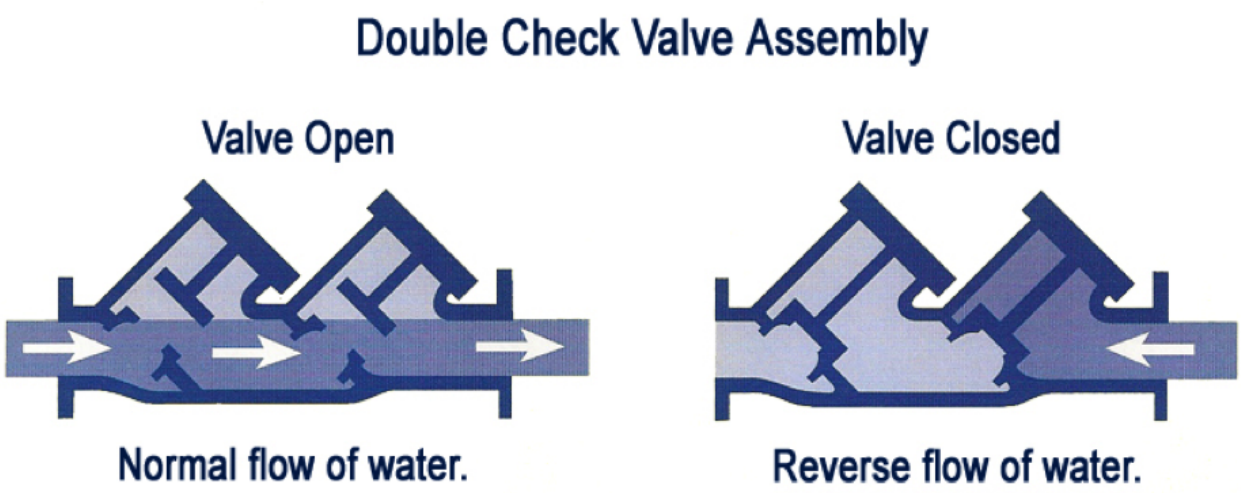
Double Check Backflow

This standard applies to devices designed to protect the potable water distribution system when an abnormality in the system causes the pressure to be temporarily higher in the polluted part of the system than in the potable water piping. The standard includes two types of backflow prevention assemblies identified as a Double Check Backflow Prevention Assembly (DC) and a Double Check Fire Protection Backflow Prevention Assembly (DCF).

The DC and DCF assemblies consist of two (2) independently acting check valves internally force-loaded to a normally closed position, two (2) tightly closing shut off (isolation) valves and properly located test cocks.

This standard also applies to manifold assemblies consisting of two (2) or more complete DC's or DCF's in parallel. The assemblies do not need to be of the same pipe size. The manifold size shall be identified by the single inlet and outlet of the manifold device.

The performance requirements for DCF's consider applications where systems are static flow for extended periods of time. Other operational characteristics of DCF's include extended periods of backpressure, fluctuating supply pressures and high velocity emergency flows.



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American Backflow Solutions: https://americanbackflowsolutions.com/index.php/funeral-homes/

Backflow Parts Depot: https://backflowpartsdepot.com/

Centers for Disease Control & Prevention: https://www.cdc.gov/coronavirus/

Department of Health: https://www.doh.wa.gov/portals/1/Documents/pubs/331-473.pdf

Environmental Protection Agency: https://www.epa.gov

Plumbing Today: https://plumbingtoday.biz/blog/what-is-a-backflow-preventer-and-how-does-it-work

Science Mag: https://www.sciencemag.org/news/

World Health Organization: https://www.who.int/

About Backflow Parts Depot

Patrick Murray who has been a visionary in the Plumbing and Backflow Industry for 30+ years founded Backflow Parts Depot in 2011.

Early on in his career, Patrick noticed the ongoing problem in the lack of availability for parts needed to regularly repair backflows. This issue along with the growing demand in the backflow industry prompted Patrick to create a company that stocks all the necessary parts to install, repair and provide maintenance to backflows.

Backflow Parts Depot was developed so that companies, technicians, and customers could have one place where all their parts needs would be met. Backflow Parts Depot carries a full line of backflows in any brand or size you may require. We also stock all manufacturer replacement parts, repair kits, tools and other commonly used hardware parts.

We also have trained, experienced and licensed backflow technicians on staff ready to answer any questions you may have on and off the job site. They are equipped with the knowledge to help you efficiently troubleshoot any assembly.

Backflow Parts Depot is committed to providing our customers with the highest quality of products and services. We are committed to offering convenience and dependability through multiple methods of shopping our product lines. Whether you are ordering online, doing in store pick-up or requesting delivery, we promise to make your shopping with us be an extraordinary experience!

Patrick Murray, a pioneer in the plumbing industry for over 30 years. He is owner and operator of BackflowPartsDepot.com and has designed and built a State-of-the-Art Backflow Training Facility. Patrick Murray is a known expert in the industry, often sought out for professional witnessing, project consulting, and problem-solving. Connect with him here.