

Backflow Preventer Freeze Protection

Winter is a rough season on outdoor backflow preventers. Through the years, the design of these assemblies changed to make them more susceptible to freezing conditions. Initially they were made of heavy materials with thick walls that were durable, but this caused them to be large, unwieldy and hard to handle because of their weight. Because of demand, manufacturers modified the design and materials used so backflow preventers are now smaller and lighter. Cast iron has been replaced by brass or plastic. Wall thicknesses that were once thick are now very thin. Even the heaviest and thickest of materials is no match for the overwhelming pressures of freezing water, but unprotected backflow preventers manufactured today are damaged when the temperature barely dips below freezing. Some damage can be repaired by replacing parts, but most often the expansion caused by freezing distorts the assemblies in a way that no reasonable repairs can return the unit to a satisfactory condition.

Most residential installations of backflow preventers are required for lawn irrigation, pools or water wells and are typically installed outside. To assure total protection from contamination on commercial customers, most Water Provider's ordinances, policies and plans require backflow preventers to be installed outside near the meter. So, how do you protect these from freezing?

Units which serve lawn irrigation and swimming pools are used only in late spring, summer and early fall and can be taken out of service when not in use. These are sometimes purged with air to remove water and left in place for the winter. This is usually accomplished by opening the unit to drain water out or by forcing compressed air in. These methods are not without risk because both can leave water in the unit or high velocities of compressed air can damage parts. Other options are to remove the unit and store it in a warm location. Recently, some manufacturers have designed backflow devices to facilitate this method. Some are designed with a module that contains the check valves and relief valve that can easily be removed and stored for the winter.

When removal is not an option, protection must be provided. Enclosures are available that will offer protection from freezing as well as vandalism. These are generally made from aluminum or fiberglass, are insulated, secured to a concrete slab and provide a drainage port within the enclosure wall. Careful consideration needs to be given to the drainage port during landscaping to avoid covering the port. A standard is available that assures enclosures have been lab tested and will protect against specific conditions. That standard is ASSE 1060. Some Water Suppliers have this standard written into their ordinance, policy or plan while others simply state that the backflow preventer must be protected from freezing without giving any details. Since the enclosure alone is generally not adequate freeze protection in the coldest winter conditions, a heat source is likely necessary. ASSE Standard 1060, 2006 edition, Section 1.2.3 states:

“Heat sources provided by the enclosure manufacturers shall be constructed and installed so that water or other liquids do not enter and or accumulate in or on the live wired sections or electrical components or wiring. Electric heat sources and electrical components which are associated with the heat source and supplied by the manufacturer shall be listed by an independent product safety listing and certification agency for use in damp locations.”

To assure that this heat source meets these conditions, has been lab tested, is safe and can provide a specific level of performance, look for labeling on the heat sources that states that the heat source is certified by an independent product safety listing and certification agency for use in damp or wet locations.



The bags shown on the left are a good extra resource (besides the insulated enclosure) to help prevent the backflow preventer from freezing.