Pressure Vacuum Breaker Basics

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A pressure vacuum breaker, or PVB, is an important component of irrigation systems. It provides protection against backflow, or back siphoning, of water from the irrigation system to your home's freshwater supply—your drinking water. Most sprinkler systems have a PVB located outdoors either next to an exterior wall or enclosed in a recessed box in the ground. Some systems have PVBs indoors, usually in a basement or crawl space, near the water shutoff for the irrigation system.

Why You Need One

Most local building codes require the use of a backflow prevention device on all water systems. Contamination of the water supply can have wide-ranging effects, so prevention is very important. Since there is usually only one water system in the home for both drinking water and all household use, including irrigation, there is always the risk contamination through cross-connections.

Backflow can occur if there is a sudden drop in the water pressure in the home's main water supply. For example, if the city water is interrupted for any reason, this could result in negative pressure in the home's main supply. Negative pressure creates a siphoning effect in which the water can flow backward in the pipes. Such an event is rare but could cause water to be sucked out of sprinkler lines and into the main water supply, and from there it can enter your household fixtures.

How It Works

A pressure vacuum breaker consists of a check device, or check valve, and an air inlet that is vented to the atmosphere (open-air). The check valve is designed to allow water through and keep the air inlet closed during normal conditions. When the air pressure is greater than the water pressure, the vented chamber opens and breaks the suction effect of the low pressure, thereby preventing the backflow of water. A pressure vacuum breaker is installed close to the water source before it goes into the sprinkler valve. It must

be installed above the highest point in the system, usually the highest sprinkler head or the highest slope in the yard.

Maintenance

Regular maintenance for a pressure vacuum breaker is minimal. The internal components may need to be replaced every five years or as specified by the manufacturer.

The most important regular maintenance item is protecting the PVB from freezing during cold weather. Draining the PVB during a sprinkler "blowout" is a critical part of winterizing a sprinkler system. Failing to drain a PVB can result in damage to its internal parts or cracking or bursting of the PVB, requiring replacement. Once the sprinkler system is winterized, the valves on a PVB typically are opened halfway to allow air to escape in the event that residual water inside the PVB freezes. Air will prevent pressure buildup that can damage the parts.

Repairs

The internal components of a pressure vacuum breaker can become damaged by freezing and through normal use over time. A clear sign that something is not working properly is leaking from under the bell or bonnet assembly of the valve. Repair kits are available from the manufacturer that are specific to each PVB model.

A standard valve consists of turning off the inlet and outlet ball valves, then removing the bonnet assembly. Since the repair parts are installed in the reverse order, it is a good idea to keep the components well organized as they are removed. The repair parts are then installed, and the water supply is turned on (inlet water supply valve first). The local building code may dictate whether or not a homeowner is allowed to repair the backflow device. If a homeowner is permitted to repair the backflow device, it is likely that an inspection of some sort is required.