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Winterizing Your Lawn Sprinkler System

Every year, before the first freeze, the ritual of irrigation "blow out" becomes the priority for all irrigation systems that are in parts the country where the frost level extends below the depth of the installed piping.

Even if you have drained some water out of the system, the remaining water can freeze, expand and crack the PVC piping (rigid, white pipe), usually from fitting to fitting. Polyethylene pipe (flexible, black pipe) is used in many freezing climates. Although polyethylene pipe is more flexible and can expand under pressure, water left inside could freeze and rupture the pipe walls. Freezing water in the backflow assembly will damage the internal components and could possibly crack the brass body.

To minimize the risk of freeze damage to your irrigation system, you'll need to "winterize" your irrigation system

Irrigation systems in areas where "winterization" is mandatory are installed using one of three types of water removal in mind: manual drain, auto drain, or blowout. If you don't know your system type, it would be best to use the blowout method.

Manual Drain Method

Use when manual valves are located at the end and low points of the irrigation piping. To drain these systems, simply shut off the irrigation water supply (shut off will be located in the basement and will be either a gate/globe valve, ball valve or stop and waste valve - see drawings below) and open all the manual drain valves. Once the water has drained out of the mainline, open the boiler drain valve or the drain cap on the stop and waste valve (whichever is used in your area) and drain all the remaining water that is between the irrigation water shut off valve and the backflow device. Open the test cocks on the backflow device. If your sprinklers have check valves you'll need to pull up on the sprinklers to allow the water to drain out the bottom of the sprinkler body. Depending on the location of the drain valves, there could be some water left in the backflow, the piping and the sprinklers. When all the water has drained out, close all the manual drain valves.

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Automatic Drain Method

Use when automatic drain valves are located at the end and low points of the irrigation piping. These will automatically open and drain water if the pressure in the piping is less than 10 PSI. To activate these, you shut off the irrigation water supply (shut off will be located in the basement and will be either a gate/globe valve, ball valve or stop and waste valve - see drawings below) and activate a station to relieve the system pressure. Once the water has drained out of the mainline, open the boiler drain valve or the drain cap on the stop and waste valve (whichever is used in your area) and drain the remaining water that is between the irrigation water shut off valve and the backflow device. Open the test cocks on the backflow device. If your sprinklers have check valves you'll need to pull up on the sprinklers to allow the water to drain out the bottom of the sprinkler body. Depending on the location of the drain valves, there could be some water left in the backflow, the piping and in the sprinklers.

In some areas you might have a combination of the manual drain system on the mainline (the pipe between the irrigation water shut off valve and the valves) and auto drain system on the lateral lines (the pipe between the valves and the sprinklers).

"Blow Out" Method

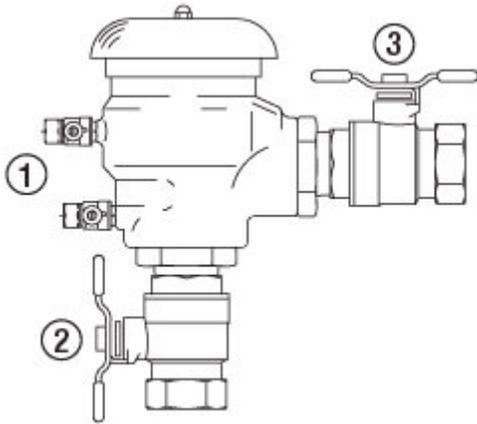
It is recommended that a qualified licensed contractor perform this type of "Winterization" method, the blow out method utilizes an air compressor with a Cubic Foot per Minute (CFM) **rating of 125-185 for any mainline of 2" or less and a PSI of 50-80**. These types of compressors can be rented at your local equipment rental yard. The compressor is attached to the mainline via a quick coupler, hose bib or other type connection, which is located before the backflow device. To start the "blow out", open the Test Cocks on the vacuum breaker, shut off the irrigation water supply and open the drain on the supply line. Once the line is drained, close the drain and proceed to connect the air line. With the compressor valve in the closed position, attach the air compressor hose to the fitting. Activate the station on the controller that is the zone or sprinklers highest in elevation and the furthest from the compressor. Do not Close the backflow isolation or Test Cock valves. Slowly open the valve on the compressor; this should gradually introduce air into the irrigation system. The air pressure should be constant at 50 PSI. If the sprinkler heads do not pop up and seal, increase the air until the heads do pop up and seal. **The air pressure should NEVER exceed 80 PSI.**

Each station/zone should be activated starting from the furthest station/zone from the compressor slowly working your way to the closest station/zone to the compressor. Each station/zone should be activated until no water can be seen exiting the heads, this should take approximately two to four minutes per station/zone. It is better to use two or three short cycles per station/zone than to have one long cycle. Once the station/zone is dry, you should not continue to blow air through the pipe. Compressed air moving through dry pipes can cause friction, which will create heat and the heat could cause damage.

Additional Steps

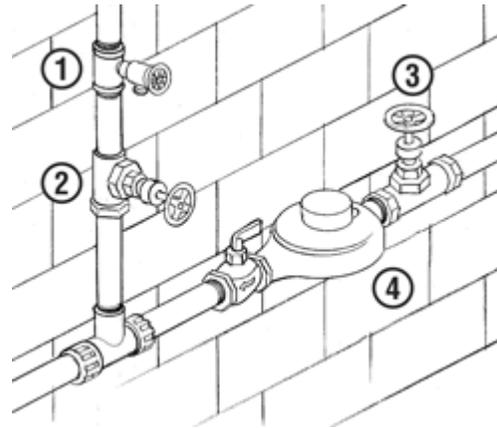
Once the water has been removed from the irrigation system, shut-down the air compressor and release any air pressure that may be present. Disconnect the airline. If your backflow device, the most common backflow installed is called a Pressure Vacuum Breaker, has ball valves, open and close the isolation valves on the backflow device numerous times to ensure that any trapped water has escaped from the upper areas. Leave the isolation valves open at a 45° angle (approximately 1/2 open) and leave the test cocks open.

Pressure Vacuum Breaker



1. PVB Test Cocks
2. Isolation Ball Valve Inlet
3. Isolation Ball Valve Outlet

Interior Point of Connection Freezing Climates

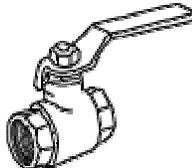


1. Boiler Valve/Drain
2. Irrigation Shut Off Valve
3. Main Water Shut Off Valve
4. Water Meter

Types of Valves



Gate Valve



Ball Valve



Stop & Waste Valve



Boiler Valve

Preparing a hydraulic control system? Shut off the water supply to the signal control tube(s) and drain the field tubing.

Outdoor mounted controllers? Leave the power on and the dial / switch in the "Off" position. The heat from the transformer will keep the enclosure warm enough to keep condensation from forming inside the controller enclosure. The dial in the "OFF" will keep the controller from activating the solenoids in the field.

Indoor mounted controllers? You may either leave the power on and the dial/switch in the "Off" position OR you may remove the battery backup and unplug the transformer.

Rain Sensors? There is not much to do to prepare the rain sensor for the winter months. If your sensor is the type with a cup or bowl that catches water, you might want to remove the water and place a plastic bag over the sensor. This will keep any water from accumulating and freezing in the cup or bowl area. If your sensor is the type that uses wafers or discs, you might want to remove the wafers and store them in the garage for the winter months. This will keep damp wafers from freezing.

The Do NOTS of "BLOW~OUT" Winterization

1. Do not allow the air pressure to exceed 80 PSI for systems with PVC piping and 50 PSI for systems with polyethylene piping.
2. Do not stand over component parts while the system is pressurized with air.
3. Do not leave the air compressor unattended.
4. Do not blow the system out through a pump. First blow out the system, then drain the pump.
5. Do not leave the manual drain valves open after the blow out.
6. Do not leave the indoor drain open during the blow out!