

It's Time for Sprinkler Spruce-Up



Are you Ready?

Spring is here and the weather is warming up. Include your sprinkler system as part of the yard spruce up for Spring. Before ramping up your irrigation system, follow these four simple steps—*inspect, connect, direct, and select*:

- **Inspect** — Check your system for clogged, broken, or missing sprinkler heads.
- **Connect** — Examine points where the sprinkler heads connect to pipes/hoses. If water is pooling in your landscape or you have large soggy areas in your yard, you could have a leak in your system. A leak as small as the tip of a ball point pen can waste about 6,300 gallons of water per month.
- **Direct** — Redirect sprinklers to apply water to the landscape or yard if they are watering the drive, house or side walk.
- **Select** — An improperly scheduled irrigation controller can waste a lot of water and money. Update your system's schedule with the season, or select a [WaterSense labeled controller](#) to take the guesswork out of scheduling.

By taking these simple steps you can save as much as 25,000 gallons of water and \$280 over a six-month period! Experts estimate that as much as half of the water we use outdoors is being wasted due to evaporation, wind, or runoff caused by inefficient irrigation systems, broken or misdirected sprinkler heads, or a leak in the system.



Uncomfortable doing it on your own?



For more tips, visit the WaterSense website at www.epa.gov/watersense/outdoors.

It's Time



INSPECT



CONNECT

to Start a

Sprinkler



DIRECT



SELECT

Spruce-Up!

Do you use an in-ground irrigation system to water plants in your landscape? Then it's a good idea to periodically check it to make sure all the components are working properly, including valves, filters, backflow preventers, pressure regulators, pipes, sprinklers, microirrigation lines, and the controller.

If your water bill is higher this watering season than it was the same time last year, it could be the sign of a leak. Components can be disturbed or damaged due to winter's cold, ice, or snow, so the start of the watering season is the perfect time to spruce up your sprinkler system. A sprinkler spruce-up involves four simple steps: inspect, connect, direct, and select.

Inspect for Breaks and Leaks

Missing or broken sprinkler heads can waste water and damage your plants



by spraying water where it isn't needed. Breaks might be hard to spot if your system runs overnight or early in the morning. One way to find

broken heads and leaks is to turn on each irrigation zone separately, then look for heads that do not pop up fully, are tilted, or are missing entirely. Make sure sprinklers aren't blocked by rocks, debris, or foliage. When the sprinkler is running, check for misting or overspray, which could be a sign that the water pressure is too high. A pressure regulator can reduce system pressure, and/or you can install WaterSense labeled spray sprinkler bodies, which have pressure regulation built in.

Connect Sprinklers, Pipes, and Valves

Leaks can also occur at the joints between sprinklers and the piping. Your irrigation professional can identify whether the joint is broken or if the sprinkler needs to be tightened. Leaking joints can also be a sign of too much water pressure or particles in the water. Check that your pressure regulator is installed properly. Particles in the water can be a sign that your filter is old or clogged and may need to be replaced.



Because many irrigation pipes are underground, it may be difficult to identify loose pipe connections.



Between irrigation cycles, look for areas of the landscape with water pooling on the surface, which could indicate an underground leak. Check the valve boxes that house controls and other components underground to make sure that valves are securely connected and can close completely, so they do not slowly seep water even when they are turned off. Installing a flow meter can also help you know when your system has a leak.

Direct Sprinklers for Best Water Coverage

Do your sprinklers spray your driveway, house, or sidewalk? Direct



them towards the landscape to avoid sending runoff—and possible pollution—down the storm drain. You (or a professional) should be able

to adjust each sprinkler nozzle so the spray is as wide or as narrow as

Go With a Pro

Once you're done with your initial spruce-up review, flag anything that needs fixing; if you can't do it yourself, find an irrigation professional certified by a WaterSense labeled program to inspect and maintain your system at

www.epa.gov/watersense/irrigation-pro. These professionals have demonstrated knowledge of water-saving technologies and techniques, and they can also program your irrigation controller based on your location and landscape to ensure the right amount of water is applied.



necessary. For best results, the water from one sprinkler head should just reach the sprinkler head next to it, known as head-to-head coverage. Keep sprinkler heads vertical and avoid tilting for best lawn coverage.

For watering flower gardens, shrubs, and trees, consider using microirrigation (also referred to as

drip irrigation) or microsprays. With microirrigation, water can be directed to the root zone, where plants need it most. Learn more at www.epa.gov/watersense/microirrigation.

Select a WaterSense Labeled Irrigation Controller

Irrigation controllers, normally located inside the garage or on an outside wall, automatically activate your system. They can be clock-timed controllers, or smart controllers that schedule irrigation based on the weather or moisture in the soil. WaterSense labeled weather-based irrigation controllers do the thinking for you in terms of when and how much to water, based on local weather and landscape conditions. When installed and programmed properly, WaterSense labeled irrigation controllers can save an average home nearly 7,600 gallons of water annually over a clock-timed controller. If you're not ready to replace

your controller, there are WaterSense labeled models that upgrade your existing controller to make it weather-based. Learn more at www.epa.gov/watersense/irrigation-controllers.

If you're not ready to replace your clock-timed irrigation controller, update it with the seasons to avoid overwatering during rainy months or cooler temperatures. If you notice that runoff occurs when you water, consider breaking up the irrigation into smaller intervals with breaks in between to allow the water to seep into the soil. For tips on adjusting your irrigation controller, visit www.epa.gov/watersense/watering-tips.



For more information about sprucing up your sprinkler and other smart watering ideas, visit www.epa.gov/watersense/outdoors.

Cover controller image courtesy of Rachio; back page controller and interior spread valve box photo courtesy of Hunter Industries Incorporated; and interior spread sprinkler photos courtesy of Rain Bird Incorporated.



Relieve Pressure and Reduce Water Waste From Spray Sprinklers



Many irrigation systems operate at water pressures that are higher than what the manufacturer recommends, which can result in excess and uneven watering. Spray sprinkler bodies (SSBs) that have earned the U.S. Environmental Protection Agency (EPA) WaterSense® label can reduce water waste and improve plant health by regulating water pressure at the spray nozzle. This document describes the characteristics, benefits, optional features, and installation tips for WaterSense labeled SSBs, and how SSBs fit into a water-smart landscape.

Background

Most spray sprinklers have recommended operating pressures between 30 pounds per square inch (psi) and 45 psi. Operating a sprinkler system at a pressure higher than recommended can cause significant water waste, due to excessive flow rates, misting, fogging, overspray, and uneven coverage.

High water pressure can be caused by high supply pressure or changes in landscape elevation. High

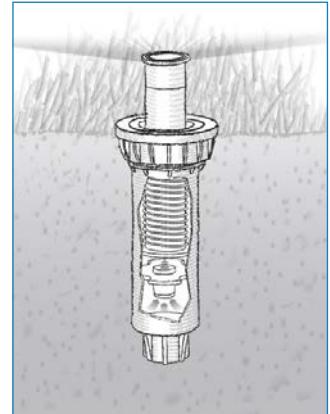
pressure can be managed by installing pressure regulators on the main line near valves that separate irrigation zones or sprinkler bodies that have internal pressure regulation. The location and number of pressure regulators will depend on where a system experiences high pressure. A pressure regulator on the main

line will reduce incoming supply water pressure for the entire system. Some systems will require multiple pressure regulators along the path of water. Some sprinkler bodies include an internal pressure regulator that is housed inside the stem. This mechanism is engaged when water entering the sprinkler body is at a pressure higher than the manufacturer-specified regulation pressure. This “integral pressure regulator” allows the sprinkler body to work at or near its optimal operating pressure, resulting in a consistent flow of water, generating the appropriate water droplet size, and providing a more uniform distribution of water across the landscape.

High pressure in irrigation systems is more common than one would expect. For example, based on irrigation audits conducted by Utah State University Extension and by the Center for Resource Conservation in Boulder, Colorado, 63 percent of



Operating under too much pressure can cause misting, fogging, overspray, and uneven coverage. Courtesy of the Irrigation Association.



Internal structure of a spray sprinkler body. Courtesy of the Irrigation Association.

irrigation systems in those regions operate at water pressures higher than 30 psi. Installing WaterSense labeled SSBs in an irrigation system for the average household, operating at or above 60 psi, can save nearly 5,600 gallons of water per year.

Why Install WaterSense Labeled Spray Sprinkler Bodies?

There are many benefits to installing WaterSense labeled SSBs:

- Reduce overwatering and improve plant health:** By using integral pressure regulation to ensure the intended amount of water is applied, WaterSense labeled SSBs reduce the likelihood of overwatering, resulting in a healthier, more attractive landscape.
- Pay for themselves with avoided water costs:** Replacing existing sprinkler bodies with WaterSense labeled models throughout an in-ground irrigation system operating at or above 60 psi can save a home with an average sized residential landscape more than \$60 per year in water and sewer costs, resulting in a payback period of 2.1 years.
- Make installation a snap:** WaterSense labeled SSBs are installed the same way as a standard model. Both installation and maintenance are simple and straightforward.

Optional Features

In addition to integral pressure regulation, sprinkler bodies can also come with optional features such as flow reduction capabilities, integral check valves, and caps to indicate reclaimed water use. Flow reduction prevents water from flowing when a sprinkler is broken or damaged. An integral check valve prevents water from flowing out the bottom of sprinklers at

Savings All Season

Installing sprinklers with flow reduction could save more than 25,000 gallons of water and \$280 in water costs over a six-month irrigation season.

Performance Under Pressure

WaterSense labeled SSBs are tested and independently certified to meet EPA's criteria for efficiency and performance, as described in the [WaterSense Specification for Spray Sprinkler Bodies](#).



- Labeled SSBs are tested for a consistent flow rate under varying upstream water pressures that are higher than ideal operating pressures for sprinkler nozzles.
- By testing for performance related to flow rate, WaterSense labeled models have demonstrated that they will perform under a variety of high-pressure conditions.
- WaterSense labeled SSBs are also tested to ensure that performance is maintained under low-pressure conditions.

lower elevations. Both are beneficial for operating an efficient irrigation system.

Design and Installation

Even the most water-efficient components cannot compensate for poor irrigation system design, installation, or maintenance. A holistic approach will help customers achieve the full potential of water savings outdoors.

An irrigation system should be designed and installed to provide the right amount of water to plants based on plant type. When designing a new landscape, group plants by water requirements into irrigation zones designed to match plant water needs. All sprinklers within a zone should have integral pressure regulation and share the same recommended operating pressure. This maintains even pressure distribution and flow rates throughout the zone, providing a uniform distribution of water and preventing misting and overspray.

For best results, after assembling the irrigation pipe, but before connecting the sprinklers, flush the entire system to remove any debris that could be in the

pipes. When installing sprinklers, as with all system components, the connection should be secure. All threaded connections should be wrapped with tape to keep the connection secure and prevent leaks. Most connections should also be glued, because the high system pressure can push joints apart.

When installing WaterSense labeled SSBs, like any sprinkler body, the top of the sprinkler body should be level with the top of the soil. During operation, the top of the sprinkler nozzle should rise higher than the grass level so that the spray is uninterrupted. Nozzle patterns should conform to the shape of the irrigated area. During installation, the direction and spray distance should be adjusted to avoid hitting any walls or hardscapes. Spray sprinklers should be avoided on steep slopes. If used on shallow slopes, to ensure

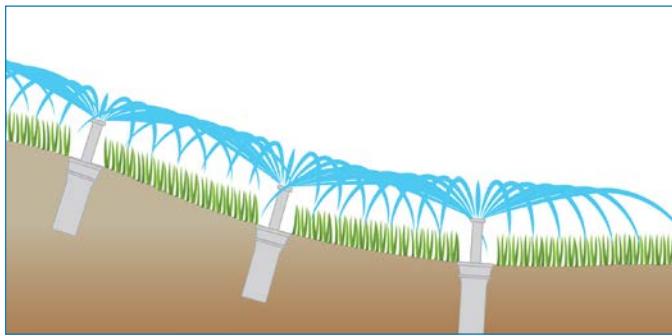


Figure 1

Installing sprinklers perpendicular to the ground allows for head-to-head coverage and an even distribution of water across the landscape.

even coverage, sprinklers should be installed such that they are oriented perpendicular to the surface of the ground (see Figure 1).

For maximum efficiency, sprinklers should be placed so that the spray of one sprinkler reaches the adjacent sprinkler. Ensuring that all sprinklers in a zone can maintain consistent pressure and flow makes even spacing and head-to-head coverage easier to achieve and avoids gaps in irrigated areas of the landscape (see Figure 2). Designing your system for head-to-head coverage includes selecting the correct nozzle, which is just as important as selecting a WaterSense labeled SSB. Differences in nozzles are based on discharge angle, pattern, and distance.

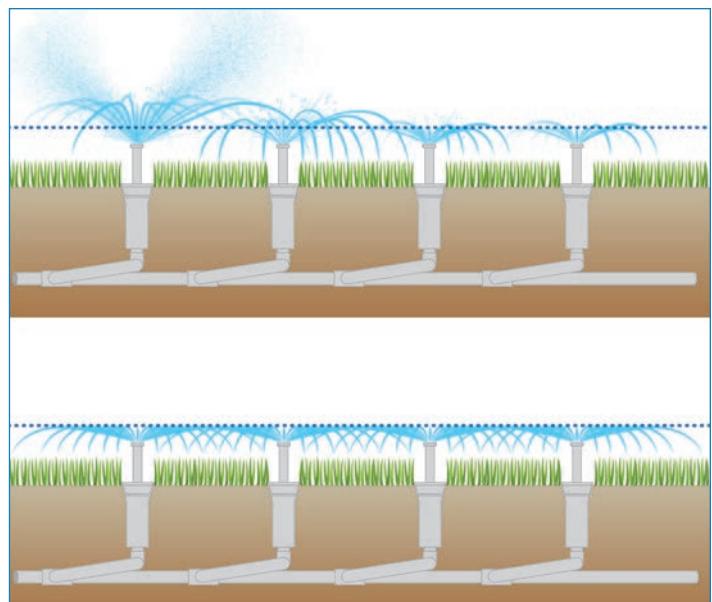


Figure 2

The top image represents a system operating at high pressure without integral pressure regulation. The bottom image shows the benefits of pressure regulation: consistent flow, reduction in misting and overspray, and improved coverage.

Exact specifications for sprinkler body spacing should be included in the manufacturer's literature.

Maximizing Outdoor Water Savings

While WaterSense labeled SSBs help reduce water waste when pressure is too high, there are other components of an irrigation system that can improve water savings. For systems where irrigation events are scheduled using a standard clock-timer controller watering at set intervals, irrigation will occur whether plants need it or not. [WaterSense labeled weather-based irrigation controllers](#) (WBICs) use local weather



Weather-based irrigation controller. Courtesy of Rachio.

data and landscape conditions to apply water only when plants need it.

Since smart irrigation is only one piece of the puzzle when it comes to reducing outdoor water waste, here are a few more ideas to keep in mind when creating a landscape or irrigation system:

- **Select plants** based on the local climate. Plants native to the region are accustomed to local weather patterns and require less irrigation.
- **Establish healthy soils** to promote deep root growth and store water.
- **Create cycle-soak schedules** if water begins to pool on the landscape surface. Dividing irrigation cycles into shorter runtimes allows water to soak into the landscape between cycles.
- **Consider soil moisture-based irrigation control technologies**, which water plants based on their needs by measuring the amount of moisture in the soil and tailoring irrigation schedules accordingly.
- **Install microirrigation around trees and shrubs**; by allowing water to seep into the soil, this technology better irrigates the root zone of plants, where they need water most.
- **Winterize** during the cold months to eliminate the chance of cracks and leaks caused by freezing. Winterizing uses air pressure to remove all water from inside the pipes. Note: If any sprinklers are installed using the side inlet, instead of the bottom inlet, winterizing will only remove water to the depth of the side inlet, and any water below that inside the sprinkler body needs to be manually removed.

Don't Lose Your Head

Foot traffic, landscaping equipment, or other machinery can easily break sprinklers and cause water to leak or spray uncontrollably. A broken or missing sprinkler head can waste as much as 1,000 gallons of water per week!

Resources

EPA offers a wide variety of information about water-smart landscaping and irrigation, as well as resources to find WaterSense labeled irrigation products and professionals certified by a WaterSense labeled program. Here are just a few resources:

- Find irrigation professionals certified by WaterSense labeled programs: <https://www.epa.gov/watersense/irrigation-pro>
- WaterSense Product Search Tool (including SSBs and WBICs): <https://www.epa.gov/watersense/product-search>
- Watering tips (including Sprinkler Spruce-Up): <https://www.epa.gov/watersense/watering-tips>
- Irrigation Association's Landscape Irrigation Best Management Practices: <https://www.irrigation.org/IA/Advocacy/Standards-Best-Practices/Landscape-Irrigation-BMPs/IA/Advocacy/Landscape-Irrigation-BMPs.aspx>

For more information about smart outdoor water use, visit <https://www.epa.gov/watersense/outdoors>.

