

# Repairing And Rebuilding Sprinkler Heads

**A** malfunctioning sprinkler head squanders irrigation time, water, and money. Worse yet, it can damage or destroy the very same turf it was designed to save. However, you may not need to throw a head away if it underperforms, wears out, or breaks. Most such sprinklers can be rebuilt or repaired so that they have a whole new service life, performing up to their original specifications for years to come.

Some sprinkler heads may require only cleaning, adjusting, or simple repairs that you can do yourself. You might even be able to rebuild them completely in your own shop. Manufacturers are designing their golf and institutional sprinkler heads today with ease of repair in mind. But if you don't have the time or ability to fix them, you can send them out to a repair facility.

Whether sprinkler heads are made of brass, cast iron, or stainless steel, having them professionally rebuilt can cost as little as one-third the price of a brand-new sprinkler. It costs even less if you can do it yourself. There are repair kits that make this faster and easier than it sounds, and many sprinkler manufacturers provide service manuals.

Whether you send sprinkler heads away to be rebuilt, fix them yourself, or buy rebuilt heads in the first place, certain economic facts do not change: A malfunctioning sprinkler wastes water. A rebuilt sprinkler costs less than a new one. But no sprinkler should be repaired unless necessary. Preventive measures are the most economical of all.

John Lamar, who is a licensed landscape contractor, founded Watley in Oak View, CA. The firm makes two products, the Rise-Up Tool and the Irri-Tool, which he developed to solve problems he himself had encountered in working with the many sprinkler heads available today.

Lamar advises, "When you are considering the repair of a particular sprinkler head, you often need to make the determination of whether the head is actually broken, out of adjustment, or just needs to be flushed and cleaned. More often than not, a good cleaning and adjustment will solve most problems."

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He points out, "With the recent concern about efficient water use, sprinkler head manufacturers have introduced several high-performance, low-precipitation-rate, low-pressure, single-stream sprinkler heads, offering the user a selection of nozzles to fit each individual situation. These heads offer enormous flexibility, but in return they demand fine tuning and clean water."

Cleaning, flushing, and adjusting sprinkler heads can be performed in the field quickly, if that is all that is needed, by removing the nozzle and flushing the head. Watley has just introduced a single, multi-faceted tool called the Irri-Tool, which is designed to assist in the installation, maintenance, and repair of irrigation systems.

Lamar says he developed the tool because many of these systems are a hybrid of sprinkler heads and drip systems made by several manufacturers, requiring many different tools for adjustment and repair. This made it necessary to have a variety of separate tools handy, until he came up with

his new multi-purpose product.

The Irri-Tool can lift and adjust most low-precipitation-rate and multiple-nozzle sprinkler heads, such as the Hunter series, Rain Bird R-50, and Toro Super 700. It also includes three different screwdrivers, a nozzle cleaner, a drip sprinkler cleaner, and a drip tubing punch.

The Irri-Tool was a natural outgrowth of Watley's first product, the Rise-Up Tool, which Lamar originally invented to help him solve some problems he had encountered as a contractor while installing, adjusting, and repairing sprinkler heads.

How do you decide whether a malfunctioning sprinkler head needs to be rebuilt or can be put in good working order through the simple adjustments, servicing, and minor repairs described above? The sprinkler head manufacturers can help you.

"Troubleshooting Automatic Sprinkler Systems," published by The Toro Company Irrigation Division in Riverside, CA, includes a number of general problem-solving tips for sprinkler heads. The guide notes, "Because of the great diversity of sprinklers, our troubleshooting methodology will only consider problems common to all sprinklers. Check with your distributor for service information on the particular sprinklers on your project." Here are Toro's time- and money-saving pointers:

\*Sprinklers should be operated and visually checked. Many dollars are lost each year, and a terrible amount of water is wasted, because sprinklers aren't serviced on a regular basis.

\*One of the most common problems is a sprinkler whose nozzle or rotor is clogged with debris. These sprinklers need to be disassembled, usually from the top, cleaned and reassembled. Most sprinklers either come with, or have available, plastic nozzle screens. Sometimes these do not get installed. Having them on hand is helpful so you can install them when sprinkler disassembly is necessary. If clogged nozzles are a recurring problem, a filter installed near the point of connection will prevent debris from reaching the sprinklers and save many hours of labor.

\*Too much pressure or not enough pressure at the sprinkler are also common sprinkler problems. Each type of sprinkler is designed to operate within a range of pressures (detailed in the manufacturer's catalog). Too much pressure at the nozzle causes misting, which reduces the radius of the sprinkler, makes the pattern prone to wind disturbance, and distorts the

sprinkler's distribution.

\*A valve with flow control can be adjusted to dissipate constant excess pressure. A pressure-regulating valve will maintain a constant downstream pressure, even with fluctuating high pressures.

\*If sprinklers are overspaced, or the pipe undersized, there aren't any simple solutions. You might consider a booster pump to bring the pressure up to the high end of the nozzle specifications as a means of improving performance. The system must be analyzed prior to adding a pump, to ensure that damage won't result to any of the system's components.

Now we move to a specific guide for one type of head, the impact sprinkler. Buckner, Rain Bird, and Weather-matic are among companies who have prepared repair manuals for impact heads. Buckner also has a manual for its cam drive heads, another long lasting type of head.

The following list of maintenance, cleaning and troubleshooting tips is from the "Rain Bird General Maintenance Manual for Irrigation System Equipment," which was compiled, written and edited by Carlyle O. Regele and Donald W. Parker. They observe, "Through many years of experience, we have found that conditions which can interfere with the proper operation of impact sprinklers are oil, low water pressure, foreign materials in the irrigation water, and excessive damage or wear to sprinkler parts."

Any foreign object that obstructs the flow through the nozzle will interfere with the operation of the oscillator arm. Small rocks and pipe scale are common in some water systems. When this material is too large to pass through the orifice of the nozzle, it will completely or partially plug the orifice and result in a malfunction of the sprinkler rotation. The rotation of the sprinkler is dependent upon the action of the arm, which, in turn, is dependent upon the pressure and integrity of the water stream leaving the nozzle.

It is not recommended to push a wire or rod into a nozzle orifice to unclog it. Should the wall of the nozzle orifice become scarred, or a vane become damaged, it may create yet another problem with the sprinkler's performance.

For this same reason, the orifice of a nozzle should never be drilled out to a larger size. A drill bit will scar the sides of the orifice and cause turbulence in the stream of water as it passes through the nozzle. This turbulence results in a distorted stream, which may reduce the driv-

ing force and the rotation of the sprinkler as well as adversely affect the distribution pattern.

A partially plugged, or badly worn, or otherwise damaged nozzle can be identified by the condition of the stream at the point where it leaves the nozzle orifice. The stream will be distorted or have a fuzzy appearance. A good stream will be tight and very smooth as it leaves the nozzle orifice, imparting maximum force to the arm.

## ***Sprinkler heads can be rebuilt for approximately one-third the cost of new ones.***

The increasing use of gear-drive heads, such as Hunter and Toro, requires a different repair tactic. The working parts of these heads are enclosed in a case. Instead of opening the case for repairs, the entire module is replaced with relative ease. The part may be more expensive overall, but the labor and skill required is less. Rain Bird is also using the concept for its R-70 series of sprinklers.

If you have now determined that your sprinkler does need repair, check out the options available to you, beginning with sending your sprinkler heads away to be rebuilt.

"The cost of a sprinkler nowadays is such that rebuilding becomes very inexpensive as a means of replacement," says Dave Tanner, co-owner of American Irrigation Repair & Supply Co., Inc., in Fremont, CA. Getting down to dollars-and-cents comparisons, Tanner says, "Some brass and steel sprinklers, such as Rain Bird, Buckner, or Thompson impact or gear drives, are very valuable and can run from \$120 to \$180 new. We can rebuild them for approximately one-third of that and guarantee them almost as long as the original manufacturer. We have extended our warranty to three years. It used to be two."

First the sprinklers are completely disassembled. Then the steel parts are put into a machine called the Wheelabrator to be cleaned automatically. "It's like an airless sandblaster," Tanner explains, "but it uses steel shot. It tumbles the parts in the Wheelabrator while shooting the shot down. This cleans the steel parts, such as the housing. The brass parts are cleaned in a glass-bead sandblaster."

The clean parts are then inspected for excessive wear and replaced if necessary. Missing or broken parts are also replaced. In selecting replacements, says Tanner, they try to utilize used parts whenever possible, such as an arm or a head assembly. These parts are taken from their large stock of returned or salvaged parts. If necessary, new parts are purchased.

All the new washers and springs are then installed, and the sprinklers are reassembled. Steel housings are coated with a rust inhibitor and painted with an acrylic enamel sealer. (Brass housings do not require painting.) Then the sprinkler assemblies are installed into the housing. The rebuilt sprinklers are water tested at the customer's pressure level on a machine that was custom-made by the company for this purpose.

Rebuilding sprinkler heads is "not something that can be handled by just simple labor," says Tanner. "There's an actual creative component, with a lot of thinking involved."

A malfunctioning sprinkler head should always be promptly repaired or replaced, Tanner warns. "A broken turf sprinkler is like having an open one-inch valve. It can lose literally hundreds of gallons a minute if it's free-flowing water," he explains.

Arco Parts, founded in 1981 by Bill Hayes, Jr., in Pleasonton, CA, also repairs and rebuilds a wide assortment of institutional sprinkler heads. The company also offers new replacement parts and repair kits for local irrigation supply houses. It has helped simplify and speed up the parts finding process by taking some of the load off of manufacturers.

Eckhart-Ross Irrigation in Manteca, CA, also rebuilds sprinkler heads. Gary Eckhart and Joe Ross are the co-owners. "Most sprinklers can be repaired indefinitely," says Eckhart. "Housings do wear out eventually, but I would discard the old one and supply a good housing."

Another repair option for do-it-yourselfers is available from certain companies. It is the "universal housing" which can replace either metal or plastic sprinkler head housings on certain Rain Bird and Weather-matic models.

As you have seen, sprinkler head repair or rebuilding can save a great deal of money: up to 70 percent when compared to the cost of buying a new one. And that doesn't include what a renovated sprinkler head can do for your turf. Unless you want to upgrade your present heads, this is an appealing alternative that deserves your full consideration. ☼