Rain Bird® RD1800™ Series Scientific Review

The Need for a More Advanced Spray

Our world is changing and the landscape industry is changing with it. A growing population, particularly in drought-susceptible regions, is taxing an already scarce potable water supply. Governments are no longer reacting to droughts with temporary policies. Instead, they have set out to develop long-term plans suited toward sustainability. As a result, the use of non-potable or "reclaimed" water for landscape irrigation is becoming increasingly necessary.

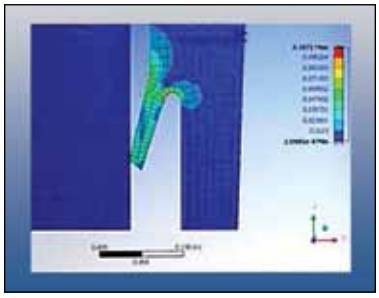
But what's good for conservation efforts is proving to be a challenge for many irrigation system components, specifically, the traditional spray head. Grit and debris, common in alternative water sources, slowly build up between the spray's stem and wiper seal. Over time, this grinds up the surface of the wiper seal and stem, increasing friction between these parts. This prevents the spray from properly retracting and causes stick-ups.

Chlorine and other chemicals used to treat reclaimed water also have damaging consequences for the average spray head. Exposure to these chemicals accelerates wear and tear and causes failure of key components such as the wiper seal, ratchet ring, check valve, pressure regulator and spray body.

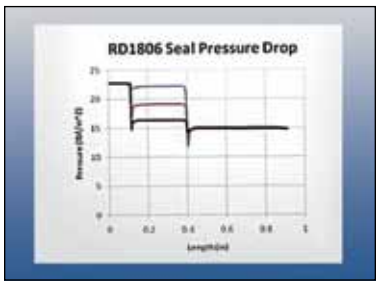
For the Answer, Rain Bird Turned to Modern Science and Technology

When designing new products, Rain Bird uses the most advanced computer software and engineering techniques available. In developing the new RD1800™, engineers conducted extensive research on the composition of reclaimed water and how it affects spray heads. They then created tests to accelerate degradation and simulate real world conditions. They compared test samples with recovered field samples to correlate the acceleration level with actual exposure duration.

In engineering the RD1800, Rain Bird optimized the design and function of components to withstand stress, maximize performance in high pressure operation and stand up to chemical degradation. Based on key findings from testing and analysis, Rain Bird engineers carefully selected new materials, creating innovative designs and water saving features.



Finite Element Analysis to simulate the displacement of the wiper seal when it is in contact with the riser. This contour plot depicts the range of displacement in the wiper seal. This simulation is crucial to developing a wiper seal that seals under pressure and flushes debris at pop-up and retraction.



Finite Element Analysis to simulate the pressure drop across the three Wiper Seal Blades. This analysis helps in designing the geometry of each wiper seal.

RAIN BIRD®

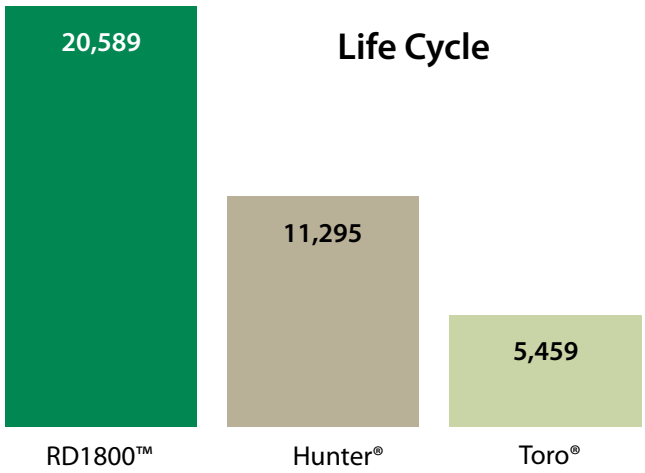
Engineered for the World's Most Daunting Landscapes

The results of this precision engineering can be seen in the RD1800's impressive array of new features. Here are a few of the highlights:

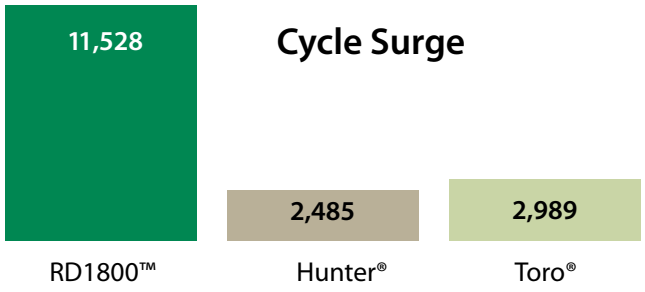
- The RD1800 features a precisely engineered, exclusive Triple-Blade Wiper Seal. The top seal flushes during pop-up and wipes the stem clean during retraction, preventing external debris from entering the spray head. During operation, the primary seal combines with the stem's surface to eliminate flow-by. The exclusive Third Blade provides another line of defense, in case the primary seal is damaged.
- The RD1800 Series is designed with reclaim water resistant materials such as EPDM and Polyester. These materials resist degradation caused by chlorine in reclaimed water, ensuring a longer life.
- The RD1800's reinforced ratchet mechanism was designed to improve ease of use and consistency, hold its setting over time, withstand years of chlorine exposure and provide greater debris resistance.
- With each system start-up, the RD1800's unique debris pockets hold grit in place—removing it from circulation and preventing long-term damage.
- The RD1800's patented pressure regulator increases nozzle efficiency by up to 50% in high pressure applications.
- Exclusive Flow-Shield™ Technology provides up to 90% reduction in water loss when a nozzle is removed, preventing potentially costly and unacceptable run-off in reclaimed water installations, especially in high visibility municipal applications.
- Flow-Shield Technology also improves flushing by preventing large debris particles from being sucked into the spray body. Instead, debris migrates to the end of the lateral line, where it can be completely and permanently flushed from the system.

Comparison Testing Proves the RD1800 More Reliable

Is the new RD1800 ready for the harsh conditions of the modern landscape? Judging from comparison testing with competitive sprays, the answer is a definitive "yes."



This comparison test shows average cycles to failure for competitive 4" spray head models including check valves and 30 psi pressure regulation. Each cycle consists of 30 seconds on at 100 psi and 30 seconds off. Tested to failure is defined as damage or non-correctable leaks. Tests conducted at Rain Bird Product Research Center in Tucson, AZ.



This comparison test also shows average cycles to failure for competitive 4" spray head models including check valves and 30 psi pressure regulation. Each cycle consists of 3 seconds on at 200 psi and 2 seconds off. Tested to failure is defined as damage or non-correctable leaks. Tests conducted at Rain Bird Product Research Center in Tucson, AZ.

Designed and built using modern technology, the Rain Bird® RD1800 is the first and only spray capable of solving today's landscape challenges. You can learn more about this innovative product at www.rainbird.com/RD1800.