



SHIFT GEARS: Exceed expectations.



Mike trusts the performance of Rain Bird® Rotors.

"In my opinion, it's everything you'd want in a rotor...extremely uniform nozzle distribution, ease of adjustment, and few if any maintenance issues... it's one great package."

—Mike Boekholder, Head Groundskeeper
Citizens Bank Park, Philadelphia, PA

Whether your field is major league or little league, Rain Bird rotors deliver.

- No brown spots with the efficient, uniform coverage of Rain Curtain™ Nozzles.
- Easy precise adjustment of BOTH arc edges.
- Maximum flexibility with non-reversing full- and part-circle in the same head.
- Low maintenance, vandal and damage resistant design.

For additional product details, consult with your Rain Bird salesperson, or visit www.rainbird.com/shiftgears.

RAIN BIRD®

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Multiflow is a high-density polyethylene enclosed core interperforated panel drain with geotextile covering.



Turf-Flow is a high-density polyethylene slotted corrugated round pipe.

icant rain to be usable. Also, because of the size of these drains, they often show at the surface in drought years.

Strip drains are becoming much more common as a means of draining athletic fields. They are much more effective in quickly removing surface water from fields than pipe drains. Strip drains are narrow trenches 2 to 4 inches wide that are cut with specialized trenchers from 8 to 18 inches deep. These drains can be much shallower and can be installed in existing turf with minimal surface disturbance.

Proper grading is the critical factor for a well-designed and installed field to drain efficiently.

The trenchers that cut the strip drains typically remove the spoils and leave a smooth bottom trench all in one operation. There are several different companies producing round or flat drainage materials that work well in these narrow trenches.

After laying the strip drains, the trenches are typically backfilled to the surface with course sand with an approximate particle size between 1.0 and 2.0 millimeters. The sand should always be tested to make sure that it does not contain fines that can reduce the life of the system or cause it to fail. These systems are often put in after an in-ground irrigation is installed. It is important that if an existing irrigation system is installed the material used for drainage does not interfere with maintenance practices such as aeration. The big advantage to the narrower trenches is that they grow in and disappear quickly.

The strip drains are connected to a perimeter collector. The collector should be sized to handle the volume of water collected from the series of strip drains. The strip drains should be placed at a 45-degree angle to the direction of the slope. This will allow them to be installed at a consistent depth and maintain slope in the pipe. Most of the trenchers are equipped with laser equip-



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Removable Field Paint System for Synthetic Turf



- GameLine Temporary Marking Paint formulated for synthetic turf fields
- Blitz™ - GameLine Remover Solution
- Blitz™ Remove Machine
- Paint simply washes away with no ghosting or residue

Big game tonight and a whole new paint job coming tomorrow?

GameLine Temporary Marking Paint is the perfect call when you need quality gloss paint that lasts one or two games and removes easily with no ghosting or residue. For best performance, apply GameLine with the Brite Striper[®] 3000 with the new 317 tip.

To easily remove the lines and logos, use a backpack sprayer to apply Blitz™ - GameLine Remover Solution and agitate using the Blitz™ Remove Machine. Follow behind with regular garden hose to rinse the paint away forever. If drainage is an issue, use Pioneer's WaterClaw to clean up excess water.

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Brite Striper[®] 3000 High Pressure Airless Striper



New & Improved!

- Professional performance with effortless operation
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Star Liner - The Compact, Portable, Electric Field Liner



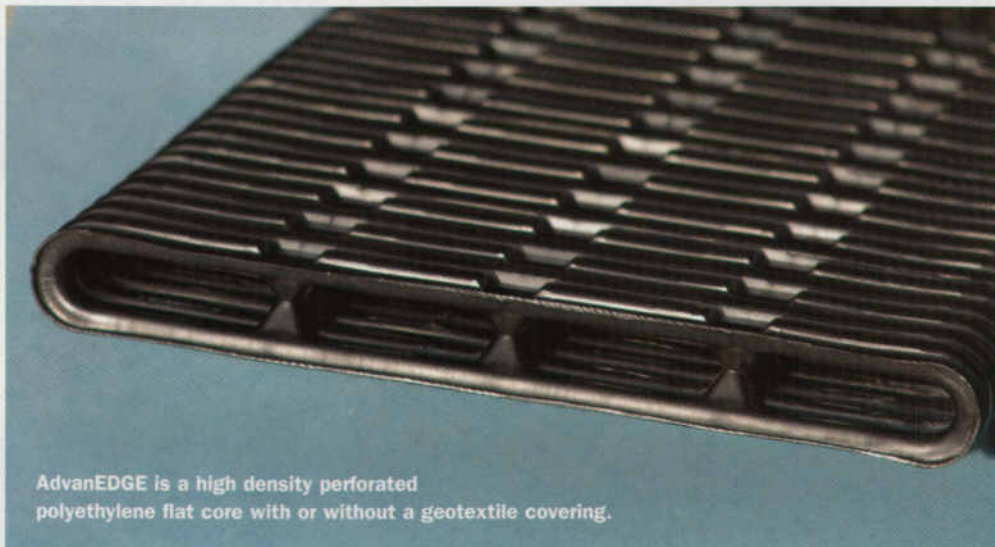
Introductory Offer:
1 StarLiner and 4 boxes
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- Easy-to-use field liner with rechargeable battery
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- Brilliant white Star Stripe paint features Halogen[®] 2000 optical brighteners. Also available in orange, red, yellow and blue
- 2.5 gal. paint container can stripe a regulation size soccer field

IRRIGATION & DRAINAGE



Hydraway is a non-woven geotextile fabric with a high density polyethylene core.



AdvanEDGE is a high density perforated polyethylene flat core with or without a geotextile covering.

ment which adds to the flexibility of an installation. The strip drains are commonly placed on 10 to 20-foot centers.

The costs for a strip drain system are dependent on the availability of proper sands and the availability of materials and the distance of the materials from the project. In most cases this type of work would be subcon-

tracted because of the high cost of the specialized trenching and support equipment. The cost for strip drains averages from \$6 to \$9 per foot for the products and installation. A typical football field would have 7,500 feet of strip drain.

The sand slit drainage system consists of a matrix of narrow 1.75-inch wide sand slits on 12 to 20-inch centers. These are cut 8 inches deep and intersect at 90-degree angles to a series of sub drains installed on 10 to 20-foot centers. This system promotes rapid surface drainage with sand trenches every 12 to 20 inches to allow water to enter the drainage system rapidly.

These sand trenches will also improve the aeration of the field and hold moisture in the soil profile when excess is not present. These systems typically cost \$1.25 to \$1.50 per square foot of field area. One consideration is that a sand-slit drained field will require topdressing and collection of the cores from aeration to maintain its functionality.

Plan ahead

The most important thing to do in any project is to plan. Identify the problems and their causes. With drainage there are many factors to consider and often the solution may involve more than one correction. Start with an accurate survey of the areas in question. Plan the grading and drainage based on the survey of the area and the soil types, anticipated rainfall, and the drainage rate expected for the field.

Investigate to find out what type, if any, drainage is already installed in the field and where the water from the field will go. Match the level of drainage to your budget but realize that cutting costs up front may cost dearly later. Keep in mind the expense and frustration of cancelling events because of wet fields.

And finally, hire reputable contractors with experience and a list of references on similar projects and the proper equipment designed for sports field drainage; these systems have very tight tolerances and must be installed correctly. In my opinion, it's preferable to pay for a better field now, done right the first time, than to play later every time it rains. ■

Steve Bush, CSFM is an agronomist and owner of Bush Sports Turf, Milan, IL. He can be reached at steve@bushturf.com.



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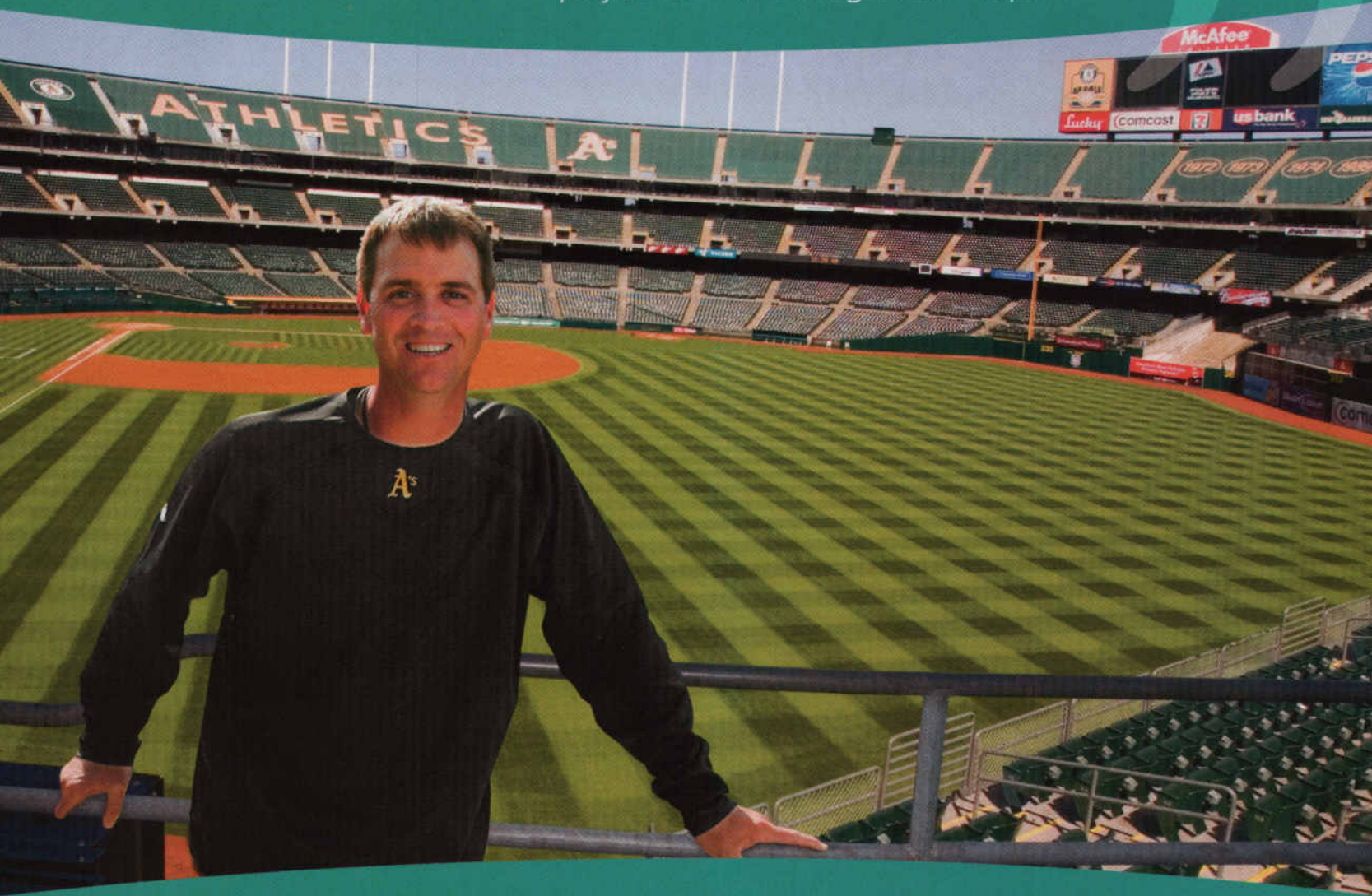
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Trends

in water management for sports turf

With water use being so important to all sports turf managers today, we asked Douglas W. York, president of Ewing Irrigation, for some advice on using the resource efficiently.

SportsTurf: What are the recent trends in water management that sports turf managers can use to their advantage?

York: With the water scarcity issue beginning to have a widespread affect on sports turf managers across the country, we're witnessing a steady migration toward water-efficiency. Many professionals have been embracing water-efficient technologies and practices for some time; others are unsure where to start, or how to integrate some of these technologies into pre-existing budgets.

There are a wide variety of solutions currently available to help:

- **Water-Efficient Sprinklers.** In smaller areas and on sidelines, opt for more efficient irrigation heads, many of which are easily adapted to existing systems. Rotator-style heads offer better distribution uniformity and can save up to 30% of overall water usage.

- **"Smart" Controllers.** Smart controllers rely on weather or soil-moisture data to control irrigation system run times automatically.

- **ET Controllers.** Evapotranspiration or "ET" controllers gather and use information from local or on-site weather sensors to control run times automatically, ensuring plant material receives the required amount of water while reducing over-watering and runoff.

- **Moisture Sensors.** These subsurface devices placed directly under the rootzone are

among the most easily applied water-saving technologies. These sensors communicate with an irrigation controller to shut down the irrigation system when sufficient moisture is detected in the soil.

- **Low-Volume "Drip" Irrigation.** Drip irrigation systems apply water directly to the surface of the soil above a plant's rootzone, minimizing evaporation and maximizing the plant's ability to directly absorb water—requiring less water overall. Drip irrigation is ideal for landscape beds that may be adjacent to your fields.

- **Fertilizer Injection Systems (Fertigation).** Traditional fertilizer programs require the use of "extra" water during the application process to ensure that the fertilizer penetrates the soil layer. During the process of fertigation, liquid fertilizer is directly injected into the irrigation system, making it easier for nutrients to infiltrate a plant's rootzone, therefore eliminating the need for watering above and beyond the irrigation system's scheduled program run time. This process also eliminates the extra labor required for the "watering in" period for new fertilizer applications.

ST: What cultural practices can they follow that will assist in managing water better?

York: Sports turf managers should contact a Certified Landscape Irrigation Auditor to perform a water audit on the site. The audit process will reveal any inefficiency contained in the irrigation system, provide him or her with an accurate assessment of the system's distribution uniformity, and identify opportunities for improvement.

ST: What products are on the horizon that will further improve sports turf managers' ability to manage water?

York: With rigorous testing protocols—such as those set forth Irrigation Associations Smart Water Application Technologies (SWAT) and the Environmental Protection Agency's WaterSense program—manufacturers are investing in improvements to existing technologies. We can expect to see continued development in weather-based controllers and soil moisture sensor technology. Drought-resistant turfgrass varieties represent another area of exciting research being conducted across the country.

ST: Any thoughts to help managers battling tight budgets?

York: Propose a test site. If you are responsible for managing multiple complexes, or are managing a large complex with several zones, identify a single site or zone for testing. It is typically easier for a sports turf manager to approach his or her supervisor to request funding for a small "test" area than to retrofit or rebuild an entire complex.

Conduct a little research, and locate a case study for a site with similar conditions where true water savings was successfully demonstrated using your desired technology. Present this as a basis for starting your own test site.

Before you begin, have an irrigation audit performed prior to making any changes to the system in order to set a benchmark for the selected site or zone. Then implement the technology for an appropriate testing period. The data mined from the testing period will be your best weapon in combating financial resistance, especially if you compare your site's potential water savings over time with the initial cost of the upgrades. ■

Thanks to Lacy Ravencraft, public relations manager for Ewing, for conducting this interview on our behalf.

Performance *Enhanced*

Whether you maintain municipal grounds or professional stadiums, as a sports turf manager the responsibility is the same — establishing and maintaining safe and aesthetically pleasing playing fields — and the *Program* from Scotts Professional Seed has turf grass varieties that will help.

The *Program* system of icons helps you identify bluegrasses, ryegrasses, fescues, and other enhanced varieties that are selected and bred for top performance. Our *Program* varieties stand up to wear and constant use; they tolerate heat, salt, shade, and are resistant to diseases like gray leaf spot and brown patch, to give you outstanding sports turf with fewer costly inputs.

Whether you maintain Little League ball fields or the newest downtown stadium the performance-enhanced *Program* varieties from Scotts Professional Seed will have you looking like a true champion.

To learn more about the *Program*, contact your nearest Scotts Turf-Seed distributor.

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On cultural practices

Mike Tentis, Ewing's National Product Manager for Turf Products & Erosion Control, had the following comments to offer regarding cultural practices:

In addition to the water-efficient technologies above, sports turf managers are also opting for slow-release fertilizers. Slowly-available fertilizers, which are typically coated with plastics, resins or sulphur, have lower salt indexes than other quickly-available nitrogen fertilizers. These "coated" nitrogen products do not need to be watered in as heavily as non-coated products.

Paying closer attention to cultural conditions will ultimately help the sports turf professional manage water resources more effectively.

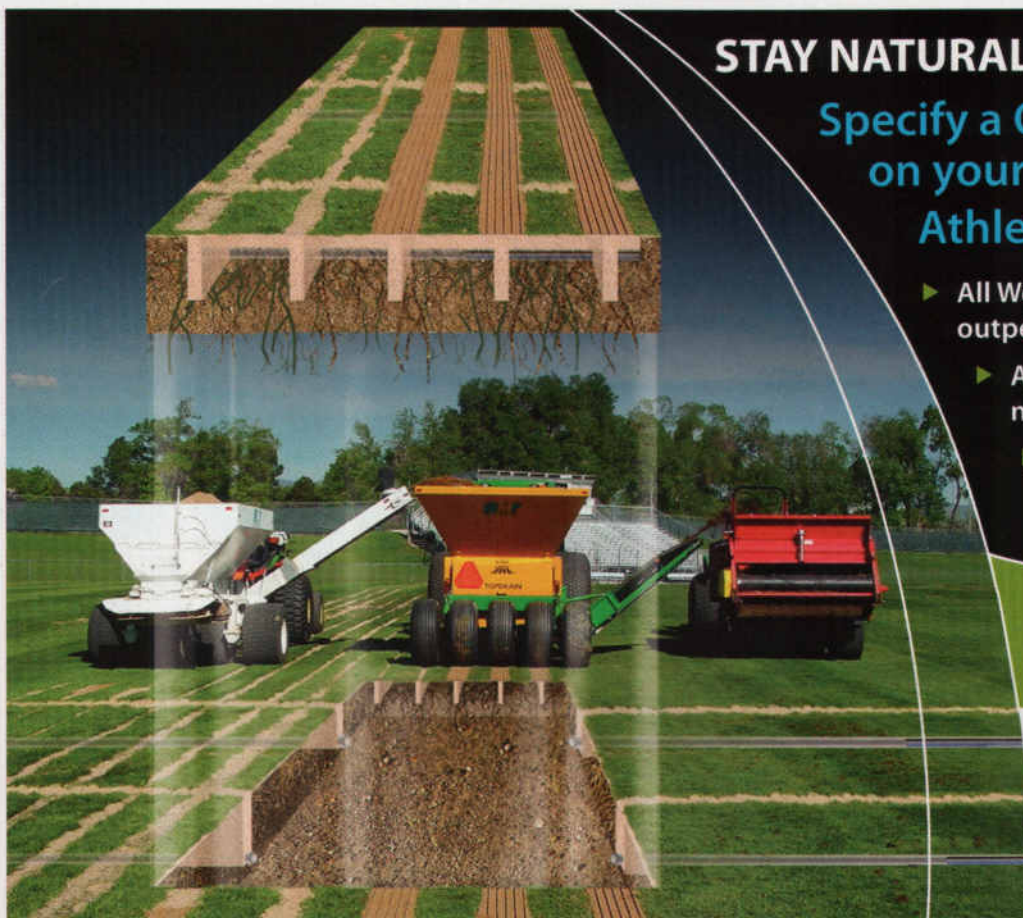
- A strong foundation of regular aeration and topdressing, with both porous calcined clay products and organic matter such as compost, will help make the medium that the roots are growing in more able to withstand the effects of drought.

- Heavily compacted soils cause rooting to diminish and thereby minimizes the roots' ability to access water deep in the soil profile.

- There is a fair amount of research that shows that turf cut higher—such as two inches from the soil layer instead of one inch—is better able to access water deeper in the soil profile, as the rooting depth is correlated to shoot height. This, however, pose a challenge on sports fields of course.

- Have a soil sample analyzed by a testing laboratory. The process is fairly inexpensive and will help the sports turf manager determine his or her site's balance of nutrients, which is an essential piece of information when making the appropriate selection and application of fertilizer.

- Adding mulch, pine straw or other amendments helps the soil hold water and nutrients, enabling plants to grow deep roots and resist disease.



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Underhill™

Products that work...smart.™



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decoder irrigation control page 13

turf stress detection page 14



Underhill, an industry leader in innovative watering products for golf, sports field and other large turf areas, brings over 28 years of know-how in developing our inventory of "Products that work...smart."



Achieve more efficient spot watering with TM Turf Stress Detection Glasses



See Page 14

MagnumTM

SOLID METAL VARIABLE SPRAY HOSE NOZZLE

UnderhillTM MagnumTM offers true fire-hose quality that holds up to years of rough use. It contains no plastic internal parts to break, stick or wear out. Our unique ratchet mechanism easily adjusts from gentle fan to powerful jet stream and prevents over-tightening damage. Precision-machined, incredibly smooth operation and outstanding distribution patterns make it ideal for high-demand areas like golf courses and athletic fields. MagnumTM is also an excellent equipment wash-down nozzle.



MagnumTM nozzle pictured with 1" brass adapter (separately on Page 8)

features

- Built for 1" and 3/4" flow rates
- Ultra-durable, fire hose quality nozzle withstands any abuse, feels great in your hands
- Solid metal internal body - no plastic parts to break or wear out. Beautiful, consistent spray patterns for life
- Ratchet mechanism prevents over-tightening damage
- Versatile, multi-pattern sprays...effortless control with hydraulic assist on/off



specifications

MATERIALS: stainless steel, aluminum, TPR rubber

FLOW: 37 GPM at 80 psi

INLET: 3/4" hose thread (1" brass adapter available, see Page 8)

solid metal internal

Won't stick...won't break

ordering

Part # NG450 - MAGNUM Hose Nozzle

Part # A-BA107FM - 1" FHT x 3/4" MHT Brass Hose Adapter

Precision™

SOLID METAL FIXED SPRAY NOZZLES

It's hard to beat a variable spray nozzle for you have this set of hose nozzles precisely engineered for specific watering needs. Millions of soft, uniform droplets provide rapid yet surprisingly gentle water application. From watering fragile seed beds to drenching sports fields, Precision™ spray patterns are designed with ideal flow rates and droplet sizes to offer you the ultimate solution for every hand watering application. Nozzles so good, spray patterns so patented.

Rainbow™

LOW FLOW RATE: COOLING GREENS, LIGHT PREGAME WATERING OF SKINS, LANDSCAPING
Ideal for watering transplants and seed beds. Excels at lower pressure flows. **15 @ 80 psi.**

Rainmaker™

LOW TO MEDIUM FLOW : SYRINGE AND SPOT WATERING
Perfect for syringing and great for hand watering turf and landscape with 3/4" hose at lower pressures. **23 @ 80 psi.**

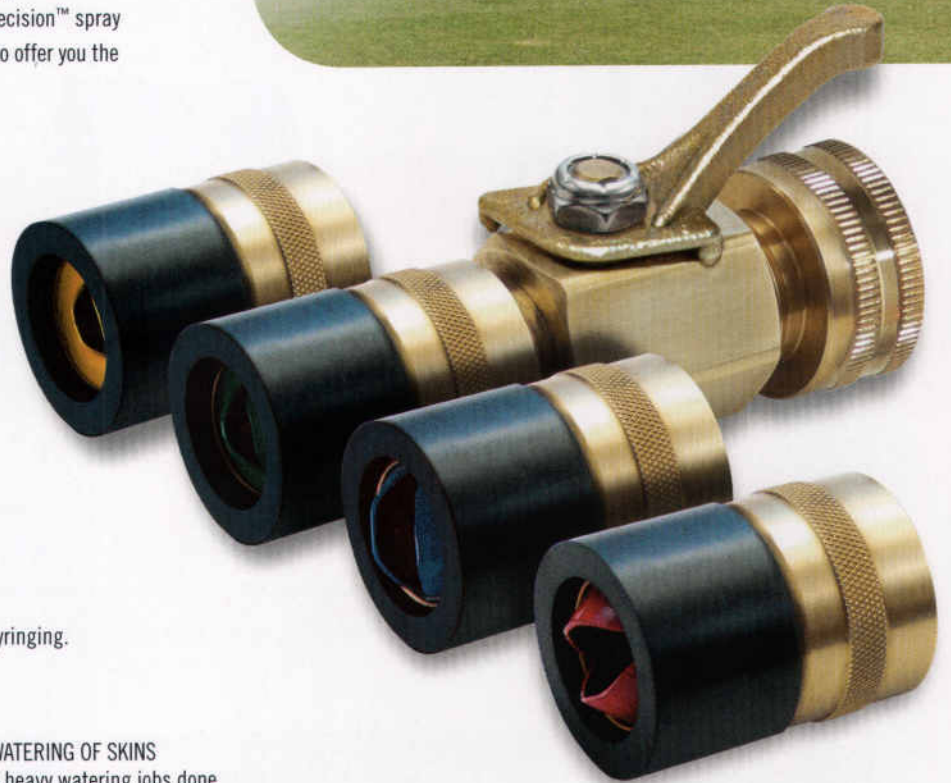
Cloudburst™

MEDIUM TO HIGH FLOW : THE DRY SPOT SPECIALIST
High volume drenching, application of wetting agents, and syringing. Ideal flow rate for 3/4" and 1" hoses. **48 @ 80 psi.**

Cyclone™

HIGH FLOW RATE: HIGH-FLOW WATERING, HEAVY PRE-GAME WATERING OF SKINS
This powerful fan-shaped spray covers a HUGE area and gets heavy watering jobs done quickly. Ideal flow rate for 1" hoses. **50+ @ 80 psi.**

GPM will vary with pressure at nozzle.



Rainmaker™ nozzle pictured with high-flow brass valve and 1" brass adapter (each sold separately on Page 8)



Precision™ nozzles' solid metal construction maintain excellent distribution patterns for life. (Nozzle pictured with high-flow composite and stainless steel valve, sold separately on Page 8)

- Part # - Precision™ Rainbow™ Hose Nozzle
- Part # - Precision™ Rainmaker™ Hose Nozzle
- Part # - Precision™ Cloudburst™ Hose Nozzle
- Part # - Precision™ Cyclone™ Hose Nozzle

- Part # - Brass, High-flow 3/4" Valve
- Part # - Composite and Stainless Steel High-Flow 3/4" Valve
- Part # - 1" x 3/4" Brass Hose Adapter



Pair your nozzles with a high flow valve

See Page 8

CoolPro™

PROFESSIONAL TURF COOLING NOZZLE

A hot summer day can be murder on your greens. Use too much water and you risk damage to the roots. CoolPro™ is the first nozzle specifically designed for the single purpose of fogging and lightly misting the turf canopy to cool without over watering. And its 25 foot pattern gets the job done quickly.



features

- Patented Precision™ nozzle fogs at 70 psi to deliver a 25 ft. pattern with only 4-6 GPM
- Ergonomic handle/valve provides easy grip and variable on/off control.
- Solid metal design uses zinc, aircraft aluminum and stainless steel for durability.
- 3/4" inlet



Perfect for tournament play, CoolPro™ puts down only enough water to cool the turf canopy. It prevents wilting while maintaining good ball speed on the greens. Not just for golf, either...CoolPro is a great tool for turf professionals who want to protect their grass on hot days without damaging roots.

Clever RollerPro™ gives you a sprinkler anywhere you have a hose outlet.



See Page 5

ordering

Part # HNC075 - CoolPro™ Hose Nozzle

Tracker™

PORTABLE IRRIGATION MACHINE

The Tracker™ offers a very economical solution for supplementing seasonal watering needs of 1/4 acre to 2 acre areas. It is also ideal for irrigating athletic fields, cemeteries, golf course roughs, or other large areas where an underground system is impractical. Built to last with precision German engineering and high quality materials, this portable powerhouse can irrigate an entire football field in just two passes.

Tracker™ requires minimal labor to operate. Powered by water, it pulls itself along a nylon cable, dragging up to 360 ft. of 1" reinforced heavy-duty hose (sold separately). Each pass irrigates about 2/3 acre per 8 hours of operations.

features

- Adjustable Speed Control: 20-70 ft./hr.
- 360 ft. nylon cable provides maximum irrigated length of 400 ft.
- Standard full or part circle sprinkler (8-15 GPM)
- 70-85 ft. pass width
- Automatic shut-off at end of pass
- Galvanized anchor stake
- Water turbine drive and gear box
- Includes 1" brass quick-connect adapter

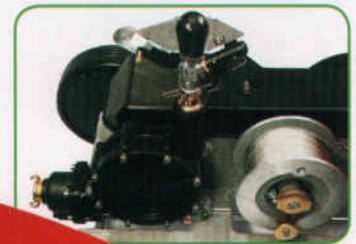


specifications

- WEIGHT: 66 lbs.
- SIZE: Length 33", Width 22", Height 22"
- MATERIALS: Aluminum, Brass, ABS



Precision German engineering, high quality components...built to last!



golf courses



campuses



cemeteries



corrals

Golf courses use Tracker™ to help irrigate roughs, driving ranges, or supplement watering in other areas where an irrigation system is not available. Tracker's maximum 400 ft. irrigation path makes it ideal for large campuses or corrals and its compact size allows it to operate in narrow spaces such as cemetery rows.

ordering

Part # T-400 - Tracker™ Portable Irrigation Machine



Solid brass one-piece quick coupler valves and valve keys can help you get your Tracker™ set up quickly.

See Page 8



RollerPro™

PORTABLE SPRINKLER BASE

The 22" wide stainless steel roller of RollerPro™ provides a stable field position for supplemental watering. Designed for years of hard use, it is ideal for watering dry spots and newly seeded areas.

features

- 22" wide stainless steel roller is weighted to prevent movement during use.
- Standard 1" FHT inlet x 1" female NPT outlet.
- 3/4" inlet and outlet adapters included.

BRASS IMPACT SPRINKLERS

Underhill offers a wide selection of high quality impact sprinklers to top your RollerPro™ portable sprinkler base. Featuring solid brass bodies with stainless steel drive springs and chemical resistant bearing seals, they provide the best combination of durability and value available.

RollerPro™ works with both 1" and 3/4" hoses and sprinklers using the included adapters. Sprinklers sold separately.



For larger irrigation needs (much larger), Mirage™ sprinkler heads have a throw radius up to 164 ft.!

ordering

Part # A-RP221 - RollerPro™

	GPM	Radius (ft.)
Part # SI075F - 3/4" MPT Full Circle Sprinkler	13	57
Part # SI075P - 3/4" MPT Part/Full Circle Sprinkler	11	48
Part # SI100F - 1" MPT Full Circle Sprinkler	23	71
Part # SI100P - 1" MPT Part/Full Circle Sprinkler	23	71
Part # SI125F - 1-1/4" MPT Full Circle Sprinkler	51	96
Part # SI125P - 1-1/4" MPT Part/Full Circle Sprinkler	54	78

Performance data shown at 80 psi. GPM and radius will vary with pressure at sprinkler

PelletPro™

APPLICATOR GUN FOR SOLID WETTING AGENT TABLETS

We outfitted our heavy-duty surfactant applicator with a high-flow composite/stainless steel valve and a Precision™ Cloudburst™ nozzle to produce the finest wetting agent gun available. The PelletPro™ accepts all wetting agent tablets and is designed to provide powerful, yet ultra-soft spray when watering or applying surfactants to tight, hydrophobic soils.

features

- 48 GPM capability gets the job done faster!
- Ultra Heavy-Duty - brass fittings, aircraft aluminum, stainless steel, and precision engineered glass-filled materials
- Patented Precision™ Cloudburst™ nozzle delivers large droplets in an outstanding fan pattern
- Pellet rotation (1 RPS) evenly dissolves/applies wetting agent tablet



With the included 1" FHT x 3/4" MHT brass adapter, PelletPro™ works with both 3/4" and 1" hoses.



2 products in 1!

Remove the PelletPro™ bowl and you have a superb syringe nozzle combo: the patented, 48 GPM Precision™ Cloudburst™ with our high-flow, oversized handle valve.



PelletPro's bowl, also sold individually, works perfectly as a replacement in-line filter bowl for most spray rigs. Heavy-duty, transparent plastic shows fluids. (No more cracked bowls during winter storage!)

ordering

- Part # A-PPWA50K - PelletPro™ Applicator Gun
- Part # A-PPB - In-line Filter Bowl and Gasket
- Part # A-PPBG - Bowl Gasket



LiquidPro™

APPLICATOR GUN FOR LIQUID WETTING AGENT

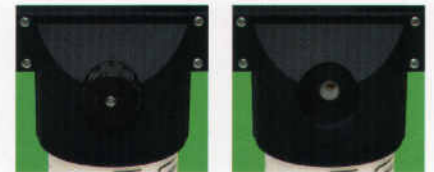
When customers requested a liquid version of the PelletPro™, the proven combination of our Precision™ Cloudburst™ nozzle and the high-flow composite/stainless steel valve had us halfway there. We added a chemical-resistant, UV-protected, lightweight siphon/mixing system in between to produce an applicator gun which can cover 1000 square feet in less than a minute. Now, with unmatched speed and uniformity, you can virtually “paint” your turf with liquid wetting agent, fertilizers, and micronutrients. And like the PelletPro, LiquidPro disassembles easily to create the Cloudburst™ High-Flow Valve syringe nozzle.



With the included 1" FHT x 3/4" MHT brass adapter, LiquidPro™ works with both 3/4" and 1" hoses.

features

- Patented Precision™ Cloudburst™ nozzle evenly distributes wetting agent ensuring uniform coverage. Made of aircraft aluminum and stainless steel.
- Lightweight, durable nylon construction weighs only 3 lbs., UV-protected and chemical resistant.
- High-density polybottle has full quart capacity with easy-to-read measurements in fluid ounces and milliliters.
- Needle Valve Metering Chamber- Engineered venturi siphon mixes proper amount of wetting agent into the water flow.
- Pistol grip design with textured handle provides sure grip surface and reduces operator fatigue.



2 products in 1!

The Precision™ Cloudburst™ nozzle and high-flow valve can be quickly assembled to create a powerful, 48 GPM syringe nozzle.



Save time by bringing plenty of wetting agent, fertilizers, and micronutrients to the field all at once with our 6-pack of polybottles.

- Adjustable metering dial offers 10 additive settings including “Water Only.”
- Metering dial can be removed to prevent tampering with a predetermined setting.

ordering

Part # A-LPWA50K - LiquidPro™ Applicator Gun
Part # A-LPWAB-6 - 6-Pack of 32 oz. Polybottles

Accessories

EVERYTHING YOU NEED...WHEN YOU NEED IT

At Underhill™, we specialize in unique “products that work...smart.” But that doesn’t mean we don’t also supply those in-between and accessory items that everyone needs. And with Underhill, you know you’re getting the highest quality and great value.

high-flow valves



HIGHEST FLOW VALVES AVAILABLE

SOLID BRASS

- 3/4" hose thread inlet/outlet
- up to 50 GPM

Part # CV075H

COMPOSITE / STAINLESS STEEL

- 3/4" hose thread inlet/outlet
- oversized handle
- up to 55 GPM

Part # A-BV77FM



hose adapters / quick-connectors



- Part # A-BA107FM - 1" FHT x 3/4" MHT
- Part # A-BA107MF - 1" MHT x 3/4" FHT
- Part # A-BQ7M - 3/4" Quick-Connect, male end
- Part # A-BQ7F - 3/4" Quick-Connect, female end
- Part # HN-075W - replacement washer, 3/4" hose



swing joints

- heavy-duty
- 12" arm length

- Part # SJ-100N12 - fits 1" inlet sprinklers, NPT thread
- Part # SJ-125A12 - fits 1-1/4" inlet sprinklers, ACME thread
- Part # SJ-150N12 - fits 1-1/2" inlet sprinklers, NPT thread

waterproof wire connectors



Part # DBY

Direct Bury Splice Kits are real time saver: the insulator tube is pre-filled with silicone grease and there's no clamping tools, no waste, no mess. Just quick and reliable underground splices...for irrigation and landscape lighting applications using 12-18 gauge wire. Each kit includes 25 tubes and 25 yellow caps.

universal replacement valve lid

- Fits all 6" to 7" round valve boxes
- High strength material
- UV resistant
- 10 year warranty



Part # VL-06

1-piece quick coupler valves & keys



- Valves: single slot, solid brass, yellow vinyl cover
- Keys: single lug, solid brass shaft

- Part # QV-075R - valve: 3/4" FPT inlet
- Part # QK-075 - key: 3/4" MPT x 1/2" FPT outlet
- Part # QV-100R - valve: 1" FPT inlet
- Part # QK-100 - key: 1" MPT x 3/4" FPT outlet
- Part # QV-150R - valve: 1-1/2" FPT inlet
- Part # QK-150 - key: 1-1/2" MPT x 1-1/4" FPT outlet



hose swivels

- solid brass

- Part # HS-075 - 3/4" FPT 3/4" MHT outlet
- Part # HS-100 - 1" FPT x 3/4" MHT outlet
- Part # HS-101 - 1" FPT x 1" MHT outlet



Measure pressure at the sprinkler with HeadChecker™

See Page 12

DeepDrip™

TREE WATERING STAKES

DeepDrip™ stakes allow you to water and fertilize your trees at the roots, encouraging deeper roots and healthier trees. Water gets underground fast, so you can water for shorter periods and enjoy considerable water conservation. They also help to aerate the soil with oxygen, and you can add fertilizer into the shaft to direct nutrients to the root zone. These versatile stakes are designed to work with a hose or automatic landscape drip systems, and come in three sizes. The 14.5" unit is ideal for small trees and shrubs with shallow roots, like rose bushes and ornamental trees (or in commercial use for trees still in boxes). The 24.5" stake is well-suited for most other tree varieties except for palm trees and similarly deeper rooted trees, which will benefit from the longer 36" stakes.



The DeepDrip's reinforced tip and cap are made from ABS and the upper shaft is made from Schedule 40 PVC. Multiple holes in the bottom half of the spike, internally covered by a mesh filter, allow water to flow out but keep dirt from getting in and clogging the tube. The UV-protected cap acts as a reinforced cover when pounding the stake into the ground, keeps debris from entering the shaft and holds a 1/4" drip line/emitter securely in place. By inserting a screwdriver through the two holes at the top of the upper shaft, stakes can be easily pulled up to remove/reposition or rotated to deter root invasion.



DeepDrip™ watering stakes can be installed during or after tree planting. Once in, you have instant access to the root system for fertilizer delivery or to set up deep automatic drip watering.

ordering

- Part # A-DD14 - DeepDrip™ 14.5" watering stake
- Part # A-DD24 - DeepDrip™ 24.5" watering stake
- Part # A-DD36 - DeepDrip™ 36" watering stake

MicroEase™

MICRO-IRRIGATION KITS

Convert your current, inefficient irrigation system into a highly effective, low-maintenance, water-saving drip system. MicroEase™ kits can connect to a water faucet, existing sprinkler system or 1/2" riser. This provides efficient, low volume irrigation ideal for golf clubhouse surrounds as well as other shrub and planter areas.



ordering

- Part # ME-SS-PK - MicroEase™ Pro Kit with spray spikes (25)
- Part # ME-8SS-PK - MicroEase™ Pro Kit with 8-stream spikes (25)
- Part # ME-SS-SCK - MicroEase™ Conversion Kit with spray spikes (9)
- Part # ME-8SS-SCK - MicroEase™ Conversion Kit with 8-stream spikes (9)



PRO KIT (faucet connection)



CONVERSION KIT (sprinkler/riser connection)

Gulp™ Series

WATER REMOVAL SUCTION PUMPS

Whether you need to remove water from sprinklers and valve boxes or displace gallons of standing water in the field, the Underhill Gulp™ series of water removal hand pumps has the right tool for the job. Constructed from heavy-duty, corrosion-proof materials, these pumps are self-priming and easy to clean. The Gulp Syringe™ and Gulp™ are ideal for carrying on maintenance carts for small, routine needs. For larger water removal jobs, BigGulp™ pumps a gallon of water in only four strokes and SuperGulp™ can move 16 gallons of water in one minute.



SuperGulp™



BigGulp™



Gulp™



Gulp™ Syringe



SUPER GULP

- 16 GPM pumping capability
- 4" dia. x 2 ft. pump chamber
- 3" dia. x 3 ft. outlet hose
- 3" dia. x 7 ft. outlet hose



BIG GULP

- 35 oz./stroke
- 3 ft. pump chamber
- 36" or 72" outlet hose



GULP

- 8 oz./stroke
- 1 ft. pump chamber
- 10" outlet pipe



GULP SYRINGE

- 8 oz./stroke
- 1 ft. pump chamber
- 11" outlet tube

Use the BigGulp™ Riser Attachment to help prevent mud and rocks from entering the pump chamber.

ordering

- Part # A-G12 - Gulp™
- Part # A-G12S - Gulp™ Syringe
- Part # A-G3636K - BigGulp™ with 36" outlet hose
- Part # A-G3672K - BigGulp™ with 72" outlet hose
- Part # A-G2484 - SuperGulp™ with 84" outlet hose
- Part # A-G01 - BigGulp™ Riser Attachment



Mirage™


HUGE THROW, HIGH-PERFORMANCE SPORTS TURF SPRINKLERS

Underhill Mirage pop-up turf sprinklers, featuring precision engineering and huge throw radius, are often installed completely outside the area of the playing field. Employing precision German engineering in design and manufacture, Underhill offers the finest large turf sprinklers in the world.

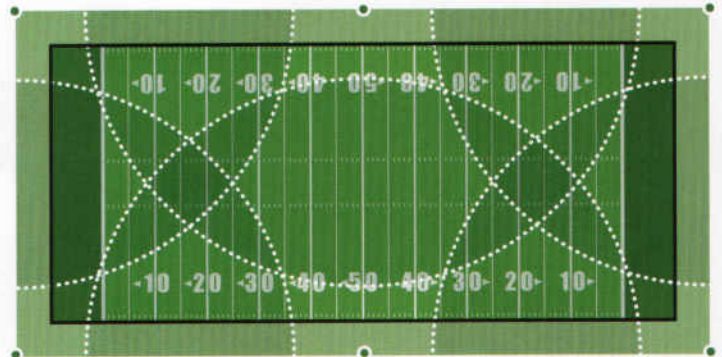
M-160: With its powerful 164 ft. throw radius, the Mirage™ M-160 is a worldwide favorite for cooling and cleaning synthetic sports fields, dust control and irrigation. Featuring ultra-precise rotation speed adjustment, these piston-drive cannons get the job done quickly and efficiently.

M-125: A very impressive long-throw sprinkler in its own right with a 125 ft. radius, the M-125 is designed for installation in artificial turf fields, or in the out-of-play areas of natural turf fields.

M-115: Best noted for the extra large 4" (101 mm) deep sod cup cover which holds a 9" (220 mm) diameter section of natural grass, the M-115 provides excellent protection for athletes. Perfect in combination systems with the M-125 installed at the field perimeter and a minimum number of heads (two or three M-115) in the playing field itself.



Incredible but true: with its 164 ft. throw radius, the Mirage M-160 can shower a regulation size football field using only 6 heads!



model selection guide

	M-115	M-125	M-160
Max Radius	125 ft. (38 m)	125 ft. (38 m)	164 ft. (50 m)
Valve Type	In Head or Block	In Head or Block	Under Head - Extra
Lid Cover	Sod Cup - Natural Grass 4" (101mm) Depth 9.5" (242 mm) Diameter	7" (180 mm) Diameter	15.6" (395 mm) Diameter
Typical Applications	Artificial Turf: Play and Sideline Areas Natural Turf: Sidelines	Artificial Turf: Play and Sideline Areas Natural Turf: Sidelines	Positioned at Sidelines: Artificial Turf Cooling Natural Turf Irrigation
Field Usage Examples	All Sports	All Sports	Football, Soccer, Race Tracks
Nozzle #s (mm)	7, 8, 9, 10, 11, 12 13, 14, 15	7, 8, 9, 10, 11, 12 13, 14, 15, 16, 17.5	16, 18, 20, 22, 24, 26
Pop-Up Height	4" (99 mm)	4" (99 mm)	2 3/4" (70 mm)
Arc	30 - 360 degrees	30 - 360 degrees	30 - 360 degrees
Trajectory	22 degrees	22 degrees	23 degrees
Rotation Speed			Precision Adjustable 100-240 seconds
Inlet (Specify)	1 1/2" (NPT or BSP)	1 1/2" (NPT or BSP)	2 1/2" F side outlet (NPT or BSP)
Height	17.7" 450 mm	17.7" 450 mm	23.6" 600 mm



ordering

- Part # M160-FP - Mirage™ 160 full/part circle
- Part # M160-EP - Mirage™ 160 full/part circle, with 3" electric valve
- Part # M125-EF - Mirage™ 125 full circle, valve-in-head
- Part # M125-EP - Mirage™ 125 full/part circle, valve-in-head
- Part # M125-BF - Mirage™ 125 full circle, block
- Part # M125-BP - Mirage™ 125 full/part circle, block
- Part # M115-EF - Mirage™ 115 full circle, valve-in-head
- Part # M115-EP - Mirage™ 115 full/part circle, valve-in-head
- Part # M115-BF - Mirage™ 115 full circle, block
- Part # M115-BP - Mirage™ 115 full/part circle, block

HeadChecker™

NOZZLE DISCHARGE PRESSURE GAUGE

HeadChecker™ combines a solid brass Pitot tube and a liquid-filled 160 psi gauge to create a handy tool for measuring nozzle discharge pressure. Assuring correct pressures is essential to maintaining highly uniform irrigation systems. The 160 psi gauge can also be used separately to measure pipeline pressure.



ordering

- Part # A-HCGPK - HeadChecker™ 160 psi gauge and Pitot tube
- Part # A-PG160L - Pressure gauge only
- Part # A-HCP - Pitot tube only

2Wire™

AFFORDABLE, VERSATILE IRRIGATION CONTROL

With over 150,000 field successes, Underhill™ 2WIRE™ irrigation control systems are a proven leader in converting controllers like the Hunter® ICC to the simplicity and low cost of two-wire technology. Installation is a breeze with our handy programmer, and after your system is in, you'll enjoy reduced maintenance costs and unbelievably easy system expansion (just splice into the control line and add a decoder). Add the Hunter® IRC remote control and you've created the ultimate (and most affordable) way to syringe anywhere on your field at the press of a button.



Offering powerful control in a small package, decoders quickly install anywhere along a 2WIRE™ path. No grounding is required other than proper grounding at the controller. One decoder per station controls one or two valves per station.

Setting up stations is a breeze with the Portable Programmer

An irrigation installation featuring the powerful Mirage™ sprinklers (see page 11-12) and 2Wire decoders becomes an on-demand syringing system with the Hunter® IRC remote control.

ordering

Part # TW-TK-DEC-1 - Decoder with 4 waterproof connectors

Part # TW-ICC-48 - ICC Decoder Module

Part # DEC-PROG-115 - Portable Programmer for TK-DEC-1 Decoders, 115V

Part # DEC-PROG-240 - Portable Programmer for TK-DEC-1 Decoders, 240V

Nastek™

EARLY STRESS DETECTION GLASSES

Disease, drought and weed invasion are plant and turf killers. But by the time you see them it can be too late. Nastek™ glasses, with stress detection technology developed by NASA, lets you “see into the future” to identify problems 2-10 days before they are visible to your naked eye. Keep your turf and vegetation healthy BEFORE serious problems arise.



STRESS DETECTION GUIDE



fusarium patch

pythium blight

yellow patch (rhizoctonia)

brown patch

anthracnose

get a jump on broken or poor-performing sprinklers

highly efficient spot watering saves time and labor costs

poa grass invasion identified BEFORE it takes over

superior weed location and spraying saves time and money



HOW DOES IT WORK? Dying vegetation signals distress with changes in how it absorbs and reflects sunlight. The earliest signals occur at the outer limits of the human visual spectrum, and are rendered invisible compared to the predominant middle wavelengths. Nastek™ Early Stress Detection Glasses filter the overpowering light in the center so that the fringe spectra, which show early plant stress, become visible!



Nastek™ Deluxe Edition includes shatterproof polycarbonate stress detection lens in “Aero II” frame, cleaning cloth and case, plus a FREE sun protection lens.



Nastek™ Standard Edition includes shatterproof polycarbonate stress detection lens in sport frame and lightweight case.



Nastek™ Clip-on glasses include shatterproof polycarbonate stress detection lenses and hard clamshell case.

ordering

- Part # NG650-01 - Nastek™ Deluxe Edition Kit
- Part # NG655-01 - Nastek™ Standard Edition
- Part # NG670-01 - Nastek™ Clip-on Lenses
- Part # NG680-TS - Nastek™ Digital Camera Lens

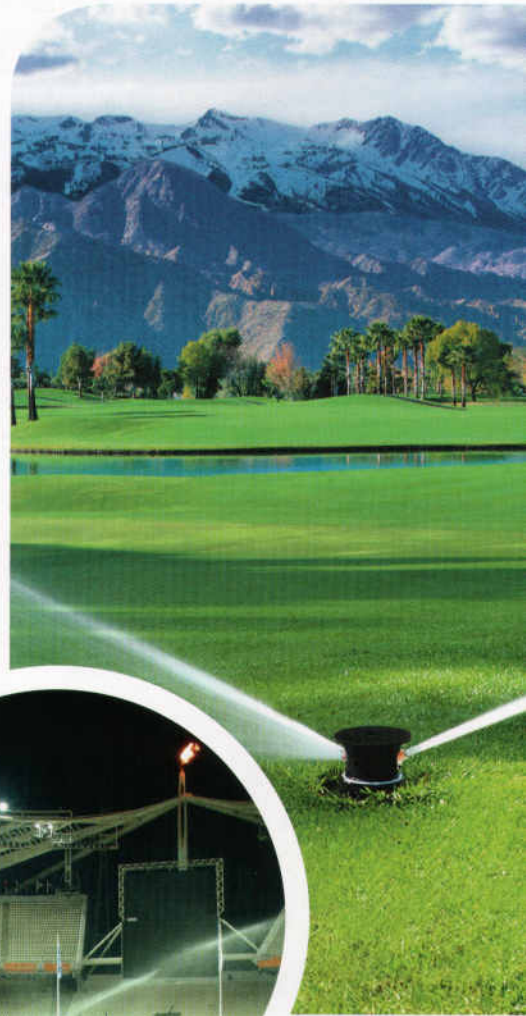


Document your findings with the Nastek™ digital camera lens. It's how we took the photographs on this page!

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Lake Forest, CA 92630 USA

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Products that work...smart.™

Maintenance guidelines from the STC, Part I

As synthetic turf's popularity increases, it's important to know the value of proper synthetic turf maintenance. Putting time into your field, even for a couple of hours each week, will keep it looking well-manicured, and more importantly maintain its safety characteristics, and add to the field's longevity. The following is an edited version of the Synthetic Turf Council's (STC) Maintenance Manual, published in 2007. The second half will appear in the August issue.

Maintenance of an infilled synthetic surface is essential. While the maintenance and upkeep of an infilled synthetic surface is considerably less than other designs, it must be properly applied. The basic behavioral characteristics of synthetic turf systems must be understood because they dictate the maintenance required.

In developing these guidelines, the Synthetic Turf Council has considered and incorporated, where applicable, the field experience of its members and other qualified entities. They stress that the provider of the syn-

Turf grooming brush





Synthetic turf rake and brush

thetic turf system and the owner must agree on the need for maintenance.

These guidelines provide the end-user/owner/client with a means of realistically evaluating the maintenance that is recommended for a synthetic surface, based on its intended use. Routine maintenance, as well as periodic intense maintenance, is essential to the life and performance of the infilled synthetic surfaces.

By definition synthetic turf fields are, in essence, a system that provides a synthetic playing surface, cushioning, drainage, and a properly prepared base. Routine maintenance, as a practical matter, is primarily applied to the top surface

where the action takes place and where it is most conspicuously observed.

Maintenance should be performed by personnel trained and knowledgeable about the specific ingredients/materials of the specified/installed system and the equipment properly used for field maintenance applications. Such personnel should be prequalified as to their expertise and knowledge of the process. When such qualified personnel can be identified, they are customarily employed by the facility management, or outsourced by facility management to a maintenance subcontractor, or contracted by the provider/manufacture of the system.

It is the intent of this Guideline document to augment the maintenance instructions provided by the manufacturer and/or initial provider of the system. In the event that manufacturer/provider instructions are provided, a review of these provisions should be made and their effect on warranties understood. Any conflict should be corrected between the parties in order to prevent the voiding of the warranties provided.

This Guideline also serves to provide an understanding of the minimum requirements by owners of a field or those who have been given the responsibility for the maintenance. It serves to make all parties to the system aware of the