TURFSCIENCE, INC.

Transform your shag carpet greens into tight-knap precision putting surfaces!

TRANSFORMER™

BRUSHING SYSTEM

For Walk-Behind Greensmowers

"The next dimension in precision putting surfaces!"

Many of the practices that are standard in greens management are about to become obsolete!

- Mild to aggressive –A brush for all seasons
- Engineered for lateral stability & proper down-pressure
- Easy angle adjustment
- Change brushes in 30 seconds
- Durable –All stainless steel / powder-coated aluminum parts
- Patent Pending

Check out our **Transformers for Fairways** brochure!

MADE IN USA

The Transformer Brushing System by TurfScience, Inc

What is an excellent putting surface?

- The speed appropriate for the green contours is achievable every day.
- As the ball rolls, the line it tracks follows the surface contour without deviating in response to turf imperfections or inconsistencies.
- The surface is consistent. It is identical among greens and identical from day to day.

In other words, the speed is fast enough to enable long putts if the putt is properly read and executed. Unpredictable and unreadable surface characteristics that would alter the path of the ball are absent. Hence, the ability to make long and challenging putts is a true test of skill not of chance. That is a "fair" surface that can be enjoyed by players of all skill levels. Each green in a round is uniform so that the player is not ambushed by an unexpected pace. The surface performance is the same each day of the week such that the player on Tuesday is just as important as the one on Saturday.

In contrast, a surface with unreadable lateral movement of the ball track, which is not a response to contour, is an "unfair" surface. It is also a justifiable source of frustration and anger. We can all live with the consequences of a poorly read and executed putt as that is the skill of the game. But, if you have to "push" the ball just to make it roll ten feet, or, when a perfectly struck ball is heading directly to the cup and takes an unpredictable right turn at the last instant, look out if you are the greenkeeper.

Which is better for your revenue stream (and your career), a foursome that just came in from a "fair" round where the best man won or one that just had eighteen angering experiences? In the golf business, it is all about the greens. Without quality putting surfaces, nothing else matters.

Putting Physics 101 Multiple Choice Quiz

Question #1: Which surface will provide the fastest and least-erratic ball roll?

a. A low-density turf canopy comprised of long and coarse-texture leaf blades in a horizontal orientation.

b. A turf canopy comprised of fine-textured and densely-packed leaf blades with vertical orientation

Hint: *Which floor would a golf ball roll farther and straighter on, a shag carpet with long coarse fibers or a one with a tight knap of short, densely-packed vertical fibers? It's the same principal and same physics!*
Correct Answer: *Isn't it obvious?*

Question #2: What practice will make grass leaf blades stand up vertically long enough for the cutter to snip them (after which the grass plant will respond by packing additional plants into the gaps in between the parent plants).

a. Topdressing with sand.
b. Verticutting.
c. Rolling.
d. Brushing.

Hint: *Take a minute and think critically about each choice (not how you were programmed to think in turf school, a product advertisement or your peers down the street). Three of the choices will actually be counter-productive as they will result in a thinning of the turf canopy.*
Correct answer: *d. brushing*

Is brushing a new phenomena?

I wish that I could claim that brushing was invented by *TurfScience, Inc*. But no, it is age-old. During the first decade of my presence in the golf-maintenance industry (1970's), every greensmower that I saw had a brush mounted on it. Approximately 1980, when more-sophisticated (and more expensive) equipment came on the market, greensmower brushes went out of vogue. Why? Because they looked primitive and a vendor couldn't make very much money selling them. When *TurfScience* resurrected brushing in the early 1990's, it brought more than a few giggles and ridicule. That is, until our putting surfaces were recognized as among the premier in the country. Along with ours, some brush manufacturing followed but it hasn't been in earnest. Why? Because until now, brushes (including the ones that we used to make) didn't work all that well. But, the new era has begun.

Construction

The *TurfScience Transformer Brushing System* is unlike any other unit that is, or has ever been on a mower. The *Transformer Brushing System* consists of two primary components:

• **Chassis** - The Transformer chassis is intricately designed to provide proper geometry and weight distribution for precision brushing at any degree of aggressiveness.

• **Brush** - The Transformer brush units (of which there are several to choose from) are custom designed and manufactured for the specific purpose and function of brushing putting surfaces. From mild to extremely aggressive, you now have a spectrum of options.

The Chassis

The Transformer chassis consists of a universal rigid brush holder attached to a model-specific mounting system via a rigid stainless-steel linkage bar. All are proudly manufactured in the USA.

A.) Ajustments – Every useful adjustment has been designed into the transformer system. A unique quick-change linkage is designed to give the superintendent full latitude of brush angle adjustment for the whole spectrum of brush options (15 seconds to change the angle of attack).

B.) Quick-change brush holder – Quickly change brushes via two pins in the holder. Whether to reverse the brush or change brushes for a different aggressiveness, it is easily done in 30 seconds.

C.) Lateral stability – No more tilting to one side or one side digging in more than the other. Unlike other brushes, the rigid linkage bar keeps the height equal on both sides and applies equal down pressure from one side to the other.

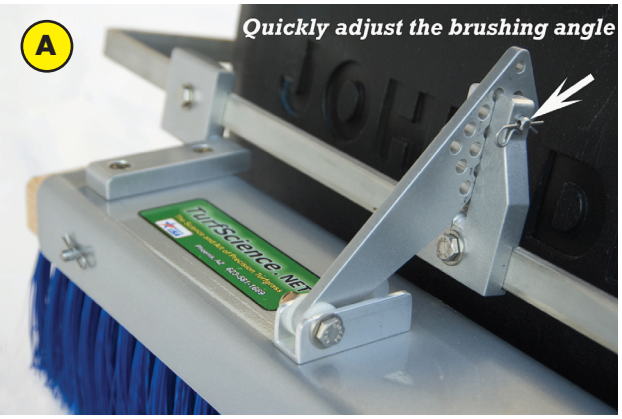
• Adjustable downside stops – Adjustable stops built into the mounting system cause the brush to automatically lift with the cutting unit at the end of every pass (no more lifting ropes). Though the entire weight of the brush and holder mechanism rides on the brush while mowing, the stops engage as the mower is lifted.

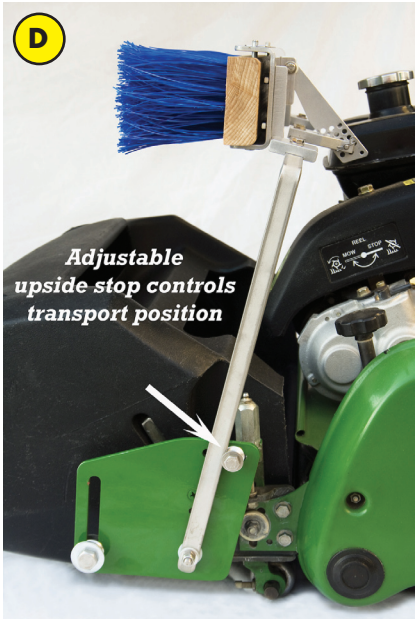
D.) Adjustable upside stops – When the brush is in the up position for transport, the weight of the system rests against the stops. No more dented gas tanks.

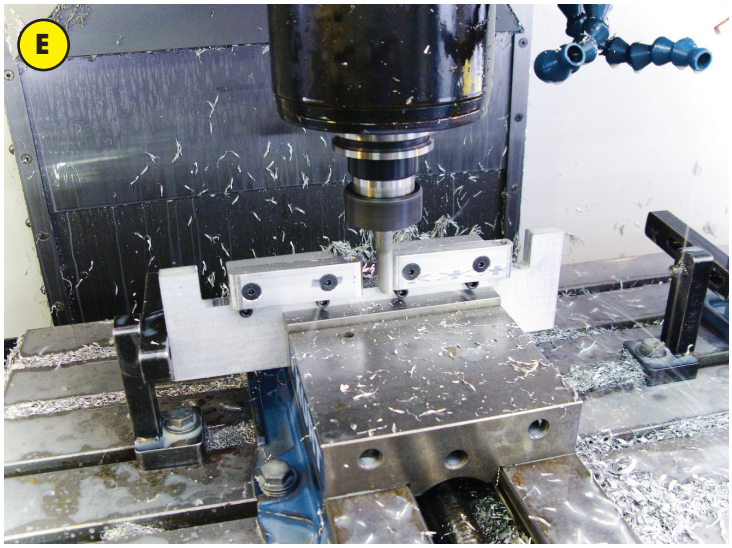
• Bulletproof – Well, almost. Recognizing the harsh treatment that mowing equipment often receives, the chassis is designed and constructed to withstand the most abusive employee.

E.) Construction – To ensure the highest of quality in the manufacturing process, all components are machined in computer-driven water-jet or CNC mill equipment from designs in *SolidWorks* software.

• Materials - Aside from several nylon bushings, every single part in the chassis, including the fasteners, is either high-grade stainless steel or powder-coated aluminum.





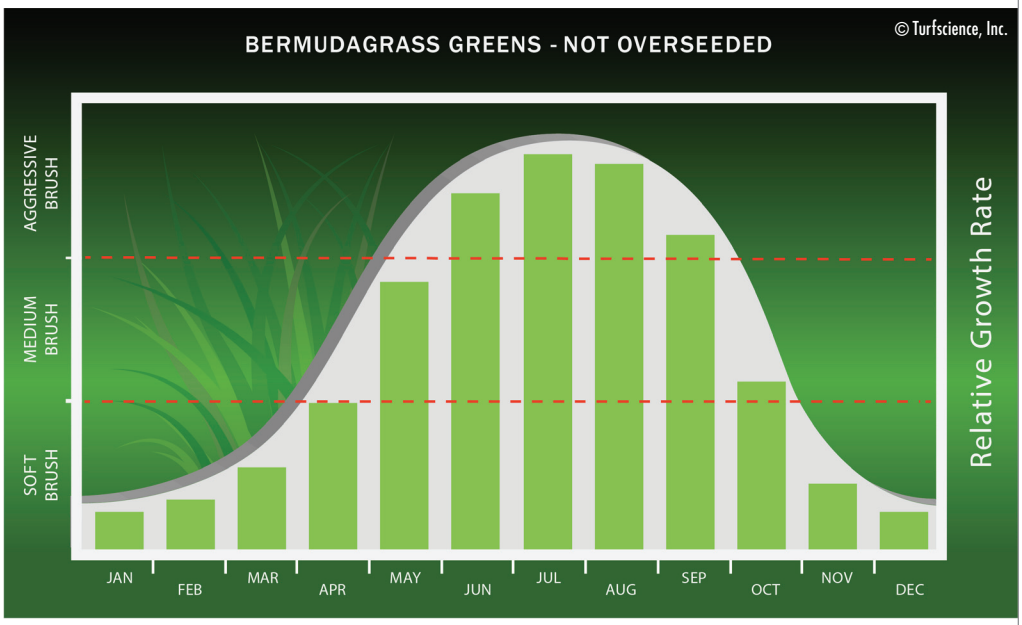


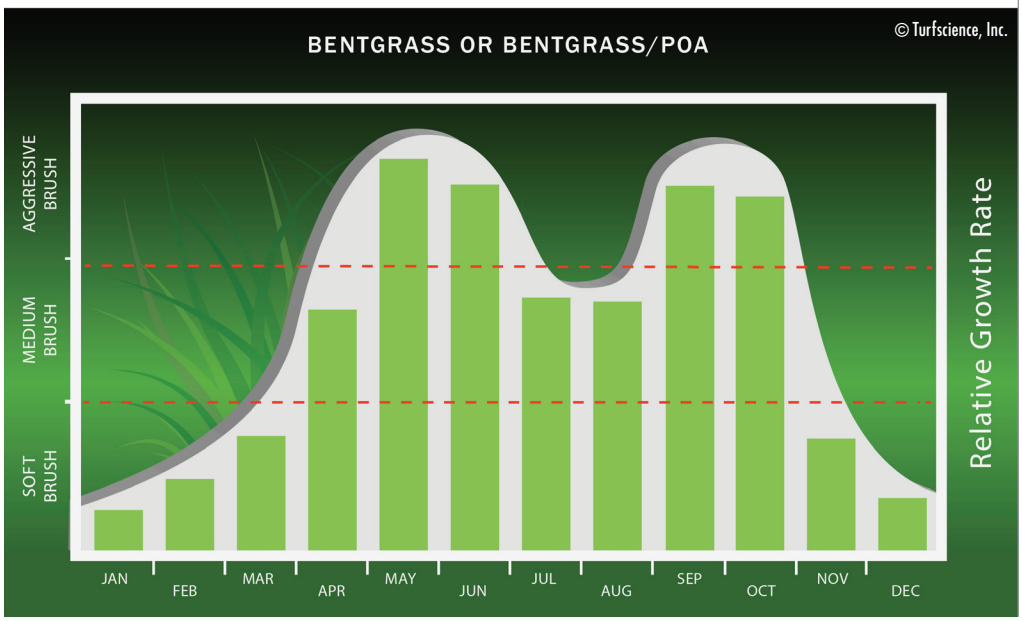
The Brushes

The *Transformer Brushing System* brush units are engineered and constructed in the USA specifically for brushing putting surfaces. The wood blocks are drilled and bristles inserted with three-dimensional CNC machines. After assembly, the wood portions are soaked and infiltrated with a water-repellant to ensure the durability of your units for enhanced lifetimes. The bristles are made of either polypropylene, nylon or polyester, depending on the desired aggressiveness.

A Brush for All Seasons

In the past, brushing was reserved for the high-growth times of year and there was only one choice of brush aggressiveness. For several reasons, the one brush that was available was of too mild to really perform. That has now changed. With the *Transformer Brushing System*, you can brush virtually every day of the year that you mow. We even have customers brushing dormant bermudagrass greens that are not overseeded throughout the Winter with our mildest brush unit. The same brush unit would be appropriate for bentgrass during the high-stress periods in the summer. In contrast, during the peaks of the annual growth cycle (May and September for bentgrass / July and August for bermudagrass), an aggressive brush would be employed. For more severe treatment similar to grooming or light verticutting, our most aggressive brush would be appropriate. With the quick-change capability, the brush unit models between those extremes can be used to tailor the aggressiveness throughout the year according the superintendent's daily judgment call. The aggressive unit may even be mounted on an old mower for incorporating sand following topdressing. Currently, we have three brush models available but we can custom-make others to suit the superintendent's needs. And standby for more action in this department as we have some creative brush ideas in the works.





Brush Unit	Use Guidelines
	Least Aggressive
A-0	Soft - Dormant Bermudagrass Cold-Weather Bentgrass
A-2.5	Medium
D-2.5	Aggressive - May & September growth surges, Summer Bermudagrass
	Most Aggressive

What To Expect When Starting The Transformer Brushing Program

The first day that you brush a shaggy golf green, you may look at the surface and ask if this is a good thing as it will look a little ragged. It is like you have ruffled the feathers and half of the feathers are still there. Have faith. Typically after days 5-7, depending on the time of year, you will notice that the greens are smoother. Many a time I have had Superintendents call after three weeks and tell me that even their mower operators are commenting "Can you believe how thick and dense these are getting?".

Think about it, it makes sense. After the fat horizontal leaf blades are removed, there is now space between plants with nothing

there to capture light. The plants respond by filling the gaps with new plants via stolons or rhizomes. Presto, higher density and vertical leaf orientation, the sign of putting surface excellence as detailed at the beginning of this discussion.

What About Grooming?

There is a world of difference between grooming and brushing. Groomers are miniature verticutters that "chop" through horizontal leaves as well as tillers if they happen to be in the path of the blades. In contrast, brushing more-gently "lifts and scissors" horizontal leaves and doesn't damage tillers. Which would you prefer if you were a plant? Groomers may have been necessary in the past because no daily-use brushes were physically strong enough to brush aggressively. With the Transformer Brushing System, that has changed. We have Superintendents using even the very aggressive brushes (B-7.5) every day on superb-quality bentgrass greens throughout the Summer. This is particularly useful when irrigated with effluent as the nutrient load causes puffing and scalping in hot weather. The aggressive brushing prevents the puffing and scalping. The end result is not a deterioration from aggressive brushing but a prevention of the deterioration associated with puffing. Great for the grass, great for the players and gold star for the Superintendent.

So why would you want to groom when you can accomplish the same (or better) effect with brushing and not so damage the grass plants? A lot of Superintendents have asked themselves that question and abandoned grooming. We get a lot of calls from Superintendents about a month after they start brushing who say, "We took the groomers off the machines and don't foresee ever using them again."

Brushing Collars, Approaches and Tees

This is the new frontier that many Superintendents have already put into practice. If brushing has such a great effect on short-cut greens, why wouldn't it have the same benefit on turf cut slightly longer? Answer, it does! A client Superintendent and Dr. Howard were inspecting a course just before a Tour event. While on a green, the supervising Tour executive was focused on the collar. He studied it with intrigue from every angle and said that he had never seen a collar that clean and dense. We then called the collar mower operator over and sure enough, it had a Transformer Brush on it. The executive's response, "We are going to be doing a lot of that in the future".

Check out our VIDEO LINKS below to see collar, tee and approach mowing *IN ACTION!*

Brushing Greens with the *Transformer System*

Brushing Bentgrass/Poa Tees & Approaches with the *Transformer Brushing System*

Brushing Greens Collar at TPC Scottsdale Hole 16

Sand Incorporation

Whenever Superintendent Kent McCutcheon at the Las Vegas Country Club did light topdressing, he went through the misery of three days of angry players, angry mechanics and ruined parts. Being creative, Kent tried something different. He put the soft A-0 brush on his Transformer system. After giving the sand an hour to dry, he brushed the greens with the blades turned off. Then he immediately went over the greens again with the blades on and picked up virtually zero sand. His next act was to call Dr. Howard at TurfScience and declare that he discovered the world's best sand incorporator. In hindsight, this makes sense as the A-0 brush is so soft that the bristles bend backward as the machine moves forward. Thus, rather than scratching sand out of the turf, it vibrates it down into the canopy and out of reach of the mower blades. Everyone wins, and the easy way! Dr Howard has since mentioned Kent's story to Transformer purchasers, many of which reported back after trying this that they feel like they died and went to sanding heaven.

Models Available & Pricing

The Transformer Brushing System is currently available for the following mowers:

- All Toro® walking greensmowers
- All John Deere® walking greensmowers
- Jacobsen® Eclipse 2 floating head mowers

PRICES:
(includes your choice of a brush)

- Fixed-head mowers.....$535
- Floating-head mowers.....$670
  - *except:* Toro 1600.....$555
  - Jacobsen Eclipse 2.....$725
- Extra brushes.....$70

Ordering

It is suggested that you consult personally with Dr. Howard at TurfScience, Inc to assist with your choice of brush units. He will also acquaint you with the performance that you may anticipate with the *Transformer Brushing System*.

CONTACT INFORMATION:

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Visit us at **www.TurfScience.NET** for all of your agronomic and facility-presentation needs.

Patent Pending

MADE IN USA

TURFSCIENCE, INC.