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MODEL 1800 Stump Router Special—$2995.00

STANDARD FEATURES OF THE 1800:

- 18 HP twin cylinder magnum Kohler motor
- 5/8″ thick cutter wheel
- 2 1-7/16″ piller block bearing and 1-7/16″ cutter wheel shaft
- Large 4.2 gallon metal gas tank
- Electric start
- Fingertip control panel
- Belt engage and disengage—not a slipping clutch
- Belt adjustment with easy-to-tighten belt after stretching
- Steel brake locks wheel when grinding stump (machine also backs up on stump to proper cutting setting)
- 4.8 tire and hubs with bearing
- Cutter wheel is easily removable from machine to enable user to change wheels, reducing downtime due to dull teeth.
- Cutter runs off of 3B belts for more power.

This small, manually-propelled machine is built to last. Like our large machines, it features the same bearing, pulling, belt slide and shafts, etc.

STUMP ROUTER 2300 & 3000

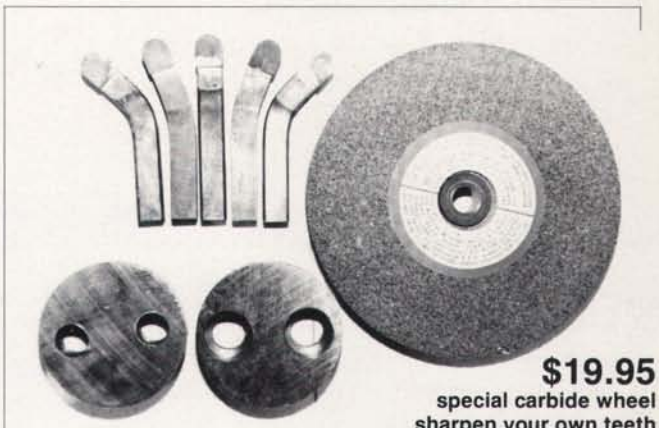
- Self-Propelled
- Removes 10″ stumps in less than two minutes!
- Easy one-man operation
- Fits in back of 6 ft. Pickup Truck!

DIMENSIONS:

Front cutter wheel guard to back of wheel	65″
Front cutter wheel to front of wheel	43″
Outside wheel to outside wheel	41″
Outside wheel to outside wheel brake	46″
Total Length	126″
Cutter wheel offset brake	
WEIGHT: Approximate	1000 lb.

18 HP — $2,995.00
23 HP — $5,535.00
30 HP — $6,735.00

Carbide Teeth



$19.95
special carbide wheel
sharpen your own teeth

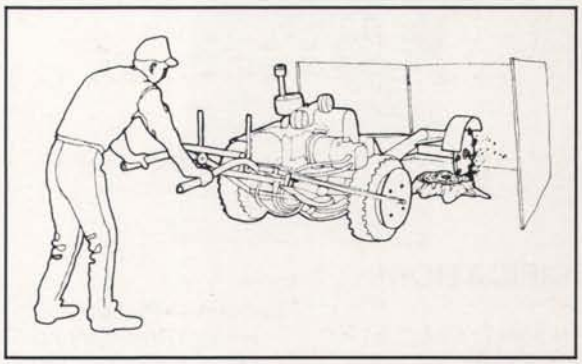
SPECIAL—$2.25 **Each**

MODEL 2300 FEATURES:

- Powered by a **23 HP** Kohler Engine operating at up to 3600 RPM
- Propulsion thru two Hydraulic Motors coupled with Sunstrand 15 Pump
- Cutter Wheel is belt driven direct from engine with Multi Band belt
- Free Wheel Valve for wheels
- Cutter Wheel has six carbide teeth-easy to remove to sharpen or replace
- Electric Start
- Height-Adjustable Handlebars

MODEL 3000 FEATURES:

- Powered by a **30 HP** Wisconsin Engine operating up to 2800 RPM
- Same features as the Model 2300



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The new Clinton soccer park was inaugurated Sept. 13, 1986. Nearly 300 children play on the seven fields every weekend.

Soccer Park

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existed for years before the community started to notice there was another sport in town beside football and baseball. With the opening of the new soccer park this fall, everybody in town is beginning to take part. It's a real community thing now."

Jammie Holland, president of the club, receives much of the credit for generating the excitement over soccer in Clinton. Like many parents, he got involved because, as a bystander, he couldn't stand to see his kids lose. "I just decided one year to coach a team to see if I could get the kids to play real soccer. You have to understand, everyone is a volunteer, from the referees to the grounds crew. It's a lot of work for a coach to teach kids their positions and pass the ball around."

Holland never played organized soccer. Like everyone else in Clinton, he played football and baseball. "During a football game in junior high, I got hit hard and was sore for weeks," he recalls. "I just wasn't big enough to take the punishment that's part of football. Looking back on those days now, I wish I had played soccer instead. Some-

continued on page 24

The Lasco Full-Circle Swing Joint.

It puts an end to leaks.

You know the problem. Adjusting a field-assembled swing joint to grade invites leakage that can swamp a landscape. Especially with valve-in-head sprinklers. Over-torquing joints, to "make sure," can produce split fittings and worse flooding.

Lasco solves the problem with elastomer O-rings that let you make adjustments without making leaks. And with special threads that just can't be over-torqued to the splitting point. No sealants needed.

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Soccer Park

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one who is coordinated and fast can be a star in soccer without being 225 pounds and over six feet tall."

Since the club plays both a fall and spring season, kids playing football and baseball can also play soccer to maintain their endurance, to work on their agility and to develop team skills. "That doesn't mean that the football and baseball stars are stars in soccer too," says Holland. "It's one sport where the smaller kids can beat the big kids."

Until this fall, Clinton's teams played on an unimproved "cow pasture" loaned to the club by the Clinton Public Schools. "It was rough and had more weeds than grass," says Holland. The school told the club it could use the land for three years, but then they wanted it back.

"Nobody was going to spend much money on fields that had no future," Holland admits. "We did what we could within reason. In a way, the fields made the kids tough. Since they were used to controlling the ball on bumpy, uneven fields, they were great when we played teams on nice, smooth fields. You can imagine what visiting teams thought of our fields. One season, two of our teams made it to the district finals. We were starting to get somewhere, but we only had the fields for two more years."

"Our soccer teams were starting to get somewhere, but we only had the fields for two more years."

That year, Holland was elected president of the club. It became his job to find new fields—and fast. As a service representative for Pitney Bowes, Holland knew a few of the members of city council from servicing their postal meters. "One night after a council meeting I spoke to the council and city manager James Luckett about our problem and inquired about any city land that could be used as a site for soccer fields."

A few council members had seen the crowds at the district soccer finals in nearby Weatherford. "The idea occurred to us," said Luckett's assistant Johnson, "that if we built a facility to host the district soccer finals, we could attract hundreds of visitors to Clinton—who would eat at our restaurants, buy our gasoline and maybe stay at our hotels."

Holland reinforced this idea by finding out that the district would hold every third playoff at Clinton—if it had a new facility.

After further discussion, a 20 acre site near the Clinton Airport was mentioned as a possibility. "That afternoon, I drove out to the airport for a close look, made a few notes, and spent the next two days sketching out a design at my kitchen table." The soccer park would have seven fields in a stair-stepped design for good spectator viewing. It included small fields for the kids under ten and regulation fields for the older kids. Holland showed the design to the council and they gave Luckett the go-ahead to do an engineering study.

Holland had kept the Booster Club informed of negotiations with the city. When the city showed interest, the club quickly offered to finance as much as it could and to take care of all scheduling and opera-

tions of the fields. The council approved $30,000 for the project.

The soil on the site was rich clay loam since the area had previously been cultivated farmland. The fields were graded and perforated drainage lines were installed on both sides of each field and backfilled with gravel to the surface. "Each field is four feet higher than the next field," says Roberts. "With drain lines between the fields, the moisture level in each field can be different.

Water was a definite concern. There was one well on the site which had to meet the needs of the irrigation system, as well as drinking fountains and future water needs. The city did not want the added expense of major changes to the well or existing water main.

"When the job was published in the Dodge Report (a construction newsletter published by McGraw Hill)," says Johnson, "we got a call from Don Cotten of Submatic Irrigation Systems in Lubbock, TX. He raised some good points about irrigating the fields. His product, a subsurface irrigation system, is popular around town for landscaping. Surprisingly, not a single company called us about a conventional surface irrigation system for the job."

Cotten's proposal was to have city crews install a network of Dripline hoses eight inches deep across each field. The hoses have built-in drip emitters every 24 inches. Each emitter releases one-half gallon of water per hour at 20 PSI. The hoses were installed with a vibratory pipe puller in rows 36 inches apart. With each emitter covering an area of six square inches, a little over a tenth of an inch of water can be added to the soil per hour.

This design is intended for heavy soils like those at the Clinton park. The emitters should be closer together and not as deep for lighter or sandy soils.

A pump, filter system and valves could be installed without major changes to the well or existing main line. The system would allow the fields to be irrigated individually or in groups. The low pressure (30 psi) and volume of water needed for the system was well within the capacity of the water supply.

Holland, Luckett and Roberts liked the idea since they could irrigate the fields during day games, avoid any water loss to evaporation, and keep water levels in the fields separate. They also didn't have the staff to keep a close eye on sprinkler heads for proper operation.

The primary concern with subsurface drip systems is clogging of the emitters. To prevent such clogging Submatic developed a one-piece enclosed turbulent flow emitter with built-in strainer. It is made of the same polyethylene as the tubing to which it is permanently welded. Water pressure in the lines needs to be 30 psi or greater to create a small void in the soil around each emitter to help prevent particles from being sucked in by negative pressure when the system is shut off. Water from the source should also be filtered to remove particles that might be suspended in it.

Sub-surface drip systems need to be purged regularly with a diluted solution of hydrochloric acid (1 part acid to 100 parts water). The weak acid cleans out any organic materials (such as algae) that may become lodged in the emitters. Twice a season is the recommendation, especially following long periods where the system has not been used. "During long periods without irrigation, the roots seek moisture anywhere in the rootzone," says Cotten. "As a result, small root hairs can grow into the emitters. The weak acid solution will purge any root hairs as well as any salts that accumulate in the line." Oklahoma soil is alkaline, so the mild acid solution also serves to improve soil pH.

Also, there is the problem of knowing when enough water has been applied. Man basically believes what he sees, and if he

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CHALKBOARD

TIPS FROM THE PROS

Deep Cultivation Restores Infiltration and Aeration

By Tom Mascaro

As a turf consultant in Miami, FL, and one of the inventors of the turf aerifier, I periodically receive phone calls from Dale Sandin, grounds manager for the Orange Bowl. During one of our conversations, Sandin asked, "How far apart would you suggest we drill holes in the turf?" The water infiltration rate of the Orange Bowl field had dropped from seven inches per hour to less than one and one-half. The problem was compaction in the top six inches of the field.

In my opinion, the P.A.T. System field in the Orange Bowl is certainly one of the best systems for intensive-use sports fields. Briefly, the P.A.T. System, developed by Dr. William Daniel, professor emeritus from Purdue University, is a lined reservoir the size of the field. It has two or three vacuum pumps connected to a drainage system. The entire reservoir is filled with sand, with a small percentage of soil and peat mixed into

The Verti-Groove cuts and removes narrow, six-inch-deep slices of soil. These slices are removed or broken up with a drag.

the top six inches. It is then seeded, sprigged or sodded.

The Orange Bowl and its P.A.T. system have worked flawlessly for more than ten years, being used for more than 30 events per year, ranging from rock concerts to tractor pulls to the Orange Bowl game. (See story in September **sportsTURF**.

The reason Dale wanted to drill holes in the turf was to try to improve water filtration and aeration. His surface aerators were not doing the job deeply enough. In fact, research has indicated that aerator tines can actually cause compaction at the bottom of the core holes if the coring depth is always kept the same. Regular aeration is part of Dale's maintenance program since its benefits clearly outweigh any potential compaction problems.

Roots grow prolifically in the peat and topsoil mixed into the top six inches of sand. However, roots die off and are replaced by new ones. In soils saturated with water, old roots do not decompose properly. Instead, they accumulate and act like a sponge. Compacted subsurface soil layers that reduce drainage set up a chain reaction that becomes progressively worse. This root-bound condition also occurs on many "sand only" golf greens.

I called Dr. Joe Duich, a recognized turf expert at Pennsylvania State University, for his thoughts on the matter. He offered two solutions. The first was to drill holes six inches deep, four inches apart with a hand drill. While such a practice might be moderately impractical for a golf green, Duich realized it was highly impractical for a football field. His second answer was to try a deep aerifier that I had experimented with years before.

First, the device had to be built. It consists of two slicing components that remove a slice of soil six inches deep. The slices are one-half-inch wide and can be spaced one or two feet apart.

While the deep aerifier was being constructed, Dale took an opportunity to have the field sand-injected. This procedure opens a slot in the soil, without removing soil, and injects sand into the void to form a drainage channel. A patented machine developed in England injects sand almost nine inches deep in rows 20 inches apart. The sand-injection process reopened the top six inches of soil with the sand below.

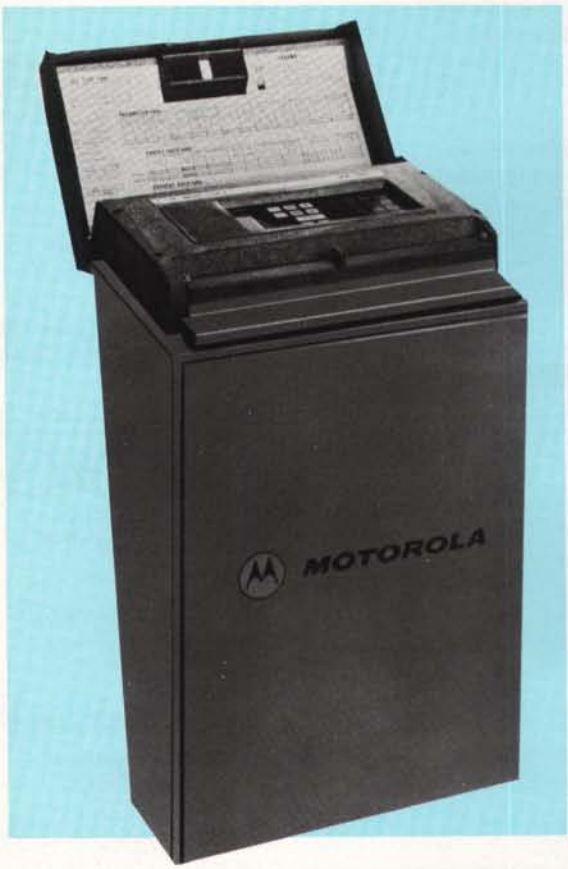
When the deep aerifier was completed, we named it the "Verti-Groove." In 1984, Dale used the Verti-Groove to open up the soil in two directions. We estimated that 20 tons of soil and old roots were brought to the surface. The process was repeated three times in 1985 in March, April and May. Removing root-bound soils down to the six-inch level opened up the soil to the air so old roots could decay properly. Conventional surface aeration was continued as before.

The soil profile of the Orange Bowl has improved dramatically. Thin thatch layers, sandwiched between applications of topdressing, have been eliminated. The topdressing serves to smooth the surface, an important factor in sports fields. With each topdressing a small amount of thatch is covered up and potential problems with layering can be avoided with both surface and deep aerification.

Ransomes distributors are taking delivery of the first Verti-Groove units this winter. There are no moving parts. It is not intended to replace surface aerification, but when used in conjunction with them, it can correct subsurface compaction caused by surface aerifier tines.

Another problem Dale and I have been looking at very closely is airborne soil pollution. We have known for years that a great deal of fine particles suspended in the air settle on turf as fallout. These pollutants, especially in metropolitan areas, consist of extremely fine particles of mineral and organic matter. Greasy substances, probably derived from jet fuels and automobiles, are also present. Dew or water falling on the turf washes the particles into the soil, where they clog pore spaces.

The full effects of airborne soil pollution are not understood and research is needed, especially for urban stadium fields. For now, a combination of surface and deep aerification can keep the problem under control.



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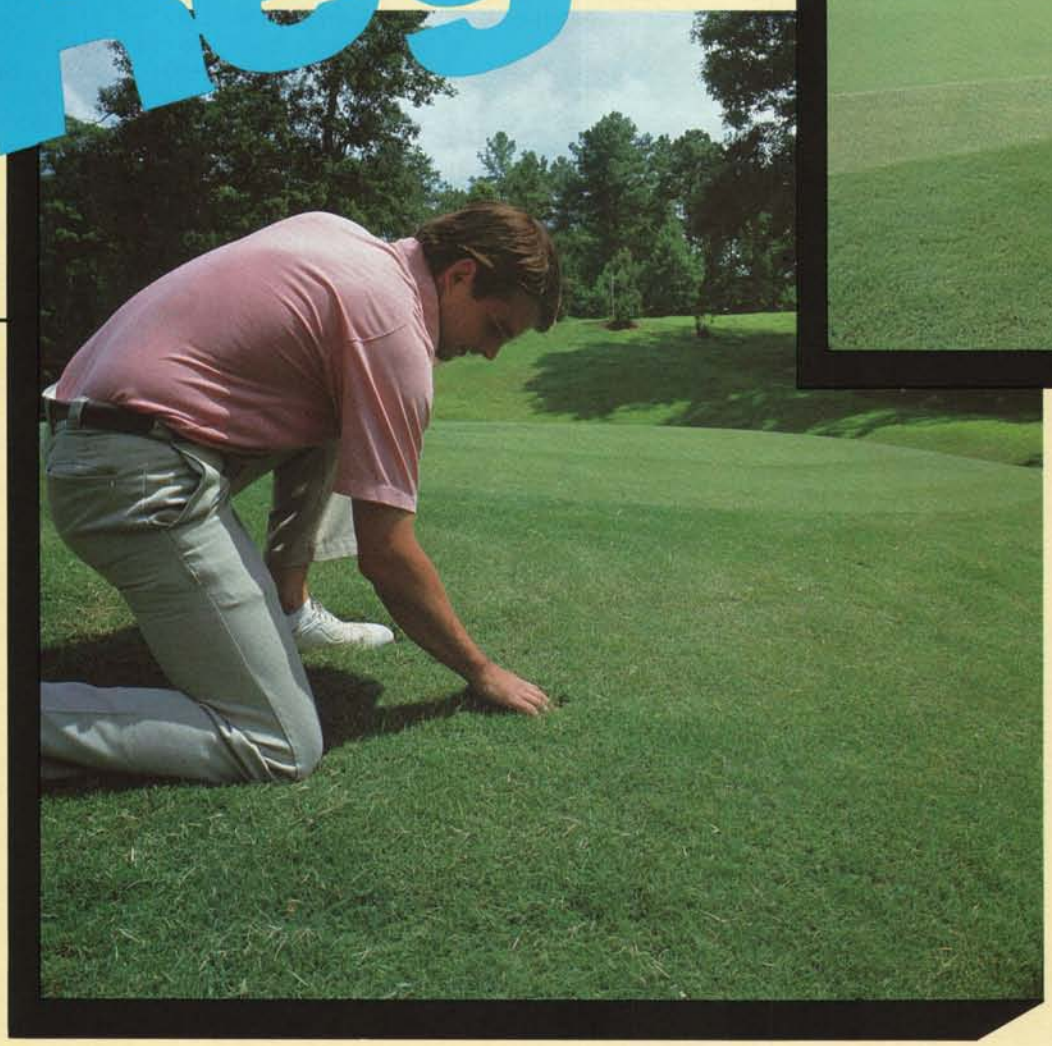

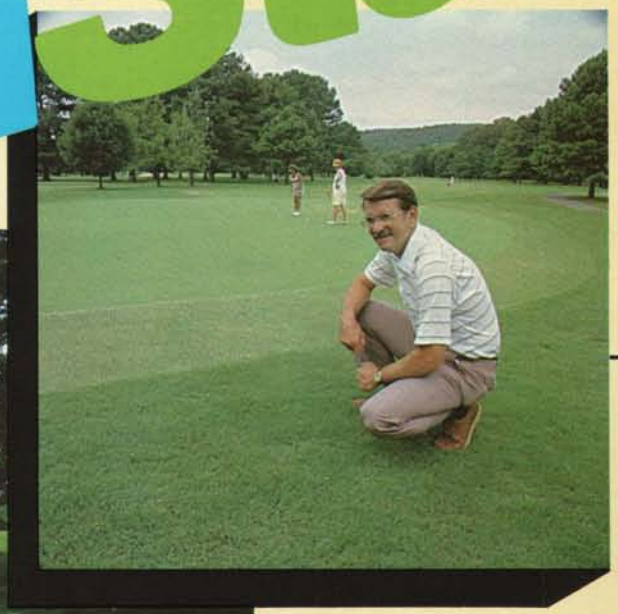

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PGMS JOINS ALCA GROUP FOR GREEN TEAM EXHIBITION

The Professional Grounds Management Society (PGMS) and the Landscape Management Division of the Associated Landscape Contractors of America (ALCA) will each have their annual meetings Nov. 9-12 at the Marc Plaza Hotel, Milwaukee, WI. For the first time they will hold a joint trade show, the Green Team Exhibition, in conjunction with the meetings.

Cooperating on arrangements for the Milwaukee events are Clarence Davids, president of PGMS; Richard Akerman, chairman of the ALCA Landscape Division; Allan Shulder, PGMS executive director, and Terry Peters, executive director of the ALCA Landscape Division.

The focus of the Green Team Exhibition will be on equipment and machinery maintenance. It will be held at the Milwaukee Exposition and Convention Center and Arena (MECCA) Nov. 11 and 12, with a field-day demonstration of equipment planned for Nov. 13.

In addition, there will be separate but concurrent PGMS and ALCA educational sessions featuring top experts in their respective fields.

These sessions will be held at the Marc Plaza Hotel Nov. 9-13.

The PGMS sessions will showcase the following speakers:

- George Wright, management expert, will speak on "Leadership Needs in 1986."
- William Bedrossian of Service Master Industries will discuss "Training: A Management Tool for Effective Operations."
- Professor Edward R. Hasselkus of the University of Wisconsin will talk about "Hardy Landscape Plants."
- Richard Jack of Athens, GA, an attorney who owned a landscape maintenance company for seven years, will cover "Legal Liability and Solutions."
- Dr. Alex Shigo, nationally known expert on tree wounds and pruning, will speak on "Tree Care."
- George Koziarz, a top authority on business, will provide pointers on "Financial Management."

The ALCA Landscape Management Division will feature the following speakers in its educational sessions:

- Ed Forman, president of Executive Development Systems, Dallas, TX, will reveal how to relax and live longer, and how to control one's environment. His topic is "Make Every Day a Great Day."
- Dr. Adlore Shaudier of the Runzheimer Institute, Rochester, WI, will give advice on "Controlling Company Costs."
- A panel of leading landscape management contractors will share their experiences on "Controlling Parts Inventory and Aftermarket Parts."
- Ron Turley, a private consultant in Phoenix, AZ, will make three presentations, one each day: "Shop and Garage Management Techniques for Entrepreneurs," "Preventive Management Programs" and "Tools and Productivity."
- Akerman will give pointers on "Controlling Equipment Abuse and Tool Loss."
- Tom Garber of Colorado Landscape Enterprises, Denver, CO, will deal with "Fighting Snow and Ice."
- A panel discussion featuring speakers from both the PGMS and ALCA educational conferences will cover the topic, "All You Need To Know About Sports Turf."
- Arnie Siet of the Bruce Company, Racine, WI, will talk about "Other Opportunities Related to Landscape Management."
- There will then be an opportunity to "relax around the table" and discuss in depth some of the topics that have been brought up during the seminar, with a panel drawn from the ranks of private contractors, government agencies, hospitals, universities and institutions, as well as shopping centers, condos and others.

For further information contact either PGMS National Headquarters at 3701 Old Court Rd., Suite 15, Pikesville, MD 21208; (301) 653-2742 or the Landscape Management Division of ALCA at 405 N. Washington St., Falls Church, VA 22046; (704) 241-4004.