

Nobody comes close to the number of pop-ups and nozzles offered by Safe-T-Lawn.[®] Not Toro.[®] Not Rain Bird.[®] Not Anybody.



You shouldn't be surprised that Safe-T-Lawn has almost double the selection of the nearest competitor in plastic pop-ups and plastic or brass nozzles. Because Safe-T-Lawn was the first to build a line of plastic pop-up sprays, starting in 1967. Safe-T-Lawn has specification extras, too, such as optional ground support flanges and check valves.

We warranty for five years; others warranty for just one. Which tells you something about Safe-T-Lawn quality.

Seven pop-ups. Nobody else makes that many. Our line includes our regular 2-in. and 2-in. economy pop-ups. A new 3-in. pop-up. Plus 4-in. and 6-in. And only Safe-T-Lawn makes two 12-in. pop-ups.

44 plastic nozzles. Choice? Toro makes only 24. Rain Bird just 12. Whatever your trajectory, gpm, radius or spray pattern, Safe-T-Lawn helps you get the job done better.

16 brass nozzles. That's 16 more than Toro. Because Toro doesn't

make any. And 7 more than Rain Bird. Because they make only 9.

Overnight delivery. From the West, Southwest or East. We have complete inventory ready to go from our own warehouse in California, Texas and Florida.

See your distributor now.

Or call us:

Fresno: (209) 291-4571.

Ft. Worth: (817) 457-8000.

Hialeah: (305) 625-7000.

Where the grass is always greener.

SAFET-LAWN[®]

HYDRAULICS ARE AN ASSET IF YOU UNDERSTAND THEM



Hydraulics provide flexibility and reliability if understood.

Imagine how complex and cumbersome turf equipment would be today without the hydraulic systems we take for granted. To perform the same functions, mechanical alternatives would add considerable size, weight, service requirements and operating cost.

For the operator, hydraulic systems not only have taken over most of the manual effort, they also have greatly improved and simplified control.

With just the touch of a lever on one of our sweepers, five cubic yards of debris can be raised 8-1/2 feet and discharged to a waiting truck.

Reels of many Jacobsen machines no longer rotate by traction. Hydraulic systems turn the reels at a selected rate, assuring a consistent cutting frequency independent of forward motion or wet or heavy turf.

Because of hydraulics, mower

gangs on turf tractors steer with the machine and can be swiftly raised to negotiate narrow areas or for transport.

Hydraulics ease steering and the use of a three point hitch, raise and lower cutter decks and snow blades, and provide a form of automatic transmission with exceptionally simple control.

But even though hydraulic systems have become commonplace and preferred, some operators may not understand them. Knowing what they are and how they work can be a great advantage when the time comes for maintenance, troubleshooting and repair.

Advantages

The basic advantages of hydraulics over other forms of power transmission are many.

Simple Design—A simple combination of pumps, valves, motors and lines replaces more complex

systems of mechanical linkages, gears, cams and levers, reducing maintenance costs and increasing reliability.

Compact Power—Hydraulic components provide more power in a smaller package than the mechanical or electrical devices that would perform the same function.

Flexibility—Because power is transmitted through tubes and hoses, hydraulic components can be located more advantageously.

Control—The power transmitted can be varied infinitely between wide limits for simple, precise and safe operator control.

Reduced Downtime—Built-in
Continues on page 44

By Tony Saitta, Chief Engineer and Ralph Sylvester, Jr., Product Training Manager, Jacobsen Division, Textron Inc.

Toro creates the ultimate low pressure, large radius Pop-Up.

"Matched Precipitation" nozzles at 1.3, 2.5 or 5.0 gpm.

Adjustable arc: 45°-315° and full circle.

The nozzle pops up a full 2" to get above tall grasses.

2"

Strong, stainless steel spring for positive, dependable retraction.

Gear-driven rotary with adjustable radius up to 50'.

Utilizes proven Toro gear drive for reliability. And it's permanently sealed and lubricated to help assure smooth performance.

Works at pressures as low as 25 psi.

Riser seal helps keep out sand and debris.

Our new Toro Super 600 certainly lives up to its name: it's versatile, reliable and economical. And it's specially designed to pass sand and silt right through it.

The Super 600 is also so remarkably compact, it's a breeze to install.

The New Toro Super 600

\$19⁹⁵*

*Manufacturer's suggested list price subject to local dealer option.

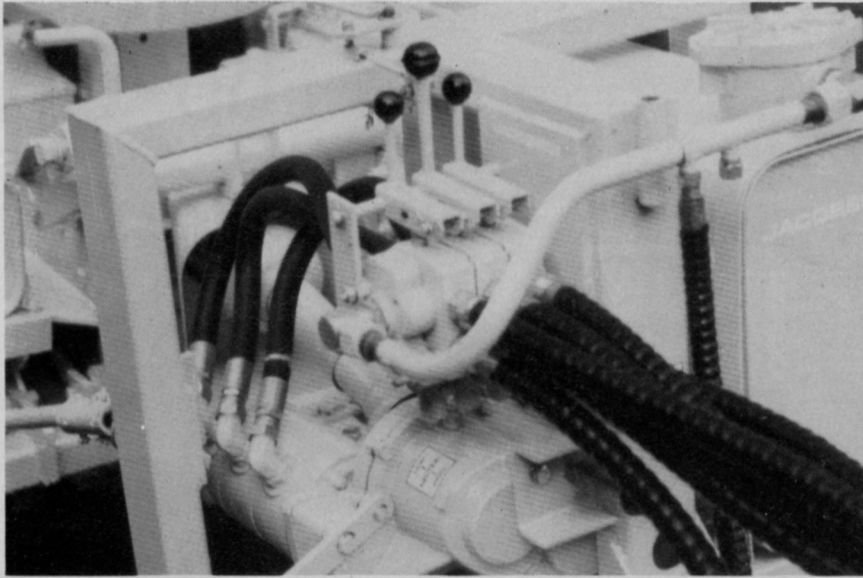
We've re-invented irrigation, from the ground up.



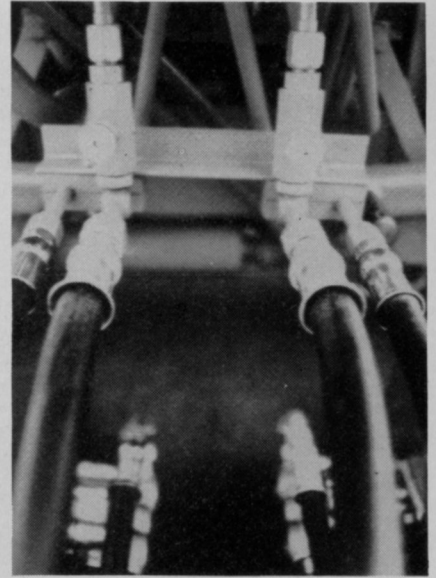
Irrigation Division

Circle No. 153 on Reader Inquiry Card

Actual Size



Components of a pull-behind gang mower hydraulic system include filter (upper right), tank (below filter), valve bank with controls, and the pump (lower left).



Flow control valves allow for backlapping the reels while in place.

relief valves provide overload protection keeping downtime and maintenance costs at a minimum.

Smooth & Quiet—Because force is transmitted through a fluid, hydraulic systems are exceptionally smooth and quiet in operation.

Basic definition

Basically, hydraulic power can be defined as the use of liquids under controlled pressure and flow to do work. Pressure exerts a force in the system, transmitting it in a confined liquid through hoses and piping. It is expressed in pounds per square inch. Flow causes motion. It is expressed in the number of gallons per minute that pass a given point.

System components

A basic hydraulic system is simple with fewer than a half dozen principal components.

Fluid Reservoir—The reservoir performs a variety of functions besides holding hydraulic fluid. Its walls are designed to dissipate the heat in the return oil. Baffles prevent the hot return oil from flowing directly to the outlet tube. They also help prevent turbulent flow which might allow air to mix with the oil, causing spongy operation and excess heat that could damage pumps. Often reservoirs are

equipped with magnetic drain plugs and filters to capture dirt particles.

Pumps—The pump converts mechanical power into hydraulic flow under pressure. Its size, or displacement, and speed determine the amount of flow in the system which, in turn, governs the operating speed of the hydraulic motor or cylinder.

A design commonly used in systems requiring up to 3,000 pounds per square inch of pressure is the gear pump. Two meshing gears force the fluid through a discharge port and tubing to the hydraulics motor which reacts.

Valves—Valves control system pressure and flow direction. The most common type consists of a spool that slides back and forth inside a housing that has passages in it. As it moves it blocks or opens the passages, routing the fluid through tubing to and from various hydraulic motors.

Another design is the relief valve that protects the system from excessive pressure. It opens when a specific pressure is reached, allowing the fluid to return to the reservoir.

Cylinder/Motor—The hydraulic cylinders and motors convert pressure and flow into mechanical power for performing work.

A hydraulic motor is quite simi-

lar to the pump, except it works in the opposite sense. Operating at pressures up to 3,000 pounds per square inch, gear motors in turf care equipment are commonly used to power hydraulic reel mowers, rotary mowers, spreader and similar drives.

Tubing/Hoses—These connect the hydraulic components to form a system. While pipe and mild steel tubing are commonly used in mobile hydraulic systems, the latter is preferred because it is easily bent, and requires fewer sections and fittings.

Flexible hose is used where a line is subject to movement. Besides simplifying connections, it also helps absorb excess pressure within the system.

Hydrostatic transmission

One of the major applications of hydraulics is the hydrostatic transmission found in all our mowing machines except our larger turf tractors.

The heart of this transmission is its variable displacement pump of piston-type design. By simply moving a foot treadle, the pump's output flow can be varied from zero to a higher rate. The same foot control can change direction of the flow to reverse the rotation of

Continues on page 56

**American
ingenuity
brings you a
front mounted
hydrostatic
mower with
more features
at a
competitive price**

**The Performer
by
SMITHCO**



The Performer is available in 18 and 23 hp Power Units, and a selection of 52", 62", and 72" mower decks.

I want more information about the Smithco Performer

Name _____

Address _____

City _____

State _____ Zip _____

Company _____

Phone _____

**POWER
LAWNMOWER
PARTS**
KWIK-FIX POWER PART™

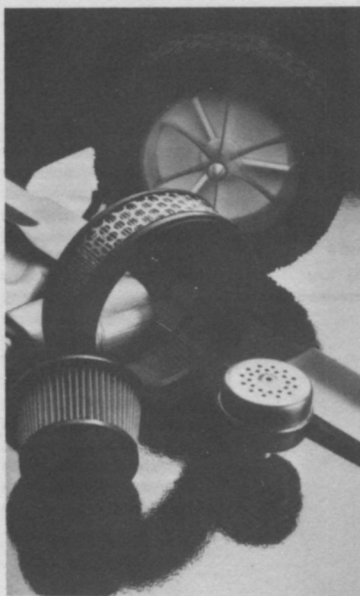
YOUR ONE SOURCE FOR PARTS!

We manufacture and stock one of the largest inventories of quality replacement parts for lawnmowers, small air-cooled engines and chain saws. Blades, spark plugs, tune-up kits, service tools and thousands more are illustrated and described in our New 148 page catalog. Get yours!

Send for your FREE catalog today!

(Please, we only accept written requests)

POWER LAWMOWER PARTS INC.
P.O. BOX 7837 LYELL STATION
ROCHESTER, NEW YORK 14606
TELEPHONE 716/458-0800



**Need lawnmower parts?
Buy direct from us and save!**

We manufacture and stock one of the largest inventories of quality replacement parts for lawnmowers, small air-cooled engines and chain saws. Blades, wheels, spark plugs, tune-up kits, service tools and thousands more are contained in our free 148 page catalog. We sell to over 30,000 dealers in the United States because our quality, prices and servicing are second to none.

Send for your FREE 148 page catalog today!

NAME _____

COMPANY _____

STREET _____

CITY _____ STATE _____ ZIP _____

WTT/482



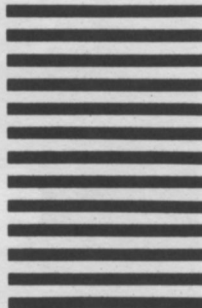
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 91, WAYNE, PA.

POSTAGE WILL BE PAID BY ADDRESSEE

Smithco Inc.
11 West Avenue
Wayne, PA 19087

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



**American
ingenuity
brings you a
front mounted
hydrostatic
mower with
more features
at a
competitive price**

The Performer

by

SMITHCO

**POWER
LAWNMOWER
PARTS**

KWIK-FIX POWER PART™

W.T.T. 4/82



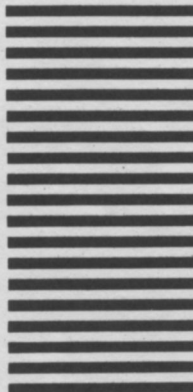
BUSINESS REPLY CARD

FIRST CLASS PERMIT NO. 4439 ROCHESTER, NY

POSTAGE WILL BE PAID BY ADDRESSEE

Power Lawnmower Parts, Inc.
P. O. Box 7837—Lyell Station
Rochester, New York 14606

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



**POWER
LAWNMOWER
PARTS**

KWIK-FIX POWER PART™

YOUR ONE SOURCE FOR PARTS!

We manufacture and stock one of the largest inventories of quality replacement parts for lawnmowers, small air-cooled engines and chain saws. Blades, spark plugs, tune-up kits, service tools and thousands more are illustrated and described in our New 148 page catalog. Get yours!

Send for your FREE catalog today!
(Please, we only accept written requests)

POWER LAWNMOWER PARTS INC.
P.O. BOX 7837 LYELL STATION
ROCHESTER, NEW YORK 14606
TELEPHONE 716/458-0800



to the right equipment
for the right job.



to the right equipment
for the right job.

EXCEL brings you 6
HUSTLER models, 6 hp ranges
designed to increase your productivity.

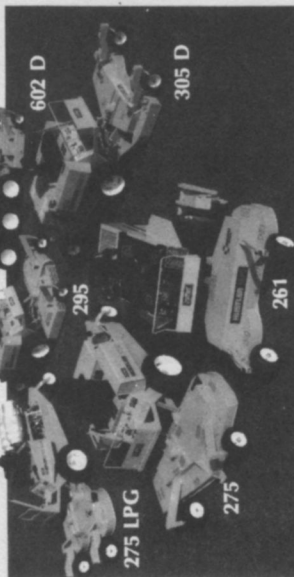
EXCEL meets any need with a full line of six HUSTLER models. All feature our dual hydrostatic drive system and twin lever, drive wheel steering for total one-hand control.

And you can choose attachments to meet year-round needs...from edgers to snow removal equipment. The result... total operating efficiency and production.

HUSTLER 261...18 hp, compact 60" former
HUSTLER 275...23 hp, steady performer
HUSTLER 275 LPG...21.5 hp, burns low-cost LPG
HUSTLER 295...25 hp, heavy-duty performance
HUSTLER 305 D...27.5 hp, diesel economy
HUSTLER 602 D...Self-leveling, 27.5 hp diesel, 6-wheel drive traction.

Call toll free
1-800-835-3260
or mail this card
for FREE literature.

GM-11P-102

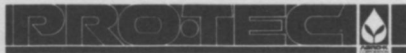


Name _____ Phone _____
Title _____
Company _____
Address _____
City _____ State _____
Zip _____

The choice of the Pros.



HUSTLER
Turf & Grounds Equipment



5750 Main Street N.E.
Minneapolis, Minnesota 55432
1-800-328-2418

Here's a way to add 2 months to your business year, strengthen your competitive position, and

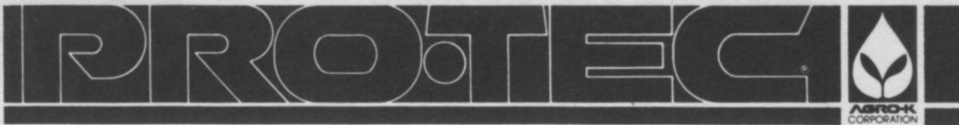
**Add 25%
To Your Profits
This Year...**

FREE! A Marketing Kit That Will Show You How To Boost Profits 25%.

By offering winter shrubbery protection service to your customers, you can extend your business year by two months and increase profits by as much as 25%. PRO-TEC® Anti-Transparent makes this all possible. It's **easy to sell** and easy to apply. Thoroughly tested and proven effective by major

nurseries and tree-growers, PRO-TEC is an opportunity to broaden your service and strengthen your competitive position. Send for your **free** marketing kit today, and plan to make more money this year. Simply fill-in and return this card. (Or phone 1-800-328-2418). We'll do the rest.

Name/Title _____
Company _____
Address _____
City/State _____ Zip _____
Phone (____) _____ Ext. _____



WTT/482



NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY CARD

FIRST CLASS PERMIT NO. 24 HESSTON, KANSAS

Postage will be paid by addressee

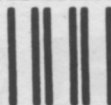
EXCEL HUSTLER Turf & Grounds Equipment

Excel Industries, Inc.
P.O. Box 727
Hesston, Kansas 67062



to the right equipment
for the right job.

WTT/482



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY CARD

FIRST CLASS PERMIT NO. 18852 MPLS, MN 55401

POSTAGE WILL BE PAID BY ADDRESSEE

AGRO•K CORPORATION
PROTEC DIVISION
5750 MAIN STREET N.E.
MINNEAPOLIS, MN 55432



5750 Main Street N.E.
Minneapolis, Minnesota 55432
1-800-328-2418

Here's a way to add 2
months to your business
year, strengthen your
competitive position, and

**Add 25%
To Your Profits
This Year...**

#GR-007



STANDARD FEATURES

- heavy steel frames
- all-weather vinyl covers
- double-stitched seams for longer cushion life.

- 5" front-to-rear adjustment
- replacement cushions always in stock

#CL-187



manufactured by:
The Grand Rock Co.
8805 East Ave.
Mentor, OH 44060

SAVE 50% OR MORE OVER COST
OF ORIGINAL EQUIPMENT SEATING

REPLACEMENT SEATS

SOME OF THE MANY APPLICATIONS:

Greens Mowers • Tractors • Loaders • Backhoes • Trap Rakes • And many more!
(minor modifications may be required on some models)

TOP QUALITY
DESIGNED FOR HEAVY INDUSTRIAL USAGE
EASILY REPLACEABLE PARTS AND CUSHIONS

FOR MORE INFORMATION, PLEASE COMPLETE AND RETURN

Your primary business at this location is: (check one only in A, B or C)

A. LANDSCAPING/GROUND CARE FACILITIES:

- GOLF COURSES
- PARKS
- RIGHTS-OF-WAY MAINTENANCE FOR HIGHWAYS, RAILROADS, & UTILITIES
- SCHOOLS, COLLEGES & UNIVERSITIES
- INDUSTRIAL & OFFICE PARKS/PLANTS
- SHOPPING CENTERS, PLAZAS AND MALLS
- PRIVATE/PUBLIC ESTATES & MUSEUMS
- CONDOMINIUMS/APARTMENTS/HOUSING DEVELOPMENTS/HOTELS/RESORTS
- CEMETERIES/MEMORIAL GARDENS
- HOSPITAL/HEALTH CARE INSTITUTIONS
- MILITARY INSTALLATIONS & PRISONS
- AIRPORTS
- MULTIPLE GOVERNMENT/MUNICIPAL FACILITIES
- OTHER TYPE OF FACILITY (PLEASE SPECIFY) _____

B. CONTRACTORS/SERVICE COMPANIES/CONSULTANTS:

- LANDSCAPE CONTRACTORS (INSTALLATION & MAINTENANCE)
- LAWN CARE SERVICE COMPANIES
- CUSTOM CHEMICAL APPLICATORS (GROUND)
- TREE SERVICE COMPANIES/ARBORISTS
- LANDSCAPE ARCHITECTS
- EROSION CONTROL COMPANIES
- EXTENSION AGENTS/CONSULTANTS FOR HORTICULTURE
- IRRIGATION CONTRACTORS
- OTHER CONTRACTOR OR SERVICE (PLEASE SPECIFY) _____

C. SUPPLIERS

- SOG GROWERS
- EQUIPMENT DEALER/DISTRIBUTOR (PLEASE SPECIFY BRANDS) _____

Please list brands of equipment now in use (i.e., Hyster, Toro, Caterpillar, etc.) _____

Your Name _____

Your Title _____

Business Name _____

Address _____

City _____ State _____ Zip _____

PLANNING TO PREVENT NOXIOUS AQUATIC PLANT GROWTH? WITH AQUASHADE?

AQUASHADE IS:

- Economical, because it long lasting.
- Non-toxic, no harm to humans, livestock, fish, wildlife and turf (EPA Registered)
- Non-killing, because it controls growth by suppressing.
- Easy to use, by just pouring.
- Beautifying, by coloring water in natural aqua-blue that will reduce sunlight.

IF SO, PLEASE CHECK-FILL IN- & RETURN

Name & Prof. Title _____

Street of P.O. _____

Town _____

State _____

FOR- Landscaping
Golf Courses
Farm Ponds
Industrial Ponds
Recreational Parks
Fountains
Fish Rearing Ponds

NEED- Nearest Distributor _____ Amount _____
Pricing _____ (1 gal. per 4 acre ft)
Ship at once _____ (1ppm)



Aquashade can make your serene pond or lake so beautiful, *without harm* to humans, fish, wildlife and turf.

WTT/482

PLACE
STAMP
HERE

THE GRAND ROCK CO., INC.
8805 EAST AVENUE
MENTOR, OH 44060

#GR-007



**STANDARD
FEATURES**

- heavy steel frames
 - all-weather vinyl covers
 - double-stitched seams for longer cushion life.
- 5" front-to-rear adjustment
•replacement cushions always in stock™

#CL-187

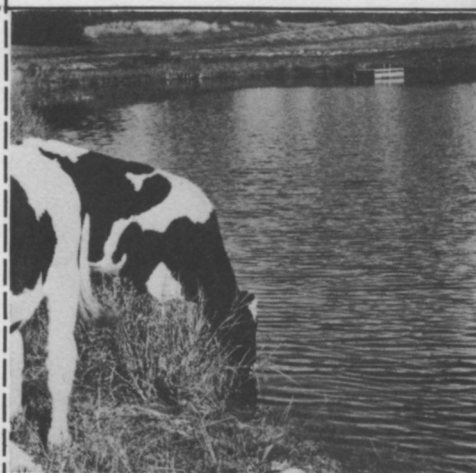
manufactured by:
The Grand Rock Co.
8805 East Ave.
Mentor, OH 44060



WTT/482

PLACE
STAMP
HERE

AQUASHADE, INC.
P.O. Box 117
Dobbs Ferry, N.Y. 10522



Aquashade can make your serene pond or lake so beautiful, without harm to humans, fish, wildlife and turf.