

This new, compact hydraulic mowing tractor, with outboard gangs raised for trimming, can put a smooth finish on 50 acres of turf in an average shift.

HYDRAULIC MOWING CAN TRIM TURF —AND BUDGETS

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The broadening use of hydraulics, a strong, long-term trend in turf care equipment development, is making a significant expansion in medium and smaller heavy-duty utility mowers.

The new hydraulic mowing applications that are now here deliver even greater operator convenience and safety, machine productivity and versatility and operating economy for both riding rotary and reel mowers that cut swaths from five to fifteen feet wide.

In addition, hydraulics raise their reliability to new highs, produce better quality cuts, and reduce maintenance by up to 50 per-

cent as I will explain later in this article.

Hydraulics, of course, are not unknown to smaller utility mowers and other turf care equipment. Hydrostatic transmissions are commonly used in our machines, with forward and reverse controlled by a single foot treadle. Hydraulics are also used for raising and lowering cutter decks and reel gangs by actuating another single foot pedal.

By themselves, these applications enhance maneuverability in trimming, moving over obstacles such as curbs and in swift transport. They also take virtually no operator effort, and, by the very

simplicity of hydraulics, already have eased maintenance considerably.

To fully appreciate the many benefits of hydraulic mowing, the unique advantages of hydraulic systems over other forms of power transmission should be reviewed.

First, a hydraulic system is relatively simple, consisting of fluid, reservoir, pump, valve lines and motor or cylinder. Fluid from the reservoir, put under pressure by the pump, is controlled by the valve in the line as it moves to the motor or cylinder that raises a cutter deck, rotates reels or rotary

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blades or performs other work. Compared to the complexity of mechanical linkage needed to do the same job, a hydraulic system is truly an uncomplicated device.

Another characteristic of a hydraulic system is that it offers more power in a smaller package, reducing equipment weight and increasing economy. And, because power is transmitted by fluid through tubes and hoses that can be easily routed, components can be located more advantageously. Control is better, too. For example, a single lever opens and closes a valve, providing infinite adjustment of the power applied as it is moved.

Downtime is not only reduced by the simplicity of the system itself. Relief valves are built in to protect against overload, making unexpected maintenance due to shock loads almost nonexistent.

Finally, because power is transmitted through a fluid, a hydraulic system is uniquely smoother and quieter in operation compared to mechanical devices. This feature has become increasingly important to equipment users, with or without government noise abatement laws.

While these systems are virtually failure-proof, with the chance of leakage fairly remote, a breach in the system could occur, allowing fluid to escape onto turf.

Should this happen, it is essential to rinse the turf immediately with water or a soapy solution. Warm or cool oil can suffocate grass while hot fluid—say from a transmission—can actually cook it, turning the blades white.

Contrary to some beliefs, the dyes in hydraulic fluids will not damage turf. They are used to color code the fluid, simplifying identification for proper use of specific products as well as to aid in leak detection.

Preventing a leak is a matter of preventative maintenance, that is establishing a procedure of routinely checking tubes, hoses and fittings, and other components for evidence of leakage, wear or looseness. This could be a part of an overall check before the machine moves out onto the turf and when it returns.



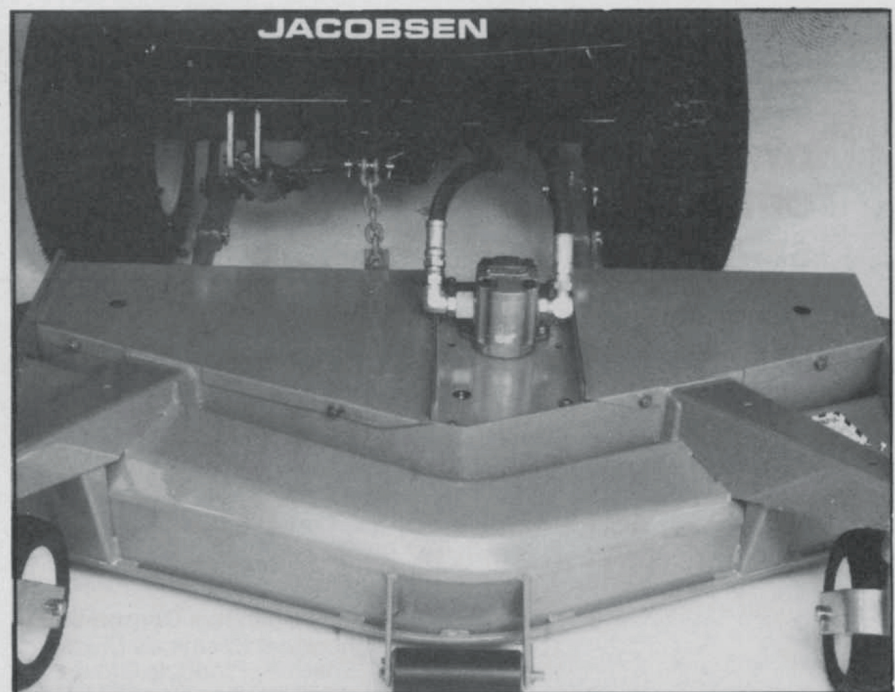
This riding mower's hydraulically driven cutter blades make short work of field grass. A snowthrower, dozer blade or rotary broom can be attached in place of the cutter deck to handle other chores throughout the year.

Translating these characteristics to hydraulic mowing in medium and smaller heavy-duty turf machines we find they create benefits beyond the inherent advantages we have listed.

A more compact machine results from hydraulically driving the blades—a machine that is easier to handle and more productive and

maneuverable. The weight saved over the mechanical system results in less compaction, and, therefore, healthier turf and less need for aeration later on.

This machine takes on new versatility, too. Plug-in hydraulics expand its utility, making it easy to remove the cutter deck and attach



The hydraulic implement drive simplifies power transmission by eliminating belts, drive shaft, bearings and P.T.O. shaft/gearbox.

a snow thrower, rotary brush or flail deck.

This system is also totally enclosed and, therefore, protected from the environment which in turf care work can be quite dusty. Another plus is that the flow of hydraulic fluid acts as a built-in cooling system.

Because a mowing unit such as this, with a cutting capacity that can range from five to six feet depending on the deck selected, may be frequently used near buildings, transmitting power to the blades hydraulically significantly reduces noise levels. The importance here goes beyond meeting current and future restrictions. It cuts operator fatigue. The smoother flow of fluid power minimizes vibration, too, another benefit for both man and machine.

Most of the advantages listed for the rotary apply to a hydraulic reel mower as well. But it has others that are uniquely its own.

Designing machines that perform well and economically is a real engineering feat.

By simply moving one lever, cutting frequency can be infinitely adjusted for the type of turf, its height, time of year and other variables. Because reels are not driven by traction, rotation remains at the set frequency despite changes in machine speed or turf conditions such as wetness. And since the reels can be driven faster, actually mowing an area in less time than larger, much heavier equipment. This can mean a reduced capital expenditure and a savings in labor costs.

Hydraulic power is generated by a second hydrostatic unit placed back-to-back with the one for the transmission. Besides driving the reels, it power-assists the steering, making the machine exceptionally easy to maneuver. In fact, because most of the mechanical linkage for steering has been eliminated, a tilt wheel has been added for better human engineering.

On the safety side, reels can be instantly stopped or started, and automatically disengage when gangs are raised.

Hydraulics also lend themselves to improved machine protection through the use of monitoring devices that with warning lights and buzzers signal the need for attention before problems occur.

And adding to the productivity of these new machines are diesel engines that require far less atten-

tion than gas power, deliver better operating economy and have longer lives.

Not only will the new wave of hydraulic mowing machines cut more turf better, they promise to give grounds maintenance budgets a proper trimming, too. And, in these days of scarce dollars, designing machines that perform as well in the field as they do on a ledger is a real feat in industry-responsive engineering. **WTT**

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March 18, 1982

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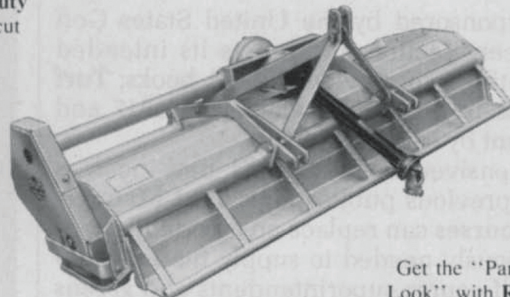
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