

ROSEMAN'S HYDRA GANG APPROACH TO FAIRWAY MOVING

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Our approach to hydraulic reel driven gang mowers has been under development for 12 years. The intensive care required for fine turf demands a light weight unit with faster mowing speed.

The first consideration was the tractor vehicle. Prior to World War II, Roseman took a Ford Industrial Tractor Dealership and for the past 43 years we have maintained a subsidiary tractor company in the Chicago District. This background has enabled us to keep current with the development of 3-point tractors and implements. Our present arrangement with Ford Tractor Division permits us to obtain original equipment manufactured (O.E.M.) Model tractors. An important advantage is that the Ford Tractor guarantee of one year follows the O.E.M. unit with service available on a world wide basis from any Ford Tractor Dealer.

We are able to specify the options relating to the needs of a practical tractor design for gang mowing. This tractor is basically a 3600 Model with a 59.5 HP Diesel Engine. Incidentally, gasoline powered tractors are no longer available from the Ford Tractor Division. The 8 speed transmission furnishes a wide range of speeds up to 18 MPH. A differential lock makes it possible to operate on side hills with constant lugging power to the drive wheels. The rear tires are a grader tread style which we buff off so that only approximately 1/4" tread remains. The air pressure is reduced to 10 lbs. which provides only 8 lbs. per square inch ground pressure. The ground weight of the tractor and linkage amounts to approximately 5000 lbs., while the mower units have a ground weight of approximately 1200 lbs. for the seven mowers.

Hilly and wet terrain is mowed with practically no tire marking and with the use of independent brakes, cross-mowing can be accomplished. There is a zero turning radius and under almost all circumstances, the turning of the tractor is done in the rough when cross-mowing.

The Roseman 7 unit Hydra-Gang Mower utilizes the tractor power take-off system to power the cutting reels and the tractor hydraulic system provides hydraulic lift for each mower unit. Drive power for reels taken directly from the tractor engine eliminates need for excessive draw bar pull and minimum weight for traction. Individual mower units follow ground contour with unlimited flexibility without scalping. Cutting height is gauged by ground reference to provide even cut over undulations. Thirty inch per unit cutting swath varies for 3,4,5 and 6 mowers with maximum of 15' for 7 gang. Mowing time is greatly reduced with a minimum of repair maintenance.

All seven units are raised or lowered by hydraulic power. When raising mower units, safety valves automatically stop the hydraulic drive to reels on all wing units. A single lever valve controls reels on all seven mowers - allows operator to vary reel speed as well as stopping and reversing reels. Quickly raises to 8' transport width.

The hydraulic power for the mowers is a simple straight forward hydraulic system. We employ a single pump and a single control valve which delivers 16 gals. per minute at 1800 engine speed. The pump is operated on the power take off shaft at 540 RPM. The single control valve reverses for

back-lapping of the reels and it is recommended that the back-lapping procedure be done every 75 to 100 hours of tractor operation.

We suggest adjustment of the bed knife to the reel at the optimum of zero clearance. This lack of steel against steel contact, as necessary with traction drive mowers, increases the need for more frequent lapping.

In the past we have received reports of oil contamination, as well as air entrainment in hydraulic oils. After consultation with five oil companies and the manufacturers of our pumps and motors, we set up a special test stand in order to evaluate various types of hydraulic oils. After such testing, we have come to the conclusion that the oil best suited for the Hydra Gang Mower is automatic transmission fluid (ATF). It is readily available and has better heat characteristics under high hydraulic pressures.

The hydraulic motors are mounted on either side of the mower units through direct splined bushings requiring no reduction train. Presently, we use a motor with a displacement of 1.5 cu. inch, at 1200 RPM with an 8 blade reel as standard.

Turf grass in the South, particularly Hybrid Bermuda, Zoysia and Kikuyu required excessive torque. Many Roseman Hydra-Gang owners in this audience have in use the earlier style motors furnishing a displacement of 1.2 cu. inch per revolution, at a speed of 1450 RPM when using the 6 blade reel. The new style motors give approximately 20% more torque.

All hydraulic components are manufactured to ASAE standards. Roseman's policy on development of improved hydraulic components is to maintain interchangeability and, therefore, if desired, the old style units or components can be updated with the new style. The cost of maintaining the Hydra-Gang is far less than the maintenance required for traction drive units. The weight is at least one-half of the ground drive units. Many moving parts are eliminated - gearing, transmission parts, clutches, differentials, etc.

Thatch removal by vertical mowing is an important program for many Hydra-Gang users. We suggest a maximum of 5 mowers, as the power requirements for thatch removal is several times greater than the power required for spiral mowing reels. The height setting for vertical mowing requires careful attention. The depth of setting should be limited to the crown of the grass plant. Slicing into the soil surface is not recommended.

A recent development is the Pull-Type Hydra-Gang Mower, allowing detachment of the mower from the tractor. The 3-point linkage is then available for use with other implements. A 7-Gang spiral mowing reel and a 5-Gang vertical thatching mower is a practical and economical combination. Both type of gangs are interchangeable on the Hydra-Pack, for substantial reduction on capital investment.

We have just introduced our new model Lift and Fold Mower, using the linkage from our mounted O.E.M. The mowing widths can vary for 3, 4, 5, 6 and 7 units and the reduced width is 8 feet for transport. The entire gang can be detached from the tractor within 15 minutes, thereby freeing the tractor for other uses.

Considering the programs for mowing fairways with triplex mowers and removal of clippings, the Roseman Hydra-Gang offers a very economical and practical back up unit for fairway mowing.