

How to Properly Maintain Mowing Equipment

By G. P. CARSON

Worthington Mower Co.

(GCSA Paper)

Most of the maintenance problems on mowing equipment that confront you from time to time are the result of not having the proper information available. This information is always contained in the instruction manual that is received with each piece of mowing equipment. But I dare say, in 90% of the cases, this manual is laid away and entirely forgotten. The manual is very important for maintaining this piece of equipment and should be read several times by all persons who are interested, and then kept in a place where it can be easily referred to from time to time.

I have had the privilege of visiting golf courses, municipalities, etc., throughout the United States and Canada, and in a large majority of cases, the lack of proper equipment and adequate tools to take care of their equipment in which thousands of dollars are invested is really astounding. I would venture to say that at least 25% do not have a work bench where a power mower can be taken apart to perform minor adjustments. Therefore, I would suggest that the first and foremost in maintaining power equipment is to have an ample and adequate supply of tools to do the necessary work that is required on all golf courses and mowing equipment.

In the October issue of *GOLFDOM* there was published a list of equipment for an average 18 hole golf course. If you were to purchase the maintenance equipment for fairways, roughs, greens and tees at the prevailing prices today, it would represent a total of approximately between \$15,000 and \$18,000. Therefore, it is important, and a good insurance policy, to devote some time and money towards maintaining this capital investment. If you had just delivered to you personally a new car which cost around \$3,000, would you immediately take this car and see how fast you could drive, and how rough a road it would travel over, or would you first become acquainted with the manual and then use your car accordingly?

Easy at the Start

This we find is one of the many faults with mowing equipment when it is received new. The \$3,000 represents the cost of a tractor and a gang of mowers

for fairway use. As this tractor is received, the instruction book should be thoroughly read and the operator or driver acquainted with this particular piece of equipment. Then, do not take this new piece of equipment and see if you can cut your fairways in 1½ to 2 hours less than it took you before; but run the tractor through a breaking-in period of one or two days of easy work and then try, if you must, to see how much time you can save. This same condition is very true with your small power mowers. They are bought new and immediately they are taken out, put on a green or a tee to see how fast they can run and how rough mowing conditions this machine can take. Use this equipment as you would a new car—then break it in and give it a chance.

Another important part of preventative maintenance, and I know that you will all agree with me, is the use of clean oil and grease. On different occasions I have had the opportunity to inspect work shops on golf courses and noticed, that although the cans of grease had come provided with a tight lid to keep the grit and foreign matter out of this grease, in lots and lots of instances, these cans were sitting around in the main building with the lid removed and sand, dust and whatnot were continually falling into this lubricant. It was then removed, put into a grease gun and the bearings and moving parts of the mowing equipment were lubricated.

In one instance, I went into a tool shed where a mechanic was regrinding a power mower. Underneath the grinder, of course it was out of the way so nobody could fall over it, was sitting a can of grease without the lid on the can and all the grinding of the metal from the reel with the grinding compound was going into this can of grease, and would eventually end up in some precision type bearing.

Another condition that we see all too often is the way your engine oil is treated. It comes to you in a sealed can or drum and is protected against dirt or any foreign matter getting into the oil; but once it is opened and you start to use it, there isn't too much care taken when you use this oil in the crankcase of your engine whether the can is clean before the oil is

put in or how much grit and grime goes down into the crankcase to help lubricate your equipment.

Check List on Equipment

I would next like to suggest that you keep a record sheet of each piece of equipment that you are using, whether it is a hand mower, power mower, tractor, or gang mower in order to maintain a check on your maintenance procedures. In all probability, you have part of a week set aside at which time the different operators or mechanics check the equipment for loose bolts and screws and most important, lubrication. This sheet should contain the work that you want checked periodically such as draining the crankcase, checking the battery for water, checking air filter, tire pressure, etc.

As these operations are done on this particular machine, they should be checked off and the date when they were done so that you, who are responsible for this equipment, can refer to these charts and check the persons whose duty it is to perform these operations. So many times at the periodical check up time which you have set aside, extra jobs come up like fixing pumps, water systems or topdressing greens and of course you give instructions to "Let that job go for today and we will do it tomorrow". But, if you don't have a check on this piece of equipment, in lots of cases tomorrow may come 10 days away. This is entirely too long and your machine is not given the attention it should have.

It has been found and investigated that 90% of your so-called breakage of mowing equipment is not caused from mowing fairways, greens, tees when you are doing this particular job but this breakage occurs when you are transporting your machines from one area to another which you are mowing. So, therefore, it is a very good preventative procedure to police your roadways or the areas that you cross from one fairway to another or one green to another in order that you can remove any obstruction that will break or damage this piece of mowing equipment.

Another problem that fits very closely in the maintenance of mowing equipment, and I can say has certainly been kicked around a lot, is the speed of mowing. The speed depends on the type of machine you are operating. Of course I do not think this has much to do with the hand mower. I have never seen an instance where an operator has pushed a hand mower at an excessive speed. But the little power mower, due to the fact that it has an engine on it, has certainly been abused—and I think that you will find that most power mowers are not designed and built to run with the throttle wide open at all times; but at a speed that is convenient and comfortable for an operator to walk.

Mowing Too Fast

In regard to the tractor-drawn equipment, this is an entirely different problem where you have horsepower enough to mow at excessive speeds. For fairway mowers, and I do not know of a high

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The 60th birthday of Willie Hunter, pro at Riviera CC (LA dist.), 1921 British Amateur champion and widely known in American pro golf, was celebrated by several joyous affairs. In this one at Riviera, Willie beams from around MGM's birthday present of a big jug of milk from wild Caledonian cows. The other merry-makers, from L to R: Aldo Ray, Bill Ching, Joe Novak, Helen Dettweiler, Vic Mature, Babe Zaharias, Scotty Chisholm, Betty Hicks, Jim Backus.

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speed fairway mower, I would like to state that it is my opinion the top speed should not exceed 6 miles per hour; that is, provided you want the type of cut with respect to smoothness that the fairway mower is designed for. Of course, if you are not particular, if the mower does not follow the contour of the ground and the undulations and you want a choppy cut, then your speed can be stepped up, in some cases, 10 to 12 miles per hour. But, here again you may run into trouble inasmuch as your maintenance and repair bills on your fairway mower will exceed tremendously your friend's across the street who is mowing his at a much slower speed.

Another important maintenance problem that has been pushed and kicked around, and I think everybody has his own version, is the proper adjustment of the reel type mower. I am going to give you my version of an adjustment of this type mower and the way I think it should be done.

First, we all know that any type of reel mower should not be adjusted too tightly. This has a serious effect on the mower in that it causes premature wear not only on the reel blades and the bottom blades, but it follows through the gears and bearings down to the traction wheels which carry the mower. For proper adjustment you should have the flyknife reel and the bottom blade making slight contact; or in other words, the clearance between the two should be zero zero. This will give you sort of a self-sharpening effect which is nothing more than a wear that is created between the bottom blade and the flyknife reel.

We know that the principal of cutting grass is nothing more than a scissors action so, for example, take an ordinary pair of shears and, if they are adjusted properly, you can cut a piece of paper or grass clean. Loosen up the adjustment on these same shears and you will find that it does not cut, but pinches. This is the same condition that happens with your mower cutting grass, but it will go a little further. As the grass is pinched off it will injure in most cases and cause a mechanical injury which is very noticeable on the fairways and greens, especially during the dormant season in July and August when the grass is tough. This loose adjustment also causes the mower to become dull. As the grass is pinched off and drawn across the cutting edge of the flyknife steel in the bottom blade, it will remove the sharp edge and will cause a rounding effect on these two surfaces. When this condition exists you have to do one of two things to get the mower back in adjustment.

First, using extreme care, adjust the mower tighter than you ordinarily do and cause the two edges to wear, bringing back

the sharp edges or lap the mower in with emery.

Maintaining Proper Adjustment

I have been asked on numerous occasions: "If we maintain proper adjustment of our mowers throughout the cutting season, why do we have to sharpen our mowers before the season is over?"

You are all well aware of the fact that the flyknife reel is ground almost to a flat surface with a slight radius on the blade. The bottom blade is ground perfectly flat on the face and also the front edge of the steel. As the mower is adjusted and worn, this front edge of the bedknife steel is worn away down to a point where invariably it has reached the knife edge instead of the square surface. As the reel travels across this knife edge, it has a tendency to pick up this feather edge and carry it back across the face of the bedknife steel particularly if you should be cutting turf where there is an accumulation of abrasives such as sand, worm casts, etc. Then the mower has the appearance of being dull, which it really is.

To eliminate this condition, use a flat mill file and, filing straight and square across the edge of the bottom blade, remove this sharp edge to about 1/16th of an inch surface. This will again bring back your cutting and shearing effect.

Another phase of grinding mowers, and

again most everybody has his own ideas and theories, is how much bevel or clearance to grind on an individual flyknife blade. The reason for grinding this clearance is primarily to ease the drag between the cutting surfaces. On tractor-drawn equipment where there is plenty of power to pull the gang of mowers, I do not think that this is such a problem because the more clearance you grind on the individual blades, the quicker the flyknife reel will wear out; and it is to your own advantage to have these blades conform to as near a perfect cylinder as possible.

However, in a little hand machine where power is a human element, it is quite noticeable how hard a machine pushes, depending upon the width of the two surfaces, and your blades should be ground accordingly. This is not quite so noticeable on the power mower as the reel is driven by an engine, but again, if this surface is allowed to get too severe, you will begin to notice a lack of power in the engine.

In the three applications I have just mentioned, I would like to caution you not to make the mistake of grinding the bevel entirely out to the cutting edge of any machine. This is purely a waste of time and material. When this sort of grinding has been done, you will notice



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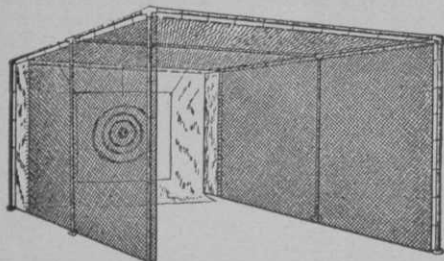
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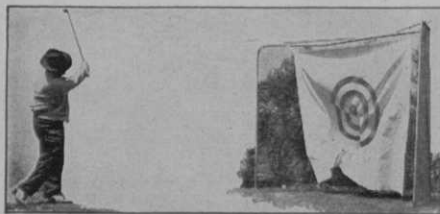
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that in a very short time, in a matter of one, two or three days, you will find this sharp edge worn away and the machine will be back to 1/16th or 1/8th of an inch on a cylindrical surface.

Installing a new bottom blade to the backing or bed shoe of any type of mower is a very important procedure. First, after removing the worn out steel from the bedknife backing, the backing should be thoroughly cleaned of any accumulation of grass clippings or rust particles and the new steel wiped clean in order to have two smooth surfaces bolted to the bedknife backing.

The next important procedure is to grind the bedknife steel after it is assembled to the bedknife backing and before it is installed in the mower. To my knowledge, all lawn mower grinders are equipped with a bottom blade grinder but are not generally used. The reason for grinding the bedknife steel after it is assembled on the backing and before assembling in the mower, is to remove any imperfections in the cutting edge of the steel.

After the backing assembly is installed in the mower, the finger guide that is used to true-up the reel has a true surface to work from and you are not grinding imperfection in each individual flyknife blade. In all probability, when the mower is removed from the grinder you can eliminate the process of lapping in the mower with emery, as so many are doing at the present time.

Keep It Clean

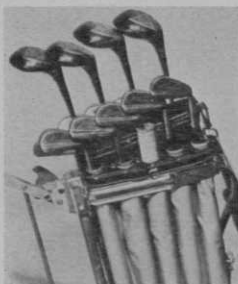
Another important maintenance procedure is keeping your equipment clean. Most all equipment is so protected that it can be washed off with water without damage to bearing or seals. I would recommend that this be done so as to clean off accumulation of grass clippings and grit that forms on the mower and prevents it from building up and forming a grinding compound that eventually works into the bearings and gear and causes premature wear. A small piece of hose and a little water will really pay you dividends. If you are fortunate enough to have an air compressor, I would certainly recommend cleaning your equipment with air.

Check Fire Insurance

The greatest enemy of mowing equipment, or any equipment, is fire. It is surprising to know how many park departments, golf courses and municipalities throughout the United States lost all their equipment last year through fire alone.

If they were fortunate enough to have their equipment covered by fire insurance, it isn't a chore to dig up another \$10,000 to \$15,000 to replace this equipment; but if they haven't, it is really a problem

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and maybe somebody is going to try to mow grass this coming year without any equipment.

If you have fire insurance, have it studied by a reliable insurance company and be sure you have adequate coverage. If you haven't any insurance, get some! A fire extinguisher located in a convenient position in your barn may decide whether you will have equipment to take care of your course for the tournament that starts tomorrow.

In my travels over a period of years, I have heard a superintendent enthused with the person in charge of equipment make this statement: "My mechanic is one of the best, and he has forgotten more than most servicemen know". This statement may be correct; but if this mechanic could go back and refresh his memory with the minor points he has forgotten, it would pay worthwhile dividends.

Course Force Has Planning Lunches at Ridgewood

Ridgewood (N.J.) CC is in its third year of spring and fall lunches for the course maintenance staff which, says

George Jacobus, the club's veteran pro, have proved to be one of the best operating and employee relations ideas ever used at the club. Jacobus, who has overall responsibility for outside operations; Wm. Sweisberger, course supt., and his asst. Robt. Kapherr, get the entire force together for lunch. The lunch isn't held unless all the men on the force are present.

The entire afternoon after the lunch is spent in reviewing the good and bad phases of work that showed up in performance, discussing plans and methods and frank talks of nature of the maintenance job, methods, costs, wages and labor relations at other courses.

Sometimes rumors heard about operations at other courses are discussed and by telephone to supts. of other courses the facts are learned and made known.

The lunch and afternoon program, according to Jacobus, has helped Sweisberger and him tremendously in getting the course men to realize their individual responsibilities and importance and to sell them on the idea that they mean more to the club than just being anonymous fellows working out on the course. Simply

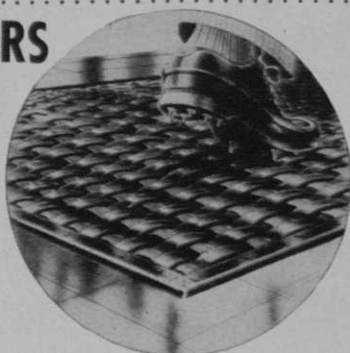
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