

Preventive maintenance keeps golf cars running — and earning

Golf cars represent a very profitable part of many golf facility operations, but also a substantial investment. It pays, therefore, to take good care of that investment in order to make the most of it. Golf cars don't make money when they are not running.

For golf cars, just as for humans, the best kind of medicine is preventive medicine. It is far better to establish and follow a routine of preventive maintenance and avoid costly downtime than to wait until a car is out of order and out of business to fix it. Fortunately, preventive maintenance of golf cars is not difficult. The following suggestions, culled from a variety of expert sources, will help prevent most problems if followed conscientiously. To further simplify things, we have grouped these maintenance procedures according to the parts of the car they apply to.

Body

Whether your golf cars have fiberglass, aluminum, or steel body panels — or a combination — the basics are the same.

Wash the car often. How often will depend on how dusty or muddy your course gets, but a good rule of thumb is to wash a golf car when it looks like it needs it — when it looks like a golfer might prefer not to rent it. Wash the car with soap and water. A household detergent will do, but nothing stronger. An automotive car wash soap is probably better, since it won't remove as much of the wax. Yes, it is a good idea to wax your golf cars.

Any good automobile wax or polish will work just fine. Just be sure the car is clean before waxing, and don't wax in the sun. A waxed golf car will last longer, will please your customers, and won't need washing as often. And, it will come clean easier.

Hose down the underside of the body and the chassis when washing a golf car, to remove mud and grass clippings.

When you wash a golf car is a good



Body

time to look for cracks in the fiberglass or dents in the metal — though it's best if the car is inspected for these things after each rental. Either way, if damage is found which might affect the structural integrity of the body or interfere with movement of the wheels or suspension, pull the car out of service to be repaired.

Upholstery

While you're washing a golf car is also a good time to look at the inside. Naturally, paper and other trash should be cleaned out after every rental or once a day, but it's a good idea to clean the upholstery periodically too. And it's best to do it before the seats get so dirty that golfers hesitate to sit down on them in their pastel golf slacks and skirts.

Soap and water can be used, but avoid harsh chemicals. An automotive-type vinyl cleaner works best.



Upholstery

As with the golf car body, cleaning time is also a good inspection time for the upholstery. Check for rips and tears, cigarette burns, and spike punctures from golfers who put their foot on the seat to tie their shoe. Minor burns and holes can be fixed with the help of an inexpensive vinyl repair kit, but if the damage is severe, you might have to buy seat covers or new upholstery.

Check the bag straps and their buckles, too. It's embarrassing and time-consuming when a golfer spills his irons down the first fairway because a bag strap didn't hold.

Tires and wheels

Check the tire tread regularly for cuts, nails, sharp stones, and so on — then check the sidewalls for cracks and separation from the tread. Naturally, if a tire looks low, you should check the air pressure. But it's best to check all of the tires occasionally with an accurate tire pressure gauge. Inflate them to the proper pressure, and make a note of any that are abnormally low. Those should be watched closely in the future to be sure that a car isn't sent out on a flat.



Mechanical

Recommended tire pressures vary from manufacturer to manufacturer, from 15 up to 25 pounds per square inch, so consult your owner's manual for the proper inflation for your golf cars.

Also look for uneven tread wear. Tires can be rotated from front to rear to even out wear and extend the life of the set, but greater wear on one side, in the middle, or on the outside edges

of a tire indicate the need for adjusting wheel alignment or air pressure.

Mechanical

Probably the most important part of a golf car to maintain in top condition at all times is not a part that makes it go — it is what makes the car stop: the brakes.

Keep the brakes adjusted to stop the car easily, to hold on the steepest hill on your course, to not pull to either side — but to not drag, either. Consult your owner's manual for specific procedure for your brand of golf car. Also be sure the brakes release automatically with the accelerator pedal.

Routine periodic brake maintenance involves inspecting the linings and drums for wear, maintaining the proper fluid level, and checking the cylinders and lines for leaks.

Lubrication schedules and procedures will also vary from one manufacturer to the next, but generally speaking you should be sure all moving parts, levers, rods, ball joints, hinge points, and cables move freely and are well lubricated. Check the differential oil level regularly.

Other mechanical checks involve testing the steering assembly for loose movement and looking for broken leaves in the car's springs. At least once per season, inspect and repack the front fork and wheel bearings.

A standard periodic "road test" should include listening for loose nuts and bolts and dragging parts as well as the more obvious things like testing the transmission's operation at various speeds and in reverse.

Engine

If your course owns gasoline-powered golf cars, there are also some elementary preventive maintenance features to follow for their engines.

Check the air filter regularly, especially if your cars run on dirt paths or in other dusty conditions, and clean or replace it as necessary. Also check the oil level if your cars have four-cycle engines. Inspect the fuel filter and clean or replace if necessary. If your brand of golf car doesn't have a filter between the fuel pump and the carburetor, consider installing one — it can help prevent carburetion problems before they begin.

While looking around the engine

Tires & Wheels



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near the carburetor, check the operation of the throttle, choke, and governor cables or linkage. Lubricate them periodically or when they seem to bind or stick.

Belts should be examined regularly for cracks and fraying. Applying automobile fan belt dressing will not

only keep them quite, but will make them last longer as well.

Just as on an automobile engine, the spark plugs and distributor contact points should be inspected at regular intervals. If not badly burned or corroded, these can be cleaned and regapped. You can clean the plugs

with a wire brush, but a spark plug cleaning machine can be a good investment if you don't already have one in your shop. When you total up all of the spark plugs used in your mowers, tractors, trucks, maintenance vehicles, and other power equipment and add those to the ones in your golf cars, it's easy to realize how much money you could save by cleaning and reusing spark plugs instead of replacing them all the time.

Points can be cleaned with fine sandpaper or a very small, very fine file before resetting to the proper gap.

Consult your owner's manual golf car for further details and specific timing on all of the above procedures.

Electrical

Whether your cars are gas or electric, it's a good idea to check all wiring on the cars periodically. Tighten loose connections and tape or replace wires with cut or frayed insulation.

If your cars are electric, note the length of the motor brushes (once per season) and install new ones if necessary. Take an air hose and blow the dust and carbon out of the motor occasionally, too. Also clean and tighten the charger plug and receptacle.

We won't go into the details of battery care now, since that's enough material for another whole article (look for it in GOLF BUSINESS in about 2 months). In general, though: check water level at least once a week and add water if low; only add water after charging; try not to spill water on outside of batteries; clean off corrosion with baking soda; keep batteries charged, but don't overcharge; don't drain charge below level recommended by battery manufacturer.

Recordkeeping

Last but not least, keep good records on the use and maintenance of your golf cars. There are many ways to do it, but you should be able to know the condition of all cars at all times. You should know how much — and when — each car has been used as well as when and what maintenance has been performed on it.

Maintaining these records will not only help keep you ahead of trouble with your golf cars, it will also help you determine what it costs to maintain your golf cars — and, therefore, how much money they make. □



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Don't dig ditches — plow pipe into place



*Vibratory plow installing irrigation system at Mesa (Ariz.) Country Club.
Pipe and wire go in the ground at the same time.*

The installation of golf course irrigation systems is a highly specialized operation which requires specialized construction techniques. Robert McCallum of Phoenix, Ariz., has developed a method that has proved highly effective on some of the west's most prestigious courses.

McCallum installs almost all laterals with vibratory plowing equipment which permits his crews to put in both plastic pipe and control wiring without having to dig trench.

"Pulling it in with a vibratory plow is best for everyone," says McCallum. "It doesn't tear up established turf, it doesn't require costly restoration, and it doesn't stop play on the course.

"On conversions (putting a new irrigation system in on an established course), we have never closed a hole during work!"

How it's done

McCallum uses two Ditch Witch vibratory plows: a 37-horsepower class R40 and a 65-horsepower class

R65. The vibratory plow component is a mechanically driven shaker box with a blade which cuts through the soil. A small starting hole is dug, the pipe is attached to the plow's blade, and it is pulled into the ground. The surface damage usually is only a small slit.

"We assemble a section of pipe, dig holes for the beginning and end of the pull and for the sprinkler heads, pull in the pipe, insert the fittings, and move on to the next section," McCallum explains.

Most pulls range from 200 to 300 feet, although McCallum has made pulls of more than 500 feet. Little or no restoration is needed.

"In tight, rough soil we run back over the slit," says McCallum. "But in 80 percent of our pulls, we don't have to do anything."

Another plus for plowing, McCallum has found, is the lack of settlement.

"If you trench the work, the fill usually settles and the course ends up



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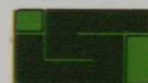
RANK		YR. AVE.
1	Derby	6.12
2	Pennfine	6.07
3	Birdie	5.75
4	Citation	5.62
5	Regal	5.60
6	Omega	5.57
7	Loretta	5.40
8	Caravelle	5.29
9	Eton	5.25
10	NK 200	5.12

1975-1976

RANK		YR. AVE.
1	Derby	6.00
2	Yorktown	5.60
3	Diplomat	5.50
4	Yorktown II	5.40
5	Manhattan	5.20
5	Pennfine	5.20
5	NK 100	5.20
7	NK 200	5.10

Derby is the turf-type perennial ryegrass that first joined the "highly preferred" list of ryegrasses and now seems to be setting the standard for excellence against all comers. Derby performs in all rating categories such as density, mowability, texture and turf quality. It does, in fact, out-perform some varieties in categories those grasses have historically claimed as their special area of strength.

It's also noteworthy that Derby has distinguished itself as a winter grass in other University tests as well as on golf course greens and other fine turf all over the South.



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looking like a checker board. There is no settlement with plowing."

McCallum has been able to plow through a wide range of soils, including rocky conditions.

"We try to plow 100 percent of the laterals. We usually end up having to trench a small portion of the total, depending on what we get into. Mains are trenched because of the larger diameter pipe."

Most of the laterals are plowed in at an average depth of 16 inches; some are as deep as 24 and 28 inches. Laterals range from 1¼ to 2½ inches with most being 1½ by 1¼ inches in diameter.

Experience and concern

McCallum has been involved in the irrigation business since the late 1950's, with golf course irrigation experience on more than 50 courses. The vibratory plowing technique has been used on many of these, including such well-known courses as Los Angeles' Bel Air Country Club, Mountain Shadows Golf Resort in Scottsdale, Ariz., and the recently completed Mesa (Ariz.) Country Club course where the photos accompanying this article were taken. McCallum presently is completing a new irrigation in-

stallation at the Arizona Biltmore Estates Golf Course in Phoenix.

The Mesa course included 125,000 feet of plowed laterals and 486,000 feet of control wiring.

The 9-hole Arizona Biltmore project will comprise 35,000 feet of plowed laterals and 210,000 feet of control wiring.

McCallum started in the business

with his father as Automatic Irrigation Co., Costa Mesa, Calif. He is now in business for himself, operating in Arizona and California.

"Our theory is to do the job right the first time and not have to go back," said McCallum. "There's not a job I've ever done that I can't go back to and get a handshake from the superintendent." □



Pipe is attached to vibratory plow blade with pulling grip.



Supply of control wire is carried on a specially made bracket mounted on the front of the vehicle.

GOLF COURSE OWNER SAYS:

Mini-computer adds efficiency to administrative operations

by John W. Urban

Golf courses, like most other businesses, are burdened with tedious, repetitive, and time-consuming administrative office work. These procedures lend themselves to errors, either by transposition of numbers or errors in posting. The great majority of golf courses still rely on the tried-and-true hand methods of posting and office computations. Some larger courses use billing machines or other labor-saving devices to speed up their work or to improve accuracy. Only a few have the need, or the financial ability, to install a full-size computer.

At Urban Hills, we did the essential office procedures by hand methods, then turned the data over to our CPA to prepare monthly statements; monthly reports for withholding taxes, FICA, state taxes, sales tax; and quarterly and annual reports.

The accountant speeds his job by sending his work to a data center which processes the information and completes our reports. We decided that we needed a method to simplify and speed up the preparation of the data we sent to him. After considerable searching, we found a mini-computer would help us get our work done faster at a reasonable cost.

We looked for a machine which would handle accounts receivable and accounts payable, compute payroll, compile daily and monthly sales sum-

maries, compute golf handicaps, and take care of similar office procedures.

We found many manufacturers who make units which could do the jobs we wanted done. All manufacturers make models in every price range. Obviously, if the machine has greater capacity or has more desirable features, it becomes more expensive.

Between calculator and computer

Our selection was the Texas Instruments SR-60. The regular unit has 40 data registers (memories) and can handle a program with 480 steps; it costs about \$1,500. The expanded unit (our final choice) is needed for payroll computation. It has 100 data registers and can handle a program with 1,920 steps; it costs about \$2,000.

We selected the SR-60 because it has a display feature which can be programmed to guide the operator through each step of any operational sequence. It is described as "a programmable prompting calculator," and it is designed to bridge the gap between simple desktop calculators and commercial computers.

The machine is about the size of a standard office typewriter and weighs 16 pounds, so it is easily portable. We can program it to perform operations similar to large computers, except that the capacity is not as great. It performs its functions fast and accurately. Anyone can learn to process a program with a small amount of training.

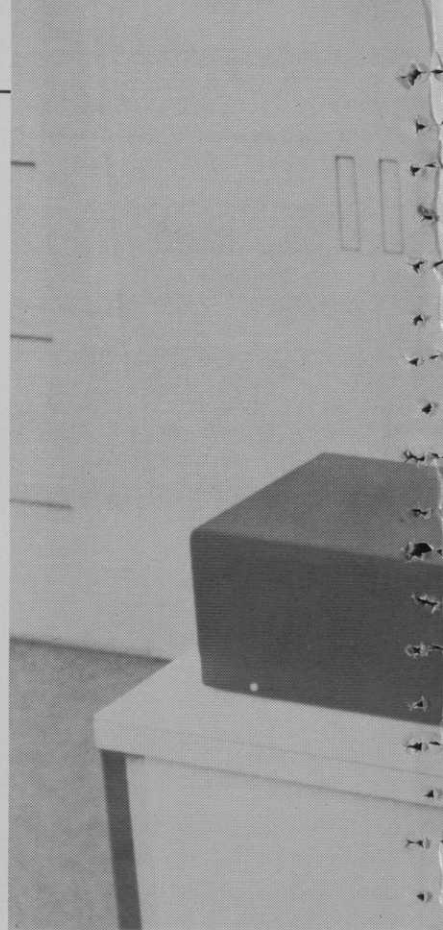
The key to solving any problem with the SR-60 is the preparation of the program. Learning to set up the programs requires more training and technique. The operating manual, programming manual, and other information which comes with the unit are awesome at first sight, but after reading the manuals and progressing from simple to more complex

programs, the basic concepts become clear. The distributor was of great help in advising how some programs could be simplified. On several occasions a representative came out to guide us through programs which were too complex for us to understand.

Before we started using the SR-60 we were as skeptical as many of you are. At one time or another all of us have complained about computers and the problems these machines seem to create. The fact is that the computer is no better than the operator. If the wrong data is put into the computer, incorrect information comes out. People connected with the computer industry have coined an acronym — GIGO — from the words Garbage In — Garbage Out. Errors which all of us have seen in computer billings have been caused by an operator who put the garbage in, and not by the inanimate machine which was doing exactly what the operator told it to do.

The SR-60 uses magnetic cards, rather than punch cards, for storing programs. It is programmed in "English" rather than complex computer language, so there is no need to learn special codes or special rules. Once a program is recorded on a magnetic card it can be run through the SR-60 as often as required. The magnetic card is permanent, and a separate card is made for each program.

A program is defined as an accumulation of keystrokes or instructions which will solve a particular



John Urban is owner-manager of Urban Hills Country Club, a successful semi-private course in Richton Park, Ill., built on land on which he made just \$200 from farming 17 years ago. When he described his family operation in a talk at the GCSAA conference in February, Urban said that "the golf business is a way of life" — an attitude that, combined with his success as a course owner, led the editors of GOLF BUSINESS to choose him as the latest addition to their Advisory Board.



Model SR-60A has replaced the SR-60 mini-computer described by John Urban; it uses cassettes rather than mag cards. Prices start at \$1,995.

Many tasks which were formerly farmed out can now be performed in our office more readily and more cheaply than before, and at the time we want it done. Repetitive jobs, formerly done by hand, can be done more quickly, and with less chance of error. Complex calculations, once placed on magnetic cards, can be processed many times without having to set up the problem all over again, each time you have to refer to it.

Exclusive golf programs

We have the SR-60 programmed to compute golf handicaps. The individual's name is printed out, the date is printed, then the total of differentials is entered in the machine (for example lowest 10 of the last 20 games) then the number of differentials used is entered, and the machine will compute and print out the golfer's handicap. If the handicap is over 45 (limit set by USGA) the machine will print out 45+. We have approximately 250 names on our handicap list, and at the prevailing price we pay to have this work done by an outside firm, and taking into consideration the cost of the operator, depreciation, and other cost factors, the amount we save will go a long way toward paying for the cost of the SR-60.

One interesting program we set up (of interest only to golf course operators) is determining size of a green. Since greens are neither completely rectangular nor completely round (but somewhere in between), we felt that if we obtained the area of a rectangle with a given perimeter and averaged that with the area of a circle with that same circumference, we would have a fairly accurate figure for area of our greens. Accordingly, we obtained the perimeter of our greens, in feet, using a wheel. We programmed the SR-60 to compute the area of a square with any given perimeter, and to compute the area of a circle with that same circumference, then average the two areas and print out the average. To obtain the area of any green we simply enter the perimeter in feet and within 5 seconds the machine gives us the area and prints it on a tape. We feel this figure is more accurate than what we used before, without going through elaborate computations to determine to the exact square foot what the size of the green is. □

problem. After a program is developed, it is recorded on a magnetic card for future use. When this card is passed through the card-reading unit of the calculator, the calculator remembers the pre-recorded instructions. It will then automatically run the program (execute the necessary key strokes) to solve the problem, stopping only where necessary for the operator to make pertinent decisions or to enter required data. Changing from one program to another is very simple.

An outstanding feature of the SR-60 is the "prompting" capability which enables a program to display a message which tells the operator what to do next. Responses to a display may be *yes*, *no*, *not apply*, *not known*, or *enter*. In addition, the display can contain a message of up to 20 characters (letters or numbers) that "prompt" the operator as the program is being run.

Applications

The SR-60 can be programmed to accumulate totals, if required. For example, one of the uses is in payroll computation. As each employee's card is inserted into the card-reading slot (and the magnetic card already has been programmed to show hourly pay, marital status, number of withholding allowances, as well as federal income tax tables, state income tax tables, FICA tables, and other deductions) the SR-60 will ask through the display how many hours the employee worked. When the hours are entered, the machine will compute gross pay and will automatically compute

appropriate withholding amounts in each category, and will print these amounts and net pay on a printout.

Re-inserting the employee's card, the machine will read the data and add the amount for each category to totals previously accumulated on the card. Thus a running total of each amount will be available on each employee's data card, and it can be used for preparation of quarterly and/or annual reports. In addition to the cumulative totals for each employee, the SR-60 will provide at the end of the payroll computation, a complete breakdown of total amount of the payroll, amounts withheld in each category, and net payroll. This data is also available on a printout and is helpful when making up monthly or quarterly reports.

We use the SR-60 for accounts receivable, accounts payable, payroll, daily and monthly sales summaries, golf handicaps, computation of area of greens, and for a food sales summary which compiles sales by items and dollar value of each item sold in the dining room. We plan to expand the use for complete inventory control, to include computation of dollar value of inventory separated into categories such as food, liquor, fertilizer, golf equipment, shoes, etc.

The most complex problem can be readily solved with the SR-60. Its capacity literally staggers the imagination. In addition to doing the work of a regular calculator, it can be programmed to solve complex problems and to print the solutions on tape to give a permanent record.

Helicopters may become a common sight on Illinois golf courses

by Steve Derrick

As the flagpole casts its first morning shadow across the ninth green at Danville Country Club, the Professional Turf Specialties helicopter is already standing by waiting for daybreak. Before the day is over it will have sprayed Dacthal and Daconil for both Jim Brant at the Danville and Don

Walker at the Elks Country Club. Along with that, Scotty Boggs and Park Commissioner Ray Randall will have them apply Tupersan to the city's golf course, Harrison Park. Normally Harrison Park uses Dacthal, but the scars left by new irrigation ditches will require overseeding and Tupersan has no effect on the new seed.

Steve Derrick is president and co-owner of Professional Turf Specialties of Normal, Ill. Besides spraying from helicopters, the company sells most major brands of turf care supplies and equipment.

The pilot gives the go-ahead and the first load is on its way. Flying about 5 feet off the ground at 60 miles per hour is certainly a fast way to spray fairways, but an accurate one also. In just 2½ hours the job is completed at Danville Country Club and it's time to move to the Elks.

Superintendent Don Walker and the pilot are already going over last minute details as the crew arrives at the Elk Club with the mixing tank and the nurse truck. At the Elks Club the fairways are to be sprayed with both Dacthal and Daconil, but the roughs



LEFT: Spray nozzles are carefully checked out before takeoff. BELOW: The helicopter flies at 60 mph about 5 feet off the ground when spraying a golf course.

