

A GUIDE TO SUCCESSFUL MAINTENANCE — Golf Cart Operation

Reprinted from Golf Digest

Proper Maintenance Procedures

Successful operators of golf car fleets have no secret. But they do have one thing in common. All know and follow a simple two-word formula to ensure complaint-free service and the highest possible profits. The formula: proper maintenance.

They know that regular maintenance is as essential for a golf car as it is for an automobile. A golf car given reasonable care will always start, never break down on the course, run smoothly for many seasons.

Before a professional, board or course owner leases or buys cars, they should make arrangements to learn from an expert on such service. Any reputable dealer or manufacturer's representative can provide this help.

A few minutes spent each day, and a few hours each year, to service engine, batteries and running gear means that no dollars will be lost in downtime.

Personnel

Every golf course owning or running a fleet of golf cars should have a person to watch over them. At many courses he is the golf professional, or one of his assistants. Sometimes he is the caddie master; sometimes a man from the grounds and green staff. The title does not matter so much as the need for that person to know and do the job. If a preventative maintenance schedule is followed faithfully, major repair jobs will seldom be needed. Most golf cars are traded in after three to five seasons, so a major overhaul is a rarity. But a club with as many as 25 cars should still have a full-time service man, for daily care alone. He should be a mechanically inclined man, not a boy with no experience or sense of responsibility. Given the right tools and authority to order spare parts, he can take care of both regular and annual service, even rebuilding a gasoline engine.

If there are fewer than 25 cars, it might be possible to hire a mechanic from a local garage on a part-time basis. The golf car dealer or salesman might suggest a competent person. The manufacturer will see that he has instructions and training on maintenance of the cars.

In some areas an expert service man is shared by several courses on a rotating basis and for major repairs. The important thing is not to skimp in having a qualified person on call.

Daily Care

On a daily basis these are the important demands in caring for a car:

To present a good impression, the body and seats of all cars should be washed, wiped or swept before a car goes out.

Electric—Batteries must be checked for charge before a car is sent out. A hydrometer is used to make sure each cell is fully charged. Water must be added as needed. After 18 holes, certainly 36, electric golf cars must be recharged.

Gasoline—The gas and oil level (on 4-cycle engines) must be checked. It is also a good idea to visually check the rotating oil screen, starter-generator and air cleaner to see that they are reasonably clean and not damaged.

Periodic Maintenance

Every golf car—electric or engine-driven—requires periodic service to its running gear. This includes wheels, brakes, drive line and steering assembly.

Golf cars are uncomplicated and usually well built, so that running gear seldom causes problems. Tire condition should be checked weekly to manufacturer's recommended pressure. Over-inflated tires put wear on the course and give a rough ride.

Monthly, the brake shoe operating cam should be greased. Cables, such as for brake and throttle, should be oiled at the same time.

Steering should be thoroughly tested at least every 25 rounds to make sure it is neither loose, nor turns hard from lack of grease.

Twice a season, wheel lugs should be tightened and brakes adjusted too. If drive belts are used, these should be properly tightened and belt dressing applied.

The accelerator pedal must operate freely and be properly adjusted. A pedal out of adjustment in an electric car will cause the switch to remain in contact and burn resistors, wiring and motor.

At least once a year, most cars also need the following service: change oil in transmission and differential, lubricate front fork, lubricate all chassis points, inspect and test shock absorbers and adjust clutch.

Wheel bearings must be packed and medium weight oil added to the differential if needed.

A service record should be kept on each car, either in the storage shed or the pro shop. Forms are often provided by the manufacturer.

Electric Car Care

Mechanically, the electric golf car is a simple machine. The power is from batteries, a switch mechanism and electric motor.

Caring for Batteries. Taking care of the batteries is the key to trouble-free service.

The most necessary tool for such maintenance is the hydrometer. Its function is simple: to tell the state of charge of a battery. This is determined by testing the acid concentration. The proper reading is usually printed on the battery connectors and may range from 1.225 to 1.260. After a round of golf, the charge reading may drop to as low as 1.100.

With a so-called "automatic" charger, the batteries may be put on charge and will return to a certain level in a given number of hours. But the hydrometer should always be used to double-check against this machine. To prevent strain on the batteries, the charger should be used for the shortest time necessary to bring the batteries up to the right level.

If chargers are non-automatic, several hydrometers which incorporate thermometers for accurate readings should be obtained. The hydrometer barrels should be kept clean and their use learned. For every 10 points below 1.260 the battery should be charged about 45 minutes at 15 to 18 amp. rate. Every morning at least one cell in each car should be checked and the battery charged more if necessary.

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Do not overfill batteries, especially right after the car has been in operation. Keep the water (electrolyte) level one-half inch above the plate rather than fill them up to the triangle or split ring mark in most batteries. Wet spots on the floor under the car, excessive battery corrosion on the frame and constantly damp battery covers indicate overfilling and boiling over.

Too often entire sets of batteries are replaced when only a single battery is defective. A sensitive voltmeter, capable of reading in hundredths of a volt, should be used in checking the sets. If the cells in a battery vary over .04 of a volt in output, the battery should be replaced.

Other Parts. All battery cables should be kept tight. Once or twice a month cables and terminals should be scrubbed, with a strong soap solution, and then rinsed. A handful of baking soda in a quart of water dissolves heavy corrosion. Terminals may be coated with a small amount of petroleum jelly, if desired, but not with a heavy coat of grease which melts and ends up as a conductor or in the cells.

Water from a municipal system is sometimes satisfactory for batteries, but distilled water is safer. Well water or water from creeks or streams should not be used. Battery water should not be stored in metal containers.

Parts and equipment needed for electrical service are: sensitive voltmeter (costing about \$25.00), temperature corrected hydrometer (about \$3.00), automatic charger relay tester (about \$35.00), spare charger, ammeter, charger timer, charger plugs and receptacles, battery cables, solenoids, switch components and motor brushes.

Gas Car Care

Any advantages of a gas-powered golf car hinge on proper maintenance of the engine. Although detailed specifications and instructions should be obtained from your car's manufacturer, there are many basic rules of service.

Basic Maintenance. Keep in mind that dirt is the No. 1 enemy of golf car engines. Any defect in the air intake system that permits dirt to enter spells trouble, and can ruin an engine in a matter of a few weeks. For longer life and safety, the following are important basic rules in servicing a gasoline golf car: • Stop the engine whenever the tank is being filled. • Avoid spilling gasoline on a hot engine. • Use fresh, clean gasoline in a regular grade. • Don't mix oil with gasoline (except with 2-cycle engine). • Be sure the vent hole in the fuel tank is open. • Disconnect the spark plug cable before making an adjustment on the engine or transmission. • Always allow engine to warm up before applying load and do not run continuously at full throttle.

Note: In the case of golf cars using 2-cycle engines, oil is mixed with gasoline as fuel and there is no oil to change in the crankcase. Also there are not belts to check on some cars.

50-Hour Check. Service on the engine should include the following.

1. Change oil in crankcase—preferably when the engine and oil are still warm. Use a good brand of SAE 20 weight, heavy duty, detergent type.

2. Remove, service and replace the air cleaner. This includes removing dust by tapping it, but not by washing it in gasoline or blowing with compressed air. If it is bent or needs new seals, replace as needed.

3. Readjust starter-generator belt if necessary. When thumb pressure on the belt at the midway point between pulleys deflects the belt $\frac{1}{4}$ inch, the belt is at proper tension.

4. Check for oil leaks. Wipe oil and dirt from fins, shroud and baffles.

100-Hour Check. Service on the engine should include the following:

1. Replace or reset spark plug. Recondition by filing electrodes and resetting gap to .025 of an inch. Use Champion J8 plug or equivalent.

2. Check ignition timing. If necessary adjust breaker points. Gap to about .020.

3. Drain and flush gasoline tank and sediment bowl.

4. Check carburetor mixture and speed settings. Idle speed range is 1,000 to 1,300 RPM on older models. Newer engines idle down to 800 RPM. Top operating speed is 3,600 RPM.

5. Lubricate starter-generator. Hinge caps at both ends require a few drops of light engine oil.

6. Tighten all mounting bolts and wiring connections.

Other annual service jobs on a gas-powered car include checking the transmission and differential lubricant levels, oiling brake and accelerator pedal bearing, and oiling the steering chain or joints.

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