

# Battery Charging Basically Same for All Chargers

**Replacement is minimized if  
daily, weekly and monthly  
maintenance checks are made**

*(Second of Two Articles)*

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The operational procedure for charging batteries is essentially the same regardless of the type of charger being used. First, determine the specific gravity reading of the batteries (forget this if using an automatic charger) to see what charge remains. Then add water to each cell to the correct level, as recommended by the battery manufacturer. Normally,  $\frac{3}{8}$  inch over the plates is satisfactory. Replace the caps, being certain that breather holes are unrestricted. Gases exit from a battery under charge and if the vents are plugged, there is a possibility of a battery exploding from the pressure build-up.

*If you have a 36-volt charger for a 36-volt car, you can connect the charger to the batteries. As a safety precaution, it is recommended that the charger be in the Off position at the time of connection.*

With the polarized connectors being used today, a reverse polarity or reverse connection should not exist. It is recommended however, that when batteries are installed a check be made for proper connections. Chargers are equipped with safety overload circuit breakers or fuses. However, a few minutes visual check will catch any incorrect connections and avoid the probability of blowing the fuse or the circuit breaker.

The charger is then ready to be turned on. After the charge period, normally 12 hours, check the specific gravity of the batteries. If the batteries are not fully charged, extend the charge period. It will

not harm the batteries to have the charger remain connected after charge as there is little or no feed back.

## Program Necessary

A good maintenance program is essential and can save battery replacements. Recommended daily service is as follows: In the morning, test the state of charge either by checking percentage on the charge meter or by checking one or two cells with a hydrometer. Give low batteries additional charge if required. In the evening, check the gravity or voltage for state of charge. Also check one cell for level of electrolyte. If the level is low, check all cells and add water where necessary. Then check the connections and place the batteries on charge.

A weekly maintenance practice should consist of filling all cells to full level. Clean the batteries, also, making certain that vent caps are tight. In cleaning use a stiff brush, baking soda solution and clear water to remove dirt and corrosion. Let the batteries dry and place them on an equalize charge to bring all the cells to the same level of charge.

Recommended monthly service is a bit more involved. After equalizing the charge, test the batteries and record the gravity readings of each cell. Correct the gravity readings to temperature if possible. This permits adjustment of the hydrometer reading so as to have the same basis for comparison time after time. When the battery is warmer than 80 degs. F add 4 points to the specific gravity reading for each 10 deg. rise in temperature. When it is colder than 80 degs. F subtract 4 points for each 10 degrees.

## Analyze Data

Analyze your records. A 25 to 40 point variation in specific gravity reading for the cells of one battery indicates a weak cell and the battery is not fit for further service. Low specific gravity in all the cells indicates insufficient charging, and the batteries should be placed on charge.

Some trouble signs to watch for:

1. If the electrolyte overflows, — the batteries have been overfilled.
2. If ON charge temperature is over 120 degs. F, the charge rate is too high. Reduce the charge rate or

turn charger off and let the batteries cool.

3. Batteries not fully charged — the charge rate is too low.
4. Insufficient power: Batteries may not be charged. Check for bad connections, an accumulation of corrosion, a poor contact in switches or battery terminals. Check the motor brushes for wear.

Short battery life may be caused by:

1. Overcharging — excessive heat damages plates and separators.
2. Undercharging—batteries remaining discharged may lead to sulphation, damaging positive plates.
3. Low Electrolyte — high acid concentration damages plates and separators.

Maintaining batteries in the off season has been a problem in the past. Batteries are perishable and lose approximately 3 points specific gravity per day at 100 degs. F and ½ point per day at 50 degs. F. To make certain that your batteries are in good state of charge, it is recommended that you check batteries every 30 days with a hydrometer. If the readings are between 1.230 and 1.260 the battery is all right. However, if the reading is 1.230 or under, it is recommended that the batteries be placed on charge. Normally a 6-hour charge will be sufficient.

#### Several Methods Available

Several methods for converting alternating current to direct current for battery charging are available. These are AC motor generators, tungar bulb-type rectifiers and the dry disc-type rectifier. The most prevalent in golf car charging are selenium rectifiers and silicon diode rectifiers. (Rectification, of course, is a method of changing AC to DC.) Trickle chargers are not suitable for heavy-duty golf car application. Constant current chargers are not readily available for golf car service.

There are several safety precautions in charging that should be remembered. Flammable hydrogen and oxygen gases are by-products of battery charging and good ventilation is essential. Don't work on batteries or disturb connections when the charger is connected and ON as sparks

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## National Golf Day On Television May 31

The National Golf Day Round of the Champions will be telecast live and in color nationally on May 31. Oldsmobile will sponsor the telecast from the Laurel Valley GC, Ligonier, Pa. The event will be carried over NBC coast-to-coast from 5 to 6 pm, EDST.

The PGA champion Bobby Nichols and the current National Open champ, Ken Venturi, will play an 18-hole match with \$10,000 going to the winner. The loser will receive \$5,000.

Beginning May 15, any golfer — man, woman or child — may play an 18-hole round at his or her course with a minimum contribution of \$1 to the PGA for the National Golf Fund. The local pro will certify scores. More than one round may be played and the best score submitted by all players who enter Golf Day competition. The scores are matched against the winner's score of the Nichols-Venturi match. Individual golfers who defeat the winner will receive a 'Beat the Champ' award from the PGA.

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may be created that can cause an explosion. Ground the car before working on it. This will eliminate static electricity. If any electrolyte is splattered, wash it out with plenty of cold water. Should you get any solution in your eyes, wash with cold water cupped in the hand and see a doctor.

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## Good Heads PGA Seniors

Cliff Good, pro at Midland (Mich.) CC, was elected president of the PGA Seniors at the annual meeting of the group in late February. Good succeeds Leonard Schmutte of Findlay (O.) CC. Schmutte was elected honorary president.

The Seniors elected Harry Moffitt of Heather Downs CC in Toledo, O. as first v-p. He will also serve as chairman of the tournament committee. Paul E. Erath of Laurel Valley GC, Ligonier, Pa., was elected second v-p and Denny McGonagle of Elks CC in Hamilton, O. was elected secretary-treasurer.