

# Battery Operation & Care

## Charging:

- Correct charging methods extend battery life and range between charges
- Charge new batteries completely before they are used for the first time
- Charging time will probably be at least 12 hours
- New batteries need up to four more hours charging time than mature batteries
- Schedule enough charging time, if possible so the charger shuts off automatically
- Age of battery, condition of the battery, state-of-discharge, the temperature of electrolyte, AC line voltage level, and other variables affect charging time.
- Limit the use of new batteries between charging for the first 5-20 cycles (new batteries have less capacity than batteries which are broken in).
- New golf cart batteries should be limited to 18 holes between charges  
Industrial vehicle batteries should not be discharged more than 20-30% before recharging
- Whenever possible, for the longest battery life, recharge batteries as soon as they become 20% discharged (1.233 SG/ 37.38 volts).
- Never allow batteries to fall below 80% discharged. (1.148 SG/35.94 Volts)
- Deep discharging significantly reduces battery life
- Batteries in storage self-discharge and should be recharged whenever the specific gravity falls below 1.240
- The rate of self-discharge varies directly with temperature
- Battery state-of-charge can be determined by using a hydrometer, or by connecting the charger and observing the charging rate
- If the ammeter needle jumps smartly to 20-25 amp and then tapers below 14 am[s within 15 minutes, the battery is fully charged.

# Watering:

- Correct watering techniques extend battery life
- Check the electrolyte level on new batteries before putting them into service, and at least monthly for batteries in service.
- Water use increases as batteries age
- Never allow the electrolyte level to fall below the top of the plates
- If the plates are exposed, add only enough water to cover the plates before charging
- Do not overfill batteries
- Electrolyte expands and can overflow during charging
- Water added to replace the spillage dilutes the electrolytes and reduces its specific gravity
- Cells with lower specific gravity have lower charging capacity
- Make sure the electrolyte covers the plates before charging and fill cells to the markers only after batteries are charged
- Use only distilled water
- Electric vehicle batteries may use up to 16 quarts of water during their useful lives, and non-distilled water may contain harmful materials which will have cumulative adverse effects on battery performance

# Cleaning:

Acid-soaked dirt on the battery tops causes current leakage and reduced battery efficiency

Hose wash battery tops periodically with low-pressure water to keep them free of all spillage, dirt, grass cuttings, and other debris

Make sure to vent caps before washing

Do not hose wash electronic controllers, switches, solenoid, and other electrical control devices. Cover them if necessary

Wash the tops with a baking soda mixture (1/2 cup per quart of water) and a stiff bristle brush if a low-pressure hose doesn't remove the dirt

Rinse with clean water

Make sure the battery tops are clean and dry before putting them into storage