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REF: Electrical System - Sub-03C

Charging the Battery

When using a trickle charger, the battery voltage increases with the amount of charge and should not exceed 15-16 volts for maintenance-free and sealed type batteries. [1)] Charge time could be up to 24 hours. A taper charger charges at a fixed voltage. As the battery's voltage increases with the amount of charge, the current drops accordingly. A drawback of both the taper and trickle chargers is speed. It can take days to bring a discharged battery up to 100%. Do not use a "Battery Tender" type charger to charge a new or discharged battery because it shuts off too soon. They are best when used to maintain a charged battery. The constant current charger maintains a constant supply of current to the battery at all levels of charging. You select the charging current, as the battery voltage increases with the amount of charge, this charger automatically increases the charging voltage to maintain the current output. Maintenance free batteries can be tested only with a voltmeter or multimeter and a load tester. These batteries are fully charged when the voltage peaks and then begins to fall — as high as 17 volts on the maintenance free battery. Remember that you should charge a battery at 1/10 of it's amp/hour rating.

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1)
HD Tech Tip #48 dated August 1998