

Batteries, Grounds, Autotransformers

A load test is the best way to check a battery. When you take your car in for a battery test, they wheel out this 3-foot unit on a cart. An engine start battery is load tested to see how many amps (200 to 400) are available to start the engine. This takes a big resistor that gets quite hot. You can also get a reasonable idea of the battery condition by monitoring the voltage level on the batteries.

You need a digital voltmeter because 12.6 volts is almost fully charged, 12.0 volts is 25% and 11.9 volts is discharged and on its way to the junk pile. These meters are available for about \$15 to \$50. If you have a friend with a high quality meter, ask him to calibrate your \$15 model and it will work fine. It is best to use distilled water, but if it is not available, use the water from your fresh water, RV filters. Be sure to check all of the batteries every two weeks when on a trip. Keep your battery terminals clean and coated with a thin layer of silicon dielectric. Buy a special wire brush terminal cleaner and use it at least once per year. This will insure that you retighten the connections. If you develop corrosion, a mixture of baking soda and water will clean it right off, but do not get any in the battery through the filler caps. Be sure and wash everything off after you are done and then clean the terminals and apply the silicon dielectric. Also, check the tightness of all of the major cable connections in particular the ground lead from the battery to the chassis. Finally spray the entire connection with one of the special battery terminal coatings to prevent corrosion.

On a recent Rally, one of the campers drove up in a newly purchased used Land Yacht and turned off his engine. Upon trying to restart, five minutes later, it would not even turn over. He then told me he had just had the starter, generator and battery replaced within the last week. I checked the battery and it was fully charged so I suggested he check the battery ground connection. Sure enough, that was the problem. He removed the wires, cleaned everything, greased everything with my silicon dielectric and retightened the bolts. Started right up like a new unit. He was heading back to the repair shop after the rally to see if he could get some of his old parts back. By the way, after he turned on his hot water heater it would light but then go out before the main burner lit. I checked the ground wire and it moved with hand pressure. A little tightening and the heater worked fine. **Check the grounds first.**

You must check each of the coach batteries, which means disconnecting one of the leads so they are not in parallel. Very often, one of them is bad and this will not show up if they are all connected together. Always remove the ground terminal from the batteries when you are going to perform any tests. If you remove, both cables hook up the ground cable last. On a new trailer, we once found that one of the batteries was not even hooked up and that explained why the RV did not last very long on battery power.

Several Land Yachts have three batteries mounted behind the front hood. They were mounted all the way to one side so that it was not possible to check the one farthest to the left without removing two of the three batteries. Guess which one always goes bad first. You can easily remount the batteries in the center with storage on each side of them. That way it will be easy to do a complete battery check.

Particularly for the older trailers, the univolts cannot restore a set of batteries that have gone into a deep cycle discharge. This is true no matter how long you are plugged into A/C shore power. Some much older units had high current capacity chargers, however, these are the units that boiled batteries and led to premature failures. If your RV charger cannot put at least 10 to 15 amps into a discharged battery then you need an auxiliary automobile type battery charger. One of the smaller units around \$45 - \$60 is fine. This will allow you to bring back your coach or engine batteries when attached to shore power. A pair of coach batteries that provide about 180 amp-hours will take about 18 hours to fully charge when using a 10-amp charger. You can use this type of charger for your engine battery just to get the vehicle started; however, you really need to put about 400 amps into it for a full charge. Starter battery chargers put out about 50 to 100 amps and are about 3 feet high on a roll around cart. However, once the vehicle is started, your engine alternator will take care of the final charging after a few hours of driving, preferably during the day.

During the winter months, you cannot leave uncharged batteries outside in the cold weather. They can freeze and crack the case. Some campers store them inside the house when the weather turns cold. You can leave them outside as long as they are kept in a charged state. A computer controlled charge system will keep a trickle charge on the batteries and start a full charge cycle as needed. You can also use a solar panel system with built in charger to keep the batteries from freezing. This works fine for the coach batteries but does nothing for the motorhome starter batteries that are not usually connected to the solar panels or charge circuits.

I use a computerized boat charger that has multiple charge circuits (two or three) for several battery banks (one charger for the coach batteries and one for the engine starter batteries). Do not forget to check the water levels several times during the winter months if you use flooded batteries.

AUTOTRANSFORMERS

I am always getting questions about whether these are needed for camping and worth the cost. What this device does is automatically increase the A/C voltage about 10% if it is below a level that could adversely affect some of your RV appliances. This increase is reduced if the voltage rises to a safe value. Lighting, water heater, power jacks, propane furnace, electric heaters are not usually damaged by low A/C voltage. Air conditioners and microwaves, however, can be seriously damaged. This is particularly true for the air conditioning compressor. When the voltage is low then motors will require more current and run slow thus increasing heat buildup. If you are in a campground with poor wiring, then problems can occur if you don't monitor the A/C voltage. I have only run into this two or three times in my camping adventures and in that case, we turned off the air conditioner and limited our current draw. The autotransformer will boost your voltage and allow you to draw more current to safely run your appliances. However, it will further reduce the voltage of your neighbors. Many years ago, campgrounds were built primarily for tent campers. Now they typically provide for 20, 30 and 50 amp rigs. In general, I think the cost benefit for an autotransformer is marginal.

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