

Storing Lead Acid Batteries

The fundamental requirement for storing lead acid batteries is that they be stored fully charged. A 14 hour full clean recharge is required before battery terminal voltage drops below 12.4 volts. Whatever method you use, observe this rule.

To start with, fully charge batteries using shore power for 14 to 18 hours. Yes, it takes that long to clean the sulfate off the plates. It is the chemistry. Abused batteries may benefit from 24 hours charging.

[B]Solar power during storage[/B]

A 100 watt solar system will supply 8 amps for approximately 6 hours every sunny day. So, approximately 48 amp hours would be collected in one day. Nearby buildings, trees, or other obstacles that shadow the solar panel will decrease daily output.

That is probably enough to last for a three day cloudy period. It depends on battery bank size and amount of current being drawn by always on appliances.

Disconnect or turn "off" anything you can for longer periods. Furnace, water heater, radio, TV, and refrigerator all may consume 12 volt power even when not in use.

Larger arrays may be capable of fully charging a lead acid battery bank in two days, followed by maintaining for indefinite periods.

Different RV's are wired differently. Turning a door 12 volt disconnect switch "off" may or may not disconnect charging. These instructions assume solar charging is "on", inverters are "off", and only small parasitic loads are "on".

[B]Storing disconnected from shore power and solar[/B]

Fully charge your batteries connected to shore power for 14 to 18 hours before putting into storage.

[B]

Disconnect switches located near entry door[/B]

Use the manufacturer supplied disconnect switch.

Monitor the battery terminal voltage periodically. The batteries require a full 10 to 14 hour charge before voltage drops to 12.4 volts.

People have found the voltage will stay up above 12.4 volts for 1 to 3 weeks. It depends on battery bank size and amount of current being drawn by always on appliances. Different RV's are wired differently. Monitor terminal voltage until you are confident you know how yours works.

Some people have reported that their door switch disconnects all charging and discharging by disconnecting at the battery terminals. Most do not disconnect all appliances. Parasitic drains persist.

Some door disconnect switches disconnect chargers. Some do not. Battery terminal voltage should slowly rise to 13.2 volts or higher if the charger is working. It still tanks 10 hours or more to fully charge the batteries at 13.6 volts.

[B]Disconnect switch near battery bank[/B]

Lately some manufacturers install a disconnect switch next to the house battery bank. It completely disconnects all loads for storage. Most often it is the owner or dealer who install the complete disconnect switch next to the battery.

Turn the disconnect switch "off". Disconnect the battery bank if there is no complete disconnect switch.

Remove the negative cable for most RV's. This is for safety while working around the batteries.

If you have a Magnum inverter charger, disconnect the positive cable. See inverter owner's manual for specific instructions.

In both cases wrap the cable ends to prevent unexpected short circuits.

Periodically monitor battery terminal voltage. Start checking frequently, then less often once you become confident the batteries are holding voltage up. Fully recharge for 14 hours before voltage drops to 12.4 volts.

Flooded cell lead acid batteries in good condition may hold for 6 months. AGM batteries may hold for 12 months. My Interstate Marine batteries hold for many months. I have never found them below 12.7 volts after long storage. Usually they are 13.0 volts.

Note: Remember the emergency electric brake on travel trailers runs off the house battery. Turn the disconnect switch "on" or reconnect the battery before towing.

[B]Storing Connected to Shore Power[/B]

Storing connected to shore power is a good way to insure lead acid batteries provide long useful service life. There are parameters that need to be observed.

Remember to check water level after charging and periodically during storage until you know how much water your system consumes. Charging consumes water. Maintaining can also consume water.

Keeping lead acid batteries fully charged during storage does not require much shore power. Even fairly large RV battery banks can be maintained using a 15 amp outlet. However, other appliances that are "on" during storage need to be considered. Either turn them "off" or provide enough power. This goes for both 12 volt and 120 volt appliances.

Maintaining lead acid batteries using a device that provides high voltage to the terminals is a serious issue. 13.2 volts is the ideal maintenance voltage.

Less than 12.7 volts leads to "sulfation". The lower the voltage, the faster sulfation occurs. 12.6 volts is not particularly bad, but lower than 12.4 becomes a problem with time.

13.6 volts is OK for flooded cells. They will consume more water than at 13.2 volts. 13.6 is a little high for many AGM batteries. They may vent and lose storage capacity. Some AGM's are more robust than others with 13.6 volts.

14.4 volts is too high for long term storage. Flooded cell batteries will consume more water. AGM's are likely to vent and lose storage capacity. 14.4 volts is good for fast charging deeply discharged batteries for a few hours. It is not good for long term storage.

Higher than 14.4 can boil flooded cells dry and cause internal corrosion. 14.4 and higher voltages are not recommended for long term storage of lead acid batteries.

Most modern RV chargers will provide 13.2 volts for long term storage. Some are programmable. Long term voltage can be adjusted. Set them to provide 13.2 if you can. Older systems may cause problems. Monitor voltage to see if yours works well.

Battery maintainers, trickle chargers, and portable automotive chargers come in different flavors. Some inexpensive models are excellent. Some are not.

Advertising on packages may deceive. There is no penalty for confusing customers or even for lying. The only way to know if the one you use is good for your batteries is to measure the terminal voltage for a while. Monitor water and voltage until you are confident it is working the way you want.

Measure the above recommend voltages at the battery terminals. Using panel read outs are more convenient and often are correct. However, different RV's are wired differently. Some

display panels show voltages that are significantly different from terminal voltages. Measure at the battery terminals until you are confident panel readings are the same as terminal readings.