

# Choosing a Battery for Your RV

Are the batteries in our RVs the same as our cars? Do you know what type and size battery you should be shopping for? Chances are the guy at the auto parts store won't give you reliable advice, and RV dealers tend to sell what they have, not necessarily what is best for you. This will help you understand your RV batteries and how to choose a replacement.

All RVs have one or more "house" batteries that provide power for the lighting, fresh water pump, furnace and other 12 volt needs. In some RVs, multiple batteries are wired together to make a single 12 volt power source. These house batteries have different characteristics than the batteries used to start an engine.

## Chassis (Starting) Batteries

Motorhomes have an engine and therefore require an engine starting (chassis) battery, but this will be separate from the house battery system. The chassis) battery is the same type as is used in a car, though often with a larger CCA (Cold Cranking Amps) rating because the engine is larger. Choosing the right one is simply a matter of getting enough CCA to do the job and generally that means replacing the battery with another of the same or larger CCA rating. With the CCA and case size (BCI Group number), most battery dealers should be able to get what you need.

A typical diesel engine RV will have two 12v batteries wired in parallel and having a rating of 900-1000 CCA each. That large a CCA usually means the battery case size is a Group 31. Gas-powered coaches usually have one starting battery with a rating in the 550-700 CCA range. Battery case sizes run from BCI size 24 in smaller motorhomes to size 27 in larger models. The best way to get the right one is to take the old one with you to the store and have them match it.

## House batteries

The best house batteries are a different breed from starting batteries. Starting batteries are designed to provide a huge amount of power (amps) in a short burst (a few seconds) to get an engine going, but house batteries are designed to provide a much fewer amps but over a sustained period of time, hours instead of seconds. Furthermore, house batteries often get heavily discharged before being fully recharged again. This is called **deep cycling** and is fundamentally different than automotive use. A battery *designed* for lower amp rates and deep cycling will last longer and perform better in an RV than an engine starting battery doing the same job. Good deep cycle batteries will last 3-4 times longer than a starting battery. They have heavier lead plates inside but fewer of them, and they are arranged to accommodate the chemical effects of heavy discharges.

Deep cycle battery capacity is measured in AH (Amp-Hours), meaning the total number of amps of power it can deliver over a 20 hour period. An alternative measurement is called RC (Reserve Capacity), which is the number of minutes the battery can sustain a 25 amp load. You don't have to understand the measurement technique to know that

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“more is better”, so a battery with a larger AH or RC rating is better (has more capacity) than a smaller one. The common size 24, 12v deep cycle battery stores about 80-85 AH of power and has an RC of around 140 minutes. A size 27 is about 105 AH and RC in the 175-200 range, and a size 29 may be 115 AH and RC of 225. Unfortunately, there is no meaningful way to compare AH and RC values, so make sure you compare apples to apples when you shop for a battery.

To help laymen along, deep cycle batteries usually say “Deep Cycle” somewhere on the label. If a battery doesn't say that, or makes prominent claims about its high CCA rating, it probably isn't a deep cycle battery.

## Marine Batteries

“Marine” batteries are a compromise design that attempts to combine the characteristics of starting and deep cycling. As with most compromises, they aren't great for either need, but they may be suitable for some uses. A marine battery trades a lower CCA rating for somewhat better deep cycle performance. Because it is a variation of a starting battery, it can be produced by the same manufacturing process, making it a less expensive battery than a true deep cycle. It lacks the stamina to endure regular and deep discharging, so marine batteries rarely last anywhere near as long as a true deep cycle.

A variant of the marine battery is the trolling motor battery, which is used to power the electric motors often used in fishing boats. Trolling motor usage is more like RV house usage and the trolling motor battery is usually a bit better for RV usage than the standard marine battery, which is also expected to crank an engine now and then.

## Battery Technologies for RV Use

Currently, all RV batteries use lead-acid technology but it comes in different forms. The basic type is called a “flooded cell” battery, where the lead plates are immersed in a solution of water & acid in liquid form. They lose (boil away) a little of the solution each time it is charged, so they require addition of some distilled water once in a while.

“Maintenance free” batteries limit the loss of electrolyte by sealing the cells except for a tiny vent hole, but this doesn't work well under frequent, heavy charging, so it is not a good choice for an RV house battery. A better choice is the AGM (Absorbed Glass Mat) battery, which retains the electrolyte solution in a sponge made of glass fibers. They are totally sealed except for a safety valve, which leads to their technical name of “Valve Regulated Lead Acid” battery, or VRLA. This type is very effective in reducing the loss of electrolyte during charging and is an excellent technology choice. Gel type batteries use a thick paste electrolyte and are also fully sealed, VRLA batteries, so they are a good choice as well. However, AGM has largely replaced Gel technology for RV use.

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## 6 Volt Golf Cart Batteries

A popular choice for an RV house battery is the 6 volt size designed for use in golf carts. It is an extremely rugged, deep cycle design and two of them can be wired in series to form a 12 volt battery that works extremely well in RV applications. Golf cart batteries must be used in pairs, so you need space for 2 or 4 or 6 of them. They are available in both flooded cell and AGM types.

## Price Vs Performance

Millions of car starting batteries are produced each year and it is the lowest priced 12v battery available, but lasts only about one season in typical RV use. Marine batteries aren't much better, typically 1-2 years of use, but are relatively low priced. True deep cycle types will last 4-10 years with reasonable care but will cost anywhere from 2x to several times as much, depending on the technology (flooded vs AGM or Gel). They cost more mostly because they are made in much lower production volumes than starting batteries and there is less price competition as well. Flooded cell deep cycles give excellent performance and life but require periodic maintenance; AGM or Gel deep cycles cost more than flooded cells but are essentially zero maintenance. One of the best combinations for price-performance is a flooded cell golf cart deep cycle – their price is relatively low and they typically give 6-7 years of use. Some owners report 10+ years from their golf cart batteries.

## What's Best for My RV?

Your best choice depends on budget and your RVing style. A deep cycle will always last longer than a marine battery, but at somewhat greater initial cost. If you are seldom without shore power, maybe just driving from home to a campground, you don't need a lot of capacity (AH or RC) so there is no need to pay for larger sizes of deep cycle. For that usage, a common size 24 or 27 12v battery will serve you adequately. Get a 12v trolling motor or marine type if low price is your priority, but a quality 12v deep cycle like the Trojan 24TMX or 27TMX will give you many years of service and make it's higher initial cost a bargain in the long run.

If you frequently boondock (camp without being plugged to shore power), you want both high amp-hour capacity and good deep cycling capability, so a quality deep cycle is your best choice. The best combination of capacity, life and price comes via a flooded cell, golf cart deep cycle, but you have to be willing to give it some attention occasionally. The top golf cart deep cycle is the Trojan T105 or the slightly larger T125. An alternative is the Interstate GC2-HD. Private label brands from Sam's or Costco are also good alternatives. These should give you 6-8 years of use with reasonable care.

If you are one of those who can't remember to check the water in the battery cells occasionally, or can't access the batteries easily, an AGM battery provides freedom from those chores while also providing excellent performance and long life. An AGM battery also largely eliminates the corrosion that often afflicts the cables and terminals on the battery. Both 6v golf cart and 12v deep cycle batteries are available in the AGM

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technology. Lifeline is the premier name in AGM batteries for RVs, but Trojan and Rolls also make excellent AGMs. Deka is another major brand. Expect to pay heavily for that convenience, though.

Consider your needs and then shop around for prices on the various battery types. Prices on deep cycles can vary immensely, so don't give up on them if the first price quotes are high. Sam's Club and Costco warehouse stores are often an excellent source for deep cycle batteries at a reasonable price.