

6 Volt vs. 12 Volt Batteries

There is a lot of discussion on which types of batteries to use for emergency or portable power. This discussion is primarily going to revolve around amateur radio power. It is agreed that for the most part, the deep cycle is the battery of choice as it is intended for being used to a point of discharge beyond that of a storage or starting battery and then charged to its peak voltage.

There are many arguments for and against using two 6v batteries wired in series vs one or two 12 volt batteries. The 12v batteries would be wired in parallel.

[Series is when you wire positive (+) to negative (-) of two batteries to double in this case the voltage. Parallel is positive to positive and negative to negative to double the capacity or amp hours but voltage remains the same.]

Mathematically amp hours are amp hours. I am going to use round numbers for this discussion. If you series two 6v batteries at 100 amp hours together, you have 12 volts at 100 amp hours. If you have two 12v batteries at 50 amp hours each wired in parallel you have 12v at 100 amp hours. Equal right? In an apples vs. apples, yes. If the batteries are both from the same manufacturer and built with the same specs except for their respective size and voltage, it would be exactly the same. Many will argue that a pair of 6v batteries in series will give you more power and last longer, get that info when “golf cart” or industrial 6v batteries are used. They are made from much heavier lead plates that are much more tolerant to discharging than their deep cycle 12v counterparts; therefore they do last longer both in the discharge and overall battery life.

Now let's look at one distinct disadvantage of a pair of 6v batteries. If one of them were to fail, you are now stuck with 6 volts instead of 12 volts. On the other hand two sixers may be easier to carry one at a time as opposed to the larger 12, but remember amperes is what is going to get you through a long day of transmitting. Two small 12's will last longer than the equal 6's. Not to say if you got a great deal on some heavy duty golf cart or industrial 6 volt batteries you shouldn't use them. By all means, do it.

By today's standards with all the new technology the new high tech batteries are lighter, tougher and last much longer than the old technology and most are sealed so they are safe for indoor use.

Do your own research to figure out which is best for you. Myself as an RV'er I would always use 12v batteries as I like the redundancy of back up voltage. One fails, which has happened more than once, I still have 12 volts and can manage until I can replace or recharge. Pound for pound and cubic inch for cubic inch, two twelves will give you more power than 2 sixes in most cases....again APPLES!!!

The following are some quotes from people with more knowledge of the subject which only points out that there is no exact answer.

“There are all different sizes/types of 12 volt batteries, depending on what kind you have, they may or may not have more staying power than a good pair of 6 volt batteries in series.”

“Generally speaking, though, you do typically get better 'bang for your buck' (\$\$ per amp-hour), with a pair of 6 volters in series. That, and with 6 volt batteries, you are more assured of getting TRUE deep-cycle batteries, intended for what you're using them for. That may or may not be the case, when you buy 12 volt batteries.”

“I would highly recommend a pair of 6 volters in series. Get you a pair of them from Sam's for \$50 each, or if you really want the best, get you a pair of Trojan golf cart 6 volt batteries, for 'bout \$70 each. That'll keep you going for several days, as long as you're careful.” (This was from 2002, so prices are higher now in 2015)

I took the specifications from a battery manufacturer and found similar or like batteries from their catalogue and tried to keep all things as equal as possible. Both were intended for deep cycle industrial machine use like commercial floor sweepers or industrial equipment that is used regularly and discharged deeply. Cost is not mentioned as it was not given. I am only using specs re: amperes, size and weight. Both batteries are rated at 20 amp hour rate which is a standard discharge capacity.

6v – 255 amps 12”x 7”x 12” and 75 lbs.

12v – 150 amp 13”x 7”x 13” and 86 lbs.

Now...let's take two each. The two 6v batteries will produce 255 amps weighing in at 150 lbs. and the two 12v batteries will produce 300 amps with 192 pound weight. 40 extra lbs. gives you 45 extra amp/hrs. of power. Pretty much equal as far as weight, a small edge in cubic inches for the 12v but cost is probably higher for the 12's...BUT remember, if one of the batteries fail on the 6v side...you have 6 unusable volts and a 150 paper weight. Mind you, quality batteries if well maintained last a long time and so failure is probably a very minor point.

I hope you find this info of at least a little value and do your own research and make your own decision. I present this info to try and help you make a cost effective purchase.

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