

So you want to fit a leisure battery

So you want to fit a leisure battery to watch DVDs/play music/keep beers cold/run lights whilst camping/surfing? I have put this together as I am being asked at least once a week about a charging system for someone's camper/surf van, and there is no one right answer. Rather than trying to respond to individual questions, I thought I would try and write something that would steer people in the right general direction rather than duplicate what **IS** already on the web. (Trust me, it's there, I know it is, as I found it.)

Things to consider:-

What is it that you want to run?

Lights, water pump, entertainment, coolbox/fridge, heater etc.

In a nut shell, a 110AH battery gives you 55AH of usable power before you drain it to below half, which is the recommended level to stop you shortening the batteries life too much. Therefore, you need to round up all the stuff you plan on using, and read their labels and work out using ohms law ($\text{watts/volts}=\text{amps per hour}$) roughly how long you will be using the item each day and what its power consumption is.

e.g

My twin 8 watt fluorescent light (so 16 watts) uses 1.3amps per hour, ($16\text{watts}/12\text{volts}=1.3\text{amps}$) so would take a fully charged battery down to half capacity on its own in just over 42 Hours. (55ah divided by 1.3 amps = 42.3hours.) If I was using light to read by during the evenings whilst camping and used 6 hours of light an evening, the battery would last about 7 days before needing a recharge if the light was the only current draw, so lights are easy.

If you want to run something like a coolbox, thats a different matter as they use around 6 amps every hour! Out of a 110AH battery you will be able to run it for 55AH/6 amps= 9 hours before your leisure battery would be drained and in need of a recharge. Even adding another 110AH battery still wouldn't give you a whole day before draining the batteries.

For storing cold stuff, you could only use a coolbox whilst you are driving plugged into vehicle cigs lighter to let the van take the strain of running it, and unplugging when the engine is off, as stuff will stay cold for ages especially if you pre-cool stuff and freeze some water bottles etc. You could even use a gas powered fridge - fitted properly and vented - or get a more economical compressor fridge like I did (my fridge uses 0.8 amps per hour which means I get around 5 1/2 days before my batteries would need a charge if just the fridge was running)

Once you have done the sums for all the stuff you plan on using, it will give you a total amount of power that you are using each day.

What you really want, is for battery bank capacity to be bigger than your total daily usage remembering that even if you have 2 batteries totalling 220AH you still don't want to drain them below half as its not

good for them long term. If you are using 60amps of power daily and you only have one 110AH leisure battery, then your battery will not last 24 hours before being drained to below 50% of its capacity and needing a recharge.

If your daily usage exceeds the amount of your battery bank, then you either need to add more batteries, or cut down on your output, as I reckon that one days power (with some to spare) from your batteries should be your minimum starting point, however the more batteries, the longer you need to charge them for.

Where and how do use the van?

On the beach, touring, wild camping/at a festival like vanfest or on a campsite with electricity?

If you are doing regular driving each day touring then, the batteries can get some charge from the alternator depending on which charging method you go for. If you drive to the coast or an event like Vanfest and park up for 2-3 days then you will need to look at either :-

- Taking all your power with you (larger battery bank)
- Generating some power whilst away (solar, generator, going for a drive/running the engine)
- Staying somewhere that has electric hook up, like a camp site so you can use a mains charger.

Where are you going to put the battery?

Under the bonnet, under the seat or in the rear?

If there is room under the bonnet, then put it there by rotating the original battery tray 90 degrees and then fitting the leisure next to that on another battery tray from a scrap yard that you have had welded in place. If you cant get away with that then it will need to go in the rear somewhere with the following considerations :-

- The further away from the vehicle battery, the heavier the cable will need to be to compensate for a voltage drop.
- If you are using a Wet acid battery, it will need to be vented to the outside of the van (probably through the floor)
- Weight distribution, as a 110AH Leisure battery can weigh 20 kilos each.

If it goes under the bonnet, then A and B above don't really matter, but if you fit one under your seat, you will need to make sure it is shielded in case it explodes as they do pop occasionally and they do contain acid, so be warned.

How you going to charge it?

Split charge, solar, hook-up, advanced regulator

