

# GET PRACTICAL...

*with deputy editor Rachel Stothert*



*Although I have a fairly logical mind (it has its blips), when it comes to motorhome electrics, I seem to hit a stumbling block. Start talking in amps and volts and my brain ceases to function. I blame it on high school physics.*

*So, when having a battery-to-battery charger fitted at RoadPro this month, I attempted once more to grasp an understanding of the power systems in motorhomes. I'm never going to be able to answer technical questions on the subject, but I think I'm on the path of enlightenment.*

*Marketplace editor, Barry Crawshaw also offers up some advice gleaned when on the hunt for new batteries recently.*

*On the same theme of getting a better understanding of our motorhomes, John Wickersham ventures into the murky world of waste water tanks. Find out how nasty smells from a motorhome's grey water tank can be banished with a few simple checks or additions.*

*And read about one man's quest to build his dream motorhome. Camping & Caravanning Club site manager, Steve Moat, found that you don't need fancy tools and oodles of experience to build your motorhome, just lots of time and plenty of patience. Steve covers the whole process from buying and preparing the empty 'van, installing insulation and cutting out the hatches to making the furniture, adding wiring and completing the whole project. Take a look for yourself.*

*Our Interchange pages are also full of advice for the enthusiastic DIYer. Get to the bottom of your motorhoming problems with the help of our newly expanded technical team. Or you might have had the same problem and hold the key to another reader's solution.*

*We're always on the look out for simple, practical tips to improve your motorhome. You can win a great prize if we publish your idea.*

*Remember that we will consider any practical or DIY article for publication, no matter how small or large. If you want to submit an article, we'll need a good selection of pictures documenting the process, as well as information on what you did, why you did it and where you sourced any supplies from.*

*As a final thought, it's worth noting that you don't have to be extremely technical to be part of the 'bonnet up' club, just be enthusiastic and willing to learn from your or others' mistakes.*

*Rachel Stothert*

## POWER TRIPS

MMM is occasionally offered products to review. So after a visit from CTEK, which makes battery chargers, we were offered a D250SC Battery-to-Battery charger.

RoadPro, one of CTEK's official dealers, installed the charger in MMM's long-term test Bürstner. Here, the RoadPro team helps explain how the electrical system in a motorhome works.

## BATTERIES

It is worth spending the extra money to get a good battery. This benefits not only the overall battery performance but also the length of time the unit will last. Paul Chamberlain of Northampton Motorhome Services, who works for RoadPro and installed the charger said: "I learnt the hard way. I've never kept a battery longer than a year, but I buy cheap ones."

The advice is also to get two batteries if you have the space. As we'll explain later, the less stress you put a battery under the longer it will last.

Batteries are constantly discharging, so if you leave your motorhome for longer periods, a solar panel could keep the battery charged.

Batteries only have so many charge and discharges, called cycles. The deeper the cycle (the more power you use before charging the battery up again) the fewer cycles the battery will provide.

They are rated at a certain amount of amps at a certain rate of discharge. It is therefore obvious to most that withdrawing lots of volts at the same time (like using a microwave on an inverter) can kill the battery quicker.

So if you can keep your battery constantly topped up (by solar or other means), it should last longer.

## MAIN TYPES OF BATTERIES

Traditional flooded lead-acid (FLA) batteries are commonly known as starter batteries. Similar to car batteries, they provide massive currents for short periods of time (to start a vehicle) and to be recharged almost immediately afterwards at quite high charging currents. Leisure batteries are different from car batteries though, with much thicker plates to better withstand more frequent and more intense charge/discharge requirements.

Sealed lead-acid (SMF) batteries offer the same technology as flooded lead-acid batteries but the battery is sealed. These batteries have a recombination lid, with cells to trap the hydrogen and oxygen gases and condense them back to liquid within the battery.

In AGM (absorbed glass mat) batteries, the electrolyte is stored in an absorbed rather than liquid form. The battery acid is soaked up in a form of fibreglass blotting paper and sealed to guarantee no spillage and no maintenance. The plates are of deep-cycle construction (thicker). They are often termed VRLA or valve-



regulated lead-acid batteries, which refers to a safety valve feature to stop any emission of gas from the battery.

Gel batteries are similar to AGM, but the electrolyte is stored in a gel rather than absorbed form, enabling them to withstand more extreme conditions and temperatures. The only drawback to gel batteries is that they require a specific charger and care is required when charging. If gel batteries are charged at too high a rate, you'll actually lose some of the electrolyte through gassing and drying out of the battery (shorter life).

## STARTER BATTERIES

All 12V batteries are composed of six 2.1V cells each made up of plates. Thin plates charge quickly, but can buckle with overcharging. So leisure batteries need thicker plates which are more resistant to the abuse from a typical motorhome power system.

Vehicle starter batteries last for years because they have a much easier life. The constant deep discharge and recharge cycles of a leisure battery shorten its life considerably.

## ON CHARGE

Most motorhomes are fitted with a standard charging system. The Elektroblock fitted to the Bürstner controls its electrics. Some devices will charge both the starter and leisure battery depending on your vehicle, but this is one question you should ask when buying a new 'van, especially in the handover.

When driving most older 'vans, the leisure battery is charging at a very basic input.

What you need to be aware of is that a fully charged battery should read with an output of about 14.1V. If the meter says anything between 11.5V and 12V, the battery is essentially flat and there is no power.

## EXTRA EXTRA

There is a host of options and upgrades that will improve power supply and maintain a battery.

Peter Rosenthal (June, p197) fitted a mains battery charger recently, which will ensure a battery is kept well charged when hooked up. These devices control the charge into the battery, to improve a battery's performance.

If you spend a lot of time wild camping, consider battery-to-battery chargers like the one that we had fitted. If you are electrically minded, you may be able to fit this device yourself. The process is simple, but may take longer depending on where the leisure battery is in relation to the vehicle battery.

Solar panels on motorhomes are a contentious issue, some would never be without a panel while others claim they are a waste of time. Andy, the owner of RoadPro, said: "I've changed my mind about solar panels and think they actually do well." This was after RoadPro had fitted one onto a Niesmann+Bischoff A-class and the meter showed real variation when the sun was out, although the panel was still supplying charge when the clouds rolled in.

Solar panels are ideal if you have the roof space, the budget (decent panels are not cheap) and want your batteries always charged to optimum.

And then there are devices that provide MPPT (maximum power point tracking) for solar

panels. These devices are like intelligent battery chargers for solar panels, monitoring the solar input and maximising the output accordingly. Devices like these can mean that you may get between 25 to 30 per cent more power from your panel, especially on days without direct sunlight.

Fuel cells are another option, but they are expensive and offer a similar level of charge as solar panels. You don't need to rely on the sun, but you do need methanol, which powers the most common ones – like EFOY. Essentially fuel cells are battery chargers, offering 12V top-up for your leisure battery.

## CONTACTS

### CTEK

Web: [www.ctek.com](http://www.ctek.com)

### Northants Motorhome Services

Tel: 01604-460332

Web: [www.northantsmotorhomeservices.co.uk](http://www.northantsmotorhomeservices.co.uk)

### RoadPro

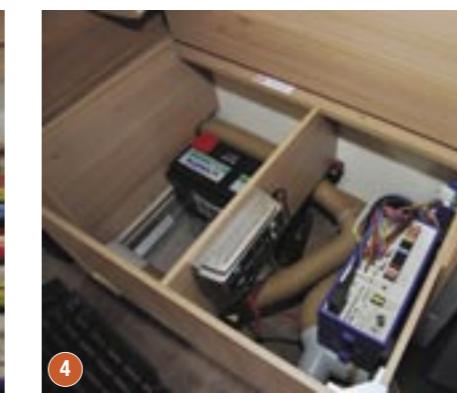
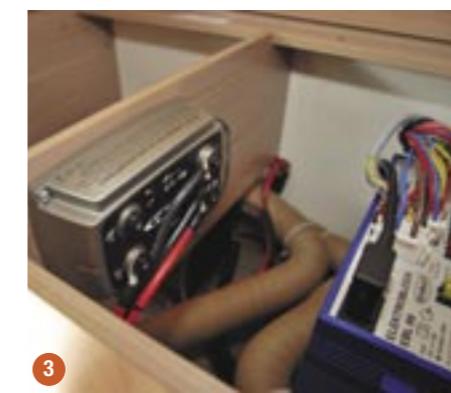
Tel: 01327-312233 Web: [www.roadpro.co.uk](http://www.roadpro.co.uk)

**1** Luckily, the 'van electrics are just behind the cab

**2** Starter batteries: less overworked than a 'van battery

**3** Fitting the CTEK battery to battery charger

**4** Motorhome electrics can be confusing



## SELECTING 12V BATTERIES

In the June (p197), Peter Rosenthal advised on increasing the capacity of a 'van 12V supply. This item on choosing batteries complements that article.

Both batteries in my 'van needed replacing, so I consulted Direct Battery Solutions, whose advice I followed. Here, its managing director Stuart James advises on battery selection.

You need a battery that fits the vehicle, but of more importance is how you use the vehicle and how frequently.

Some key points to consider are:

The battery life expectancy: how often the vehicle and battery are likely to be used (the number of cycles). Consider the frequency of trips and amount of remote use versus hook-up.

The expected depth of discharge: consider the amount of electrical equipment and usage.

Level of safety required: sealed batteries (SMF, AGM and GEL) are safer than flooded (FLA) or wet batteries. No gases to vent, no risk of spillage.

**Getting to grips with battery technology**  
A motorhome battery needs the technology of either a robust starter battery (for reliable starting power) or a deep cycling battery to maintain the domestic (electrical equipment) requirements. In the smallest 'vans, one battery may need to perform both functions.

## Deep-cycling capability

Deep cycle leisure batteries can be charged and discharged more times than the average lead-acid battery. A deep cycle battery can last up to five times longer than a flooded lead-acid battery, but it will cost considerably more.

Each battery has a certain life expectancy based on a number of cycles (or number of times used). Many factors affect the cycle life (battery technology and construction, charging method and ambient temperature), but in short, the deeper the discharge, the shorter the lifespan of the battery.

Thin-plated batteries, which suffer 100 per cent discharge will last only a small number of cycles. A more technically advanced AGM or gel battery offers more cycles.

## Battery lifetime

A quick and easy way to calculate the lifetime of a battery is:

Number of cycles x depth of discharge = battery lifetime.

The higher the specification of your battery, the greater the lifetime.  
Barry Crawshaw

## CONTACT

### Direct Battery Solutions

Tel: 08448-006843

Web: [www.directbatterysolutions.co.uk](http://www.directbatterysolutions.co.uk)

Direct Battery Solutions is a specialist in leisure batteries for motorhomes, caravans, camping and marine applications. It supplies both to trade and direct to consumers via its online shop.