

Leisure batteries are subjected to in-depth inspections under controlled conditions. You should never cut open a battery at home

Power CUTS

John Wickersham observes as nine leisure batteries are opened up to scrutiny

HOW IS A PURPOSE-MADE LEISURE BATTERY DIFFERENT THAN A STARTER BATTERY?

A leisure battery that is built to cope with repeated heavy discharge/recharging cycles has thicker, larger lead plates than a starter battery. That adds to the cost and a genuine leisure battery weighs more than a similarly-sized starter battery.

A fibrous sheet should also press hard against each lead plate's grid to help it retain its lead oxide paste. That's because repeated charging causes paste to fall from the grid and results in battery failure.

Unfortunately, you can't see inside a battery – and recent tests have revealed that batteries labelled as leisure batteries are not always built as described above.

If you're staying on sites without 230V electric hook-up facilities (as discussed last month), you're going to need a good-quality leisure battery.

Of course, if you always use pitches that provide mains electricity, a leisure battery is not so important. That's because your 12V appliances receive power whenever the caravan's charger is running. Here's how it works:

→ The site provides 230V AC electricity

- The charger converts this to feed the battery with 12V DC
- Acting like an electrical reservoir, the battery smoothes flow irregularities
- Your 12V accessories can draw the power they need

On 'mains sites' many owners manage with a 12V battery of only modest capability. Even a car starter battery will do, although its thin lead plates and inability to endure repeated heavy discharge and

recharging may limit its life. A starter battery can't perform like a leisure battery when, in the absence of hook-ups, 12V is needed for long periods. Equally, starting an engine as opposed to running 12V appliances needs a purpose-made product.

Arguably, it is possible for these products to do each other's jobs for a brief period, but inevitably they fail prematurely. If enduring performance is needed, it isn't possible to manufacture a 'lead and acid' battery that performs both

as a starter battery and a deep-cycling leisure battery with equal long-term success.

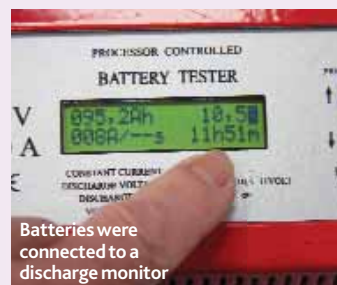
Specialists claim that if a starter battery is used to do the work of a leisure battery, it is likely to fail after about 80 heavy recharging cycles. In contrast, a purpose-made leisure battery often achieves over 400 cycles. Worryingly, as mentioned in the panel above, recent tests carried out on products labelled as leisure batteries found that many have the internal construction of starter batteries.

BATTERY TESTING

In the October 2010 Club magazine, we reported on a test that aimed to establish the true Amp hour (Ah) performance of eight new lead/acid products bearing 'leisure battery' labels. This revealing article can be retrieved from The Club's archives.

Similarly, a National Caravan Council (NCC) Working Group carried out tests recently and found that one battery with a claimed 110Ah capacity only achieved 33Ah.

Another initiative conducted earlier this year saw nine 'off-the-shelf' products subjected to testing. This was observed by technical staff from the three national caravan/motorhome clubs together with presenters from



Batteries were connected to a discharge monitor

the Caravan and Motorhome TV channels. Disappointing findings emerged once again – here's what the testing entailed:

- Each new battery was charged to its full capacity and then coupled to a discharge test monitor. This imposes a controlled discharge



which terminates when a battery falls to 10.5V. Its true Amp hour (Ah) capacity is then revealed.

- A technical specialist, appropriately dressed in protective gear, then emptied each battery's acid in a safe manner. As shown in the main photograph above, each

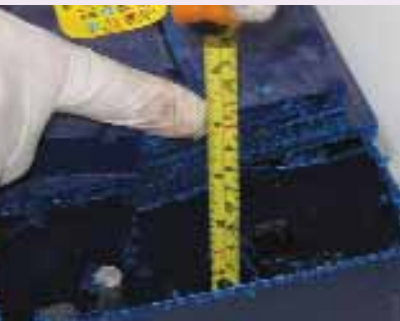


battery was then cut open to reveal its internal construction.

- Samples were coded and, to protect identities, labels were removed. Two of the products complied with battery specification and testing standard EN 50342; the rest did not.

FINDINGS

The photographs in this panel show examples of remarkable differences found in tested products. Key points to look for are robust lead plates that take up a significant area within the cell. A fibrous material should also help keep the lead oxide paste stay in the grid of each plate.



The casing of this so-called 'leisure battery' was impressively large but, when it was opened up, the plates were revealed to only occupied a small area near the bottom of the cell



This battery, which had a good Ah capacity, is constructed using substantial lead plates, each of which sits in a separator envelope duly supported with glass fibre mat



Batteries left below 12.2V develop a white deposit of sulphate on their plates. That can render a battery useless – this so-called 'brand new' product was sold in this state



When submitted to heavy discharging/charging, lead oxide paste falls away from thin lead plates. This process has already started here after just one charge of the battery



There was a remarkable difference in the size of lead plates in different products



Thin plates achieve their task in a starter battery but cannot cope with repeated heavy discharge/charge cycles. These were so thin, a spring was used to hold them in place

CONCLUSION

Only two products complied with EN 50342 and both displayed the type of sturdy plates expected of purpose-made leisure batteries and good Ah capacities, too. These were products from Banner (01889 571100) and Varta (01753 480610; uk.varta.com). Exide (0845 450 2400; exide.com/gb/en) lead/acid leisure batteries also comply with EN 50342 but since examples couldn't be found at UK dealerships, none was tested.

The other seven products on test were built like starter batteries but bore leisure battery labels. It would be

tempting to reveal the manufacturers' identities but as it was not possible to test every battery on the market, The Club feels such a move would be inappropriate. It does, however, feel justified in singling out some makes for praise.

The Club also feels that, although the testing highlighted in this article is credible, spending large amounts of time debating the results with several manufacturers would not be a good use of resources when there are numerous other issues of concern to Club members. Interestingly, at least one manufacturer is now



Products from Varta and Banner performed well in leisure battery testing



producing cut-away display models for internal inspections at forthcoming caravan shows.

NB. The NCC is in the final stages of publishing: *Code of Practice*:

Specification for Auxiliary Batteries. It is appearing any time now and, in future, compliant products will presumably be labelled, so we will know what's inside.