

Parallel Charging AGM and Conventional Batteries

- by Collyn Rivers

There is a seemingly ongoing usage amongst RV and 4WD owners to use conventional lead acid starter batteries and AGM auxiliary batteries. Whilst most AGM battery makers advise against doing this their concern seems to be mostly that the very high charge acceptance (due to low internal impedance) may cause the AGM to grab all the available charge at the expense of the starter battery. I also suspect that the AGM vendors would like to see a further AGM battery to be used for starting!

Were the batteries to be simply paralleled this could well be a cause for concern. But as long as a voltage sensitive

relay isolates the auxiliary battery from the AGM/s until the starter battery reaches 13.5 or so volts there is little if any cause for concern. Further, as these units disconnect the AGM battery if the starter battery falls below 12.5 volts the AGM cannot grab any meaningful charge from the starter battery were the engine to be stopped.

Even where both the starter and auxiliary batteries are AGMs it is still highly advisable to use a voltage sensitive isolating relay.

There is a minor concern that a typical AGM battery requires a marginally lower float voltage (LifeLine specifies as low as 13.3 volts). This is unlikely to cause problems in typical RV usage, where undercharging

is almost the norm, but where a solar system is also in use, it is advisable to program this (where possible) accordingly.

My own system, installed in our 4.2 litre TD Nissan Patrol, may be of interest. Two roof-mounted 100-watt BP Solar modules drive a 60-litre Engel fridge via a Plasmatronic PL regulator monitored via a current shunt. A 100 Ah LifeLine battery mounted under the bonnet is connected via 16 sq mm cable (I go in for voltage drop overkill).

A Redarc voltage sensitive

relay separates the AGM from the starter battery. As the solar modules alone normally provide more than adequate input I have inserted a dashboard mounted switch that cuts the current flow through the Redarc relay's operating solenoid unless alternator charging is also required. This obviates overcharging the AGM in routine use, but automatically provides voltage



1. Author's 4.2 litre turbo diesel Nissan Patrol has two 80-watt BP solar modules charging a 100 Ah LifeLine AGM battery.

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protection on the rare times when alternator charging is required. The system (installed very professionally by Greg Reen's mob in Broome) works faultlessly.

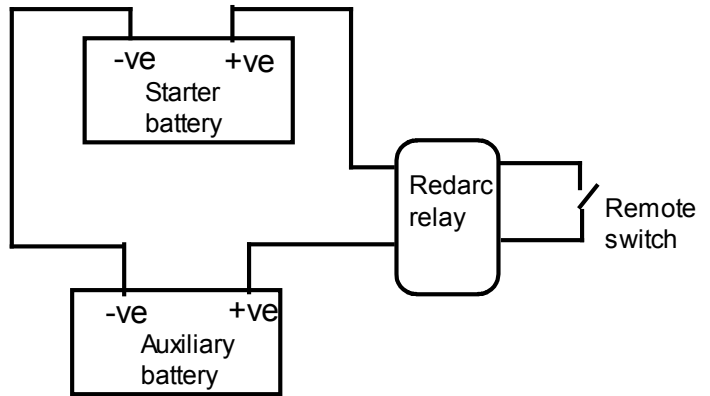
Further to AGM batteries, many auto electricians tell me they are asked for advice re float charging AGM in RVs that may be unused 4- 6 months or so.

These batteries were originally designed for military use to reliably start engines in vehicles (such as snow ploughs) that were used only occasionally. They have extremely low self discharge and even in hot climates will retain at least 60% of their charge for the better part of a year. And unlike conventional batteries will not suffer from sulphation.

But whilst they are both electrically and mechanically rugged AGMs do not appreciate

long-term overcharging. The best approach is to ensure they are fully charged before storage - and simply leave them be. In hot places recharge every six months or so, but otherwise once a year is fine.

If the owner insists on float charging this can only be done safely via a really good three-stage charger programmed for AGM batteries; or via a small solar module (about 5 watts is adequate per 100 Ah in conjunction with a solar regulator) - again programmable for AGM



2. A dashboard operated switch making or breaking the solenoid circuit, normally overrides the Redarc relay - enabling alternator charging to be used on the rare times when solar input is too low. This safeguards the auxiliary AGM against overcharging.

batteries. This is readily possible with the Plasmatronic PL series).

Few problems are normally experienced with AGMs but if under-bonnet mounted, care should be taken to shield them from direct heat (especially

from a turbocharger) because as with conventional batteries, AGMs charge more readily when hot.

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