Lead Acid Batteries

By G8MNY (Updated Feb 10)
(8 Bit ASCII graphics use code page 437 or 850, Terminal Font)

BATTERY OPEN CIRCUIT?

Have you checked to see it they come up with a reverse charge? This is something that is quite safe to do to a Lead acid (but never a NiCad as they may explode), as this is how the original batteries were made.

FLAT STATE

+ Plate	Electrolyte	- Plate
Pb PbSO4	H20	PbSO4 Pb
Grey/White	Low SG=1.0	Grey/White

CHARGED STATE

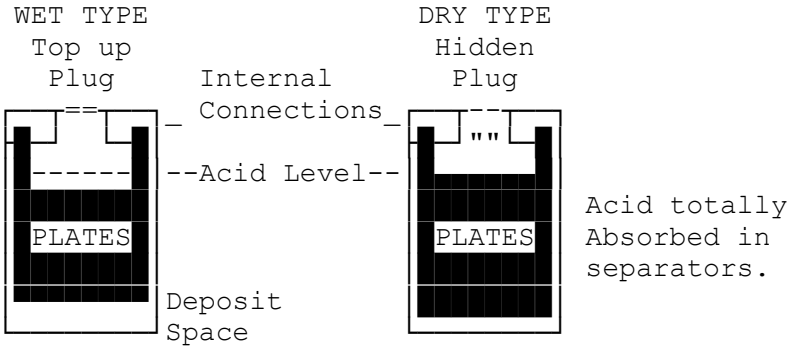
+ Plate	Electrolyte	- Plate
Pb PbO2	H20+H2SO4	Pb Pb
Brown	SG > 1.25	Grey

(SG = Specific Gravity of the Acid measured with a Hydrometer)

There is 2 type of lead (PbSO4) sulphate that is formed on flat batteries, the first type is conductive & allows normal recharging, the 2nd type that crystallises over a long time is hard white lead sulphate that just insulates the cell plate & inhibits normal recharging unless very high voltages (>5V/Cell) are applied. But reverse charging (with a suitable current limiting lamp in series) will break down the hard sulphate immediately, charge until current drops (as normal). A couple of charge/discharge cycles with a lamp load to discharge each time will then bring back a heavily sulphated battery to near normal capacity.

DRY FIT TYPES??

The so called dryfit batteries are actually wet types with a clever seal. They are just as susceptible to loss of water by over-charging & warm temperatures as wet batteries are, but you're supposed to throw this type away instead of topping them up!



However closer examination of the top of dryfits will show a glued cover over a set of 6 rubber cup caps that if removed will let the cells be topped up as normal. Only some success is possible with this method, as over-charging usually destroys the lead frame in the +ve plate as well & it falls apart.

Cycle charging up to 14.5V (6 cells), 13.8V standard infinite float charge, but 13.5V MAX on sealed cells, as they cannot afford to lose any water!

SAFETY

a) Make sure the battery polarity is correct!
b) Disconnect battery earth first to make +ve connections, as this is safer if using spanners in confined areas where they are liable to short out. Reprogram car radio e.g. make sure U have radio security numbers before you start! The same goes for some types of engine management systems, read handbook.
c) For your garage, put a sign by the car battery if there is a 2nd battery!
d) Use short runs of suitable gauge wire, remember @ 12V volts are easily lost.
e) Protect wire though bulkheads from chafing damage with suitable grommets.
f) Use suitable fuses. (no nails/ally foil).
g) Make sure 2nd battery fastenings are secure (e.g. in case of accident).
h) Be aware of explosive hydrogen build up on batteries, always "BLOW AWAY" gases before risk of sparks from connecting leads & crock clips etc!
i) Acid makes holes in clothes, wash any splashes immediately. In eyes wash immediately & seek medical help.
j) 12V Electrical fires are best stopped with a pair of cutters!
k) Molten copper is HOT & stays hot. Use water on red hot leads.
l) Use RCDs protected mains on outdoor leads for charging/soldering etc.
m) Take extra precaution if gas soldering leads/connectors on/near vehicles!
o) If you are wiring -ve directly to battery then fusing the -ve to rig, this protects against faulty battery earth straps, (rig fire on starting car!)

Tony, G8TBF says there is another way to recover batteries that have gone high resistance due to being left idle for long periods.
Connect a bridge rectifier across the battery, + to +, & supply this from a 240V AC source in series with a 15W or 40W light bulb. The supply should preferably be from an isolating transformer..... 73, Tony, G8TBF.

Why Don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP