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Battery Basics – rights and wrongs

All batteries do much the same job, right? No, selecting the wrong one can actually adversely affect performance, as well as potentially do long term damage to your vehicle. The car battery is a “grudge” purchase, very high on the list of items we love to hate, mainly to the experience of failure, usually in the most inconvenient location at the worst possible time. Some would argue that when this occurs, any working battery is the right battery, but the choice of an inappropriate type or size is actually a poor solution as this article attempts to explain.

For a start (no pun intended) there is a major difference between starting batteries and deep-cycle batteries. The former is designed to deliver a massive load of power for a very short time then recover quickly by recharging via the vehicle’s charge system. Conversely, a deep cycle battery, while it can be used for starting, is designed to provide moderate power for a long period and be capable of being discharged to less than half of its rated capacity, before being recharged. The latter is really only suitable for running appliances like fridges, lights, inverters and so on.

Next we should consider battery capacity, which is measured in two ways – the number of amp-hours (AH) and the cold-cranking power (CCA). There is also “cranking amps” (CA) as a rating, but for practical purposes, this is less useful than CCA). This is where the selection gets to be important, because a battery may have a high AH rating, but insufficient CCA to handle starting a serious V8 or diesel engine. Any decent sized V8 or diesel will generally require 700 CCA or over and in cold climates, the CCA rating probably needs to exceed manufacturer specifications. The reverse situation of high CCA but low AH will deliver the power, but will have insufficient reserve capacity and will probably be incapable of handling multiple starts of a large engine. If in doubt, go larger, not smaller.

There is another reason for choosing the appropriate battery rating and that is to ensure the power being fed through to the vehicle’s injectors and (in the case of a petrol model), the spark plugs. Too low a voltage can seriously affect injector function, just as one example of the need for correct battery selection.

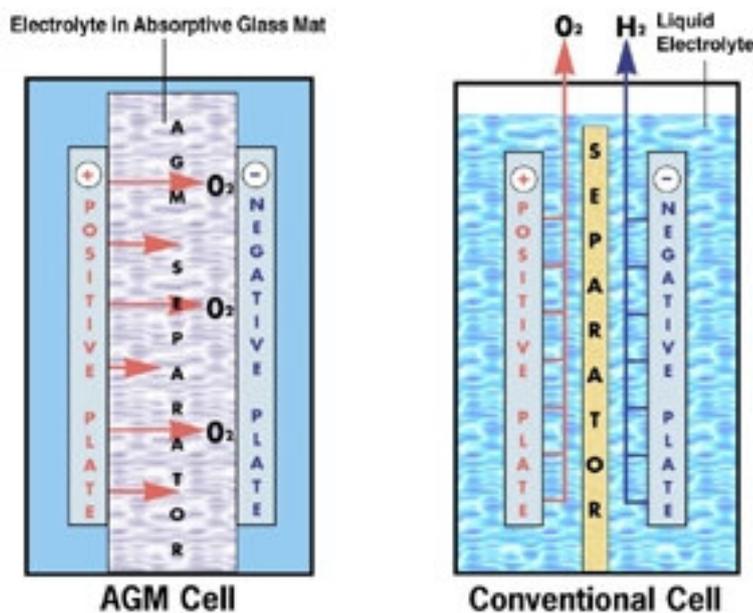
A less obvious, but very frustrating issue is the physical size, the location and the type of terminals. If necessary, draw a picture of the terminal positions and be sure to get a replacement with the same configuration. Carrying a battery to the car only to find it will not fit can spoil your day.

A quite different issue to capacity is the compromise between quality, performance and price. For batteries, this opens up a whole new discussion about the type to choose, this in turn being a function of how the vehicle is mostly used, under what conditions and where, Ambient temperature is one of the most important criteria, but so is the whether the vehicle is used mostly for longer trips, or for constant stop/start city driving. .

The most common battery technology is Lead-acid, but even here there are many variables. Amps for amps, regular wet cell types requiring owner-maintenance by topping up the electrolyte are generally the cheapest variety. With this type, only demineralised (or distilled) water must be used. Tap water will introduce impurities that can seriously shorten battery life. The frequency at which to check the electrolyte level will vary from one vehicle to another, often depending on the settings within the vehicle's charge system.

Sealed or low maintenance versions also come in different types. Many now use lead-antimony and calcium plate technology, generally offering less terminal corrosion, longer operating life and improved safety at not much greater cost than regular batteries. However, calcium types must not be discharged to any great extent and are therefore unsuited for use other than as starting batteries, whereas conventional batteries, although not designed for the purpose, can be used for some limited deep-cycle applications, say as a second battery in a vehicle to power a fridge or other accessories.

A fairly major step upwards in terms of performance, longevity, but also cost is the absorbed glass mat (AGM) battery. There are now some relatively low cost units available from Asian manufacturers but the major name brands command serious premium prices. AGM batteries are maintenance free, will usually last up to three times the life of a comparable lead-acid battery. They are also more suited to off-road use where vibration will not degrade the internal structure, the latter being a common fault when a lead-acid or calcium type is shaken around.



Source - Hawker

Finally, "brand" is not always a useful indicator, because most manufacturers supply resellers with products under different labels. Conversely, even a major brand may have some or all of its product range supplied by an offshore manufacturer or wholesaler.

The best all round solution is to seek advice and to purchase your battery from a source specialising in your particular vehicle, where you will have the assurance of appropriate knowledge and probably little or no difference in the price you will pay.