#### **Better Batteries?**



A valve regulated lead—acid (VRLA) battery or sealed lead—acid (SLA) battery, is characterized by a limited amount of electrolyte ("starved" electrolyte) absorbed in a plate separator or formed into a gel. The negative and positive plates are proportioned so that oxygen recombination is facilitated within the cell. A relief valve retains the contents independent of the position of the cells.

There are two primary types of VRLA batteries, absorbent glass mat (AGM) and gel cell (gel battery). The gel cells add silica dust to the electrolyte, forming a thick putty-like gel. AGM (absorbent glass mat) batteries feature fiberglass mesh between the battery plates, which serves to contain the electrolyte and separate the plates. Both types of VRLA batteries offer advantages and disadvantages compared to conventional flooded vented lead—acid (VLA) batteries or each other.

Gel batteries are called gel because they use silica (or sand) to turn the acid inside the battery into a thick liquid. This liquid does make it spill-proof, like our AGM batteries, but the gel is fragile, and can be easily burned if used in high amperage situations.

Due to their construction, the gel cell and AGM types of VRLA can be mounted in any orientation, and do not require constant maintenance. The term "maintenance free" is a misnomer as VRLA batteries still require cleaning and regular functional testing. They are widely used in large portable electrical devices, off-grid power systems and similar roles, where large amounts of storage are needed at a lower cost than other low-maintenance technologies like lithium ion.

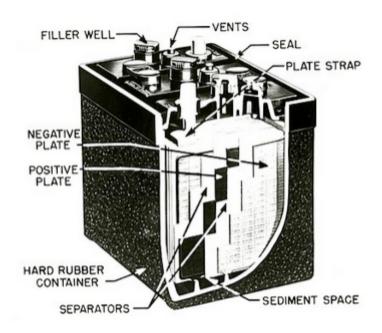
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### absorbent glass mat

But what does AGM stand for? AGM means absorbent glass mat and refers to the fine glass fiber separator between the positive and negative plates that helps absorb all the battery acid. AGM Batteries are advanced lead-acid batteries.

Absorbent Glass Mat Batteries (AKA: AGM) are advanced lead-acid batteries. AGM refers to the fine glass fiber separator between the positive and negative plates that helps absorb all the battery acid. Advanced maintenance-free lead-acid batteries with optimized cell design and compression are designed to resist spilling acid, reduce water loss during usage, supply superior power and provide vibration resistance in today's high-electrical demand vehicles. What sets these AGM batteries apart from their conventional competitors? The liquid flowing inside AGM Batteries is sealed. Standard lead-acid batteries contain electrolyte that move freely inside the battery encasement.

Known properly as a VLA (**Vented Lead Acid**) battery, wet cell batteries differ from lead acid VRLA batteries in that they utilize a vent to allow gas to escape to the atmosphere.



Obviously, these were and still are the standard style of lead-acid batteries. Although, they have recently since lost some popularity and marketshare with the advent of sealed AGM batteries. While the standard lead-acid batteries remain the most cost-effective alternative, they may have a shorter lifespan. Conversely, AGM batteries hold their charge well and are less likely to sulfate when compared to regular wet cell batteries (conventional batteries types).

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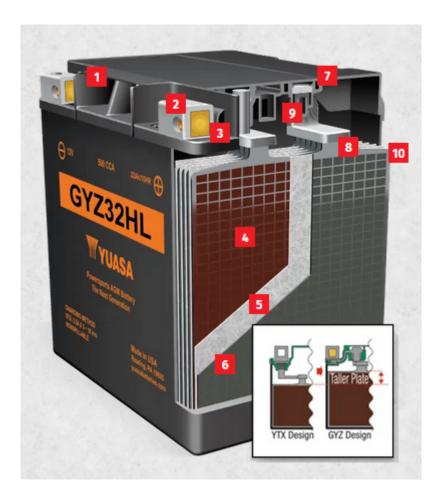


AGM's are ideal for seasonal vehicles. Conventional batteries are limited in their orientations; they must be mounted and stored in upright positions to prevent unwelcome leakage since the liquid electrolyte flows freely inside them. But with AGM batteries, the liquid is sealed inside the battery encasement. They do not have to be mounted and stored in upright positions.



Another advantage of the AGM is that it makes it more resistant to vibration with the electrolyte absorbed and held by a separator suspended inside the battery; a compelling alternative for vehicles that operate on uneven surfaces.

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