It isn't easy knowing everything about batteries:

We know that batteries can be a tricky subject. We have long years of accumulated knowledge about batteries and how to care for them. We can tell you everything from how batteries are made, to giving you good advice on care and charging.

How does a battery work?

Batteries do not create energy - they store it. In the same way you can fill a bucket with something, you can store electricity in a battery.

What is the difference between an open and sealed battery?

Batteries can be either open or sealed. Most industrial batteries are sealed. You can easily recognise open batteries as they contain tops that can be opened. This means that the battery may need to have its fluid levels regulated. In addition to open batteries needing occasional refilling with water, they are also freely ventilated. This means that they have valves where the storage gasses can escape. Sealed batteries have a special recombination structure that ensures all the gasses are converted to water, meaning that both the gasses and fluid levels are kept in equilibrium. This means that sealed batteries are maintenance-free. AGM and gel batteries look different, but are always seal valve regulated (VRLA) batteries.

What does Ah stand for?

It is common to measure batteries in Ampere hours (Ah). Ah means the number of Amperes times the number of hours when discharging at a constant current down to 10.5 Volts at +25°C.

What is the difference between an Antimony and Calcium battery?

There are different metals in a lead battery than just lead. The lead "mixture" found in the plates consists of either Antimony-Antimony, Antimony-Calcium or Calcium-Calcium, depending on what best suits its purpose.

The difference between Antimony and Calcium is that Antimony has a higher degree of water consumption. Calcium-Calcium batteries lose fluid at a rate of approximately 80% lower than Antimony batteries and have an even lower self-discharge rate.

Why is it important to charge a battery?

When a battery discharges, the lead and lead oxide found in the lead

plates is transformed into lead sulphate. This lead sulphate forms water, which dilutes the sulphuric acid. The accumulation of lead sulphate is an entirely normal part of a battery's process. When a battery is recharged, the lead sulphate is re-converted to lead, lead oxide and sulphuric acid. If the battery is left discharged for a long time, lead sulphate crystals form to an extent that the battery rusts and can no longer be used.

What is a battery's normal charging current and voltage?

All batteries are different and, therefore, need different charging currents and voltages. Normally, batteries should be charged with approximately 10% of its capacity in Amperes. For example, a 60Ah battery should be charged with 6Ah. Normally, batteries should be stored with a maintenance charge of 14.2-14.6 V.

How do I know it is fully charged?

A fully charged battery maintains an at rest voltage of 12.7 V. The specific gravity of the acid should then be 1.28. In principle, if a battery is spent, it should have an at rest voltage of 12.0 V. The specific gravity of the acid should then be less than 1.20. If a battery is kept at a charge level of 50% or less for longer periods, it will undergo sulphation. To get the best lifetime out of a battery, it is important to keep its charge at more than 50%.

What does sulphation mean?

When a battery rusts, it is called sulphation. The lower voltage a battery has, the greater the risk of it undergoing sulphation. The only way to avoid sulphation is to regularly charge the battery.
In this manner, the battery will last for its optimal lifetime. When the battery is discharged, the lead and lead oxide that would previously be found in its lead plates is transformed into lead sulphate. In turn, this lead sulphate forms water that dilutes the battery acid. The accumulation of lead sulphate is an entirely normal part of a battery's process. When a battery is recharged, the lead sulphate is re-converted to lead, lead oxide and sulphuric acid. If the battery is left uncharged, lead sulphate crystals form to the extent that they are not reconverted during the charging process. This is called sulphation.

How should I care for a battery?

For open batteries, always ensure the acid level is kept at approximately 5-10 mm above the lead plates.
Never leave the battery discharged.
Charge the battery regularly and as needed.
Inspect the venting valve, ensuring it is not bent or clogged.
Keep the battery dry and clean. Clean the terminals to prevent corrosion.
Ensure that the cables, terminals and case are damage free and that there are no loose connections.

Why won't my battery charge?

When a battery is fully discharged, it is harder to accept a high voltage. It may seem like the battery is taking the voltage, but it will only charge the surface of the plates. In these cases, the battery will need to be charged under a low voltage for a long time, up to two or three days.

What does self-discharge mean?

The time a battery will maintain its charge depends on how it is built. Furthermore, batteries also have a self-discharge rate. This means that a certain amount of energy will continuously "leak" from the battery. The warmer it is, the higher the self-discharge rate will be.

What do CCA, Din and EN mean?

CCA is an acronym for Cold Cranking Amp. CCA has different testing standards, such as EN, DIN, JIS, and SAE, depending on where you are in the world. Hi-Volt uses the SAE standard.

Why do I have more problems with my starting battery in winter?

Batteries are made to provide 100% capacity at around 20°C. The colder it is, the lower the battery's capacity. At the same time, batteries are placed under greater demand at lower temperatures.

In a battery context, what does a cycle mean?

A cycle consists of charging and discharging a battery. How many cycles a battery has depends on the discharge rate and temperature. Traction batteries are the best at having most cycles.

Can you cycle a starting battery?

Yes, but a starting battery is made to start an engine, i.e. provide a high current for a short period. If you cycle a starting battery, it will have a much shorter lifetime compared to if you use a traction battery.

What has happened when a battery stops working shortly after purchase?

The most common reasons for a new battery to stop working are:

- The charging system is faulty.
- The creeping discharge occasioned from, for example, lights, poor contacts or alarms in cars, could have discharged the battery.
- A pole shoe is loose or has oxidised.
- The battery's capacity is insufficient for the vehicle.

.

How do I recycle my battery?

Batteries contain lead, acid and plastic. All these are recyclable. If you are referring to single use, scrap batteries, you can leave them at the council environmental stations or in specific returns bins, which can be found where batteries are sold. You can also contact us for further information.

Why can't I charge my battery?

The most common reason is that the charger has not started the charging process, due to the battery holding too little charge and the resistance being too great. To get the charging process to start you may require a high current charger. Feel free to contact Hi-volt for help. Another reason could be that the battery has undergone sulphation.