



A car's battery is a vital and expensive component without which an automobile cannot function. Maintaining your car's battery by keeping it charged and healthy ensures optimum performance and extends the useful life of the battery itself.

Different Kinds Of Car Batteries

Today, modern world car batteries come in many shapes, sizes, and materials. Hybrid and electric vehicles use lithium-ion batteries whereas traditional diesel and petrol-powered cars use a "start, lighting, ignition" or SLI battery for short. SLI batteries utilize lead-acid technology and can be either wet cell or VRLA.

Wet Cell Batteries



Also known as "flooded batteries" have a series of cells that are made of lead plates that are submerged in electrolyte (a mixture of sulphuric acid and pure water). Wet cell batteries require maintenance in the form of [topping off](#) water levels in battery cells using distilled or [deionized water](#).

Advanced Flooded Battery (AFD) car batteries are a subcategory of wet cell batteries that are specifically designed for modern entry-level stop-start automobiles.

Valve Regulated Lead Acid (VRLA)



Modern cars use VRLA batteries that are sealed and contain pressurized safety valves in each battery cell. This makes them “maintenance free” and much safer than wet cell batteries. However, it also makes them expensive.

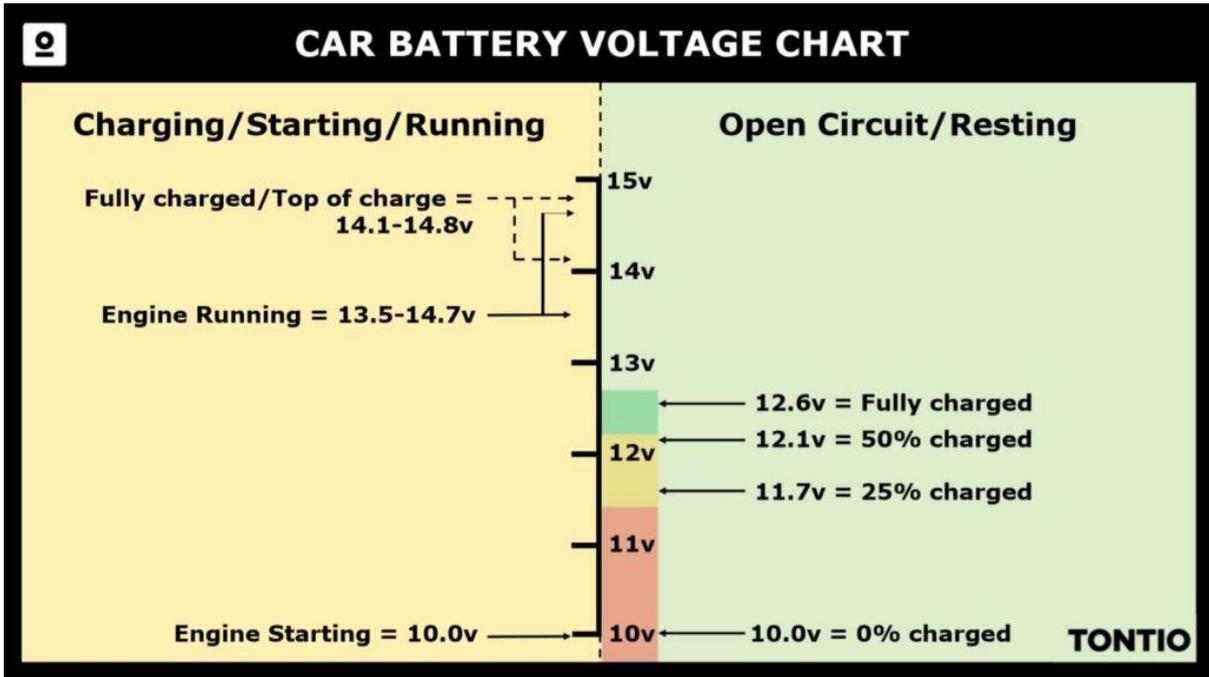
The Absorbed Glass Matt (AGM) is the most common type of VRLA battery used in automobiles. AGM batteries are well-equipped to deliver high performance in short-bursts which make them ideal for the high-energy demands of modern stop-start vehicles.

The Average Lifespan of Different Car Batteries

- Wet cell batteries can last for up to four to five years with proper maintenance and upkeep.
- VRLA batteries have a much longer life-span and can last anywhere from 5-10 years depending on the quality of materials and plate thickness used by the manufacturer.

How Can Temperature Impact Battery Life?

Extreme temperature can impact the performance and useful-life of car batteries regardless of whether they are wet cells or VRLA. Different temperatures have different effects on the chemical processes taking place inside the car battery. A car battery is at its optimum performance at around 25°C, anything higher or lower than this temperature can adversely affect a battery's useful-life.



Car batteries are made of six cells each producing 2.1 volts for a total of 12.6 volts. However, extreme temperature and frequency of use can limit a car battery's ability to hold its charge, especially in below-freezing conditions. Charge levels can drop by as much as 40% in cold conditions and once the battery gets older it will no longer be able to produce a current strong enough to start the engine.

Maintenance of Car Batteries

Even though modern VRLA batteries claim to be "maintenance free" it is important to still take measures to ensure optimum performance and longevity. Cleaning a VRLA battery with a baking soda and water solution can prevent corrosive materials from accumulating around the battery connectors. Routinely checking to make sure that the cable connectors are tightly fitted on to the terminal post is also necessary to ensure the best performance out of your car.

Wet cell batteries, on the other hand, require to be periodically topped off with distilled or deionized water for increased life and performance. Cleaning cable connectors with wire brushes can prevent corrosive minerals from building up that lead to electrical interference and weak voltage output. Use the same baking soda and water solution to clean corrosive material buildup on wet cell batteries.

Factors Affecting Car Battery Efficiency

Once a car's engine starts the alternator acts as a support to the main battery charging it as you drive along. However, several factors can impact the ability of your battery being able to hold a charge and ultimately going flat.

- **City driving:** stop-start driving along with excessive use of electronic equipment can limit your alternator's ability to charge the car battery during driving.

- **Sulfation:** refers to a chemical reaction that takes power away from a battery during excessive discharging. This limits a car battery's ability to hold an adequate charge and gets worse the longer the battery remains drained.

How Do You Test Your Car's Battery Performance?

The best way to test your car's battery performance is to use a multimeter. This handheld device measures electric voltage and current in amps along with resistance and many other values. When using a digital multimeter follow these steps:

1. Expose battery terminals
2. Conduct the test at least an hour after using the car
3. Point end probe-type are the best leads for the job
4. Set dial on the multimeter to 20 volts DC
5. Touch red probe to positive + terminal of the battery
6. Touch the black probe to the negative - terminal
7. Have someone turn on the car's headlights
8. If multimeter reads 12.6V than the battery is fully charged
9. A reading of 12.3V means battery is 75% charged
10. A low reading requires you to charge the battery and try again

Even on low voltage readings, it is important to make sure that sufficient time is given for the battery to charge. If the reading persists then it is likely that your car battery can no longer hold a charge and has come to the end of its useful life and needs to be replaced.

Reasons Behind A Car Battery Not Holding A Charge

1. Parasitic Loss

Forgot to turn off your car lights and woke up the next morning to find your battery flat? Well, this is exactly what parasitic loss refers to and the best thing to do in such instances is to remove your car battery and fully charge it using a car battery charger or jumper cables. To test if the battery still works, leave it charging overnight and check the morning after to see if the battery has been able to hold its charge or not.

2. Faulty Alternator

An alternator's job is to make sure that the car battery is being charged while the engine is running along with providing power to the car's electrical systems. Using a multimeter one can check to see the voltage the car is producing when the engine is on. If the reading is between 13.8V to 14.4V you have a healthy alternator. If readings or lower or higher you might want to get your alternator checked.

3. Wear & Tear of Battery Terminals

Dirty, dusty, corroded and loose-fitting battery terminals can result in a drop in voltage that often feels like you have a faulty battery or your battery is giving out. Routinely checking and cleaning battery terminals can improve performance and eliminate interruptions in current output.

4. A Dirty Battery Lid

Simply cleaning your battery lid occasionally can prevent the accumulation of dirt and moisture that can lead to voltage leaks due to 'tracking' across the top of the battery.

Ways to Charge A Car Battery

There are two ways to charge a dead battery.

1. Car Jumper Cables

In cases of parasitic loss, the best way to get your car started is to jump-start it using a set of jumper cables. To do this you would require a set of jumper cables and another vehicle with a similar battery type.

2. Car Battery Charger

A car battery charger provides an easy and inexpensive way to charge your drained battery using a main electrical point.

Time Needed To Charge A Car battery

The time required to charge a car battery depends on how drained or discharged the battery is, the AH rating of the battery, and the amp rating of the charger. A general rule of thumb is to leave the battery on charge overnight to be sure that it is at full charge.

Charging Cycles

As your car battery charges it goes through three phases or cycles referred to as bulk, acceptance, and float. To learn more about charging cycles visit Tontio.com for more details.

What If My Car Battery Just Won't Charge?

In such cases, it is always important to first check that the battery charger is operating ok. It is also important to allow sufficient time for the battery to charge before use (leaving it to charge overnight should do the trick). If the battery still won't charge it is highly likely that you will need a new one after all.

Monitoring Car Batteries

Modern battery monitors can track battery performance and send that information directly to your smartphone when in range. This keeps you up to date on any battery related issues and allows you to take measures immediately to address inadequate battery performance improving overall life-span and efficiency.

Car Battery Efficiency

As modern vehicles come equipped with more and more electronic equipment as standard the toll on batteries continues to rise every day. Ensuring to maintain battery water and routinely cleaning out battery lid, terminals and connectors can lead to a healthy and long-lasting car battery.