

General Automotive Questions

Q: Does a battery do anything else besides start my vehicle?

A: Having a battery, you can trust is more important than some may realize. Not only does it provide the power to start your vehicle, but it also plays other important roles in its operation of your vehicle.

The main function for most vehicle batteries is to supply power to the starter and ignition system so the engine can be cranked or started.

The battery also supplies the extra power necessary when the vehicle's electrical load requirements exceed the supply from the charging system. This means that your battery must also help power all the electronics and accessories that come installed or that are plugged into your car or boat. KOYAMA's AGM or Absorbed Glass Mat batteries have no free-flowing acid. Special micro-fiber glass mats absorb the acid so the battery will not spill or leak. This glass mat material helps reinforce the battery's internal components improving its ability to withstand the demands of multiple accessory loads (your vehicle's many electronics). The battery also acts as a voltage stabilizer in the electrical system. The battery smoothed out or reduces high voltage spikes, which can occur in a vehicle's electrical system when loads are abruptly shut off. These excessively high voltages could damage other components in the electrical system if it were not for the protection provided by the battery.

Q: Can KOYAMA flooded and AGM lead-acid batteries be recycled?

A: KOYAMA's lead-acid batteries are one of the most recyclable products on the planet. Lead-acid batteries have a higher recycling rate than glass, aluminum, and newspaper. In fact, virtually 100% of every battery component can be recycled to make a brand new battery.

Q: How does a battery work?

A: When two unlike materials such as the positive and negative plates (the electrodes) are immersed in an electrolyte (such as a solution of sulfuric acid and water) voltage is developed. The voltage developed depends on the types of materials used for electrodes and on the electrolyte used. The voltage is approximately 2.1 volts for a lead-acid battery cell. A typical lead-acid battery consists of six cells and is called a 12-volt battery. Electrical current is produced by the chemical reaction between the electrodes and the electrolyte when there is a complete circuit between the positive and negative terminals. If a battery is rechargeable, such as a lead-acid battery, forcing current through the battery in the opposite direction with a charger will restore the electrodes and electrolyte to their original states.

Q: How can I maximize my battery performance in my vehicle?

A: The battery is part of a system. When installing your new battery, it is wise to check related components. Follow all safety instructions when handling batteries! Always disconnect grounded cable first and connect it last to prevent dangerous sparks! Do not attempt the following vehicle maintenance without training or proper instructions:

- Check cables
- Clean corrosion off battery hold-downs, cables, and trays
- Verify voltage regulator and alternator output meet proper specifications
- Repair shorts (any load that is on when it should be off) in electrical system
- If a load is left on and battery becomes discharged, recharge promptly
- Tighten cables properly and always secure the battery properly
- Do not keep your battery at a low state-of-charge for long periods of time. Batteries will self-discharge if not used. Conventional automotive batteries perform best when they are at a full state-of-charge.

NOTE: Remember to always wear safety glasses and a face shield when working on or near batteries. Always protect your eyes!

Q: Do the best batteries always have the highest CCA ratings?

A: No. Optimized power is not always reflected by CCA ratings. AGM batteries deliver power quickly to start the engine. A CCA rating measures cranking over a 30 second period. Cars today start in milliseconds due to improved electrical systems. Fuel injection, computerized starting controls, and other enhancements allow vehicles to start quickly without the need for extended cranking. Premium batteries should deliver the right balance of life, power, and durability – not just starting power.

Q: Does the length of driving time play a factor in battery life?

A: Unlike fuel consumption, a longer length of driving time can be both beneficial and detrimental to the longevity of a battery. Beneficial in the sense that frequent starting without enough time for the alternator to recharge the battery can be hard on it over time. Conventional automotive batteries perform best when they are at a full state of charge. Adversely, the longer the vehicle is in use, the more vibration and shaking it undergoes. This can also cause additional wear on the battery over time as well. The hardest scenario on a battery; however, is not using it at all. Batteries that sit for long periods of time can lose power or self-discharge. If discharged for too long, this can cause permanent damage to the battery to the point where it cannot be recharged.

Q: What are some common causes of automotive battery failure?

A: Accidental power drains (like leaving your headlights or dome lights on) that discharge the battery to the point that it doesn't have enough power to start the vehicle. Draining the battery to a very low state-of-charge can do permanent capacity damage. Another common cause of battery failure is from putting the wrong battery in the wrong application. For instance, if the vehicle requires a certain amount of starting power, installing a battery that isn't designed to provide that much starting power will quickly wear out to the point of a no-start situation. Also, if the battery's dimensions don't align with the vehicle's recommendations, it might not have a good fit and suffer damage from vibration or clearance issues. Always pay close attention to the Battery Application Guide and specifically follow its instructions.

Higher temperatures also have a detrimental effect on battery life. However, in the cold, oil and transmission fluids are more viscous so getting the car started requires more energy. In general, extreme temperatures, hot or cold, have an adverse effect on battery life. However, it's the heat that does most of the damage, but more batteries actually fail when they're put to the test in the cold.

Q: With engine compartments getting smaller and vehicles needing more power to operate the complex vehicle electronics, what is happening with battery technology to keep things running smoothly?

A: The consumer driving experience continues to expect increased electrical functions and features, which forces vehicle electrical systems, and the batteries that help power them, to become more durable and efficient. The automotive industry is on an upward trend toward the use of Enhanced Life Flooded and AGM (Absorbed Glass Mat) products as a vehicle's Original Equipment battery. These enhanced battery technologies add additional durability to the battery's design to enable it last longer under less than ideal circumstances and demanding accessory loads. This helps accommodate complex vehicle electronics and the

demand they put on the battery. An AGM design is also spillproof and valve-regulated. This makes it safer to put in more non-traditional locations like under the seat or other areas that would allow for more space under the hood for other engine components.

Q: Why is installing batteries in vehicles more complicated than it used to be?

A: Mostly towards the end of the 1990's, some of the biggest consequences to disconnecting the battery resulted in losing radio settings, seat positions, and side-view mirror adjustments. As we progress into the 21st century, the stakes of not taking the proper precautions before and after disconnecting the battery have increasingly become much higher as well as the need for more sophisticated methods and a broader knowledge base for adhering to these precautions. For example, for most modern vehicles, the engine's computer records things like engine misfires and oxygen-sensor performance, and confirms that, over time, the emission-control system is doing its job. Once battery power is disconnected, those settings are cleared and the vehicle needs to relearn this data. The impact of losing data collected by the vehicle can result from something as inconvenient as to failing an emission's test (depending on the state of inspection) to something much more serious like damaging the battery due to incorrect voltage output settings. Several BMW, Audi, and Lexus vehicle models require the computer system to be reset after battery replacement. Mercedes-Benz models have specific instructions in the owner's manual for electrical set up requirements, and a few Infiniti models even require the shift release to be reset after battery replacement.

While more extensive procedures can be found in higher end vehicles, other models are in no way immune to extra steps involved when disconnecting the battery. Hundreds of vehicle models require additional steps or precautions when replacing a battery which include:

- Battery disconnection precautions
- Power window, locks, and sunroof programming
- Convenience accessory programming
- Supplemental restraint and ABS system precautions
- Resetting engine and body control systems

Any who replaced a battery should closely regard the need for system resets, safety precautions, or specific instructions when replacing batteries in modern vehicles. Be informed of what the individual owner's manuals require for battery replacement as well as the numerous guides and resources that solely focus on battery replacement and reset procedures.