

# **DON'T GET CAUGHT COLD WITH A DEAD BATTERY**

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Of all the components under the hood, the battery is probably the most blamed item for some problems associated with your car.

If your car doesn't start, the battery is blamed. If your headlights and other electrical components are weak, you blame the battery. The battery's main purpose is to hold electricity to start the car, and secondarily, to provide "reserve power" to handle any additional electrical accessories in the car that the alternator cannot keep up with.

Granted, the battery can be old and just plain worn out, or the battery can be defective and is a source of the problem. But there are many associated components that are in the same circuit as the battery and should be looked at.

The alternator provides between 13.2 and 14.9 volts to run the car's ignition, accessories (as fans, lights, radios, etc.) and to put a charge back into the battery that was drained from starting. If the alternator is weak, or defective, the battery does most of the work of providing current until it can give no more. If the alternator belt is loose, aged, cracked, or ready to break, the alternator doesn't turn at its proper speed to run the electricity in your car, and the battery runs down.

The regulator (some are built into the alternator; some are separate components mounted on the fender or firewall) is to regulate the current flow from the alternator. If the regulator is defective, more than 15 volts is pushed through the system and is a cause for boiling a battery dry. If shorted, it may drain the battery of its stored electricity.

The starter normally draws between 100 to 250 amps to start the engine. If there are problems with the starter, or the starter solenoid, the amperage drawn can be excessive (eg. 300 to 700 amps), and drain the stored power in the battery, or overload its internal structure causing it to break internal connections. This also can lead to draining the battery to the point that it cannot provide the needed current flow to turn the starter.

Wiring should be checked for any worn spots that might be touching the car's body, or "grounding out". Check to see that all connections are clean and tight.

Your driving habits, especially during the winter months, need to be considered. Short hop driving (a mile to and from work, for example) does not allow for proper charging of the battery. The battery needs to be warmed internally to 50 degrees (F) before it can even accept a charge. Therefore, starting your car, running lights, defrosters, fans and radios in sub-freezing temperatures only drain the battery. Multiply this by several weeks of short-trip drives, and you have a discharged battery. The cure: periodic overnight battery charging at home with a 10 amp charger resolves this problem.

There are several things that the car owner (or his favorite service facility) can do to gain the maximum service from the battery:

1. Check fluid levels periodically. The term "maintenance free" may be on your battery, but most batteries allow service to the cells by removable caps. If your battery is indeed a sealed type, have it checked by a service center) for proper voltage output under a load. The fluid level should cover the plates. Distilled water is recommended if fluid needs to be added. If the plates in a battery are exposed to air for a length of time, they oxidize and become useless. Low fluid levels are caused by excessive drains on the battery, severe hot weather, severe cold weather where the battery has to work a lot, or holes in the case caused by an improperly secured battery and rubs against rusted or corroded metal tray parts. Note also, that an improperly secured battery can lead to internal vibration which will destroy a battery. Adding water to the battery may not fix a battery that has been dry too long. Also, after adding water, the battery should be charged properly to chemically change the water to acid that holds the charge in the battery. The battery will need to be charged properly with relation to its capacity, temperature and existing state of charge.

2. Clean connections periodically. Too often, posts and clamps are corroded (caused by natural gassing as a battery charges) and prevents current from flowing to the starter. Connections should be bright and free of any foreign matter. The use of grease to cover the posts to prevent corrosion is not recommended as

grease can liquify as it heats, and insulate the post from the clamp, thus causing loss of current flow to the starter.

3. Have your starting and charging system checked by a service facility. Early detection of problems will prevent awaiting a tow truck in 0 degree temperatures. In recent surveys of car owners, 23% of the cars have battery or electrical problems.

4. Be cautious around batteries. They produce explosive hydrogen gas as they charge. Do not smoke or do anything around a battery that could produce a spark. Follow directions when jump-starting a car, or hooking up a battery charger. 5. Charge batteries for the proper length of time. Some batteries have a greater "reserve capacity", a rating that all batteries have, but may not be noted on the battery label. High cold cranking amps AND high minute reserve should be considered when purchasing a battery. Higher reserve rated batteries need more time on the charger. A quick two hour charge may not be sufficient to give maximum performance during cold weather.

6. Be aware of temperatures in which your car is operating. Very hot temperatures geometrically accelerate the internal destruction of a battery. Batteries die during the hot summer months, and if not replaced then, will certainly show up in the first cold snap of winter. Therefore, you may consider having your battery checked in the fall.

7. If you store a battery (for your car, tractor, marine, garden tractor, etc.) for a period of time, charge the battery until it is fully charged, then store it in a cool, dry place on a block of wood. A 100% charged battery's freezing point is 67 degrees below zero (F). In time, a battery does naturally discharge, and the property of the acid becomes closer to water and will freeze causing plate damage and case breakage. Therefore, charge a stored wetted battery every few months. This will keep the plates porous and prevents it from sulfating, which is a sealing of the plates and internally destroys the battery. You should get longer service from your battery when you properly store it.

8. When your ignition key is off, make sure all other electrical components are off, as well. Headlights left on, glove box or truck lights that are on for some reason, added on radios and radar detectors that are not affected by the switch can all drain a battery. Lead-calcium constructed batteries can handle a deep drain only once or twice before its ability to retain its fully charged state is affected, and will shorten its life. Newer cars with clocks and computers with memory drain very little out of a battery, but if the car is not driven in a while, this could take its toll on the battery's health.

9. If you do need to purchase a battery, do your homework. Ask for the specifications for the battery. High cranking amp output in some cases may mean lower reserve capacity, and won't give you maximum service. Watch out for words in advertising like "delivers UP TO xxx CCA"-this may mean that batteries are grouped in a price structure, and your particular battery required by your car manufacturer may be rated less than the number you see in the ad, and you still pay that block price. Get the right battery that is supposed to fit in your application. Smaller batteries may not hold down properly, and can cause damage to the battery. Ask questions about warranties and how they are handled. You may purchase a five year battery, but should it fail after 3 ½ years, it may be cheaper to purchase a new battery outright than to pay adjustment costs, depending on how adjustment costs are based. Some advertisers promote a multi-year warranty period on a light duty battery. In this area, the heavier cranking amp battery you can purchase will usually assure longer life because the battery won't have to work as hard each time it is used. Be concerned about places that sell batteries and won't take your old one back. Batteries are termed "hazardous material" and should be properly recycled. By federal law, any business that sells a lead-acid MUST accept back your old battery if you ask them to. Most states require an exchange of the old battery at the time of purchase. When you shop for batteries be aware the difference between a "cranking amp" (measured at 32 degrees F) and a "cold cranking amp" (measured at 0 degrees F). All manufactures require a minimum rating, at zero degrees, called a CCA. Many ads show CA, or cranking amps, which are higher numbers, but may not meet your car's requirement. Make sure you are getting the correct battery.