

Where Would We Be Without Batteries?

by Sara J McBride

Every time you jump in your car, you turn the key, the engine fires up and off you go. Since our cars tend to be on the super reliable side, one of the things we tend to forget about is our car battery. And why should we? It's a sealed element, it's turning the engine over, so why bother?

Well, OK, put let's pop open the trunk and look at it anyway. Some of us are driving around with the original battery in our Miatas. I'm driving a 1995 and let me tell you, the battery in my previous vehicles did not last 10 years! (And why is the battery in the back corner of the trunk, you ask? Why it helps maintain that wonderful 50 - 50 balance that the Mazda engineers were striving for!) When I do need to replace it, what kind of battery will I drop in there?

Types of batteries are Flooded or Wet Cells, Gel Cells and AGM Cells (Absorbed Glass Mat). Wet Cells are the most common lead-acid battery-type in use today. They offer the most size and design options and are built for many different uses. Typically, the cells can be accessed via small 1/2" holes in the top casing of the battery. The plastic container used for flooded cells will have one or more cells molded into it. Each cell will feature a grid of lead plates along with an electrolyte based on sulfuric acid. Since the grid is not supported except at the edges, flooded lead-acid batteries are mechanically the weakest batteries. Since the container is not sealed, great care has to be taken to ensure that the electrolyte does not come into contact with you (burns!) or the car (corrosion!), both very bad events.

Gel Cells use a thickening agent like fumed silica to immobilize the electrolyte. Thus, if the battery container cracks or is breached, the cell will continue to function. Furthermore, the thickening agent prevents stratification by preventing the movement of electrolyte. As Gel cells are sealed and cannot be re-filled with electrolyte, controlling the rate of charge is very important or the battery will be ruined in short order. Furthermore, gel cells use slightly lower charging voltages than flooded cells and thus the set-points for charging equipment have to be adjusted.

The OEM battery in Miatas are AGM batteries. They are the latest step in the evolution of lead-acid batteries. Instead of using a gel, an AGM uses a fiberglass like separator to hold the electrolyte in place. The physical bond between the separator fibers, the lead plates, and the container make AGMs spill-proof and the most vibration and impact resistant lead-acid batteries available today. Even better, AGMs use almost the same voltage set-points as flooded cells and thus can be used as drop-in replacements for flooded cells. Basically, an AGM can do anything a Gel-cell can, only better. However, since they are



A leaky battery can ruin your car (and your day).

also sealed, charging has to be controlled carefully or they can be ruined.

Someday, your battery may not be up to snuff and will no longer recharge, so you will need to replace it. Mazda replacement batteries are not AGMs, but a wet cell. Many people, myself included, think this is not a smart choice and opt for a AGM replacement battery from Westco or one from AutoZone that is from the same vendor that Westco uses. Why? Remember when we said that Wet Cell lead-acid batteries are mechanically the weakest batteries? Combine high vibration leading to a leaky cell and spirited driving and you get acid eating out a trunk. This happened to Jerry Jaspers of the Greater Cincinnati Miata Club who had a Mazda wet cell replacement battery. After repairing the damage caused by the acid from the wet cell battery, he now has an AGM unit in his trunk.

Editor's Note: Battery information provided by Constantin von Wentzel from his website. He knows his batteries! Go here: <http://www.vonwentzel.net/Battery/index.html>
Thanks to Jerry Jaspers from GCMC for photo.

Tour Notebook...from page 3

Rallymasters pulled this off. We drove through a heavy downpour in southern Indiana Friday evening an hour before arriving at the B&B and had a torrential, hail filled, tree damaging storm hit us an hour after we got home Sunday evening. In between, it was sunny, hot and did I mention sunny? So if you are going to be a Rallymaster, corner this team and find out their secret for securing beautiful weather.

Overall, this was a terrific trip and I have only highlighted a brief amount of the thoughtful details that made it that way. We also had wonderful accommodations at the Leavenworth Inn. Of course, having served five years in the Navy in my youth, that name caused me a little concern prior to our arrival (Hmmm, Leavenworth Prison?), concerns that were quickly alleviated! The park-like setting of this B&B with its many unique and well-appointed rooms, common areas, decks, daily fresh cookies, and abundant book and

video collections in every house (of the good stuff you wish you had more time for) made this one of the best we have stayed at!

Our Rallymasters organized a nice mix of driving, dining (Huber farms), scenic pit stops (Caesar's Casino on the river) and socializing (room tours, wine tasting, cards and general gatherings). It was fun to meet new people and get reacquainted with others.

Thank you Norm, Susie, Gary and Kathy... there sure are some amazing roads in the "Boon Docks"!