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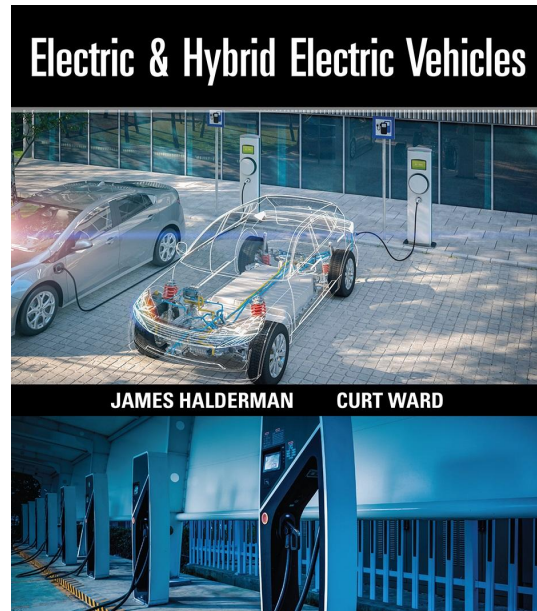
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Author & Automotive Expert James D. Halderman

## What's new with Jim?



Curt Ward and I are pleased to announce that our new textbook titled **Electric and Hybrid Electric Vehicles** has been published and is ready to be used for summer or fall classes. Order ISBN 9780137532124. If you have not

seen the resources posted on my [website](#), send Glen, the website manager, an email and ask for a FREE access for a limited time. Email Glen at [Glen@jameshalderman.com](mailto:Glen@jameshalderman.com).

## Where's Jim?

Finally, events and conferences are starting back again after two years. I will be attending the following events in March.

- **March 4-6**- Vision Expo - Kansas City
- **March 10-11**- Michigan Automotive Teachers Association (MATA) in Big Rapids, MI at Ferris State University
- **March 24-25**- ICAIA at Southern Illinois University in Carbondale, IL

Keep up with me at:

[www.jameshalderman.com](http://www.jameshalderman.com)

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*Everything is organized for you!*

**Puzzle of the month**

## Downloads

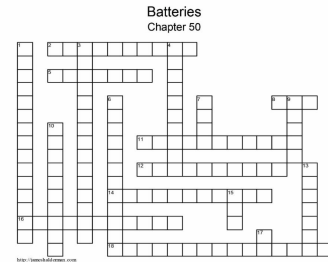
### Animations by ASE area

Custom animations developed to illustrate various automotive related functions.

### Videos by ASE area

Video links cultivated to teach various automotive functions, diagnosis and repair.

Find this month's puzzle of the month at this [link](#) and test your students knowledge on batteries.



- ACROSS**
- The negative plates are pasted to the grid with a pure \_\_\_\_\_.
  - \_\_\_\_\_ is the release of hydrogen and oxygen from the battery that occurs during charging and results in water usage.
  - Battery sizes are standardized by the \_\_\_\_\_.
  - Conventional batteries use a liquid electrolyte called \_\_\_\_\_ batteries.
  - Each cell is separated from the other cells by \_\_\_\_\_ which are made of the same material as that used for the outside case of the battery.
  - Both types of valve-regulated, lead-acid batteries are also called \_\_\_\_\_ battery design.
  - \_\_\_\_\_ is the term used to describe the acid solution in a battery.
  - The amount of sulfate in the electrolyte is determined by the electrolyte's \_\_\_\_\_ which is the ratio of the weight of a given volume of a liquid to the weight of an equal volume of water.
- DOWN**
- A \_\_\_\_\_ battery uses little water during normal service because of the alloy material used to construct the battery plate grids.
  - The \_\_\_\_\_ rating for batteries is the number of minutes that a battery can produce 25 amperes and still have a battery voltage of 1.75 volts per cell.
  - \_\_\_\_\_ is an older battery rating system that measures how many amperes of current the battery can produce over a period of time.
  - Another name for a maintenance-free battery is a \_\_\_\_\_ battery.
  - Each positive and negative plate in a battery is constructed on framework, or \_\_\_\_\_ made primarily of lead.
  - \_\_\_\_\_ are constructed of positive and negative plates with insulating separators between each plate.
  - \_\_\_\_\_ is a pure porous lead.
  - Another name for a cell is an \_\_\_\_\_.
  - The acid used in an \_\_\_\_\_ battery is tightly absorbed into the separator, making the battery leakproof and spillproof.
  - The designation \_\_\_\_\_ refers to the number of amperes that can be supplied by a battery at 32°F (0°C).

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## Auto Trivia

This Dodge model was called?

- Coronet
- Royal Lancer
- La Femme
- D-500

*\*Answer at the bottom*



## FAQ

### Can a Stop-Start System Be Turned Off?

Sometimes. Some vehicles equipped with a stop-start system can be turned off using a button on the dash or center stack.

### Sample ASE certification-type question

- An acceptable charging circuit voltage on a 12-volt system is \_\_\_\_\_.
- 13.5 to 15.0 volts
  - 12.6 to 15.6 volts
  - 12 to 14 volts

d. 14.9 to 16.1 volts

### Answer/Explanation

**The correct answer is a.** The charging system voltage should be within 13.5 to 15.0 volts according to most vehicle manufacturer's specifications. Answer b is not correct because 12.6 volts is too low and 15.6 volts is too high and could damage the battery. Answer c is not correct because 12 volts is too low a voltage to adequately charge the battery. Answer d is not correct because the voltage is too high and could damage the battery and some electrical devices in the vehicle.

## Tech Tip

### Programming Auto Down/Up Power Windows

Many vehicles are equipped with automatic operation that can cause the window to go all the way down (or up) if the window switch is depressed beyond a certain point or held for a fraction of a second. Sometimes this feature is lost if the battery in the vehicle has been disconnected.

Although this programming procedure can vary depending on the make and model, many times the window(s) can be reprogrammed without using a scan tool by depressing and holding the down window switch for 10 seconds. If the vehicle is equipped with an auto up feature, repeat the procedure by holding the window switch up for 10 seconds. Always check exact service information for the vehicle being serviced.

## Case Study

### The Case of The Inoperative Radar Cruise Control

The driver of a Lexus NX experienced a situation where the radar cruise control stopped working due to ice on the sensor after driving through light snow showers. When the front was checked, it was discovered that ice had accumulated on the front grille. Using an ice scraper brush, the grille was cleaned, which restored the proper operation of the radar cruise control. In automated vehicles, the sensors need to be heated, and maybe cleaned, so that they can operate under all driving conditions.



#### Summary:

**Complaint**—Radar cruise stopped working and a message appeared to clean the sensor.

**Cause**—Ice buildup on the grille.

**Correction**—Cleaning the front of the grille, using a brush restored the proper operation of the radar cruise control.

## Straight Talk

### Readers Ask About EV Charging Times

*From the February 26 Wheels Section of the Dayton Daily News*

**Wheels:**

*Karen W. asked by email:*

*“How long does it take to charge the battery? How much extra time will I need to plan a 750-mile trip?”*



**Halderman:**

Electric vehicles are not your best option for a vehicle to be used for long distance travel due to the time needed to recharge about every 200-250 miles. Most currently available electric vehicles have a range of between 200 and 300 miles. According to General Motors Corp, when they were designing the extended range electric vehicle Volt, they found that most people commute about 35 miles a day. As a result, the battery size of the Volt was designed to furnish about 45 miles of range using the battery alone.

When traveling, a smartphone app, such as Plug Share or the vehicle itself can be used to locate level three charging stations along the route. Using a level 3 charging station, it takes less than an hour to recharge a typical electric car about every 250 miles. While longer than filling a tank, most electric vehicle owners use that time to take a break or eat a meal. If traveling 750 miles often, an electric vehicle is not a good choice for you. Most owners charge at night at home so the owners start off every day with a “full tank.”

*Have an automotive question? Get a straight answer by writing to Jim at [jim@jameshalderman.com](mailto:jim@jameshalderman.com)*



**Answer To This Month's Trivia:**  
b Royal Lancer

#### Contact Us

