

## Author & Automotive Expert James D. Halderman



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Halderman newsletter

September 2016

### What's new with Jim?

Now that classes have started, it is time to try to make a difference in the lives of your students. As some very wise people have told me:

**"If you are working harder than your students, you are doing something wrong"**

To help achieve this, ask your students to use my [website](http://www.jameshalderman.com) and view the hundreds of videos and animations all sorted by ASE content area or by chapter, making it easy to find the topics needed. I have found that having students view animations and videos creates many questions such as "why did the technician do it that way?" Many students love animations because they often say "I had no idea how this unit worked until I saw the animation showing the parts inside."

Visit my website [www.jameshalderman.com](http://www.jameshalderman.com) often and regularly because the site is being updated continuously and send me an email ([jim@jameshalderman.com](mailto:jim@jameshalderman.com)) if there is a feature that you would like to see on my site. Have a great school year.

*Please continue to follow me on [LinkedIn](#), [Facebook](#) and [Twitter](#) for up-to-the-minute updates and for the fantastic interaction I receive from many of you.*

Sincerely,  
Jim

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## Auto Trivia

Elvis Presley famously loved which brand of automobile?

- a. Lincoln
- b. Chrysler
- c. Cadillac
- d. Studebaker

**Answer at the bottom of this page!**

## Sample ASE question

### Question:

What is the switch in the center of this cutaway hydraulic brake component?

- a. Metering valve
- b. Pressure differential switch
- c. Proportioning valve
- d. Master cylinder check valve

### Answer/Explanation

The correct answer is b. The switch is the pressure differential switch, which completes the electrical path to ground to light the red brake warning lamp in the event that there is a difference in pressure between the two brake circuits. Answers a, c, and d are not correct because they are not the switch shown.



## FAQ

### What do regenerative brakes look like?

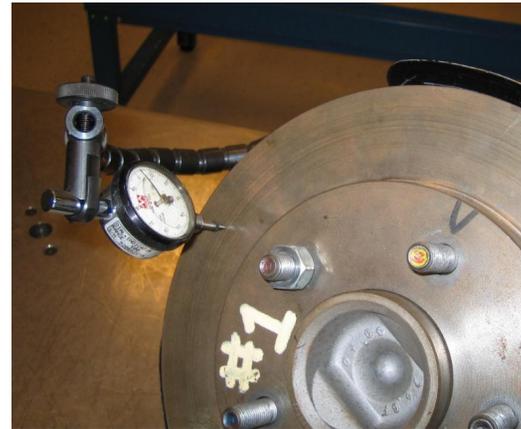
Regenerative brakes use the rotation of the wheels applied to the electric traction (drive) motor to create electricity. Therefore, the brakes themselves look the same as conventional brakes because the hydraulic brakes are still in place and work the same as conventional brakes. The major difference is that the standard wheel brakes work mostly at low vehicle speeds, whereas conventional brakes work at all speeds. As a result, the brakes on a hybrid electric vehicle should last many times longer than the brakes on a conventional vehicle.

## Tech Tip

## Think of a human hair

Measurements and specifications for brake rotors do not seem to mean much unless you can visualize the size compared to something with which you are familiar. The diameter of a human hair is from 0.002 to 0.004 inch (2 to 4 thousandths of an inch).

The maximum lateral runout of a rotor is usually within this same dimension. The reason a dial indicator has to be used to measure runout, and a micrometer to measure parallelism, is that the dimensions involved are less than the diameter of a human hair.



## Straight Talk

From the August 27, Wheels section of Dayton Daily News

### Buick owner asks about brake life

#### Wheels:

Jane of Dayton writes that she is concerned that her Buick needed new brakes at 33,000 miles. She feels that brakes should last longer than this and wants to know your opinion.

#### Halderman:

Jane included a copy of the repair order, which states that the front brakes were worn. This may mean that they are partially worn or could mean that they were worn to the point that the service technician thought they should be replaced. Many service technicians recommend replacement of front disc brake pads whenever they are worn to 50% or less of the original usable thickness. According to one industry standards,



- The disc brake pads are "required" to be replaced whenever the thickness of the friction material is at or below the minimum allowable thickness as specified by the vehicle manufacturer.
- If the friction material thickness is close to the minimum, then the service technician can

"suggest" replacement because it is close to the end of its service life.

There is another factor to consider and this is that any service work performed on the braking system should be performed to "restore the braking system to as new condition." It is this last statement that I believe the technician and the dealership thought when it performed a rear brake cleaning and adjustment and suggested the replacement of the front disc brake pads. Brake service life is extremely variable based on driving habits, speeds, as well as vehicle weight and type of driving. A front-wheel-drive vehicle such as Jane's Buick is also harder on front brakes than most rear-wheel-drive vehicles because up to 80% of the braking is performed by the front brakes alone.

For example, if the vehicle was driven on the highway every day, the brakes could last much longer than 33,000 miles because the brakes are not being applied during most of the travel. A vehicle used in city driving may require brake replacement every 20,000 miles. Apparently, Jane did ask that the brakes be inspected. It was not mentioned in Jane's letter, but I would assume that the dealer notified her of the condition of the brakes and did get approval before the replacement of the front disc brake pads.

*Have an automotive question? Please write to Jim with your questions at [jim@jameshalderman.com](mailto:jim@jameshalderman.com)*

**Trivia question answer: C.**

Please let me know what you think of the newsletter. I would love to include any of your automotive news, trivia questions or any tech tips you might have. Send me your suggestions!

You can email me [here](#) or visit [my website](#). You can connect with me on Facebook, Twitter and LinkedIn too (links above).

Regards,

*Jim Halderman*

*James D. Halderman writes automotive technology textbooks for [Pearson Education](#). He is an ASE-certified Master Technician with more than 20 years instructional experience.*