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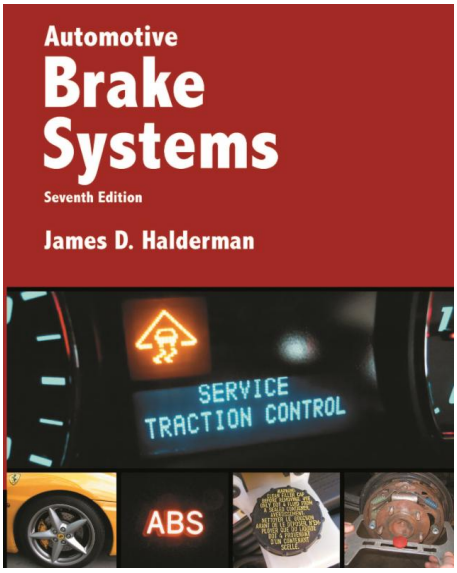
Halderman newsletter **February 2016**

What's new with Jim?



I am happy to announce that the latest edition (7th) of Automotive Brakes Systems (ISBN 0-13-406312-0) is now available to order for summer or fall classes. Here is what is new in the seventh edition:

- Over 40 new full-color photos and line drawings have been added to help bring the subject to life.
- All of the content throughout has been updated to meet the latest NATEF and ASE standards.
- The chapter on brake principles (Chapter 4) has been expanded and now includes the details on brake friction materials which are now in one location instead of being repeated in the drum and disc brake chapters.
- Qualifying a brake lathe information has been added to Chapter 15
- The three chapters on antilock brake systems (ABS) have been condensed and updated to two new chapters (Chapters 17 and 18) to make this topic more concise, which makes it easier to teach or learn this technical content.
- The chapter on regenerative brakes (Chapter 20) has been moved to the end of the book as suggested by automotive instructors.
- Many new review and chapter quiz questions were changed to match the new and updated content in each chapter.

Examples of what was changed and updated include:
1. The GM regular production code (RPO) information has been added to Chapter 3 (Braking System Components and Performance Standards)
2. Content related to ceramic brake pads and environmental concerns of copper in brake friction materials has been added to

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WHERE'S JIM?
Shows Jim will be attending this month.

Chicago Auto Show (media preview days) - February 10-12

Chapter 4 (Brake Principles and Friction Materials).
3. Case studies have been updated to include the "three Cs" (complaint, cause, and correction).
4. The BCM control of the red brake warning light (RBWL) has been added to Chapter 6 (Hydraulic Valves and Switches).
5. Brake line corrosion reduction coating has been added to Chapter 7(Brake Fluid and Lines).
6. New disc brake photo sequence has been added to Chapter 13 (Disc Brake Diagnosis and Service)

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

Auto Trivia

What is the firing order of this small-block Chevrolet V-8 engine?

a. 1-2-3-4-5-6-7-8
b. 1-3-7-2-6-5-4-8
c. 1-5-4-2-6-3-7-8
d. 1-8-4-3-6-5-7-2

Answer at the bottom of this page!

Sample ASE question

QUESTION:
The button on the valve should be depressed or held out when pressure bleeding the brakes.
a. Metering
b. Proportioning
c. Pressure differential
d. Residual check

Answer/Explanation
The correct answer is a. The metering valve must be bypassed by pushing in or pulling out on the button depending on vehicle when pressure bleeding. The metering valve closes off the passage to the front brakes at low pressures and does not allow brake fluid to pass during bleeding. The metering valve allows normal brake fluid flow above 70 to 300 psi to allow for normal braking after the rear brakes have applied. Answer b is not correct because the proportioning valve limits the pressure to the rear brakes. Answer c is not

correct because the pressure differential is used to turn on the red brake warning lamp if there is a hydraulic failure. Answer d is not correct because the residual check valve is used to keep a slight amount of pressure applied to the drum brakes to help keep the sealing cups from collapsing inward when the brake pedal is released.
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Tech Tip

Don't fill the master cylinder without seeing me!

The boss explained to the beginning technician that there are two reasons why the customer should be told not to fill the master cylinder reservoir when the brake fluid is down to the "minimum" mark.
1. If the master cylinder reservoir is low, there may be a leak that should be repaired.
2. As the brakes wear, the disc brake piston moves outward to maintain the same distance between friction materials and the rotor. Therefore, as the disc brake pads wear, the brake fluid level goes down to compensate.
Therefore, if the brake fluid is low, the vehicle should be serviced-either for new brakes or to repair a leak.

Straight Talk

From the January 30, Wheels section of Dayton Daily News

The case of the hot brakes

Wheels: Randy C. of Dayton writes via e-mail: "Hi Jim,
I was hoping you could give me some advice. I have owned my 1987 Corvette for about 10 years it has 140,000 miles on the odometer. I bought it from a friend who purchased it new so I know a little about the history of the car. It has been well maintain with a repaint and new interior, the engine and automatic transmission are original, it has good brake lining (70%) and rotors, which all have been replaced. It is a second car just to drive for fun in nice weather. The last couple of summers when driving on a hot day say 80 or 90 degrees, usually around 35 or 40 mph the left front brake will apply and lock, you can feel the car beginning to pull to the left. I stop the car and when I get out to inspect it, you can feel the heat coming from the left front brake rotor with a little smoke. I get back in the car and the brake pedal goes to the floor and the brake has released, I do have minimal braking, enough to limp home but it is not very safe. If I let the car sit the next day the brakes are working fine. There are no ABS or brake lights coming on, so if I take to the shop I do not think they will find anything wrong. This has happened 3 or 4 times in the last couple of summers. Do you think I should put a new brake caliper or wheel sensor on the left front wheel? I don't want to replace parts that do not need it. Always enjoy reading your car advice."

Halderman: The most likely cause of your brake problem is due to a stuck caliper on the left front and/or a defective flexible brake line on the left front. Either of these can cause the brakes on the left front to remain slightly applied and cause heat to be generated. The heat from the stuck brake then can cause the brake fluid to boil. When the brake fluid boils, this causes an almost total loss of braking power. I suggest that the car be taken to a professional service technician who can check the caliper and the brake fluid. It is difficult at times to spot a defective brake hose because the inner

liner can collapse causing the brake fluid to be trapped in the caliper and not returned to the master cylinder. Because the car is about 18 years old, the service technician may recommend that the brake system be restored with new brake calipers and flexible brake lines, and then replacement of the brake fluid.

Have an automotive question? Please write to Jim with your questions at jim@jameshalderman.com

Trivia question answer: D.

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.