



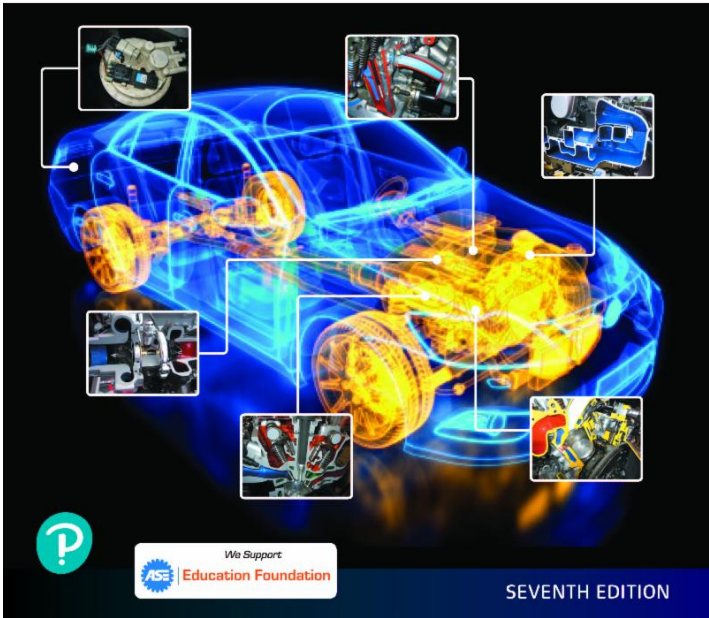
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What's new with Jim?

Advanced Engine Performance Diagnosis

JAMES D. HALDERMAN CURT WARD



I am pleased to announce that Curt Ward from Joliet Junior College has joined me to update the latest edition of Advanced Engine Performance Diagnosis. This new edition (2020 copyright) will be available soon and can be ordered for next fall classes. The following changes and updates have been made to the new seventh edition based on requests from instructors and reviewers from throughout North America:

- The chapters have been rewritten to be more concise.
- Over 75 new full color line drawings and photos have been added to the new edition to help bring the subject to life.
- Case studies have been added to many chapters that include the "three Cs" (Complaint, Cause, and Correction)
- Updated throughout and correlated to the latest ASE/ tasks.

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Where's Jim?

Jim will be attending press preview days at the Chicago Auto Show, February 7-8, 2019

Attending Vision Hi-Tech Training and Expo in Overland Park, KS February 27-March 3, 2019

Keep up with me at:
www.jameshalderman.com
 Email Jim
 Facebook

Puzzle of the month

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

HALDERMAN ABS Diagnosis And Service
 Chapter 18

ACROSS

- When installing new WSS, look for a piece of _____ on the tip and of the unit.
- The _____ usually comes on after an engine start during the initialization or start up self-test sequence.
- A bent axle or hub will produce a wobble pattern that _____ the strength of the sensor signal changes with each revolution.
- Do not pry against or hit the wheel speed sensor.
- Test a digital WSS by first checking that _____ is enabled in the sensor with the key on, engine off.
- A _____ warns of a possible dangerous failure in the brake lines, such as low brake fluid level or too pressure in half of the hydraulic system.
- Avoid trapping lines of different _____ than that of the original lines.

DOWN

- Avoid inserting the _____ for a transmitting device near the ABS control unit.
- _____ are required by all dealers that sell and service the brand of vehicle.
- Never open a _____ or wire the ABS to prevent it.
- A _____ cable connects to the ABS harness near the ABS module.
- A good WSS should produce an AC signal that increases in frequency and amplitude with increasing wheel speed.
- A reading of about 1,000 ohms would indicate proper _____ resistance.
- The ABS amber warning light may be _____ by the brake fluid level switch.
- Score ABS applications use _____ wheel speed sensors.

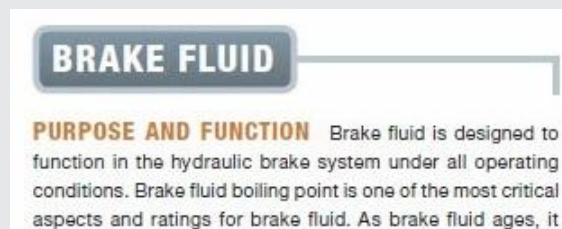
- A new chapter title Oscilloscopes and DSOs (Chapter 4) has been greatly enhanced.
- The chapter Valve and Variable Valve Timing Diagnosis (Chapter 7) has been rewritten and updated to include Fiat-Chrysler Multiair systems and additional diagnostic procedures.
- Chapter 20, Fuel Trim Diagnosis, has been expanded and enhanced.
- The new Tier 3 emission standards have been added to Chapter 26 (Vehicle Emissions Standards and Testing).
- Module Programming (Chapter 28) has been added to the new edition.

Behind the Scenes

A new feature each month will highlight what is done "behind the scenes" during the development and creation of a textbook. To help create a consistent and thorough format for each topic, the following six elements are used, usually divided into three major headings:

- Purpose and Function
- Parts and Operation
- Diagnosis and Service

When selecting a textbook for use in classes, please check to see if there is a clearly defined organization. Having a consistent and clearly marked text makes it easier to teach for the instructor and easier for the beginning technician to learn.



Auto Trivia

Chrysler (Chrysler, Dodge, Plymouth) used a push button shifter from 1956 to the mid 1960s. What other company used a push button shifter?

- Edsel
- Packard
- Mercury
- Studebaker

Answer at the bottom of this page!

FAQ

Why Are Some Brake Pads Slotted and Others Not?

Brake pads are designed by the vehicle manufacturer for each specific application. Some are tapered at the ends and others are slotted, and many are tapered and slotted. According to brake design engineers, these features are designed to help reduce brake noise. By changing the size of the pad area or by breaking it up into sections by slotting, the frequency of the sound generated during braking changes. For best results, use a replacement brake pad that has the same design features as the original brake pads.

Sample ASE certification-type question

Question:

Which of the following conditions can cause the red brake warning lamp to light?

- Low brake fluid level in the master cylinder reservoir
- Parking brake applied
- A leak in either the front or rear brake line
- Any of the above

Answer/explanation:

The correct answer is d. All of the items listed in answers a, b, and c can turn on the red brake warning lamp. The warning lamp can be turned on by the input from the brake fluid reservoir level sensor. The parking brake lever switch can also turn on the red brake warning lamp. If there is unequal brake fluid pressure between the two sections of the system, the pressure differential switch will turn on the red

brake warning lamp. Answers a, b, and c are not correct because all of the items are correct making d the best answer.

Tech Tip

"B" Means Braking

All Toyota hybrid vehicles have a position on the gear selector marked "B." This position is to be used when descending steep grades and the regenerative braking is optimized. This position allows the safe and controlled descent without having the driver use the base brakes. Having to use the base brakes only wastes energy that could be captured and returned to the batteries. It can also cause the brakes to overheat.



Straight Talk

From the January 26 Wheels section of Dayton Daily News

Reader Has Questions about Tire Size

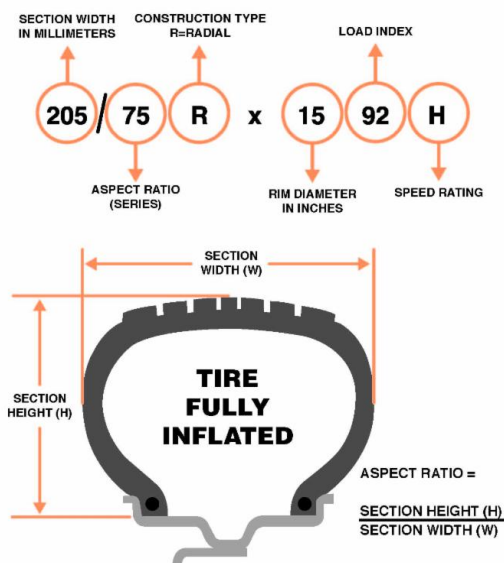
Bob S. writes by email:

"I am hoping you could clarify a couple things for me. I have a 245/ 45 tire on my car on which I am taking measurements. At 245, its tread width should be 9.6". I measure 8.5". Using the 245 to calculate the sidewall height, it should be 110 mm or 4.3" tall. Mine measures 3.5". I assume this measurement is taken from the ground surface to the outside edge of the rim. The numbers don't seem to match. Are the measurements made for a tire not installed and inflated? Any explanation for the discrepancy?"

Halderman:

The width of the tire is not the width of the tread but instead is the "cross-sectional" width so this is why I think your measurements are not aligned to the size. The section width (245) is the maximum width of the tire (widest part of the sidewall) of the tire mounted on the nominal wheel width (as specified by the Tire and Rim Association) and inflated. The section height (45) is 45% of the section width. This includes the bead area which is below the wheel lip and is not visible/measurable when the tire is mounted. A 17" wheel is 17". Diameter is measured where the tire bead sits, not the visible diameter of the wheel with a tire mounted.

Also, please note that tire size can vary by tire manufacturer. In fact, one "green tire" as an uncured tire is called, can be made in many different sizes of tires, depending on which mold is used. In other words, while it appears to be very detailed as to the width and height that the tire should be, it is far from true for many tires. That is why we always recommend that the same size and brand of tire be used on the vehicle, especially all-wheel and four-wheel- drive vehicles.



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

Trivia question answer: A.

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.