Automotive Technology 6th Edition
Chapter 96 Braking System Components & Performance Standards
Opening Your Class

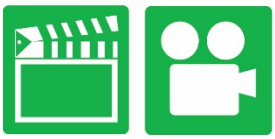
KEY ELEMENT	EXAMPLES
Introduce Content	This Automotive Technology 6th text provides complete coverage of automotive components, operation, design, and troubleshooting. It correlates material to task lists specified by ASE and ASEEducation (NATEF) and emphasizes a problem-solving approach. Chapter features include Tech Tips, Frequently Asked Questions, Case Studies, Videos, Animations, and ASEEducation (NATEF) Task Sheets.
Motivate Learners	Explain how the knowledge of how something works translates into the ability to use that knowledge to figure why the engine does not work correctly and how this saves diagnosis time, which translates into more money.
State the learning objectives for the chapter or course you are about to cover and explain this is what they should be able to do as a result of attending this session or class.	Explain learning objectives to students as listed below: 1. Describe the fundamentals of brake systems. 2. Describe brake design requirements. 3. List the six brake system categories. 4. State the purpose of an antilock brake system. 5. Discuss federal brake standards and legal aspects of brake repair. 6. This chapter will help prepare for the Brakes (A5) ASE certification test.
Establish the Mood or Climate	Provide a ***WELCOME,*** Avoid put downs and bad jokes.
Complete Essentials	Restrooms, breaks, registration, tests, etc.
Clarify and Establish Knowledge Base	Do a round robin of the class by going around the room and having each student give their backgrounds, years of experience, family, hobbies, career goals, or anything they want to share.

NOTE: Lesson plan is based on 6th Edition Chapter Images found on Jim's web site @ www.jameshalderman.com

DOWNLOAD Chapter 96 Chapter Images: From

http://www.jameshalderman.com/automotive_principles.html

NOTE: You can use Chapter Images or possibly Power Point files:

ICONS	CH96 Brake Components
	**1. SLIDE 1 CH9 BRAKING SYS COMP & PERFORMANCE STANDARDS** **2. SLIDE 2 EXPLAIN Figure 96-1** Typical vehicle brake system showing all typical components. **3. SLIDE 3 EXPLAIN Figure 96-2** drum brake assembly **4. SLIDE 4 EXPLAIN Figure 96-3** disc brake assembly
	**Check for ADDITIONAL VIDEOS & ANIMATIONS @ http://www.jameshalderman.com/** **WEB SITE IS CONSTANTLY UPDATED** **http://www.jameshalderman.com/automotive_principles.html** **DOWNLOAD** **Crossword Puzzle (Microsoft Word) (PDF)** **Word Search Puzzle (Microsoft Word) (PDF**
	**Videos**
	**DISCUSSION: Ask students to talk about how braking systems work to reduce speed and to stop vehicles. Have students describe the hydraulic system that activates the brakes on each wheel.**
	**DEMONSTRATION: Show students an example of a drum brake and discuss how it works. Why have these been superseded by disc brakes on the front wheels of most vehicles today?**
	**DISCUSSION: Ask students to discuss all the basic components that make up a vehicle braking system.**
	**DEMONSTRATION: Show students an example of a disc brake and discuss how it works. Ask students to compare the servicing issues for drum and disc brakes.**
	**DISCUSSION: Ask students to discuss how all types of vehicle braking systems must be designed to stop vehicles safely.**
	**5. SLIDE 5 EXPLAIN Figure 96-4** Typical brake system components.

ICONS	CH96 Brake Components
	**DISCUSSION:** **Ask students to talk about 6 subsystem categories of brake-system components. How does each system work, what components make up each subsystem, and what is its function as part of the entire braking system?**
	**6. SLIDE 6 EXPLAIN Figure 96-5** red brake warning light will remain on after a bulb test if there is a fault with the hydraulic part of the brake system.
	**DISCUSSION:** **Have students talk about the difference between a red light on the dash as compared to an amber light**
	**DEMONSTRATION:** **On a lab vehicle demo the bulb check showing the 2 lights**
	**7. SLIDE 7 EXPLAIN FIGURE 96–6** ABS warning light is amber.
	**DISCUSS FREQUENTLY ASKED QUESTION:** ***How Do Adjustable Pedals Work?*** **Adjustable pedals, also called electric adjustable pedals (EAP), place the brake pedal and accelerator pedal on movable brackets that are motor operated. A typical adjustable pedal system includes the following components:** • **Adjustable pedal position switch, which allows driver to position the pedals.** • **Adjustable pedal assembly, which includes the motor, threaded adjustment rods, and a pedal position sensor.** • **SEE FIGURE 96–7.** **The position of the pedals, as well as position of seat system, is usually included as part of memory seat function and can be set for two or more drivers.**
	**8. SLIDE 8 EXPLAIN FIGURE 96–7** A typical adjustable pedal assembly. Both the accelerator and the brake pedal

ICONS	CH96 Brake Components
    	can be moved forward and rearward by using the adjustable pedal position switch. 9. **SLIDE 9 EXPLAIN FIGURE 96–8** Typical components of an antilock brake system (ABS) used on a rear wheel-drive vehicle. 10. **SLIDE 10 EXPLAIN FIGURE 96–9** A typical Service Parts Identification (RPO) sticker is located on the inside of the trunk lid of a GM vehicle. **DISCUSS FREQUENTLY ASKED QUESTION:** ***What Is a GM RPO Code? See Figure 96-9*** **DEMONSTRATION: Show students components of antilock braking system (ABS) and discuss how they work to prevent brakes from locking during a skid. What is indicated by brake-pedal pulsations exhibited by some ABS systems?** **DISCUSSION: Ask students to discuss how the Federal Motor Vehicle Safety Standards (FMVSS) established regulations for automotive braking systems. Why are such safety standards important and necessary?** **DISCUSSION: Ask students to discuss FMVSS 135 standard for brake system safety and performance requirements. What parts of the braking system fall under the FMVSS 135 regulations?** **DISCUSSION: Ask students to discuss the issue of technician liability for damage and injuries resulting from badly performed repairs to critical systems such as brakes and steering controls. What is the goal of all repairs?**