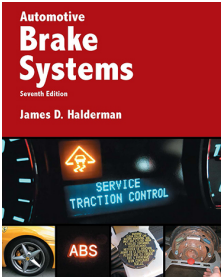


Automotive Brake Systems



CHAPTER 01

Service Information,
Tools, and Safety

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved PEARSON

OBJECTIVES

- Locate and interpret vehicle and part identification numbers and labels.
- Locate vehicle service information from a variety of sources.
- Identify the strength and grades of various threaded fasteners.
- Identify the various kinds of hand tools and their uses.

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved PEARSON

OBJECTIVES

- Identify the various kinds of automotive tools and their uses.
- Describe personal protective equipment and safety precautions to be used when working on automobiles.

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved PEARSON

VEHICLE IDENTIFICATION

- Make, Model, And Year
- Vehicle Identification Number
 - VIN
- Vehicle Safety Certification Label
- VECI Label
- Calibration Codes
- Casting Numbers

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved PEARSON

SERVICE INFORMATION

- Included in most service manuals are the following:
 - Capacities and recommended specifications for all fluids
 - Specifications including engine and routine maintenance items
 - Testing procedures
 - Service procedures including the use of special tools when needed

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved PEARSON

SERVICE INFORMATION

- Electronic service information is available mostly by subscription
 - Provides access to an Internet site where service manual-type information is available.
- Technical service bulletins, often abbreviated TSB, sometimes called technical service information bulletins (TSIB)

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved PEARSON

SERVICE INFORMATION

- Issued by the vehicle manufacturer to notify service technicians of a problem and include the necessary corrective action.
- The Internet has opened the field for information exchange and access to technical advice.
- One of the most useful websites is the International Automotive Technician's Network at www.iatn.net.

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

SERVICE INFORMATION

- A recall or campaign is issued by a vehicle manufacturer and a notice is sent to all owners in the event of a safety-related fault or concern.
- While these faults may be repaired by shops, it is generally handled by a local dealer.

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

THREADED FASTENERS

- Bolts and threads
- Fractional bolts
- Metric bolts
- Grades of bolts
- Tensile Strength of Fasteners
- Nuts
- Washers

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

HAND TOOLS

- Wrenches are used to grasp and rotate threaded fasteners
- A socket fits over the fastener and grips the points and/or flats of the bolt or nut
- A ratchet turns the socket in only one direction and allows the rotating of the ratchet handle back and forth in a narrow space

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

HAND TOOLS

- Torque wrenches are socket turning handles that apply a known amount of force to the fastener
- Always use the proper type and size screwdriver that matches the fastener
- Hammers and Mallets: used to force objects together or apart

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

HAND TOOLS

- A pliers is capable of holding, twisting, bending, and cutting objects and is an extremely useful classification of tools
- Files are used to smooth metal and are constructed of hardened steel with diagonal rows of teeth
- Snips: cutters used for a variety of material to fabricate sheet metal brackets or heat shields

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

HAND TOOLS

- Utility Knife: used to cut a variety of materials such as carpet, plastic, wood, and paper products, such as cardboard
- Punches: used to drive a pin out that is used to retain two components
- Chisels: used for cutting off rivets or to separate two pieces of an assembly

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

HAND TOOLS

- Hacksaws: used to cut metals, such as steel, aluminum, brass, or copper
 - Move the hacksaw slowly away from you, then lift slightly and return for another cut

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

ELECTRICAL WORK HAND TOOLS

- A test light is used to test for electricity
- Electric Soldering Guns
 - Usually powered by 110 volt AC and often has two power settings expressed in watts
- Electrical Work Hand Tools
- A digital meter is a necessary tool for electrical diagnosis and troubleshooting.

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

HAND TOOL MAINTENANCE

- Clean each tool before placing it back into the tool box.
- Keep tools separated.
- Line the drawers of the tool box with a material that will prevent the tools from moving with drawers opening.
- Release the tension on all "clicker-type" torque wrenches.
- Keep the tool box secure.

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved PEARSON

TROUBLE LIGHTS

- Incandescent
- Fluorescent
- LED Trouble Light

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved PEARSON

AIR AND ELECTRICALLY OPERATED TOOLS

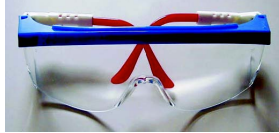
- Impact Wrench
- Air Ratchet
- Die Grinder
- Bench-mounted Or Pedestal-mounted Grinder

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved PEARSON

PROTECTIVE EQUIPMENT AND VEHICLE PROTECTION

- Safety Glasses
- Steel-toed Safety Shoes
- Bump Cap
- Hearing Protection
- Gloves
- Fender Covers
- Interior Protection

FIGURE 1-61 Safety glasses should be worn at all times when working on or around any vehicle or servicing any components.



ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

HOISTING A VEHICLE

- Center vehicle on the lift or hoist.
- The pads of the lift should be spread as far apart as possible to provide a stable platform.
- Each pad should be placed under a portion of the vehicle that is strong and capable of supporting the weight of the vehicle.

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

FLOOR JACKS

- Description
 - Floor jacks are used to lift one side or end of a vehicle. They are portable and relatively inexpensive and must be used with safety (jack) stands.
- Operating Principles
- Safe Use of a Floor Jack
 - Drive-on ramps

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

OTHER SAFETY

- Electrical Cord Safety
- Jump Starting and Battery Safety
- Fire Extinguishers
- Fire Blankets
- First Aid and Eye Wash Stations
- Hybrid Electric Vehicle Safety Issues

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

SUMMARY

- Whenever a vehicle is raised above the ground, it must be supported at a substantial section of the body or frame
- Wrenches: open end, box end, and combination open and box end
- Sockets are rotated by a ratchet or breaker bar, also called a flex handle

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

SUMMARY

- Sockets are rotated by a ratchet or breaker bar, also called a flex handle
- Hybrid electric vehicles should be de-powered if any of the high-voltage components are going to be serviced
- Screwdriver types include straight blade, Phillips, and Torx
- Hammers and mallets come in a variety of sizes and weights

ALWAYS LEARNING Automotive Brake Systems, 7e James D. Halderman Copyright © 2017 by Pearson Education, Inc. All Rights Reserved. PEARSON

SUMMARY

- Pliers are a useful tool and are available in many different types
- Torque wrenches measure the amount of torque applied to a fastener
- Other common hand tools include snapping pliers, files, cutters, punches, chisels, and hacksaws
