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PREFACE

PROFESSIONAL TECHNICIAN SERIES  Part of Pearson Automotive's Series, the eighth edition of Automotive Steering, Suspension, and Alignment represents the future of automotive textbooks. The series is a full-color, media-integrated solution for today's students and instructors. The series includes textbooks that cover all eight areas of ASE certification, plus additional titles covering common courses.

The series is also peer reviewed for technical accuracy.

NEW THIS EDITION  Based on the suggestions and recommendations from automotive instructors and reviewers, the following changes have been made to the eighth edition:

- The number of chapters have been increased from 20 to 21 to help meet the latest ASE tasks. The new chapter is Chapter 3 – Service Information, Work Orders and Vehicle Identification.
- Over 40 new full-color photos and line drawings to make the subject come alive.
- Updated throughout and correlated to the latest ASE A4 tasks.
- New Case Studies included in this edition covering the “three Cs” (Complaint, Cause, and Correction).
- New OSHA hazardous chemical labeling requirements added to Chapter 2.
- Additional content on snap-in and clamp-on TPMS sensors, plus updated relearn procedures, in chapter 5.

ASE CORRELATED  This comprehensive textbook is divided into sections that correspond to the A4 area of certifications as specified by the National Institute for Automotive Service Excellence (ASE). The areas of the ASE material certification test are listed in the objectives at the beginning of each chapter, and all laboratory worksheets are correlated to the ASE Task Sheets.

A COMPLETE INSTRUCTOR AND STUDENT SUPPLEMENTS PACKAGE  All Professional Technician textbooks are accompanied by a full set of instructor and student supplements. Please see page xii for a detailed list of supplements.

A FOCUS ON DIAGNOSIS AND PROBLEM SOLVING  The Professional Technician Series has been developed to satisfy the need for a greater emphasis on problem diagnosis. Automotive instructors and service managers agree that students and beginning technicians need more training in diagnostic procedures and skill development. To meet this need and demonstrate how real-world problems are solved, “Case Study” features are included throughout and highlight how real-life problems are diagnosed and repaired.

The following pages highlight the unique core features that set the Pearson Automotive Series book apart from other automotive textbooks.
LEARNING OBJECTIVES AND KEY TERMS appear at the beginning of each chapter to help students and instructors focus on the most important material in each chapter. The chapter objectives are based on specific ASE and NATEF tasks.

TECH TIP

It Just Takes a Second
Whenever removing any automotive component, it is wise to screw the bolts back into the holes a couple of threads by hand. This ensures that the right bolt will be used in its original location when the component or part is put back on the vehicle.

Shop Cloth Disposal
Always dispose of oily shop cloths in an enclosed container to prevent a fire. ⚠️ SEE FIGURE 2–63. Whenever oily cloths are thrown together on the floor or workbench, a chemical reaction can occur, which can ignite the cloth even without an open flame. This process of ignition without an open flame is called spontaneous combustion.

CASE STUDY

The Rattle Story
A customer complained that a rattle was heard every time the vehicle hit a bump. The noise sounded as if it came from the rear. All parts of the exhaust system and suspension system were checked. Everything seemed okay until the vehicle was raised with a frame-type hoist instead of a drive-on type. Then, whenever the right rear wheel was lifted, the noise occurred. The problem was a worn (elongated) shock absorber mounting hole. A washer with the proper-size hole was welded over the worn lower frame mount and the shock absorber was bolted back into place.

Summary:
- **Complaint**—Vehicle owner complained of a rattle sound from the rear suspension at times.
- **Cause**—The lower shock mount was found to be worn (elongated) causing the noise.
- **Correction**—A steel washer was welded over the worn lower frame mount which restored the shock mount to the correct size and solved the noise issue.

CASE STUDIES present students with actual automotive scenarios and shows how these common (and sometimes uncommon) problems were diagnosed and repaired.
FREQUENTLY ASKED QUESTIONS are based on the author’s own experience and provide answers to many of the most common questions asked by students and beginning service technicians.

NOTE: Most of these “locking nuts” are grouped together and are commonly referred to as prevailing torque nuts. This means that the nut will hold its tightness or torque and not loosen with movement or vibration.

NOTES provide students with additional technical information to give them a greater understanding of a specific task or procedure.

CAUTION: Never use hardware store (nongraded) bolts, studs, or nuts on any vehicle steering, suspension, or brake component. Always use the exact size and grade of hardware that is specified and used by the vehicle manufacturer.

CAUTIONS alert students about potential damage to the vehicle that can occur during a specific task or service procedure.
The first step in hoisting a vehicle is to properly align the vehicle in the center of the stall. The arms can be moved in and out and most pads can be rotated to allow for many different types of vehicle construction. Tall pad extensions can also be used to gain access to the frame of a vehicle. This position is needed to safely hoist many pickup trucks, vans, and sport utility vehicles. Most lifts are equipped with short pad extensions that are often necessary to use to allow the pad to contact the frame of a vehicle without causing the arm of the lift to hit and damage parts of the body. An additional extension may be necessary to hoist a truck or van equipped with running boards to give the necessary clearance. Position the pads under the vehicle under the recommended locations. After being sure all pads are correctly positioned, use the electromechanical controls to raise the vehicle. With the vehicle raised 1 foot (30 cm) off the ground, push down on the vehicle to check to see if it is stable on the pads. If the vehicle rocks, lower the vehicle and reset the pads. The vehicle can be raised to any desired working level. Be sure the safety is engaged before working on or under the vehicle. If raising a vehicle without a frame, place the flat pads under the pinch weld seam to spread the load. If additional clearance is necessary, the pads can be raised as shown. When the service work is completed, the hoist should be raised slightly and the safety released before using the hydraulic lever to lower the vehicle. After lowering the vehicle, be sure all arms of the lift are moved out of the way before driving the vehicle out of the work stall. Most vehicles will be correctly positioned when the left front tire is centered on the tire pad.

### RESOURCES IN PRINT AND ONLINE

**Automotive Steering, Suspension, and Alignment**

<table>
<thead>
<tr>
<th>NAME OF SUPPLEMENT</th>
<th>PRINT</th>
<th>ONLINE</th>
<th>AUDIENCE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor Resource Manual</td>
<td>✔</td>
<td>Instructors</td>
<td>NEW! The ultimate teaching aid: chapter summaries, key terms, chapter learning objectives, and lecture resources</td>
<td></td>
</tr>
<tr>
<td>TestGen</td>
<td>✔</td>
<td>Instructors</td>
<td>Test generation software and test bank for the text.</td>
<td></td>
</tr>
<tr>
<td>PowerPoint Presentation</td>
<td>✔</td>
<td>Instructors</td>
<td>Slides include chapter learning objectives, lecture outline of the text, and graphics from the book.</td>
<td></td>
</tr>
<tr>
<td>Image Bank</td>
<td>✔</td>
<td>Instructors</td>
<td>All of the images and graphs from the textbook to create customized lecture slides.</td>
<td></td>
</tr>
<tr>
<td>ASE Correlated Task Sheets – for Instructors</td>
<td>✔</td>
<td>Instructors</td>
<td>Downloadable ASE task sheets for easy customization and development of unique task sheets.</td>
<td></td>
</tr>
<tr>
<td>ASE Correlated Task Sheets – For Students</td>
<td>✔</td>
<td>Students</td>
<td>Study activity manual that correlates ASE Automobile Standards to chapters and page numbers in the text. Available to students at a discounted price when packaged with the text.</td>
<td></td>
</tr>
<tr>
<td>VitalSource eBook</td>
<td>✔</td>
<td>Students</td>
<td>An alternative to purchasing the print textbook, students can save up to 50% off the suggested list price of the print text. Visit <a href="http://www.vitalsource.com">www.vitalsource.com</a></td>
<td></td>
</tr>
</tbody>
</table>

All online resources can be downloaded from the Instructor’s Resource Center: www.pearsonhighered.com

Search for your specific title there and select the Resources.
ACKNOWLEDGMENTS

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—James D. Halderman
JIM HALDERMAN brings a world of experience, knowledge, and talent to his work. His automotive service experience includes working as a flat-rate technician, a business owner, and a professor of automotive technology at a leading U.S. community college for more than 20 years.

He has a Bachelor of Science Degree from Ohio Northern University and a Master’s Degree in Education from Miami University in Oxford, Ohio. Jim also holds a U.S. Patent for an electronic transmission control device. He is an ASE-certified Master Automotive Technician and Advanced Engine Performance (L1) ASE-certified.

Jim is the author of many automotive textbooks all published by Pearson Education.

Jim has presented numerous technical seminars to national audiences including the California Automotive Teachers (CAT) and the Illinois College Automotive Instructor Association (ICAIA). He is also a member and presenter at the North American Council of Automotive Teachers (NACAT). Jim was also named Regional Teacher of the Year by General Motors Corporation and a member of the advisory board for Technological Studies department at Ohio Northern University.

Jim and his wife, Michelle, live in Dayton, Ohio. They have two children. You can reach Jim at jim@jameshalderman.com