AUTOMOTIVE TECHNOLOGY
Principles, Diagnosis, and Service
SIXTH EDITION

James D. Halderman
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NEW TO THIS EDITION. Based on the suggestions and recommendations from automotive instructors and reviewers, the following changes have been made to the sixth edition:

- The number of chapters have been increased from 130 to 136 making it easier to select the exact content to study or teach.
  - The new chapters include:
    - Chapter 58 - Safety, Comfort, and Convenience Accessories
    - Chapter 59 - Security and Immobilizer Systems
    - Chapter 61 - Autonomous Vehicles - Operation and Service Procedures
    - Chapter 64 - Air Management System
  - Two new chapters were added under the hybrid vehicle section titled Hybrid High-Voltage Batteries (Chapter 92) and Electric and Plug-in Hybrid Electric Vehicles (Chapter 93).
  - The chapter on power steering was expanded and then split into two chapters: Hydraulic Power Steering Systems (Chapter 122) and Electric Power Steering Systems (Chapter 123).
  - A new chapter titled Vibration and Noise Diagnosis and Correction (Chapter 132) was added in response to instructor requests.
  - Over 200 new full-color photos and line drawings to make the subject come alive.
  - Updated throughout and correlated to the latest ASE 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 7.
  - New content on three-legged and low-profile fuses, plus smart junction boxes, added to Chapter 44.
  - The chapter on brake principles (Chapter 97) has been expanded to include the details on brake friction materials, which are now in one location, instead of being repeated in the drum and disc brake chapters.
  - Qualifying brake lathe information added to Chapter 108.
  - Additional content on snap-in and clamp-on TPMS sensors, plus updated relearn procedures, in Chapter 114.
  - Additional content on various wheel-weight material, plus wheel-flange information, added to the totally updated Chapter 115.
  - Many new review and chapter quiz questions align to the new and updated content in each chapter.

ASE CORRELATED This comprehensive textbook is divided into sections that correspond to the eight areas of certifications as specified by the National Institute for Automotive Service Excellence (ASE). All laboratory worksheets are correlated to the ASE Task Sheets.

A COMPLETE INSTRUCTOR AND STUDENT SUPPLEMENT PACKAGE Please see page xi for a detailed list of supplements.

A FOCUS ON DIAGNOSIS AND PROBLEM SOLVING The primary focus of this textbook is to satisfy the need for problem diagnosis. Time and again, the author has heard that technicians need more training in diagnostic procedures and skill development. To meet this need and to help illustrate how real problems are solved, diagnostic stories are included throughout. Each new topic covers the parts involved, as well as their purpose, function, and operation, and how to test and diagnose each system.

The following pages highlight the unique core features that set this 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 tasks.
CAUTIONS: 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.

WARNING  Do not use incandescent trouble lights around gasoline or other flammable liquids. The liquids can cause the bulb to break and the hot filament can ignite the flammable liquid, which can cause personal injury, or even death.

WARNINGS  alert students to potential dangers to themselves during a specific task or service procedure.

STEP-BY-STEP  photo sequences show in detail the steps involved in performing a specific task or service procedure.

THE REVIEW QUESTIONS AND CHAPTER QUIZ  at the end of each chapter help students review the material presented in the chapter and test themselves to see how much they’ve learned.
REVEL AUTOMOTIVE TECHNOLOGY, 6E

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Automotive Technology, Sixth Edition is also available via Revel™, an interactive learning environment that enables students to read, practice, and study in one continuous experience. Learn more at https://www.pearsonhighered.com/revel/index.html

Revel is an interactive learning environment that engages students and helps them prepare for your class. It is a completely digital environment that replaces the textbook and other digital resources to give students a continuous, interactive experience. By integrating videos, interactives, and other assessments throughout the narrative students can read, explore, and practice in one place.

Revel’s interactive features boost student engagement, leading to a better understanding of course material and preparing them for success in their future careers. Students can access Revel whenever and wherever they need to on any computer, tablet, or smartphone.

With Revel Automotive Technology 6E, students will be engaged in the content by reading and doing. Videos with questions, case studies, interactive activities, flashcards, and end of chapter quizzes engage students and enhance their understanding of core topics as they progress through the content. Instructors can also assign ASE Task Sheets for students to complete while they are in the shop and then submit through Revel for grading.

- **Step-by-Step Photo Sequences** show in detail the steps involved in performing a specific task or service procedure
- **Task Sheets for each ASE Objective** are included with the applicable chapter and are submitted digitally for instructor grading!
- **Videos** demonstrate or expand on key ASE procedures and concepts. Each video includes Check Your Understanding questions to ensure students understand the material.
- **Interactive activities** allow students to check their understanding through parts identification, labeling, matching, and other engaging activities.
- **Case Studies** provide a real world scenario to challenge students to think critically about and determine the Complaint, Cause, and Correction
- **Flashcards** review chapter key terms to ensure students know the important terminology before moving ahead.
- **End of Chapter Quiz** provide an assessment of chapter objectives to ensure students are mastering the content.
- **Notes and Highlighting** allow you and your students to easily take notes and mark what is important for easy review later.

**PERFORMANCE DASHBOARD** Revel includes a Performance Dashboard that enables you to view assignment completion, time on task, answers to short- answer assignments, how the class is trending, and student performance by learning outcome. This view allows you to view average performance for your class. You can view average time on task for each chapter section and quiz, as well as the scores for each quiz.

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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.
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