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**Portable Edition**

# **Auto Repair**

## **FOR DUMMIES®**

**Learn to:**

- Perform routine repairs and maintenance
- Troubleshoot problems and symptoms
- Save fuel and extend your car's life

**Deanna Sclar**





***Auto Repair***  
FOR  
**DUMMIES®**  
PORTABLE EDITION

**by Deanna Sclar**  
**John O'Dell, Technical Advisor**



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**Deanna Sclar** is also the internationally best-selling author of *Buying a Car For Dummies*, a money-saving guide to every aspect of car ownership, including buying, selling, financing, auto insurance and claims, and more. A former contributing editor to *Family Circle*, *Boys' Life*, *Exploring*, and the *Los Angeles Times*, her articles have appeared in *Redbook*, *New Woman*, and other national magazines.

As an automotive expert and consumer spokesperson, Deanna has appeared on more than 800 radio and TV shows, including her own segment on *NBC Nightly News with Tom Brokaw*; *Good Morning America* and *Today*; the Lifetime, CNN, and National Public Radio networks; and local shows in 30 major cities. Her *Auto Repair For Dummies* video was a National Home Video Awards finalist. She has co-hosted *Outrageous Women*, a weekly TV talk show, and has produced, written, hosted, and edited several documentaries. Her "Auto Repair for Dummies" course at California State University, Northridge, drew the largest crowds ever in their continuing education program.

A lifelong environmental activist, Deanna led the group that threw the first Earth Day celebration in New York City and convinced Mayor Lindsay to start the first urban recycling program. The former "Thumbs Sclar" has restored two classic cars, a truck, and three homes. An inveterate gypsy and blue-water sailor, she has crewed her way across the Pacific and Polynesia, sailed and dived Hawaii and the Great Barrier Reef, trekked alone for nine months through Southeast Asia and five months through Brazil, and crossed the Atlantic in a small sailboat with a companion and a cat.

"My goal is to prove that we have control over our lives," she says. "Whether you are working on a car or making a lifelong dream come true, it's a do-it-yourself world. Knowing this has turned my life into a great adventure, and I want to pass the good news on to everybody else!"

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# Introduction

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**F**or many people, getting a driver's license is an event that runs second only to getting a diploma or a marriage license. Most of us succeed in passing the test and hop happily into our vehicles, headed for the freedom of the open road. Unfortunately, most of us don't know the first thing about the machines we're licensed to drive — and this can turn a ticket to freedom into a ticket to trouble.

I'm not necessarily talking about physical danger. State motor vehicle bureaus have made fairly sure that, before we can get a driver's license, we know how to drive defensively and can handle a vehicle under poor driving conditions. What I'm referring to is the kind of trouble that comes from depending on other people to care for and repair our vehicles. If you're like most people, you probably tend to drive around until something goes wrong and then incur the expense of replacing worn and burned-out parts — or the entire vehicle! — when low-cost, regular maintenance could have kept your wheels turning for a long time.

Whether you're trying to cut expenses, are tired of being patronized, or have just fallen in love with your first car, this book tells you how your vehicle works, what it needs in the way of tender loving care, how to reduce its impact on the environment, and how to keep from getting ripped off if you have to entrust repairs to someone else. By handling the simple maintenance and being able to diagnose trouble and perform the less complex repairs yourself, you'll earn the respect of your family, your mechanic, and your car — and you'll feel pretty good about it!

## *How I Became Intimately Involved with My Car, and Why You Should Too*

Before I moved to California, I was an ordinary urban cliff dweller: I had only a nodding acquaintance with cars. Ours was locked up in a garage, and I used subways, buses, and taxis. All the maintenance on our car was done by the garage that housed it. When we moved to California, my enthusiasm for a life in the sun was considerably dampened by the knowledge that this would also include a life on the freeways, but the first time I took the family car to the supermarket myself I had an epiphany in the parking lot: I could drive anywhere I wanted to, instead of just being driven home. It wasn't long before I was looking for a car of my own.

The best I could do was a secondhand Mustang with more than 70,000 miles on it. A friend of mine checked out the car and pronounced it drivable. He said that it might need "a little work." We took it to a reliable mechanic, who checked it over, tuned it up, and told me that it was "a classic."

Thus reassured, I drove the car to the Department of Motor Vehicles to register it. I parked the car, turned off the ignition, locked it, and found that the car was singing! A bit puzzled, I rechecked the ignition and the radio, but everything was truly shut off. And still the car sang. By the time I returned, all was quiet. But that night, when I took the family out to dinner, old Tweety Bird began to sing again. After several weeks of expensive and unsuccessful repairs, I found out that all she had needed was an inexpensive radiator cap. To my amazement, the shop was unwilling to refund the money I'd spent on all the other stuff they'd tried! I realized that it would be impossible to communicate with Tweety properly if I didn't know anything about her, and the repair bills were going to send both of us down the drain.

So I conned a friend of mine into taking an auto shop class with me at a local adult-ed center. Instead of a bewildering

array of weird objects and miles of hoses that threatened to blow up if I turned a screw in the wrong direction, I soon found that a car was just a series of simple mechanisms linked together and that vehicles are very good about sending out signals telling you clearly what's wrong — if you know how to hear, see, smell, or feel them.

Before long, it was no longer enough to be able to communicate with a mechanic; I wanted to be the mechanic *myself* whenever possible. Not only did I save money, but Tweety began running better, and I found that not only was I saving money and fuel, I was having *fun!*

Today, vehicles are more complex because computers control many systems and even professional mechanics need specialized equipment to deal with them. The upside is that these vehicles usually need fewer repairs, and there are much greater intervals between basic maintenance tasks, most of which are still easily done yourself. The same goes for making a variety of minor repairs and adjustments.

Unlike professional mechanics, when *you* do the troubleshooting (that's CarSpeak for diagnosing a problem by analyzing the symptoms), you can try the cheaper solutions first. For example, if your engine has been overheating constantly, you check the radiator cap and the coolant level, look for leaks in the hoses, and check the thermostat *before* paying for a new water pump. If it's the cap, a hose, or the thermostat, you may be able to easily replace it yourself, and the money you'll save is well worth the effort. If it finally comes down to changing the water pump, you can ask the mechanic about installing a good rebuilt pump instead of an expensive new one.

With this book as your guide to how cars work, you may discover that your vehicle stops being a mystery and begins to be fun to hang around with. When you realize that a vehicle exhibits most of the symptoms of life — it's self-propelled, reacts to outside stimuli, consumes fuel and discharges wastes, and even manages to sing a little tune now and then — it's really hard not to respond to it as though it were another living thing.

## Conventions Used in This Book

The following conventions are used throughout the book:

- ✓ All web addresses appear in `monofont`.
- ✓ *Italics* are used to note technical terms that aren't defined in the glossary.
- ✓ **Bold** is used to highlight the action parts of numbered steps as well as key information in lists.

## Foolish Assumptions

In order to make this book as relevant, readable, and enjoyable as possible, I envision it as a friendly conversation with the kind of person I feel would want to read it. Here's my mental portrait of you, my reader:

- ✓ You're intelligent and may know a great deal about a lot of things (law, business, literature, medicine, and other nonautomotive subjects), but you need some help when it comes to cars.
- ✓ You're tired of living as a "closet dummy" who nods and smiles at the incomprehensible mutterings of your mechanic, only to end up shelling out money for repairs that you neither fully understand nor always need.
- ✓ You've decided that it simply isn't worth the extra money to have other people do things for you that you can do yourself.
- ✓ You're tired of other people assuming (especially if you're a teenager, a senior, or a woman) that you aren't capable of handling repairs yourself.
- ✓ You want to keep a good vehicle in good condition without paying dearly to have someone else do the simple maintenance, or you want to keep your old heap running just a little longer without spending a lot of money on it.
- ✓ You want to maintain your vehicle *without* devoting every weekend, weeknight, and spare lunch hour to poring

over the intricacies, details, and mysteries of the internal combustion engine.

- ✓ You've realized (I hope!) that a vehicle that runs inefficiently because it's poorly maintained or is running on fossil fuel pollutes the environment, and you want to do something to turn that around.

## *Icons Used in This Book*

To make this book easier to read and simpler to use, I include some icons that can help you find key ideas and information.



This icon points to suggestions or hints that can make a task easier, save you money, help you avoid hassles, and otherwise make your life easier.



Paragraphs marked by this icon point out events or circumstances that are dangerous or can end up costing you a lot of money.



Paragraphs marked with this icon help you save fuel, cut air pollution, recycle parts, and dispose of toxic substances safely.



This icon indicates information that you may have encountered elsewhere in the book and need to take into consideration and keep in mind.



This icon appears beside technical information that, although interesting (at least to me), you can skip without risking anything important.

## *Where to Go from Here*

You can use this book any way you want to. You can read it from cover to cover or jump from section to section as the mood strikes you. To find a general topic, head to the Table of Contents. If you're looking for more specific information, go to the Index.

## The 5<sup>th</sup> Wave

By Rich Tennant



"Did you have an appointment?"

## Chapter 1

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# Things Every Driver Should Know

---

### *In This Chapter*

- ▶ Knowing when to do it yourself
  - ▶ Getting under the hood
  - ▶ Taking things apart (and putting them back together again)
  - ▶ Jacking up a vehicle
  - ▶ Getting into your car when you lock yourself out
- 

**Y**ou don't have to be born with a wrench in your hand to know how to fix things — even things as seemingly complicated as a car. Of course, the simplest tasks can sometimes be the biggest hurdles to overcome. After all, if you can't even figure out how to open the hood, how can you check the oil or the coolant level? In this chapter, I give you the basics: simple jobs that you'll need to do again and again.

### *Before You Tackle Any Job*

It's wonderful to do things yourself. You spend less money, you get a sense of power knowing that you did it on your own, and you know that the job's been done right. With that in mind, let's get on to the very first thing you need to know in order to work on your vehicle.