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Of all the potential maintenance or repairs one might face, electrical problems are usually the most difficult and time consuming. This happens because unlike broken mechanical parts, one can't normally look at wires, switches or other electrical devices and see why they're not functioning correctly. Diagnosing electrical faults isn't an intuitive thing. In fact, many professional mechanics would rather run for cover than be assigned the task of diagnosing and repairing these problems, and lots of home mechanics have accidentally "let the smoke out of the wires" after installing an electrical accessory. As a young mechanic, I came to realize my own shortcomings in this area and sought out material to bring myself up to speed. Unfortunately, most books on the subject back then were intended as college or trade school texts and assumed a level of knowledge not possessed by most high school grads. Further, the math involved quickly convinced most novice readers that the subject was beyond their understanding. I wish this book had been available back then.

Tracy Martin is not an electrical engineer. He's a fellow who started out as a lab technician for a turbocharger manufacturer and was often faced with the need to repair prototype ignition and fuel injection systems – systems for which no official repair literature was available. So, one might say, he was dragged kicking and screaming into the world of electricity and electronics. Applying what he'd learned to his own vehicles progressed to teaching other technicians when electronics became common on cars and bikes. With that background, and because of his ability to make the complex simple, Tracy found himself in demand as an instructor with corporations such as Sun, Allen, Nissan, and Snap-on Tools. Now, home mechanics and professionals alike can benefit from Tracy's experience as he covers such subjects as tools, test procedures, batteries, ignition, fuel injection, and charging systems. He even shows the reader how to decipher faults without becoming hopelessly entangled in the maze of spaghetti known as wiring diagrams. They're easy to navigate – once one knows how. Speaking of knowing how, it's much easier to determine when a component isn't working correctly when one knows how that component is supposed to operate. Tracy takes care of that with discussions of ignition coils, points, starters, regulators, relays, etc.

Math? Don't sweat it. Mr. Martin uses only the most elementary math, and purely for the purpose of describing the relationship between voltage, resistance, and amperage – knowledge without which no mechanic, pro or not, has a prayer of actually diagnosing a fault by means other than trial and error. You say you don't even know what the terms voltage, resistance, and amperage mean? Then this book is for you. With plenty of clear diagrams and photos, Tracy brings the reader slowly and painlessly up to speed; each chapter builds on knowledge presented in the previous one. Those who already have a reasonably good understanding of electricity will enjoy the discussion of modern Electronic Engine Management Systems – the sensors involved, how they interact with the bike's computer, how they work, and the tools necessary to diagnose faults through waveform analysis.

Will this book make the reader an expert? No. What it will do is provide the reader the essentials necessary to gain diagnostic skill through understanding and practice. Practice doesn't make perfect, unless it's perfect practice. I recommend this book highly for both the home mechanic and professional technicians.