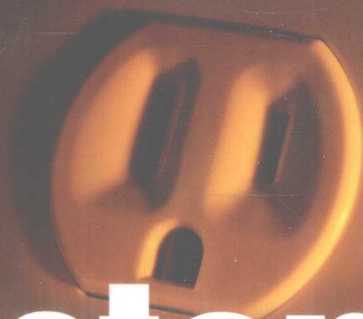


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David and Gary Tuck are a father and son team who have devoted their lives to the electrical trade. Both men are master electricians and operate a family-owned business in Fort Fairfield, Maine. Over the years, the Tuck team has done residential, light commercial, commercial, and industrial work. Their services have been in such high demand that they have traveled hundreds of miles to take on large projects. They are known for responding to the most basic requests from area homeowners. Having been in business for decades, the Tuck name is known to nearly everyone in their community. Their well rounded and deep rooted experience brings this book to life with years and years of hard earned, hands on knowledge.

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UNDERSTANDING CIRCUITS

Understanding circuits is a necessary part of an electrician's education. There are many types of circuits in use. Every type of circuit has its own job to do. Choosing the right circuit for a job is essential to a successful electrical installation. Are you familiar with all of the major types of circuits? If not, you will be more informed once you finish reading this chapter. The following circuits listed are the ones encountered most often. Keeping these circuits fresh in your mind can prove helpful in the field.

SERIES CIRCUIT

A series circuit is one where all devices on the circuit are connected one after another (Figure 1.1). Every device on this type of circuit receives the same amount of power. Streetlights are often wired on a series circuit.

PARALLEL CIRCUITS

Parallel circuits are sometimes called multiple circuits or shunt circuits. These circuits are similar to series circuits, but not exactly the same (Figure 1.2). Parallel circuits have all devices arranged so that

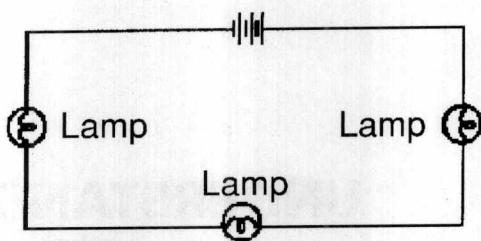


FIGURE 1.1 Diagram of a series circuit.

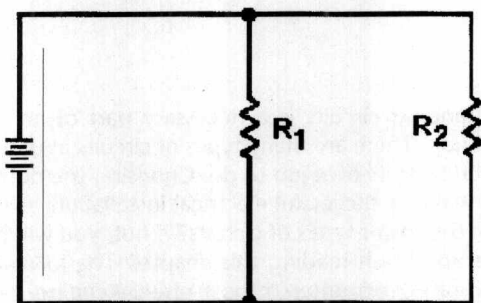


FIGURE 1.2 Diagram of a simple parallel circuit.

current is divided between them. How do parallel circuits and series circuits differ? Series circuits maintain constant power to devices connected to them and the generated electron moving force (emf) varies with the load. In a parallel circuit, the current running through the generator varies with the load and the generator emf is maintained practically constant.

PARALLEL-SERIES CIRCUIT

A parallel-series circuit is made up of many minor circuits in series with each other and with several of these series circuits then connected in parallel (Figure 1.3).