



Fact Sheet

Arc-Fault Circuit Interrupters

What are Arc-Fault Circuit Interrupters (AFCIs)?

The 2008 *National Electrical Code® (NEC®)* requirement for AFCI protection considerably expands this fire prevention technology to the majority of circuits installed in new and renovated homes. The type of AFCI currently available commercially is a next-generation circuit breaker that not only provides the conventional safety functions, but its advanced design also rapidly detects potentially dangerous arcs and disconnects power in the circuit before a fire can start. Fire safety officials throughout the U.S. endorse AFCIs as a significant step forward in electrical fire safety.

Why should they be installed in homes?

AFCIs will save lives and make homes safer. According to the U.S. Fire Administration, each year home electrical problems cause about 70,000 fires, resulting in 485 deaths and \$868 million in property loss.

Why mandate AFCIs for newer homes when statistics show the majority of problems have occurred in older homes?

Fire safety officials recommend the use of AFCIs in all dwellings. While it is true that fire statistics in many cases are derived from older dwellings, damage to appliance cords or to wires hidden in a wall can occur regardless of the home's age. In addition, incorrectly performed electrical installations can occur in both new and old homes. As technology evolves and the *NEC* is revised, the enhanced level of safety is typically required only in new construction that is subject to the latest adopted edition. Homes wired per the 2008 *NEC* will have the majority of their circuits protect by AFCIs for the life of the electrical system.

How do you know AFCIs will prevent fires and save lives?

Since 1999, AFCIs have been thoroughly field-tested. Underwriters Laboratories, the National Association of State Fire Marshals (NASFM), the U.S. Consumer Product Safety Commission, and many other experts have found AFCIs to be reliable and effective. By eliminating a significant source of electrically related fires, future statistics will demonstrate a reduction in fires of electrical origin.

Are AFCIs expensive?

The cost of the enhanced protection is directly related to the size of the dwelling and the number of circuits installed. Current retail prices of AFCI-type circuit breakers at several national building supply chains are in the range of \$35 to \$40 per unit. Even for larger homes with more circuits, the cost increase is insignificant compared to the total cost of the home, particularly when the increased level of safety is factored.

Do AFCIs interfere with smoke alarms and appliances, and trip unnecessarily?

AFCIs do not interfere with power supply reliability. These state-of-the-art devices identify problems that current circuit breakers are not designed to protect against, which can result in what appears to be an unexplained circuit breaker trip. By actually identifying these problems, residents are safer.

What is the *NEC*?

The *NEC* is the *National Electrical Code*. The *NEC's* mission is to provide practical safeguards from the hazards that arise from using electricity. It is the most widely adopted safety code in the United States and the world, and it is the benchmark for safe electrical installations. The *NEC* is an evolving document, developed through an open consensus process. A new edition is issued every three years.

For more information, visit www.nfpa.org.



Tamper-Resistant Electrical Receptacles

What are tamper-resistant electrical receptacles and what is the new requirement?

The 2008 *National Electrical Code® (NEC®)* will require new and renovated dwellings to have tamper-resistant (TR) receptacles. These receptacles have spring-loaded shutters that close off the contact openings, or slots, of the receptacles. When a plug is inserted into the receptacle, both springs are compressed and the shutters then open, allowing for the metal prongs to make contact to create an electrical circuit. Because both springs must be compressed at the same time, the shutters do not open when a child attempts to insert an object into only one contact opening, and there is no contact with electricity. Tamper-resistant receptacles are an important next step to making the home a safer place for children.

Why require tamper-resistant electrical receptacles?

Each year, approximately 2,400 children suffer severe shock and burns when they stick items into the slots of electrical receptacles. It is estimated that there are six to 12 child fatalities a year related to this.

If homeowners do not have children, are TR receptacles required?

Yes. Owners or tenants of homes and apartments change frequently. In addition, exposure to electrical shock and burn accidents are not limited to a child's own home. Children visit homes of relatives and friends who don't have children of their own. This requirement ensures all new homes and apartments are safe for children, whether the home is their own or they are there on a temporary basis.

Do TR receptacles require greater insertion strength than standard receptacles?

TR receptacles require comparable force to other receptacles. The insertion force may vary depending on the newness of the device to the shape or style of the plug being inserted.

Are TR receptacles costly?

No. The projected cost of a TR receptacle adds about \$0.50 to the cost of an unprotected receptacle. Based on current statistics, the average home has about 75 receptacles resulting in an overall added cost of under \$40. This amount may vary slightly based on the type and style of TR receptacle used. This minimal increase in cost buys a significant increase in electrical safety for children.

Shouldn't people accept responsibility for their children and teach their children not to stick items in receptacles?

Accidents involving children and receptacles cannot be blamed entirely on poor parenting. They involve people who look away for a moment, only to face undue tragedy and pain as the result of a child's curiosity. The *NEC's* mission is to provide electrical safety in the home. TR receptacles are a simple and easy way to protect children from serious injuries that continue to happen every year.

Why are TR receptacles preferred over products such as receptacles with caps or with sliding receptacle covers?

Receptacle caps may be lost and also may be a choking hazard for some ages. Children can learn to defeat sliding receptacle covers when they watch their parents. TR receptacles provide security against the insertion of objects other than cord plugs into the energized parts.

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