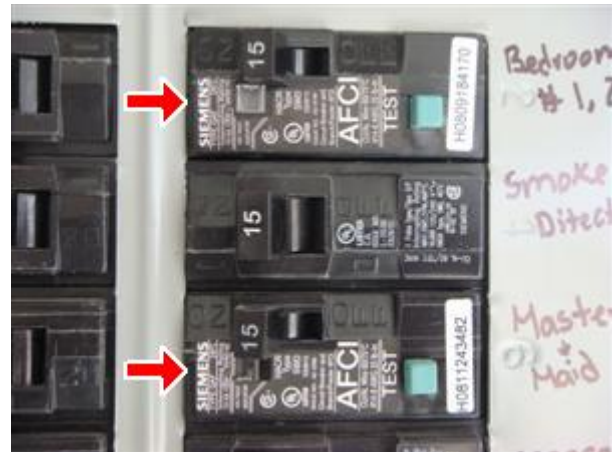


AFCI's (arc fault circuit interrupter) are electrical devices located in service electrical panels and are designed to protect against fires caused by arcing faults in the home electrical wiring.



AFCI's are an important safety addition to homes in part because they address an additional type of electrical fault that can cause a fire and one which may not be detected and interrupted by a conventional circuit breaker.

Arcing faults often occur in damaged or deteriorated wires and cords. Some causes of damaged and deteriorated wiring include:

- puncturing of wire insulation from picture hanging or cable staples,
- poorly installed outlets or switches,
- cords caught in doors or under furniture,
- furniture pushed against plugs in an outlet,
- natural aging,
- and cord exposure to heat vents and sunlight.

How does an Arc Fault Circuit Interrupter (AFCI) Work?

Conventional circuit breakers only respond to overloads and short circuits; so they do not protect against arcing conditions that produce erratic current flow. An AFCI is selective so that normal arcs do not cause it to trip.

The AFCI circuitry continuously monitors current flow through the AFCI. AFCI's use unique current sensing circuitry to discriminate between normal and unwanted arcing conditions. Once an unwanted arcing condition is detected, the control circuitry in the AFCI trips the internal contacts, thus de-energizing the circuit and reducing the potential for a fire to occur.

It is important to note that AFCIs are designed to mitigate the effects of arcing faults but cannot eliminate them completely. In some cases, the initial arc may cause ignition prior to detection and circuit interruption by the AFCI.

The AFCI circuit breaker serves a dual purpose – not only will it shut off electricity in the event of an “arcing fault”, but it will also trip when a short circuit or an overload occurs. The AFCI circuit breaker provides protection for the branch circuit wiring and limited protection for power cords and extension cords. Single-pole, 15- and 20- ampere AFCI circuit breakers are presently available.

(continued)

Where should Arc Fault Circuit Interrupters (AFCIs) be used?

The 1999 edition of the National Electrical Code, the model code for electrical wiring adopted by many local jurisdictions, requires AFCIs for receptacle outlets in bedrooms, effective January 1, 2002.

Although the requirement is limited to only certain circuits in new residential construction, AFCIs should be considered for added protection in other circuits and for existing homes as well. Older homes with aging and deteriorating wiring systems can especially benefit from the added protection of AFCIs. AFCIs should also be considered whenever adding or upgrading a panel box while using existing branch circuit conductors.

Beginning with the 2008 edition of the U.S. National Electrical Code, AFCI's are required not only in bedrooms but in other areas of the home such as dining rooms, living rooms, and other habitable areas, and apply to most electrical circuits including hard-wired smoke detectors, overhead fans, etc.

How Much Does an AFCI Cost? Cost Benefit Calculation of AFCI's:

An AFCI circuit breaker typically costs about \$30.00 to \$35.00. A conventional 15A circuit breaker typically costs \$2.00 to \$4.00. There is an additional cost to install an AFCI circuit breaker, but as it's basically a "plug-in" device that is placed in the electrical panel, that number should be small, smaller still if the AFCI installation is combined with other electrical work needed at a home.

While these specialized AFCI circuit breakers cost more, it is not a significant cost compared with the value of a home, not to mention the more difficult to measure cost of possible injuries or fatalities should a fire occur.

Safety Warning:

- AFCI circuit breakers should be installed by a qualified electrician.
- Do not attempt to work on your electrical wiring, switches, or outlets unless you are properly trained and equipped to do so. Electrical components in a building can easily cause an electrical shock, burn, or even death.
- Even when a hot line switch is off, one terminal on the switch is still connected to the power source. Before doing any work on the switch, the power source must be turned off by setting a circuit breaker to OFF or removing a fuse.