



Arc Fault Circuit Interrupters (AFCI'S)

An **Arc Fault Circuit Interrupter (AFCI)** is a specific duplex receptacle or circuit breaker designed to help prevent fires by detecting an unintended electrical arc and disconnecting the power before the arc starts a fire. An AFCI must distinguish between a harmless arc that occurs incidental to normal operation of switches, plugs and brushed motors and an undesirable arc that can occur, for example, in a lamp cord that has a broken conductor in the cord.

Arc faults in a home are one of the leading causes for electrical wiring fires.^[1] Each year in the United States, over 40,000 fires are attributed to home electrical wiring. These fires result in over 350 deaths and over 1,400 injuries each year.^[2]

Conventional circuit breakers only respond to overloads and short circuits; so they do not protect against arcing conditions that produce erratic, and often reduced current. An AFCI is selective so that normal arcs do not cause it to trip. The AFCI circuitry continuously monitors the current and discriminates between normal and unwanted arcing conditions. Once an unwanted arcing condition is detected, the AFCI opens its internal contacts, thus de-energizing the circuit and reducing the potential for a fire to occur. An AFCI should not trip during normal arcing conditions, which can occur when a switch is opened or a plug is pulled from a receptacle, or a device with a brush-type motor is in operation.^[3]

AFCI circuit breakers resemble a GFCI/RCD (Ground-Fault Circuit Interrupt/Residual-Current Device) breaker in that they both have a test button although each has a different function; similarly, AFCI receptacles resemble GFCI receptacles in that they too have a test button. GFCIs and RCDs are designed to protect against electrical shock of a person, while AFCIs (receptacle or breaker) are primarily designed to protect against electrical fires caused by arcing. Some outlets must be protected by both a GFCI and an AFCI, such as an outlet near a wet bar in a family room.

AFCI receptacles, specifically Outlet Branch Circuit (OBC) AFCI Receptacles, are an alternative solution to AFCI Breakers. These receptacles are designed to address the dangers associated with both types of potentially hazardous arcing – parallel and series. AFCI receptacles offer the benefit of localized TEST and RESET with these buttons located on the face of the device itself. This is very convenient and saves a trip to the breaker panel.

When installed as the first outlet on a branch circuit, AFCI receptacles provide series arc protection for the entire branch circuit. They also provide parallel arc protection for the branch circuit starting at the AFCI receptacle. Unlike AFCI breakers, AFCI receptacles may be used on any wiring system regardless of the panel.

They are required in new construction on all 15A and 20A 125V circuits to bedrooms, where most arc fault fires originate. Also they are now required in family rooms, dining rooms, living rooms, parlors, libraries, dens, sunrooms, recreation rooms, closets, hallways or similar rooms. Replacement of old receptacles in these areas would require new AFCI's be installed. NEC Jan. 1, 2014.

Both State of Wisconsin and ASHI (American Society of Home Inspectors) Standards of Practice, require that all AFCIs be tested and reported as to their condition in the home inspection report.

Source: Wikipedia, National Electric Code (NEC)

For additional information, or to schedule an inspection, please call Jeff @ (608) 434-0790. Please visit us online at www.wiscons.net