



Arc Fault circuit Interrupters

We have all shared the experience at some time in our lives. You turn on an electrical switch, and hear a frying or crackling sound. What is that noise? Is it dangerous? Is there any way to protect against it?

What we are hearing, in that instant after “throwing” the switch, is electrical arcing. Arcing is the luminous discharge of electrical current crossing the gap between two electrodes. Underwriters Laboratories (UL) states that arcing can involve temperatures of several thousand degrees Celsius. That temperature is hot enough to arc weld steel. An unintentional discharge of this nature is known as an arc fault, and such a fault can cause a fire in your home.

There are three typical types of arc faults that may occur in your home; hot-to-neutral, hot-to-ground, and series arcs. Hot-to-neutral and hot-to-ground arcs are known as parallel arcs, because they generally occur between two parallel wires that carry electrical power to and from the electrical panel. These types of arcs generally involve higher current since they are only limited by the available current of the circuit, and are usually the result of damaged cable insulation. Series arcs occur when a loose or damaged wire makes intermittent contact with itself.

Arc faults may occur either in electrical appliances or devices, or within the wiring system of your home. If you hear the telltale sound and suspect an arc fault in a device, unplug the device and discontinue use until it has been evaluated by a qualified individual. Extension or appliance cords located too close to a heating source, extension or appliance cords crushed by a door or window, and too many electrical cables bundled together, can lead to an arc fault. If you believe that an arc fault exists within the wiring system of your home, a professional electrician should be consulted.

Arc Fault Circuit Interrupters (AFCI's), a special type of circuit breaker, are now available for installation in the electrical distribution panel of your home, to protect against arc faults within the wiring system. The 2002 National Electrical Code now requires the installation of AFCI's in all new 120-volt bedroom branch circuits, and anywhere that a cable enters a bedroom through the ceiling, floors, or walls. These AFCI's offer an additional layer of protection not available from traditional electrical panel breakers. If you already have AFCI's in your electrical panel, a reset button, similar to that of a GFCI breaker, can identify them. Most manufactures are using blue colored test buttons on their AFCI breakers.

If you suspect that arc faults exist in your home wiring system, or in any appliance or device within your home, have it addressed by a qualified individual

immediately. Arc fault protection will not be widely installed for years, so personal vigilance, and preventive maintenance, is currently the best protection for your home.

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