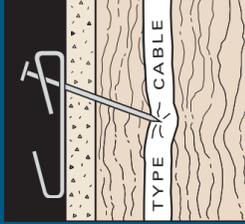
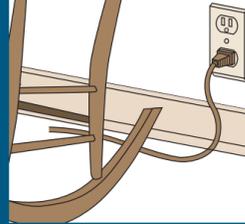


Some Possible Causes of Arc Faults

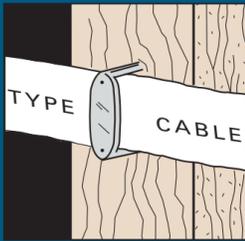
The nail from a picture hanger or flooring can actually puncture insulation and cause arcing.



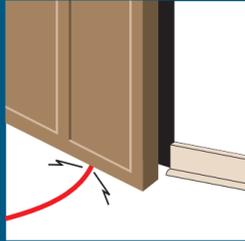
Insulation may be damaged when furniture is pushed up against or rests on a cord.



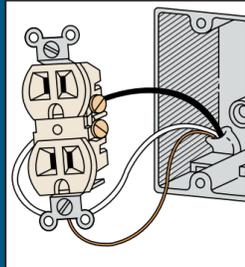
During new construction or remodeling, a wire can be pinched or punctured by a nail...or stapled too tightly against a wood stud, creating the possibility of arcing.



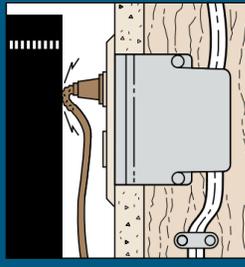
A door can puncture or cause damage to insulation on extension cords.



A wall plug or switch, if improperly installed with loose connections, may eventually result in arcing.



Any damage to connected cords can result in arcing faults.



Eaton Corporation is a diversified industrial manufacturer ranked among the largest Fortune 500 companies. The electrical group is Eaton's largest division and is a global leader in electrical control, power distribution, power quality, automation, and monitoring products and services. Eaton's electrical products include brands such as Cutler-Hammer®, MGE Office Protection Systems, Powerware®, Holec®, and MEM®. Eaton provides PowerChain Management® solutions to serve the needs of the industrial, institutional, IT, data center, mission critical, utility, residential and OEM markets worldwide.

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Combination Arc Fault Circuit Interrupter

Product Focus

Reducing the Risk of Home Fires Through Better Technology





The Need for Arc Fault Circuit Interrupters

The UL® Standard for Arc Fault Circuit Interrupters (AFCIs) (UL 1699) defines an arcing fault as an unintentional arcing condition in a circuit.

Arcing creates high intensity heating at the point of the arc resulting in burning particles that may over time ignite surrounding material, such as wood framing or insulation.

The temperatures of these arcs can exceed 10,000 degrees Fahrenheit. Repeated arcing can create carbon paths that are the foundation for continued arcing generating even higher temperatures.

National fire statistics from the U.S.

Consumer Products Safety Commission show that more than 40,000 fires are caused each year by problems with home electrical wiring. For the past 10 years, electrical wiring systems have been the leading cause of fire deaths involving electrical equipment, claiming an average of nearly 350 lives each year. These deaths and fires cost society over \$2 billion annually.

There are many reasons arc faults may occur, that include:

- Damaged wires from a carelessly nailed wall stud.
- Damaged or misapplied equipment or appliances.
- Overheating from excessive current flow.

- Cracked insulation on wire or cords from age, heat, chemical erosion or bending stress.
- Loose or improper outlet or switch connections
- Frayed or ruptured extension or appliance cords.
- Moisture or contaminants between conductors of different voltage.
- Electrical wire insulation chewed by rodents.

The most serious of these conditions (in terms of arc-fault related fire risk) occur behind walls and under floors. Because these conditions exist unseen they are more likely to go undetected for longer periods of time and thereby increase the risk of fire.

What the National Electrical Code® Says

2005 NEC® – Article 210.12

“(B) Dwelling Unit Bedrooms. All 120-volt, single phase, 15- and 20-ampere branch circuits supplying outlets installed in dwelling unit bedrooms shall be protected by a listed arc-fault circuit interrupter, combination type installed to provide protection of the branch circuit.

Branch/feeder AFCIs shall be permitted to be used to meet the requirements of 210.12(B) until January 1, 2008.

*For information on types of arc-fault circuit interrupters, see UL 1699-1999, Standard for Arc-Fault Circuit Interrupters.

Exception: The location of the arc-fault circuit interrupter shall be permitted to be at other than the origination of the branch circuit in compliance with (a) and (b):

(a) The arc-fault circuit interrupter installed within 1.8 m (6 ft) of the branch circuit overcurrent device as measured along the branch circuit conductors.

(b) The circuit conductors between the branch circuit overcurrent device and the arc-fault circuit interrupter shall be installed in a metal raceway or a cable with a metallic sheath.”

2008 NEC® – Article 210.12

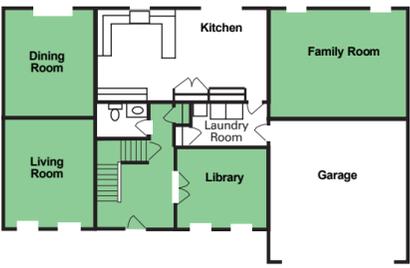
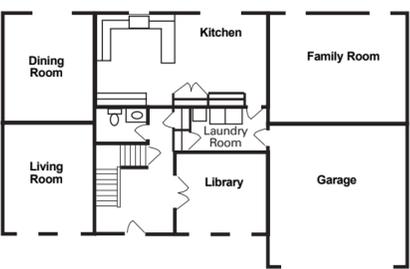
“(B) Dwelling Units. All 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets installed in dwelling unit

- | | | |
|--|--|--|
| family rooms, living rooms, bedrooms, recreation rooms, | dining rooms, libraries, sun rooms, hallways, | parlors, dens, closets, |
|--|--|--|

or similar rooms or areas shall be protected by a listed arc fault circuit interrupter, combination-type, installed to provide protection of the branch circuit”

Contact your local electrical code enforcement agency to understand the impact to your market.

*Reference Fine Print Notes Article 210.12 National Electric Code 2008



Eaton's Newest Answer



Eaton has been the industry leader in the arc fault circuit interrupter category by consistently introducing new technology to the market and conducting cutting edge research.

The Branch Feeder Type AFCI has been installed in homes since 1999. This type of AFCI protects against high level arcing (≥75A) which occur when insulation on the wiring has been compromised, creating sparks when the current travels from the conductor to another conductor or ground.

The newest addition to the Cutler-Hammer AFCI line of products is the Combination Type Arc Fault Circuit Interrupter. This AFCI breaker not only detects high level (>75A) arcs and line to ground arcs, but it also provides low level (>5A) arc detection down through the connected cords.

In addition to the fact that this Combination Type AFCI will meet the more stringent code requirements of the 2008 NEC for 15 and 20 amp branch circuits in a home, it also is available as a Plug-on-neutral style which save time in installation and minimizes errors.

Eaton not only provides you with the best products, but they are backed by expert technical support available 24 hours a day and include a lifetime warranty.

No matter what your residential electrical protection requirements are, Eaton has the best solution for you!

Contact your local Eaton authorized electrical distributor today for more information on Eaton's Cutler-Hammer brand Combination Type Arc Fault Circuit Interrupters or visit www.eaton.com/electrical



Combination Arc Fault Circuit Breakers are also available in a plug-on neutral design which saves installation time.



| | | | |
|--------------------|-----------------|--------------------------|--|
| Branch Feeder AFCI | Line-to-Neutral | Line-to-Ground Detection | |
| Combination AFCI | Line-to-Neutral | Line-to-Ground Detection | Low Level Arc Detection in Connected Cords |