

Lewis Electric Update



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Electrical Wiring FAQ

What's the purpose of the ground prong on an outlet?

Apart from their use in electronics, which we won't comment on, and for certain fluorescent lights

(which will not turn on without a good ground connection), they are intended to guard against insulation failures within the device. Generally, the case of the appliance is connected to the ground lead. If there is an insulation failure that shorts the hot lead to the case, the ground lead conducts the electricity away safely (and possibly trips the circuit breaker in the process). If the case is not grounded and the short occurs, the case is live and if you touch it while you are grounded, you will get shocked. Of course, if the circuit is a GFCI protected, it will be a very small shock.

There are some appliances that should never be grounded. In particular, that applies to toasters and anything else with exposed conductors. If you were to touch the heating electrode in a toaster, and you are not grounded, nothing will happen. If you are slightly grounded, you will get a small shock. But if the

case were grounded, and you were holding it, you would be the perfect path to ground and you could possibly be electrocuted.

What does a fuse or circuit breaker do and what are the differences?

Fuses and Circuit breakers are designed to interrupt the power to a circuit when the current flow exceeds safe levels. For example, if your toaster shorts out, a fuse or breaker should trip, protecting the wiring in the walls from melting. As such, fuses and breakers are primarily intended to protect wiring and UL approval supposedly indicates that the equipment itself will not cause a fire.

Fuses contain a narrow strip of metal which is designed to melt (safely) when the current exceeds the rated value, thereby interrupting the power to the circuit. Fuses trip relatively fast. Which can sometimes be a problem with motors which have large startup current surges. For motor circuits, you can use a "time delay" fuse (such as a fusetron) which will avoid tripping on momentary overloads. A fusetron looks like a spring loaded fuse. A fuse can only trip once, then it must be replaced.

Breakers are fairly complicated mechanical devices. They usually consist of one spring loaded contact which is



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latched into position against another contact. When the current flow through the device exceeds the rated value, a bimetallic strip heats up and bends. By bending it trips the latch, and the spring pulls the contacts apart. Circuit breakers behave similarly to fuses, that is, they tend to take longer to trip at moderate overloads than ordinary fuses. With high overloads, with high overloads they trip quickly. Breakers can be reset a infinite number of times but they are not indestructible. Each time they trip, or are thrown when a circuit is in use, some arcing takes place, which damages the contacts. Thus, breakers should not be used in place of switches.

Neither breakers nor fuses “limit” the current. A dead short on a circuit can cause hundreds or sometimes thousands of amperes to flow for a short period of time, which can often cause severe damage.

What is a UL Listing?

The UL stands for “Underwriters Laboratory “. It used to be an Insurance Industry organization, but now it is independent and non-profit. It tests electrical components and equipment for potential hazards. When something is UL listed, that means that the UL has tested the device, and it meets their requirements for safety - fire or shock hazard. It does not necessarily mean that the device actually does what it is supposed to, just that it probably won't kill you.

The UL does not have the power of law in the U. S., you are permitted to

buy and install non-UL-listed devices. However, insurance policies sometimes have clauses in them that will limit their liability in case of a claim made in response to the failure of a non-UL-listed device. In many situations the NEC (National Electric Code) will require that a wiring component used for specific purpose is UL-listed for that purpose. Indirectly, this means that certain parts of your wiring must be UL-listed before an inspector will approve it and/or occupancy permits issued.

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Totally useless facts !!!

A duck's quack does not echo, and no one knows why !

The only 15 letter word that can be spelled without repeating a letter is uncopyrightable.

The “save” icon on Microsoft Word shows a floppy disk, with the shutter on backwards.

Cats have over a hundred vocal sounds, while dogs only have about ten.

Camels milk does not curdle.

The only nation who's name begins with an “A”, but does not end in an “A” is Afghanistan.

Texas is also the only state that is allowed to fly its state flag at the same height as the United States flag.

Pinocchio is Italian for “pine head”.