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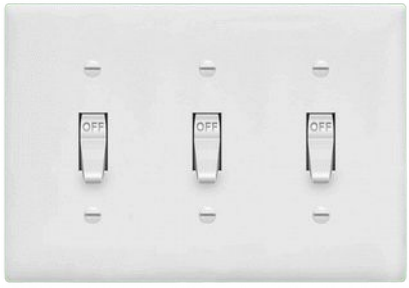
Common Electrical Terms Defined

Like any specialized field of study, electrical contracting has it own set of specialized terms. Here is a small glossary of common electrical terms that you may hear us using on the job. If a description has a word in *italics*, that means that word is defined in this document.

110, 120, 220, 240

These numbers refers to *voltage*. From a power plant or generator, *electricity* travels over local distribution systems to individual homes. Most houses today have two 110- or 120-volt *wires* and one *neutral* wire running into the house from the local distribution system. These wires can run underground or above ground. For example, if there are two 120-volt wires running to the house, then the house has 240-volt service and large *appliances*, such as dryers and air conditioners.

1-, 2-, 3-, or 4-Gang



'#-Gang' describes the number of spaces for *devices* in an electrical wall box. For example, a 1-gang dimmer switch will have a single dimmer on the plate, a 2-gang dimmer switch will have 2 dimmers, and so on. Larger and more complex construction can have up to 6-gang or more!

Amp / Amperage

"Amp" is shorthand for "ampere," which is the basic unit of measurement for electric flow. It is the rate of electron flow or current in an electrical conductor moving past a specific point in one second. If you think in terms of water through a hose, amperage would be a measure of water volume flowing through the hose.

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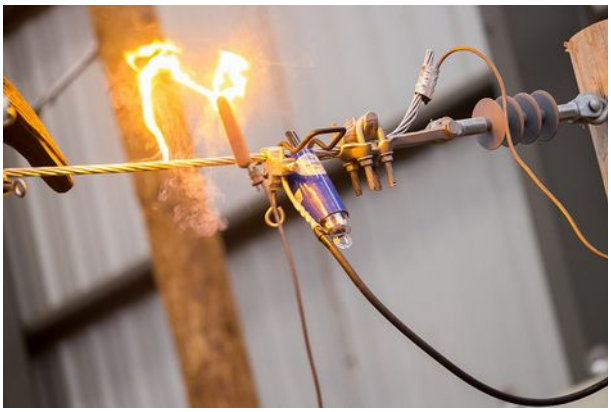
Appliance

An appliance is not a *fixture* (fan, light) or a *device* (outlet, switch), but is a non-lighting movable electrical item that consumes electricity to function. Examples: dryer, fax machine, garbage disposal, refrigerator, toaster.

Arcing / Arc



An arc is a visible energy discharge between two terminals that is caused by electrical current interacting with gases in the air via ionization. Electric arcs occur in nature in the form of lightning.

AFCI / AFI

Arc **F**ault **C**ircuit **I**nterrupter. It is a type of circuit *breaker* that breaks the circuit when it detects a dangerous electrical arc. They are sometimes called “combination breakers,” because of multiple methods of arc detection. There are also AFCI *outlets* that serve the same purpose.

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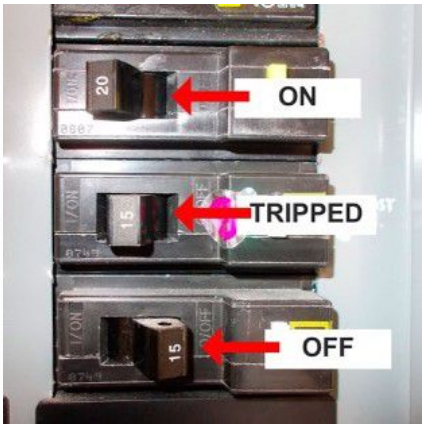
Breaker

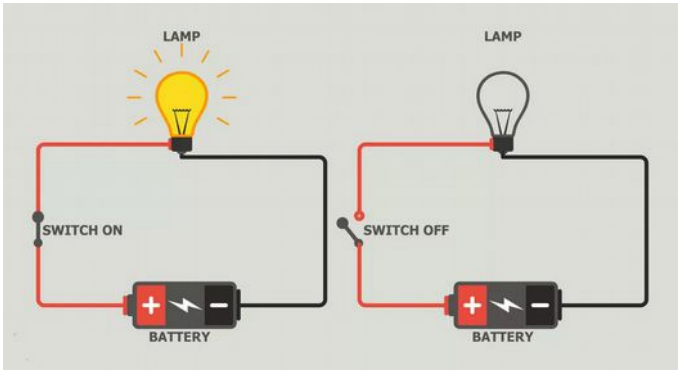


An automatic switching *device* that disconnects power to a *circuit* when *current* or heat exceeds a certain level for a certain amount of time. It's located in a circuit *panel* box and its handle is generally in one of three positions: on, tripped (the middle position), and off.

Cable

A cable is a set of *wires*, usually encased in an outer protective sheath. A "cord" would be a cable by this definition, but a cord is more flexible and often has a plug end for a portable appliance or lamp. Common types of cables are for TV/satellite and audio-visual installation.

Circuit



An electrical *device* that provides a power source and path for electrical *current* to flow in (roughly) a circular line, route, or movement that starts and finishes at the same place.

Conductor

In electrical, to "conduct" means to transmit electricity or heat. Therefore, a "conductor" is a substance or material that allows electricity to flow through it (a *wire* or *cable*), to transmit electric current from one piece of electrical equipment to another, or to ground.

Conduit

A tube made of metal, plastic or PVC, used to protect and route electrical wiring in a building or non-building structure. It can be solid or flexible.

Current

Electricity or "current" is the movement of electrons through a conductor, like a *wire*. The rate of flow of electrical energy through a wire, comparable to the amount of water flowing in a pipe. The difference between Alternating Current (AC) and Direct Durrent (DC) lies in the direction in which the electrons flow. In DC, the electrons flow steadily in a single direction, or "forward," while in AC, electrons keep switching directions, sometimes going "forward" and then going "backward." We use AC currents in household applications such as fans, TVs, computer systems. It is the output of common utility *outlets*.

Device

As distinct from a *fixture* or *appliance*, an item which does not itself consume significant electricity, but interrupts or passes it on in a particular fashion. Examples include: *switch*, *receptacle*, thermostat, *breaker*, *fuse*.

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Disconnect

A device used to ensure that an electrical circuit is completely de-energized for service or maintenance. They are most often used on larger electrical units, such as electric water heaters and AC condensing units. It is a means to "disconnect" power between the item and the breaker.

Electricity

A form of energy that is carried through *wires* and is used to operate machines, lights, etc. It is observable in nature (lightning) or is produced (generator).

Fault

In an electric power system, a fault or fault current is any abnormal electric current. A fault occurs if a *circuit* is interrupted by some failure in power transmission or in the actual physical pieces of the system.

Fixture

An item that is non-movable (in a "fixed" position) once installed, and are normally part of the build of the home. Lights and fans are the most common types of fixtures.

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Fuse / Fuse Box

An electrical safety *device* that can stop *current* from flowing if it becomes overloaded. Its safety device consisting of a strip of wire that melts and breaks an electric circuit if the current exceeds a safe level. A "fuse box" contains fuses rather than *breakers*; the two terms (breaker and fuse) are often confused.

GFCI / GFI

Ground **F**ault **C**ircuit **I**nterrupter. They are *devices* to prevent electrocution, which serves also as a *receptacle*. Since 1973, National Electric Code has required GFCI protection for more and more receptacle locations in homes. If connected properly, a GFCI receptacle is able to sense and disrupt ground-faults. Nowadays, for new construction, there are special *breakers* that are both GFCI and *AFCI* capable, sometimes called "dual-function breakers."

Ground

A ground is a direct electrical connection to the earth. A "ground wire" means a separate *wire* that keeps metal parts of *devices*, *fixtures*, or *appliances* from staying accidentally energized and endangering people or equipment in the event of a surge. These wires are either bare copper or have green insulation. The ground wire is not connected so as to be part of the normal path of the circuit, but when a ground wire *does* carry current, it is doing it's job by diverting power so it does not create a dangerous situation. If items are not grounded and the electricity is touched by, say your hand, your body can become a path for *current* from a hot wire touching the metal to get to the ground. A rule of thumb to remember is that **all electricity is trying to get to ground by any and all means possible.**

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Ground Fault

A ground fault occurs when a *short circuit* finds a path to the earth via something besides the *neutral*/ground wire. It is a "leaking" of current off of the intended path. The electrical current is taking an alternative path to the ground through the user. Most shocks are an example of a ground fault.

Hot / Hot Wire

Also known as "live" wire. Electric wire or cable through which current is flowing, as opposed to ground wire or neutral wire.

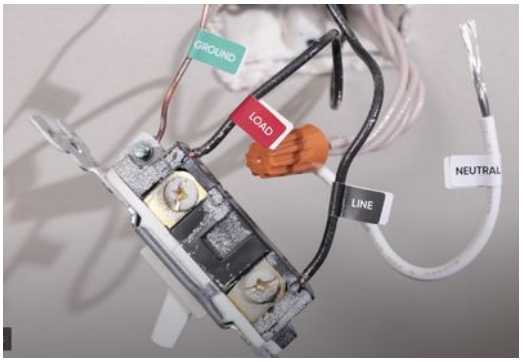
Junction Box

A container for electrical connections, usually intended to conceal them from sight, deter tampering, and to withstand weather. They can be in many types of locations: inside walls, ceilings, attics, and outside. Shorthand is "j-box."

Load

The amount of power consumed by a circuit, measured in *amps*.

Neutral



The neutral *wire* is a *circuit* conductor that normally carries current, and is connected to *ground* (earth) at the main electrical *panel*. Neutrals are sometimes insulated in white.

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Overheat / Overload

Overheating is when the *wires* become too hot to be safe, and the *breaker* trips to prevent damage. An overload occurs when a *circuit* has carried (1) a little too much energy for too long, or (2) way too much energy in a very short span of time.

Panel

The large metal box containing breakers for circuits; other names include circuit panel, breaker panel, or breaker box. The "main" panel or "service" panel would be the central source for the home and would be receiving its power from the power company; it's normally located near your electric utility meter (older homes it may be on an interior wall adjacent to the meter). There can be **subpanels** in a home, fed from the main panel and containing some of the home's circuit breakers – these are usually the panels you'd find in your garage or a hallway.

Plug

The plug is the end piece of a wire from an appliance or other electrical item that connects to an outlet. It very commonly is confused for "outlet," which is the device on the wall that a plug goes into.

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Outlet, Receptacle

Receptacle is mostly a fancy word for "outlet." A *device* that serves as the means for lights or appliances to connect to a circuit by a cord with a plug on the end. Sometimes the word "plug" is used to mean "outlet", but that is inaccurate; the plug is the end piece of a wire from an appliance or other electrical item that connects TO an outlet.

Short Circuit

A short circuit ("short") occurs when a hot wire and a neutral wire touch each other, or there is an interruption in the current in a spot it does not belong. When this happens, a large amount of current flows, causing a fuse to blow or a circuit breaker to trip, potentially creating sparks or a pop that can create smoke. The cause of this unfortunate occurrence may be as simple as a loose connection on one of these two wires in a junction box.

Socket

The part of a light fixture that receives the bulb or tube. Not to be confused with a *plug, outlet,* or *receptacle*.

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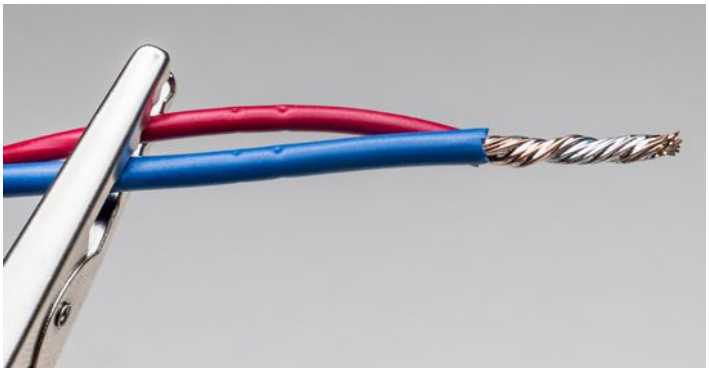
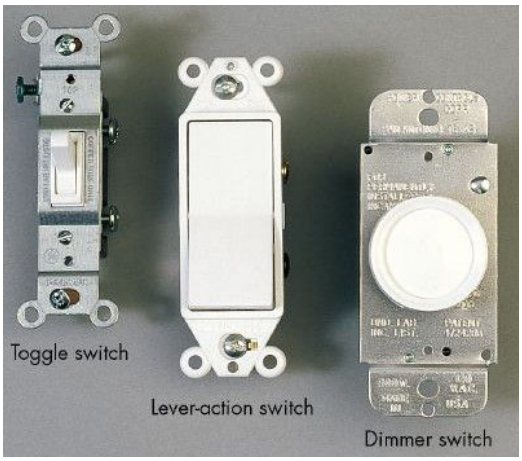
Splice



Splicing wire is the process of joining two or more pieces of wire together. Leave this kind of work to a professional, or you may risk a short.

Switch

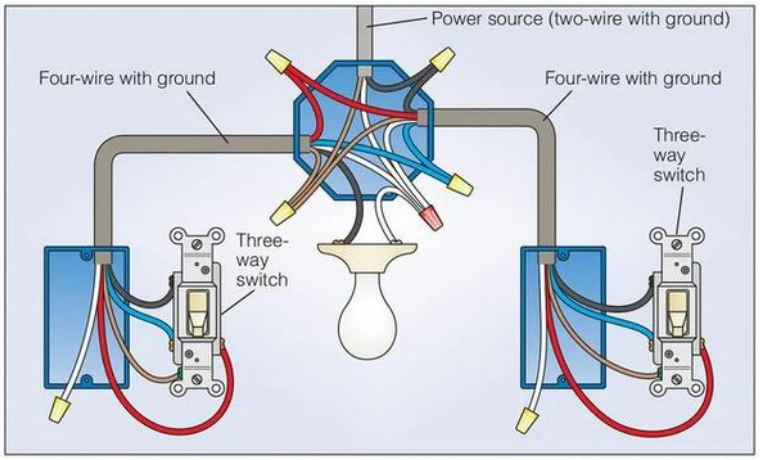


A device used to interrupt current to part of a circuit. You use one to turn lights off and on.

Terminal

A point where two or more wires are connected in an electrical circuit (which can be a screw or other pressure-device), for the purpose of passing electrical current along.

3-way System



If you have 2 switches that control 1 light, you have a 3-way system. The name comes from the number of terminals on, or contact points within the switches involved. 4-way systems exist as well.

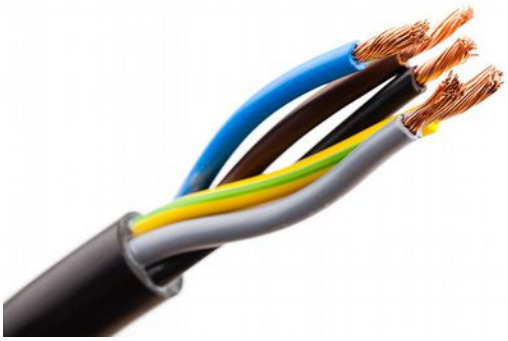
Volt / Voltage

Voltage is a force that makes *electricity* move through a *wire*. If you think in terms of water through a hose, voltage would be a measure of the speed of water flowing through the hose.

Watt / Wattage

The amount of power required to operate an electrical *appliance* or *device*. Wattage is directly proportional to current and to voltage and is mathematically the product of them (*amps* times *volts*). Wattage can be compared to horsepower.

Wire



An electrical wire is the component used to transport electricity. It is made of a *conductive* material, single or multiple strands, often surrounded by an insulating envelope. The inside of the electrical wire is called the “core” of the wire. Wires come in various sizes (gauges) depending on what it's being connected to and how much power it needs to transmit.
