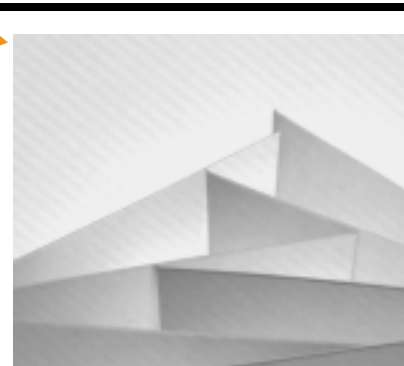


Helpful hints on

Special Spring into Action
Electrical Safety Issue

HOME ELECTRICITY



FROM THE LEVITON INSTITUTE

VOL. 7

Electrical Safety: Does Your Home Pass the Test?



By following a few simple guidelines you can keep your home and family electrically safe.

According to the U.S. Consumer Product Safety Commission (CPSC), faulty home electrical wiring is responsible for 40,000 fires a year and results in the loss of 350 lives, thousands of electrical

shock and burn injuries, and more than \$2 billion in personal property damage. With electrical energy use typically on the rise during the warmer weather, the Leviton Institute advises that Spring is an

excellent time to conduct a 10-step home electrical safety inspection.

1. Electrical Outlets: Check for loose-fitting plugs which can be a shock or fire hazard. Replace missing or broken wallplates so wiring and components are not exposed.

2. GFCIs: Make sure GFCIs are installed in your kitchen, bathrooms, workshop, basement, garage and outdoor areas where water and electricity are likely to come in contact. Test them monthly to ensure they work properly.

3. Plugs: Never force them into outlets. Don't remove the ground pin (third prong) to make a three-prong plug fit a two-conductor outlet. Avoid overloading outlets with adapters and too many appliance plugs.

4. Cords: Make sure they are not frayed or cracked, placed under carpets or rugs, resting on furniture or located in high-traffic areas. Do not nail or staple them to walls, floors or other objects.

5. Extension Cords: Use on a temporary basis only. They are not

intended as permanent household wiring. Make sure they have safety closures to protect young children from shock hazards and mouth burn injuries.

6. Light Bulbs: Check the wattage to make sure light bulbs match the fixture requirements. Replace bulbs that have higher wattage ratings than recommended. Make sure they are screwed in securely so they don't overheat.

7. Circuit Breakers/Fuses: Fuses should be properly rated for the circuit they are protecting. If you don't know the correct rating, have an electrician identify and label the correct size to be used. Always replace a fuse with the same size you are removing. Check that circuit breakers are working properly.

8. Appliances/Electronics: If an appliance repeatedly blows a fuse, trips a circuit breaker or has given you an electrical shock, immediately unplug it and have it repaired or replaced. Look for cracks

or damage in wiring, plugs and connectors. Use surge protectors to protect expensive electronics.

9. Outdoor Connections: Electric-powered lawn equipment and power tools should not be used in the rain, on wet grass or in wet conditions. Inspect for frayed cords, broken plugs and cracked or broken housings. Always use an extension cord rated for outdoor use.

10. Service Capacity: Electrical systems can become overloaded. As you continue to upgrade your home with more lighting, appliances and electronics, your home's electrical service capacity may become overburdened.

If fuses blow or circuit breakers trip frequently, you may need to increase your home's electrical service and add new branch circuits. A qualified, licensed electrician can determine the appropriate service requirements for your home and provide you with an estimate of the cost to upgrade.

5 Outdoor Electrical Safety Tips

Whether you're doing backyard chores or entertaining on your pool deck, warm weather means more outdoor electrical connections. The Leviton Institute advises you should keep a few basic safety tips in mind during warmer weather to avoid electrical shock.

1. Have Outdoor GFCIs Installed

When you're outdoors, water and electricity can easily mix. The risk of electrical shock from frayed power cords or damaged equipment is much greater on wet or damp ground. Have GFCIs installed in place of outdoor receptacles. Swimming pool lighting and hot tubs should also have GFCI-protected circuits. If you already have GFCIs installed, test them monthly to ensure they're in good working order.

2. Use While-In-Use Covers

The National Electrical Code requires "while-in-use" weatherproof receptacle covers where outdoor equipment is used. These covers completely enclose receptacles while plugs are inserted, keeping out rain and moisture. Both GFCIs and "while-in-use" weatherproof covers are available at hardware stores, home centers and a variety of retail outlets.

3. Use Tools and Appliances Safely

Edgers, mowers and weed trimmers feature heavily insulated cords and sturdy molded-on plugs. Electrical devices that are not designed for outdoor use (stereos, table lamps, kitchen appliances) can be easily damaged by moisture or a sudden summer shower, turning

them into serious shock hazards. Always inspect appliances for frayed cords, broken plugs or cracked housings and don't use the equipment until you repair or replace it. Be careful not to overload your outdoor receptacles as this can cause overheating and fire. Never use electrical devices in the rain, on wet surfaces or while you're standing in water.

4. Use Outdoor Extension Cords

When using an extension cord, remember to always use one marked for outdoor use with a three-prong grounding plug that's rated for the power needs of your tools. Also, use one long extension cord instead of linking several shorter ones together. Make sure to keep the cord out of your path or work area to protect it from damage and always keep it away from water.



Always show caution with outdoor electrical connections.

5. Disconnect Outdoor Devices

Turn off outdoor electrical devices when you're through using them and unplug them at the

receptacle. Never leave a "live" device unattended, even if you're only going in the house for a minute.

Is Your Home Power Hungry?



When modernizing your home you may have to consider an electrical service upgrade.

Upgrading your home with a hot tub or spa or adding a home theater or home office may require more than new equipment purchases. When redecorating, you are instantly rewarded with a beautiful new look. But equally important are changes that are not visual but improve your lifestyle. If you cannot use your microwave and coffeemaker simultaneously, your electrical system may be seriously challenged.

Make Your House Future-Ready

For most homes, 150-200 amp service is recommended. According to the Leviton Institute, a 200-amp service panel will give you enough power to enjoy your home theater while running the washing machine and dishwasher and ensure that your home is ready for the future.

Call an Electrician

Since most of us don't have the luxury of completely rewiring our homes, the next best thing is to upgrade to a new service panel and keep what we can of our existing wiring.

While some home electrical upgrades are perfect for do-it-yourselfers, installing a service panel is not one of them. And many local codes don't allow it, so call an electrician.

The average cost for an upgrade to a 3-wire, grounded, 200-amp system is approximately \$2800-\$3000. This money is well spent because it adds value to your home and also provides peace of mind.

Breakers and Service Panels

Circuit breakers and fuse boxes protect your home from an electrical fire caused by an overload or

short circuit. Breakers come in 15, 20, 30 amps, etc. and must be used with matching circuits. Never use a 20-amp breaker on a 15-amp circuit because the wire will carry more current than it's rated for and the breaker won't trip.

Most service panels have a single main service disconnect in the form of an individual breaker or a series of high-amperage breakers connected together. Your electrician will create a panelboard or circuit directory that lists the circuits for every location in your home.

Subpanels

Another way to add to your electrical capacity is to install subpanels. These are smaller versions of your main service panel. They make it easier to wire a large house because the electrician only has to run one feeder cable from the main panel to the subpanel instead of running cable for every circuit separately.

Subpanels are required to be installed in accessible locations. This may be a stumbling block because a panel is hardly decorative. Weigh your need for the panel against your décor considerations. If you're remodeling your home, a good place for a subpanel is in a new addition, a workshop or near a converted attic. Of course, cost is also a consideration.

Whatever your service need, contact an electrician for a safe system that will meet local codes and keep your house powered safely and sufficiently for years to come.



When disconnecting an extension cord, always pull from the plug or connector, never the cord itself.

How to Use Electrical Extension Cords Safely

Extension cords are among the most convenient products in the home, bringing lamps and appliances within easy reach of electrical outlets. But when they are misused, they can also be a source of potential danger.

The Leviton Institute estimates that some 3,000 people are treated each year for injuries associated with extension cords and that improperly functioning cords result in 5,000 residential fires. It urges you to take the following precautions when using extension cords in your home and outdoor areas:

- Don't run them through walls, under rugs or furniture, or across doorways.
- Don't repair a damaged cord with electrical tape; replace it instead.
- Don't overload it; if any part of the cord feels warm, it is drawing too much power and could present a fire or shock hazard.
- Don't cut off the ground pin to connect a 3-prong appliance cord to a 2-wire extension cord or receptacle. Always use a UL-listed adapter for this purpose.
- Replace older extension cords if one of the prongs in the plug is not polarized (i.e., one prong is wider than the other).
- Don't allow extension cords to dangle from counters or table tops, where someone can accidentally pull them down or trip over them.

■ Always plug an appliance into the extension cord before plugging the extension cord into a wall receptacle. Make sure the appliance is "off" before plugging in.

■ When disconnecting, always pull from the plug, never the cord itself.

■ Use special, heavy-duty extension cords for high-wattage appliances such as air conditioners, portable electric heaters and freezers.

■ When placing furniture or an appliance directly up against a wall where a cord is plugged into a receptacle, use a low profile type of plug. These plugs will let the appliance or furniture get closer to the wall, and there is less chance of the plug coming loose.

■ Outside the home, use extension cords designed expressly for outdoor use.

■ To determine if an extension cord is properly rated for the number and types of devices being plugged in, add the total wattage of each bulb or appliance and then divide by 120 to calculate the number of amps. If the total amps is equal or greater than the maximum rating of the cord, use a higher rated extension cord.

Following this advice will go a long way to ensure that your extension cords will always be used in a safe, efficient manner.



Make sure you're not overworking your service panel.

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3 Easy Electrical Projects for the Weekend DIY'er

Despite their long service life, electrical wiring devices occasionally need to be replaced. The good news is: you don't have to be a master electrician to replace these devices yourself.

Now that spring is here, you can spring into action with three simple electrical upgrades you can do yourself. But don't let your weekend electrical project become a shocking experience. The Leviton Institute urges you to turn off the power at the circuit breaker box before you begin any electrical work and always follow the instructions manufacturers include with their devices.

1. Replacing Electrical Outlets: The contacts in an electrical outlet that hold a plug securely can fatigue and lose their gripping force. If an appliance plug doesn't fit into the outlet don't bend the prongs on the plug. Replace the outlet as soon as possible.

Another reason to replace an outlet is to upgrade to a specialized outlet like a surge protected or GFCI protected outlet. When redecorating is the objective, con-

sider upgrading to designer-style outlets. These outlets have a decorative rectangular shape and offer a sleek contemporary appearance that enhances your home's interior.

2. Replacing Switches: The mechanism inside a switch can wear out, resulting in loose action or outright failure. When this happens, it's time to replace the switch. A standard single-pole switch with two screw terminals is the easiest to replace; three-way and four-way switches are more complicated because you have additional traveler wires to deal with.

You can replace your run-of-the-mill toggle switch with a decorative switch with a rocker-style ON/OFF mechanism. A rocker switch has the added advantage of a universal design that is easier to use if you or someone in your household has limited range of motion or minimal dexterity due to age or disability. Toggle switches and rocker style switches come in illuminated versions which makes them easy to locate in darkened areas.

You can also consider adding a dimmer. These are available in

many different styles. Dimmers conserve energy and save on your electric bill.

Seeking a hands-free alternative to lighting control? Consider installing an occupancy sensor. It "senses" when a person enters and leaves a room. The sensor automatically turns the lights on and off in response. You'll never find yourself reaching for a light switch with an arm full of packages or fumbling around in a dark room to locate the switch.

Another alternative is an electronic timer switch which lets you set up the time intervals when lights and appliances should be activated.

3. Upgrading Outdoor Devices: Don't overlook outdoor devices when considering your weekend electrical projects. And don't replace outdoor switches and receptacles with indoor versions unless you also use a bubble-type cover or a cover with a flip-style lid known as a weatherproof cover. Adding this type of weather protection to your outdoor devices will help create a safer electrical environment.



Designer-Styled Outlet



Electronic Dimmer

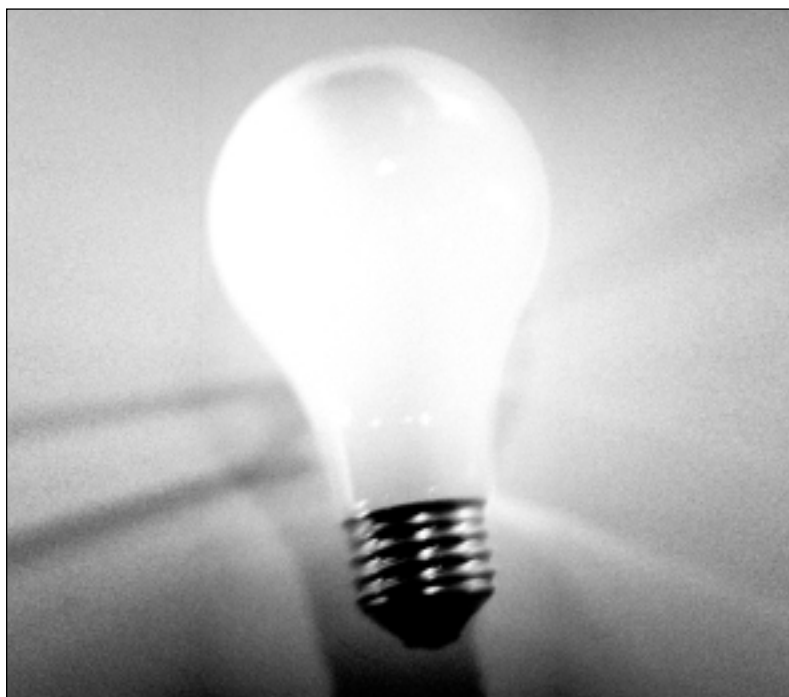
Outdoor switch covers are available with a built-in horizontal, lever-type switch that comes with a foam gasket between the cover plate and the box. The lever activates a regular toggle switch underneath. Outdoor receptacles should always be GFCI types with an outdoor, weatherproof cover.

Installing a raintight, while-in-use cover for equipment that is plugged in all the time adds an extra measure of protection. These covers can be mounted vertically or horizontally. They are easily installed with the GFCI by following the manufacturer's instructions.



Occupancy Sensor

How Electrically-Savvy Are You?



A 60 watt bulb draws 1/2 Amp. See question 4.

What you don't know about electricity can be shocking! In addition to safety issues, a basic understanding of electricity can help you select the best electrical devices for your home and reduce your energy bill as well. The Leviton Institute helps you test your knowledge with the following true/false quiz on electricity.

1. Dimmers simply absorb energy from light bulbs and don't save you any money.

2. Dimmers cannot be used to control ceiling fans.

3. GFCIs offer the same protection that circuit breakers do.

4. A 1200-Watt appliance draws 10 Amps of electrical current.

5. Only a licensed electrician can test a GFCI.

6. 12-gauge wire is rated to carry more electrical current than 14-gauge wire.

7. If a plug keeps falling out of a receptacle, use pliers to spread the plug blades farther apart.

8. Surges can enter your electronic equipment through phone and cable connections.

Answers

1. False. Dimmers don't absorb power. They control the amount of time a bulb is on and off 120 times a second, but your eye can't see this. A dim setting limits the time the bulb is on. A bulb dimmed to 50% uses approximately 25% less power and lasts approximately 20 times longer, saving both on lighting energy and bulb replacement costs.

2. True. Dimmers can damage fan motors. Only fan speed control units can be used with ceiling fans. They are usually available with the same styling and features as dimmers but are safe for fan motors.

3. False. Circuit breakers are designed to trip when a severe short causes high levels of electrical current to flow through your wires. GFCIs provide protection from ground fault. This can occur when current leaking from a dam-

aged appliance travels to ground through a person touching the appliance. Ground fault current can be lethal, but is typically not high enough to trip a breaker. A GFCI is designed to trip when it senses a relatively tiny amount of ground fault current.

4. True. Light bulbs and appliances are rated in Watts, while electrical wiring is rated in Amps. Divide the Watts by 120 (the household voltage) to arrive at the amperage rating. In this case, 1200 Watts divided by 120 Volts equals 10 Amps.

$$\text{Amps} = \frac{\text{Watts}}{120}$$

5. False. Using a simple procedure you should test your GFCIs monthly. Plug a lamp into the GFCI and turn it on. Press the Test button—the GFCI should trip causing the light to go off. Press the Reset button on the GFCI and the lamp should go on again. This confirms that the GFCI is working properly. If the GFCI does not trip (shut off the light) when you press the Test button, there is an electrical problem and you should contact

a licensed electrician.

6. True. The larger the diameter of wire, the more electrical current it can carry. What is sometimes confusing is that the larger the diameter, the smaller the wire gauge. For example, 14-gauge wire is rated for small electrical tools and appliances, but larger power tools require 12-gauge wire.

7. False. When a receptacle no longer holds a plug firmly in place, the half-inserted, live plug is a serious shock hazard, especially for children. When a receptacle is old or worn out by excessive use, its contacts no longer properly grip a plug. Any receptacle in this condition must be replaced.

8. True. Surges that can damage your PC, television, video recorder and answering machine can enter through phone, data line and cable connections. Use surge protective power strips that not only provide the maximum amount of powerline protection, but also offer protection for phone, data and cable lines. These multi-purpose surge strips are available in home centers, electronic stores and a variety of retail outlets.

Safer GFCIs Still Require Regular In-Home Testing



Lock-out style GFCIs require monthly testing as do standard GFCIs.

A recent study of GFCIs in homes across the country revealed that one in every ten fails to work properly. This statistic is one of the reasons Underwriters Laboratories, the more than 100 year-old consumer product safety testing and certification organization, revised its listing requirements for GFCIs earlier this year. The revision was designed to improve the dependability of

these life-saving devices we may all too often take for granted.

New Requirements for GFCI Safety

UL's new requirements for GFCIs manufactured after January 1, 2003 include a greater resistance to power surges and corrosive environmental agents, two of the leading causes of GFCI failure. The new GFCIs also provide a diagnostic indica-

tion if the devices are miswired during installation. This helps eliminate line-load wiring reversals that result in GFCIs still delivering power after they have tripped. Another requirement is increased immunity to false or "nuisance" tripping caused by electrical interference on the power line.

What is a Ground Fault?

Ground faults occur when current leaks out of a damaged appliance and flows to ground through any available path. If a person touching the faulty device provides a path for the current to ground, he or she may be severely shocked or even electrocuted.

A GFCI receptacle monitors the level of current flowing out of it and the level of current returning back. If these levels aren't exactly the same, there's current leaking to ground through an unintended path (possibly a person). If a GFCI senses even a tiny difference in these current levels, it shuts off the flow of electrical current within a fraction of a second, helping prevent injury or death.

How Do You Know if Your GFCI is Working?

GFCIs are extremely reliable devices that have made a significant contribution to electrical safety since their introduction

almost 30 years ago. Like any electronic device, however, they can become damaged over time.

Standard GFCIs will still provide power even after they are damaged and are unable to trip, functioning as live receptacles without offering your family protection from dangerous ground faults. Without regular testing, you can't confirm that your GFCIs are providing this important protection.

This is why it's so important to regularly test the GFCIs installed in your home, garage, and outdoor areas. According to the Leviton Institute, even the newest generation of GFCIs can malfunction over time and should be tested once a month to ensure they are working properly.

Lockout GFCIs

For the highest level of protection, have your electrician install a GFCI with a lockout feature. A lock-out GFCI cannot be RESET if it becomes damaged and cannot respond to a ground fault, safeguarding you from the possibility of having a live, unprotected receptacle in an installation where GFCI protection is required.

Replacing your current GFCIs with models that meet the new, tougher listing requirements will

help ensure that they withstand conditions that have damaged GFCIs in the past. Remember to test all your installed GFCIs monthly. And for the utmost in protection and peace of mind, install devices that offer a lockout feature.

Testing a GFCI Takes Less Than a Minute

Testing to determine whether a GFCI works properly is a simple procedure that takes less than a minute and may save your life:

1. First plug an appliance or nightlight into the GFCI and turn it on.
2. Press the "TEST" button and see if the appliance or the light goes off.
3. Press the "RESET" button and the appliance or light should go back on.
4. If the appliance or light doesn't go off when you push the TEST button, the GFCI isn't working properly and should be replaced.

How to Keep Your Pets Safe from Electrical Hazards

As a pet owner, you know all too well how your four-legged family member is apt to make a play toy out of everything in and around your home. It's important to make sure your pets don't add electrical devices to their toy chest. The same frayed electrical cord that delivers an electrical shock to an adult may have enough voltage to kill a dog or cat.

A frisky Fido or curious Fluffy can cause an electrical hazard or fire in ways you may not have thought about. The Leviton Institute suggests you keep your home a safe haven for all members of your family by implementing the following safety checklist.

1. Keep electrical cords away from puppies and kittens so they don't chew on them and receive a severe shock. If you have difficulty getting your pet to stop chewing on the cord, you can paint it with a bitter-tasting polish or wrap the cord in a thick plastic sleeve.

2. Make sure nightlights and appliances are completely plugged into wall outlets. Partially exposed prongs are a hazard for curious children, puppies and kittens.

3. Keep halogen lamps away from play areas for pets and children. Some halogen bulbs can reach temperatures of 1,000 degrees. Knocked over during play they could easily cause a fire.

4. Keep appliances near sinks, bathtubs, and pools a safe distance away from the water source. Playful pets can knock radios, curling irons and other items into the water, creating a dangerous situation.

5. Discourage cats and dogs from curling up for a nap behind warm computer equipment. Pets need to be kept away from all electrical connections.

6. Bring pets indoors during lightning storms. Wind, rain and lightning can bring down live power lines, presenting a hazard for pets that are outdoors.

7. Keep candles away from places where a cat or dog can knock them over.



Don't let your pets come in contact with electrical devices or wiring.

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