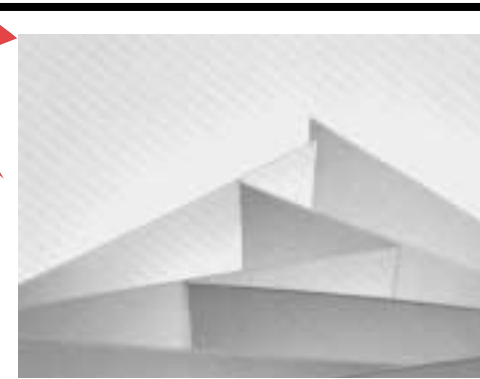


Helpful hints on

HOME ELECTRICITY

Special Holiday Safety
Feature Inside!



FROM THE LEVITON INSTITUTE

VOL. 4

What Electricians Want You To Know About Hiring an Electrician



Want to take the guesswork out of hiring an electrician? By knowing what to ask and what qualifications are important, you can save yourself some time and money.

What's the best way to get quality electrical work at a good price? Electricians say you can save yourself time and aggravation by knowing how electricians work.

The Leviton Institute interviewed several electrical contractors, and here's what they want you to ask before you contract for their services.

1. Ask me about the kind of work I do.

Electrical contractors tend to

specialize. Some only do new construction or remodeling work. Some do only minor repairs, such as installing a new light fixture or replacing an outlet or switch. So tell the electrician about the job you have in mind first.

2. Ask me if a permit is required.

In most municipalities, a permit is required when an electrician needs to run a new circuit or extend an existing one. It's

not needed for simple repairs, such as replacing an outlet or light fixture, but it is for larger projects—say, if you're installing a new hot tub.

A permit provides you with protection, because a government inspector will come to your home to check and approve the electrician's work before the job is completed. The electrical contractor should always obtain the permit under his name, not yours, and post the permit on the job site.

3. Ask me if I am a certified, licensed electrical contractor.

Electricians are highly trained professionals. Their certification and state license are proof they have mastered their trade and that their work meets local electrical codes. For insurance reasons, it's always best to hire a licensed electrician, especially when a permit is required.

4. Ask me if I carry insurance and worker's compensation.

The last thing you want when you hire an electrical contractor is to be sued if a worker is injured while working in your home. Before you hire a contractor for a large project, ask to see proof of current insurance and a state license.

For a typical remodeling job, an electrician should carry a minimum of \$500,000 in liability insurance and worker's compensation coverage.

5. For a small job, ask me for an estimate over the phone.

Electrical contractors don't

mind coming out to give you an estimate, but on a small job, they may lose money just driving to your home. Instead, the electrician may give you his minimum charge, or a fixed price for the job you have described.

On larger jobs, ask for an hourly rate. The average rate for a licensed electrician around the country varies from \$45 to \$65 an hour. Expect to pay more if a helper is needed on the job. You should also call two or three contractors and ask them to come to your home to give you an estimate.

6. Ask the electrician to purchase all the materials for the job.

You may think you'll save money by buying the materials yourself, but the Leviton Institute found it's better for the electrician to make all the purchases. If the electrician buys the materials, he's responsible for warranty issues, defective products, and broken or missing parts.

For example, if you bought a light fixture and the electrician finds a part missing during installation, it's up to you to go back to the store and get the missing part. Meanwhile, the electrician sits around and charges you by the hour. If the electrician buys the fixture and a part is missing, it's his responsibility—and his time.

7. Ask me who is responsible for any repairs caused by the job.

To install a new circuit in your home, an electrician may

need to drill or cut holes in the walls. The repair work is generally not done by the electrician. The same is true if you're having landscaping lights installed outside and the contractor needs to dig trenches in the lawn and uproot shrubbery.

The final question you may have is how to pay for the services. On small jobs, the contractor expects payment when the job is completed. On larger jobs, the contractor will typically ask for 10 to 30 percent of the total job before work begins, with additional payments upon completion of certain stages.

For your protection, do not make the final payment until you've received a waiver stating that all suppliers and other workers on the job have been paid by the electrical contractor. Without this waiver, you may be responsible for these charges if the electrician doesn't pay them.

When the Leviton Institute asked about the best way to find a qualified electrical contractor, word of mouth was the number one answer. Next best, pay a visit to your local wholesale electrical supply house, tell them about your project, and ask for references. The Yellow Pages is another good source. For major projects, think twice before calling someone who advertises on a local bulletin board or neighborhood newspaper because they may not be certified and licensed. ❖

Don't Let Outdoor Holiday Lights Throw You for a Loop



If your home does not have outdoor GFCI receptacles, the Leviton Institute recommends the use of an inexpensive GFCI cord set.

From icicle lights hanging down from the roof to elaborate lawn decorations, more and more families are decorating with festive holiday lights. But are they taking the necessary precautions so no one is thrown for a loop by a frayed extension cord or a damaged wire on a strand of lights?

To protect yourself and your

family from potential electrical hazards, the Leviton Institute urges you to plug all outdoor holiday lights into a special receptacle called a Ground Fault Circuit Interrupter (GFCI). This receptacle is special because it provides personal protection from electrical shocks.

GFCI receptacles are now

required wherever an electrical outlet is within 6 feet of water. That's why they're installed in kitchens, bathrooms, basements, garages, and outdoors. Older homes,—even those built just twenty years ago—may not have GFCI receptacles, inside or out.

Next time you're outside, take a look at your outdoor receptacles. Do they have two buttons on them, marked "test" and "reset?" If they do, you have a GFCI receptacle. If not, the Leviton Institute recommends that you have a GFCI installed before the holiday lighting season.

Another option is to purchase an inexpensive extension cord set that has a built-in GFCI receptacle. First plug the GFCI cord set into the outdoor outlet, and then plug your other extension cords and holiday lights into the GFCI cord set. These GFCI cord sets are available at hardware stores and home centers. They cost about \$25.

One other safety precaution: It is important to test your GFCI receptacle before plugging holiday lights into it to make sure it is still providing protection. You should check all GFCI receptacles once a month. ❖

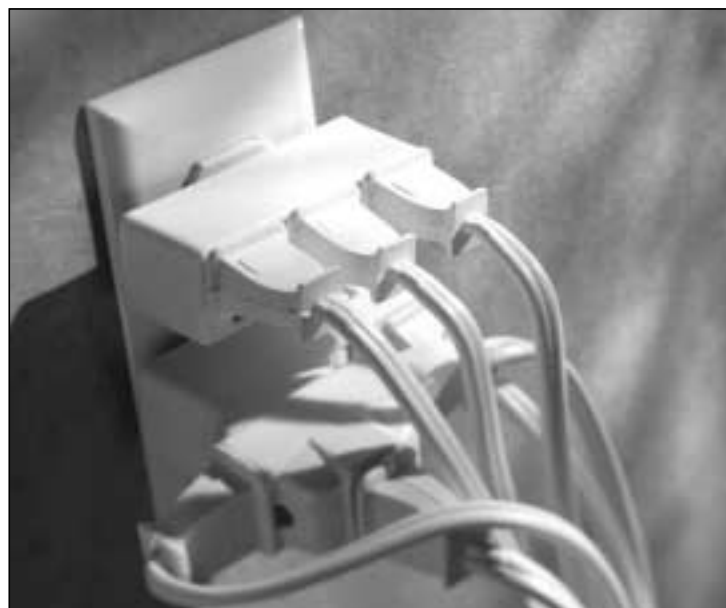
How to Test a GFCI Receptacle

If your home is equipped with Ground Fault Circuit Interrupter receptacles, the Leviton Institute advises they be tested monthly to ensure they are functioning properly. To conduct the test, simply follow these steps:

- Plug a lamp or appliance into the GFCI receptacle.
- Turn on the lamp or appliance.
- Push the "TEST" button on the GFCI receptacle. If the GFCI is working properly, the procedure should turn off the power to the lamp or appliance.
- Push the "RESET" button on the GFCI. This should return power to the GFCI receptacle and re-illuminate the lamp. If the power does not go off when you push the TEST button, there is an electrical problem that should be corrected by a licensed electrical contractor.

Avoid overloading outlets during the holidays

The Leviton Institute asks everyone to please think twice before plugging too many holiday lights and other electrical decorations into a single outlet. The problem: an overloaded outlet can overheat and potentially create an electrical fire.



Holiday Electrical Safety Tips for Children

The sparkle of holiday decorations is a delight to children. They're also a source of potential accidents, including decorations that get plugged into an electrical outlet. To keep infants and toddlers out of harm's way this holiday season, the Leviton Institute offers these simple safety tips.

■ The best place to start looking for potential electrical hazards is at eye level—not at adult eye level, but at child level. This means getting on your hands and knees and seeing the world from a child's perspective.

■ Christmas tree lights, for example, can beckon a child to grab hold of a strand for a closer look—or worse, if they end up in an infant's mouth. To prevent the risks, start the lowest strand of tree lights out of the reach of

infants and toddlers. It's also a good idea to avoid putting small and breakable ornaments, metal hooks, and ornaments that look like food on the lower limbs of the tree.

■ Extension cords are another potential hazard this time of year. Children like to pull on, and sometimes even chew on, extension cords. For safety's sake, keep them out of reach and out of sight. But don't run extension cords under carpets or rugs, because walking on cords could break the insulation and possibly cause a fire.

■ While crawling around on the floor, look for other electrical cords that can be a hazard. A lamp cord dangling from a table, for example, invites a child's curious hands to pull on it. This could send the lamp

toppling down onto the child, causing injury. By using a cord reel, you can shorten the cord and help avert an accident.

■ Finally, take a look at the electrical outlets on the wall. While they hold no appeal to you, to an infant or toddler they're an open invitation to poke something in the holes. And if that something happens to be metallic, sparks could fly.

To prevent problems, the Leviton Institute recommends putting outlet caps on all exposed electrical outlets. There are many types to choose from, such as outlet caps that completely close off unused outlets. You can also install tamper-resistant outlets and tamper-resistant wallplates and adaptors which are available at hardware stores and home centers. ❖

SECTION

Keep Your Holidays Electrically Safe



Never plug in more than three light strands in an extension cord.

Why let an electrical accident ruin your holiday season? Take a little extra care by following these simple safety tips from the Leviton Institute, and get your holiday decorating off to a safe start.

What you need to know about Christmas tree lights

Those strands of holiday lights look innocent enough, but when you plug too many into the same outlet, you run the risk of overloading a circuit. Signs of an overloaded circuit are lights that flicker or dim; a TV screen that shrinks in size; an outlet or switch that feels warm to the touch. Another is a tripped circuit breaker or a blown fuse.

Before you begin to decorate, it's a good idea to check out the condition of each light strand. If you find broken or cracked sockets, loose connections, or frayed or cut insulation, it's best to discard that strand and buy a new one.

When shopping for lights or other electrical decorations, make sure they have the UL safety-approved label. And don't purchase outdoor lights for indoor use. They usually burn hotter than indoor lights.

Here are some other important safety tips:

- ✓ Unplug tree lights when you're not home, and when you go to bed.
- ✓ Never use electric lights on a metallic tree.
- ✓ For outside decorations, use only lights rated for outdoor use.

- ✓ Make sure outdoor lights and all electrical decorations are plugged into a Ground Fault Circuit Interrupter receptacle, preferably with a weatherproof cover.

What you need to know about extension cords

Extension cords can be overloaded just as easily as your house wiring, so don't plug more than three strands of lights into one extension cord. After plugging your decorations into an extension cord, check to see if the cord is warm to the touch. If it is, unplug some of the decorations. Better yet, use an extension cord with thicker wires.

Here are some other tips from the Leviton Institute:

- ✓ Don't run extension cords under rugs or carpets.
- ✓ Keep extension cords out of the reach of infants.
- ✓ Never use indoor extension cords outside. They are not designed to withstand outdoor conditions.
- ✓ Only use extension cords that have the UL label.
- ✓ Use one long extension cord rather than linking several shorter cords together.

According to the U.S. Consumer Product Safety Commission, more than 1,200 people end up at the emergency room for an injury related to holiday lights every year. Another 6,000 are injured by holiday decorations and Christmas trees. ❖

Peak Burglary Season Has Arrived: Are You Prepared?

The holidays are a joyous time for many families. Unfortunately, they are also a time of increased home burglaries. The number of burglaries rises dramatically twice each year, during the holiday season of November and December, and when people take vacations in July and August. The reason is simple: Folks let their guard down.

Over the past 20 years, the number of house burglaries has been declining steadily, according to statistics from the U.S. Department of Justice. In 1981, home burglaries reached a high of 106 break-ins per 1,000 households. By 1999, the number dropped to 34 per 1,000 households—about one home in 30.

Even so, with approximately 3.6 million completed or attempted home burglaries in 1999, one burglary takes place every 11 seconds in the United States. The latest 1999 numbers from the Bureau of Justice Statistics indicate that 42 percent of all reported household burglaries occurred during the day and 32 percent at night with the time of the remaining 26% unknown.

Simple Safety Steps

There are many steps homeowners can take to protect their homes. Most are simple, such as installing deadbolts on all outside doors and making sure all doors and windows are securely locked before leaving home.

For nighttime protection, adequate outdoor lighting is an important deterrent that will make your house less attractive to a burglar. However, with the price of electricity now rising, keeping outdoor floodlights on all night can be somewhat expensive. That's why the Leviton Institute recommends the use of motion detectors.

Motion Detectors

A motion detector is an inexpensive device that automatically turns on the lights it controls. When the device detects the presence of a person within its sensing range, it turns the lights on. After the person is no longer in its sensing range, it turns the lights off.

Timers

You can give your home a "lived-in look" to deter burglars by using rotary timers to turn room lights, radios, and TVs on and off during the night. The lights don't have to be on long, but you do want to have several lights going on and off at differ-

ent times to make it appear that someone is moving about the house.

For year-round convenience, the Leviton Institute recommends the use of electronic timers to control porch lights and landscape lighting. These

Remember to keep the curtains drawn. Most home burglars are semiprofessional thieves or amateurs who may live in the neighborhood. They typically spend less than two minutes trying to get into a door or window before giving up and looking for an eas-



New programmable timers make it easier to give your house a "lived in look" to deter a burglar.

devices allow you to program a variety of on and off sequences during the night. They are installed in the wall and replace regular wall switches.

PLC Devices

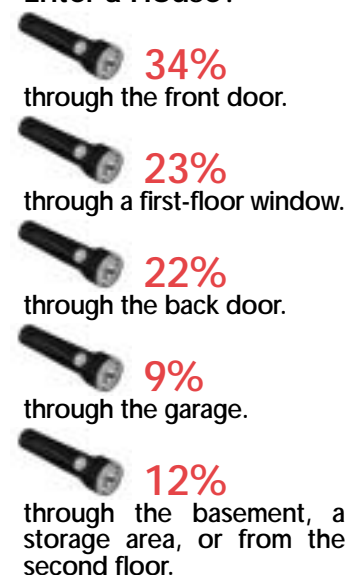
Another solution for controlling indoor lights is to install powerline carrier (PLC) devices that replace standard switches and receptacles and use your home's existing wiring to control lights and appliances. With PLC devices you can program the lights in your home to turn on and off at preset time intervals. You can even control your lights and appliances remotely from a telephone keypad.

Setting Up a Good Defense

Security experts advise putting certain lights in your home on timers all year long, not just when you are away from home. This sets up a routine that gives your home a lived-in look that deters burglars. The locations recommended are near your front and back windows.

ier target. By setting up a good defense, with deadbolt locks, windows that lock securely, and good lighting, you can safeguard your home when you're away. ❖

Where Does a Burglar Enter a House?



Source: National Burglar and Fire Alarm Association.

Hidden Dangers in Telecommuting



As more employers offer telecommuting options to employees, new risks are introduced into the work environment. According to the Leviton Institute, these can have an adverse impact on company security and home office equipment.

For most organizations, network security is a major concern. Yet, when hackers prowl the Internet looking for vulnerable networks, they often start by probing the computers of home offices connected to a corporate

network over the Internet.

To make matters worse, telecommuters favor high-speed broadband Internet connections that are on 24 hours a day, making home computers easy targets for hacker attacks. Even telecommuters connected to a corporate network over a Virtual Private Network (VPN) are vulnerable.

■ Protect yourself from computer hackers

The best solution today is an Internet router with hardware-based firewall protection. Unlike software firewalls, the router's

firewall keeps the computer's Internet address hidden, making the network connection invisible to a hacker.

■ Beware of power surges

Temporary power surges can damage equipment and cause computer programs to lock up and become corrupted.

Many people assume that power surges are caused mainly by lightning strikes, but 80 percent of them are generated from within the home. Common sources include household appliances such as air conditioners, washing machines, clothes dryers and refrigerators. Office equipment, including laser printers, photocopiers and fluorescent lights also generate temporary power surges.

There are several devices that can protect your home from power surges. The first line of defense is an inexpensive power strip that incorporates surge protection. These devices cost between \$20 and \$80. The Leviton Institute recommends that telecommuters purchase power-strips with the maximum amount of surge protection, including protection for telephone and data lines.

Another option is to install surge-protected wall receptacles. "Quad receptacles" that have four outlets with built-in surge protection can replace standard electrical outlets, helping to reduce the jumble of wires that results when too many plug-in devices are used in the home office.

For more robust protection, the Leviton Institute recommends two other devices: a panel-mounted surge protector installed next to the circuit breaker panel, and a meter socket surge arrestor installed at the electric meter. These devices provide whole-house surge protection and should be installed by a qualified electrician.

■ Watch out for blackouts

Blackouts and brownouts, now a more frequent occurrence in certain parts of the country, can also damage home office equipment and cause the loss of important data.

The best solution for preventing this danger is to purchase an uninterruptible power supply (UPS). Not only does a UPS device allow time for an orderly shutdown of a computer when the power goes out, it also regu-

lates the flow of electricity, smoothing out the current before it goes to equipment. Some UPS devices also incorporate surge protection.

■ Avoid overloaded circuits

Surge protectors and UPS devices protect equipment, but they do not protect the telecommuter from the potential hazards of an overloaded wall receptacle.

If too much equipment is plugged into the same outlet, more current may be running through the outlet than it can handle.

There are several telltale signs of overloading: an outlet that is warm to the touch; an outlet that is discolored; circuit breakers that frequently trip or fuses that frequently blow; a noticeable smell of burned insulation; an extension cord that is warm to the touch.

To prevent these electrical hazards in the home office, the Leviton Institute recommends calling an electrician to install a dedicated circuit to the home office. And while the electrician is there, consider installing additional outlets in the home office to eliminate the use of extension cords. ♦

Home Workshops Need Heavy-Duty Wiring



Is the wiring in your home workshop up to the job?

To prolong the life of your power tools—and for your own protection—the Leviton Institute recommends that you conduct a safety audit of your home workshop's electrical wiring system and correct any problems. This is particularly important if your circuit breakers frequently trip.

Here's what to look for:

■ At the service panel

- Circuit breakers supplying the workshop should be 20 amp. Two 20-amp circuits dedicated to the workshop should be adequate. You may want to consider installing a separate subpanel if you frequently run more than two stationary power tools at the same time, or if your shop is far

away from the main service panel.

■ Branch circuits

- If your workshop is in an unfinished room, make sure the exposed wiring runs along structural members and is securely stapled to exposed studs to protect the wiring from potential damage. Some municipalities require the use of armored cable, such as BX, if the wiring is exposed.

- Wiring should be 12 gauge for a 20-amp circuit. Look on the wire's insulation jacket to find out the gauge.

- For an extra measure of safety, put the lights in your workshop on a separate dedicated circuit so if a power tool trips a circuit breaker, the lights will still be on. If this wiring scheme is not feasible, then put the lights on a branch circuit that is not used for powering the tools in the workshop.

- If you can run two separate circuits for your power tools, install the wiring so that both circuits are next to each other so that you can run two tools at the same time. Using two circuits also minimizes the chances of a

momentary (start-up) overload tripping the circuit breaker.

- Consider running a 220-volt circuit in the shop for power tools with motors rated for 220 volts because 220-volt motors draw less current.

■ Outlets and Switches

- Because outlets and receptacles could be damaged by flying debris or large pieces of work banging into them, the Leviton Institute recommends using industrial or hospital grade devices which withstand more abuse than an ordinary residential grade device.

- For the workbench area, install outlets every 2 to 4 feet. In other areas of the workshop, consider installing outlets at a 4-foot height and use metal boxes and metal wallplates if the wiring is exposed. Be sure to check your local electrical building codes before installing outlets.

■ Extension cords

- Avoid using extension cords as permanent wiring. In cases where extension cords must be used, it's a good idea to regularly inspect the entire length of the cord. Replace, rather than repair,

damaged extension cords.

- Always use an extension cord rated for the tool. The tool's owner's manual will indicate the proper wire gauge and maximum length for extension cords.

- A coiled extension cord may build up heat when it has a heavy load on it, creating a potential fire hazard. It's best to make a regular habit of uncoiling all extension cords before using them.

■ Personal protection

- Install a Ground Fault Circuit Interrupter (GFCI) receptacle as the first outlet in any circuit so it will provide personal protection from electrical shock along the entire circuit.

- When an extension cord is required for outdoor use and cannot be connected to a GFCI-protected outlet, use a GFCI cord set with the extension cord.

■ Surge protection

Each time powerful motors are switched on or off, voltage surges could be generated that can sneak back into the house wiring. By installing a panel-mounted surge protection device on the branch circuits feeding the workshop, voltage surges can be reduced. ♦