

Electrical Safety Checklist

Courtesy of
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www.jloelectrical.com

Doing an electrical safety check in and around your home twice a year will keep your home and family safe!

At the beginning of summer and winter, check each room in your home for electrical safety. Work through the lists below. Invest 10 - 20 minutes of your time now. It may save a life or prevent an accident in the future.

Make a note of any problems and make sure they are repaired.

Sockets and Switches

- Are all sockets, switches and multiboxes working properly with no damaged or broken plugs, sockets, light switches or light fittings?
- Are all sockets and switches cool to the touch?
- Do all electric plugs fit snugly into the sockets?
- Are all multi-boxes placed up high, out of the reach of children?
- Have you installed safety devices such as GFI Protected Outlets, shuttered sockets and recessed outlets?
- Have you limited the number of appliances plugged into one outlet, so as not to draw too heavy a load on the circuit?
- Do you have only one heater per outlet?
- If children are present, do **all** unused outlets have **safety covers**?

Safety Tips

Purchase safety covers for all unused outlets. Children can suffer serious shock and burn injuries if they insert objects into outlets. Are **all** outlets and switches **working** properly?

Have an electrician check the outlets and switches. Improperly operating outlets or switches may indicate that an unsafe wiring condition exists. A loose screw holding a wire or a worn out switch can lead to electrical arcing, overheating, or a fire. Are **all** outlets and switches **cool** to the touch?

Make sure appliances are not overloading the outlet. Stop using them until an electrician checks the problem. Unusually warm outlets or switches may indicate an unsafe wiring condition exists, such as a loose electrical connection that can start a fire. (Some dimmer switches may become warm during normal use) Do **all** electrical plugs fit **snugly** into all outlets?

Have the outlet replaced. Loose-fitting plugs can cause overheating and fires. A loose connection cannot carry much current without getting hot. Do **all** outlets have **faceplates** covering all wiring?

Install faceplates. Exposed wiring is a shock hazard. Children may stick objects into an electrical outlet that is not covered with a plate.



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Electrical Cords (including those on lamps and extension cords) and Entertainment Equipment (TVs, DVD players, computers, etc.)

- Are all electric cords in **good condition**, with no cracking or fraying in the outer cover or any internal wires exposed?
- Are all electric cords **clear of rugs and furniture**?
- Are all **extension** cords used for **temporary** purposes only? If not, ask an electrician to install a socket-outlet where needed.
- Are all cords **out of the way** so they can't be tripped over, damaged by furniture, or caught in any way?

Safety Tips

Replace all damaged cords or replace equipment. Damaged cords may have exposed live wires that can be shock and fire hazards. Is **any** cord placed where it might be stepped on?

Move all cords so they are out of the path of foot traffic. Cords placed in the path of traffic are tripping hazards. Cords can be damaged when stepped on, creating a fire or shock hazard. Is **any** piece of **furniture** or **rug** resting on an electrical cord?

Move cords or furniture so cords are not covered. Heavy weights or traffic can damage cords, crushing insulation or breaking wire strands, creating a fire or shock hazard. Is **any** cord tightly **wrapped** around any object?

Unwrap cords. Wrapped cords trap heat that normally escapes loose cords, which can lead to melting or weakening of insulation. Are cords attached to anything (wall, baseboard, etc) with **nails or wire staples**?

Remove any nails and/or staples and replace damaged cords. Nails and staples can tear or crush the insulation or cut the wires inside, presenting a fire or shock hazard. Are **all** extensions cords equipped with **safety covers** on the unused outlets?

Replace cord with a higher capacity cord (16 AWG handles 1375 W, use 14 or 12 AWG for heavier loads). Too much current will cause the wires to get hot. If the cord, plug, or outlet feels warm, it may be overloaded, and can be a fire hazard. Is **any** extension cord being used on a **permanent** basis?

Have new outlets installed where needed, or move appliance closer to an outlet. Extension cords are not as safe as permanent house wiring. Installed wiring can carry more current and is protected from accidental damage that could cause shock or fire. Is **all** the entertainment equipment placed so that **air** can freely circulate around it?

Move equipment so it has room to "breathe." Avoid enclosing equipment in a cabinet without proper openings and do not store papers around equipment. Blocking air flow to equipment can cause overheating and a possible fire hazard. (Refer to the owner's manual for guidance.) Is **all** the equipment in a **dry** location, free of any source of water, including rain, leaks, and spills?

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Relocate equipment away from water source such as plants and aquariums. Mixing electricity and water can result in a serious shock or fire hazard.

3-Prong Adapters

- Are properly grounded **3-prong adapters** used to attach power cords with 3-prong plugs to older 2-prong outlets?

Safety Tip

Always connect the grounding wire or metal tab on the adaptor to the center screw on the outlet cover. The grounding feature provided by a 3-prong adapter for a 2-prong outlet is a safety feature designed to lessen the risk of fire or shock in case of an appliance fault. NEVER defeat the adapter's grounding feature or break the ground pin from a 3-prong plug.

Lighting

- Do you have the **correct** bulbs in your light fittings and lamps?

Safety Tip

Replace the bulb with the correct wattage bulb. If you aren't sure, use a bulb 60 watts or less. For unmarked ceiling fixtures with miniature bulbs, use 25 watt bulbs. A bulb that is a higher wattage than recommended may overheat the light fixture, wiring or nearby combustible materials, leading to a fire.

Portable Electric Heaters

- Do you follow the "heater metre rule" with all heaters at least one metre away from things that can burn?
- Are all heaters in good working condition with no broken parts, funny noises or smells?
- Have you recently maintained and cleaned your heater?
- Does the heater have a seal of a **nationally-recognized testing laboratory (NRTL)**, such as UL, ETL, or CSA?

Safety Tips

Replace heater. Keep heaters far away from all combustibles and avoid touching them while plugged in and hot. Avoid using an uncertified heater. There is less assurance that safety features are adequate for heaters not tested by a nationally recognized lab. Is the heater placed **at least 3 feet** from **combustibles**, such as drapes and newspapers?



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Move heater at least 3 feet away from combustibles and check that nothing could fall or lean onto the heater. Some heaters can produce enough heat to ignite nearby combustible materials. Is the heater **stable** and placed where it will not tip over?

Place heater on a stable surface and ensure it is out of traffic. A fire hazard can result if a heater is tipped over. Children, animals, or even blowing drapes can knock a heater over. Although some heaters have tip-over switches, it is better to be sure the heater is stable. Is the heater in **good working order**? (no odd smells, sparks or smoke when operating)

Have the heater repaired or buy a replacement that has a seal (from a NRTL) on it. Operating problems often indicate an unsafe electrical condition that could cause fire or electrical shock.

Large Appliances

- When moving or repositioning of large heavy appliances such as refrigerators and freezers, care must be taken not to damage the flexible power supply cords.
- Do you regularly check and clean the lint from your clothes-dryer filter?
- Do you consistently ensure that the stove-top is kept clear of things that could burn - such as paper towels and plastic cords - keeping them at least one metre away from the elements?

Small Appliances

- Are all small appliances around your home in good condition with no exposed wiring, funny noises or smells?
- Do all your small appliances operate correctly?
- Are all small appliances unplugged when not in use?
- Are all cords to electric appliances stored out of the way so that a child cannot pull them down onto him or herself?

Electric Blankets

- Are all electric blankets in good condition with no scorch marks, kinks, exposed or damaged wiring?
- Are your electric blankets stored flat or rolled in corrugated cardboard when not in use?
- Have you had your electric blanket tested recently?
- How old are your electric blankets? (We generally recommend replacing an electric blanket after 2 or 3 years of use).

See Appendix A for more information – Electric Blankets



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In All Bathrooms - Small Electrical Appliances (hairdryers, curling irons, electric razors, etc.)

- Are **all** appliances **unplugged** when not in use?

Safety Tips

Unplug all small appliances when not in use. Even when turned off, plugged-in electrical appliances may cause a shock hazard if they fall into water. Sometimes a worn switch may turn on with no one touching it. Are **all** appliances in **good condition**? That is, are they working the same with no signs of damaged wiring or parts? (smoke, sparks, and noises, etc.)

Discard or have repaired. Irregular operation is a sign of damage to electrical parts. Damaged appliances can become a shock or fire hazard. Are **portable heaters** ever used in the bathroom?

Consider installing a fixed heating fan. Avoid using portable heaters in the bathroom. If you use a portable heater, either plug it into a GFCI outlet or use a heater with a GFCI plug. Portable heaters can be an electrocution hazard when used in bathrooms. The many grounded surfaces and water contribute to this hazard. A GFCI can help to reduce the risk of serious injury or electrocution.

Fuses and Circuit Breakers

- Can you change a fuse correctly?
- Are all fuse wires the **correct size** for the circuits on your switchboard?
- Is it a rare occurrence for a fuse to blow in your home? If this happens have an electrician find the cause.

Further information see Appendix B

Circuit Breaker Box

- Do you periodically turn **circuit breakers** off and on?

Safety Tips

Turn off the freezer, refrigerator, and air conditioner. Flip each circuit breaker off and on three times. Do this at least once a year. Circuit breakers must be exercised periodically to make sure they have not become stuck and to keep them in good working order. Appliances with compressor motors can be damaged by repeated power interruptions if you don't turn them off or unplug them.

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Test GFCIs monthly. To test: Push the test button. The breaker handle should go to the middle or off position. To reset: Move the breaker handle to the off position and then to the on position. A defective GFCI circuit breaker should be replaced by a qualified electrician. GFCIs must be operating properly to protect against electrocution. They can fail without showing any sign of failure, so regular testing may save your life. By installing GFCIs, you are reducing your risk of electric shock.

If **Arc Fault Circuit Interrupters (AFCIs)** are installed, are they tested periodically?

To test: Follow the directions in the GFCI test above. A defective AFCI circuit breaker should be replaced by a qualified electrician.

AFCIs are special circuit breakers that detect electrical arcing that may occur if a wire or connection is damaged. Without an AFCI, this kind of arcing could cause unnoticed overheating and start a fire. AFCIs can stop working without showing signs of failure, so regular testing to identify a non-functioning AFCI may save your life.

Electrical Power Tools

- Are **all** cord connected power tools equipped with **3-prong plugs** or marked to indicate they are **double insulated**?

Safety Tip

Consider replacing older tools lacking these safety features. At the very least, make sure to plug them into a working GFCI outlet when using them. These safety features reduce the risk of electric shock and electrocution. Metal-cased electrical tools without proper grounding become more dangerous as old internal insulation wears and cracks. Portable GFCIs are as effective as installed GFCIs.

Outdoors

- Are all power lines well clear of buildings, structures and trees?
- Are all outside electrical outlets protected by an **RCD** or an isolating transformer?

Electrical Outlets

- Does **each** outlet have its own **weatherproof cover**?

Safety Tips

Have weatherproof covers installed and keep them closed on unused outlets. If outlets must be used in wet weather, install a "weatherproof while in use" cover. Moisture can get into outside outlets and cause a malfunction, which can pose a possible shock or fire hazard. Most covers don't keep water out when a cord is plugged into them, because the water drips between the plug and outlet. Are **all** outlets protected by a **GFCI**?

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Have GFCIs installed or plug in a portable GFCI when you use an outdoor outlet. GFCIs are sensitive to moisture and should be protected when used outdoors. GFCIs protect against electrocution. Many local building codes require installing GFCIs for outside circuits when new homes are built or when existing ones are renovated.

Electric Garden Tools (lawn mowers, hedge trimmers, weed trimmers, etc.)

- Are **all** power cords in good condition (e.g., no **cracks, exposed wires**, etc.)?

Safety Tips

Have damaged cords replaced by a qualified repair facility. Damaged cords that have exposed wires are shock and fire hazards, especially outdoors when in contact with moisture and the ground. Are **tools** in good condition and **operating properly**? Do they function in a consistent manner and show no signs of damaged wiring or parts?

Discard them, or have the tools repaired by a qualified repair facility. If a power tool is not operating as you would expect, it is usually a sign of damage. Damaged tools can become a shock or fire hazard when wiring, motors, or other electrical parts begin to wear out or fail. Are **corded electric power tools** used around ponds or other wet or damp areas?

Avoid using corded tools in damp or wet locations. If a tool gets wet, unplug it before touching it. Let it dry thoroughly. If the tool was immersed have it tested at a qualified repair center before trying to use it again. Or use battery powered tools if possible. An electric tool in water is a potential electrocution hazard. No home power tools and few submersible pumps are safety-tested for use with people in the water. Even double insulated tools can become dangerous if they get wet. Using **GFCI** protection can reduce the risk of injury.

Extension Cords Used Outdoors

- Are **extension cords** marked specifically for **outdoor use**?

Safety Tips

Replace with extension cords marked for outdoor use. Cords made for indoor use will not withstand the temperature, humidity, and mechanical stresses of outdoor use. Indoor cords are more easily damaged and could become fire or shock hazards when used outdoors. Are **3-prong extension cords** available **and being used** with the grounded (3-prong) plugs on outdoor products?

Obtain 3-prong extension cords with proper grounding (3-prong plugs and three-slot outlets). Products with 3-prong plugs are designed to lower the risk of electric shock. Using a 3- prong product with a 2-prong extension cord eliminates the protection and increases the likelihood of electrocution or fire if the tool has an internal electrical fault.

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Pools and Spas

- Is any **electrical equipment** used outdoors or around a swimming pool, spa or hot tub?

Safety Tip

Make sure all electrical equipment stays dry. Plug power cords only into working GFCI outlets. Unplug the equipment if it is wet or immersed in the water before you try to “rescue” it. Electrical products, even those in plastic or “double insulated” cases, can leak electrical current if they become wet from rain or splashing or have fallen into water. If they are wet, they are a serious shock or electrocution hazard.

Electrical Emergency

- Do you know what to do in an electrical emergency?
- Have you taught your family to be safe around electricity?
- Do you have smoke alarms installed in your home?
- Have you tested your smoke alarms recently? Do you test them regularly?
- Do you have a multi-purpose fire extinguisher in your home?
- Do all people who live in your home know the safest evacuation route in case of an emergency?
- Do you have an emergency plan?

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Appendix A

Electric Blankets

- Each season, before using your electric blanket, check for damage or wear and check again each time you change the sheets. Inspect the cord, control switch and plug for any damage and look for any kinks, worn or exposed wires, scorch marks, or breaks in the heating element.
- To check, turn the blanket on for 15 minutes at the highest setting (don't leave the room) and then turn it off. Run your hand over the blanket and feel for hot spots. A hot spot indicates that the heating coil has been kinked or damaged, which could lead to fire or electric shock so the blanket should be replaced with a new one.
- Use an electric blanket only to warm the bed. To avoid overheating, switch it off before you get in. Overheating can be life threatening, especially for the very young, ill, or elderly.
- Creasing can damage the heating elements, so when fitting the blanket, ensure it is flat on the bed. Secure the blanket firmly, using the attached ties. Pins or sharp objects should not be used. Keep the cord and control switch clear of the bed so they don't get damaged.
- Never leave an electric blanket unattended for long periods of time when it is switched on.
- In summer, store your blanket rolled (in corrugated cardboard, if possible) or leave it flat on your bed or in a dry area where no objects will be placed on it. Never fold your blanket, as this is likely to damage the heating elements.
- Never use an electric blanket that is wet. Dry it thoroughly according to the manufacturer's instructions. Never drink in bed or place a hot water bottle in a bed when an electric blanket is in use.
- Never buy second hand or used electric blankets.
- Some people are more sensitive to electricity than others and can feel a sensation from an electric blanket, even with the electric blanket controller in the off position. **Any such sensation from an electric blanket or any other electrical appliance should be checked out by an electrician or other competent person, prior to further use.** Should the blanket be found to be safe by the electrician or other competent person, any sensation felt from the blanket can be stopped by switching the blanket off at the wall socket-outlet or by removing the plug from the socket-outlet.

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Appendix B

Introduction

The permanent wiring and electrical fittings (switches, socket outlets, lighting outlets) in your home are part of the electrical installations.

Electrical installations can age and become overloaded, particularly in old homes where the original wiring may not adequately meet the requirements for the number of electrical appliances in use today.

Warning signs that the electrical installation in your home is becoming unsafe include plugs and sockets that are hot to the touch or are discoloured with brown scorch marks, fuses that blow, circuit breakers that trip for no apparent reason, and flickering lights.

These signs may mean that the wiring of the electrical fittings in your home needs upgrading. If you are concerned, contact a licensed electrician.

If you notice any of the above warning signs when buying a house, have a licensed electrician check the internal wiring. They will be able to tell you if any repairs are necessary and will estimate the cost.

Homeowners are permitted to undertake wiring in strict accordance with **ECP 51**. However, this should not be attempted unless the homeowner is confident that he or she has the knowledge, tools, and skills necessary for the task. (Note: An inferior job can be considerably more expensive, in time and money, than paying a properly licensed electrician to do perform the work in the first instance.)

Failure to follow the requirement of ECP 51 could cause an unsafe situation and lead to electric shock or fire.

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Fuses and Circuit Breakers

The switchboard protects the electrical wiring system in your home. It comprises the main power switch, along with a number of fuses, or circuit breakers. Each fuse or circuit breaker corresponds to a different area of wiring in your home.

In the event of an electrical fault the fuse will blow or the circuit breaker will trip. The power to the corresponding area of the house will be shut off, to prevent overloading or fire.

The main difference between a circuit breaker or a fuse is that a circuit breaker can be reset, whereas once a fuse blows it must be replaced.

Before you replace a fuse, always turn off the main power switch and all appliances and lights that are on that fuse. Always replace a fuse with the correct current rating. A fuse with too high a current rating could allow excessive current to flow through the circuit, leading to overheating and possibly fire.

If a fuse keeps blowing, call a licensed electrician. If possible, replace the fuses in your switchboard with plug-in circuit breakers of the same rating, as these are safer to use and do not require replacing.

It is always a good idea to know what each fuse or circuit breaker protects. Switchboards are normally labelled. If yours is not, next time you have electrical work done, ask your licensed electrician to do this for you. This can save you time in identifying a blown fuse or which circuit breaker to switch off, should the need arise.

How to Replace a Fuse

Follow this guide when replacing some types of fuses:

1. Turn off the main power switch at the switchboard.
2. Look inside the switchboard for a list of the equipment or circuits each fuse controls. Usually one fuse controls a certain area of the house, such as the kitchen, or certain types of equipment, like lighting.
3. If you can't tell which fuse has blown, pull out, inspect, and replace each fuse, one at a time.
4. Once identified, switch off lights and unplug all appliances on the faulty circuit.
5. Replace the fuse wire. There are a number of different types of fuses. If you are not sure, the best way to replace a fuse is to examine one of the intact fuses in your switchboard and copy the way the wiring runs in the carrier.

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6. Make sure you use the correct current rating fuse wire. The current rating is generally indicated on the front of the fuse carrier.
 - Lighting circuits typically use 5 amp fuse wire, but not greater than 10 amp.
 - Socket outlets use 10 amp fuse wire, but not greater than 15 amp fuse wire.
 - Large appliances, such as electric stoves, may use a larger size fuse.
7. Make sure no excess fuse wire is sticking out of the fuse carrier.
8. Replace the fuse carrier and turn on the main power switch.
9. Check all appliances, light fittings and cords that were in use when the circuit failed. Replace or repair faulty equipment. Check that the fuse did not blow due to overloading the circuit.
10. If the fuse blows again, call a licensed electrician.
11. Never be tempted to replace a fuse wire with a larger size of fuse wire, or another object. Doing so may result in an electrically-caused fire.
12. If a fuse has blown it is because of an overload situation or a fault has occurred on the circuit. If you replace a fuse and it still blows, you should call a licensed electrician.

How to Check Your Circuit Breaker

1. If your power goes off because your circuit breaker has tripped, look for the lever in the "off" position or where the button has popped out.
2. Switch off lights and unplug all appliances on the faulty circuit.
3. Push the operating lever to the "on" position, or push in the button on the circuit breaker.
4. If the circuit breaker continues to trip, call a licensed electrician.

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Appendix C

Electrical Safety Publications

016 Extension Cords Fact Sheet Fact Sheet www.cpsc.gov/cpsc/pub/pubs/16.html

099 GFCIs Fact Sheet Fact Sheet www.cpsc.gov/cpsc/pub/pubs/99.html

516 Repairing Aluminum Wiring Booklet www.cpsc.gov/cpsc/pub/pubs/516.pdf

518 Home Wiring Hazards Booklet www.cpsc.gov/cpsc/pub/pubs/518.pdf

519 Don't Swim with Shock Booklet www.cpsc.gov/cpsc/pub/pubs/519.pdf

524 Electrical Receptacle Outlets Fact Sheet www.cpsc.gov/cpsc/pub/pubs/524.html

5037 Newer Hairdryers Prevent Electrocutions
Safety Alert www.cpsc.gov/cpsc/pub/pubs/5037.html

5038 Use a Ground-Fault Circuit-Interrupter With Electric Heaters in the Bathroom
Safety Alert www.cpsc.gov/cpsc/pub/pubs/5038.html

5039 Install Ground-Fault Circuit-Interrupter Protection for Pools, Spas and Hot Tubs
Safety Alert www.cpsc.gov/cpsc/pub/pubs/5039.html

5040 Use a Ground-Fault Circuit-Interrupter with Every Power Tool
Safety Alert www.cpsc.gov/cpsc/pub/pubs/5040.html

5060 Metal Ladders and Electricity Don't Mix
Safety Alert www.cpsc.gov/cpsc/pub/pubs/5060.pdf

5061 Electrocutation Hazard with Do-It-Yourself Repairs of Microwave Ovens
Safety Alert www.cpsc.gov/cpsc/pub/pubs/5061.html

5133 Preventing Home Fires: Arc Fault Circuit Interrupters (AFCIs)
Safety Alert www.cpsc.gov/cpsc/pub/pubs/afci.html

5134 Arc Fault Circuit Interrupters (AFCIs)
Fact Sheet www.cpsc.gov/cpsc/pub/pubs/