



GFCI Outlets

A Ground Fault Circuit Interrupter (GFCI) is an outlet designed to help protect people from electrical shocks due to hazardous ground faults. Ground faults occur when instead of following its normal safe path, electricity overloads a circuit, shorts a circuit or follows an undesirable path, possibly flowing through to a person.

For example:

- Operating electrical equipment in wet or damp conditions
- Electrical current leaks from appliances or tools
- Electrical wiring becomes frayed or damaged

GFCIs are required by The National Electrical Code® (NEC®) to be installed for personal protection near all household water and moisture sources such as: bathroom and kitchen sinks, pools and spas, laundry rooms, basements and other wet or damp locations.

Overview

GFCI outlets are designed to help prevent people from receiving dangerous shocks. When a ground fault occurs and electricity from an appliance passes through the person's body, the resulting shock can cause serious injury or even death.

GFCIs have special circuitry built into them. When any light or appliance is plugged into a GFCI outlet, it receives power, just as if it's plugged into a regular outlet. But the GFCI monitors the electrical power that it feeds to the light or appliance. If it detects a ground fault, **IT SHUTS OFF POWER TO THE LIGHT OR APPLIANCE IN A FRACTION OF A SECOND**, to help prevent serious injury to a healthy person.



Where to Install GFCI Outlets

The NEC requires the installation of GFCIs in the following areas of the home: kitchens, bathrooms, laundry rooms, workshops, basements, garages/carports and outdoor areas such as pools, decks and patios.

When customers are installing or replacing electrical outlets, you should recommend they upgrade to GFCI outlets to provide themselves and their family with this important protection. GFCI outlets not only protect what's plugged into them, but also provide feed-through protection to ordinary outlets wired downstream (other outlets on the same circuit).

Benefits of Leviton SmartlockPro® GFCI Outlets

Patented Reset Lockout – prevents reset if a SmartlockPro GFCI is damaged so that it cannot respond to a ground fault. Competitive GFCIs may allow reset even if they are no longer providing protection. The SmartlockPro RESET button will not engage if:

- The GFCI is miswired due to reversal of the line and load leads, delivery of power to feed-through terminal and face will be blocked
- There is no power being supplied to the GFCI
- The GFCI cannot pass its internal test

LED Indicator for Line-Load Reversal – if miswired during installation (line-load reversal) it cannot be reset. The green LED will be ON to indicate a line-load reversal. Once the GFCI is properly wired and can be reset, the LED acts as a power indicator that remains ON as long as the GFCI is providing power. Unlike some other designs that employ a one-time feature, Leviton's line-load reversal protection is not lost or disabled after initial installation.

SmartlockPro Dual-Function LED Indicators*

	LED Indication	Reset Status	Reason
During initial installation	ON	Will not reset	Line and load leads are reversed
	OFF	Press RESET and LED comes ON	GFCI is wired and operating correctly
During normal operation	ON	GFCI is reset	Power is ON
	OFF	GFCI is tripped	Power is OFF

*Self-test indicators may differ. Refer to instruction sheet.

Slim Design – takes up 25% less space in the wallbox vs. other GFCIs. Reduced depth makes them easier to install in any electrical box, even shallow ones. Plus, the terminals allow for easy wiring options, with back and side wire capabilities.



Typical GFCI

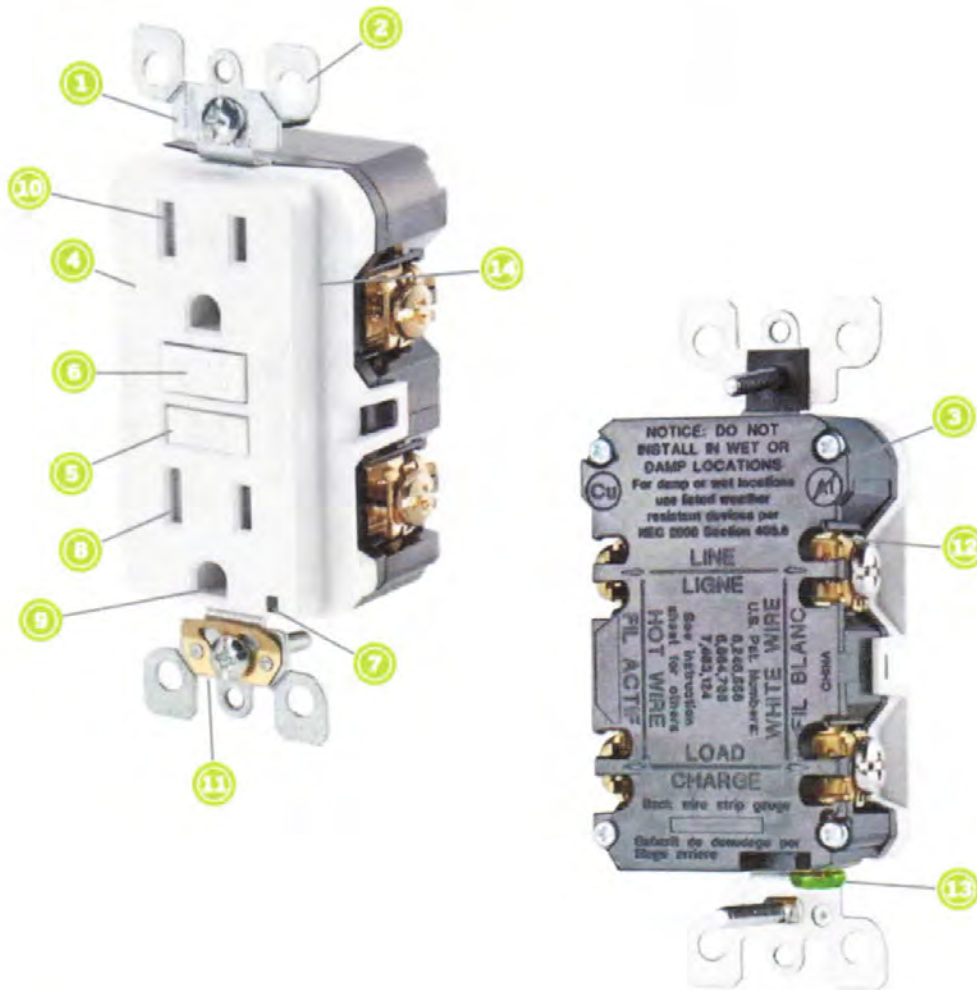


SmartlockPro® Slim GFCI

Components of GFCI Outlets

Figure 1 shows a typical Leviton duplex GFCI outlet and identifies several components of the device. There are some variations, but basically, all GFCI outlets have these elements.

Figure 1



- 1 The MOUNTING STRAP is the backbone of the GFCI and holds the device in place within the wallbox.
- 2 The PLASTER EARS are part of the mounting strap and help the GFCI sit flush with the wall.
- 3 The BODY is the back part of the GFCI.

- ④ The IMPACT RESISTANT FACE reduces cracking or damage from hard contact.
- ⑤ The TEST BUTTON is used to test the GFCI and confirm it is working properly. When pressed, the RESET BUTTON pops up and the GFCI shuts off the power.
- ⑥ The RESET BUTTON pops up when the GFCI is tested. SmartlockPro GFCIs PATENTED RESET LOCKOUT will prevent reset if the GFCI circuit is not functioning properly and cannot respond to a ground fault. It also will shut off power when it detects a faulty light or an appliance leaking current. It can be pressed back down to restore power, but will immediately trip again until faulty equipment is unplugged.
- ⑦ The DUAL FUNCTION INDICATOR LIGHT indicates: (1) if the device is miswired during installation (line-load reversal) and cannot be reset, the green LED will be ON to indicate a line-load reversal. Once the GFCI is properly wired and can be RESET, (2) the LED acts as a power indicator that remains ON as long as the GFCI is operating correctly and providing power.
- ⑧ The CONTACTS are inside the GFCI. They grip the blades of an inserted plug and provide the electrical current to the lamp or appliance.
- ⑨ The GROUND CONTACT is also inside the GFCI outlet. It grips the ground pin of three-pronged plugs.
- ⑩ The TAMPER RESISTANT SHUTTER blocks access to the contacts unless a properly rated two or three prong plug is inserted into the device.
- ⑪ The SELF GROUND CLIP ensures device is grounded in a properly grounded metal wallbox without having to connect a ground wire directly to the GFCI.
- ⑫ The EXTERNAL BACK WIRE CLAMP connects the wires (called electrical conductors) from a power source to the GFCI. The terminal screws on GFCIs are color coded so they clearly show which conductor should be connected to which terminal screw. The brass screws are for the "hot" conductor. The silver terminal screws are for the neutral conductor.
- ⑬ The GREEN HEXAGONAL GROUND SCREW is fastened to the strap and is used to connect the GFCI outlet to the ground wire (if any) in the wallbox.
- ⑭ The RATING is indicated on the device and shows the GFCIs electrical rating. GFCIs are available with either 15 Amp or 20 Amp ratings at 125 Volts. All GFCIs are rated 20A-125V Feed-Through. (Meaning it can be installed on a branch circuit protected by a 20A circuit breaker.)

Types of GFCI Outlets

GFCI outlets can replace standard outlets. Leviton SmartlockPro GFCI outlets are available in both 15 and 20 Amp versions including many styles: standard (non tamper resistant), tamper resistant, outdoor grade, and space-saving switch/outlet combinations.



Cat. No. N7599

- **Standard GFCI** – Available with matching or red and black TEST and RESET buttons.



Cat. No. X7599

- **Tamper Resistant GFCI** – Available with matching or red and black TEST and RESET buttons. Meets child safety requirements of the NEC – built in shutter helps prevent access to the contacts by most foreign objects.



Cat. No. X7590

- **Blank Face GFCI** – Designed for installation near pools, spas, hot tubs and other areas where GFCI protection is required but an outlet may not be needed.



Cat. No. X7299

- **Switch and Tamper Resistant GFCI Outlet** – Space saving design fits multiple devices in a single wallbox



Cat. No. X7592

- **Tamper Resistant GFCI w/LED Guide Light** – Has added benefit of a dual LED guide light without losing outlet space. The built-in sensor automatically turns the guide light ON/OFF based on ambient lighting.



Cat. No. S7599

- **Self-Test GFCI** – Performs a self-test every 15 minutes to confirm that protected power is available. This device has two status indicator lights and an audible tone to signal the status of GFCI protection.



Cat. No. WT599

- **Weather/Tamper Resistant GFCI** – Meets NEC requirements for outdoor wet or damp locations.



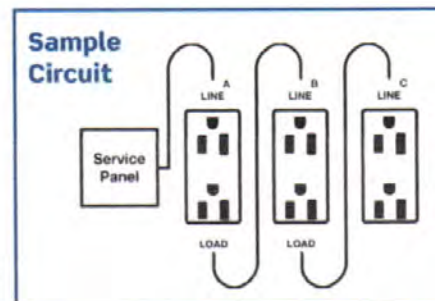
Weather resistant GFCIs must be installed in weatherproof enclosure with approved caulk and gaskets.



Installation and Wiring Considerations

1. If there is any installation where the customer is unsure of how to proceed, or does not feel able to carry out the tasks specified in the wiring device instruction sheets, **STOP RIGHT THERE!** Always advise the customer to **CONSULT AN ELECTRICIAN** in such a case. Electrical wiring can be complicated, and unless the installation can be properly and safely completed by the customer, the very best plan is to contact an electrician. GFCI's do not necessarily wire the same as conventional outlets.
2. The information in this manual is here to help you serve your customers. Do not use this information as a substitute for the installation instructions provided with the devices themselves. The instructions contain very specific and detailed directions for the device they're packed with. Use this guide as a general reference, but also become familiar with the specific instruction sheets for the devices your customers will be asking about.
3. Remind your customers that in order to prevent death or injury before they begin any wiring project, **THEY MUST TURN OFF POWER AT THE FUSE OR CIRCUIT BREAKER THAT SUPPLIES ELECTRICITY TO THE WIRES THEY WILL BE WORKING WITH.** And after they complete their installation, they should restore power at the fuse or circuit breaker and verify that the new device is working properly. If the fuse blows or the circuit breaker trips when power is restored, or if the new device doesn't seem to be working properly the customer should immediately contact an electrician.
4. **DO NOT** install the GFCI outlet in an electrical box containing (a) more than four (4) wires (not including the grounding wires) or (b) cables with more than two (2) wires (not including the grounding wire). Contact an electrician if either (a) or (b) is true.

5. Placement in Circuit: The GFCI's place in the circuit determines if it protects other outlets in the circuit. Placing the GFCI in position A will also provide protection to "load side" outlets B and C. On the other hand, placing the GFCI in position C will not provide protection to outlets A or B. Remember that outlets A, B, and C can be in different rooms.



Testing a GFCI Outlet

A GFCI outlet must be tested immediately after installation and then on a monthly basis going forward. If the GFCI is miswired it may not prevent personal injury or death due to a ground fault (electrical shock). If the LINE wires are mistakenly connected to the LOAD terminals, the GFCI will not reset and will not provide power to either the GFCI outlet face or any outlets fed from the GFCI.

How to Test a GFCI Outlet



1. Plug a lamp or radio into the GFCI outlet and turn ON the lamp or radio.

2. Push the TEST button on the GFCI. The GFCI will trip and power to the lamp or radio will be cut OFF.

3. The GFCI is working properly only if you can push the RESET button on the SmartlockPro GFCI to restore power to the lamp or radio.



The SmartlockPro RESET button will not restore power if the GFCI is damaged and cannot respond to a ground fault. Some GFCIs can still be RESET and provide power even though they are not providing protection.



GFCIs can become damaged over time. They must be tested monthly to ensure they are providing protection.