1. What is a GFCI?
A GFCI receptacle is different from conventional receptacles. In the event of a ground fault, a GFCI will trip and quickly stop the flow of electricity to prevent serious injury.

Definition of a ground fault:
Instead of following its normal safe path, electricity passes through a person’s body to reach the ground. For example, a defective appliance can cause a ground fault.

A GFCI receptacle does NOT protect against circuit overloads, short circuits, or shocks. For example, you can still be shocked if you touch bare wires while standing on a non-conducting surface, such as a wood floor.

2. The GFCI’s features

- **Receptacle**
- **Outlet**
- **Test button:** See step 8
- **Reset button:** See step 8
- **Power Indicator Lamp**
- **Mounting Bracket**

3. Should you install it?
Installing a GFCI receptacle can be more complicated than installing a conventional receptacle.

Make sure that you:
- Understand basic wiring principles and techniques
- Can interpret wiring diagrams
- Have circuit wiring experience
- Are prepared to take a few minutes to test your work, making sure that you have wired the GFCI receptacle correctly

4. LINE vs. LOAD
A cable consists of 2 or 3 wires.

- **Cable**
- **Wires**

**LINE cable:**
Delivers power from the service panel (breaker panel or fuse box) to the GFCI. If there is only one cable entering the electrical box, it is the LINE cable. This cable should be connected to the GFCI’s LINE terminals only.

**LOAD cable:**
Delivers power from the GFCI to another receptacle in the circuit. This cable should be connected to the GFCI’s LOAD terminals only. The LOAD terminals are under the yellow sticker. Do NOT remove the sticker at this time.

5. Turn the power OFF
Plug an electrical device, such as a lamp or radio, into the receptacle on which you are working. Turn the lamp or radio ON. Then, go to the service panel. Find the breaker or fuse that protects that receptacle. Place the breaker in the OFF position or completely remove the fuse. The lamp or radio must turn OFF.

Next, plug in and turn ON the lamp or radio at the receptacle’s other outlet to make sure the power is OFF at both outlets. If the power is not OFF, stop work and call an electrician to complete the installation.

6. Identify cables/wires

**Important:**
DO NOT install the GFCI receptacle in an electrical box containing (a) more than four (4) wires (not including the grounding wire) or (b) cables with more than two (2) wires (not including the grounding wire). Contact a qualified electrician if either (a) or (b) are true.

If you are replacing an old receptacle, pull it out of the electrical box without disconnecting the wires.

- If you see one cable (2-3 wires), it is the LINE cable. The receptacle is probably in position C (see diagram to the right). Remove the receptacle and go to step 7A.
- If you see two cables (4-6 wires), the receptacle is probably in position A or B (see diagram to the right). Follow steps a-e of the procedure to the right.

**Sample circuit:**
(1) Detach one cable’s white wire and hot wire from the receptacle and cap each one separately with a wire connector. Make sure that they are from the same cable.
(2) Re-install the receptacle in the electrical box, attach faceplate, then turn the power ON at the service panel.
(3) Determine if power is flowing to the receptacle. If so, the capped wires are the LOAD wires. If not, the capped wires are the LINE wires.
(4) Turn the power OFF at the service panel, label the LINE and LOAD wires, then remove the receptacle.
(5) Go to step 7B.

**Placement in circuit:**
The GFCI’s place in the circuit determines if it protects other receptacles in the circuit.

**Procedure:** box with two (2) cables (4-6 wires):
(a) Detach one cable’s white wire and hot wire from the receptacle and cap each one separately with a wire connector. Make sure that they are from the same cable.
(b) Re-install the receptacle in the electrical box, attach faceplate, then turn the power ON at the service panel.
(c) Determine if power is flowing to the receptacle. If so, the capped wires are the LOAD wires. If not, the capped wires are the LINE wires.
(d) Turn the power OFF at the service panel, label the LINE and LOAD wires, then remove the receptacle.
(e) Go to step 7B.
7. Connect the wires (choose A or B) — only after reading other side completely

A: One Cable (2 or 3 wires) entering the box

- Connect the LINE cable wires to the LINE terminals:
  - The white wire connects to the WHITE terminal (Silver)
  - The black wire connects to the HOT terminal (Brass)
- Connect the grounding wire (only if there is a grounding wire):
  - Connect a 6-inch bare copper (or GREEN) 12 or 14 AWG wire to the grounding terminal on the GFCI. Also connect a similar wire to the grounding terminal on the box. Connect the ends of these wires to the LINE cable’s bare copper (or GREEN) wire using a wire connector. If these wires are already in place, check the connections.

B: Two cables (4 or 6 wires) entering the box

- Connect the LINE cable wires to the LINE terminals:
  - The white wire connects to the WHITE terminal (Silver)
  - The black wire connects to the HOT terminal (Brass)
- Connect the LOAD cable wires to the LOAD terminals:
  - Connect the grounding wire (only if there is a grounding wire):
  - Connect a 6-inch bare copper (or GREEN) 12 or 14 AWG wire to the grounding terminal on the GFCI.

Complete the installation:
- Fold the wires into the box, keeping the grounding wire away from the WHITE and HOT terminals. Screw the receptacle to the box and attach the faceplate.
- Go to step 8.

8. Test your work

Why perform this test?
- If you miswired the GFCI it may not prevent personal injury or death due to a ground fault (electrical shock).
- If you mistakenly connect the LINE wires to the LOAD terminals, the GFCI will still operate like an ordinary receptacle, but it will not interrupt a ground fault.

Procedure:
(a) This GFCI is shipped from the factory in the tripped condition and cannot be reset until it is wired correctly and power is supplied to the device. Plug a lamp or radio into the GFCI (and leave it plugged in). Turn the power ON at the service panel. Ensure that the GFCI is still in the tripped condition by pressing the TEST button. If the lamp or radio is ON and the Indicator Light (Cat. Nos. 8598 and 8898 ONLY) turns ON, the GFCI has been installed correctly. If the GFCI cannot be reset, go to the Troubleshooting section.
(b) Press the RESET button fully; if the lamp or radio turns ON and the Indicator Light (Cat. Nos. 8598 and 8898 ONLY) turns ON, the GFCI has been correctly installed. If the GFCI cannot be reset, go to the Troubleshooting section.
(c) If you installed your GFCI using step 7B press the TEST button, then plug a lamp or radio into surrounding receptacles to see which one(s), in addition to the GFCI, lost power when you pressed the TEST button. DO NOT plug into the receptacles to lose power. Place a “GFCI Protected” sticker on every receptacle that lost power, then press the RESET button to reset the GFCI.
(d) Press the TEST button (then RESET button) every month to assure proper operation. If the GFCI cannot be reset, then it must be replaced.

TROUBLESHOOTING

Turn the power OFF and check the wire connections against the appropriate wiring diagram in step 7A or 7B. Make sure that there are no loose wires or loose connections. Start the test from the beginning of step 8 if you rewired any connections to the GFCI.

General Information

GFCI ratings:
- 15A-250V AC - Cat. No. 8590 Faceloc
- 15A-250V AC - Cat Nos. 8598 (Lighted) and 8899 Duplex Receptacle
- 20A-250V AC - Cat Nos. 8598 (Lighted) and 8899 Duplex Receptacle

All devices rated 20A feed-through