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.

GFCI’s do 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.

GFCI’s contain a lockout feature that will prevent the device from providing electricity in the event of a ground fault.

2. The GFCI’s features
- Grounding Terminal (Green): Connection for bare copper or green wire
- Back wire ground hole (Green): Connection for bare copper or green wire
- Back wire holes: Connection for the LOAD cable’s white wire
- Hot terminal (Brass): Connection for the LOAD cable’s black wire
- White terminal (Silver): Connection for the LINE cable’s white wire
- Red terminal (Black): Connection for the LOAD cable’s red wire
- Black terminal (Black): Connection for the LINE cable’s black wire
- Screw (terminal) colors: Green = grounding terminal

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

Make sure you:
- Understand basic wiring principles and techniques
- Can interpret wiring diagrams
- Have circuit wiring experience

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

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

6. Identify cables/wires
Important:
Do NOT install the GFCI receptacle in an electrical box containing (a) two wires, (b) more than two wires, (c) wires other than black, white, and green, (d) wires other than bare, stranded copper wire, (e) wires other than aluminum wire.

If you are replacing an old receptacle and the wires are not disconnected, follow these steps:

(a) 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.

(b) 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.

(c) If you see three cables (6 wires), the receptacle is probably in position A, B, or C (see diagram to the right). Follow steps a-e of the procedure to the right.

If the power is not OFF, stop work and call an electrician to complete the installation.

Procedure: box with two (2) cables (4-6 wires):

(a) Detach one cable’s white wire and hot wires 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.

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

Sample circuit:

Applying the GFCI in position A will also provide protection to load side receptacles B and C. On the other hand, placing the GFCI in position C will not provide protection to receptacles A or B. Remember that receptacles A, B, and C can be in different rooms.

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

Make sure 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.

- 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.

6. Identify cables/wires
Important:
Do NOT install the GFCI receptacle in an electrical box containing (a) two wires, (b) more than two wires, (c) wires other than black, white, and green, (d) wires other than bare, stranded copper wire, (e) wires other than aluminum wire.

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

Procedure: box with two (2) cables (4-6 wires):

(a) Detach one cable’s white wire and hot wires 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:
  - Loop clockwise 2/3 of the wire
  - Connect the LOAD cable wires to the LOAD terminals:

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

- Connect the LINE cable wires to the LINE terminals:
  - Loop clockwise 2/3 of the wire
  - Insert bare wire fully and tighten terminal clamp on conductor ONLY

- Connect the LOAD cable wires to the LOAD terminals:
  - Insert bare wire fully and tighten terminal clamp on conductor ONLY

8. Test your work

Why perform this test?
- If you rewired the GFCI it may not prevent personal injury or death due to a ground fault (electrical shock).
- If mistakenly connect the LINE wires to the LOAD terminals, the GFCI will not reset and will not provide power to either the GFCI receptacle face or any receptacles fed from the GFCI.

Procedure:
- (a) This GFCI is shipped from the factory in the tripped condition and cannot be reset until the GFCI 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 indicator light on the GFCI receptacle face is ON and the lamp or radio is OFF go to the Troubleshooting section because LINE and LOAD wiring connections have been reversed. You will not be able to RESET the GFCI in this condition.
- (b) Press the RESET button fully. If the lamp or radio turns ON then the GFCI is tripped, check connections. 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 life saving devices into any of the receptacles that lost power. Place a "GFCI PROTECTED OUTLET" sticker on every receptacle that had power.
- (d) Press the TEST button (the RESET button) every month to assure proper operation. If the indicator light does not go out and come back on or if the GFCI cannot be reset, then it must be replaced.

General Information

- GFCI ratings:
  - 15A-125V AC: Cat No. 7599 Duplex Receptacle
  - 15A-125V AC: Cat No. 7799 Tamper Resistant Duplex Receptacle
  - 15A-125V AC: Cat No. W7599 Weather Resistant Duplex Receptacle
  - 15A-125V AC: Cat No. W7599-TR Weather and Tamper Resistant Duplex Receptacle
  - 20A-125V AC: Cat No. W7599-TR Weather and Tamper Resistant Duplex Receptacle

TROUBLESHOOTING

Turn the power OFF and check the wiring 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.

WARNING: DO NOT INSTALL IN WET OR DAMP LOCATIONS without proper weatherproof enclosure as per NEC406.8. Approved caulks and gaskets must be used.