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Installing and Testing a AFCI/GFCI Receptacle


Please read this leaflet completely before getting started.

3. Should you install it?

Installing an AFCI/GFCI receptacle can be more complicated than installing a conventional receptacle.

Make sure that you:

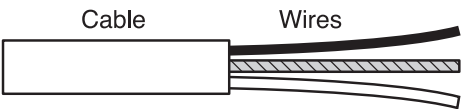
- Understand basic wiring principles and techniques.
- Can interpret wiring diagrams.
- Have circuit wiring experience.
- Are prepared to take a few minutes to test your work, making sure that you have wired the AFCI/GFCI receptacle correctly.


CAUTION

- To prevent severe shock or electrocution, always turn the power OFF at the service panel before working with wiring.
- Use this AFCI/GFCI receptacle with copper or copper-clad wire. Do not use it with aluminum wire.
- Do not install this AFCI/GFCI receptacle on a circuit that powers life support equipment because if the AFCI/GFCI trips, it will shut down the equipment.
- For installation in wet locations, protect the AFCI/GFCI receptacle with a weatherproof cover that will keep both the receptacle and any plugs dry.
- Must be installed in accordance with national and local electrical codes.

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 AFCI/GFCI. If there is only one cable entering the electrical box, it is the LINE cable. This cable should be connected to the AFCI/GFCI's LINE terminals only.
- LOAD cable:**

Delivers power from the AFCI/GFCI to another receptacle in the circuit. This cable should be connected to the AFCI/GFCI's LOAD terminals only. The LOAD terminals are under the yellow sticker. Do not remove the sticker at this time.

1. What is an AFCI/GFCI?

An AFCI/GFCI receptacle is different from conventional receptacles. In the event of a ground fault or arcing fault, this device will trip and quickly stop the flow of electricity to prevent serious injury or to mitigate the effects of the arcing that may have posed a risk of fire ignition if the arcing persisted.

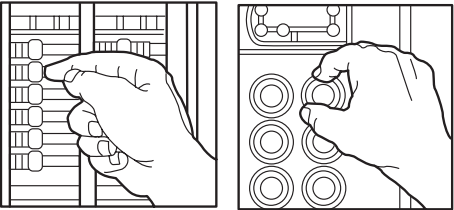
- Definition of a ground fault:*

Instead of following its normal safe path, electricity passes through a person's body to reach the ground.
- Definition of an arcing fault:*

An arcing fault is an unintentional arcing condition in a circuit. Arcing occurs as a normal condition in some motors or when a switch opens.
- An AFCI/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.

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 should 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.

- Self-Test GFCI circuitry with SafeLock Protection**

This is a **Self-Test GFCI Receptacle with SafeLock™ Protection**; it conducts an automatic test every three seconds, ensuring it's always ready to protect. If the device fails the test, the GFCI indicator light flashes to signal that the AFCI/GFCI should be replaced. It also has our proven SafeLock Protection feature: if critical components are damaged and protection is lost, power to this receptacle, and any downstream receptacles, will be disconnected.

6. Identify cables/wires

- IMPORTANT:**
- Do not install the AFCI/GFCI receptacle in an electrical box containing
- more than 4 wires (not including the grounding wires) or
 - cables with more than two wires (not including the grounding wire). Contact a qualified electrician if either (a) or (b) is 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.

2. The AFCI/GFCI's features

FRONT VIEW

Labels for Front View: Receptacle, Outlet, TEST button: See step 8, GFCI Indicator Light, Reset button: See step 8, AFCI Indicator Light, Outlet, Mounting bracket.

BACK VIEW

Labels for Back View: LOAD Hot terminal (Brass): Connection for the LOAD cable's black wire, LINE Hot terminal (Brass): Connection for the LINE cable's black wire, Grounding terminal (Green): Connection for bare copper or green wire, LOAD White terminal (Silver): Connection for the LOAD cable's white wire, LINE White terminal (Silver): Connection for the LINE cable's white wire.

A yellow sticker covers the LOAD terminals. Do not remove the sticker at this time.

Screw (terminal) colors:
 Green = grounding terminals
 Silver = white terminals
 Brass = hot terminals

- Procedure: box with two cables (4-6 wires)**
- Detach one cable's white and hot wires from the receptacle and cap each one separately with a wire connector. Make sure that they are from the same cable.
 - Re-install the receptacle in the electrical box, attach the faceplate, then turn the power ON at the service panel.
 - 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.
 - Turn the power OFF at the service panel, label the LINE and LOAD wires, then remove the receptacle.
 - Go to step 7B.

Placement in circuit:

The AFCI/GFCI's place in the circuit determines if it protects other receptacles in the circuit.

Sample circuit:

The diagram shows a 'Service Panel' box on the left. Three lines, labeled A, B, and C, branch out to the right. Each line goes through a receptacle. Receptacle A is labeled 'LOAD' and 'LINE'. Receptacle B is labeled 'LOAD' and 'LINE'. Receptacle C is labeled 'LINE'. Arrows indicate the flow of power from the Service Panel through the receptacles.

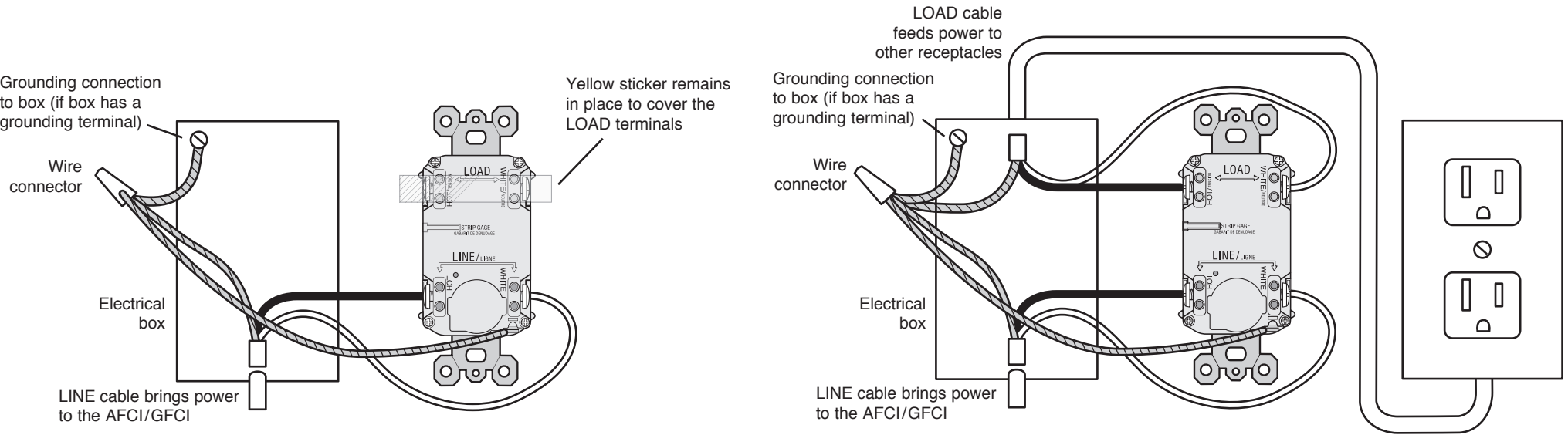
Placing the AFCI/GFCI in position A will also provide protection to "load side" receptacles B and C. On the other hand, placing the GFCI in position C will not provide protection to receptacles A or B. Remember that receptacles A, B, and C can be in different rooms.

7. Connect the wires (choose A or B)... only after reading other side completely

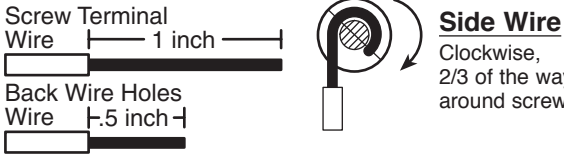
A: One cable (2 or 3 wires) entering the box

OR

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



About wire connections:



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)

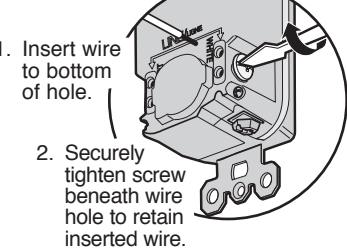
Connect the grounding wire (only if there is a grounding wire):

- For a box with no grounding terminal (diagram not shown): Connect the LINE cable's bare copper (or green) wire directly to the grounding terminal on the AFCI/GFCI receptacle.
- For a box with a grounding terminal (diagram shown above): Connect a 6-inch bare copper (or green) 12 or 14 AWG wire to the grounding terminal on the AFCI/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.

Complete the installation:

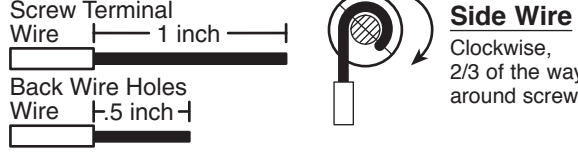
- Fold the wires into the box, keeping the grounding wire away from the White and Hot terminals. Screw the receptacle to the box and attach the faceplate.
- Go to step 8.

Back Wire



1. Insert wire to bottom of hole.
2. Securely tighten screw beneath wire hole to retain inserted wire.

About wire connections:



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:

- Remove the yellow sticker to reveal the LOAD terminals
- The white wire connects to the White terminal (Silver)
- The black wire connects to the Hot terminal (Brass)

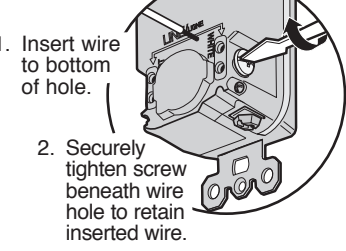
Connect the grounding wires as shown above (only if there is a grounding wire):

- Connect a 6-inch bare copper (or green) 12 or 14 AWG wire to the grounding terminal on the AFCI/GFCI. If the box has a grounding terminal, also connect a similar wire to the grounding terminal on the box. Connect the ends of these wires to the LINE and LOAD cable's bare copper (or green) wire using a wire connector. If these wires are already in place, check the connections.

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.

Back Wire



1. Insert wire to bottom of hole.
2. Securely tighten screw beneath wire hole to retain inserted wire.

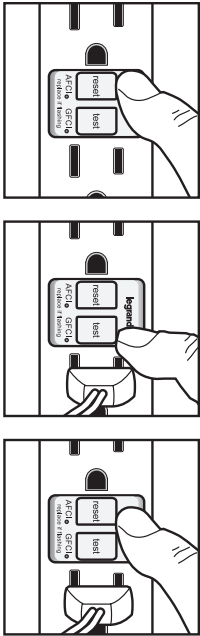
8. Test your work

Why perform this test?

- If you miswired the AFCI/GFCI, it may not prevent personal injury or death due to a ground fault (electrical shock), or it may not mitigate the effects of arcing faults due to unintentional arcing in a circuit.

Procedure:

- Turn the power ON at the service panel. Press the RESET button fully. The RESET button should stay in. If the RESET button does not stay in, go to Troubleshooting. If the RESET button stays in, plug a lamp or radio into the AFCI/GFCI (and leave it plugged in) to verify that the power is ON. If there is no power, go to Troubleshooting.
- Press the TEST button in order to trip the device. This should stop the flow of electricity, making the radio or lamp shut OFF. Note that the RESET button will pop-out. If the power stays ON, or the red indicator lights stay off, go to Troubleshooting. If the power goes OFF, and the red indicator lights come on, you have installed the AFCI/GFCI receptacle correctly. To restore power, press the RESET button.
- If you installed your AFCI/GFCI using step 7B, plug a lamp or radio into surrounding receptacles to see which one(s), in addition to the AFCI/GFCI, lost power when you pressed the TEST button. Do not plug life saving devices into any receptacles that lost power. Place an "AFCI/GFCI Protected" sticker on every receptacle that lost power.
- Press the TEST button (then RESET button) every month to assure proper operation.
- This device has **Self-Test GFCI circuitry with SafeLock Protection™**; it conducts an automatic test every three seconds, ensuring it's always ready to protect. If the device fails the test, the GFCI indicator light flashes to signal that the GFCI should be replaced. It also has our proven SafeLock Protection feature: if critical components are damaged and protection is lost, power to this receptacle, and any downstream receptacles, will be disconnected.



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. Also, it is possible that you reversed the LINE and LOAD connections. LINE/LOAD reversal will be indicated by no power at the AFCI/GFCI and by the RESET button not staying in when pressed, or by the red indicator lights remaining off after you press the AFCI/GFCI's TEST button. Reverse the LINE and LOAD connections if necessary. Start the test from the beginning of step 8 if you rewired any connections to the AFCI/GFCI.

Ratings:
15A 125V 60Hz
20A 125V 60Hz

LIMITED ONE YEAR WARRANTY
Pass & Seymour will remedy any defect in workmanship or material in Pass & Seymour products which may develop under proper and normal use within one year from date of purchase by a consumer:
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