

How to Replace a Switch

The switches are the ones most frequently replaced, either because a switch has failed or because you want to substitute a newer type. Before deciding that a switch has failed, however, check the light bulb it controls and the fuse or circuit breaker that controls it. Most switches are replaced as shown below – a good job requiring one screwdriver, pliers and two inexpensive testers. When you begin the replacement of any switch, turn off power to the switch, unscrew the cover plate and loosen the two screws holding the switch in the box until you can pull the switch out. The screws should not come out of the mounting strap. Grip the ends of the mounting strap and pull the switch out of the box until the wires are fully extended. The replacement will only take 15 to 30 minutes.

Table – 1

Tools Needed	Materials Needed
Circuit Tester	Standard Wall Switch
Screwdrivers	Wire connectors
Combination tool	Electrical tape
Needle-nose pliers	

Stage I - Identifying the wiring

1. With the wires exposed, you will find one of the two wiring variations that determine how the new switch is to be hooked up.
2. In one variation, called middle-of-the-run (Picture not available), at least two cables enter the box. Two black wires, or one black and one red wire, are the hot wires attached to the switch terminals; you will also see white wires and generally bare

copper wires connected with wire caps. The white wires are neutral, the bare ones are ground wires; neither should be disconnected or pulled out of position for this job.

3. In the second variation, called a switch loop (Figure 1), only one cable enters the box, and one black and one white wire are connected to the switch. Here, the white wire is not neutral; it is hot and should be marked as such with black electrical tape or black paint near the end of the insulation. If the wire has not been so identified, code it before replacing the wires.

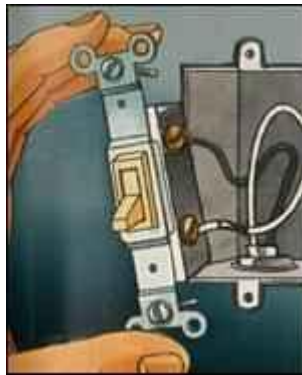


Figure 1 (Switch Loop)

Stage II - Removing the switch

1. To be sure the current is indeed shut off, touch one probe of a voltage tester to the metal shell of the outlet box and the other probe to each of the brass terminals in succession.
2. If the switch has push-in terminals, insert the probe into the release slots. The tester should not glow on either terminal. If it does, you have not disconnected the fuse or turned off the circuit breaker that controls the circuit; return to the service panel and find the right one.
3. When you are certain that the power is off, loosen the terminals with a screwdriver and remove the wires, using long-nose pliers to open the loop on the end of each wire.



Figure 2



Figure 3

Stage III - Testing the switch

1. If you are replacing the switch because you think it faulty, use a continuity tester for two checks on the internal wiring of the switch.
2. First, apply the alligator clip and probe of the tester to the switch terminals. Move the switch handle back and forth between the 'off' and 'on' positions. On a good switch, the tester will light at 'on,' but not at 'off.'
3. Second, fasten the alligator clip of the tester to the metal mounting strap of the switch and touch the probe to each of the switch terminals in succession, moving the handle from the 'off' to the 'on' position at each terminal.
4. On a good switch, the tester will not light in any position. If the switch fails either of these tests, it must be replaced.



Figure 4

Stage IV - Installing the new switch

1. Align the replacement switch vertically. A switch should be off when handle is down and on when it is up.
2. Connect the two hot wires to the terminals, either wire to either terminal. Push the switch back into the outlet box, folding the slack wire behind the switch, and fasten it with the mounting screws.
3. If the box is slightly tilted – as it generally is – change the position of the screws in the wide mounting slots to get the switch straight.
4. If the box is recessed in the wall, circular tabs called plaster ears, located at the of the mounting strap, will keep the switch handle flush with the wall.
5. If the box is flush and the ears get in the way of the cover plate, take them off with pliers.



Figure 5

Stage V - Grounding the switches

1. In the past, the metal parts of switches were grounded only by mounting screws that fastened them to grounded outlet boxes. Switches are now available with a more reliable ground connection: a separate grounding screw terminal, which is identified by green color-coding on the screwhead or by the letters GR next to the screw hole.
2. To ground one of these switches in an outlet box wired with plastic-sheathed cable, run a short length of either bare wire or insulated green wire from the green grounding terminal to the wire cap that links the bare ground wires of the cables and the box.
3. If armored cable serves the box, you may find no separate ground wire. In that case, run the wire from the green terminal directly to a grounding screw in the box.

Source of illustration

http://www.homedepot.com/prel80/HDUS/EN_US/diy_main/pg_diy.jsp?CNTTYPE=NAVIGATION&CNTKEY=projects%2fpg_index.jsp&DRC=1&BV_SessionID=@@@1479115291.1016309119@@@@&BV_EngineID=ccdjadcejfdlmjlcgelceffdfgidgj1.0