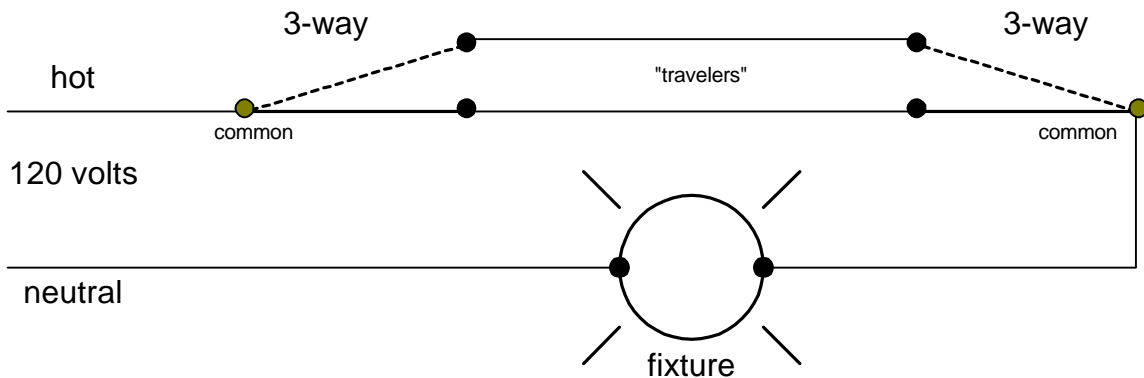
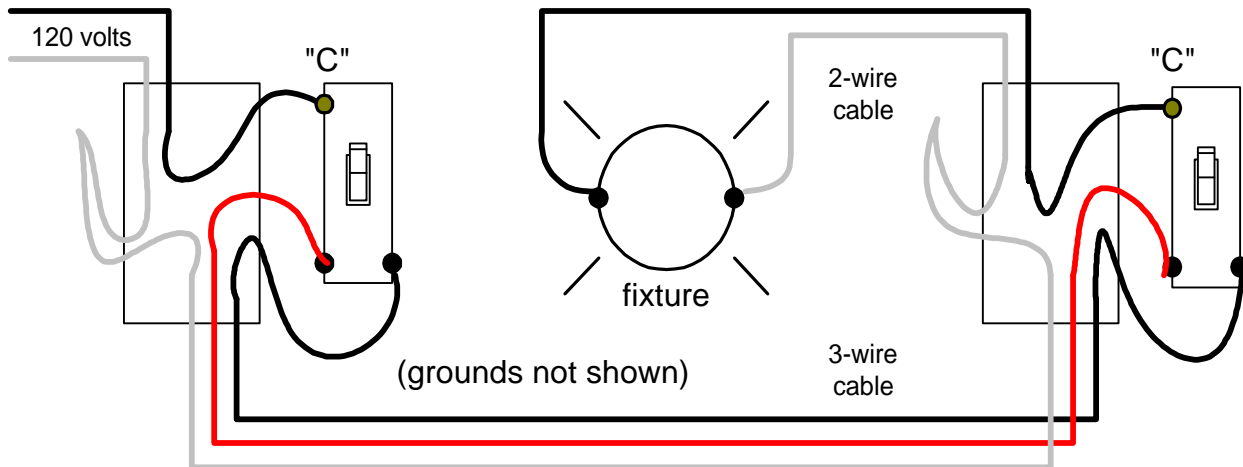


# Three-way Switches

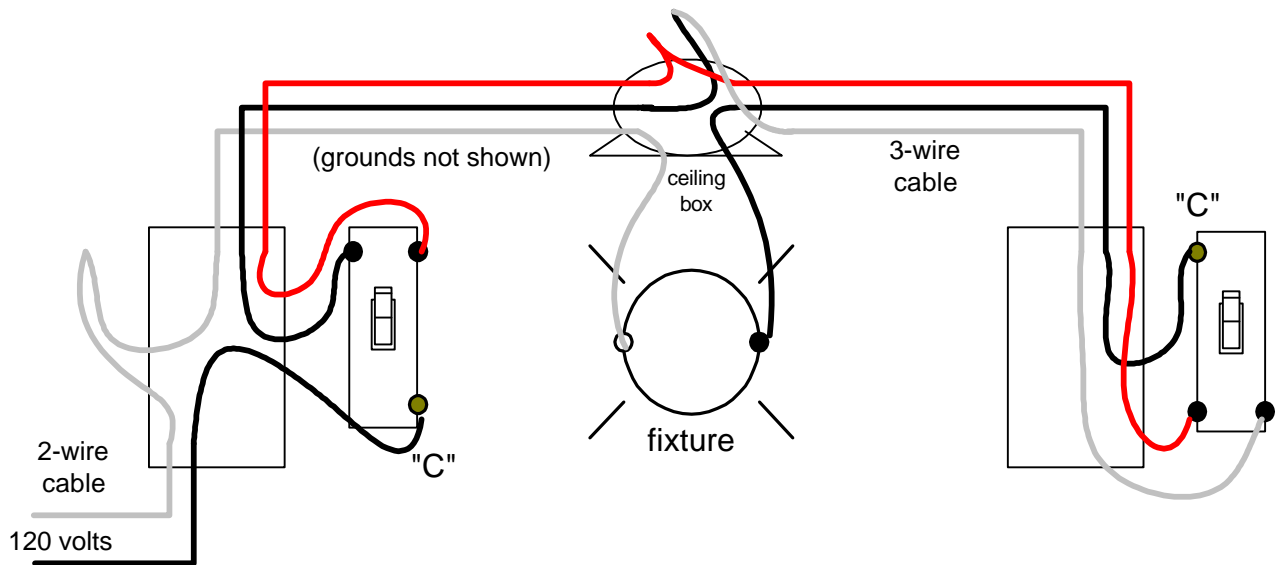
Three-way switches are not as mysterious as they seem. In the diagram below, the light is on, but if you change the position of either switch, it will be off, (note that when you change the position of the switch, it closes on the dotted line and opens the solid line). It seems simple in this line diagram, but there are several methods used to connect three-ways, and some of those wiring methods get confusing.



The "common" terminal on a three way is usually identified by the color of the screw. The easiest and most frequently used method for wiring a three-way system, is to "feed" one switch, run a three conductor cable from switch to switch, and a two conductor cable to the light from the other switch.



In this installation the red and black "travelers" are easy to identify, and every connection is simple and logical. If there were more than one light controlled by these three-way switches, another 2-wire cable would be routed from fixture to fixture to fixture, etc. Note that the grounding wires are not shown in these diagrams for the sake of simplicity. In an actual installation, every conductive surface such as the body of the light fixture and the metal chassis or "yoke" of the switches would be bonded to the green of bare ground conductors in the cables.



In this method, one switch is fed with incoming power, and a 3-wire cable is routed to the light fixture box, then another 3-wire cable goes to the other switch. As you can see in the drawing, one of the travelers has to change color in the light fixture box and that can create some confusion. There are several other ways to wire and connect three-way switches; these two methods are the most common.

In every situation, every wiring method must include grounding of conductive parts for safety. The metal parts of a light fixture, and the chassis and ground terminal of receptacles and switches must **NEVER** be connected to the neutral conductor of a circuit.

Effective equipment grounding is essential to the safety of building occupants and maintenance personnel. When equipment enclosures are properly grounded, the risk of electric shock is reduced dramatically; if a circuit conductor shorts out to the enclosure, the circuit breaker or fuse will open, and the circuit will be de-energized **BEFORE** someone touches the equipment and gets shocked.

Whether troubleshooting electrical problems, or making a new installation, Safety should be the number one concern. The right tools and test instruments, and the knowledge to complete the task, are the ingredients for success.

There are countless sources of information that are available at little or no cost. Safeguard yourself and everyone that will use the electrical system you install, by being properly equipped before you begin an electrical project.

