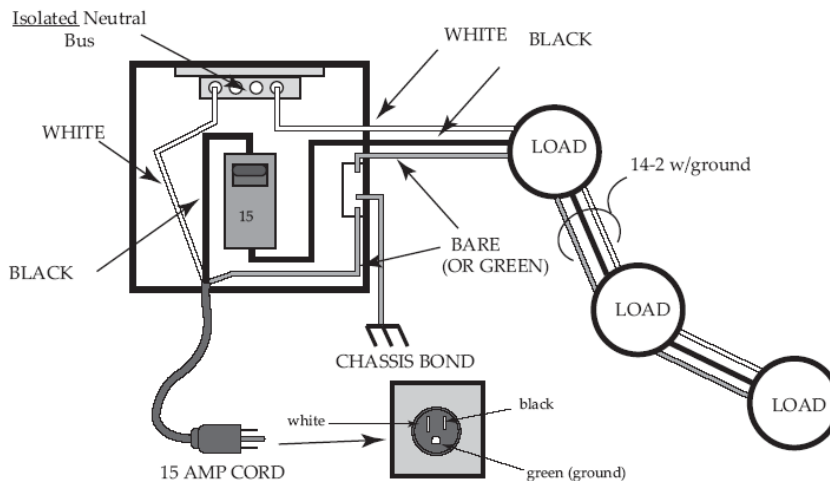
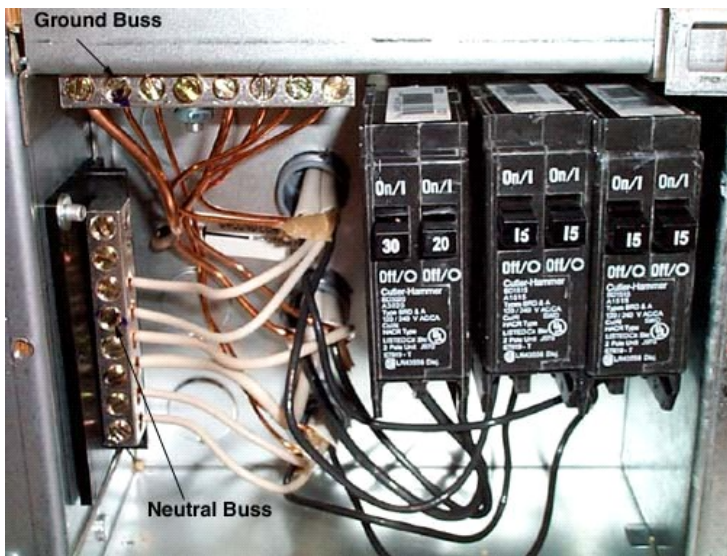


RVIA Standards Department's position paper on explaining the need for an isolated neutral in an RV 120V electrical system.

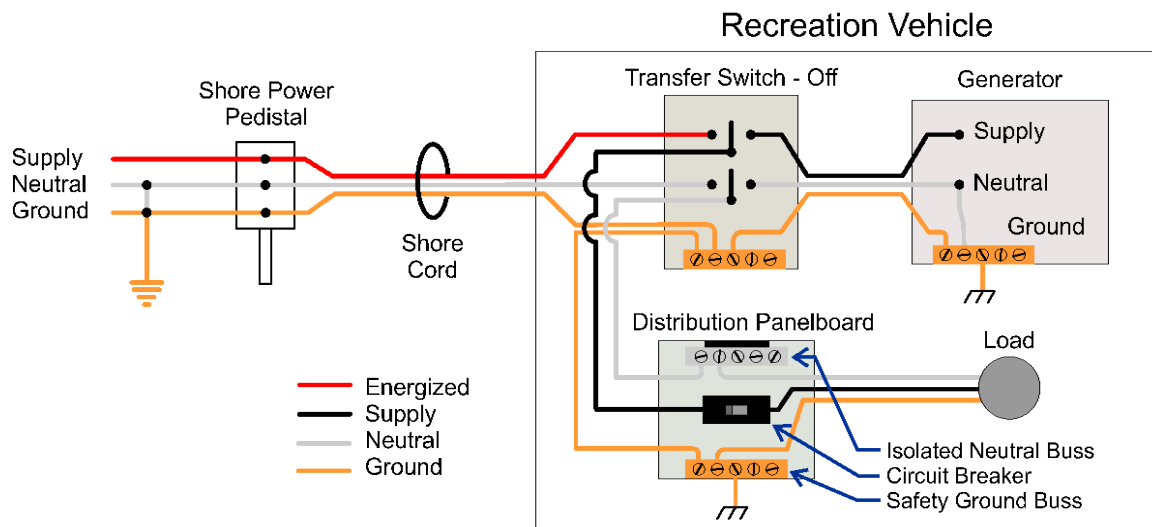
Isolated Neutral – Both the supply (black) and neutral (white) wires are current-carrying conductors. Other than the color identifying them, the main difference is the supply conductor is run through a circuit breaker and the neutral conductor terminates in an isolated buss bar. They both conduct the same current, and are treated alike within a circuit. They are run parallel to each other, and each is isolated from the other and from the safety ground (bare or green wire). Inside the distribution panelboard, both supply and neutral conductors are insulated from the enclosure thereby isolating the neutral conductor within the circuit. This isolation is important throughout to avoid a hot-skin or hazardous electrical condition.



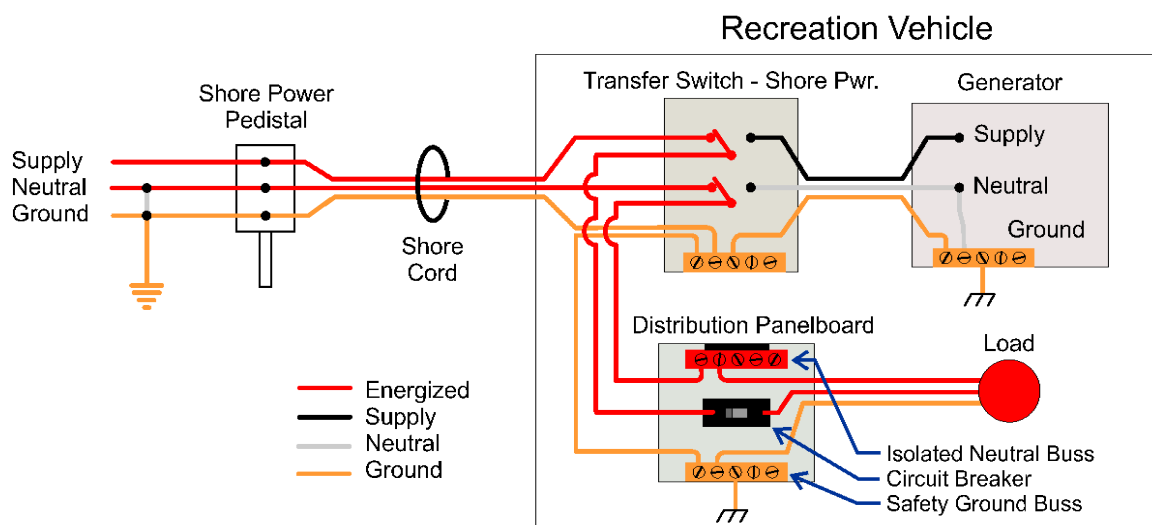
RVs are wired differently than houses and the differences are based on the grounding system. In an RV, the neutral conductor is isolated from the ground conductor. *There is no electrical interconnection of the white wire and the bare ground wire in the RV.*

In a house, the white and bare ground wires can be interconnected at the main distribution panelboard where polarity is not easily reversed. Reverse polarity in the RV occurs when the white and black conductors are switched in relation to the supply wiring and can result from a fault in the shore power receptacle, power supply cord or power supply adaptor plug. This is especially true where someone cuts off the ground pin of the cord or uses an ungrounded (2-wire) extension cord. In a situation of reverse polarity, power is "fed" to the neutral conductor and a short in the wiring could energize the exterior skin or other metal parts, creating a shock hazard that could cause severe burns or possibly death.

The isolated neutral in the RV electrical system is an important safety precaution as illustrated by the diagrams below.

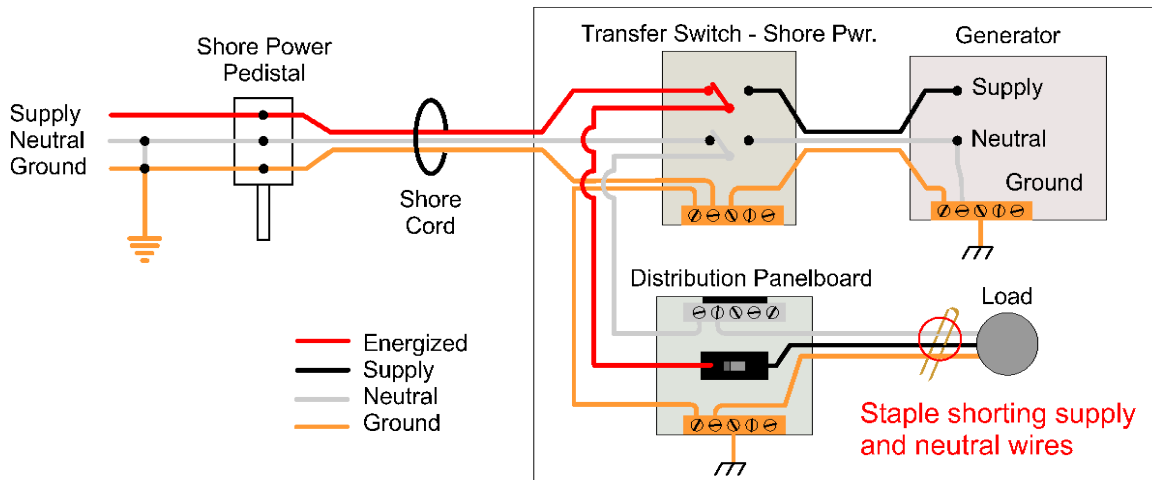


The energized portion of the circuit is shown in red and stops at the open transfer switch.



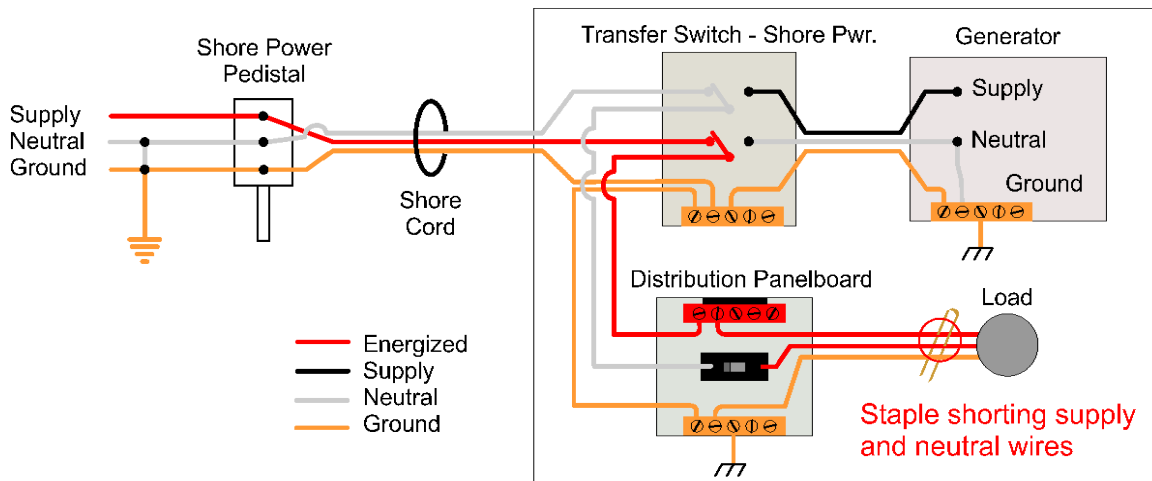
When the transfer switch is closed (switched to shore power) the entire circuit is energized.

Recreation Vehicle



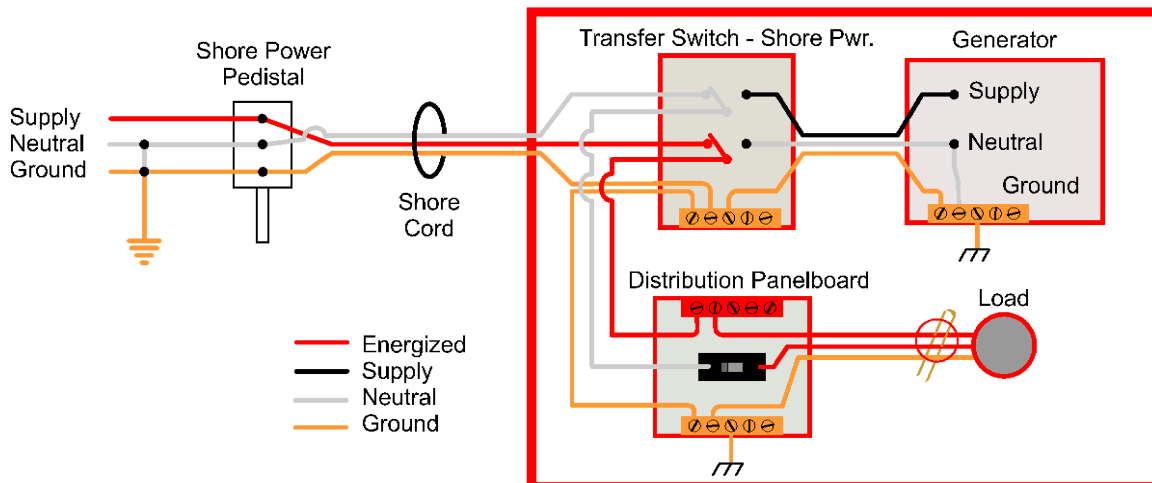
If a wire is shorted, the over-current protection device will open and de-energize everything downstream of the circuit breaker.

Recreation Vehicle



With the polarity reversed and a wire shorted, the breaker will still open, but the circuit normally downstream of the breaker remains energized.

Recreation Vehicle



*With the polarity reversed, a wire shorted, and the **neutral conductor NOT isolated from ground**, the breaker will open and the circuit normally downstream will remain energized as before. But, in addition, the entire*

chassis, skin, and all electrical boxes and grounded devices will also be energized, as shown in red, creating a severe shock hazard in and around the RV.