GFCI COMMENTS

COMMENT 1: After reading your solutions to ground fault grounding and giving a little thought I will as a member pass on my insight to you. I think maybe you should correct your statements in the *Blue Beret*. First off National electric code allows for the neutral= white wire and the ground which = bare or green wire to be bonded (that means connected) at the source only and only one time. If a devise such as a power supply is installed with a make before brake relay bonding the two wires it will not be consistent with NEC. It will always trip a GFCI and should. In code classes we learned the reasons for grounding. The code books do not give you that. The primary reason for an electrical system to carry a ground is LIGHTNING PROTECTION. There are other reasons, too. In class I found that surprising! Therefore your solution to switch off the ground even for a moment is a NEC VIOLATION! The solution to your problem is not to switch off the ground but to choose a power supply that does not bond the neutral away from the source panel-board anytime. I suggest you contact Jackson Center for one that will work for you. I have an '88 Excella and do not have a problem. By bypassing you are shooting the messenger not the enemy.

Your second solution bonds the neutral and the ground of a generator. Now picture this. Electricity goes out the hot wire and comes back to the source on the neutral or white wire. It does not just disappear. The only thing that happens to it is the voltage is reduced by the amount of resistance of the appliance. So when the ground and the hot are connected the trailer could have as much amperage running on the trailer frame as the hot wire of the circuit does. OK? Yes, where they are connected might make a difference. Although the generator becomes a new source like a panelboard bonding is not an acceptable solution. NEC requires all generators used on construction sites and all buildings not attached to the main building to have a driven ground rod. Few do. I believe a person should not use insulating blocks under their trailer jacks. There is a chapter in NEC that deals with Recreational Vehicles, I do not know if it would be of help to you. I hope I have been of some help.

ANSWER: Thanks for your input. Unfortunately as campers, when we rent a spot, we have no choice in how a campsite is wired or what is available to us. I am aware of all of the reasons for grounding and why it is important. The makers of large capacity Inverters include the relay grounding systems I describe. By switching off the ground, allowing the Inverter relay to actuate, and then turning on the ground you can safely utilize the power source you have been presented. If this is a NEC violation I don't think our members will be too concerned. However, I do not believe it is since RV manufacturers must comply with similar standards. In fact, if the campground owners knew how to wire they would not have the ground connected directly to their GFCI receptacles since they do have a proper ground connection in the primary supply panels.

My Airstream Coach does not have a ground to neutral connection on the GFCI Circuit Breaker. It is connected to 16 receptacle outlets. All Class A motorhomes use this approach. I have not run into a trailer that uses a large enough Inverter to have this problem.

I had contacted Jackson Center engineers as well as three dealers about this problem (several times) and none of them had any idea how to fix it or what was causing it. However, they all acknowledged that it existed. They were very pleased to get my article about what caused the problem and how to fix it.

Class A motorhomes allow for three primary AC power sources as follows:

1. Campground Shore Power Grounded in Primary Campground Panel

2. Generator Power Grounded in the generator circuits

3. Inverter Power Grounded in the Inverter using Relay circuit

The Honda generators, which are used by almost all WBCCI campers, are wired as I have described in the article. That is a fact. There is no connection between neutral and ground in order to allow a second generator to be connected in parallel. I was simply pointing out that unless the camper hooks the generator ground to neutral himself he will have an unsafe condition. I have run in to this at least 40 or 50 times. If you don't do this the aluminum skin can be hot and you will get a shock. If you are in a puddle the shock can be quite dangerous.

To summarize: My article was not intended to provide any insight into NEC electrical codes or procedures. It was simply to provide a safe and easy solution to a problem that we run into countless times when camping across the country.

COMMENT 2: Good afternoon. A friend of mine shared your December notes on the GFI mystery with me and I must say it's a neat problem with a neat solution. As an engineer, I have dealt with GFCI's, grounding 'loops' and isolation transformers in the communications world but not the specific problem of having to 'lift' the grounding link to get around the changeover sequence. I suppose a subsequent momentary interruption would also initiate a fallout.

Yours was a nice finding and too good for me not to respond. I really appreciate instances of 'The law of unintended consequences' and this was a prime example.

QUESTION 3: In reading your article on The CFCI Mystery, I cannot understand how your are connecting your jumper on the 110V side of a 50A circuit? Where are you plugging into the 20A circuit? I have 50A service in my Airstream motorhome and cannot follow this interface box you show. Thank you for contributing to our technical problems we all experience on the road.

ANSWER: It should be titled 'GFCI' Mystery, sometimes editors make mistakes. This article does not apply when you are plugging into either 50 or 30 amp shore supplies since they never use GFCI outlets. When you are going to be hooking up to a 20 amp circuit then you must use a power adaptor, which converts your 50A input to a 20A service. If you are connecting to a 20A GFCI protected outlet then it may have an internal ground, which will cause the power to shut down immediately. The switch in the new adaptor allows you to temporarily turn off this ground. You can then reconnect the ground and not trip the GFCI.

A 50 amp input provides two 110 VAC supplies since there are two hot wires, one neutral and a ground (4 wire system). This is the 220 VAC provided in your house wiring. Most RVs do not use the 220 volts but simply wire different things to the two circuits. For example, if you have two air conditioners each will be wired to a separate leg of the input AC. That is why when you have 30 amp service you can only use one air conditioner. For 30 amp service you need an adaptor, which converts from the 4 wire 50A to a 3 wire special plug. It simply disconnects one side of the 50 amp plug and removes power from one air conditioner and some other stuff.

For 20 amp service all you are doing is converting the 3 wire special plug to a conventional plug, so you can obtain power from any normal outlet. The 20 amp adaptor plugs into the special jumper cable described in the article. Hope this helps.