# INTERMITTENT DC POWER

**Question:** While dry camping at the Albuquerque Balloon Fiesta, the Direct Current (DC) power on our 2007 Safari SE FB quit working. Or more appropriately it worked intermittently. On the second morning we went down to the feld to see the mass ascension, when we returned we discovered there was no power at all (no lights, no refrigerator, no water pump, not even the little light on the battery disconnect switch). We connected the A/S to the generator and had power. However, when we turned on additional items, (another light, the water pump to flush the toilet, etc.) I noticed that the other lights would dim, like you were using the batteries and placing additional load on them. In the past I never noticed lights dimming when we were hooked to shore or generator power.

Since we were at an Airstream rally, there were plenty of helpful folks around that immediately came over with volt meters, fuses, and even extra batteries. We (they) tested connections and fuses, and determined that I was not getting power to the Convertor from the batteries. A suggestion was made that the batteries may be dead (bad cell?), so we planned to go to the local Costco for new batteries. However, as mentioned earlier, when running the generator we had power. We ran the generator until we had to leave to run the errands, but a funny thing happened when we turned off the generator, we had battery power. This lasted for a few minutes, until my wife flushed the toilet, then boom, no power. After returning from Costco we switched the batteries' out, to no avail. At this time I noticed that the trailer's tongue lift jack didn't work either. It is connected via a single wire to one of the batteries positive post. It's not connected to anything else in the trailer and I assumed (and still do assume) that it should work as long as the battery it was connected to was good, which it was.

I consulted some more people, and a suggestion was made that my battery disconnect may be going bad and therefore allowing intermittent power. So we overrode the disconnect, basically hardwiring the batteries to the Convertor. After doing this we had power again from the batteries. I did not test the tongue lift jack at that time. The power from the batteries stayed on for about an hour then, boom, just like turning off a light switch, the power stopped (we were not doing anything, just sitting). After a visit to the dark side, we woke the next morning watched the festivities and decided to go to an RV park with shore power (the batteries were still not providing power), as we knew we were functional with that option. We went to a lovely RV park in Angel Fire, New Mexico. When we arrived we had no battery power, another volt meter was produced with the same results, no power at the convertor, power in the batteries, the tongue jack did not work and with shore power the lights would dim with additional load being put to the system. The next morning we packed up and headed back to Denver. I did not check to see if we had battery power, I just kept the A/S plugged into shore power so we could lift the trailer. When we arrived home, lo and behold, everything worked on battery power, the lights, the tongue jack, water pump, refrigerator etc. Additionally, when we hooked to shore power there was (is) no dimming with additional load (my lovely wife ran a vacuum cleaner with lights ablaze using one of the outlets).

There were a couple suggestions regarding the cause of this problem and I thought I would see what you all think. The frst is that my convertor is going bad, the second is that I have a short in the ground somewhere (as someone stated this would be the only reason the Tongue jack wouldn't work). I am not saying these are the causes. I have no clue, so I am placing myself in Tech Help's capable hands.

**Answer:** Very interesting Patrick. Power going off and on in a random manner usually means a switch or connection is causing the problem. A battery which has a bad cell could do this since the short could be intermittent (metal particles floating in the fluid).However, since you replaced the batteries this rules them out, as well as the battery terminal connections. Disconnect switches do fail but usually they develop burned spots and severely reduce the current flow capability resulting in a permanent failure. Your Converter must be providing some charging capability since the batteries sometimes work and then they abruptly shut off. You are correct about the tongue lift jack as well as your assumption that if it is not working it must be the battery or something in the direct connection.

My guess is, the problem is in the battery cable ground to the trailer chassis. Don't try to move it to see if it is tight. Take it loose from the chassis; thoroughly clean the grounding area (be sure to get any paint off); check the cable end lug to be sure it is tight and clean; reinstall using a good coating of silicon dielectric on each layer and with a star washer against the chassis/the cable ground lug/flat washer/lock washer and finally the nut in that order on the bolt. Use stainless steel hardware with the bolt head against the chassis and the washers and lug on the opposite side. After checking to make sure everything is OK spray the entire assembly with a battery terminal protective coating.

Another area to check is the ground wire connection from the Converter. This, however, would not stop the tongue jack from working. A loose battery ground connection would reduce current flow into the batteries from the Converter thus never fully charging them. When you operate from Shore Power you are feeding the Converter, however, if the battery ground is not good you are trying to power all of the DC voltage appliances direct from the Converter. It is not designed to operate this way and supply current directly to all of the trailers DC circuits. The Converter charges the batteries, which have the capacity to power the trailers equipment. That is why you were getting the dimming on shore power. Also, with a long trip home, you are getting more charging time, which further indicates you have a bad connection that prevents a full charge of the batteries. Good Luck and let me know if this fxes the problem.

**Response:** Thank you for the very timely response. Three different people seem to agree that the issue is the ground, we'll find out. I plan on working on this issue tomorrow (basically I am going to tighten every electrical connection I can fnd). Would you know where the **battery cable ground** connects to the trailer chassis? The trailer is a 2007 Safari 27 FB. Is it an obvious connection, easy to see, or do I need to dig around to fnd it? By the way I noticed my negative battery cable clamp is cracked (it does hold tight on the battery terminal), I will replace it also but was wondering if this could possibly be the cause? Any information you can provide will be greatly appreciated. Thanks again for everything you've done already.

**Answer 2:** I don't know where the ground connection is but check with Airstream for this info. A cracked negative battery cable clamp could indeed cause all of your problems. Even if it appears to be tight it may not be capable of providing the full amps needed for a complete charge. You can replace just the connector without doing the whole cable. Try this frst before you attempt the actual cable chassis ground connection.

I have been snookered many times by supposedly tight ground connections. I remember a friend's tow vehicle at a rally. Car would not start, so I turned on the lights, which were quite bright. I assumed the electrical connections were therefore fine and it was

the starter components. After a Sunday tow the garage mechanic took a wrench to the ground terminal and did about ¼ inch tighten. The car started right up and the problem was solved. I was quite embarrassed because my friend had to pay for the tow with the repair being free.

**Final Response:** Just wanted to provide an update, I believe we have determined the cause of the problem. I think I told you earlier that I was going to just tighten every electric connection I could find. I replaced both battery clamps. I also found where the ground wire connects to the frame and found that it was loose. I tightened it and while taking off the panel to gain access to the other connections I re-created the problem. No power anywhere, not even the tongue jack, a 20 pack of Coors brought over my crack mechanic (when I say crack I don't mean he's good I mean he's on crack!!!!). Seriously, he came over with a very sophisticated measuring device (a souped up voltmeter?). However, when we went to take some measurements, he noticed that the battery ground wire basically fell out of the "ground bus" I mean it wasn't even tightened down. So we tightened it to the bus, along with every other connection, tightened all the busses to the panel (most were loosely attached and missing screws. Several never had screws in the frst place). So we tightened the bejeebers out of everything in that area. Everything now works. If you are a religious man, please pray that it stays working. Thank you for all your advise and direction. I couldn't have done it without you.