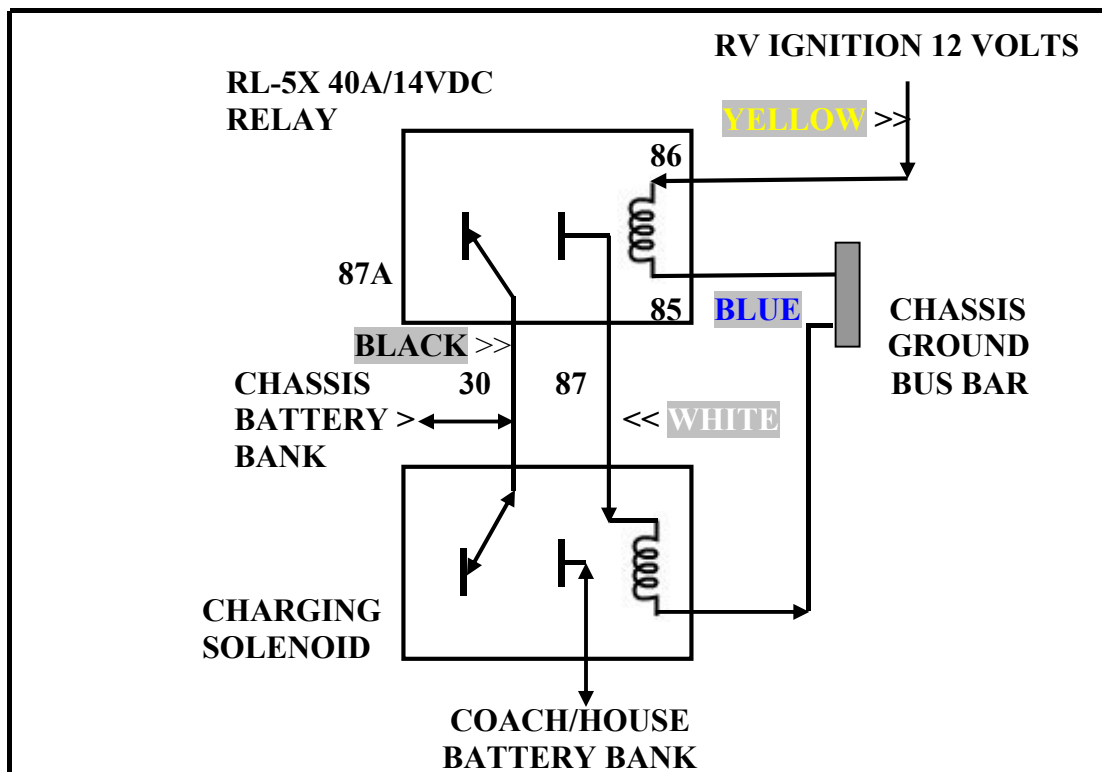


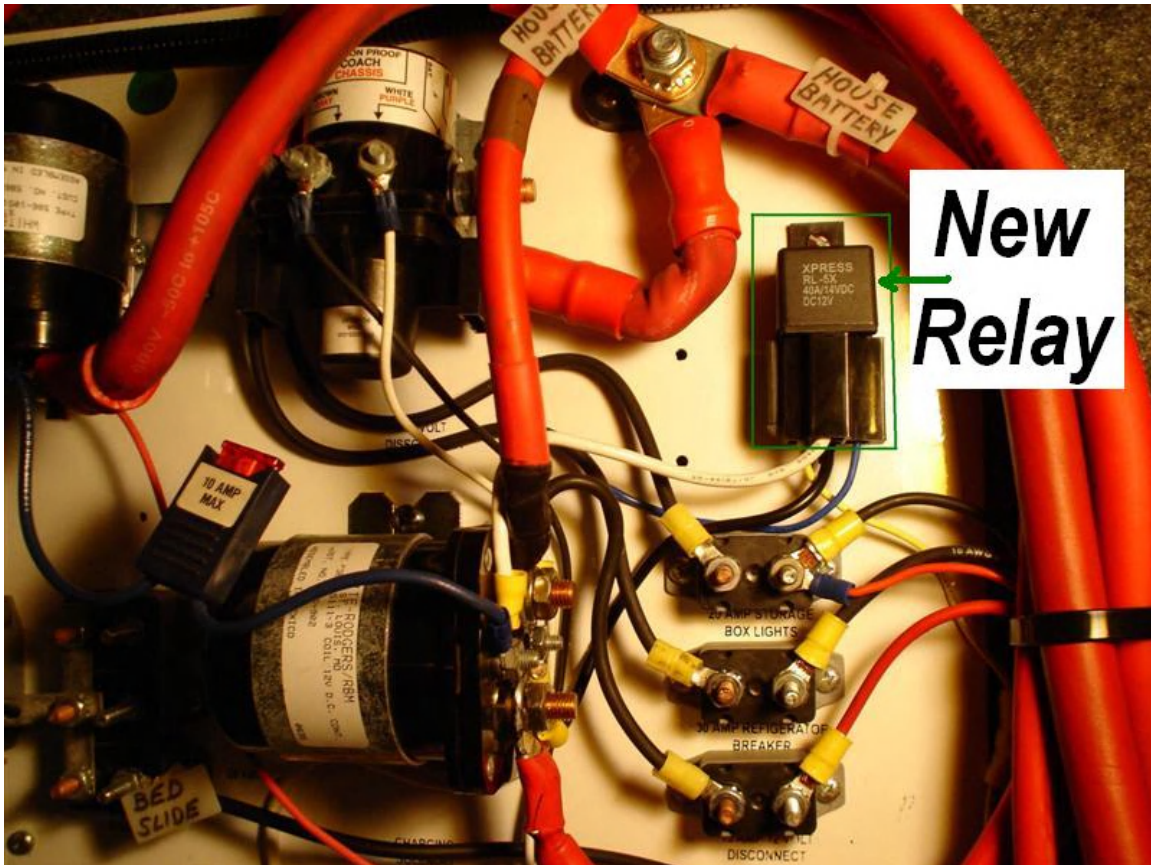


# Charging Solenoid Problem

Last year my 2007 Phaeton had an intermittent problem with its "Charging Solenoid". We made a trip to Red Bay shortly after the intermittent problem began, at my request Tiffin provided me with a new Charge Solenoid which I changed out. I kept the old solenoid as a backup as a future just in case. Recently the problem came back but was no longer intermittent. While on our last weekend trip I resorted to using a rubber mallet to tap on the solenoid which would jar it into action. Today I re-installed the original solenoid after testing them both on the bench with a good 12 volt power supply. They both operated perfectly on the bench, so I decided to conduct further testing. I found when I turned on the ignition switch which feeds the solenoid's coil, the DC voltage was dropping almost 0.5 volts. Further testing showed the chassis battery voltage was not the problem. I found the voltage drop was related to the length of cable required to send voltage from the chassis batteries to the front coach firewall where the power was then sent to the Freightliner ignition circuit fuse and relay box under the drawers. From the box the 12 volts was sent to the passenger side rear electrical compartment to the coil of the Charging Solenoid. That round trip is nearly 90 feet. Too far IMO on the small cables Tiffin was using for this circuit. How to solve the Tiffin undersized cable problem? After thinking over the options, below is an diagram of the new modification with relay I installed.



I decided to install a SPDT automotive style relay (RL-5X 40A/14VDC) along with a mating 5 wire automotive socket in the passenger side rear electrical compartment. The relay uses Chassis Battery voltage to energize the coil of the Tiffin installed "Charging Solenoid". I used Tiffin's STANDARD ignition powered circuit to energize the coil of the new automotive relay. The 0.5 volt drop experienced in the original Tiffin circuit will never be a problem for the new relay control circuit. Voltage to energize the Charging Solenoid is now routed a matter of a few inches, where Tiffin had the Charging Solenoid control circuit running almost 100 feet.



As seen in the above picture, I used the standard relay socket wiring to complete the installation. The Tiffin installed ignition control wiring (green & yellow) wires were spliced to the relay's **YELLOW** wire. The relay's **BLUE** wire is connected to the Charge Solenoid's ground side of the coil circuit which is wired to electrical panel's ground bus bar. The **BLACK** wire is connected to the Charge Solenoid "Chassis Battery" terminal which is wired to the Chassis Battery Bank. The **WHITE** wire was connected to the Charging Solenoid's coil used to energize the Charging Solenoid when the ignition is on, which in turn connects the Chassis and House/Coach Battery Banks together while the RV is running.