

The Preventive Maintenance Series

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Electrical Tips

There is an endless list of weird stuff that infects our electrical systems, mostly caused by age and humidity, but also inherited from semi-skilled mechanics. Terminology is important: a **short** means a positive voltage wire going to ground where it should not; it blows fuses and melts things. An **open** is a wire that is not continuous; it will cause an accessory to malfunction. You should be aware that a connector with fuzzy green or white corrosion indicates high resistance. That translates into heat buildup at that point and lower (or no) voltage at the other end of the line.

First rule of Corvair electrics: When you make repairs or add accessories, solder all splices and connectors and use shrink fit tubing. Non-soldered connectors and switches reduce voltage a minimum of 0.3 volt, or 2.1% per item in the circuit – an industry standard. For example, to power your stock late model blower motor on high speed involves: the junction in the back, the rear connector, the front connector, the ignition switch, the fuse block, the blower switch, the front connector again and the blower motor connector. So if your charging system supplies 14.4 volts you will have 12 volts normally at the motor if everything is in good condition – this is what the designers anticipated. In addition, the condition of the ground at the accessory is also critical. In this example, if the heater box is losing its ground (quite common), no matter how high the available positive voltage, you will have a slow blower speed. Adding a relay at the blower motor to switch voltage directly from the battery to the blower (on high speed) eliminates the voltage drop in the circuit and combined with an added ground wire to the blower, will be a great improvement. I have part numbers and a diagram if you are interested in the relay.

Second rule of Corvair electrics: Wire size is critical to the load applied to it. Electrical work is like plumbing work; you are dealing with volume and rate of flow through a pipe. The addition of radios, wiper delays, cruise control, and similar items use low amperage and can be added to existing circuits with the use of original wire and fuses. Adding items like high speed blower motors and air conditioning would require upgrading the wiring and adding relays and inline fuses to keep the voltage up and ensure peak performance.

Ground Control Circuits: There are four circuits in a Corvair that operate by controlling the ground circuit while the device has continuous positive voltage. Those include the dome/courtesy lights, windshield wiper and washer unit, horn relay and the coil.

- Dome/courtesy light: positive voltage is supplied to those bulbs at all times and the circuit is completed when the door jam switch is grounded or the headlight switch grounds the circuit. Usual problem areas are shorted courtesy sockets and shorts in the dome light. Also the door jam switch may cock, be installed incorrectly or just be dirty or rusty, causing either a loss of ground, or an always on situation.

- The windshield wiper motor control circuit has positive voltage with the key on and grounds through the dashboard switch. If you have an intermittent or dead wiper motor, check the fuse and then check the switch; it must be grounded to the dashboard by a tight bezel nut. The switch can also be bad but removing it and tightening the tabs on the back to re-establish contact may cure the problem. If the wipers work only when holding in on the washer button, you absolutely have a switch ground problem. In addition, the motor frame (park circuit) is grounded by a copper tab located under one mounting screw – make sure it is clean and tight.
- The horn relay has positive voltage all the time; depressing the horn button/ring will send a ground to the relay and the horn honks. Horns in the 60-63 cars fail because of their location (water leaks at the trunk seam on to the relay), other early models (and FC) may have problems with rust on the contact plate in the steering wheel – and many times because of problems caused by those before you doing strange things because they did not understand the system.
- When the key is on, the coil has positive voltage all the time on the + side and is grounded by closing the points to energize the coil windings.