

Too Hot To Handle

I had a call one day on a 2002 Dodge Grand Caravan with some very weird symptoms. The wipers would cycle randomly. At times, the power windows were inoperative. At other times, some relays in the Integrated Power Module (IPM) would click rapidly when the key was first turned on, and when the relays were chattering, the engine would not start.

All of these symptoms could be traced back to the IPM which directly or indirectly controls the wipers, windows, and obviously, the relays that are in it. My immediate thought was that a wiring harness was causing these symptoms to occur, as this model year has a horrendous track record for corrosion in the wiring harness. Because the wire harness for the IPM is located directly below the battery, battery acid tends to find its way into the harness.

The technician had also noticed a single wire that appeared to have been chewed on by a rodent. I asked him to inspect the harness that is hidden under the left inner fender it's a great spot for a rodent to sit and munch on wires. The tech told me that the wires looked perfect in that hidden area.

I reiterated that I was sure the problem was in the wire harness that connects to the IPM. I had him remove the battery and battery tray so he could get a better look at the wires under the battery. I have seen even a light coating of battery acid cause voltage to bleed from one wire to another. He saw no problem with that wire harness, and found no sign of battery acid anywhere.

When the wire harness passed his inspection, I had him start checking ground circuits and connections. Consulting a wiring diagram, I saw that there was one ground (G100 ground) for the IPM that is located underneath the battery tray. He said that it looked clean, but when he touched it to verify that it was tight, it was **so hot** that he burned two layers of skin off his finger!

The G100 ground is a stud that screws into the frame rail. The wires are installed to the stud, and a nut holds the wires tight to the stud. The problem was between the stud and the frame rail. The resistance and associated voltage drop across the two surfaces caused the stud to heat up. The technician relocated the ground further ahead on the frame rail, and then used a sheet metal screw to secure it to the frame rail. All of the symptoms were gone.

The technician could have done a quick voltage drop check of this ground using a DVOM to find the problem. But sometimes, old tried and true methods do the trick. In this case, since electrical resistance causes heat, the technician was able to find the problem without using any test equipment whatsoever!

*Written by Arlen Mauland, Identifix Chrysler & Mitsubishi Specialist
Certified: Chrysler Master, ASE Master, L1*