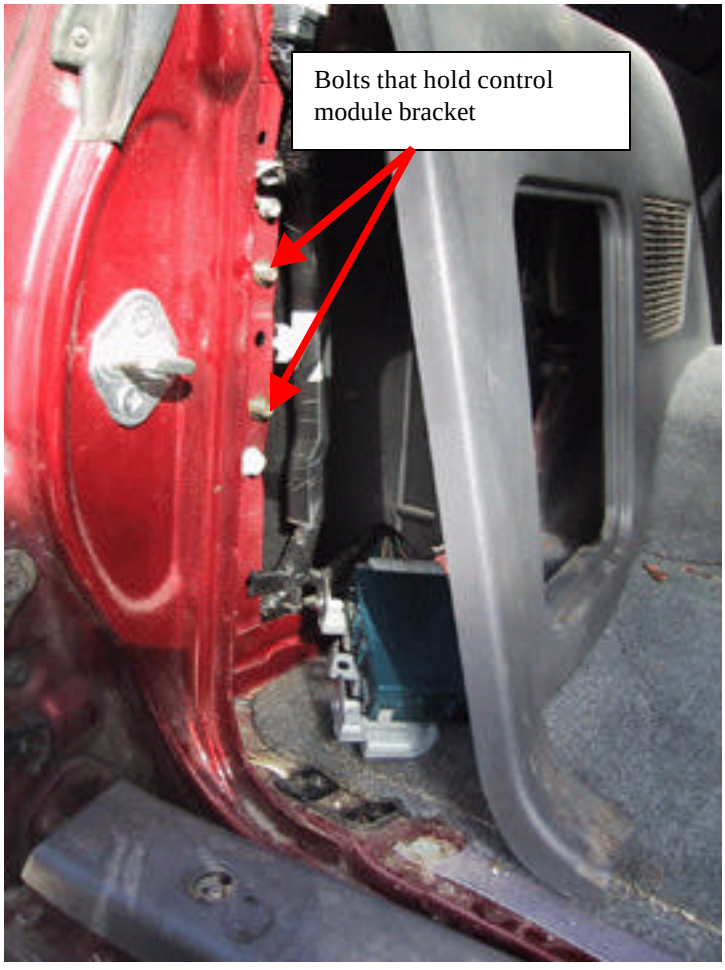
Fixing a 4-Runner Rear Window Control Problems

I had a problem where the rear electric window in my 91 4-Runner would go down flawlessly, but was intermittent (via inside or key switch) when powered to go up. If you have a similar problem, here is some background information on the cause, and tips on a fix that will cost you nothing.

The root cause of the problem is that the UP relay on the window control module has pitted contacts. The current required to lift the window is apparently more than the current required lowering it, and more than the relay can handle over time. The high motor current causes arcing which burns and pits the contacts. To fix the problem, you must replace the relay.

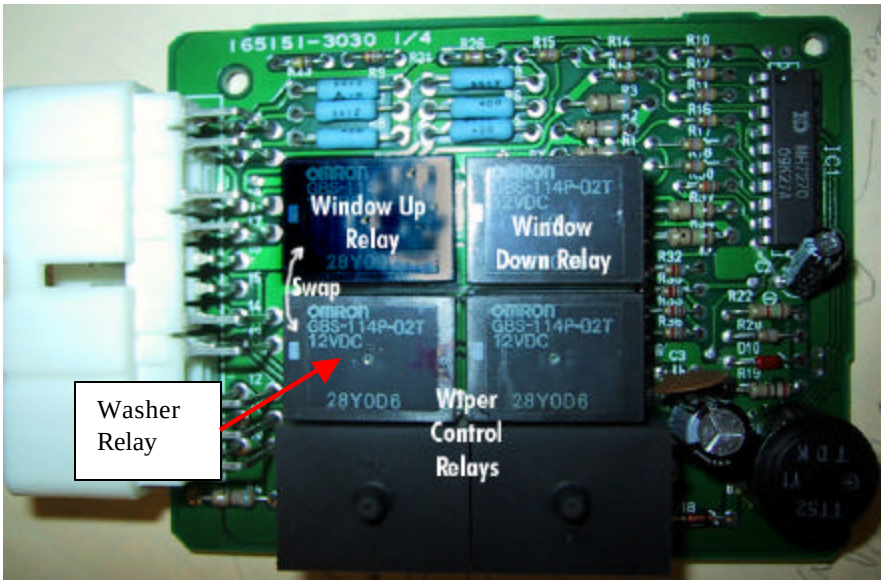


First you must remove the control module. This is a little hard to find. You must remove the plastic trim (pop of screw caps with small screwdriver to get to screws at the bottom edge of the cargo area at the tailgate. This allows you to pop the side panels away from the metal frame on the driver's-side of the car. Remove the two hex head bolts holding the control module bracket. The control module is tucked between the driver's-side tool compartment and the metal frame next to the wiring harness. The wiring harness is actually attached to this bracket. Pull out the bracket until you can unplug the wiring harness from the module (plastic box on the bracket). At this point you can either order a replacement module (quoted at $360 to me by the dealer) or fix it.

To fix it you must remove the box from the bracket, and the end cap from the box. The control module electronics will then slide out. For my car there are six relays on the circuit card. There are two relays on that board that control the window motor; one for UP and one for DOWN. One of the two wires from the window motor goes to each of these two relays. When no power is applied to the relay coils, the motor wires are both grounded (through normally-closed pin of the relay). When voltage is applied to either of the relay coils, the motor wire attached to that relay goes to 12 volts (through the normally-open pin on relay) while the other motor lead is held to ground. Energize the UP relay and 12 volts goes to one side of the motor. Activate the DOWN relay, and the other motor wire goes to 12 volts, reversing the motor.

The UP relay is the one that fails and it must be replaced. I searched the Internet and parts catalogs for a replacement OMRON relay, but could not find one. This is a 12-volt miniature automotive, PCB relay with 5 pins and a 320 ohm coil. It measures (about) 22mm long X 16mm wide X 15.5mm high. It is made in Japan and may not be available domestically. I could not find a direct replacement in Radio shack or Digi-Key, although there are several relays that could be made to work if you can live with wires hanging off the board and a relay outside the case..

If you cannot find a replacement relay, you have another option…swap them around. Four of the six relays on the board are identical, so I swapped the bad WINDOW UP relay with the relay used to turn on the rear window washer motor. Note that you should invest $7 in a spring loaded solder sucker from Radio Shack if you don't have one. You are likely to damage the board if you try to remove the relays without one.



The photo shows the position of the window relays, as well as the swap that I made. This fixes the window UP problem immediately and gets you back in business. On the other hand, you are now missing the rear window washer function. You can either do without, or try to fix the one you have for light duty use.

You can open the bad relay by slowly, carefully, running a razor knife around the bottom edge to cut through the hot-melt sealer on the bottom on the relay. There is a plastic sleeve, about an eight of an inch high, around the base, and between the wall of the case and the base. You want to cut around the outer-most perimeter, next to the case. Be careful that the knife blade does not go too deep, or you could damage the fine magnet wire on the coil. The relay base and sleeve will come out of the case, and you can now get to the contacts. The bottom contact is the one that will be burned. You need to clean this contact, along with the mating coil-driven contact, with emery cloth. It will be pitted badly, but there isn't much you can do about that. Just clean off the burnt areas. The contacts on my relay had eroded to the point that cleaning did not help. I had to bend the relay contact arm a little so that the edge of the lower moving contact point could mate with the lower contact point. Verify operation and conductivity with an ohmmeter before reassembly. Put it back together, re-seal it with hot melt glue (or tape if you think it will need future cleaning) and solder it back on the board. This should keep you going for another 6-10 years, especially if you don't use the rear window washer very often.

I'm sure there are a lot of people dealing with this problem I hope this helps.

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