

# Carl's Tech Tip #4: The Electrical System

## The 308 Electrical System

Today, we are going to discuss the 308 electrical system, with particular reference to the fuse box. This is a most misunderstood part of the car and can be responsible for some of the more common electrical gremlins that we all seem to experience from time to time. Luckily, it's pretty simple to check out and doesn't take long.

Sometimes, you hear people explain that unreliable electrics is merely another idiosyncrasy from the 1970's Ferraris. However, the cars electrics seemed to perform well when they were new, so why shouldn't they now? The loom is constructed of reasonable gauge wire and certainly on a fibreglass car, there are numerous earthing points. The connections and relays are manufactured by Bosch who has manufactured high quality vehicle electrical systems for many years. So what is the problem when your cooling fans run slow, or the windows go down half way?

It appears that the main problem with the electrics is the fuse box and the connections in the loom. Unfortunately, Ferrari chose to use a fuse box of indifferent quality at best! We touched on this lightly in article number 4 regarding the cooling system. The biggest problem is the brass contacts that clamp the fuse. This is because they are riveted to the terminal strip and over time the rivets work loose and make a poor or non-existent connection. The easiest way to fix this is to remove both fuse boxes and check the resistance across the block. It should be zero.

Wriggle the terminal clamps for the fuses and make sure they are tight. I clamped the rivets tight (all mine were loose) then cleaned them with a fibreglass contact cleaning pen and finally soldered each rivet to the terminal block. The fuse box that carries the highest current (such as the cooling fans and headlights) usually suffers the most. Don't forget to check the spade connections that push on to the terminal strips. There is the connection on the fuse block itself, but remember the bare copper wire is only crimped on to the spade terminal. You can solder this connection for a permanent fix.

These circuits are easy to test. Even if you don't have access to a multimeter you can simply bypass each circuit with a short length of wire with a small alligator clip on each end. You can also run the wiring directly from the fuse box to the circuit eg. the headlights to see if they are brighter. If so, then you have a problem in the wiring from the fuse box to the lights. Don't forget to check the relay connections too. Removing the relays and re-inserting them a few times easily cleans the connections. Finally, make sure the battery has a clean connection to its leads. Again the battery, like some of the earthing points sits in an area that is susceptible to moisture so make sure the terminals are clean.

Notice above the two fuse boxes there are some earthing points to the cross member below the windscreen. Make sure these terminals are tight. You may wish to remove them and clean the contact area. Remember that again the spade terminals are crimped on to the wire so soldering is the best cure here. About 10 centimetres behind the headlight motors (on the left and right upper chassis rail) is an earthing point for all the electrical circuits in the front of the car. This unfortunately is open to the elements being close to the front suspension so make sure the connections are good here. Notice how the wiring loom has the plastic „snap“ connections. In theory there is nothing wrong with these however Ferrari saw fit to use non weather resistant versions. Over time the ingress of water and dirt will corrode the brass spade terminals, making a low resistance connection impossible. This is particularly important for the cooling fans and the electric windows as they both draw high current. The connections for the windows can sometimes be accessible through the loudspeaker hole in the door.

On my car, I removed all these snap connections entirely. I preferred to have the wiring loom in one piece to reduce the resistance as much as possible. I soldered the wires together and covered the joints with two layers of heatshrink. (Heatshrink is an insulating conduit that shrinks to the diameter of the wire when heated forming a weather tight seal. It's available from Dick Smith).

After cleaning the electrical connections the best way to keep your electrics operational is to use the car often. Sitting in a garage rotting doesn't do the electrical system (or the car) any good at all.

Good Luck, Carl.