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That Went Wrong? - You Gotta be Kidding!

The car, a 1985 Porsche. I know, "What's that car doing in a restoration magazine?", you wonder. Well, some occurrence are so universal and at the same time unusual that only a readership with the warped minds of those who favor old cars can appreciate them. And, this is one of those occurrences.

So, as I said, the car is a 1985 Porsche. Now this car has two sets of timing belts, one to run the cam shaft and the water pump, and another to run a pair of counter-rotating balance shafts to cancel out engine vibrations. For several months I had been hearing a rattling sound like a failing bearing but had been unable to find the offending part. Finally, I had resolved that whatever it was, it was going to fail eventually and then I would find it. Sure enough, one Monday morning I start up the on ramp onto the freeway, and the car emits a loud crunch, followed by one of those unnerving rumbling sounds that you know means something bad is happening. But the car kept running, and I backed off the on ramp (no way was I going to get on the freeway now) and went home. Part way down the on ramp the rumbling stopped, and the car ran fine.

So, I got home, opened up the cover over the timing belts, and looked in. What I saw was that the tensioner for the balance shaft belt, a toothed pulley on a ball bearing, had shed all of its balls and relieved the tension on the belt, allowing it to slip and grind against the timing belt cover (the rumbling sound). Well, this is actually a very fortunate occurrence on this car, because if it had been the timing belt tensioner, significant damage would have resulted to the engine as the pistons pounded the valves to smithereens (or worse). Of course, because the balance shafts turn at twice the engine RPM, and the cam shaft turns at half the engine RPM, the balance shaft tensioner turns twice as fast as the cam shaft tensioner and thus should fail first.

Well, I replaced the failed parts in about the most inefficient way possible - drive to the dealer in another car, buy new belts and a new tensioner, change the belts and discover that the timing tensioner is failing also, drive back to the dealer to get the timing belt tensioner, and finally finish the job in the dark with a trouble light. But, in the end it was all done and the car ran fine and I went to sleep.

Well, the next day, I again head off onto the freeway for a lengthy commute, and discover to my surprise and chagrin that while the car runs fine, the speedometer stops at exactly 38 miles per hour, and the tachometer stops at a corresponding RPM. Clearly, the gauges are not right because I can easily go faster than traffic on the freeway (which I assure you required going much faster than 38 MPH), and I can rev the car to the rev limit (these cars have an electronic cutout to protect the engine from over revving) which is 6000 RPM. This, thinks I to myself, is exceedingly odd. What could I have done by working on the timing belts to make both the speedometer and the tachometer malfunction. I did a lot of driving around that day, and no answer came to me, so I figured it must be some unrelated failure (a case of respecting the old logical fallacy of "ex hoc, propter hoc"¹). Since both gauges were electronic, one possibility that came to mind was an open ground wire.

¹for those who have forgotten their highschool latin, this translates as "after this, hence because of this", and it is of course false because it is not the case that a second event is caused by the event that preceded it. A classic example is running out of gas just after reaching a romantic parking place in the old jalopy.

Well, I got home and dug out the factory service manual (always get a factory service manual for your car, it saves so much grief). What the schematic told me was first that the Germans have a warped sense of humor or a rather unusual way of representing things electrical, and that secondly although the sensors for the speedometer and tach were separate, the instrument cluster was not represented in enough detail to help in troubleshooting. (so much for the value of a shop manual).

So, out to the car, and into the supplication position - you know, feet in the air, head down by the pedals, and body wedged between the steering wheel and the seat - with a flash light, to look for an open wire or loose connection. Of course there were no loose connections or broken or corroded wires to be found, and staring into the back of the dash did not lead to further inspiration (only perspiration), so I crawled out and did the only thing left to do - I removed the gauge cluster. Now, this is not as bad as removing the cluster from a mid 70s Chrysler, but Eric the evil elf must have has some part in the design because it was only with the most careful maneuvering and tugging that I was able to extract the cluster, disconnect three cable harnesses from it, and get the mess out from behind the steering wheel.

When I got it out, I could see nothing obviously wrong, so I took it inside to look at in a more civilized environment. When I looked carefully at it, I could see that in extracting it I had torn one of the traces on the flexible circuit board that makes the whole thing work, but fortunately it looked like that trace was not used (apparently being reserved for some function for a car with an automatic transmission). To be sure, I decided to open the cluster up and see exactly what was on the other side of the broken trace. I was right, it was unused. And the gauges were clean and moved freely.

But, as I was about to put it back together, I looked into the front part of the gauge cluster - the part which consists of the Plexiglass faceplate, and the black surrounds for the gauges, and noticed a fair sized brown spider. Now I don't know about you, but up until then I had only found bugs in computer programs, never in vehicle gauges. A closer inspection revealed that this particular spider (presumably sent by Eric the evil elf) had decided that my gauge cluster would be a nice place to spin a web. And, of course, it was not your usual circular or hexagonal web that this particular species of spider wove, but a series of horizontal strands of webbing extending from one side of the cluster housing to the other. So what was happening, clearly, was that the indicators would move normally until they ran into one of the strands of the spider's web, and then they would be restrained from further movement.

I took the cluster front housing outside and shook the spider out so he (or she, never could tell one from the other) could catch bugs in a more fruitful place than inside my gauge cluster, washed the housing and removed all the webbing, and put the thing back together. Of course it worked perfectly, and I felt a certain sense of relief, but I still wonder what would have happened if I had brought this in to the dealer or a regular mechanic for repair. Would the mechanic have found the true cause of the problem, or would I be the proud owner of a new gauge cluster and a far lighter wallet?

While I will never know the answer to that question, I now know this - spider webs are far stronger than we think they are, and they really are invisible under some circumstances. Even when I knew there was a web inside the cluster, I couldn't see it with the black faced gauges behind it. This poor spider, instead of catching bugs, just caught a few good pointers.