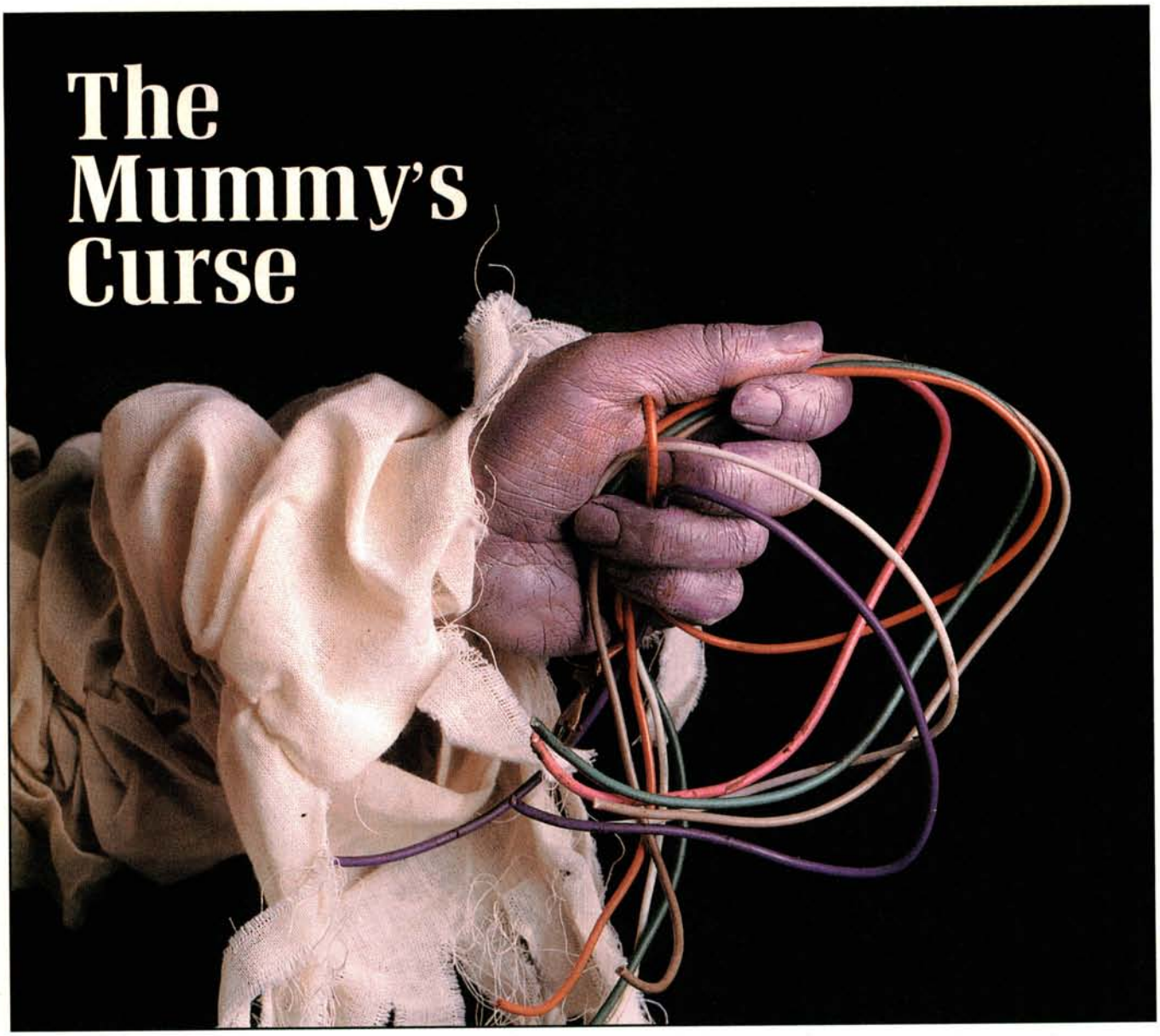
IMPORT SERVICE

Driveability Clinic

The Mummy's Curse



Forensic archaeologists are a special breed of investigators who seek the solutions to ancient crimes. Working with clues as tiny and elusive as a grain of pollen or a mouse's tooth, they are often able to answer riddles that have stumped others for centuries. Let's see if some of these special skills can be used to solve the Riddle of the Mummy's Curse.

Something occasionally made Mummy's car (a 1987 Nissan Maxima wagon) refuse to start. This problem had been occurring intermittently for more than two years. Mummy had the car checked out at a number of shops around town, but no one seemed able to pin down the problem. The engine always cranked well; but would not start, or might sputter before catching. By the time it reached us, the Maxima was racking up the majority of its miles on the back of a tow truck.

In the best archaeological tradition, we began by looking for clues. When we removed the rear seat to inspect the fuel pump wiring harness, we found the unmistakable signs of kiddie debris: broken pieces of toys, discarded candy wrappers, and misplaced mittens. Further probing revealed that one of Mummy's

kids had spilled a soda during a fast-food stop. Thanks to the dried cola syrup, the multi-pin fuel pump connector had become securely fastened to a stamped depression in the floor pan. The combination of cola and electricity proved unfortunate, as the fuel pump's electrical power supply circuit slowly corroded.

The resulting voltage drop during cranking was great enough to deprive the fuel pump of the voltage it needed to actually deliver fuel to the injectors. Any additional cola spills in this area would have resubmerged one or more of the connector cavities, possibly reactivating the cola's corrosive effects.

If this had been an ordinary repair, replacing the damaged fuel pump connector and removing the kiddie debris would have finished the job. But we were dealing with the Mummy's Curse; so we weren't surprised when the Maxima still refused to start after the fuel pump connector had been repaired.

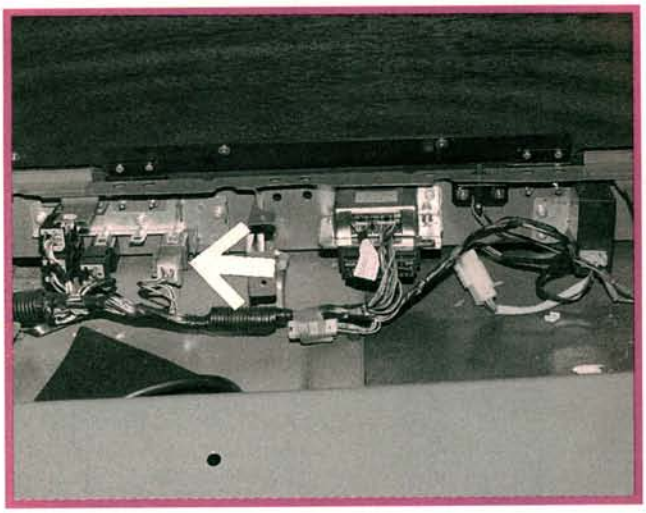
An ancient superstition states that bad things happen in threes. We had solved one riddle, but there were still two more curses to overcome before the day was over. If you like an old fashioned mystery, join us as we visit the innermost chambers of Mummy's car. Please pardon the mess. Not wanting to disturb any evidence, we left most of the debris in place while we gathered clues and took our photos.

— By Sam Bell

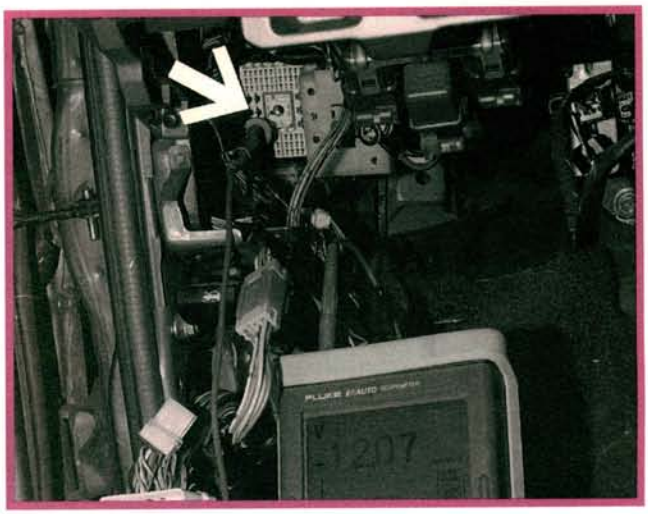
1 A quick check convinced us that plenty of spark was available. The healthy response to a whiff of carburetor cleaner down the throat of the air flow sensor seemed to confirm a decided lack of fuel. There was also an ominous silence from the fuel pump. We probed the blade-type fuel pump fuse with a test light and found power at both ends. So far, so good. But we wondered if this was destined to be the last sign of positive voltage we encountered.

2 Previous experience with in-tank Maxima fuel pumps led us to pull up the back seat cushion to inspect the wiring at the top of the tank. The wagon's pump access cover is visible, but it can't be removed until you've also removed the eight rear seat back bolts. The tank top connections were okay, but Mummy's little helpers had scattered several funerary offerings in the area. The fuel pressure hose is barely visible. The stamped cover arrow must point forward to avoid wiring damage.

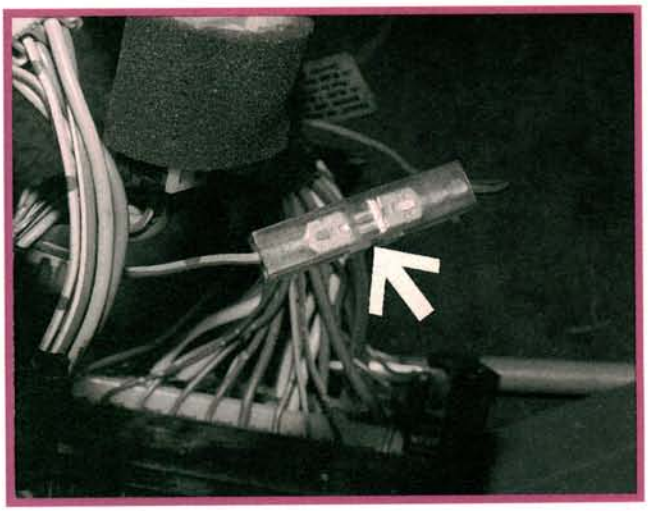
3 The multi-pin connector under the seat cushion was heavily corroded and stuck to the floor, apparently the victim of a soft drink spilled long ago. We replaced the male pin on the pump power feed wire when the old one came out in two pieces. Was this the break we had been waiting for? Unfortunately not, as the wire was still as dead as a second dynasty pharaoh. We wondered how the car had run in the first place. Was this a false start, or had we stumbled onto an ultimate cause?



4 A wiring diagram confirmed the location of a parallel splice to the fuel pump relay, so we decided to see whether the relay was getting power. According to the wiring diagram, the fuel pump relay controls the fuel pump ground and is itself under ECU control. If the relay coil had power, we would know that our wiring problem was between the splice and the fuel pump connector. The fuel pump relay coil wasn't getting power either. It was beginning to look like our problem was located further upstream.

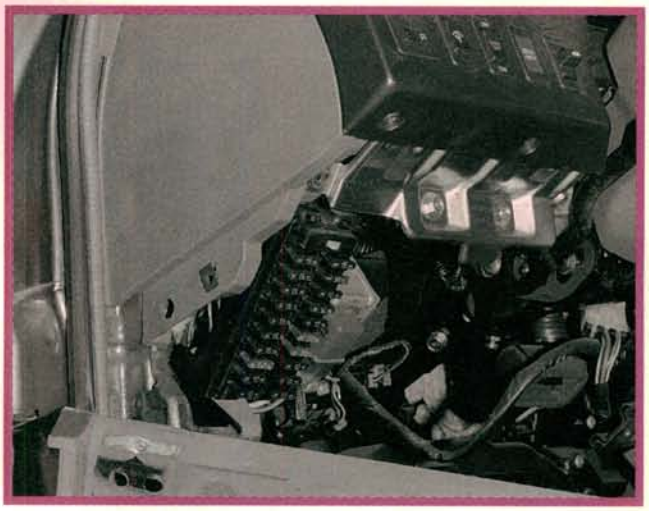


5 What has more pins than a fakir's bed of nails? If you guessed the aptly-named SMJ (super multi junction) connector, go to the head of the procession. The original purpose of this massive connector has been lost to history. Today, it does an excellent job of frustrating technicians who are forced to operate without a wiring diagram. We found no power on the output side of the SMJ (cavity M6), but had juice on the input side. Wiggling the output harness made the power come and go. Was this the end of our search?

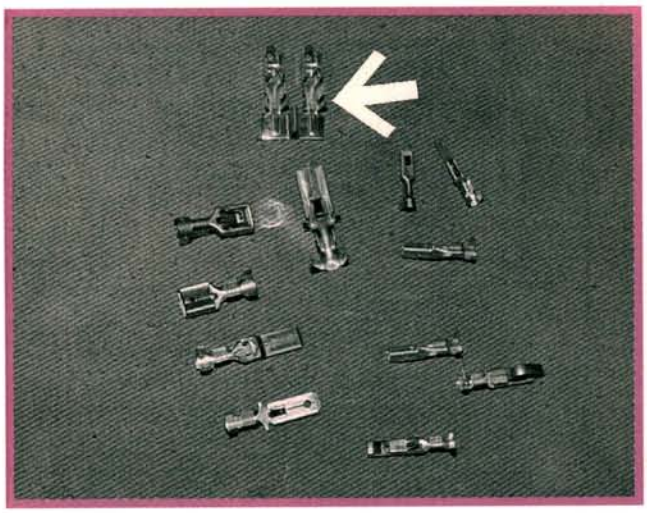


6 Misfortune struck again, as the Mummy's Curse manifested itself in a complete lack of parts listings for the special SMJ connectors. Our local Nissan dealer suggested that we could buy a complete harness for only slightly less than a pharaoh's ransom (see sidebar on page 41). We opted to cut the fuel pump wiring on either side of the SMJ, then install our own connectors. We later attached the appropriate hieroglyphic inscriptions to help guide future explorers past this potential pitfall.

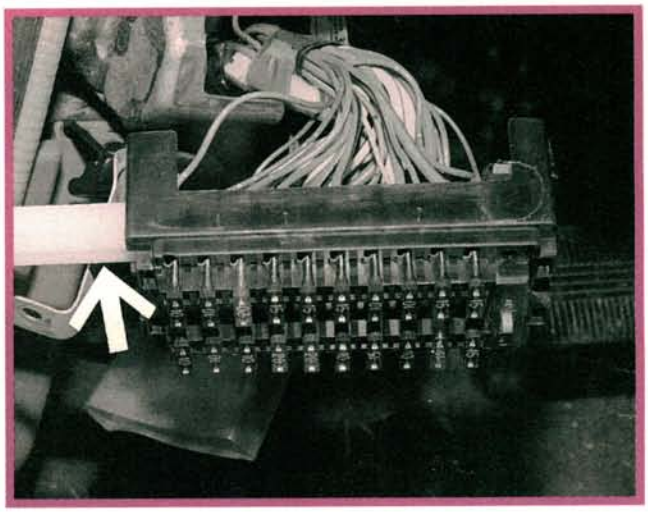
7 It is very important for you to make certain that you have the correct wires before taking the extreme measures mentioned in the previous caption. Several harnesses contain wires with identical colors, although their gauges may be different. Perhaps even more confusing, wires using the same colors in different combinations can also be found. For example, a red wire with a black stripe and a silver dash is NOT the same as a black wire with a red stripe and a silver dash. Check twice, cut once.



8 What more could go wrong? Professor Murphy had long ago cautioned us never to ask that question. Although the engine now started and ran several times in a row, it suddenly died as we began to remount the fuse panel we had previously removed for access to the SMJ. Wiggling the fuse panel harness caused the power feed to our new connector to falter. We cursed like a mummy as we discovered an enterprising DIYer had previously tapped into the fuel pump fuse output terminal, destroying its spring tension.



9 We checked with the dealer for availability of a new fuse panel terminal, only to run into the same dead end we had encountered during our previous SMJ terminal inquiry. Unwilling to accept no for an answer a second time, we widened our search pattern and found treasure at the third Nissan dealership we called. The Mummy's Curse was not to be denied, however. It took several phone calls and an in-person visit to procure the right terminal for the job (arrow). We collected the other terminals along the way.



10 To replace the fuse-holder terminal, use a small screwdriver to remove the plastic retainer slide from the fuse panel. Then use your screwdriver again to release the locking tab that holds the terminal to the panel. The double terminal shown in the previous photo is suitable for the power input side of the fuse panel. You will need to separate one of the terminals at its base before it can be used on the panel's output side. Crimp and/or solder the terminal wiring, then reinstall it.

Terminal Diagnosis

We usually enjoy electrical work. It's generally cleaner, more intellectually stimulating, and more profitable than many other types of automotive repair work. That's providing, of course, that you have three essential ingredients: a good wiring diagram, the right wiring terminals and terminal tools, and a great deal of patience. In this case, we had two out of three; but the lack of the right terminals and special tools to service the SMJ almost made us revise our count to one out of three.

We may be able to save you from some of the frustration we experienced, however. Your local Nissan dealership's parts department personnel probably won't know what you're talking about if you ask them for the special SMJ wiring harness terminals you need, but their service department should have the right stuff in the form of a wiring harness terminal service kit.

If you do enough Nissan electrical work, you may be interested in ordering the terminal service kit from Kent-Moore Tools (Circle No. 142). The correct part number for the complete terminal assortment is J-38751. The fuse panel terminals go under the number J-38751-34, and the full width male spade SMJ terminals go under the number J38751-45. The corresponding female terminals are listed as J-38751-31.

If you can't adequately describe the terminals you need over the phone, the Mummy's Curse may demand a personal trip to the dealership to pick out your terminals. If you don't know what you want, don't expect the service technicians at the dealership to bail you out. There are no application guides to check your selections against. So if you don't know what you want, chances are pretty good that you won't get what you need.

Under normal circumstances, it's usually a safe bet to rule out the SMJ during the course of a regular (non-curse) electrical diagnosis. Unless a lot of people are pulling our leg, SMJ terminal problems are relatively rare in the real world. The techs we spoke to claimed that most of SMJ problems they had seen were caused by fire, water, theft, poorly crimped harness terminals, or Mummy's Curses.

A great breakthrough in the study of archaeology came in 1799 with the discovery of the Rosetta Stone. The Rosetta Stone carried the same message in each of three different languages, and helped archaeologists decipher the meaning of hieroglyphic inscriptions.

If your diagnosis leads you to the SMJ as ours did, an electrical wiring diagram should be considered an absolute must. There are more wires leading in and out of this area than a single person can be expected to keep track of. And many of these wires have very similar combinations of colors and gauges. You'll need a Rosetta Stone (a wiring diagram) to find your way safely through the maze.