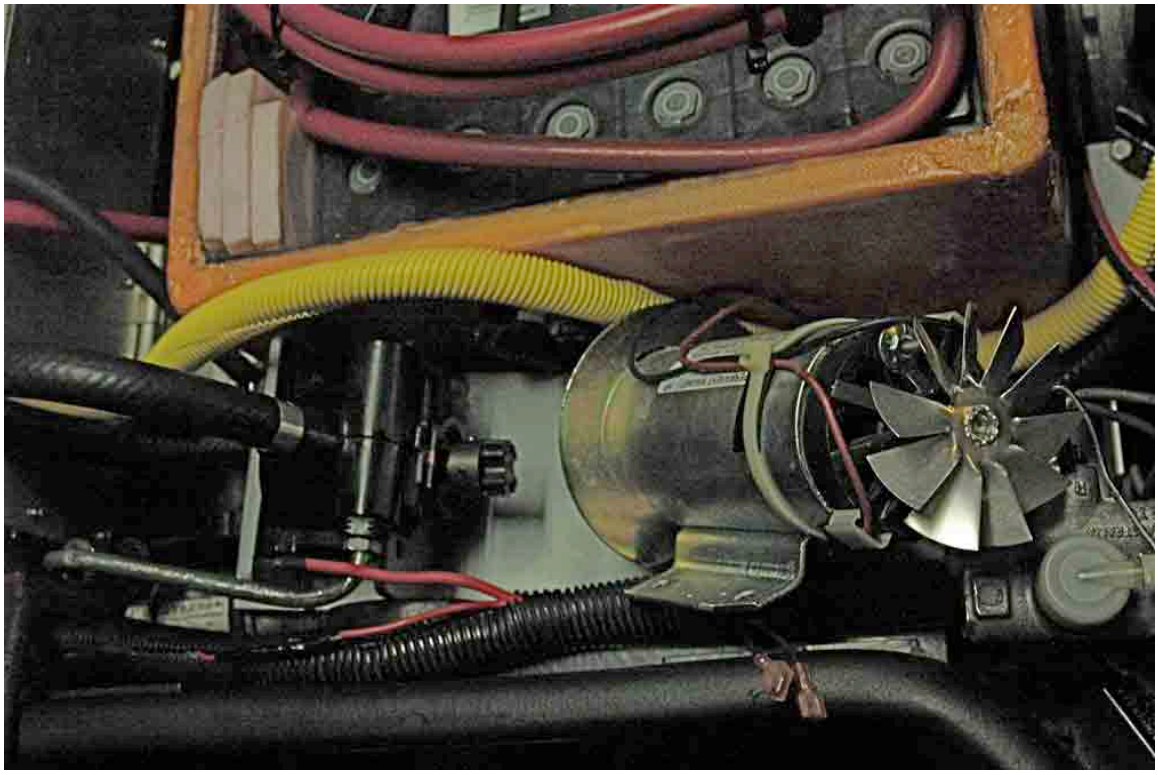
The Volt Vette Project

Chapter 22

Testing…Screech! Testing…Thump!

I try to back the Vette on to a two-wheel dolly. But, with only 7% of rated power, the car is reluctant to move up the ramp.
Tim tells me that with such a low power setting, I should back off and gun it, and stop worrying about flying off the back end of the dolly.
With some misgivings, I hit the accelerator. Like a rocket the Volt Vette shot up the ramp, and belly-flopped on to the back of the dolly! The car was resting on its frame, with the rear wheels dangling in space.
Are we having fun yet?
The Vette's doors were blocked shut by the dolly's wheels. I have to climb out thru the driver's side window.
A stroke of luck! The car is undamaged!
It takes a while, but we get the rear end back on the dolly.

With the Volt Vette back in my garage, I go to work on the power steering problem. Quickly I discover that the motor I have to run the power steering pump will work on 12 volts without burning up. It would also work on 36 volts. But when I test drive the system, the motor overheats after just two miles. So I tried using a new, unfried motor.



I noticed that the tail shaft of this type motor was probably designed to hold a fan blade, probably to cool the motor. Spend a lot of time looking for small fan blades. Spend still more time getting the thing properly mounted. But that presents a new problem. Bare metal blades spinning at 5000rpm could do bad things to nearby wiring.

Nothing I try to power the steering pump works well!

Time to think.

Gosh, that hurts!

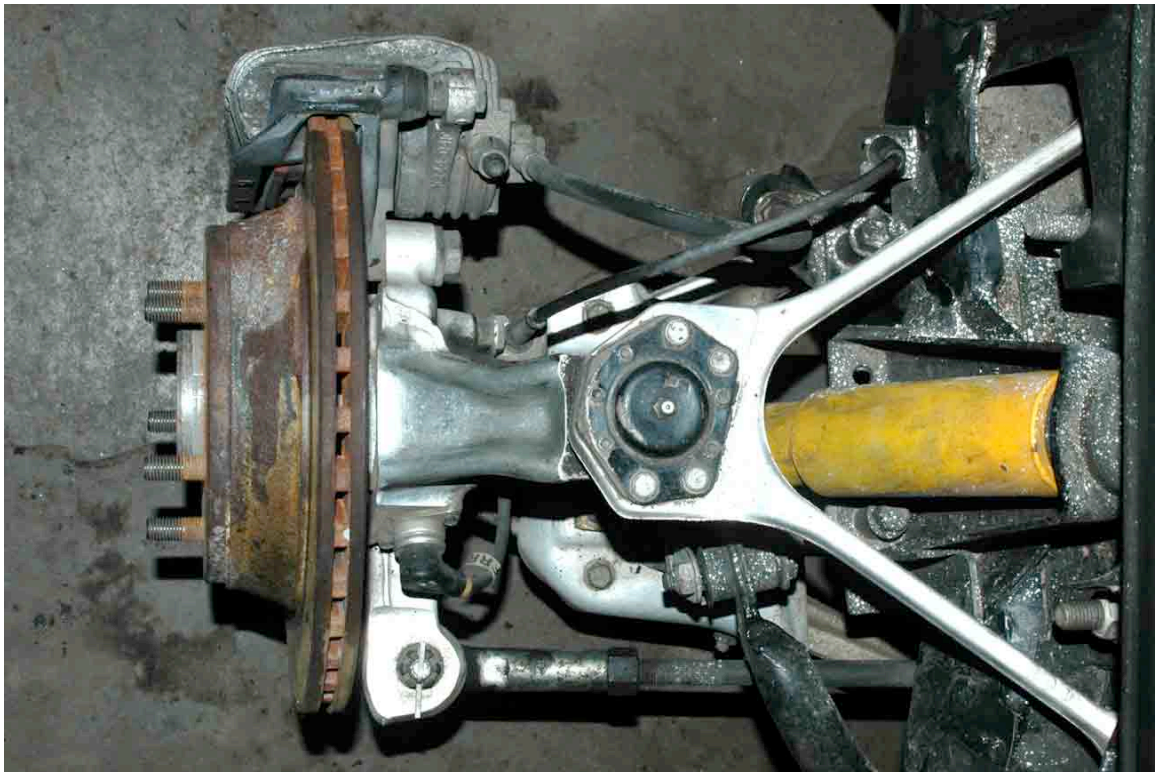
It seemed to me that power steering pumps must be different from most other pumps. Think about it. In a regular pump, the faster it spins, the more power it has.

But the faster a steering pump spins, the less power it has. You make a sharp turn at 10 mph, the pump must be very powerful. At 70 mph the pump is very weak, allowing the driver a good feel for the road.

Many people had hoped that in my ignorance of electric cars, I would discover an "outside the box" solution to running power steering. Something clever, cheap, space-saving, and easy to do.

I put the power steering problem on the back burner and let it simmer.

Time for a real road test. I increase the power setting to 600 amps. Rolf and I jump in the Corvette and back out of the garage. We hear a loud metal-on-metal noise. Sounds like brake trouble. Rolf and I jack up the car and remove the wheels, one by one.



Nothing is amiss with any of the disk brakes.

I have Joyce walk around the car. With her excellent hearing, she is able to pinpoint the source of the noise.
It's the motor! The worst possible news!
With some difficulty, I remove the 240-pound motor from the car.
It sounds like a bolt broke inside the spinning Warp 11. Time to strip down the motor and check each and every part for damage.
I wish I knew at least a little about electric motor repair!
First I remove the bell end, this supports the business end of the spinning armature. Out come the 8 brushes and the tail end that houses them. I muscle the heavy armature out of the central field coil.
And that folks, is it!

I stand back to admire the simple parts that together can generate more power than a V-8 four times its size.
Carefully I check each part for damage. But there is none, nor is there any trace of broken bolts. A call to Lee is in order. He tells me that if there are no broken parts, it probably means that one of the 4

electromagnets, that make up the field coil, has come loose and hit the spinning armature. None of the magnets looked loose to me, but, the bolts holding the topmost magnet were loose.
After putting the motor back together, I made sure all the outer casting bolts were tight. Lee was right, the motor ran fine after that. The hardest part was trying to shoehorn the Warp 11 back into the engine!

Next time: Power Steering, or Bust!