

1966 Antenna Repairs

By Dave Wrzesinski

The frozen antenna problem was not obvious when I inspected the 1966 Corvette in the fall of 1986. The body was stripped to the fiberglass, with only the windshield, instrument cluster, steering column and two seats added.

The chassis under it had a big block connected to a three speed automatic. There were twenty seven (big) boxes of parts containing a lot of a 427/390 roadster with air, power steering, power brakes, two tops, and what used to be a blue interior.

Out of all of the missing and broken pieces, the antenna would take the longest to restore. Two power antennas were in the boxes. One was a GM antenna with two opposing cylinders mounted to the antenna mast. It

worked. The other was a strange plastic coated housing with a mast sticking out of it next to the rectangular iron motor housing. Since the motor housing looked just like the headlamp motors, I correctly guessed that this was the original power antenna. It was frozen. Applying twelve volts to the power lines produced a little hum.

A lot of time was wasted adapting the other GM antenna to the Corvette body. A simple twenty dollar unit ordered from a J.C. Whitney catalog was easier to install and a lot lighter. Cutting the plastic coating on the Corvette antenna allowed the sheet metal cover to be removed. I was hoping to find that the drive needed to be cleaned and oiled. Instead I found that only a few inches of drive cable remained attached to the mast. The rest was rust powder at the

bottom of the housing with an inch or two of spring wrapped cable thrown in. Soaking the mast with penetrating oil by the week and the month did not loosen the top mast section from the grip of the second section.

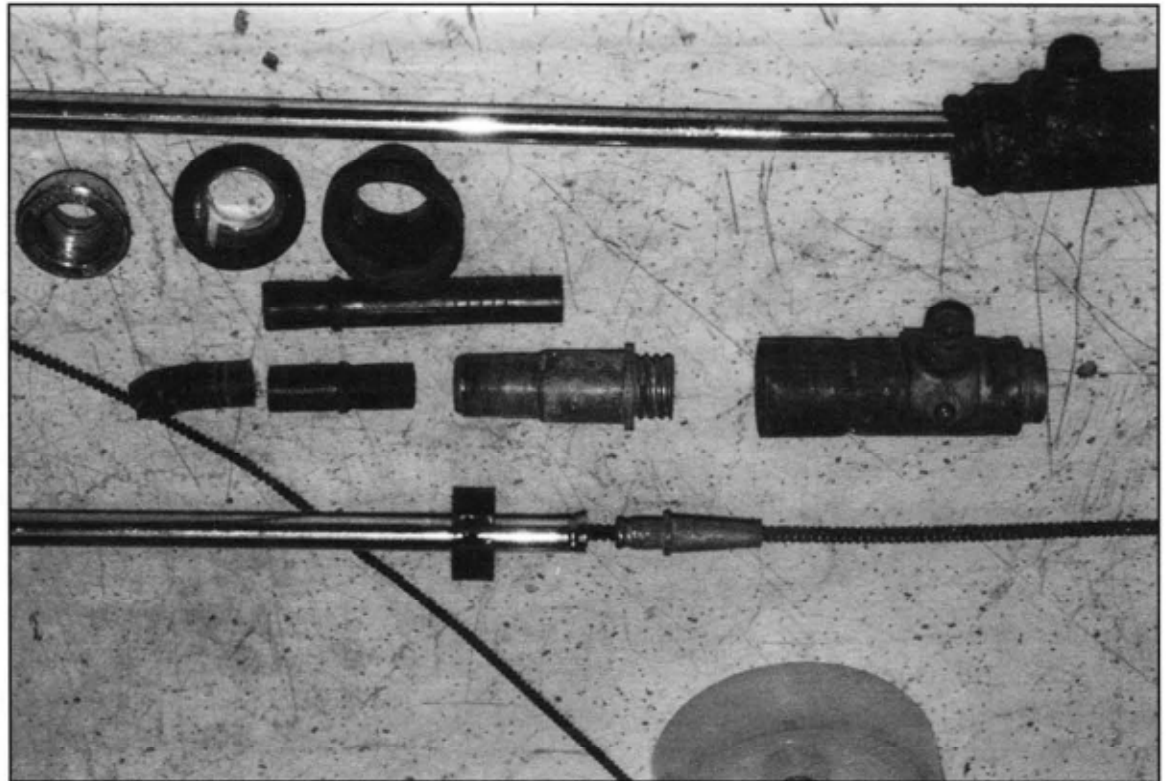


Figure 1

Mast Parts

Fast forward in time to 1995, at the Bloomington Corvette show swap meet. There, on the ground, is a tar covered power antenna housing with two wires and a bent and broken antenna mast sticking out of it. The vendor attaches a battery and the broken mast moves six whole inches. I pay forty dollars for the part and depart happy, knowing that the drive cable of my new possession is intact.

During the winter of 1996 I pried the cover from the swap meet assembly and discover a very rusty antenna drive. The drive cable has a stranded steel cable core with a long coil spring wound around it to engage the gear drive. At the opposite end from the mast is a lead lump that appears to secure the spring to the core cable. I disassembled the mast by first unscrewing the mast spacer retainer, then removing

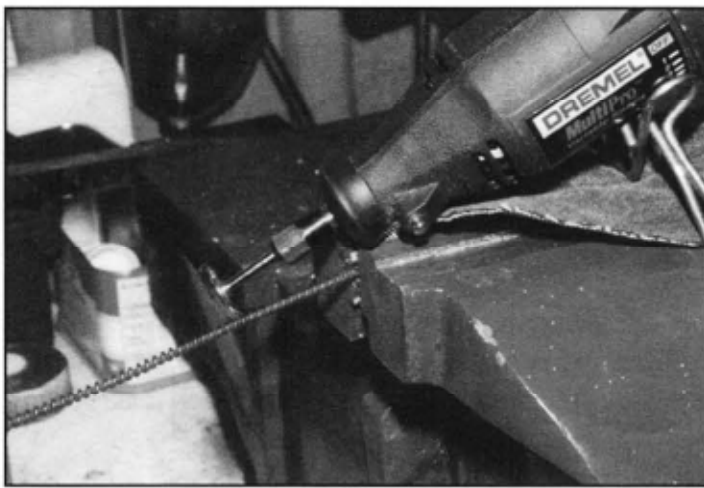


Figure 2 Cleaning the Cable

the screws at the small casting that secures the mast to the drive housing. Pulling the mast out reveals a pinch locked assembly with an annular black plastic ring at the core. (See Figure 1.)

The mast at the bottom of Figure 1 is still locked into the casting by the plastic ring. Above it are the three pieces that hold the assembly to the body hole, with a complete plastic antenna mast spacer above them. Just above that are the casting that has the female electrical antenna connection, the spacer retainer, and a damaged plastic mast spacer (cut into two parts – explained later). Above that is a damaged mast with a good drive cable. Note that the annular ring on the mast has been cut to facilitate disassembly. Cutting a slot did not harm its function or usability.

Once the ring is cut and the top mast section (with the drive cable attached) is removed, a rotary hobby tool (such as the Dremel shown) with a small wire wheel can be used to clean the cable. To protect the cable, I used a rag in the vise. (See Figure 2.)

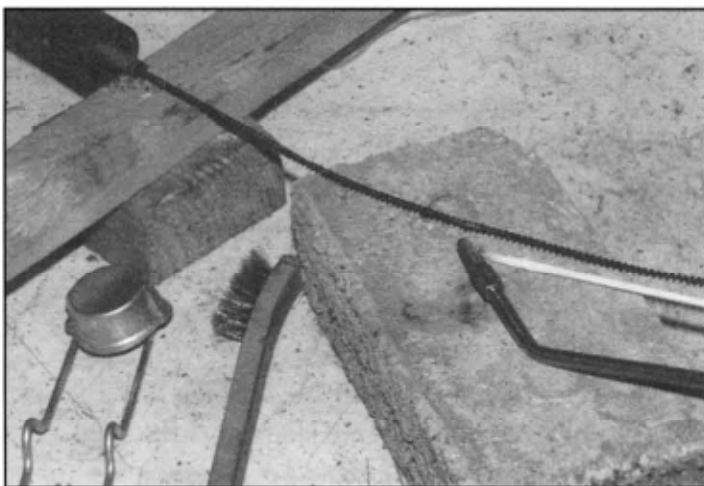


Figure 3 Brazing the Cables Together

After all rust and dirt has been removed from the cable, use a cutting disc in the Dremel to cleanly cut the cable from the donor mast. If the top mast section of the mast that you wish to refurbish is frozen, try holding the end of the stub cable in a vice while twisting the hex top of the mast clockwise with a 1/4 drive socket. This compresses the cable spring onto the stranded wire core inside the second section. When yours becomes free (as mine did), cut the end of the cable stub cleanly from the mast that you wish to refurbish. Then clean the penetrating oil from the stub cable. Also clean the cut end of the donor cable.

Note that either end of the donor cable can be brazed to the stub of the mast to be refurbished. If the donor cable has a weak spot near the mast (as mine did), cleanly cut the lead ball from the opposite end of the drive cable, and braze that end to the cable stub on to the recipient mast stub. When the assembly was new, the lead ball fixed the spring to the steel stranded drive cable. By now, corrosion has assumed that function, and the lead ball is redundant. If you must replace it, try acid core solder. In either case, after all rust and dirt have been removed from the cable, use a cutting disc in the Dremel to cleanly cut the cable from the donor mast.

The next step is brazing the cut ends together. I used wood and C clamps to hold the pieces in proper alignment over a simple brick (used as a heat insulator). I purchased an inexpensive propane brazing kit and rod coated with flux at my discount lumber store (along with cutting/brazing goggles). I had not done any brazing in years, but this was not difficult. Anyone who has never brazed might do well to have a welder perform this chore.

The mast stub cable and donor cable ends are then joined by brazing **with the cut spring ends properly aligned**. The spring alignment is needed to prevent interference with the drive wheel that can cause damage and/or a jammed antenna. (See Figure 3.)

With the thin cutting disk in the Dremel tool, carefully grind the excess brass from the brazed area of the cable. The object of grinding here is to present a surface to the teeth of the drive wheel that is the same as the surface of the spring. Since the splice is close to the mast, it will not be forced to flex around the wheel. If the splice were made closer to the mast, the mast could be damaged by the heat of brazing. If it were farther from the mast, getting the splice to flex around the drive might be a problem. (See Figure 4.)

Now is the time to clean the motor armature and make any needed repairs to the wires that carry twelve volts to the motor. The wires on mine had aged badly at the motor case; so I cut off the ends with hard cracked insulation and

soldered the remaining wires back onto the motor. Add a touch of grease to the motor bearing surfaces and reassemble the motor. I cleaned all the plastic coating from the outside of the motor and drive case, and used cans of clear liquid electrical insulator to recoat the assembly after final tests. My steel drive wheels were very rusty and the four spring-loaded balls (that provide overrun protection) were frozen by rust in the plastic gear that the motor drives. New balls were obtained from a bearing dealer for a dollar, and new springs were obtained from a hardware store. After cleaning the rust from the drive wheel, I used the Dremel tool to put a very slight ramp on the four rivet heads that the spring loaded balls must climb to provide overrun protection. That will insure no additional stress on the drive cable in future years. (See Figure 5.)

Two balls and springs are shown in place on the plastic gear, and two are displayed on the surface of the gear, in the center of Figure 5.

Assembly is done by applying lots of grease to the cable and reversing the disassembly process. I applied Kendall blue wheel bearing grease, which is low temperature tolerant. Don't forget to solder the mast wire back onto the antenna cable socket if you cut the wire. Now to cap off the assembly process, a good looking black plastic mast spacer is needed. Back at Figure 1, you noticed that the damaged mast spacer had been cut into two pieces. The flange in the spacer (that holds it in position) is closer to one end. I cut enough material from the long end to make it equal to the short end. That leaves the flange in the center of the spacer. The spacer may now be installed inverted to display the freshly cut end to the world. That makes the finished product look like it did, when it was new. Now mine also works like it did when it was new. If you restore yours, I hope yours does also.

Finally, if you find a swap meet parts donor assembly like mine, you will end up with lots of good motor and drive parts to advertise for sale in *The Driveline*. Maybe some supplier will find a spring and cable to offer as a kit - with balls and springs - to eliminate the years of searching. Until then, swap

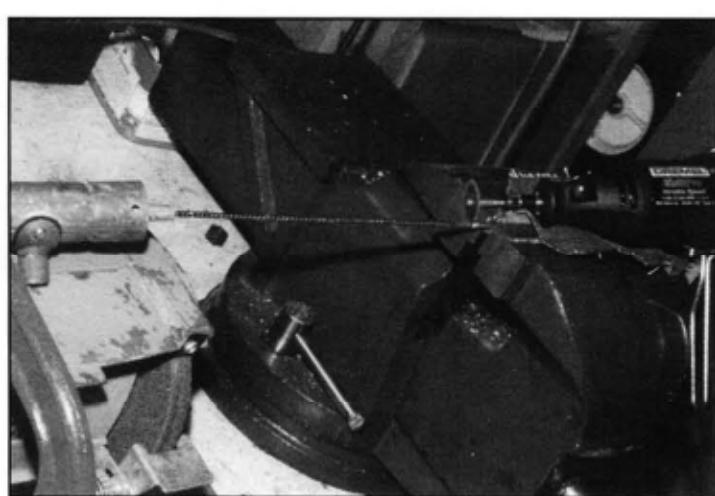


Figure 4 Grind the Brazed Joint

meets are great! Also, I am told that other 1966 GM cars used this antenna assembly, so junk yards and non-Corvette swap meets might be helpful.

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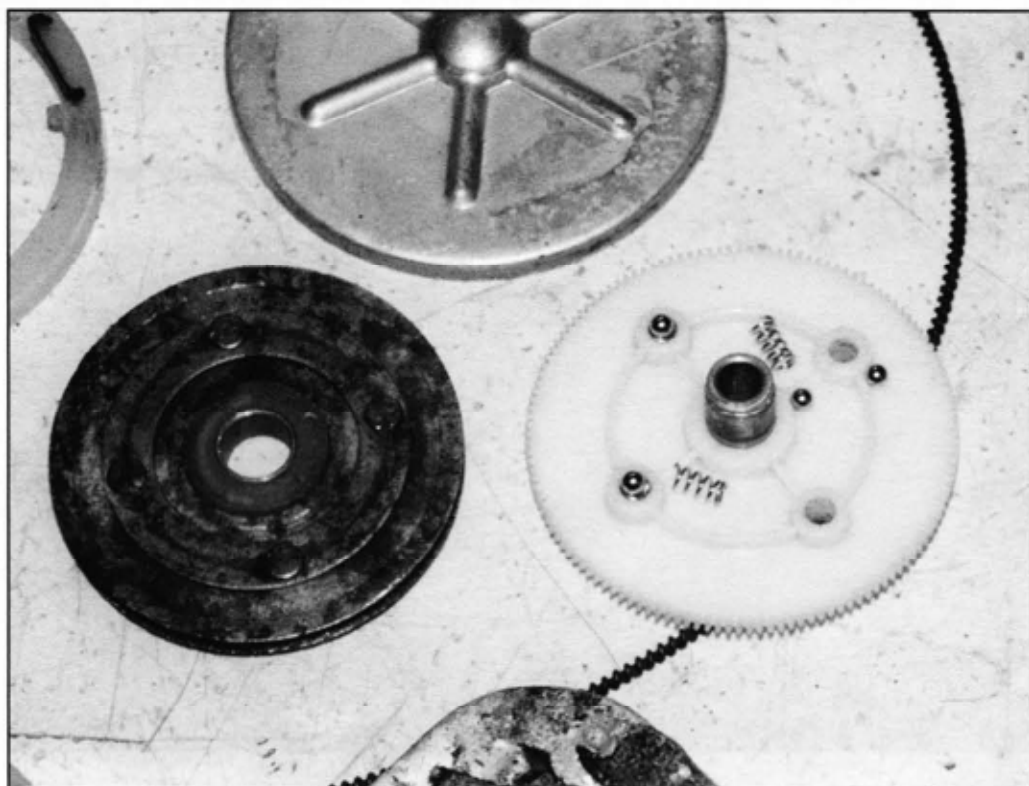


Figure 5 Steel Cable Drive Wheel and Plastic Gear