

# My HORNS Didn't Work! NOW they do!

By Doug Bailey

I learned a lot from fellow CLC members while fixing the horns on the "Turk," my '58 Extended Deck Sedan. There's a wealth of help scattered throughout the forums and web sites. Sharing what I learned about horn issues is what this article is about.

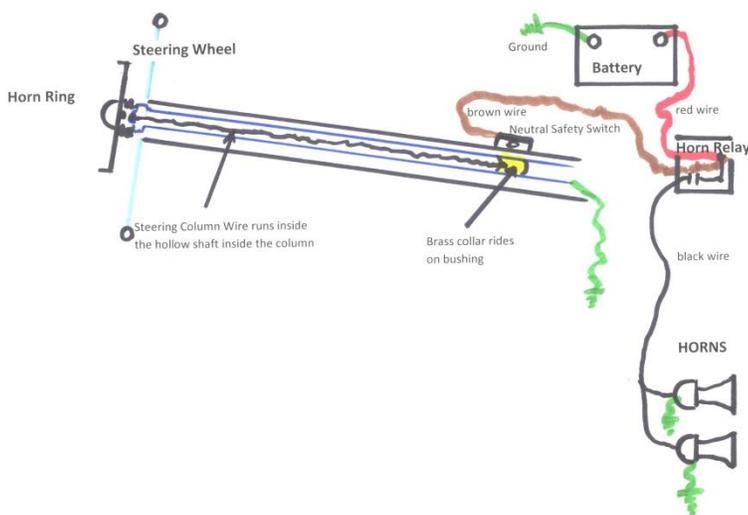


**Does your horn fail to blow at all? Or, does your horn blow constantly?** If your horns don't work, start with the horn grounds, then check the relay, and tighten the horn ring. ***If that doesn't fix it, then it might be time to go inside the column.***

My own problem was LOUD! When we replaced the steering coupler, suddenly horns that had worked for 50+ years had to be unplugged because they sounded constantly. Here's what we did to get them back in working order...

**Parts of the Horn System:** The general diagram below is redrawn from an article Dave Becker, the director of the 1958 Cadillac Owners' Online Group, sent me. It was originally developed by Kevin Rafferty for the Cascade Region of the CLC. It shows you the pieces of the horn circuit. These parts apply to about any Cadillac horns, but the rest of this article deals primarily with Fifties cars.

Horn Diagram: General Elements of the Horn in mid-Fifties Cadillacs



**Ground faults:** Always check the horn grounds first! As with most things electrical on your car, without a proper ground the horns will not work. Clean up corrosion and run an extra ground wire to a solid location on the chassis. That goes for the steering column, too. There should be a copper grounding strap located at the steering coupler (i.e., the "rag-joint"), where the column fastens to the steering box. If this isn't in place, make one.

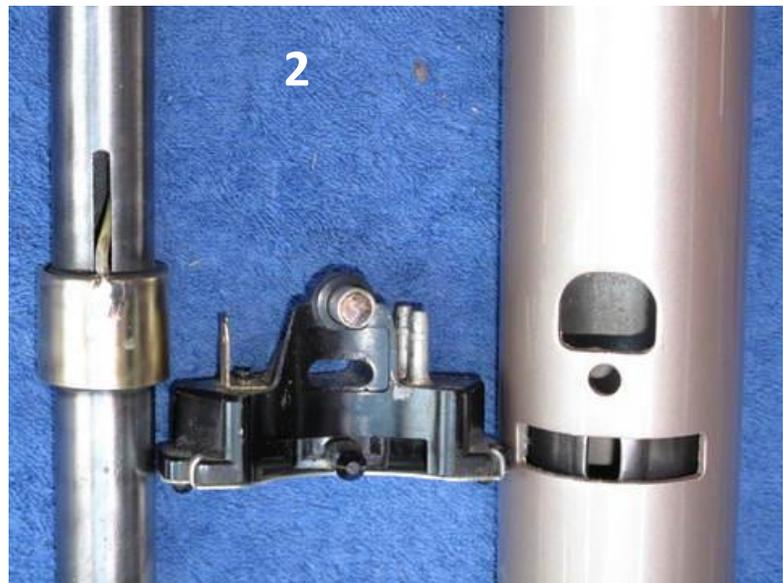
If your horn sounds when you attach the horn wire to the neutral safety switch you probably have a ground in the circuit - most likely somewhere between the neutral safety switch and the horn ring. If the horn sounds when the connection is made at the neutral safety switch AND the horn ring is removed from the steering wheel, your problem is in the wiring running down the inside of the steering column.



Photo #1 is a shot of the column from Chris Shaw's 1958 Cadillac (thanks Chris!). As you can see, three shafts make up the column. The bottom shaft rides inside the one in the middle, which rides in the housing at top. In this article I'm not tackling the turn signals or the steering coupler ("rag joint"). We will skip the center shaft in this photo and concentrate on the lower pieces in the shot.

**Neutral Safety Switch:** A frequent problem is a broken neutral safety switch (NSS). *For horn issues, the NSS is not acting as a neutral safety switch, but as a "horn wire junction."* This is important because in earlier Cadillacs this "junction" was a separate unit that was not part of the NSS.

To determine if the switch is bad, bypass it. Connect a jumper wire between the horn lead and the steering shaft, then press the horn ring. If the horn works, it's a bad NSS. If it doesn't work, it could be the NSS, or one of many other problems. The NSS on my 1958 Cadillac bolts to the steering column on the top side at the lower end, extending a spring-loaded copper button through a hole in the shaft. It sends electrical current from the horn contacts at the horn ring to the horn lead.



That's the NSS in the middle of photo #2, also supplied by Chris Shaw of the '58 Owners Group. On the right is the column, on the left is the hollow steel shaft that runs down inside the column. What might go wrong here? The housing of the NSS can break, because it's brittle plastic or Bakelite. A chip or a crack can loosen the button, losing contact. Normally the button rides on the brass collar shown beside the NSS, maintaining contact as the shaft rotates. In well-worn neutral safety switches, the button is worn smooth, even down to the metal retaining collar, like Chris's here.

To inspect the NSS, first disconnect the battery. (Do this while making *any* adjustments to your system.) Remove the NSS from the steering column, checking that the button is intact, spring-loaded, and not too worn down. Good luck finding a replacement NSS. They are out there, but they come dear. One on eBay right now lists for \$350! Peach State member Bob Winchell tells me the NSS can be rebuilt by "Chopper God," who's active on the '63-'64 Cadillac forum.

**Horn Relay:** If you have a fault or a ground in the circuit between the horn relay and the actual horns the horns would sound constantly, regardless of whether the neutral safety switch was connected. The same applies for a fault or ground between the horn relay and the neutral safety switch. Horn relays do go bad, and you can test them by bypassing them. But a new one is available at Rock Auto for under \$8.00.

**General Horn Wiring:** According to Chris Shaw and verified by my own horn's original wiring, your horns should use the following leads. You might check those to verify your wiring is as it was intended:

- a. From the horn ring to neutral safety switch: White.
- b. From neutral safety switch to horn relay: Tan or brown. Attaches to center position on relay.
- c. From horn relay to horns: Black. Attaches to right position on relay.
- d. From horn relay to fuse block: Red. Attaches at left position on relay/Body feed on fuse block.

**Tightening the Horn Ring:** Is your horn ring loose, or does it only sound the horn at one spot on the ring?

A simple adjustment of the set screws will hold the horn ring tighter to the wheel. There are two set-screws under the horn ring collar on the underside of the steering wheel, set roughly at 11:00 and 5:00. You'll have to be flexible to find them: From the floor, look up the column to where the collar of the horn ring ends. With the battery disconnected, have a helper press the horn ring completely and evenly down, while you tighten the hex screws. You may also have issues with the parts inside the horn ring, as shown in photo #3. The spring can get crushed over time, the rubber O-ring can break, or the paper seals can deteriorate. Other than seals, replacements may be hard to find. Maybe you can locate a donor car.



**The Steering Shaft Bushing:** At left is Chris Shaw's photo #4. You'll have to remove the steering column to get to this: the hollow steering shaft again. See that slot with a wire emerging? That wire comes down inside the shaft and exits at a solder point on the brass collar. Beneath this collar is a fiber or rubber bushing that insulates the collar from the steel shaft. The button on the NSS extends through the column, riding on this brass collar. A few things can go wrong here: (a) when the solder breaks or gets corroded, it loses the connection with the horn ring up top via the wire, (b) the bushing can dry out and crumble, leaving the brass collar grounded, or sliding around inside the column, and (c) some collars are actually split. If the gap is large enough it might cause the NSS's button to hang up. On my horn, this collar was split badly *and* loose (photo #5). It was riding up the shaft, completely off the bushing. My problem happened when we changed out the rag joint. We used a little too much force, shoving the shaft UP

toward the steering wheel. This was enough to split the collar, grounding the horn. We wrongly assumed it was a grounded steering column wire!

**Steering Column Wire:** Look again at the parts at the top of the steering column (shown in the lower right corner of photo #1). The wire runs inside the shaft to a solder point on the brass collar down below. Notice that this wire has a brass nib soldered on at the top end. You can also see the shaft retaining nut, and a rubber "top hat" insulator. The wire runs down through that rubber insulator, which



keeps the metal nib from grounding on the retaining nut. When you press on the horn ring it completes the circuit by touching the wire's nib to the retaining nut. There are three possible issues at this end: (a) the wire's insulation may be cracked or broken, allowing it to ground inside the shaft; (b) the "top hat" rubber insulator can deteriorate, allowing the brass nib to ground on the retaining nut; or (c) the brass nib soldered to the top of the wire can be loose or missing. My insulator was intact, and the wire itself was fine. But the nib at the top was MISSING. Peach State membership director Buster Miller's horn was missing the rubber insulator; it had crumbled and allowed the horn wire to ground out on the steel retaining nut. It's not easy to make one with that lip around the top, but he managed it.

**Rebuilding the horns:** Before they stopped working my horns were feeble. Horns can get wet enough inside to rust the steel diaphragm, and the two fiber gaskets will almost surely be rotten. If the gaskets are gone or broken, the diaphragm will ground against the housing and the horn won't blow. Even if the gasket is okay, a rusted diaphragm does not reverberate well. You can find replacements online cheap, and after-market horns are not out of the question. So, you might decide to skip this hassle. But if you want to keep your original horns, you *can* repair the originals like I did.

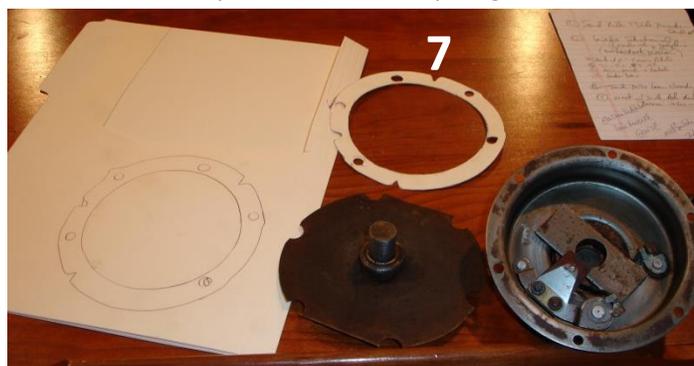
a. Drill out the rivets holding the two halves of the horn housing together. Find some small bolts with lock washers to replace those rivets. You'll need them later.

b. Photo #6 shows the two halves, separated and cleaned up before repainting the outsides "under hood" black. The left half (with the mounting bracket) holds the diaphragm. It's a metal version of a radio speaker's cone. That center post is a magnet. When the magnet is pulled by the electrical pulse, it vibrates the diaphragm, and gives us the sound. This shot shows the diaphragm after I've done my best to



polish off the rust and corrosion. If yours is too far gone, replace the horn. Mine worked, but rough edges will make your horn sound puny. Better to find one online.

c. In photo #7 the bracketed half is apart (this is the left side in photo #6): The diaphragm is outside the housing, flipped over. Clean these parts up, inside and out. My diaphragm remained slightly corroded on this side, but this side won't matter. Treat it and move on. The edges must be clean enough to make a seal with the gasket (see next step). Also clean up the housing containing the circuitry. Check contacts and re-solder if necessary.



d. You need to replace the gaskets before re-assembly. A manila file folder works fine. Trace the outline of the horn's half onto the paper and then cut out *one for each side of the diaphragm*. Be precise! It will make a difference. I used the adhesive we use on rubber window seals, running a bead along both sides of each new gasket. Re-assemble the pieces of the "horn sandwich" using the replacement bolts and lock washers you found to fit. This can be tricky. If you allow the diaphragm to touch the horn housing it will not work. Same with the new bolts. Bench test your repair with a 12-volt battery. Good luck!

**CREDITS:** Dave Becker is the founder of the 1958 Cadillac Owners Group and THE source for info on the '58s. Dave sent me Kevin Rafferty's original horn worksheet back in 2009. Chris Shaw has been around the '58s for a long time, and he's always willing to share helpful information and photos. Bill Wine is another helpful '58 forum contributor. (If you're not monitoring a forum for your model year, shame on you!) Peach State's Jay Friedman and Frank Butler helped me search for ground faults during Bob Winchell's Cadillac Clinics, and Jay reviewed my draft several times. Adam Byars and his dad, Mike, removed the steering column and actually re-wired my column. Buster Miller shared his parts bin and showed me how he re-horned "Patsy," his black '58 "Couperado." I owe you all a stout blast on the Turk's (now working) horns! *Doug Bailey 05-22-13*