

COOL AIR

Newsletter of AirVair, the CORSA Chapter for Air Conditioned Corvairs
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Restore Your Compressor Cut-Out Switch

by N. Joseph Potts

Air-conditioned Corvairs from 1966 through 1969 came with a switch attached to the right hinge on the engine-compartment lid that shuts off the compressor when the lid is raised. Its purpose is to prevent excessive internal pressures in the system that rapidly build up when airflow through the condenser (mounted over the air intake forward of the engine compartment) is interrupted, as happens when the engine-compartment lid is raised. The switch senses the attitude of the lid through its hinge, and breaks the ground leg of the circuit that engages the compressor's clutch.

Because the switch moves relative to its wire every time the lid is raised, the common failure mode for this switch over long periods of time is that its wire breaks off at the switch at a length too short to splice to. Since the switch is "sealed," this renders the switch seemingly irreparable. It is, of course, dangerous to omit such a switch from the ground circuit of the compressor, and it's typically awkward and very non-stock to adapt a thermostat or other type of replacement attitude-sensing switch to perform the function. I have found no replacement switch as such for sale by any Corvair vendor, although used and perhaps even NOS examples may be available from time to time.

But now for the good news: the switch is enclosed in its sheet-metal cylinder by two end caps, at least one of which is merely pressed onto the cylinder. It is, of course, somewhat challenging to remove the cap without collapsing the rather delicate shell, and once the switch is open and apart, there remain minor challenges to the reattainment of reliable function together with a stock appearance, but these can be overcome in the manner described below.

Opening the Case

The key to this most-delicate operation is to apply spreading force (prying) *between* the caps without applying any holding force across either cap or the cylinder in the middle. One of the caps has a hole in it through which the wire passes, and the other cap is closed (blind). In the accompanying drawing, the "blind" cap remains pressed onto the cylinder. In my case, the cap with the hole came off, but it makes no difference which cap comes off—there is no need to remove both caps, nor either cap in particular.

After many unsuccessful experiments and some scratching of the sheet metal, I got success by gently retaining one cap with the blades of a large wirecutter and prying against the wirecutter on the opposite cap with the ends of a pair of right-angle needlenose pliers. There are many ways to do this. Suffice it to say, any of them is suitable that yields the desired result (a cap pops off).

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Disassembly and Cleaning

The switch virtually falls apart under the compression of the spring (see drawing) that keeps the parts in electrical contact with each other. I found little corrosion in my switch, and confined my cleanup work pretty much to brightening up the ends of the mercury switch proper with a mild abrasive (metal polish). I also took the opportunity to polish up both the inside and the outside of the shell. Of course, a polished appearance of the shell may not be entirely stock, for purists who care about such things. The wire, being broken, will be replaced, complete with the button contact at the end of the wire, which poses the replacement challenge of this exercise.

Replacing the Broken Part

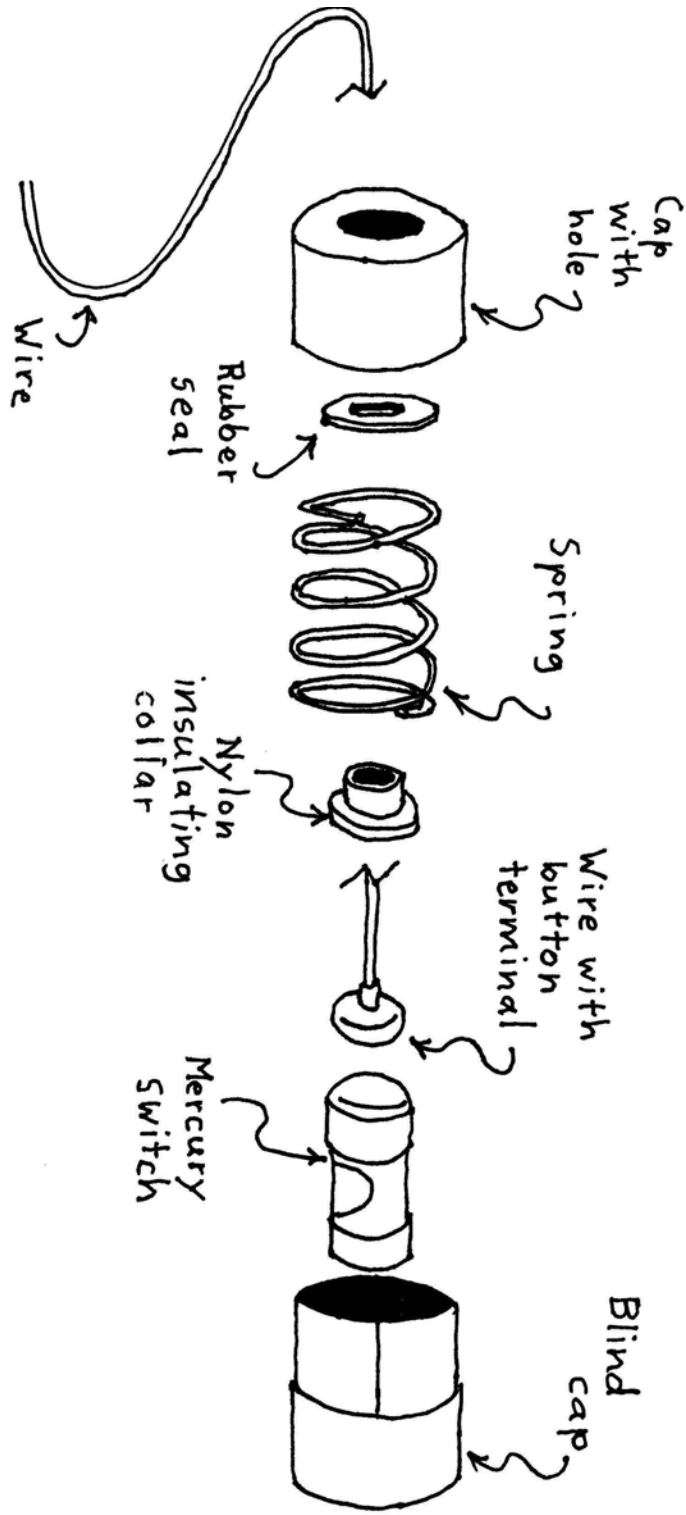
The broken part of the switch, obviously, is the wire, which over the years will have become work-hardened from the flexing it is subjected to every time the lid is raised and lowered. This switch was originally put in the car as part of the harness that plugs into the compressor-clutch coil, so if you wish a stock, integrated appearance in your engine bay, you'll have to provide a wire about 30 inches long with a Series 56 male (sold by Clark's, among others) terminal at one end, the button at the other, and the nylon insulating collar, spring, rubber seal, and cap on the wire *before* you crimp the second terminal on the wire. While the wiring diagram shows this wire as (14-ga.) black, my wire is black with a green stripe that matches the green used for the insulation of the power lead to the compressor clutch that runs all the way to the front of the passenger compartment. And my original wire looks more like 18-gauge, for what that's worth.

I have not been able to locate any supply of the button or "mushroom" end-of-wire contacts such as this switch contains, so the foregoing will not be an option unless either you do locate such a supply (there must be one), or you content yourself with something like a big glob of solder at the end of the wire, which *might* work perfectly well. I'll just describe what I did, which reflects my greater concern for reliability and function and my lesser concern for accuracy of every visual detail.

Electrical components, particularly automotive ones, that have terminations like the mushroom-terminated wire we're trying to replace are rather common. You can probably remember seeing them here and there although, if you're like me, you may have difficulty remember in just *what* you saw them. I managed to remember that I've seen such terminations in fuseholders, although since repairing my switch, I've noted even better examples in certain automotive bulb sockets. The fuseholder I found in my moment of need had a yellow wire, and that's what's in my car and working (if not exactly looking) just fine at this very moment. You may hold out for one with a black wire; I've since noted that such are very much to be had.

Finishing

The rest was quite simple, not to say obvious. I put the switch back together the way it came apart (see diagram), and pressed the cap back onto the cylinder. I spliced the switch onto the end of the wire it broke off from and snapped the repaired switch back into its bracket, which I restored to its position on the right hinge of the engine-compartment lid.



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