

**Newsletter of Air 'Vair, the CORSA Chapter for Air Conditioned Corvairs  
Spring 2008**

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### **Fan Your Stock System!**

Adding a generic, \$50 electric fan to the condenser of your stock A/C system can improve the performance not only of your system, but of your engine as well—in fact, engine performance was the reason I did this, and I got what I wanted. And I got it not only for a reasonable cost of money and effort, but I got it without cutting or drilling anything on my mostly stock 1966 Corsa. The addition is completely and easily removable, and after removal, the car is exactly the way it was before the addition.

A major, if theoretical, complaint about every stock design of A/C system ever put in a Corvair is that the condenser is in every case placed ahead of the engine in the very air stream that is used for cooling the engine. Since the purpose of a condenser is to transfer heat from the cabin to the stream of air passing through the condenser, this means that all heat so transferred gets shoved straight into the engine, to *cool* the engine. This has moved the more stalwart among us to relocate the condenser to various places, most popularly (and extremely) to the floor of the luggage compartment at the front of the car. The results of such heroic efforts, as one would hope, have been favorable, at least for the engine.

### **The Problem**

But as a practical matter, the factory design causes little trouble on well maintained engines that aren't being used to pull half-ton trailers uphill on very hot days at speeds above 60mph. I don't have a trailer, and the nearest respectable mountain to me in South Florida is almost a thousand miles away (in Cuba). But with a system that was 1966 stock right down to the Frigidaire A-6 compressor, I was getting engine trouble on very hot days when launching out of a two-minute wait for a traffic light, of which there are many more than a thousand within one mile of me. The problem was, when I let out the clutch (just the way I usually did), the engine would stall. Its torque "headroom" was greatly reduced from the normal, such as after a momentary stop, say, for a stop sign.

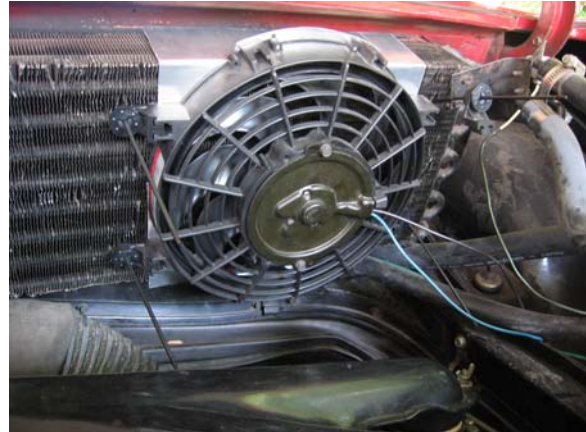
Doesn't sound like an A/C problem, does it? Well, then what *would* cause the engine to lose torque headroom progressively as it sits idling on a hot day? My idle compensator solenoid was working and adjusted properly, as the behavior of the system in shorter stops implied. The idle speed I had to set it for in order to overcome this problem was excessive. After a year or more of thinking about this (only during the summer, which is over six months long here), I hit upon what I still think is the correct theory: at idle, so

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little air is drawn through the condenser that pressure in the refrigerant system builds up as the engine stays at idle. This increasing pressure makes the compressor harder and harder to turn, so that when the clutch is let out, the engine has much less than its usual torque headroom, and stalls.

### **The Solution**

How to get more air through the condenser at idle? Obviously, a fan—in my case a puller fan attached to the condenser on the downstream side. On 1965 and prior designs, it would be a pusher fan mounted atop the condenser. The first photo shows a single 9-inch reversible fan I mounted on my condenser. The bright aluminum visible on the top of the condenser is part of a baffle I constructed, which was the hardest part of the project, but much of the difficulty was design, which is fully disclosed in this letter, so that part of the effort need not be repeated by anyone doing what I did, using the same model of fan. After taking the photo, I painted the visible part of the baffle black. It looks much better that way to me.



### **The Fan**

The 1966-and-after condenser is about 8½ inches vertically. I used a 9-inch-diameter fan, as I have heard of others doing, specifically a Derale #16509, purchased from Summit Racing Equipment for \$70. This fan is not audible to this driver while the engine is running, and it can be installed, like most of these fans, to be either a pusher or a puller. As the dimensions above suggest, this fan “overlaps” the condenser’s height by about half an inch, but I dealt with the overlap (which could have reduced effective capacity considerably) by making a baffle, about which more soon. I wasn’t sure I’d have room behind the air cleaner of my 140 for a second fan, so I went with the 9-inch. If I had used two, I would have used 8-inch fans. Derale is not necessarily a superior brand—it’s just what my suppliers happened to have. They offer fans in many sizes, including 8-inch.



The fan, like its competition, comes with four nylon bolts with which to mount it on the condenser. These are easy to install, they do not threaten the condenser, they are durable, and they are *not* reusable, so do not place their (one-way) nuts on them until you are sure they are where you want them.

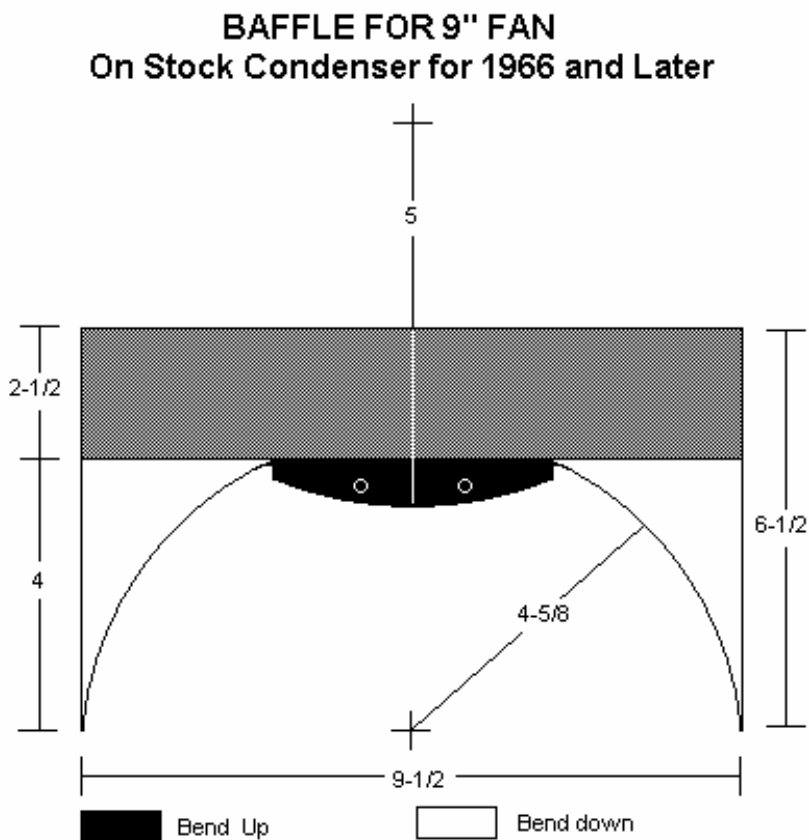
### **Electrical**

I use a relay to switch my compressor (and I hope you do, too, so your original compressor switch doesn’t burn out), so I

just spliced the fan's power lead into the relay's output for the compressor. My fan switches on and off with the compressor. Having the fan run all the time the a/c is on could make sense as well, but to do that on my car would involve running a wire up to the front of the car.

## Baffling

As mentioned, I fabricated a baffle for the fan to keep it from sucking air from the engine compartment instead of through the condenser. The main places where this would happen with the 9-inch fan would be the places where the fan extended over the top and beneath the bottom of the condenser. Closing these gaps with anything from cardboard to plywood to, in my case, thin sheet aluminum, is a simple matter, as there are two holes at the top and bottom of the fan by which this can be done.



But I noted that the fan could also pull air from the engine compartment through the top and bottom surfaces (the condenser is about  $2\frac{5}{8}$ -inches thick) of the condenser, and through the side of the condenser adjacent to the fan above and below the fan. So I made a slightly more-complex baffle (see drawing) of two identical halves, each half being snipped from a piece of aluminum  $9\frac{1}{2}$  inches long by  $6\frac{1}{2}$  inches wide with a pair of tin snips. These are the baffles shown in the photos of the fan as well.

The drawing is not to scale. The two white circles show approximately where the two screw holes to the fan should be. The baffles attach only to the fan, not to the condenser.

# **COOL AIR**

**Air 'Vair, CORSA Chapter 004**

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**Galion, OH 44833**

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## Air 'Vair/CORSA Membership Application

First Name, Initial \_\_\_\_\_ Last Name \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ State/Prov. \_\_\_\_\_ Post Code \_\_\_\_\_ Country \_\_\_\_\_

Phone Number (\_\_\_\_) \_\_\_\_\_ E-mail \_\_\_\_\_

One-year membership and subscription (all amounts in US dollars):

	CORSA Member	AirVair+CORSA
Address in United States or possessions	\$5	\$50
Address in Canada	\$6	\$54
Address elsewhere	\$7	\$55

Checks (payable to AirVair) must be in US funds drawn on a US bank.