



COOL AIR

**Newsletter of Air 'Vair, the CORSA Chapter for Air Conditioned Corvairs
Fall 2006**

Keeping It Idling

A normal Corvair engine in good condition doesn't develop enough power at idle to run stably with a stock (Frigidaire) compressor engaged. The stock fix for this in most Corvair years was to install a solenoid in the carburetor linkage that opened the carburetors slightly when the air conditioner is on. With the compressor clutch engaged, the end result was an idle speed slightly higher than normal (about 1,000 rpm), and an idle speed somewhat higher than that when the thermostat on the evaporator disengaged the compressor to keep the evaporator core from icing up.

But even this arrangement can be overwhelmed during prolonged idling in very hot conditions (the ones in which you'd be most likely to want to run your air conditioner). In those circumstances, the engine at idle speeds does not pull enough air through the condenser to cool the refrigerant completely before it returns to the compressor. When incompletely condensed refrigerant enters the compressor, the power required to turn the compressor increases, eventually rising to the level at which it stops the engine (typically when the light turns green and you throw the throttles open to get going).



In the short run, you can combat this problem by revving your engine, but this is especially difficult with an automatic transmission, which you must shift to neutral to keep the car from moving when you do this. Even with my manual transmission, using the clutch to prevent motion of the car has led to overheating of my clutch pilot bushing and a hellish squeal warning me of the impending requirement to remove the power train to replace that little bushing (I backed off and have not had to replace the bushing so far).

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After you've grown tired of this expedient (rapidly), you begin casting about for an approach that might be a little more elegant and perhaps a bit less demanding of your reflexes and patience. There are three changes you can make to your system that can help alleviate this problem, which I will discuss in descending order of their difficulty and cost.

Replace the Compressor

The stock A-6 (axial six-cylinder) Frigidaire is quite a power hog by modern standards. Modern compressors, notably those of the "Sanden" design (R-5, or radial five-cylinder) pump comparable volumes of refrigerant at comparable pressures while consuming substantially less power than the Frigidaires. Being smaller and lighter, they're relatively easy to retrofit, and they're widely available in the A/C components markets, including the offerings of Corvair specialists. They cost about \$200, but obviously installing them requires evacuation and recharging of the refrigerant circuit along with replacement of the desiccant (receiver/dryer).

Install a Binary or Trinary Switch

These switches open and close according, variously, to either the temperature or the pressure (much the same thing) of the refrigerant. Binaries open when temperature or pressure get too high, and trinaries open when the measured phenomenon is either too high or too low. Typically, these switches connect and disconnect power to the compressor clutch, but they are also used to control electric fans (see below), where present.

The difficult part of these switches is that they must be plumbed into the refrigerant circuit, and so require the evacuation and charging required for any opening of the refrigerant circuit. The usual place for plumbing them in is a port provided for such purposes on many (but not all) versions of the receiver-dryer for the Corvair and its contemporaries. If you go this route, you'll be replacing the receiver-dryer anyway (because the system was opened), so just make sure it has the port for this use, like the one in the picture.

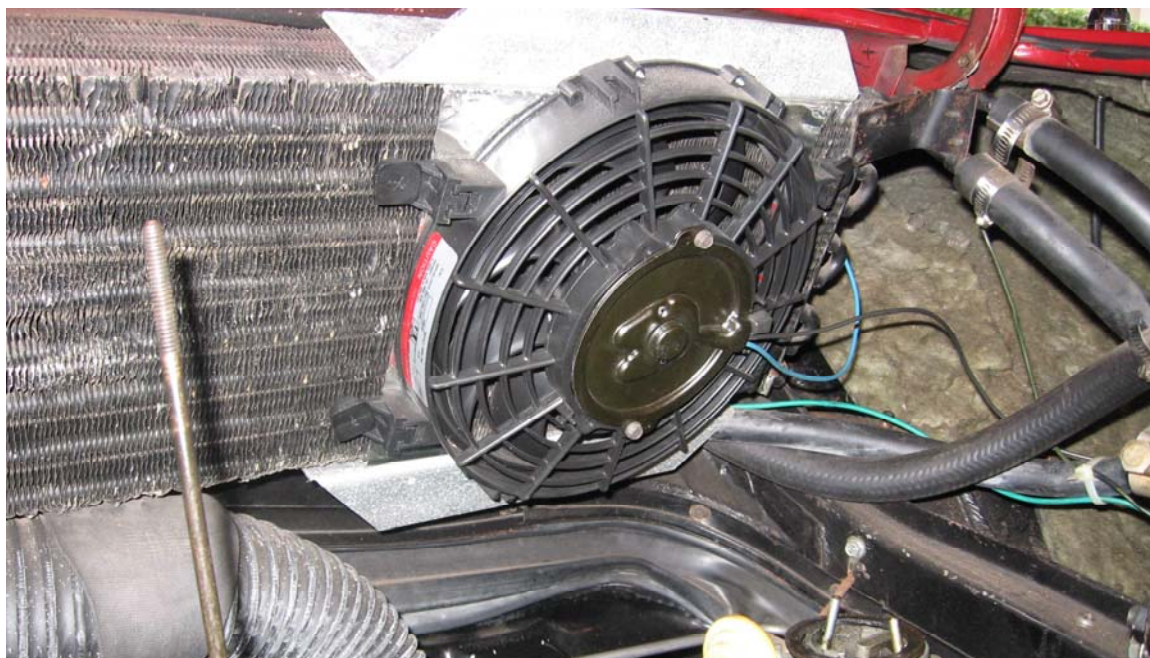


You will, of course, have to run two wires back to the compressor from the switch. A further disadvantage is that cooling at times of high internal temperature or pressure (just when it's most needed in the cabin) is interrupted whenever the switch opens, so theoretically the A/C's throughput might be reduced at such times, but I've never heard a complaint along these lines.



Install a Condenser Fan or Two

The easiest and cheapest remedy imposes an additional load on your electrical system to avoid having to open the refrigerant circuit. Inexpensive electric fans fit most installations and I have found them effective and quiet on my 66. For the 1966-style condenser on the firewall, a nine-inch fan from J. C. Whitney fit nicely. Some who have this condenser have installed two such fans, but I suspect such installations may be noisy. My own, although it runs all the time the A/C is on (no fancy switches or relays for me), seems inaudible in my otherwise rather noisy coupe.



Installations on this type of setup involve using a “puller” fan, while the earlier condenser-over-engine designs may require a “pusher” fan, perhaps of diameter larger than nine inches. Most fans are readily convertible between “pusher” and “puller.” This route has the advantage that it increases cooling when the engine is turning slowly, not only for the condenser, but possibly also for the engine itself.

Using a fan in this way does not seem to have enabled me to do without the factory solenoid, but together, the fan and the solenoid have provided me with an idle that is virtually bulletproof. The other fixes mentioned above may work better with the solenoid than without it, so if you have a solenoid, try just disconnecting it to see how everything works together, before actually removing it.

For those of us in the Northern Hemisphere, *this* is the time of the year for A/C work, so whatever your project, start it now, and hope to finish it by the time the weather is getting hot again!

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