



**Newsletter of Air 'Vair, the CORSA Chapter for Air Conditioned Corvairs  
Summer 2007**

**Head-to-Head: Delco A-6 vs. Sanden SD-508**

In a **COOL AIR** survey just over a year ago, we learned that four out of ten respondents compressed their refrigerant with a Sanden compressor, while six out of ten were sticking with the original axial 6-cylinder compressor, usually bearing a Frigidaire label. The Sanden, a more-recent axial 5-cylinder design used for at least the past ten years in various forms as original equipment in many cars and trucks, is unarguably smaller and lighter than the A-6 (today distributed by Delco) by a wide margin. All these external factors have led to widespread acceptance of the idea that the Sanden consumes less of the engine's output, or improves the system's cooling capacity, or both, vis a vis the A-6 it replaces.

That the Sanden is more efficient than the A-6 seems undeniable from its more-recent design, although the question of how *much* greater its efficiency is remains very much open to question. That it improves the system's cooling capacity is even more open to question in that, contrary to appearances, the A-6 *is* modified for the Corvair among the literally thousands of makes and models (including not only practically all GM models from the Sixties and Seventies, but even Jaguars) its variants are found in. The modification of the oil pump to pump when the compressor is turned counter-clockwise (versus the clockwise direction common to virtually every other application) is well known. Less well known is the reduced compression ratio of the Corvair version, which bears the part number 6550111 on its label. This modification adapts the A-6's capacity—and power consumption—to the capacities of the system's other components and the

The Numbers		
	<b>Sanden</b>	<b>A-6<sup>1</sup></b>
Output <sup>2</sup> at 2,000rpm (BTU/hr.)	23,200	28,500
Output at 3,000rpm (BTU/hr.)	30,500	36,900
Output at 4,000rpm (BTU/hr.)	36,900	44,500
Pulley Diameter (inch)	5.2	5.5
Displacement (cubic inch)	8.4	12.8 <sup>4</sup>
Cylinders/configuration	5/axial	6/axial
Weight (pound)	11.2	34.1
Cost <sup>3</sup> (\$)	358	116

<sup>1</sup> Output figures are for "standard" A-6. They would be less for the low-compression Corvair model.

<sup>2</sup> RPM figures are for the engine; outputs are interpolated from compressor data for Corvair 6-inch crankshaft pulley.

<sup>3</sup> Cost for A-6 is rebuilding net of core charges; for Sanden is cost of all conversion materials. No taxes, refrigerant, dryer, or shipping charges are included. Sanden figures from Clark's Corvair parts, A-6 from Auto Parts Giant.

<sup>4</sup> Measurement of a sample. Corvair Shop Manual gives 10.8.

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requirements of the Corvair's passenger space. The system's cooling capacity cannot exceed the capacities of all of its components, no matter how much compressor capacity might be increased.



**The Delco A-6**

Both the Sanden and the A-6 are cheap and widely available. While you theoretically *can* buy a new A-6 for the Corvair, rebuilding services are widely available, apparently with great variations in quality as well as price. Most Sandens sold for conversions seem to be new ones. As might be expected, parts for the A-6 are also widely available. Clark's Corvair Parts sells new Sanden SD-508s (the appropriate model for the Corvair), rebuilt A-6es, and parts for the A-6, along with conversion kits for the Sanden. SD-508 is now an obsolete designation for the current product, designated SDH514, which is updated for R-134a but still handles R-12 just fine.

For those concerned with such things, replacing an A-6 with a Sanden takes more than twenty pounds off the weight hanging out behind the rear axle, a performance limitation of the Corvair design. The weight differential is even greater than shown in the table above, since the bracket for the A-6—particularly the high-mount designed for use with four-carburetor engines or the smog pump—is substantially heavier than the equivalent bracket for the Sanden.

Perhaps the most-common complaint about the A-6 is that it leaks oil from the seal at its input shaft, just behind the clutch. While minor leakage is normal and not a problem, the major leakage frequently reported not only makes a mess, but is usually accompanied by refrigerant loss. Obviously, enough lubricant loss threatens the compressor itself. Some rebuilt units leak as soon as they are installed, while current experience with new A-6es is practically impossible to find. Much seems to depend on the skill and diligence of the rebuilder, of which there are many hundreds in business.

Both Sandens and A-6es are suitable for use either with R-12 or R-134a and their respective lubricants. The Sanden, however, may be more optimized for R-134a, and may have some gain in performance versus the A-6 in a R-134a conversion, but as mentioned, system cooling capacity is determined by all system components working together, so an advantage at the compressor might not be realized in actual use.

### **Conversion/Repair**

Repairing a shaft-seal leak in an A-6 requires evacuating and recharging the system, as does converting a system to use the Sanden. Converting to the Sanden requires, in addition to the compressor, a mounting bracket and two hose adaptors, all of which Clark's sells for a package price of \$300, described in their catalog as "Everything you



**The Sanden SD-508**

need to add a modern Sanden compressor to your system.” Of course, in addition to this, you will need a v-belt (your old one won’t fit), you’ll need lengths of hose for the suction and discharge, and you’ll need some means of bead-lock crimping the hoses to the hose adaptors they supply, which use this method rather than the barb-and-hose method of the original stock system. Clark’s sells hose, and the crimping service as well, at additional charge. For costing purposes, I have included five feet of suction hose (the length

required for a late model to reach the original attachment point for that hose), two feet of discharge hose, crimping, and a fan belt, which you will need to get at an auto-supply store, since the needed size varies according to the particulars of each installation.

### **The Frankenstein A-6**

An A-6 with a counter-clockwise oil pump doesn’t last long in a Corvair. Don’t ask how I know this. But it happens, sometimes inadvertently, other times perhaps in full knowledge of what is being done, that a Corvair oil pump (it’s part of the rear head) is attached to a conventional (high compression) version of the compressor. The high-compression version is far more-common. While doing this works, it probably doesn’t provide any great improvement in cooling, and it very likely bogs the engine down quite noticeably, depending on the engine’s rated power and condition. The problem is more-serious with an automatic transmission, of course.

Cases like this may be the source of the A-6’s reputation as a power hog. Even the number 6550111 on the shell doesn’t guarantee that the low-compression pistons are inside. The replacement cylinder-and-shaft assembly that Clark’s sells, for example, appears to be the high-compression version (the piston tops are not dished).

It is possible for a dedicated home mechanic to reseal an A-6 that is otherwise in good condition without the rare, expensive special tools shown in the Shop Manual. The one I resealed in this manner continues to work without leaking in Wade Lanning’s 1966 Monza. A full description of this procedure will come in the next two editions of **COOL AIR**.

### **Tony Fiore, R.I.P.**

Tony Fiore, immediate past editor of **COOL AIR**, passed away at his home in Sarasota, Fla. on June 6 at age 95. He is best known as the author of *The Corvair Decade*, the pre-eminent non-technical book on the subject of Corvairs. Wherever he is now, Tony is undoubtedly driving one of his beloved Corvairs. And you just *know* that Corvair is air-conditioned.

# **COOL AIR**

**Air 'Vair, CORSA Chapter 004**

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## Air 'Vair/CORSA Membership Application

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

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Address in Canada	\$6	\$54
Address elsewhere	\$7	\$55

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