



Sonny Balcaen gets his Corvair Corsa a bit out of shape while testing his hop-up and handling kit. A switch to 14-inch Cragar alloy wheels improved the handling as well as giving a slight ratio increase. The 15 to 16 extra horses give plenty of go.

CORVAIR ECONOMY HOP-UP

There's a new way to get a Corvair to step livelier,
with improved mileage to boot.
It's all in kit form, developed by veteran hot rodder Sonny Balcaen

text and photos by Eric Rickman

The old axiom, "you can never get something for nothing," has been proven time and time again in hot rodding. When alterations or modifications are made to a car's engine to achieve improved performances, the resulting horsepower has to be fed and mileage suffers accordingly. But Sonny Balcaen has developed a method to up the power on Corvairs, and he's one of the very few to produce a hop-up modification that carries with it improved economy as a welcome bonus.

Many stories on souping Corvairs have been included in *HOT ROD* Magazine. As a rule, basic instructions call for machining off the intake manifold and bolting on a set of thirstier carbs. Wow! It'll go like gangbusters and pass everything but a gas pump. Admittedly, the Corvair wasn't built for

racing; the carbs, for example, are small for a reason: The Corvair is marketed primarily as a compact economy car. However, engineers (and hot rodders, too) somewhere along the line have missed a point, one that long-time rodder Sonny Balcaen picked up on and pursued. He's found a way to increase the horsepower in a Corvair by some 15 horses over the entire rpm range, with a phenomenal 31-hp gain at 4-grand, right where it's needed. And what else is new? Sonny negated the old axiom; his technique can produce a mileage boost of 2 mpg in city traffic, with more than a 4-mpg improvement at cruising speeds.

Sonny's method is so original that a patent has been applied for on the principle. The product of his work is available in kit form for Corvair driv-

ers, distributed by IECO (Induction Engineering Co.).

At first glance the new unit appears to be a four-leg manifold with a Carter AFB 4-barrel mounted. Each of the "legs" extends to the stock carb mounting flange of the Corvair engine; closer inspection reveals the "speed secrets." (The unit covered in this article is tailored for the '65 140-hp engine; kits are available for all model Corvairs.)

The primary AFB venturi is 1 $\frac{1}{2}$ -inch with standard primary jets; metering rods are one step leaner. The secondary venturi area is 1 $\frac{1}{8}$ -inch and the secondary jets are changed to .049-inch diameter. Total venturi area is 4.920 square inches. This is an increase of 1.70 square inches over the stock four single-throat carbs. Actually, the result is an over-carb effect for the

small engine, and that's where Sonny's development becomes important.

Total venturi area must always be related to engine displacement. The velocity of air through the venturi is the controlling factor in making the carburetor function properly. A small cylinder, or small engine, can't pull air through a large venturi with sufficient velocity; it may do so at wide open throttle, but the engine will not run properly in the low ranges.

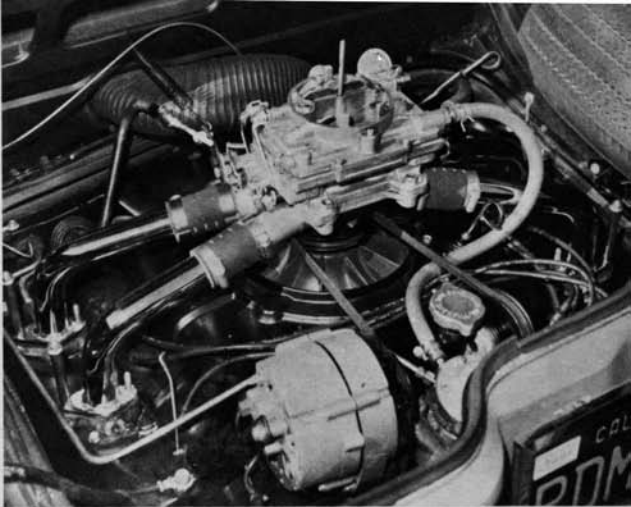
Sonny approached the problem as though he were dealing with two three-cylinder engines which, in effect, he was. He placed a dividing bulkhead into his manifold, just under the carburetor, splitting it into two 2-barrel carbs. The outcome: 2.460 square inches of venturi feeding three cylinders, an increase of just .890 square inch. This is not an increase so radical that it will cause any problems in low rpm ranges, yet it affords a considerable boost in power. The assembly is a true 180-degree injection system. The accompanying dyno test chart reveals that there is a 31-horsepower gain (40 per cent) at the 4-grand mark. Obvious is the performance achieved as a driver winds out beyond the 4-grand mark in second and third gears. Mileage tests with the stock singles resulted in 15 mpg in the city, and 22 mpg at highway speeds; the AFB produced 17 mpg in town and mileage jumped to 26.1 mpg on the road. All of the carb linkage remains stock so that the secondaries open just as they would on a big engine.

Driving the car with the AFB setup is an exciting experience, best described as "smooth as silk." Our test car was idled down in high several times; then the driver stepped on it and the car pulled up to full speed as if powered by an electric motor, with no bucking whatever. Idle down in second or third, mash it, and the car gives the driver a good kick in the seat as revs approach 4000 revolutions per minute.

Economy is enjoyed because the engine is operating on the primary circuit most of the time, and it's leaned down one step. Smoothness is appreciable over the stock singles, if only because efficient synchronizing of four carbs is virtually impossible when compared to a single unit, working as two. The astounding power jump in the 4-grand range is the result of the ram effect of the intake tubes reaching from the carb manifold to the engine manifold.

That's not all of Sonny's program; with an angry bee buzzing in the back of his test Corvair, he decided to learn what could be done to improve the little car's handling. Sonny has been around rodding for a good many years, served as Carroll Shelby's right-hand man, with Shelby American, through

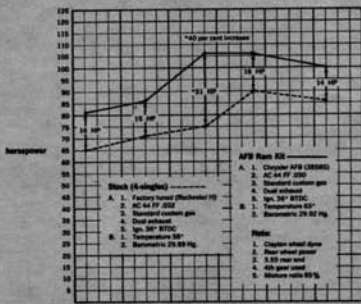
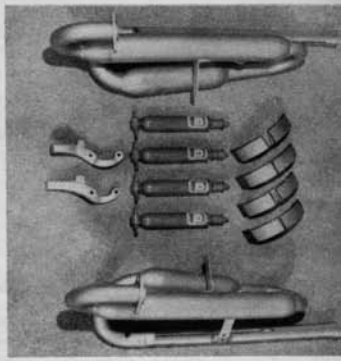
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ABOVE - The spider-like ram tubes' length "tunes in" at four-thousand rpm. This accounts for the 40 per cent horsepower jump at this point. Primary and secondary venturi give added area and maintain necessary air velocity. Manifold cuts carb into two dual throats.

RIGHT - Performance and handling kit includes larger tuned mufflers and exhaust system, metallic brakes, stiffer shocks, and longer, stronger steering arms. The megaphone dual exhaust system is lighter than stock, gives three per cent horsepower increase by size alone.

BELOW - Graph indicates a minimum increase of 14 horsepower over entire range. A power increase of 31 horses is realized at four grand. Notice power falls off at this point in stock setup. This is right where you need it most.



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the development stages of the Cobra and Ford 350 GT. With this experience and a lot of sports car driving logged through the years, Sonny knew how the car should handle, and what it would take to make it do so.

Sonny's new chassis kit includes sintered metal lining brake shoes; if the car is going to go faster, it'll have to stop better, too. Sintered metal linings are not prone to heat or water fade failures. Constant-pressure shocks are a part of the kit, intended to improve cornering and control through use of stiffer valving. And the Corvair's exhaust system hasn't been overlooked; when an engine is fed more, it has to have a more efficient exit, so Sonny designed a megaphone dual setup which is lighter than stock and is reported to increase horsepower by 3 per cent as a result of better breathing characteristics. To improve steering, Sonny provides in his kit slightly longer and stronger pitman and idler arms which speed up steering to three turns, lock to lock. The driver therefore has a better "feel" of the road, as well as better control in tight corners.

Last, but by far not least, the car's wheel geometry was up for readjustment. The rear end was set at 1 degree negative camber with a $\frac{1}{16}$ -inch toe-in. The front was re-set with $\frac{1}{2}$ -degree positive camber and $\frac{1}{8}$ -inch toe-in. Even without the added hardware, this little tip will make any Corvair handle better. Another item that helped both handling and mileage was a set of 14-inch Cragar alloy wheels with 7.00 tires ('65 Corvair lug-bolt pattern is the same as the big cars). The 14-inch doughnuts raise the rear end ratio slightly and afford more "meat" on the road.

With the hop-up kit installed, as well as the handling kit, and the geometry changes made, the car was taken out on a very winding mountain road. It handled much the same as my old Ingal's Borrelli kart, impossible to spin it out. Four-wheel drifts were a "natural"; kick it down to second, pitch it into the corner, and cross it up to "dirt track" through. The quick steering keeps the driver in command and the car stays absolutely flat at all times. This came as quite a revelation, for some early stock Corvair road tests, in which the test driver "got over his head" in a corner, deliberately, resulted in no recovery, or slow at best, and a spinout. The weight in the rear created a built-in ground loop.

With Sonny's new setup the car is as close to being a racer in handling and performance as one can possibly imagine with the Corvair. And there's that mileage, too... ■■