



An Orange Julius to Go

*Recipe for a Porsche-killer:
Take one tired ex-Showroom Stock Scirocco,
mix in several helpings of aftermarket speed parts,
and bake to perfection on the race track*

by Jim Shane

PHOTOS BY THE AUTHOR

Street racing is alive and well and living in Los Angeles. Anyone who doesn't think so is invited to drive to and from work with me. Every morning and afternoon, I'm out there in the commute-hour madhouse, jostling for primo position at the stoplights, booming down freeway off-ramps at illegal speeds and carving up suburban neighborhoods in search of shortcuts around jammed intersections. And there's always some sort of fast car glued to my bumper. Challenges are thrown and accepted at nearly every street corner.

Of course, I caught the street-racing fever in part because the car I drove seemed to, well, *encourage* this sort of illicit behavior. See, I'm a racer. I drive in the Sports Car Club of America's Showroom Stock class for production cars modified only by the addition of safety equipment. And since I drove my

race car on the street, the huge racing numbers on the doors and the assortment of sponsorship logos on the fender panels tended to determine the kind of company I kept on my daily commute-hour ramble.

But I had a problem. My racing Scirocco looked speed-styled, but its bone-stock personality insured that every Porsche, BMW or Corvette I met could eat it for lunch. I felt doomed to humiliation. Then, two years ago, I moved up from my old carbureted Scirocco to a new fuel-injected model. Suddenly I had a 60,000-mile Scirocco on my hands with eight races worth of high-rpm running and four rumpled corners from fighting for racing room in the corners. It was going to be a difficult car to sell and get any money out of.

Then I had a great idea. Why not breathe some new life into the car and

at the same time build a pocket rocket more capable of slugging it out toe-to-toe with the high-performance cars that had been victimizing me every morning and afternoon? I figured that the intelligent application of a few aftermarket catalogs to my worn VW would provide me with a Porsche-killer at *less* than the cost of a new Scirocco.

Basically, I decided to build my car all over again. The result would be more than just another paint-and-tape special, however. I approached the building of this car as seriously as if I were constructing an IMSA racer. At every step of the way, I applied the same hard-hitting performance criteria you would use to evaluate a race car. This kind of thinking paid off, for as the demon Scirocco emerged, it was as perfectly suited to its environment as anything ever to roll out of the shops of

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Banjo Matthews, Jim Hall or Bob Sharp. Because I'm not a millionaire, I didn't end up with a street 934. But I came pretty close—and at a price far more affordable than the price tag of a Porsche 911SC or even a BMW 320i.

Like any heady race-car builder, I began by stripping all the gimcracks from the Scirocco's finely drawn Giugiaro sheet metal—from the bumpers and trim to the windshield and hatchback glass. Then I thought about what I wanted in terms of driver comfort, which is an important component in keeping you alert and at your best. What I had was a bunch of huge windows that provided the visibility for which VW products are noted—and a black vinyl interior that absorbed the sunshine pouring through the glass and turned the inside of the car into a Dutch oven. Since I would not stand to have my engine compromised by air conditioning, I decided a sunroof would be in order.

I opted for the largest hole I could buy for the roof of my car. The Sunway Roof Corporation of Anaheim, California, claims its Sunway Folding Sunroof provides it. I drove a Scirocco equipped with one and promptly ordered one up for my own car.

When it's closed, the fabric roof is nearly as smooth and thin as a vinyl roof—and it doesn't rattle in the wind. You open it up like a buggy top, folding it back upon itself. A wind deflector on a patented friction hinge tilts up and stays up even at the Scirocco's terminal velocity, so your hair doesn't get mussed at speed. In addition, two 10-gauge metal strips are pop-ripped to the roof fore and aft of the hole, and two heavy steel plates support the sides, compensating for the loss of chassis rigidity that accompanies most sunroof installations.

After the sunroof was installed, I took the car to Gordon's Body Shop in Redondo Beach for a body massage and painting. Gordon's is one of the few establishments that still repairs metal damage and uses lead as a filler instead of putty. A burnt-orange super high-gloss enamel accomplished the rest of the body's transformation. (The color brought to mind the perfect moniker for the car: Orange Julius.) Then I reattached the bumpers and the trim that had been finished in black (some of it black chrome) in the meantime. A Mulholland Rear Window Louvre assembly bolted to the hatchback window helped ensure that the interior would remain cool. It also can be lifted for window cleaning. And because the Mulholland assembly fits inside the rear window frame, I didn't have to worry about theft; yet I could dismount it easily and substitute a ski rack.

The next item on my agenda had a lot to do with the driver's mental health—an accessory seat. A good seat does more than just hold your head up

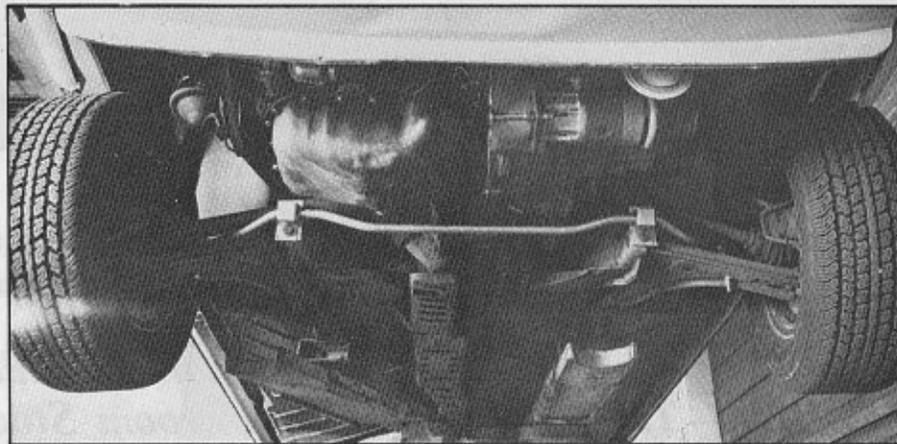
high enough to see over the dashboard. It also does more than fend off the fatigue that original-equipment seats almost universally produce.

For my money, the Recaro LS seat was the best possible choice. It offers the ideal mixture of comfort, truly orthopedic support, and the ability to faithfully keep you in touch with what the car is doing even in the most extreme situations. If you've ever worn yourself out fighting against g-forces in an original-equipment seat that has gone mushy, you'll appreciate the way the Recaro holds you in place. I chose the high side bolsters of the LS seat over the lower bolsters of the less expensive N-model because positive location was more important to me than ease of entry and exit.

With the exterior and interior of the Scirocco tuned to my liking, I turned my attention to the more obvious factors in the high-performance equation. The first was suspension. The original



David S. Schwartz, special projects coordinator, Recaro USA, Inc., points out the inner workings of the Recaro LS seat chosen by Shane for his Orange Julius.



View of front suspension shows anti-sway bar installation. Front and rear bars cut a full second from lap times at Willow Springs Raceway.

equipment suspension does a good job of giving the 1900-pound Scirocco agile footing under ordinary circumstances, but my race track time revealed the car's tendency to hike its inside rear wheel and roll under ferociously whenever I cornered enthusiastically.

The Scirocco's pronounced front-end weight bias—63% of its weight lies over the front tires—accounts for this curious cornering attitude. You'd think that with only one tire patch on the ground in the rear, the Scirocco would oversteer at the limit, but instead the outside front tire breaks loose and the car understeers. This phenomenon is most noticeable in corners where the speedometer registers more than 75 mph. In low- and medium-speed corners, you try to avoid overloading the outside front tire by feeding in steering inputs very smoothly. Make a mistake and the front end will wash out in terminal understeer while the outside front of the car pogo's up and down on its MacPherson strut. I've found that in such turns

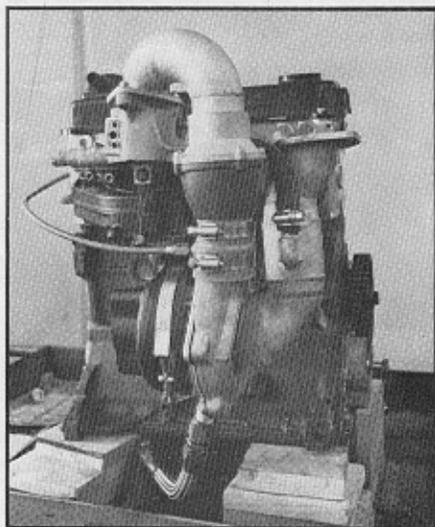
it's crucial to make my approach gently and to pick up the throttle smoothly as soon as the chassis assumes its cornering attitude.

I reckoned the best way to dial out the Scirocco's deficiencies in the corners was to simply make sure it went around the turns with four big rubber footprints on the ground instead of two-and-a-half. Goodyear BR60x13s with a contact patch almost 1.25 inches wider than the stock 175/70 Continentals had proven themselves in IMSA racing. The widest rim seemed like a good idea, but I also had to factor in the size and location of the front disc brake calipers and proper offset for good drivetrain life and reasonable steering effort. I chose the Reverse Vector wheel made by American Racing.

After the wheels and tires, I addressed the suspension itself. I equipped the car with the complete Mulholland street package, which includes shocks, springs and front and rear anti-sway bars. Aside from more firmly damping



Dean Shane, author's brother, pauses in midst of tire switch at Willow Springs. From left are stock Continental TS771, Goodyear BR60x13.



BAE turbocharger was welded to special exhaust manifold. Design has been discontinued, and BAE now makes its own exhaust manifold for bolt-on installation.

wheel inputs, the Mulholland suspension eliminates a lot of the car's uncomfortable body roll and lowers the car 1.5 inches.

This is the place where most conventional street tuners stop. They walk through a few aftermarket catalogs, compare a few specifications and call it a day. I took my Orange Julius to Willow Springs Raceway for a heads-up comparison with my Scirocco Show-room Stock racer to find out just how much and in what ways my suspension tuning had affected the car.

Running on fully treaded Continen-

tals (which are somewhat slower than the shaved tires used for racing), I established a baseline for comparison at a lap time of 1:55.8 in the hot spring sun. Then I put the Goodyears with their special rims on the stock Scirocco. I was amazed to discover that my lap times were nearly 3 seconds a lap slower, despite the fact that the car's cornering attitudes were improved and lap times were more consistent than before.

Next, I added the Interpart springs and shocks to the stocker. There was an instant improvement of 1 second a lap, but the car was still slower than it had been with its wimpy stock tires. Skeptical of my race car's motor, I put the stock suspension on the orange car. It promptly established a lap time just as quick as the race car running on stock suspension and tires. When I added the front and rear anti-sway bars, a full second was subtracted from the lap times. Also, the addition of the sway bars alone felt far more significant than the shocks, springs and tires together.

Apparently, the fat Goodyear tires didn't help the car as much as I expected. With shocks, springs and anti-sway bars, but running the skinny Continental tires, both cars were about 0.75 second faster. The modified Sciroccos were also extremely stable compared to the stockers. Yet once I added all the suspension tricks plus the Goodyears, my lap times suddenly grew slower.

Finally, I came to the conclusion that the Scirocco just had too much sticky rubber on the road for the engine to pull around. Turn Two, a long, uphill right-hander, showed why. Usually I enter this turn in my racer at about 85 mph and then shift down to 3rd as gravity and tire scrub reduce my speed to 75 mph. When the car was equipped with Goodyears, I had to shift down 200 yards sooner than with the Continentals. The big tires just amplified tire scrub while the car was understeering. A call to J.L. Henderson of Carroll Shelby's Goodyear race tire store confirmed the phenomenon, for Henderson cited the experience of certain IMSA sedans that turned quicker lap times on 70-series tires than on 60-series tires.

My suspension tuning ultimately revealed three important facts. First, the most inconsistent results were obtained with stock suspension and tires, simply because you can't be consistent with a car that handles sloppily. Second, you can compromise the high-speed effectiveness of a car by equipping it with tires that overpower a small engine. And third, you can amplify the high-speed handicap of big tires by bolting them to a suspension that makes them work effectively—that is, big tires are bad enough by themselves, but if you make them work harder by keeping them on the ground, you lose even more speed.

Despite this evidence, you'll note that

the Orange Julius still wears its wide-body Goodyears. That's because the high-speed fallacy of big tires actually has little impact on the kind of driving I do in the commute-hour crush. Medium- and low-speed corners are the order of the day here, and the Goodyears have a lot more grip than the Continentals. I like the crisp and precise feel of the steering with the Goodyears. They also really clutch at the pavement under braking. High-speed behavior may be important. But for the kind of street racing I do, stable cornering and a good bite at medium speeds are far more important for the racer's edge. So Julius wears big Goodyears. At least I know they will get faster as the first few millimeters of gummy tread wear away.

Now that I had the measure of my competition in the corners, there still remained the matter of getting the hole-shot away from the stoplights. Frankly, the 70-horsepower VW engine, for all its free-revving goodness and responsiveness, didn't cut it against 115-horsepower BMWs and Porsche 924s—not to mention the odd Corvette. But I knew of a secret weapon—turbocharging.

There's certainly no need to discuss the virtues of the exhaust-driven supercharger. Every car and engine manufacturer from Saab to Buick to Cosworth will offer testimony to the benefits derived from packing a combustion chamber brimful of fuel/air mixture. And since the impeller wheel in the engine's induction system uses the engine's own exhaust gases, no crankshaft energy is sapped. Turbocharging represented the ideal solution to the Scirocco's anemia at the stoplights.

Once I conferred with Ted Carlson of BAE, noted manufacturer of turbocharging kits for motorhomes and trucks as well as cars, I learned that carburetion wasn't exactly the best way to go with turbocharging, since it's difficult to calibrate the fuel/air mixture precisely. Fuel injection lends itself far better to turbocharging, but since this project began as a largely bolt-on affair, I elected to work with carburetors as best I could.

The heat produced by turbocharger plumbing makes its location in the engine compartment extremely critical, so I was impressed by the pride BAE takes in adapting and engineering its turbocharger kits specifically for every vehicle. And this means much more than trimming one-size-fits-all plumbing to fit, for the BAE kit uses expensive custom castings. One added expense of the BAE installation was a new VW exhaust manifold. The manifold must be cut and trimmed before the turbocharger housing is welded in place, and a used one doesn't respond very well to welding. Most of the installation was done with the engine out of the car, but only to facilitate my photographing the process.

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I wasn't surprised when the engine was refitted to the Scirocco and recorded a 70-80% boost in peak horsepower on BAE's dynamometer. But I was surprised to find that it still offered civilized driveability and fuel consumption. Whether the motor is started warm or cold, or whether it endures stop-and-go driving or miles of freeway flying, the Scirocco's revitalized engine displays no bad habits. Only when I push the go-pedal hard can I detect the turbocharger's influence. There's a moment of lag, and then you're pushed gently back in your seat. A faint whistle from the engine compartment begins, and the tach needle leaps toward the redline. You don't dare to speed-shift, since a missed shift would fragment the motor in a second, considering the rate at which the revs increase. The BAE turbo won't turn a carbureted 1500cc Scirocco engine into a fire-breathing IMSA rat motor, but it will help it churn out enough horsepower to surprise a lot of Porsches and BMWs.

Of course, dyno curves make nice illustrations suitable for framing, so this is the point where most street tuners stop. But I know that lap times are the ultimate test.

As it turned out, my final race track evaluation had two purposes: to establish the comparison in performance between a stock Scirocco engine and the turbo motor; and to find out if the added horsepower made any difference in the way the super-wide Goodyear GT Radials performed.

The turbocharger's impact was most pronounced on straightline acceleration. At Willow, the car had never seen redline in 4th gear, but now I reached this mark (110 mph) at two points on the track. In slow turns, however, where speed is determined by the suspension's ability to keep the car out of the weeds rather than horsepower, there was little difference in the car's performance. Still, I detected a slight increase in exit speed, because when I fed in the gas after the corner's apex, the engine had enough punch to accelerate.

The car's major improvement with the turbo in place came in long, high-speed bends. The additional horsepower helped to overcome the speed-sapping understeer of the big tires. When I had originally evaluated the suspension at Willow, you'll remember, I was forced to downshift in Willow's long uphill Turn Two just to maintain 72 mph or so of exit speed. With the turbo in place, the car performed much as before through the first third of the corner, but once the chassis took a set and assumed its cornering attitude as it powered toward the exit, the advantage of the turbo could really be felt. Downshifting was no longer necessary. The additional horsepower could now overcome the understeering tires, and I could actually maintain 4th gear and

reach an exit speed of about 85 mph—an amazing difference.

The well-known phenomenon of throttle lag that is a product of turbocharged engines proved to be something of a nuisance on the race track. It was most evident when powering to the exits of corners that had required hard braking and a downshift. I'd put my foot into the gas, and the engine would hesitate as if it were suffering from a flat spot in carburetion—and then accelerate. Actually, in that interval of less than a second, the engine accelerated just as quickly as a stock engine—which wasn't bad—but the contrast between boost and non-boost was disconcerting. And when the power poured in, there was a slight tendency for the Scirocco's front wheels to break loose for a moment, requiring a steering correction. Turbo lag doesn't present a serious problem, but it takes a little practice to get used to the transition from no boost to horsepower.

Although the turbo motor proved capable of pulling the big Goodyears around at a fairly prodigious rate, it was even more effective when the Con-

ble of faster lap times than the Pontiac but only at the cost of erratic behavior that produces as many slow laps as fast laps. Controllability helps you drive fast *all* the time.

Tire selection might be the most crucial element of any suspension setup. You cannot deny that the less friction you have, the faster a small car can go. The key lies in balancing horsepower to friction. You don't want to have too much horsepower because you won't be able to get it to the ground. You don't want too much tire, because the friction will just glue you to the road. Clearly, the GT Radials are not the answer for this car except for the slow corners of street racing (of course, they look great too), but perhaps a better tire lies somewhere between the stock Contis and the Goodyears.

I'm convinced that turbocharging is a thoroughly practical way to build more speed into your car—substantially more speed. Who knows what kind of wild camshaft and oversize pistons would have been necessary to produce horsepower equivalent to that churned out by a stock motor under pressure? And



tinentials were fitted. There was a greater percentage of improvement when you compare the car's lap times with the Goodyears before and after the turbo's installation, but the Continentals still held the quickest lap times. So, while the turbo car could smoke the GT radials in some corners, it accelerated better with the Continentals.

There's probably a lot of good advice contained in my experience with the Orange Julius for anyone contemplating suspension and engine changes to a car. First, stock suspension and tire setups are probably underrated, since you really can drive a car at quite a clip when it's bone-stock. You'll go a little bit faster with all the trick bits but at the cost of \$100 a second or so. The primary benefit of an aftermarket suspension lies in controllability—that is, it's a lot easier to drive the Scirocco fast with the Mulholland options than without them. That lesson should not be underestimated, for it's controllability that makes a car like a Pontiac Trans Am quicker than a Corvette, which is capa-

even though the Julius had to deal with a low-tech carburetor, driveability was more than adequate.

In the end, there's lots of things to pick and chose from in this list of speed parts that would help you coax a little bit more forward thrust from your personal sled. But as for me, I'm glad I did the whole number. I'll pay any price for an automobile that's fun to drive at every moment. You can't put a price tag on 4-wheel thrills. Yet the fact that I managed to attain street racing nirvana at less than the price of a new Scirocco makes me even happier.

I still get into as many street-racing duels as ever with the Orange Julius, despite the fact that the door panels no longer carry 3-foot-tall numbers. And if you're in LA, you'll no doubt see my Scirocco hooked up bumper-to-bumper with some other fast car, screeching down freeway off-ramps. Of course there's a big difference from the way things started out at the beginning of this story. This time I'll be driving the car up front. 