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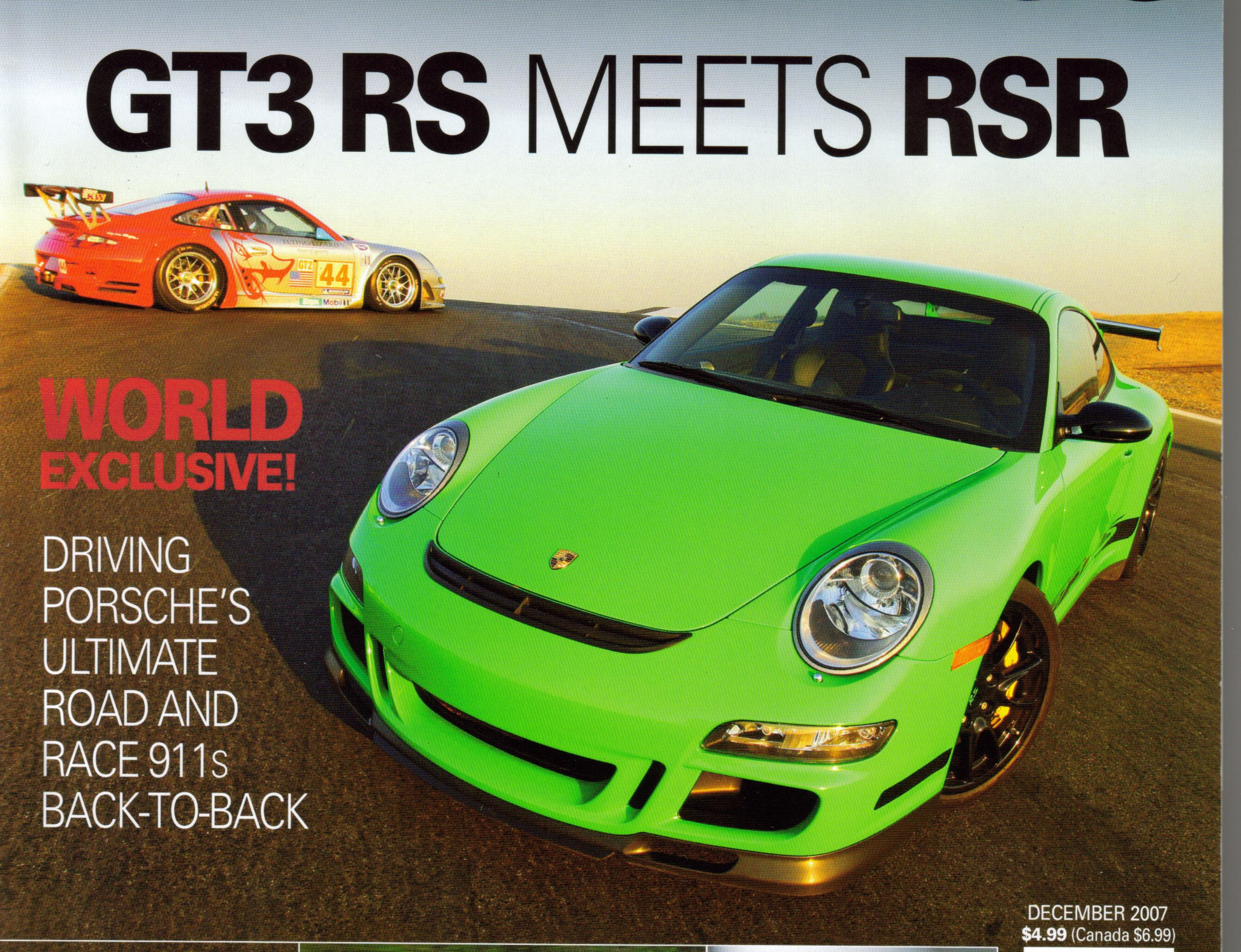
The Magazine About Porsche

911 excellence

GT3 RS MEETS RSR



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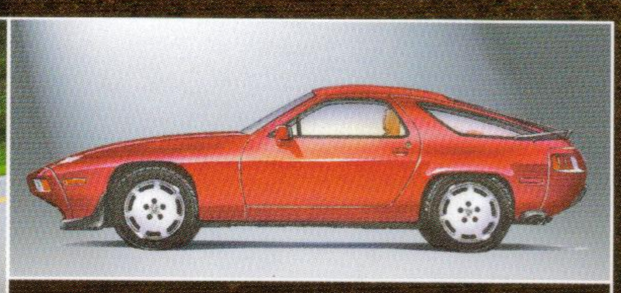

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PORSCHE
First in Flight
74 RSR
NORTH CAROLINA

Going **Bigger**

WHAT STARTED AS A CRASH REPAIR TURNED INTO A FULL-BOAT IROC REPLICA—WITH A 3.9-LITER FLAT SIX, A 993 RS 3.8 TRANSAXLE, AND MUCH MORE

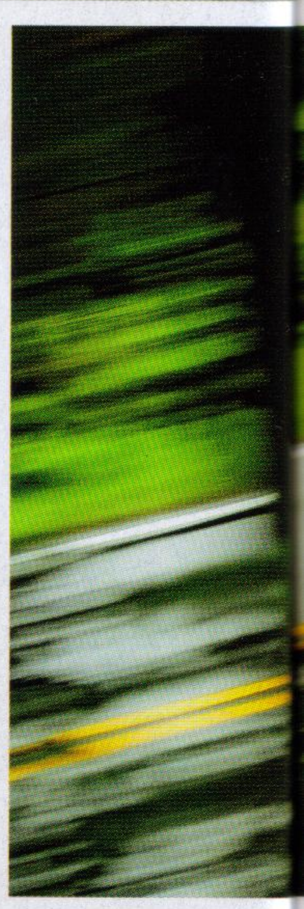
STORY AND PHOTOS BY BOB CHAPMAN

I started one thing, just wanting my 911 to be fixed as quickly as possible," says Matteo Amoroso. "And then, little by little, it ballooned into something a lot bigger." Ha! A lot bigger indeed...and more beautiful, in Mexico Blue, to boot.

A twist of the key yields a familiar *rr-rr-rr*, but it takes moderate throttle application before the air-cooled, 3.9-liter flat six coughs to life and settles into a rough, raucous idle. Pulling out of the parking lot, the engine sputters a couple of times before catching and thrusting this 1974 911 coupe forward. A quick run through first gear and into second is all it takes to clear the cylinders. The engine settles into a burbling idle while we're waiting for the first stoplight to turn green.

Hanging a right onto Route 76, an internal mental battle ensues. It's tough to keep the revs under control while the flat six is still cold. As 3000 rpm approaches, the torque curve starts an upward arc, hinting at the fun yet to come. But Clayton, Georgia is no place for showmanship. A traffic citation, currently burning a hole in my back pocket from the drive into this two-stoplight town, attests to that fact.

Minutes later, as Route 76 turns into Lookout Mountain Scenic Highway and Clayton disappears in the rearview mirror, it's time for a few runs through the gears. With a downshift to second and a heavy throttle, the blue Porsche surges forward. Torque is said to build to a heady 314 lb-ft at 5350 rpm, with horsepower peaking at 375 at 6800 revs. While the latter number isn't far off a 996 GT3's, the more impressive thing here is that this old 911 packs more torque than a 997 GT3. Despite a 7500-rpm redline, short shifting just north of 7000 seems the best way to keep the 993 RS transmission serving up the meat of the 3.9's powerband.



It's enough to propel 2,630 pounds — 155 pounds of driver and 10 gallons of gas included — very respectably if not overwhelmingly. The sensation of speed is strong, but can't compete with the symphony behind the firewall. As peak torque approaches, you land at the front of the grid in Frankenheimer's *Grand Prix* — minus a couple thousand revs, of course. The aural sensation as exhaust travels through Steve Timmins-designed head-

ers and a Flowmaster muffler is more 1960s-era Formula 1 than air-cooled 911. It's breathtaking — and unlike anything I've heard from a Porsche flat six.

Unfortunately, this highway's sweeping curves aren't the most prudent for exploring the capabilities of the chassis, suspension, and tire combination. Fortunately, Lookout Mountain Scenic Highway isn't our destination. Shortly after crossing over Lake Burton's northernmost finger, a left turn onto GA 197 beckons. The smooth tarmac that follows features a series of second- and third-gear corners winding along the lake's western edge. Blipping the throttle to downshift for the first tight left-hander yields a sharp bark from the twin tips that makes arm hairs stand on end. Slight understeer from turn-in through exit is comforting in an unfamiliar car as pace gradually quickens during the first half-dozen corners or so.

Amoroso requested the conservative setup, hoping to lessen the likelihood that

1974 is largely limited to what you see on the outside. The engine bay's blue cooling fan, induction setup, and Fox reservoirs all indicate cooks have been in this kitchen. Inside, the modern headliner and leather Recaros are steps ahead of anything seen in Roger Penske's IROC racers...

fast right-hander, and a bead of sweat leaves a trail from forehead to jaw line.

There's a bit of travel in the brake pedal up top, but once the big calipers start to clamp, the bigger chunk of that travel ceases. Braking force from there is controlled by pressure, not travel on this non-power-assist system. At first, this makes it feel as though the 930 brakes aren't quite up to the task. But, the brain soon adapts to the leg pressure required to haul the car down quickly. Once that point is reached, braking feel is really quite good.

Feathering the throttle slightly in mid-corner tucks the front end nicely and gets the weight moving to the rears. To this point, the front of the car has felt unusually light, despite a claimed — and fairly standard for a 911 — 38/62 weight distribution. Thus, it's taken a few corners to gain confidence that the front will stay settled as the limit is approached. But settled it stays. More impressive, the rear end stays tidy, too. The back remains planted and predictable in all situations except those that are egregiously unjustifiable. This is due, in part, to the engine being an excellent match for the car; the Timmins-built 3.9-liter six allows the driver to extract the capabilities of the chassis without overpowering it.

This stunning blue head-turner is the

events," he recalls. The project spiraled upward quickly from there.

Charlotte-based EuroWerks had done the work on his coupe, installing a 3.6 from Timmins' shop, Instant-G, and the flares. After the accident, Amoroso contacted Keith Walters and Aaron Winans at Zuffenhaus — the racing/fabrication arm of Eurowerks — to discuss the way forward. The bent chassis was sent to a local body shop for straightening. The front suspension of the Carrera had been damaged, so a replacement was necessary. "My '88 had 23-mm and 33-mm torsion bars and, when I took it to the race track, I really felt it was very, very soft," states Amoroso. He decided to ditch the torsion-bar suspension and go with 935-style suspension from Eisenlohr Racing Products coupled with Fox coil-overs from Smart Racing Products to allow flexibility in setup. Plans were also made to upgrade the braking system with a Fabcar dual-master setup, delete the sunroof, and install a fuel cell.

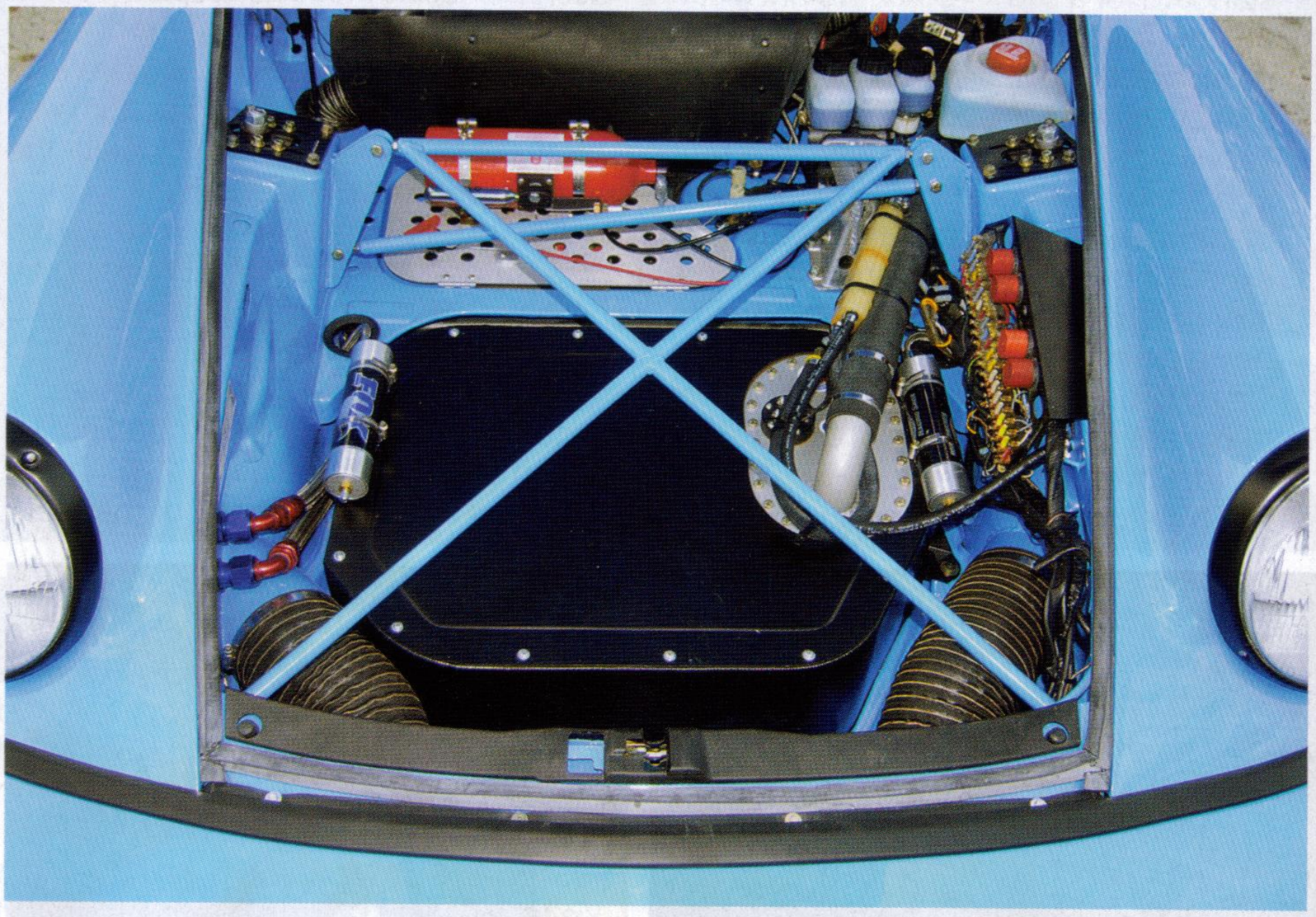
It was at that time that Amoroso started thinking about the engine. "Browsing on Pelican (Parts' website), I found a good deal on a Motec M600 and I decided to buy it," he continues. "I always wanted a motor with individual throttle bodies. I'd driven a 911 with carbs, a 2.4S, and I loved the throttle response of that car."

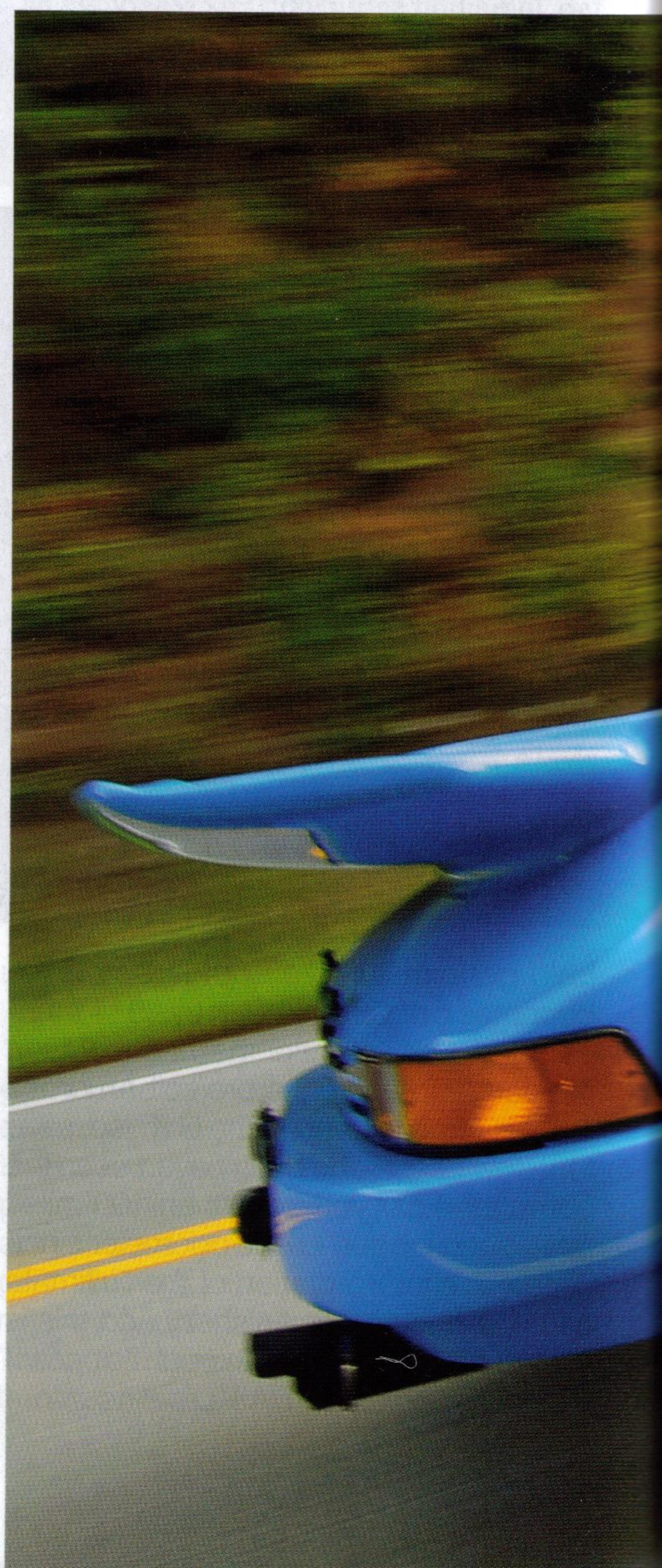
he'd get himself into trouble before he becomes comfortable with this 911's tendencies. Did I mention he hasn't driven the car yet? During the project, Amoroso and his family moved to the U.K., so, save for a few photos, he hasn't even *seen* the completed car yet! Less than 100 miles have been logged on the odometer since Amoroso's interpretation of the "ultimate air-cooled 911" was finished, and this is the first time it's been put through its paces! Gulp. BFG g-Force T/A KD's sing into a

product of an 18-month+ odyssey that actually started relatively conservatively. Several months after his 1988 911 Carrera 3.2 had received a widebody conversion and a 3.6-liter upgrade, Amoroso swerved to avoid another car that had pulled onto the road in his path. He missed the car, but wrapped his freshly modified Carrera around a pole. "At first, I just wanted to replace the suspension and get the car fixed as quickly as possible so I could have a daily driver and also do driver-ed

He wanted a similar feel from his 1988. Since the chassis work would take some time, Amoroso decided to tinker with the 3.6-liter motor in his car, as well. Impressed with the service and credentials of Steve Timmins — who holds a PhD in mechanical engineering and is an instructor in engine design at University of Delaware — Amoroso placed a call.

He communicated what he was looking for in terms of performance, and a decision was made to source another 3.6





core instead of opening his 1997 993 3.6 and deleting VarioRam. Timmins took the "new" flat six from 3.6 to 3.9 liters — boring the case to 109 mm — and installed CMW/JE pistons and LN Engineering Nickies cylinders with copper sealing rings. Carillo 993 connecting rods were attached to the pistons via ARP rod bolts. Aggressive Dougherty Racing DC62 camshafts were added to the mix. CMW heads were also selected, with larger valves (52-mm intake/43-mm exhaust) and CMW's proprietary valve gear. Steve Timmins reground the intake and exhaust seats and installed new guides. The compression ratio was set at 11.4:1.

To achieve Amoroso's desire for a carb-like feel from the new flat six, induction would come from individual Jenvey throttle bodies, 51 mm wide up top and tapering to 45 mm at the ports. "I like to think of them as computer-controlled carburetors. When you open the throttle, there's no restriction. They act like carburetors, but with real fuel management," comments Timmins. "The fuel-management system takes care of everything, like temperature, humidity, atmospheric pressure, engine speed, throttle angle, etc." To the 3.9, Steve Timmins mated in-house designed headers/exchangers and a dual-in/dual-out Flowmaster muffler.

With engine work underway and the 1988 chassis in the bodyshop, Amoroso posted on the Pelican Parts 911 Technical Forum about his nascent endeavor and the circumstances surrounding it. The close-knit Internet community rallied around what was already an interesting project car, supporting Amoroso's undertaking and offering advice. Soon after, the 1988 chassis was returned to Zuffenhaus. Unfortunately, when it came back from the frame machine, it wasn't straight enough.

A suitably strong 1974 flat-nose conversion body came available at that time, so it was purchased to continue the project.

A suggestion to switch to a six-speed G50 transmission was among the early advice posted on the Pelican Parts forum. A second post suggested the G50/31 — the transmission used in the 993 RS. Amoroso decided to go for it, saying, "we were starting to build something special, and that transmission was really going to put this thing on a different level." Walters ordered a G50/31 directly from Porsche. This decision, however, raised one significant issue. The center tunnel of the 1974 tub could not accommodate the transaxle. A suitable 964 tub was located, the floorpans were cut from each, and the 964's pan was grafted into the 1974 tub. Had the G50/31 decision been made prior to obtaining the 1974 tub, either a 964 or a 993 tub could have been sourced and back-dated to suit the IROC RSR-style 911 Amoroso was beginning to envision.

Timmins was worried that the engine would need a lot of cooling, so a 72-row, nose-mount Mocal oil cooler was purchased. Amoroso wanted side exits with flow through the wheelwells, so ducts were fashioned at Zuffenhaus for this. To improve center of gravity, it made sense to move the oil tank forward. Says Walters: "Once we started that, we decided to go ahead and just graft a whole system in from a 964. So, we put the oil fill in the frame, which gave us maximum tire clearance." While that work was being done, a Fuel Safe SA 100 fuel cell was installed.

The ERP 935 suspension components and the SRP/Fox coil-overs purchased to replace the 1988's suspension were kept for the 1974 tub. Continues Walters: "We like this suspension combination because it doesn't really matter what the customer wants ride-height wise, track-width wise, or handling-characteristics wise, you can dial in whatever you want." The ERP components allow control over track, camber, and caster while the SRP shocks allow fine-tuning for compression and rebound. The front strut towers and rear shock towers were reinforced next. At the front, aftermarket strut towers were welded in for SRP's camber plates and an RSR-style strut brace was fabricated and installed. At the rear, the 964 floorpan necessitated modifications to the suspension pick-up points. 930 trailing arms were added late in the project, requiring more fabrication in order to accommodate the shorter trailing arms. SRP anti-roll bars were selected and, to stay "in-period," 930 brakes were substituted for the Brembo GTP brakes originally chosen for the project. A Fabcar dual-master cylinder kit with a Tilton master cylinder and bias adjustability was added to allow cockpit control of brake bias for street versus track driving.

Amoroso had longtime predilections for the 1973 RS 2.7 and the IROC RSR 3.0 that followed. As focus shifted from the mechanicals to the exterior, a TRE IROC-look front bumper and tail were procured along with a TRE rear bumper — all three made of fiberglass. Amoroso knew that

Fuel cell, Fox shocks reservoirs, and cross-braced strut-tower bar continue to tell the tale of this serious mid-year 911 hot rod. Later Momo wheel resembles a Prototipo, but adds suede and usefully dished spokes.

the car would be used on a daily basis, so all other exterior body panels would remain steel, including the 930 front fenders. While this would add weight, durability was a significant concern and could not be overlooked. TRE also supplied '74 RS replica mirrors. Zuffenhaus fashioned a custom, adjustable splitter to fit under the front bumper. Fuchs-based custom wheels from Lindsey Racing were transferred from the 1988 tub, sized 17x9.5 up front and 17x11 in the rear.

Amoroso wanted the car to look mostly period correct. Nevertheless, several concessions were made in the interior for the sake of elegance and safety. Included are an Alcantara headliner and a suede-covered Momo steering wheel mounted on a GT3 RS quick-release hub. Recaro Pole Position seats and six-point Schroth racing belts were selected to keep the driver and passenger firmly affixed. Zuffenhaus fabricated a bolt-in four-point roll bar for track use — removable to allow Amoroso's young daughters to ride in style in the back seats. A fire-suppression system was added for safety's sake.

The intention was always to do a bare-metal color change to Mexico Blue, but a decision was made to powder-coat the unibody rather than paint it. Says Walters: "At least we'd get some data on weight. Typically, when people do bare-metal color changes, they don't completely strip the bottom of the car or the wheel wells." Amoroso found the formula for Mexico Blue in order to create, as closely as possible, a matching powder coat. However, while color palettes for powder-coating have improved in recent years, limitations still exist. So, the match couldn't be precise. Thus, once formulated, a sample of the powder-coat color was used to create matching paint for the exterior panels. Import Paint and Body in Charlotte was contracted to do all paint work.

Throughout the project, Amoroso continued to post status updates to his original Pelican Parts discussion thread, and the community remained a source of inspiration and support. "It's difficult to explain how a group of virtual friends could have such an influence, but it did get me through," recalls Amoroso fondly. By project's end, the thread had become one of the most viewed in the history of Pelican Parts' discussion forums. And deservedly so — the car is that good.

It's a meticulously detailed, drop-dead stunner that stands out against practically any background. As the car sits before a quiet country field at the corner of GA 197 and GA 356, the big Lindsey wheels and 255/315 BF Goodrich rubber help give it a tremendously aggressive stance. This 911 is almost too beautiful to drive... Yeah, right. GA 197 is even more fun going the other way! Something tells us Amoroso will be driving this car a *lot* once it gets to the United Kingdom.

"I could have bought a GT3 or a GT3 RS for the amount of money I put in the car," he says. "But, for me, it wouldn't give me the experience this car will. From the sound, from the mechanical interaction with every component in the car — there really is no layer between driver and car. That's what I was after, the emotional connection to the car. I'm looking for the total experience." Amoroso went bigger and, judging from my time with his car, he won't be disappointed he did.

"THERE REALLY IS NO LAYER BETWEEN DRIVER AND CAR. THAT'S WHAT I WAS AFTER, THE EMOTIONAL CONNECTION..."