

# SOPHISTICATED SIBLING

When the creators of the Le Mans-winning Corvette C6R racecar set out to build a streetbound GT, the first thing they did was start over. Jeff Glenn looks at the Pratt & Miller C6RS supercar; art courtesy Pratt & Miller.

For issue CM38, Competition Editor Peter Brock went inside the fountain-head of Corvette Racing, Pratt & Miller Engineering of New Hudson MI. His goal was to see how Gary Pratt and Jim Miller's racing group evolved to become the tightest ship in American sports-car competition.

While his hosts gave Peter virtually unlimited access, one thing he had to agree *not* to reveal was the car you see here, a machine that was just heading toward final testing.

For years now, Pratt & Miller has resisted Corvette owners' pleas to create street parts derived from their full-racing hardware. Gary Pratt and his cohorts knew such a move was potentially lucrative, but their first and best customer had to remain General Motors. Then, last spring, a similar request came from GM itself—specifically, Corvette marketing manager Gary Claudio asked Pratt & Miller if they wanted to try making consumer products with some of the design cues and concepts of the C6R racecar.

Eight months later, the Pratt & Miller C6RS rolled out of the shop. On the outside the new machine shared the C6R's menacing stance, with subtle flares culminating in a 1.6-inch-wider body over appropriately meatier rubber. Under the hood a purpose-built, non-LS Katech V8 throbbed in front of a race-style dual-disc clutch. At first glance, it looked like

a Le Mans GT1 car set loose for the highway. However, in examining at the finished C6RS today, the most striking thing is how *little* it shares—both mechanically and in its intent—with the C6R competition machine.

The exceptions are mostly aesthetic. A direct panel swap from the racecar isn't possible—by the time P&M finishes prepping an ALMS car the pickup points are totally different—but the look and the aerodynamics are mostly the same. On the road car the roof, doors, and rear deck are stock Z06; the rest is custom-fabricated for the RS out of carbon composite. Mike Atkins, Pratt & Miller's C6RS project manager notes, "The louvers on the fenders, similar to the C6R's louvers, are 100% functional. We use fully enclosed carbon inner fender liners, so the louvers extract hot air from the engine compartment and also create a downforce effect." The RS's functional ram-air scoop is larger than that on the C6R, and Pratt & Miller's "waterfall" heat extractor sits further back. Where the racer uses a solid floor, the street car's floorpans remains stock. The main underbody aero effects thus come from the 1.5-inch carbon front splitter, which feeds subtle tunnels under the nose; the extended rocker panels, to help direct air rearward; and the large rear diffuser. A new rear end cap houses race-style LED taillamps and backup lights.











Motorsport Composites of Grafton WI—the same firm that makes bodies for Pratt & Miller's Cadillac CTS-V entries, its upcoming Pontiac G6 racecars, and most of the C6R's underbody—makes the carbon exterior parts of the C6RS. Founder Brian Utt started out making fiberglass parts for his own mid-'60s club racer and the work mushroomed from there: By the 1980s he was constructing high-tech Corvette skins for the 24 Hours of Daytona and business was booming. "Like all the pieces we do for Pratt & Miller, we went down there and pulled the molds off their clay mockup," Utt explains. "It took about a week. The construction techniques for the C6RS bodywork are the same as for any other carbon racecar bodywork, but the pieces themselves are a little bit stronger for street duty." Utt also notes that Pratt & Miller "...do the final fit to each car, just as you would with a racecar. It's pretty labor-intensive."

Adding to the C6RS's racy aesthetics is a racy ride height some 1.5 inches lower than that of the stock Z06—an effect achieved via adjustable air suspension. "We wanted to lower the car based on aesthetics and performance, but every late-model Corvette we've ever looked beneath has had its plastic spoiler scraped off. (With the C6RS) we were even extending the front splitter, so damage was clearly a concern," Atkins says. Thus, an unusual and distinctly un-racecar-like damping system was developed. In place of the C6R's remote-reservoir Penske dampers are

special Arvin Meritor shocks sporting compact airbags built right into their tops.

Personally, when I picture airbag shocks, big, ugly balloon-toppers under a hotrod or semi truck leap to mind. These units are totally different, sporting pneumatic chambers about 70mm in diameter and neatly contained within the OE shock areas inside the A-arms. "We've been working with Arvin Meritor on non-street [think military] projects, and they expressed an interest in developing a dynamic ride system for street use. We thought this might be a good platform (to do that on), so we worked with them and they worked with us." The ride height is speed sensitive and the effective rate of the dampers is adjusted in real time. Atkins says the team is still fine-tuning the system, which is currently broken out into basic Park, Drive, and Entry height settings. "As we're testing the mule we're fine-tuning the valving, stabilizing the ride, and playing with the input parameters on the air units. That's one of the main reasons we're delaying the delivery of the first cars until April. We still have some tuning to do, and we want to make sure all of our reliability issues are solid. Don't get me wrong: Just because it's (mechanically) different than the C6R, the principles carry over. And because of our knowledge of how to go testing, whether it's a race car or a street car, you can apply those same techniques."

The other big suspension change involves the cars' monoleaf springs: Pratt & Miller has developed lighter, lower-rate units to work

Aesthetics (above) and power level may mirror the C6R's, but additional cabin insulation and hand-sewn leather surfaces (right) are pure Grand Touring. The green "S" in the logos denotes E85 ability, a (thus-far) unique feature of C6RS #1, ordered by Jay Leno.

with the pneumatically mediated shocks. The rest of the hardware—control arms, pickup points, and geometry—is all OE Z06. The team also called on racing partners BBS and Brembo to provide lightweight centerlock wheels and advanced stopping power, respectively. To accept the new centerlocks P&M fabricates its own hubs with larger bearings; these mate to the original Z06 uprights. Buyers get a special three-piece wrench to help loosen the nuts, which are snugged gorilla-tight at 550 lbs-ft of torque.

The black-chrome BBS wheels look similar to the C6R's units but aren't the same parts. The road car's wheels measure 18x11 in front and 19x13.6 at the rear, with Michelin Pilot Sports of a reasonable 295/30-18 and 345/30-19, respectively. The Brembo six-piston front and four-piston rear monoblock calipers provide even more flex- and heat-resistance than the two-piece originals. The fully floating 14x13-inch front rotors are the same size as stock; at 13.6x1.1, the rears are slightly bigger in diameter and thickness. The rear brake ducts have been supersized and, unlike the ductless fronts of the stock Z06, functional piping carries cooling air from the nose cap to two sites at both forward corner.





From the start of the C6RS project, everyone involved agreed the car had to be driven by a big-displacement, normally aspirated V8. Atkins again: "At first we were going to utilize the LSX version of the GM motor, but at the time there were no aluminum LSX blocks offered and we didn't want to take the all-aluminum LS7 out just to put a 200-pound-heavier iron block back in. We talked to [GM] Powertrain and Performance and found out that the aluminum LSX was still a way off, if it happened at all, so we went the (C6R) route and contacted Katech, which builds all of our

race motors. It's a great fit and a great marriage; they've done a fantastic job delivering a special engine for this car, just as they do with the racecars."

Special indeed: Katech's C6RS mill takes the form of an 8.2-liter, all-aluminum V8 making 600 horsepower at 5800 rpm and 600 lbs-ft of torque at 4600. The block is machined by Dart, whose pioneering work by founder Richard Maskin with aluminum heads and blocks for drag racing made the firm synonymous with powerful, reliable, oversized V8s. Caleb Newman, director of aftermarket oper-

ations for Katech, puts it this way: "In addition to all of the racing work we do, we've been doing street-car engines for private individuals for several years now. (For the C6RS) we designed the case that Dart machines for us; it's exclusive to this project."

Overall, the Katech powerplant is similar in weight to an LS7. A little weight (about eight pounds) is saved by using NICOM linerless bores rather than LS-type steel liners, but added deck height (to handle a 4.5-inch stroke) puts that back in. In NICOM construction, a special electroplating process uses







nickel as a matrix to spread silicon-carbide directly onto the cylinder walls, forming a tough, uniform coating right on the aluminum casting. "We've proven it repeatedly over the years in racing to be a superior bore finish for wear, heat transfer, and durability compared to traditional liners. The bore geometry also stays more precise, which significantly reduces blow-by." While the Katech-designed forged-steel crankshaft and rods are machined off-site, the forged-aluminum pistons are made in-house. The heads are LS7 units sporting lightly modified chambers and slightly lower compression. Additionally, the C6RS team has taken steps under the hood to make this V8 look like an engine instead of an art-nouveau coffee table—they've shunned the typical modern car's plastic vanity cover and relocated the coils to the sides of the heads, exposing metallic valvecovers and slick carbon-fiber air-management pieces.

Downstream, power is passed through a dual-disc Centerforce high-torque clutch. Pratt & Miller blueprints the T56 six-speed gear-

Initially, GM's Gary Claudio approached Pratt & Miller about factory-blessed accessories like carbon C6R-style hoods. As that list became longer and longer, the idea of a fully engineered and assembled tuner car with high-end luxury-GT trimmings evolved instead.





box for smoother feel and more positive shifts, but "...the ratios stay the same," Atkins says. "We do take it apart and replace some of the pieces, billet struts for instance, just to make it a little bit nicer." The rest of the driveline is pure Z06, including the traction control, but the butterflies at the back of the OE exhaust tract are gone. The C6RS's Corsa cat-back system belts out one song only.

**W**ith a similarly weighted driveline, carbon-fiber bodywork, a less massive clutch pack, and lighter wheels, you'd guess the C6RS would deliver an aggregate reduction in curb weight over the Z06. It does, too, until Pratt & Miller starts adding 70 pounds of Dynamat insulation back in. The result puts the C6RS about four pounds over a stock Z06, but the payoff is world-class road-car dynamics: rock-solid cabin feel, protection from the upgraded engine's intense heat, and added relief from the usual Corvette's road and exhaust inputs. The interior is then redone in French seamed leather, including the console lid, shifter, e-brake handle, and two-tone steering wheel. Even the wrench kit for the BBS centerlocks is "leather-accented." Special C6RS logos find their way onto the door-sills, the dash, the floor mats, and the heavily bolstered Lear seats.

Pratt & Miller unveiled the C6RS at the SEMA show in Las Vegas this fall. The display model—the series' first—was earmarked for ubiquitous car guy and longtime GM pitcher Jay Leno and built with a one-off E85 version of the Katech V8. (Note the green "S" in the C6RS logo.) At the show Atkins admitted that they still planned to take the car back to Michigan to finalize the suspension settings, rather than letting Jay drive it straight home. He also dismissed performance figures quoted in some media as computer simulation: "We haven't had a chance to do high-speed testing yet. That will happen in the next couple of weeks after SEMA, when we can do our own quarter-mile, 0-60, and top-end numbers. We've done Finite Element Analysis [computer simulations] already, but what it should be and what it actually turns out to be are often two different things. We're not going to advertise anything until we have rock-solid data."

With significantly more power and essentially the same weight as a stock Z06, there's no question the C6RS will be quick—perhaps almost as quick as the C6R racer, which has to carry lead ballast and power-reducing intake restrictors on the track. But does that mean the C6RS should fundamentally *feel* like a racecar? Just the opposite, declares Atkins. "We're not offering a track vehicle; this was

designed as a high-performance supercar for the road. In fact, if someone wants to take it to the track that's up to them, but we're not condoning it. The C6RS doesn't have track-safety features like a rollcage, a fire-suppression system, or five-point harnesses."

Pratt & Miller predicts it can build 25 cars between April '08 and March '09. The company hasn't decided if it's going to limit the overall volume or timeframe beyond that, but to my thinking 25 sounds about right. Despite this car's impeccable pedigree and highly compelling hardware, the team in New Hudson must be keenly aware of two factors working against a huge run on RSs. The first is cost: A conversion on a donor Corvette Z06 runs about \$185K, putting the turnkey price up against better established rivals like Ferrari's 599GTB—an even more powerful and refined, if heavier, Grand Tourer.

The second is Chevrolet's own 600-bhp, Z06-derived super-Corvette, which is likely to be shown to the public at the January '08 Detroit show as the next ZR1. Fortunately, Pratt & Miller's sophisticated trimmings, opulent interior, and big-inch engine make the C6RS decidedly more upmarket than Chevrolet's own supercar. P&M should have no trouble finding two- or three-dozen wealthy Corvette fans of equal sophistication. ○

