Four for the Big Boys

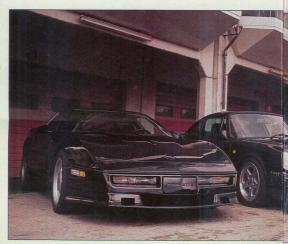
An exotic quartet at the limit in the land of no limits.

BY CSABA CSERE

PHOTOGRAPHY BY MARTYN GODDARD

• If you're a wine connoisseur, you reads for your coakserwe every time the latest vintage of Château Intoxicant hist the shekves. If you're a modern-art lover, you make a beeline for the local muscum whenever a collection of Campbell's soup cans hist town. As for us, well, this isn't. Samps and Draw, is it? Our passon is Samps and Draw, is it? Our passon is considered to sample a new high-performance cookie, we grab you trest gear and go.

We had to go a little farther than usual when our most recent opportunity arose. At the invitation of Germany's Sport Audo magazine, a Stuttgart-based monthly that concentrates on racing and high-performance street cars, we flew to Europe to participate in a high-speed comparison test that would make any car enthussia.



drool. Our friends at the German publication had arranged to test an elite group of modified cars, each recognized as the best aftermarket version of its marque. Awaiting us in Deutschland were a Ruf Porsche 911 Turbo, a Callaway Corvette, a Brandenburger Lister Jaguar XJ-S, and an AMG Hammer Coupe. Comparison tests don't set any better.

Unfortunately, AMG withdrew its entry at the last minute, the demands of its European Group A racing operation having taken precedence over providing a Hammer test car for our outing. Undeterred, Sport Aulus arranged for a fine eleventh-hour substitute: a Mercedes-Benz modified by a German tuner bearing the unlikely name Lotee Design. The Lotee Benz wasn't built to American specifications,

but neither were any of the other cars in the group. The Callaway Corvette was a prototype of a future high-performance European model, the Lister Jaguar was a special German-bred edition, and the Ruf Porsche was free of catalytic converters. Each car promised an overdose of speed, speed, speed.

Since none of these cars will be sold in America—in the forms you see here don't start saving up for your favorite. Instead, consider this review pure speed reading. If you love fast cars as much as we do, you won't be disappointed.

We begin our speedfest with an examination of what is probably the least familiar car in the group. Our Lotec Mercedes started out as a five-speed 300CE before Lotec's boss, German road-racing champion turned car tuner Kurt Lotterschmid, got his hands on it. Starting with the basic Mercedes 3.0-liter six, Lotterschmid added a Rayjay turbocharger, a large intercooler, and a sophisticated electronic control system. The black box prevents

cooler, and a sophisticated electronic control system. The black box prevents detonation by monitoring the boost pressure and the intake-manifold air temperature and then regulating the ignition timing. It also varies the control pressure of the KE-Jertonic fuel injection to tailor the fuel flow to the boost pressure. The entire Lotec kit bolts on with no internal engine modifications. Delivering a maximum boost pressure of 10.9 pst, the blown ensine produces 340 hp ns 45500 mm and

325 pound-feet of torque at 2800 rpm.

Lotterschmid left the rest of the driveline completely stock but modified the





chassis, making it a bit stouter than normal. Koni shocks and a set of shorter, stiffer springs firm up the suspension, and Goodyear Eagle VR tires mounted on one-piece BBS wheels (7.5 inches wide in front and 8.5 at the rear) enhance the CE's grip on the pavement.

On the outside, the Lotec Benz features a fiberglass hood that incorporates a 560SL-like grille rather than the traditional big-Benz radiator shell. It also sports subtle, ground-hugging front and rear valance panels.

"Subtle" is certainly not a term that one would use to describe the Brandenburger Lister Jaguar XJ-S. This brawny Jag looks like Sylvester Stallone shrink-wrapped in a Savile Row suit. Rippling with muscular bulges and flares, the Jag's bodywork radi-

ates strength and power. This super XJ-S was produced by Roland Brandenburger, Germany's only auto dealer who sells Jaguars exclusively. To make one of his monsters, Brandenburger grafts an assortment of swollen steel fenders and plastic spoilers onto a stripped XI-S. The body pieces are supplied by Brian Lister, the noted English Jaguar tuner. Brandenburger then adds a full complement of Lister-supplied equipment to the base V-12 engine, including a stroked Cosworth crankshaft with new connecting rods and pistons; ported cylinder heads; larger valves; radical camshafts; a free-flowing exhaust system; and modified intake manifold that inhales through four, rather than two, throttle plates. The result is 6.0 liters, 475 hp, and 490 pound-feet of torque. The engine is coupled to a modified version of the Getrag five-speed gearbox used by Jaguar in its European six-cylinder models

The engine and body add-ons are all Lister components, but Herr Brandenburger modifies the suspension with pieces he selects himself. These include





and stiffer coil springs, a rear anti-roll bar, and a larger-than-standard anti-roll bar in front. To rein in the big cat's power and weight, Brandenburger adds the same enormous brakes used in Jaguar's Group C race car. Beneath the bulging fenders squat 245/45VR-16 Bridgestone RE71 Sport tires mounted on nine-inch-wide BBS wheels in front and ten-inch rims in the rear. Finally, to ensure that no one mistakes the origin of this special Lister Jag, Brandenburger plasters his name-in six-inch-high letters-on the car's tail and on both flanks. So far, Brandenburger has built only four of the ferocious Jags

Compared with the Brandenburger works, Reeves Callaway's Old Lyme, Connecticut-based operation looks like General Motors. Since he began production in 1986, Callaway has built more than 200 twin-turbocharged Corvettes. Our test car, however, bore scant resemblance to a regular Callaway production model. For the Sport Auto speed gathering, Callaway instead provided a one-of-a-kind prototype of an ultra-high-performancethough still street-legal-twin-turbocharged Vette.

Designed for the European market, this special Callaway benefited from a mild engine massage and an exhaust system free of catalysts. Though the turbochargers and the boost level were not altered, the engine was pumped up with ported heads. a slightly more radical camshaft, and an intake manifold having shorter, largerdiameter runners. Callaway estimated the engine's output at about 400 hp-only slightly more than his stock engine's 382 hp. The modified powerplant easily pulls to 5500 rpm, however, whereas the stock engine starts to wheeze soon after 4500 rpm. To cope with the engine's power,

Callaway installed a prototype high-

performance suspension. The changes consisted of Showroom Stock-spec Delco-Bilstein shocks: zero-compliance. rod-end-equipped rear toe-control links; a lower ride height; and special alignment settings. Callaway also added a set of experimental shaved Goodyear ZR40 tires mounted on his standard seventeen-inch Dymag magnesium wheels.

To reduce lift and enhance high-speed stability, Callaway gave the car a tiny ducktail spoiler and a modest front air dam. The car's purposeful design is evident on the inside, too, where Callaway installed a



pair of lightweight graphite Recaro racing seats to cradle the car's two occupants.

The same form-follows-function philosophy guided the construction of the Ruf Porsche 911 Turbo, Alois Ruf's small shop is in Pfaffenhausen, about 100 miles southeast of Stuttgart, but he practices the Porsche religion as if he worked on the factory grounds. Ruf believes devoutly in the evergreen virtues of the 911. To him, the front-engined, water-cooled Porsches are anomalies, if not outrages. Ruf also believes in speed above all else. Indeed, he builds his fastest cars with narrowfendered Carrera bodywork instead of the 911 Turbo's more aggressive-looking flares, claiming that the reduced frontal area adds more than 10 mph to the car's

Ruf's modifications to the basic turbo six add even more mph. Large-bore pistons, ported cylinder heads, a capacious intercooler, exotic camshafts, a high-flow turbocharger, a low-restriction muffler, and 15 psi of boost pressure yield a 3.4-liter engine that develops 369 hp at 6000 rpm

This power flows through a five-speed, Ruf-developed version of the 911 Turbo's standard four-speed gearbox. Ruf's transmission features a lower first gear and a

top speed.

higher top gear than the standard box, as well as smaller gaps between the gears. The five-speed is perfect for keeping the high-strung engine within its narrow power band.

Ruf also fits stiffer rear torsion bars, tighter shocks, and beefier brakes to the basic Turbo chassis. These pieces help to exploit the traction of the Dunlop Denloc SP Sport D40 tires. Fitted to Ruf's distinctive seventeen-inch wheels, the Denlocs are designed to stay on the rims even after a loss of pressure. This climinates the need for a spare and, in turn, allows room

for a larger fuel tank.

The big fuel tank is a practical touch, but crussing range is hardly a criterion by which these cars should be judged.

These four speed machines are designed to leave other cars in their duals. Nothing less. They are built to present drivers the contract of th

motoring.

Just how far beyond varies with the car.

The Lotec Mercedes was the slowest car in the group. Aided only by its bolt-on turbo kit, it needed all of five seconds to hit 60 mph, 13.7 seconds to hurdle through the quarter-mile at 106 mph, 1ad about 25 seconds more to hit 150 mph, 1t finally ran out of breath at 170 mph. This was the

slowet car in the bunch. The Brandenburger Jaguar, more extensively modified and substantially more powerful than the Lotec, easily activated in S844 pounds. Though it didn't have enough off-the-line traction to make full use of its V-12's power, the beefy XJ-S hit 60 mph in 4.8 seconds and blasted through the quarter-mile in 13.1 seconds at 112 mph. Less than 30 seconds foll throttly yielded 150 mph, and the V-12

at 112 mph. Less than 30 seconds of full throttle yielded 150 mph, and the V-12 was able to pull all the way to its 6500-rpm redline in fifth—equal to 175 mph. The Porsche and the Corvette were faster still—and very closely matched. With its rear-engine layout aiding traction, the Ruf Porsche was quicker off the line than the Corrette and held its lead until we moved well into triple-digit speeds. The Ruf rockeed to 60 mph in just 4.3 seconds, reached 100 mph in less than ten seconds, and smoked through the quarter-mile in 12.5 seconds at 112 mpc. And it had legs; on the autobahn, we

clocked a spectacular 187-mph top speed. Out of the blocks, the Callsway lagged behind the Ruf by a few tenths at nearly every point, but its high-speed superiority was revealed by its 118-mph trap speed in the quater-enile. Sure crough, the Callsway's astonishing 22.8-second time to 150 mph best the Ruf s. And on the yielded an eye-popping 193 mph. From a car you can drive on the street.

The difference between the Lotee's 170-mph top speed and the Callaway's 193-mph limit may seem academic, but it translates into a major difference in high-speed acceleration. From 150 mph, for example, the Callaway is able to accelerate four times faster than the Lotee.

The most noticeable difference among the four cars was throttle response. The normally aspirated Jaguar took a clear clead, responding with immediate thrust at the slightest provocation of its throttle-even at 1000 pm in fifth gear. The Callaway and the Lotec were slightly less sharp, responding with moderate turbo lag and offering reasonably strong response even before the boost built up; at high speeds on the autobahn, both cars of-fered virtually immediate response.

Portsche 911 Turbos have long been infamous for their pronounced throttle lag, and Ruf's modifications have done little to improve the situation. In fact, our particular Ruf had a fuel-system problem that tended to kill its off-boost output. As a result, flooring the throttle below 4000 rpm was like lighting the fuse on a cherry









		price as tested (Germany)	engine	claimed power/torque	transmission/ gear ratios:1/ axle ratio:1
tics	BRANDENBURGER LISTER JAGUAR XJ-S	\$151,000	SOHC V-12, 386 cu in (5993cc), aluminum block and heads, Lucas electronic fuel injection	475 bhp @ 5900 rpm/ 490 lb-ft @ 4200 rpm	Getrag 5-speed/ 3.57, 2.13, 1.40, 1.00, 0.76/ 3.54, limited slip
Statistic	CALLAWAY CORVETTE SPORT	\$84,000	twin-turbocharged and intercooled V-8, 350 cu in (5733cc), iron block and aluminum heads, GM(Callaway electronic engine-control system with port tuel injection	400 bhp @ 4700 rpm/ 500 lb-ft @ 3200 rpm	GM/Doug Nash 4-speed with electronic overdrive/ 2.88, 1.91, 1.33, 1.00; 0.60/ 3.07, limited slip
Vital	LOTEC MERCEDES 300CE TURBO	\$69,000	turbocharged and intercooled SOHC 6-in-line, 181 cu in (2962cc), iron block and aluminum head, Bosch KE-Jetronic port fuel injection	340 bhp @ 5500 rpm/ 325 lb-ft @ 2800 rpm	Mercedes-Benz 5-speed/ 3.86, 2.18, 1.38, 1.00, 0.80/ 3.07, limited stip
	RUF PORSCHE 911 TURBO	\$101,000	turbocharged and intercooled SOHC flat 8, 205 cu in (3367cc), aluminum block and heads, Bosch K-Jetronic port fuel injection	389 bhp @ 6000 rpm/ 354 lb-ft @ 4800 rpm	Ruf 5-speed/ 2.78, 1.60, 1.12, 0.83, 0.63/ 4.00, limited slip









bomb: nothing happened for several seconds, and then things happened with explosive force. The only way to enjoy this car was to shift it all the time and keep the engine near full boil.

The Ruf's on-off throttle response was an even more serious problem when we took it to the Nürburgring for a few hot laps. The famous 14.2-mile course is difficult enough without having to worry about keeping the revs in the upper reaches of the engine's rpm band. Fortunately, the Ruf's chassis felt right at home on the Ring's treacherous hills, bumps, and dips. The brakes easily handled the downhill hairpins, and the car neither floated nor bottomed at any speed. True to its oversteering 911 heritage, though, the Ruf felt slow and sluggish unless driven with its tail hanging out a bit The Callaway was nowhere near as

confortable as the Ruf of the treek in a racing shocks were simply too stiff to handle the Ring's rolling topography, and the usspension bobbled and weaved. Still, the Callaway was easy to drive, offering tremendous grpt, excellent balance, plenty of accessible power, and the reassurance of antibled brankes. Driven in a smooth of artibled brankes. Driven in a smooth quick lap times.

The Brandenburger Jaguar also deliv.

ered a friendly ride. Although it seemed to offer less grip than the Corvette, it was quite well balanced. And thanks to its massive bulk, it responded to handling inputs more slowly than the Ruf or the Callaway. That made it an easy car to slide—espe-

more slowly than the Ruf or the Callaway. That made it an easy car to slide—especially since the instant throttle response made controlling the grip of the rear wheels as easy as twirling a rheostat. The big brakes also worked effectively once they warmed up; the rears tended to lock when cold.

The Lotec felt the least comfortable on

the track. Its suspension was softer than any of the other cars', and its body moved around a lot more during hard cornering,

dimensions, in				curb	susp				
heel- xase	length	width 74.3	height	weight,	front	rear	brakes, F/R	tires Bridgestone RE71 Sport, 245/45VR-16	
02.0	181.9		48.0	3824	ind, unequal-length control arms, coil springs, anti-roll bar	ind; 1 fixed-length half-shaft, 1 control arm, 1 trailing link, and 2 coll-shock units per side; anti-roll bar	vented disc/ vented disc		
06.9	176.5	71.0	46.0	arms, plastic leaf spring, and roll bar		ind; 1 fixed-length half-shaft, 2 lateral links, and 2 trailing links per side; plastic leaf spring; anti-roll bar	vented disc/ vented disc; anti-lock control	Goodyear Eagle ZR40, P275/40ZR-17 (experimental)	
06.9	183.3	68.5	53.3	3164	ind, strut located by a control arm, coil springs, anti-roll bar	ind; 2 leteral links and 3 diagonal trailing links per side; coil springs; anti-roll bar	vented disc/ disc; ant-lock control	Goodyear Eagle VR, F: 205/55VR-16; R: 225/50VR-16	
6.4	168.9	65.0	51.0	2990	ind, strut located by a control arm, torsion bars, anti-roll bar	ind, semi-trailing arm, torsion bars, anti-roll bar	vented disc/ vented disc	Dunlop Denloc SP Sport D40, F: DL215/45VR-17; R: DL235/45VR-17	

braking, and acceleration, Its engine also incuped rather dramatically it is throttle was modulated when the boost was up. Rapid progress around the track was further impeded by grinding noises from the brakes and from ires that rubbed on the fender lips in hard corners. Still, the Lotee did nothing treacherous. If we gionered its protests and just drove it hard, it turned in a pit mes surprisingly dose to those of the

other cars.

Once off the track, the Lotec was the easiest car to live with. Its supple suspen-

sion was well suited to street driving, its steering was progressive and nicely weighted, and all of its controls operated smoothly. With its quiet and responsive cragine, it was nearly as comfortable and easy to drive as a stock Mercedes—and it has almost double the power. With some additional flender clearance and a remedy for its throttle hiccup, the Lotec would be a near perfete greatleman's express.

The Ruf, with its raspy, spitting exhaust, stiff ride, and explosive acceleration, acted like anything but a gentlemanly car. But on the autobahn it was hard to beat. Driving at 150 mph was relaxed—a one-handed affair. The body structure felt exceptionally solid, and the car seemed utterly secure. Even so, this ultimate Porsche 911 demands a higher-than-usual level of driver involvement if one wishes to explore its considerable potential.

The Jag fell between the two German cars. It rode stiffly in town but softened up considerably on the highway. It was as loud as the Porsche, but sang a mellower exhaust song. And its handling was

Top-Speed Blowout

Want to ruin your day? Lose a tire at 190 mph.

Most people will tell you that if one of your tires blows out at high speed, you're doomed. The car will go out of control and either wad tistel fine a ball or scatter into a million pieces. Either way, both it and you will end up in final resting places. Before participating in the \$part Aud by high-speed tells. I was one of those people. Fortunately, I'm Iving proof that a high-speed blowned doesn't.

always mean certain disaster.
All of the top speeds reported in this story were measured on the six-lane Autobath 5, just north of Karlsruhe, West Germany. A Sport Auto driver and 1 tested the Callaway Corvette at four a.m. on a Sunday morning to avoid interference from traffic—sepecially trucks, which need a special permit for Stunday autobahn appearances.

Stefan Roser was in the Callaway's driver's seat. Rose is the lead tester at Sport Auto, a part-time racer, and a damn good driver. He knew this stretch of unlimited-speed autobahn well, so he drove. Securely belted into the right seat, I manned a stopwatch to measure our progress past the kilometer posts.

Despite a surprising amount of trafic, Stefan had to back out of full throutle only once during our ten-mile southbound run. The Callaway wasn't wonderfully stable at top speed, but it stayed in its lane as the kilometer posts flew by less than twelve seconds apart. That translated into more than 190 mph with the heaffidness in.

We turned around for our return trip (to compensate for any wind) and blasted off again. After about five flat-out miles—with the speedometer indicating 195 mph—the car suddenly began to vibrate heavily. I looked over at Stefan, and he said just one word: "Tire." The left front tire had blown apart, and we

were going fast enough to fly.

To its eternal credit, the Corvette plowed straight on drifting only slightly to the left. Stefan eased off the gas and concentrated on keeping the Callaway from getting sideways. He didn't touch the brakes; if he had, he might have upset the cin's stability.

It seemed as if I could have written a book in the time it took the car to slow to 130 mph. At that point, Stefan gingerly started applying the brakes. By 80 mph we seemed to be going so slowly that I was ready to get out and walk. As we slowed further, Stefan pulled over onto the right shoulder and brought us to a dismified ston. We stepned out.

The car rested on its left front wheel. The front spoiled had been ground away, and some of the bothywork had been destrowed by the disninegrating tire. The battery was dampling by its carried of the state of the disning the state of the s

For our top-speed run Gallsway had fitted stock, fall-tread-depth Goodysear Eagle ZR40s at the rear and left the experimental, shaved Goodysears we used for the rest of our tests in from. Later, when we talked to Goodysear engineers about the incident, they explained that the prototype time (which are not available to the public) were optimized for creat a ratio rather than continuous

All tires are a carefully developed balance of compromises. The design characteristics that produce high-speed du-

top-speed running.

rability are very different from those that produce low lap times. Since no street-tired Corvette is likely to approach 200 mph on a racetrack, the Goodycar engineers—thinking that the car would be driven only on a trackuraded some high-speed durability for more grip when they designed our

Calbassy's special tires.
The stock ZRM0 (svailable on Corvetes for 1988) easily survived out ropseed run because they have been developed and tested for use as front tires on Chevrolet's upcoming 180-mph Corvette ZR1. Goodyear has no doubts as to their high-speed durability, and neither do we. Three of us in the office Goodyear street tires, and we trust them implicitly when they are properly selected for their intended use.

That qualifier is a caution to all owners and builders of fast cars. Cars that can exceed 150 mph are no longer as are as politicians who keep their promises. Unfortunately, crsuring stability, durability, and safety at speed is much harder to do than simply making the power tog pals. You have to be careful when experimenting with the running gear of a fast car. That obviously goes

Should you ever experience a blossdon't pame. Ease off the gas and don't even think about braking. Your only priority is to keep the car going in a straight line. As your speed dissipates and you develop a feel for the car's stability you can try braking very geritly, but he ready to back off if the car pulls to one side.

Thanks in part to Stefan's expert driving. I survived an ultra-high-speed blowout. But I don't ever want to risk the odds again.

The Wheel-less Fifth Wheel

Introducing our hottest new piece of test gear.

• Keen observers may have noticed that our test equipment appears to be missing something. The suction cups holding a few mechanical bits to the side of the car are still there, but where's the usual "fifth wheel"—the distancemeasuring key to the whole system? No, it didn't fall oft during a high-speed test: what you see here is our brand-new, wheel-less opical test equipment.

It's called the Correvit. Built by Datron-Messtechnik GmbH in West Germany, the Correvit does away with the conventional lifth wheel and instead measures speed with light—with no parts touching the road.

parts touching the road.

The heart of the system is the Corrects1, sensor. To measure vehicle beam of light not not read surface and then reads this lighted piece of road with a lem. The lens focuses the road mage onto an optical clement called a prism grainity, as the car moves, the road's spots of light and dark move the road's spots of light and dark move made spots of light and dark move that the road is post of light and dark move that the road is post of light and light and

photocells, the system determines the vehicle's speed.

Using this speed signal and a precise internal clock, the Correvit's small computer then calculates distance. We've programmed the Correvit's internal memory to compute results for our enternative battery of performance tests; it can also handle almost any other tests we assign it. The Correvit's results are extremely accurate, generating less than one-half of one percent variation in

readings taken between 0 and 150 mph. The system's optical design class several benefits. Since it has no parts in contact with the road, we can use the Correvi on rough surfaces or during between the road, we can use the Correvi on rough surfaces or during have to worry about the fifth wheels have to worry about the fifth wheels have to worry about the fifth wheels tendency to bounce and fift at speed, we can use the Correvii for accumet high-speed testing. The Correvii is even designed to work on snow, ice, and wet passement—a major benefit when we passement—a proferom highly special-vised tests.

All in all, we're quite happy with our new toy. You'll be seeing a lot more of what it can do from now on.



Judged purely by its numbers, the special Callaway was the most impressive car in the group. But it also had a number of flaws. The shocks felt even stiffer on the road than on the Nürburgring. They kept the car from floating, but they also made it bounce off every bump in the pavement. That problem was compounded by the Callaway's overly sensitive steering. The steering of the other three cars tended to feel dead and lifeless at low speeds, gradually becoming linear and secure as speed increased. The Callaway's steering, however, was responsive at low speeds and became much too sharp on the autobahn. All Corvettes equipped with the fast-ratio Z51 steering suffer from this problem, but it becomes particularly acute when driving in Germany. At more than 190 mph on the autobahn-with a guardrail three feet away on the left and a truck going 60 mph in the lane to the right-twitchy steering is

the last thing you want along for the ride.

The Callaway's special tires were also a
poor match for its speed capabilities (see
sidebar). Between the stiff shocks, the
touchy steering at speed, and the unsuitable tires, this Corvette's performance exceeded its stability. A stock Callaway
would have been slower, but it would have
been a much more satisfying package.

been a much more stitistying package.

Despite our complaints, we enjoyed all of the speed machines in our joint \$5par\$ for the speed machines in our joint \$5par\$, we were most impulsed to the speed machines to the speed machines of the speed speed speed to the speed speed speed to the speed s

Its	
Resu	
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Test	
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	acceleration, sec									
	0-30 mph	0-60 mph	0-100 mph	0-130 mph	0-150 mph	Ye-mile	top gear, 30-50 mph	top gear, 50-70 mph	top speed,	braking, 70-0 mph, fr
BRANDENBURGER LISTER JAGUAR XJ-S	2.0	4.8	10.8	18.9	28.0	13.1 @ 112 mph	6.4	6.1	175	195
CALLAWAY CORVETTE SPORT	2.1	4.6	10.2	16.8	22.8	12.8 @ 118 mph	11.4	9.5	193	157
LOTEC MERCEDES 300CE TURBO	2.1	5.0	12.3	21.5	38.3	13.7 @ 106 mph	11.6	8.7	170	182
RUF PORSCHE 911 TURBO	1.6	4.3	9.6	16.9	24.3	12.5 @ 112 mph	18.0	15.8	187	199