

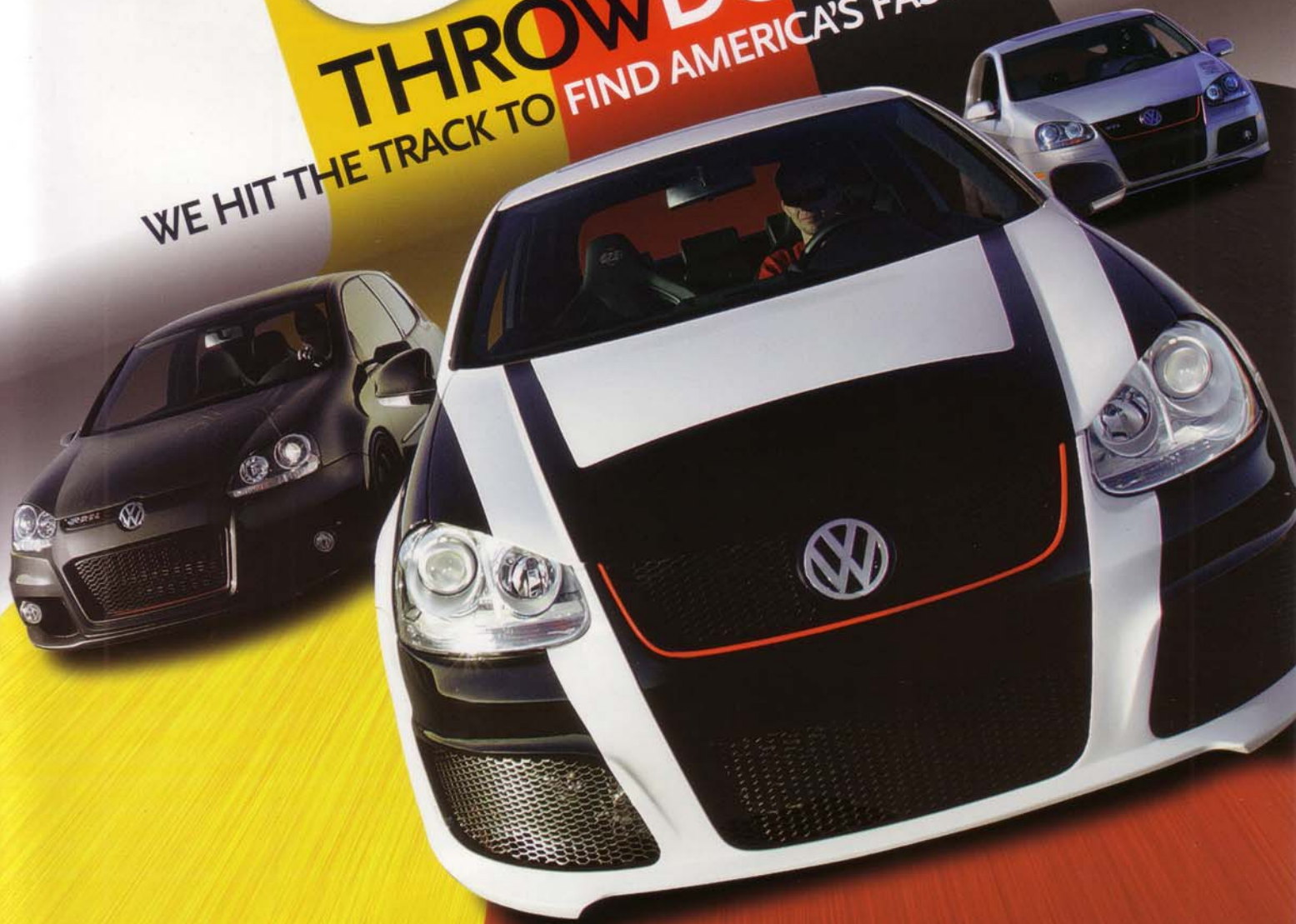
24 HOURS OF LEMONS—RACING & WINNING IN A \$500 BEATER

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SPORT COMPACT CAR

THE GTI THROWDOWN

WE HIT THE TRACK TO FIND AMERICA'S FASTEST NEW GTI



BY EDWARD LOH AND JAY CHEN

PHOTOGRAPHY BY LES BIDRAWN AND EDWARD LOH

GTI TUNER CHALLENGE

Is the original hot hatch really back?
We track test four GTI tuners to find out.



Snoop Dogg didn't invent rap music, Nintendo wasn't the first video game system, and the Civic Si was not the first hot hatch.

No, credit for the creation of the entire hot hatchback segment goes to Volkswagen, when the Rabbit GTI was released in 1983. This revolutionary 90bhp front-driver shamed many sports cars of its day and subsequently created an entirely new class of vehicle that soon saw entries from every major auto manufacturer in the world.





Since 1983, the GTI has undergone a series of regular updates. Unfortunately, like many of its contemporaries, these newer versions have diluted some of the original's purity and sense of purpose. While subsequent GTIs have grown larger and more powerful, many enthusiasts have noted that they seem to have lost a bit of the magic that made them so 'hot' in the first place.

However, the latest MkV iteration is a return to the GTI of old. Since its release in the spring of 2006, it has been universally praised by the media (including the editors of this magazine) for its excellent interior and exterior design, high-tech direct injection turbo engine, and sporty chassis. Clearly the media likes the new GTI, but after a few months with the car, what do tuners and enthusiasts have to say?

VW of America was determined to find out and decided to pose the question in the form of a GTI Tuner Challenge, the results to be shared at the 2006 SEMA show, coin-

ciding with the launch of two extra special factory-modified concept VWs.

THE PLAN

VW of America solicited 16 respected tuners for proposals on a performance tuned GTI. From that pool, Volkswagen's Robert Gal and Derek Jenkins, head of VW's Design Center in California, selected four tuners, using the creativity of each proposal as the deciding factor.

Suspension manufacturer H&R was one of the companies chosen, joining VW performance experts APR, Autobahn Designs (ABD), and Watercooled Racing Development (WRD). Each was given a brand new 2006 GTI and a deadline two weeks prior to SEMA to have their cars finished and ready to run at the track.

Since tuner efforts can only go so far to stoke the public's passion, VW decided to produce two of its own special vehicles. For the second year in a row, Jenkins took

charge of this project. In 2005, he headed up the SEMA campaign that shocked and awed attendees with powerful R Concept interpretations of the Jetta, Passat, and Touareg. For 2006, he and his team based their factory tuning efforts on the GTI and Rabbit, producing the R GTI and Thunder Bunny II (see sidebars).

THE CHALLENGE

Naturally, VW wanted some press on these products. But more importantly, it needed an independent third party to pick a winner. So our parent company, Primedia, was approached, which got us and our fine sister magazines, *europaean car* and *euro-tuner*, involved. VW of America tasked all of us with developing a suitable competition for testing the four tuner GTIs and picking an overall winner. The enticement? Time permitting, we would get to test Jenkins' top secret SEMA cars as well.

Since the tuner GTIs are essentially per-

formance tuned street cars, we decided to test them at the Streets of Willow, in Rosamond, California. *Motor Trend's* test guru, Neil Chirico ran the testing, while *MT's* senior editor John Kiewicz and *SCC's* Jay Chen assisted.

In the end, though, it would be up to each of the three magazines to pick their own winner, based on shared performance data and their own subjective criteria.

Performance testing consisted of a series of three hot laps along with modified acceleration and brake testing. Due to the lack of runoff and the gentle rise of the Streets' front straight, acceleration was limited to 0-60mph, while braking was measured from just 60mph down to standstill. In the spirit of our Ultimate Street Car Challenge, we also had a dyno showdown the following day, not at our normal facility, but at Zero-1000 USA Inc, in the City of Industry, California. To help put the factory and tuner efforts in perspective, we also asked VW to bring two stock GTIs for comparison: a six-speed manual and one equipped with the DSG transmission. For our subjective evaluation, we examined each vehicle and lapped them to compare performance, streetworthiness and overall execution.

PERFORMANCE TESTING

A run-of-the-mill Southern California fall day at The Streets: warm and dry, bright, unrelenting sunshine. With newly renovated asphalt on the skidpad and the rest of the track smooth and fast, there



would be no complaint about the conditions or the facilities. After a brief practice session to set up their cars, each team got a total of three laps to get the fastest time.

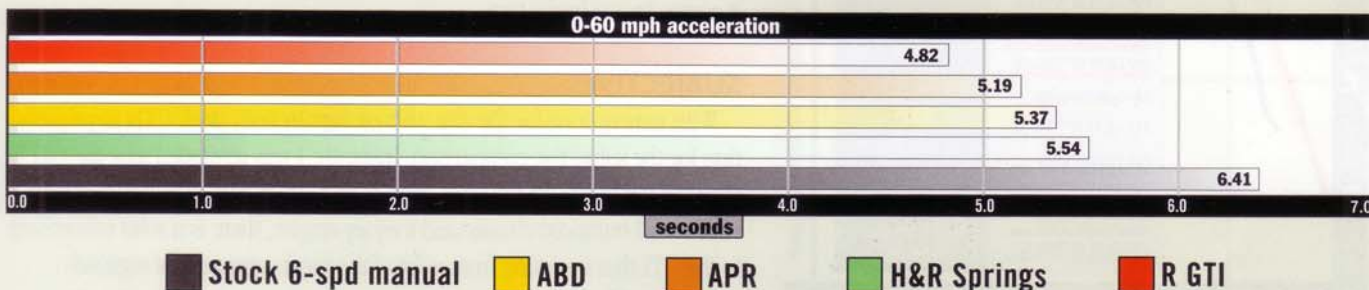
Teams supplied their own drivers, from Eibach's Jim Hickerson (who drove for the ABD team) to SCCA Speed World Challenge stud and Audi racer Randy Pobst driving for APR. Although both VW factory-tuned SEMA cars made it to the track, only the R GTI was set to run; not all the kinks had been worked out of the Thunder Bunny II.

Since our challenge took place less than two weeks before SEMA, there was talk in the paddock about some teams preserving their cars and running only at seven- or eight-tenths. Baloney, once testing was under way, it was clear all the teams were going for broke—in some cases, literally. The WRD team destroyed their transmission

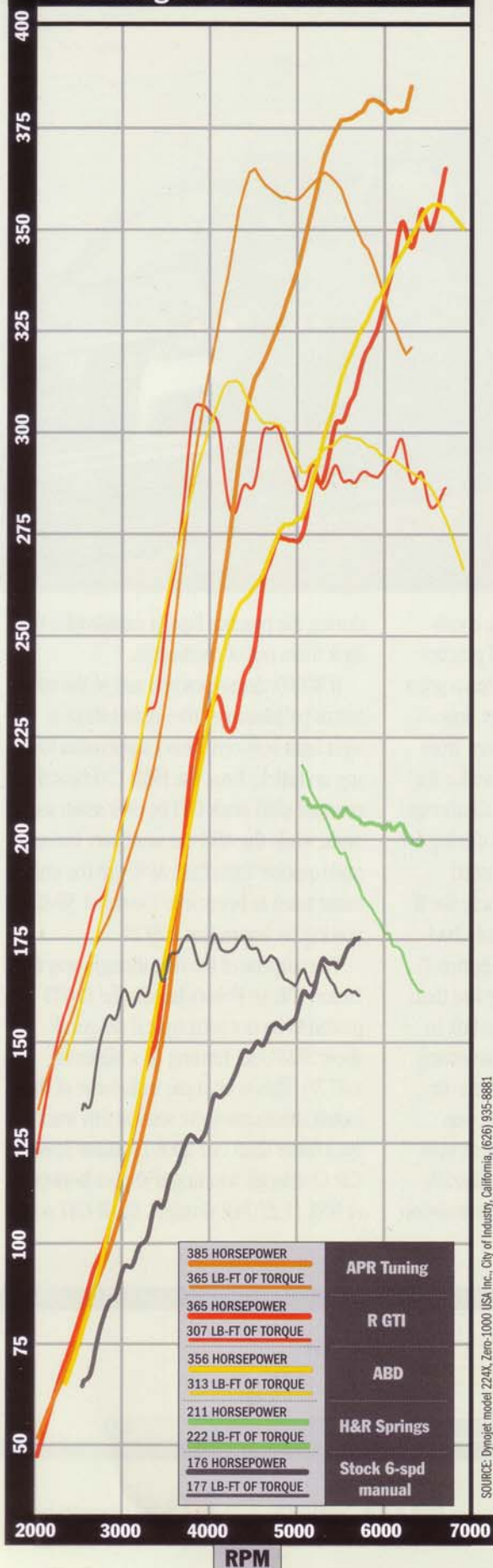
during the practice laps, a catastrophe that took them out of contention.

If WRD's demise caused any of the other teams palpitations, they didn't show it: with light bolt-ons, heavy suspension tuning and sticky tires, the H&R GTI beat the manual-shift stock GTI by over seven seconds, while the ABD car went over two seconds quicker than that. APR was the only tuner team to break into the sub-1:30 club, posting an impressive 1:29.21.

The surprise of the day, though, was the factory VW. In Pobst's hands, the R GTI proved to be not your typical no-go/all-show SEMA car, turning in a blistering 1:27.39. This is on a par with some of the fastest street cars we've seen at this track—even faster than our 2006 Ultimate Street Car Challenge-winning 650-plus horsepower NSX (1:27:74). Granted, the R GTI post-



Volkswagen GTI Tuner shootout



SOURCE: Dynojet model 224X, Zero-1000 USA Inc., City of Industry, California, (626) 935-8881



ed this time on a slightly faster track configuration, but it was still faster than a mid-engine sports car with a 300hp advantage.

This finishing order repeated itself in the acceleration phase, though only after a bit of fiddling with the R GTI, whose engine would inexplicably cut out at 50mph. After pulling the wheel speed sensor, the car turned in a blazing 4.82-second sprint to 60mph, the only sub-five second pass and faster than the APR car by nearly four-tenths. After APR came ABD in 5.37 seconds and H&R at just over 5.5. An impressive showing for all, considering the stock car could only manage 6.4 seconds.

More surprising is how the tuners did on the brake test—each finished within one foot of the stock GTI's best stopping distance of 117 feet. Are we disgusted? Actually, quite the opposite. Despite all teams running R compound and aftermarket brake upgrades, we were impressed that the tuners were able to meet (ABD)—or in some cases exceed (H&R)—the stock car. Call us cynical, but our testing experience often shows that while tuners can almost always improve on power/torque delivery and consequently acceleration and lap times, they rarely beat stock cars when it comes to our brake tests.

SUBJECTIVE

With testing done for the day, we took laps in both stock GTIs in preparation for the subjective comparison. Instantly, I was reminded why the GTI is near the top of my list for front-drive performance cars. Not only is it fun, with a well-balanced chassis and torquey engine, there is a solid refinement to the GTI that's missing from a lot of the sport compacts we regularly experience. There is room for improvement—particularly in cornering,

where it sways and leans, and feels unsettled during quick transitions. Acceleration is also hindered by the lack of a limited-slip differential (LSD) and an engine that feels peaky when pushed hard.

H&R

Though H&R's interpretation has some serious suspension tuning, its only other performance mods are a GIAC chip, turbo-back exhaust, and upgraded wheels and tires. It was also the only one running a DSG transmission, which meant it had no aftermarket LSD. Jay called them on it:

"The DSG, as good as it is, still lags a little at the apex—like most wet-clutch transmissions. And the GIAC-chipped boost increase makes the turbo even more peaky than stock. Right where you start feeding power, the turbo is totally spooled and hits hard. Fun, but not what you want if you're into smooth, fast laps."

But the single biggest problem seemed to be tire selection. "It's on Bridgestone RE-01R max grip tires, while the suspension is set up to use Hoosiers," continues Jay. "The spring rates are too stiff, causing a jarring ride on the track and transmitting more info than I need or that the tires can deal with."

Despite a mismatched suspension and tires (our fault for changing the rules at the last minute), H&R's car was far quicker and more surefooted than stock. I found that, without pushing, it would easily run down the stock GTI in the esses. The reduced body roll offers more stability, greater confidence and higher closing speed. As for the DSG, I disagree that it shifts too slowly. When blipping through the gears in S-mode, more time is spent waiting for the inside wheel to quit spinning and catch some grip.

AUTOBAHN DESIGN (ABD)

With a paint job made to look like riveted metal and 18-inch iForged wheels finished off with a disc grinder, ABD's wild 'Industrial GTI' theme is hard to miss, especially since it carries over to the gutted

interior and engine bay.

"These guys are boost junkies. They claim the car makes 25psi at some unbelievably low rpm," says Jay. But after driving their GTI, I didn't believe him—I thought for sure it was boosting well over 40psi.

Hot laps required an equivalent industrial driving style—dropping the hammer out of the corners requires a vise-grip on the steering wheel. The head-snapping onset of boost certainly makes ABD's GTI the most fun to drive on the track—as long as you're not concerned with the racing line or setting the fastest time.

But all that boost is not necessarily good, says Jay: "Part of the problem is that the Quaife LSD is always fighting to figure out where to send torque—even in a straight line. In the turns, the car feels unmanageable, since the engine is so peaky." This on-off power delivery is ultimately ABD's undoing. As fun as it is drive, it's hard to drive seriously.

APR

Despite our reservations about the APR car's brake set-up (actually, it seemed all the Brembo-equipped GTIs exhibited some incompatibility with the factory-calibrated ABS and ESP systems), we were most enthusiastic about APR's tuning, especially whatever they did to give it excellent clutch and LSD feel.

"All the tuned manual GTIs ran the same clutch and Quaife LSDs, but this one had excellent clutch feel and did not torque steer, like ABD's or the stock car. It's a matter of power delivery: when boost spikes, the wheels spin, and since the axles are not symmetric, the load on each front tire is different. This car doesn't do that, since boost—or maybe just power—is fed in at a slower rate."

The suspension isn't nearly as well sorted: "It is well balanced in terms of spring rate for the track, but either the travel or damping is all messed up," continues Jay. "The car feels like it bottoms out in the front first,

THE ORIGINAL

RABBIT GTI (MKI)



Sold in the US:

1983-1984

Engine: 1.8-liter four-cylinder

Horsepower: 90bhp

Bet you didn't know:

Europeans had been enjoying the Golf GTI since 1976.

GOLF GTI (MKII)



Sold in the US:

1985-1992

Engine: 1.8-liter four-cylinder

Horsepower:

105bhp (eight-valve), 139bhp (16-valve)

Bet you didn't know: this was when the 16-valve version first appeared.

GOLF GTI (MKIII)



Sold in the US:

1994-1999

Engine: 2.8-liter V6

Horsepower: 172bhp

Bet you didn't know: America didn't get the

'proper' GTI, but had the VR6 version instead.

GTI (MKIV)



Sold in the US: 1999-2006

Engine: 1.8-liter four-cylinder, turbocharged

Horsepower: 180bhp

Bet you didn't know: the GTI 337 US limited edition was named after the original car's factory code.

GTI (MKV)



Sold in the US: 2006-present

Engine: 2.0-liter four-cylinder

Horsepower: 200bhp

Bet you didn't know: there were plans for an R36 model, but the DSG gearbox couldn't squeeze behind it.

—Colin Ryan

then bounces up. The front loses traction and leaves the rear to figure out what the hell is going on. In those situations, all you can do is lift and watch the car's nose push toward the edge of the track."

R GTI

Though there isn't any point in comparing the R GTI to the others for the purposes of this competition, driving it back-to-back with the rest gave us a lot of insight into how far the tuners had come, and how much could still be done.

"Without comparing its stats, the R GTI is by far the most beautiful and fastest of the group. The engine delivers power progressively, without the stock turbo's peaky or out-of-breath feel. Torque steer is also minimal, even though this car felt the quickest."

Power delivery aside, the R GTI's most compelling characteristic is its smooth and transparent handling. That no other car drove better was redemption for H&R, since their car ran the exact same setup as the R GTI. "Minus the power, this is probably what the H&R car would have felt like had we allowed them to run the Hoosier race compound. It's well sorted, without travel or damping issues, and exhibits the best track feel with lift throttle rotation—though not in excess."

The only imperfection we find are the seats. Not only do the Recaros seem to be mounted too low, but they are wide at the



thighs, hips, and back. I'm by no means a skinny guy, but I found myself sliding around during cornering—disconcerting in a car this fast and sticky.

THE WINNER

The following day at the dyno only supported both the lap and acceleration data collected at the track. With 368 wheel-hp, the APR car won the overall dyno battle by doubling stock output, though the APR-powered R GTI was not far behind with 358hp.

So who won? Clearly we would have given the top prize to the R GTI had this been a competition for unlimited vehicles produced with unlimited resources. But since this was a competition designed with tuners and regular Joes in mind, the exotic R GTI could not be counted.

From the first click of the timer, the battle was clearly between ABD and APR. Unfortunately, mechanical issues took WRD out of the competition and, though nicely set up for the street, the mildly tuned H&R GTI was clearly outgunned—surrendering over

100hp and nearly 100lb-ft of torque to the other two.

As for ABD versus APR, the decision was clearly in favor of Alabama's APR boys. The problem? From the outside in, the ABD GTI is simply too much. They picked an industrial styling theme that covered the outside in a fake metal finish that seemed more

APR 2006 VOLKSWAGEN GTI

ENGINE

Engine Code: BPY

Type: 1984cc in-line four, iron block, aluminum head, turbocharged and intercooled

Internal Modifications: APR rods

External Modifications: APR Stage 3 turbo kit with Inconel cast exhaust manifold, APR GT2871R turbo, cast aluminum piping, silicon hoses, FMIC and full three-inch dual exhaust

Engine Management Modifications: APR ECU reflash and FSI fueling components

DRIVETRAIN

Layout: Transverse front engine, front-wheel drive

Drivetrain Modifications: APR Stage 3 clutch, Quaife LSD, 4.14:1 final drive

SUSPENSION

Front: Koni coilovers

Rear: Koni coilovers and H&R anti-roll bar

BRAKES

Front: 14-in. vented floating slotted rotors with four-piston fixed Alcon calipers, Alcon pads and stainless steel braided lines

Rear: Stock

EXTERNAL

Wheels: 19x8.5 custom BBS RS-GT

Tires: Michelin Pilot Sport Cup, 235/35ZR19

Body: Oettinger body kit, Hella headlights

Interior: Streetdeck infotainment system w/ touch-screen operation, NAV, voice activation, XM radio, backup camera, constant internet access, MP3 capability, music/data storage capability

	Stock m/t	ABD	APR	H&R	R GTI
Wheel horsepower	188	349	356	217	358
Torque	211	309	389	217	300
Lateral g (extrapolated from telemetry)	0.83	0.89	0.96	0.87	1.06
0-60mph (sec)	6.41	5.37	5.19	5.54	4.82
Lap times	1:42.353	1:32.505	1:29.309	1:34.990	1:30.995
	1:41.971	1:32.304	1:29.334	1:35.517	1:28.666
	1:42.448	1:32.217	1:29.771	1:36.047	1:27.366
Average	1:42.257	1:32.342	1:29.471	1:34.935	1:28.996



NOPI Supershow than Wolfsburg Limited Edition.

And then there is how it drives. Sure, the big boost brings big smiles for the first couple of laps, but probing its outer limits causes furrowed brows. The faster I went, the less sure I became. I found myself feeling relieved that I didn't have to try and set a fast lap; before I'd ever attempt ten-tenths, I'd put on my firesuit and get my affairs in order.

Driving the ABD car is like raising a Ben-

gal tiger at home—it sounds like a lot of fun until you get bitten. And though I never reached that point, I couldn't shake the feeling that when I ran out of talent in the ABD car, I'd be in a world of hurt.

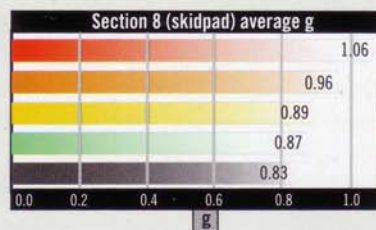
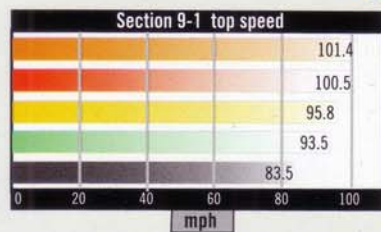
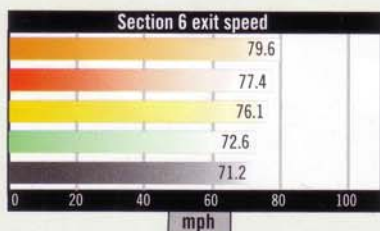
The APR car is essentially the opposite. With smooth—actually massive—power delivery and a communicative chassis, higher speeds elevated confidence, not anxiety, levels. Jay puts it best: "Power delivery is good without the 'holy-shit!' of the ABD car or the peaky

breathless feel of the H&R car's stock turbo."

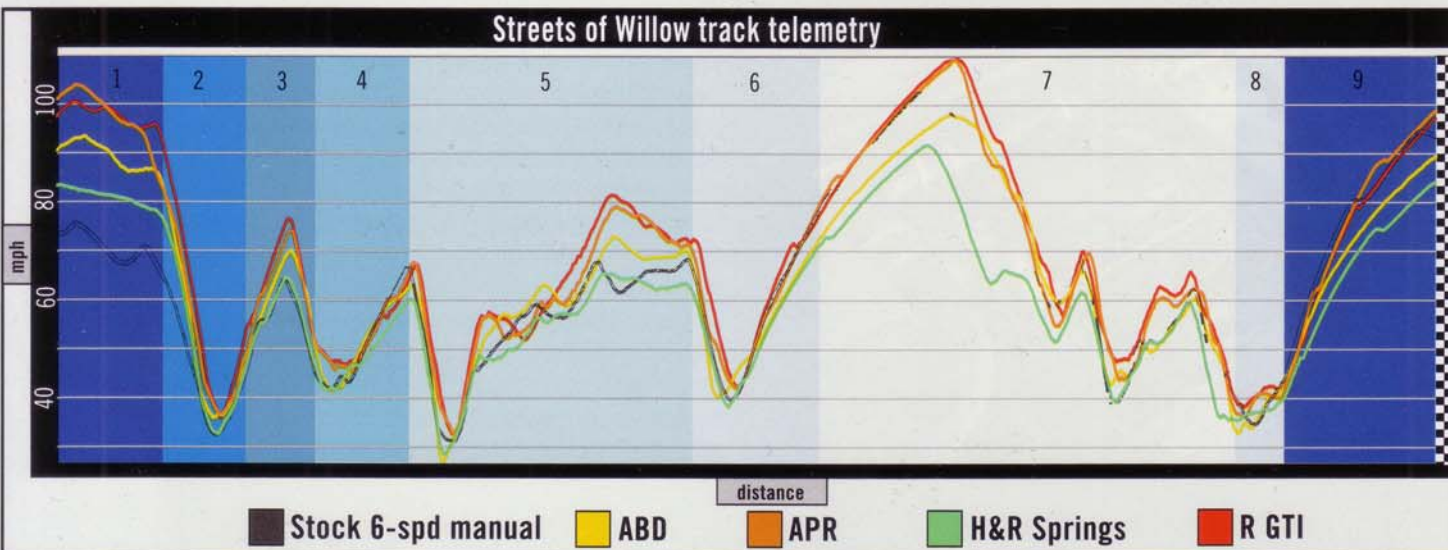
And while neither of us care much for the paint job, we concede it makes for a pretty bitchin' cover and is perfect for a vehicle built for SEMA. But the bottom line is that the APR GTI managed to produce the most power, the fastest lap and acceleration times, and the most rewarding drive—all with a full interior. From paint job to performance, the APR GTI has proven to be the ultimate expression of what a tuned sport compact car should be. ■

HOT HATCH, HOT LAPS

We each GTI's fastest lap and mapped the line, times, and performance through key sectors of The Streets of Willow. Section 9 to 1, the front straight is all about top speed, staying flat all the way through the kink leading into Turn 2. Section 5 is a chain of complex sweepers that require heavy brakes, speed and some well set up suspension to get through in the fastest time. This leads into Turn 6, or 'The Bowl', a high bank on camber turn where even street tires will break 1g. Exit out of 6 is the most critical, as it leads to the fastest part of the track. Speed through Sector 7 is a matter of balls, since the crest at the baby esses is blind. We also extrapolated a roughly 200-foot skid pad number out of Turn 8 as it leads back onto the front straight. Each GTI's speed, along with the stock baseline, are shown in the color-coded telemetry log. The colored dots show where each car was when the R GTI passed the finish line. **-JC**



Streets of Willow track telemetry





The team (left to right): Yuval Applebaum, senior interior designer; Derek Jenkins, chief designer DCC VW; Sulaeman 'Abeng' Halim, senior exterior designer (not shown: Nancy Holman, senior designer in charge of color, materials and graphics)

R GTI—THE BADDEST OF THEM ALL

Consider the R GTI the direct descendant of the R concept show-stealers at SEMA in 2005. After all, the same parents are involved: chief designer Derek Jenkins and his talented crew at the Volkswagen Design Center California, located in Santa Monica. However, unlike the R concept vehicles which showcased the extremes of performance-tuned Volkswagens, Jenkins and his team approached the R GTI with a goal of "speed through lightness." That is, amplifying the engine's output and improving performance by reducing weight. "The R GTI is a kind of weekend track car, but still a car you could take on the street. But unlike last year, our approach was more on weight reduction instead of going totally nuts on the power," says Jenkins. "Hence the extensive use of vacuum-bagged carbon fiber composites to save weight."

In collaboration with carbon fiber component experts, OSIR Design, Jenkins replaced much of the stock GTI, including the front fenders, hood, side skirts and hatch door, with carbon-fiber panels.

But weight saving was just the beginning. "To maximize improvements in power and authentically deal with the inherent limitations of front-wheel drive, we subtly widened the front fenders to accommodate 265s all round. We didn't have to widen the rear, but we had to add about 23mm to each front fender." As you can tell from our track testing, the wider Michelin Pilot Sport Cups (265/30-R19) helped the R GTI pull some impressive numbers.

So did the power upgrades. Jenkins gives credit for the R GTI's impressive performance to APR, who replaced the stock turbocharger with a larger Garrett ball-bearing unit with twice the flow capacity. A large-diameter cast-aluminum intake pipe feeds the big turbo from the larger, front-mounted intercooler, delivering twice the stock airflow. Add an Inconel exhaust manifold and an APR stainless steel exhaust system and the result is 358 wheel-hp at 21psi. If 100-octane race fuel is used, VW claims output rises to some 400hp.

2006 VOLKSWAGEN R GTI

ENGINE

Engine Code: BPY

Type: 1984cc in-line four, iron block, aluminum head, turbocharged and intercooled

External Modifications: APR GT2871R turbo kit, aluminum intake pipe, cast Inconel exhaust manifold, silicone hoses, APR R32-type central twin exhaust pipes

Engine Management Modifications: APR ECU reflash and FSI fuel system upgrade

DRIVETRAIN

Layout: Transverse front engine, front-wheel drive

Drivetrain Modifications: APR Stage 3 clutch, Quaife LSD, 4.14:1 final drive

SUSPENSION

Front: H&R RSS Club Sport coilovers, 26mm adjustable anti-roll bar

Rear: H&R RSS Club Sport coil-overs, 24mm adjustable anti-roll bar and 5mm rear Trak+ wheel spacers

BRAKES

Front: 12.9-in. vented floating cross-drilled rotors with four-piston fixed Brembo calipers, Brembo pads

Rear: Cross-drilled rotors

EXTERNAL

Wheels: 19x9 custom aluminum

Tires: 265/30R19 Michelin Pilot Sport Cup

Body: CF front fenders, hood, side rockers, custom mirrors, lower front spoiler, front grille surround, rear rooftop spoiler and hatch door, R32 taillights, blacked-out headlights

Interior: Recaro Pole Position seats, rear custom-designed racing buckets, custom moveable harness bar



To handle all this power yet still remain driver-friendly, an upgraded clutch and a Quaife limited-slip differential were installed. Ideally, Jenkins envisioned the R GTI to be used as daily transportation that would deliver precise handling on twisty roads and weekend track days. H&R's RSS Club Sport system of coilover shocks and springs is augmented with a pair of adjustable anti-roll bars.

Fitted at the front corners are Brembo's four-piston aluminum alloy calipers, which squeeze Brembo two-piece floating cross-drilled discs with billet aluminum hats. The front calipers have even been painted with the colors of the German flag (the inspiration for our cover).

Naturally, the interior is swathed in carbon fiber and black leather. An ingenious touch is the front safety belt system, developed in the design studio, for Recaro sports seats. "This flip-harness mechanism allows four-point harnesses on all four seats," says Jenkins. "Typically, when you equip the front with a harness, you can't have access to the rear seats, so we designed this special harness set-up that allows you to

flip up the brace to squeeze into the rear and then bring the bar back down. Like an amusement park ride."

But the interior's *pieces de resistance* are the rear seats. "We carried over the weight-saving concept by removing the stock rear cushions and frame and installing a one-piece carbon fiber bucket shell, that mimics the Recaros up front, adding small cushion inserts."

Think the car looks mean? Credit the new front end, with a large central carbon fiber shield. "The larger central grille is an evolution of the existing GTI front end. We just put extra emphasis on the lower grille. It's much larger than the existing GTI, but the same as the IROC concept. It's the direction of new products that are coming. Potentially, the new face of VW."

Adding to the menace are a number of distinctive exterior touches, including blacked-out front headlamp housings, R32 taillights with smoked lenses, and R32-type central twin exhaust pipes. The hexagonal 'stealth' graphics refer to the GTI's trademark hexagonal grille pattern. These satin and matte graphics are only visible in certain lighting conditions from certain angles. This theme is also seen in the R GTI's specially constructed 19x9-inch aluminum alloy wheels. Although these wheels should be lighter than factory spec, forged 18-inch Neuspeed wheels were used for our track tests.

Though the R GTI is a one-off (Volkswagen has no plans to put it into production), it does serve as tangible, track-proven evidence of what the company is capable of.

"I think we have really strong products now, ones with good base performance and a good price, that are an excellent basis for the tuner to build on," concludes Jenkins. "And I think there is a fresh look and a fresh spirit that goes along with the fact that these are VWs, with a rich history of tuning and an authentic European touring and racing aesthetic." —Ed.

