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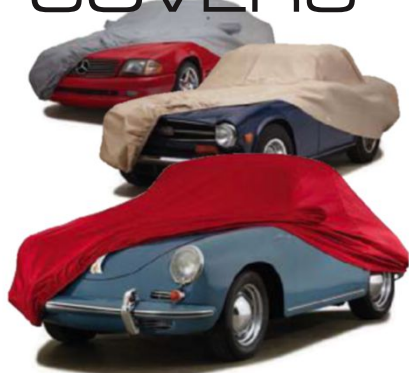


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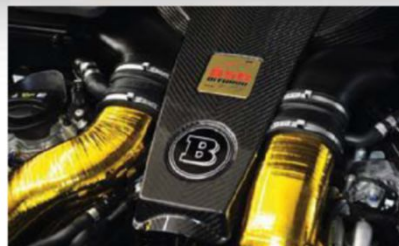


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# BACK IN SESSION

**I'M BACK, BUT THIS TIME IN THE CAPTAIN'S CHAIR.** Some of you may recognize my name; I was the engineering editor here at *European Car* from 2006 until 2008. It was my first gig in automotive journalism, so this feels like a bit of a homecoming. The last few years I've been away sharpening my abilities, learning new skills, but mostly missing being around European cars exclusively.

My first few days behind the wheel were spent assessing the positives and negatives of the title at present. From past experience, I know upsetting the status quo can be a dangerous proposition. Although to some it may seem like this is just a car magazine, it is something both staff and readers have made an intellectual and emotional investment in. Luckily for me, the week after I took the seat, the results of *European Car's* most recent reader survey came back. Even luckier for me, my ideas match almost Scantron dot for Scantron dot with all of you who responded.

Changes will start making their way into the magazine, website, and YouTube channel over the next few months, although this issue will already have a different feel to it. Our survey showed that almost unanimously, our readers want more technical information and more performance-oriented content. You will notice that along with our usual First Drives, there is our first in the series of Tested articles.

Part of what I have been doing during my time away from *EC* was writing for *Motor Trend*, where just about everything is tested for actual performance numbers. While others may rely on manufacturers' claims, we will be burning fuel and rubber to give you real numbers from a controlled environment. *EC* will be using the same test parameters as our sister publications *Motor Trend* and *Automobile*, meaning our data is comparable with theirs for your barstool-betting comparison convenience.

When you get to the test of the Rolls-Royce Wraith a little later in this issue, you will notice the old standbys; 0-60 mph, quarter-mile time and trap speed, 60-0 mph braking, along with something that might be new to you. Figure-8 testing is two, 200-foot skidpads separated by 500 feet. That means we get an average g-force in both directions in skidpad sections, plus acceleration and braking performance summed up in one simple lap time. You will also notice an average g for the entire figure-8 lap, which comparing that number to just the average lateral number can help you determine if the car is stronger in cornering or in a straight line.

Besides the performance numbers, our magazine will start featuring more news and information concerning the latest and greatest in technology.

Cars are advancing faster than ever, and we intend to keep up. Look for features highlighting the latest from both auto manufacturers and the aftermarket industry with more explanation as to the hows and whys it works.

If you are sitting on your couch reading this and are not itching to hit the racetrack, count yourself in the minority of *EC's* readers. The majority of readers either currently or want to participate in track

**"Besides the performance numbers, our magazine will start featuring more news and information concerning the latest and greatest in technology."**

events. For those of you who haven't yet scratched the itch, in upcoming issues we will prepare you with a look at the basics of what you need and need to know to take the plunge into probably the greatest experience most car enthusiasts can have, a day of track driving.

There are plenty of other things all of you readers have asked for. I don't want to give away too many spoilers right now, so keep watching. *European Car* will deliver all of the content that makes you a current *EC* reader, while expanding in directions consistent with all our interests. This isn't just about cars; it's the community, the experience, and the people. So let's get this started.

**Michael Febbo**, Editor  
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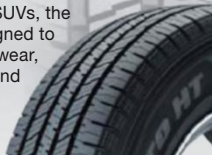


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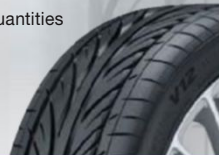
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## YOKOHAMA ADVAN SPORT A/S TIRES

It seems strange to talk about high-performance rubber having wavy sipes for wet weather grip and z-shaped grooves for traction in the snow, but these new Advan Sport A/S boots from Yokohama manage to incorporate virtually everything required from a tire. Durability and low noise go hand in hand with advanced polymers, extra-large outside shoulder blocks (for crisper cornering), and beefed-up lateral stiffness. It comes in a comprehensive range of sizes, so there should be a version for most European marques. **From \$124 per tire**

[yokohamatire.com](http://yokohamatire.com)



## PORSCHE CLASSIC MOTOR OIL

The clue's in the name, but Porsche has formulated an oil especially for its earlier engines. Well, two oils, to be precise. For the 356, 914, and 911 models up to the 2.7-liter G-Model, there's a 20W-50; 3.0-liter flat-sixes up to and including the 993 version (the last air-cooled 911) enjoy a 10W-60 lube. Modern oils are super-good at cleaning, but Porsche recognizes the hazards of an older engine suddenly losing all those deposits accumulated over the years. And as tempting as it might be, a lot of classic Porsches aren't driven every day, so the oil also has to meet those particular demands. Therefore, the company's philosophy has been: "as advanced as possible, as traditional as necessary." This oil might well work in older examples of other marques, so check with your tech. **From \$11.83 for a liter of**

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[porsche.com](http://porsche.com)



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As well as the predictable stuff like stone chips, bug goo, and bird poo, one of the things Xpel says its Ultimate self-healing film protects against is magnesium chloride—which seems a little discriminatory toward something that could be quite useful. But that salty concoction used to de-ice roads contains magnesium chloride and therefore brings the threat of rust. So this could be of particular interest to owners of older Italian cars as well as drivers living in areas that get snowy. The film is made of urethane, it's more or less invisible, and it comes with a 10-year warranty. And again, it's self-healing. **Prices start at \$700 for a 24-inch hood section and incorporate side mirrors, fenders, and front bumper**

[xpel.com](http://xpel.com)





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# GEAR

## H&R SPORT SPRINGS

The F22 BMW M235i is new, here, fast, and wonderful. Some owners might be wondering why they should change their springs for these H&R sporty specials. Because the company works with BMW Motorsport and is involved in the BMW M235i Racing Cup, that's why. Cold-wound, time-tempered, and shot-peened in Germany, these springs are lighter than stock, lower ride height by an inch, and (says H&R) improve handling without sacrificing comfort. **\$389 (PN 28891-2)**

[hrsprings.com](http://hrsprings.com)



## LEMUR MONITORS BLUE DRIVER

Not a golf club made from cobalt, the Blue Driver is actually an onboard diagnostics tool that links to a smartphone via Bluetooth and allows the user to read, decipher, and clear diagnostic codes. It gives possible causes, recommends repairs, and can tell when a vehicle is ready for smog testing. It also captures live data that can then be sent to a computer using Dropbox. Works in vehicles made in 1996 or after, and the app runs on iOS 7 or Android 4.0.

**\$99.95 (the app is free)**

[lemurmonitors.com](http://lemurmonitors.com)



## AKRAPOVIC EVOLUTION EXHAUST SYSTEM

Slovenian aftermarket artiste Akrapovic has a new set of mainly titanium pipes for the Audi S6 and S7 Sportback to give those V8 engines a touch more power and torque (the company claims 4.5 hp and 5.7 lb-ft), sharper throttle response, lighter weight, and more of a bellow. Valves are actuated electronically to suit the vehicle's driving program and the driver's inputs, but there's no need to reprogram the ECU.

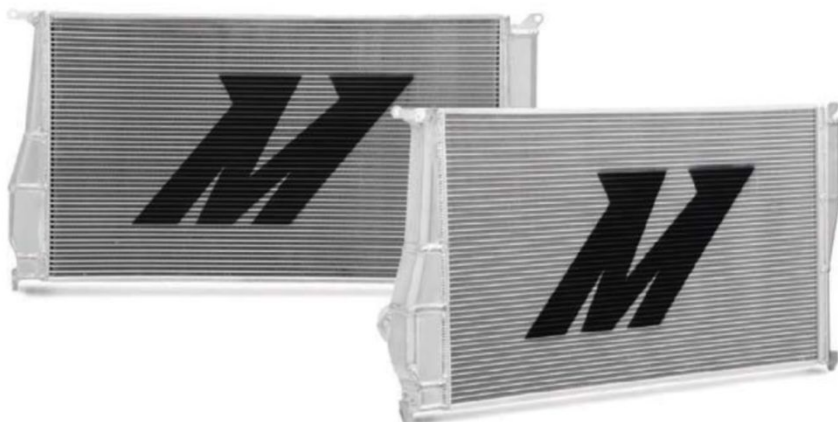
**A quartet of carbon-fiber tips finishes the whole thing off \$8,084.95**

[akrapovic.com](http://akrapovic.com)

## MISHIMOTO PERFORMANCE ALUMINUM RADIATOR

This is a direct fit for the 2006 to 2013 BMW 335i and the 2007 to 2012 BMW 135i that offers 35 percent more cooling capacity and a 25 percent increase in core thickness. It's all aluminum with TIG-welded end tanks and CNC-machined connections. It also comes with a magnetic oil drain plug with a high-quality Dowty (bonded) seal. The plug removes metal fragments circulating around the system. Comes with a lifetime warranty. **\$825**

[mishimoto.com](http://mishimoto.com)





## ARNOTT AIR SPRING

To the five guys in the United States who have an E61 BMW 5 Series wagon, first: we salute you. Second, you might be interested in this air spring for versions with the self-leveling rear suspension. It has a bladder sourced from Continental ContiTech, heavy-duty crimping rings, and quick-connect air line fitting (4 mm). Works for either side, and Arnott recommends replacing in pairs. **\$184 (PN A-2755)**

[arnottinc.com](http://arnottinc.com)



## O34 MOTORSPORT SPIDER HOSE KIT

Apparently, the "Spider" breather hose in the Audi 2.7T engine (APB code) has some issues. But if anyone owns (or is thinking of buying) a C5-type A6 2.7 or Allroad, or a B5 version of the S4, then help is at hand. A replacement setup from O34 Motorsport is fashioned from high-quality silicone. Its modular design can accommodate an oil catch can installation, and the kit includes hose clamps as well as a billet PCV check valve. **\$225**

[o34motorsport.com](http://o34motorsport.com)



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# GEAR

## NICHE ENYO ALLOY WHEEL

There are niche products and Niche products. This Enyo wheel from Niche's Sport Series is of cast monoblock construction with a reversed lip and comes as a 20-inch with widths of 9, 10, or 10.5 inches. The face is concave, but Niche says there's plenty of room within the rim's circumference for upgrading to larger brake calipers. Finish is black/dark tint. **\$258**

[nicheroadwheels.com](http://nicheroadwheels.com)



## AWE TUNING PERFORMANCE EXHAUST

Not many companies offer a guarantee that customers will like the sound of their exhaust systems, but AWE does with its new T304 stainless steel setup for the 991 Porsche 911 Carrera. Not only that, but it saves 12 pounds and is claimed to add up to 29 hp and 33 lb-ft of torque. It's a direct replacement, and AWE also guarantees no pesky "check engine" lights. There's the choice of chrome or black tips, or the owner can retain the factory tips.

**From \$1,385**

[awe-tuning.com](http://awe-tuning.com)

## VREDESTEIN ULTRAC VORTI TIRES

There aren't many tires designed in conjunction with Giugiaro, but chances are they're made by Vredestein—like this Ultrac Vorti ultra-high performance tire, with its asymmetric tread design. The company claims high levels of grip along with handling, comfort, and braking performance in dry and wet conditions, yet noise levels are kept low. Owners of BMW X5/X6 and Porsche Cayenne sport utes might be pleased to learn that the range of sizes stretches from 17 to 22 inches. And Vredestein also informs us that staggered fitments are available with extra grip on the rear tires, especially for European cars.

**From \$125 per tire**

[vredestein.com](http://vredestein.com)



## DEATSCHWERKS DV2 FUEL INJECTORS

These should, um, inject new life into an engine. They're high-flow squirters that can fit the VW/Audi 1.8T, Porsche 911 Turbo (996 model), and the Mercedes-Benz CL55 AMG, E55 AMG and SLK 32 AMG. The company says they're compatible with every kind of go juice, from high-octane race fuel to E85. Using Bosch EV14 technology, they deliver 1,200 cc per minute at pressures of 45 psi and offer "comprehensive injector characterization data" for easier tuning. **\$639 (four injectors); \$929 (six); \$1,199 (eight)**

[deatschwerks.com](http://deatschwerks.com)

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[oxygenplus.com](http://oxygenplus.com)







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\*567-mile range based on 43 mpg highway EPA estimates for a 2015 Golf TDI Clean Diesel with available DSG® automatic transmission and a 13.2-gallon fuel tank. Your mileage will vary and depends on several factors, including your driving habits and vehicle condition. \*\*With rear seats folded and adjustable cargo floor lowered. ©2014 Volkswagen of America, Inc.



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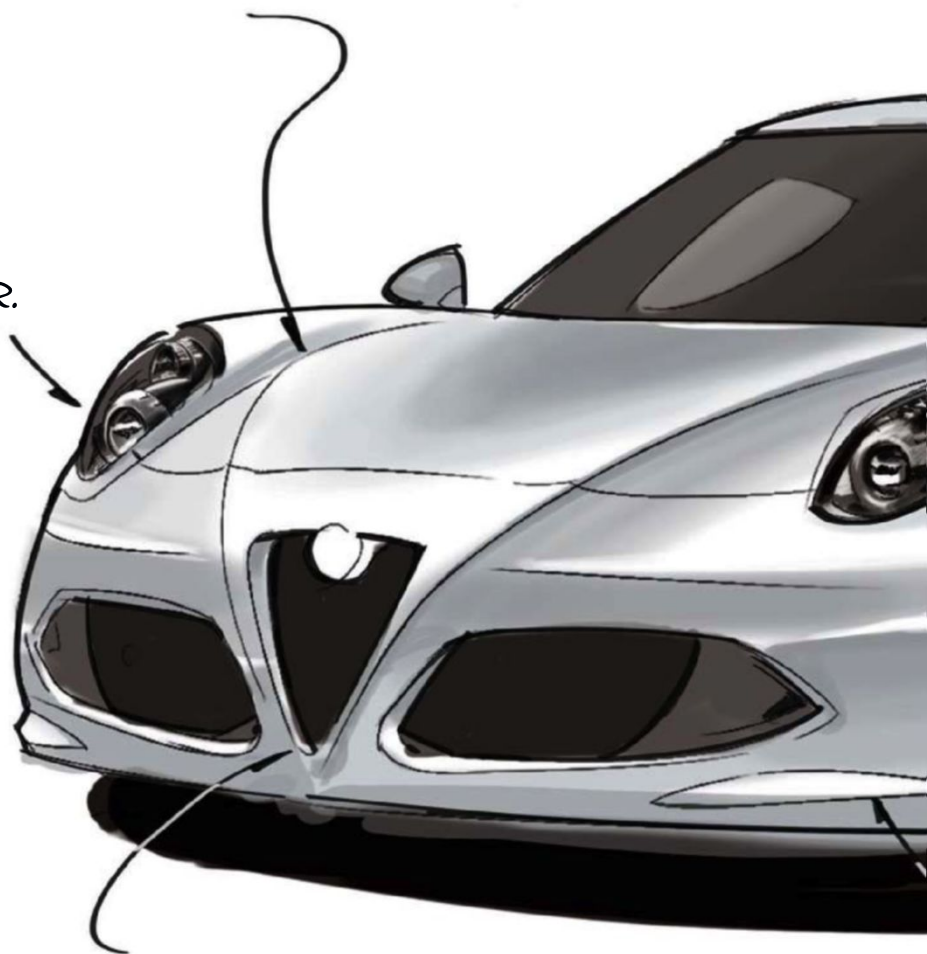


# Behind the Lines: Alfa Romeo 4C

ITALIAN MUSCLE REACHES AMERICAN SHOWROOMS

*Extreme spines that start at the base of the grille and flow over the shoulder, disappearing into the rear wing house; the top-down shape.*

*No exposed "spider" eyes like EU model. U.S. model receives dual-projectors with LED DLR.*



*Iconic Alfa Romeo upside-down triangle grille is exaggerated to allow more airflow and better "down-the-road graphics."*

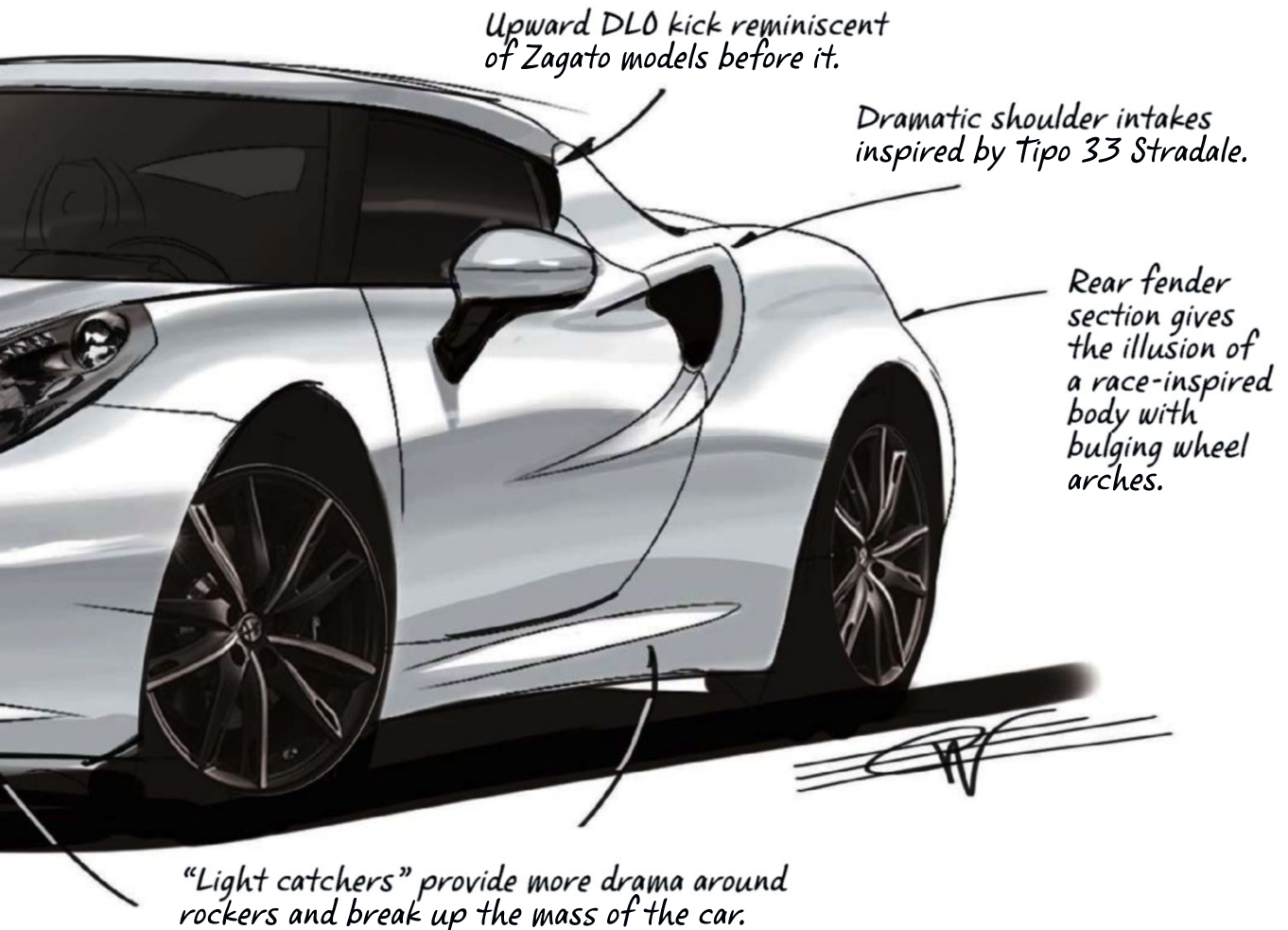


**THE ALFA ROMEO HAS TRIUMPHANTLY** returned to the United States. To kick things off, they chose a turbocharged four-cylinder carbon-fiber sports car that makes Porsche stretch their collars nervously. Even though it sounds high-tech, the 4C sticks to its Italian roots by eliminating some technology and common creature comforts.

All of those things should sound enticing to the “enthusiast” or “purist” driver we secretly bury deep down inside of our commuter driving shells. The 4C explores a myriad of heritage Alfa design cues and, perhaps, a few borrowed elements to ensure its success in the market place.

The 4C has been referred to as a “busy design.”

Glancing at the 4C, you can't help but try to make up your mind at what exactly is going on. Is it a squished 8C or Muscle Milk-swilling Lotus? Whatever side of the fence you land on, the 4C demands your attention and begs you to drive the crap out of it. Not to mention its ability to make you leave it in lower gears while cruising the boulevard to make well and damn sure people notice you. Chief exterior designer Alessandro Maccolini drew inspiration from the gorgeous Alfa Romeo Tipo 33 Stradale designed by Franco Scaglione in 1967. So it's no surprise that some of the 33 made its way onto the 4C—such as the mid-door intake scoop along the shoulder line and the rear glass engine cover that stretches into the rear decklid.





The roof butting up against the rear fender profile arch hints back to the Tipo 33 and offers a playful toy car design treatment.

Dramatic front fender lines plunge into the side intakes, offering a sensation of speed while sitting still.

Borrowed elements often find their way onto "budget" sports cars, like these Fiat 500 sideview mirrors.


Busy, busy, busy. The 4C isn't afraid to slam shapes into each other.

More LeMans inspired than anything on the car, the rear diffuser could be compared to wild designs like the PI and LaFerrari, offering drama and much needed performance-inspired design.

Three grille intakes around the rear glass allow for better airflow into the motor and provide a classic mesh element.

**"The proportions are clearly meant for a performance vehicle while still maintaining a level of cohesive balance, which is why the end package looks so familiar to a Lotus Exige."**

Sure the 4C isn't anywhere near it's low-slung mid-engined grandfather, but it does help reignite the brand's road presence, which hasn't been felt since the Giulietta roamed America more than 50 years ago. The proportions are clearly meant for a performance vehicle while still maintaining a level of cohesive balance, which is why the end package looks so familiar to a Lotus Exige. That old proverb "If it ain't broke, don't fix it" applies heavily to the 4C (and perhaps the Hennessy Venom GT).

What makes the Alfa Romeo 4C so inviting is its Alfa-hess. It's meant to be a wild re-introduction for purists and evoke enough attitude for YouTube-posting, social-frenzied teens to enjoy when they've had their fill of Veyrons and Huayras. No power steering or reasonable places to stash your mistress' belongings are present in the micro fun machine, but who cares? A wonderful Italian performance brand is back, and you can't afford not to own one. 



# THE REAL WORLD

**EVER WONDERED WHY** the big, bold numbers on the window sticker of the car you bought have yet to be achieved. Sure, "your mileage may vary" is the mantra, but *Motor Trend* went to work with Emissions Analytics to help consumers. With Sam Boyle (pictured) and Jesus Flores doing all of the hard work, RealMPG has proven to be a component of *Motor Trend* testing and evaluation that consumers can count on.

## 1. STRENGTHS & WEAKNESSES:

*Motor Trend* has been testing cars since 1949 and as Frank Markus noted in his Technologue column ([bit.ly/MTTesting](http://bit.ly/MTTesting)) of *Motor Trend*, "...a big weakness of ours: measuring fuel economy." With Emissions Analytics expertise, *Motor Trend* has invested where no other automotive media evaluation has gone.

## 2. BE COMFORTABLE.

Before and after each city/highway test, Sam Boyle conducts a calibration that zeroes out the gas analyzer with nitrogen (pictured here) The test includes multiple drive sessions as well as installing and removing the equipment for as many as 25 tests per week. To stay comfortable yet meet their



job demands, the Dickies Regular Straight Fit 5-Pocket Jean ([bit.ly/Dickies5Pocket](http://bit.ly/Dickies5Pocket)) provide casual, Built To Work comfort.

## 3. SCIENTIFIC DISCOVERY.

To determine economy, the special calibrated Chevron test fuel remains constant in each and every test. The carbon mass sampled through monitoring tailpipe emissions allows Emissions Analytics to continuously compute

instantaneous fuel consumption. Check out [bit.ly/MTMPG101](http://bit.ly/MTMPG101) for more on the test process.

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## EVENTS

**Mazda Raceway Laguna Seca** – Salinas, CA  
March 7-9

**Texas Motor Speedway** – Fort Worth, TX  
March 21-23

**Daytona International Speedway** – Daytona, FL  
May 23-25

**Auto Club Speedway** – Fontana, CA  
June 13-15

**Road America** – Elkhart Lake, WI  
June 20-22

**Gateway Motorsports Park** – Madison, IL  
July 18-20

**Portland International Raceway** – Portland, OR  
Aug 1-3

**Michigan International Speedway** – Brooklyn, MI  
Aug 22-24

**Sebring International Raceway** – Sebring, FL  
September 19-21

**Pittsburgh International RaceComplex** – Waupum, PA  
October 3-5

**Las Vegas (by invitation only)** – Las Vegas, NV  
November 8-9

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# Mercedes S63 AMG Coupe

A NEW CLASS OF SPEED

Words Ian Kuah

## HIGHLIGHTS

- › All-new model
- › Looks the part
- › 4WD and 585hp
- › Class Flagship Mercedes Coupe
- › 5.5 litre V8, bi-turbo engine
- › 664 ft lb and estimated 22.8 mpg

**A WORLD-CLASS LUXURY COUPE** like the new Mercedes S-Class Coupe is akin to a sports jacket from an haute couture tailor who works with the finest cloth. It must exude gravitas and elegance as well as a relaxed chic. The Italians have the perfect word for this: *sprezzatura*, the art of effortless superiority.

In design terms, Mercedes is the only player in this segment who has truly succeeded in bringing luxury car design into the 21<sup>st</sup> century. And this is not purely a cosmetic exercise. In terms of onboard technology, the company has also left its rivals half a generation behind.

Thus, the new Mercedes S-Class Coupe exudes a dynamism that catches your eye in a way that charges the brain with the notion that the car is moving or is about to move even when it's standing still.

The new coupe's low roofline features the traditional Mercedes pillarless side glass, and its squat, purposeful stance is emphasized by the horizontal chrome feature strip that spans the trunk lid and the tops of the rear light clusters.

The big front grille with its huge three-pointed star and single horizontal bar is the epitome of the Mercedes sport grille. But where the grille was flush with the bodywork on the coupe's less sculpted C215 predecessor, it is now a three-dimensional element, thrusting forward into the airstream as part of an organically shaped nose cone that extends downward into a curvaceous front spoiler, flanked by LED headlamps featuring 47 Swarovski crystals in each unit.

Inside, the refreshing approach to cabin design shows an appropriately forward-looking touch underpinned by unimpeachable build quality, and top-quality materials are as pleasing to the fingertips as they are to the eyes. The widescreen electronic displays that sit cheek-by-jowl in the new dashboard are identical to the S-Class limos, and that is no bad





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**“We benefitted from the complete sea change in the philosophy of the S-Class Coupe compared to the outgoing CL.”**

thing since they are the class of the industry. To maximize the feeling of light and space, a glass Panorama roof is set into an external roofline dropped by 0.3 inch for a sleeker look. The lack of a sliding sunroof led to a gain of 1.34 inches of extra headroom.

Wind noise at speed is impressively low, and the coupe is even quieter in this respect than the S-Class sedan and the now-defunct Maybach über-limousine, and 30 percent quieter than the CL. While the S500 Coupe has the same 0.27 drag coefficient as the sedan, careful wind tunnel work around the A-pillars and the pillarless side glass is responsible for its lower wind noise. Hypothetically, you can leave the

volume control for the fabulously musical Burmester audio system turned one notch lower!

If anything, the Sport mode is the one that impresses more as it manages to maintain most of the suppleness of the Comfort setting in its secondary ride, whilst delivering iron-fisted control of the car's not insubstantial bulk when pressing on. Rear-wheel-drive coupes are fitted with ABC suspension featuring Magic Body Control, while 4Matic versions have Airmatic suspension with ZF's electronic Continuous Dampener Control (CDC). The new Curve Tilt Function that leans the car into bends like a motorcycle is an extra option for ABC-equipped RWD models.

“We benefitted from the complete sea change in the philosophy of the S-Class Coupe compared to the outgoing CL,” explained AMG's product planning manager, Oliver Weich. “Where the CL was more or less a short wheelbase two-door S-Class, the physically smaller and lighter C217 S-Class Coupe was designed to be a sportier car from day one.

“It was an aim of both the Mercedes and AMG teams that the S-Class Coupe would not just promise a sporty drive with its sleek design, but actually be able to follow through in its driving dynamics as well.”

The amazing thing is how much of the S500's ride comfort is retained by the S63 AMG despite the substantial suspension uprating work. The AMG suspension bushes are between 200 and 700 percent stiffer than the ones on the S500 Coupe depending on location and application, and the front axle has different kinematics for better response and control. The suspension settings are also quite different. The first giveaway is the 1.6-degree negative camber setting for the front wheels, a significant 1.1 degree more than on the S500 Coupe. This gives



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## PROS

- › Turbo engine is a powerhouse
- › Head turning styling
- › A real four-seater coupe
- › Sets the class benchmark in technical innovation

## CONS

- › This much power could be disastrous to a clean driving record



## TECH SPEC

### 2015 S63 AMG 4MATIC

#### LAYOUT

front-engine, 4Matic AWD

#### ENGINE

5,461cc, V8 DOHC, direct-injection, twin-turbo

#### DRIVETRAIN

AMG Speedshift MCT 7-speed automatic transmission

#### BRAKES

6-piston calipers 14.6 inch f, 4-piston 14.2 inch r, ceramic rotor optional

#### SUSPENSION

F: Four-link independent, Airmatic, active damping, anti-roll bar. R: Multi-link independent, Airmatic, active damping, anti-roll bar. AMG specific settings with uprated bushes

#### WHEELS & TIRES

F: 8.5J x 19-inch alloys with 255/55ZR19 tires. R: 9.5J x 19-inch alloys with 285/40ZR19. 20-inch optional

## PERFORMANCE

#### MAX POWER

585 hp at 5,500rpm

#### MAX TORQUE

664 ft lb from 2,250-3,750 rpm

#### 0-62MPH

4.8 sec

#### TOP SPEED

155mph (electronically limited)

#### WEIGHT

4,564 lb

#### ECONOMY

16/24 mpg (est)

#### MSRP

\$220,000 (est)



the S63 AMG better turn-in response, while not being enough to adversely affect the wear rate on the inside of the tires.

The exhaust system is unique to this car and has the obligatory electronically operated flaps to provide a louder soundtrack in Sport and Manual modes. "With the latest electronic control maps for the exhaust, we have given the system more spread beyond the old open or closed option," Oliver explained. "We can now provide different flap angles depending on engine speed and torque output. In fact, we have six settings related to engine speed and another six related to torque output. So even if you are in Comfort mode, the flaps will open when you hit peak torque and peak revs," he said. "The system starts to work over 3,000 rpm and 400 Nm."

As on the S63 AMG sedan, the old concept of standard and Performance Package has been scrapped for the S-Class Coupe. Thus, the S63 AMG Coupe also comes with the full fat version of AMG's M157 direct-injection, twin-turbo V8, with 585 hp at 5,500 rpm and 664 ft-lb of torque between 2,250 and 3,750 rpm. Perfect traction enables the S63 AMG 4Matic to launch itself to 62 mph in a very rapid 3.9 seconds, compared to 4.3 seconds for the rear-wheel-drive-only version. Top speed of both is the usual electronically limited 155 mph with an 186-mph limit as a cost option.

The S63 AMG Coupe is so well damped that I was not sure initially if the small measure of extra firmness over the S500 Coupe was down to the uprated suspension or the optional 20-inch forged alloys shod with 255/40ZR20 and 285/35ZR20 Continental Sport Contact 5P rubber on my test car. And I could not tell that the car I drove was 4WD, so the new front suspension setup obviously works.

With its AMG aero kit and 20-inch forged wheels and an even richer interior with carbon-fiber inserts on the dash, doors, and console, the S63 Coupe looks the part. My test car also had the optional matte paintwork that made it look even more aggressive. The S63 AMG Coupe is a quite different animal from the S500. Aggressive and alive when prodded, it still retains a high level of refinement when you throttle back. In 4Matic guise especially, it really is a practical sports coupe for all seasons. **AC**



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# 2015 Porsche Macan

WE GET TO GRIPS WITH PORSCHE'S SMALL SUV ON U.S. ROADS

Words Greg Emmerson

**WHEN PORSCHE ANNOUNCED THE CAYENNE BACK IN 2002**, you could argue the company deserved the flak it got from enthusiasts who were upset at the apparent dilution of the brand and rather dismayed by its challenging design.

Of course, sales justified Weissach's decision and perhaps kept the 911 assembly lines open during the recession. However, you can't help but think things might have gone smoother if they started with the Macan.

Undoubtedly, time has softened opinions, but still the Macan's smaller dimensions seem better suited to the sports car company. Its lower weight also makes it a more convincing sport truck.

Obviously, the new Macan is a product of the lessons learned from the Cayenne, so it's a stronger proposition from the outset. However, I'd suggest the new Turbo model is perhaps the first truly practical sports car Porsche has ever built (please address letters of dismay to the editor, Mike Febbo, who disagrees).

You don't want to talk about the Macan's Audi Q5 genes around any Porsche personnel because they'll take a swing at your ear. Very little of it remains, although the platform is obviously shared. Porsche's designers and engineers did a thorough job of separating them.

Visually, the Macan appears far wider and lower, thanks to its 38-pound aluminum, clamshell hood that houses wide-set 911-style headlights. Then there's the wide center air intake and brake ducts pushed into the corners of the front bumper; the claw-like strakes giving the car extra menace.

From the rear, the Macan has 911 Turbo-esque hips, with the narrow glasshouse flaring out around the 918-style horizontal taillights. The profile shows a sloping roofline, reminiscent perhaps of the company's sports cars, while the trim insert on the lower door panels can be finished in black, carbon fiber, or color-matched to suit your taste.

In the right body color, with the black trim package and 21-inch 911 Turbo Design wheels, the Porsche

## HIGHLIGHTS

- » 0-60 mph in 4.4 seconds with Sport Chrono
- » Sports car handling
- » Excellent quality and comfort
- » Aggressive styling
- » Good off-road ability
- » Comfort for four people and luggage

## TECHNOLOGY

- » 400 hp 3.6L V6 biturbo engine or...
- » 340 hp 3.0L V6 biturbo engine
- » Standard PDK dual-clutch auto
- » Active AWD
- » PASM active suspension
- » Optional air suspension

## ELECTRONICS

- » Porsche Traction Management
- » Torque Vectoring option





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## PROS

- Excellent performance and handling
- Wonderful interior
- Good looks
- It's a Porsche

## CONS

- Options add up quick

## TECH SPEC 2015 PORSCHE MACAN S

**LAYOUT**  
front-engine, AWD

**ENGINE**  
3.0-liter 90-degree V6  
DOHC 24v twin-turbo,  
direct injection, VarioCam  
Plus variable valve system,  
dry sump

**DRIVETRAIN**  
seven-speed PDK dual-  
clutch transmission

**BRAKES**  
six-piston calipers, 13.8-  
inch rotors f: single-piston,  
13.0in r

**SUSPENSION**  
five-arm multi-link f,  
trapezoidal-link r

**WHEELS & TIRES**  
19x8" f, 19x9" r wheels,  
235/55 R19 f, 255/50 R18  
r tires

## PERFORMANCE

**MAX POWER**  
340 hp at 5,500-6,500  
rpm

**MAX TORQUE**  
339 lb-ft at 1,450-5,000  
rpm

**0-60 MPH**  
5.2 seconds

**TOP SPEED**  
156 mph

**WEIGHT**  
4,300 pounds

**ECONOMY**  
17/23/19 mpg (city/  
combined/highway)

**MSRP**  
\$49,900

Macan is an attractive car that will undoubtedly dominate the style-conscious crossover segment, outgunning the Evoque with more power, and being more distinctive than BMW's offerings.

The interior is typically Porsche and an interesting alternative to the aforementioned machines. The driver sits 2.75 inches lower than in the Cayenne, and you feel more integrated into the machine.

Where most manufacturers are taking the minimalist approach, the Macan cabin is still unashamedly button-heavy. The console is lined with a dizzying array of buttons that require you to take your eyes off the road for a considerable time when first searching for a particular function. Familiarity will inevitably alleviate the problem, and the styling is undoubtedly sporty in nature.

Yet Porsche has never been solely about appearance or style. Form follows function and, by definition, the Macan has to perform at the highest level. But how do you demonstrate the breadth of capabilities of a machine like this?

Fortunately, Porsche had devised a test that would let us go from city to freeway to canyon roads. We'd then climb steep, rocky hillsides and take high-speed laps of a demanding racetrack, sampling the Macan in almost every environment imaginable.

Fitted with the optional \$2,745 air suspension, the vehicle can be raised to increase ground clearance. It has a series of off-road traction and hill descent technologies that allowed it to tackle some very challenging terrain on the same tires we'd use on the track. The off-road button affected gear selection, traction control, and ride height, making it surprisingly adept in difficult terrain. Its ability to clear large ruts and straddle troughs was impressive, as was the way it found grip despite a very loose, dusty surface. We



had the active all-wheel drive and Porsche Traction Management (PTM) systems to thank for our forward momentum and we can only imagine that, with the right tires, the Macan will be a useful tool in winter.

The same air suspension, when equipped with the \$1,490 Torque Vectoring system, made the Macan unbelievable nimble on the handling course, being able to turn tightly at high speed without suffering understeer—something that wasn't true of models without this technology. But at 4,300 pounds (depending on spec), some understeer is inevitable when pushed really hard. And yet, the most remarkable memory of the experience was the Macan's agility. It really was like a taller, heavier car rather than a lowered SUV.

Our choice of engine would undoubtedly be the 400hp 3.6L V6 biturbo in the Macan Turbo. But with an MSRP starting at \$72,300, and several of the well-equipped test vehicles exceeding \$100k, the Macan S will inevitably be more popular.

Boasting a respectable 340 hp from its 3.0L V6 biturbo engine, the S starts at \$49,900, which compares well to the \$51,900 Audi Q5 3.0TFSI Prestige model.

If you're going to buy the S, we advise you not to sample the Turbo. In fact, don't go anywhere near one. It's better looking with its deeper chin spoiler, and the performance is intoxicating. In fact, the Sport Chrono package fitted to the Turbo model will propel it from 0-60 mph in 4.4 seconds. Even the S will reach 60 mph in 5 seconds with the Sport Chrono pack, making it capable of terrifying the wife, kids, and dog!

Although these cars will rarely find a racetrack, we couldn't resist a few hot laps, and were extremely impressed at the Macan's poise and stability. There were times when its weight was an encumbrance, but the optional Torque Vectoring allowed you to hold a tight line and throw the SUV into turns with merry abandon.

The cars are equipped with staggered wheels to give the handling a rear-wheel bias for mid-corner balance. And it works, but again, it's the ability of the Torque Vectoring that's worth its weight in gold if you intend to drive the Macan hard.

The S model comes with standard, non-adjustable suspension, while the Turbo is equipped with Porsche's PASM active suspension, which adapts to road conditions, creating a significantly more capable machine. Yet the optional air-ride is the ultimate solution for sports handling, being 15mm lower and seemingly better able to respond to hard cornering.

The Macan is a handsome, capable, efficient means of transport that will do extremely well in the compact SUV segment. It brings oodles of class and delivers in every respect. Inevitably, it will become the ultimate family car for school runs, but it's prowess is probably better suited to the 911 owner who likes to get away with the family, or sometimes needs extra cargo capacity for work.

Make no mistake, the Porsche Macan is a sports car with a tailgate. It will humiliate the vast majority of cars in any environment you care to name, and be more stylish, comfortable, and enjoyable.

The only thing I've found that comes close to the Macan Turbo would be the Range Rover Sport or BMW X5M, which will probably option out at a similar price once you've specified all the toys. It's also the four-door, four-seat Porsche I'd choose over the Cayenne and Panamera. **EC**



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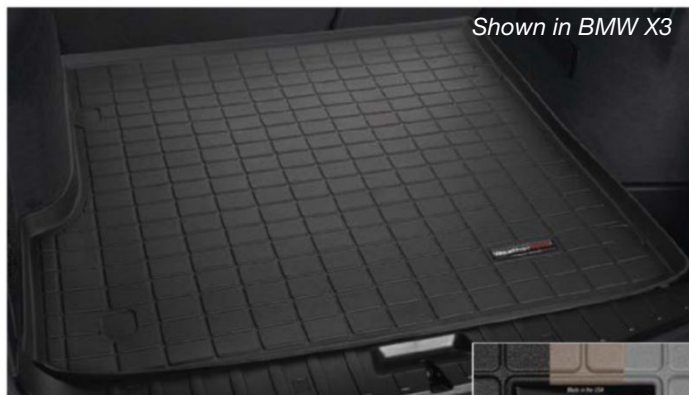
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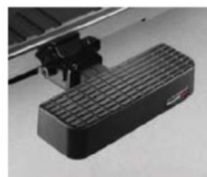
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# 2014 Rolls-Royce Wraith

THE POWER OF ELEGANCE

**WORDS** Michael Febbo  
**PHOTOS** Sean Russell & Rolls-Royce

**IT MUST BE STRANGE** to exist in a class of one; to not have contemporaries, to not have benchmarks to measure yourself against. The owner of a Rolls-Royce must be familiar with this feeling, and they must be able to console themselves by swaddling their bodies in quilts stuffed puffy with hundred dollar bills. If you read our February 2014 issue, you got a glimmer of driving Rolls-Royce's latest touring coupe, but it was just a drive. The Wraith is a high-performance fastback packing 624 hp from its 6.6-liter, twin-turbo V12. Clearly, we needed another opportunity with the car at a test track to see what all that power can do in a 5,328-pound cruiser.

If you're reading the magazine in page order, you no doubt read Ian Kuah's review of the new Mercedes S63 Coupe. The latest in space-age German technology can be yours for the very reasonable sum right around \$220,000. I say reasonable because everything is relative. The Rolls-Royce Wraith starts at \$288,600, but the car we tested had a bottom line of \$360,325 with options. Let that sink in. That's more the than the price of a Boxster S in options alone, but I digress.

Testing the performance of a Rolls-Royce is a bit of an otherworldly experience. There aren't many people in this world who get to drive a Rolls and fewer





external sound for that matter—doesn't exist. From outside, the Wraith sounds like a Spitfire ripping down the runway—it's glorious.

Coming back down from speed, the Wraith stops in a relatively short 109 feet from 60 mph. That is 2 feet shorter than the aforementioned Bentley, which not only enjoys an advantage of wider front tires but a 150-pound advantage in mass as well. Again, no drama in the endeavor, just punt the brake pedal toward the floor and the car dives on the front axle while screeching to a halt.

Our figure-8 testing is where things normally get interesting for larger, more massive cars. This Roller is no exception. Braking into the skipad sections is again fantastic, although you feel every ounce of mass wanting to continue on; the big brakes scrub speed dutifully. Turn in too quickly and the car returns gentle, speed scrubbing understeer. The same happens if you try and carry your braking too late into the turn. The Wraith prefers a more gentle, patient hand at the wheel. Fast steering inputs create a situation in which the tires, wheels, and suspension charge eagerly into the turn, while the body tries to continue straight on. The Rolls certainly does. The body movement could best be described as nautical. Although the Wraith is tuned to be more sporting than its chassis-mate Ghost, it is still far from a sports car. The air suspension is firm but compliant in most situations but isn't quite designed for snatching at lower-speed, high-g turns.

The Wraith prefers the driver to come almost completely off the brakes, let the car settle and regain composure, turn in deliberately but patiently, again, let the body settle its considerable mass on the outside tires, and then feed in the power. The Wraith will average 0.82 g around the skidpad section. A quick prod of the throttle will blast the rear tires free from the constraints of friction, creating a gluttonous, smoke-pouring drift. Driving a Rolls-Royce, even one that isn't yours, gives you a glimpse into the life of the 1%. Powering a Rolls-Royce out of a turn, swinging the back end around while feeling the tires melt beneath the mountain of torque, lets you gaze down on the 1% from the life of a fractional.

If you are more concerned with lap times than with smoke-filled gluttony, you can feed power in slowly, let the rear end hook up and power out onto the straight, while picking up the front end like an offshore racer. The Wraith will ultimately lap our

## TECH SPEC 2014 ROLLS-ROYCE WRAITH

**LAYOUT**  
front-engine, RWD

**ENGINE**  
6.6-liter V12 48v twin-turbo, direct injection  
Max power 624 bhp at 5,600 rpm  
Max torque 590 lb-ft at 1,500-5,500 rpm

**DRIVETRAIN**  
eight-speed automatic ZF transmission with Satellite Aided Transmission system

**BRAKES**  
four-piston calipers, 16.1" rotors f, single-piston, 15.8" r

**SUSPENSION**  
double-wishbone f, multi-link r, air springs, electronic variable damping, antiroll stabilization

**WHEELS & TIRES**  
20x8.5" f, 20x9.5" r wheels, 255/45 R20 f, 285/40 R20 r Goodyear EfficientGrip RFT tires

**EXTERIOR**  
steel bodywork, alloy hood, composite trunk lid, coach doors

**INTERIOR**  
Starlight Headliner, natural grain leather, Canadel Paneling, wool carpets

### PERFORMANCE

**0-60 MPH**  
4.1 sec

**QUARTER-MILE**  
12.5 @ 114.0 mph

**60-0 MPH**  
109 feet

**TOP SPEED**  
155 mph (limited)

**FIGURE-8**  
26.6 sec @ 0.72 (avg)

**LATERAL ACCELERATION**  
0.82 g (avg)

**EPA ECONOMY**  
11/24/17mpg (city/highway/combined)

**MSRP**  
\$288,600

**AS TESTED**  
\$360,325

still who are fortunate enough to drive them at their limits. I do this job for science.

Acceleration runs are obviously fast, yet strangely effortless. Launching the car can be difficult with 590 lb-ft of torque being delivered through just the rear tires. The engineers in Goodwood eschewed the all-wheel-drive trend and stuck with the more traditional rear-wheel drive. Careful throttle modulation and a bit of practice allows for a 0-60-mph sprint in just 4.1 seconds. In comparison, a Bentley Continental GT Speed I tested did the same in 3.8 seconds, but with the added benefit of powering all four corners. If you keep your Berluti boot planted in the Wraith's thick woolen carpet, the quarter-mile eclipses in a mere 12.5 seconds with a trap speed of 114 mph. The ZF eight-speed automatic is smooth and efficient. It never feels as though power is oozing away like some autos, but it certainly never bangs a shift, either. From inside the car, the engine noise—and all





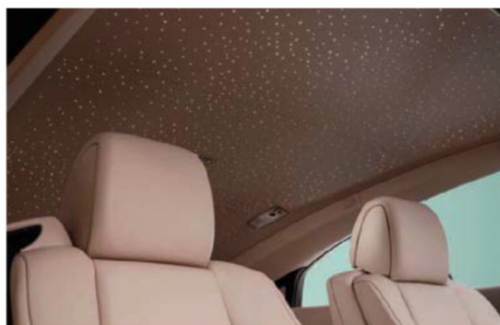


figure-8 in 26.6 seconds. The Continental GT does the same lap 0.9 seconds quicker, again the all-wheel drive is a big advantage exiting turns. The Bentley won't ever present you with the option of drifting, however.

At the end of the day, we can try and compare the Wraith to other vehicles, or collections of other vehicles if that makes more sense. Ultimately, however, it stands alone. I have laid out the performance numbers to bare, but hopefully I have also given some insight into the feeling of the Wraith. From the inch-thick carpeting, to the immense slabs of wood that make up the door panels and then drifting up to the fiber-optic-equipped starry night headliner, nothing gives you the elegant experience of this Rolls-Royce. While Cadillac, Lexus, and the rest of the luxury pretenders throw stitching on every edge and corner of their interiors, Rolls has moved past that and is now leaving the busy, overworked look for simplicity and the beauty of uninterrupted shapes.

It seems almost counterintuitive to say about a \$360,000 high-tech vehicle, but the pleasure comes from the simple act of driving it. It isn't simply the exclusivity endowed by the price, but the rarity of such a well-engineered vehicle that achieves world-class luxury with elegant athleticism. **EC**



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# METAL MARVEL

HOW A REAL-LIFE AUDI R8 OWNER MADE HIS OWN FLYING ARMOR

WORDS COLIN RYAN PHOTOS ROBB SUTTON

## WHAT WOULD TONY STARK DO?

Looks like we have the answer here: Put all that engineering vision and expertise into an Audi R8 instead of making a modern-day suit of armor to become Iron Man—and the result would probably look like Nathan Cicio's passion project.

Passion is the right word here, because Cicio says, "I've built a lot of cars, but this one has my heart. I can't even explain the emotional connection and excitement." Some of that connection no doubt comes from the fact that 70 percent of this build was performed by Cicio's own hands. And the reason why he's built a lot of cars is because he owns and runs TopSpeed Motorsports, a performance shop based in Alpharetta, Georgia.

Many of those builds have involved versions of the Nissan GT-R and Porsche 911. TSM cars have won the One Lap of America event for four consecutive years. But the R8 has always "spoken" to Cicio. He thinks it's "one of the best supercars on the market today. The R8 has a racing heritage... Le Mans, cup cars in the United States and internationally. The first time I drove one, it just fit. I absolutely loved it and still do."

Inspired by the R8 Ultra racing machine, Cicio made a decision: "I wanted to build a car that looked so crazy-radical, most people would not believe it was street legal. But if you were to hop in and drive it down the highway, you would feel it was nicer and more luxurious than stock." The idea was also to use fewer off-the-shelf parts than usual.

He wanted to start with a V10/six-speed manual model in red, which turned out to be a mission of its own. "From all the documentation I could find, there were only 20 or so ever shipped to the United States in that configuration," Cicio says. "So it was going to take some digging." In the fall of 2013, the right candidate turned up at a small Texas dealership. Cicio pounced. He only had the car for a month before breaking out the wrenches. "The goal was to leave absolutely no stone unturned. We wanted to address everything."









The first thing was the body, which is 5.5 inches wider than standard. Right away, this became a major challenge. Every carbon-fiber part, except for the rear wing, is a hand-built one-off. Although many of this car's custom components were designed and built in-house, Cicio had some outside help along the way. In this case, it was from Bryson Richards of Classic Livery in nearby Atlanta.

"The body was a work of art, to be honest. Bryson is more of an artist and visionary than a body man," he says. Cicio, Bryson, and good friend Leh Keen (racing driver, more on him later) thrashed out the concept. Then came four months of multiple revisions on the hood, front lip, canards, side skirts, rear fenders, and rear bumper. Cicio describes the process as "interesting." He uses that word quite a bit, usually in places where most of us would say "problematic" or something less printable.

"I cannot tell you how many times Leh and I would say to Bryson: 'That's not 100 percent what we had in our heads. Cut it off and start again.' Bryson, being the perfectionist he is, continued to push through without one bit of complaint to deliver a car that was not only perfect in his mind but also exactly what Leh and I wanted. The design had to follow performance, the performance I knew I had to have."

Which was when TSM went into overdrive with a twin-turbo setup, keeping things modular to test various options. The trusty Garrett 35R eventually got the nod, along with Tial wastegates and blow-off valves, plus a special cooling system. "There were some tricks to this part of the build. We decided on an air-to-water intercooler that not only increased efficiency but combined the water tank and the intercoolers in the same unit. This design of pushing water up through the intercoolers and letting it drain back through a completely integrated tank before getting pushed through the heat exchanger was not only innovative but eventually proved to work well on the track."







Measured at the wheels, Cicio claims 750 hp and 600 lb-ft of torque, the latter with a flat graph from 3,000 to 8,200 rpm and still making more than 500 lb-ft in those upper reaches. In someone else's hands, this could have been the opportunity to turn up the boost and go for even bigger, brag-worthy numbers. Cicio settled on just 6 psi of boost to make sure the car didn't run into a heap of heat-related issues.

The only transmission modification is a carbon/Kevlar multi-disc clutch made (naturally) by TSM.

Another happy outcome of low boost is that the car doesn't have any split-personality induction shenanigans. "The turbo hit is almost non-existent," Cicio says. "It feels like a huge-displacement NA engine that never stops pulling all the way to redline. The car drives like stock as far as throttle response, tip in, linear WOT pulls, and all. TSM tuned the car using only the factory ECU with no piggyback, so the throttle, fuel, and timing controls are extremely fluid and work seamlessly."

This was important, because the R8 had a job to do. "Everything we build, we race," Cicio says. "This car was never going to be a garage queen or a show car." So the next step was to get the aerodynamics completed.

"For the wing, I called the people at GoodAero (of Columbus, Ohio), who have a great design built by Crawford Composites. I've used their foil in the past and it has proven itself to be a high-downforce piece with a low drag coefficient." Outwardly, the car was done. "The final product combines absolutely stunning lines with the functionality of air flow, downforce, and the ability to fit a ton of tire for maximum grip."

Those tires are either Michelin Pilot Super Sport for the street or Toyo Proxes R888 on the track, fitted to 19-inch HRE alloys. Behind the wheels is an upgraded Brembo braking system, and the springy bits have been changed to JRZ coilovers. In stock form, the R8 is one of the sweetest-handling sports cars out there, so messing around with it offers plenty of scope to screw up the whole thing. Not when Lehman Keen is on the case.

Keen, a great friend of Cicio's, was another principle source of help. Lehman "Leh" Keen has won at the 12 Hours of Sebring (in a Porsche), taken an overall second place at the 24 Hours of Nürburgring, and a second in the GT2 class at Le Mans, so he knows how to attack an apex.

"Leh being a professional racer and me being a track enthusiast, we were dead set on the fact that this was going to perform on a circuit like it was a factory racer on street tires." Cicio says the handling is "still progressive and balanced. We did use the aero and tire size (295 up front) to dial out a little of the understeer the factory car got from the small 235 front tires." As well as the track expanding to fit the new wider body, ride height is lower by around 1.5 inches overall.

If all this sounds like an exercise in discomfort, think again. TSM doesn't specialize in





## TECH SPEC

### 2011 AUDI R8

**Nathan Cicio, TopSpeed Motorsports**  
Alpharetta, GA

#### ENGINE

5.2-liter V10, Garrett 35R turbochargers, Tial wastegates and blow-off valves, TSM air-water cooling system and stainless steel exhaust

#### DRIVETRAIN

six-speed manual, TSM carbon/Kevlar clutch, AWD

#### BRAKES

Brembo six-piston calipers, 15.4-inch rotors (f); four-piston calipers, 14.0-inch rotors (r); Race Technology pads, TSM braided lines, Motul 660 fluid

#### SUSPENSION

JRZ coilovers

#### WHEELS & TIRES

19x10 HRE forged alloy wheels, 295/35 tires (f); 19x13 HRE forged alloy wheels, 335/30 tires (r)

#### EXTERIOR

TSM/Classic Livery carbon-fiber hood, decklid, widebody kit; GoodAero rear wing

#### INTERIOR

Recaro Sportster CS seats, custom leather/Alcantara/dry carbon trim

#### THANKS

The staff at TopSpeed Motorsports, Lehman Keen, Bryson Richards, JPM Coachworks, GoodAero







interiors, so Cicio outsourced those duties to JPM Coachworks in Atlanta, Georgia. "A lot of people said I was nuts for wanting to put a fully custom, luxury interior in a time attack track car. But I knew what I wanted. 'No stone unturned' was the goal, and the interior was a stone. My instruction to JPM was: 'I do not want to see one stock plastic, aluminum, or leather piece put back in this car. I want every single panel either redone in Nappa leather, covered in Alcantara, or custom-made in carbon fiber.' From the dash to the firewall, the headliner to the carpet, absolutely every piece of the inside was pulled out."

In came Recaro Sportster CS seats with custom coverings. The steering wheel, center console, and dash are now wrapped in Alcantara with dry carbon accents where there used to be silver trim. The door panels are a combination of leather and Alcantara with red stitching, while the headliner and rear storage shelf sport diamond-stitched leather to match the upper portion of the seatbacks. "I also had them fit extra sound deadening," Cicio says.

Nice recipe so far and definitely something a tech-crazy mogul like Tony Stark would go for. Time to find out if there was any proof in that pudding. Cicio puts the sprint from zero to 60 mph at 2.9 seconds and top speed above 200 mph. It sounds feasible. "Both Leh and I were in shock the first time we drove it. Rolling down the highway at 80 mph with the windows up, the car is silent. With the extra sound deadening, the turbos to muffle the exhaust and then the exhaust design itself (another TSM component, by the way; stainless steel, TIG-welded, back-purged, Audi factory cats), there is no drone at all. However, roll down the window and drop it from Sixth to Third and the turbos spool in like a jet, the V10 screaming behind them."

And the hours working on those one-off body parts and wind-tunnel-testing them appear to be well spent. "The TSM TT WideBody R8 is without a doubt one of the most exhilarating cars I've ever had on track. With all the added downforce, you have to push the car really, really, really hard to get to the edge of what it will do. The faster you go, the better the car grips, giving the driver confidence in high-speed sections of the track. You can even push the car on street tires much further than one would think.

"The power delivery is also spot-on, since the turbos come up so linear. After a tough 45-minute session of track work, the intake air temperatures, as well as oil and coolant temps, stay in check throughout."

"With the gated shifter, you get the exotic feel of metal clanking on metal as you row through the gears, which is simply awesome. Yet it still has creature comforts like a full Harman Kardon audio system, satellite radio, air conditioning, and rearview camera. We even kept the parking sensors. The overall experience, people's reactions, the performance, sounds, and comfort are just incredible." ■





# ENDURANCE TRAINING

A WELL-HONED ASTON VANTAGE FOR LESS THAN \$100,000 AND A LINK WITH THE NÜRBURGRING? YES, PLEASE...

WORDS SHANE O'DONOGHUE PHOTOS MAX EAREY

## CAR NUTS WITH \$100,000 BURNING A HOLE IN THEIR BANK ACCOUNTS

have a lot to think about; they're spoiled for choice. That range of options was considerably bolstered recently by the arrival of the sublime Jaguar F-Type R Coupé. Aston Martin, previously insulated from competition with Jaguar by their Ford parents, suddenly finds itself with a rather tasty rival, at a tantalizing price point. A replacement for the Vantage lineup is on the way—and likely to be AMG-powered—but it's still some time off, so Aston's immediate plan is to offer a version of the V8 Vantage that

includes all the best bits of the car in a unique-looking and racing-inspired package, all for under the magic \$100,000 mark.

In the U.S., it's called the V8 Vantage GT, though it's closely related to the Euro-spec model, designated N430. That's "N" for Nürburgring and 430hp maximum power. While the GT package is ostensibly a styling and equipment update, with a moderate suite of mechanical changes, the association with the legendary race circuit in Germany is a lot more than just a marketing man's idea. This is reinforced as we arrive into the Aston Martin

Nürburgring Test Centre to pick up our test cars, just a mile or so from the infamous track (on which the 24-hour race will begin in just eight hours), and home to many of Aston's engineers. Now, most European automakers use the Nordschleife ("North Loop" in English—the old circuit at the Nürburgring is also referred to as the Green Hell) to develop their road cars to some degree, but Aston Martin has carved out a cozier relationship than most with the place over the past few years, thanks mainly to its involvement with the annual 24-hour race.









And the duration of the race is about all this event has in common with the Le Mans endurance classic, held the weekend before. Wander around the car parks at Le Mans and you'll find rare hyper-cars and classic icons aplenty; big contingents of foreign race fans, and clean and tidy RVs. Do the same at the Ring and it's a little different. For starters, because the track covers such a vast area of forest, there's a lot less crowding in any one place, and it's clear that most of the spectators are German. Not only that, but they appear to have camped out nearly a week in advance, eschewing the comforts of a modern RV for ramshackle constructions. The sole purpose of these impressive homemade buildings is to get a better view of the track, while staying dry. And drinking beer. Lots of beer. We were warned by Nürburgring veterans to be careful in the woods late at night, as the locals go "a bit feral," and though we saw no trouble, the loud music, haphazard dancing, and large fire creations we witnessed made the event feel more like an illegal house party than an international auto race.

But the racing is deadly serious. Not only do drivers and machines have to endure a full 24 hours of lapping the treacherous near-16-mile course; few other races in the world feature such a diverse range of machinery with such wild speed differentials. There are more than 200 cars at the start, and we witnessed everything from old Volkswagen Golfs and BMW

3 Series to the top-lining GT3 racers, such as the Audi R8, BMW Z4, Mercedes-Benz SLS AMG, Porsche 911, and a single Aston Martin V12 Vantage.

Getting to the finish line is not just about reliability, but also staying out of trouble. The GT3 cars are constantly dealing with slower traffic, and there's as much a variance in driver skill as there is in the machinery on track. The result is plenty of collisions, some big, some less so. Few cars finish the race without some scar to show for it. Into this cauldron, Aston Martin likes to sprinkle a few of its models, as it has done for several years. This year, its single GT3 entry—the distinctively Bilstein liveried blue-and-yellow V12 Vantage—managed a creditable Fifth place overall, though all of its racers finished, and that includes a close-to-production V12 Vantage and two V8 Vantage N430s.

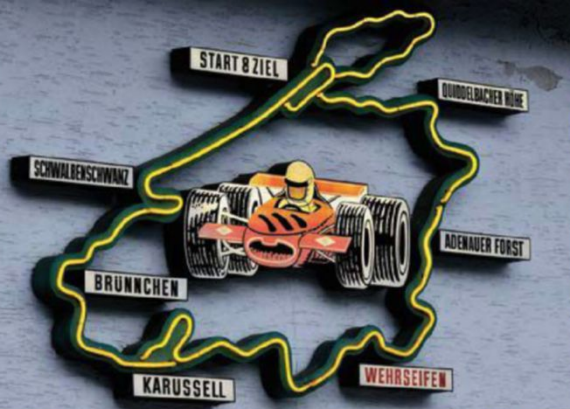
The special-edition road car with its two-tone color scheme doesn't seem so incongruous now, does it? We prefer the look of the Euro-spec car that does without the less than attractive white "GT" stripes, though U.S. buyers can choose to do without them and indeed can order a car without contrasting

colors, too. Still, there are five choices of finish where the contrasting hue is applied to the nose, door mirror casings, rear diffuser, and the roof rails that lead into the windscreen pillars. The iconic green and yellow option isn't for the shy, retiring type, but it feels special. Complementing the paintwork is a dark theme for other detailing, plus simply stunning graphite painted forged alloy wheels. Those are lightweight items, too, removing overall mass and unsprung weight for the suspension to deal with.

Aston fits the V8 Vantage S's sports suspension to the GT, too, with refreshingly simple fixed-rate damping. And it's very well judged, endowing the Vantage with incredible individual wheel control, even over some seriously pockmarked German blacktop. The tires rarely lose contact with the road, and when they do, it's only for a split second and it doesn't ruffle the Aston's feathers in the least. This unrelenting composure is one of the defining characteristics of this model's chassis. Yet despite how easy it is to drive this car quickly, it makes the driver feel part of the action. The quick-rack steering is assisted by a hydraulic pump rather than the latest









#### + PROS

- › Fabulous noise
- › Truly engaging chassis
- › Feel of specialness
- › Long throttle travel to mete out the power

#### - CONS

- › Gear lever position not great in manual car
- › Interior switchgear not intuitive to use
- › More powerful Jaguar F-Type R Coupé is the same price

#### HIGHLIGHTS

- › Sports suspension
- › Lightweight alloy wheels
- › Unique decals and appearance
- › Sub-\$100,000 price point
- › Engaging chassis dynamics
- › Sublime metallic V8 engine noise

#### TECHNOLOGY

- › Naturally aspirated, 4.7-liter V8 petrol engine with 430 hp and 361 lb-ft of torque
- › Limited-slip differential on rear axle
- › Option of seven-speed Sportshift II automated manual transmission with short final drive

#### ELECTRONICS

- › Three-mode traction and stability control system
- › Sport button for throttle response and exhaust bypass valve
- › Dynamic stability control, anti-lock brakes, Hydraulic Brake Assist, Electronic Brakeforce Distribution, Emergency Brake Assist, Hill Start Assist



generation of (feedback-sapping) electric motor systems, which is a big help, and there's clear telegraphing to the driver as to how much grip is left underneath.

Traction is immense in the dry and it takes a lot of provocation to overstep the limits. Try to push through a corner too early and the nose will wash wide slowly, though avoid that with a more modest entry speed and the reward is a more neutral cornering stance through the middle of the bend and delicious oversteer as you accelerate away. So good is traction that there's little to fear in turning the control system off fully in the dry, though Aston sensibly provides a midway setting that allows some slip before intervening. Through all this, the big brakes impress with perfect pedal feel and unflappable stopping power. Impressively, even if you have to dab the brakes halfway around a fast bend for some reason, the Aston just tucks in with no nervousness or hint at instability.

Performance is fast by any normal standards, though hardly class-leading when you take the 550hp F-Type R into consideration. Nonetheless, in isolation, the Aston's naturally aspirated engine is a joy to extend, making all the right noises, especially if you have the Sport mode turned on all the time—as we'd recommend. Keen drivers will like that Aston fits the GT with a six-speed manual tranny as standard, and we'd stick with it despite the awkward positioning of the lever. The automated manual alternative isn't quite in keeping with the rest of the GT ethos in this car—and of course would push the price over that \$100,000 barrier... **C**

#### TECH SPEC

### 2014 ASTON MARTIN V8 VANTAGE GT

#### LAYOUT

Front-engine, rear-wheel drive

#### ENGINE

Naturally aspirated, aluminum head and block 4,735cc

#### DRIVETRAIN

Six-speed manual transmission with single plate clutch and limited slip differential (seven-speed Sportshift automated manual is optional with paddle shifts)

#### BRAKES

Front: 6-piston brake calipers; steel discs (15 in.)

Rear: 4-piston brake calipers; steel discs (13 in.)

Front axle Double wishbone, steel coil springs over aluminum

shock absorbers, tubular steel anti-roll bar with drop links

Rear axle Double wishbone, steel coil springs over aluminum

shock absorbers, tubular steel anti-roll bar with drop links,

aluminum toe control arm

#### WHEELS & TIRES

Front Bridgestone Potenza 245/40 ZR19 (8.5J x 19 rim)

Rear Bridgestone Potenza 285/35 ZR19 (10J x 19 rim)

#### PERFORMANCE

##### MAX POWER

430 hp at 7,300 rpm

##### MAX TORQUE

361 lb-ft at 5,000 rpm 0-62 mph 4.5 seconds

##### TOP SPEED

190 mph

##### WEIGHT

3,549 lb. (curb weight)

##### ECONOMY

15 mpg (U.S. mpg combined figure)

##### MSRP

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# *Noble Intentions*

PRESERVING THE ESSENCE OF A RARE EXOTIC

WORDS PETER WU PHOTOS PATRICK LAUDER









## AARON YEE HAD TAKEN HIS '05

**LOTUS ELISE** about as far as he could, with a list of mods that included a supercharger, carbon seats, more powerful brakes, and a set of Nitron coilovers. It wasn't just about being done or bored. How can you get tired of 260 hp propelling 2,000 pounds? He hadn't. He just saw a natural transition to the Noble M400, which he describes as a "Lotus on steroids."

Lotus founder, Colin Chapman, wasn't the first to realize that cars perform better with less mass. He just immortalized with the famous quote, "Add lightness to go faster." The ethos of striving toward favorable power-to-weight ratios is a British tradition Chapman could easily take credit for when you look at all the manufacturers who came during and after his time and adhered to the mantra. Companies such as TVR, Marcos, Ginetta, Ariel, Radical, and Caparo certainly fit the mold.

To that list, you can also add Noble, which was founded in 1999 by designer and engineer Lee Noble. His first car, the M10, was similar to Toyota's MR Spyder and didn't sell very well. But his second car, the M12, made others take notice. It's mid-engined like the M10 but bigger and powered by a twin-turbo 2.5-liter Ford V6 (and later a 3.0-liter version). It wore some swoopy, yet purposeful, fiberglass bodywork that was neither groundbreaking nor behind the times. The company continued to improve upon the car and eventually created a track version of the M12 renamed the M400.

Yee said his M400 is one of about 220 Nobles



that have been imported to the U.S., 100 of those being M400s. Nobles are imported as kit cars exclusively by 1G Racing, which started in Ohio and is now located in Florida. The cars are imported without engines or transmissions and the buyer needs to acquire the drivetrain from a separate supplier in order to qualify as a kit car in the eyes of the feds. 1G eventually bought the rights to the M12/M400 and now produces a newer version of the car called Rossion.

Yee has owned his for nearly two years and

in that time, he's expanded its envelope with thoughtful, functional upgrades. He said the mods aren't aimed at creating the most-powerful M400 around, as that would probably end up hurting its driveability. Instead, he chose proven bolt-on parts. Yee has had almost all of the tuning done by TurboHoses of Livermore, California, which has established itself as one of the go-to shops for Noble service and performance. His car uses TurboHoses' larger intercooler with custom piping, and they also installed larger injectors,







an upgraded fuel pump, the GReddy blow-off valve, and a custom 3-inch exhaust system.

Yee said a stock M400 dynos at 350 whp, and his car measured 400 whp before the exhaust and intercooler were installed. With some fine-tuning of the ECU, he'd expect to see 425-430 whp. So plug in the 2,337-pound weight Noble claimed for the car and you're looking at less than 5 pounds for every horsepower at the crank. That explains why a stock M400 can clock 0-60 mph in the low-3-second range and scoot down the quarter-mile in around 12

seconds, give or take a few tenths.

In addition to the straight-line performance, Nobles have also been lauded for their handling. Yee said his M400 feels just as precise and flickable as the lighter Elise, but because it weighs about 300 pounds more, it also feels more stable. He added 20 mm of width to the contact patches on the front corners by going to 245/40-18 Nitto NT-01s and 10 mm to the rear with 275/35-18. Handling was further optimized with a corner balance and alignment of the already capable Noble chassis.

#### TECH SPEC

### 2005 NOBLE M400

#### LAYOUT

Mid-engine, RWD, 2-pass, 2-door coupe

#### WEIGHT

2,337 lb

#### ENGINE

3.0-liter, 430-whp (est), twin-turbo DOHC 24V V6, Garrett T28 turbos, TurboHoses custom intercooler, upgraded injectors and fuel pump, GReddy blow-off valve, 3-inch exhaust

#### TRANSMISSION

six-speed manual, Quaife limited-slip differential

#### BRAKES

four-piston calipers, 13.0-inch rotors (f/r)

#### SUSPENSION

Upper and lower A-arm with Dynamic Racing adjustable coilovers with H&R springs, adjustable antiroll bars (f/r)

#### WHEELS & TIRES

Noble three-piece 18x8.5-inch (f) 18x10-inch (r) wheels, Nitto NT-01 245/40-18 (f) 275/35-18 (r) tires

#### EXTERIOR

3M Matte Blue Metallic wrap








As much as he likes the car's blistering acceleration and scalpel-sharp handling, Yee also likes being the only Noble at the many car shows he attends in the Bay Area, which oftentimes ends with him taking home the trophy for best exotic. With that exclusivity also comes the problem of getting parts. Noble stopped making replacement parts for

the M400, and Yee heard that all of the old stock has since sold out. If anything from a body panel to a window regulator breaks, the owner's stuck with having the part fabricated. That's why he decided to preserve it instead of changing too much.

That hasn't stopped him from putting miles on it. Yee said he usually drives it five times a

week, sometimes to work or for quick errands, but mostly in the twisties around the Bay Area, where's he's not afraid to cane it without mercy. It's raw and pure and free of computer-controlled minders that only detract from the experience. Maybe instead of the 3M matte blue, Yee should've wrapped it in a shade of green, for envy. 





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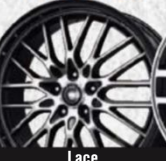
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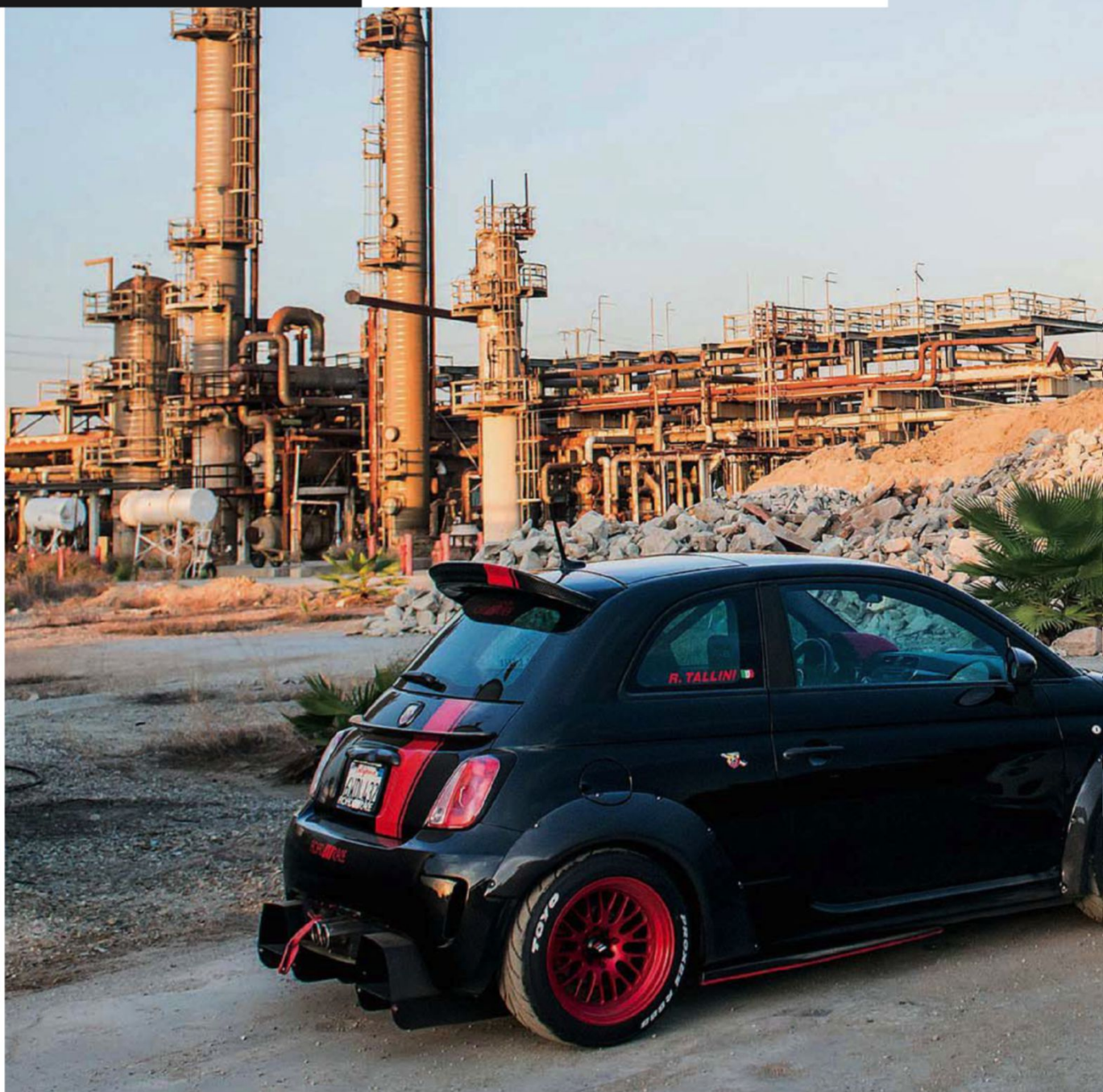
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# CUTE COUPLE





# ROAD RACE MOTORSPORTS TAKES ABARTH

WORDS COLIN RYAN PHOTOS ADRIAN JON

## SANTA FE SPRINGS IN SOUTHERN

California sounds romantic. In reality, the place is an industrial area southeast of Los Angeles. But that doesn't mean something romantic isn't going on.

Tuning house Road Race Motorsports has begun an affair that melds two cultures, a kind of Romeo and Juliet story—only with an upbeat ending. On one side is the Fiat 500, the adorable little Italian subcompact that seems tailor-made for darting down tight Roman roads. On the other is the American passion for customization, for making something capable of victory on a track.

The result is distinctly Italian-American, which is hardly surprising, because the godfather of Road Race Motorsports is also Italian-American: Rob Tallini. “We’re the first company in North America to develop and

make performance parts for the 500,” says Tallini, a man who has spent 30 years racing many machines on many surfaces against other cars and the clock. Parked just outside is a fully prepped Mitsubishi Evo that looks ready to tackle the Monte Carlo Rally at a moment's notice. Inside the shop is a 911 GT3. RRM has worked with several manufacturers to create special projects.

The car we're most interested in right now is the Fiat 500 Abarth. Once at the RRM shop, it's a somewhat open-ended list of modifications, but Tallini is collating and refining a package he calls M1. It definitely has to be wide-bodied and reach an acceptable level of power and chassis tuning. The M stands for macchina, which is Italian for machine. In these pictures are two of the first four M1 builds, the black car receiving a touch more attention than the white one. These parts are all designed to fit the American-spec 500, since the Euro version has slightly different dimensions.

Take a 500 Abarth into Tallini and the first question he'll ask is, “What do you want to do with it?” When that question is answered, it will dictate how the car is fettled. But Tallini has his own template: a setup suitable for tarmac rallying. He says it's “the one that will

give you the most satisfaction and make you most likely to drive it.”

Once the commitment is made, there's no going back. Sections of the fenders are cut away to make room for the wider wheel/tire combination, topped off by carbon-fiber flares. RRM receives “raw” alloy wheels and finishes them according to the customer's wishes. The anodized red versions photograph well, but in the shop is a black, chromed set that looks super-cool in real life.

On virtually every RRM vehicle are Toyo Proxes tires. Tallini has used them extensively in his racing career and finds them consistent in their ability to provide grip and resist wear.

There's actually a lot of carbon fiber on an M1, from side mirror caps to the aerodynamic kit to the vented hood. They all come from the shop's own molds and are the shop's own designs. Tallini feels that carbon fiber is one of his operation's strong suits. Note how the side skirts expand after the doors, making them less likely to be trodden on, and for easier entry and exit.

RRM doesn't bother trying to remove the original Abarth rear wing; it's too destructive. Instead, a specially designed carbon-fiber piece slips onto it.







Move down to the carbon-fiber rear diffuser and there's a Formula One–style third brake light set into it, as well as the tailpipes of RRM's own stainless steel exhaust system.

Behind the front lip is a duct that feeds air to the front brakes—enough to keep them cool and able to fight fade during track day torturing. The uprated braking system has been developed in conjunction with anchor aficionados StopTech. Pad compound is Tallini's recipe.

Just by looking at this brake ducting, we appreciate the twin goals of lightness and coolness that pervade the build. Lightness obviously helps with agility and balance. A tiny Antigravity lithium battery, only a fraction of the weight of regular lead/acid batteries, is one small step toward shedding the pounds.

Saving weight throughout means being able to pinpoint where the heavy stuff can go, like subframe braces and the hexagonal rear antiroll bar. The merits or otherwise of a six-sided antiroll bar can be argued this way and that, but Tallini says a customer of his saw lap times improve substantially once an RRM “Big Red” antiroll bar had been fitted. “He said it transformed the car,” Tallini says. “That kind of response charges our batteries.”

Keeping things cool helps the turbocharged engine make optimum power. RRM retains the stock engine internals and blower but uses a new in-house ECU, plus military-grade heatshields for the downpipe and turbo. The NACA duct and vent in the carbon-fiber hood contribute to keeping intake temperatures just 3 to 5 degrees higher than exterior temperatures. For good measure, RRM also offers the option of water/methanol cooling.

It's always a positive sign when even the invisible custom-made stuff looks good. RRM's lightweight pulley is a wonderful piece of machined aluminum. Tallini could have gone for a smaller pulley, but found that a fullsize unit works best.





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The factory turbocharger has been boosted up to 22 psi, considered by RRM to be its “sweet spot,” having gone as high as 30 psi in testing, but deciding to back it off in the interests of reliability and civility. “There are no trade-offs at this point,” Tallini says. “No need for bigger injectors that drink more fuel. And we’ve not given up any driveability.”

Tallini claims engine output is 250 hp at 5,500 rpm and 260 lb-ft of torque at 3,800 rpm, measured at the crank. The flatness of the torque curve between 3,000 and 5,000 rpm gives some idea of how sweetly driveable this engine is.

No transmission mods on these particular cars, but RRM does offer a limited-slip differential and its own carbon/Kevlar clutch components.

In any car worth the trouble, there’s always a bit of German engineering. Here, it’s the Bilstein suspension, tuned in conjunction with RRM to provide compliance as well as grip on the track or the street. Ride height at the front is lowered by 1.5 inches from stock, 1.75 inches at the rear. It’s virtually the same equipment and setup used in the fleet of 500s driven by

the Italian police. There’s no adjustability, but “it’s all done perfectly,” Tallini says. That’s because Bilstein and RRM worked on this together for a whole year, using only RRM’s cars throughout the process.

Whether by luck or design, Fiat located the gear lever high up, so when you sit in the Racetech sports seat and grab the RRM aluminum shift knob (that’s designed and machined to fit neatly in your hand), you can fantasize for a second that you’re using a sequential ‘box.

Another way to lose weight is to ditch the rear seats. Some customers do, some don’t. An M1 Abarth could be just the thing for the guys to pile into during a track weekend evening when the local rib joint is calling. Or there’s the option of fitting a sparse construction that Tallini calls a “sports” ‘cage.

It takes a donor car (a current 2014 500 Abarth starts at \$22,195) plus somewhere between \$30,000 to \$40,000 for a serial-numbered M1. Or it’s possible to even get north of that amount, depending on how tricked out a customer would like the car to be. See how the white example has some smart leather upholstery with contrasting stitching. RRM also offers a complete roof transplant, taking off the metal one and replacing it with carbon fiber.

It’s taken around two years to bring together this collection of parts and then refine them. Tallini and his team are rightly proud of their M1 package and clearly loving the work involved. But inveterate racers never rest on their laurels. In Tallini’s case, here comes that Romeo name again. He’s looking forward to the Alfa Romeo 4C and what Road Race Motorsports can do for that car—which could really be an affair to remember. **EC**

## • TECH SPEC 2012 FIAT 500 ABARTH

**Owner** Road Race Motorsports  
**Location** Santa Fe Springs, California

### ENGINE

1.4-liter four-cylinder, turbocharged, hard anodized engine cover, lightweight pulley, Ultimate ECM, air intake, exhaust system, water/methanol injection kit, downpipe with micro cat and heatshield sleeve, turbo blanket, solid engine mounts, Antigravity battery, Zetronix wideband air/fuel ratio meter

### DRIVETRAIN

stock five-speed manual

### BRAKES

RRM/Stoptech calipers, rotors, pads, stainless steel braided lines

### SUSPENSION

Bilstein B14-PSS coilovers, bushing kit, RRM Big Red rear antiroll bar, chassis bracing

### WHEELS & TIRES

16x9 forged alloy wheels f&r, 225/40 Toyo Proxes R888 tires, black lug bolts

### EXTERIOR

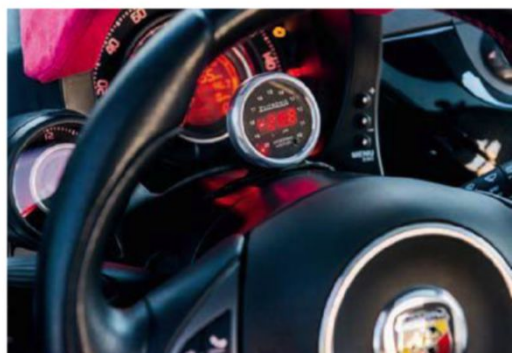
RRM carbon-fiber spoiler extension, carbon-fiber hood with vent and duct, carbon-fiber Forza front lip with carbon-fiber add-on, carbon-fiber flares, carbon-fiber side skirts, carbon-fiber front and rear bezels, carbon-fiber mirror covers, carbon-fiber trunk latch, carbon-fiber rear diffuser, carbon-fiber brake cooling ducts, grille insert, stripe kit

### INTERIOR

rollcage, harnesses, aluminum shift knob, Alcantara instrument cowl cover, Racetech front bucket seats

### THANKS

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# THE MILLTEK VOLKSWAGEN RACING CUP

VW'S MODELS GO HEAD TO HEAD  
FROM SHOWROOM TO TRACK

WORDS RYAN JURNECKA PHOTOS COURTESY OF VOLKSWAGEN RACING







## ON A CONTINENT KNOWN FOR SPEC-RACING CHAMPIONSHIPS

favoring the likes of Clios, Golfs, and 911s, there exists a rather unique breed of manufacturer racing in Great Britain. The Milltek Volkswagen Racing Cup is where you can find a variety of the German manufacturer's models going head to head in a championship that values close competition and rewards engineering ingenuity.

Started in 2001, the Volkswagen Racing Cup came from a successful series of racing endeavors by Volkswagen Motorsport UK, a company created by Volkswagen in 1997 with directors from both Volkswagen Racing UK and Germany's Volkswagen Racing division.

Its first foray was rally racing, with Volkswagen Motorsport UK entering and winning the British Rally Championship in its first year with the Golf GTI MkIII kit car with driver Mark Higgins. Further rally wins were later achieved when the GTI MkIV widebody kit car was introduced two years later. A second place in the one-off Super 1600 restricted Formula Rally Championship with a Polo GTI would be the closing chapter of the company's rally racing focus.

In 2001, the company name changed to Volkswagen Racing UK and the focus shifted to creating a series that would break away from the familiar spec format found in the Lupo and Beetle cup run by VW in Germany. The idea would be to give drivers and teams more freedom of choice in model, and find their own way through careful engineering and limited modifications. Also, instead of a car becoming obsolete and ineligible for further racing in a spec series over a period as short as four years, the series would allow cars to compete that are up to 10 years old, leading to lower costs and greater longevity in the series.

The current championship calendar consists of seven race weekends that support the British F3 and British GT Championships, and the Milltek Volkswagen Racing Cup is the only saloon series to do so. The races are limited to two 20-minute sprints accounting for a total of 14 races during the season. Six of the seven races are held in the U.K. at such legendary courses as Silverstone and Brands Hatch. The lone race outside the country is held at the iconic Spa-Francorchamps circuit, which includes the cars parading on slicks via police escort through a nearby local village en route to the track and providing a stunning photo opportunity for fans, as well as a chance to see the car and drivers close up.

To keep the competition close throughout the weekend and the season, measures are taken to mix up the field and ensure no one team or driver can walk away in the championship. The top eight finishers of a race must add 20 kg of ballast to their cars. Should they then finish outside the top eight, they can remove 20 kg. There have been cars known to carry up to 80 kg of ballast by the end of the season. In addition, the top six finishers of the first race will start from the back of the field in reverse order for the second race. Thanks to





a close relationship to Volkswagen Racing in Germany, the winner of the championship will earn a one-off drive in the German Scirocco Cup supporting the final DTM race of the year.

Historically, cars have ranged from many generations of Golf GTIs to Lupos, Sciorrocos, Polos, Corrados, Beetle RSIs, and for 10 years even a Caddy Van that proved looks can be deceiving when it scored podiums and even set a class lap record at Rockingham during one weekend. The van has since been driven by high-profile racers such as David Coulthard and Tiff Needell on promotion days. “The idea is to take a car from the show and use it in the championship,” says Volkswagen Racing UK Managing Director Sam Roach.

This variety is made possible by the fact that the cars are regulated by a weight-power ratio allowing for the top 10 to be within one second of each other's lap time. Currently, the full 37-car field consists mostly of Scirocco Rs and Golf GTI MkV and VIs, all with 2.0-liter turbocharged engines, but there also exists two 2.0-liter TDI-powered cars: a Beetle RSI and Golf MkV. The cars are limited to 250 hp through computer engine mapping and usually carry the same engine that the car was fitted with, which in turn means the field can have anything from turbocharged to naturally aspirated, and even diesel powered engines. The limit on horsepower is strictly for reliability reasons. “These engines can certainly deliver more power,” Roach says, “but with more power comes potentially more problems. We try to keep things at a sensible level for the rest of the car.” The transmissions are either manual or DSG twin-clutch. Hankook has







## TECH SPEC

### MILLTEK GTI MK6

#### VEHICLE LAYOUT

Front-engine, FWD, 2-pass, 2-door hatchback

#### WEIGHT

2,381 lb

#### ENGINE

2.0-liter 250hp/330-lb-ft turbo DOHC 16v I-4  
VW Racing; software, cold-air Intake

#### TRANSMISSION

six-speed manual, VW Racing; Quickshift,  
limited slip differential, sintered-metal  
clutch

#### BRAKES

six-piston calipers, 13.9-inch rotors (f), single  
piston calipers, 10.7-inch rotors (r), ABS  
disabled, adjustable bias

#### SUSPENSION

VW Racing; three-way adjustable coilover  
struts, adjustable top mounts, solid  
bushings, adjustable antiroll bar(f) three-way  
adjustable shocks, solid bushings, adjustable  
antiroll bars, multi-link

#### WHEELS & TIRES

18x9-inch VW Racing Wheels, 225/40-18  
Hankook Racing Slick Tires

developed the racing slicks for the series with an emphasis on economy, as one set will last an entire weekend—with no difference in performance gains should a team change to newer tires over the course of the weekend.

In an effort to cut costs, cars are limited in modifications, particularly when it comes to the bodywork of the vehicle, thus trying to keep an aesthetic bond to their road-going counterparts. The engineering of the car becomes the crucial factor in success for a team, which—in turn—provides a proving ground for young engineers looking to break into further, more advanced forms of racing.

The drivers are mostly all amateurs. Stefan Di Resta, brother to ex-F1 and current DTM driver Paul and cousin to Dario and Marino Franchitti, is currently leading the championship at the time of this writing. Some are older drivers with regular day jobs, but the young drivers seem to have their eyes set on a career in touring car racing. Some of these drivers have gone on to future success. Tony Gilham, an ex-cage fighter, won the championship in 2007 and went on two years later to the British Touring Car Championship, where he currently owns his own team. Gilham also owns a team in the VW Racing Cup, where he has selected three drivers over the years to make the transition from his VWRC team to his BTTC team.

There are currently three disabled drivers racing in the Milltek VW Racing Cup who were attracted to the sport because of the ability to drive DSG race cars. Based on the severity of disability, some race cars in the series have throttle and brake controls on the wheel while others have modified pedals







that allow for a driver with a single leg. This relevant technology transfer has been a large benefit for VW by demonstrating the flexibility of its cars to the unique needs of their owners.


Another way the series has been able to translate racing technology to its road-going car has been selling modified parts to road-going enthusiasts. "Drivers can buy the same parts used in the series, same cold-air intakes, exhaust, and wheels," according to Roach.

"All of the parts for our race cars can be sold around the world as car modifications for people who want high performance for their road-going and track-going cars. So there's relevant car technology transfer between the two." Certain Audi and Skoda owners who share a similar platform will also be able to benefit from these modifications.

In addition to modifications, VW as a brand has benefited greatly from the success of

the Volkswagen Racing Cup championship through its seemingly unlikely success stories. Perhaps its biggest claim to fame came in 2002 when an MkIV Golf scored the first win ever for a diesel-powered engine in a sprint race. This victory sparked a whole new interest in diesel-powered Volkswagens for enthusiasts and also made Volkswagen Racing UK a valuable resource for teams in Touring Cars and Le Mans looking to emulate the same success. The success the Caddy Van achieved in the sport also became a great advertisement for VW's commercial division when plumbers and electricians began to purchase the available modifications to put on their company vans. In addition, the van held the distinction of being the first racing van in the world, which created awareness for the championship as "that one with the vans racing."

Title sponsor Milltek, a British exhaust manufacturer, has also benefitted from the VW Racing Cup, selling high-performance exhaust systems and catalytic converters based on those used in the series. Milltek has also taken the extra step and entered a team of its own in the championship, in which one seat is earned through a "driver scholarship" competition, which culminates in the top eight finalists going head to head in January for a shot at the ride.

The 2014 season has two race weekends left to go—the race at Brands Hatch August 30, and the finale at Donington Park September 13. Di Resta in his Scirocco R 2.0T leads Joe Fulbrook in a Golf GTI MkV 2.0T by only two points. With five different winners in ten races, an unpredictable finish to the season is guaranteed. The series may be followed through its website ([volkswagenracing.co.uk/vwcup](http://volkswagenracing.co.uk/vwcup)) and Facebook page ([facebook.com/VolkswagenRacingUK](https://facebook.com/VolkswagenRacingUK)). 



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-Greg Emmerson (European Car Magazine)

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-MJ Calabrese (Roundel Magazine)

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**VETERAN CLUB RACER STEVE FLOYD DIDN'T HOLD BACK** when he showed me the lines through Chuckwalla Valley Raceway's 17 turns. There wouldn't be a warm-up lap or turn-by-turn descriptions of braking, turn-in, and track-out points, aside from one warning about a blind off-camber right-hander. Floyd had the Yokohama Neovas sliding by the second corner, making small corrections to the steering angles as the tires danced back and forth over their limits on the broiling desert asphalt.

# UNLEASHED

TWO MINDS MEET TO BUILD  
A BETTER CAYMAN

WORDS AND PHOTOS BY PETER WU

Given the speed and the ease in which he tossed around the car we were in, you'd think Floyd knew the car inside out. The reality, though, was that was the first time he'd been on a track in the heavily fortified Cayman S with a 3.8-liter Carrera S engine he built for owner Dave Petty.

There wasn't anything particularly wrong with Petty's '09 Cayman S, nor was there anything wrong with Petty himself. But like many others before him, he couldn't help but wonder what his car would feel like with some serious power, the kind of power to scare off the 911, the kind of car even Porsche admitted it couldn't build without upending the pecking order.

So when Petty met Floyd, whom, in addition to racing his '68 911 in POC events, is also the owner of Desert Performance Motorsports in Palm Desert, California, and a Porsche technician since '71, it didn't take long for them to decide to build what they like to call a Cayman "RS."

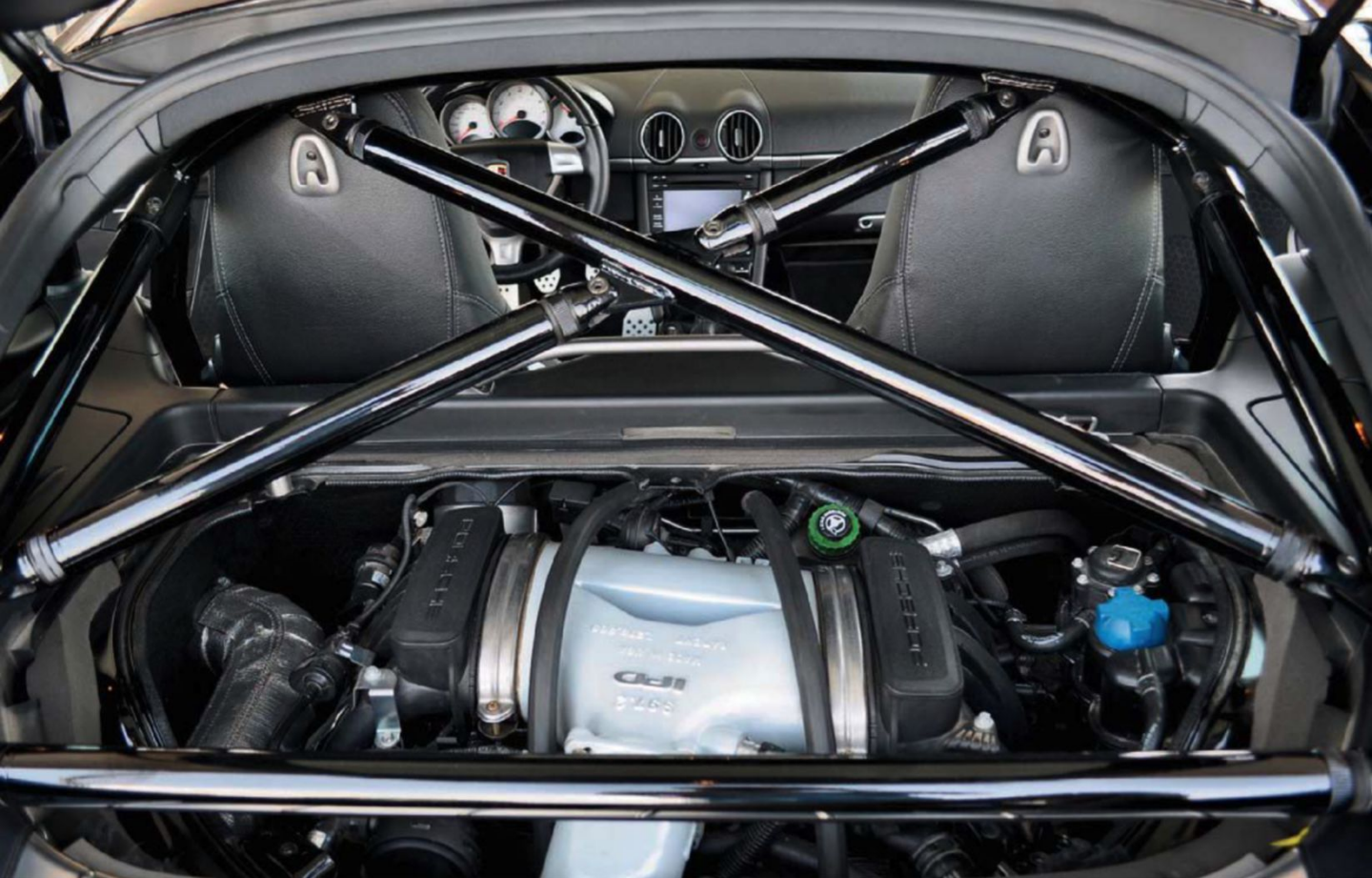
They first considered having the stock 3.4-liter bored to make it a 4.0 liter, but Floyd didn't believe the cylinder walls were thick enough. After they nixed that idea, they began the search for a Carrera engine, eventually finding a 2011 factory re-built, Carrera S 3.8-liter with zero miles from Los Angeles Dismantlers in Sun Valley, California.

Floyd said the engine bolted right in without modifications to the engine mounts, but it wasn't as straightforward as that. The 3.8's intake plenum extends straight out and bumps up against the upper edge of the Cayman's engine bay.









To avoid cutting, Floyd and Petty contacted IPD about supplying them with a curved intake plenum. IPD, who makes higher-flowing Y-pipes and intake plenums for a long list of water-cooled engines, sent Floyd several different plenums to check for clearance.

Eventually, two different plenums were used, both of which needed to be cut, welded, and reshaped to make the throttle body clear the transmission's bell housing. The welding and powdercoating were performed by B&J Powder Coating. As you can see from the photo, the top section of the intake plenum butts up against the engine cover's seal.

Attached to the 3.8's throttle body is a Fabspeed Stage 1 cold-air intake. Floyd and Petty had the pipe wrapped in a hand-stitched, heat-shielding blanket to keep it

from absorbing the heat in the engine bay. On the exhaust side, FVD Brombacher sport headers and 200 cell cats connect to a Fabspeed exhaust system. Softronic then wrote ECU code, taking into consideration all of the upgrades. Petty estimates the engine now produces 420-430 hp and 350-380 lb-ft of torque compared to the stock engine's 385 hp and 330 lb-ft. The extra power eventually ate through the stock clutch, so Floyd and Petty installed a stronger Aasco full-race flywheel/clutch with a six-button flat-drive plate. It chatters a bit on idle, which is a trade-off Petty was more than willing to live with.

It also requires extra revs to get off the line, as I found out when I pulled out of the pits. The throws in the stock Cayman S gearbox have been reduced with a B&M short-throw

shifter, so grabbing the next gear required just a flick of the wrist.

If you have to learn a track and get a feel for a car at the same time, there are few better cars to do so than a 987 chassis because it communicates so well and forgives your small mistakes. While I took it relatively easy on the first lap, Petty's Cayman "RS" let me know there was plenty of grip left unexploited.

The aforementioned Yokohama Neovas measure 235/35-19 in front and 295/30-19 in back, which gives it the same width of tire in front and an extra 30 mm in back when compared to a Cayman S. They're mounted on 19x9-inch and 19x10.5-inch three-piece BBS race wheels with the forged centers painted black. The car sits a little lower on a set of Bilstein PSS9 coilovers, set at the 5 position. GT3 front control arms and tie-rod ends were supplied by Tarret Engineering, as were the rear adjustable toe links and thicker sway bars. The shock towers are tied together with an FVD Brombacher strut brace, and FVD's Clubsport rollage lets you know the car has serious intentions. Once all the new suspension parts were in place, Floyd and Petty corner-balanced the car to optimize handling.

After the warm-up lap, I started to probe the limits with a little extra speed into the corners, a touch more throttle on the exit, and near-redline shifts on the two long straights. The engine responded to the increased demands by taking deeper breaths through the Fabspeed intake, emitting unfiltered, feral screams as it went through the rev range, tingling my spine and daring me to go faster.





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## TECH SPEC

### 2009 PORSCHE CAYMAN S

#### LAYOUT

Mid-engine, rear-drive, coupe

#### ENGINE

3.8-liter Carrera S flat-six, IPD custom intake plenum, Fabspeed Cold Air Intake, Softronic ECU tuning, FVD Bromacher sport headers, 200 cell cats, Fabspeed exhaust, Est. power 430 hp and 380 lb-ft torque

#### TRANSMISSION

Stock six-speed manual, B&M short shifter, Aasco clutch, OS Giken limited-slip differential

#### BRAKES

GT3 Brembo front calipers and rotors, stock rear brakes

#### SUSPENSION

Bilstein PSS9 coilovers, GT3 front control arms and tie rods, rear adjustable toe links, track sway bars, corner balanced

#### WHEELS & TIRES

BBS, three-piece race wheels 19x9-inch front, 19x10.5-inch rear, Yokohama Neova 235/35-19-inch front, 295/30-19-inch rear

#### INTERIOR

Stock

#### EXTERIOR

Cayman R front lip spoiler



Increasing speed is easy because the chassis lets you know exactly what you're doing right or wrong. Small mistakes are easily corrected with a little brake, throttle, or steering, and the chassis stays stable throughout. It feels flat through the corners, with just a smidgen of lean to let you know you're getting close to the limit. Every corner is a quest to feel that magical neutral feeling where both front and rear tires are working equally hard at hanging on.

The tires held up well even though the track temperature was easily more than 130 degrees, but they did start to feel greasy after five laps. Floyd and Petty installed an OS Giken limited-slip differential to maximize grip and it locks in

immediately and helps guide the rear through the turn when asked for power.

And there is never a lack of propulsion. The 3.8 never feels restrained as it shoots the car from corner to corner and down the straights. The power curve feels progressive and linear, building continuously to redline. The car accelerates without resistance, like a speed skater with cartoonish quads powering toward the finish line, an ideal fusion of velocity and fluidity.

To rein it in from the triple digits I touched on the straights, Floyd and Petty replaced the stock brakes with front Brembo calipers and rotors from a GT3. They were so effective that I never had to ask for all they had to

give, nor did they fade after many laps in high desert heat.

Shortcomings were hard to find in Floyd and Petty's "RS." It took everything without feeling sloppy or overwhelmed, beautifully tuned to handle the extra power and high-cornering loads. On the fastest of Chuckwalla's sweeping turns, there is enough grip and speed to make you question your sanity and skills.

Prior to driving Petty's Cayman, I had suggested finding a Cayman R to compare it to. Petty said it would be no contest and thought a GT3 would be a better comparison. After just a handful of laps, I realized he was spot on. **E**



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# A CLASSIC TRAGEDY: THE FORGOTTEN BUGATTI PLANT

FAR AWAY FROM DETROIT,  
ITALY HAS ITS OWN STORY  
OF A FALLEN FACTORY

WORDS & PHOTOS MATT ZUCHOWSKI











## SOMEWHERE BETWEEN MONACO AND CHERNOBYL LIES CAMPOGALLIANO,

a little town in the suburbs of Modena. It's between the two not only geographically but spiritually. When you cross the decomposing walls of the former Bugatti SpA headquarters, you get the feeling of being between the Cote d'Azur glamour and the derelict radioactive Ukrainian ruins. Leaving aside the automotive context, it is still a staggering view. Marble restrooms last used two decades ago now filled with dust and moss. High-tech code door locks and scanners now guarding nothing more than empty rooms with more dust. Futuristic ornamentation on staircases contrasting with cracked glass and spider webs. Finally, in the corner of a huge grubby hall, a big snowman sculpture made of paper, looking like some kind of a prop from a gloomy horror movie. It sure is an unusual place, even before you get to know that... it's here that Bugatti EB110 was designed and built.

"Today, we can look into our future with renewed enthusiasm," announced Romano Artioli on the day of reviving one of most legendary, mythical French makes in 1991. For Artioli, a successful businessman and Ferrari dealer who brought a number of different automotive brands to Italy, it was a successful end to a nearly four-year journey, during which he had to establish the whole company from scratch. The idea of building a new Bugatti came from a series of meetings between Artioli, Ferruccio Lamborghini (who sold his famous company in 1974), Paolo Stanzani (engineer of numerous Lamborghinis and Ferrari 288 GTO), and French car expert Jean Marc Borel. It was an exceptional challenge, as Bugatti wasn't an ordinary car company after all. Even if it ceased to exist in the 1950s and had one unsuccessful revival attempt in the '60s by Virgil Exner, it was still vividly remembered as one of the legendary and respected names in the automotive industry.

Born in Italy, Ettore Bugatti worked in Germany and France to become one of the greatest engineers in automotive history: his state-of-the-art voitures and landaulets presented unsurpassed levels of luxury, beauty, and build quality, often introducing revolutionary design solutions. Raised in a family of well-known artists and architects, he designed a train and light aircraft as well. Artioli couldn't take any half measures. What he had to do is start from nothing and go straight to the league of supercar elite, making a step ahead of Ferrari F40 and Porsche 959.

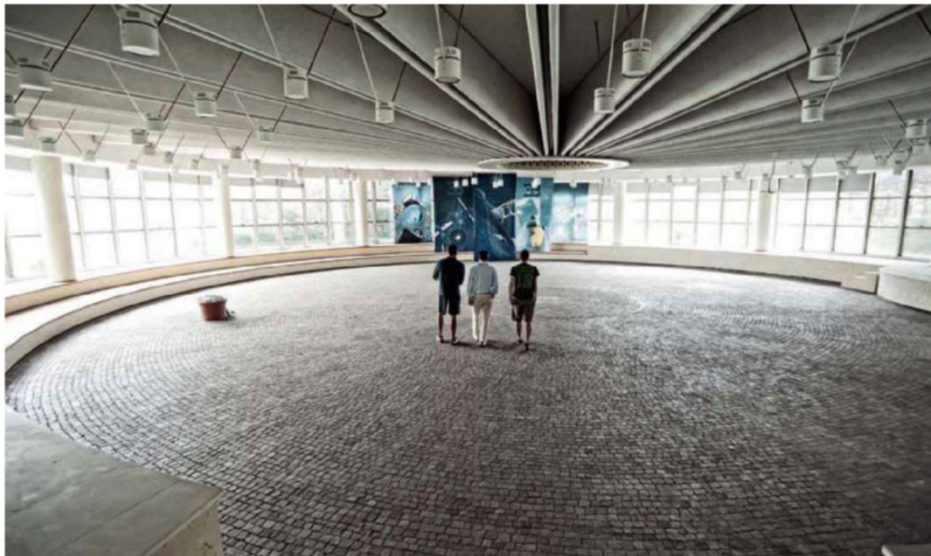




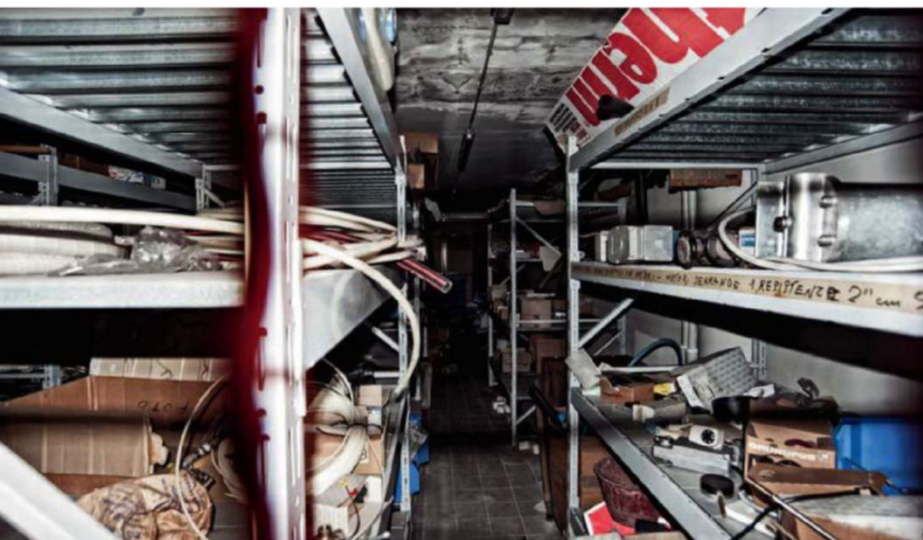


In 1987, despite the French industry department's resistance, Bugatti company left its homeland and started its new era in Italy. An avant-garde building complex was erected next to an autostrada from Modena to Verona, where all of the designing, R&D, and building works started soon afterward. From above their drawing boards, through the glass walls, designers had a view of the test track, which in turn surrounded the factory. Here, all of the important things happened, from casting the engines to sewing the upholstery. The R&D department could simulate different weather conditions in its tests, emulate a full lap of the Le Mans race, and had its own room for testing gas emissions in the times when none of the competitors took environmental issues seriously.

In September 1990, a grand parade of 77 classic Bugattis drove all the way from the company's old headquarters in Molsheim to its new home in Italy. The final look of the car was still not known, but it was clear it was going to be a hell of a special car. It was confirmed that EB110—called that to commemorate Ettore Bugatti's 110<sup>th</sup> birthday—would have four turbochargers and all-wheel drive that would allow it to earn the title of the fastest road car with its 209-mph top speed. What Volkswagen did with its Veyron was in fact merely repeating what a bunch of Italians had done a decade earlier.







Even with the favorable reception, famous clients, and promising results in motorsport, nothing could fight the financial crisis of the early 1990s. From the beginning of its production in 1992, only 139 examples of Bugatti's sole model left the gates of the Campogalliano plant. The following EB112—a less radical and more luxury-oriented four-door coupe—was ready to be launched, but due to a lack of time and funds, it didn't make it further than to three pre-production prototypes. Four years after Artiolì's words about enthusiasm and looking into the future, Bugatti Automobili ceased operations, leaving 200 million USD in the red and 220 workers without their jobs. Now Bugatti has at last retained its rightful glory thanks to the massive effort of VW, and the little Italian company is remembered only as a short, curious episode of the brand's history.

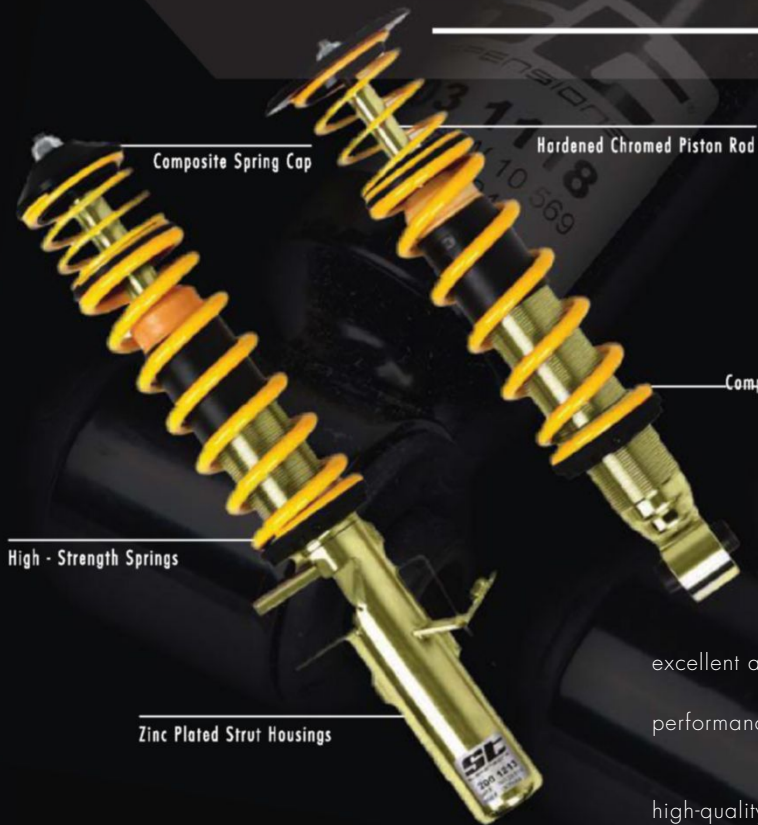
Today, this deserted lot, dominated by wild bushes and trees, is a workplace for only one man—a security guard with a dog. They were hired by local authorities who now manage this area. The Italian government has hoped to bring a new investor from the automotive business here, so it's chosen to leave everything intact. Twenty years on, it's still waiting without touching anything. So much for an Italian way of solving a crisis.





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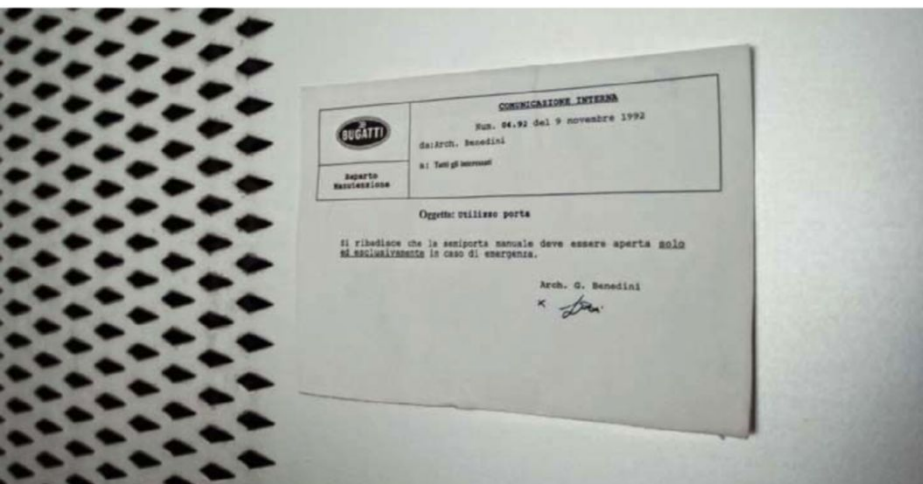
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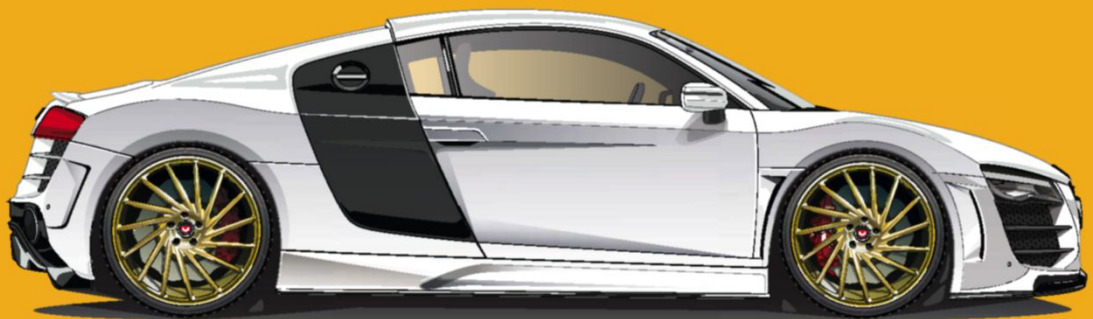




When you enter the area (with a little luck, you can really do that when you're in Campogalliano), you feel like it's the early '90s all over again. Time stopped here when Nirvana was still playing gigs and Ayrton Senna was winning in F1. You treat yourself to a sentimental journey to the past, having a hands-on experience of realizing how big and archaic telephones and computers were back then, seeing them lying around, and when stumbling upon the dates on the documents, phonebooks (remember those?), or even emptied champagne bottles, you understand that the life here ended abruptly, as if in a matter of one day. To add to the psychedelic image, there are some toys, confetti, and children's sculptures scattered about, as the locals meet here for various celebrations and holidays. Under their feet, they can occasionally find labels indicating the production line of the doomed EB112, the big handmade painting of which can be admired on the wall in the old canteen.

Most of the production line was sold at auction in 1997, along with five unfinished chassis and spare parts by German specialist Dauer Sportwagen. Dauer refined the design and sold the remaining cars under the name of Dauer EB110 SS. Even today, when the production halls are mostly empty, it is easy to imagine how modern and sophisticated a facility it was not that long ago. The only thing you can find now in Romano Artioli's office is gray carpet. This brave Italian entrepreneur was here for the last time in 1996. He can't go back to the place that not only cost him his fortune, but also broke his heart. ❄️





VOSSEN





Mk7 GTI and Golf R make a great partnership, but the R now has a distinct performance advantage.

# FASTIVUS

WE GET SOME HOT LAPS IN THE 2015 VW GTI AND GOLF R

WORDS GREG EMMERSON PHOTOS GREG EMMERSON, JASON GELINAS, LOUIS MAYO, CATHERINE COLLINS



Eugene Lee and his crew did a great job of organizing the track and show activities.



A giant parade lap was organized for all attendees to gather for a group photo.

**THERE WAS AN UNUSUAL**, almost eerie stillness as we entered Willow Springs Raceway in Rosamond, California. It was Too-Early-A.M. and the always bustling track lay silent. Low clouds blocked the sun and the air was heavier than normal, seeming to hug the hilltops.

Rounding the garages, we were greeted by a line of VWs against the pitwall. Their drivers were prepping the cars for what would be a busy day of hot laps and a car show. But in the early hours, before the main crowds appeared, there was a calmness over the desert location.

It wasn't long before the PA system crackled to life and a voice stabbed the tranquility, echoing around the facility, inviting drivers to their briefing. There would be different run groups to separate the novices from the experienced, overtaking rules were explained and cautions issued.

We were invited to Fastivus 2014 as guests of organizer Eugene Lee and event sponsors Volkswagen of America. The latter had provided the latest Mk7 GTI—a car I was rather unimpressed with during a recent road test (EC 10.14)—as well as the revamped Golf R. Early reviews of this performance model had been so positive, we couldn't miss the opportunity...

Our credentials permitted us to venture on-track with different run groups, allowing us to compare the new cars to standard and modified predecessors. It also ensured we'd get enough laps to fully appraise these performance models.

Our first laps in the GTI were designed to familiarize ourselves with the car and the track layout—there are several tricky, high-speed corners that demand a great deal of respect and punish the unwary.





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Dennis Tang's RS4-bodied sedan from a previous EC cover shoot.



The popular bicycle race getting under way.



Early morning preparation turned many show cars into track cars.

As we gained pace, it was great to be stirring the cogs in a three-pedal GTI. Despite its excellent DSG transmission, VW has remained true to clutch-capable drivers.

The manufacturer had intended to bring its latest Mk7 GTI with the optional performance pack, which boosts the stock engine output from 210 hp to 220 hp. It also gets bigger brakes and, most importantly, a torque-sensing limited-slip diff that would be ideally suited to the track. Sadly, that wasn't the case. In fact, we soon realized our car was on all-season tires, which gave it a significant disadvantage in the high-speed turns. However, it also gave the GTI an extra element of entertainment, with the tires letting go predictably and safely. You would simply enter the corners, scrub to the outside of the turn, get on the power and wheelspin your way out.

The new traction control and XDS+ electronic diff means you don't suffer the hideous power interruptions of the Mk5 GTI, as power was cut to restore traction. Instead, the Mk7 has a revised version of the previous generation's electronics that allow some wheelspin and maintain momentum.

After our initial disappointment with the Mk7 GTI, we were delighted to discover it's still a very competent track car, with all the attributes we've come to love and expect from the original hot hatch.

This discovery alone would have made our track day experience worthwhile, but the best was yet to come. Switching to the Golf R, we weren't fully prepared for the revelation that awaited us.

We had sampled the first-gen Golf R on another of SoCal's racetracks and, while we loved the experience, we found it was hard to lose a well-driven GTI because its extra weight wasn't fully compensated by the improved traction and power. That clearly wasn't the case with the new car, however. . .

From the first corner out of the pits, we found the extra grip, not only from its summer tires, but also the 4Motion AWD system that was shifting the torque around, wasting very little energy in wheelspin or understeer.



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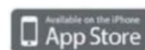
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2015 Golf R was a revelation on the track—answering many of the criticisms of the previous model.



A little Saturday night drag racing kept Fastivus attendees occupied.

Equally important is the EA888 2.0T now develops 296 hp. And while the GTI runs out of puff at relatively low RPM, the R is still pulling up to its peak output at 6,200 rpm. Yet it's neither rough nor uncivilized. In fact, the Golf R has an unexpected refinement, which is also exhibited by its greater poise and agility.

As another bonus, you can finally defeat the traction control system, and the driving mode selector has a Race setting that allows you to tune the throttle response, suspension and steering to the track. What's more, the XDS+ electric diffs front and rear are working with the Haldex system to brake the inside wheels. This physically reduces understeer, making the car surprisingly agile and very precise.

There were times when we overcooked a corner but the electronics would drag the nose back into line, flattering you with an apex-hugging line.

And where the old car struggled to pull away from the GTI, this one was in danger of lapping its all-season-equipped counterpart.

Finally, VW has a flagship model worthy of the name. Whether it's able to compete with the Subaru WRX is another question for a different test, but you know it wins on fit, finish and refinement. And don't forget, the Golf R 400 was recently revealed in concept form, with a production version slated for early 2016. So VW fans have a great deal to look forward to.

We can certainly expect to see a brace of Mk7 GTIs and Golf Rs at next year's Fastivus, and maybe we'll be able to sample the production version of the R 400 as well...

For more details about Fastivus 2015 and its three-day activities, visit [fastivus.com](http://fastivus.com). 



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Bugatti Veyron SS creeping around the show grounds.

# HRE OPEN HOUSE

## RIGHT IN THE ENTHUSIAST'S WHEELHOUSE

WORDS EZEKIEL WHEELER PHOTOS EZEKIEL WHEELER, LINHBERGH NGUYEN

**JUNE GLOOM IS A MARINE LAYER,** overcast phenomena that lingers over San Diego as summer fights its way into a full-time schedule. It's also a sign that Southern California is about to kick off a busy show season. On any given Sunday, you can expect more than a dozen motor gatherings for any petrol fetish you may have. For us, the first week of June means one thing, the HRE Wheels Open House.

Located in Vista, California, HRE Wheels has become the benchmark wheel manufacturer and one of the only aftermarket wheels on the market that won't hurt the resale value of your car. Hell, in some cases you can actually add a bit of value to your car if you slap on a set.

More than 1,000 cars filled nearly every available dock, parking spot, and some "open areas." For a West Coast show, it's rare to see such diverse Euro and domestic rides getting along at one location. When the grounds are filled with rarities like a Ford GT, Maserati MC12, Bugatti Veyron, and an original classic Mercedes-Benz 300SL Gull Wing, everybody is bound to emerge from the woodwork. The usual suspects for HRE fever are Audi, Porsche, and BMW enthusiasts. We were shocked to see how many freshly tuned RS7s were on

hand. Our friends at TAG Motorsports seemed to have the jump on the industry, having tuned more than a dozen to date with a few on hand for fans to drool over.

LTMW wasn't to be outshined and brought nearly every Liberty Walk wide-body in its arsenal. Streetwear brand Crooks & Castles turned up with some exotic luxury as well.



Unexpected heritage was on hand as well, like this Dino.

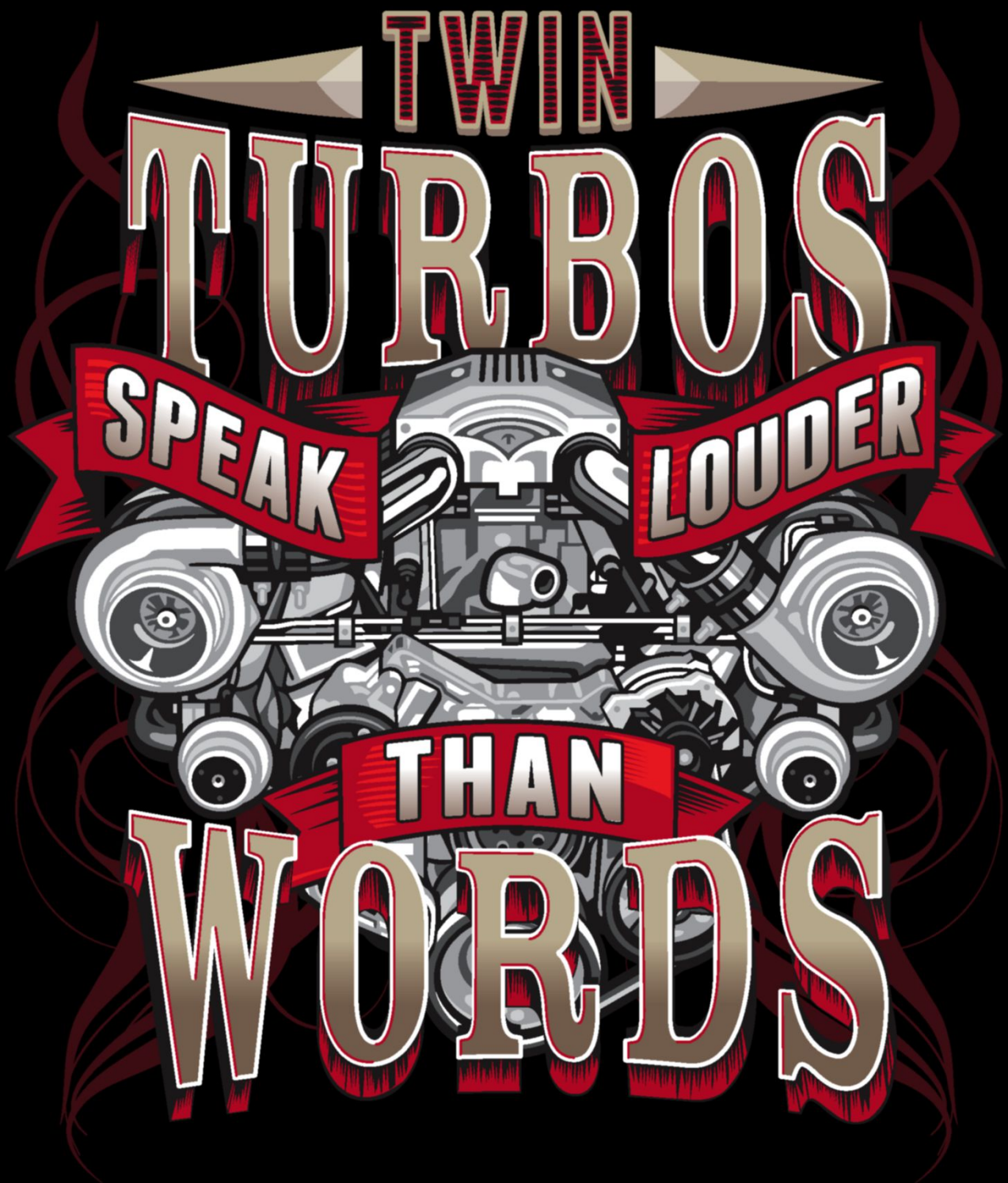


Crooks & Castles' Lamborghini Aventador slammed on Vintage Series HRE Wheels.



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Not too many Mercedes-Benz CLS63s find their bellies on the ground and kitted with gold wheels.



The E34 M5 seems to be the forgotten M5 marque, but it's still just as potent tuned as it's brethren.



Details are everything at HRE. Here are the company's new RS103s.



One of a handful of lowered, tuned, and HRE-equipped Audi RS7s from TAG Motorsports.



That same frame-laying CLS63 was retrofitted with a custom trunk complete with every urban skater's dream. A Desert Eagle 0.50, some Montana spray cans, and enough room for two champagne bottles.

In addition to the normal festivities, participants were asked to donate to the Motor4Toys charity. At the end of the day, they were able to tally up \$6,500 for the organization. Master of ceremonies The Smoking Tire host Matt Farah ensured the crowd was fired up and forked over enough dough throughout the day for the ultimate raffle prize—a set of HRE Wheels of the winner's choosing.

It's no secret that HRE Wheels aren't for the budget conscious—that was the genesis of the FlowForm series wheels. But while most of us are still saving our pennies to have a custom set built for our cars, HRE decided to take this open-house opportunity to debut yet another new wheel line. The new RS1 Series is a forged three-piece, reverse-mounted wheel that comes out of the gate with six new designs, including the nine-spoke mesh RS100, the seven-spoke split RS101, the five-spoke twist RS102, the fifteen-spoke multi RS103, the solid five-spoke RS105, and the six-spoke RS106. The Series RS1 is available in diameters ranging from 18 to 22 inches and widths ranging from seven to fourteen inches.



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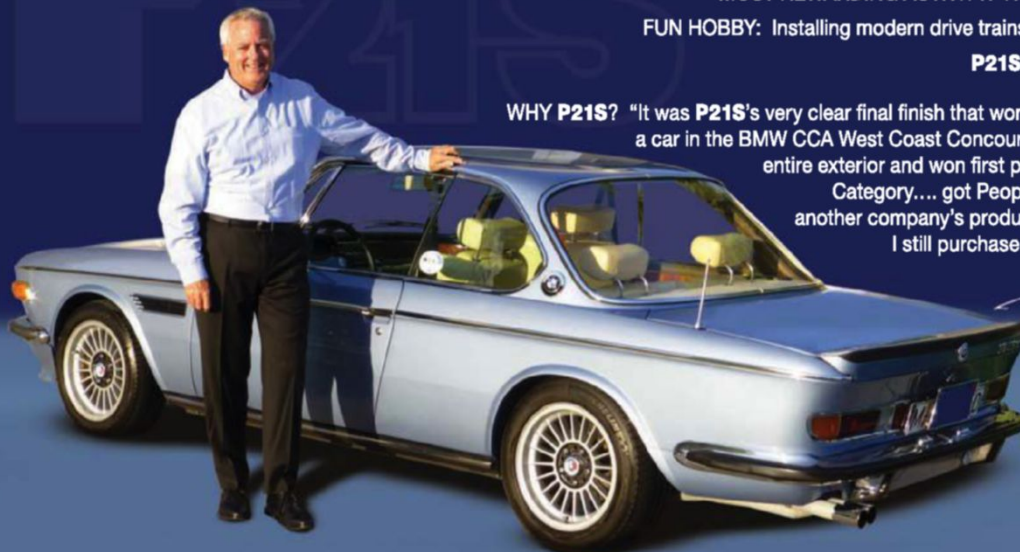
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Last seen at SEMA 2013, the LTMW E91 station wagon wins every time.



Who could resist the handsome good looks of a 300SL Gullwing?



Belonging to Instagram favorite @FingersCrossed4Morrow, this Porsche C4S has just the right amount of mean the 996 was meant to have.



A freshly cut wheel ready for a new home.



The illusive Matt Farah in his natural habitat.



There's something about a wide-body Lotus that feels right.



Alan Peltier was on hand to give personal tours of the HRE Wheels facility and what rocket science went into their new RS1 wheel series.



Wide is an understatement these days. This LTMW E92 M3 tries to hide its girth with slimming black. Not sure it worked.

"Every year, this event just gets more and more popular," said Alan Peltier, president of HRE Wheels. "We had more cars, attendees, and partners attending than ever before. Seeing the awe and excitement at the sheer scale of it all and being able to show everyone the real magic behind the HRE brand makes this a truly wonderful event for the entire HRE team."

One thing is for sure, if you've been looking for a summer kick-off event and happen to be in Southern California around the beginning of June, you certainly will not be disappointed in the HRE Wheels Open House. You never know what, or who, will turn up. **EC**





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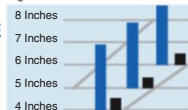
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# 1991-1994 Mercedes-Benz 500E/E500 W124

A PORSCHE-BUILT MERCEDES V8 SUPER SEDAN

Words Colin Ryan

**THE PANAMERA IS NOT THE FIRST SEDAN PORSCHE HAS EVER MADE.** Years before, the company built the Type 2758, more commonly known as the Mercedes-Benz 500E. This is based on the W124 generation (1985 to 1996) of the three-pointed star's ever-popular premium midsize sedan.

After the 959 and 928 models ceased production, Porsche needed to drum up some business to keep its line in Rossle-Bau, Zuffenhausen from falling idle. It just so happened that Mercedes-Benz wanted something with appeal to drivers who weren't chauffeurs or popes. The answer was a Porsche-fettled E-Class, the stealthiest of stealth sport sedans.

This was a time when the AMG tuning house was still an independent company and its great claim to fame was the "Hammer," based, again, on the W124 and powered by a rudely muscular V8 to reach a top speed of 190 mph. The 500E (whose proper code number is W124.036; some people like this stuff) went for more modest engine power but could still hit 60 mph in less than 6 seconds, which was fast in those days.

Propulsion comes from M-B's M119 engine. Also energizing the 500SL, it's a 5.0-liter V8 renowned for its ability to cover half a million kilometers without skipping a beat, as long as it's maintained properly. Remember, this is the era when Mercedes-Benz over-engineered everything. Variable valve timing on the intake side helps to make 322 hp.

A four-speed transmission isn't such a downside. The strength and elasticity of the engine's 354 lb-ft of torque make this gearbox easy to live with. That drive goes to the rear wheels turned by an R126 axle.

The brakes also came from the 500SL, with 11.8-inch ventilated front disks bitten by four-piston calipers. Rear discs are 10.9 inches and ventilated, regardless of model year.

It's generally not easy to tell a 500E from the rest of its W124 brethren, even though a lower front lip helps make a distinction. A wider track (by 1.5 inches), along with wider wheels and tires, means larger flares above the wheelwells. The car left the factory with 16-inch alloy wheels; the regular models had 15-inchers. And thanks to a suspension re-tuned by





Porsche (using Bilstein shock absorbers), the 500E sits 0.9 inches lower than standard.

Jamming a V8 into the engine bay left no room for the battery, so that was relocated to the trunk.

To sit in one of the four leather-covered Recaro seats (the fronts are heated) is to enjoy a serene wood-trimmed cabin where one could almost be oblivious to the quickly gathering momentum if one neglected to check the speedometer. Only slightly worrying is the fact that some early versions didn't have any airbags.

Each car is virtually handmade and took 18 days to build. Compare that with the three days required to build a regular W124 E-Class. Completion rate was an average of 10 cars a day.

The basic bodies in white came out of Mercedes-Benz's Sindelfingen plant, headed to Porsche's Rossle-Bau line at Zuffenhausen, just to the north of Stuttgart, for structural mods. Then back to Sindelfingen for painting and rustproofing. And finally back to Rossle-Bau (where the Audi RS2 Avants were later made) to receive the drivetrain, chassis, and interiors.

More than 10,000 examples were produced, with 1,500 or so going to the United States. If you ever see an E500 Limited with an even plusher interior, that was the final run of 12 cars made for Switzerland. There's an ultra-rare E60 AMG version of the E500 packing a 381hp 6.0-liter version of the M119 V8, with an AMG suspension and AMG twin-outlet exhaust.

The name went from 500E to E500 for the 1994 model year face-lift that applied to the whole E-Class

range. The E500 now took the 12.6-inch front brake discs from the SL600. Sadly, 1994 U.S.-spec models also saw a 7hp downturn; blame emissions regulations.

As well as looking out for the usual stuff—bashed alloy wheels, general signs of abuse, uneven tire wear, whether the heavy seller has ruined the cushioning of the driver's seat, etc.—possible buyers should also be aware of some other specific things. The main problem seems to be the engine wiring harness, an issue shared with many Mercedes-Benz cars from this period. The wires were sheathed in materials that were supposed to be environmentally friendly, but they sure turned out to be less than driver-friendly by disintegrating and causing electrical shorts. The ignition control module has also been known to fail on rare occasions.

Earlier 1992 models had Brembo aluminum calipers. When the brake pads wore down, the system would start making a noise. Cars from later in the year (and 1993) had heavier iron calipers supplied by ATE that never had such a problem. With a car that's both powerful and heavy (3,850 pounds), substantial brake wear is unavoidable. A change of rotors every 60,000 miles or so would be a good call.

And think about rebuilding the transmission every 150,000 miles. The rear suspension is a self-leveling setup that stands the rigors of time and use.

The Becker 1432 audio system in the 500E has a reputation for patchy quality; E500 models received a 10-speaker Alpine system that was definitely a step up.

Kelley Blue Book values a good-condition '94 E500 with 100,000 miles on the clock at \$11,746. But things are never that simple in the world of collector cars, which the 500E/E500 is fast becoming. Expect to pay around \$30,000 or more for a low-mileage example in great shape. A quick web search unearthed a '93 500E with 50,300 miles going for \$49,900. ❌

## TECH SPEC

### 1991-1994 MERCEDES-BENZ 500E/E500

#### LAYOUT

Longitudinal front engine, rear-wheel drive

#### ENGINE

5.0-liter, dohc, 32-valve, V8, Bosch electronic port fuel injection

#### TRANSMISSION

Four-speed automatic

#### SUSPENSION

Struts, coil springs, antiroll bar (f); multilink, coil springs, anti-roll bar (r)

## PERFORMANCE

#### PEAK POWER

322 hp @ 5,700 rpm ('91-'93); 315 hp @ 5,700 rpm ('94)

#### PEAK TORQUE

354 lb-ft @ 3,900 rpm

#### 0-60 MPH

6.0 seconds

#### TOP SPEED

155 mph



# 2014 VOLKSWAGEN PASSAT SEL PREMIUM PROJECT CHAPTER 1

PUTTING THE SWAG IN THE FAMILY VOLKSWAGEN

Words Michael Febbo Photos William Walker

**H**ISTORICALLY, THE VOLKSWAGEN PASSAT HAS ALWAYS BEEN a bit of niche vehicle in the United States. It offered something a little different for the midsized sedan buyer, but never made much of an impact in the segment. It always catered to the outliers in the market and struggled to hit the radar of mainstream consumers.

Everything changed in 2012 with a Passat designed and engineered specifically to the wants and needs of North Americans. To top it off, the NMS, or New Midsized Sedan as it is known, is built in VW's brand-new state-of-the-art

facility in Chattanooga, Tennessee. When it launched, the Passat was roomier and better equipped than its chief rivals the Camry and Accord. On top of that, it offered the 2.0-liter TDI, which put the big sedan's efficiency in an entirely different league. Since then, the competitors have caught up in interior space and features, but still don't offer the real key to the Passat. It drives like a Volkswagen. That is to say, in a class of underwhelmers, you can have a car that fits the whole family and still has the DNA of your GTI.

One of the few complaints about the Passat when it launched as a 2012 was

the 2.5-liter I-5 offered as the base engine. While most of the complaints were blown out of proportion, it didn't necessarily offer either the fuel efficiency or the low-end torque the great chassis deserved. For 2014, that has been remedied and the car you see here is powered by VW's EA888 1.8-liter turbocharged I-4. It's rated at the same 170 hp as the outgoing 2.5, but thanks to 184 lb-ft of torque delivered at a mere 1,500 rpm, it feels significantly stronger. The improvements in power are also immediately apparent at the test track, as the 1.8t Passat is a full second faster from 0-60 mph than the 2.5 five-cylinder.





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- Cost less than manufacturer parts
- FMVSS approved, TÜV approved

The Passat you see here is an SEL Premium trim model, finished in Reflex Silver Metallic over Titan Black interior. The sticker price as it sits is \$31,715, including \$820 for destination fees. The SEL Premium delivers on its name and is equipped with keyless access and ignition, power adjustable heated front seats with driver memory function, sunroof, rearview camera, remote start, navigation, and leather interior. There's more, but those are the highlights. The SEL is only available with a six-speed tiptronic automatic, but you should be happy to hear that S, SE, and Passat Sport 1.8t trims are all available with a manual transmission. I should point out that the Passat 1.8t S manual, which is still nicely equipped, can be had for just under 23 grand.

This project was already in motion when I jumped onto the EC train, so this first installment is my predecessor's take on what a Passat should be. To start with, he wanted the ability to control ride height in real time, which requires air suspension. Thanks to Airlift's Autopilot V2 system, the Passat will bounce up or down with the press of a button. The system consists of 30-way adjustable monotube dampers replacing the factory front struts and rear shocks, along with rubber airbags in place of coil springs. In the trunk, we fit a 4-gallon aluminum tank, a 1.3-cfm air compressor, and an air manifold that allows independent adjustment of all four corners. The installation is quite a bit more involved than your average coilover kit; ours was handled by Strassessport in Covina, California.



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After the initial mechanical install and basic set up, we had the car fine-tuned by the air specialists at Boden Autohaus in Costa Mesa, California. The damping rates make a big difference in ride comfort and handling. You will need to coordinate those with the normal air pressure you will be running in the bags, as that determines effective spring rate and ride height. We found that in order to run significantly higher than factory spring rates, we needed air pressure that would extend the bag past the ride height we wanted. The length of the damper housing is adjustable in a

similar manner to a coilover, but the car still runs short of droop travel, and the dampers are topping out with high bag pressure. Of course at normal pressures, this is only an issue on rough road surfaces and creates some three-wheeling action on steeper driveways.

If you want a ride and handling balance similar to factory, while having a lowered ride height, this kit does the job. The tops of the front struts are mounted with monoball-equipped camber plates, so those transmit more noise and vibrations, as you would expect.

#### TECH SPEC

### 2014 VW PASSAT SEL PREMIUM

#### VEHICLE LAYOUT

Front-engine, FWD, five-pass, four-door sedan

#### ENGINE

1.8-liter 170hp/184-lb-ft turbo DOHC 16v I-4

#### TRANSMISSION

six-speed automatic

#### BRAKES

Single-piston calipers, 12.3-inch rotors (f), single-piston calipers, 10.7-inch rotors (r)

#### SUSPENSION

Airlift adjustable struts with airbags (f), adjustable shocks with airbags multilink (r)

#### WHEELS & TIRES

20x9" et 40 Rotiform SNA wheels, 255/30-20 Continental ContiSportContact 5P tires

#### PRICING

Passat (as tested): \$31,715, Airlift Digital Combo Kit with Autopilot V2: \$4270.48, Rotiform SNA: \$379/wheel, Continental ContiSportContact 5P: \$357/tire (tire rack)





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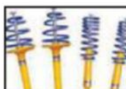
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I have a feeling most customers looking at air suspension are more concerned with ride height adjustability over track day performance. The Airlift kit fully aired up sits roughly an inch below stock height. On the factory wheels and tires, or a package of the same size, we were able to drop the car almost 6 inches. I have been driving around at roughly 2 inches below stock ride height, and the Passat still rides normally and with some attentive driving, doesn't scrape on driveways or speed bumps. Anything much lower than that, however, and your fenders will start running into problems, or more literally tires. Since the car is on loan, we weren't willing to modify the fenders, but if this was our car, we could have rolled the fender lip and modified the fender-liner mount to accommodate bigger turning angles at low ride heights.

To take it up another notch, we've fitted the Passat with some shiny new wheels and performance tires. The wheels are from Rotiform in Huntington Beach, California. They are a cast one-piece wheel sized 20x9

inches with a 40mm offset. The SNA is one of Rotiform's more affordable wheels, but it looks as good as anything out there. We went with a machined finish to match some of the brightwork on the Passat's body and the result is classy and aggressive. Retail price for one these wheels is \$379 and I would say worth every penny. At first, I wasn't sure about the 20-inch diameter, but the Passat is a big car and it wears them well. Our enthusiast friends know right away these are premium aftermarket items, while the muggles see the size and bling and know something is up but can't quite tell what.

We chose Rotiform to supply the wheels for several reasons, one of which is they know their stuff inside and out. No matter what crazy fitment you're considering, they've probably done it already, so they can tell you how to do it, and then supply it. Second, they have a reputation for quality wheels, so you can be confident these wheels are going to balance out, run true, and hold up like the factory wheel.

The Passat SEL Premium comes from the factory with Continental ContiProContact all-season tires in 235/45-18. While we had zero complaints with the factory tires, living in Southern California, we didn't really see the need for an all-season and by nature, I always seem to want something a bit more aggressive. After talking to Continental, we decided on the ContiSportContact 5P, a max performance summer tire found as original equipment on cars with AMG and S badges.

With some research, we determined a 255/30-20 would be about the biggest tire we could stuff under the car. The new tire is roughly half-inch wider and a quarter-inch smaller in diameter than the factory fitment, so it easily stays within acceptable variance.

While I've noticed more grip, better turn-in, and even better straight-line stability with the new tires, I haven't noticed any degradation of ride quality or increased noise. I expected the shorter and stiffer sidewalls to transmit more road irregularities into the car, but it just isn't the case. The only thing I have noticed is I have to lean into the brake pedal a bit more to get the same level of stopping power. It seems the extra rotating mass from the larger tire and wheel package is taking a bit more work to accelerate or decelerate.

While it seems like this is a pretty mild project build, it's what we are seeing a lot of at car shows all over the country. Enthusiasts just want to drop the car on bags and put on a nice set of wheels and call it a day. We won't stop there. In future installments, we will go in search of more performance from VW's big family sedan. While I like the new Sport model available from dealerships, I would still like to see something similar to a Passat GLI or GT offered from VW. The fundamentals of a sports sedan are alive and kicking inside the Passat; they just need a little encouragement to get out. The next time you read about this Passat, it will have gone from show sled to canyon carver. **EC**



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