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GTS



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BMW X6
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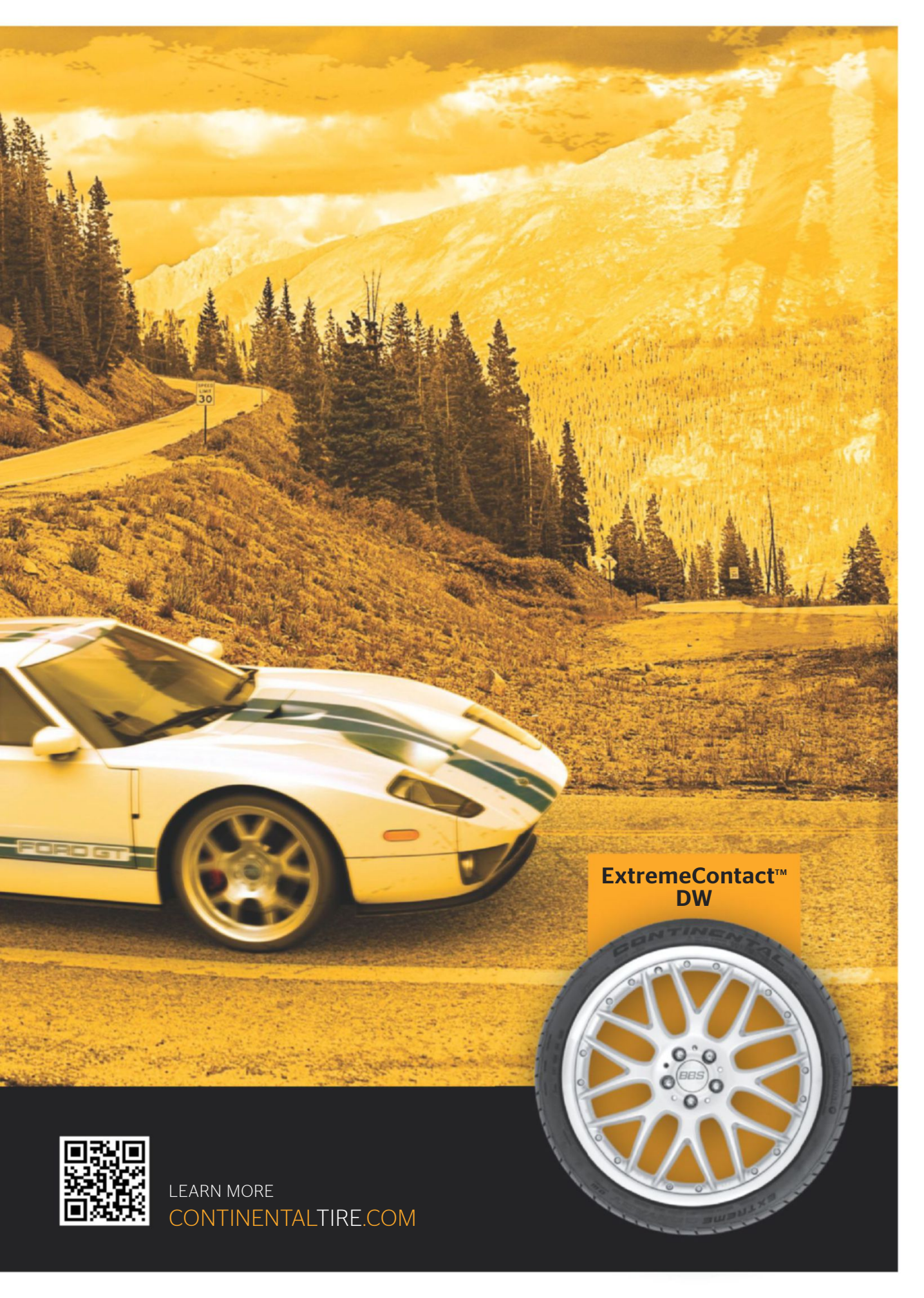
New Fiat Roadster?
The Best of SEMA 2014
BMW E90 M3: Dyno-Tested Power



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"For Audi or VW owners with turbocharged engines the (P3Cars Vent Integrated Digital interface) digital multifunction gauge is a dream come true!"

-Paul Rivera (Quattro Quarterly Magazine)

"The P3Cars gauge is ready to go straight out of the box... it's been helpful to read boost and EGT, with the adjustable shift light being another handy option. It's certainly a useful tool for modified car owners."
-Greg Emmerson (European Car Magazine)

"They've designed a simple plug-in harness, and a really clean display that reads all sorts of info, and it's in view of the driver and passenger while not cluttering the steering wheel or center console. Better yet, it's affordable in comparison to all those ancient analog gauges as just the desired boost, oil and water temperature and battery gauges would set you back over twice what the retail of P3 Car's VIDI gauge does at it's MSRP!" -Barry Brazier (MC2 Mini Magazine)

"With this one gauge I can now read turbo boost pressure, engine coolant temp, intake air temp, exhaust gas temp, battery voltage, rpm, vehicle speed ... Hell, the new gauge even gives me the ability to read and reset engine trouble codes! I was sold the minute I saw it, and all the willpower in the world couldn't prevent me from plunking down my hard-earned cash for this marvelous instrument."
-MJ Calabrese (Roundel Magazine)

At P3Cars we've been producing the highest quality instruments for some of the world's finest cars since 2009. Our fundamental goal is to retain the gorgeous design of the OEM interior, and also accentuate it by providing an extended cache of metrics to the discerning driver. A new kind of interface was created, and new ways of thinking brought about a revolutionary new product.

Our gauge is a simple "plug and play" device with a revolutionary interface all designed and built here in the USA. Simply plug one of our VIDI units into your car's diagnostic port and you are ready to go. It is that simple. Boost, all available temps like coolant and EGT, a 0-60 timer, shift light, timing, and even battery voltage are all right at your finger tips. We even included a code read and reset function for engine fault codes. What's more is our VIDI is expandable, having 3 additional 0-5v linear inputs for those of you who take your cars even more seriously. Monitor anything from AFR to pressure or even flow rate. Your car wants to talk to you. Are you ready to listen?



SPEED AND SENSIBILITY

THE CALIFORNIA SCREAMIN' ROLLER COASTER in Disney's California Adventure opened in 2001. It's the anchor attraction and the perfect set piece for the board-walk-themed area of the park. It's still the second longest steel roller coaster in the United States and the longest roller coaster with a loop. The thing that really sets it apart, however, is the linear induction motor propulsion that launches trains toward the first hill, instead of the old chain drive system that dragged the train to the top. A train full of 24 passengers is hurled forward by nothing more than electromagnets hitting 55 mph in just 4 seconds.

I'm not a roller coaster fanatic, despite being a regular on racetracks and canyon roads doing something legitimately dangerous. The idea of perceived danger with no control is less appealing. I'm sure that says something about my psyche. Besides that, sitting underneath a human-sized plow yoke in a stylized fiberglass hot tub on wheels just waiting for the kid in front of me to lose his corndog isn't that appealing, either. I do like Screamin', however, as it is the smoothest of its kind I've ever been on. And that initial acceleration has shocked me since the first time I rode it almost a decade and a half ago.

In 2001, a Porsche 911 had 300 hp and just barely broke the 5-second mark to 60 mph. Heck, the GT3 still took 4.5 seconds, and even the all-wheel-drive twin-turbo needed 4.2 seconds. So getting on Screamin' meant anyone over 48 inches in height and with \$48 could experience acceleration faster than a 911 Turbo. As you can imagine, the turn-of-the-millennium excitement levels were dialed to 11.

Last weekend, I spent 45 minutes enjoying the humanity-watching buffet that is a Disney line experience before my stomach crept into my throat while waiting to get onto the Screamin' train. It's incredibly rare I get nervous before driving a car. The last time was sliding into a McLaren 650S at Ascari during a torrential downpour. I was more worried about damaging the car than getting hurt. Roller coasters, though, still give me tummy grumbles that make me rethink whatever I ate last. With the soothing sounds of Neil Patrick Harris's voiceover reminding me not to stand, reach outside the car, text or tweet during the ride, I am restrained like a mule about to pull a hay cart.

Working from past experience, I rest my head against the tub. It's going to end up there anyway once the magnets get to work, so under my own gentle terms is better than the more violent alternative. The countdown from five is rushed and fails to build tension. There is a nearly imperceptible feeling of mechanical tension in the train right before launch; probably the magnetic field scrambling my DNA. I'm sure it's less damage than what TSA scanners cause on a regular basis. The

induction motor may somehow damage me physically, but the TSA grope-a-dope still has the upper hand (so to speak) in ego smashing.

Others scream, laugh, and swear as the train builds kinetic energy. I'm far too manly to scream, instead giggling like a kindergartner on a merry-go-round. While gaining altitude, all I can think of is that the 911 GTS I just drove is faster than this, the once-king of thrill rides. The 911 Turbo S I also drove a few weeks ago is not just a little faster, it humiliates it. In the 4 seconds it takes Screamin' to get to 55 mph, the Turbo S hits 75 mph. The coaster is still fun, even if the Turbo S eclipses it.

You might be wondering where I'm going with this. As our issues come together, I wade through pitch after pitch of the latest tuner car piece with 1,000, 1,200, even 1,500 hp. Some pitches literally just read: "This car has 1,500 horsepower!" As if that should be enough for me to drop everything and go drive it.

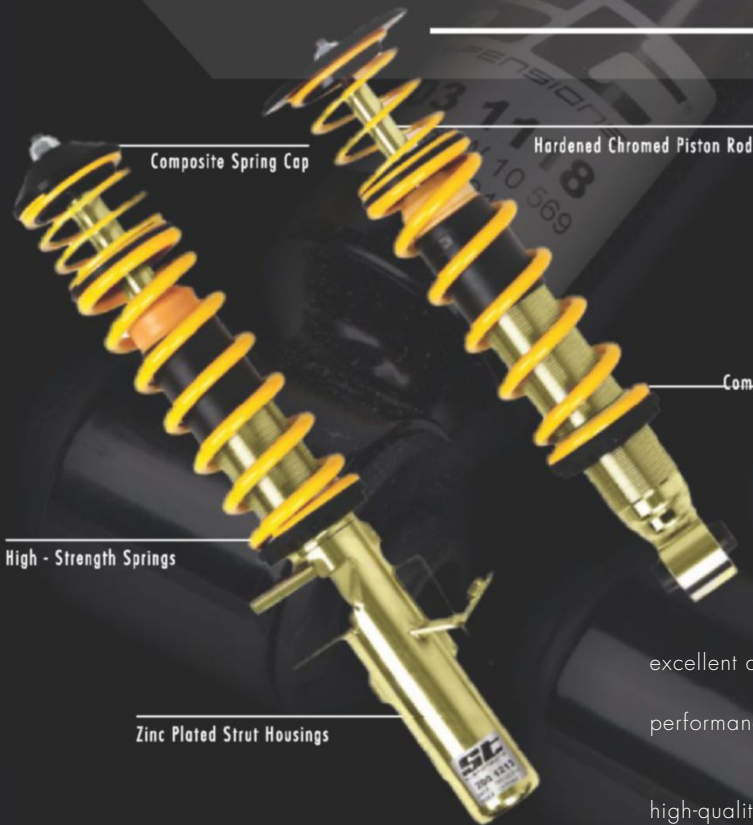
You no doubt noticed this issue's cover calling the GTS the "Ideal 911." Perhaps you immediately thought, "How can that be when a GT3 and Turbo are both faster?" My point is: Faster isn't always better. In this issue is a feature on a MkVI GTI that certainly isn't the fastest example out there, but every aspect of the car has received attention. You will also see a drive of the new Audi A3 TDI. Again, there is a higher-performance S3 available, but that isn't necessarily the best alternative for everyone. Also, we take a deeper look at the Mercedes-Benz S-Class Coupe and examine the difference between the S550 and S63, while also contemplating what this car means and how it fits into the universe.

Judging cars as "faster is better" or "more powerful is better" is the lazy way out. I hope we're hitting something more in-depth in our reviews and features. Like California Screamin', cars should deliver an experience far beyond numbers.

Michael Febbo, Editor
european.car@sorc.com

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THULE CANYON BASKET

Thule, those masters of roof-related storage, have just become basket cases. Well, the company has a new product out: the Canyon Basket, ideally suited for a rugged SUV like the Mercedes-Benz G-Class or Land Rover LR4, but will fit on most car roofs. The plus point is that it can take a lot of things that wouldn't be able to fit in a closed container. A fairing is included for some aerodynamic help, and the whole thing attaches to all Thule rack systems, therefore passing stringent crash tests. A 20-inch extension is available separately, likewise a cargo net and crossbars. **\$299.95. thule.com**



FORGE MOTORSPORT ENGINE CAP COVERS

Bright, shiny things: always a good move. These sparkling objects are for the current MkVII VW Golf 2.0. They have been designed and engineered to fit directly onto, or replace altogether, the stock caps. They've been CNC-machined and come in polished aluminum or anodized black. **\$220 for the set. forgemotorsport.com**



MILLTEK SPORT EXHAUST SYSTEM

Audi's fabulous S8 performs that difficult and impressive trick of delivering a bunch of driving thrills while still being able to act as a comfortable, non-fatiguing, long-distance tourer. So making an aftermarket exhaust that enhances both of those conflicting aspects takes some doing. But Milltek has done it with a new cat-back system fashioned from aircraft-grade stainless steel. It emits the right amount of spine-tingling noise under acceleration but hushes down to near-OE levels for peaceful cruising.

\$3,499. g-werke.com



BILSTEIN B4 DAMPERS

There's a good chance MkIV VW Golf owners might be experiencing some fatigue in their dampers by now. Suspension specialist Bilstein has a twin-tube answer that will not only help restore handling but actually make it better than when the car left the assembly line. These B4 dampers come in "factory black" and enjoy OEM-quality construction and fit, while the company claims they will last longer than standard units. They're also backed by a limited lifetime warranty. **\$165.42 (front), \$122.19 (rear). bilsteinus.com**



DURAFLEX AERO PARTS

Fiberglass reinforced plastic (FRP) and flex resins are the recipe for Duraflex's wings, spoilers, and lips, etc. A one-piece trunk lid spoiler to make a Jaguar XK look more like an XKR-S comes in at \$1,049. The company also does some sweet stuff for the VW GTI, like a rear lip under-spoiler air dam for \$335. Owners of the '10-'13 Mercedes-Benz E-Class, '03-'09 CLK, '02-'04 Ferrari 360 Modena, E90 BMW M3, and E62 6 Series might also care to check out the Duraflex parts for those cars. **From \$99.** extremedimensions.com



ULTRA RACING STRUT BRACES

The E92 BMW 325i (2006 to 2011) is the lucky recipient of Ultra Racing's latest attention. The company has just produced front and rear strut braces for this comely coupe. They feature one-piece steel construction and use the most direct bracing route possible for maximum rigidity. They have also been designed to work in conjunction with the car's crumple zones in the event of a crash. But with any luck, the improved handling should help avoid any catastrophes. **107.80 GBP (about \$169).** potn.co.uk



CORBEAU FORZA SPORT RACING SEAT

Here is a full competition race seat with a tubular steel frame and integrated body support, capable of accommodating harnesses from three to six points. It can be mounted from the bottom or the side; Corbeau has a comprehensive range of custom mounting brackets. It's also FIA-approved. One other great thing to add to that list is the affordable price. **\$319.** corbeau.com

GEAR

KW COILOVER SET

The new Audi A3 sedan is a wonderful machine straight out of Ingolstadt. But that hasn't stopped KW from creating its renowned stainless steel suspension sets for it, that work with both front-drive and all-wheel-drive versions. In true KW fashion, there's the basic Variant 1, Variant 2 has extra rebound damping adjustment, and Variant 3 brings separate rebound and compression adjustment. **V1 is \$1,519.99; V2 is \$1,939.99; V3 is \$2,499.99.**

kwsuspensions.com



VORSTEINER V-FF 101 FLOW FORGED ALLOY WHEELS

These entry-level alloys are a claimed 25 percent lighter than conventional cast construction but also stronger. They're offered with three center profiles of differing concavities, are compatible with big brake kits, and need no spacers, hub-centric rings, or any special hardware. The 101 is finished in Mercury Silver, Carbon Graphite, or Mystic Black. It's a 20-inch wheel, with widths ranging from 8.5 inches to 12 inches. Vorsteiner has outfitted a 991 Carrera S with Carbon Graphite examples—20x8.5 (standard profile) at the front, 20x11 (concave profile) at the rear—that use Porsche's original tire sizes of 245/35 and 295/30. The company says that even after a moderate drop in ride height, the car will still be rub-free. **From \$550 per wheel.**

vorsteiner.com



HRE FF15 FLOW FORM ALLOY WHEELS

HRE's Flow Form series is produced by a low-pressure cast flow-forming process for precision and strength. Following on from the FF01 is this multi-spoke FF15, available in 18-, 19-, and 20-inch diameters and a range of widths to suit most European marques. Finishes are gloss silver or satin black, but the company will entertain requests for custom colors. **From \$2,900 for a set of four.** hrewheels.com



AWE TUNING S-FLO CARBON INTAKE

This fully enclosed high-grade 2x2 carbon-fiber airbox is made especially for the Audi S6 and S7 and is guaranteed to fit the factory locations perfectly. On top of that, AWE claims gains in power of up to 20 hp and 21 lb-ft of torque measured at the crank. Like all AWE stuff, it's been designed and engineered in-house. It looks pretty darn cool, too. Comes with the washable S-Flo filter, Nomex-reinforced silicone hose, plus all the required mounting hardware and brackets. **\$915.40.** awe-tuning.com



CEC C25/26/27 MADE IN GERMANY ALLOY WHEELS

Claus Ettensberger and his CEC company are celebrating 25 years of tuning and transformations in 2015. And those celebrations involve creating the C25 wheel, a diamond-cut, forged, two-piece, spinning work of art. But CEC isn't the kind of company to stop there, hence the C26 and C27 as well, forming the Made in Germany Wheel Collection. The 10-spoke C26, incidentally, is CEC's first directional wheel. All three are available in diameters of 20 to 22 inches and widths from 9 to 12 inches. They also come with standard, concave, or deep concave center profiles. **From \$1,899.**

cecwheels.com



KINEKT JEWELRY

They won't make your car any quicker, but they could make your other half's heart beat faster. This Gear Ring and Gear Necklace from Kinekt are made from high-quality hypoallergenic stainless steel. And yes, they have moving parts. The ring is for men or women and the necklace... well, who are we to judge? The matte-finish ring (other finishes and gold construction, with or without diamonds, are also available) comes in standard U.S. sizes ranging from 5 to 20, while the brushed-metal-finish necklace has chain lengths of 18, 20, or 30 inches, although Kinekt can also do custom lengths. **Ring: \$165. Necklace: \$185.**

kinektdesign.com

CASIO EDIFICE X INFINITI RED BULL RACING EQB-500RBK-1AER CHRONOGRAPH

The 2014 Formula One season wasn't such a great one for Red Bull Racing, but that hasn't stopped the merchandising machine from creating this retro-style watch in conjunction with Casio. It synchronizes with the owner's smartphone via Bluetooth to make sure it shows the right time wherever it is in the world as well as display the time back home, so it's perfect for globe-trotting racers. It also stores up to 300 items of lap data and employs a stopwatch that is accurate to 0.001 of a second. **We've seen it for sale on U.S. websites for \$596.**

edifice-watches.co.uk



TAROX BIG BRAKE KIT

For some serious eight-piston stopping power in a MkVII Golf, try this. It fits within the OEM 18-inch wheel without the need for spacers. The calipers (made from aero-grade billet aluminum) grab 14.2-inch two-piece rotors using the company's Corsa pads that are suitable for road as well as track. The kit comes with competition-quality braided and coated lines, plus all the required brackets. **It's available from a British website with free shipping at around \$3,900.**

tarox.co.uk



ZUNA DRIVE SMARTPHONE CASE/MOUNT

It's about time someone came up with this. It's an impact-absorbing smartphone case that will do the honors for the iPhone 5, 5S, 6, and 6 Plus, with a version coming soon for the Samsung Galaxy S. But it can also perform double duty as a dashboard mount, thanks to a clip at the back that latches onto a horizontal air vent, placing the phone at an ideal height for checking those navigation apps. At journey's end, just detach and take the phone with you. Then mount it to another car's dash if required. Weighs just a few ounces and comes in white, black, blue, or orange. **\$39.99.**

zuna.com



'15 BMW X6 xDrive 50i

STYLE IS A BIG DEAL IN CROSSOVER APPEAL

Words Michael Febbo

I WAS ONE OF THE FIRST AMERICAN JOURNALISTS

to get the first-generation BMW X6 out of the press fleet back in 2008. I spent the week basking in the envious stares of Newport Beach soccer moms as they sat in their traditional, boring-backed SUVs. The four-door coupe idea was still relatively new at the time, and the well-off suburbanite crowd hadn't even considered the idea of a four-door coupe crossover utility vehicle. The X6 was something new and seductively sexy. It told the world, "I'm more unique than all you unique people who bought an SUV instead of a sedan." Now in its second generation, it's even sexier, faster, and more refined.

BMW has sold roughly a quarter-million of the swoopy soft-roaders since it started building them in its Spartanburg, South Carolina, factory. Journalists and customers alike argue whether the design is extremely feminine or masculine, but everyone agrees on the extreme part. There is nothing middle of the road about the X6 styling. Without assigning a gender, I find the X6 to be aggressive and futuristic. The new proportions are even better than the last generation, and while it is X5 based, it only bears a

family resemblance in terms of styling language.

It does, however, share powertrain options with its more traditional stablemate. Like the X5, it will be offered in rear-wheel drive along with the traditional all-wheel drive. BMW is realistic and realizes that when its SUV customers do venture off road, they rent an electric vehicle to carry their clubs and themselves into the rough. The rear-wheel, or sDrive, might be the perfect version for all the Sunbelt customers and drifting aficionados with families.

The engine options remain the same in this generation, with the turbocharged 3.0L I-6 being the entry-level option. I use the term entry-level in the lightest of terms, as an underrated 300 lb-ft of torque being delivered through an eight-speed ZF transmission can't be considered a sacrifice. If you need to get the kids to lacrosse in a hurry, BMW is still offering the lust-worthy turbocharged 4.4L V-8. Those turbos are working just slightly harder for 2015, with the engine now producing 445 hp and 480 lb-ft of torque. BMW claims 0-60 mph in 4.6 seconds for the V-8, but I imagine that number is as modest as the torque figures.





I took the V-8 on a twisty road loop and other than the extra size, it is hard to find fault with the SUV.

The European market has the option of two diesels, the twin-turbo 3.0L with 413 lb-ft of torque and the triple-turbo, no seriously, 3.0L producing a truly awesome 546 lb-ft. The U.S. market will likely get the twin-turbo model in a year or two, the real monster we may only see as it leaves the factory headed for other shores.

The X6's interior feels familiar, yet more modern. The flat surfaces are now more sculpted and smaller. Materials feel higher quality and more luxurious and there is a more open airiness in all directions. The big center-mounted screen still looks like an electronic Eggo coming out the dash-toaster, but the anti-integrated look that has swept the industry has finally grown on me. The seats are supportive and sporty by



SUV standards and allow for the typical exaggerated range of motion BMWs are known for. The shifter is again an electronic joystick and the smallish steering wheel is a wonder of modern ergonomics. Driving the X6, you are easily forgiven for thinking you're in a sports sedan.

Road manners do their best to continue the sedan illusion. In most situations, you'll never run out of performance. I took the V-8 on a twisty road loop and other than the extra size, it is hard to find fault with the SUV. On tight turns, the high center of gravity and overall girth make themselves known, but on the bigger radius sweepers, grip is plentiful as is torque.

Driving hard is fun, but more important to every other seat beside the driver's, the X6 is quite and comfortable. BMW has been doing its homework lately when it comes to air management around the vehicle. This is no exception as wind noise is minimal. Surprisingly, even the big tires are pretty quiet at speed.

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PROS

- › Style for miles
- › Roomy and modern interior
- › Drives like a big BMW

CONS

- › No diesel, yet
- › X5 is more logical
- › Nobody sells R-compound tires for the X6



Since we were in the neighborhood, we spent most of an afternoon at BMW's performance driving center. Like a good athlete, the X6 performs skills drills with natural ability. Directional changes in the slalom are adventurous at first, but confidence quickly builds. The biggest problem is seeing the cones from altitude. Panic braking was equally effortless with the only issue being the active strangulation seatbelts. Pretensioning saves lives in accidents but creates immeasurable frustration on tracks.

The Performance Driving Center has a short road coarse loop with a couple of fun elevation changes and a great mixture of higher speed turns with tight technical sections. While the best weapon on the track might be a 235, the X6 is a complete hoot. The X6 likes to be thrown around. Turn in hard and the car rotates and settles down quick. The torque vectoring differential in the rear throws power to the outside tire and keeps the car turning. Even with all that torque, it gets to the ground through one wheel or another. At the limits in the higher speed turns, the car dutifully understeers. The longer constant radius stuff doesn't allow for mashing the gas, so the torque vectoring isn't as effective. I left the road coarse wishing for more laps. Would I be the only X6 at a BMWCCA track day?

Our second to last adventure was an off-road coarse that Disney himself couldn't have done better. Manufacturers' prepared off-road loops are the equivalent to the Rubicon trail, built at a miniature golf course. Every obstacle, clearance, and climb is designed to stress a vehicle to roughly 90 percent of its abilities. The water fording feels more like Adventure Land's Jungle Cruise—it's just missing animatronic lions and 60-year-old jokes. Steep climbs and sudden drops show off the front-mounted camera and decent control—both worked flawlessly. It was possible to keep powering over bumps with a tire in the air. Will any owner ever do this? Probably not, but it's nice to know they could.

The off-roading was really just the salad before

the 24-ounce steak. Our last event was the wet skidpad with the Euro-only monster diesel; the trunk even has an M on it. The all-wheel-drive SUV is shockingly capable of maintaining full opposite-lock drifts. I managed three full laps before getting cocky and eventually parking the car in the infield grass. Approach the limits slowly and let the torque do the work. The danger is trying too hard and yanking the car into understeer. If I ever have a big enough backyard, I'm building a wet skidpad.

It's worth mentioning that the trunk volume of the new X6 is cavernous. Obviously not quite as cavernous as an X5, but even as the father of a stroller-aged toddler, I estimate it would be as big as I would ever need. The fold-flat seats would allow for IKEA runs, but who am I kidding? If you can swing the \$60,550 for the X5 sDrive 35i, you probably aren't buying flat pack. If you're curious, the 445hp X5 xDrive 50i is a mere \$73,850, including destination. If I could afford such a car, I would also spring for the \$3,500 M Sport Package that includes 19-inch wheels, M steering wheel, more aggressive aerodynamics and a few other things. I'd probably also need the \$4,500 Dynamic Handling Package for the active roll stabilization, as well as the Driver Assistance Pack plus active cruise control with stop and go, which also adds blind-spot assist, around-view camera, and a host of other safety features.

BMW considers the X6 to be worth \$6,400 more than a comparable X5; we can't put a price on style. Even with the sales success of the previous generation, the X6 is still a relatively rare sight and still turns heads. It's great to drive, and I have an incredible desire to take one out to track day. I can't imagine the fun of running down sedans and sports cars in the kid-hauler, and it is totally capable of doing that. If you're considering the 3.0L, it might be worth holding out for the diesel that is almost certainly coming shortly. You might also think about the optional rear sunshades, as your kids might not need as much attention as you do. **EC**



TECH SPEC

'15 X6 XDRIVE 50i

BASE PRICE
\$73,850

VEHICLE LAYOUT
Front-engine, AWD, five-passenger, four-door, SUV

ENGINE
4.4L/445-hp/480-lb-ft twin-turbo DOHC 32-valve V-8

TRANSMISSION
eight-speed automatic

CURB WEIGHT
5,200 pounds

WHEELBASE
115.5 in.

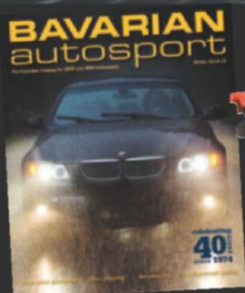
LENGTH X WIDTH X HEIGHT
192.0 x 78.1 x 66.5

0-60 MPH
4.6 sec.

QUARTER-MILE
13.0 sec. @ 105.0 mph (est.)

BRAKING, 60-0 MPH
129 ft. (est.)

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'15 Mercedes S-Class Coupe

A MATTER OF TASTE

Words Michael Febbo

ON PAPER, THE NEW MERCEDES BENZ S550 4 MATIC COUPE and the AMG S63 4 Matic Coupe seem pretty far apart. The S550 carries a base price of \$120,825, including destination, and is equipped with 449 hp and 516 lb-ft of torque. The S63 is a full \$41,000 higher in price, 128 more horsepower, and an extra 148 lb-ft of torque. The numbers, however, are a very small fraction of the total differences between the two models.

The S-Class coupe is replacing the CL. Just as this was being written, Mercedes announced a complete revamp of its naming structure that is more focused on defining core structure model lines and a bit more descriptive. Regardless of the name, the flagship status is obvious from the size and presence on the road, even if the new styling looks as if it takes up less of the road. The styling language for the S-Coupe originated in 2009 with the Vision GT Concept under the leadership of Gordon Wagener, Mercedes' head of design. He explains, "Luxury changes, it is the

most rare thing, but also the most desirable at the time."

The simplicity of design started in the 1920s with the Bauhaus movement, but how that is translated onto the S-Coupe is what makes it modern. "The beauty is in the purity," Gordon explains. "Designers love simplicity. Everything starts in the proportions. You can't camouflage bad proportions with good design." With that in mind, the coupe is elegant and balanced at every angle. The design is cohesive, and you don't get different emotions when changing angles. The S550 and S63 are differentiated by front and rear bumpers, the AMG having a more aggressive look.

Gordon isn't stuck on just the artistic side of the design. "In an increasingly digital world, analog becomes desirable and luxurious." For the better part of automotive history, the headlight was a necessary evil for designers. At first they were a fixed round shape that had to be hung on the car. They were later



“Sex appeal
has natural
attraction,
but universal
appeal has
timelessness.”



The difference between the S550 and S63 comes down mostly to the thicker steering wheel.





Quad tailpipes are the AMG's telltale of power.



integrated and not long after, started to be shaped. It has only been in recent years, mostly due to technology, that the inside of the headlight has become a design element. "Headlights are where we cut open the body to show the tech inside." The headlight has become the crystal back that reveals the movement on a fine watch. There are now teams dedicated to light design, something that would shock car designers from just 20 years ago.

Differences between the S550 and the S63's interiors are minimally different as well. The S63 sports a flat-bottomed, thicker-rimmed AMG steering wheel. The interior design is roomy but enveloping; you never feel as if you need more space. The seats are large and soft, with a range of adjustments that has to make just about any sized person comfortable. Many German designers still believe the best interiors are functional, comfortable, but most importantly, not distracting. Mercedes was that way for many years, but things are changing. "As cars become more autonomous, the car becomes more a living space," according to Gordon. Again, luxury isn't just about the amount of equipment inside the car, but how you interact with it.

During the conversation, when Gordon pauses to think, he rolls, flips, and slides his iPhone 6 in his hands. He references it several times to explain design concepts. The iPhone embodies good design. "Sex appeal has natural attraction, but universal appeal has timelessness."

As everything becomes more digital in cars, the S-Coupe has large video displays inlaid in the dash where you normally find gauges, things like air vents become eye candy, and switches are the new tactile treats. Adjusting the air vents in the S-Coupe returns a slightly damped click. It feels expensive. The switches and buttons all offer the same smooth and slow resistance. These things may not matter to most car shoppers, they just want to switch on the radio, but a car like this is incomplete without those touches. In the end, let's be honest, it is the smallest



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**PROS**

- › Elegant
- › Mechanical
- › Built to a vision, not a price
- › Oh, that sound

CONS

- › AMG could stand some differentiation
- › A plug-in hybrid would be fantastic

TECH SPEC

'15 MERCEDES S550 AND S63 AMG 4-MATIC COUPE

BASE PRICE
\$120,825/\$161,825

VEHICLE LAYOUT
Front-engine, AWD, four-passenger, two-door, coupe

ENGINE
4.7L/449hp/516-lb-ft twin-turbo DOHC V-8;
5.5L/577hp/664-lb-ft twin-turbo DOHC V-8

TRANSMISSION
Nine-speed automatic

CURB WEIGHT
4,700 lbs.

WHEELBASE
115.9 in.

**LENGTH X WIDTH X
HEIGHT**
197.9 x 74.8 x 55.6 in.

0-60MPH
3.9 seconds

of details that feel of unwavering attention. That's what commands the extra price.

On the road, the cars are all about the details as well. As mentioned before, both cars are very similar mechanically, yet feel very different. It's obvious that countless hours have been spent calibrating them exactly to someone's vision of the car. The S550 drives down the road exuding luxury. It feels larger and heavier than the AMG, although it isn't. The steering in the S550 is slower and requires more lock for the same radius turn. The S550's suspension is firm and transmits road information without ever being harsh. The 4.7L twin-turbo V-8 rumbles along inside the car and you can feel it. There is still a mechanical connection to the car. I am actually a bit surprised by it. Everything I hear and feel, I know Mercedes as the ability to filter or tune out—they've done it in other cars.


The S63 is the next stage in this experiential tuning. The 5.5L twin-turbo V-8 changes from the Coupe's rumble to a roar. You feel it in your gut either from inside the car or out. It fires up with a crackle and "vruump." The sound alone tells you this is going to be a different experience from the S550. The throttle is more sensitive, which makes the car more excitable. Where the S550 takes high-speed cruising in long, effortless strides, the S63 wants to eat up the road and the other cars on it. It isn't a sports car in any way, but something like a large, powerful yacht. There is more feedback from the road—again it isn't harsh and you would never confuse the ride with an SLS, but you know what the massive tires are rolling over. The S550's seven-speed traditional torque converter automatic changes gears with a soft push against your back. The S63 is equipped with AMG's seven-speed, wet, multi-plate, single-clutch, automatic

transmission. It snatches gears quickly, but never bangs them. It has a unique sensation compared to all the dual-clutch gearboxes out there; it falls somewhere between those and a traditional auto.

Like the gear changes, steering is now more direct and precise. The steering rack is quicker and the front suspension has more negative camber. The rear subframe is also mounted on stiffer bushings; all of this adds up to a more responsive chassis. The S63 still feels large on twisting back roads, but it feels more eager to get down them.

In Sport Mode, I can see where some customers of a six-figure luxury coupe might find it a little unsettling. This car has the ability to feel a bit serious. On larger mountain roads filled with big sweepers, the S63 has the ability to run with some other pretty serious competition, and I suspect many S-Coupe buyers have no interest in that.

There are probably a fair number of our readers wondering if this car has any relevance to them at all. The S-Class, in any form, has always been one of the benchmarks in the automotive world. This latest coupe is no exception. From the styling to the technology, everything you see here will trickle down into cars at all price ranges. Perhaps more applicable is the theory behind these cars. As already stated, Mercedes could have made both of these cars quieter, smoother, and ultimately more disconnected. The fact that a powerhouse like Mercedes sees the value in keeping the mechanical soul alive inside cars is encouraging for everyone. Designers of less expensive, less technologically advanced cars strive to emulate the S-Class. If Mercedes and AMG can show the timelessness in enjoying the mechanical attributes of the car, the rest of the industry will follow.

The S550 and S63 are trendsetters. While both very similar, they speak to different buyers. Mercedes tells us that in this market, the price difference isn't really a deciding factor. Someone buying either of these cars is probably parking them in a garage with at a minimum two other cars. This might even be the least expensive of the fleet. Choosing between the two simply does come down to preference. If it were my choice, I would take the AMG simply because I want the greater connection to the car, yet I can see the attraction of the S550's ultimate luxury. If these two versions seem slightly too common, never fear, AMG will be showing the 6.0L twin-turbo V-12-powered S65 shortly. Is there anything more mechanically lust-worthy than a V-12? 



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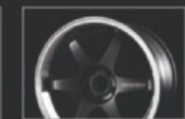
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'15 BMW X4 Xdrive 28i

IF X EQUALS 4, FIND Y

Words Michael Febbo

BMW IS ROLLING OUT ITS NEWEST SPECIALIZED ENTRY into a rather crowded arena. The X4 is four-door coupe-like crossover facing competition from more traditional SUVs, sedans, station wagons, actual four-door coupes, and some sort of slightly less lifted but taller roofed crossover vehicles. The strangest part: All the cars just listed are also from BMW.

First, like the X6 is related to an X5, the X4 is basically a sexier version of its platform mate, the X3. It shares powertrains and many other mechanical components, and even the interior is a cloned X3. The main difference is that the X4 stretches the front occupants out a bit more, to the detriment of those in the back. That, combined with the low roofline, means 1.7 inches less of both legroom and headroom in the X4. The X3, even with its tall roof, only manages an extra 10 percent more space in the luggage compartment: 550 liters, compared with the X4's 500. For reference, the 3 Series GT has 520 liters, while the 3 Series Sports Wagon makes do with 495.

The interior never feels cramped in the front. Adult passengers may not want to sit in the back for a road trip, but it's bearable around town. Taller passengers in skirts or dresses may have a tough time not having a Hollywood starlet moment with the combination of high floor, low seat, and low door opening. It's still easy, however, to load a child into a car seat.

Material quality is typical of BMWs in the mid-\$40,000 base price area, which is to say rather nice. While this might be a less expensive alternative to the X6, it certainly doesn't look it from the outside. The size and proportions really make it stand out amid Southern California's sea of 3 Series, and you don't look just like any other SUV driver.

The X4 xDrive28i doesn't stand out as much in performance, at least not in a straight line. The last 328 GT xDrive we tested hit 60 mph in 5.9 seconds; this X4 is noticeably slower at 6.3 seconds. Likewise in the quarter-mile, the GT managed a 14.5-second run at 95.1 mph. The X4 did 15 seconds flat at 89.7 mph.



Both are powered by the same 248hp, turbocharged 2.0L four-cylinder bolted to an eight-speed automatic.

This X4 weighs 4,145 pounds, while the GT tipped the scales at 3,959 pounds. That difference doesn't sound like much, but it's perceptible on the street. It may be more about tuning, but the X4 feels slower and requires far more effort. It almost begs to be driven in Sport Mode and to keep the engine spinning energetically. That's fine when you feel like a sporty drive, but a frenetic engine can soon get old in rush-hour traffic. I love BMW's turbo four, but it feels a bit out of its element here.

The suspension tuning might also be slightly to blame. In most BMWs, I would describe the suspension as firm but never harsh. The X4 crosses the line to harsh without apology. I know there has to be some differentiation between the X3 and X4, but perhaps it should have been more the styling than the tuning. Of all the variations mentioned earlier, the X4 has the worst ride quality.

That said, it does pretty well around the figure-8 and being driven hard on the road. Cornering is flat and turn-in is responsive for a vehicle this tall. Unfortunately, physics still wins and the X4 lags behind the lower-set 328 GT in lap time. The X4 completes the figure in 27 seconds flat; the GT nips it at 26.6 seconds.

"I know there has to be some differentiation between the X3 and X4, but perhaps it should have been more the styling than the tuning."



TECH SPEC '15 BMW X4 XDRIVE28i

BASE PRICE
\$45,650

PRICE AS TESTED
\$54,550

VEHICLE LAYOUT
Front-engine, AWD, five-seat, four-door SUV

ENGINE
2.0L, 240hp, 258-lb-ft turbo, DOHC 16-valve I-4

TRANSMISSION
eight-speed automatic

CURB WEIGHT (F/R DIST.)
4,145 lb. (49/51)

WHEELBASE
110.6 in.

LENGTH X WIDTH X HEIGHT
184.3 x 74.1 x 63.9 in.

0-60 MPH
6.3 sec.

QUARTER-MILE
15.0 sec. @ 89.7 mph

BRAKING, 60-0 MPH
128 ft.

LATERAL ACCELERATION
0.85 g (avg.)

MT FIGURE-8
27.0 sec. @ 0.65 g (avg.)



The GT feels less composed, though, and exhibits more body movement, so it isn't as rewarding to drive. We tested a rear-drive 328i Sport sedan (back in 2012) that turned in a 25.9-second lap. I'll also note that the 328i is an absolute dream to drive around the figure-8.

Perhaps quantitative testing is the wrong way to look at the X4. This isn't a "numbers" car and, unlike the X6, I never had any desire to take it to a track. This car is about style and giving buyers of compact SUVs another option.

For a small family, this thing would be great. It offers a decent amount of space, a luxurious interior, and a fun drive. You could choose worse cars to pull up in at the next PTA meeting. So far, the X6 has been a big hit for BMW, and we can't imagine the X4 not following suit. While I would probably choose a 328d xDrive Sport Wagon, there are a fair number of people who wouldn't be caught dead in such a vehicle. I'm sure all our readers are more enlightened than that.

Our tester came in at \$54,550 and felt decently equipped, but I have a feeling most will leave the lot with an even higher price. For an extra \$3,300, you can get BMW's glorious 300hp, turbocharged, 3.0L six-cylinder. If the X4 is the SUV for you, look into that bigger engine. **EC**



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BRAKES 	SUSPENSION
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'15 Jaguar F-Type S Coupe

OPPOSITE LOCK, STOCK, AND TWO SMOKING EXHAUST PIPES

Words Michael Febbo

TALK TO ANYONE WHO HAS DRIVEN THE NEW

JAGUAR F-Type and without a doubt one of the first things they will mention is the sound. Whether powered by the 3.0L supercharged V-6 or the bonkers 5.0L supercharged V-8, Jaguar's sports car attacks the world with a relentless aural assault. The rest of it ain't too bad, either.

I've driven both powertrain versions in coupe and convertible extensively. While I love every one of the 550 horses under the hood of the F-Type R Coupe, we're now looking at the middle child with 380 hp and a base price of \$77,895.

For context, a 350hp Porsche 911 Carrera starts at \$85,295, while a 315hp BMW 640i costs \$77,050. The Jaguar offers the biggest power bang for the buck and will likely be the most exotic at the local mall.

Of the three, the 911 is closest to a pure sports car; the BMW more luxurious. The Jaguar falls right in between, with the ability to offer a rawer experience, but—with adaptive suspension, fantastic eight-speed automatic transmission, and active exhaust—can also be quite sedate. This cat has a bit of chameleon to it.

In normal cruising, the F-Type is as comfortable as any Jaguar sedan. The steering is on the lighter side,

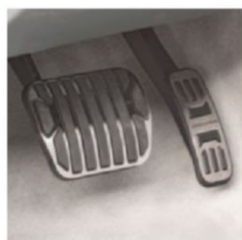
the engine hums away in the background, gearshifts are smooth, and ride quality is as soft as desired in a small coupe.

Our tester comes with the optional Performance Pack S. It includes larger brakes, active exhaust, configurable driving modes, and a few interior upgrades. Sitting to the left of the shifter is a toggle switch. Forward is for Snow Mode. I assume it works, but it would have been a long drive from our Los Angeles office to test it.

Tipping the rocker back activates Dynamic Mode. The suspension stiffens, the steering gets heavier, throttle response sharpens, and the transmission becomes more eager to hold gears. You can still slide the shifter into Sport Mode, but press the button on the center console marked with two exhaust tips and this mild-mannered coupe suddenly turns into a raucous street brawler.

The sound shooting out of the two centrally mounted pipes will have people wondering what's under the hood. It doesn't sound like a muscle-car V-8, yet it sounds like no other V-6. It probably pulls better than any other V-6 as well.

At our test track, the F-Type S runs from standstill





to 60 mph in 4.3 seconds. Admittedly, the Porsche matches that time, but the exact 911 we are comparing weighs a lithe 3,156 pounds, while our F-Type is 3,809 pounds. That marked difference also helps explain how the less powerful Porsche runs the quarter-mile in 12.7 seconds at 112.8 mph. The Jag is ever so slightly behind at 12.9 seconds, showing 107.4 mph through the speed trap. It's worth pointing out that the Jag is 4.5 inches wider than the 911 and has almost 7 more inches in wheelbase.

From 60 mph, the F-Type comes to a halt in a highly respectable 109 feet. Normally this would be great, but the Porsche uses that mass hanging out back to better utilize all four tires and stops in just 98 feet. Both cars offer great feel and travel in the brake pedal. Around town, the Jaguar is never grabby. Running hard at our test track, it never feels like the brakes are going away.

"It's worth pointing out that the Jag is 4.5 inches wider than the 911 and has almost 7 more inches in wheelbase."





TECH SPEC

'15 JAGUAR F-TYPE S COUPE

BASE PRICE

\$77,925

PRICE AS TESTED

\$92,575

VEHICLE LAYOUT

Front-engine, RWD, two-seat, two-door coupe

ENGINE

3.0L, 380hp, 339-lb-ft, supercharged DOHC 24-valve V-6

TRANSMISSION

Eight-speed automatic

CURB WEIGHT (F/R DIST)

3,809 lb. (52/48)

WHEELBASE

103.2 in.

LENGTH X WIDTH X HEIGHT

176.0 x 75.7 x 51.5 in.

0-60 MPH

4.3 sec.

QUARTER-MILE

12.9 sec. @ 107.4 mph

BRAKING, 60-0 MPH

109 ft.

LATERAL ACCELERATION

0.90 g (avg.)

FIGURE-8

25.4 sec. @ 0.76 g (avg.)



Around the figure-8 is where the 911 really shows its sports-car stuff. Up against the F, it's just a more serious machine. It puts down power, stops, and corners harder. And it does the figure-8 in 24 seconds flat, which, let's face it, is absolutely phenomenal and within spitting distance of supercars. The F-Type turns in a 25.4-second lap—still respectable, but how the car does it is the thing that matters most.

There is a lot of classic sports car DNA working in the British car. On the skidpad sections of the figure-8, it's possible to use the throttle and easily adjust the car's attitude. Kick it and the back slews out. But balancing the car on the throttle is just as easy. It will put on a drift clinic that would be the envy of many a Japanese import.

If driven smoothly, it will reward by applying power to the ground in a way an XK simply cannot manage. At the limits, the car is controllable and predictable. The XK is predictable only in its uncontrollability.

The supercharged V-8 F-Type is trickier to drive. It has so much torque at any given moment that takes incredible skill and patience to get it down to the tarmac. Even then, it never really feels like you can use all of it, despite the smallest of steering inputs.

The F-Type S is (in my opinion, at least) the sweet

spot of the lineup. It's comfortable, luxurious, and still fast. Flipping a rocker switch, pushing a button, and sliding a lever transforms it from a tuxedoed Hugh Grant to a shirtless Jason Statham. The price for performance, exclusivity, and level of equipment is almost impossible to beat. Jaguar will offer this car with a manual transmission, and there will also be an all-wheel-drive version. With the way the range is filling out, the F-Type might start making bigger inroads. Until then, it remains the hidden gem of the segment. **BC**



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Graduating

FIAT AND MAZDA COLLABORATE
ON THE NEXT SPIDER

Words & Illustration
Ezekiel Wheeler

Fiats have distinguished body lines. This breaks up the mass, injects character, and makes sure the car doesn't look like a giant blob.



WHAT WE'VE DRUMMED UP FROM OUR IMAGINATIONS, current automotive DNA, and a chat with Fiat Group's design head, Lorenzo Ramaciotti, is this: the 2017 Fiat Spider, aka the Mazda MX-5 with new front and rear fasciae.

"Fiat is a brand that is meant to be happy," Ramaciotti said. "We want the car to be viewed and loved like a pet." Even so, taking an aggressively designed MX-5 and making it "playful" was a task that took us several attempts.

Luckily, we were able to grab closer looks at the MX-5 chassis and concept car at the 2014 Paris motor show, and even had the pleasure to stumble upon the MX-5 Global Cup car during SEMA. We noticed lines along the upper arch of the headlights similar to the new 500X, as well as the distinct line

between the front bumper and the hood, which is strangely like the 500's grille surround. The new MX-5 sports a protruding snout, but this just means more room for a larger intercooler if Fiat decides to shove in a growling Abarth engine.

The Scion FR-S and Subaru BR-Z are the current benchmark when it comes to cross-breeding sports cars. The fact they're so similar seems like a missed opportunity.

One thing this Fiata could have going for it is an entirely different design philosophy to affect a departure from ready-made parts. A \$30,000 Fiat roadster with a manual gearbox and rear-wheel drive is fine by us and quite probably a vast majority of recent college grads looking to ditch their sacrificial Corollas. ▶

The new 500X headlights are aggressive and inviting enough to find themselves on the Spider.




The MX-5 has a long snout for pedestrian impact and more cooling bits, perhaps a future turbo motor. Fiat will simplify that angular nature and bring some personality.

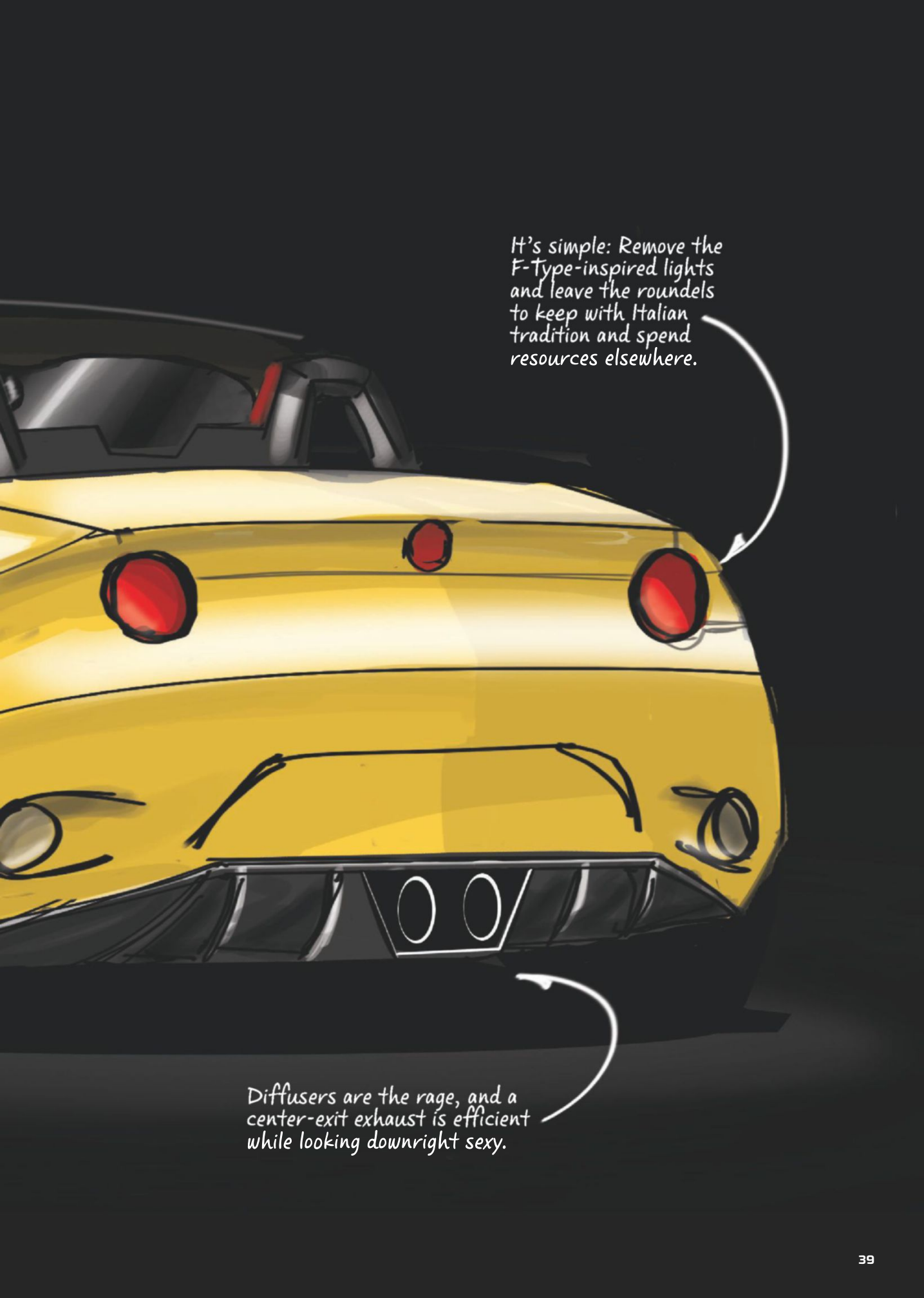
> behind the lines

The last affordable Italian roadster to cruise American highways was the Alfa Romeo Spider, practically unchanged since Dustin Hoffman made it Hollywood-famous in *The Graduate*. Dreams of restoring a Duetto or a Giulietta are dwindling by the hour, thanks to a flood of investors who view classic cars as their ticket to retirement wealth.

This potential Fiat/Mazda collaboration could generate a new cult classic. Or a new “cute” car that will repel men and sell in droves to women (the stronger deciding power regarding vehicle purchases). It could also mean even more drivers in the middle of the pack hunting for a seventh-place finish at the local SCCA racing weekend.

This notion has to be one of the best things to emerge from the auto industry of late and has yet to receive any denials. Until they pull off the covers from the real thing, though, here's the breakdown. 





It's simple: Remove the F-Type-inspired lights and leave the roundels to keep with Italian tradition and spend resources elsewhere.

Diffusers are the rage, and a center-exit exhaust is efficient while looking downright sexy.



THE BEST GETS BETTER

'15 PORSCHE 911 CARRERA GTS

WORDS MICHAEL FEBBO

A PORSCHE PR REPRESENTATIVE

ONCE TOLD ME: "Other companies will put money on the hood of a car near the end of its lifecycle. Porsche chooses to put money under the hood." Putting money "on the hood" basically refers to manufacturers discounting or offering cash back. He's saying Porsche puts more money into the actual car.

That's one way to think about the '15 911 Carrera GTS range. Strictly speaking, this could be considered little more than a value package, offering all the performance options available on any other Carrera S at a discounted price. Or you could look at it as the distillation of the Carrera S and 4S, giving the enthusiast what he or she wants with a little extra in terms of aesthetics and cachet.

For all GTS models, Porsche starts with the Carrera 4S body. This is the only way those wider rear fenders are going on a rear-drive Carrera. The more aggressive exterior is courtesy of Porsche's Aerokit Cup front bumper, aero side mirrors, blacked-out trim and matte black center-lock 20-inch wheels normally reserved for the GT3 and Turbo S. For those interested in changing wheels at the track, Porsche says the switch to five-lug is a no-cost option.

Speaking of no-cost options, the GTS lettering may also be deleted from the rear and sides, while silver wheels, power folding mirrors and a sport steering wheel are all for free if so desired.

Standard equipment on the GTS that is normally optional on the Carrera S includes the Sport Chrono Package, Sport Exhaust, bi-xenon lights with PDLs (Porsche Dynamic Lighting System) and PASM (Porsche Active Suspension Management). Inside, four-way adjustable sport seats are standard, but can be upgraded to 18-way.

The stock cabin sports a mixture of leather and Alcantara. An additional \$4,120 bags the GTS interior package, adding contrast stitching on panels; carbon fiber door, dash and console trim; contrasting tachometer face; embroidered (silver or red stitching) seats and mats.

The 430hp, 3.8L flat-six is the same engine found in the Carrera S models, pumped up with the optional X51 Power Kit. In standard Carrera S trim, the engine produces an already astounding 400 hp. If you think you can easily duplicate that on non-GTS models for less than the \$17,800 premium, you are probably mistaken.

The differences start with a two-stage, variable-geometry intake manifold. Porsche uses one butterfly valve in the main plenum chamber and then individual butterflies in each intake runner. When an intake valve is open, the combination of descending piston plus outside ambient pressure forces air into the combustion chamber at high speed. When the valve closes, that charge bounces off the valve face and is reflected back up the intake runner toward the plenum chamber. It will then pressurize the plenum, which in turn sends another pressure wave back down the runner. If that wave reaches the end of the runner just as it is re-opening, the charge rushes in with more energy, causing a small supercharging effect. The pressure wave's speed is relatively constant at the speed of sound. Obviously, it's dependent on air pressure, but that's a story for another time.

Since the time between the intake valves opening is dependent on engine speed, or rpm, a fixed-length intake runner can only be optimized for a specific rpm. By deploying flaps in these intake runners and the plenum, Porsche can optimize resonance charging at different engine speeds. With this setup, it is possible to see volumetric efficiencies of greater than 100 percent, meaning a cylinder with a volume of 633 cubic centimeters might be able to pull in 650 cc or more, allowing it to perform like a larger engine.

Much like the intake plenum, camshafts are usually optimized for one particular engine speed. Here, Porsche uses two different cam profiles to change lift at different rpm as well as variable cam timing to select when valves open in relation to piston position. The GTS and X51-equipped cars both use a more aggressive cam profile for higher revs, allowing the engine to breathe deeper for more power.

On the other side of the boom, Porsche's



sport exhaust allows for lower back pressure, adding to performance as well as producing a great noise. The system is variable, with valves that not only maximize flow rates, but also allow for more or less sound, depending on preference.

Lastly, the included Sport Chrono package brings active engine mounts, which soften at low-torque operation to reduce vibration and noise, and stiffen up during higher-torque operation and during greater g-loads to stop powertrain movement.

With that brief science lesson out of the way, let's drive. Any GTS is, in a word, sublime. As stated earlier, it really isn't that much different from a Carrera S with a careful selection of driver-focused options. In the end, however, it gels into a wonderfully cohesive package.

To see what these models are like in the real world, we hit the Angeles Forest Mountains outside of Los Angeles in a rear-wheel-drive, PDK coupe (Guards Red, if you're wondering). The car is immediately familiar to 911 drivers. The seating position is as good as it gets, with plenty of headroom and a steering wheel that tilts and telescopes enough to accommodate just about any human body type out there. The sport seats are supportive and the ergonomics are near-perfect.

The sport exhaust adds rumbles and grumbles that fit the car's character perfectly and give that crackly bark during overrun and shifts. In some older versions, Sport mode was almost too aggressive for the street, with throttle tip-in making the car feel jumpy. And it would hold gears for too long. Comfort Mode, however, was too relaxed and focused on fuel economy. Sport now feels more adaptable and the car seems smart enough to figure out the driver's intentions pretty quickly.

The GTS is most at home on the main roads going up into the mountains. It excels through big sweepers and over fast switchbacks. It soaks up bumps and covers ground as fast as anything out there. Mid-range torque is addictive and the performance envelope hovers above legal limits by a decent margin.

On roads like these, power output is perfectly matched to the chassis and you hardly ever find your foot all the way to the floor or even zinging to redline. The twistiness of the tarmac won't allow it.

Switching over to lesser-traveled canyons is a reminder of how much the 911 has grown over the years. On roads that at one time would have been the natural habitat of an air-cooled 911, the 991's width is immediately obvious and even slightly unwelcome in some instances.





The car wraps itself around you and you know where every corner is. But sometimes the passenger-side fender is either uncomfortably close to a cliff wall or a 100-foot drop. Suddenly, driving fast is more about lane management than hitting the best cornering lines.

For someone who runs a lot of small canyons, I might suggest a base 911 (or dare I say?) even a Cayman. Luckily, the body control and sharp steering remove some of the guesswork from the situation.

Canyon driving gave way to track driving at Willow Springs Raceway, with every model of the GTS ready to roll: rear-drive and all-wheel drive, coupe and cabriolet, manual and PDK.

First, let's address transmissions. Porsche has, in its own words, retuned the seven-speed manual for the GTS. It may be the best in the business. Shifts are precise and smooth, with a mechanical feel few others can match. The clutch has the perfect resistance and bite point. This is a last Hail Mary for the manual and Porsche could not have made it any better. If I were looking at a convertible, or maybe even a coupe with no intention of ever going to the track, I would buy it without hesitation. I would never regret it while sitting in traffic; I wouldn't regret it driving in canyons. The rev-matching in Sport Plus mode is better than I can do, and an occasional clutch drop 0is good for the soul. No remorse—until, that is, I drove it back to back on a racetrack with the PDK.

Even in full automatic mode, the PDK is superior on the track. Shifts are blindingly fast and slick, and the car follows orders through the shift paddles with Doberman-like obedience. Clutch pedal fans, I'm sorry, but I'm officially won over.

Driving rear- and all-wheel drive GTS versions one after the other is enlightening. If you believe powering the front wheels spoils right-foot driving or contaminates steering feel, you're dead wrong. Both cars will swing around with a big punch of the throttle. The difference is that when you creep up to a Carrera 2's limits, a little more throttle rotates the car. That's fine, but more push just produces more rotation and you scrub speed.

In the Carrera 4, when the limit comes up and you apply more throttle, the car pushes the power around and figures out which end can best utilize it. It keeps accelerating while the rear-driver is putting on a drift show. You can get the C4 into a four-wheel drift by adding throttle gently. This will cause involuntary yodeling and rally-induced smiling that will last for days.

In the past, Big Willow probably wouldn't have been the best choice to show off a 911. There are two spots in particular that, in earlier generations, are typically hair-raising. One is the transition between turns four and five. To be fast, the downhill section requires a movement from throttle to brakes while applying steering input. Anyone familiar with 911s knows this would have been a recipe for disaster. The GTS with PASM comes to the rescue. Gone are the big-attitude changes





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associated with lifting out of the throttle. The rear end stays dutifully in line and allows the whole section to be conquered in big sweeping arcs, rather than cutting it up into sharp turn, straight, followed by another sharp turn.

The second troublesome area is between turns eight and nine. The GTS is doing in the neighborhood 120 mph here and, again, it requires simultaneous turning, lifting and braking. Not only is PASM a lifesaver, but I have a feeling the active engine mounts aren't hurting either. Cars normally have an initial weight transfer and then a secondary one when anything on flexible mounts "catches up." With active mounts, this is no longer an issue.

I'm not a convertible guy; I would probably never buy one. That said, I have to admit that driving one right after a coupe is probably the only time you can find a downside to the open-top version. It feels slightly heavier and ever so slightly less responsive. Going from a C2 tin-top to a C4 cab, the weight difference is eye-opening. The change in weight isn't nearly so dramatic when driving a C4 coupe immediately afterward.

If it were my money, I'd order a white Carrera 4 GTS coupe with the interior package, Bose audio, Park Assist with camera, European delivery, PDK, PASM sport (which lowers the car an additional 10mm) and painted key (it's a special car, why not?). All this would set me back \$139,725 with delivery. You might say: "Hey, the GT3 bases at only \$131,395. Why not just get that?" Well, if it was just a track or weekend car, that would no doubt be my choice. If, however, I wanted to drive this car daily, I would go GTS. A comparable C4S would cost around \$147,695, by my calculation. Once GTS models start hitting dealerships, I have a hard time imagining someone walking in and not buying one over the standard S. It could happen, though; maybe some customers will talk dealers into putting money on the hood. 



TECH SPEC

'15 PORSCHE 911 CARRERA 2/4 GTS

BASE PRICE
\$115,195

VEHICLE LAYOUT
Rear-engine, RWD/AWD, 2+2-pass, two-door, coupe/convertible

ENGINES
3.8L, 430 hp, 325 lb-ft, DOHC 24-valve F-6

TRANSMISSIONS
Seven-speed manual, seven-speed auto-clutch manual

CURB WEIGHT
3,150-3,350 lb. (mfr.)

WHEELBASE
96.5 in.

LENGTH X WIDTH X HEIGHT
176.8 x 72.9 x 51.3 in.

0-60 MPH
3.8 sec. (mfr. est.)

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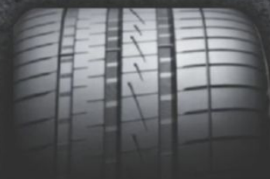
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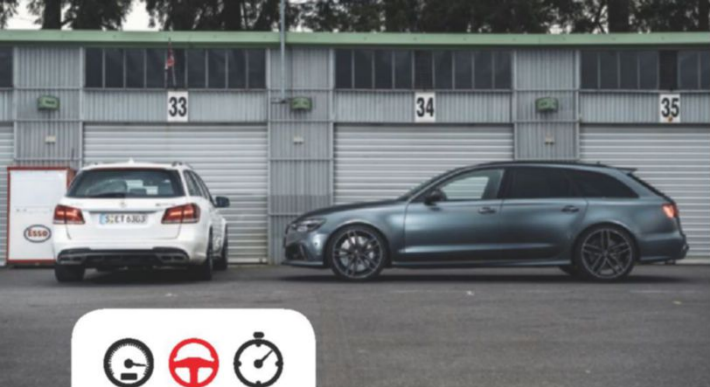
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1,137 HP AND 117 CUBIC FEET OF CARGO SPACE AROUND THE **13 MILES** AND **147 TURNS** OF THE NÜRBURGRING

WORDS MATT ZUCHOWSKI PHOTOS KONRAD SKURA



G

ERMAN SUPER-WAGONS.

Possibly the greatest triumph of human engineering over the laws of physics. These heirs to the unforgettable Audi RS2 Porsche

Avant and AMG Hammer were created to make mincemeat of long highway miles and humiliate showy exotics at traffic light contests. But surely no one buys them to shave tenths of a second from a lap time.

The Nürburgring Nordschleife is no ordinary track day playground. From Ruf's '80s promotional *Faszination* movie clip (where test driver Stefan Roser, in casual street clothes, blasts through each corner in the frantic Yellowbird) to *Gran Turismo 4* fame, this one-of-a-kind stretch of road hidden in the woods of the Eifel Mountains is not only a slice of motoring culture but part-creator of it.

It's a cliché, but this is still the place for the definitive test of man and machine. The Nordschleife is a track like no other, simultaneously beautiful and lethal. Going on for 13 miles, it's unusually long for a track. But the most striking thing once you're here is the difference in altitudes. Each straight ends with a sharp uphill run. There's 985 feet of difference between the highest and the lowest part of this never-ending roller coaster.

Add a relatively narrow track width of 30 feet, Armco barriers about 5 feet from the racing line (in most places) with scarcely any run-off areas, trees making every corner blind, and ever-changing weather conditions (thank the clouds trapped in the valley where the track is located) and the result is the best driving experience for mere mortals and the best proving ground for the car industry. Every pound, every detail of performance is felt dramatically and each mistake punished severely.

Leaving the paddock, a Nordschleife conqueror is treated with a harsh compression at Tiergarten and a difficult braking area to the Hohenrain chicane that opens a technical section ending at Flugplatz, its name taken from a nasty tendency to send cars airborne (an airfield also used to be nearby). A couple of sweeping corners and from the surprising narrow left starts the Adenauer Forst. Some nerve-racking moments later, the brave driver sees the Karussell, that iconic banked 270-degree left-hander Juan Manuel Fangio tackled by aiming at the highest tree at the entrance (let's hope it's still the same one after 60 years). Then the most exciting part comes with drops and blind corners pushing stomach up to throat with even greater force. Out on the Brünchen (the most-photographed section) and through Schwalbenschwanz to Small Karussell, which throws the car back onto the main straight, where a car can at last use its power to achieve scary speeds. OK, that's one lap done.

Back in the 1920s, when the Nürburgring was built, it wasn't that different from other tracks of that era, like Reims in France or Spa-Francorchamps, just over the Belgian border. But while other circuits became





shorter, more civilized, or closed altogether, the northern loop of the Nürburgring (hence its name: Nordschleife) has survived to present times without any major changes. One lap is four times the length of the Circuit of the Americas, it contains three cities in its inner borders, and it's a public road. Yes, anyone with a driving license can enter it during the "tourist rides" that take place most days of the week for the best part of the year. Of course, it's quite special for a public road. To start with, there's a toll. Quite a lot: One lap costs 27 euros (\$34). To make things more bearable, a nine-lap pass is 209 euros (\$260), which is really enough for a whole day. Or sell everything, move to the area, buy an annual pass, and use it every day.

It's a tempting idea for many. The distinct atmosphere makes this place a car enthusiast's Mecca. In the surrounding towns, gas stations, and hotels, there are many souvenirs of the great drivers and past races ranging from autographs to gear to parts of the actual cars. Random supercars with registration plates from all over the world buzz along the local roads along with masked test mules of the cars we'll hear about in two years trying to be inconspicuous. Meanwhile, a group of Japanese engineers in the nearby Rasthaus take a break from working on their new JDM special.





During public rides, helmets are advised but not really popular among drivers. Still, all cars have to wear registration plates and they can overtake only from the left side. Track etiquette obliges slower drivers to make room for faster ones (even if you're in a Gallardo and there's a Renault Megane sitting on your tail) and use indicators. Hide your pride and don't time yourself. No one is really here to compete with others, more like struggling to get through. Going ten-tenths is reserved for the Nordschleife gods. Especially since your insurer will only pay for losses on the other side of the fence. Here they don't care if you blow your life savings on repairing your car and cleaning up the mess it has made. Rebuilding the barriers can add up to several thousand dollars.

A good place, then, to learn the limits of those two \$100,000 efforts from AMG and Quattro. They seem nearly identical: close performance numbers thanks to twin-turbo V-8s, similar cargo capacities, and both have roof rails. The biggest difference is that the RS6 Avant is not coming to the United States, while the E63 AMG S 4Matic is the only Pond-crossing version from the four-wagon E63 European lineup: the S and non-S (the first

with a gloss black front apron, slightly bigger wheels, and a tad more powerful engine—just enough to outdo the Audi), and all-wheel drive or rear-wheel drive. Audi USA prefers to sell the four-door equivalent of the Avant, the RS7 Quattro, which costs around \$3,000 dollars more than the Benz. But at this level, that's about the price of one mat.

There's little subtlety or romance to be found in these two. With their extra-large wagon bodies, they are fantastically over-spec'd, high-caliber weapons. Audi's 4.0L V-8 (shared with the Bentley Continental GT) generates a healthy 560 hp and 516 lb-ft, but Mercedes tops that with 577 hp and 590 lb-ft.

The E63 S is the bad guy here. AMG has sneaked a new, smaller engine under the hood, but with 5.5 liters of capacity, it's still pretty big and retains its muscle-car drama. As every proper AMG should, its V-8 rumble is one of the biggest treats of the whole show.

Inside the RS6, it's not that noisier than

any other Audi wagon. And while the previous version had a big V-10, this one has eight, or sometimes even four cylinders. The Nordschleife is no place to utilize cylinder-on-demand technology, but on our long way to the track, the car could average 24 mpg. The Audi seems to be more civilized and a little more precise. Maybe it's because of the smaller engine that sounds faint in comparison to the AMG's gargantuan mill, but also doesn't weigh on the front axle so much (downsizing can be good for Greenpeace and Nürburgring performance).

The Audi also feels the more agile of the two, even if it employs air suspension. Its Sport Suspension Plus option can bring the steel springs back, but there's really no need in Dynamic mode. Then the RS6 is so stiff that the driver can lose his teeth on the Karussell's concrete slabs. The AMG has its own buttons to regulate gearbox, suspension, and traction control, which upgrade it from menacingly quick to downright crazy.

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At the parking lot next to the starting line—the place of the last deep breath before the moment of truth—it's the Audi that collects more looks. Despite losing its characteristic wide fenders sculpted as a tribute to the first Quattro, but with amusingly unstealthy stealth matte paint and the “I eat BMWs for breakfast” front, it instantly earns visual credit. Along with the big air intakes comes a grille with tuner-like “quattro” lettering smeared at its base, because a small logo won't do. The rear is now dominated by a diffuser that complements the wagon body surprisingly well, accompanied by two bazookas Audi calls exhaust tips.

The E63 S seems to be the ultimate Q-car in comparison. Nothing suggests its acceleration time, which puts it on par with the Lamborghini Murciélago and Pagani Zonda F. Onlookers might even mistake it for an ordinary E-class, but for the fact that there are no normal cars in the Nordschleife's parking lot.

Among the rollcages and seat harnesses fitted to the bare metal of everything else from early Golfs to the latest Porsches, the peerless interiors of these two are worlds apart. I almost feel guilty entering the track with

honeycomb-quilted Nappa leather seats, the latest multimedia interfaces with big screens, and top names on the hi-fi systems. The only enhancement to their comfy cabins is some minor carbon-fiber detailing—no BMW M5-colored rev counter or Jaguar XFR-S blue stitching theatrics.

Every driver feels great respect for this ribbon of asphalt, including the famous Jackie Stewart, who coined the often-used nickname “Green Hell.” We came here to have fun, but it's more like a struggle for survival on the front line of battle. You see cars crashed in spots where everything was fine just a lap ago. During a busy day, sirens closing the circuit can be heard nearly every hour so that everyone waiting to get on the track can see how a tow truck returns with a wrecked Vette and its miserable driver.

That's why I enlisted the help of Carlo Finé to evaluate the cars' true performance in this hostile environment. He's a police driving instructor who teaches other policemen how to drive fast, using the Nordschleife as their classroom (yes, they really do that in Germany). He is not as well known as Sabine Schmitz, but with more than 1,000 Nürburgring laps covered

on duty and another 1,000 in his free time, he's no newbie. Even he never mashes the throttle of either car for more than mere seconds, despite both overweight autobahn-blasters still generating impressive levels of grip in the corners, with only the slightest of body rolls and traces of understeer. Happy tail slides are not on either car's menu, though. In the E63 S, it's curtailed by the 4Matic system. In the RS6, it's nowhere to be found.

Adding all-wheel drive to the E63 S helps put all its power on the tarmac more effectively. The Mercedes is slightly faster in a straight line, thanks to the slight 4.5 percent power advantage. It has better steering, too, and is surprisingly well weighted and communicative. The RS6's driving experience is blunt and slightly isolated, like all big, fast Audis. Even in Dynamic mode, there's still that artificial feeling. But maybe that's how Joe Public can drive with his wife and kids and a week's worth of groceries in a car faster than a Ferrari F430. Even in these conditions, both the RS6 and E63 S are exceptionally stable, thanks to the heavyweight stance, big distance between all the four wheels, and power steering systems calibrated to mitigate a driver's nervousness.

Knowing I have stopping power on my side (if the Audi's 16.5-inch carbon ceramics discs can't save me, what will?), I pluck up the courage to make good use of that massive power. Incredibly, I feel I'm in the right place sitting in either E63 S or RS6 to tackle this circuit. What's even more surprising, both cars feel they're in the right place as well. They're built so well they can probably outlive your grandkids, but what counts even more is that they can survive a whole series of brake-biting, rubber-burning, exhaust-glowing laps, which is rare among stock machines.

Before long, I have too much fun, achieving speeds far greater than I should and generally ignoring everything I have written about safety measures so far. There is something so magically wrong about the Nordschleife that makes people keep coming back. Humans are weird, but who built these two wagons in the first place? 🚗



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YK580

Control Contact Sport A/S

STARTS AT \$55

STARTS AT \$57

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STARTS AT \$118

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WORDS COLIN RYAN





THIS IS THE TALE OF A LIGHT RIGHT FOOT. Part of the fun of driving is being able to mash the throttle every now and then. But there is another way, where utmost control is exercised and impulses repressed to make a tankful of fuel go as far as possible. This is Audi's TDI Challenge.

The goal: to drive a '15 Audi A3 TDI from Albuquerque, New Mexico, to San Diego, California, on one tank of diesel. The indirect route (not just a case of getting on Interstate 10 and slipstreaming a few trucks) is 834 miles, going through Sedona, Arizona. The tank holds 13.2 gallons. That works out to an average of 63.2 mpg. Fine in theory, but there are hills, traffic, and cities to deal with.

It is feasible, though, because Audi hired a hyper-miler expert to do a preliminary run. All it requires is to not use the air conditioning (even when driving through the desert), go slowly while a string of big rigs negotiate their way past, and no doubt employ a secret repertoire of special techniques to get maximum mileage from each squirt of diesel injected into those four cylinders.

This engine is the third and newest iteration of the VW Audi group's trusty, clean, and quiet 2.0L turbodiesel. It now makes 150 hp (10 more than before) but keeps torque at a still meaty 236 lb-ft, coming in strong at just 1,750 rpm. Where the previous version returned 30 mpg city, 42 mpg highway, and 34 mpg combined, this one is rated at 31/43/36. Our fuel-stretching specialist thinks those EPA numbers can be bettered just by sticking to the speed limits. But if this is a competition, there's no point in not being competitive.

One of the many great things about the new A3 is the trip computer, which is easy to navigate while still keeping hands on the steering wheel. It's useful to check the average consumption from time to time, but the instantaneous consumption readout really helps to focus the mind. On the first stretch from Albuquerque to Grants, there are plenty of uphill sections, and I'm torn between going slow and asking too much of the engine or putting my foot down, getting some momentum and staying in a higher gear. I go for momentum.

Some of the downhill stretches aren't sufficiently steep to throw the dual-clutch, six-speed transmission into neutral and coast while feeling smug about the 300-mpg figure that flashes up at those times. It still needs some throttle to keep the weight moving and have some kind of run-up to the next incline.

We stop at Grants to see the Ice Cave in El Malpais. It's a collapsed lava tube from a now-extinct volcano where the temperature never gets above 31 degrees F and the deepest ice is about 1,000 years old. From there, we trudge to Flagstaff and the other highlight of the day: the 89A that runs through the grandiose Oak Creek Canyon to Sedona. With the low sun hitting the lofty red rocks, it surely ranks as one of the great natural wonders of the world.

After day one, my driving partner (the excellent Nate Martinez of *Motor Trend*) and

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I have covered 372.7 miles at an average of 55.6 mpg. The trip computer gives our current range as 315 miles, with 461 more to go. There's no chance of cheating. Audi has placed a seal on the fuel cap, so if we stopped for an illicit couple of gallons, we'd be busted. But clearly, we need a better game plan.

We leave early next morning, with thousands of stars twinkling in a clear, pre-dawn sky. Arizona is so desolately majestic that I don't mind moving through it at an almost glacial pace. There are mountains, Alpine-like roads, and those cacti normally seen in cartoons—saguaro (*Carnegiea Gigantea*)—are everywhere. Speaking of cartoons, it looks like

we should be overtaken by the Road Runner (*Velocitus Delectiblus*) followed by Wile E. Coyote (*Desertus-Operativus Imbecilius*) on an Acme rocket sled. Everything else has been overtaking us on this trip, including a bus towing a porta-potty. Oh, the indignity. Luckily, vision is excellent for those many glances over the shoulder. Blind spot monitoring is an option, by the way.

On the west side of Sedona, one stretch of the 89A is a mountain road of smooth tarmac with some gorgeous bends. It's probably the one occasion ever in which I can turn to my driving partner and say I just took that last corner at 100 mpg. It's times like this that the

A3's grippy front end comes into its own. The car turns in with precision and composure. Push it further and it'll understeer, then ease off the throttle and everything nudges back into shape. No all-wheel drive, just front-drive. But for something that's supposed to be the sensible choice, the A3 TDI is a surprising bundle of fun.

Rougher road surfaces bring more noticeable noise, though, and the suspension's sporty edge means a ride quality that sometimes gets close to jiggly. At no time did I actually need to sit in the back, but with the driver seat set up for me (an average-height adult male), I could get in the rear quarters easily, slide my feet under the seat in front, and not worry too much about hitting the headliner. The trunk also has more than enough space for the obligatory two sets of golf clubs.

We take the 89 from Prescott, through Yarnell. We go past real cowboys, working on ranches, riding horses, wearing hats and chaps (the cowboys, not us). Then we drop down to the long, straight 60 to eventually meet up with the 10 and stay on that while crossing into California. Then we take the 98, dip south on the 111, and head west again on the 8 that skirts close to the Mexican border and sends us over more switchbacks and through the Sahara Desert. It's not the Sahara, obviously, but the fine, pale yellow sands of Glamis Dunes are exactly how I'd imagine the world's largest desert to look. Whenever I fly across the United States, I always try to get a window seat and spend most of the journey looking at the amazing scenery below. Now I was right in it.



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TECH SPEC

'15 AUDI A3 TDI

LAYOUT

transverse front engine, FWD

ENGINE

1.8L inline-four, turbocharged, DOHC

TRANSMISSION

six-speed, dual-clutch

BRAKES

12.3-in. ventilated discs (f); 10.7-in. solid discs (r)

SUSPENSION

Macpherson struts w/ lower A-arm and stabilizer bar (f); torsion beam w/ separate springs and dampers (r)

WHEELS & TIRES

17-in. wheels; 225/45 all-season tires

PEAK HORSEPOWER

150 @ 3,500 rpm

PEAK TORQUE

236 lb-ft @ 1,750 rpm

0-60 MPH

8.1 sec.

TOP SPEED

130 mph

FUEL CONSUMPTION (CITY/HIGHWAY/COMBINED)

31/43/36 mpg

And the trip computer is telling us that we really will be right in it. In just a few miles. Every pulse (not even a prod) of the accelerator brings the real-time consumption figure down, along with feelings of stress and self-loathing. There's finally a point where we can rendezvous with some Audi techs and they can replenish the tank by a few gallons. It's immediately before a long uphill stretch that will surely pull the instantaneous mpg figure down into single digits.


After a total of 714.6 miles and an average of 59.7 mpg over two days, we decide to do the decent thing. The trip computer says we have 10 miles until empty. This is one of those situations where I wish I knew even yesterday what I know now, because the second day's average is 63.7, good enough to put the challenge within reach. The last 50 to 100 miles would still have been fraught, though, driving with the fuel gauge on E and with zero range in the display, trusting that Audi's engineers had been deliberately pessimistic and factored in a margin for error.

It's a sign of how good the car is (and especially how well-shaped and supportive the seats are) that I would have gladly done another 834 miles straight away. This premium compact sedan is ideal for someone who does a lot of driving and wants to be in a classy environment (a Bang & Olufsen audio system is on the options list) while keeping fuel bills manageable. And who wants it to be about more than just getting from one place to another. The TDI Challenge really has been the journey, not the destination.

Away from any unusual constraints, though, it's still possible to get mpg in the high 50s just by using common sense. Keep an eye out for traffic lights that have been green for a while; don't go speeding up to them only to brake hard when they go back to red and then sit there for a couple of minutes. Try to synch the approach for when they just turn green. Also, use the transmission in manual mode to stay in as high a gear as possible. In general, be gentle with driver inputs.

Should the desire to be less gentle arise, then the A3 TDI can hit 60 mph from standstill in 8.1 seconds before hitting a top speed of 130 mph. That's more than enough push for getting up to freeway speeds, powering out of bends, and for most overtaking situations.

Let's not forget that Audi has won Le Mans multiple times with diesel-powered race cars, so the company's knowledge of endurance, power, and reliability is pretty much unparalleled.

The trouble is that the great American motorist still finds it hard to accept diesel-powered cars. Gasoline is as much part of the culture as barbecued meat. In Europe, there are more new diesel cars sold than petrol drinkers. The old clichés of being slow, noisy, and dirty disappeared there years ago. And the irony is that diesel would suit the style of most American drivers. They love torque, which engines like this have by the bucketload. And with all those long, long, lonely roads that cross the heartland—exactly like those driven in the TDI Challenge—lower fuel consumption seems like a no-brainer. 

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LAUNCH PAD

THE 2014
TOP SPEED
SHOOT OUT
BREAKS THE
200-MPH
BARRIER



WORDS BOB HERNANDEZ
PHOTOS STAFF



THE ENTHUSIAST COMMUNITY HAS TAKEN a liking to airstrip-based top speed events. The growing popularity of contests like the Texas Mile, Mojave Mile, and No Fly Zone demonstrate the appeal of safely pinning the throttle for a half-mile or mile. No cops, no traffic, no turns. Just a driver, a car, and an open stretch of long, straight tarmac.

European Car wanted some of that action. But we didn't want to be part of someone else's show; we've been to enough No Fly Zone (NFZ) events to know we'd prefer to throw our own affair. So with the help of NFZ organizers, Omega Motorsport, we assembled a group at Minter Field—a small, municipal airport in Shafter, California (just north of Bakersfield)—for the inaugural and somewhat experimental Top Speed Shootout. ➤







Experimental, because while all those other events run single cars down the strip, we decided to up the excitement factor by having pairs of cars on the attack. Not a race, exactly, but certainly another element to keep participants on their toes.

The field included guests of sister publications *Super Street* and *5.0 Mustang* but was made up primarily of European-branded entries (we also borrowed a Kawasaki Ninja ZX-14R sportbike just for the heck of it). Burger Tuning's F80 M3, Tim Davis' McLaren MP4, and Kenneth Romero's Porsche 997 all put in passes in excess of 150 mph. Canadian Kenton von Hollen's built E46 M3 (a previous *European Car*-featured vehicle) tied for the second-best run with Frank Hwang's MkIV Supra, both hitting 179.1 mph. But no one could beat the insane 996 brought out by BBI Autosport.

Aptly named "King Kong," this is one of the fastest rear-drive 911s in the world—a point proven emphatically at Top Speed Shootout. The E85-fueled, 1,500hp machine began with a pass of 197 mph, and it only went up from there. By the time it was done, it managed an astonishing 201.5 mph, demolishing the competition. We couldn't have asked for a more dramatic high, and we're looking forward to a much bigger field taking part in 2015. **EC**

FINAL RESULTS	DRIVER	MPH
'01 BBI PORSCHE 911	Betim Berisha	201.5
'03 BMW M3	Kenton von Hollen	179.1
'94 TOYOTA SUPRA	Frank Hwang	179.1
'07 PORSCHE 911 TURBO	Kenneth Romero	165.8
'10 NISSAN GT-R	Anthony Grant	160.8
'12 MCLAREN MP4 12C	Tim Davis	3156.8
'15 BURGER TUNING BMW M3	Tony Burger	151.5
'02 FORD MUSTANG	KJ Jones	136





THE FAMILY CAR

WE WELCOME A FIAT 500 ABARTH TO OUR GARAGE

Words & Photos Michael Febbo

SOME CARS JUST PROVIDE TRANSPORTATION, some are integral to a lifestyle, and some—like the Fiat 500 Abarth—become part of the family.

My first name is Michael, my middle name is Santino. My godfather was also named Michael, but I am really named after the two Corleone boys of Mario Puzo's creation. I suppose it's only fitting, then, that I have fallen in love with the Fiat 500 Abarth, the latest car to occupy a spot in *ec*'s long-term garage.

It's also strange, because the first time I drove an Abarth I wasn't particularly impressed with this tiniest and most value-packed of Italian performance cars in the United States. I found it cramped, unrefined, and honestly a bit loud. It didn't take long for those opinions to do a 180.

When I requested the car from Fiat, I was pretty specific in my wants. I asked for a white, modestly optioned, manual coupe. However, when everything was said and done, they offered me a black, loaded, manual convertible. Naturally, it was an offer I couldn't refuse.

I was hoping for a base price of \$23,245, which would make it not only the least-expensive Italian performance car, but

also a decent amount less than even a basic Volkswagen GTI. As it turns out, this convertible has a base of \$27,045 with destination.

On top of that, we have the Beats Premium Audio Pack for \$700; Electronics Group with Wi-Fi for \$609; Comfort/Convenience Group including Auto Temp Control; heated front seats, and Sirius XM Radio all for \$900; black-trimmed headlights are another \$250; gray mirror caps and side stripes are \$450, TomTom navigation is \$600, and finally the 17x7-inch forged wheels are \$1,300. All these items bring the grand total to \$31,854. For comparison's sake, a GTI Autobahn is slightly more, but offers a bit more equipment as well.

The thing about the Abarth, however, is that it can't really be compared to anything else. This isn't a car you buy because it makes any amount of sense. But art doesn't make sense, music doesn't make sense, why should your car have to?

I've already met several other Abarth owners at gas stations and in various parking lots. An unusual bunch, but they're all crazy about this diminutive machine. It seems most have bought it as a second or third (sometimes seventh) car and it appears it is anywhere from a third to a fifth of the price of the next least-expensive car with which it shares a garage. It's hard to imagine, but several owners walk past their 911s, AMGs, and M-cars and get into this go-kart for commuting or running errands. The Abarth gets under your skin.

The first weekend I brought it home, I was concerned about getting my wife, my 2-year-old and myself in the car. My son is roughly 35 pounds, but a toddler comes as an equipment group. First, there's the child, then the car seat, which pushes him away from the seat so he requires the same amount of space as a largish adult—plus a backpack, usually bulging. We also have a stroller at least 80 percent of the time; luckily it folds up fairly small.

The hardtop 500 is a hatchback, the soft-top has what is essentially a trunk. Since the rear window folds away with the roof, the trunk lid is hinged just below. Cargo space is



not huge, but holds a few bags easily. Sadly, the stroller has to sit behind my driver seat, which is far enough back so a person couldn't occupy it anyway.

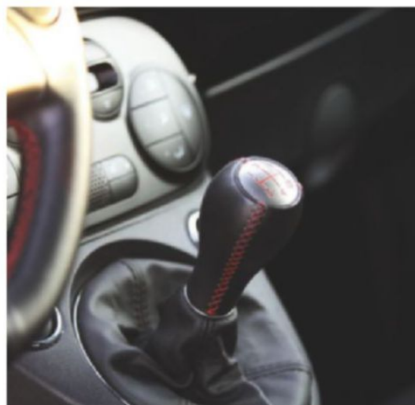
My wife's passenger seat is far enough forward that my son can still kick his legs around and just far enough back that she can just open the glovebox. The narrowness of the car also means we sit shoulder to shoulder. The feeling is more snuggled than smooshed, although driving your boss to the airport might be an awkward experience.

We've only done short road trips so far, but they are flashbacks to drives I had as a kid. When my son was born, we had a VW Passat and that transitioned into a Mercedes-Benz GL350, both of which are phenomenal vehicles. Both have an abundance of space. In the GL, my wife and I had a 1-foot-wide center console between us and my son was so far back we had to shout to hear each other.

The Fiat brings the family together more effectively than Milton Bradley. As my son is naming off every car he sees, I can hear it all. When his Hot Wheels, stuffed monkey, Legos, donut, cup of goldfish crackers, apple slices, juice box, water bottle, hat, or sunglasses hit the floor, I can get it. Nothing is ever out of reach from the driver seat.

Although the convertible was not my choice, we are enjoying it far more than I would like to admit. With the top open, the





sound of the exhaust ripping away echoes off the surroundings and becomes even louder inside the car. The drive to daycare in the morning becomes an early-morning grand prix. My son will throw his hands in the air while giggling and squealing.

The Fiat feels fast at any speed. You can swing the tachometer all the way up to redline, exhaust brapping furiously, and I'm not worried about losing my license. That isn't to say the Abarth is slow, but compared to the cars normally seen in *European car* it is far more relatable to the real world.

Speaking of the engine, it's a raging 1.4L rated at 160 hp and 170 lb-ft of torque. Those numbers don't reflect its character; the little engine that can punches well

above its weight. It likes to rev, but at the same time has plenty of low-end torque. The dash-mounted boost gauge swings easily and quickly to the 18-psi section of the dial. Boost is so quick and easy, it's only the futuristic cyborg vacuum cleaner noises that give it away as being force-fed and not larger displacement.

The five-speed transmission is the perfect playmate for the powerplant. Gearing is short and allows the engine to keep the revs where they should be. Drivers who spend a decent amount of time on the highway would appreciate a Sixth gear, but you would never need it around town.

Suspension settings are stiff, but the rates are never harsh. The ride is lively,

mostly attributable to the car's size. Although we all complain about how big cars keep getting, we take for granted the fact that longer wheelbases and more mass inherently provide greater ride comfort. This little lightweight gets thrown around a bit by bumps that wouldn't even be felt in a 5 Series.

The steering is terrier-quick and feel can probably be best described as old-school. Initial turn-in is tough to keep smooth. The Abarth flicks into turns and then settles down quickly. It understeers—basically, that's all it will do. Abrupt throttle lifts will get the nose to tuck back in, but don't expect any rotation. We understand the aftermarket has a few answers for that.



TECH SPEC

'14 FIAT 500C ABARTH

BASE PRICE

\$27,045

PRICE AS TESTED

\$31,854

LAYOUT

front-engine, FWD, four-passenger,
two-door, convertible

ENGINE

1.4L, 160hp, 170-lb-ft, turbo, SOHC, I4

TRANSMISSION

five-speed manual

CURB WEIGHT

2,600 lb. (est.)

WHEELBASE

90.6 in.


LENGTH X WIDTH X HEIGHT

144.4 x 64.1 x 59.2 in.

0-60 MPH

6.8 seconds (est.)

Which brings us to the magazine's plans for the Abarth. This will be used for several months, and we will evaluate the car on a daily basis. We are realistic and realize most of our readers just can't leave well enough alone, that the tuning bug will eventually sting them. Honestly, we're no different. The second the Fiat arrived, Google searches for suspension, braking, and power upgrades began. We're going to see what's available from Fiat dealers and reputable tuners.

We've already started the testing process, gathering more data than you might be accustomed to seeing in car magazines. At this point, we aren't even sure exactly how long our hot little Italian will be around, so we're going to take advantage of it every day. We love it as is, but can make some changes to individualize it to our tastes. Like any member of the family, we don't want to change who it is—we just want to help it become the best it can be. *Ciao.* 



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SWEATING THE DETAILS

PERFECTING

THE VW GTI

ONE COMPONENT

AT A TIME

WORDS BRYAN JOSLIN
PHOTOS MIKE HYATT



THAT BIT YOU ALWAYS HEARD about not judging a book by its cover? It's good advice. Case in point: the Volkswagen GTI you see here. That's right, the sensible-looking four-door family car in Carbon Steel Grey. The one that just blew past you like a Fourth of July bottle rocket.

That's exactly the effect Ryan Jacobs envisioned when he first starting improving his '11 GTI. After years behind the wheel of several tweaked-up JDM rides, Ryan crossed borders for something from the Old Country. A practical daily driver was the requirement, but he wasn't quite ready to give up the performance he was accustomed to. Like so many before him, he soon found himself the owner of a brand-new GTI.

Right out of the box, the MK6 GTI is a pretty ideal mix of performance and practicality, but Ryan knew there was more to be had from its turbocharged 2.0L engine and sophisticated chassis. Almost immediately, he got to work changing out factory parts with carefully curated upgrades from the after-market with the ultimate goal of creating the perfect GTI.

Ryan has spent virtually every day of the last four years in search of the right upgrades to make his GTI the ideal balance of daily driver and track beast. In just about every corner of the car, he has gone through numerous iterations in search of "just right." The parts he's tried and discarded would be an enviable list for most of us, but his dedication—or maybe more accurately, his obsession to perfection—shows in the final product. You want proof? Search any of the big VW forums for his build threads, where he posts under the handle HYDEI6. The man is pathological.

The logical starting point for adding power to a modern turbocharged VW is, naturally, engine software. Redline Speed Worx flashed the ECU with APR's multi-program software package, consisting of stock, 91-octane, 93-octane, and 100-octane race gas settings. This was later upgraded to play along with new K04 turbo hardware and a front-mount intercooler, also from APR.

To handle the heavier breathing, Ryan replaced the factory airbox with an open intake system from Unitronic and upgraded the standard MAP (manifold absolute pressure) sensor with a high-performance factory unit from the Golf R. He then turned to Neuspeed for throttle body and turbo discharge pipes to keep things moving smoothly through this typical bottleneck.

Inside the K04 turbo, SoCalPorting worked its magic with a full port and polish on the turbocharger and exhaust manifold to clean up the flow of hot gases. To keep the turbo performing at its peak, Ryan ditched the factory diverter valve in favor of a heartier DV+ unit from GoFastBits, which sits on a relocated mount from Unitronic. All said and done, the engine's fiery-hot breath leaves the GTI through a custom 3-inch exhaust from SPM.





The ignition system was upgraded with high-performance coil packs from Ignition Projects firing NGK 8-series iridium plugs. To ensure reliable power supply under more demanding conditions, a compact, lightweight GUIR lithium battery from Braille replaces the conventional lead-acid anchor, removing nearly 40 pounds from the front end in the process.

In this state of tune, the 2.0T TSI engine jumped from 207 hp and 220 lb-ft of torque to 375 hp and 402 lb-ft in its 100-octane race gas program. Ryan uses an Aquamist HFS-4 water/methanol injection system from Howerton Engineering to achieve 100-octane performance from 93-octane pump gas. Four jets individually feed each cylinder through the intake plenum with a fifth jet to cool the throttle body's intake charge, all fed by a Coolingmist 2.3 Gallon All in One Pro Tank that is cleanly integrated into the rear cargo area.

With so much invested in engine upgrades, Ryan reflected on another old adage, the one about an ounce of prevention being worth a pound of cure. Starting with the cooling

system, he ditched the factory radiator and its failure-prone plastic end caps for a high-performance all-aluminum piece from Tyrolsport, while a Dimple magnetic drain oil drain plug pulls out any free-range ferrous material from the lubrication system. Heat-deflecting Lava Turbo Blankets from PTP wrap the downpipe and turbocharger to shield the engine bay from excessive temps, with a matching set of firewall and underhood blankets protecting vital electronic components while soaking up direct injection noise.

A South Bend Stage 3 clutch disk delivers power to a beefed-up six-speed factory gearbox built by Redline Speed Worx. A DieselGeek short shift kit, enhanced by TyrolSport solid shifter bracket bushings, acts on steel shift forks from USP Motorsports. A limited-slip diff from Peloquin negotiates torque between the left and right Driveshaft Shop level-2.9 axles. A Stage 1 upper motor mount from Black Forest Industries and a stiffer lower motor mount from HPA keep the engine and trans in place when the torque starts flowing.





TECH SPEC

'11 VW GTI SPECS

ENGINE/ENGINE COMPARTMENT

APR 2.0T TSI KO4 Conversion/ECU flash and intercooler, Aquamist Water/Alcohol Injection, Unitrone cold air intake system, GFB T9351 DV+ diverter valve kit, Neuspeed HI FLO KO4 turbo discharge pipe, VW Golf R 3-bar MAP sensor, SoCalPorting turbo and exhaust manifold port & polish, SPM 3" custom turbo-back exhaust, TyrolSport aluminum radiator, 034 Motorsport oil catch can, Black Forest Industries Stage 1 engine mount, HPA 75-durometer (red) lower engine mount, Braille GU1R Green Lite lithium battery combo, PTP Turbo Lava turbo blanket, downpipe heat wrap and firewall blanket

TRANSMISSION/DRIVETRAIN

South Bend Stage 3 TSI clutch disc, BMC short-throw clutch stop, DieselGeek Sigma 6 short shift kit, TyrolSport solid shifter bracket bushing kit, Peloquin limited-slip differential, Driveshaft Shop level 2.9 axle assemblies

CHASSIS/SUSPENSION

ST Suspensions Coilover Kit, Audi TT strut mounts, H&R 26mm front/24 mm rear sway bar, SuperPro Performance control arm kit, Whiteline rear trailing arm front bushings, TyrolSport DeadSet rigid front and rear subframe collar kits

BRAKES

StopTech ST-40 328mm 4-piston front brake kit with slotted rotors, StopTech 310mm rear slotted brake rotors, VW Mk V R32 rear brake calipers, TyrolSport master cylinder brace

WHEELS/TIRES

19 x 8 inch VMR V705 Alloy Wheels, 225/40-18 Michelin Pilot Super Sport tires

EXTERIOR

VW Euro "Highline" front grille, Golf R LED taillights

INTERIOR

AWE vent-mount boost gauge, Stinger Roadkill door and truck sound deadening kits



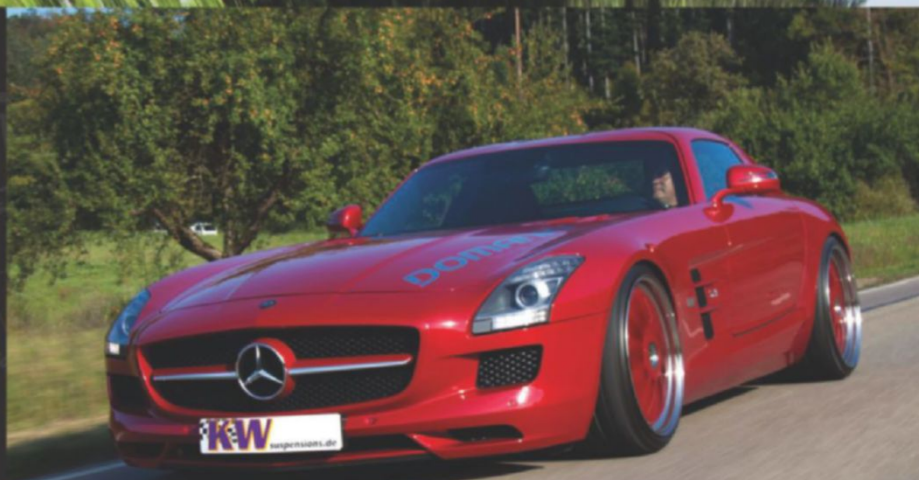
Behind the perpetually clean 18x8 VMR V705 five-spoke alloys lives a meticulously sorted brake setup. The fronts feature four-piston StopTech ST-40 calipers on 328mm two-piece slotted rotors, while the rear calipers are upgraded factory units from a Mk V R32 acting on 310mm StopTech slotted rotors. Ryan had the calipers powdercoated black for a clean, subtle appearance and uses Hyde's Serum, a product he developed himself, to keep rust from forming on the steel brake rotors after the car is washed. StopTech stainless steel lines and a TyrolSport master cylinder brace ensure the forces applied at the pedal translate into rock-solid braking performance at the discs, no doubt helped by the sticky 225/40-18 Michelin SuperSport tires.

All about the go and less about the show, it should come as no surprise that Ryan chose function over "stance" when it came to the suspension as well, foregoing airbags for old-school steel. A coilover kit from ST Suspensions replaces the factory springs, shock, and struts, aided by H&R sway bars at both axles. The steel front control arms have been replaced with SuperPro alloy units with upgraded bushings. The rear trailing arm bushings and sway bar endlinks are also upgrades courtesy of Whiteline.

With all the added stiffness in the suspension components, the GTI's unibody was in need of its own reinforcements. The rear body section is stiffened with a carbon-fiber hatch brace from TyrolSport, and the front and rear suspension subframes are more solidly connected to the body with TyrolSport's DeadSet Rigid Collar kits.

Despite all the work beneath the skin, Ryan has intentionally kept the outward appearance of his GTI decidedly low-key. No sense drawing unwanted attention, after all. Carbon Steel Grey, it turns out, is the perfect canvas for a sleeper; the car's menacing presence its only real giveaway. Upgrades on the outside are largely limited to bits and pieces from the VW parts bin. Golf R taillights and a European Golf Highline grille give the GTI a simple, purposeful look. To go with the taillights, all the other exterior running lights are equipped with LEDs. The mirror caps, front spoiler, and rear valance are color-matched to the wheels for an understated accent, a tinted rear reflector matches the taillights, and the front-side markers were color-matched to the car to finish off the effect.

The cockpit is equally clean and free of unnecessary embellishments. An AWE boost gauge in the left-side dash vent delivers vital stats on the engine's inner workings alongside a column-mounted gauge for the Aquamist system. LEDs illuminate the cockpit. With all the heavy-duty hardware he's installed, it might be fair to assume Ryan has overworked a perfectly good GTI. But you'd be wrong. From the driver seat, the car retains all its original charms, but everything is now sharper, more precise, and much more effective. Power, braking, cornering. All of it is just about as perfect as a front-drive car can ever hope to be.



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The engine is a powerhouse that requires thoughtful application of the right pedal to manage responsibly. Needless to say, it will freely spin its front tires at launch. But what's surprising is how easily a full-throttle drop from cruising speed in Third or Fourth gear can just as easily deliver the same effect. Moderation is the key to a smooth drive with so much power in reserve.

Working the gears in Ryan's GTI is a rare pleasure as well, since all the usual freeplay and slop have been eliminated from the cable-operated linkage. Instead, it's a smooth, precise experience that feels more akin to a longitudinally mounted rear-drive gearbox with stick acting directly on the internals. The clutch is firm and precise as well, yet requires little in the way of added effort. Likewise, everything about the brakes is firm and exacting in its performance.

Perhaps most surprising is the level of refinement this odd menagerie of parts delivers. The suspension, for instance, is damn-near magical in its ability to mask road imperfections while simultaneously eliminating body roll when the road goes all twisty.

There's none of the expected bunny-hopping over pavement seams, no bump-steer mid-corner. The combination of a stiff chassis with relatively soft suspension components pays dividends in the real world.

The same goes for the exhaust. Despite a deep howl at start-up, the pipes are extremely mellow once the engine is warmed up. From outside the car, there's no denying it's a performance beast, its deep bass song resonating proudly at full stomp. Inside, however, there's a surprising absence of "cruising boom," that tendency large-bore exhausts often have for creating an annoying resonant frequency when rolling along at fairly low engine speeds. You can actually converse at normal speaking levels while cruising in Ryan's car.

Most enthusiasts would look at Ryan's car and see a finished project. Heck, most people would have considered this car finished long before this level, but as you may have guessed, there are still plans. Ryan intends to do a full engine build with components from Integrated Engineering. Stronger rods and pistons will get the squeeze from a twin-scroll turbo kit. He has visions of 500 hp, which makes me wonder if that will be the tipping point that turns this beautifully sorted dual-purpose build into a full-time track monster. **E**



OWNER'S CHOICE

I asked Ryan about some of his favorite components he's used on the GTI. He has obviously researched and tested these parts at length, so he knows what works and what doesn't. He was nice enough to list a few of his car's greatest hits in order of cost.

1. TYROLSPORT—DEADSET RIGID SUBFRAME COLLAR KIT: A simple fix to the "subframe clunk" on several newer VW models. The kit consists of machined brass collars and ARP bolts that precisely locate the car's front subframe, eliminating any slop or movement. It provides a more solid feel and eliminates the banging sounds. **RETAIL: \$225**

2. DIESEL GEEK—SIGMA 6 SHORT SHIFT KIT: It may look like overkill, but the chunky billet aluminum pieces in the Diesel Geek shifter remove all the slop and flex in the factory setup. Plastic rod ends are replaced with Teflon-lined steel spherical bearings, and the remaining plastic in the slider has been replaced with a higher strength structural plastic. **RETAIL: \$195**

3. AQUAMIST—HSF4 WATER/METHANOL INJECTION KIT: While most water/meth kits are simple on or off and triggered by boost pressure, the HSF4 uses a combination of injector pulse width, fuel line pressure, and boost to determine when and how much to spray. It may not be a cheap modification, but when you look at the price of larger intercoolers and the price of 100-octane gas, this starts to make more sense. **RETAIL: \$885**

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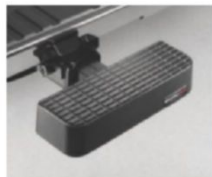
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AIMING TO WIN

WORDS RYAN JURNECKA



INSIDE AIM AUTOSPORT'S TITLE HUNT AT PETIT LE MANS

IT'S THE PETIT LE MANS 10-HOUR RACE WEEKEND AT ROAD ATLANTA. Now in its 17th running, the event has established itself as one of the major endurance races in North America. At this final meet of the inaugural Tudor United Sports Car Championship (TUSCC), titles are at stake in every class.

Canadian-based AIM Autosport compete in the GT Daytona class and are locked in a three-way battle with Turner BMW's Z4 and Alex Job Racing's 911 for top team,

manufacturer and driver. AIM's Ferrari 458 Italia GT Grand Am has netted them championships in the Rolex Grand Am series for the last two years (manufacturer, driver, and team in 2012, manufacturer in 2013). With the driver pairing of Townsend Bell and Bill Sweedler, AIM are currently third after 12 races and have within their grasp the "championship within a championship"—the Patron North America Endurance Cup—which goes to the highest points-scorer in the season's four long-haul competitions. For this weekend, the teams take





on a third driver; AIM have chosen Formula Drift star and Ferrari clientele coach, Conrad Grunewald.

The cars take to the track for their first practice session on a warm, humid Thursday morning. A new visitor to Road Atlanta may be surprised by a lack of attendance at the three wooden bleachers lining the main straight, an uncharacteristic sight at most other tracks. But many people are camping along the perimeter. Others have their chairs staked out at Spectator Hill, catching a superb view of the Esses, which is a prime spot for overtaking.

At the end of the session, AIM are in 13th position, 0.7 of a second down on eighth-place Turner BMW, the current championship leader. Top spot is a position AIM have held for most of this season and are now fighting to regain.

"This is not normal for us," says co-owner Andrew Bordin as his techs sweat over the No. 555 Revo-branded 458. "We've never worked so hard just to get into the top 10. We're used to winning races and championships."

This reversal of fortune has come about because of something called the Balance of Performance (BoP), a rule intended to prevent any one team and/or manufacturer dominating a season. An International Motor Sports Association (IMSA) committee allows either enhancements such as more downforce and greater revs, or imposes extra ballast and aerodynamic restrictions. Ferrari chose more power at Daytona and that—combined with subsequent good fortune regarding pit strategies and consistency in long races—has obliged the Italian marque to swallow the lower downforce/extra weight medicine as the season winds up. While the results could be attributed more to brain than brawn, the BoP changes remain.

The difference is clearly visible when the Ferrari is parked near any one of the six Porsches that have qualified higher. The Stuttgart machines deploy much larger rear wings, plus large front dive planes and splitters. BMW and Aston Martin also carry similar BoP advantages over the Ferrari.

As far as the difference in how the car now behaves compared with the beginning of the season, Bill Sweedler is candid. "Out of control," he says. "That's the only way to describe it." However, he admits that "endurance is an equalizer. We have to focus on teamwork, like AIM have always done. To have a shot at this championship, we need to excel in the pits and driver changes, and with other strategy calls."

Endurance races are where AIM Autosport seem to shine the most. They won their class at the opening race of the season in the 24 Hours of Daytona and finished second in the last two races, the 12 Hours of Sebring and the Six Hours of Watkins Glen.

"We tend to do pretty well in long races," Bell says. "But we can't ignore the fact that, in the last few races, our relative performance to other manufacturers has gone in the wrong direction. There's no way for us to out-drive or out-strategize that fundamental reality. It'd be



“WHILE SOME MANUFACTURERS ARE EASIER ON REAR TIRES (LIKE AUDI AND FERRARI), CONTINENTAL HAS ACHIEVED ITS GOAL OF MAKING ONE THAT WORKS WELL IN TERMS OF PERFORMANCE AND SAFETY.”

nice to go into battle knife to knife. As opposed to hand to knife.”

Road Atlanta provides its own particular endurance challenges. “This track probably puts a greater premium on rear tire wear than any place we’ve been all season,” Bell says. “Talk to any team up and down the paddock in our class (and) rear tire wear is key.”

Rubber is one aspect the cars have had to deal with from the get-go. In addition to providing the spec tire for all TUSCC classes (except for GTLM), Continental Tire had a specific target in the GTD class and endurance

racers: compounds that satisfy every team and every participating manufacturer. The company has created three: one for the wet, one especially for Daytona (to compensate for the high banking), and one for all the other circuits.

While some manufacturers are easier on rear tires (like Audi and Ferrari), Continental has achieved its goal of making one that works well in terms of performance and safety, including the rear-engine Porsches that tend to be harder on their back boots. Another endurance challenge is that the tire has to work just



as well during the heat of the day as the cold of the night. Again, Continental found a solution.

During the weekend, Continental’s techs check tire wear. First they scrape off any rubber pickup, then measure the remaining tread. They also take the most worn to the least worn and record the temperatures—allowing them to get a feel for how a car’s overall balance affects wear—and report their findings back to the teams’ engineers. If they see an excess of temperature in one position of the car, they are able to give pointers for gains in tire performance and longevity.

Saturday morning. The humidity and heat have turned to bitter cold after a rainstorm on Friday. Sixty minutes before the 10-hour race begins, the grid is opened to the public. People

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DRAMA REMAINS AN UNWELCOME GUEST RIGHT UP TO THE LAST LAP AS A 911 SPINS DIRECTLY IN FRONT OF BELL.

stream onto the track to get up close to the 51 cars. A variety of accents are heard, from Southern to German to indistinguishable. A collection of mostly overweight middle-aged men wait their turn to flash boyish grins with the Continental Tire girls. At 10:45, the fans leave the grid and Bell arrives at his car. Fifteen minutes later, he swaps his old-fashioned driver's cap for a helmet just as the announcer orders drivers to their cars. Ten minutes later, the race kicks off, accompanied by a burst of fireworks that contribute mostly smoke and more noise to the general air of excitement.

AIM start well, with Bell moving up to first

during his initial stint. When Sweedler takes over, things begin to unravel. He's hit twice, both times invoking a string of expletives from the normally cool-headed driver. The second hit is especially unfortunate: a deflating rear tire at the start of a lap. A disconnected drinking hose makes Grunewald's drive unbearable. He does the shortest spell out of the three before handing it back to Bell for the night's finale.

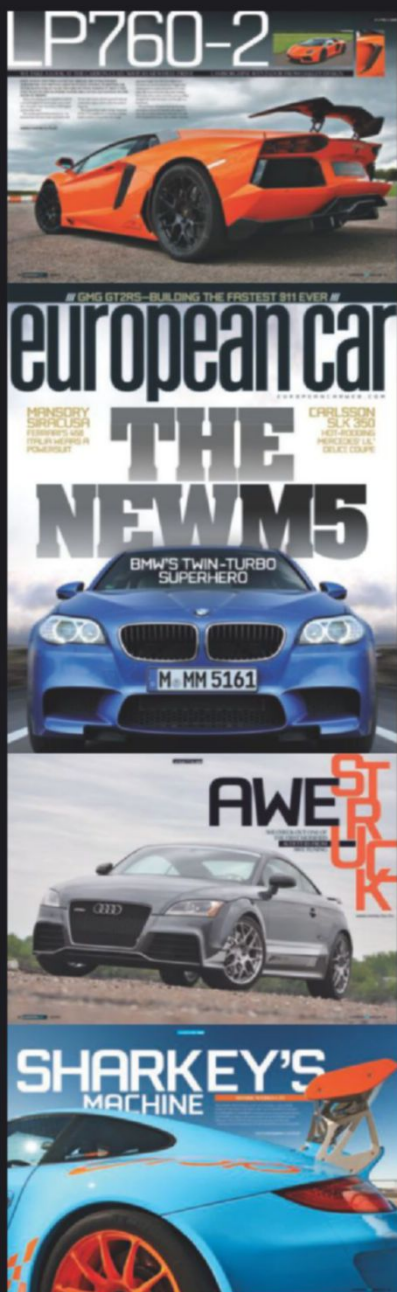
Drama remains an unwelcome guest right up to the last lap as a 911 spins directly in front of Bell. Sweedler, now on radio duties, warns Bell to stay to the left of the imminent

danger. Bell narrowly avoids the Porsche to come home in seventh. The Turner BMW finishes fourth. While AIM have finished the season in fourth (an overall win by Paul Miller's Audi R8 team forced their way into the fray), the team scored the most endurance race points, winning the Patron North American Endurance Cup for team and driver. Still, Bordin is fuming. "I thought we at least had second locked up," he says as he walks from the podium where he stood only minutes before accepting a trophy and a custom guitar.

Ultimately, the team is grudgingly satisfied after a difficult end to the season. "I don't like to moan about it," says Bordin after offering his thoughts on how BoP could be enhanced. "We've been on both sides of the coin (AIM has benefitted from BoP in previous years). Everything will be re-evaluated before next season." **EC**



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FLEET FEET

THESE SHOES BEAT
THE TRACK DAY HEAT

WORDS COLIN RYAN PHOTO ROBERT GUIDO

For serious track days, there must be serious footwear. Driving shoes that go up the ankle can bring support and also some protection against those really hot transmission tunnels. Yet they also need to allow for some nifty footwork on occasion and not detach the driver from the feel of the pedals. A tall order, but here are some shoes that deliver. We are deeply grateful to the excellent Subé Sports of Huntington Beach, California, for allowing us to raid their shelves and set up our cameras in their workshop. Check out subesports.com.

1. PUMA TRIONFO MID PRO II

A pricey one, but check out the stabilizing carbon-fiber cup around the heel and the "twin runner" arrangement at the same location. Buy these shoes and you'll want to get into a race car just to do them justice. The body is made from Schoeller canvas (Schoeller makes high-tech fabrics for all sorts of applications) and soft suede, and the lining is Nomex. A "tongueless" design means a snug fit as well as keeping weight to a minimum, while the wearer enjoys good blood flow thanks to the asymmetric lacing arrangement. FIA 8856-2000 and SFI 3.3/5 approved. Available in black, red, or blue. **\$269** us.puma.com

2. SPARCO SLALOM SL-3

Sparco is one of those trusted names in motorsport. The reason why is because the company makes stuff as good as this. It's a lightweight suede upper/rubber sole racing boot with a Nomex lining. The sole is oil- and fuel-resistant as well as being anti-slip and

anti-static. FIA and SFI approved. Available in black, blue, or red.

\$189 sparcouusa.com

3. PUMA SL TECH MID PRO

Full-grain leather combines with an oil-resistant rubber sole and an anatomically shaped footplate for an ideal driving shoe. Asymmetric lacing keeps the blood circulating nicely and a "split heel" feature brings support, sensitivity, and agility, making it comfortable enough for endurance racing. The company says this shoe is 25 percent lighter than "other conventional designs." FIA 8856-2000 and SFI 3.3/5

approved. Available in black, red, or blue.

\$219 puma.com

4. ALPINESTARS TECH I-KX

A lot of great racers cut their teeth on karts. It's also a relatively inexpensive way to get some big driving thrills. And naturally, the right kit is important. This karting shoe from Alpinestars is light yet feature-packed, all at a reasonable price. It has the company's lateral forefoot support and is made of microfibers and mesh inserts for the tongue, heel, and sides. So there's excellent ventilation. The sole is made of a special rubber compound for grip and sensitivity in





wet and dry conditions. This shoe even has a Kevlar speed-lacing system for a quick, precise, and secure closure. Available in black/white/red, blue/white, black/white, or black/yellow. FIA and SFI approved.
\$129.95 alpinestars.com

5. SPARCO TOP 3

This is the company's most popular high-top racing shoe. It's made of super-soft yet durable suede, with a rubber sole that is (like the Slalom) oil- and fuel-resistant, and anti-slip and anti-static. Note the reinforcement at the heel and the fairly sharp angle at the pivot point for ultra-precise

pedal modulations. FIA and SFI approved. Available in black, blue, gray, red, or yellow.
\$219 sparcousa.com

6. ALPINESTARS TECH 1-T

Note how the ankle-cut profile provides support yet still allows freedom of movement. We're talking full-grain leather upper, lateral forefoot support for stability, rubber compound sole for ideal feel and vibration resistance, plus a Nomex lining. Available in red/black, black/gray/white, blue/white, black/orange/white, black/yellow fluorescent, gray/black/red, or anthracite. So there ought to be some color combination there

to please a sponsor or two. FIA and SFI approved.

\$249.95 alpinestars.com

7. PUMA REPLICAT III LOW

Not strictly a driving shoe in the accepted sense, since it doesn't have ankle support/protection. But it can be an excellent crew shoe, pull duty as a stylish piece of general-use footwear, and still provide some useful feel for an impromptu blast. Made from suede and available in black/white, red/white, or white/black. The white-bodied version is not too bright, more kind of ivory.

\$70 us.puma.com



A Liberty Walk widebody kit installed on a 911 Turbo built by BBI Autosport.

FLARE



This Mercedes was in a booth for nitrogen tire-filling equipment. The work was impressive and the yellow paint really brings back DTM memories.



Speaking of DTM, Akrapovic Exhaust had DTM Champion Marco Wittmann's BMW on display.



SEMA 2014: HEY, BIG FENDERS

WORDS MICHAEL FEBBO PHOTOS BOB HERNANDEZ

I ATTENDED MY FIRST SEMA SHOW IN 1991.

I was still in high school and managed to bluff my way into the annual aftermarket industry show in Las Vegas. To a teenage car fanatic barely old enough to have a license, it was really too much to take in and may have contributed to the automotive delinquency I now exhibit. It was a much different show then, but some of that magic is still there for me.

There was a point when SEMA vehicles represented what the average enthusiast was building. Companies like Neuspeed and CEC were once kings of the show. Today, it is rare for tuners to even have their own booths. They usually choose to display with a manufacturer whose pockets are deeper. It isn't uncommon to see the best cars sitting alongside (or even underneath) everything from batteries to hose clamps.

The days of pure performance are also gone. It is now about making a splash and being showier than the next guy. At one time, a well-built GTI or M5 could have stood out among the muscle cars and classic street rods. Now they have to compete with Ken Block's Gymkhana Mustang and green chrome machine-gun-toting monster trucks.

The need for a wow factor helps explain why just about everything at the show had bolt-on fender flares. The bolted-on flare of today is the Altezza taillamp and 6-inch exhaust tip of yesterday. Everyone at the show had them; only a few were able to pull it off gracefully. It was shocking how many of these cars not only had custom flares and custom-built multi-piece wheels, but still required equally custom wheel spacers.

If it wasn't flared, it was on air suspension. Dozens upon dozens of vehicles stacked deep



We don't feel as if the rally scene gets enough love, and this rack of Hellas on the front of a MINI make us want to build something like it.

and piled high demonstrating just how unique and obviously difficult it is to build a bagged car that sits on the ground. All in all, the takeaway from the show is that form trumps function.

Besides my clear dislike of the car as art movement, there are several positive trends for the performance fan. One is the democratization of carbon ceramic brake rotors. It wasn't that long ago that everyone except for top-level racing teams was relegated to good old-fashioned iron. In the last few years, they have become factory options on higher-end Porsche, Audi, BMW, and Mercedes-Benz cars.

Brembo has led the charge in composite brake rotors in recent years, but newcomer Fusion, a small company based in Anaheim, California, is also looking to make inroads. Fusion's kits still aren't cheap, about \$11,000 even with a pre-order discount, but competition always helps consumer value in the long run. If carbon isn't quite your bag, the sheer volume of applications on offer from Wilwood Brakes is mind-blowing. Expect to see some hard-core testing of this company's products on future projects.



Tuned E63 AMG wagon in white, no less.



Most of the time, less is more, as proven by this V-8 M3 with mild exterior modifications.



We love E30s and we love ITB. However, we also love hoods and ground clearance, so this 3 Series is really playing with our emotions.



Even though the latest M3 and M4 have only been available for a matter of months, the show was filled a variety of tuning levels. This well-built version was on display in the Falken Tires booth.



You heard it here first: DTM tribute cars are the next big thing. This E36 borrowing Tic Tac livery from an E30 DTM racer is a great example.



We love the big fenders on this Audi. Unfortunately, the sexiness of the curves all but disappears in the matte paint.



Everyone has a different idea of the perfect booth model. We aren't here to judge anyone. Also, this was not the shiniest thing in the booth.



H&R brought a MkVII Golf SportWagen to the show, months before one will hit North American dealerships.



The GTI RS from Q34 Motorsport may be the wildest Golf on the planet. An Audi turbocharged V-6 sits in the middle of the car, feeding power to the rear wheels.



Another clean air-cooled tucked away in a corner. Things like this aren't really appreciated to their fullest at SEMA. Maybe if it had more stickers?



An amazing air-cooled 911 from BBI. It's hard to see in the photos, but the steel fenders were flared by hand and look as if it could have come from the factory that way.



A Fusion carbon ceramic brake rotor. Made right here in the USA and taking the fight to the big boys in brakes.



Just one of the "unique" vehicles slammed on air suspension, parked among a lot of vehicles unique in the exact same way.



Speaking of wide done well, this is a Bentley GT3 race car.



Well, the craftsmanship is nice on this BMW.



Obviously, we took this shot before the show opened. During the show, these automotive office chairs were constantly filled with showgoers "trying them out."

If it weren't for aftermarket wheels, SEMA would be roughly the size of a veterinary orthodontics convention. From the cars around the show, you might be forgiven for thinking that Rotiform and HRE are the only wheel manufacturers in existence. A long walk through the wheel hall actually reveals that 70 percent of the industry is made up of Rotiform, HRE, and companies making Rotiform and HRE knock-offs.

A conversation with Alan Peltier of HRE revealed two things. First, Peltier is still the most dedicated wheel nerd on the planet. I mean that in the most respectfully jealous way possible. Second, what I'm even happier to report is that reverse drop-center wheels (the ones with the big, flat deep chrome barrel) are dead. Thankfully, the industry is swinging back to either the stepped lip or the concave monoblock design with the spokes reaching to (or nearly to) the outer rim.

There were a few other standouts in the wheel hall. Forgeline seems to be doing a great job offering road wheels similar in design and construction to the wheels it builds for IMSA

competitors. I was also happy to see Fondmetal making a comeback to the U.S. market with a large selection of understated designs and a variety of finishes. The company has a long history in top-level motorsports, including F1, DTM, and endurance racing. All the wheels are made in Italy and carry both TÜV approval and that elusive Euro-snob cachet.

Luckily, our Euro-snobbery is usually justified when looking at the level of advancement our cars have straight from the factory. Adaptive systems are now becoming the norm on everything from suspensions to exhausts. While it may seem tough to improve on features that already have optimized modes for comfort and performance, the industry is responding. There were several suspension options on display that will interface with factory adaptive systems, offering plug-and-play dampers that integrate into your car, or—in the case of KW—a kit that converts BMW active dampers into threaded body coilovers. Exhaust systems from manufacturers like Remus and Akrapovic feature valved systems that function just like the factory item.



To us, the 996 is the least attractive of the 911 family. This widebody kit isn't doing much to help matters, but we understand it's packing some performance under the hood.



The C63 AMG Black Series is a longtime favorite. This particular car was built for the Optima Ultimate Street Car Invitational held in Las Vegas following the show.



Not all the Euros at the show are cookie-cutter wide-bodied exotics. We have a soft spot for air-cooled VW-based cars like this one in the EMPi booth.



PPG Paints had the best booth, hands down, taking inspiration from *Toy Story* and everyone's childhood. Deep inside the booth was a clean Porsche 356.



An Audi R8 in Continental Tire's booth, which was thankfully spared the widebody look, although we understand the engine is force-fed. Expect to see more of this soon.



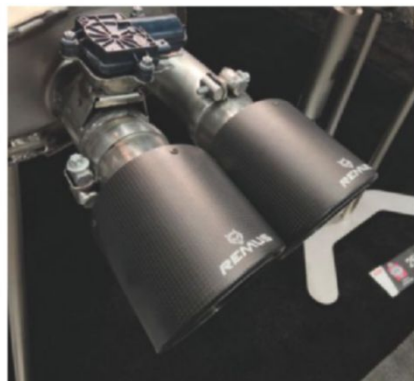
Yes, that tiny truck in the background is a lifted Hummer. The monster in front is a Freightliner Sport Chassis. There's always a bigger fish.



HRE Wheels demonstrates the power of the correct rim. This was one of the top three Porsches at the show and mostly a stock 991 GT3.



AEM was showing off its new Infinity standalone engine management system for 996 and 997 port-injection 911s. Expect to see more on this in a future issue.



Remus showed several exhaust systems that either integrate with factory active systems or allow owners to add it to cars that didn't originally have it.



We found this guy polishing a half-built car at the show. He's famed Porsche builder Magnus Walker, and this looks to be his best work yet.



BMW wasn't the only manufacturer at the show, but clearly wanted to show tuners that not all modifications need to come from the aftermarket. Everything from aero to brakes to added power is available from M Performance Parts.



The Turner Racing Z4 was on display in H&R's booth. We love a good race machine.



Some people shouldn't be allowed to touch cars.

Speaking of factory, BMW, MINI, Mercedes-Benz, and Fiat all had a presence at the show. Mercedes-Benz gave out four Metris vans to try and create a little buzz about this upcoming product for the North American market. BMW and MINI were there to show off some tuning products available through OE channels, and Fiat seems to be looking for feedback on the possibilities of performance tuning. We like seeing OE manufacturers represented at SEMA, but it is a bit strange given the sometimes adversarial relationship that owners of tuned cars have with dealerships.



The ultimate family hauler? Lowered Audi Allroad with a little extra storage up top.



Bilstein took the opportunity to show off its new MkVII Golf coilover setup, along with a working shock dyno, seen directly behind.



The E46 is a prime candidate for bigger fenders and racing modifications. We would love to get this to a track day.

While it is easy to complain about the miles of walking, the crowds, and the obscene prices for horrendously bad food, I still get excited walking in every morning. I found several products you will be seeing in upcoming projects. Some will be seen in print, but others you will likely need to check out on our website, where we have unlimited space for photography and video. While I did not love every car at the show, the industry still produces plenty for the performance enthusiast. Maybe next year we'll need to build a car to fly the *europaean* car flag. 🇪🇺



AFFORDABLE E9X M3 UPGRADES: PART I

REAL-WORLD MODIFICATIONS THAT BOOST PERFORMANCE WITHOUT BREAKING THE BANK: 20 WHP FOR JUST \$600 **WORDS AND PHOTOS JUSTIN FIVELLA**

THE MISSION WAS SIMPLE, BUT THAT DIDN'T MEAN IT WAS GOING TO BE EASY: gain 50 hp at the wheels with an E9X BMW M3 without breaking the bank. In truth, the idea carelessly came to us over coffee, as internally combusted banter eventually reached a crescendo, bursting into all-out bench racing. And thus, the idea was born, the challenge was made, and immediately even we questioned our judgment. In reality, while used E9X M3s have fallen in price, nothing about the aftermarket upgrades for the fourth-generation M3 are, well, cheap. To add insult to injury, many claim the 4.0L naturally aspirated V-8 in the M3, the S65, comes in such a high state of tune from the factory that expecting huge power gains from aftermarket additions just isn't in the cards. But as it turns out, a call to Tom Guagliardo at European Auto Source changed our outlook from pessimistic to downright excited.

"Believe it or not, there is a ton of power left on the table with the stock S65 motor since the concessions to civility BMW had to make from the factory significantly hinder outright horsepower," Guagliardo explained.

OK, so BMW left some power on the table to appease the passengers, but what about the affordable part of our equation?

"We've had great luck with the Macht Schnell line of parts for the E9X M3s both in regards to price and performance," he said.

Price and performance, come on, who are you kidding? Again, our pessimism waned with a simple Google search that revealed bolt-on parts that were well within reach of most enthusiasts' budgets—and so, a star, err, a story series was born.

THE PLAN

As mentioned, our long conversation with the BMW gurus at EAS proved there was considerable power left on the table with

the E9X M3 from the factory and that we could in fact add performance mods that wouldn't cost a fortune. But could we really hit our goal of 50 hp at the wheels on an already highly tuned motor?

"It takes the right package of parts that work in unison, but we often see bolt-on E9X M3s gain between 40 and 50 hp at wheels with the right modifications," Guagliardo said. After some debate, we decided it was most applicable if the modifications were broken into three parts. The first two will build a solid foundation of horsepower in the hopes of gaining 50 whp. The last installment will take the project one step further by adding modifications to bolster driving dynamics.

"Most customers start with quality underdrive pulleys and an intake followed by exhaust components and a tune before adding suspension and aesthetic mods," Guagliardo explained. And so we heeded his advice, by starting our quest under the hood.



After consulting with the BMW gurus at Macht Schnell, we started the power party with their Performance Underdrive Pulleys. Here's a look at the Macht Schnell crank pulley against the stock unit. It's machined from T3-hardened, 6061-T6 aerospace aluminum so it's not only lighter than the OEM unit, but it's also smaller in diameter. This helps lower the moment of inertia and underdrive the accessories to cut parasitic drag and gain power.



The Macht Schnell Performance Underdrive Pulley kit also comes with a power steering pulley that is lighter than the OEM unit and also underdriven. Unlike other companies, Macht Schnell was careful not to overly slow the accessory speeds so as not to create overheating, charging, or power steering issues.



We begin the installation process by removing the intake system. Adam Koch of EAS starts by removing the upper air-inlet tube.

STEP 1: MACHT SCHNELL PERFORMANCE UNDERDRIVE PULLEYS

In recent years, companies like Macht Schnell have proven that properly designed units can strike the perfect balance between civility and performance.

"There's always a balance with underdrive pulleys, and some kits are so aggressive at slowing down the accessory drives that the cars can have battery charging issues, overheating problems, and the power steering can become heavy," Guagliardo said.

As I'm sure you already know, underdrive pulleys do just that, they underdrive the accessories, thus diminishing parasitic drag and in turn, increasing power. The underdrive process is typically achieved by under-sizing the crank pulley and oversizing the accessory pulleys (like the lowest gear on a bicycle that utilizes the smallest front chain-ring and the largest rear cog).

In most cases, the majority of the power increases comes from turning the accessories at a slower pace. However, in some cases these underdrive pulleys have a secondary benefit: reducing the moment of inertia, thus improving acceleration and spool-up. The smaller diameter and lighter weight pulleys make it easier for the motor to rotate them from slow speeds, thus increasing overall acceleration.

The underdrive pulleys we speak of are not to be confused with an undersized and overdriven supercharger pulley that increases rotor speed and therefore boost from its decreased circumference.

But enough Physics 101, what about these particular Macht Schnell pulleys for the E9X M3?

"They're made from T3 hard-anodized 6061-T6 aerospace aluminum to exact tolerances for performance without the reliability concerns of inexpensive units," Guagliardo said.



A few screw, nuts, bolts, and clamps later and the airbox assembly exits the engine bay.



Next up, the fan assembly will need to be removed to free up enough space to access the pulleys.



It's a tight fit, but with some patience, the power steering pulley can be accessed. Once the three bolts are removed, release the belt tension and then the OEM pulley can leave the party.



Next comes the removal of the stock crank pulley. Again, take your time and remain patient while removing all six bolts.

As if Macht Schnell hadn't done enough homework already, the company went one step further to ensure maximum user-friendliness.

"They were smart enough to use off-the-shelf belts so that it's easy to get a replacement from a local parts house in the event a belt snaps on the road," Guagliardo said.

As I'm sure you already know, if the diameters of the pulleys change, so does the required length of the belt—the OEM belt isn't compatible with underdrive pulleys.

The Macht Schnell pulleys were designed to increase performance without compromise, and with a retail of just \$295, there's little financial compromise, either.



Here's a peek at the EAS power steering pulley mounted in place. Don't forget to follow the factory torque settings and sequences.



Be sure to transfer this factory shim over to the Macht Schnell unit—it mounts between the bolts and the pulley. Again, be sure to follow all factory torque settings and sequences when tightening the bolts.



After installing the supplied belts and setting the tension, it should look like this. Simply reverse the removal process of the intake and take your M3 for a spin. In our case, we left the car strapped to the dyno throughout the test to keep the dyno results consistent. Continue on to see how much horsepower the pulleys were worth on our stock '11 E90 DCT M3.



Here's the second piece of our dynamic duo of affordable bolt-ons for Part I of this series, the Macht Schnell Stage 2 Intake Charge Kit. It comes with everything needed to give your S65 some lungs, including a cotton gauze air filter, intake charge scoops, intake charge pipe and filter adaptor, heavy-duty rubber intake couplers, and Euro-style Worm clamps.



Have a look at the factory air inlet adapter. The Macht Schnell unit (pictured left) is not only much bigger than the factory unit and devoid of the large kink in the lower left, but it also features a high-flow gloss finish. The Macht Schnell intake is said to outflow the stock unit by 30 percent.



Another reason the Macht Schnell intake increases power is its larger oiled-cotton air-filter element that improves flow while still maintaining the OEM filter's 99 percent debris collection efficiency to meet ISO 5011 standards. It's also reusable, so it should last the life of the car.



We won't rehash the airbox removal process, but once the airbox is out of the engine bay, separate the upper and lower halves so the OEM internal parts can be swapped for the Macht Schnell components.



Macht Schnell conducted extensive research on the OEM E9X intake system and concluded that the efficient factory airbox wasn't the restriction; rather, the factory charge pipe was the bottleneck. The Macht Schnell charge pipe (pictured left) is 18 percent larger than the factory unit and devoid of both the kink in the lower corner and the corrugated construction that creates power-robbing turbulent air. The Macht Schnell unit still retains the factory PCV function as well.



To maximize airflow to the intake while the car is in motion, Macht Schnell also includes air-charge scoops that direct incoming air from behind the roundels and into the intake. To access these, the roundels must first be removed.

STEP 2: MACHT SCHNELL STAGE 2 INTAKE CHARGE KIT

In the world of internal combustion engines, more air equals more power. But with a few caveats, cooler air is more densely packed with oxygen, thus increasing power, and lastly, the smoother the airflow into the throttle body, the better.

"Macht Schnell spent countless hours in SolidWorks software perfecting the design, testing flow rates with Cosmos, fluid dynamics simulation software, and testing prototypes on the dyno and track to ensure they had the best possible product for the E9X M3 platform," Guagliardo said.

He went on to explain that this endless testing proved the stock airbox was extremely efficient, unlike its supporting components.

According to the power pros at Macht Schnell, they increased the flow of the stock intake by 30 percent through focused attention on the points of restriction. The charge pipe was enlarged 18 percent, and while the external surface has an OEM-like textured finish, inside it's glass smooth and sans the corrugated steps of the stock unit. The smooth, uniform design diminishes turbulence and increases airflow.

The air filter adapter housing is also larger in size and features smoother transitions. The large oiled cotton gauze air filter increases airflow while preserving the OEM filter's 99 percent debris collection efficiency to meet ISO 5011 standards. It's also reusable, so it should last the life of the car.

Macht Schnell went one step further to ensure ample power gains with its Stage 2 intake by incorporating a pair of Intake Charge Scoops that mount behind the roundels, directing incoming air into the intake track. But an intake is more than just a design statement; it's also about the fit and finish.

"We've had great luck with the Macht Schnell components since they retain factory functions like the PCV, use OEM-style clamps and connectors, and are constructed of high-quality polyethylene," Guagliardo said. The last parameter of importance is build quality.



This is the only required modification for the install; these small holes that must be drilled to secure the air-charge scoops.



The Macht Schnell air filter requires a different retention pin. Don't worry, the kit comes with an appropriately sized unit.

"The textured finish on the charge pipe looks just like it's OEM, and the unassuming raised logo is transparent to all but the most trained of eyes," Guagliardo said.

He's right. Unless you're looking for the intake, it's easily missed, and the fact that it feeds into the stock airbox further reinforces its OEM-like appearance.

It also comes with all the clamps, bolts, and hardware necessary to install the intake in roughly an hour. We should add that it's also affordable, with a retail of \$399.99.

DYNO TIME

What started as a quest for an additional 50 whp suddenly became a quest for the ever-elusive number all but the strongest naturally aspirated E90 M3s fall short of—the magical 400-whp mark.

But when our test subject, an immaculate '11 DCT-equipped M3 owned by Jeremy Stanton, threw down impressive baseline figures despite heavy stock wheels and ambient temps hovering in the mid-90s, suddenly the hunt for 400 whp was all consuming. How much did it make in stock trim? Try a stout 352.56 hp and 261.68 lb-ft at the wheels.

With that addition of the Macht Schnell Performance Underdrive Pulleys, peak power jumped 7.09 hp and 4.24 lb-ft for totals of 359.65 hp and 265.92 lb-ft at the wheels. As expected, the gains were consistent throughout the entire curve.

Next came the Macht Schnell Stage 2 Intake Charge Kit and it, too, didn't disappoint with nice gains below 4,500 rpm and significant increases from 5,000 rpm up to the 8,400-rpm redline. The Stage 2 intake pushed power up another 12.83 hp and 2.71 lb-ft for new totals of 372.48 hp and 268.63 lb-ft at the tires. We were within striking distance of the infamous 400-whp mark, but more importantly we gained 19.92 hp and 6.95 lb-ft with the addition of two affordable modifications.



Connect the charge pipe to the intake manifold plenum, followed by the air-inlet adapter, air filter, and airbox lower. Make sure and secure all of the clamps before installing the airbox lid. Here's a peek at just how gargantuan the new intake system is.



Next, you'll want to install the airbox lid and secure all of the factory bolts.

DRIVING IMPRESSIONS

To think the engaging E9X M3 could transcend its already visceral experience at speed would initially seem like a farce, but the addition of the intake and pulleys transformed our all-motor phenom. Throttle-response boarders on telepathic, as every millimeter of throttle input rewards the driver with instant feedback. Its eagerness to rev has only intensified, just as outright acceleration is even more robust, and the increased intake howl is intoxicating.

If not for the increased performance, simply returning the stifled S65 its voice that was so drastically stolen by the evil bearers of the red tape is worth the price of admission. Transitioning to WOT is a tantalizing experience, as the intake howl fills the cabin with harmonious anger—words do it little justice.

We won't be performing acceleration tests until the last of the engine modifications, but the seat-of-the-pants feel confirms what the dyno is suggesting.

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Only a trained eye will catch the faint Macht Schnell raised logo on the charge pipe. The unit uses a textured finish for an OEM-like style. Now it's time to hit the rollers and see what these mods were worth.

THE NEXT STEP

It's hard to believe we've already boosted power by nearly 20 hp and 7 lb-ft at wheels for less than \$700 on a car that's supposed to be infamously expensive to modify and cantankerous at best.

As impressive as the dyno numbers might be, it's the newfound experience behind the wheel that's worth its weight in gold. Honestly, the increased enjoyment from the cockpit is that much better. But hang tight, we've got plenty more in store. Until next month.

BASELINE PERFORMANCE FIGURES:

All data acquired with a Racelogic VBOX Sport. Launches were conducted without launch control and on OEM Continental tires. Launch control was not used due to inconsistent times from the excessive wheelspin on the unprepared surface.

0-30: 2.71 seconds

0-60: 5.35 seconds

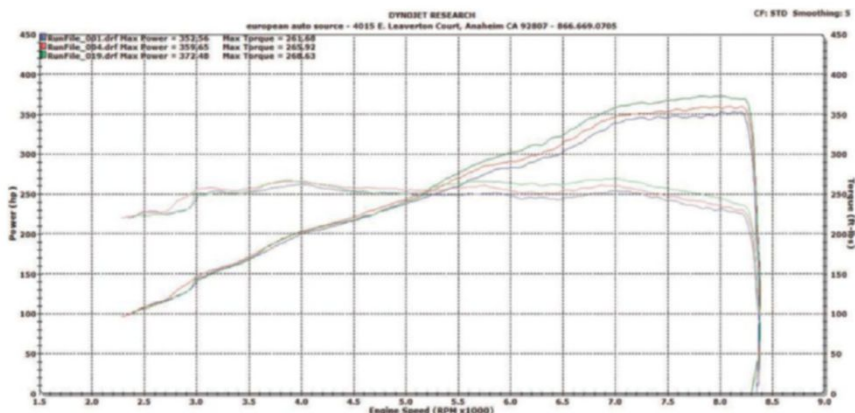
0-100: 11.1 seconds

Quarter-mile: 13.67 @ 113 mph

SOURCES

European Auto Source (EAS)
866-669-0705
europeanautosource.com

Macht Schnell
machtschnell.com



With a mere 11,000 miles on the '11 DCT-equipped M3 owned by Jeremy Stanton, we expected stout numbers. We weren't disappointed with a baseline pull of 352.56 hp and 261.68 lb-ft at the wheels. The Performance Underdrive Pulleys alone netted consistent gains from bottom to top, eventually reaching a new peak of 359.65 hp and 265.92 lb-ft at the wheels for peak-to-peak gains of 7.09 hp and 4.24 lb-ft at the tires. The addition of the Stage 2 intake pushed power to a new peak of 372.48 hp and 268.63 lb-ft at the tires for gains of 12.83 hp and 2.71 lb-ft at the tires. Total gains from the baseline were 19.92 hp and 6.95 lb-ft at the tires for solid improvements that won't break the bank.

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'66 to '94 Alfa Romeo Spider

MRS. ROBINSON, YOU'RE TRYING TO SEDUCE ME

Words Colin Ryan

LOVE MAKES PEOPLE DO THE CRAZIEST THINGS.

Like buy an Alfa Romeo Spider. Thing is, an Alfa Spider (just like so many cars from this marque) is so easy to love, at least from afar. The styling, courtesy of design legend Battista Pininfarina, is a big part of the seduction. Especially the Series I with that gorgeous sloping "boat tail" rear styling.

This model, the Duetto as it was named in a public contest, came out in 1966, powered by a 1.6L four-cylinder engine making 108 hp with dual Weber

carburetors. Although Alfa Romeo has a wonderful reputation for making driver's cars, the Duetto really isn't one of them, despite a decent power-to-weight ratio. It doesn't even come with particularly impressive handling chops. But, boy, does it look elegant. Later S1 engines grew to 1779 cc, swapping the carbs for SPICA mechanical fuel injection and the Duetto name for Spider 1750. Since decent Series 1 models command high prices, Series 2 cars could be a good place to start the search if you're on a budget.

The Kamm-tailed Series 2 hit the scene in 1970, retaining the 118hp, 1.8L engine. But later that year came the popular 2.0L Spider 2000. These larger engines continued with SPICA mechanical fuel injection. This system was a bit ahead of its time and not well understood by some, so it's not unusual to find S2 models retrofitted with carburetors. Yet SPICA-equipped examples retain their value better. If inspecting a SPICA model, check the "choke cable," which is meant to provide a richer mixture for cold starts and not intended to be used as a kind of cruise control. By 1975, the Spider's elegant chrome bumpers morphed into large rubber items to handle U.S. impact standards. Smog regulations added catalytic converters and lowered compression, making mid-to-late S2 cars heavier and less powerful than ever before.



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SUSPENSION
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springs, antiroll bar (f);
multilink, coil springs,
antiroll bar (r)

PERFORMANCE

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115-120 hp (2.0)

PEAK TORQUE
105 lb-ft (1.6), 124 lb-ft
(1.8), 122-128 lb-ft (2.0)

0-60 MPH
10.4 sec. ('85 Graduate)

TOP SPEED
95 mph ('85 Graduate)

Some salvation was found in the Series 3.

Contemporary Bosch fuel injection restored some of the 2.0L's performance and greatly improved its driveability and reliability. By 1984, the little Alfa had sprouted an ungainly rubber spoiler and in 1986, the classic dual-pod speedo and tach (with individual chrome-rimmed ancillary gauges atop the center stack) made way for a contemporary and unremarkable plastic-bodied instrument cluster.

A base model, the Graduate (named after the Dustin Hoffman film in which a red Duetto plays a major role), arrived in '85 with vinyl seat covering, manual mirrors, and steel wheels. Generally, a Series 3 from '82 to '84 represents a sweet spot for Spiders, still with a wooden steering wheel, classic instrumentation, and an un-spoilered Kamm tail, yet with more modern—and therefore more reliable—mechanicals.

The Veloce's interior was upgraded in '86 with better leather seats. This was also the year when the range-topping Quadrifoglio Verde (green clover leaf) model was introduced. It came with 15-inch "phone dial" wheels, while the standard car has 14-inch "five-pointed star" Cromodora alloys, gray suede-trimmed seats, a removable hardtop, side skirts, and unique badging.

Post-'90 models were face-lifted to create the Series 4 cars, which remained on sale in the U.S. until 1994. The tacked-on rear spoiler was ditched and the front and rear bumper fasciae were better integrated with the rest of the car's smoothed-out body. S4 cars also enjoy power steering and a new airbag-equipped steering wheel, along with more expensive-looking leather and standard Quadrifoglio-style wheels.


The usual gripes with an Alfa Spider center on ergonomics. It has that typical Italian driving position (for the era) where the driver needs long arms and short legs to really feel at home. The position of the long-throw gear lever is another idiosyncrasy, but at least the driver is always aware that this is far from the bland, instantly forgettable experience of almost

any Japanese sedan. On the subject of gears, there's a general tendency for the synchromesh (designed by Porsche, incidentally) to wear out in such a way as to make swift shifts into second nigh on impossible.

Electrics are not a strong point (when were they ever in Italian cars?). Gauges shouldn't be trusted. The roofs don't age well, but there are specialist replacement companies, and do-it-yourselfers can buy new roofs from \$309.95. Seals in the brake servos will perish over time, and leaking brake fluid gets sucked into the engine, creating white smoke. A servo reconditioning kit is an affordable fix, but a garage will probably replace the servos, lines, and master cylinder.

Rust. It's not that the Spider is any more of a rust bucket than other Italian cars of its time, but the most obvious flaw is that water coming down from the roof gets into the rocker panels (sills), where there's a distinct lack of drainage holes. Keep a magnet handy when inspecting a possible buy to make sure the whole thing isn't held together with Bondo. And if you're looking at a couple or three, buy the one with the best bodywork.

The aluminum engines are considered to be pretty strong. They're essentially the same motor, so parts are easy to get and often interchangeable. Just make sure it's fully warmed up before exploring the upper revs.

The Alfa Romeo Spider is too old to get any blue book treatment, so it's a question of scouring through classified ads. *Auto Trader* had a super-clean '91 model for \$21,795 (from a dealer) at one end of the spectrum, while the other end showed an '87 Graduate with 128,000 miles in need of a paintjob plus a few other bits and pieces for \$2,850 (still ridiculously tempting). A look on that well-known auction website unearthed prices ranging from \$4,500 to \$15,900. The Alfa Bulletin Board (alfabb.com) is a worthwhile resource with many helpful forum members. 

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