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A movie poster for 'Need for Speed' featuring Aaron Paul. He is shown from the chest up, looking upwards with a serious expression. The background is a dark, fiery blue with orange and yellow light streaks. A Ford Mustang is shown in the lower half, with motion blur and light trails suggesting high speed. The title 'NEED FOR SPEED' is written in a large, white, stylized font, slanted upwards. Below the title, the text 'IN THEATRES MARCH 14' is written in a smaller, white, sans-serif font.

NEED FOR SPEED

IN THEATRES MARCH 14

 @NeedforSpeed

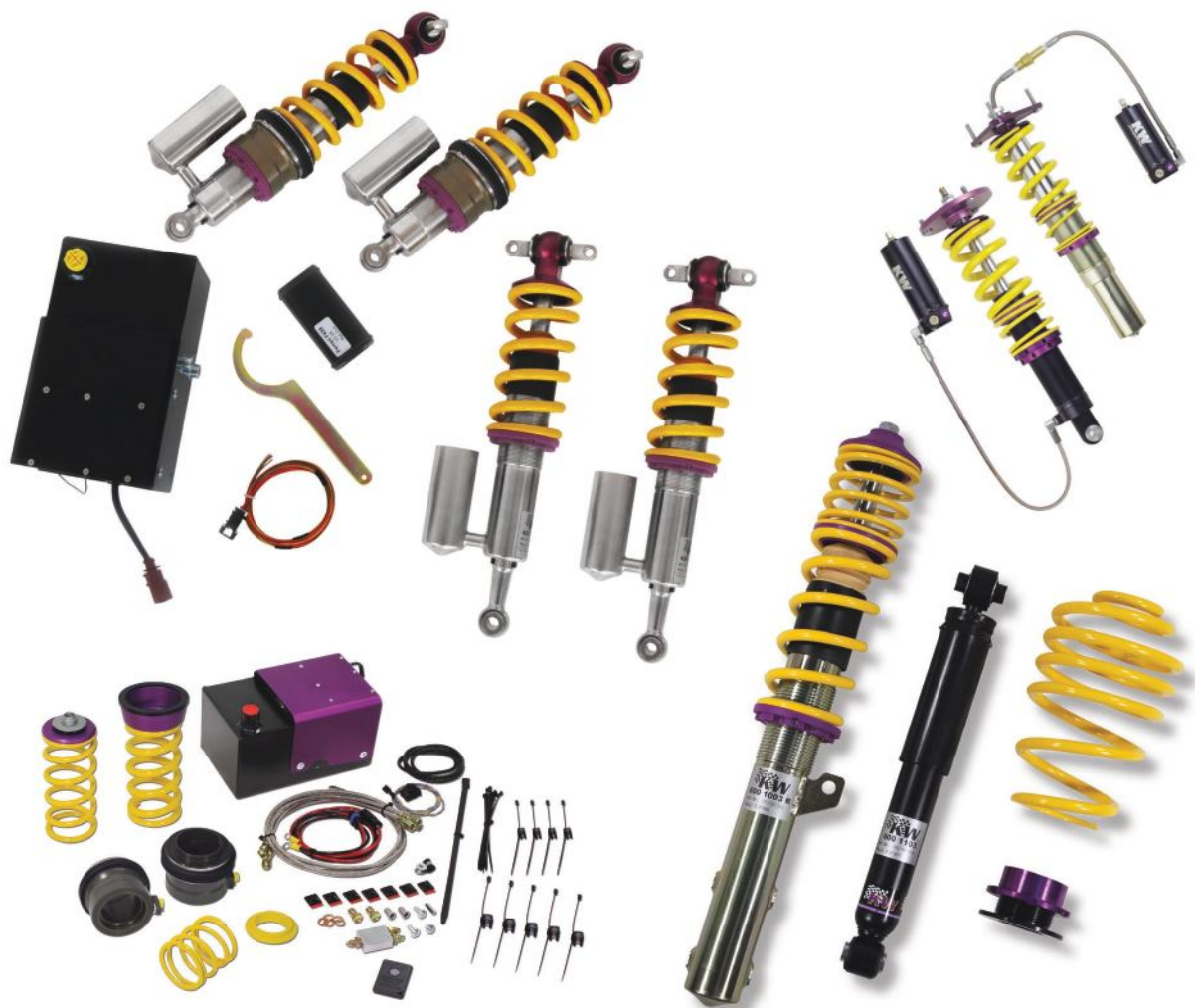
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 NeedForSpeed

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SEE THE TAG MOTORSPORTS AUDI RS4 REPLICA IN ACTION

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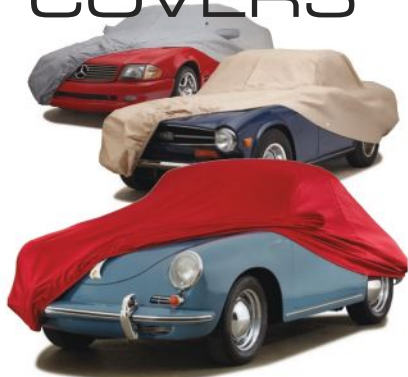
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“I imagine there was a small room in a large office building in Munich where a man used to sit and think of numbers for BMW.”



THE NUMBERS SIMPLY DON'T ADD UP

 I've had some surprisingly heated debates with people confused by BMW's new numbering system. The division of the 3 Series range and subsequent introduction of the 4 Series seems to have riled people.

The concept is relatively straightforward, although exceptions to the rule do muddy the waters. So anything with two doors gets an even number – 2, 4, 6. While anything with four doors gets an odd number – 1, 3, 5, 7. This includes the X models – X1, X3 and X5 being conventional SUVs, whereas the X6 and forthcoming X4 (plus rumored X2) are coupes.

And here comes the mud in the water. Those X coupes are also four-door models, as is the 6 Series Gran Coupe and imminent 4 Series Gran Coupe. So the new rule is odd numbers are sedans, even numbers are coupes and convertibles.

The new format will make models easier to identify. Imagine if all the derivatives about to be spawned by the 3 Series – sedan, wagon, coupe, convertible, Gran Turismo, Gran Coupe and who knows what else – were called 335i? At least the 435i has halved the possible variations the badge could refer to...

While I know there are more important issues in the world, it's not the model number that's troubling me, it's the remainder...

I imagine there was a small room in a large office building in Munich where a man used to sit and think of numbers for BMW. His greatest hits included M3 and M5, while 320 was pretty good, Z1 and X5 weren't bad, and M535i had a nice ring to it.

Sadly, he lost his job. He must have done. Have you seen the new naming system? It used to be that a 325i was simply a 3 Series with a 2.5-liter engine that was fuel injected. However, what should be called the BMW 330i Turbo is actually the 335i because it's trying to sell against larger capacity competitors.

What's wrong with 330i Turbo? Or is "Turbo" too clichéd since

it's applied to everything from vacuum cleaners to toasters?

I'll concede there's precedence for increasing the engine numbers when a turbo is fitted, such as the E23 745i, which had a 3.2-liter motor with a 1.4 multiplier applied for the turbo installation.

In fact, there were always exceptions to its model number/engine capacity badging rule, but they were few and far between.

That can't excuse the latest naming system. Who can forget the classic 1 Series M Coupe? Or how about the Z4 sDrive35is: This catchy name indicates it's a Z4 with RWD with a 3.0L turbo motor with the hotter "s" specification.

In BMW speak, "sDrive" refers to rear-wheel drive, with "x" meaning AWD. And we can expect another prefix when the proposed FWD models arrive...

Let's just say these new names are clumsy and leave it there. With so many (too many) models, differentiating between them was always going to be a problem. And while I don't necessarily have a simpler solution, is this the best way to do it?

Let us know if you have any better BMW badging ideas.

Moby Dick

I particularly enjoyed the photos from the gathering of Porsche Le Mans winners in this issue. I've always been a fan of the 935 derivatives and figured that if a car deserved a nickname, it had to be extra special. And "Moby Dick" was a great way to describe the giant whaletail on its rump.

The cars had a fearsome reputation, both for winning races and terrifying drivers, which added to the mystique of these Martini-liveried machines that would kickstart the dreams of so many young enthusiasts. After all, the 911 Turbo was the first pinup for most of us, and the 935 was the ultimate expression of this bedroom wall favorite.

I'd love to have seen video from this event but we didn't have anybody filming it. However, you can see footage of our adventures with the Audi RS4 replica online at www.europeancarmag.com. In addition to our featured videos, you'll find the latest news and events. Or join our Facebook page to see what we're up to each month.

GREG EMMERSON

EDITOR

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NEUSPEED RSe52 WHEELS

★ Weighing a mere 19.5 lb, the Neuspeed RSe52 lightweight wheels were created with advanced flow-forming technology for weight reduction. Compatible with big-brake kits, the RSe52 claims to be the ultimate track wheel for VW/Audi owners. They come in 18x8 and 18x9" sizes with the correct stud pattern and offset for your car. They also accept factory TPMS sensors. **From \$299.95**
neuspeed.com



SUPERPRO CONTROL ARMS

★ Australian suspension specialist SuperPro has introduced alloy control arms for the BMW 1 Series coupe and E9X 3 Series. Available separately or as a kit, the front radius arms and lower control arms allow up to 1° of camber change and 0.8° of caster adjustment while on the car. They come with SuperPro polyurethane bushings to provide more control, particularly on modified cars. If you visit the website, click "Where to Buy" and it will take you to a map of the US with a list of dealers that can provide pricing.
superpro.eu.com

IE CAMBER PLATES

★ Integrated Engineering has stepped away from its usual internal engine components to produce these camber plates. Designed to allow maximum camber adjustability, they provide a stable front suspension by replacing the OEM rubber mounts with steel bearings. The camber plates will maximize grip levels while eliminating unwanted movement under heavy loads. To combat the spring "popping and binding" issues common with many camber plates, the IE design incorporates a heavy-duty thrust needle bearing and the bearings are completely sealed from the elements. **\$499.99**
performancebyie.com



CORBEAU SPORTLINE SEATS

★ The Sportline RRS seats were created for sports driving and feature a fingertip reclining mechanism that allows the seat to be infinitely adjusted, but can be returned to the full upright position with a separate lever for track use. Designed for comfort, the seats hug the body, resulting in a reduction of driver fatigue. The Sportline has harness slots for three-, four- and five-point harnesses and the seats are wrapped in vinyl with a carbon-look center section. **\$475**
corbeau.com



AWE GLI EXHAUST

★ AWE Tuning announced the release of its complete exhaust solution for 2013+ VW GLI and its third-gen EA888 2.0T motor. Engineered, developed, and handcrafted in-house, it includes a downpipe constructed from mandrel-bent 3" T304 stainless steel with a V-band turbo flange and a 200-cell HJS catalytic converter. The Track and Touring exhaust system was designed with Helmholtz resonators to eliminate unwanted frequencies while maintaining an aggressive tone. It uses mandrel-bent 2.5" T304 stainless and comes with either 90mm black diamond or chrome tips. The full system is claimed to gain 24hp and 23tq when used from the turbo-back without software. **\$1649.95**
awe-tuning.com



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Mk3 1.8T SWAP KIT

★ After months of R&D, Black Forest Industries has introduced its "basic" drop-in kit, allowing a quick and easy swap of the 1.8T engine into the VW Mk3 ABA chassis. The conversion kit now features all the key components, including a 3.5bar fuel pressure regulator. There's also BFI's custom-machined distributor, ignition wires and billet throttle cable bracket. The final component is C2 Motorsports' custom software, ensuring the engine will run smoothly. **\$799.99**

blackforestindustries.com



PIONEER NEX

★ Pioneer's latest NEX interface was designed specifically for smartphone users, allowing them to control a combination of onboard features with connected services via large touchscreen displays. The benefits include connectivity with AppRadio Mode, AVICSYN Networked Navigation, iDataLink Maestro support, MirrorLink compatibility, Siri Eyes Free mode, expanded Bluetooth capabilities, Pandora, SiriusXM, HD Radio, FLAC file playback, dual camera input and pretty much anything else a smartphone-user would need. All this technology means your phone and its apps become part of the entertainment system, allowing a versatile and upgradable experience. **From \$700**

pioneerelectronics.com



CTEK TEST & CHARGE

★ This new battery charger was designed to give users a full diagnostic report on their vehicle charging system. By combining an advanced microprocessor-controlled battery charger with a battery and alternator test function, the CTEK MUS 4.3 provides critical feedback in battery testing, charging and maintenance. The device is said to have superior performance on batteries from 1.2Ah up to 110Ah and solves a broad range of problems thanks to features like the patented automatic desulphation program and a special reconditioning function that revives and restores deeply discharged and stratified batteries. We've had a chance to sample the charger and found it to be easy to use and reliable, although we've not had any severely depleted batteries to deal with as yet. **\$119.99**

smartercharger.com



ADVÁN GT WHEEL

★ Now available in North America by popular demand, the 18" Adván Racing GT wheel by Yokohama features a five-spoke design cut from a single piece of A6061-T6 aluminum. It's offered in European and Japanese bolt patterns in three finishes: Machined and Racing Metal Black, Racing White or Semi-Gloss Black. There are three different rim depths to suit your stance requirements, as well as two different center cap designs.

From \$771 each
advanwheels.com.com



FORGE BIG BRAKE KITS

★ Forge Motorsport has released its new brake kits for BMW and Mini, designed for bolt-on simplicity. Fitting many BMW platforms including E9X, as well as every generation of Cooper and Countryman, the Forge kits come in two sizes; four-piston/330mm for cars with 17" wheels, and six-piston/356mm for 19" or larger. The rotors are track-quality and utilize separate bells for optimum heat dissipation. Machined from solid aluminum, the calipers feature 7075 billet aluminum and use heavy-duty weather seals. The brake kits come with all necessary hardware, including Hosetechnik teflon-lined lines and EBC fast-road pads. **From \$1800**
foragemotorsport.com



MILLTEK BLACK TIPS

★ Milltek is now offering a Cerakote "Black Velvet" coating on its GT 100 exhaust tips. The ceramic technology offers better scratch and impact resistance while being able to maintain its finish for longer, even under grueling heat cycles. It will be available on Milltek tips for cars like the Golf R, Audi S6, Panamera, etc as a no-cost option. **\$TBD**
millteksport.com

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POWERPOT X

★ Here's a phone charger with a difference. It's designed for users who go off the beaten path. Made possible by Kickstarter funding, the PowerPot X from Power Practical is an upgraded version of its original PowerPot that converts energy from heated water to generate electricity to charge your personal devices. PowerPot X got a boost in size and strength but maintains its minimal weight, making it a great solution for backpackers or weekend camping. It can emit 10 watts of power, and hold up to one gallon of liquid, keeping everybody refreshed and devices charged. **\$225** thepowerpot.com



VOLK RACING G25 PRISM

★ Volk has a number of new wheels available, including the G25, which applies the latest forging technology to keep weight to a minimum, specifically from the back of the spokes. Offered in 18, 19, and 20" diameter, the G25 can be ordered in Prism Dark Silver or Prism Crystal White. The rainbow effect of the prism colors creates a unique color shift as light catches it. rays-msc.com



MEGUIAR'S TIRE COATING

★ Bringing long-lasting shine to dull tires, Meguiar's new Ultimate Black Tire Coating provides a durable coating that dries with a deep, black, wet appearance. And while other tire shines can fade, peel or crack over time, the Meguiar's coating is guaranteed to last more than one month. It's resistant to water and wear and won't peel or crack. Simply spray it onto a clean, dry tire and walk away. The coating leaves tires with a protective shine that should outlast the competition. **\$13.99** meguiars.com

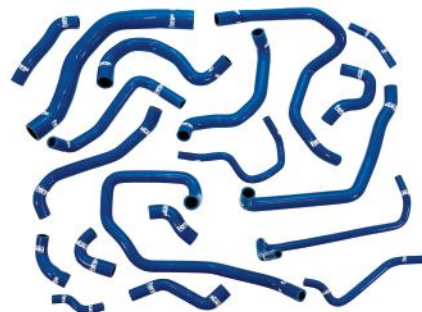


SPORTLINE RRX

★ The new Sportline RRX seat has got it all, from good looks to incredible comfort, whether on street, track, or off-road, the RRX boasts ample lateral bolster support, with the comfort of a daily driver. That comfort, style and support is pumped into every inch of the RRX, which features top of the line injection-molded foam, strategically placed bolsters for support in all the right places, and harness belt capability. Available in a black vinyl with a grey carbon-fiber vinyl contrast, RRX will fit up to a 38" waist. **\$499** corbeau.com

FORGE Mk7 KIT

★ In preparation for the arrival of the new Mk7 VW Golf, Forge Motorsport has a 19-piece coolant kit designed to handle the latest OAT-formulations used in VW coolant. As a result, the hoses have a fluorosilicone lining to ensure longevity, while the hoses were also designed to withstand higher pressures and temperatures than any original equipment hose, as always. The kit is available in black, red or blue. **From \$415** forgemotorsport.com



POWERPAK ULTRA

★ Without even trying, we seem to be on a mission to find the best power packs for charging your electronic devices. We've found a few we liked, including the predecessor to the Trent PowerPak Ultra. However, nothing that's gone before has been able to compete with this marvel. That's because it packs a 14000mAh battery, keeping USB-based devices juiced no matter what surprise lies around the bend. Built rugged to survive most drops, the device can even be temporarily submerged in water for up to 30min without damage (providing the rubber covers are in place). This makes it the perfect accessory for outdoor trips and sports. Powerful enough to store 700% of the average smartphone's battery life and featuring a rugged exterior, the PowerPak Ultra is available in black or orange. To date, we've charged our phone five times before depleting the battery. It has twin USB outputs to simultaneously charge two phones, tablets, etc. **\$69.95** newtrent.com





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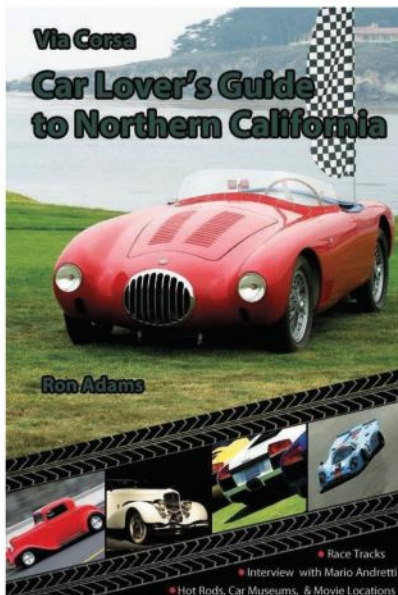


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CAR LOVER'S GUIDE TO NORCAL

★ If you're planning a trip to Northern California, or maybe you're a resident and want to check out what's around you, we recommend the *Car Lover's Guide to Northern California* published by Via Corsa. It's the third book in the series, following guides to Arizona and Southern Germany, and each is produced by driving enthusiasts for drivers. The NorCal book debuted at last year's Pebble Beach Concours and covers everything from Monterey Car Week to Pebble Beach, plus recommended wineries in the area, local racetracks, museums, car-themed movie locations, driving schools, rally routes and major events. We've enjoyed the series and this is another handy guide for your bookshelf. It's available from the publisher or Motorbooks International. **\$19.95**
viacorsa.com



booq LAPTOP BAG

★ booq bags is making a name for itself with affordable, intelligent designs for modern lifestyles. The Viper Courier seen here is available for either a 13 or 15" laptop, with each costing the same. It has a protective laptop pouch inside that uses thick padding, with separate storage for an iPad, pens and a lanyard. There are two unzipped exterior pockets that allow more storage, with one side offering



HITCASE PRO CASE, LENS & MOUNT

★ We bring you a lot of phone cases with an array of functions, and the new Hitcase Pro seems to wrap everything into one sturdy package. The case itself is waterproof to 33ft thanks to a proper latched sealing system. It's also shockproof, and should be able to take a 6ft tumble without damage to the iPhone 4/4S or 5/5S inside (two models available). Additionally, it houses a 3x wideangle lens that appears to have excellent clarity and isn't so wide the images look cartoonish. But there's more... The case has a rail system that allows an included mount to be slid very securely onto the case. This is attached to either a tripod or the supplied StickR adhesive footing that can be stuck to any flat, non-porous surface. However, Hitcase also makes a number of other mounts that are bought separately, including the SuckR sucker mount seen here. There's even tube, rollcage and chest mounts, among others. We've been using the Hitcase and like its versatility. It does make the phone slightly bulky, and it's hard to hear people, but that's the price of protection. The buttons and screen now require a more positive push to overcome the waterproofing protection, and they advise you to open the bottom latch to allow the microphone to operate properly, but everything else works as it should. We're slightly worried about scratching the lens but there are protective caps available at extra cost. Hitcase seems to have thought of everything, including its free iPhone Vidometer app that allows you to overlay speed, altitude, g-force, etc onto your videos with several different layouts.

Hitcase \$129.99, SuckR \$39.99

hitcase.com



WREN V5 SPEAKER

★ Having experienced the frustration of purchasing a remote speaker to use with a phone, we've made it our mission to seek out the quality products so you can purchase with confidence, and the Wren V5 wireless speaker is one of the very best we've heard. It's packed with clever ideas, that start with a ported, braced MDF cabinet covered in either bamboo or rosewood veneers. It also has a thick silicone base to avoid vibration and eliminate unwanted noise. It uses twin 3" speakers with four-layer drivers plus a 19mm tweeter to provide crisp, clear sound with real quality. If all you listen to is hiphop or thrash metal, this might be more than you need, but if you want to hear the voices and instruments, the Wren V5 delivers genuine quality. It has USB and Aux inputs but is available in V5AP versions for Apple Airplay, or V5PF for Android users. These will sync to the device and allow streaming playback. As part of the package, if you change devices during its three-year warranty period, you can exchange the speaker for the alternative operating system for just \$99. Alternatively, there's a third V5BT that will work with either device using Bluetooth. We really enjoyed the sound from the V5 and loved how it looks. This is definitely a cut above the average wireless speaker. **\$399**

wrensound.com



stiffened protection. The handles fold away and there's an attached shoulder strap made from seatbelt nylon if you prefer. The Viper is part of booq's lightweight Fibre Collection, constructed from natural fibers that are both waterproofed and organically dyed. It includes a metal plaque with a unique serial number so the bag can be returned to you if lost. **\$95**
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PORSCHE 911 CARRERA (TYPE 993) SERVICE MANUAL

Covering the Carrera, Carrera S,
Carrera 4, Carrera 4S (1995-98)

WORDS / *Doug Neilson*

IT'S HARD TO BEAT THE VALUE AND DETAILS IN THE LATEST SERVICE MANUAL FROM BENTLEY PUBLISHERS FOR NORMALLY ASPIRATED TYPE-993 PORSCHE 911 MODELS (1995-98).

Published at the end of last year, it boasts a whopping 946 pages with 1523 photos, illustrations and diagrams. It comes with a durable hardcover with full color repair procedures and costs \$219.95 (although we've seen it for less online).

We love it. Let us tell you more...

Having owned several Bentley Service Manuals for various European cars over the years (I still have two of my favorite manuals from previous cars on my bookshelf: VW Golf/Rabbit/Sirocco/Jetta 1980-84 and Porsche 911 Carrera 1984-89), we were pleased to see a new manual for the 993 Porsche 911. It was especially well received since I'd recently taken possession of a '95 993 Carrera 2 that occupies one of my precious garage spots.

More importantly, over the past 30 years or so, I've literally saved thousands of dollars fixing my own cars, but wouldn't have been able to do so without the information, procedures, torque specifications, diagrams and more, contained in each Bentley Service Manual.

This new manual is exceedingly comprehensive and it will be a valuable tool for all 993 owners and professional technicians alike. Like all Bentley manuals, it's easy to use and understand.

The manual is divided into ten chapters, including nine repair chapters that are assembled in a similar layout to the factory workshop manuals, making it easy to find what component you need to remove, replace, or troubleshoot.

Here's a summary of chapters and topics:

- **SECTION 0** - General Maintenance: vehicle identification, option codes, technical specifications, general service and maintenance
- **SECTION 1** - Engine: removal and installation, disassembly and assembly,

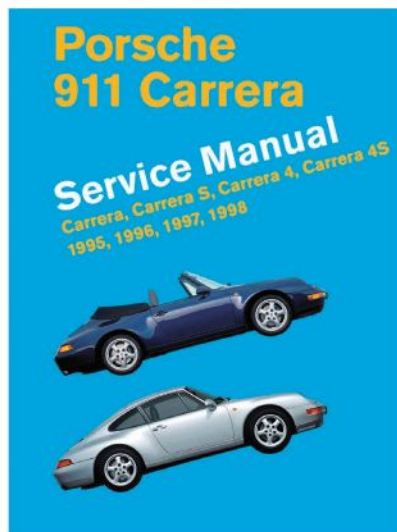
crankshaft, pistons and cylinders, heads, camshafts and lubrication

- **SECTION 2** - Engine management, exhaust, and electrical: fuel supply, injection, exhaust system and ignition
- **SECTION 3** - Clutch and Transmission: clutch and hydraulic system, torque converter, shift linkages, differentials, electrical components. Note: No internal repair is covered for the transmissions.
- **SECTION 4** - Suspension, Brakes and Steering: suspension, axles, bearings, alignment, steering, antilock brake system, calipers, rotors and hydraulic components
- **SECTION 5** - Body: fenders, trunk lid, hood and doors
- **SECTION 6** - Body Components: sunroof, targa top, convertible, bumpers, windows, mirrors and airbags.
- **SECTION 7** - Interior Trim: console, dashboard and seating.
- **SECTION 8** - Heating and A/C: heat exchangers, climate control, filters, motors, ducting, compressor, condenser and more
- **SECTION 9** - Electrics: instruments, lights, fuses, relays, wiring diagrams, OBD1 and OBD2 on-board diagnostics

As we said, this reference book is very comprehensive. We found the procedures well presented, with concise descriptions, color photos and schematic diagrams or illustrations. And the quality of the photos and diagrams allows you to understand a given component or procedure.

No manual is complete without the correct factory tightening sequences and torque specifications, troubleshooting charts and visual inspection sections; this book has it all.

We highly recommend this service manual for all 993 owners. And, for owners without access to the ridiculously expensive factory repair manuals, this book is an absolute steal. In fact, it will pay for itself many times over during your years of 993 ownership.



OTHER EUROPEAN CAR SERVICE MANUALS AVAILABLE FROM BENTLEY PUBLISHERS

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Triumph TR2 and TR3

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VW - most models



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2015 Porsche 918 Spyder

A SUPERCAR AS MOMENTOUS AS THE 959

/// Words Michael Harley

HIGHLIGHTS

- » 887hp, 944 lb-ft, 2.5sec, 211mph
- » Carbon fiber structure
- » Plug-in hybrid
- » Two electric motors
- » All-wheel drive
- » Carbon-ceramic brakes
- » Lightweight Weissach Package option

TECHNOLOGY

- » 608hp V8 in the rear with 156hp electric motor
- » Seven-speed PDK dual-clutch transaxle
- » 129hp electric motor in the front with its own transmission for AWD
- » rear-wheel steer
- » Hybrid braking

ELECTRONICS

- » Five drive modes allowing fully electric or hybrid drive
- » PASM adaptive damping
- » Electric rear steering, electro-mechanical front steering
- » 7hr battery recharge from 110V AC supply
- » Active aerodynamics

NINE HUNDRED AND FORTY FOUR POUND-FEET OF TORQUE CRUSHES

THE COMPETITION. Yet Porsche's engineering team downplays the output of the 918 Spyder; the automaker's first new supercar since the Carrera GT was discontinued in 2006. Instead, the men in white lab coats speak about the challenge, and eventual success, of building a new flagship embedded

with technology that will serve as the company's gene pool for many decades to come.

The 918 Spyder program was launched in the summer of 2010 and, in short order, a low-slung carbon-bodied coupe was spotted testing. Details leaked of the mule's plug-in hybrid, all-wheel drive powertrain, active aerodynamics and motorsport innovation. Finally, at the 2013

Frankfurt Auto Show, Porsche revealed the 918 had lapped the Nordschleife in 6:57min – setting a new world record for a production vehicle in the process.

But it would be months before those not on the company's payroll would be invited to slip behind the three-spoke wheel, snug themselves into the thinly padded carbon-fiber bucket seat, insert the key and mash the accelerator to the floor.

The heart of the 918 is its innovative all-wheel drive propulsion system. Nestled low, just aft of the driver in the carbon-fiber tub, is a race-bred, dry-sumped, 4.6-liter V8 that develops 608hp. Sandwiched between it and the seven-speed PDK dual-clutch gearbox is a 156hp electric motor. One or both can drive the rear wheels.

The front wheels are powered by a separate 129hp electric motor, able to operate independently or in conjunction



things. This sheds an additional 90 lb compared to the standard model.

Performance is spectacular. With launch control, Porsche conservatively states the Weissach model will hit 60mph in 2.5sec, with the instrument panel's digital speedometer reading 186mph just 19.9sec after initial launch. The quarter-mile is devoured in 9.9sec at 146mph, which equals or better the best from Ferrari, Lamborghini, McLaren and even Bugatti.

There are five drive modes – E-Power, Hybrid, Sport Hybrid, Race Hybrid and Hot Lap (listed in order of ferocity), which are selected from a steering wheel-mounted dial. They allow the operator to choose how the gasoline-electric hybrid will delegate and consume available power. The first two modes are optimized for public roads, providing 19 miles of combustion-free range, and efficiency unheard of in a supercar. In fact, it's predicted that when the EPA releases figures, the 918 should make a BMW 128i look like a gas-guzzler.

The real treat ensues when any of the last three modes are engaged, and Spain's Circuit de Valencia was chosen to display the 918's prowess, with the two-seater attacking the F1 training ground with a vengeance.

The V8 runs constantly in these three performance modes, with the top-mounted titanium exhaust ports bellowing hot gas with a wicked soundtrack, barely inches behind the driver's ears.

Acceleration is hallucinatory when the combustion engine and twin electric motors are all focused on the same objective.

Cornering is remarkably tame, despite the very high g-forces, because the AWD, rear-wheel steering and sophisticated electronics manage available grip, making it seem almost benign. The driver is left to focus on the apex, using the sharp steering to put the grippy Michelins on the

with the rear engines, based on demand.

The total system power is rated at 887hp, with an extraordinary 944 lb-ft of torque – most of Porsche's legendary racecars haven't been this powerful!

Ensuring the power remains accessible is the adaptive damping of the Porsche Active Suspension Management (PASM). Electro-mechanical steering systems, on both the front and rear axles, improve agility and stability (the rears turn up to 3° in either direction with electric assistance).

The braking system is hybrid, exclusively employing regenerative resistance up to 0.5g of deceleration. Above that threshold, the Porsche Ceramic Composite Brake (PCCB) package, hidden inside the staggered 20 and 21" wheels, provides mechanical clamping on the drilled rotors.

Battery-powered hybrids are notoriously heavy, but Porsche worked

feverishly to keep weight to a minimum. Yet even with comprehensive use of carbon fiber, titanium and forged aluminum, the 918 tips the scales at 3692 lb – you can blame 304 lb of that on the liquid-cooled lithium-ion traction battery pack alone.

Yet the mass is placed strategically low (the center of gravity is no higher than the hubs of the center-lock wheels) and carefully balanced (43/57 front-to-rear weight distribution) to produce what Porsche calls "no-compromise driving dynamics."

The options list is short, but a "must-have" is the \$84000 Weissach Package, which replaces the leather upholstery with lightweight alcantara, substituting aluminum interior trim for carbon fiber, removing sound insulation, adding magnesium wheels and upgrading the exterior aerodynamics, among other



PROS

- » Design
- » Performance

CONS

- » Price



TECH SPEC



edge of the track.

Inevitably, oversteer is easy to induce, but a quick steering ratio ensures that a flick of the wrist pulls the tail back in when the throttle is prodded. Even at the limit of adhesion, running over the painted curbs, does little to unsettle the chassis. The suspension tuning is simply superb.

Braking is nothing less than fascinating, with the transition from engine drag to mechanical deceleration seamlessly executed even under heavy or rapid-fire modulation.

Overall, it's hard to fault the machine's demeanor. Despite its prodigious power, mechanical complexity and unnerving sticker price, its on-road behavior is as amicable as a VW Golf. Even the 911 Turbo S is more challenging to drive at high-speed on a track.

A short, three-year gestation didn't result in any compromises from the automaker – the Porsche 918 Spyder will truly arrive as the most technically advanced and polished supercar on the planet.

2015 PORSCHE 918 SPYDER WITH WEISSACH PACKAGE

LAYOUT

front-mounted electric motor, rear-mounted gasoline engine and electric motor, AWD

ENGINE

4.6-liter V8 32v direct injection, dry-sumped, plus two permanent-magnet AC synchronous motors, liquid-cooled lithium-ion battery pack

DRIVETRAIN

seven-speed PDK dual-clutch rear transmission, separate gearbox for electric front motor

BRAKES

six-piston Acid Green calipers, 410mm carbon-ceramic drilled rotors f, four-piston, 390mm r

SUSPENSION

double wishbones f, multi-link r, electric rear steering

WHEELS & TIRES

20x9.5" f, 21x12.5" r magnesium wheels, 265/35 f, 325/30 R21 r Michelin tires

EXTERIOR

CFRP monocoque, aluminum crash structure, Porsche Active Aerodynamics, Targa roof

PERFORMANCE

MAX V8 POWER
608hp at 8700rpm

MAX REAR ELECTRIC POWER
156hp

MAX FRONT ELECTRIC POWER
129hp

MAX COMBINED POWER
887hp

MAX V8 TORQUE
398 lb-ft at 6700rpm

MAX COMBINED TORQUE
944 lb-ft

0-60MPH
2.5sec

TOP SPEED
211mph

WEIGHT
3602 lb

ECONOMY
TBC

MSRP
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2014 Audi S3 Sedan

AUDI ADDS A TRUNK TO ITS HOTTEST HATCH

/// Words Matt Robinson

HIGHLIGHTS

- » Good-looking compact sports sedan
- » Lighter and stiffer than old S3 hatch
- » Quality cabin materials and ergonomics
- » Entertaining to drive
- » Plenty of AWD grip
- » Decent soundtrack

TECHNOLOGY

- » 300hp 2.0T motor
- » Cleaner and more efficient than previous S3 model
- » Manual six-speed or dual-clutch S tronic automatic
- » quattro drivetrain with magnetic ride as standard
- » Lightweight build pins weight to 3197 lb

ELECTRONICS

- » Latest generation MMI with 11" folding display
- » Xenon Plus headlights with LED DRL strips
- » S instrument cluster with color DIS

FAST AUDIS ARE A CONUNDRUM IF YOU PLACE AN EMPHASIS ON DRIVING SATISFACTION. Their showroom appeal can't be underestimated since they always look good and the build quality is practically bombproof, but the dynamics can be a little hit-or-miss. For every sparkling R8, second-gen TT and B7 RS4 that wins plaudits, there are other S and RS Audis that were spoiled by numb steering, a brittle ride or excessive understeer.

Enter the third-generation S3. It epitomizes the hot hatch formula, even if it costs more than many of its contemporaries. However, Audi feels it's onto a winner by grafting a trunk to the back of the hatchback to create their first ever compact sedan S model.

The good news is that the Sedan is both the best-looking version of the S3 to date and it's coming to America. The design has a real clarity from the moment you first see it, with its squat, hunkered stance, coupé-like profile and sharp lines. It's muscular and taut, and works well in almost any color. Inside, things get even better. The usual excellent

Audi interior is evident and you can load it with a slew of optional equipment, such as adaptive cruise control, active lane assist, a 14-speaker B&O stereo and MMI Navigation Plus. But fortunately, all the basics are flawless, from the fantastic leather front seats to the chunky three-spoke steering wheel, so you could probably keep the sticker price under control.

There's also plenty of space for four adults, even with the driver's chair pushed back, while the trunk is actually bigger with the seats up than in the S3 Sportback.

The S3 Sedan shares its 2.0-liter TFSI engine with the hatchback version, and again, this is a very good thing. Supremely strong throughout the rev range, it delivers meaningful acceleration no matter what speed you're going. The boost delivery is lag-free, and you'll have a hard time remembering it's turbocharged.

The motor has a nice exhaust note, which is augmented by a flap in the exhaust and an electromechanical sound actuator in the



bulkhead. Unfortunately, this makes it sound slightly artificial and grates a little. Still, 300hp and a sub-5sec 0-62mph are stats befitting more expensive machines, so we'll cut the S3 Sedan some slack.

We sampled the engine with the S tronic six-speed dual-clutch auto, and while we'd normally make a strong case for a stick shift, the S tronic is such a capable companion for the four-cylinder that it might be the better option...

It only showed slow-witted behavior when coming out of the tightest hairpins and asking for more than 50% throttle. In this situation it took its time to kick down. Otherwise, the trans shifted imperceptibly, emitting an entertaining "pop" from the quad exhaust tips on fast upshifts.

Obviously, the S3 is equipped with quattro all-wheel drive, as well as torque-vectoring, which means you've got seemingly endless grip to put 300hp to

the pavement in any conditions. But what really impressed us was the Sedan's entertaining steering. Uninhibited by the huge expectations placed on anything wearing an RS badge, the S3 delivered excellent dynamics.

There are still flaws, chief of which is the steering remains numb unless in the sporty driving modes – the S3 has the mode select switch that allows you to choose from five different setups. These alter throttle response, steering weight, damper rates and S tronic shift speed. However, even in the Dynamic setting the steering remains numb around dead center. Yet it has consistent weight and the S3's nose always reacts to inputs in lightning fashion. We were also happy to discover that understeer was practically eradicated unless you're travelling at extremely high speeds.

The Audi S3's ride quality exhibits a



PROS

- ▶ Beautifully made
- ▶ Good-looking exterior
- ▶ Drives better than predecessors
- ▶ Immense quattro grip
- ▶ Strong, lag-free engine
- ▶ Little competition

CONS

- ▶ Not as much fun as RWD
- ▶ Most of the best bits are optional extras
- ▶ Steering not perfect



TECH SPEC

2014 AUDI S3 SEDAN

LAYOUT
front-engine, quattro AWD

ENGINE
1984cc TFSI four-cylinder 16v petrol turbocharged, direct and indirect injection

DRIVETRAIN
six-speed S tronic dual-clutch automatic transmission

BRAKES
ventilated rotors all round, dual circuit with diagonal split, ABS and ESP, S3-branded calipers f

SUSPENSION
MacPherson strut f, four-link r

WHEELS & TIRES
19" twin-five-spoke wheels, 235/35 R19 tires

PERFORMANCE

MAX POWER
300hp at 5500-6200rpm

MAX TORQUE
280 lb-ft at 1800-5500rpm

0-62MPH
4.9sec (S tronic)

TOP SPEED
155mph (limited)

WEIGHT
3197 lb (S tronic)

ECONOMY
TBC

MSRP
TBC

compliance in all areas that many previous S/RS models failed to achieve. It's not only comfortable but keeps the rubber on the road, making the car devastatingly quick when the curves come thick and fast. You find yourself grinning as the S3 encourages you to commit to each bend more than the last. The grip is astonishing in the dry as it scythes through curves and sweepers with aplomb – in the wet, it's going to be peerless.

With great stopping power provided by the ample brakes, the S3 is blessed with a suite of controls that work so well together, this might be one of quattro GmbH's best efforts since the original '80s legend that bore the hallowed name.

The drawback is it doesn't leave much room to maneuver for an impending RS version... and in some ways it's better than all the existing S/RS Audis as well.

With only the Mercedes-Benz

CLA45 AMG occupying this rarified performance niche – a car that's even more powerful and expensive – the S3 Sedan has a clear route to success. Although once the next Golf R and BMW M2 arrive, things could get a lot more exciting for this sports sedan.



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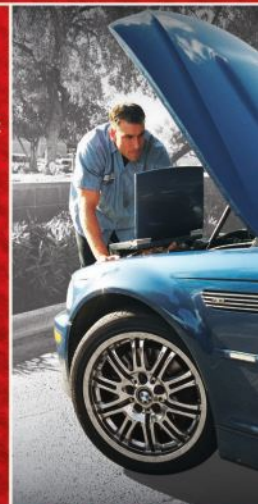
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2014 BMW M235i

THE 135i REPLACEMENT IS A STUNNING 326HP, REAR-WHEEL DRIVE, M-TUNED COUPE – LET THAT SINK IN!

/// Words Alex Bernstein

HIGHLIGHTS

- » Under \$45000
- » Rear-wheel drive
- » Aggressive styling
- » Minimalist interior
- » Fun on the track

TECHNOLOGY

- » 326hp N55 3.0L turbo motor
- » 332 lb-ft from 1300rpm
- » Adaptive suspension
- » Big brakes
- » Intelligent Dynamic Stability Control

ELECTRONICS

- » 6.5" iDrive display
- » Connected Drive
- » BMW Apps

YES, BMW HAS ADDED ANOTHER NUMERAL TO ITS MODEL LINE AND IT'S THE 2 SERIES. The trick here, though, is that it replaces the 1 Series in the US, where we don't get the European hatchbacks from the same model lineage. So it now follows the rejuvenated numbering, where odd numbers mean four doors, and even numbers mean coupes and convertibles.

Enough about the naming, though, because the sportiest 2 Series, the M235i, is spectacular. It's one of the best BMWs we've driven since, dare we say, the 135i. It's bigger, faster and stronger in every way, and it's downright handsome.

The Bavarian design team nailed it. From the rising front-to-rear swage line, to the compact greenhouse and aggressive front-end, the M235i owns the road with more presence than anything in its segment.

BMW wanted to reference its legendary 2002 with the M235i, offering a powerful and compact car that's also light and agile, while being strong in its appearance. Sure, we don't see much of the

2002 here, but the philosophy is undeniable.

While larger in every way than the outgoing 135i, it manages to weigh about the same, which is refreshing in the land of automotive obesity.

Length is increased by almost 3", while width and wheelbase grow 1.3". The trunk has enough room for more than just golf clubs, with 13.8cuft, and if you decide to carry passengers, they'll be happier with the increased space.

But let's get onto the good stuff, like what makes the M235i go...

BMW used its proven formula of a big punch in a small package, with a tweaked N55 I-6 turbo motor boasting 326hp and 332 lb-ft, in a package that weighs an estimated 3500 lb. So the M235i is a rocket. It'll hit 60mph in 4.8sec, or so BMW claims, yet it feels even more eager than that!

On the infield course at Las Vegas Motor Speedway, we were able to feel the benefit of the new chassis. Of course, 50/50 weight distribution kept the M235i balanced and nimble, and thanks to the standard Adaptive M suspension and



M Sport braking system, there were no complaints of stability or grip.

This is in part thanks to the Michelin Pilot Super Sport tires, measuring 225/40 front and 245/35 rear. These are wider than the 135i's front tires, providing more grip and less understeer. It's also an aggressive tire that speaks volumes about BMW's intentions for its stout coupe, and we love it!

What doesn't speak to the weekend racer, on the other hand, is the eight-speed ZF automatic transmission. There was a lack of connection here, and despite its quick shifts, it didn't feel appropriate for the little M235i.

Don't fret, though, because a six-speed manual transmission is a no-charge option, and one we highly recommend. Unfortunately, the M Performance mechanical limited-slip diff doesn't come standard, so BMW will charge you extra. But at least it's an option...

We're not sure how much it will cost, but if you enjoy driving with spirit, smoking the tires and

+ PROS

- › Good looking
- › Reasonably priced
- › Awesome to drive
- › First gear burnouts

× CONS

- › Doesn't come with a DCT trans option
- › LSD optional extra

kicking the tail out, we suggest you go big and opt for it.

On track, the auto with its open differential was able to hit apexes and demolish the straightaways, but we craved the control of a manual transmission and the power distribution of an LSD.

So, is this an actual M car? Not quite. The M Performance parts fitted to it are meant to bridge the gap between BMW's M division and its regular production cars. And why

didn't they just call it the M2? Because an actual M2 is rumored to be under development, and if it's a raw, visceral, sporty upgrade over the entertaining M235i, we have lots to look forward to from our favorite Bavarian brand.

The M235i is an amazing car that will please driving enthusiasts and win even more converts to the BMW roundel. It combines a poised chassis with a powerful punch that will give the Mercedes CLA45 AMG, Audi S3 and VW Golf R a good run for their money, being the only RWD car among them.



TECH SPEC

2014
BMW M235i

LAYOUT
front-engine, RWD

ENGINE
3.0L I-6 24v DOHC with single twin-scroll turbocharger, direct injection

TRANSMISSION
six-speed manual or eight-speed ZF automatic

BRAKES
M Sport four-piston calipers f, two-piston r, rotors TBC

SUSPENSION
aluminum double-pivot spring and strut f, five-link independent r

WHEELS & TIRES
18x7.5" f, 18x8" r, 225/40, 245/35 R18 Michelin Pilot Super Sport tires

EXTERIOR
rear spoiler, front air curtain, Shadowline trim, Ferric Gray mirror caps, dark chrome trim on bumpers, air intakes, kidney grille slats and exhaust tips, M Sport aerodynamic kit

PERFORMANCE

POWER
326hp at 5800rpm

TORQUE
332 lb-ft at 1300-4500rpm

0-62MPH
4.8sec (auto trans)

TOP SPEED
155mph

WEIGHT
3505 lb (manual), 3535 lb (auto)

ECONOMY
25/32mpg city/highway (est)

MSRP
\$43100



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2015 Aston Martin V12 Vantage S

WE TRACK-TEST THE
565HP VANTAGE

/// Words Greg Emmerson



HIGHLIGHTS

- » AM28 V12 motor
- » 565hp, 205mph, 3.7sec
- » New automated-manual transmission
- » Fastest accelerating Aston to date

TECHNOLOGY

- » 6.0L V12 gets new Bosch engine management
- » seven-speed Sportshift III transaxle

ELECTRONICS

- » Three-stage adaptive damping
- » ZF Servotronic steering

FOR SUCH A SMALL COMPANY, ASTON MARTIN'S PRODUCT OUTPUT SEEMS TO BE IN HYPER-DRIVE.

It's as if every other month we're reviewing a new model, with the Vanquish, Rapide and DB9 appearing recently. And now the V12 Vantage S is making a great case for sports car ownership.

Regarded by many as the prettiest Aston of all, the Vantage began life with a V8, evolved to a V12, and now has an updated 12-cylinder to justify its new V12 S designation.

This model replaces the previous V12 Vantage and power has risen from 510hp to 565hp. And while this is the same output as the new Vanquish engine, it's not exactly the same motor.

The AM28 V12 in the Vantage shares the architecture of the Vanquish engine – same block, bore, stroke and heads – but it has new Bosch management and dual variable camshaft timing among its upgrades, providing smooth throttle response and near-instantaneous grunt.

The V12 S also gets the seven-speed Sportshift III transaxle, rather than the Touchtronic II in the

Vanquish. And to be honest, this is where the new car received most of its criticism.

While the Touchtronic is a fully automatic transmission with manual paddle shift control, the Sportshift is an automated manual. To all extents and purposes, both are operated in the same way: either select D on the dash-mounted gear buttons or tap one of the paddle shifters for manual operation. The differences are internal, with the Sportshift having a greater track focus, perhaps explaining why it wasn't popular on the road. Our test driver reported a ponderous shift at anything but high speeds, causing jerky progress in the \$185k sports car – far from ideal.

And, of course, the traditional manual transmission is no longer available; something that might have resolved all the issues. However, the carmaker reports very little interest from its customers in having a third pedal, so the market has spoken (even if the market was wrong...)

Amid the slight controversy, Aston Martin wanted to prove there was method to



With Sport mode selected, the V12 Vantage S came alive but you also need to activate the adaptive damping. The three-stage system allows Normal (providing surprising comfort), Sport and Track modes. We opted for Sport since it allowed the curbs to be ridden more easily. It also accessed the Sport setting for the ZF Servotronic power steering, giving it more weight and substance, although its 15:1 ratio was already an improvement over the previous models.

So with everything set, we built up speed and again the V12 S was on our side. At the end of the back straight you need to scrub off about 100mph before the 180° right turn, but the stock carbon-ceramic brake discs and six-piston front calipers made a mockery of the braking markers. Within a couple of laps we'd halved our braking distance and could probably have gone deeper still, but for the concrete wall on its perimeter.

Using the paddles, the acceleration was swift, hitting 60mph in less than 4sec and reaching about 150mph on the short straight. The car was also wonderfully balanced, allowing delicate turn-in and early power application off the apex. It certainly wasn't nose heavy, thanks to the V12's rearward mounting position, and the transaxle helping it rotate. Admittedly, we kept the traction control on because I don't want to explain to my boss why we'd have to repair aluminum body panels and composite bumpers. However, it allowed a degree of slide and wheelspin before interjecting. And it was never impolite in its interruption, as you'd expect from the British...

Driven at high speed, either bouncing off the rev limiter or diving on the brake pedal, the gear shift quality was never an issue. It was as fast and precise as we wished, allowing plenty of engine braking with high-RPM downshifts. However, we were never

the madness, and made the V12 Vantage S available to us at the Palm Beach International Raceway in Florida.

Although rather short and flat, the track did offer a high-speed straight and several technical turns to illustrate the car's prowess, so we set about exploring its ability.

Since we've already covered the car in a previous First Drive (*EC2/14*), we're concentrating here on its sporting character. And the first highlight was the Sport button that altered throttle response, shift speed and exhaust note when pressed. The V12 already sounded good but with this button activated, it was spectacular, and surely one of the main reasons people will buy the car.

In fact, the car has a new exhaust based on the One-77 supercar from several years ago, bringing less weight, bulk and an improved aural performance.





TECH SPEC

2015 ASTON MARTIN V12 VANTAGE S

LAYOUT

Front/mid-mounted engine, RWD

ENGINE

5935cc AM28 V12 48v, Bosch injection, Dual Variable Camshaft Timing

DRIVETRAIN

seven-speed Sportshift III automatic transmission, rear/mid-mounted transaxle, carbon fiber driveshaft, limited-slip differential

BRAKES

398mm carbon-ceramic rotors, six-piston black calipers f, 360mm, four-piston r

SUSPENSION

independent double wishbones f&r, adaptive dampers

WHEELS & TIRES

19x9" f, 19x11" r ten-spoke forged wheels, 255/35 f, 295/30 R19 Pirelli P Zero Corsa tires

EXTERIOR

aluminum structure with aluminum, magnesium, composite and steel body

PERFORMANCE

MAX POWER

565hp at 6750rpm

MAX TORQUE

457 lb-ft at 5750rpm

0-60MPH

3.7sec

TOP SPEED

205mph

WEIGHT

3670 lb

ECONOMY

TBC

MSRP

\$184995



driving slow enough to experience the low-speed hesitation and jerkiness reported by our colleagues.

So Aston has positioned the V12 S at the hardcore end of the Vantage spectrum, providing the V8, V8 S and Roadster as softer options if preferred. They even went to the trouble of underlining its intentions with a carbon fiber grille, hood vents, front spoiler and rear diffuser. It additionally gets forged ten-spoke wheels plus a black-painted roof and grille surround.

So while the V12 Vantage S didn't

win outright plaudits at its initial launch, we'd like to revise our stance now we've sampled it in the correct environment. Aston Martin obviously feels there's enough depth in its model range and customer base to provide a more track-focused sports car that brings the same beauty and craftsmanship as its other sports cars, yet is able to mix it with the best for fast road or track use. It still has all the drama you want from an Aston Martin Vantage but with a little more attitude.

PROS

- » Design
- » Performance
- » Engine noise
- » Steering
- » Brakes

CONS

- » Transmission jerky on the street
- » No manual option
- » Price





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MISSION IMPOSSIBLE

We always want the impossible, and an Audi RS4 sedan is about as unlikely as they come...



here's a long tradition of American drivers missing out on appealing European cars. But that spawned another tradition of recreating these remarkable machines using a combination of ingenuity and sheer determination. There's also a third tradition of giving it a unique twist, with Audi's RS wagons commonly reinterpreted as more popular sedans.

Not wanting to break with this tradition, Dennis Tang teamed up with TAG Motorsports in Vista, CA to create the first B8 RS4 in the US, and the first B8 RS4 sedan in the world. This gives him huge bragging rights, and frequent sightings of the white Audi have led to online forums lighting up as enthusiasts imagine they've seen the automotive equivalent of Bigfoot.

So how did it all come about? Dennis has been modifying his 2013 Audi S4 ever since he bought it. In fact, it was previously featured in *EC* 11/13 as part of our "Coilovers vs Air" suspension test. Dennis had fitted the KW DDC and HLS system, allowing the damping rates to be varied on the move or from his phone, and the nose to be hydraulically raised to clear obstacles. It was a great comparison for

WORDS / Greg Emmerson
PHOTOS / Alex Bernstein
VIDEO / Mike Sabounchi



the AccuAir air suspension and proved a worthy adversary in our test.

In addition to the suspension, Dennis had worked with Alex Andonian at TAG to fit AWE Tuning components such as GIAC software, StopTech big brakes and 19" HRE wheels. That was eight months ago, and a great deal has happened in the intervening time...

PLAYING TAG

So what does it take to build an RS4 sedan? We spoke to Alex about the build, since he'd been at the sharp-end of making it happen. "It started as a joke," he recalled. "We'd done almost everything possible to the S4 but without getting into the cosmetics too much. One day, Dennis asked what else we could do and we suggested the European RS4 as a joke!"

While it might have seemed ridiculous at the time, the seed was planted in Tang's brain and on his next visit, he asked them to investigate the RS4 conversion further.

"Dennis is a great guy and we became friends during the course of his S4 build. He was always dropping in to have something fitted or refined, so we were happy to look into the RS4 swap," Alex continued. "If we didn't have that relationship, we probably wouldn't have taken it seriously..."

Using two computers to compare S4 and RS4 parts lists and diagrams, the TAG team created a list of what they thought would be needed to build this very special car. The total came to around

\$23000 and, with regular shipments coming from Germany every three weeks, the parts were soon in their possession.

"It was when everything was laid in front of us that we fully realized the size of challenge," Alex admitted. What had seemed like an interesting notion was now an action list on a whiteboard.

With so much fabrication needed, Alex enlisted the help of local specialist, Hot Rods & Custom Stuff (HRCS) from Escondido, CA. These guys have created some incredible projects, including the "Mercedes Bent" from SEMA 2010 – it was a 190SL with SL65 running gear, built to an extraordinary standard and the star of the show. While they don't come cheap, Alex knew the quality of work would be beyond reproach.

S4 TO RS4

Diving into the project, TAG removed the front-end in order to fit the RS4's flared fenders. And that's when the problems began. The S4 fenders are about 0.25" longer. Getting the new parts to fit properly would require new door sill sections – actually it needed a one-piece item that fits into the bottom of the door jambs, locating the doors, all four fenders and side skirts.

Aware that everything could be "made" to fit eventually, Dennis and Alex decided to do it right, ordering the new door sills and cutting out the S4 panels. Because they weren't structural, it didn't affect the bodyshell but would ensure the majority of parts fitted properly.

They weren't out of the woods yet. With the front fenders in place, the RS4 front bumper and grille rapidly followed (both cars share the same hood). The side sills went on and the front doors were good, but the RS4 is an Avant and the roofline is different at the rear. The solution was to order RS4 rear doors but remove the top window frame and replace it with the S4 frame and glass.

The flare for the rear fenders also starts in the rear doors, so they were needed anyway. However, TAG also discovered that the gas cap is contoured, so that was added to the parts list.

The rear quarter panels were obviously flared but, designed for the wagon, the shape continued higher and longer than it would on a sedan. So HRCS set about reshaping the panel to fit. Everything was done in metal so that the panel just needed to be attached rather than filled.

While working on the rear, they discovered the RS4 also has different inner fenders and floor area, so these parts were also ordered and welded onto the sedan to ensure a perfect replica.

[1] Custom-finished 21" HRE wheels are bolted over a six-piston StopTech ST-60 big brake kit

[2] 3.0L TFSI supercharged engine gives away the car's S4 roots, but additions such as the GIAC software, AWE pulley and heat exchanger plus Supersprint long-tube headers and exhaust give it enough performance to carry off the conversion

[3] Even the black tips are genuine RS4, ordered as part of the complete makeover





At this point, everybody was looking forward to the project's conclusion. And then the rear bumper raised its ugly head. "This was probably the biggest headache of the entire build," Alex admitted. "It took 60 hours in labor alone!"

The problem was that the Avant's tailgate and light positions were utterly different to the sedan, so nothing was aligned. After careful consideration, the best solution was to graft the top of the S4 bumper to the bottom of the RS4 part, ensuring the original trunk and tail lights could be retained.

The S4 section then had to be flared to match the contours of the RS4 bumper, which continued the lines of the fender flare. The job initially involved heating and pulling, but would require some plastic filler as well to get a perfect finish.

"Perfect" is the right word to describe this car. Alex and the entire team went the extra mile to

build something Audi might stand behind. "We aim to have it inspected by an Audi dealer once the shakedown tests are completed," he stated. "We want to assure Dennis, and anybody else who might want the same, that this vehicle is correct in every detail."

The original Ibis White is also a stock RS4 color, so the car was resprayed by HRCS to their exacting standards. The window surrounds and exterior trim were painted gloss black to replicate the Black Optic package on the RS4.

With no trunk spoiler option for the B8 RS4, Dennis retained his existing S4 part, which is tastefully discreet.

Thinking of building something similar? Alex estimated a cost of around \$65k to replicate it to this standard, working with HRCS. But that's without wheels, brakes, suspension, etc.

PERFORMANCE

The wider fenders gave the team more room to maneuver, so they opted for a generous 20x10.5" front and 20x11" rear. With TAG's new premises next door to HRE, the guys came over to check the measurements before machining a set of P104 wheels with a 37mm offset.

"The design was close to the stock RS4 wheels, but with an aftermarket twist," Alex told us. "On the S4, the biggest we'd fitted was 20x10" ET36 with 255/30 tires, but for this car we were able to fit 295/25s all round; the wider rear wheels allowing the rear tires to be stretched slightly, reducing the height of the sidewall and gaining some extra clearance," he explained.

The car would remain on its KW DDC suspension with HLS nose-lift, since it's about as advanced as you can buy right now. TAG had



[4] Fitting the front fenders was the start of the adventure for TAG Motorsports, as it discovered that the RS4 Avant was also different under the skin

[5] Flat-bottomed steering wheel remains S4 while Dennis saves for the real thing

[6] In addition to a vent-mounted boost gauge, TAG placed the KW DDC buttons on the console



integrated the DDC controls into the console, sitting opposite the new RS4 Stop/Start button that was fitted.

The only other interior upgrade was an AWE boost gauge, although Dennis had planned RS4 bucket seats and even its carbon-ceramic brakes, but with the project going over budget during the build stage, these additions are on hold.

Returning to the suspension, Dennis had previously fitted EuroCode sway bars and its Alu Kreuz drivetrain stabilizer, both of which were retained for the makeover. He also kept the StopTech ST-60 big brake kit with six-piston front calipers and 380mm rotors.

In the engine department, the supercharged 3.0L V6 TFSI motor had initially been uprated with GIAC software, an AWE Tuning pulley, intake and heat exchanger.

For round two, GIAC would contribute a more aggressive program because Supersprint had supplied the first example of its new long-tube headers and full exhaust system. This was finished with genuine RS4 tips to complete the makeover. And while it might not match the 450hp of the original car's 4.2L V8, you might be surprised at how fast a modified S4 can be...

TANG

Speaking to Dennis, he was predictably excited to own such a unique vehicle. He's still entertained by the online speculation whenever somebody posts a photo of it, imagining they've scooped a spy shot, but generally he can slip under the radar.

"Leaving the car in its original white meant it doesn't always get noticed at first. Despite all the work, the car is a sleeper because the RS styling is more discreet than some of its competitors. But it always gets a great reception once people realize what it is," he laughed.

In addition to the bodywork, the new engine mods also made a dramatic impact on the driving experience. "The car is now significantly faster. With the exhaust headers and updated software it pulls so much harder and is a lot more fun to drive," he confirmed.

"We actually helped Supersprint develop the headers. They sent us a prototype but it was much too raspy, so we helped them tune the sound. It's now more subdued at the bottom-end, but really wails at the top," Dennis continued.

He also confirmed the RS4 front bucket seats remain on his wishlist, although carbon fiber interior trim will probably arrive first.

He's still contemplating the carbon-ceramic brake rotors as well, but is prioritizing an upgrade for the stock rear brakes.

"The project isn't over by any means," Dennis told us. "We're still looking at what we can do in the future, but first I'm planning to get out and really enjoy the car." ☺



TECH SPEC

2013 AUDI S4

DENNIS TANG
PASADENA, CA

ENGINE

3.0L V6 24v TFSI supercharged with GIAC stage 2 software, AWE Tuning stage 2 pulley, S-Flo intake, carbon air box, heat exchanger and coolant reservoir, Supersprint long-tube headers and exhaust system, OEM RS4 exhaust tips

DRIVETRAIN

seven-speed Audi S tronic dual-clutch transmission with GIAC software, quattro AWD

BRAKES

StopTech ST-60 BBK with six-piston calipers in Ibis White, 380mm rotors, StopTech pads r, braided lines f&r

SUSPENSION

KW DDC coilovers with W-LAN kit for iPhone control, KW Hydraulic Lift System, EuroCode Tuning sway bars and Alu Kreuz drivetrain stabilizer

WHEELS & TIRES

21x10.5" f, 21x11" r HRE P104 wheels in dark tinted brushed finish, 295/25 R21 Pirelli P Zero Nero tires

EXTERIOR OEM Audi RS4 front bumper, fenders, grille (in black), side skirts, door sills, rear doors and handles, rear quarter panels, gas door and rear bumper (blended to S4 bumper), European-spec headlights, S4 trunk spoiler, trim painted gloss black, car repainted Ibis White

INTERIOR

AWE Tuning boost gauge, RS4 Start/Stop button, KW DDC buttons

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Bill Earon had his 1978 911 SC converted from track star to street king

WORDS & PHOTOS
Alex Bernstein

he Porsche 911... It just doesn't get old. But even when it does, its design is timeless, stunning in all its variations. So each time we see one, we reflect on vehicular perfection. There are other cars we lust after, but the Porsche 911 will always be the one. And while it can be tough to sift through the submissions we receive or builds we come





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across, not wanting to disappoint anybody who's poured their heart into their own car, sometimes the decision is easy. Take the 1978 Porsche 911 SC you see here, for example. It makes us want to sell everything we own simply to park it outside our office. Owner Bill Earon is a lucky, lucky guy.

Perhaps lucky is the wrong word. Bill's successful in business, which has allowed him to feed his motorsport addiction. He races a 996 Cup Car in the Pirelli Driver's Cup Series at tracks across the country, and placed second in his class last season. And while he isn't the hands-on

wrenching type, Bill refers to himself as more of a "general contractor" when it comes to his 911, giving input and direction during its lengthy restoration.

As is blatantly obvious, Bill repainted his SC. But you might not be aware it matches his racecar after a bare-metal stripdown that started in 2012 at Bell's Autosport in Huntington Beach, CA.

"Before I bought the Cup Car, my SC was a very competitive racer," he revealed. "But after driving a real racecar, nothing else could compare, so I decided to turn the SC into a street car."

As a result, the race-prepped '78 was torn down and, upon its reconstruction, Bill became painfully aware that his beloved P-car needed many parts replaced. "After Bell's fixed and replaced so many

[1] Even the Porsche crest shines like new, adding color and contrast

[2] Chubby Toyo tires, black Fikse wheels and a hint of orange from the Brembos is all it takes to understand this 911's purpose

[3] Looking at the '70s cluster takes us back to the good old days of minimalism



parts, I eventually decided to replace everything to make it like-new," he recalled. So much for just a paint job!

The original narrow-body fenders remained intact, but the addition of Getty Design's hood, bumpers and deck lid added the racing touch the 911 needed. And thanks to Bell's, the fit and finish is factory-like, producing a stunning car.

A set of Fikse FM/10 wheels, staggered and

finished in matte black, work perfectly under the 911, especially with meaty 275-section Toyo R888 race rubber poking out back.

Upon first glance, you're instantly aware this is a special car. It's not just another restoration project, and thanks to BBi Autosport around the corner in Huntington Beach, CA, the exhaust fabrication has created a symphony you want to hear over and over again.

[4] Custom upholstery goes a long way when it comes out like this! The Cobra seats blend perfectly
[5] The rebuilt 3.2-liter looks and sounds brand new

At its heart, the 911 boasts a 270hp 3.2-liter flat-six with 964 cams. It was fully refurbished and is a stout performer, meant for rigorous track abuse and miles of adrenaline-pumping, twisty-road fun.

While Bill's Cup Car blended its "putty" paint

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NEUSPEED RSE52 APPLICATION GUIDE

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		+45	5.112	57.1	
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AUDI B8 S4 :: RSe52 18x9.0J :: HOOSIER 275/35R18

ENGINE • EXHAUST • SUSPENSION • WHEELS



TECH SPEC

1978 PORSCHE 911 SC

BILL EARON
BOSTON, MA

ENGINE

3.2-liter flat-six with 964 camshafts

DRIVETRAIN

915 five-speed manual transmission

BRAKES

Brembo four-piston calipers f&r,
323mm rotors f, 309mm rotors r

SUSPENSION

Bilstein dampers, race springs f,
torsion bar r

WHEELS & TIRES

17x8.5" f, 17x9.5" r Fikse FM/10
wheels, 245/40 R17 f, 275/40 R17 r
Toyo R888 tires

EXTERIOR

Getty Design bumpers, hood and
deck lid, car painted in custom
"Putty"

INTERIOR

Cobra fixed-back race seats, leather
and suede retrim, Momo steering
wheel, motorsport shifter

with orange accents, he kept the SC more subtle, using black accents instead. In fact, the only orange lick is visible on the big Brembo calipers that keep the car under control.

With a peek inside, it's as minimalist as it was supposed to be. A pair of fixed-back Cobra race seats were re-upholstered, along with the headliner and door cards. A dated Momo steering wheel and tall motorsport shifter were the only other accessories it required.

After a year of work, and itching to get behind the wheel, Bill sat down with Loren Beggs at 911 Design in Montclair, CA. During their conversation, he was persuaded to permit some final touches. "Loren removed the motor to re-plate all exposed

metal," Bill explained. They also fine-tuned the appearance, worked on the small details, and polished an already stellar job.

"It's funny that what was meant to be a dedicated racecar has turned into such a fun street car," Bill laughed. "People always ask what it is because you can't just buy a car like this. It's so special and unique." ☺

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- **Bell's Autosport** bells-auto.com
- **BBI Autosport** bbiautosport.com
- **911 Design** nine11design.com



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Shoehorn Special

G-Power shoehorned a 600hp supercharged M3 V8 into the 1M to create a monster

/// WORDS
& PHOTOS
Stephen Hall

B

ig engine, small car: It's a classic recipe that's produced some of the coolest cars in history. Yet nowadays it's all about downsizing, with the next M3 returning to a six-cylinder after its foray into V8 muscle.

And while big motors are fun, who would deny that when BMW decided to give "M" aficionados a 1 Series deserving of the tricolor badge, a look under the hood at its N54 3.0L straight-six and pair of turbos confirmed it was just about the perfect combination for the 1 Series M Coupe. After all, 335bhp and 332 lb-ft in the small coupe bodyshell was sufficient to satisfy even the most ardent enthusiast.

However, tuners often like to pick up the baton and run from the point where car manufacturers stop. And where most companies would begin by massaging the ECU and increasing the boost, German tuner G-Power chose to do things differently. Very differently indeed.

For their interpretation of the BMW 1M, the straight-six biturbo was junked in favor of the S65 4.0L V8 from the E9X M3. And while even this would be enough for most people, G-Power fitted an ASA T1-523 supercharger for good measure.

With the power up to 600hp, this is the automotive equivalent of strapping a missile to its back and blasting into outer space.







HURRICANE

G-Power's new supercar was appropriately named the G1 V8 Hurricane RS and we were granted an audience with the very first example. Since it was highly bespoke, the exact price was hard to pin down but don't budget for less than \$200k if you'd like to own something like this.

Being handed the keys to such a powerful and expensive supercar was rather daunting, but opportunities like this don't come every day...

We searched for the perfect roads to take advantage of what the Hurricane had to offer, and it didn't take long to find a quiet stretch of pavement. It was here that we examined the effect of stuffing a supercharged V8 under the hood of the 1 Series Coupe.

We probably don't need to confirm that it's fast. 600hp at 7800rpm and 430 lb-ft at 3900rpm in a 3500 lb two-door was always a recipe for straight-line fireworks; but this was just the stepping off point – G-Power has a close relationship with supercharger manufacturer ASA, allowing for the tantalizing possibility of future evolutions with even more power...

Married to the seven-speed dual-clutch DCT transmission, the Frankenstein 1M appears to

compress time and distance like no other. You can melt the tires all day long if you like, but hook everything up, find the grip, and the acceleration is utterly brutal.

Wheelspin is easily provoked with the traction control turned off, but its traction is actually quite good, once it's been discovered. As a result, the supercharged V8 does most damage once the rear wheels have full purchase on the tarmac: at around 40mph in the dry. If the road is wet, leave the Hurricane in the garage!

Supercharging has become a hallmark of G-Power. And where the stock 1M delivered its torque in a wave of low-revs thrust, the V8 RS builds power in a linear fashion. So the faster the engine spins, the more power you get. As a result, the characteristic high-RPM lunge for the redline made by the M3's S65 V8 is present and correct, but ramped up about 50%. And behind the wheel of a 1 Series, it's both thrilling and faintly absurd.

We weren't able to record performance figures but the tuner claims 0-62mph in 4.4sec, 0-125mph under 12.7sec and a top speed of 205mph. In fact, G-Power has a reputation for demonstrating top speed publicly (search G-Power on YouTube) so they should soon be able to verify the numbers.

Supercharging pays dividends in other areas, too. The smooth, linear power delivery, for example, compares favorably to the thump of torque typical of turbocharged engines. It also makes the BMW easier to drive up to and beyond the limit of its grip. And once at the limit, the G1 RS was very easy to balance on the throttle.

Of course, 600hp demands respect, but it was simple to meter the power, reaching the point where the rear wheels were rotating a little faster than the road speed. The glorious result was a car that could be balanced on the throttle all day long. It was also reassuring to find a grippy and precise front-end to rely on. And although the steering wasn't the last word in road feel, every element of the 1M's fantastic chassis balance could be exploited.

Inevitably, the Hurricane is a drift champion. Sharper body control, thanks to its tailored KW

[1] Carbon trunk contributes more weight saving
[2], [3] The carbon-fiber hood features an M3-style bulge and vents

[4] If fitting the M3 V8 wasn't enough, G-Power supercharged it to 600hp, adding a cast air box, intercooler and exhaust



4



suspension, played its part, as well as the DCT transmission that allowed the driver to focus on braking and turn-in. Fortunately, the huge Mov'it brakes were more than a match for the outrageous performance, with the pedal remaining firm no matter how hard we drove.

In addition to its ASA blower, the V8 engine received a cast aluminum air box with eight induction pipes to balance throttle response. It also got a large front-mounted water-to-air intercooler plus a stainless steel exhaust system that provides a vicious bark to the V8 rumble.

The chassis sports the aforementioned KW

Clubsport coilovers and Mov'it brakes that utilize six-piston front and four-piston rear calipers with 396mm carbon-ceramic rotors all round. These fit under 20x9" front and x10" rear G-Power Silverstone Diamond wheels with 255/30 and 295/25 Michelin Pilot Super Sport tires, respectively.

The brakes are said to be 50% lighter than the stock parts, and G-Power added to the savings with a carbon hood and trunk – the hood possessing an M3-style power bulge and vents.

Despite being a ripped muscledar, the G1 RS is remarkably civilized inside. Rather than the customary stripped-out, roll-caged track refugee,

🏠 **20" G-Power wheels conceal carbon-ceramic Mov'it rotors and six-piston front calipers**

the cabin received a full retrim in white leather with brown alcantara highlights.

It created a stunning environment to cosset you from the commotion outside. Even the exhaust was quiet when unprovoked, and the DCT allowed effortless paddle-shifts. Naturally, you could specify any exterior or interior color combination, but this exquisite combination seemed very calming.

When the car was conceived, the brief was to

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Leather and alcantara retrim might seem at odds with the car's frantic personality

create the most extreme 1 Series Coupe possible, while retaining daily usability. And with the G1 V8 Hurricane RS, G-Power hit the nail on the head. So while 600bhp in a compact coupe might have been a nightmare a few years ago, lurching at low speed, burning through clutches and with an overheated cabins, what we have here is a 1M able to outrun most supercars, deliver huge grins and transport you 500 miles without stress. It's another awesome display of the tuner's art and became an instant classic as soon as the wheels first turned. 📸



TECH SPEC

2011 BMW 1 SERIES M
COUPE - G-POWER G1 V8
HURRICANE RS

ENGINE

4.0L S65 V8 with ASA T1-523 supercharger, cast aluminum air box, individual induction pipe, water-to-air front-mount intercooler, stainless steel exhaust

DRIVETRAIN

seven-speed M-DCT dual-clutch transmission

BRAKES

Mov'it six-piston calipers f, four-piston r, 396mm carbon-ceramic rotors

SUSPENSION

KW Clubsport coilovers

WHEELS & TIRES

20x9" f, 20x10" r G-Power Silverstone Diamond wheels, 255/30 R20 f, 295/25 R20 r Michelin Pilot Super Sport tires

EXTERIOR

G-Power carbon fiber hood and trunk

INTERIOR

white leather, brown alcantara upholstery



Contact

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he Lotus Elise is widely regarded as one of the best handling, most rewarding cars in existence. It combines reduced weight with enough horsepower and a rigid chassis to create a car that handles more like a go-kart than a regular passenger vehicle.

With this race-focused machine, tuning options are predictably abundant, allowing the chassis to be further exploited. However, we're always able to find somebody who got carried away and tackled a project of unfathomable proportions. And in this instance, that man is Ken McNeill.

As the proud owner of a '95 Porsche 911 Cabriolet, Ken enjoyed Sunday drives and occasional car shows. "I went to a show where the performance driving school from Brainerd International Raceway had a display. I discovered they were doing a Porsche Club track day but, since my car didn't have a roll-bar, I wasn't allowed on-track."

KENDO

\$100,000 later, Ken McNeill shows off his unique 264hp widebody Elise GT

WORDS Alex Bernstein **///** **PHOTOS** Alex Bellus





We've all been to track events, and spectating can be frustrating because it encourages the urge to participate. So Ken decided to use his marketing skills to film promotional videos for the Porsche Club at BIR. "Once they saw the videos, the school owner told me I could drive one of his spec racers on the track," he recalled. "I did a 25min session and the experience was phenomenal. I was hooked! Two weeks later, my Porsche was for sale."

And that's where our story begins. Ken found a '99 Lotus Elise Sport 190 on eBay and negotiated an even trade for his 911. "I started tracking it in the summer of '09, and since I had a great relationship with the BIR guys, my track time was free! Now I'm a driving instructor, too. It's funny how things work out," he laughed. But Ken's fun would stop abruptly.

"I was flying down the straight at Road America when the stock Rover engine blew," he

remembered. While potent, the British engine was expensive to repair and the availability of easy Honda swaps persuaded Ken to give his Lotus a new heart.

He purchased a Honda K24A2 2.4-liter four-cylinder motor from the '04 Acura TSX. It was known for high torque at relatively low revs, which was ideal for a track car since bearing wear and rod failure is directly proportional to RPM.

The stock motor produced a modest 200hp and 171 lb-ft, which was unremarkable but bear in mind the Elise only weighed about 1700 lb. "Power to weight is everything," Ken reminded us.

The motor wouldn't retain its factory specs; he wanted it to remain reliable but have more power. So he tore it down and sent the crank, block and head to Endyn Racing in Fort Worth, TX.

Ken wanted the satisfaction of assembling the engine himself, without the worry of tolerances and

clearances, so Endyn would pre-fit all the parts for him. The balanced rotating assembly, 12.5:1 Endyn Roller-Wave pistons and custom Crower Rods Maxi-Light billet rods sealed the deal.

The cylinder head was CNC-ported and given upgraded internals as well as stage 2 Endyn camshafts to finish it internally. While a bigger intake manifold and throttle body, larger injectors and custom headers would complete the overhaul.

The engine was prepared with meticulous attention to detail in Ken's garage, using only the best parts available. As a result, it's safe to say the K24 will probably never blow and yet, once nestled behind the seats, was dyno-tuned to 264whp.

Ken would also add a Honda six-speed manual trans and custom axles to ensure there was no weak link in the drivetrain.

With its extra power, McNeill wanted to increase its footprint from the factory 195/50 and 225/45 tire



1

[1] Fiberglass widebody was hand-laid by the owner around 17" and 18" SSR wheels

[2] 264hp Honda K24 engine and six-speed trans swap gave the Lotus the performance it needed

[3], [4] Ken redesigned the interior with carbon Tillet seats, custom console and suede trim

[5] It was while driving BIR single-seat racecars that Ken was inspired to buy and build his Elise

sizes. He decided to swap the dinky stock wheels to SSR SP1 three-piece, sized 17x8.5" front and a massive 18x11" rear. These would be fitted with more substantial 225/40 and 285/30 Hoosier tires, respectively. But adding an extra 2.5" of tire to each corner would be impossible without a widebody conversion. "As long as you're a smart, you can learn almost anything from the internet," Ken assured us. And with napkin sketches evolving in both style and detail, Ken settled on a look for his



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5





Elise GT. It would be wider, more aerodynamic and unlike any other Elise. “Everybody said I was crazy to cut-up and ruin the car, but somebody had to do it!” he laughed.

It would take Ken more than 1000 hours over 18 months to complete the custom fiberglass bodywork. During that time, he enlisted the services of Chris Randall at Hoffman’s Motorsport, a UK-based Lotus race shop, who supplied custom-valved dampers and a matched set of springs specifically for his Elise GT.

He also took time to uprate the braking system,

retaining the factory calipers but fitting drilled and slotted rotors on lightweight aluminum bells with Pagid RS-14 pads.

The last step was the interior. “The belts, seats and fire suppression systems I had were only good for about five years before needing to be replaced,” he explained. “So I decided to redo the interior instead, creating more of a supercar cockpit, rather than the minimalistic Elise interior.”

Finding seats to fit the little Lotus was extremely difficult but the FIA-homologated, carbon fiber/GRP B6F seat from Tillett Racing Seats in England

were designed specifically for cars with narrow cockpits. So Ken purchased a pair and put his newfound fiberglass fabrication skills to use creating a new center console. It was wrapped in black suede, along with the seat cushions, dashboard, instrument binnacle, steering column and door cards.

“I’ve only driven the car on-track four or five times since it was completed, but it’s incredible!” Ken proclaimed. “The level of grip is mind-blowing.”

With its greater abilities, Ken admits he’s

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TECH SPEC

apprehensive to find the limits. You can't exactly find replacement body panels for a custom-built Elise with over \$100,000 invested...

"The project is almost completed but I'm now focusing on making the car street legal so I can drive it on weekends and visit car shows," he told us. "There's a chance I may fit a twin-screw Whipple supercharger as well, because 400hp would be awesome!" ☺

1999 LOTUS ELISE SPORT 190

KEN MCNEILL
MINNEAPOLIS, MN

ENGINE

2.4-liter Honda K24A2 four-cylinder 16v with 12.5:1 Endyn Roller-Wave pistons, Crower Rods Maxi-Light billet rods, CNC-ported cylinder head, black-nitride coated big valves, Eibach valve

springs, Chromoly retainers, Endyn stage 2 cams, CNC-ported oil pump, Skunk2 Pro K Series intake manifold, Injector Dynamics 725cc injectors, Fluidampr harmonic balancer, custom header and exhaust

DRIVETRAIN

2003 Honda Civic six-speed manual transmission, Exedy clutch, pressure plate and 8 lb flywheel with ARP bolts, custom axles

BRAKES

stock calipers, 288mm drilled/slotted rotors on aluminum bells, Pagid RS-14 brake pads

SUSPENSION

custom-valved Hoffman's Motorsport coilovers

WHEELS & TIRES

17x8.5" f, 18x11" r SSR SP1 wheels, 225/40 R17 f, 285/30 R18 r Hoosier R6 tires

EXTERIOR

custom fiberglass widebody with chassis-mounted APR GTC-300 carbon fiber rear wing

INTERIOR

carbon fiber Tillett B6F race seats and mounts, Schroth six-point harnesses, Momo steering wheel and shift knob, custom center console, oil pressure and temp gauges, shift lights, Traqmate lap timer, fire extinguisher

THANKS

Alan Gourlay, EliseShop, Full Blown Motorsports, SNS Automotive, Martyn Tinker, Jason Sieling





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Check out Mike Meszaros' slammed Mk5 GTI

WORDS *Will Taylor* /// PHOTOS *Jordan Donnelly*





WE HOPE IT DOESN'T CAUSE YOU TOO MUCH DISTRESS WHEN YOU LEARN THAT MIKE MESZAROS USED TO OWN A FORD MUSTANG. THERE, WE'VE SAID IT. IT'S OUT IN THE OPEN!

Fortunately, he saw the error of his ways after observing VW crews like Dubbers Inc, Central Florida Euro and WFSU. He knew it was time for change and the German journey began with the purchase of an '03 Audi A4.

Having done his research, Mike thought he knew what he wanted. So over the next three years he put a lot of hard work into the car, making lifelong friendships along the way while pulling all-nighters in a carport in Cocoa, FL.

The Audi was a testbed for all Mike's ideas and eventually he had a bagged A4 on Rotiform BLQs, with an Ultra Sport front bumper and shaved Euro trunk.



But like a forlorn lover, Mike soon tired of the Audi and secretly knew he didn't build it for himself. It was built to please the scene, and a change was in order.

The A4 was returned to stock and traded for the '08 GTI you see here. "When I realized the Audi was built for people around me, I decided to build something I'd enjoy. And since I'd always wanted a GTI, I went for it," Mike said.

Since he'd already dabbled with air-ride, the VW would get a static drop on BC Racing coilovers. It was also fitted with classic BBS RS wheels and an OSIR rear diffuser. The potent 2.0T was uncorked with APR stage 1 software and a Carbinio intake. However, this only encouraged Mike to seek more power with a Godspeed intercooler and 3" downpipe. To ensure he was receiving all the

available boost, a New South gauge was installed in the center air vent. Furthermore, the exterior had an OEM+ vibe thanks to a Vortex front lip and Jetta Wolfsburg grille.

It was following a trip to SoWo 2012 that the BBS would make way for Mike's first set of CCW LM20 wheels. The car would remain in that style until one hot July day in South Florida when a manhole cover would rip off the front bumper and trigger the passenger airbag in a cloud of dust and broken dreams.

The situation looked grim for Mike but the GTI was taken to good friend Ken Nelson at European Performance & Repair to assess the damage. It certainly needed some TLC and would eventually emerge with a new subframe, dashboard and Rabbit front bumper.

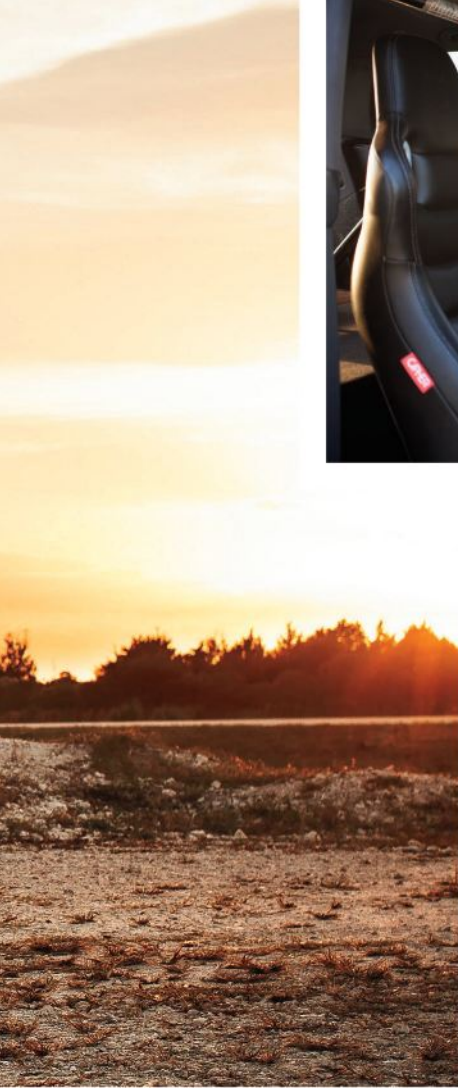
"I always loved the Mk4 GTI but the MK5 had that big grille so the Rabbit bumper cleaned it up," Mike explained. The bumper also got a Vortex lip and the GTI instantly became a wolf in Rabbit's fur.

The next concern was to ensure the GTI never had the chance to meet a manhole cover again. Enter EuroSpec Motorsports with Air Lift struts and V2 management.

The Air Lift air suspension wasn't cheap, so Mike parted with his CCW wheels in order to pay for it. He would buy some Land Rover wheels as a temporary replacement.

It took the help of good friend Mac Herron and a long night to get the GTI bagged with a black aluminum tank and custom copper hardline setup.

The addiction we all suffer from was taking hold and one mod led to another as Meszaros changed





TECH SPEC

2008 VW GTI

MIKE MESZAROS
MELBOURNE, FL

ENGINE

2.0L four-cylinder 16v FSI turbo with APR stage 2 software, Forge Twintake, Godspeed downpipe, custom 3" cat-back exhaust

DRIVETRAIN

stock DSG transmission

SUSPENSION

Air Lift XL Slam kit, double billow rear bags, custom hardlines, five-gallon air tank, Dorbitz sway bar brackets, FK sway bar end-links

BRAKES

stock

WHEELS & TIRES

17x9.5" ET25 f, 17x10" ET19" r
CCW LM20 wheels, anodized gold, 205/45 R17 Falken ZIE ZE512 tires

EXTERIOR

OEM VW Rabbit front bumper, VW Accessories lip, European TDI rear bumper, rolled front fenders, pulled rear fenders

INTERIOR

Cipher Auto Euro Racing seats, Auto Power roll-bar, New South Performance boost gauge in center vent, carbon weave cloth and white double-stitching on 2012 Beetle steering wheel, door cards and armrest, rear-seat delete, hardwood trunk floor

THANKS

Lauren Nolte, Michael Wood, Jesse Sardina, Charles Devine, Mac Herron, Collins Upholstery, De Caudella's Custom Refinishing, EuroSpec Motorsports, Euro Performance & Repair

wheels, bumpers, tail lights, and almost everything else before the concept was complete. The Land Rover wheels were sold and AMG Aero 1 wheels took their place. The massive rollers required a visit to Clay Dean at De' Caudella's Custom Refinishing for some fender assistance and to refresh the paint.

When Mike returned to the shop a few weeks later, the VW was wider, lower and had fresh paint on the rear quarter panels and front lip. But with SoWo 2013 around the corner, the decision was made to improve the interior.

The first thing to change was the seats, with an email to Cipher Auto to order its Euro Racing seats in black with white stitching. He also got an Auto Power roll-bar, which was received as a trade for the leather rear seat. Mac Herron then stepped in again to help construct the rear-seat delete in time for the big show.

Rather than inspire Mike, SoWo left him restless. So he decided the AMG wheels had to go, along with the OSIR diffuser, which was replaced by a European-spec TDI rear bumper that concealed a 3" turn-down tailpipe.

Mike found another set of BBS RS but these

wouldn't last long, being traded for the gold CCW LM20 wheels seen here. Measuring a healthy 17x9.5" front and 17x10" rear, they fitted perfectly under the widened fenders.

Like a man with an impossible itch, the GTI was sent to Collin's Upholstery in Melbourne, FL where the door cards and armrest were refinished in a carbon weave material with white double-stitching to match the Cipher seats. "I'm not a huge fan of carbon fiber," Mike told us, "but I wanted something different to help set it apart from other Mk5s."

The final piece to the puzzle was a '12 VW Beetle steering wheel, which similarly received a carbon weave center.

And that brings us up to date. Mike Meszaros is truly happy but we have to suspect this won't be the end of the build. However, he wanted to point out that none of this would have happened without the help of Mac, Michael, Charlie, Jesse, Clay and Ken. "It was because of these guys the car looks this good. Without them, I'd have been lost," he explained. And that's what makes the VW scene so special — it's all about enjoying the cars and making great friends. ☺



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RARE GROOVE

Most people view the BMW M5 purely from a performance



W

inston Lumanlan earned his stripes on the show scene long before bagged Euros were a mainstay; back when BMWs, Mercs and VWs were rarely seen at the big import shows. We're talking about more than a decade ago. "I started attending JDM shows back in '95 with my Honda Civic. After dumping a ton of money into it and winning some trophies, I decided to move up to a Euro in 2000. That was back when it was rare to see a BMW or a Benz at a show," Lumanlan said.

An E46 330i was his first entry into the scene and, after a full build, he would follow it with a host of Benz – C43, C55, E350 – before returning to the Bimmer world with an E39 530i.

perspective, but Winston Lumanlan felt it had more to offer...

WORDS *Justin Fivella* /// PHOTOS *Richard Le*



1

"I loved the 530i and I did everything to it. I mean everything: interior, paint, body mods, suspension, brakes, lights, you name it... but when I finally decided to add a VF-Engineering supercharger, the techs at VF found a bad cylinder during a leak-down test, which threw a wrench in my plans," Lumanlan said.

Believing that when life throws you lemons, you make lemonade, Winston turned a bad situation into a new beginning. "At that point I was disappointed after all the work I'd put into the 530i but, instead of giving up, I saw an opportunity to buy the car I'd always wanted — an E39 M5; the last true M5 ever built," Lumanlan said.

Many would agree with his sentiment, and it will come as no surprise to learn that when he decided to give it a full makeover, it raised a few eyebrows online. To add fuel to the fire, Lumanlan was lucky enough to find the unicorn of E39 M5s, a one-owner car in Titanium silver with brushed silver interior accents. "I found it with dumb luck after telling a friend I was looking for an M5. He mentioned a friend was selling one," he explained.

The M5 was the score of a lifetime. It had 80,000 original miles and survived the first ten years of its life with only a few mods. But things were about to change. "I'm the type of person who doesn't waste time before modding a car. The minute I get it I'm already planning the entire build and ordering parts. Modifying cars is what I do. It's part of me," Lumanlan said.

The first round included rims, tint and suspension, and from there it snowballed. "I'd

imagined the build in my head and one thing that kept coming to mind was shaving all the exterior moldings because I'd never seen it done and knew it would look great," he said.

Just the mention of shaving the moldings on a vaunted M5 had the forums on fire with people calling blasphemy and claiming he'd neuter the most prominent exterior feature of a the E39 M5. They threatened to ban him from the site if he dared. And so he did!

"I loved the shaved look on the newer M5s and even though many people thought it would look terrible, it's been well received," Winston said. "It adds a subtle custom touch."

What wasn't so subtle was the custom Schiedmann hood from Denmark. "I wanted a vented hood but all the US options were too flashy. I wanted to keep it clean, so paid \$800 to have the aluminum Schiedmann sent from Denmark, and it was worth the wait," he explained.

Lumanlan likes to go the extra mile, which was further exemplified by his decision to shave the front bumper and then add Mercedes E63 AMG vents, before a custom carbon fiber splitter was created by combining an M3 CSL part with an APR Miata piece.

There are more custom accents in the rear, such as the Nissan GT-R vents in the bumper, or the carbon Schiedmann diffuser that was mated to a C63 AMG lip and molded to the stock bumper.

At this point, the factory Titanium silver was rejected, replaced by Lamborghini Balloon White for a touch of class only supercar colors can add.

No ensemble is complete without the right shoes. In this case it was 20x10" front and 20x11" rear RSVForged MS10W wheels wrapped in Hankook tires. And you won't have missed the Air Lift coil-over-bag air suspension, which has AutoPilot V2 Digital Control, Zex air tank and Viair 380c compressor. "In order to get it low on the 20s, we had to pull the fenders more than 0.5" to get them to tuck, but I'll be switching to 19s soon so I can lay frame," Lumanlan laughed.

Don't make the mistake of assuming the M5 has forgotten its performance roots. The S62 V8 was fortified with stage 3 Dinan software and tuned velocity stacks along with Rogue Engineering pulleys, a SuperSprint X-pipe and Meisterschaft GT2 exhaust plus a stage 2 aFe intake.

On the drivetrain, a Dinan 3.45:1 LSD was installed, along with a UUC clutch and lightweight flywheel, while massive StopTech brakes convert forward motion into a distant memory. "Like everything else on the car, I decided to give the

[1] 20" RSVForged wheels were custom-made, with Winston being involved in the design. StopTech brakes were custom-painted, stance is courtesy of Air Lift
[2] Diamond-stitched alcantara upholstery undoubtedly brings a touch of class
[3] Rear bumper has Nissan GT-R vents. A carbon trunk and Schnitzer roof spoiler were also added
[4] Trunk features custom enclosures for the amps and subwoofers as well as the air tank and TVs
[5] 5.0 V8 has a roster of performance upgrades, and there's a Dinan LSD as well





TECH SPEC

2003 BMW M5

WINSTON LUMANLAN
SAN RAMON, CA
CO-OWNER, KIDS N CRIBS 2

ENGINE

5.0L S62 V8 with stage 3 Dinan software and tuned velocity stacks, stage 2 aFe CAI, Rogue Engineering Power Pulleys, SuperSprint X-pipe, Meisterschaft GT2 exhaust system, Corteco motor mounts, painted plenum, airboxes and accessories

DRIVETRAIN

six-speed manual transmission with UUC Performance clutch and lightweight flywheel, Sachs Performance Clutch Stop, clutch delay valve, Rogue Engineering short-shift and transmission mounts, Dinan 3.45:1 limited-slip differential and subframe reinforcement kit

BRAKES

StopTech ST40 four-piston calipers, 355mm drilled rotors f, ST22 two-piston, 345mm r, Street Performance pads, stainless steel lines

SUSPENSION

Air Lift air system and camber plates, AutoPilot V2 Digital controller, ZEX tank, Viair 380c compressor, ECS wheel bearings and center tie-rod, Dinan lower control arm monoball kit and polished strut tower brace

WHEELS & TIRES

20x10" f, 20x11" r RSVForged MS10W wheels, 255/30 R20 f, 295/25 R20 r Hankook Ventus V12 tires

EXTERIOR

Schmiedmann hood, shaved exterior moldings, E63 AMG front, GT-R rear

Rare M5 has shaved moldings, custom CSL lip, C63 AMG bumper vents and vented aluminum hood

bumper vents, carbon fiber CSL front lip with APR secondary lip, Schmiedmann carbon rear diffuser with E63 AMG lower section, AC Schnitzer roof spoiler, molded foglight covers, smoked headlights, LED tail lights and markers, silver window tint, Umnitza 8000K HID headlight bulbs, 3000K HID foglight bulbs, ICE V6 angel-eye upgrade, ION LED license plate bulbs and reversing bulbs, car painted Lamborghini Balloon White, black roof, hood vents and mirrors

INTERIOR

diamond-stitched alcantara seats panels, door cards, shift and e-brake boots, suede headliner, ZHP shift knob, brushed titanium interior trim, AC Schnitzer pedals, e-brake handle, Umnitza interior LEDs

AUDIO/VISUAL

modified BMW head unit, Diamond Audio 12" subwoofers, 600/1 and 300/4 amplifiers, Hertz Audio coaxial and component speakers, MPI 400 power inverter, Precision Power capacitor, fiberglass amp rack and trunk enclosure with three 9" LCD monitors, Nintendo Wii, LED illumination, Dynamat

THANKS

Darwin at RSVForged/Sonic Motorsport, Tony at TNT Autobody Sacramento, Devin at Speed Element, Rommel at Canlas Mobile Tint, Noe at Avila Auto Upholstery, John at JS Design Factory, Michael and Nick at O2 Creation, Tim at Umnitza, Matt at Hard Parker Garage, Tom and Jeff at Air Lift, GT Haus, Dinan, UUC Motorwerks, Europrojektz, Jesus, Menard, Trina, Mika, Alex

calipers a custom touch, adding gold pearl to Porsche yellow paint so it matched the underhood accents," Lumanlan said.

With so much going on, Winston didn't forget the interior, adding white diamond-stitched panels in perforated alcantara to the black leather seats, complete with matching piping, shift and e-brake boot plus door cards.

"I wanted a killer stereo but didn't want to mess with the factory head unit, so I modified it to work with the rest of the system," Lumanlan said. This involved Diamond Audio subs and amps in a custom trunk enclosure, along with Hertz Audio components, several capacitors, three 9" LCD monitors, a Nintendo Wii console and a partridge in a pear tree... OK, we made the last part up, but you get the point.

So while the M5 is decked-out from top to bottom, inside and out, Winston ain't done yet. He plans on laying frame, widebody styling and forced induction. And while some people might consider the car to be too extreme, we applaud Lumanlan for keeping it tasteful. "It's difficult to add this many mods and keep it restrained. Many cars look cluttered with parts but my goal was to keep it clean and classy," he concluded. ☺

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/// WORDS & PHOTOS *Alex Bernstein*





F

FOUNDED IN 2002 BY TWO MOTORSPORT ENTHUSIASTS, A SPEC PRODUCTS WOULD SOON BE REGARDED AS ONE OF THE PREMIER SUPPLIERS OF ELUSIVE PERFORMANCE PARTS FOR THE IMPORT SCENE, MAKING ON-TIME SHIPPING A PRIORITY AND SIX-MONTH WAITING A THING OF THE PAST. During this process, A Spec (pronounced A-spec) soon realized many of the parts that were requested weren't of the quality they wanted, so the company took things into its own hands and started producing parts of its own.

Focusing on the popular Mitsubishi Evo, A Spec was successful in its mission and the business continued to grow. But with its roots firmly planted in the Japanese import scene, we were somewhat surprised to discover the firm was getting into the Euro market. In fact, it announced its arrival with a stunning F30 BMW 335i.

Finished in Melbourne Red – one of those great colors that seems to glow and absorb natural light, looking showroom-fresh in any environment – the car was instantly noticeable at the 2013 SEMA Show where it was unveiled to the public.

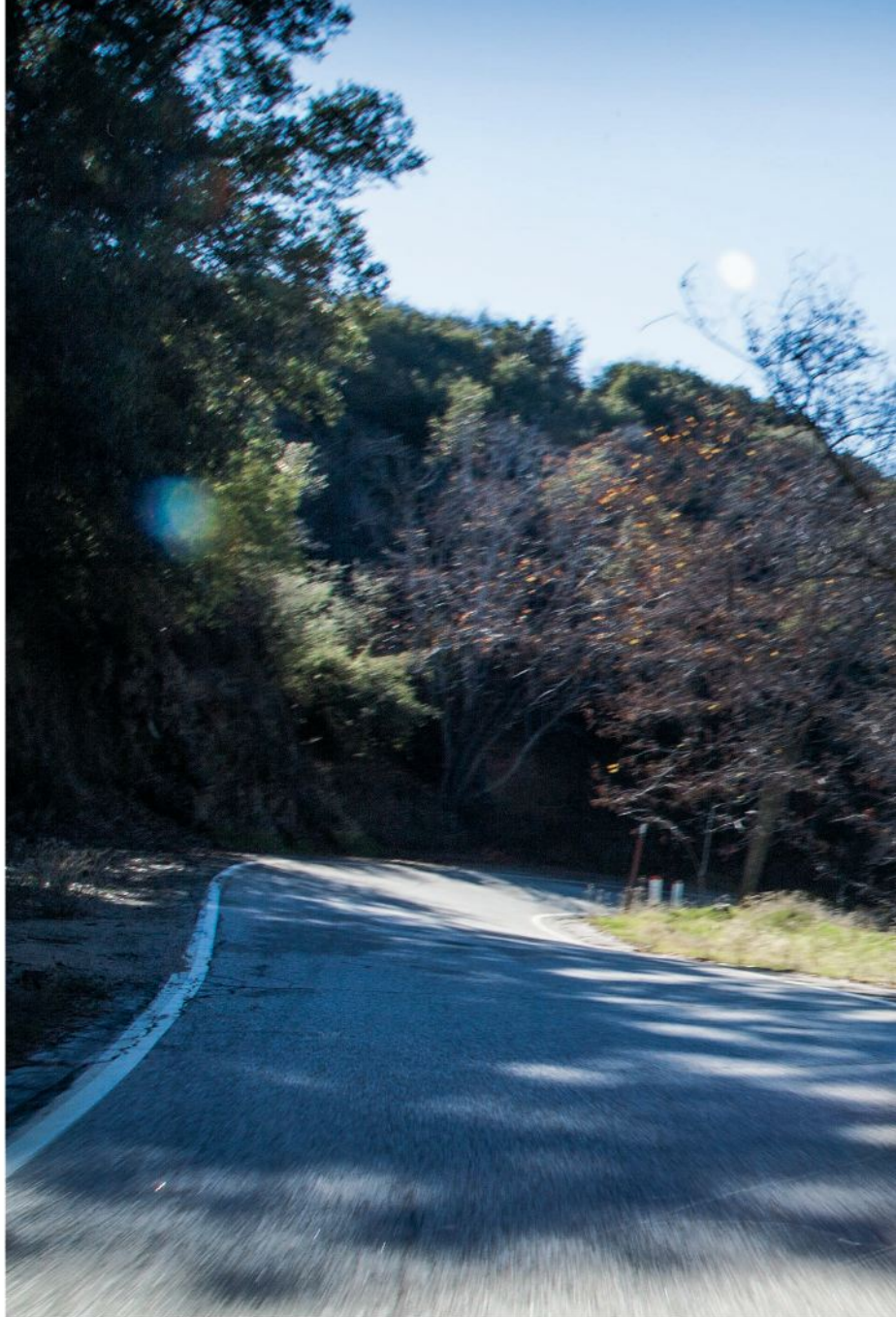
“Our goal was to create a unique body kit from carbon fiber that would add some aggression to the car,” said A Spec marketing director, Tuan Nguyen. And yes, you read that correctly, the kit is 100% vacuum-formed carbon fiber, and it's not just the bumper. . .

The A Spec F30 body kit comprised the front and rear bumpers, hood, side skirts, trunk spoiler, roof overlay with sunroof and antenna cutouts, mirror caps and kidney grilles. A Spec Products asserted that each piece was necessary to dramatically transform the 3 Series' appearance, and we had to agree. Job well done.

The fit and finish was extremely good, which was just as well because this 335i attracts attention wherever it goes. And while the carbon body kit is a star player, it's only part of the A Spec Products' F30 package.

“We loved the power of the N55 3.0L turbo motor, but wanted better throttle response and definitely a nice exhaust note,” Tuan told us.

So A Spec decided to remove the factory catalytic converter in favor of its own high-flow unit, which allowed the turbo to spool quicker







thanks to better airflow, and is claimed to provide gains across the powerband.

The tuner also installed its own cat-back, quad-tip exhaust system. “We spent a great deal of time tuning the exhaust note and love how the car now sounds,” Tuan explained, “although we’d still like to see more power, so we’re developing our own Power Box 2 piggy-back ECU upgrade plus a carbon fiber intake system.”

With the exhaust system added, the A Spec team needed to ensure the car was suited to high-speed use, not leaving any area untouched. They began by working with stomping superstars, Alcon Components, to create an A Spec-branded big-brake kit. It included six-piston calipers up front with four-pistons in the rear, coated in bright yellow to ensure they don’t go unnoticed.

The large 380mm front rotors were accommodated behind A Spec’s own VF35 three-piece forged wheels. “We wanted to accentuate the tougher lines of our 335i, so the deep, concave,

five-spoke design was a perfect fit,” Tuan said.

The wheels were neatly tucked into the fenders by KW Variant 3 coilovers — one of the few things not directly developed by A Spec itself. During our drive, the BMW was nicely compliant around town and was hard to upset on the mountains roads.

The V3s suited this chassis well, especially when paired with sticky Michelin Pilot Super Sport tires and the aforementioned big brakes. In fact, the A Spec F30 inspired lots of confidence, supported by the wonderful Recaro Sportster CS seats — we’ve not found a car these didn’t improve.

So how much will the A Spec treatment impact your wallet? We wish we could tell you but the parts were so new the prices were unavailable. But stay tuned for an update as soon as it’s announced. And for those of you wishing to do something similar to your BMW 1 or 4 Series, the good news is that A Spec is in the midst of creating something for both these models, and we’ll also bring you this announcement as soon as possible. ☺

TECH SPEC

2013 BMW 335i
A SPEC PRODUCTS
EL MONTE, CA

ENGINE

3.0-liter N55 six-cylinder 24v turbo with A Spec high-flow cat and stainless steel cat-back exhaust with quad tips

DRIVETRAIN

eight-speed ZF automatic transmission

BRAKES

Alcon/A Spec six-piston calipers, 380mm rotors f, four-piston calipers, 355mm rotors r, Pagid pads

SUSPENSION

KW Variant 3 coilovers

WHEELS & TIRES

19x9" f, 19x10" r A Spec VF35 wheels, 235/40 R19 Michelin Pilot Super Sport tires

EXTERIOR

A Spec carbon fiber front and rear bumpers, hood, side skirts, trunk spoiler, roof overlay, mirror caps, kidney grilles

INTERIOR

Recaro Sportster CS seats

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PORSCHE'S



HEROES OF LE MANS

We meet the men and machines behind
Porsche's remarkable Le Mans history
as it returns for 2014

WORDS & PHOTOS *Ian Kuah*



The 911 GT1 won Le Mans in 1998 and was a huge step forward in terms of technology, aerodynamics and construction





IF YOU ASK THE OLDER MEMBERS OF SOCIETY, THEY'LL SOON TELL YOU THAT THE WORLD WAS A KINDER, QUIETER PLACE 40 YEARS AGO. It was a simpler time, with a lot less regulation. However, that also applied to the noise level of racecars. And dispelling the notion that the world was a more peaceful place, the racecars of yesteryear were very, very loud.

The noisy truth became evident when the #4 flat-nose Porsche 936/77 Spyder of Ickx, Barth and Haywood – 1977 winners of the 24 Hours of Le Mans – was fired up in Hockenheim's pitlane.

As the early morning sun began to slowly burn its way through the mist, the whine of a mechanical fuel pump and the slow churn of a starter motor sliced the cool air and the silence was shattered by a sharp “whrrrapp,” followed by a sustained roar as the unsilenced 540hp flat-six turbo burst into life. It soon found its singing voice as the driver blipped the throttle to keep it from stalling.

Up to that point, we'd been admiring the collection of historic Porsche Le Mans winners, and chatting with some of the fearless pilots who had coaxed them to glorious victories in their heyday.

Drivers in attendance were the legendary Hans Herrmann, Jürgen Barth, Richard Attwood, Manfred Jantke, Manfred Schurti and Gijs van Lennep – familiar names to Porsche Motorsport fans. Heroes one and all, these men had their moment of glory on the Le Mans podium after the most gruelling long-distance race on earth.

They were reunited at Hockenheim circuit to paint a picture of their great battles, and did so most eloquently: “No ABS, no traction control and no power steering,” Hans Herrmann recalled.

“These were totally analog cars, and once the mechanics set them up as best as they could, it was down to us and lady luck to either win or simply finish the race!”

As some of the old timers climbed into their former mounts to deliver a few demonstration laps, the task of providing rapid taxi rides fell to 32 year-old Timo Bernhard in the legendary

- ★ The men and machines. From left to right: Jürgen Barth with the #4 936/77 Spyder, Hans Herrmann and Richard Attwood with the #23 917 KH, Gijs van Lennep and Manfred Schurti with the #22 917 KH, Romain Dumas and Timo Bernhard with the #26 911 GT1
- ★ The “Moby Dick” 935/78 was the ultimate evolution of the 935 chassis. It had a terrifying 845hp turbo engine and was demonstrated by Timo Bernhard, who was enjoying the challenge of its massive turbo lag



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Porsche 935/77.

A world-class driver, Bernhard was recently chosen to pilot Porsche's brand new LMP1 hybrid racecar in the 2014 World Endurance Championship. He already has a formidable string of victories to his name, most significantly the 24 Hours of Le Mans for Audi in 2010, the 12 Hours of Sebring in 2008, and winner of the 24 Hours of Daytona in 2003.

When it was my turn to ride shotgun in the 935/77, I was happy the helmet filtered a great deal of the decibels because the cabin acted like an amplifier when the motor was fired. A two-hour stint at Le Mans must have been both gruelling and deafening.

As the 935 lurched down the pitlane, you could tell the period ignition and mechanical fuel injection were imprecise instruments. Its coughing and spluttering were an instant giveaway, but add a massive turbocharger, with its legendary lag, and you have a racecar that required both balls to drive and patience to tame.

Although Timo wasn't using all the revs, you felt the big hit of torque as we exited pitlane, heading for the sharp right-hand turn into the Querspange section of the Club Circuit.

At just 1.3 miles long, Hockenheim's Club Circuit is a combination of slow, medium and fast curves, linked by two short straights. As such, it's more of a handling circuit than for outright speed, and with its lag-ridden turbo, the 935/77 wasn't the easiest machine to pedal rapidly around it.

With the boost spooled up, we rocketed out of a bend and down the straight. Smooth inputs and staying on top of the turbo was the secret, with Timo putting on a command performance.

Despite being versed in modern racecars with mapped ignition and fuelling, Bernhard clearly had the measure of the recalcitrant beast. He later told us the old Le Mans racer was a huge culture shock at first, but he soon got the hang of it and relished the challenge.

Clocked at 211mph on the Mulsanne Straight in its day, the 935/77's thrust on full boost was impressive, even by today's standards. However, time moves on, and Timo can likely push the 2014 911 GT3 around Hockenheim in less time and with far less effort than this car demanded. Thanks to lessons learnt in the heat of competition, and the relentless march of progress, that's how far Porsche road cars have come in 40 years.

After the hot laps, we had time to marvel at

[1] It doesn't get much more epic than this: Martini 935/77 and 935/78 with the Rothmans 956
[2] 936/77 Spyder took three Le Mans victories and remains one of Porsche's most successful racecars
[3], [4] The 917 had a fearsome reputation when it won Le Mans in 1970. Check out its basic cockpit layout

the quiver of historic Le Mans-winning cars in attendance. They included the 580hp #23 and 600hp #22 917 KH Coupes from 1970 and '71, respectively. Other notables included the 845hp "Moby Dick" 935/78 from 1978, the 911 GT1 from 1998 and the 630hp 956 Coupe from 1982.

While it wasn't even a definitive collection of Le Mans-winning Porsches, it gave a great insight to the variety of cars and technology that helped the factory team fight its way to so many victories in the glorious years from 1970-98.

With 16 overall wins, including seven consecutive victories, Porsche is the consummate master of Le Mans, and long-distance sports car racing in general. So it's appropriate that Porsche was calling its build-up to the eight races in the 2014 World Endurance Championship "Mission 2014. Our Return." For Porsche fans, it's going to be a great year of motorsport. 🏁



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PORSCHE 911

(TYPE-996) PERFORMANCE BUYER'S GUIDE

WORDS / Doug Neilson



IF YOU CURRENTLY OWN, OR ARE CONSIDERING THE PURCHASE OF, A 1999-2004 TYPE-996 PORSCHE 911 CARRERA 2, CARRERA 4 OR CARRERA 4S, GOOD FOR YOU, BECAUSE THIS SERIES OF THE 911 REPRESENTS ONE OF THE BEST PERFORMANCE/\$ RATIOS IN THE USED SPORTS CAR MARKET.

The 996 was an all-new design and didn't carry over significant components from previous 911 models. It received new bodywork, a contemporary interior and fresh powertrain that included the 911's first water-cooled engine, all of which weren't well received...

Some enthusiasts don't consider the 996 as beautiful as other 911s, and that's one reason why they fetch bargain prices.

But for savvy European car enthusiasts like us, there are very good reasons to own a 996: Firstly, they have excellent

power, brakes and handling. Secondly, the inherent problems are well documented. And thirdly, there's an abundance of aftermarket products available, making it easy to maintain or modify these cars.

Our Performance Buyer's Guide will cover 996 models (C2, C4 and C4S Coupe, Cabriolet and Targa) with the 3.4-litre flat-six naturally aspirated engines. They produced 296hp (1999) and 300hp (2000-01). We'll also cover the 320hp 3.6L (2002-on).

Searching the internet will quickly

reveal a cluster of 996 Carrera models, ranging in price from \$15000-25000 for high-mileage 1999-2001 examples. While you can expect to pay \$30,000-45000 for lower mileage 2002-2004 cars.

There are plenty to choose from, so take your time. A thorough pre-purchase inspection (PPI) by a qualified shop is recommended for any used Porsche. And if you're concerned with future resale value, we recommend a car with a full service history and no accidents. You'll thank us later.

With that said, the 996 has some problem areas you should be aware of. The first is intermediate shaft (IMS) bearing failure on the M96 engine. It's





prone to failure, although the later 3.6L motors were less susceptible. It gives little warning before it fails, and will destroy the engine when it does. To avoid this problem, we suggest pre-emptive IMS bearing replacement using a revised part from **LN Engineering** (\$650).

Another common problem is rear main seal (RMS) oil leaks. Hopefully, your 996 has already received the new RMS part to solve this issue, but check first.

The water-cooled M96 engine was also prone to cracked cylinder heads, porous engine castings and water pump failures.

While it didn't affect all cars, you should check the service history to see if such items were repaired under warranty a few years ago.

In any case, it's generally recommended that water pumps be replaced every four years or 50K miles. And specialists recommend flushing the coolant system every two years, although this is rather excessive for "lifetime" coolant, in our opinion...

A lower temperature, 160°F thermostat from **LN Engineering** (\$99) will also help protect your engine.

As with any European car, its care and maintenance is key to longevity and trouble-free driving. Using the best products goes a long way to keeping your Porsche at its peak.

ECS Tuning is a great place to start for high-quality European products such as Mobil 1 oil, Pentosin PAS fluid, Motul gear oil, ATE brake fluid and OE Porsche coolant. They also offer repair kits (using OE parts where possible) containing every necessary part for brake system and control arm repairs, plus a whole lot more. The prices are excellent, too.

STAGE 1 EASY DOES IT

A Porsche 911 is a different animal than most other cars, with far more performance. For this reason, we believe the best place to start upgrading is the chassis.

Assuming your 996 is in great shape, you can make big improvements to handing and braking by changing a few basic items. Start with adjustable sway bars from **H&R**, **Eibach** or **GMG Racing** to reduce body roll and adjust the handling balance. Prices start around \$420 a set.

If you want to stiffen the ride or lower the center of gravity, a set of coil springs from **H&R**, **Eibach** or **ECS** might be worth

considering from \$330.

In the braking department, provided your hydraulic system and rotors are up to snuff, we suggest brake pads from **Hawk**, **PFC**, **Pagid** or **Endless** (from \$192 per axle). Also flush your system with **Endless** 66ORF superfluid; the best DOT4 fluid available at \$42.



New high-performance tires will also improve your handling and braking beyond measure. This is a very important area with many brands to consider, but don't skimp on the rubber.

If you insist on starting to modify the engine, start with a **K&N** filter from \$123 and have your stock exhaust mufflers modified by **FD Motorsports** for \$280 plus core (or supply yours). They add an external stainless steel partial bypass pipe to the muffler, giving a good tone without drone, but an aggressive sound under hard acceleration.

Still looking for more? Try engine software from **APR**, **Evolution Motorsport** or **GIAC**. It should provide a mild 15whp or so in the mid-range, with about 10whp up top as well as improved throttle response and drivability. It costs from \$999.



STAGE 2 GETTING SERIOUS

Porsche brakes are excellent, but to improve them further you can choose a more aggressive pad material and upgrade to stainless steel lines (from \$120 at **ECS Tuning**). This will give you a firmer pedal but if it's not enough braking power or heat capacity for your needs, then upgrade to a **StopTech** big-brake kit (from \$2795 per axle).

It's also time to get more serious about suspension. Many of the link joints have rubber bushings that wear out.

Fortunately, **GMG** has a complete solution, starting with solid rear toe- and dog-bone links (\$795 and \$1050). This will tighten the rear-end but you can additionally replace the control-arm thrust bushings (\$595), front toe-links (\$545), or swap your control-arm end bushings for mono-ball units (\$595) and install adjustable thrust arms (\$895).

Elephant Racing also produces solid links, including complete control arms with solid weather-sealed joints and a double-adjuster to make fast and precise camber changes (\$990).

When you move to solid joints, it's time to consider coilover suspension. The top performers would be **Bilstein**, **H&R**





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and **KW**, with fixed rate and adjustable damper units available for your needs and budget.

Once you can generate more g-force

in the corners, we'd suggest a deeper 0.5-liter (\$349) or 2L (\$849) oil sump from **LN Engineering**. They come baffled with a pick-up extension and will protect your engine from oil starvation.

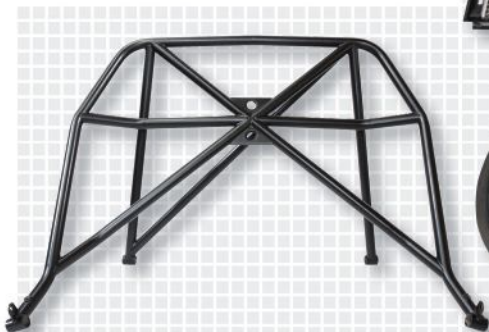
Squeezing more power from the 3.4L or 3.6L motor is possible. Start with an **IPD** plenum (\$895). The larger Y-shaped piece channels intake air, reducing turbulence and increasing velocity to improve power and torque throughout the rev range. Expect 20-25whp in the mid-range and 10-15whp up top.

Their **IPD** Competition plenum mates to a larger 82mm GT3 throttle body (74mm stock) for another 5-7whp when combined with exhaust mods. Speaking of which, you'll need high-flow catalytic



converters to unleash significant power, such as the **Speedtech** 200-cell Sport Cat and X-pipe (\$1495) that should avoid a Check Engine Light.

STAGE 3 HARDCORE



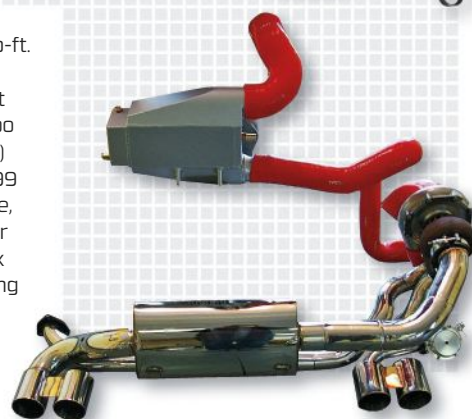
If you want extreme performance, we'd first suggest a half-rollcage such as the one from **GMG Racing** (from \$1795).

You're then ready to look at the **VF Engineering** VF425 or VF470 supercharger kits for the 3.4L or 3.6L Carrera (from \$7800). The kits include a Vortech V3 blower, CNC brackets and a proprietary serpentine belt system utilizing the OEM tensioner. There's also a liquid-to-air intercooler, OEM third radiator, high-flow injectors, associated plumbing and engine software. Expect



gains in the region of 120whp and 80 lb-ft.

If you're looking to rival the 997 Porsche 911 Turbo, however, you'll want to consider the **TPC Racing** CT520 turbo system for the 996 3.4L (390-405whp) or 3.6L (420whp). The kit will cost \$9999 and includes a TPC turbo, blow-off valve, stainless steel cat-back exhaust, bigger injectors, liquid-to-air intercooler, spark plugs, associated brackets and plumbing plus software. Cars with the manual transmission will also require the OEM third radiator package (\$757).



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+ **APR**
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+ **Bilstein**
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+ **ECS Tuning**
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+ **Eibach**
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+ **Elephant Racing**
elephantracing.com

+ **Endless**
endlessusa.com

+ **Evolution Motorsport**
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+ **FD Motorsports**
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PART I

Project B8

BODY KIT FITTING

INTRODUCING OUR WINTER BEATER PROJECT AUDI A4 2.0T QUATTRO

ADMITTEDLY, MOST WINTER BEATERS AREN'T AS NICE AS THIS 2009 AUDI A4 2.0T QUATTRO. However, it had covered almost 100k miles, had a blown turbo, worn brakes and sloppy suspension when we found it. And having a relatively rare manual transmission, it sat unwanted for too long, so we made an offer that couldn't be refused and we were happy to pay. Let's just say it was under \$10k...

So having stolen the A4 2.0Tq MT cheap enough to cover the cost of repairs, we set about finding the right parts to make our AWD snow queen into the sort of car we could enjoy when the grip levels dropped.

With phone calls made and orders placed, we waited for the parts to arrive. But while the car sat, we had a chance to poke around it some more and discovered the high mileage had inflicted a high price on its appearance as well. The front-end was heavily stone-chipped, with road rash peppering the front screen, headlights, grille, hood and apron. Even the front fenders hadn't escaped what appeared to have been several

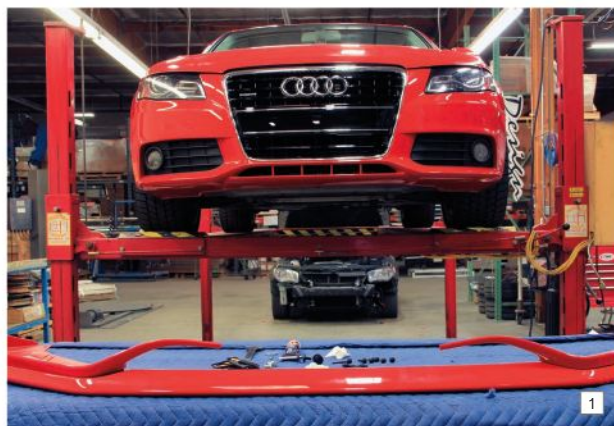
winters on heavily gritted roads.

The front spoiler had also taken a beating from poor parking and contact with foreign objects. Since we bought the car so cheap, we still had some money to invest before we passed the breakeven mark, so decided to make some repairs.

Inevitably, we weren't going to leave the A4 stock. So once we got a cheap painting quote from friends in the business, we decided to upgrade the cosmetics with an authentic Audi Accessories body kit.

You may recall we fitted an Audi body kit to our TT project car (which also continues in this issue), so we knew the quality was superb and fitting was simple (saving labor costs). All we had to do was order it from our local Audi dealer and get it painted along with the hood and fenders.

Fitting is a Do-it-yourself proposition if you're relatively competent, but a workshop lift will help, and a body shop will make life simpler. The fitting process should be completed in less than one day but make sure you have friends around to lend a hand with the larger pieces. All the fitting hardware is provided but not the glue. We've listed what we used below but a bodyshop will be able to advise.



Front Spoiler

The front spoiler comes in four pieces that include two side parts, a larger lower splitter and a center detail to connect everything together.

Installation starts with cleaning the bodywork and wiping down with alcohol cleaner to remove any grease or residue (do this to all surfaces receiving the new parts). Then test-fitting the pieces to align them. You can use the supplied pucks to ensure everything is in position and eliminate the guesswork later.

You want to sparsely glue the pucks to the bodywork and see that 30-50% of the puck is away from the bodywork. This makes it easier to remove them once the kit is fastened and minimizes potential damage to the paint.

Once you're happy with the location, sand the groove inside the front spoiler. It takes the glue and, although not specified in the Audi instruction leaflet, sanding helps to improve adhesion for the glue.

With the glue applied in the groove, press the side

pieces into place. Use blue painter's tape to secure the parts to the bodywork while the glue cures. Repeat for both sides and the center piece.

Allow the glue to set for 15-30min - the time is weather-dependent, with warm temps giving a shorter curing time.

Once hardened, apply Meguiar's Cleaner Wax liberally around the edge of the new parts and the bodywork. Then take a fine-edged plastic knife and remove the excess glue from the joint. The petroleum in the wax reacts with the glue, allowing it to be removed

[1] Four-piece front spoiler painted and ready for assembly

[2] Sand the glue groove and apply a bead of adhesive

[3] Fit the side pieces first, followed by the center piece

[4] Use painter's tape and C-clamps to secure parts while the glue cures

[5] After 15-30min, apply Meguiar's Cleaner Wax and remove excess glue visible in the joint

[6] Once the adhesive has set, press the front lip into place

more easily, while also avoiding scratches in the paint as the blade moves across it.

Finally, fit the lower spoiler. It snaps into place but you'll need to wait until the glue

has cured on the other pieces before doing so – you don't want to apply pressure and have something move out of kilter before it's properly set.

When ready, apply glue to the interior groove on the spoiler and snap it into place. Be sure to use more painter's tape to hold the lip in place while everything cures overnight.



Side Skirts

Start by removing four 10mm screws that hold a plastic undertray in place. Pull it aside to access the bottom of the car. It will be screwed back into place later once the skirts are fitted and the glue cured.

Test-fit each skirt and fasten the alignment pucks to the rear wheel well. Once in position, sand the interior glue groove and apply a bead of adhesive.

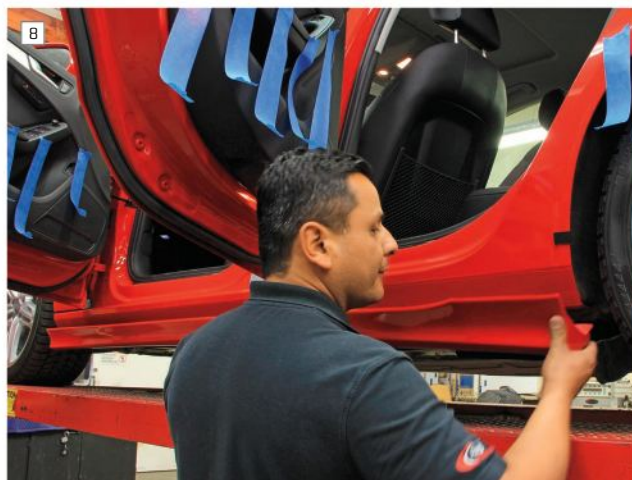
With help from a friend, press the skirt to the body, working your way from the rear wheel to the front. Then break out the painter's tape again and fix it in place to ensure that sucker isn't going anywhere. Repeat for the

opposite side.

Remember to apply the wax and remove the excess glue shortly after fitting. If

you leave it too long, the glue will harden and be almost impossible to shift. Then allow the glue to cure overnight.

- [7] Trial-fit the side skirts first
- [8] Once glue is applied, start from the back and work forward
- [9] Black locating pucks help with alignment
- [10] Remove excess glue again



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Rear Spoiler

To fit, simply clean the trunk lid with alcohol, sand the interior glue groove, apply glue, align and press into place. Then secure with tape and revisit after 15-30min to clean the excess glue.

The fitting is straightforward but alignment is critical, so take your time.



[11] Test-fit trunk spoiler

[12] Apply glue and press down. Painter's tape is prepared and will secure spoiler in place while glue sets



Rear Diffuser

Prior to fitting this part, we installed the aftermarket exhaust system we'll be using. This would help us see where the tailpipes would sit (we'll cover the exhaust system in a later issue). Our goal was to frame the new tips with the

painted two-piece diffuser from Audi Accessories.

Replacing the drab black OE plastic insert, the new diffuser clips into place and is capped by a frame to hide the clip valley. The frame is a nice detail and was secured with the same sand-n-glue steps.

With our body kit fitted, the

car looked so much better. The scruffy front-end was gone and instantly looked more sporty. We should point out that we painted the front grille in gloss black to tidy it, rather than go to the expense of buying a new assembly. It saved us more money and definitely added to the impact.

[13] Unclip stock diffuser

[14] Press the replacement diffuser until it clicks into place

[15] Secure with supplied screws

[16] The finished item



Contact

Audi Genuine Accessories
audiusa.com



SUPPLIES

80-grit sand paper, two tubes of ELCK P1 1K-PU adhesive, Meguiar's Cleaner Wax, microfiber towels, blue painter's tape, mini C-clamps, plastic blade. All necessary locating

pucks, screws, washers, speed clips and push-pins were supplied with the body kit.

NEXT MONTH

In part two we'll look at our first performance modifications for

the B8 A4 2.0Tq, which will entail new brakes, suspension and wheels from Stasis Revo Group. This will get the chassis sorted before we increase power with a replacement turbo, software, intake, intercooler and exhaust.

	PART	PART#	SUPPLIER	PRICE*
	Front spoiler	8K0071053A X7R	Audi Accessories	\$885
	Side skirts	8K0071685 X7R	Audi Accessories	\$885
	Trunk spoiler	8K5071645B X7R	Audi Accessories	\$565
	Rear diffuser	8K0071620C X7R	Audi Accessories	\$760

*All prices are for painted parts from the Audi dealer. Unpainted parts are cheaper

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PART 5

Project Audi TT

INTERIOR UPGRADES

OUR 2008 AUDI TT 2.0T GETS A
TT RS STEERING WHEEL AND
P3 CARS VENT GAUGE

IT WAS NEVER OUR INTENTION TO TURN OUR 2.0T INTO AN RS REPLICA, BUT THE MORE PARTS WE FOUND THAT WOULD FIT OUR HUMBLE FWD COUPE, THE MORE TEMPTED WE WERE TO GO OUT AND FIND SOMETHING ELSE.

So while we wanted to address the car's appearance and chassis, in particular, the TT RS parts were perfect for the job since they offered factory fit and finish and virtually no modifications were required.

With that said, the perforated leather steering wheel is probably the last TT RS item we'll fit to our car. In fact, we almost didn't use it at all but the soft leather, aluminum trim and RS badge made it too hard to resist.

Although we haven't covered it in detail yet, the Audi has Revo software to give it a bit more pep. We hope to carry out a few more engine mods as well, so since we were working on the interior, we decided to throw in one of the excellent vent gauges

from P3 Cars. These monitor boost pressure as well as a raft of other parameters that make it a useful tool in any modified car. It's also ridiculously easy to fit and utterly discreet.

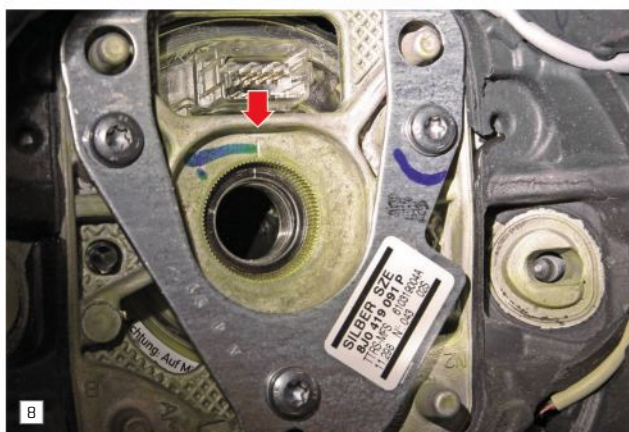
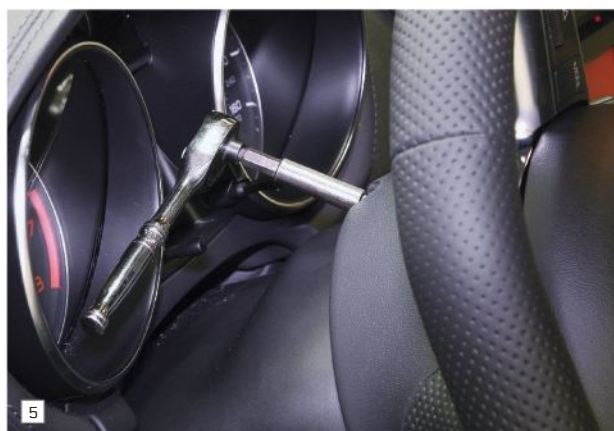
In fact, both jobs would take barely an hour to complete and required no special tools, provided you have Torx and Spline bits for the steering wheel removal.

Steering Wheel

The TT RS steering wheel is remarkably similar to our stock 2.0T part. However, it uses softer, perforated leather around its more sculpted rim, aluminum trim around the horn push and an RS badge, but otherwise, it's the same flat-bottomed design as the stock steering wheel.

That said, it looks and feels much better and justified the expense. It's worth noting that if you want to save some money, you could keep your stock airbag module and fit it into the RS wheel. It fits perfectly and represents a significant saving.

The TT RS wheel is available for cars with either manual or auto transmissions, so order the one that will match your needs (the latter has shift paddles).



[1] [2] [3] The stock wheel and the TT RS replacement with its perforated leather rim, aluminum trim on airbag module and RS badging
[4] The airbag is bought separately,

so you could use the existing bag to save money
[5] Start by turning wheel 90° to reveal covers over T30 Torx bolts. Remove these and undo bolts

[6] Remove the airbag module by pulling it towards you, and then disconnect the two electrical plugs
[7] Unbolt steering wheel from steering column with 12mm Spline bit.

Take care not to knock the two pins either side of the column
[8] When fitting the new wheel, ensure the notch is aligned with the notch on the column

The installation began by disconnecting the battery and removing two trim pieces from behind the stock steering wheel. They simply push off to expose the Torx bolts underneath.

Turn the wheel 90° in both directions to expose each screw at the top of the steering cowl. Then use a T30 Torx bit to undo them because they secure the airbag module in place.

Then pull the airbag towards you and release the two wiring connectors behind it. You now have access to the main bolt that secures the wheel to the steering column. Undo it using a 12mm Spline bit.

Once you've done that, you'll notice a small notch on both the column and steering wheel. This will ensure the new wheel goes back in exactly the same position.

As you remove the wheel and refit the new one, be very careful not to turn the column or knock the pin switches on either side of the column. These cancel the indicators and disturbing them will affect their operation.

Gently push the new steering wheel into place, aligning the two notches and passing the pin switches through their respective holes. Then refit the main bolt and



tighten to 22 lbf.ft.

Now take the new airbag and reconnect the two wiring harness plugs. The back of the airbag module has a locating pin at the top, which slots into a hole in the wheel. Align the pin and push the bag into place until it snaps home.

You can now turn the wheel 90° in both directions to refit the Torx bolts on the back of

the wheel, securing the airbag module. Refit the trim pieces over the bolts.

With the installation complete, reconnect the battery and test the horn, volume, station and mode buttons on the spokes, as well as the shift paddles. Our car didn't require any coding and all the functions worked, but some models may require

[9] Tighten the main bolt to secure the new wheel

[10] When refitting the airbag, there's a locating pin at the top. Reconnect the wiring and push it home

[11] Reconnect the battery and check the paddles and buttons work, and that the indicators cancel

a trip to the dealer or an Audi specialist if the paddles aren't working.

Vent Gauge

We previously fitted a P3 Cars vent gauge on our 2012 BMW 335i (££11/13) and loved the simple installation process, clear instructions and online video, plus its selectable menu options for monitoring different vehicle parameters. So we decided our Audi TT would also benefit from the same technology.

After visiting the website and ordering the correct gauge pre-fitted into the cooling vent, we set about installing it. This operation is ridiculously easily and perfectly demonstrated



in a tutorial video on the p3cars.com website. It's so well produced that our attempts are slightly redundant, but just in case you decided to install your vent gauge in an area without

internet service, we'll point out the key stages.

We also enlisted the help of local tuner Strasse Sport from Covina, CA to get the job done. This seemed unnecessary until it came to wrapping

[12] P3 Cars gauge installed in OEM vent, with wiring harness and plugs

[13] Use screwdriver to access fusebox

things up, as you'll discover...

Start by removing the fusebox cover from the side

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of the dash using a flathead screwdriver in the notch provided. Then extract the cooling vent. Start by getting your fingers under the top left side and work your way around its circumference. It's fairly tight, so we resorted to a screwdriver for assistance, but take care not to damage the dash. When the vent is free, replace it with the P3 Cars vent. It slots into the same hole, threading the cable with it.

This cable plugs into the control module that, in turn, is connected to a plug for the OBD2 port. Plug the latter into the OBD2 port and turn on the ignition to check the system is operational. If it's working, ziptie the cables and module before tucking them into the fusebox area. Now replace the fusebox cover.

It should be as simple as that, but the size of the module, plugs and cables meant it wouldn't fit in the fusebox area. We eventually resorted to removing some of the trim from the door aperture to gain access to space behind the dash. Even then, it took longer to conceal the cables than fit the gauge. It's not an insurmountable problem but be prepared to scrape your knuckles.

The small buttons on the gauge face allow you to access the different parameters that include boost/vacuum, RPM with shift lights, coolant temp, voltage, throttle position, air intake temp, EGT, speed and even a 0-60mph stopwatch. It will record peak values and allow 15sec of playback for the chosen mode. In fact, the only parameter missing is oil temp but it does allow for external inputs if you wanted to add one. What's more, it's reading the car's onboard sensors, so accuracy is assured.

When switched off, the gauge is almost invisible. When in use, it remains discreet and the vent still



- [14] Pry stock vent from dashboard
[15] Feed gauge's cable through the dash and into the fusebox area, then fit new P3 Cars vent gauge
[16] Gauge and OBD2 plug are

- connected to control module
[17] Space to conceal module and cables is tight, but we squeezed it behind the fusebox after removing some trim panels

- [18] P3 Cars' gauge reads the car's sensors, here showing that boost/vacuum has been selected
[19] Different parameters are selected by pressing small button

PART	PART#	SUPPLIER	PRICE
TT RS STEERING WHEEL	8J0419091N SZE (MT) 8J0419091P SZE (AT)	AUDI ACCESSORIES	\$1300
TT RS AIR BAG	8J0880201N 6PS	AUDI ACCESSORIES	\$1183.80
VENT GAUGE	P3AT3	P3 CARS	\$639*

*price includes OEM vent

functions. Compared to the expense and complexity of installing enough conventional gauges to monitor this many functions, the P3 Cars gauge is extremely compact,

affordable and easy to use.

If you want to save money, you can order the gauge without the OEM Audi vent. This way the \$639 price tag drops to just \$389, and online

instructions explain how to install the gauge into your own cooling vent. It adds a little complexity to the procedure but increases your options.

Look out for our planned engine and chassis upgrades to our Project Audi TT 2.0T in future issues.

PROJECT TT

PART	ISSUE	SUBJECT
1	9/12	Audi Genuine Accessories body kit and 19" wheels
2	5/13	H&R coilovers and sway bars
3	6/13	TT RS front brakes and wheels
4	9/13	TT RS front bumper and grille
5	5/14	TT RS steering wheel, P3 Cars vent gauge

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