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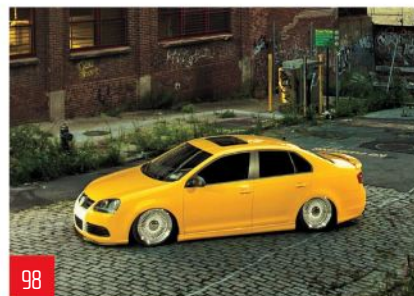
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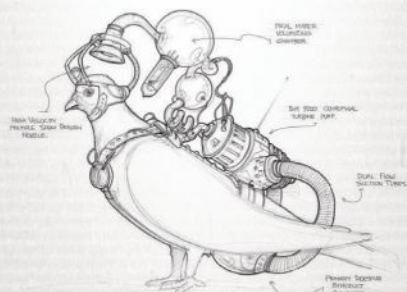
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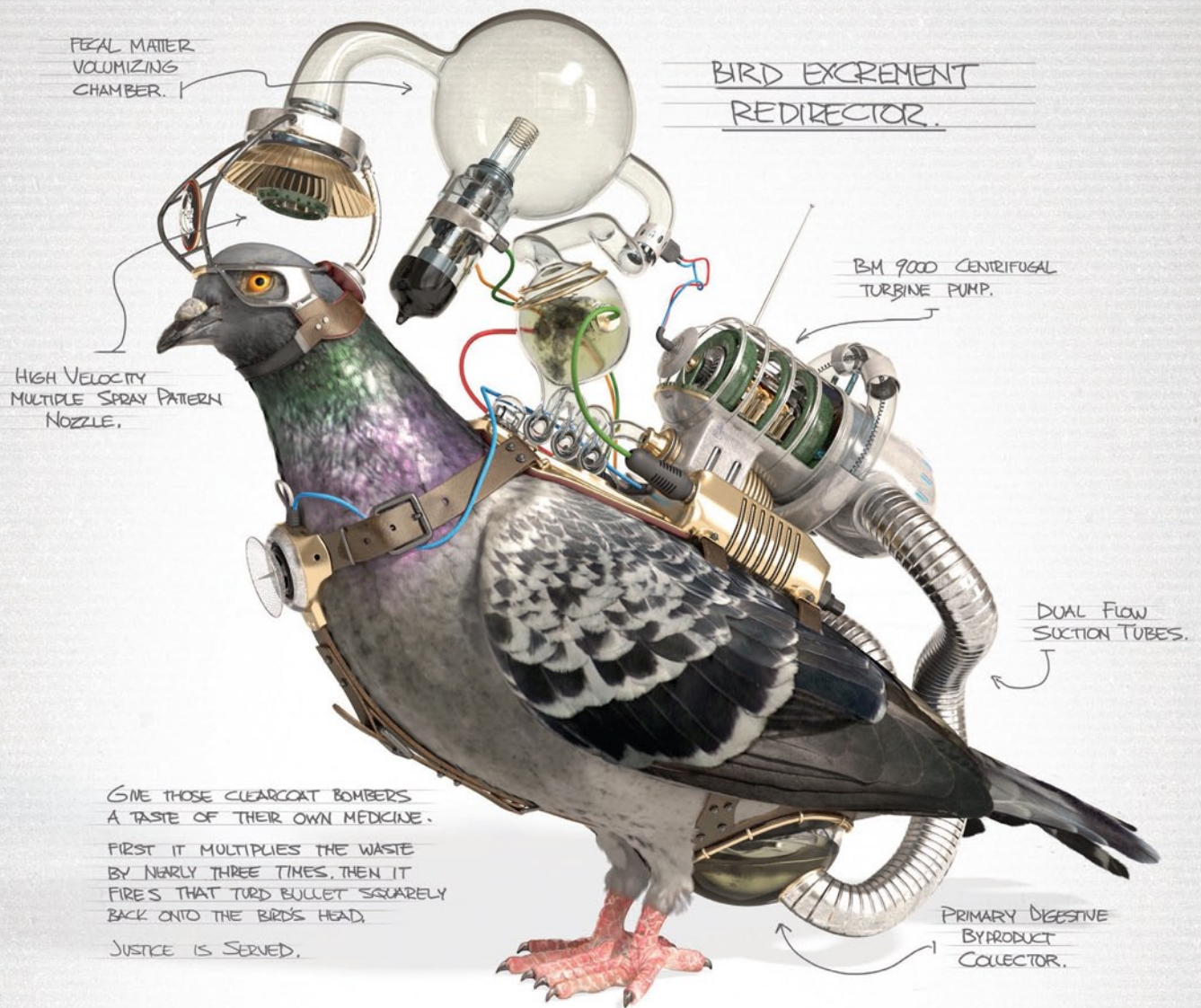
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At Mothers®, we're always thinking of ways to make the world a better place for cars. And while some ideas may never make it onto the shelves, rest assured, we'll never stop innovating.





## behind the wheel



# THE CAT IS DEFINITELY BACK

**IN THE LAST SIX MONTHS** it feels as if we've driven more Jaguars than in the last six years. It's not that we're showing them preferential treatment, simply that the company has produced a disproportionate number of quality machines and released them in a relatively short period.

The 11/13 cover featured our Jaguar XFR project car we built in association with GSR Autosport and Vorsteiner, creating a very appealing package that was the equal of the BMW M5 we compared it to. We followed that with our comparison test of the F-Type V8s against the new Corvette Stingray, a story that graced the cover of the 2/14 issue. I'm still ashamed to admit I narrowly preferred the Vette, which is an astonishing package for the price, but the Jag wasn't far off, providing plenty of smiles per mile.

In the 4/14 issue we compared the XFR-S against the Audi RS7 and Mercedes E63 AMG. This was an incredibly stern test for all three vehicles and each excelled in different areas, making it almost impossible to pick a winner. My heart might have gone with the Jag, since it was sensational to drive, but the group went for the E63 and, unusually, I acquiesced...

**"I have to admit, I find driving such exotic machinery nerve-wracking and generally don't enjoy the experience until I take stock and relax."**

Once over the first-night nerves, the Jaguar was a delight to drive. Number one treat was the exhaust note that encouraged me to find a route home that involved multiple tunnels. However, the amazing carbon-ceramic brakes were a close second. Not that I went around stomping on them, but it was incredibly

This month we got our hands on the fantastically rare XKR-S GT. As we explain, it's one of only 25 cars built for the North American market, and that brought its own stresses. We were the last publication invited to drive it before the car went to a new owner, so no pressure then!

I have to admit, I find driving such exotic machinery nerve-wracking and generally don't enjoy the experience until I take stock and relax. I'm far more likely to crash while worrying about all the consequences than simply getting on with the task. However, the knowledge that the carbon splitter requires five hours and thousands of dollars to replace was a constant concern when maneuvering.

reassuring to know you could stop on a postage stamp, seemingly from any speed.

The GT ticked every box. The handling was possibly better than any Jag to date, the steering was perfectly weighted, the seats superbly supportive and comfortable, the ride compliant... In fact, I have to admit, I don't understand why the base model XK isn't this good. I know it's aimed at a different, older driver, but it would surely attract more customers if it used similar ride, handling, sound, steering, etc.

Perhaps my only reservation was the enormous rear wing. It was too extroverted for the character of the car, and I noticed people didn't react to the XKR-S GT in the same way they would to, say, a similar Aston Martin. I think other road users had to be slightly intimidated by the size of that wing, which also cut the roof off cars behind, obscuring the lights on police cars, for example.

I realize it adds lots of downforce and makes a real statement, but the GT needed to be more sophisticated to let people know how good this car is. Fit a larger lip spoiler on the trunk maybe and call it a day. I'll sacrifice 100 lb of downforce for something I'm more comfortable to drive.

Unsurprisingly, the car attracted a great deal of interest when parked, and it got overwhelmingly positive comments. Most people were happy to see Jaguar build such a ballsy car and were genuinely delighted to see the company making such a confident return after many feared it might have disappeared altogether.

This isn't the end of Jaguar's resurgence and we'll open the next chapter in our First Drive review of the new F-Type R Coupe in the next issue. With a power increase, stiffer body and oodles of style, it might even eclipse the XKR-S GT...

### DIGITAL

I know I mention it every month, but don't forget to join our online community. We passed one million Facebook friends at the start of the year, so you really can share your comments with a large part of the Euro community.

We also regularly update [europeancarmag.com](http://europeancarmag.com) which is where you can find our exclusive stories and videos, such as the footage from our XKR-S GT vs RX-7 drag race. It was the first time we incorporated a helicam into our arsenal, so this video has a new look for us. Look out for more news, features, events and videos each month. **EC**

Greg Emmerson, Editor  
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
## NEUSPEED 18 INCH LIGHTWEIGHT WHEEL

Introducing the all new RSe52 light weight wheel, the street 18-inch version of the 17-inch RSe05. Carrying the same concept from NEUSPEED's other wheel line ups, the RSe52 features smooth and simple design lines giving the 'clean' and un-overbearing but yet complimentary to your European design Mini Cooper, Audi and Volkswagen vehicles.

Each RSe52 is spec-ed specifically for the assigned vehicle, which translates to complete direct bolt-on fitment utilizing factory lug bolts, center caps, as well as tire pressure monitoring sensors (if applicable).

Combination of its light weight (19.5 - 22 lbs), fitment spec, and reasonable price tags (\$280 - \$340 MSRP) makes NEUSPEED RSe52 the perfect wheel for STREET and TRACK application.

### NEUSPEED RSE52 APPLICATION GUIDE

SIZE	WIDTH	OFFSET	PCD	HUB BORE	APPLICATION
18 INCH	7.5J	+45	4.100	56.1	
	8.0J	+45	5.120	72.5	
		+45	5.112	57.1	 
	9.0J	+40	5.112	66.5*	 

\* 57.1MM HUB RING IS INCLUDED FOR VOLKSWAGEN APPLICATION.  
AUDI B8 S4 :: RSe52 18x9.0J :: HOOSIER 275/35R18

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\* SATIN BRONZE

\* SATIN GUN METAL



## AEM INFINITY ECU

AEM has added to its state-of-the-art but affordable ECU range, introducing the Infinity-6 for six-cylinder and Infinity-8h for V8 racing engines using high-impedance injectors. Both include the advanced features of the bigger -8/10/12 iteration, including the latest generation 200MHz processor. The ECU works on airflow-based (VE) tuning to eliminate the need to look up the many correction tables that previous generation ECUs required. It's also compatible with flex fuel and multi-fuel, has on-board wideband control, map switching and knock control. Engine protection strategies include coolant temp, oil temp, AFR vs MAP, intake air temp, knock or fuel pressure. What's more, it has control circuits for factory drive-by-wire, variable cam timing, boost and traction control systems included. **\$1433.89**

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



## AWE PULLEY

AWE Tuning has released a version of its stage 2 Performance Pulley Kit for the 2013/14 B8.5 Audi S4 and S5 3.0T equipped with the six-speed manual transmission. In its own testing, AWE has seen 473hp on 104-octane with the pulley and additional tuning, where the S Tronic could only achieve 458hp with the same parts. The kit was developed by AWE and GIAC, track tested at New Jersey Motorsports Park and is now available in black electrocoat for a factory appearance. **\$1749**

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



## MINI DIGITAL GAUGE

Now available for the R56, R57, R58 and R59 Mini Cooper platforms, the P3 Cars Integrated Digital Interface allows Mini owners to interact with their vehicles in a whole new way. The digital display truly harmonizes with the Mini's interior, fitting neatly into the cockpit to have a factory appearance. It can monitor boost and vacuum for forced induction models as well as coolant temp, oil temp, voltage and has peak recall on all functions. There are also three additional analog inputs. Made in the USA, it includes color-matched LED illumination. **\$399**

[p3cars.com](http://p3cars.com)



## KOYORAD BMW RADIATOR

Koyorad has introduced a direct replacement all-aluminum performance radiator for 1988-99 six-cylinder E30 and E36 BMW 3 Series models with manual transmissions. The application features Koyorad's 48mm "HH Series" radiator core, which was developed to increase coolant volume and promote better airflow as well as coolant circulation. Koyorad has engineered the part with precision, directly replacing the stock OEM plastic/aluminum radiator, bolting easily into the factory fan shroud for a quick and simple installation. Koyorad has also integrated a 1/8 PT female accessory fitting (supplied with a threaded plug) to accept temperature sensors typically included with most aftermarket temperature gauges. **\$359**

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



## DINAN BMW SPRINGS

Dinan's new performance springs were designed for the latest F30 BMW 335i and 328i. They're said to offer a lower stance, reduced body roll and sharper handling. They will also provide an aggressive look and increased driver control. The springs lower the F30 by 20mm front and rear, preserving suspension geometry and lowering the car's center of gravity for enhanced handling without sacrificing the ride quality. The 30% increase in spring rate will reduce the rear suspension compression under acceleration and front suspension compression under braking, giving the driver more control. **\$549**

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



## GOODYEAR ULTRA GRIP 8 PERFORMANCE

Goodyear has released its new premium line of ultra-high performance all-season tires. The Ultra Grip 8 Performance features a tread design with multiple biting edges to enhance traction on wet surfaces as well as in ice and snow. The top-tier tires boast consistent grip in low temps thanks to an optimized polymer blend and silica tread compound to maintain flexibility in the cold. The tires were developed in Europe, where high-performance winter tire use is often mandated by law, and the UG8P is now available in North America in a range of sizes for high-performance European vehicles. **\$TBD**

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



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# GEAR



## MERCEDES-BENZ AIR FILTERS

aFe Power has introduced performance filters for current Mercedes-Benz models with the 4.6, 4.7 and 5.5L V8 engine including the E63, E500, E550, GL450, SL550, etc. Constructed with 100% polyurethane casings, the high-flow, oiled filters are a direct replacement for the OE elements but will reportedly outflow them by up to 29%. This results in improved horsepower and torque. aFe employs a rounded pleat design, which provides more surface area for increased flow and greater dust retention. The pliable sealing surface conforms to the filter housing and eliminates the need for gaskets or sealants. aFe replacement filters have a limited lifetime warranty. **\$160**

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



## EZ OIL DRAIN VALVE

Available for all passenger cars, the EZ Oil Drain Valve replaces the standard drain plug on all oil pans for clean and trouble-free oil changes. Simply replace the oil drain plug with the EZ valve, and no special tools are required. Once fitted, just move the lever a quarter turn and drain, then return to the original locked position to close. The valve also features a removable hose-end option, with a choice of connectors to drain oil away. There's even an L-shaped hose-end, offering an adjustable 90° elbow to prevent hose kinks. Hose ends may be removed after oil changes where clearance is an issue. **from \$29.95**

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



## ODYSSEY PERFORMANCE BATTERY

The new Odyssey Performance Series 65-760 battery features 762 cold-cranking amps, 129 reserve capacity minutes, and deep-cycle capability up to 400 cycles at 80% depth of discharge. It's specifically built for consumer applications and engineered with Thin Plate Pure Lead technology to provide rugged construction, reliability and its deep-cycling capability. In short, it should deliver more power and longer service life than the competition. Boasting a three- to 10-year life and two-year storage life at 77°F, the 65-760 is vibration-resistant, classified as "non-spillable" by the DoT and includes a limited four-year replacement warranty. **\$253.78**

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



## M5 CARBON FIBER ENGINE COVER

aFe has a hand-crafted, carbon fiber engine cover for the 2012-14 F10 BMW M5. It's constructed from 2x2 twill weave carbon fiber and finished in a high-gloss clearcoat, while the underside has a smooth finish to avoid scratches. The stock "M" emblem and rubber grommets are easily removed from the factory cover in order to be installed on the aFe carbon cover, providing factory appearance and fitting. **\$624.75**

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



## MOTHERS TRIM CLEANER KIT

Maintaining the appearance of plastic trim is made simple by the Mothers Back-to-Black Heavy Duty Trim Cleaner Kit. The drip-free gel formula is said to provide unmatched penetration in order to deep clean any vehicle's trim. Unsightly oxidation, dirt, road grime and even stubborn embedded wax are no match for this heavy-duty cleaner, which promises to renew your exterior trim and textured plastics of any color to their original appearance. The kit includes a 12oz bottle of Trim Cleaner and a Deep Cleansing Trim Brush. **\$9.99**

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



## MOTHERS HEADLIGHT RENEWAL KIT

The Mothers NuLens Headlight Renewal Kit was developed to reduce the amount of time it takes to safely restore, maintain and protect plastic headlight covers. This kit allows simple removal of yellowing or stains, and is a good solution for scratches. The NuLens kit includes everything you need, and even works on other types of transparent plastic surfaces. The kit comprises a 3" soft-flex backing plate, quick-change PowerBall 4Lights Polishing Tool, restoration discs and an 8oz PowerPlastic 4Lights polish to restore clarity. Using the polish regularly leaves a tough, protective and oxidation-inhibiting polymer layer to guard against future degradation. **\$31.49**

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



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# GEAR



## EAGLE ONE WAX

Eagle One has released Wax-As-U-Dry. It's a spray wax with a patented formula that will mix with water so it can be used on wet or dry surfaces. Simply spray on your wet ride and wipe dry for long-lasting protection and shine. It apparently requires no buffing and won't haze, streak or leave residue. Featuring carnauba wax, Wax-As-U-Dry provides a protective barrier on your car's paint that will last for months. Anti-corrosion additives protect the paint from acid rain, salt and rust. **\$14**

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



## MEGUIAR'S AIR RE-FRESHER

Coming in a 2oz spray can and having a "new car smell", Meguiar's went to great pains to differentiate this product from regular air fresheners. This isn't something you hang from the mirror; it's an odor removal system. They advise it's best used when the interior is clean and dry. Place the can on the floor in the center of the car, set the car's ventilation to max cold, activate the locking trigger and leave it to empty. The odor will then penetrate the entire car and is said to remove the unwanted odor permanently. **\$6.99**

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



## BMW SPEAKER UPGRADE

Bavsound has announced a plug-n-play Stage One speaker upgrade for the F30 BMW 3 Series. The speakers are claimed to produce a higher quality sound with a wider range of the bass and treble, thanks to coated natural-fiber drivers and silk tweeters that remain distortion-free at higher volume to provide accurate sound reproduction. The Stage One kit features pre-installed plug-n-play connectors, factory-matched impedances and custom-molded baskets. By utilizing all the factory fittings, this easy-to-use speaker system is a perfect solution for the lifetime of the vehicle, or can be easily converted back to stock for leased vehicles. **\$799**

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



## B&W MASERATI EDITION HEADPHONES

The Bowers & Wilkins P5 Maserati Edition Hi-Fi headphones were designed to function alongside most smartphones, and are supplied with an approved iPhone cable. When connected to current iPhone models, the headphones allow for speech and device control. There's also a standard audio cable with gold-plated plugs. The headphones feature linear neodymium magnets, optimized Mylar diaphragms and maximum noise isolation thanks to sealed, leather ear pads. The closed-back design features a rigid metal faceplate and provides comfort for extended listening. The P5 Maserati Edition was crafted from fine-grain natural leather finished in the carmaker's Deep Racing Blue. **\$399.99**

[bowers-wilkins.com](http://bowers-wilkins.com)



## MINI MIRROR BOOMBOX

iUi Design has created an interesting Bluetooth speaker for Mini enthusiasts. It looks identical to the Mini's distinctive oval door mirrors and even comes in a number of classic finishes including the Union Jack and checkered flags. On the front it has a mirror as well as a speaker grille with the Mini emblem. Designed for ease of use, it has NFC- and Bluetooth-compatibility to quickly pair your device. You can then stream music to the 8w speaker that gives clear, accurate sound reproduction, that surpasses its small size. There's an engine sound when the BoomBox is turned on and a voice bids goodbye when turned off. It also tells you when your device is connected, so there's no confusion. Volume is controlled by touch sensors, with lights behind the mirror to confirm operation. The unit has a microphone so it can also be used to take phone calls. It has a rechargeable lithium-ion battery capable of up to eight hours of playback and they'll even ship it free. For the price, we liked the look, functionality and sound quality. **\$149.99**

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



## UNIVERSAL PHONE MOUNT

Weighing less than 1oz, the Kenu Ariframe portable smartphone mount attaches easily to any air vent. Its low-profile design keeps the phone at eye level and has a rotating clip for horizontal and vertical positioning. The clip also doubles as a travel stand for watching movies, playing games or chatting when out of the car. The over-molded grips keep your phone free from scratches, and the expandable jaw holds most smartphones securely in place. **\$24.95**

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



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## BLUETOOTH CAR KIT

Kinivo has a simple hands-free solution for answering calls and enjoying music while on the road. The BTC450 will connect to any smartphone, tablet or Bluetooth device and stream to your car's stereo system via its 3.5mm audio jack. This provides the ability for users to receive calls and operate their device's voice-command functionality through the built-in microphone. The Kinivo BTC450 allows users to select audio with control over tracks, including play, pause, previous song and next song functions. Installation is simple because the BTC450 connects into the vehicle's stereo system via the 3.5mm audio connector. **\$44.95**

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



## DUAL USB CHARGER

id America is offering a car charger to suit the interior of your European vehicle. Combining style and function, the LX dual USB was designed with genuine leather trim, which delivers a modern, polished appearance to complement any interior. The 2.1A output will charge high-powered devices, while the built-in fuse will protect against possible power surges. It can also power two iPods, iPhones, MP3, GPS or other gadgets and has an LED power indicator. **\$24.95**

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



## BLUETOOTH HEADSET

The Kinivo BTM440 Bluetooth headset combines advanced noise cancellation technology with lightweight wraparound design for convenient hands-free calling. It allows users to control calls wirelessly from any Bluetooth-enabled smartphone for hands-free operation. The Mono headset's built-in microphone is said to provide crystal-clear phone calls while driving. The lightweight earpiece was designed for extended wear, allowing users to remain comfortably connected for long periods of time. The easy-to-use operation offers full control over functions like voice dialing, adjusting volume, answering calls and more. There's a rechargeable lithium-ion battery that lasts more than four hours of active talk time, or 150 hours in standby mode. It connects to the included micro-USB cable to recharge. **\$24.99**

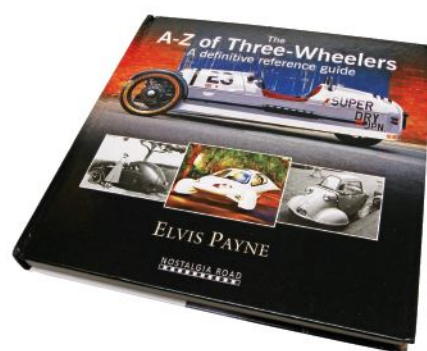
[kinivo.com](http://kinivo.com)



## ROCKFORD BLUETOOTH ADAPTER

Audio specialist Rockford Fosgate has announced its new RFBTAUX Universal Bluetooth Plug & Play Mobile Adapter. It will give users an easy way to stream media content from a smartphone, tablet or laptop to a 3.5mm AUX input jack. The content could include your music library or just about any app such as Pandora or Rhapsody. The RFBTAUX easily pairs with Bluetooth devices - the Auto Connect provides an audible chime when connected - and will stream the audio to any source with an AUX input. It also has a USB port for charging your phone (USB cable not included). **\$49.99**

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



## A-Z OF THREE-WHEELERS

The introduction of the Morgan 3 Wheeler in 2011 brought the subject of tripod travel back into the public's imagination. But if you imagine this is a passing phase, you'd be wrong. Elvis Payne's comprehensive 272pg book catalogs more than 450 manufacturers and 1000 models that date back to the steam-powered vehicle developed by Nicolas-Joseph Cugnot in 1769. As the first form of powered transport, three-wheelers have always been with us, and this book from Crécy Publishing (available from CarTech) leaves you in no doubt. A lot of the photography is full color with some older B&W images and even illustrations where photos don't exist. The book is from left field but includes everything from trucks to track cars, utility transport, speed record breakers and concepts like VW's 2006 GX3. **\$39.95**

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



## SCOSCHE BOOMCAN

This miniature speaker packs a surprisingly big punch. At 2" tall it's the smallest of several Scosche "can" speakers that will easily fit in your pocket or bag. The lithium-ion battery is charged by USB for two hours of play. The 35mm speaker provides a decent sound that inevitably lacks bass but didn't distort, even at its loudest volume setting - one button turns it on and selects one of two volume levels. You then adjust from your device. Bluetooth connection is simple and it chimes to confirm, or there's an aux jack input. Available in four colors, there's also an optional cycle mount. The boomCAN is compact but delivers crisp sound. **\$29.99**

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



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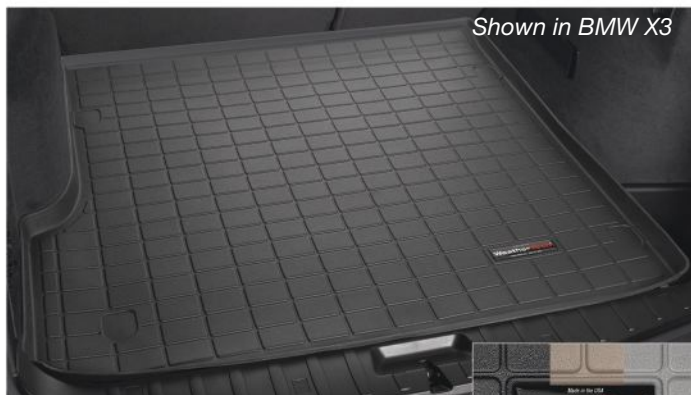
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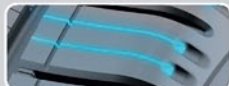
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# BMW M235i Racing

WE WERE THE FIRST TO SAMPLE BMW'S LATEST FACTORY RACER AND LOVED EVERY SECOND OF THE EXPERIENCE

Words Greg Emmerson  
Photos BMW  
Video Mike Sabouchi

## HIGHLIGHTS

- › Factory racer
- › Competitive out of the box
- › Safe and reliable
- › Ideal for first-time racer
- › Fitted with rollcage, fuel cell and slicks
- › Unique widebody styling

## TECHNOLOGY

- › 333hp, 332 lb-ft N55 3.0L motor
- › Reprogrammed ZF eight-speed auto trans
- › Mechanical LSD

## ELECTRONICS

- › Race-tuned steering, traction control, ABS and motor
- › Steering wheel-mounted info display

**AS I RAISE MY LEG** over the door bars of the FIA-spec rollcage, I can't hide from the weight of expectation upon me. I'm honored to be the first journalist to drive the BMW M235i Racing but, in addition to my own high hopes, I have to contend with the presence of BMW senior management, development engineers, an experienced racer in the shape of works driver Joey Hand, and our own Mike Sabouchi, poised with cameras and GoPros to capture any incompetence on the small, tight Inner Handling Course at Las Vegas Speedway.

Ducking my head under the roof bar, the BMW-supplied helmet clunks into the steel cage; something I'll repeat with annoying regularity. By now my mouth is dry and hands sweating into the Nomex gloves. I've driven lots of cars on countless tracks but this was special – my first time in a factory racecar and a rare outing on slicks. It was a real privilege and I was going to make the most of it...

Sinking my backside into the tight seat, I'm struck by the low driving position. It's about 4" lower than a regular M235i but seems more. In fact, I'm peering over the M Performance steering wheel, trying to familiarize myself with the controls.

An engineer sticks his head into the doorframe to help with the harness belts. Cinched in tight, the Coupe feels almost alien after the Alpina B7 we rolled up in this morning. He runs me through the startup procedure. My head was spinning and the limited peripheral vision from the helmet wasn't helping.

"Push the brake pedal, press the starter button and select drive," he instructs. Hang on, I can do that...

I take a deep breath. The fog clears. Despite its widebody fenders covering 18x10" BBS Motorsport wheels and Dunlop slicks, its door numbers and racing stripes, this is still an M235i with a race seat, rollcage and fuel cell. Yes, it's more complicated than that, but it certainly wasn't intimidating when I took stock of my surroundings. This was going to be fun!

## NÜRBURGRING

So how did BMW's latest factory racer come into existence? Talking to BMW Motorsport Director, Jens Marquardt, he explained that during last year's VLN 24-hour race at the Nürburgring, he walked the grid with other senior management. After admiring their Z4 GT3-spec cars up front, they realized that further back BMW's representation was primarily from older





E36 and E30 chassis. They simply didn't have any modern machinery for the grass roots racers. In fact, the last real product was the M3 GT4, which wasn't exactly bargain basement.

Taking the task by the horns, Jens gathered his team, appointing Sebastian Golz as the M235i Racing Project Manager. They examined several solutions and, with the new 2 Series about to start its life cycle, it seemed the ideal candidate since it would be both affordable and around for a few years.

Involving all BMW departments, from its Leipzig production plant where the bulk of the car is assembled, to the BMW dynamics engineers, software technicians, purchasing and Motorsport departments, their priority was to create an affordable, accessible vehicle for national racing series and club events.

As such, the racecar would use a surprising number of production parts. The 333hp engine, for example, was essentially the stock N55 3.0L but for software tuning; even the engine cooling and intercooling was production M235i.

During the car's extensive Nürburgring testing, which included a two-week continuous driving program, Sebastian Golz assured us his team experienced no overheating issues (although we'll be interested to see how that translates to a Californian summer or the heat of Dubai...). Equally important will be the software upgrades to ensure the car doesn't drop into Limp Mode when it does get hot. Make no mistake, this car was built to race and BMW has put its reputation behind it.

Perhaps the most controversial decision was to retain the production ZF 8HP eight-speed automatic transmission, not even offering a manual option. According to Jens, the decision was taken during development of the BMW M4. While driving

**"Perhaps the most controversial decision was to retain the production ZF 8HP eight-speed automatic transmission, not even offering a manual option."**

Racing uses production N55 3.0L turbo engine with custom software tuning and exhaust







Receiving instructions from works driver Joey Hand prior to a couple of paced laps... He seemed annoyed when I later suggested his lines could be improved!

test mules on the 'Ring, BMW management and engineers felt the speed and simplicity of a paddle shift would make the car more accessible to a broad range of drivers. It would also protect the engine from over-revving, and wouldn't add any development cost beyond software. It also transpired that ZF was very keen to support the project.

Despite the sound of straight-cut gears inside the cabin, Golz assured us the transmission was internally stock, the noise was the result of a lack of soundproofing – it even keeps the same ratios as the road car.

What was different was the shift speed, engaging fast and hard. The torque converter disengages once the car's rolling to prevent it slipping the power after each shift. With this transmission, the M235i Racing is

like driving the E60 M5 with the shift force turned up to max – it comes in with a real bang.

So why doesn't it have DCT? After all, it's BMW's flagship transmission and reputedly the most advanced around. Well, it was a simple matter of economics, according to Golz. The M235i wasn't engineered for DCT, so developing it solely for the racecar would have introduced greater cost, a longer gestation period and more expensive repairs.

After looking at all the options, BMW felt the 8HP was the best option and, after driving it, we're inclined to agree. It's not as engaging as a six-speed manual, but it does allow you to get on with finding the apex and building speed.

Perhaps our only complaint was that the downshift threshold seemed a little low. On occasions it refused to give us gears because the revs were higher than permitted. To be honest, it's also a bad habit of mine, preferring to use a lot of engine braking rather than getting it done with the enormously capable US-made Performance Friction four-piston front brake setup.

Talking to Joey Hand after his handful of laps, the brakes were also a standout feature for him. "You'll never run out of brakes in that car," he confirmed. "The ABS threshold was set very high, allowing a degree of lock up on hard application."

## CHASSIS

The surface of the Vegas Speedway track was smooth, with gentle curbs that didn't seem to upset the car. In fact, the ride on its combination of KW dampers with H&R springs seemed remarkably compliant, allowing the weight to be transferred and traction to be found.



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

Daytona International Speedway - Daytona, FL  
May 23-25

Auto Club Speedway - Fontana, CA  
June 13-15

Road America - Elkhart Lake, WI  
June 20-22

Gateway Motorsports Park - Madison, IL  
July 18-20

Portland International Raceway - Portland, OR  
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Aug 22-24

Sebring International Raceway - Sebring, FL  
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Full cage, Recaro seat, harnesses, M Performance steering wheel, carbon console and door cards are all that separate this interior from the production car



The majority of the driver information is selectable on the steering wheel display, which also provides shift lights



Maybe the carbon fiber door cards save weight, but they certainly look the part

tires were the primary factor, but the M235i Racing appeared wonderfully neutral. You had to want it to oversteer, because otherwise it would simply follow the line you picked without fuss or drama.

The mechanical limited-slip differential was another welcome ally, providing further stability and traction. Apparently identical to the LSD available as an option on the M235i road car, but with a different locking rate, I'd swear you could feel it transferring power across the rear axle in the transitions. Whatever it was, there was no lack of confidence when driving the car.

After his laps, Hand would decrease the tire pressures, finding more grip in the process, while I was still in the learning phase. Given only 10 or 11 laps to familiarize myself, I concentrated on trying to interpret what was happening and where I was going.

However, I did expect more heft to the steering with its wide 265/660 R18 slick front tires – the square set-up front and rear was designed to save teams from needing different size spares, even allowing the rubber to be rotated.

Again, the racecar retained the stock electric steering of the production M235i, but BMW's dynamics engineers had worked tirelessly to get the correct ratio and weight. Certainly, the turn-in was beautifully precise, but I'd have requested a little more weight. Joey Hand was of a similar opinion but, two days after his appearance at the Rolex 24, his frame of reference was very different to mine...

The new bumpers and fenders replaced the stock panels, constructed from carbon fiber-reinforced fiberglass, a material chosen for its low weight and cost. A rear wing was deemed unnecessary thanks to aerodynamic balance being established with the carbon splitter on the front spoiler, and was proven by Nürburgring testing. However, BMW will happily sell you a wing but stressed that the front spoiler and suspension would need corresponding upgrades.

The interior featured more carbon fiber, with it appearing on the dash, console, door cards and floor panels. If you don't specify a passenger seat, an optional carbon floor panel is available to replace it. However, we should stress these weren't your typical

After completing a few laps with the traction control in its Sport setting, I put on my brave trousers and switched everything off. The sticky Dunlops ensured remarkable traction, allowing you to get on the power before the apex, with only a slight wiggle from the rear in protest. Yet everything felt very predictable and reassuring.

The car also cornered remarkably flat, allowing a degree of weight transfer to load up the tires, but the H&R sway bars fitted front and rear did an admirable job of body control.

It exhibited no understeer at this speed. Undoubtedly, the prodigious grip from the wide front

#### PROS

- › Purpose-built racer
- › Incredible chassis
- › Easy to use
- › Relatively affordable

#### CONS

- › US delivery uncertain



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## TECH SPEC

### 2014 BMW M235i RACING

#### ENGINE

2979cc N55 six-cylinder  
24v direct injection, turbo  
with BMW Motorsport  
software, Racing exhaust  
and catalytic converters

#### DRIVETRAIN

ZF 8HP eight-speed  
automatic transmission  
with paddle shifters, BMW  
Motorsport software and  
modified torque converter,  
BMW M Performance  
mechanical limited-slip  
differential

#### BRAKES

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four-piston fixed calipers,  
370mm rotors f, BMW  
M4 two-piston calipers,  
345mm rotors r

#### SUSPENSION

KW V3 dampers, H&R  
springs, H&R adjustable  
front and fixed rear sway  
bars, carbon fiber and  
aluminum front strut  
tower braces

#### WHEELS & TIRES

18x10" BBS Motorsport  
wheels, 265/660 R18  
Dunlop Racing slick tires

#### EXTERIOR

BMW Motorsport carbon  
fiber-reinforced fiberglass  
fenders, front and rear  
bumpers and spoilers,  
M Performance carbon  
fiber front splitters, rear  
spoiler and diffuser, black  
grilles, hood latches

#### INTERIOR

Recaro Pro Racer  
SPGracing seat, Schroth  
six-point harnesses, FIA-  
approved rollcage, fuel  
cell, BMW M Performance  
steering wheel with info  
display and shift lights,  
carbon fiber dash trim,  
center console, floor  
panels and door panels  
with cloth pull tabs, rear  
seat and sound insulation  
removed, optional  
passenger seat

## PERFORMANCE

#### MAX POWER

333hp

#### MAX TORQUE

332 lb-ft

#### 0-62MPH

n/a

#### TOP SPEED

n/a

#### WEIGHT

3140 lb (estimated)

#### ECONOMY

n/a

#### MSRP

\$82000 approx

racing parts. The fit and finish was certainly worthy of a factory racer.

As prototype number two of three cars built, this particular example retained its iDrive screen on the dashboard, which will be absent from the final version, according to Golz. Instead, most of the data will be available in the small display on the BMW M Performance steering wheel, which also sported shift lights – this is another item available from your dealer for BMW road cars.

With its adjustable seat position and steering column, it was possible to quickly get comfortable in the M235i Racing, reducing distractions.

The overall weight reduction measures, such as the lightweight bodywork, wheels, removal of insulation and factory seats, was countered somewhat by the rollcage and fuel cell – the latter not required by many race series but Jens explained the team focused on creating a safe car. As a result, we were told the weight savings over the production car would be in the region of 270 lb, with the car expected to weigh around 3140 lb once the final spec is signed off. While it's a relatively small saving, it greatly benefited the performance, handling and braking.

With the insulation removed, a lot of work had gone into producing a good sound. In fact, the driving experience was intensified by the mild transmission whine and purposeful exhaust note. Relatively subdued at low RPM, the M235i Racing had an angry tone at speed. Yet the exhaust neither droned nor buzzed inside the car, although the helmet might have helped... That said, you won't need earplugs to race this car.

## COMING TO AMERICA

Once the initial nerves had settled, the M235i Racing was remarkably civilized. It was comfortable, lightweight and quiet – everything the road car offers but with an utterly different character. This was undoubtedly a racecar. Perhaps not hard-edged like a 911 GT3, it won't bite too hard if you make a mistake, either. The big brakes, prodigious grip and predictable handling would see to that.

The M235i Racing was designed to offer an affordable access point for track day enthusiasts who want to take the next step to club, regional or national race series. Costing around \$82000 (depending on the Euro exchange rate), the car is relatively affordable for established teams. It's also competitively priced if you were to try and replicate it yourself. As a result, BMW reported taking 35 orders at the car's Nürburgring introduction for European race teams, with more enquiries continuing to come in on a regular basis.

According to Marquardt, there are no production limits. He claims BMW will build as many cars as are requested, with the Racing assembled alongside the regular 2 Series at BMW's Leipzig plant. The vehicles are then transferred to an outside contractor for final assembly of the specialized items like the rollcage, fuel cell and so forth.

European deliveries will take precedence, with the US being supplied rather late in the day. Nobody would give a date but didn't contradict us when we suggested deliveries might start towards the end of the year.

With that said, we spoke to a leading BMW race team in the US that contradicted this information. They had tried to order cars directly from Germany



Receiving more instructions from Sebastian Golz, BMW's M235i Racing Project Manager before the track opened



to avoid the delay but had been refused. They were apparently told the order books were full for the next two years and that the M235i Racing may never actually reach the US!

This clearly contradicted what BMW was telling us, creating a confusing situation but, until we see cars in the hands of North American race teams, we won't know who's correct...

Impatient US customers could look at building their own versions of the car, with many of the parts available through the eight BMW Motorsport dealers across the country or from the aftermarket. The problem will be in the software calibration for the ABS, traction control, steering, engine, temperature control, transmission tuning, etc. Without these, the car won't be as suitable for competition.

It will be a shame if the M235i Racing doesn't reach these shores because it's a remarkably good package that would make an ideal entry-level racecar for anybody looking to make that first step into wheel-to-wheel motorsport. I guess we'll just have to wait and see... **EC**



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# 2014 McLaren P1

“SPECTACULAR” DOESN’T DESCRIBE THE 906HP MCLAREN P1 HYPERCAR

Words Thomas Geiger & Ian Kuah

**A MARQUE’S DNA CAN BE** measured by its ability to produce a new car that’s instantly recognizable as one of its own. The clues lie in how the shape, proportions and details are eloquently described by the design language that’s evolved over time. And while mass-market brands seem locked in a relentless course towards interchangeable designs, at the other end of the market, the converse is true.

The latest super sports cars from Ferrari, McLaren and Porsche are the visual and technical epitome of their respective company’s heritage and aspirations. In a nutshell, the Ferrari LaFerrari, McLaren P1 and Porsche 918 Spyder showcase some of the most extreme expressions of design and engineering you’re likely to see, and a hint to the production cars of tomorrow.

While all three marques are playing with decks stacked full of aces, McLaren clearly holds the wild card. All three have long and illustrious histories in motorsport, but as carmakers, McLaren is definitely the newbie here.

Having less road car history as a reference point isn’t a problem for McLaren, whose F1 exploits are the stuff of legends. Playing the maverick has always been good for the British marque, and McLaren chief, Ron Dennis, is the consummate master of the art. It simply makes McLaren the most unpredictable of the three manufacturers.

Just like one of its F1 championship winners, McLaren’s first road car, the ‘92 F1, left the start line on full throttle, winning the ‘95 Le Mans 24 Hours in spectacular fashion on its first ever outing, snatching first, third, fourth and fifth places. Three years later, the legend grew with the accolade of “fastest production car.” McLaren clearly doesn’t do things in half measures.

This was crystal clear, as I ran my eyes over the futuristic lines of the McLaren P1 sitting on the tarmac at the Bahrain International Circuit. In the warm sunlight, the perfect carbon fiber bodywork displayed its deep metallic purple paint.

To reach this stage, McLaren had to dig deep into the expertise accumulated by its road and race teams, adapting existing technologies and inventing some along the way. The trick was integrating cutting edge ideas into a seamless entity that would be able to raise the bar for a road-legal hyper sports car to an all-time high.

In short, the aim was to not only eclipse the Bugatti Veyron, but also upstage its contemporary rivals such as La Ferrari and the 918 Spyder, which are also playing the new hybrid power game.

The P1 manages its airflow like an aeroplane, both over and through its bodywork, with the McLaren engineers ensuring state-of-the-art performance from both its active and passive aerodynamics. McLaren’s chief test driver, Chris Goodwin, explained that the DRS setting alters the rear wing’s angle of attack to reduce drag by up to 23%, for example.

Like its F1 predecessor, the P1 is compact by supercar standards. You could even say it appears shrink-wrapped around its mechanicals. Yet as an unashamedly engineering-led design, the P1 is

## HIGHLIGHTS

- › Incredible hybrid power
- › Active aerodynamics
- › F1-derived KERS and DRS
- › Active suspension

## TECHNOLOGY

- › Carbon fiber safety structure
- › V8 engine can charge electric motor
- › 198 lb carbon fiber core
- › Aluminum subframes
- › Multilayer carbon-ceramic brakes

## ELECTRONICS

- › Battery fully charged in under 2 hours
- › Multiple charging options





perhaps the ultimate automotive expression of form following function.

Dubbed the MonoCage by McLaren, the 198 lb carbon fiber core is unique to the P1 and quite different from the 12C's. Bearing more than a passing resemblance to the core of a Le Mans prototype, the passenger safety cell includes the A-pillars, roof rails, snorkel air intake and special moldings for the IPAS battery and power electronics.

Like all hybrid cars, the P1 has two powertrains. The internal combustion engine is a development of the 3799cc M838T V8 biturbo found in the 12C. Major changes include dry sump lubrication, allowing the engine to be lower in the chassis, as well as larger turbochargers running at 35psi boost pressure. The resulting M383TQ produces 727hp at 7300rpm and 530 lb-ft at 4000rpm.

The electric motor is mounted alongside the V8, produces its own 176hp and 96 lb-ft, while step-up gearing gives it an effective torque of 192 lb-ft. McLaren claims the electric motor produces twice the power of its Formula One KERS unit, and that the lithium-ion battery pack has greater continuous power density compared to anything else available. Weighing 211 lb, the battery sits between the cabin and engine bay, and almost perfectly in the car's center of gravity.

An important difference from other hybrids is that McLaren eschews regenerative braking in the interest of brake response and feel.

As a plug-in hybrid, the P1 can be charged from a wall socket, via a bespoke charger, taking two hours for a full charge or 10min for a top up. Alternatively, there's a "Charge" button on the dash, allowing the V8 to act as a generator.

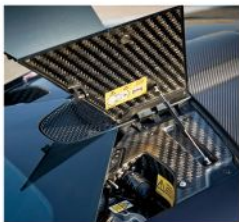


There are two ways to deploy the electric power. The first is as a standalone source, where the battery alone can move you 7.5 miles and travel up to 99mph, with 0-62mph taking a sedate 9.4sec. However, high-speed travel depletes the batteries very quickly. So the other option is to use the electric motor to boost the V8 in maximum attack mode, engaged by the IPAS button. At this point, the P1 boasts an unfathomable combined maximum output of 906hp and 664 lb-ft. As a result it will hit 62mph in a stunning 2.8sec, 125mph in 6.8sec and 186mph in 16.5sec from a standstill.

Both power sources drive the rear wheels through a seven-speed dual-clutch transmission. This is the

**"An important difference from other hybrids is that McLaren eschews regenerative braking in the interest of brake response and feel."**





**PROS**

- › Incredible performance
- › Multiple powertrain modes
- › Active aero
- › Good ergonomics
- › "Race" button

**CONS**

- › 7.5-mile range in EV mode
- › Price

**TECH SPEC**

**2014 MCLAREN P1**

**LAYOUT**

longitudinal mid-engine, RWD

**ENGINE**

3799cc V8 twin-turbo gasoline engine with variable valve timing plus a lightweight electric motor

**DRIVETRAIN**

seven-speed SSG dual-clutch transmission

**BRAKES**

six-piston calipers, 390mm Akebono carbon-ceramic rotors f, four-piston calipers, 380mm rotors r

**SUSPENSION**

RaceActive chassis control

**WHEELS & TIRES**

19x9" f, 20x11.5" r forged wheels, 245/35 ZR19 f, 315/30 ZR20 r Pirelli P Zero Corsa tires

**EXTERIOR**

carbon fiber MonoCage structure with aluminum subframes front and rear, active aerodynamics with Drag Reduction System and underbody flaps

**PERFORMANCE**

**V8 MAX POWER**

727hp at 7300rpm

**V8 MAX TORQUE**

530 lb-ft at 4000rpm

**ELECTRIC MAX POWER**

176hp

**ELECTRIC MAX TORQUE**

96 lb-ft

**COMBINED MAX POWER**

903hp

**COMBINED MAX TORQUE**

664 lb-ft

**0-62MPH**

2.8sec

**TOP SPEED**

217mph (limited)

**WEIGHT**

3197 lb

**ECONOMY**

28.3mpg combined (estimated)

**MSRP**

TBC



All the torque is very tempting and, like a junkie, once you've experienced the sound of the V8 and the awesome thrust towards the horizon, you keep wanting more.

The power steering is moderately light but has plenty of feel, just like the 12C. While the brakes are simply incredible – they're from Akebono, McLaren's F1 partner, and use a new type of carbon-ceramic rotor capable of absorbing 50% more heat energy than existing systems.

By itself, the twin-turbo V8 engine can appear to stumble at times, displaying a modicum of turbo lag, especially in the higher gears. But with its peak torque available from zero revs, the electric motor fills the gaps very efficiently.

Two rotary switches on the center console allow you to adjust the handling and powertrain application, with each notch shifting the balance more towards the racetrack.

If you have 30sec to spare, push the "Race" button and the P1 changes character completely. The active suspension collapses to the tarmac, the spring rate goes up 300% and the rear wing extends all the way, neatly blocking your rearward vision.

At this point, the P1 takes you to the edge. The maximum aero pins the car to the tarmac, while the boosted powertrain flings you at the landscape. It's both incredible and ridiculous at the same time, yet there's little doubt even an experienced driver would get into trouble on the first lap if they use Race mode straight off the blocks. It's something you need to work up to...

Experienced international racer, Chris Goodwin, explained the McLaren P1 has more raw speed and is more fun to drive than many purebred racecars. "Last summer I spent two weeks with the P1 on the Nordschleife, and drove a 12C GT3 in the 24 Hours of Spa race," Chris recalled. "The GT3 was so much slower than the P1, making it perhaps the most boring 24 hours of my life!"

The McLaren P1 should be on sale later this year, built to order, with approximately 375 available (significantly more than the limited edition F1) and all suspected to have been pre-sold. Prices are rumored to be anything from \$1.1 to \$1.5 million, but the value can only increase over time. **EC**

same unit found in the 12C, upgraded for greater torque handling and enhanced cooling. Apart from a larger oil cooler, the unit has two air-blast clutch coolers to control temps.

The claimed 217mph top speed is electronically limited for the Pirelli P Zero Corsa tires that are mounted on 19x9" and 20x11.5" forged wheels.

The P1's cabin is an orgy of carbon fiber and alcantara, making for a comfortable, high-grip, low-reflection environment: A perfect blend of spartan, functional luxury that puts the vital controls and dials directly ahead of the driver. The P1's workspace demonstrates perfect ergonomic design and the art of carbon fiber used as a structural material.

At normal speeds, the P1 is a pussycat; both docile and comfortable. Laid-back cruising can lull you into a false sense of security, because when you drop the hammer, the contrast is mind-blowing.





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# 2014 Mini Cooper & Cooper S

AN ALL-NEW, COMPLETELY REDESIGNED MINI (HONEST!)

Words Pablo Mazlumian

## HIGHLIGHTS

- › New turbo engines
- › New chassis
- › Giant speedo removed
- › Still a "Mini"

## TECHNOLOGY

- › Turbo for both models
- › Cooper S goes to 2.0L
- › Direct injection
- › Variable cam and valve timing
- › GPS shift optimization for auto trans
- › Curb weight under 2800 lb

## ELECTRONICS

- › Parking assistance
- › LED driving lights
- › Smartphone integration
- › Facebook/Twitter on the fly

**TO CALL THE MINI COOPER** a success story is a colossal understatement. The automaker sold 305,000 of its second-generation Coopers in 2013 alone, with most of those transactions Stateside. Planning to expand its market share, Mini designed a new package that will not only reinvigorate existing customers, but could also tempt others to switch brand loyalties.

So while you might think you're simply looking at an updated, second-gen Mini, we're assured that the Cooper and Cooper S are all-new vehicles. They've been thoroughly redesigned, putting the product ahead of its predecessors in terms of both performance and value.

Starting with the appearance, the body was stretched 4.5" and widened 1.7", although it's only 0.3" higher, creating a more aggressive stance. As a result, luggage space has increased by more than 30%. The dimensional changes are significant, since the Mini is supposed to be a small car, but it still looks very much a Mini, hence the slogan, "The New Mini. The New Original."

Outwardly, they have new headlamps, with optional LED driving lights as a first in this segment. There's a hexagonal radiator grille, new bumpers, the choice of five new paint colors, plus an assortment of new

wheels in silver or black, ranging from 15-18".

For the first time, both the Cooper and Cooper S get British-built turbocharged engines using BMW's TwinPower technology, direct injection and variable cam timing (double Vanos on the S). The base model's is a redesigned 1.5L three-cylinder, while the four-cylinder in the S jumps to a welcome 2.0-liters. Although the 1.5L diesel three-cylinder isn't destined for us Stateside at present, both blocks come from the same mold.

## COOPER

Flown to Puerto Rico to sample the new car away from the winter misery in North America, we chose to blaze the jungle trails in the six-speed manual Cooper first and, to be honest, for under \$20k our expectations weren't lofty. But sliding into the cockpit, we instantly realized how comfortable yet sporty the John Cooper Works steering wheel and factory seats felt. The adjustable armrest keeps you comfy on long driving stints and there was plenty headroom.

It was also great to see the speedometer back in the instrument cluster rather than the cartoon dial that used to be in the center dash. This has allowed Mini to utilize an 8.8" screen for its sophisticated infotainment, which includes a Driving Excitement



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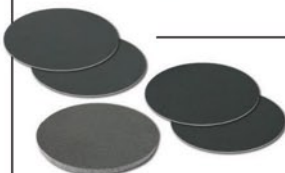
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Analyzer that recommends optimal shift points and even records peak-g acceleration. There's also an optional rear parking camera and GPS navigation.

Smartphone apps, Facebook and Twitter accounts, appointment calendar and a web radio can be accessed through the large screen here as well, giving you access to BMW's technology suite that keeps you connected on the road.

The Cooper's 1.5L three-cylinder turbocharged engine was rated at a measly 137hp, but it had 169 lb-ft of torque (a 51 lb-ft increase over the previous base model) giving a surprising punch in the lower gears. It wasn't until pushing highway speeds that the acceleration started to plateau, even with the Cooper's 0.28 drag coefficient.

As the base model, it's miles ahead of the outgoing Cooper. A speed demon could still get into trouble, thanks to its 2605 lb curb weight (70 lb heavier than the old model) and peak torque to rival the outgoing Cooper S!

Given the new optional driver assistance systems, including camera-based active cruise control, collision and pedestrian warnings with brake function, as well as high-beam assistant and road sign detection, the car is certainly on your side.

For those who dread the city squeeze, the New Mini has a parking assistant system that detects suitable parking spaces and executes the necessary parallel-parking steering movements for you. All the driver does is operate the gear selector and throttle.

Adding to the base Cooper's fun factor is the engine's soundtrack. At 4000rpm it reminded us of a

watercooled 911 Turbo, albeit much quieter. When we reported this to Mini engineers, they explained they'd worked diligently on the harmonic frequencies to make it sound like a six-cylinder.

#### COOPER S

After our pleasant drive we then transitioned into the Cooper S with far greater expectations. As with previous generations, the S is easily distinguished from its little brother by larger wheels, the signature hood scoop and different bumpers with functional front brake ducts.

**"As the base model, it's miles ahead of the outgoing Cooper. A speed demon could still get into trouble, thanks to its 2605 lb curb weight."**





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#### PROS

- › Power increase across the board
- › Longer wheelbase adds stability
- › More technology for the same price
- › Still fun to drive
- › Price

#### CONS

- › Continues to get bigger
- › Cooper gearing rather tall for spirited driving
- › Suspension in Sport Mode is rather stiff

### TECH SPEC

## 2014 MINI COOPER S

#### LAYOUT

front-engine, FWD

#### ENGINE

1998cc four-cylinder turbo with direct-injection, variable valve control, double Vanos variable cam control

#### DRIVETRAIN

six-speed manual transmission (optional six-speed automatic with paddle shift)

#### BRAKES

vented disc brakes

#### SUSPENSION

single-joint McPherson strut axle with aluminum swivel bearing and anti-dive control

#### WHEELS & TIRES

16x6.5" wheels, 195/55 R16 tires

### PERFORMANCE

#### POWER

189hp at 4700-6000rpm

#### TORQUE

221 lb-ft at 1250-4000rpm

#### 0-60MPH

6.5sec (6.4sec)\*

#### WEIGHT

2760 lb

#### ECONOMY

27/40/34mpg\* (city/highway/combined)

#### MSRP

\$19950

\*auto transmission



15 lb-ft more than the outgoing JCW Cooper S.

Combine this output with a feathery 2760 lb curb weight (92 lb heavier than the previous S) and 0-60mph comes in a factory claimed 6.4sec – although we wouldn't be surprised if it scores a "high-five" when independently tested.

The Cooper S is simply quick. It's enormous fun to drive yet will reward the driver with up to 40mpg on the highway, which is an 18% improvement over the previous model.

Carving through Puerto Rico's turns, we experienced Mini's new Dynamic Damper Control, which is offered on both models. It provides two different settings for the dampers' compression and rebound, enabling drivers to choose between a sporty or more comfort-oriented mode.

While the sportier level was remarkably stiff on uneven surfaces, both levels absorbed the bumps with a finesse and predictability you'd normally find in a BMW 3 or 5 Series. And, given the car's extended wheelbase, Mini did a fantastic job to preserve the characteristic kart-like precision.

Compared to the previous generation, the new Mini models pack a punch of new technology throughout, more powerful and fuel-efficient engines, better crash protection, more luggage space and only a marginal increase in weight. And to think, the base price only increased by \$250 and \$300 for the Cooper and Cooper S, respectively.

The gap between the two models has narrowed, so that both can be thoroughly enjoyed by performance-minded enthusiasts, with the Cooper bringing a low admission price.

So which model would we take? If we're honest, the Cooper provided a memorable combination of good looks, a torque-rich engine, superb handling, great ride comfort, exceptional affordability and gobs of fun. It'll please most families of four and was definitely the surprise of the day.

Given a limited-slip diff and some aftermarket software, we think the Cooper would be an unbeatable package.

The Cooper S, however, has a more aggressive appearance (even if the air dam seems to give it a worried expression...) and its 37% power advantage is enticing for only \$4k more. So maybe we'll take a manual Cooper S in Volcano Orange, please! **EC**

While the interior was similar to the base model (no bad thing), pressing the Engine Start button focused our attention on the exhaust note. The 2.0T purrs but has a more ferocious snarl when provoked.

We were able to sample the new automatic transmission here and liked how it looked similar to a manual gear selector. Aside from that, the six-speed auto featured Mini's new "Predictive Drivetrain." It's a GPS-based system that accounts for your route profile to control gear shifts!

For those wanting more control, the paddle shifters turn with the steering wheel and provide precise gear selections with near-DCT speed. The addictive exhaust also pops on deceleration and downshifts, providing the icing on the driving cake.

With 221 lb-ft of overboost in a fat 1250-4750rpm chunk (it's more like 2500-4750rpm in the first two gears), the Cooper S peaks at 189hp – 8hp and 31 lb-ft higher than its predecessor. This is also





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# 2015 Volvo S60, V60 and XC60 Drive-E

THE VOLVO WAGON FINALLY RETURNS TO THE US, ALONG WITH A REFRESHED S60 AND XC60, PLUS NEW FOUR-CYLINDER POWERTRAINS

Words Colin Ryan

## HIGHLIGHTS

- » New engines
- » New auto transmission
- » New wagon available
- » V60 T5 from \$36,225
- » Sport seats and suspension options

## TECHNOLOGY

- » Hybrid style Drive-E economy functions
- » Turbo/supercharged engine
- » Collision avoidance features
- » Semi-automatic parallel parking assist

## ELECTRONICS

- » Internet access with optional Sensus infotainment

**LET'S GET THE CONFUSING STUFF** out of the way because Volvo's familiar alphanumeric naming system for its engines, such as T6 for its six-cylinder turbo, is going to be carried over to its new powertrains. However, the company's two new drivetrains deploy four cylinders, yet are still called T5 and T6. So going forward from the 2015 model year, these designations will denote the level of power rather than the number of pistons. Confused?

Once you get past that, everything seems rosy. So while Volvo didn't thrive under the Ford umbrella, its 2010 acquisition by Chinese company Geely seems to have had a more positive impact. The Swedes benefited from a cash injection of billions of dollars, so were obliged to come up with their own material rather than relying on parts from the Blue Oval.

It turns out that the new stuff is mighty impressive. At Detroit 2014 we saw the handsome XC Concept, based on the company's new Scalable Product Architecture (SPA).

And we have two new powertrains from the new Drive-E family. The thinking here is that the smaller, all-aluminum four-cylinder engines weigh less, require less space and allow room for an electric motor in the future.

The power is dependent not so much on displacement but by the amount of air that can be fed into each cylinder. So the new T5 is a 2.0-liter

four with a turbo, direct injection and continuous variable valve timing on the intake and exhaust. The result is 240hp and 258 lb-ft (with a 10sec, 280 lb-ft overboost function). Drive goes to the front wheels (AWD isn't yet available) through a smooth-shifting eight-speed Aisin automatic transmission.

The T6 uses the same basic architecture but the 2.0L develops an intoxicating 302hp and 295 lb-ft thanks to both a turbo and supercharger, with the latter added for greater low-end punch before the turbo kicks in.

Such technology is unusual but not revolutionary. Several companies have experimented with it, including VW's compound induction on its 1.4TSI Twincharger engine. However, it's only possible when packaging permits, or where the added complexity and cost can be overcome.

Although "Drive-E" sounds as if an electric motor is involved, that's not the case. Both the T5 and T6 use functions usually associated with hybrids, like a start/stop function and "coasting" feature, where the engine is turned off on downhill stretches.

Again, Volvo isn't alone in using these technologies but it's putting the ingredients together in an intelligent way. The consequence is that the 2015 S60 can hit 60mph in 6sec but return 25mpg city and 37mpg highway consumption figures. These stack up well when compared with rivals such as the Audi A4



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#### + PROS

- › More thrust, less thirst
- › Plenty of safety features available
- › Cool wagon
- › Modern styling

#### - CONS

- › Start/stop function not quite seamless
- › T6 needs more refinement

### TECH SPEC

## 2015 VOLVO V60 T5 DRIVE-E

#### LAYOUT

front-engine, FWD

#### ENGINE

1970cc four-cylinder 16v gasoline with variable valve timing, direct injection, turbocharged

#### DRIVETRAIN

eight-speed automatic transmission with paddle shifters

#### BRAKES

single-piston calipers, 12.4" rotors f, 11.9" r

#### SUSPENSION

McPherson struts f, independent r

#### WHEELS & TIRES

19x8" Bor wheels, 235/40 R19 all-season tires

### PERFORMANCE

#### MAX POWER

240hp at 5600rpm

#### MAX TORQUE

258 lb-ft at 1500-4500rpm

#### 0-60MPH

6sec

#### TOP SPEED

130mph

#### WEIGHT

3530 lb

#### ECONOMY

25/37/29mpg (city/highway/combined)

#### MSRP

\$36225 (inc D&D)



personality, which isn't an easy feat.

The steering, although electrically assisted, has some weight and feel. We also liked the optional sports suspension, which provided stability and composure both at three-figure speeds and under heavy braking.

The cabin design is understated but the materials and finishes are first class. Noise levels are low and it exudes an air of quality.

Then there are wagon attributes that include retractable luggage (or pet) netting and a flip-up section to portion off a section of the load space to secure the week's grocery shopping. The rear seats split 60/40 and fold flat, creating a maximum cargo volume of 15.2cuft, while the rear passengers get decent legroom for a compact wagon.

Climbing into a Volvo S60 T6, that 302hp motor can deliver 0-60mph in 5.6sec as well as 24mpg city and 35mpg highway. But after experiencing it in both the 2015 XC60 crossover and S60 (both extensively refreshed), it seems there's still some work to be done here...

There's some twitchiness to the steering under acceleration. This is surely torque steer being tamed by the steering software but it appeared as if the throttle mapping needed some recalibration to prevent the power coming on as strong at low revs. No doubt AWD will resolve this tendency and allow more of the power to be unleashed in all conditions.

Another issue concerned the start/stop function on all three vehicles. It appears that when you lift your foot from the brake to pull away, the engine starts up again but if you need to turn at the same time, it takes a moment for the power assistance to return. It should really be seamless, especially with electric steering but hopefully they'll work on that.

Otherwise, both the S60 and V60, in particular, are good-looking cars with handsome lines. The 2015 engineering brings a quality look and feel with new technology, plenty of power and good economy. Perhaps the only hesitation was that our S60 T6 test vehicle with blind spot monitoring, rearview camera, plus pedestrian and cyclist detection (with full brake function) was priced at almost \$48000. That's rather pricey but we'd be tempted towards the V60 T5 anyway. It felt better balanced and is gentler on your wallet in every respect. **EC**

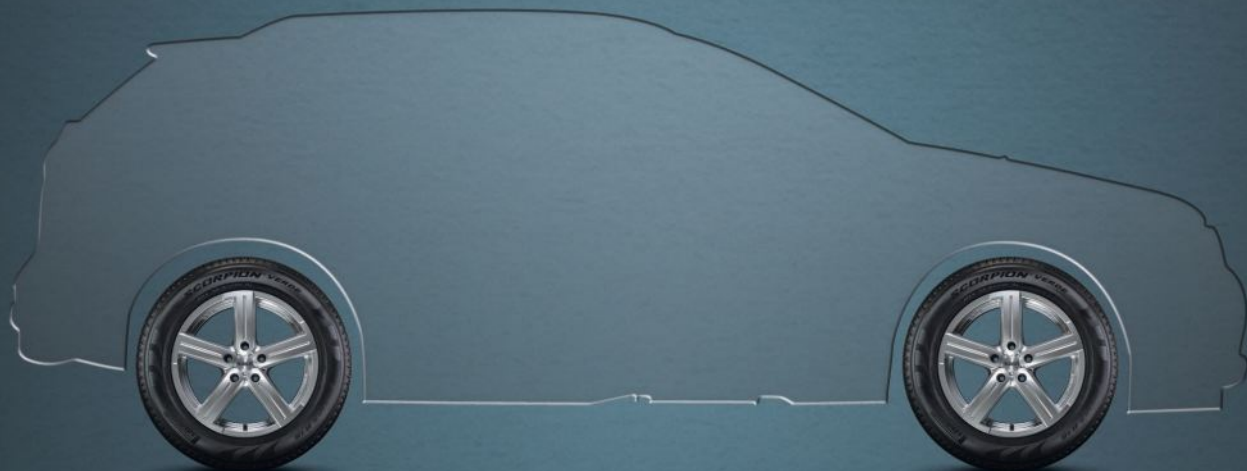
2.0T (6.6sec, 24/32mpg) and the BMW 320i (7.1sec, 24/36mpg).

On the road, the T5 delivers plenty, with an accelerative burst to join a freeway or overtake as simple as flexing your right foot.

We first experienced this new motor in a rather remarkable car: a 2015 V60 T5. The "V" designation indicates it's a wagon, and sees US drivers finally able to own a Volvo wagon again, and it's a complete joy.

It's often said that the only people in the US who like wagons are car journos, but Volvo has a rich tradition of making sturdy and reliable wagons that have had a strong following in the past. And Volvo is doing its best to attract these drivers back to the fold because the 2015 V60 works well on so many levels. Sit in the optional sports seats, for example, and enjoy extra lateral support through the corners, yet they're as comfortable as Volvo seats have always been. The V60 manages to combine practicality with





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# THE ITALIA JOB

REGULAR FERRARI 458 ITALIA NOT  
SPECIAL ENOUGH FOR YOU? THEN  
WHY NOT GIVE IT THE SVR TREATMENT?

WORDS GREG EMMERSON  
PHOTOS JORGE NUNEZ











**IF YOU'RE LIKE US**, you probably still nudge somebody every time you see a Ferrari 458 Italia, or any of the Prancing Horses, for that matter. But we have to recognize that, for some people, merely owning one isn't sufficient satisfaction. They want to leave their mark on the Maranello brand, personalizing their car to differentiate it from any others they might stumble across.

To be fair, if you live in the larger population centers around the world, your chances of an encounter with a similar Ferrari are significantly increased. So Los Angeles-based businessman, Rob Marley, owner of the Crooks & Castles (crooksncastles.com) clothing brand, wanted to ensure he always had the upper hand in any impromptu meeting.

As a certified car guy, Rob's garage includes an E30 M3, E-Class wagon, RWB 911 and Ferrari 599, so when he bought this 2012 458 Italia, it had to compete for attention with his other exotic machinery.

Initially, he was slated to receive the first Liberty Walk widebody kit, but eventually decided he couldn't bring himself to cut into the 458's sinuous flanks. So while Wataru Kato from Liberty Walk would eventually buy his own car and have it appear center stage at 2013 SEMA



Custom titanium exhaust retains Ferrari's distinctive three-tailpipe design

show in the Nitto Tire booth, Rob still had a problem to resolve.

To his good fortune, another Japanese styling specialist called Super Veloce Racing also had a 458 body kit and was also looking to debut it at SEMA. As associates of Liberty Walk, Kato recommended Long Tran at LTMotorwerks (LTMW) to Nobuyuki Tani, owner of SVR in Kyoto, Japan.

LTMW had been entrusted with building

several Liberty Walk (LW) cars for the show, including its Nissan GTR, 458 Italia, BMW 335i and various M3s. In fact, the El Monte, CA-based BMW specialist would build thirteen different cars for various tuners and owners, with each making its mark at the Las Vegas spectacular.

With Tani needing a car for his SEMA debut, Long suggested the less radical conversion might suit Rob, so a deal was struck. Fortunately,





GMG Racing software and a custom exhaust system boost output from the already potent 4.5L V8

#### TECH SPEC

### 2012 FERRARI 458 ITALIA

#### ROB MARLEY

Los Angeles, CA  
Owner, Crooks & Castles

#### ENGINE

4.5-liter V8 32v with GMG Racing software, custom titanium exhaust system

#### DRIVETRAIN

stock

#### BRAKES

stock

#### SUSPENSION

Novitec Rosso lowering springs

#### WHEELS & TIRES

20x9" ET38 1" lips f, 20x12" ET50 2.5" lips r, HRE Vintage Series 501 wheels, matte black centers, gloss black rims, titanium ARP fasteners, 245/35 R20 f, 295/35 R20 r Nitto Invo tires

#### EXTERIOR

SVR 458-R carbon fiber front bumper, splitter, side blades, rear bumper and undertray

#### INTERIOR

stock

#### THANKS

Super Veloce Racing (auto-veloce.com), LTMotorwerks (lrmotorwerks.com), HRE (hrewheels.com), Nitto (nittotire.com), Novitec Rosso (novitecgroup.com), Crooks & Castles (crooksncastles.com)



it involved a heavy discount for the \$30k carbon fiber body kit in order to secure the car's presence at the show.

Estimating 3-4 days to paint and fit the kit, Long and his cohorts were able to squeeze in work on Rob's Ferrari between the other projects, even finishing it ahead of schedule.

Fitted to his black 458 and partially painted to obscure the carbon fiber construction underneath, the SVR 458-R body kit is certainly more discreet than the Liberty Walk widebody, yet still striking in its own right.

It included a replacement front bumper panel, which is an enormous one-piece molding with a deeper front spoiler and larger ducting. It has a separate carbon fiber splitter, which remains unpainted in its raw carbon state, as does the center section in the bumper.

All the parts simply bolt to the original Ferrari mounting points, including the carbon blades fitted to the side of the car. Again unpainted, these were bolted under the car using longer bolts into the bottom of the factory side skirt mounts. At the rear, SVR designed another deep bumper that included vents behind the rear wheels and deleted the stock diffuser. However, it includes a separate carbon undertray that has smaller fins to channel the airflow.

Its center section highlights the carbon weave and the distinctive three tailpipes that form part of a custom titanium exhaust that was fabricated for LTMW. It's part of an incredibly expensive system that snakes into the engine bay and includes a remote-controlled valve to allow Rob to select either a discreet exhaust note or one that makes your ears bleed.



20" HRE Vintage Series wheels were custom-finished and wrapped in wide Nitto rubber



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**STR 605**

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MATTE BLACK

**STR 607**

19x8.5, 19x10, 20x9  
20x10.5, 22x9, 22x10.5

GUN METAL, TITANIUM  
SILVER, WHITE/BLACK

**STR 617**

18x8, 18x9, 19x8.5  
19x9.5, 20x9, 20x10.5

WHITE/BLACK, TITANIUM  
BLACK, ORANGE, GUN METAL

**STR 606**

15x8, 15x9, 16x8, 16x9  
17x8.5, 17x9.5, 18x8, 18x9

GOLD, WHITE  
GUN METAL, SILVER

**STR 609**

18x8.5, 19x9.5

MATTE BLACK



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SVR front bumper is considerably deeper than stock part and constructed entirely from carbon fiber



Carbon blades run the length of the car

Rear bumper is also deeper than stock and deletes the original diffuser section


The SVR 458-R kit would typically be completed with a huge carbon fiber rear wing – so large it has to be mounted to the subframe through slots in the rear bumper. These slots can be covered when the wing isn't in use. In fact, Rob doesn't like using it since the wing generates so much downforce it actually makes the car slower on anything but the racetrack.

He additionally has the Liberty Walk widebody rear spoiler, but also chose not to use it since both items significantly reduce his limited rear visibility.

With the body styling fitted, the car would need the correct stance to carry off the conversion, so a set of Novitec Rosso coil springs were ordered from the US distributor for the German Ferrari tuning brand. These mount over the factory coilovers to allow the ride height to be altered.

The car would be lowered onto the staggered 20" HRE Vintage Series 501 wheels. Carefully measured, the offsets would be +38 front, +50 rear, with 1" and 2.5" outer lips, respectively. The wheels were finished with matte black centers, gloss black rims and titanium ARP fasteners. Tires are suitably huge Nitto Invo's with lettered sidewalls that also spell out "CRKS" to acknowledge Crooks & Castles.

With the paint drying in the Las Vegas sun, Rob's 458 Italia went on display at SEMA. Unfortunately for Tani-san, it was parked outdoors for the week-long event. However, he managed to overcome the heat and sell an undisclosed number of body kits, making all the effort worthwhile.

In addition to the 458-R kit, SVR also offers a less costly lip kit for the same car, as well as styling for the 430 and 360, so check out their website at [auto-veloce.com](http://auto-veloce.com) for details. If you wish to order a kit and have it fitted, contact Long Tran at [ltmotorwerks.com](http://ltmotorwerks.com) 





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# THURSDAY NIGHT DRAGS

## 2014 JAGUAR XKR-S GT VS 1994 MAZDA RX-7

WELL, WHAT WOULD YOU DO  
WITH A \$175K, 550HP,  
LIMITED EDITION JAGUAR?

**WORDS** GREG EMMERSON  
**PHOTOS** MATT JONES, GREG EMMERSON  
**VIDEO** MIKE SABOUNCHI  
**HELICAM** GARY COGIS

**WHenever we're invited to drive** the latest European performance cars, we're always faced with a dilemma. Do we simply go with the same formula as buff books like *Motor Trend*, *Automobile*, etc and conduct the most obvious comparison test, or do we try to give it an *EC* angle?

As a rule, we prefer to march to our own beat and, before leaving, Alex Bernstein suggested we treat Jaguar's latest exotic as the muscle car it wanted to be. So that's what happened, to the bemusement of the regular attendees at Irwindale Speedway's weekly Thursday night Test 'n Tune session.

It's like an open mic night for local drag racers; most coming out with friends to either race one another, set up their cars or challenge one of the big boys. There's everything from Detroit iron to Euros, imports, drag bikes, '50s classics and even junior rails. The "run what you brung" events are very popular and frequently oversubscribed, but we managed to persuade the track officials to let us run first.

Although only an eighth-mile course – quarter-mile tracks are almost non-existent around LA – it would allow us to have some fun with the car while testing its traction and acceleration. But what would we run against?

Opening the discussion to some of the import magazines in our office, they didn't seem to have anything to match the caliber of this very special Jag, so finally nominated a purpose-built racecar as their best opportunity to beat the XKR-S GT...







## 1 OF 25

One look at the carbon fiber splitter and dive planes on the front of this car, its huge carbon brakes and even bigger rear wing tells everybody what they need to know about the Jag: it's a potent weapon, and a poke at the throttle pedal removes any remaining doubt.

Emblazoned across the sill plate as you open the door is the legend "XKR-S GT – 1 of 25". This hints at the rarity of the British sports car, with 25 coming to the US and five going to Canada.

The elongated name is a reference to its parentage, born from the humble Jaguar XK sports coupe that sired the XKR, which gave birth to the formidable XKR-S. The GT version is what Jaguar describes as a "track-ready" version of the XK and we certainly wouldn't contest that claim.

Developed by Jaguar's ETO division (Engineered To Order), they focused on aero and chassis upgrades, deeming the 550hp supercharged V8 from the XKR-S to be sufficient for this application. In fact, it already lights up the tires too easily under most circumstances, proving it didn't need any more grunt under its vented aluminum hood.

While being slightly impractical for daily driving, the new aerodynamic aids were shown to develop 320 lb of downforce at the car's 186mph top speed. With this understood, you can excuse the restricted rear vision from the carbon fiber wing on its machined aluminum support struts, and the incredibly vulnerable front splitter.

The front-end received a significant update, with the XKR-S front bumper receiving the carbon splitter that protrudes 2.4" beyond the front of the car, forcing you to park far away from curbs, and to approach every driveway like a crab. It's certainly awkward but nobody likes to hear the sound of carbon fiber cracking!

The splitter is mated to carbon fiber wheel arch extensions ahead of the front and behind the rear wheels. They work in conjunction with dive planes on the front spoiler and an aluminum undertray to increase aero efficiency.

The louvered hood helps evacuate hot air after it has forcefully entered through the nostrils on top of the bumper. The air passes over the intercooling before it's routed over the roof to the double-decker rear spoilers. These include a trunk lip and the elevated wing that work in concert with a carbon diffuser to manage airflow around the rear-end.

Only available in Polaris White with distinctive black graphics and R-S GT badging, the Jaguar cuts an intimidating figure on the road or racetrack. Interestingly, it didn't appear to attract the sort of attention you get while driving an Aston Martin, for example, which we can only assume was because other drivers were possibly deterred by the giant wing.

Chassis modifications were extensive, including new suspension arms, uprights, bearings, bushings and a rear subframe, all based on knowledge gained from the Jaguar F-Type program.

It has a wider front track for stability and

re-valved dampers allow ride height adjustment with the race-style twin coil springs. These are 68% stiffer front, 25% rear than the XFR-S, and have been designed for track-focused handling and responsiveness. However, thanks to the Adaptive Dynamics damping system, the ride quality was remarkably good in its Normal Mode. In fact, the car felt like a comfortable grand tourer, but with virtual no body roll. Hit the Dynamic Mode button on the console and everything becomes more intense. The damping is instantly stiffer, finding more imperfections in the road surface while being responsive to direction changes.

In this mode, the electronic differential also allows extra leeway, allowing the rear-end to move around more, although keeping the back wheels in line was always a challenge, regardless of mode. If the steering is so much as 1° off center and you apply more than 30% throttle, the rear-end will start to come around. It's quickly caught and the XKR-S GT is easily one of the most entertaining cars we've driven in a very long time. It's communicative and offers great acceleration, stopping and cornering force. Yet it doesn't seem to take itself too seriously, happily allowing the driver to play, whether the traction control is on or off.

We were surprised at how easily the Jaguar could overcome the grip of its incredibly wide Pirelli 305/30 rear tires, mounted on 20x10.5" forged wheels – not something that would help us at the drag strip, but a trait we hoped could be overcome.





550hp Jaguar 5.0L supercharged vs 1000whp Chevrolet LSA 6.8L supercharged – yet the contest was closer than you'd expect...



## TECH SPEC 2014 JAGUAR XKR-S GT

### ENGINE

5.0-liter AJ133 Gen III aluminum V8 DOHC 32v, direct injection, dual independent variable cam timing, Eaton twin-vortex supercharger, dual intercoolers

### DRIVETRAIN

Sequential Shift six-speed automatic transmission

### BRAKES

six-piston monoblock calipers, 15.7" carbon-ceramic rotors f, four-piston, 15" r

### SUSPENSION

Adaptive Dynamics active and height-adjustable dampers, stiffened twin-coil springs, wider front track, increased camber, uprated bushings, new steering system, faster steering ratio

### WHEELS & TIRES

20x 9" f, 20x10.5" r forged wheels, 255/35 R20 f, 305/30 R20 r Pirelli Corsa tires

### EXTERIOR

carbon fiber splitter, twin dive planes, diffuser and rear wing, louvered hood, wheel arch extensions, front undertray, trunk spoiler, GT graphics

### INTERIOR

16-way electric Performance seats in leather and suedecloth with R-S GT embroidery, black suedecloth headliner and steering wheel

### PERFORMANCE

#### MAX POWER

550hp at 6000-6500rpm

#### MAX TORQUE

502 lb-ft 2500-5500rpm

#### 0-60MPH

3.9sec

#### TOP SPEED

186mph (limited)

#### WEIGHT

3968 lb

#### ECONOMY

15/18/22mpg (city/combined/highway)

#### MSRP

\$174895 (inc D&D)



We're prepared to say this is probably the only time you'll ever see a Jaguar XKR-S GT in a line for drag racing



20" forged wheels, Pirelli Corsa tires and carbon-ceramic rotors with six-piston calipers



The Jag's aero kit adds positive downforce, although the front splitter was vulnerable to curbs and driveways





With Stephan Papadakis at the wheel and the Jaguar's advanced electronics, it consistently got the fastest starts



We drafted Stephan Papadakis and Robert Baltazar for driving duties, ensuring each car had the best possible chance

The GT was the first production Jaguar fitted with carbon-ceramic brakes, housing massive 15.7" front and 15" rear rotors, clamped by six- and four-piston yellow calipers, respectively. Unlike some other supercars, the brakes didn't snatch, were perfectly linear, quiet and strong from cold. This can be partially attributed to the Pre-Fill system that works in conjunction with the DSC to pressurize the brakes every time the driver lifts off the throttle. It ensured they worked perfectly every time, providing phenomenal stopping power, and giving you the confidence to explore the power and handling limits more thoroughly.

The carbon brakes saved 46 lb from the unsprung weight but Jaguar claims an identical 3968 lb curb weight for the three XKR models, although we suspect this might be for homologation, since the GT should be lighter than the rest...



In a "best of three" contest, the Mazda narrowly beat the Jag

With all that said, we probably wouldn't care if the Jaguar looked and handled like a pig, because its greatest attribute is the exhaust note, making good use of flap technology to be quiet and drone-free under light throttle. Yet it roared like a startled tiger under full load. Unfortunately, our video doesn't do it full justice because it's competing against a barely-silenced Mazda RX-7.

The XKR-S GT is possibly the ultimate tunnel car, filling any cavern with an F1 soundtrack that sent tingles down your spine. In Dynamic Mode it would also pop and splutter on lift-off, and blip the throttle on downchanges, adding to the aural excellence. So while we loved the F-Type V8S, the \$175,000 XKR-S GT has taught the youngster how it's done.

#### THE RACE

The car we'd be competing against was a 1994 Mazda RX-7 from Jordan Innovations in Irwindale, CA. Owner Jeff Jordan had swapped in a Vortech-supercharged LSA V8 on AEM

Infinity engine management. It was rated "in excess of" 1000whp and had a modified BRS Autodesign widebody to ensure it could accept 295/35 R18 Nitto NT-05 tires all the way round, providing ample traction.

Built as a Time Attack racer, check out its ridiculous spec list in the separate panel and you'll see Jeff brought a howitzer to a gunfight. We were hoping for a "chipped" Lexus ISF, or something... Maybe a Scion FR-S turbo... Not a bloody racecar!

With experienced driver Robert Baltazar at the wheel of the "ringer," we decided to level the playing field by enlisting the help of multiple import drag racing champion and drift racer, Stephan Papadakis. He would know the best way to launch the Jaguar and certainly give us a fighting chance.

After a couple of practice launches in the parking lot, experimenting with the traction control, Stephan was pretty confident. "Dude, we've got this in the bag!" he grinned. "Admittedly, I don't know what the Mazda can



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**MARANELLO 410BM**  
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**MODENA 414MB**  
18X8 | 20X8.5 | 20X10



**MAGELLAN 409MB**  
18X8 | 20X8.5 | 20X10







Modified widebody allowed 18x11" tires all round for Time Attack events



You have to admire the engineering required to extract 1000whp from a Chevy V8

do, but there's surely no way it can launch as hard as this..."

As it turns out, Steph's launch technique (a little bit of throttle to prime the transmission, while holding the brakes) and the car's Dynamic Mode traction control was enough to fire the XKR-S GT off the line like an aircraft carrier's steam catapult. It left Robert and the RX-7 in a cloud of wheelspin, made worse with each gear change as the car snaked up Irwindale's eighth-mile. One win for the Jag, which recorded a time of 8.413sec at 91.45mph – a respectable speed for such a short track.

As it transpires, the RX-7 had adjustable traction control, which was switched off for the first run. Crossing the line in 9.514sec at 72.06mph clearly wasn't close to the car's potential, although so much power would always cause traction problems – something we secretly hoped couldn't be completely resolved that night...

For the second run, Jeff activated the traction control, then encouraged Robert to warm the tires with a full burnout, and he duly obliged. Meanwhile, Steph avoided the water and snuck through the burnout box to wait for Robert at the start line. With all its electronics, he saw little need to warm the Jaguar's tires and risk the transmission.

As the lights went green, both drivers were already on the power. Steph's incredible timing – he claims to see when each filament in the starting tree bulbs are going out – combined with the Jaguar's Dynamic Mode traction control and shift patterns, saw it again launch hardest and fastest. Steph's reaction time was an impressive 0.218sec, compared to Robert's 0.574, but this time the RX-7 had hooked up.

It was ahead by the 60ft mark, and at 330ft, and crossed the finish line first with a time of 8.03sec at 92.51mph, compared to 8.863 at 88.9mph for the Jaguar.

## MAZDA RX-7

As an electronics specialist, Jeff Jordan created Jordan Innovations to cater to the import tuner crowd, with a number of products crossing over into other markets. His '94 FD3S Mazda RX-7 originally had a 450whp LS6 V8 swap in 2010, but was upgraded to its current 1000whp LSA V8 for SEMA 2013. The powertrain swap and upgrades were designed by Jeff, who shared the machine work and assembly with Millennium Motorsports.

The car was designed specifically for Time Attack events, where the original bodysheet, suspension mounting points, etc must be retained but powertrain and aero mods were unrestricted.



### TECH SPEC

#### 1994 MAZDA RX-7

##### ENGINE

LSA aluminum block bored to 4.065", doweled billet main caps, Callies Magnum 4" crank and 6.125" Ultra Billet rods, asymmetric JE FSR -5cc pistons, ACL race bearings, ARP Pro Series studs and bolts, GM MLS gaskets, Comp Cams boost cam, double-roller billet timing set, short-travel race lifters, trunnion bearing rocker upgrade and front cover, Improved Racing oil pump baffle, Jordan Innovations oil filter relocation, Accusump and oil cooler, West Coast Cylinder Heads CNC ported heads, 10.25:1 compression 75cc chambers, hollow-stem stainless steel valves, double valve springs, titanium retainers, Manton pushrods, GM LS3 intake manifold and DBW throttle body, Vortech V7-YSI supercharger with Camaro bracket and 50mm cog drive, 80-tooth crank sprocket, 28-tooth blower sprocket, Turbosmart Big Bubba 50mm BOV, PowerGate 60mm wastegate, Jordan Innovations intercooler and piping, AEM Infinity engine management, Injector Dynamics ID2000 injectors, FAST fuel rails, Bosch 044 pump, Jordan Innovations surge tank, Fuelab 424 pump, filters and 529 digital regulator, 10an/8an feed/return hard lines, Jordan Innovations mil-spec harnesses and gauges

##### DRIVETRAIN

RPM Transmissions Level VII TR6060 transmission, cryo-treated, micro-polished with billet shafts, ACT twin-plate clutch, Driveshaft Shop aluminum CV shaft, Ronin Speedworks Explorer 8.8:1 IRS diff and axles

##### BRAKES

stock with Hawk Blue pads

##### SUSPENSION

custom-valved Öhlins DFV coilovers, Swift springs, Jordan Innovations tubular sway bars, Samberg bump steer spacers

##### WHEELS & TIRES

18x10" ET +0 f, 18x11" ET -19 r Work V5-XX wheels, 295/35 R18 Nitto NT-05 tires

##### EXTERIOR

modified BRS Autodesign body kit with Andrew Brilliant/AMB Aero front splitter and diffuser, APR rear wing

##### CONTACT

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## ROBERT BALTAZAR

With racing in his blood, Robert started karting aged 8, continuing for six years before getting into drag racing with a '66 Barracuda. After college he joined the US Navy as a Firefighter before attending the Skip Barber School in Laguna Seca when he got out. That led to his involvement in Time Attack road-racing, which he continues to compete in, as well as SCCA autocross and time trials.



## STEPHAN PAPADAKIS

Growing up racing on the streets and tracks of Southern California in a modified Civic hatchback, Steph was part of the underground subculture that developed into the import tuner scene. He legitimized Papadakis Racing (and the new sport compact drag racing scene) by developing the first tube-chassis FWD drag car in the US. His AEM Drag Civic set the standard, winning Pro and Outlaw class championships with what became the world's fastest FWD racer.

In '03, Steph again made history in the AEM/DriverFX.com Civic, setting records as the world's fastest sport compact and quickest Honda with a best ET of 6.71sec at 207.8mph. He would subsequently build other cars and continue to improve his time, racking up more wins and honors. This would open the door to the professional Formula D drifting series, where he won "co-rookie of the year" in '05.

The following year, Papadakis would manage the team and oversee Tanner Foust when he took FD championship titles in '07 and '08. The drift team continues and Steph was awarded 2012 Formula Drift team manager of the year but he also climbed behind the wheel of a Pro Lite Unlimited Class off-road truck in 2010, competing in the Lucas Oil Off Road Racing Series where he hopes to create another dynasty for Papadakis Racing.

Unfortunately, we don't have space here to list all Stephan's achievements, so visit [papadakisracing.com](http://papadakisracing.com) for the full breakdown.

## IRWINDALE SPEEDWAY

The Irwindale Speedway and Event Center are at the heart of motorsport activities for the greater Los Angeles area, providing everything from short-track oval racing to eighth-mile drag racing, karting and driving school activities. It's also the spiritual home of drifting, with the national finals held here every year.

A number of major shows are held at Irwindale each year, including hot rod and air-cooled VW events. There used to be some Euro gatherings as well, but these seem to have faded away. Unfortunately,



the track website doesn't list the events but its Facebook page usually has details. Visit [irwindalespeedway.com](http://irwindalespeedway.com) for more info.



Despite a good launch, the GT was significantly slower than its previous run, so Steph decided to try a manual launch on his third attempt. He extinguished the traction control altogether and would shift with the paddles himself.

So as the cars lined up, with one win apiece, this was the decider. Would power beat finesse? Could Steph uphold Euro honor?

The amber light sequence flashed and engine revs reached a crescendo as the green illuminated. The rear wheels on both cars were already spinning and again Steph got the jump. His reaction time was just 0.181sec and, for the third time of asking, the Jaguar was out of the blocks first.

By the 60ft mark, they were still close, but the RX-7 had pulled level, gaining a 0.5sec advantage by the 330ft mark. With minimal wheelspin, the Mazda dispatched the eighth-mile track in 7.783sec at 90.79mph, pulling out a couple of car lengths over our plucky Brit.

With a time of 8.421sec at 92.8mph, it was a similar run to the Jaguar's first attempt, but this time it had been convincingly beaten.

Away from the track, Stephan suggested,

"I might be able to improve the time by a couple of tenths, but so can the RX-7. I'm sure there's no way I could find the 0.6sec I'd need to have beaten him this time, and that's assuming he doesn't get any faster."

At this point, we realized we should have requested a "best of five" runs contest because the race officials excluded the Mazda for exceeding the noise restrictions with what could best be described as a painful exhaust note. We'd have happily won by default!

So in the end, our 1-of-25, \$175,000, 550hp Jaguar XKR-S GT succumbed to what was, in reality, a one-sided fight. It put up a valiant effort but couldn't overcome the RX-7's power and weight advantage. However, it proved that the Jag is anything but a high-strung exotic. It's capable of being down 'n dirty, and we could have run all night against modern Detroit iron that would have been closer competitors. However, we decided to save the Jaguar's time slips as a memento of what will surely be the only drag racing exploits ever attempted by the XKR-S GT; happy to have both taken part in a historic occasion and to have caught it all on camera and video. **EC**





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## STATUS





**IF YOU'VE EVER SEEN** a Porsche Supercup race, you've probably wondered how you'd fare in the Porsche's GT3-based spec series. And if you haven't, then you must have thought about what it would be like to drive one of these cars on the street...

In fact, you can get a fairly good idea of what a Cup car is like if you've been fortunate enough to drive the 911 GT3 RS, because it's actually the basis for the GT3 Cup cars used in the Supercup series. The biggest difference between the Cup car and GT3 RS are the transmissions (sequential for the racecar) and about 400 lb in weight (2646 lb race vs 3020 lb road).

I'm sure most of us would be happy with a stock GT3 RS – one of the most focused and least compromising production cars you can buy. But some people, like John Mendoza, don't want to settle for second best. They want to know exactly what it would be like to drive a Cup car, so he did something about it...

His quest to build his own GT3 Cup car started when he loaded his 2007 997.1 GT3 on a trailer bound for Tennessee, signing the title over to the new owner. And in a classic case of not knowing what you've got until it's gone, it didn't take long for him to start longing for another one.

FIA-approved rollage was sourced from Belgium and, like the OMP steering wheel, are genuine Cup parts

He went one step further, though, and put his name on the list at his local Porsche dealership for the yet-to-be-unveiled 991 GT3. But once he discovered the new car would only be available with Porsche's dual-clutch PDK transmission, he cancelled his order, preferring the connection and control of a manual shift more than the automated one.



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Recaro Pro Racer seats are light enough to counteract added weight of rollcage

Back on the hunt, he started looking for a 997.2 GT3 RS, eventually finding the right example in Florida. It was in Carrera white with red decals and had the lightweight halogen headlights rather than the heavier HID's.

Once in his possession, Mendoza stripped off the vinyl, bringing it closer to the GT3 Cup car. He then added a Cup front splitter, which extends 15mm lower than the stock part to increase downforce. After that, he swapped the reclining carbon fiber seats, which weigh 39 lb each, for a pair of European-spec GT3 Clubsport seats (the same as fitted in the Carrera GT). Apparently, they cost a mind-blowing \$20k, or what we call a down payment on a house!

The next swap was from the stock rear spoiler to the Cup wing. It sits considerably higher, measuring 66.9" to the road car's 57.5".

It certainly makes a statement and both the splitter and wing came directly from Porsche Motorsport, costing about \$5300.

A few weeks later, he got his hands on a titanium Akrapovic Cup exhaust from Aleks Doba at Alekshop in Fremont, CA. The \$7k system was good for an extra 8hp at 3970rpm and, because it does away with the OEM side mufflers, weighed 46.3 lb less than the stock – further improving the performance.

Shaving weight was important because he'd add some with the FIA-approved, European Club Sport, six-point rollcage from Carnewal in Belgium. Installed by Mike Tolle at Tolle Fab in Rancho Cordova, CA, the \$10k cage would add 84 lb, but the increased rigidity and safety was Mendoza's main concern with his intention to use the finished car on the track.

## TECH SPEC 2011 PORSCHE GT3 RS

**JOHN MENDOZA**  
Sacramento, CA  
Firefighter

### ENGINE

3.8-liter, flat-six-cylinder 24v with Sharkwerks/ EVOMSiT software, titanium Akrapovic Sports Cup exhaust

### DRIVETRAIN

six-speed manual transmission with CAE short-shifter

### BRAKES

stock

### SUSPENSION

stock

### WHEELS & TIRES

18x9" f, 18x12" r BBS Motorsport wheels, 245/40 R18 f, 335/30 R18 r Michelin Pilot Sports 2 tires (street) or 245/40 R18 f, 305/35 R18 r Nitto NT01 tires (track)

### EXTERIOR

911 GT3 Cup front splitter and rear wing

### INTERIOR

Recaro Pro Racer seats, Porsche Clubsport six-point rollcage, Porsche Motorsport OMP steering wheel

GT3 RS wears the Cup racer's genuine front splitter, rear wing and 18" BBS Motorsport wheels





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CAE shifter retains H-pattern but looks like sequential racing shifter

Vehicle owner, John Mendoza, is friends with Akira Nakai from RWB, who signed the car and approved the windshield banner, welcoming his GT3 RS into the RWB family



The next step was swapping the stock steering wheel for a lighter OMP part from Porsche Motorsport, attached to a Works Bell short hub and Rapfix II quick release.

Then came a CAE shifter from Germany. At first glance it looks like a sequential shifter but actually retains the H-pattern of the stock transmission. The lever is taller, placed closer to the steering wheel for quicker access and Mendoza said the action was “like a rifle bolt.”

Wheels are vital to any project build and John was able to purchase the same BBS Motorsport wheels as used on the GT3 Cup car. They help shed some unsprung weight, tipping the scales at 22.2/23.4 lb front/rear versus 23.5/28 lb for the stock rims.

The wheels were purchased through our

friend Eric Nareshni at Supreme Power Parts in Placentia, CA, costing about \$1600 per corner. He also provided the tires, which are 245/40 and 335/30 Michelin PPS2 on the street. The car runs a second set of 18s at the track, fitted with 245/40 and 305/35 Nitto NT01 rubber.

To date, the suspension remains stock, the GT3 RS set up stiff enough for its intended use, although John plans to upgrade to RSS control arms in the near future.

As a production engine with one of the highest horsepower-per-liter figures in the world, the 450hp 3.8-liter RS motor didn't have much headroom for improvement but John took it to Sharkwerks in Fremont, CA nonetheless. They fitted the EVOMSit software that was reportedly good for another 16whp

and 13 lb-ft on 91-octane gas with the stock exhaust. Throw in the Akrapovic system and the engine should be good for an extra 25-30hp to the crank.

As a final flourish, Mendoza revisited his choice of seats, deciding to remove the pricey Carrera GT items in favor of ultra-lightweight Recaro Pro Racer seats. Manufactured in carbon/kevlar and supplied by Griffin Motorwerke, they weigh a scant 10 lb each, counteracting the inclusion of the rollcage.

Some \$43k later, John now has a faster, stiffer and more stable 911 GT3 RS, highlighted with genuine Cup parts and a selection of topnotch components. While that's a heavy budget, he can claim that he now knows what it's like to drive a GT3 Cup car on the road. **EC**



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# VON HOLLEN'S EXPRESS

ONE MAN'S QUEST  
TO CREATE A 1000HP M3

WORDS JUSTIN FIVELLA  
PHOTOS STEPHEN BROOKS







**THERE ARE PARTS OF CANADA SO RURAL,** A DIEHARD GEARHEAD COULD LIVE HIS ENTIRE LIFE WITHOUT EVER SEEING AN E46 M3. HOLD THAT THOUGHT FOR A SECOND – *NEVER SEEING ONE IN PERSON, ONLY IN MAGAZINES AND ONLINE!*

Such was the case for Kenton von Hollen. He'd never seen one until he actually bought an M3. For all he knew, it could have been a unicorn, but that didn't stop him from believing and buying a 2003.5 BMW M3 in Imola Red.

"I've always been a car guy, having owned a built Z31 300ZX with a big turbo as well as a Duramax diesel truck that made over 1200 lb-ft. But I'd always wanted a European car because they seemed more sophisticated, comfortable and fast but could haul my family," von Hollen said. "I live in a rural province of Canada (Alberta) that's bigger than California yet only has three car dealerships. It's the kind of desolate place where you don't see performance cars too often," he added.

As a result of his geographical location, he'd never laid eyes on a real E46 M3 until the day he bought one.

"I'd never seen one, but based on everything I'd read, I knew it was the car for me," Kenton confirmed. "I can still remember the first time I drove it. The handling was out of this world and it was built so well. It was everything I'd hoped for," he added.

Call it fate, but the Imola coupe was only one hour away from his home, tucked away in another small town off the beaten path. The original owner had only driven the pristine M3 during the summer, and a mere 55000 miles were registered on the clock. "Like most good car stories, I initially wanted to keep it stock. But when I turned to the internet for information, the upgrades ignited from there," Ken said.

What started as as simple fishing expedition into E46 car care and maintenance was transformed into a Horsepower Freaks (HPF) turbo build in no time flat.

"After learning everything I could about the E46 M3 on the forums and in magazines, I decided to look into performance mods, and before long I was dead-set on a turbo kit," Ken said. "Shortly after talking to HPF, I scheduled an appointment and drove the car down to Portland, OR for the install," he added.

Two short months after buying the car, he was about to embark on a journey that would begin with a Stage 2 turbo kit. Five days after delivering the car at HPF, it was making







HPF turbo kit morphed into a custom, high-compression, 1000hp conversion thanks to Labb22, M&B Cylinder Heads, a Precision turbo and AEM standalone

600whp with methanol injection and 110-octane leaded fuel.

As luck would have it, on his long drive home, von Hollen cooked two pistons in the motor. The loss of compression was traced back to a faulty boost controller and a malfunctioning fuel pump.

Depressed by his bad fortune, von Hollen was unwilling to admit defeat and wasted little time having M&B Cylinder Heads build him a low-compression short block. When run on the same 110/meth combo, it made 680whp with an extra 100 lb-ft of torque compared to when the bottom-end was stock.

As with many parts of this build, bad luck was lurking around the corner. This time it metamorphosed as a rogue turbo that would grenade his exhaust system.

"The day I got the built-motor back, the exhaust wheel on the turbo sheared off and destroyed the exhaust system and several other components. Thankfully, the debris went downstream and not into the motor," he added.

Learning to look for the positive is an essential trait if you're going to stick with a build of this caliber. So a replacement 67mm turbo was the quick fix, but Ken was now hell-bent on perfection, and the thought of another failed turbo led him to a dual-ball bearing Precision 7168 turbo with billet wheel that kicked the boost to new levels.

How much? Try 620whp on pump gas and 800whp with race gas and meth.

## AEM

In this form, our Canadian friend was able to amass more than 20,000 miles driving throughout Canada, cruising down to California, and even hitting track days and Shift S3ctor's half-mile races.

"I took the car everywhere, from airfield events to the drag strip and even road courses. Naturally, I turned down the boost for the latter, but it was a ton of fun and I soon got hooked on track days," he said.

Like all gearheads, enough is never enough,

## TECH SPEC 2003 BMW M3

### KENTON VON HOLLEN

Alberta, Canada  
Oil Field Engineer

### ENGINE

3.2L straight-six 24v S54 motor with M&B Cylinder Heads and Lab22 built motor with 11.5:1 Wiseco pistons, Crower rods, heavy-duty wrist pins, balanced crank, M&B head, Supertech valve springs, Dr Vanos rebuilt Vanos with cryogenically-treated exhaust hub, Steed Speed CNC'ed exhaust manifold, HPF scavenge oil system, Radium catch can, Lab22 black anodized FMIC, intake manifold and pipe, 71mm Precision PT7168 billet turbo, 44mm Tial wastegate, twin HKS SSQV blow-off valves, AEM Infinity engine management, Walbro 255LPH in-tank pump, ID2000cc Injectors, Radium multi-pump surge tank with twin Walbro 400 E85 fuel pumps, PTFE lines and anodized fittings, Flex Fuel ethanol sensor, fuel temp and pressure sensors, Vibra-Technic engine mount

### DRIVETRAIN

six-speed manual transmission with OS Giken R3C triple-disc clutch and lightweight flywheel, Autosolutions short shifter with race bushings, ZHP illuminated shift knob, reinforced subframe, Driveshaft Shop Level 5 axles, Vibra-Technic transmission mount

### BRAKES

Brembo monoblock six-piston calipers, 355mm grooved rotors f, four-piston, 345mm r, Ferodo DS2500 street pads, Cobalt Friction XR1/XR3 track pads

### SUSPENSION

TCKline dual adjustable coilovers, camber plates, Powerflex subframe and control arm bushings

### WHEELS & TIRES

18x9" ET 35 f, 18x10.5" ET 27 r Apex ARC-8 wheels, 5mm front spacers, 265/35 R18 f, 275/40 R18 r Toyo R888 tires

### EXTERIOR

widened rear fenders, BMW CSL trunk, carbon fiber front splitters, painted reflectors, smoked LED turn signals, Depo smoked corners, black hood and kidney grilles

### INTERIOR

AEM wideband and boost gauges mounted in rearview mirror, custom pedal covers and clutch stop, LED lighting

### AUDIO/VISUAL

Dynavin D99+ head unit, JL Audio 10W3V3-2 subwoofer and XD700/5 amp, GAS E46 H/K crossover

### THANKS

Lab22, John Truong, Ryan Champ, Chris Nguyen, Joey Letcher, M&B Cylinder Heads, Radium Engineering, AEM Performance Electronics, ApexRaceParts, DERMotorsports, German Audio Specialties, Bill Hall Body & Frame, Marcus Olson

so von Hollen wisely chose to upgrade the fuel system next. "I upgraded to PTFE lines, a Radium multi-pump surge tank, twin Walbro 400 E85 pumps, a Fuel Lab filter and pressure regulator along with a Radium rail and Injector Dynamics ID2000 injectors," he said.

The fuel upgrades were finished the night before Shift S3ctor 3, where the car again threw down 800whp, but this time on ethanol rather than the race gas/methanol combo he'd been previously using. Fresh from the dyno, the M3 claimed the title of "Fastest BMW" with a speed of 178mph.





AEM wideband and boost gauge displays concealed in rearview mirror

As you'd guess, Ken was just getting started. His next modification would ultimately become one of his favorites: the plug-n-play AEM Infinity standalone engine management system. "The Infinity opened a lot of tuning doors because it allowed us to control every OEM feature, even the Vanos. We could also tune for different fuels and it helped increase power throughout the rev band. It even made it more drivable!" von Hollen said.

Along with the AEM Infinity, a flex-fuel sensor and fuel pressure sensor were added to take advantage of the standalone's ability to switch maps. "With the standalone and sensors I can run whatever concentration of ethanol I want without having to drain the tank. It's brilliant!" von Hollen exclaimed.

The addition of the AEM ECU kicked power past 900whp and 700 lb-ft on E90 ethanol, or 680whp on pump gas.

As a testbed for AEM and many other parts, the car has withstood more than 250 dyno pulls, thousands of street miles, and plenty of full-throttle track outings. Like all good things though, it eventually came to an end when the head gasket blew.

#### LAB22

As he'd done before, Ken took a bad situation and turned it around, deciding to build a high-compression motor. In fact, the team at Lab22 removed the old motor and installed its new high-comp replacement in less than a day.

"The Lab22 guys were phenomenal and crucial to the car, both from tuning and tweaking, to the installation of the motor. They also designed the turbo system upgrades. I've got nothing but good things to say about them," Kenton said.

With some additional cylinder head work to

the new 11.5:1 motor, it easily made 925whp on E75 and 25psi boost pressure just days before Shift S3ctor 4. Although they didn't increase the boost until the event, the same combination in another M3 made 1040hp at the wheels on E90 ethanol with more boost.

"The car is so docile but it absolutely flies. It's so fast that it's genuinely hard to describe. Thank goodness I upgraded the brakes early on when the first turbo setup overcooked the stock brakes following some high-speed pulls. That was scary, to say the least," Kenton said.

His binders of choice are six-piston Brembo monoblock calipers up front with 355mm rotors, while a four-piston/345mm combination was fitted in the rear.

For suspension, TCKline dual adjustable coilovers and camber plates plus Powerflex bushings keep the M3 pointed straight. And when it came to putting the power down, von Hollen has been ecstatic with the sticky Toyo R888 tires. Apparently, they hooked up so well, the rear subframe had to be reinforced. Extra precautions were taken with Level 5 axles from Driveshaft Shop as well as an OS Giken R3C triple-disc clutch and lightweight flywheel to turn all that power in into forward motion.

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Six-piston Brembos were an early upgrade after the stock brakes melted on some high-speed runs



The car carries a significant sound system but it uses quick-release connectors for track-side removal



Black grilles, FMIC and carbon splitters aren't really enough to indicate this car could eat you alive

race bearings from Autosolutions. It's one of my favorite mods because it transformed the shifting and I'm reminded of it every time I change gear," von Hollen said.

As with its mechanical upgrades, even the cosmetic modifications are hard to spot. "I wanted more tire for better traction, so had the rear fenders widened 0.8" on either side. They retain the stock appearance, so you have to look hard to notice them," Ken said.

Easier to spot are the black kidney- and hood grilles, along with the smoked LED tail lights, corners and the CSL trunk lid.

Inside, you'll find more subtle touches and a significant stereo, but once again, it's not exactly the norm. "I wanted a killer stereo but needed it to be easily removable for the track, so it utilizes a quick-connect system that allows me to remove everything in 5min," Ken told us.

Some might wonder why you'd fit a stereo in a purpose-built car like this, but Kenton had it nailed: "I've owned the car almost three years and, despite all the motor problems, I've driven more than 35000 miles. I just can't get enough of it. At the end of the day, I just want to drive it and enjoy every mile." **EC**



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# V W i O

STEFANO TRINGALI'S  
VW GTI RETURNS  
WITH A WIDEBODY  
AND BIG TURBO

WORDS JUSTIN FIVELLA PHOTOS JORDAN DONNELLY



**THERE ARE SEVEN TRILLION** (that's nine zeros for those counting) internet users worldwide. That's a ton of online daters, gamers, too many kitten searches and plenty of LOL, SMH and WTF. And this VW GTI owes much of its existence to the web...

"Blue hadn't been available since the Mk4 GTI and because I missed it so much, I drummed up tons of signatures through an online petition in the hope of getting VW of America to bring back the blue paint for the Mk6 GTI. I even went so far as to say I'd buy one if VW made the color available!" Stefano Tringali told us.

Whether VW heard the cries will forever be part of web lore, but Tringali put his money where his mouth was and bought a Shadow Blue GTI of his very own. Actually, he initially leased it, but later had no choice but to buy it...

"I was originally content to add coilovers and wheels but then I heard that a good friend was selling his air-ride and, as they say, the rest was history," Stefano continued.

Speaking of history, regular readers might remember this car from *EC 12/12* but it's changed significantly since then. "I get bored easily," he laughed. "I just can't leave things alone. But after the last round of mods, I was finally happy with it."

If you recall the first feature, the GTI retains its Air Lift XL front and Firestone rear air components with Tokico shocks, dual compressors and V1 management. It also has the custom rear valance with VW Touareg exhaust tips and, well, that's about it.

"Before the first round of mods, I was content to keep it light so I could return it to stock when the lease was up. But after the addition of air-ride, everything changed."

The VW Golf R front bumper would spawn a second round of upgrades. "I fell in love with the 'R' bumper and had to have it. But once it was shaved and installed, suddenly the side skirts looked odd," he said.

So it was out with the old and in with the

new. The previous Thunder Bunny skirts were traded for Golf R parts and, at the same time, he decided to take the leap he dreamed of since day one. "I always wanted to add wide fenders, but realized the difference between too much and too little is miniscule. But after careful consideration, I decided to start with widebody front fenders from SRS-Tech," he explained.

To the untrained eye, these fenders look stock, but aficionados will note that while they preserve the factory lines, they're 1.5" wider.

At that point, the rear flanks were now puny, so Danny Colavecchio at Slammered Inc in Davie, FL cut and pulled the rear metal by 1.5" for a more uniform look.

Another cool touch is the carbon fiber rear diffuser, sourced from a Japanese company now reportedly out of business. But it houses a pair of triangular tailpipes imaginatively taken from the VW Touareg.

With an exterior this sweet, the interior had better be as good. "Kip Love at Love's Trim







APR K04 big turbo, Forge Twintercooler, BSH intake and custom 3" exhaust are among the owner's favorite mods



## TECH SPEC 2010 VW GTI

**STEFANO TRINGALI**  
Fort Lauderdale, FL

### ENGINE

2.0L four-cylinder 16v FSI turbo with APR K04 big turbo kit, Forge Twintercooler, BSH cold-air intake, custom 3" exhaust with Magnaflow muffler, 2012 VW Touareg tips, SPM motor mounts, painted engine cover and accents

### DRIVETRAIN

stock six-speed manual with Spec stage 2 clutch and flywheel

### BRAKES

stock

### SUSPENSION

Air Lift XL front bags, Firestone rear bags on custom mounts, Tokico shocks, dual Vair 444s compressors, AutoPilot V1 controller, eight-gallon air tank, quick connector for air tools, notched subframe, front anti-roll bar removed

### WHEELS & TIRES

19x9.5" ET33 f, 19x11" ET24 r VIP Modular VX110 wheels with aluminum faces and chrome lips, 215/35 R19 f Nitto NeoGen, 235/35 R19 r Achilles tires

Peanut butter leather was applied to the seats, door cards, armrest plus the shift and e-brake boots

### EXTERIOR

shaved VW Golf R front bumper and side skirts, SRS-Tech flared front fenders, cut and pulled rear fenders, hood notch filled, badgeless grille, carbon fiber rear diffuser, rear wiper delete, 6000K HID Xenon headlights and foglights, European-spec Golf R LED tail lights, blue-glass door mirrors, color-matched antenna, OEM VW Shadow Blue paint

### INTERIOR

peanut butter leather retrim with diamond stitching on front and rear seats, door cards, armrest, shift and e-brake boots, painted dash trim, custom-mounted air controller, New South Performance vent boost gauge, penny shift knob, false trunk floor for air components, covered in 2011 pennies

### THANKS

Kip Love at Love's Trim Shop (on Facebook), Danny Colavecchio at Slammered Inc (slammered-inc.com), Alex and Marcela at EuroSpec Motorsports (on Facebook), Steve, Justin, Arie Abrams





Eight-gallon air tank is submerged in the false floor that's covered in pennies



Golf R bumper triggered a second round of modifications. It scrapes the ground thanks to Air Lift XP front- and Firestone rear bags with Tokico shocks, Viar compressors and an AutoPilot controller

Japanese-sourced carbon fiber rear diffuser outlines the VW Touareg exhaust tips

Shop in Georgia did the peanut butter leather interior with custom stitching and color-matched interior trim. It also matches the air-ride display in the trunk that has peanut butter and copper accents," he explained.

You'll also notice that the infamous penny trunk lining remains – a feature that got Stefano so much attention when the car first appeared on the scene.

You might imagine that the stance and widebody would be Tringali's favorite aspects, but you'd be dead wrong. "Stepping up to the APR K04 turbo kit was a night and day difference from the previous stage 2," Stefano explained. "It was startlingly quick and easily my favorite mod because it made the car so much fun to drive."

You see, Tringali might have constructed a show-winning car, but it was built to be driven. "I put 65000 miles on the car in three years, hitting SoWo three times, H2O twice, Euro Tripper and a ton of local shows," he explained.

If you've noticed the past tense, it's because Tringali decided to part with the GTI after three glorious years. "I sold it to another enthusiast in Oregon who loves it and although I recently bought an '05 VW Rabbit as the next project, I still miss the GTI," he said.

When asked what he missed most, Stefano admitted it was simply driving it. With its big turbo and widebody styling, there's no escaping the fact that any VW, no matter how different they might be, is still a driver's car. **EC**



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# M20 EVOLUTION INFLU

PUSHING THE LIMITS  
OF THE 328i'S 2.0L  
N20 TURBO MOTOR

WORDS & PHOTOS PETER WU

**CLEARLY FRED SU**, the owner of Evolution Racewerks, knew something I didn't when he declined to ride shotgun during my test drive of his modified 328i. "Motion sickness," he claimed, but there was more to it than that. . .

Having just completed a full line of upgrades on his '12 F30 328i, Su knew he had created a monster and was concerned that a ride in the passenger seat would induce terror rather than motion sickness.

This ER 328i first appeared in *EC* 10/12 as the test mule for Su's new intake and downpipe. Coupled with a Burger Motorsports Juicebox engine management system, the setup netted an average of 35whp and 36 lb-ft over the baseline, resulting in best dyno runs of 271whp and 292 lb-ft of torque. To give you an idea, these numbers produced by the N20 2.0-liter four-cylinder turbo engine are similar to or better than we've seen from the stock N55 3.0L six-cylinder turbo.

Since that first test, Evolution Racewerks added its new intercooler, charge pipe and exhaust system. Burger Motorsports also introduced a stage 2 tune for the car to exploit the lower intake temps.

The new ER intercooler has double the frontal surface area of the stock part. It measures 20x11" (versus 20x5.5" stock) and features high-density bar-and-plate cores with more cooling fins than regular intercoolers (18-20 fins per square inch vs 14-16 fins/sqin stock).

The new charge pipe has been made from 6061 aluminum and was, therefore, stiffer than the stock plastic pipe, which was never designed to handle higher boost pressure. The new part was also mandrel bent for smoother airflow, benefiting turbo and throttle response.

The new exhaust is referred to as a "modular" system. Its 3" stainless steel piping was cut in sections of standardized length that can be attached with V-band connectors, allowing easy changes between the downpipe, mid-pipe and rear sections. It means owners can switch from a street exhaust with mufflers to a track setup without mufflers in as little as 5min.











Evolution Racewerks intercooler, charge pipe, intake, downpipe, exhaust and Juicebox ECU produced 312whp and 355 lb-ft, making it the one of the most powerful 328i to date

The Stage 2 Burger Motorsports software raised boost from 21psi to the 23.38psi it registered during the strongest dyno run we witnessed on the European auto source Mustang Dyno.

With its new parts, the 2.0L turbo motor produced an impressive 312whp at 5400rpm and 355 lb-ft at 3100rpm. This amounted to a gain of 51whp and 63 lb-ft to the wheels.

Even with its improved air flow, drivability hasn't suffered. It still only required a light throttle and little boost for the twin-scroll turbo to blend into stop-and-go traffic. A look at the dyno graph showed there was slightly more torque than stock at 2100rpm and, by

2500rpm, ER's setup gave more than 300 lb-ft at the wheels. This was more than the stock 335i produced at maximum and dwarfed the stock 328i maximum output of 220 lb-ft.

Fred Su confirmed that his test showed the dual exhaust sacrificed some torque in the low- and mid-range when compared to a single-pipe system, but the dual setup made better power in the second half of the rev range. Consequently, ER offers both single- and dual-pipe exhaust systems for the F30 328i.

As one of the most highly modified N20 conversions available, when you want to achieve serious speed, the Evolution Racewerks engine responds willingly. It provides a hefty

shove of torque that transitions to horsepower as the revs climb. Yet with power peaking at 5400rpm, and seeming to drop off quickly after that, you don't have to redline the engine. Instead, we would short-shift to keep the motor on the boil, then glance at the speedo to realize you're making the kind of progress normally associated with BMW's M products.

The speed is deceptive, as the F30 chassis is extremely composed. Yet ER tightened it further with a set of CKS C1 coilovers that utilized Swift springs and wider 235/35 front and 265/35 R19 rear Toyo Proxes T1 Sport tires. These were mounted on 19x9" front, 19x10" rear MORR VS8.2 flow-formed wheels.





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Exterior upgrades include a custom LTMW front bumper, BMW M Sport rear bumper, skirts, trunk spoiler and a BMW 335i rear valance



During our drive, the coilovers were set at six on a scale of ten, making them well suited to both daily driving and high-speed work, especially since the lighter N20 helps the car turn-in to corners more eagerly than the heavier 335i. While the Toyos stuck like fresh epoxy resin, holding a tight line through all kinds of turns.

Slicing through a series of long, fast, sweeping turns at ridiculous speed was easy, with only your comfort level with nearby guardrails, canyon walls and steep descents governing

the pace. And after several miles of exploring the car's limits, it was easy to understand why Su declined the ride-along. Yet he should have known the six-piston Brembo front calipers, along with braided lines meant the brake pedal provided a strong bite and good modulation.

On the outside, ER's 328i was the epitome of clean, featuring subtle but distinctive touches such as the 6 Series M Sport front bumper conversion executed by our friends at LTMotorwerks. It fuses the 645i M Sport bumpers' lower section to the stock 328i upper.



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ER's dual exhaust sacrifices some low-end torque for high-RPM power. It sits in a 335i rear valance



19" MORA wheels with Toyo tires, Brembo BBK and CKS coilovers

The car also wore a pair of BMW M Sport side skirts, carbon fiber rear spoiler and rear bumper with a 335i dual outlet valance and diffuser. The overall effect was a car that gets itself noticed but without fully hinting at its true speed potential.

Many people lamented the loss of the normally aspirated straight-six engine when BMW introduced the N20 2.0T in the F30 328i but, with emissions and fuel economy regulations getting tougher, the BMW turbo engine is winning many fans. And while it lacks the smoothness of the N55 engine, ER's tuning program shows that extracting more power is a lot easier than the comparatively small gains you'd get from an ECU tune and exhaust on the naturally aspirated motor. With the right parts, the power gains are similar to a mildly-modified N55. So for minimal expense, you can punch with the heavyweights while benefiting from improved cornering and better economy that the 328i provides. **EC**

## TECH SPEC

### 2012 BMW 328i

#### EVOLUTION RACEWORKS

Baldwin Park, CA

#### ENGINE

2.0L N20 four-cylinder 16v turbo with Evolution Racewerks intercooler, Competition Series charge pipe, intake, Competition Series 4" downpipe and modular exhaust system, Burger Motorsports stage 2 Juicebox ECU

#### TRANSMISSION

stock six-speed manual

#### BRAKES

six-piston Brembo front calipers, 355mm two-piece slotted rotors

#### SUSPENSION

CKS C1 coilovers, Swift springs

#### WHEELS & TIRES

19x9" f, 19x10" r MORA VS8.2 flow-formed wheels, 235/35 R19 f, 265/35 R19 r Toyo Proxes T1 Sport tires

#### EXTERIOR

LT Motorwerks custom front bumper, BMW M Sport side skirts, carbon fiber trunk spoiler and rear bumper with BMW 335i rear valance and diffuser

#### INTERIOR

BMW M Performance carbon and alcantara shift knob

#### THANKS

Kip Love at Love's Trim Shop (on Facebook), Danny Colavecchio at Slammered Inc (slammered-inc.com), Alex and Marcela at EuroSpec Motorsports (on Facebook), Steve, Justin, Arie Abrams

#### CONTACT

evolutionracewerks.com

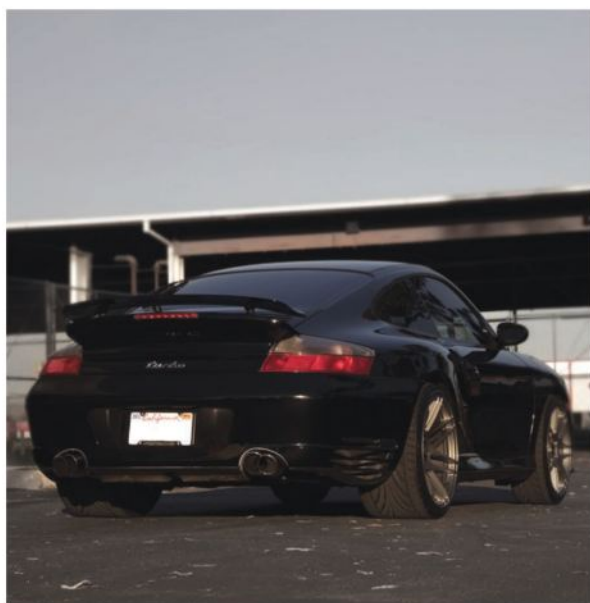


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# FAHRENHEIT

## **AUTODROMO INTERNAZIONALE ENZO E DINO FERRARI** (AKA Imola

circuit) is the infamous Italian racetrack near the town of Imola and a jaunt up the highway from the Ferrari factory in Maranello. It's an unforgiving and blindingly fast 17-turn circuit known as much for its flat-out speed as for its uncompromising nature. It's a special place with a rich history of photo-finish championships and tragic crashes. But what does this legendary racetrack have in common with an aired-out Jetta? It's simple, the Jetta is number 993 of 1200 Imola Yellow Fahrenheit GLIs ever produced.

It might be a stretch trying to imagine the VW lapping the track its color was named after, but it was what attracted Vinny Castrogiovanni. "I really wanted an '07 Fahrenheit GLI because of its unique color. It's not something you see every day," he said.

"I found the car at a Volkswagen dealer with only 7000 miles on it. It was apparently

a corporate car that had been driven around the different dealerships. It had the factory Votex body kit, which I didn't even appreciate until I delved deeper into the VW scene," Castrogiovanni confessed.

We're talking about a rare car with a rare kit. How many Fahrenheit GLIs with factory-equipped Votex kits do you think exist? But the VW rookie would remain in the dark a few months longer before he officially became a Dubhead. "Prior to the Mk5 I owned an Oldsmobile, so it's safe to say the Jetta was my first real car. When I bought it, I wasn't into the aftermarket scene. In fact, I was just happy to have a cool car in a unique color," he continued.

Everything would change one day when stopped at a red light. "A guy in a modified Mk5 GTI pulled up next to me and after complimenting me on my Fahrenheit Edition, he told me to check out the local VW forums and from there it just snowballed,"

**WORDS** JUSTIN FIVELLA  
**PHOTOS** RONALDO STEWART





A vibrant yellow Volkswagen Jetta GLI is shown from a side profile, parked on a cobblestone street. The car features multi-spoke alloy wheels and a sleek, aerodynamic design. In the background, the iconic Manhattan Bridge spans the frame, its steel structure and suspension cables clearly visible. The sky is filled with soft, golden clouds, suggesting a sunset or sunrise scene. The overall composition is a classic automotive advertisement style.

**GLI**

BUYING A VW JETTA  
WOULD CHANGE VINNY  
CASTROGIVANNI'S WORLD...





Castrogianni explained.

And snowball it did... "I blew my entire bank account at my first Waterfest. I bought a downpipe, cold-air intake and a bunch of other stuff," Castrogianni laughed. In fact, he had the ECU flashed as well but the tune couldn't be activated until the downpipe sitting in the trunk was installed.

Ah, what we wouldn't give to step back to our youth, our first VW and a little cash burning a hole in our pocket once again...

With the next paycheck came the installation of the APR 3" downpipe and activation of its stage 2 software, along with a custom 3" exhaust made from Magnaflow and Autotech components. Inlet restrictions were relieved with a BSH True Seal intake.

Other upgrades included a Forge diverter valve relocation kit and Eurojet PCV fix. A VAG-com session also traded USDM annoyances for Euro features like auto window up and down from the keyfob.

While on the topic of up and down, the Jetta drops thanks to one of the few Bagyard Bomber Classic air-ride kits to float across the pond. Viar compressors, controlled by an AccuAir E-Level management system, fill these rare bags. The five-gallon air tank sits in a custom trunk enclosure, looking discreet and classy.

Pulling and rolling the rear fenders so thin they'd cut sashimi wasn't enough to provide sufficient tire clearance, so the pads on the wheels were shaved, but more was needed. So Castrogianni had a local legend fabricate custom adjustable rear control arms that allowed up to -7° of camber to tuck the wheels.

And speaking of the wheels, Castrogianni went West Coast lowrider style with 18" Work Desmond Verse wheels. The modular design had powdercoated centers and was wrapped in Nitto rubber.



APR software and downpipe, BSH CAI and custom exhaust add go to the show





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It sounds so simple, but we'd be lying if we said it was. "The car was ruined twice: Once when my 'pop-up' garage blew over on top of the car, and the second time when it was hit in the parking lot at work," Vinny said.

The hit-and-run incident brought forth significant exterior changes, like the Lamborghini/Ford yellow paint – I know, we made a big deal out of the factory Imola Yellow, but Castrogiovanni always sets himself apart. "After the second mishap I decided to paint it a blend of Lamborghini and Ford yellows, fitting a shaved R32 front-end at the same time," he said.

A keen eye will also notice the shaved front bumper and extremities, along with the retrofitted Seat Cupra R front lip plus the late-Mk5 tail lights in a darker shade of red. Like we said, he's all about the details...

Which reminds us: did you notice the paisley-wrapped roof pillars and full stereo system? These are nice interior touches that also incorporate a hidden button for his train horn. And that hints at Vinny's sense of humor that includes the vanity plate that's worth a few laughs, no matter where he goes.

He's a perfectionist, a joker, an Art & Design student and he's created a very cool car. **EC**

**18" Work wheels** have powdercoated centers and polished lips for some lowrider flavor. Rear suspension has custom control arms to increase negative camber and tucked the tires under the rolled and pulled fenders. The Bagyard Bomber Classic air-ride is controlled by AccuAir E-Level management system



The Fahrenheit's famous Imola Yellow was actually resprayed with a blend of Ford and Lamborghini paints

#### TECH SPEC

2007 VW GLI  
FAHRENHEIT EDITION #993/1200

**VINNY CASTROGIOVANNI**  
Art & Design Student  
Long Island, NY

#### ENGINE

2.0L four-cylinder FSI 16v with APR stage 2 software and 3" downpipe, custom 3" Magnaflow/Autotech exhaust, BSH True Seal cold-air intake, Forge Motorsport diverter valve relocation kit, Eurojet PCV fix, BFI dogbone mount

#### DRIVETRAIN

stock DSG

#### BRAKES

stock calipers, Hawk HPS pads

#### SUSPENSION

Bagyard Bomber Classic front and rear air bags and front sway bar end-links, Accuair E-Level management, dual Viar 480c compressors, dual water traps, five-gallon skinny tank with 3/8" line and wireless remotes, 27mm Hotchkis front sway bar, 27mm APR rear sway bar, custom adjustable rear control arms

#### WHEELS & TIRES

18x8" ET24 f, 18x9" ET26 r Work Desmond Verse wheels with polished lips and white powdercoated centers, 215/35 R18 Nitto Neo-Gen tires

#### EXTERIOR

shaved R32 front-end, shaved trunk, pulled and rolled fenders, VW Votex side skirts and rear valance, Seat Cupra R lip, R-Line black mirror caps, hidden GLI foglights, In.Pro headlights, Nokya yellow fog- and headlight bulbs, Ziza LED city and plate lights, tint, car painted custom Lamborghini and Ford yellow

#### INTERIOR

paisley cloth on pillars, New South Performance boost gauge in steering wheel pod, Euro light switch, Monster Mats, white LED interior lights, train horn

#### AUDIO/VISUAL

Rockford Fosgate P53 12" subwoofer, Power Acoustik amplifier

#### THANKS

my parents, friends at LiMKV, Alexa, Dave, Alex and Jon, Greg 5 "Swoops," AirSociety, Bag Riders, AccuAir, Clique, Flipz, Dabberfam and Bdegalife



Paisley roof pillars are a nice touch



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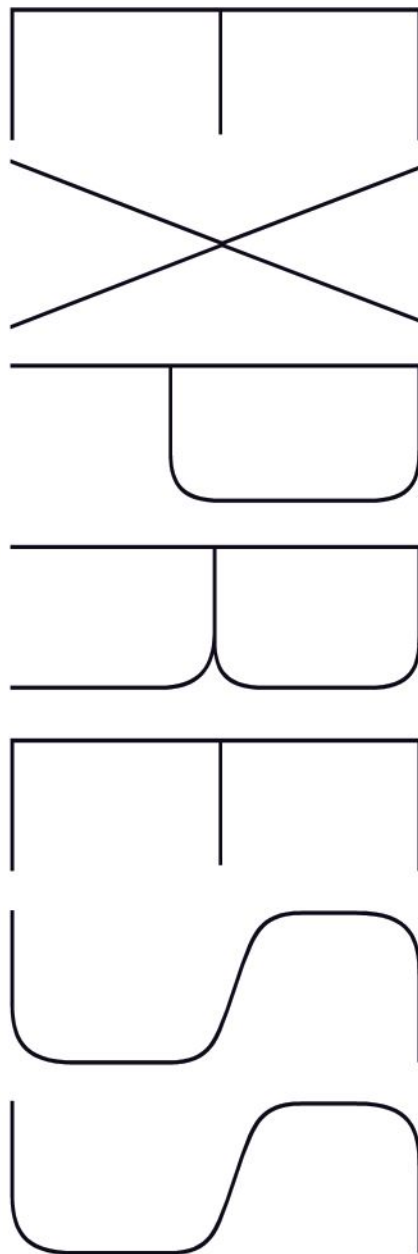








# S6



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WORDS & PHOTOS IAN KUAH





4.0L V8 biturbo makes 600hp and 553 lb-ft thanks to larger turbos and software tuning

## COMPONENT RATIONALIZATION HAS BEEN

a godsend for carmakers because it enables them to save money by using common components across a broad range of models. And for the consumer, there's an

advantage to having, let's say, a detuned version of a flagship motor in your car, especially when the tune is essentially software based. This would enable the astute aftermarket tuner to extract the missing horsepower knowing the mechanical components have a comfortable margin to work within.

The new Audi S6 is a case in point. Its 420hp, 3993cc V8 biturbo motor is currently the least powerful member of the EA824 engine family that's also installed in the 500hp Bentley GT V8, 520hp Audi S8 and 560hp RS6 Avant.

With this in mind, German tuner Abt Sportsline set out to produce the AS6-R — a car that could bridge the gap between the S6 and RS6 Avant, even exceeding the output of the latter. And since the RS6 is only available in Europe and only as a wagon, US owners of the S6 sedan can get closer to experiencing what the factory hot rod feels like for less money.

Abt claims the EA824 motor has plenty of headroom, demonstrating its 700hp version of the RS6 motor on the dyno during our visit. So taking the AS6-R conversion to 600hp and 553 lb-ft is well within what the tuner regards as “sensible” limits.

The increase was found with a pair of larger turbochargers and software tuning. The Abt engineers claimed the turbos were “modified” and we suspect they may be based on the



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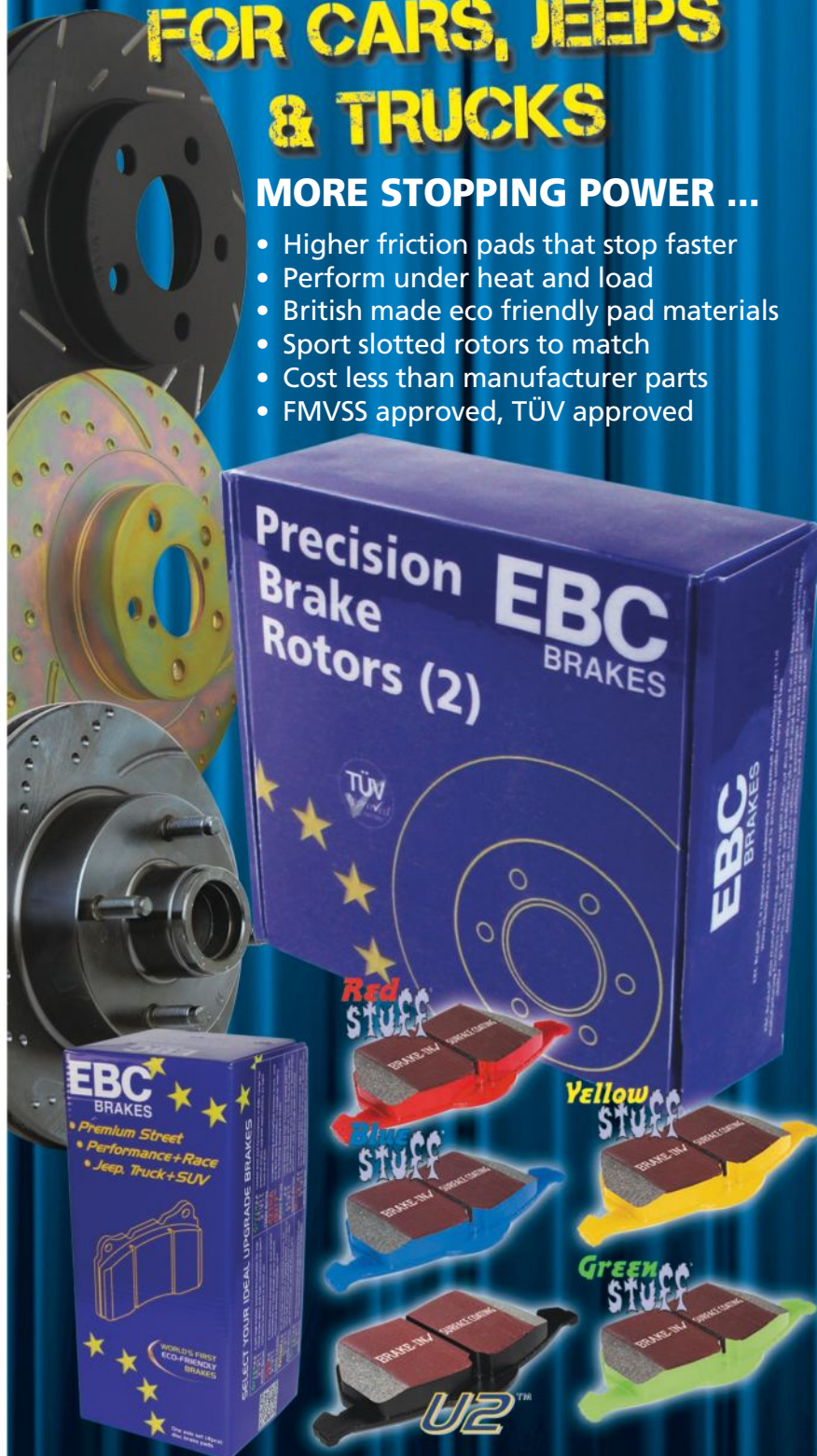
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Large carbon fiber roof spoiler can be fitted to any A6, but is more useful on a 192mph AS6-R!

RS6 units, since the stock S6 turbos couldn't flow enough air. The corresponding software ensured sufficient fuel supply and, while it could have been based on RS6 maps, there are many differences between the two applications that would have required custom tuning.

We should put the AS6-R into context since the increased output represents one of the biggest jumps in Abt's tuning history. In fact, its extra 180hp and 148 lb-ft equates to 42.9 and 36.4%, respectively.

Perhaps inevitably, the power and torque curves are slightly different from stock. So where the S6 makes its 420hp available from 5500-6400rpm, the Abt turbos and software

develop the full 600hp at 6000rpm. Similarly, the stock 406 lb-ft is delivered across an impressive plateau from 1400-5200rpm, while the AS6-R brings its 553 lb-ft from 2900-5200rpm. In reality, the peakier torque number is irrelevant since the tuned motor is making more twisting force at 1400rpm than stock, so it's stronger throughout the rev range, although its peak numbers are delivered slightly higher.

Another interesting statistic is that the AS6-R produced the same 226g/km of CO2 emissions as the stock Audi S6. This is partly the result of the EU emissions test cycle being carried out at part throttle, but it gives you an idea of the engine's efficiency.

#### TECH SPEC

### 2014 AUDI A6 – ABT SPORTSLINE AS6-R

#### ENGINE

4.0-liter V8 biturbo with Abt Sportsline replacement turbos, software, stainless steel rear muffler

#### DRIVETRAIN

seven-speed, dual-clutch S tronic transmission, Audi Sport differential, quattro AWD

#### BRAKES

stock carbon-ceramic rotors

#### SUSPENSION

stock Audi Adaptive air suspension

#### WHEELS & TIRES

21x9" ET30 Abt DR wheels, 265/30 ZR21 Continental ContiSportContact 5 tires

#### EXTERIOR

carbon fiber front intake frames, mirror caps, side sill covers, roof spoiler, plastic rear valance and fender vents

#### INTERIOR

stock, Abt mats

#### CONTACT

abtamerica.com



Cosmetic changes up front are limited to carbon frames around the foglights



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bias. Beyond that, the optional Audi Sport Differential and torque vectoring function fitted to the car further improved chassis response and handling. In fact, the limit of mechanical grip was far beyond what was sensible to explore on public roads.

So on fast country roads, the AS6-R will really compress the straights between the bends, meaning you need to lean on the brakes pretty hard. Fortunately, Abt had specified the factory ceramic brakes option as part of the AS6-R package, providing impressive staying power when repeatedly used hard.

Because of its refinement, the AS6-R is totally at home on the autobahn, where its long legs make it a consummate cruiser with comfort levels no different from stock. But pity the junior league supercar that tries to tangle with you, as that huge slug of torque will put significant fresh air between the tail of the Abt Audi and its challenger, allowing you to explore the upper reaches of its speed range.

So unlike many tuner packages, the Abt AS6-R doesn't have the tuner's aftermarket brakes or suspension. However, it does have the company's latest DR wheels that measure 21x9" all round with 265/30 Continental rubber.

The big wheels complement the fairly subtle carbon fiber cosmetic additions, which include frames around the front bumper intakes, trim pieces on the factory side skirts, mirror caps and a large rooftop spoiler. The Abt rear valance and vents in the front fenders are manufactured from injection-molded plastic.

The Abt AS6-R is an interesting package because it manages to eclipse the factory RS6 in terms of horsepower using software and turbo upgrades. Sold as a complete car in Europe, we were able to confirm with Abt America that US customers can add any of these components to an existing Audi S6. So contact them via [abtameric.com](http://abtameric.com) if you want to humble some sports car owners. **EC**



Chassis upgrades are restricted to 21" Abt wheels and Conti tires, with the tuner relying on the factory air suspension and carbon-ceramic brake rotors

Thanks to the quattro all-wheel-drive system, there's no problem deploying the enhanced output. In fact, the stopwatch recorded 3.9sec for the 0-62mph sprint, which is a 0.8sec improvement over the stock S6. Furthermore, 0-124mph takes 12.9sec and, with the 155mph speed limiter removed in the AS6-R remap, Vmax is now an impressive 192.6mph!

The new rear valance in the stock bumper has cut-outs for a quartet of 3.5" tailpipes that trim the stainless steel exhaust muffler. It offers a deeper, fruitier note when you rev the bent-crank V8 and only hints at the car's complete change of character. With 40hp and

37 lb-ft more than an RS6, the Abt AS6-R is a rocketship, hurling you down the road with g-force in the lower gears pinning you back into the comfortable factory leather sports seats.

Manufactured with a high quota of aluminium, the S6 is still a large, heavy car, tipping the scales at 4398 lb. However, with the body roll reduced by selecting Dynamic Mode, the car feels surprisingly agile in the bends. There are several factors for this, including Audi repositioning the engine and transmission 2.8" further back in the chassis compared to the previous model. This has helped the balance, along with the 40/60% rearward power



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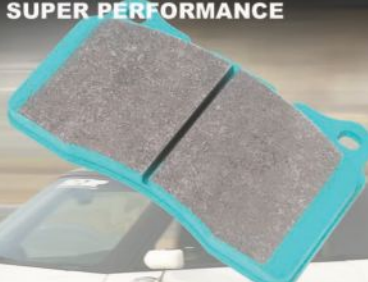
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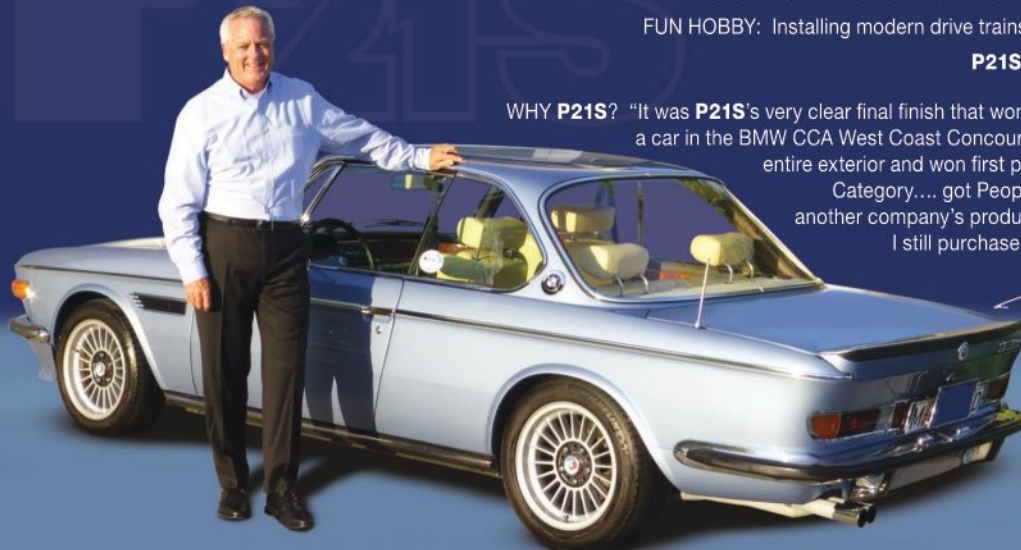
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## TRAKKTAPE

Many track junkies cover various parts of their car with blue painter's tape for added protection. This undoubtedly protects the exterior but it sure looks frickin' ugly!

We came across an alternative product called TrakkTape, which is basically a clear version of the mild adhesion painter's tape.

It's easy to apply and, most importantly, to remove. It comes in 3"x100', 6"x100' and 6"x600' rolls, allowing you to cover most areas more quickly and efficiently.

The product should offer greater protection than blue tape thanks to its 5mm thickness and better durability. Equally as important, it's almost invisible to the track day photographer or pitlane passerby, ensuring your machine always looks good.

Apply it to the front-end, fenders, side skirts, rear apron - anywhere your car is likely to throw up or catch rocks and gravel that would otherwise damage your paintwork.

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



## MOTHERS R3

If you have a vinyl wrap on your car, you already have one of the best ways to keep your factory paint in pristine condition. However, one major drawback of the vinyl is keeping it clean, especially from the black marks caused by rubber flying off tires on the racetrack. These marks are relatively easy to remove from paint, but more difficult to erase from vinyl film. However, Mother's R3 (Race Rubber Remover) solves the problem on both paint and vinyl with a formula that allows you to just wipe away rubber marks with ease. Simply spray on and rub off. This is definitely a useful product for track day enthusiasts to have in their arsenal.

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



## DR COLOR CHIP

If you didn't protect your paint soon enough, you probably have damage already. This will likely include abrasion to the clearcoat, which nobody except you will notice, and can be treated with polishing wax. However, if you've suffered paint chips as well, these are more visible on most colors.

Fortunately, Dr Color Chip does a great job hiding ugly white speckles that appear as the paint layer is chipped away. Simply order the Dr Color Chip kit that's specific to your factory paint code. You'll receive touch-up paint, brush, glove, cloths and sealer.



Start by dabbing the paint on with the small brush, then gently smear it in with a latex-gloved finger and wait. After a short time, carefully buff and blend with the supplied sealer. It's really that simple.

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



## CLEARPLEX WINDSHIELD PROTECTION

Like your paint, the car's windshield is also vulnerable to rock chips and abrasion damage. To avoid the worst of it, Clearplex film works in precisely the same way as vinyl film, except that it's optically clear, making it perfect for windshields.

Clearplex comes in pre-cut and shrunk (shaped and contoured by heat) DIY kits, and it's available for several European models. However, it can also be custom applied at your local tint shop if your vehicle isn't covered on the pre-cut list.

Without affecting visibility on the racetrack, ClearPlex will give you a measure of protection previously unavailable and avoid expensive windshield replacement or annoying nicks in the glass.

[clearplex.com](http://clearplex.com) **EC**





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**AMAROO** - Silver with Brushed Face and Chrome Lip

## Multi-Piece

The new Amaroo wheel style is available in 18, 19 and 20 inch multi-piece staggered fitments and comes in multiple finish options. Our multi-piece wheel styles feature lightweight forged barrel construction.



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