

At this year's Bimmerfest we noticed the OEM+ style of Dave Aupperle's 318is. We appreciated that the enthusiast had expended so much time and effort to transform the neglected four cylinder 3-Series into a performance machine. We met with Dave at his home in Hermosa Beach, CA where he built the car in his crammed one-car garage. He was so passionate and knowledgeable about his project that he wanted to write his personal story and we offered to publish it. Over to you, Dave:

I've always been a gearhead by trade, which is why I'm now a full-time mechanical engineer. My passion for cars started in high school after blowing the engine on my '85 Toyota truck. A lack of cash meant there was no choice but to rebuild it myself. I spent most of my money and high school years turning this truck into a customized show vehicle.

As I neared the end of high school my buddy Kenny Jisser showed up in a new '92 E36 BMW 318is with a big smile on his face. I loved the style and handling and vowed to own a BMW myself.

Years went by and then my truck was stolen. I took the insurance payout to a BMW dealership to ease my pain and drove away in an 18-month-old '95 CPO 318is automatic with 25k on the odometer.

Typically, I started out saying I'd leave it stock and appreciate the OEM German engineering. Well, that didn't last long. But it was after I started full-time work that the cashflow increased and the mods started to arrive.

The car came together slowly. I started with the usual wheel and suspension upgrades. Being a sensible shopper, I sourced most of my parts used from eBay and online forums. In the early stages I cycled through three sets of wheels before finding the right set, finally settling on 18" Schnitzer Type 3 wheels. I then wrapped them in Toyo T1-S – 225 in front, 255 in the rear – once the rear fenders were rolled with a specialized tool I rented via mail order.

To improve the suspension, I sat the car on Bilstein shocks coupled with Eibach Pro-Kit lowering springs. Rear end height adjusters

The Road



Words: Dave Aupperle
Photos: Sam Du

It may look like an M3 but don't be deceived.
This is Dave Aupperle's supercharged 318is.



Less Traveled



were also added to give the car a sporty forward rake.

To improve handling in the twisties, I fitted Racing Dynamics sway and strut bars, K-Mac adjustable camber plates and urethane offset control arm bushings. Once again, installed by yours truly.

Not long after finishing the first phase, the car was involved in a minor collision. This launched the exterior mods and I sent the car to Ron's Auto Body in Torrance, CA for a facelift. It was outfitted in full Motorsport skirts, bumpers, door moldings and mirrors. I also upgraded to European headlights and clear blinkers. At one point I tried angel eyes, but pulled them out.

Driving a 318is auto with an M3 suit

naturally encouraged name-calling from the fellas. And since 'all show and no go' wasn't cool, the engine was the next step.

In the pursuit of power, most would toss the four-banger in favor of a throaty six, but I decided to go the supercharger route. I sourced a used Downing Atlanta blower and after a weekend in the garage, the car had 7.5 lb of boost available. It jumped to over 170whp from the original 105hp.

I also realized a tranny swap was in order. I researched the swap and sourced a 328i Getrag five-speed. I also added a B&M short shift, UUC mounts, Schnitzer pedals, '99 M3 clutch and 3.45:1 LSD. Then South Bay Independent BMW in Gardena, CA installed the tranny in just one day.

After enjoying the supercharged five-speed for a while I eventually wanted more power, but that required more boost and more fuel. The problem was that custom programming for the OBD1 ECU was non-existent and Downing Atlanta relies on a rising rate fuel pressure regulator for the additional fueling. With the 10.5:1 compression, stock ECU and an FPR controlling fuel, the D/A kit provides little room for an upgrade.

On the flip side, the ODB1-governed M42 motor has forged internals, which is a darn bulletproof powerplant. So I decided to tackle the fueling myself. A stand-alone computer was out of my financial reach, so I opted for a piggyback fuel controller. Mark Amarandos at Split Second came to the rescue and I opted



for their ARC-2A dial-controlled unit so I could make adjustments on the fly without integrating a laptop.

I toiled in the garage and wired the controller, mounting it in the glovebox. I was then able to swap my restrictive vane airflow meter in favor of an MAF from a '99 M3. Of course, additional fueling was beyond the stock injectors, so I got a set of 28 lb injectors.

With fuel control at my fingertips, I increased the boost to 10psi using a custom pulley from Chad Cheung at It's All About Speed (IAAS). I was then able to street tune the fuel curve and dial in an air/fuel ratio of 12.0-12.5 at wide-open throttle with the customary 14.7 ratio controlled in closed loop.

Although the car ran well up top, the higher boost brought pre-detonation issues in the

SoCal summers. To combat this I installed an Aquamist methanol injection system. It engages at 1.5psi boost, shielding the engine with a cooling mist of 50/50 water/methanol. Although the system requires frequent refilling of the reservoir, it does cool the intake to prevent pre-detonation.

Given that the car was my daily driver until recently, this configuration has proven reliable and given consistent power.

To monitor the engine I installed an A-pillar pod with VDO gauges for fuel pressure and boost, along with an AEM wideband O2 sensor gauge.

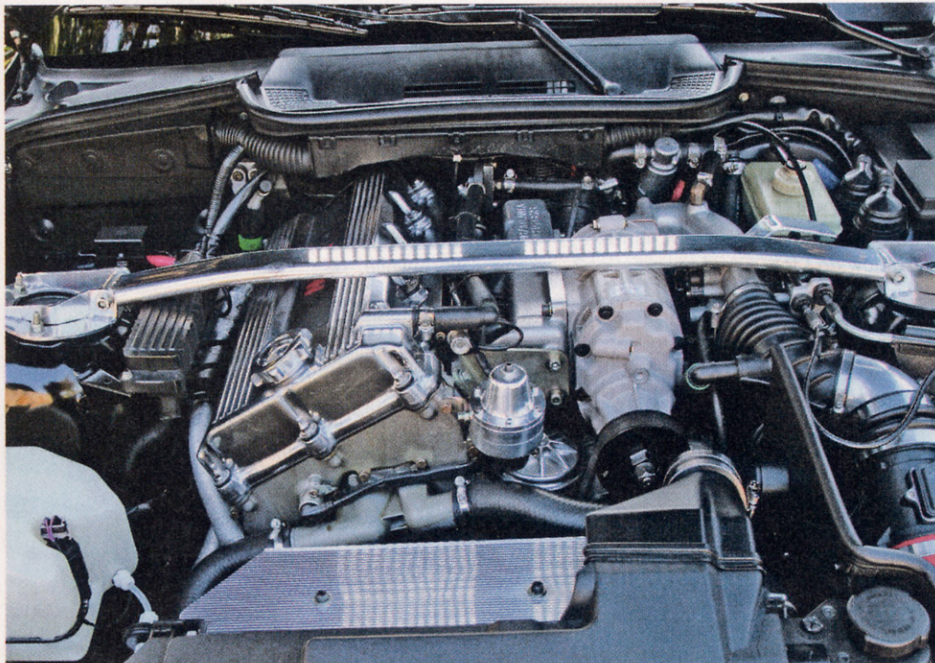
The stock braking was pushed to the limit, and needed help. I upgraded with a 14" Brembo Gran Turismo front kit and Brembo rotors on the rear. To clear the larger calipers,

45mm spacers were used on the front to give the wheels a nice tuck in the fenders.

I then sourced a set of used M3 Vader seats on eBay and had them reupholstered in the same OEM vinyl used for the rest of my interior by Manhattan Auto Seat Covers in Manhattan Beach, CA.

I also updated the rest of the interior, but one of my better accomplishments was integrating a three-spoke M3 steering wheel with M5 controls. Using some of my engineering knowledge, I adapted the controls to interface with my Blaupunkt head unit.

By this time I had really started to search out rare items to make my car unique. I started with exterior parts from the '95 M3 lightweight (LTW). Through the forums I got my hands on an adjustable front splitter and



DAVE AUPPERLE

LOCATION: Hermosa Beach, CA

OCCUPATION: Mechanical Engineer

1995 BMW 318iS

ENGINE: M42 I4 16v OBD1 1.8 liter, 10.5:1 compression, forged internals, Downing Atlanta supercharger kit, custom pulley upgrade for 10psi boost, Split Second ARC-2A piggyback fuel management, 28 lb fuel injectors, M3 mass airflow conversion, fabricated aluminum 3" intake and shield, Aquamist 1s water/methanol injection system, Supersprint 4-into-1 header and after-cat exhaust

DRIVELINE: five-speed manual conversion, B&M short shifter, 3.45:1 LSD, M3 flywheel and clutch, UUC urethane transmission mounts

SUSPENSION: Elbach Pro-Kit springs, Bilstein dampers, Racing Dynamics sway bars with Turner Motorsport sway bar mount reinforcing kit, Racing Dynamics front strut bar, custom rear strut bar and tower support, offset urethane control arm bushings, K-Mac front camber adjustment kit

WHEELS & TIRES: 18x8.5" AC Schnitzer Type 3 wheels with 45mm front, 10mm rear spacers, 225/40 front and 255/40-18 rear Toyo T1-S tires

BRAKES: Brembo 14" Gran Turismo front brake kit, Brembo drilled rears, stainless steel brake lines

EXTERIOR: OE M3 bumpers, skirts, moldings and mirrors, OE M3 lightweight front splitter and rear spoiler with OE LED brake light, color-matched moldings and grille, clear Euro indicators and tail lights, OE ZKW Euro ellipsoid headlights

INTERIOR: custom A-pillar gauge pod with AEM wideband O2 gauge plus VDO fuel pressure and boost gauge with amber lighting, water injection LEDs, M5 steering wheel with operational stereo controls, shift light in rearview mirror, Euro rear foglight switch, illuminated Euro M3 shift knob, leather shift and E-brake boots, E46 armrest, late-model airbag door panel conversion, interior footwell lights and onboard computer, M3 Vader seats covered in vinyl, M3 lightweight door sills, sunroof switch in center console, AC Schnitzer pedals

AUDIO/VISUAL: Blaupunkt Toronto CD head unit, Neo Car Juke Box 60Gb mp3 hard drive with dash display and controller, A/D/S eight-channel P850 amp flush-mounted in trunk, A/D/S 345iS front and component speakers, Kenwood KGC-4042A EQ in glovebox, JL Audio sub box with three 10" drivers

THANKS: Franklin and Ruben at South Bay BMW Parts, Chad at IAAS, Jon and Janet at Manhattan Auto Seat Covers, Gary at Evosport, Mark Amarandos at Split Second, Ron's Autobody, Alex at European Car Stereo, North Hollywood Speedometer, Ed at Allen's Tire, South Bay Independent BMW



height-adjustable rear wing. These gave the car the aggressive look I was after. I also sourced LTW door sill plates but color-matched most of the exterior trim in BMW Schwartz II black.

I then turned to finer details. Being an engineer, I felt that reaching up to the sunroof switch was too much effort. So I placed another switch in the center console OEM-style. I also added a Euro rear foglight switch, allowing me to connect the Euro city lights on a separate circuit so I could turn them on at will. As a final touch, I integrated a shift light into the rearview mirror.

So how do I feel about my creation?

Well, the car's a blast to drive. With the lightweight engine and performance mods, it's amazingly nimble and handles better than many newer cars on the market. It also pulls strong, allowing me to pace factory M3s. Recent dyno runs show a little over 200hp to the rear wheels. It's also a rare sight at shows, probably because most people don't have the patience to build a 318i, but I guess I've always enjoyed the road less traveled. And every rip of the throttle sings the supercharger song, reminding me of the hard work and detailing that have made my years in the garage worthwhile. 