

EVO HOT AND RETRO COOL

With a Sport Evolution-spec M3 motor under its hood and extensive chassis modifications, Daniel Cooper's 2002 is the ultimate backroad or track day sleeper, with contemporary performance in an unassumingly retro package.

By Zachary Mayne Photography by Zachary Mayne

Exiting a tight hairpin where the road begins to run steeply uphill, the back tires break traction and the rear end swings out even though I'm only using a small portion of the available power. A flick of opposite lock through the fat leather wheel corrects the oversteer, and I accelerate hard out of the turn as the car lunges up the short straight, pressing me back in the seat as the motor revs effortlessly up through the powerband. There's almost no body roll as I flick the

car back and forth through the S-curves until another hairpin looms and I have to haul on the powerful brakes before turning in.

A shakedown of one of BMW's latest driving machines? No, I'm behind the wheel of what has got to be one of the ultimate q-cars out there, Daniel Cooper's M3-powered 1973 2002tii.

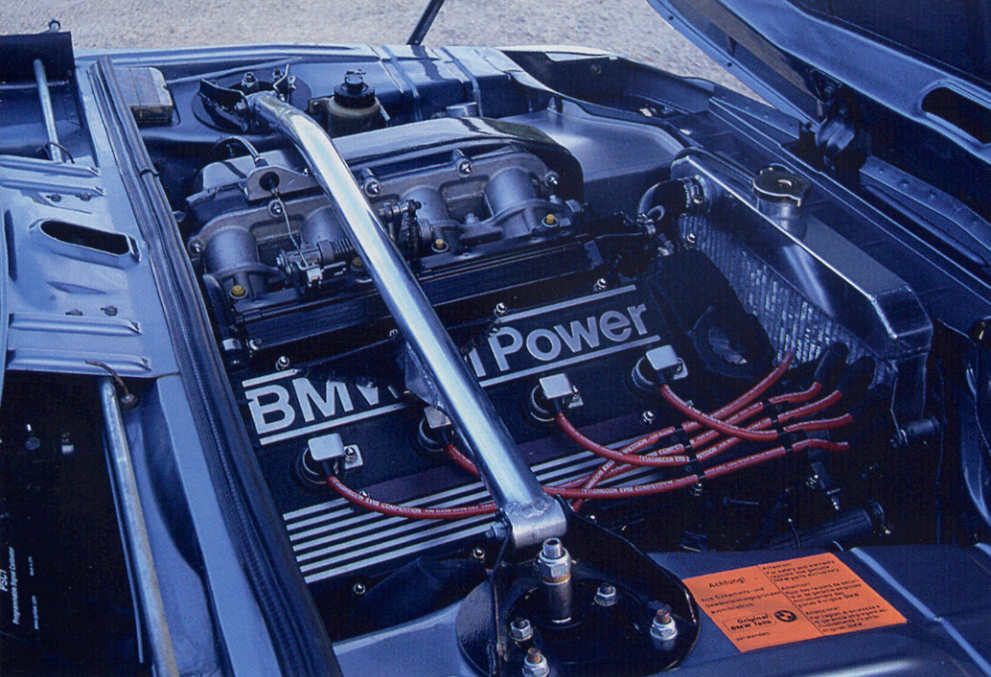
Installing the E30 M3's four-cylinder S14 motor in the engine bay of a 2002 isn't a novel concept. In fact, it's relatively easy, and

many owners have done it. But Cooper has moved the game on a bit with this creation, which sports not just an M3 engine, but one that has been bored and stroked from the original 2.3 liters to 2.5.

Those up on various E30 M3 derivatives will note that this is the same displacement as that of the S14 B25 or Sport Evolution. With 238 bhp, the B25 variant surpassed the standard S14's 200 bhp and also the 220 bhp of the limited-production S14 Evolution built in 1989.







Daniel Cooper's 2002tii may look more or less stock from the outside, but don't let that perfect restoration fool you. Underneath its Baltic Blau paint, a 267-hp M3 Sport Evolution motor and a chassis stiffened by a full roll cage make this a real sleeper. Recaro seats and HRE wheels look great.

This special motor found its way into just 600 Sport Evolutions built in 1990 to qualify the E30 M3 for the DTM's Group A racing class.

More importantly, perhaps, Cooper's early '70s 2002 can handle the additional 100 or so horsepower thanks to a restoration that included some serious chassis strengthening by Ireland Engineering and brakes by AP Racing. This is one monster that remains firmly in its creator's control.

Beyond the standard S14

Cooper found his tii in New Mexico in 1992. "It had undergone a full restoration, and when I saw it in person, it was even better than I thought it would be," he says. The paint, a gorgeous Baltic Blau Metallic, still looks fresh today, and the car has never needed a respray. The tii was close to stock, though the motor had been tweaked during the rebuild and put out something close to 160 horsepower, while the gearbox had been replaced with a close-ratio Euro-spec 323i unit. For the first few years that he owned it, Cooper contented himself with a few minor modifications, such as an upgrade to the brakes, which have since been changed again, and the addition of the tan Recaro SRD buckets that grace the interior.

Around 1999, however, Cooper decided that he wanted the maximum performance he could reasonably get out of his aging 2002. "I had heard about people doing the E30 M3 motor transplant, and when I started doing research found that the block of the 2002 and the M3 motor were very similar," he says. "So I started looking for a shop that could do the conversion." He settled on



Mountain Auto Sport Racing (MASR), a well-known BMW tuning and racing shop in Ludlow, Vermont, to carry out the work.

Cooper supplied MASR with a powerplant out of a '91 M3, and MASR rebuilt it to Sport Evolution spec and then some. A Sport Evolution crankshaft was sourced in Europe that allowed stroke to increase along with bore for a displacement of 2.5 liters. Forged billet Pauter connecting rods were attached to pistons that bumped the compression to 10.2:1, just shy of the Sport Evolution's 10.5:1.

Larger Sport Evolution intake and exhaust valves plus titanium valve springs and retainers were fitted to the ported and polished head. A radiused valve job was performed, as well, taking it a step beyond the more common three-angle grind. A set of Schrick camshafts were installed that allow the motor to be safely revved well past 7,000 rpm. To get enough fuel to the now-thirstier motor, larger Sport Evolution fuel injectors replaced the stock M3 items.

Since the motor was now displacing more air, Cooper elected to have the M3 throttle bodies and air horns bored out from the stock 46mm to the Sport Evolution's 48mm. "You can buy the larger throttle bodies from the factory, but they are very expensive," says Cooper, who instead had VAC Motorsports in Pennsylvania machine the stock M3 throttle bodies to the larger diameter. VAC also machined a custom set of 48mm throttle plates, which were ported and polished along with the air horns.

A carbon fiber airbox was also bolted on, shedding some weight while also looking pretty cool. Recently, Cooper installed one

of Split Second Performance's much freer-breathing mass air-flow meters, which allows the fuel/air mixture to be programmed via a laptop computer. "The installation drops about seven pounds by eliminating the OEM air-flow meter," says Cooper. "And there was around a twelve horsepower gain along with enhanced torque, throttle response and drivability."

The engine exhales through a Group A rally-type header mated to a custom three-inch stainless steel exhaust. Dual inline Borla mufflers allow for a healthy growl, but the exhaust note is far from obnoxious. Cooling is provided by an unusually large single-core custom made aluminum radiator by Ron Davis Racing.

On the dyno, the Sport Evolution-spec mill pumps out around 267 horsepower, translating to around 239 rear-wheel horsepower at a lofty 7,400 rpm, while maximum torque is up to 210 lb-ft at a useable 4,000 rpm.

The desirable close-ratio 323i gearbox was retained, now mated to an eight-pound Turner Motorsports aluminum flywheel to allow the engine to spin up quicker. The clutch is a heavy-duty Sachs unit. A torque-sensing Quaife limited-slip differential sends power to the rear wheels through custom manufactured 4030 billet stub axles.

Stiffening the old sled

To bring the performance of the rest of the old-school '02 in line with the increased power, the chassis underwent a series of modifications, as well. Cooper is an avid track day participant who wanted his M3-powered car to be able to perform well at

Northern California's road courses while remaining relatively livable on the bumpy roads of the Bay Area. In the search for a suspension that could competently handle high-speed track duty and real-world driving, he turned to Ireland Engineering in Duarte, California. Ireland supplied the custom-valved Bilstein coil-overs at all four corners, with spring rates of 250 pounds at the front and 200 pounds at the rear. Ireland also supplied Cooper with fully adjustable anodized billet camber plates with spherical bearings.

Urethane bushings were fitted wherever possible and a set of 22mm front and rear Ireland Engineering anti-roll bars eliminate excess body roll. A gorgeous custom strut bar up front is cleverly mounted to the top of the motor's cam cover as well as the shock towers. "This makes the engine a stressed member, and also greatly reduces engine vibration, engine mount fatigue and exhaust movement," Cooper explains. The front sub-frame and rear trailing arms were extensively gusseted to strengthen the underpinnings.

Braking at the front is handled by an AP Racing kit sourced from Canadian company KVR Performance. Massive AP four-piston billet calipers grip two-piece cross-drilled and vented rotors, which feature anodized aluminum hats. The calipers hold KVR pads, and AP Racing brake fluid pumps through braided steel lines. Providing added braking at the rear is a 323i "big drum" conversion. "At some point, I would like to put an AP Racing disc conversion on the back," says Cooper.

While working as Infineon/Sears Point Raceway's marketing manager, Cooper came into contact with some world-class fabrica-

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tors. Sonoma, California's Hamlin Fabrication made the 2002's custom roll cage, which ties into the body at the A and B pillars, the rocker sills, firewall and shock towers. The cage also incorporates a cross bar under the dash and a rear strut tower brace/battery holder. "The cage made a huge difference," says Cooper happily. "Now the thing hardly flexes at all."

Since Cooper wanted a car that had the heart and soul of a true M-car with the retro visual appeal of the 2002, the choice of wheels was critical. Go too large and it wouldn't look right; too small and there wouldn't be enough tread to harness the power. The solution was a set of HRE 535 two-piece alloys, 6.5 x 15-inches up front and 7 x 15 inches at the back, custom drilled for the four-bolt '02 hub. "I like them because they're fifteens but look more like fourteens," explains Cooper. The undeniably classy looking wheels are shod with Bridgestone RE730 tires, 195/50ZR15s up front and 205/50ZR15s out back. In truth, the car is under-tired, something that Cooper is looking at remedying. High horsepower and 205-series tires are simply not the best of bedfellows.

The Route One torture test

Cooper is rightly proud of his creation and was more than happy to hand over the keys so I could get some extensive seat time in his 2002/M3.

When I climb into the very comfortable Recaro bucket, which puts the driver in an upright, commanding view, I'm greeted by the grippy MOMO wheel, tilted at a decidedly horizontal angle in typical 2002 manner. Sinuous Route One is beckoning, but I first

blast the car up and down the freeway to get a sense of its high-speed stability. Traffic is pretty dense, so I quell an urge to explore triple-digit terrain. Overall though, the '02 is extremely stable at highway speeds, hunkering down on its coil-overs, and it can be piloted through traffic confidently and quickly. Spot a gap and the excess power puts you there instantly. The AP brakes are superb, and haul the car down with far more authority than the stock setup. Meanwhile, the inherent visibility offered by the '02's open greenhouse is always confidence inspiring.

Later, I'm pointing the '02 down a road that will show the weaknesses of even the most well-executed suspension set-up. A combination of fast sweepers, incredibly tight hairpins and S-curves galore set in pavement full of bumps and ridges, Route One just north of the Golden Gate is fun but challenging, with cliffs that serve as stark reminders that this is no place for sloppy driving.

The performance of the 2002 on this winding stretch of asphalt is by turns astonishing and downright hilarious. That a box of a car like this—albeit one of the great classic boxes—can accelerate, turn and stop as well as this is impressive stuff, especially considering its age.

Nail the throttle coming out of turns and there is power in abundance, starting at just over 2,000 rpm and building in a nice flat torque curve all the way past 7,000. The tuned M3 engine wails through the rev-range with an urgent mechanical joy. Send the tach needle to the upper end of the dial and the engine note takes on an intensity not dissimilar to that of a 600cc sportbike.

With so much unexpected torque on hand, I manage to get it well sideways when I exit a turn while applying a couple thousand revs a little prematurely. Luckily, my lightning-fast reflexes saved the day—okay, maybe it was the Quaife limited-slip diff doing its work to snap the car back into line without even a minor wag from the tail in the opposite direction. And thanks to the Quaife's torque-sensing design, steering accurately with the throttle makes it easy to send the car into smooth, controlled drifts as often as desired.

With all this power, the car *does* need more traction. While the narrow footprint of the tires contributes greatly to the '02's sleeper appeal, there is simply too much power for the relatively skinny rubber. 2002s already have a rep as being a bit tail-happy, and this car's stiff suspension and relatively large reserve of power means that respect is certainly due when probing the limits. The steering, unassisted and very heavy at parking-lot speeds, is perfectly weighted at higher speeds. It offers loads of feedback, contributing greatly to driver confidence when nearing the limits of adhesion.

The shift action is pure '80s BMW, a little notchy, and this one seemed to take a little more authority to get to the desired gear quickly. It's also got a dogleg first gear, which is pretty cool in my book. An MASR short-shift kit made the fore and aft throw feel satisfyingly short, but the side-to-side distance seemed longer and a little mismatched. Until I got used to exactly where the gears were, I found myself reaching for a downshift and finding neutral instead. A minor complaint, really, and one that was banished with familiarity.

Within the tires' limitations, the car can be confidently hurled into turn after turn, the chassis responding swiftly to steering input. There is virtually no body roll thanks to the roll cage and larger anti-roll bars as well as the stiff coil-overs. And is it ever stiff: With the endless bumps, ridges and troughs of Route One, I had a few exhilarating moments when the front and rear tires skittered nervously due to the suspension's lack of compliancy over rough sections of road.

But Cooper didn't really envision this as a car that would be perfect for all conditions. Instead, he wanted one that could be driven daily on the street but would really shine when presented with a smooth stretch of racetrack pavement or a nice section of public road. He got what he wanted, and he got what a lot of other 2002 owners want, as well: At 2002's '02 Fest West, Cooper's M3-powered creation was voted "The 2002 You Would Most Like to Own." The '02 Fest participants obviously knew how cool this car is; after experiencing it myself, I couldn't agree more. ●