



# STILL PERFECT

More than 20 years after it was built, BMW's original M3 is still the ideal machine for street and track, especially when it's been brought up to date like Mark Amarandos' Alpine White example.

By Zachary Mayne Photography by Zachary Mayne





**I**t's late afternoon in Newport Beach, and the setting sun is falling across the hard-edged, muscular creases of Mark Amarandos' Alpine White 1989 E30 M3. The light reveals the car's origins as a dual-purpose road car/racer, built by BMW to meet homologation requirements for European sports car racing.

That it fulfilled its mission so well is evidenced by its enduring popularity more than 20 years after it first took to the tarmac. Visit a BMW CCA club race—or any track day, for that matter—and you'll see more than a few E30 M3s in both full-on race guise and street/track form. Even though subsequent M3s have offered more performance, none have improved upon the clarity of vision BMW displayed in the original.

That's what made an E30 M3 the only logical choice when Amarandos wanted to build

a track car that he could also drive on the street. An electrical engineer who owns Split Second tuning in Southern California, Amarandos had already developed an E30 M3 to compete in BMW CCA Club Racing's D-Modified category. He raced it for several years but has since handed over the driving duties to the technician who maintains it.

This time, Amarandos wanted to build a slightly less focused example, and in 2003 he located the perfect starting point: a 1989 M3 for sale in the San Francisco Bay Area.

"It was in great condition and was fairly stock, though it had all of the usual bolt-on stuff," Amarandos says, referring to the aftermarket exhaust and stiffer-than-stock suspension then fitted to the car.

Amarandos had a more highly tuned interpretation in mind, but he didn't go full steam ahead with modifications.

### Incremental improvements

"It was an incremental thing," he says. "We started with the suspension and got the handling dialed in first."

At the front, the existing shocks were replaced by Ground Control coilovers that use shocks from Advanced Design with 440-lb., 6 x 2.5-inch Eibach springs. The shocks allow precise adjustment of compression and rebound damping, while ride height is easily adjustable via threaded collars on the springs. At the rear, Amarandos went with Koni Motorsport shocks that are similarly adjustable for compression and rebound damping, paired at this end with 625-lb., 5 x 2.25-inch Eibach springs.

The stock 19mm front and 14.5mm rear anti-roll bars were replaced by a set of Ireland Engineering anti-roll bars that measure 25mm front and 22mm rear. The front

end also benefits from Ireland Engineering camber plates with spherical bushings, while the rear uses Ireland Engineering mounts that allow up to 2.4° of negative camber. A Sparco strut brace reduces front chassis flex during cornering, and the chassis gets additional stiffness from Group N rear subframe bushings and polyurethane trailing arm bushings. Amarandos also reinforced the front and rear subframes to better endure the stresses of the track.

Though the car was intended as a multipurpose M3 that would be nearly as comfortable on the 405 freeway as it was dissecting apexes at Willow Springs, Amarandos admits that his M3's engine is "more of a race setup."

The engine was built by Mickey Miller and his team at Bullet Performance. Bullet's technicians started with a BMW Motorsport crankshaft that was balanced before installation, as were the Pauter connecting rods that actuate CP Pistons with an 11.25:1 compression ratio. The S14's original 2.3 liters of displacement increased to a more generous 2.5 liters, echoing the production M3's progress from 2,302cc to 2,493cc in the final Sport Evolution edition.

With the bottom end buttoned up, Bullet engineered a powerful but reliable cylinder head that could withstand repeated forays into the high engine speeds for which tuned S14s are noted. The M3's original head was rebuilt with a VAC valve train that replaces the standard valve shims with a shim-under-bucket setup. The head has been ported and polished along with the S14's four individual throttle bodies, which were enlarged from the original 46mm to 48mm. Finally, the head was fitted with a set of higher-revving yet still streetable Schrick 284/276 camshafts.

Amarandos also replaced the inefficient "barn-door" style airflow meter with a mass airflow sensor (MAF) developed by Split Second. "The original sensor is equivalent to a 2.5-inch round opening," notes Amarandos, who says the 4.0-inch MAF added 14 rear-wheel hp to the engine's output. Other mods include a custom Split Second computer chip and a VAC underdrive pulley set.

On the exhaust side, a four-into-one header with merge collector was custom-made by JP Performance. JP also built the rest of the exhaust using 3.0-inch tubing that terminates in a resonator.

When the M3 was rolled onto the dyno, the tuned S14 put out an impressive 224 rear-wheel horsepower at 7,100 rpm and 177 ft-lb of torque at 4,900 rpm.

### Euro parts and big Brembos

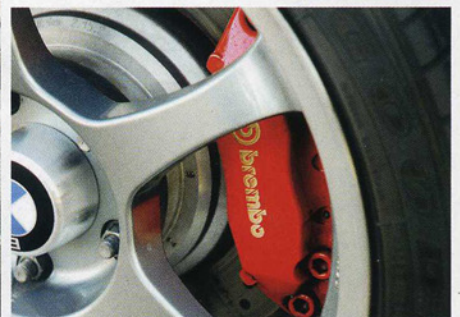
To make maximum use of the newfound power, Amarandos swapped the car's original five-speed overdrive transmission for a Euro-spec close-ratio 'box. This is the same Getrag gearbox that was denied to North American enthusiasts when BMW decided that the unusual shift pattern—with a "dog-leg" first gear—would be too difficult for U.S. drivers to master. Instead, U.S. M3s got the same "H-pattern" transmission used in the more pedestrian E30 325i.

Amarandos completed the drivetrain with a Sachs sport clutch, a lightened flywheel and a Quaife 3.73:1 limited slip differential, the latter taking the place of the original 4.10:1 limited slip rear end.

In place of the stock 7.0 x 15-inch basketweaves, Amarandos mounted a set of 8.0 x 17-inch SSR Competition alloys at all four corners, shod with 235/40-17 Toyo RA-1



The S14 four in Mark Amarandos' E30 M3 delivers 224 hp to the rear wheels through a close-ratio Euro-spec gearbox. Behind SSR Competition wheels, Brembo brakes arrest forward motion.



tires. At the same time, he installed 20mm wheel spacers and longer wheel studs to increase track width.

For serious track use, the right brakes are just as important as a properly engineered engine and suspension. In place of the BMW's original single-piston calipers and 280mm front/282mm rear rotors, Amarandos installed a Brembo big-brake kit with four-piston calipers and track-compound Hawk pads that clamp 330mm rotors at all four corners. The original rubber brake lines have been upgraded to braided steel for superior pedal feel, and a Wilwood proportioning valve allows bias adjustments from within the cockpit. Finally, a set of custom inlet hoses direct cool air to the front rotors.

The M3's purposeful, race-inspired bodywork is just fine as it came from the factory, though Amarandos prefers the look of BMW's final Sport Evolution edition to that of the plainer U.S.-spec original. At the front, he installed an Evolution II-type front lip extension, complemented by a Sport Evolution grille. At the rear, a larger Sport Evolution-type wing at the rear takes the place of the original.

The theme continues in the cockpit, where Amarandos fitted a gorgeous Sport Evolution suede steering wheel. He sourced genuine BMW Motorsport cloth from Germany and had it installed in the center sections of the front Recaro SRD buckets as well as the rear seat, which is otherwise original. Amarandos also fabricated a set of brackets that lower the front seats by about an inch to improve the car's center of gravity.

### Aggressive driving required

Those Recaros are supremely comfortable, but more importantly they lock the driver into the alert, upright driving position that this M3 demands. Acceleration is much stronger than in a stock M3, and the motor feels closer to a racing engine than a hotted-up street motor.

It doesn't have a great deal of torque—though, in fairness, I'd just gotten out of a 135i whose 300 lb-ft might have skewed my perception a bit. But the engine picks up speed quickly and power grows exponentially as the tachometer needle whips around the gauge. The engine relishes aggressive driving, and it enjoys being kept between

5,000 rpm and its 7,800-rpm redline. And the sound it makes is nothing short of hair-raising, its unmuffled exhaust emitting a raspy howl at high engine speeds.

The real heart of this E30 M3, however, is the chassis and suspension setup. The Ground Control coilovers at the front are on the stiff side, to be sure, telegraphing even the smallest bumps and surface imperfections right into the steering wheel. It's not quite masochistic, but only a real driving enthusiast would put up with it on a daily basis. The upside to this track-tuned suspension, of course, is instantaneous turn-in and a near-absence of body roll. The chassis is resolutely neutral around corners, an attitude that can no doubt be transformed into easily controllable oversteer at higher speeds or with more aggressive driving.

Amarandos thinks the car is perfect. He takes it to about four track days a year, never on a trailer. The car has never let him down on the way to the track or on the way home after a day of hot laps, proof positive that BMW's first M3 remains just as usable for street and track as it was the day it left the M plant in Garching. 🍀

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