

JANUARY 2004

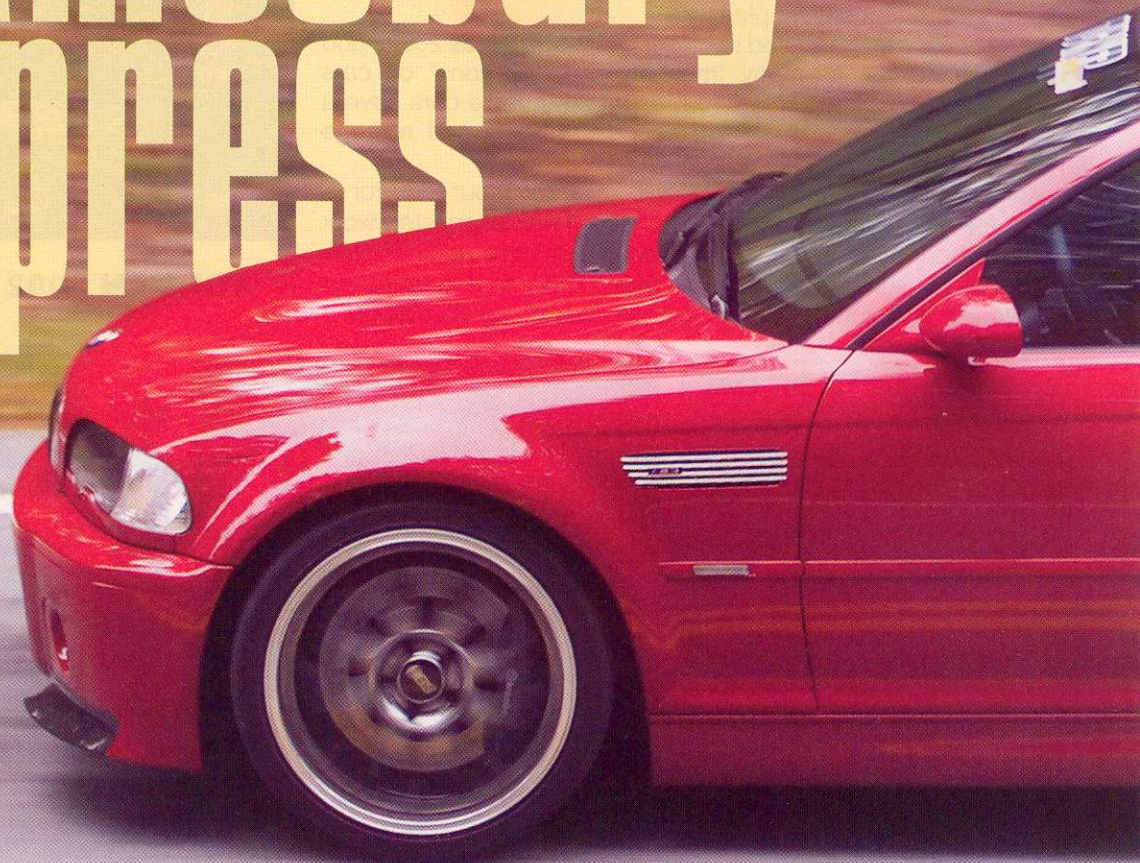
Roundel



**X3 + xDrive =
All-WHEEEE!-Drive**

The Amesbury Express

WANT AN M3 CSL, BUT AREN'T READY TO MOVE TO EUROPE?



It seems like every time I pick up one of my favorite car magazines these days, the M3 CSL is either on the cover or featured in an article. These articles invariably conclude with a review of how terrific the car is and a reminder that for those of us here in the U.S., it's as close as we're going to get to experiencing the factory's ultimate E46 M3.

Turner Motorsport (TMS) owner Will Turner also likes the M3 CSL, and decided

to build his own version using many of the performance parts that he sells out of his Amesbury, Massachusetts, shop and installs in his championship-winning World Challenge race cars. The end result is an M3 that is strikingly attractive, more than a match for the CSL in performance, and even more flexible for track work. "The goal we had when building the TMS M3 was to put together a package that would offer our cus-

tomers increased performance for both the street and track, without sacrificing too much in reliability or ride comfort," says Turner. "We also wanted to give our customers a good 'bang for the buck,' so we concentrated on things that made a difference."

Turner and his team have a wealth of experience preparing BMWs for driving schools and racing, so they knew exactly where the M3 needed improvement: reduc-

TURNER MOTORSPORT CAN BUILD YOU THE PERFECT CAR.



STORY AND PHOTOGRAPHS BY DAVID HAUETER

ing understeer, increasing braking performance, and enhancing low-end power. Turner also had the goal of giving his M3 a more distinctive appearance.

COSMETICS

There's certainly nothing wrong with the appearance of the E46 M3; it has muscles in all the right places. But Turner managed to pick the perfect components that accentuate



the original design without overstyling it. Enhancements include an M3 CSL-style front airdam, which weighs fifteen pounds less and reduces front lift by more than 50 percent compared to the stock M3. At the rear is a composite trunk lid like the CSL's, with an integrated spoiler that reduces lift. It's also lighter, as weight is trimmed through removal of the tool kit and the external lock mechanism (the trunk can be opened with the key remote). Since true CSL components are difficult to get without a CSL VIN number, Turner is having similar pieces made—and will offer them at a lower price than the factory. Another focal point of the TMS M3 is the striking BBS RS-GT alloy wheels, which look—to me, at least—significantly better than the stock wheels.

BRAKING

Braking performance has always been one of the weak points of the E46 M3 once you get the car onto a track—something we found out last year during our track test at Watkins Glen. With the power of the M3 and the excessive weight that it carries, it simply needs more stopping power for con-



The 19" BBS RS GT wheels are stunning—and allow a nice view of the Brembo brakes.



tinuous high-performance driving. TMS solved the brake-fade issue by installing 14" Brembo cross-drilled rotors on the front and the floating rotors from the Euro M3 on the rear, which help to dissipate heat faster and are less prone to warping. Brembo four-piston calipers are used all around, and stainless-steel brake lines distribute the brake fluid. Cool Willies carbon brake pads also help to manage the heat buildup from high-speed braking and provide more consistent pedal feel.

HANDLING

Understeer is a fact of life in modern high-horsepower cars, but it is not ideal for skilled drivers who make frequent visits to the track. Turner's goal with the M3 was to reduce understeer—but not get rid of it completely. "We knew from racing that the E46 cars return faster lap times when there is a slight push left in them," he says. The TMS upgrade involves stiffening of the suspension through the use of Moton Club Sport double-adjustable shocks, which have six settings for compression and rebound and are 50 percent stiffer than stock in the softest setting and 125 percent stiffer in the firmest setting. H&R Sport springs lower the car while providing a firmer set-up than stock, and a larger 31-mm front anti-roll bar helps reduce body roll. To handle the increased stiffness, TMS reinforced the shock towers and the front subframe.

POWER

Turner had another goal with the TMS M3: improving low-end torque as well as overall horsepower—not a simple task given the advanced development of the M3 engine. One of the simplest ways this was done was through installing Jim Conforti's Shark Injector software, which increases power by altering the fuel-enrichment map, cam timing, and ignition timing. The end

Moton double-adjustable shock absorbers have six settings for rebound and compression, providing great flexibility for street and track use.



The CSL airdam reduces lift by more than 50% compared to stock and gives the M3 a more menacing appearance coming up in the rear-view mirror.



result for the M3 is a peak gain of six horsepower and 1.6 foot-pounds of torque at the rear wheels, while the rev limit is raised to 8,100 rpm and the 155 mph top-speed limiter is removed (a point Turner eclipsed by a considerable margin during testing). Engine breathing is improved through installation of the Euro M3's headers and catalyst, as well as a Borla sport exhaust, which weighs only 37 pounds and delivers twelve additional horsepower—at least according to Borla.

Turner Motorsport brings their racing experience full circle by selling many of the parts that are developed and used in their World Challenge race cars. One of these products is their Power Pulley kit, which is designed to underdrive the water pump, power steering pump, and alternator, delivering a 10-20 percent decrease in drive speeds, which reduces the load on the engine. This decreased burden on the engine translates into additional horsepower to put to the road—an increase of 10.7 hp at 6,960 rpm and a torque increase of 8.1 foot-pounds at 5,550. Together, all of the TMS upgrades add up on the dyno to a total increase of 24 horsepower and 35 foot-pounds of torque at the rear wheels.



The composite rear trunk lid weighs less than stock and reduces lift with its integrated spoiler.

INFORMATION

www.turnermotorsport.com
www.motonsuspension.com
www.hrsprings.com

TMS M3 PARTS LIST

Carbon-fiber CSL-style front bumper: \$1,499

CSL-style rear trunk lid (unpainted): \$850

Shark Injector performance software programmer: \$349

Euro M3 headers/cat: \$3,080

Borla sport exhaust: \$899.98

Underdrive power pulley kit: \$299.95

BBS 19" RS-GT Wheels (Set of four): \$3,588

H&R sport spring set: \$259.95

Moton Club Sport suspension: approx. \$3,500

Brembo big brake kit (front, includes rotors, calipers, lines): \$2,995.95

Euro M3 floating rotors (rear): \$438

Brembo rear brake calipers (includes pads/lines): \$1,550

BMW Motorsport strut brace: \$324.95



Turner's next project for the TMS M3 is the addition of the CSL-style airbox, a TMS-built unit that is very similar to the stock CSL unit.

DRIVING

There's over 300 miles between Turner's headquarters in Massachusetts and my home in New York, a trip that if planned correctly will take you over roads ranging from Interstate to parkway with long sweeping turns to tight, twisty two-lane roads. Those first few hundred miles gave some strong initial impressions of the TMS M3, particularly in the ride and handling departments. With the stiffer shocks and springs, the TMS M3 has an acceptable level of comfort over bumps and broken pavement—if you have a strong tendency toward high-performance cars. If you don't, you would likely find it fairly harsh—but in that case you probably wouldn't make these upgrades anyway. This is clearly a car that is made for drivers who plan to spend a lot of time at the track, but still need to drive it on the road to get there.

The handling improvements made by TMS really transform the M3 on smooth, twisty roads. Driving south on the Taconic Parkway in Eastern New York and onto Route 301 to Cold Spring, the car was immensely satisfying to drive fast. The understeer that's present in the stock M3 has been almost completely eliminated, and it responds more quickly to directional changes. Turner's car still suffers from the somewhat vague steering that plagues all E46 M3s, but with the

reduced body roll, stiffer set-up, and larger contact patch, the car has more precise turn-in to corners and feels noticeably more composed in quick steering transitions.

To get a better idea of how Turner's car compares to stock, we drove the TMS M3 and Club member Paul Licata's M3 back-to-back on some of our favorite testing roads in New York's Harriman State Park. While the stock M3 is very impressive on these twisty roads (particularly with the Dinan exhaust and software in Paul's car), the TMS M3 really felt more buttoned down and poised in its handling. Turner's car also had more noticeable torque when powering out of second- and third-gear corners, and the Borla sport exhaust gave the car a much more authoritative voice, though we would be hard pressed to choose between the Borla and Dinan systems. Braking felt similar between the two cars, but we certainly trust Turner's assertion that the Brembo upgrades hold up much better in track driving. One thing we did notice is that the Cool Willies carbon brake pads feel more progressive and provide better pedal feel once they have some heat in them.

The race track would obviously be the most appropriate place to thoroughly test the various settings on the Moton Club Sport dampers, but after testing the system in different settings on the challenging roads of

Harriman State Park, we came away very impressed. Compression settings can be easily changed by simply dialing to the correct setting on the top of the reservoirs, and rebound changes are made by turning a nut at the top of the strut towers. In the lower settings, the Moton system (combined with the H&R springs) provides a more composed set-up than stock, and when dialed up to the stiffest settings, feels more go-kart-like in its handling response—almost akin to the razor-sharp precision of the Honda S2000.

World-class sports cars like the M3 come out of the factory at such a high level that it requires some investment to make consequential performance improvements. The great thing about the TMS M3 is that it can very competently serve double duty as both a road car and a track car, particularly with the flexibility offered by the Moton Club Sport dampers. This is a great car for devoted track junkies who want to get the most out of their car but can't necessarily afford a dedicated track car that can't be driven on the street. It's the kind of car we at *Roundel* love, the kind of car that found us looking for new places to drive it and experience its added potential, which is not yet fully realized. Will Turner still has some work planned on this car, with the CSL airbox, sport camshafts, and a lightweight flywheel on the agenda. We'll let you know how it turns out. ♦