

BMW Car Club  
of America  
North Star Chapter



# North Star Bavarian December, 2016



The BMW M Coupe shown was modified and built exclusively at BMW of Minnetonka.



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## What's Inside

Upcoming Club Events .....	2
Be all that you can be: E46 M3 .....	4-7
<b>*Newsletter Electronic Delivery*</b> .....	8
Polar Run 2017 .....	9
Winter Dinner.....	10
'M' Day recap.....	12-13

## On The Cover

December, 2016 .

This issue of the North Star Bavarian news letter's cover displays one of the least expensive examples of the make this Editor has ever purchased. A 1995 E34 525i/A come 'racecar' for this years annual Polar Run road rally from the Twin Cities all the way to Wisconsin Dells.



230,000 hard miles, and a French-made General Motors 4 speed automatic!

If you would like to see your car or BMW content on the cover of the next newsletter, feel free to email submission requests to [editor@northstarbmw.org](mailto:editor@northstarbmw.org)!

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## Upcoming Club Events

Annual Winter Dinner @ Gasthaus  
Saturday January 14th, 2017  
8390 Lofton Ave N, Stillwater MN 55082

Teen Street Survival  
Saturday January 21st, 2017  
Dakota County Technical College

Winter Car Control Clinic  
Saturday February 4th, 2017  
Dakota County Technical College

Teen Street Survival  
Saturday February 18th, 2017  
Dakota County Technical College

Motorwerks BMW Technical Session  
Saturday, February 25, 2017  
1300 American Blvd W. Bloomington, MN 55420

Teen Street Survival  
Saturday March 4th, 2017  
Dakota County Technical College

Winter Car Control Clinic  
Friday May 6th, 2017  
Dakota County Technical College

Autolieben  
July 30th, 2017  
Afton Alps

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# Be all you can be -- the E46 M3

words and photos by: Erik Berger

When BMW announced the E46 M3 would be brought to the USA with the same engine the rest of the world would have -- the automotive publications couldn't wait to get their hands on it. Prior to the E46 M3, USA really never got the 'full-fat' M3 engines. Sure, we got an S14 under the hood of our E30 M3 and that was an engine the rest of the world got, but we had stringent dual-cat exhausts and a conservative tune state. The E36 chassis was the biggest offender though. Where the rest of the world got the S50B32 individual throttle body inline 6 engine with double variable valve timing and 286 horsepower, the US Domestic Market got what were glorified 325 and 328 engine with larger bores, longer strokes and slightly hotted up cam shafts. What that meant for us was a more tame 240-horsepower rating and with that the cars weren't equipped with fancy floating hat brakes or the 210-mm large differentials the Euro vehicles were. Our S50B30US and S52B32US engines are FAR from bad powerplants and are well known to be reliable well in to the 300,000 mile range where the Euro S50B32s would have needed multiple major services, we still couldn't help but feel shorted by BMW.

Back to the E46 -- the S54B32 engine wasn't the only thing that made the car great, but it certainly didn't hurt. the S54B32 world engine carried the same basic block and head design from the European specification S50B32 engine, 6 throttle bodies, a large plenum and double VANOS variable valve timing, but changes to the cylinder head for better flow, a much more sophisticated Siemens engine control system and new fracture-split forged steel connecting rods which allowed for higher maximum engine speed brought the S50B32 Euro output in to the new ages with 333

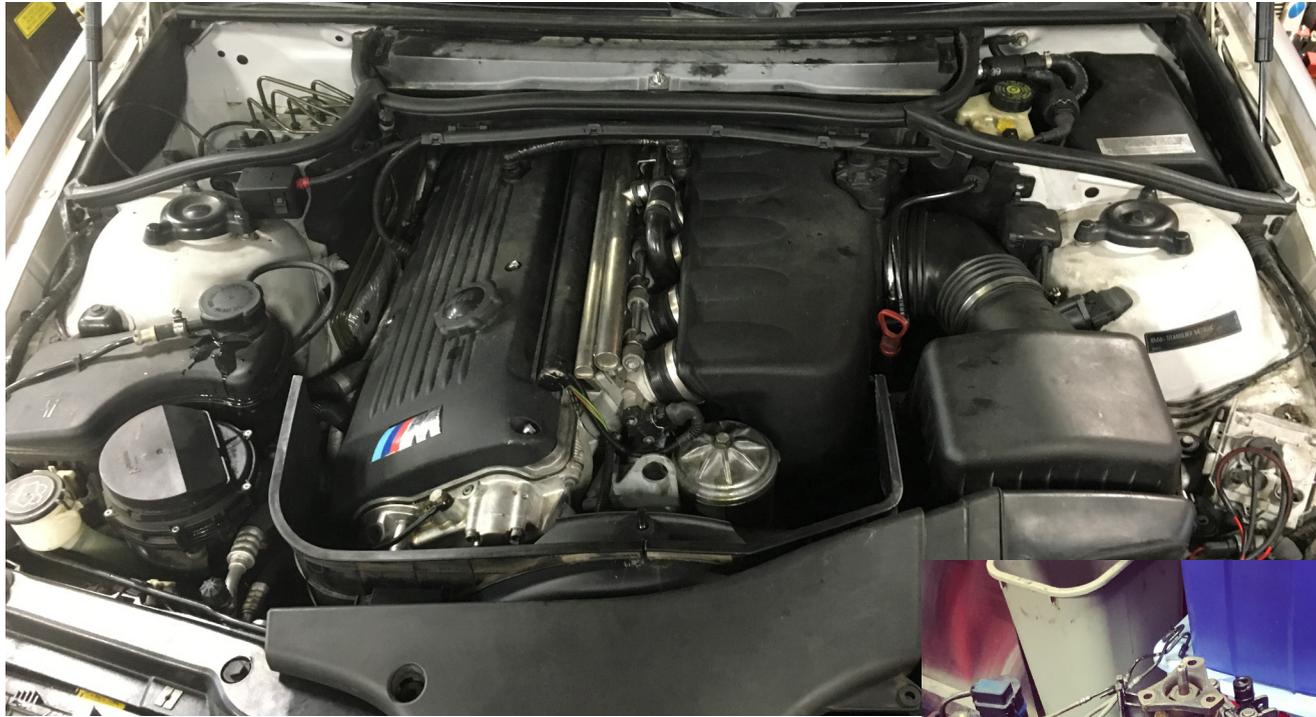


euro-spec-ponies, and to this day the S54B32 is the most powerful specific output commercially sold inline 6 normally aspirated engine BMW has ever produced in horsepower and torque.

BMW, when assembling the E46 M3 for the world market, left in the large 210-mm Limited Slip Differential with massive finned cover for track cooling, the 6 speed manual transmission that the Europeans got with the prior generation M3 was swapped with the S6S 420G 6 speed getrag box from the E39 M5 and a secondary air injection system along with primary catalytic converters were added, bringing our engine output down to around 321-horsepower.

When the E46 M3 finally hit the shelves in 2000, just ahead of its 2001 model year, the car was a hit. Easily besting not only its competitors, but a long list of then-supercars as well with a claimed 0-60 sprint of 4.8 seconds with the 6-speed manual transmission and of course that gentleman's agreement 155-mph limited top speed. Interior build quality was vastly improved, creature comforts were all there from the lesser E46 models and some new features as well like passive tire pressure monitoring and park distance control.





Externally the M3 was only subtly differentiated from its 328Ci brother with wider fenders, a lower, wider track, larger 18-inch wheels, bulged aluminum hood and the now quintessential fender vents which were originally added for cooling but were left even after engineering deemed them unnecessary.

Why all of this detail on a car you don't care about? Well, they're fantastic vehicles, and in a lot of ways, they're the first and last of a formula we in the USA only briefly saw. Values on these cars are at all-time lows and they will be remembered fondly by those who grew up alongside them as well as those who have the privilege of hooning one around a track or twisty road. You would keep your eye open for one. Really. Chances are if you buy the right car, you can thoroughly enjoy it for 5-10 years and not only come out even, but even make money on the endeavor.

"There's a \$6,000 2002 SMG convertible down the street in silver! Should I buy that one?" No, you probably shouldn't. At least not if maintaining or appreciating the value is on your mind for these cars. Certain configurations are well worth the small price premium these days. Although the convertible cars are great fun and are extremely practical, the values on the can-opener'd M3s have never hung on (except for the ultra dinosaur rare E30 M3 convertibles fetching well in to the 6 figure area), most convertibles were fully spec'd cars which means they have SMG gearboxes. What the devil does 'SMG' mean? It stands for Sequential Manual Gearbox.. You know, like 90's Formula-1 technology? You don't want that transmission. Yes, your wife can drive it, but that pain just is simply not worth the cost of admission. The SMG is not only like riding with a beginner manual driver behind the wheel at all times, constantly getting in your way of shifting, kicking down and herky-jerky clutch engagement, the electro mechanical and hydraulic nature of the units that control this system make them prone to failure, but the sophisticated electronics that drive them also require vehicle and unit specific computer interaction to replace, oftentimes leaving the rest of the car almost



worthless when the unit finally decides to give up the proverbial ghost.

Ok, so probably not a convertible, and I get why you should not buy the old tech SMG.. but you mentioned a year and also the color silver -- What gives there?

I'll start with the years. This may be a complete non issue if you get a car with documented service history, and no production E46 M3 is immune to these problems until they're specifically addressed with specific after-market parts, but in 2000, when these cars first launched, BMW was using 5W-30 oil in them. Oil that proved to be FAR too thin to protect the connecting rod bearings from the immense load presented by the connecting rods at 8,100rpm. BMW recalled the rod bearings on these cars, and lots of customers had it taken care of, but there are droves of E46 M3s out there with lower mileage that have never had this taken care of. If it hasn't been documented, have it done and make sure the updated BMW bearings or a VAC coated bearing set are installed. BMW updated the bearings in 2003 when the connecting rod bolt diameter dropped from M11 to M10 and the required oil went from Mobil 1 5W30 to Castrol TWS 10W-60, but as I said this is not a sure-fire reliable set of rod bearings. Bearings weren't the only issue -- the variable valve timing system runs on oil pressure. Oil pressure is generated by a pump on the front of the exhaust camshaft on these engines, and the machining tolerances weren't quite tight enough from the factory leading to some slop. Slop leads to immense G-loads on the oil pump drive hub and occasionally those metal tabs break off and fall in to the oil pan or worse, ingested by the timing chain on the engine, causing big dam-



age. Scary, right? Well, that's not the biggest Achilles heel of the S54 camshaft. 12 small bolts that secure all of the oily spinny chain bits and oil pump to the cams are prone to loosening themselves over time. A failure here almost always results in a completely destroyed engine.

As with any collector BMW, the boring colors do not hold up as well on resale. Titanium Silver will never net as much down the road as Laguna Seca Blue or Imola Red. Just be cautious if buying a car speculatively.

Any other issue on these cars is congruent with any other E46, rear sub frames are prone to cracking, as are the mounting points on the chassis. not expensive to have repaired, but the labor to have it R&R'd is quite expensive, so



a good PPI at a reputable shop dealing in these cars is well worth the financial outlay.

Ok, so there's a Phoenix yellow 2002 M3 coupe with an SMG and 90,000 miles down the street with a bad SMG pump for \$7,000 -- is that special color and the coupe body enough to offset the cost of fixing that transmission? Maybe, but the beauty of these cars is because the 6 speed manual and the SMG share the same physical transmission, that Getrag S6S 420G we talked about earlier, you can actually convert these cars from SMG to 6 (or even the brutally stout USM E36 M3 ZF 5 speed) manual transmission.

It's no secret at this point that a solid example, given the same color, year and options configuration will net you (or cost you) 50-100% more as a 6 speed manual than it will as an SMG, operable or not. I personally don't see that price gulf shrinking any time soon because the SMG cars just don't FEEL like an M car, and they're a constant source

of worry for the owners, never trusting them fully after a certain number of miles. I'd say buy that Phoenix yellow coupe, pending a PPI to ensure the sub frame is in good condition, immediately have the camshaft bolts replaced with some Fastenal 12.9 fillister head bolts and aerospace loctite, do the Besian systems VANOS oil pump drive gear and have the rod bearings replaced with the VAC coated units (While you're in there, ARP2000 rod bolts too!).

The SMG is bad, remember? Yeah, I'm getting to that -- ditch the SMG. If you can't drive manual, learn. Any financial outlay you have in to that swap, you WILL recoup in resale later on, so don't worry when the bill hits \$3,500-4,000+ on your swap if you pay someone like yours truly to do it for you, and take pride in having 'saved' a lovely timeless future collectible from the foul pits of SMG cursed existence with as little as \$1,500 investment in the conversion.

In the last issue, I made mention of a future project being a 2005 E46 M3 coming in for an SMG to Manual conversion -- Ok, great -- you do those all the time. True, but this car was going to be different. Since the owner is an avid track enthusiast and the



car does a whole heap of track miles, I made mention to him that the 5-speed ZF transmission the US Market got on a HUGE number of cars, but most famously in the E36 M3 was not only much stronger, quite a lot cheaper and lighter but it also was configured internally the other way around, meaning when you hit the brakes hard the oil goes to the front of the transmission where gears 1, 2 and 3 are (gears you are typically using while going slowly) and while accelerating, and the oil is at the back of the transmission gears 4 and 5 are bathed in that lubricant.

While the 6-speed Getrag is a very strong and well loved transmission, hard track use is not kind to these transmissions, and honestly the first 5 ratios in the Getrag are almost identical to the ZF 5 speed, only really losing the over-drive gear that most E46 owners don't really even care about.

Swapping in a manual box to the M3 is slightly harder than a non-M E46 in that the SMG computer is far more integrated to the Engine and Chassis computers than the 5 speed torque converter units in the lesser cars, certain other physical provisions, like a mounting point for the manual transmission carrier which is oddly missing from the SMG M3, but not missing from any ZF or GM automatic E46 non-M. There are OEM parts solutions to every facet of the conversion on the 6 speed, and all but the drive shaft on the 5 speed conversions.

The fun-to-drive factor of the car as a manual is not even on the same planet as pre-swap SMG, and amazingly since the conversions can be done so cost effectively and cleanly, the vast majority of the second-hand buyers of these cars simply do not care if the car was born an SMG. Some even prefer it due to the fact the engine cannot be mechanically over-revved with the computerized clutch and gear selection mechanism.

# Do you want a hard copy of the newsletter? This announcement requires action on your part!

You may choose to continue to receive a paper copy if that is your preference. Instructions are at the end of this announcement and will be sent to you in an email as well.

The North Star chapter of the BMW Car Club of America wants to keep you aware of activities offered by your club. We also enjoy presenting articles written by members. Whether in Electronic, or paper form, we will continue this service to you.

You have four months to take action if you want to receive a paper copy of your news letter. you can follow these instructions to change your preference at any time.

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# Polar Run: 2017

Words and photos by Erik Berger

Reliability, Speed, Build quality -- all things definitely not found in the BMW E34 525i/A, and all qualities of a car you want to take on a road rally like the annual Polar Run road rally charity race. While we are technically sponsored this year, however that definitely does not legitimize our 'Team Hoonicorn'. As two-year veterans, running every year the rally has been available, we have had a new rally car every year so far, always a car purchased for \$1000 or less and modified almost exclusively with parts just laying around the garage and storage units.

After a speeding ticket and 9 months of fighting it in Cook County, MN including a drive up with a lawyer to fight the small fine, I looked for a car that had cruise control that functioned, and with that hopefully something comfortable, with a good stereo and a heater. This E34 popped up in the hands of a good, old friend for a very attractive price and already bearing good Dunlop snow tires which we would definitely need for the rally. The car wasn't (and isn't) without it's fair share of flaws. 8 feet of fuel hard line was seeping fuel on to the exhaust, the rear left brake line rusted through on a test drive and the fuel pump committed harry kerry shortly thereafter. Still, Nothing I couldn't take care of with a spool of E85 capable fuel hose, a tin snips, and various other flare tools, oh, and that \$13 open box 540i fuel pump I randomly purchased years prior and was still on the shelf! Now, with the addition of a TON of vinyl from various performance outlets that legitimately sent free advertising upon my request and a massive \$30 eBay LED light bar on



the roof, the car is fully ready for the rally ahead, and its ultimate part-out and burial before the fourth-annual race in 2018 where I'll find another sub \$1000 BMW and run it once again with my trusty (and required) rally copilots. Stay tuned for a more complete article in (hopefully) the next issue after the rally culminates and we've got some funny stories to share and hopefully no catastrophic failure of the trusty steed that is HOONICORN(V3.0).

# Annual Winter Dinner

Come join us for the annual North Star Chapter Winter Dinner on Saturday, January 14, 2017 at the Gasthaus Bavarian Hunter located at 8390 Lofton Ave., Stillwater, MN. This year we are pleased to feature as our guest speaker Don Dethlefsen. Don has been restoring old cars for over 50 years. He spent 36 years in Lithography, sold his business when computers changed the craft and has spent the past 20 years restoring BMWs for customers all over the world. He is the Founder of The Werk Shop in the Chicago area.

The event will run from 5:00 PM - 8:00 PM in a private dining room and includes a buffet dinner of Sauerbraten, Mixed Sausages with Sauerkraut, Chicken Breast with Sun Dried Tomato Cream Sauce, Parsley Buttered Spaetzle, Red Cabbage, Mashed Potatoes & Gravy, Green Beans Almondine, House Salad, Dinner Rolls, Apple Strudel Cheesecake, Soft Drinks and Coffee. All other beverages will be on a cash bar basis.

The cost is \$30 per guest. Reservations Only - No Payment at the Door! This event usually fills up. (Maximum 95 participants)

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## Northstar BMW's fall BMW M day recap!



This isn't the first BMW Performance 'M' Day we've had and it definitely won't be the last! Thank you to all who attended and we're so happy that everyone who went unanimously had a great time saying things like 'Experience of a Lifetime. Bucket list item!' 'Great fun. Great value and great instruction since we didn't have a lot of past experience!' along with tons of glowing reviews straight from our group about the facility, the vehicles, the instructors and camaraderie!

Stay tuned for future 'M' dates and be sure to get your name in as soon as possible because these popular events DO fill up fast and are on a first-come first-served basis!





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