

# fast times

the newsletter of **Bavarian Autosport**

Spring 2012

## NEW! LED angel eye bulbs, angel eye rings, turn signal bulbs and license plate lights.



Above left: stock angel eyes on a 5 series 04 thru 10.  
Above right: LED bulb in the same 5 series 04 thru 10.  
Left: LED upgrade bulbs for Genuine BMW angel eyes on 1 series, 3 series 06 thru 11, 5 series 01 thru 10, 6 series 04 thru 11, 7 series 02 thru 08, X3 04 thru 06, X5 04 on, X6 and Z4 09 on. \$149.95 pair

**Let your BMW shine!** These cool new LED bulbs and angel eye rings from WeissLicht will help your BMW stand out from the crowd. They're 35–40% brighter than halogen and have a white light output comparable to a 6000K HID/Xenon kit. The bulbs are easy to install and feature a plug-n-play design that requires no modifications.

The add-on angel eye rings have 60+ LEDs in each ring (4 rings total), that produce a much brighter light than other aftermarket kits. (So bright, they compete with 2012 BMWs in terms of visibility.) Installation of the rings is a little more involved than the bulbs – you need to open your headlights to install the rings, then wire them accordingly – but very do-able if you are at all technically inclined. Instructions are included.

**We also offer complete LED angel eye headlight assemblies for most 3 series 84 on, 5 series 89 thru 03, 7 series 88 thru 01 and X5 00 thru 03!**



Above and top: LED angel eye add-on rings for stock BMW headlights that do not have angel eyes. Available for most 3 series 92 thru 03, 5 series 97 thru 03 and 7 series 95 thru 01. \$159.95 set of 4



Left: LED turn signal bulb for 3 series 06 thru 12. Available in amber (to replicate stock bulb color) or bright white. \$99.95 pair



Above: Stock license plate light shown on left; LED license plate light shown on right. LEDs lights are available for most 1 series, 3 series 92 thru 11, 5 series 97 on, 7 series 95 thru 08, X5, X6 and Z4. \$49.95 pair

## D.I.Y.: Automatic transmission fluid and filter change.



Here's a simple maintenance procedure that can prevent catastrophic (i.e. very expensive) transmission failure. See the article on page 7...

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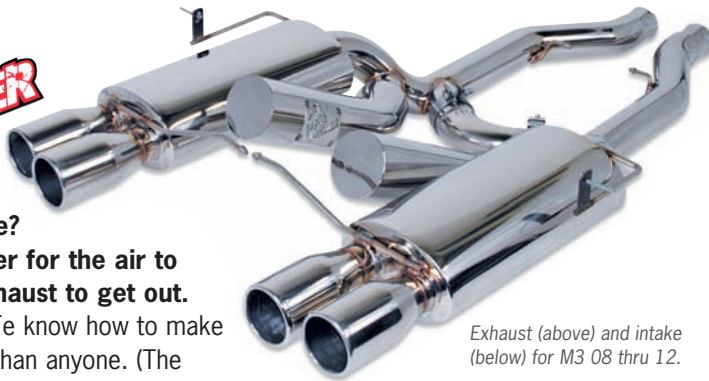
Just make it easier for the air to get in and the exhaust to get out.

The engineers at aFe know how to make this happen better than anyone. (The company isn't called Advanced Flow Engineering for nothing. Plus the company's founder and CEO, Nick Niakan, owns several BMWs.)

So now that it's prime driving season, what better time to add some horsepower and torque, and save a few bucks in the process. aFe is offering Bavarian Autosport customers some exclusive, instant rebates: get \$25 back on any Stage 2 intake kit for BMWs or MINIs, \$50 back on any exhaust for BMWs\* and \$100 if you buy both! Installations are bolt-on for most applications. To find out what's available for your year and model, ask your phone rep or visit [www.BavAuto.com](http://www.BavAuto.com).



\* Available for 135i, 335i and M3 08 thru 11.



Exhaust (above) and intake (below) for M3 08 thru 12.

## Product Focus: Our Berber floor mats combine style, strength and now savings.

Our Berber floor mats are made using a heavy-duty, 42oz. carpeting on top of an insulating layer, on top of a waterproof membrane. This "sandwich" is cut to fit your year and model BMW or MINI precisely, then finished with genuine serge edging for the ultimate in style and durability. A BMW-style Velcro retention system keeps them in place. You can order them: a) plain, b) embroidered with your model number in the center or c) embroidered with the Bavarian Autosport logo along the side. And now through April 30th, you can save \$15! Plain and Bavarian logo mats, originally \$129.95, are now \$114.95; model number mats, originally \$154.95, are now \$139.95. All are backed by a Lifetime Warranty.



Is it a match? Ask for free color samples!



Left to right: Medium Beige, Dark Beige, Medium Gray, Black and Dark Gray (mat set pictured at right).

## Product Focus: UUC Motorwerks stainless steel shift knobs



UUC Motorwerks is renowned for the quality of their performance upgrades, including their short shift kits (see page 6). It should come as no surprise, then, that their CNC-machined, stainless steel shift knobs are some of the finest, heaviest knobs we've ever had the pleasure to use. (And they're reasonably priced, too!)

- A. The RK5 knob features a "hood" at the base that wraps over the leather boot for a finished look. 5- or 6-speed BMW-style insert. 17.6 oz. \$139.95
- B. The RK5-EBB emergency brake handle matches the RK5 knob (A) with a "hood" at the base. \$114.95
- C. The RK6A is an ultra-short knob that is 2-position height-adjustable. 5- or 6-speed BMW-style insert. 14.1 oz. \$114.95
- D. The RK7 is an "ultra-short" knob that, like the RK6A (C), is 2-position height-adjustable, but the shift pattern (5- or 6-speed) is engraved on a rounded, stainless steel insert. 17.6 oz. \$114.95
- E. The RK2SS is the same as the RK5 (A) but without the "hood" on the base. 5- or 6-speed BMW-style insert. 17.6 oz. \$99.95
- F. The RK6A-L is a leather-wrapped version of the 2-position height-adjustable RK6A (C). Features the finest Italian leather, hand-sewn in the USA. 5- or 6-speed BMW-style insert. 14.1 oz. \$134.95
- G. The RK6A-L EBB emergency brake handle is a great match for leather-wrapped shift knobs. Finished in the finest Italian leather, hand-sewn in the USA. \$129.95

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*Not shown (see it at BavAuto.com):* The RK7A-L is a leather-wrapped version of the RK7 (D). Features the finest Italian leather, hand-sewn in the USA. 17.6 oz. \$134.95



Now thru April 30, buy a UUC shift knob and/or e-brake handle when you buy a UUC short shift kit (see page 6) and we'll take 10% off the knob and/or handle!



## Over 280 years of BMW/MINI experience is yours for the asking - free!



If you add up all the years the enthusiasts at Bavarian Autosport have been working on BMWs and MINIs – and helping people like you work on theirs – it totals well over 280 years. That's a lot of knowledge under one roof. And it's yours for the asking. Have a question about your BMW or MINI? Search Bavarian Otto's knowledge base of nearly 1,000 tech Q&As at [blog.BavAuto.com](http://blog.BavAuto.com), or call 800.535.2002.

### Tire saver or traction improver? The answer is, "Yes!"

Dear Bavarian Otto,

I have two questions about the rear camber kit for my 2000 Z3. I am considering this purchase for the purpose of increasing tire life.

1. How does it affect the rear track?
2. What is the camber adjustment range?

Annette

Otto replies:

*The rear camber bushing kit will not appreciably affect the rear track width. However, when reducing the negative camber for better tire wear, the top of the tire will be moved farther outboard – closer to the upper lip of the wheel opening – by a very small amount. (This should not be an issue unless you are running a larger than stock wheel/tire set-up that is already very close to the fender lip, in which case reducing the negative camber could potentially cause the tire to rub on the inside of the fender lip.) As for the camber adjustment range, it is about 1.5 degrees in either direction from the stock position (3 degrees total). Note that the camber kit for your application also allows rear toe adjustment. (Not all camber kits do.) For best tire wear on a standard street car, we typically recommend about 1/4 to 1/2 degree negative camber with the BMW factory toe setting.*

Blog comment from Steve W. in California:

Whoa! I was a bit apprehensive about buying an adjustable camber kit but went ahead and ordered it and had it installed in my 1985 535... My mechanic was blown away and said I was ready for the track. It helped get my tires more vertical so they don't wear as much. And as far as the handling, I check my rear view mirror when I go through a tight turn and the car that was in the mirror is now left in the dust!

[Ed. Note: all adjustable camber kits are on sale during the month of April.]

### Cleaning Mass Air Flow Sensors

Dear Bavarian Otto,

I was wondering where is the Mass Air Flow Sensor in my '97 528i and how to clean it properly.

Mark

Otto replies:

*BMW started using Mass Air Flow sensors (MAF) in the early '90s on most models. (Note that MINIs and some latest model BMWs do not use this system and do not have MAF units.) The MAF units use an electrically heated wire or metal film that is cooled by the incoming air. The cooling changes the resistance of the sensor wire or film and, hence, the voltage that is*

*allowed to flow through the wire or film. The Engine Control Unit (ECU) measures this change, determines the mass of the airflow into the engine and makes its calculation accordingly. On most BMWs, the MAF is located directly behind the air filter box. It typically is a cylindrical unit that is connected directly to the filter box. Some later models have MAF sensors that incorporate just the sensor itself (without the cylindrical airflow housing) and are mounted in the air filter box or in another location within the intake system. Over time, the MAF hot wire or film becomes dirty from contaminants in the air. When this happens, the sensor becomes less responsive and sends inaccurate information to the ECU. This leads to a degradation of engine performance and efficiency. Bavarian Autosport fully recommends periodic cleaning of the MAF sensor wire or film. Once per year is adequate for most applications. To clean the MAF, simply remove it and liberally spray the hot wire or film with Mass Airflow Sensor Cleaner, available from Bavarian Autosport for \$7.95 (part #05110). DO NOT use ordinary electrical or contact cleaner on the MAF or try to scrape the build-up off the wire or film – this can permanently damage the MAF and a new one is rather expensive (currently \$339.95 for your 528i). After you have sprayed the Mass Airflow Sensor Cleaner, allow the unit to dry thoroughly before reinstalling. If you believe there is still build-up on the hot wire or film after it has been sprayed once, feel free to spray and let dry again.*

## Product Focus: Red Line full-synthetic engine oil

Most dealerships perform oil changes at 15,000 miles using bulk motor oils that just meet the minimum BMW Long-Life spec (LL-01). As a result, many newer 3 series and 5 series engines (N52, M54, M56, N62) come "off warranty" with issues of sludging and wear. The high detergency of Red Line's 5W30 motor oil helps these engines by cleaning up the mess, promoting longer engine life and preventing a potential, costly engine rebuild. In addition, Red Line's high natural viscosity index (VI) provides a thicker oil film on bearings and cams, and promotes proper VANOS operation. Red Line's 10W30 and 10W40 motor oils feature similar characteristics and are often utilized in older, high-mileage engines and warmer climates. Other advantages of Red Line:



- Group-V Ester Base Stocks for stability and a longer drain interval.
- More than 1200ppm of ZDDP (a zinc-based compound) for wear control.
- Industry-leading NOACK (evaporation rating) and high temp/high shear properties.

*TECH TIP: Many independent technicians remove the cam covers on troubled engines to find a mess that cannot be safely "scraped away" without risk of blocking oil passages. Running Red Line motor oil for one or two shorter drain intervals (2,500–3,000 miles) safely removes as much sludge as possible before establishing longer Red Line drain intervals for the rest of the engine's life.*

We carry the full line of Red Line high-performance motor oils. Quarts start at \$10.95 each, while gallons start at \$41.95 each.

## DIY: Installing a short-throw shift kit. *🔧🔧🔧*

Replacing your worn out, stock shifter with a short-throw shift kit not only lets you save time during shifting, it upgrades inherent weaknesses in the stock design, giving you tighter, crisper shifts and a longer-lasting shifter. Follow along as we install a UUC short shift kit and selector rod on a 3 series 92 thru 98 (E36 chassis). This model is an M3 but the procedures are applicable to most BMW standard transmissions from 1986 on. (Earlier models incorporate a different shifter support arm design, but otherwise the shifter assembly is basically the same.)

### Tools used:

- Ramps or floor jack & jack stands
- 3/8" or 1/2" drive ratchets, extensions and 10mm thru 18mm sockets
- Metric combination wrench set (box-end & open-end) 10mm thru 18mm
- Standard screwdrivers and basic toolbox items, such as; pliers, etc.
- Bentley repair manual

### Parts used:

- UUC short shift kit
- UUC DSSR (double-shear selector rod)
- New forward shifter connector stub/bushing assembly
- Exhaust gaskets/hardware as needed (e.g. catalytic converter install kit)
- Driveshaft coupling flex disc with fasteners, as applicable

**NOTE:** To make this job easier, we will remove the exhaust and driveshaft. (If you have never done this before, don't worry – these are straightforward tasks.) In some cases, the short shift kit can be installed without removing the exhaust or the driveshaft, but on most models, the job is easier if the exhaust and the front of the driveshaft are moved out of the way. In removing the exhaust, we have two options: Since the catalytic converter is what is actually in the way, we can either remove just the converter (by disconnecting it at the exhaust manifolds and at the converter-to-muffler connections) or we can remove the complete exhaust assembly as one long unit (just disconnect the converter at the manifolds). In this case, we will remove the complete exhaust as one assembly.

**1.** Raise and support the vehicle, using the proper safety precautions. While the short shifter installation can be done using drive-on ramps, the work is much easier to perform if you can get both ends of the vehicle up in the air, as you will be working in the center, removing exhaust components and the front of the driveshaft.

**2.** Remove any under-chassis splash or heat shield panels that may impede access to the exhaust, driveshaft and transmission.

**3.** Disconnect the oxygen sensor harness plugs from the vehicle harness plugs. Depending on the year and model, there may be from one to four sensors that are mounted in the converter assembly.

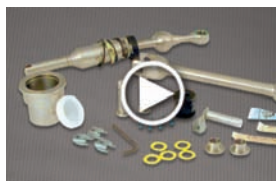
**4.** Using a socket (size varies from model to model), universal joint, extensions and ratchet,

remove the exhaust manifold to catalytic converter nuts (or bolts, as applicable) (figure 1). Support the front of the converter assembly with a floor jack or jack stands.



Figure 1

**5.** Support the rear of the muffler assembly with a jack or jack stands. Disconnect the middle muffler pipe hanger(s) and the rear muffler can hangers. Carefully lower the converter and muffler assembly from under the vehicle and set it aside...



To read the rest of this article and watch our DIY video, go to [blog.BavAuto.com/go/shortshift](http://blog.BavAuto.com/go/shortshift).

## Product Focus: UUC Motorwerks short-throw shift kits.



White lines = distance stock shifter travels.

Above: UUC short shift kit mounted in a stock BMW shifter support arm, with a UUC DSSR connected below.

**The “ultimate” short shifters.** UUC is well known for engineering each product to the highest possible standards. These shifters are no different. They reduce shift throw by 30-40%, while zero-clearance bushings eliminate all play. The upper section is height-adjustable by as much as 3/4” so you can optimize for comfort and ergonomics. The CNC-machined, stainless steel lower section features an integral pivot ball and self-adjusting primary pivot bearing. Then there's a separate inner silicone section that isolates the upper section from the lower, absorbing vibrations before they have a chance to get to your hand.

### 100% bolt-on.

All UUC short shifters are 100% compatible with original BMW shifter support arms and knobs. The bolt-on installation requires no irreversible changes to your BMW.

### Don't forget the DSSR.

For even greater precision, better feel and longer life, we highly recommend adding the UUC DSSR (double-shear selector rod). The BMW selector rod connects the bottom of the shift lever to the shift rod connection on the transmission on just one side. Over time, the torsional force exerted by this lopsided design creates excessive lateral (side-to-side) play. The DSSR has fork-style (a.k.a. double-shear) connectors on its ends to apply pressure evenly across the face area on both sides of the connections. This reduces lateral play and extends the useful life of the shifter.



UUC's DSSR comes with stainless steel locking pins, urethane washers and lubricant.

**Special offer!** Now thru April 30th, when you buy a UUC short-throw shift kit, we'll take 10% off any UUC shift knob and/or e-brake handle (page 2) if you buy those at the same time!



## DIY: Installing a Bavarian Autosport sway bar kit. *🔧🔧*

Sway bar kit for 3 series 99 thru 05.



Pop quiz: Which suspension upgrade is the easiest to install, offers the greatest improvement in handling, and is the least expensive? (The headline offers a big hint.)

For most street-driven vehicles, upgrading the sway bars will have a greater effect on handling and cornering than performance springs and shocks. And sway bars do not change the ride quality or feel harsh on poor road surfaces. For a BMW or MINI owner who would like improved handling but may not wish to change the vehicle's height or ride comfort, upgraded sway bars are the perfect answer. They can be installed by you (yes, you) in a couple of hours, and no special tools are required.

Follow along as we install a Bavarian Autosport sway bar kit on a 330ci (3 series 99 thru 05, E46 chassis). The procedure would be almost identical for other E46 models as well as the 3 series 92 thru 98 (E36).

Follow along as we install a Bavarian Autosport sway bar kit on a 330ci (3 series 99 thru 05, E46 chassis). The procedure would be almost identical for other E46 models as well as the 3 series 92 thru 98 (E36).

### Tools used:

- Ramps or floor jack & jack stands
- 3/8" or 1/2" drive ratchets, extensions and 10mm thru 16mm sockets
- Metric combination wrench set (box-end & open-end) 10mm thru 18mm

### Parts used:

- Bavarian Autosport sway bar kit (more info at BavAuto.com)
- New front & rear end links, if needed
- New bushing brackets, if needed
- Liqui Moly anti-seize compound

**1.** Raise and support the vehicle, using the proper safety precautions. While the sway bar installation can be done using drive-on ramps, the work is much easier to perform if you can remove the wheels and let the suspension hang, as opposed to having it compressed on ramps.

**2.** Remove the applicable wheels (front for installing the front sway bar, etc.).

**3.** Remove any under-chassis splash panels that may impede access to the sway bars.

### Installing the front sway bar

**1.** Disconnect the links from the sway bar ends (figure 1). For models that have links connecting from the sway bar ends and upward to brackets on the strut housings, see step 1a.



Figure 1

**1a.** Use a thin, 18mm open-end wrench to hold the link's ball-joint and stud (between the boot and the sway bar) while loosening the securing nut. Note that the link-ends have two flat spots on a flange just between the link-end's boot and the side of the sway bar end. These flats are typically 18mm in size (width), but we have seen other sizes, such as 16mm. A fairly thin, open-end wrench is required to insert between the boot and the side of the sway bar...

Our sway bars are on sale thru April 30th! See page 8...

To read the rest of this article and watch our DIY video, go to [blog.BavAuto.com/go/swaybar](http://blog.BavAuto.com/go/swaybar).



## D.I.Y.: Automatic transmission fluid and filter change. *🔧🔧*

The fluid in an automatic transmission is the lifeblood of the transmission, functioning as a lubricant, a coolant, a detergent, a clutch and more. Clean fluid is absolutely critical to the life of the transmission. When we come across non-functioning automatic transmissions, we usually find that the fluid and filter were not changed at regular intervals, if ever. (BMW recently dropped the word "lifetime" from their fluids and filters and now uses "extended service.") We recommend changing automatic transmission fluid and filters every other year or at 50,000 miles. *You must use the proper fluid for your application.* (We carry them all.) In this DIY, we will change the fluid and filter on a 2000 528i wagon. Other models may have different shaped fluid pans, filters, fill/drain plug locations, etc. The general procedures, however, apply to all automatic transmissions. The Bentley repair manual for your year and model will detail the specifics.



### Tools used:

- Bentley repair manual
- Ramps or floor jack & jack stands
- 3/8" drive ratchet, extensions and 10mm through 16mm sockets
- 3/8" drive Torx male bits for use with the 3/8" ratchet (if needed)

- 3/8" drive Allen male bits for use with the 3/8" ratchet (if needed)
- Metric combination wrench set (box-end & open-end) 10mm thru 18mm
- Fluid transfer pump
- Fluid drain pan
- Absorbent mats

### Parts used:

- Automatic transmission fluid
- Transmission filter kit
- Magnetic drain plug

**NOTE:** For complete draining as well as proper refilling, we want the transmission to be at operating temperature. Drive the vehicle until the engine is fully warmed up, then drive at higher road speeds (50 mph to 70 mph) for a couple miles prior to starting this procedure. **CAUTION: The engine, exhaust and the transmission will be hot! So will the transmission fluid!** Use caution when working under the vehicle and draining the hot transmission fluid.

**1.** Raise and support the vehicle using the proper safety precautions. We need to have the vehicle high enough to easily access the transmission fluid pan for fluid draining and pan and filter removal. This work can be done using drive-on ramps, but access to the transmission area is easier if the vehicle is higher. Additionally, the vehicle needs to be level when we start to refill the transmission fluid. Therefore, it is recommended that the front and the rear be raised equally.

**2.** Remove any splash panels that may impede access to the transmission fluid pan.

**3.** Position the fluid drain pan under the fluid drain plug in the transmission pan.

**4.** Remove the fluid drain plug and allow the fluid to drain into the drain pan (figure 1).

**5.** Loosen the transmission fluid pan mounting bolts: work in a criss-cross pattern starting from the middle of the pan, working outward toward the front and rear...



Figure 1



To read the rest of this article and watch our DIY video, go to [blog.BavAuto.com/go/automatic](http://blog.BavAuto.com/go/automatic).