

Eibach sport suspension kits help you go faster, stop sooner, look better, save money.

When it comes to performance suspension, Eibach is the #1 choice of motorsport champions worldwide. We've been selling Eibach springs and sway bars for years because they offer:



Pro-System-Plus includes Pro-Kit springs, Eibach performance shocks and Anti-Roll sway bars.

Eibach also produces complete suspension kits engineered specifically for assertive drivers of BMWs and MINIs. These kits lower your car's center of gravity to provide more immediate steering response, reduced body roll, increased stability and enhanced cornering ability... without lowering ride quality. What does all this mean for you?

Better performance, a cooler appearance, greater safety and improved fuel economy.

Independent tests performed at Willow Springs Raceway

- Precision tolerances – the tightest in the industry.
- Extensive development and testing on road and track.
- Reduced weight for less unsprung mass (i.e. quicker acceleration and shorter braking).
- Exceptional durability with very little degradation of performance over time.

prove that replacing a stock suspension with Eibach improves acceleration, cornering speed, braking distance and even fuel economy. (See our web site for details.)

You can now get all seven Eibach suspension kits through Bavarian Autosport.

- **Pro-System.** Matched set of Pro-Kit springs and Eibach performance shocks.
- **Pro-System-Plus.** The Pro-System with sway bars.
- **Sport-System.** Matched set of Sportline springs and Eibach performance shocks.
- **Sport-System-Plus.** The Sport-System with sway bars.
- **Pro-Street-S.** Coil-over kit with adjustable ride height (rust-free, stainless steel housings).
- **Multi-Pro-R1.** Coil-over kit with adjustable ride height and shock valving (a single adjustment for both the rebound rate and compression rate).
- **Multi-Pro-R2.** Coil-over kit with adjustable ride height and shock valving (individual adjustments for rebound rate and compression rate), plus remote reservoirs for easier access to the adjustment knobs.



Multi-Pro R1 coil over kit lets you adjust chassis height and the rebound/compression rate of the shocks.

You also get better pricing.

Buying any Eibach System or System-Plus saves you 10% over buying the same items individually, and we're offering the coil-over kits at special introductory prices. Eibach Systems and coil-over kits range from \$794.95 to \$2,274.95. To figure out which of these options is best for your car and how you drive, ask your phone rep or visit www.BavAuto.com.

In an hour you can add 27 hp to your BMW twin turbo.



aFe Magnum Force intake installed on a 2008 335i.

We've been touting the advantages of aFe Magnum Force cold-air intake kits for years. Not only do they improve the power and performance

continued on page 2...

fast times table of contents

Eibach sport suspension kits	1
aFe intakes for twin turbo BMWs	1
Product Focus: Ultimate mats	2
How to order custom seat covers	2
Ask Bavarian Otto	3
Bavarian Profile: Linda Laprade	3
D.I.Y.: Preventive maintenance, part 2 – under the car	4–6
Product Focus: Our exclusive Pagid Red brake pads	7
New Scorpion exhaust application	7
Paint repair: Bye-bye road rash	7
April specials	8

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twin turbo intake continued from page 1

of your BMW or MINI, they give it a more aggressive sound. Now the engineers at aFe have developed dual-filter intakes for the BMW twin turbo engines used in the newer 1, 3 and 5 series. These kits increase air flow (CFM – cubic feet per minute) by more than 90%! Here’s how they are able to achieve this:

- The OE panel air filter is replaced with two high-flow, 360° air filters with the deepest pleats in the industry.
- The factory air box is replaced with a heat shield that seals tight against the hood. This keeps hot air that’s trapped under the hood from entering the engine and robbing you of power. (Hot air is less dense than cold air, so there’s not as much oxygen entering the combustion chamber.)

The results are maximum gains of 27 hp and 35 ftlb of torque. The kit is available with your choice of reusable Pro5 R filters (oiled blue, shown on page 1) or ProDry S filters (non-oiled white, above).

You can also add Dynamic Air Scoops (left). They mount behind the front grills to provide a “ram air” effect, using motion to increase static air pressure in the intake manifold for even greater flow. aFe intake kits range from \$231.95 to \$699.95. Purchase one by April 30 and get a \$25 manufacturer’s rebate.



Dynamic Air Scoops (DAS) which mount behind the front grills to provide a “ram air” effect.



aFe twin turbo intake with dual, ProDry S cone filters.

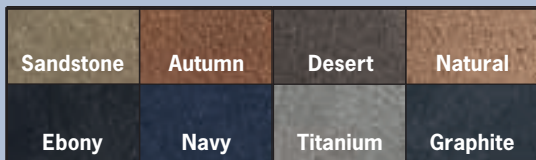
Buy any afe intake kit by April 30th and get a \$25 manufacturer's rebate!

Ultimate floor mats for BMWs and MINIs

Our Ultimate floor mats are the ultimate in luxury and durability. They’re made with 54oz. carpeting that is so thick, you’ll be tempted to drive barefoot. They’re cut to fit your year and model precisely for a perfect fit. They’re offered in eight colors (below), in your choice of plain or with our logo embroidered on the front mats. They come with a true Lifetime Warranty. And now through April 30th, they’re the ultimate deal – normally \$139.95 set, we’re discounting them to \$124.95.

P.S. Make sure you get the right color; ask for free color samples before ordering.

Even our 32oz. Plush mats (near right) and 42oz. Berber mats (right center) seem to pale in comparison to our super-plush, 54oz. Ultimate mats (far right).



Before ordering seat covers, determine which seats you have.

Last fall we introduced a line of custom-fit seat covers. Made of synthetic leather, they use patterns taken directly from measurements of BMW factory seats so they fit like a glove. They’re comparatively inexpensive (\$199.95 front pair or rear bench). And they’re available in assorted solid colors and duo-tones (below). Since their introduction, we’ve delivered hundreds of these custom covers to delighted BMW owners throughout North America. Some of these owners use the covers to protect the fine leather upholstery in their Bimmers; some are giving older interiors a facelift by covering up cracked, faded or torn upholstery; and still others are simply adding some style to the interior of their Bimmers.

But not everyone who ordered these covers was totally happy, and we take full responsibility. One reason was the active headrests that are standard on newer BMWs. They’re connected to the car’s electrical system and cannot be easily removed, making installation of the seat covers next to impossible (or very expensive). We are in the process of identifying which cars have these headrests and will not be offering seat covers for those models. (Sorry.)

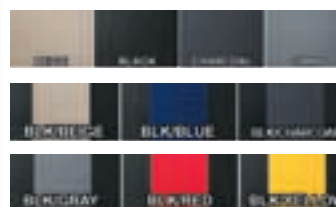
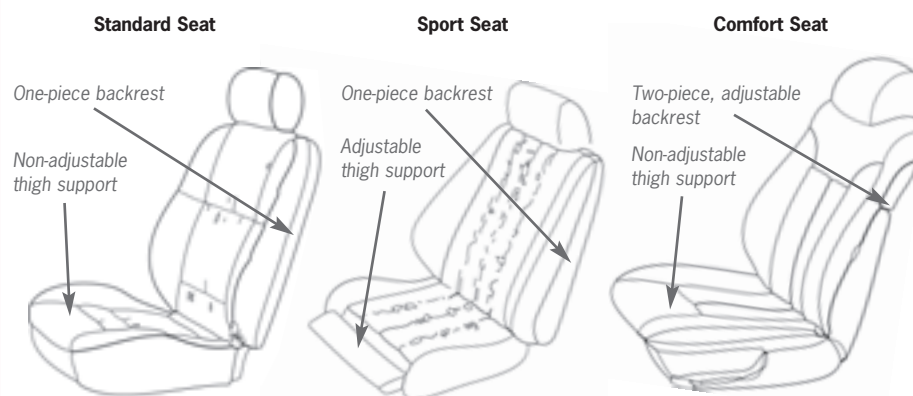
The other issue was that we didn’t fully explain the difference between BMW’s Standard, Sport and Comfort seats. So as part of our mea culpa, here are three illustrations to help you figure out what kind of seats you have in your Bimmer.



Above: Custom-fit seat covers on Sport seats in a 330i. Notice how nicely the covers fit on the adjustable thigh supports and side bolsters.



Above: Custom-fit seat covers on a 330i rear seat. Center panel with velcro opens to allow use of the armrest.



These custom seat covers are available in your choice of four solid colors (top row) or six duo-tone combinations (bottom two rows).

Make sure you get the color you want – call and ask for free color samples.

from our tech team ask "bavarian otto"

Over 200 years of BMW experience is just a phone call or e-mail away.



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 200 years. That's a lot of knowledge under one roof. And it's all yours for the asking. Have a question? Ask that savvy, BMW and MINI enthusiast, "Bavarian Otto" – just call 800.535.2002 or e-mail Otto@BavAuto.com.

The old, gray fluid ain't what it used to be... ⚡

Dear Bavarian Otto,

I loved the article on do-it-yourself preventive maintenance in the last issue! I just checked the power steering fluid on my '99 M Coupe and have a question about the color. It's grey without even a slight reddish hue, but it doesn't look too old or beat up. Could it be a different type of fluid than mentioned in your article? Please advise on how I should proceed.

John K.

Otto replies:

I am not surprised at the gray color of your original power steering fluid. This is quite normal when the fluid ages. The proper fluid is Dexron III (or higher) automatic transmission fluid. We offer a synthetic fluid from Red Line. I would suggest that you have about 3 to 4 quarts on hand for the fluid flush. Additionally, I would recommend a new filter (the filter is encased in the plastic reservoir). Here are three options for flushing the power steering fluid:

- 1) You can remove the fluid in the reservoir using any type of suction tool (turkey baster, vacuum pump, etc.). Replace the reservoir/filter (or just the filter on some models). Note that there may still be a fair amount of fluid in the bottom of the reservoir. Be prepared to catch the fluid with a large rag. Refill with fresh Dexron III fluid (or CF-7.1 or CF-11, if applicable – refer to the fluid tag on the reservoir). Start the engine. Keep drawing out old fluid and refilling with fresh, letting the engine run for a few minutes in-between each draw/refill session. Eventually, the fluid will be bright and clear, indicating that most or all of the old fluid has been removed.
- 2) After drawing most of the old fluid out of the reservoir, you can disconnect all of the hose connections at the pump, steering rack and reservoir and let everything drain. Install the new filter/reservoir. Reassemble all of the hoses and then follow Option 1 (above) for refilling.
- 3) Draw the fluid from the reservoir. Install the new filter/reservoir. Remove the return fluid hose from the bottom of the reservoir. Place the hose in a bucket (you may have to attach a double ended nipple and more hose to get all the way to the bucket). Use a plugged piece of hose to cap the nipple on the reservoir (where the return hose was attached). Be prepared with a few quarts of fresh fluid. Fill the reservoir. Have a helper start the engine and then keep pouring fresh fluid into the reservoir until the fluid coming out of the return hose (in the bucket) is fresh and clear (do not let the reservoir go dry). Turn off the engine. Re-attach the hoses. Fill the reservoir and start the engine. Adjust the fluid level as needed.

Good luck, John. Contact me if you have any further questions.

... and when I move the sun visor, the radio goes off! ⚡

Dear Bavarian Otto,

I am on active-duty in the U.S. Navy and was deployed to Iraq from July to February. When I returned, I found that the battery in my 1999 528i was bad. I had a new battery installed but my keys would not re-code. My local tech tried to re-code my keys, but couldn't. So I took it to another tech in my area. He was able to program the keys, however now my air bag warning light is on and is flickering bright/dim. While the air bag light is on, none of the controls on my steering wheel work, nor do the heated seats. And my radio intermittently goes on and off. My tech has spent numerous hours trying to locate the problem, but he has not had any luck. Any ideas?

Jay H.

Otto replies:

From the description of your symptoms, I would say that you likely have a faulty ignition switch (the actual electrical switch in the lock assembly in the steering column). This is becoming a very common problem, especially on 7 series 95 thru 01 and 5 series 97 thru 03. It can affect the various systems that you've mentioned, as well as others. (One customer told us that when he moves the sun visor, the radio shuts off.) For your 1999 528i, the part is #61 32 6 901 961 (\$49.95). I would also recommend getting a Memory Saver #295A (\$9.95). This plugs into your cigarette lighter and uses a standard, 9-volt battery (not included) to keep your on-board computer and radio from losing their codes and pre-sets when you disconnect your BMW's battery (which you will need to do to replace the switch). Replacement is a fairly simple procedure and is covered in detail in the Bentley manual. For your car, the Bentley is a 2-volume set, #B502 (\$129.95). So for \$190 and an hour or so of your time, you can make all those electrical gremlins go away... for a lot less than a tech would charge.

To change or not to change (the transmission fluid)... ⚡

Dear Bavarian Otto,

I have a 1999 323i 4-door with 115,000 miles on it. When the car is cold, the automatic transmission doesn't want to engage. However, once the car warms up a bit, the transmission engages. It has been doing this for a couple of

continued on page 6...

Bavarian Profile



Linda Laprade

As our daytime receptionist, Linda is the voice of Bavarian Autosport, and has been for more than 11 years. Linda first came to us as a summer temp-worker in 1997. At the time, she was working in a school system during the academic year. After spending a few months here, she decided to join us full-time. (Probably because we let her listen to her favorite oldies station – we know it's not because we're better behaved than school kids.)

Prior to working for the school, Linda and her husband, André, owned and operated a few McDonald's restaurants in both Maine and NH. They have a son, a daughter and three grandchildren. In addition to being a full-time employee and doting grandmother, Linda is an avid quilting enthusiast and holds a board position with her local Quilter's Guild. She also enjoys baking and is nice enough to offer many of her creations to anyone (especially those of us trying to lose weight) who walks by her desk.

... Wonder if we can convince her to do the same thing with her quilts?...

Preventive maintenance, part 2 – inspecting under the front of the car. ✂✂

In part one of our inspection series in the Winter 2008-2009 *Fast Times* (www.bavauto.com/newsletter), we showed you how you can save money by checking wear and maintenance items under the hood. Now we will show you how to do under-car inspections. Doing these inspections yourself will save you a lot of cash over paying someone to do it, but the real savings come in identifying potential problems in your steering, suspension and brake systems before they become disasters. In this article we will present inspections under the front of your vehicle: inspections under the rear of your car will be covered in the next issue.

Jacking up your car.

The first thing you need to do is get the car in the air so that you can crawl under and around the front end. Now is the time to use the floor jack and jack stands that we discussed in the Winter 2008-2009 *Fast Times*. In using a hydraulic floor jack, you want to be sure that you place the jack's lifter pad on a structural part of the car that can support the weight of the vehicle as you raise it. Similarly, you need to place jack stands under areas that can fully support the vehicle's weight when the jack is lowered.

WARNING: Make sure your car is on a level, sturdy surface such as concrete. DO NOT jack up a car that is parked on dirt, lawn or sand. DO NOT jack up a car that is on a slope (either front to back or side to side). If jacking up a car on asphalt, make sure that the asphalt is not soft (i.e. in the hot sun).

Prior to doing any jacking, loosen the lugs on the front wheels, place the shifter in Park (automatic transmission) or 1st gear (manual transmission) and securely apply the park brake. Place a pair of wheel chocks behind the rear wheels. Give the chocks a firm kick to snug them against the tires. If your vehicle's chassis has been lowered using sport springs or a coil-over kit, you may need to drive the front of the vehicle up onto 2" x 8" (or wider) lumber in order to get the floor jack under the chassis.

Jack placement.

On earlier BMW models that do not have under-car splash panels that cover the oil pan, front suspension cross-members and under-floor frame rails, you can place the floor jack under the uni-body frame rails (under the driver or passenger floors). This includes 2002, Bavaria, 3.Ocs, 3 series thru 91, 5 series thru 96, 6 series thru 89 and 7 series thru 94. In using the frame rails you must place the jack pad at the forward end of the frame rails, just behind the point where the rails start to curve upward toward the firewall and engine compartment (fig. 1). This is the strongest area of the rail and can support the weight of the vehicle. Do not place the jack at a point further to the rear on these frame rails. If there are no splash panels in the way, you can also lift the whole front end by placing the jack under the center of the front suspension cross-member (if the vehicle is not too low). Note that even though these vehicles have lifting points on the undersides of the rocker panels, these points are only for use with the original BMW emergency jacks. Placing a floor jack at these points will damage the underside of the rocker panels.



Figure 1



Figure 2

On later model BMWs that have rubber jack pads on the undersides of the rocker panels, you can use these for lifting the vehicle with the floor jack. This includes 3 series 92 on, 5 series 97 on, 6 series 03 on, 7 series 95 on, 8 series, X series and Z series. Place the floor jack's lifter under the rubber jack pad at the front of the rocker panel (fig. 2).

NOTE: One or more of the rubber jack pads may be missing from the rocker panels. DO NOT jack on a bare rocker panel – either remove a jack pad from one of the other lifting points and insert it where you need it (fig. 3), or order a new pad from Bavarian Autosport.



Figure 3

Jack stand placement.

Our favorite spot for jack stand placement is under the forward ends of the uni-body frame rails (referred to previously for jack placement on early models). However, you may not be able to access these points for various reasons (e.g. splash panels, jack is already there, etc.). If the frame rails are not readily accessible, you can use the front suspension cross-member (at the outer left and right ends, near the inner ball joints or control arm bushings), or the rearward control arm bushing mount brackets (fig. 4). On many of the late models BMWs, locating a suitable position for a jack stand can be a bit frustrating. You may have to jack the car up, temporarily place a jack stand, remove the various splash panels, then re-jack and place the stands in a more desirable spot (fig. 5).



Figure 4



Figure 5

NOTE: After final placement of the jack stands, leave the jack in a safeguard position that is not actually supporting the vehicle. Get out from under the car and give it a few shoves from side to side. It should feel solid and secure, not wobbly. Once you are sure that the vehicle is safe and secure, place the floor jack in a safety position with the lifter contacting the underside of the vehicle and the jack locked in this position.

Left: Jack stands in secure position under engine subframe.

Okay, let's start our under-car inspection...

1) Remove all under-car splash panels.

You may have as many as three separate panels, starting just behind the bumper, to under the engine, to under the transmission (figs. 6A & 6B).



Figure 6A



Figure 6B

2) Check the front wheel bearings.

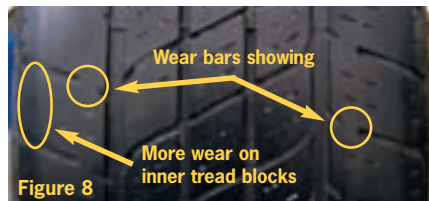
Grasp the tire at the 12 o'clock and 6 o'clock positions. Alternately push and pull the tire/wheel assembly (fig. 7). You should detect no movement or wobbling. If any movement is detected, the wheel bearing assembly should be replaced. Spin the wheel/tire assembly; the assembly should spin freely, with no wobbling or grinding noises. If there is resistance to spinning or you hear rough noises, the bearings may be at fault, but it could also be the brakes (step 3).



Figure 7

3) Check for sticking brake calipers. Step hard on the brake pedal, then release it. Now spin each front wheel/tire assembly. They should spin fairly freely. If either one will not spin for at least two revolutions, you may have a sticking brake caliper caused by corrosion between the caliper's hydraulic piston and its cylinder bore. This would require either replacing or rebuilding the caliper. **NOTE:** This test is not as reliable for all-wheel or front-wheel drive models, due to the drag of the drivetrain components. However, if one side has noticeably more drag than the other, and the pads on that side are more worn than the other side (step 7), this would be an indicator of a potentially sticking caliper.

4) Check your tires.



Remove the wheel/tire assembly. Inspect the inner and outer sidewalls of the tire for cracking or bulging. Either condition is cause for replacement due to the possibility of blowout. Inspect the tire tread: it should exhibit smooth and even wear from the inside to outside tread blocks. There should be no cracking in the valleys between the raised tread blocks. The tread depth should be consistent

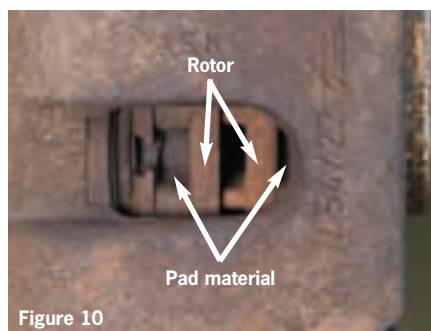
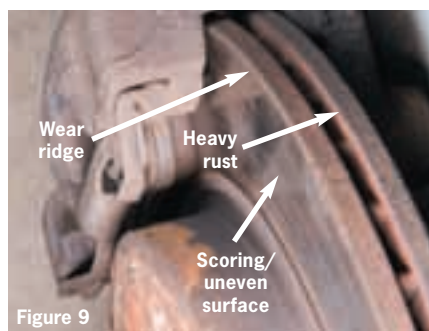
across the tread face (tread depth gauges are available at most auto parts stores and can accurately and consistently read the tread depth). None of the molded-in wear indicator bars should be as high as the tread blocks. If the wear bars are even with the tread block height, the tires are legally worn out and will be far more susceptible to hydroplaning in wet conditions (fig. 8). They should be replaced. Carefully rub your hand across the tread blocks, in various directions: you should feel no sharp edges to the tread blocks (feather edging). Finally, view the tread surface from different angles; do you see any uneven wear, such as areas that are worn more than the surrounding area? This is called cupping. Here are some other wear issues to look for:

- Inner and outer tread blocks have less depth than the center tread blocks. This indicates a history of under-inflation.
- Center tread blocks have less tread depth than the inner and outer blocks. This indicates a history of over-inflation.
- Inner tread blocks have less tread depth than outer tread blocks. This is generally an indicator of excessive negative camber. This is somewhat common on BMWs – especially BMWs that have been lowered. If the vehicle has not been lowered, but the camber wear is excessive, we offer suspension modifications that allow the camber to be reduced.
- Feather edging is typically an indicator of an improper toe-in/toe-out alignment.
- Cupping is typically due to worn out suspension/steering components and/or worn out shocks.

5) Check the valve stems. If they are rubber, gently bend them and inspect for cracking. If cracks are found, they should be replaced.

6) Check the wheels. Look for heavy rusting (if steel) or cracking. Cracked wheels should be replaced. Rusted wheels should be de-rusted, inspected and, if structurally sound, repainted.

7) Check your brakes. Sticking calipers should have already been tested in step 3. Now inspect the brake rotor for heavy rusting at the outer edges, heavy scoring on the pad wear surface or a heavy ridge at the outer edge of the pad wear surface (fig. 9). Any of these conditions warrants replacement of the rotor. Inspect thickness of the brake pad friction material by looking through the inspection port in the middle of the caliper (fig. 10). [NOTE: With some calipers, you may not be able to see both pads through the inspection port.] Both pads (inner



and outer) should be worn evenly. If the outer pad is worn more than the inner pad, this is an indication that the caliper guide bolts are sticking in the bushings. Remove the guide bolts, clean the bolts and the bushings and lubricate with Lubro-Moly Anti-Seize or Sta-Lube Disc Brake Grease. Alternately, you can replace the guide bolts and bushings with new ones, (either factory replacement or upgraded versions, fig. 11). If the pads show 1/8", or less, of material remaining, you should plan on replacing them as soon as it is convenient, taking note of the rotor condition as well. Inspect the rubber brake fluid line that runs from the chassis to the caliper. Any signs of cracks or leakage indicate a need for immediate replacement.



Figure 11

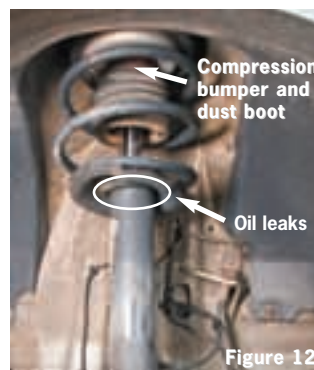


Figure 12

8) Check the front shocks/struts and springs.

Look for oil leakage from the upper shaft seal, which indicates a need for replacement (fig. 12). Inspect the upper and lower ends of the coil spring for broken ends. Inspect the dust protection boot and compression bumper (on the upper rod of the shock, inside the spring area) for deterioration. Grasp the spring and check for play or movement at the upper mount by trying to wobble the assembly in any direction. There should be no movement (except for radial movement, as when steering).

9) Check the ball joints.

Check the outer ball joint(s) by grasping the back-side of the joint and the end of the threaded stud (past the nut) – or the spindle eye – with a large pair of channel-lock pliers and attempt to pinch the pliers closed (fig. 13). There should be no movement of the joint, (i.e. the pliers should not close at all). Using a large pry bar, try to pry the ball joint apart leveraging against the control arm(s). Again, there should be no movement. Any movement indicates a need for replacement. Additionally, deteriorated or torn rubber boots on the ball joints will allow grease to leak out and dirt and water to enter, leading to early failure of the joint. If this is the case, replace the ball joints and/or control arms.

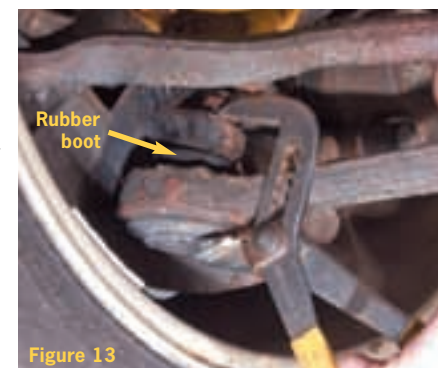


Figure 13

10) Check the steering linkage. Grasp the brake rotor at 3 o'clock and 9 o'clock and try to wobble the assembly. You should detect no movement. If any movement is detected, closely watch for movement at the tie-rod ends (both inner and outer), steering rack (or gearbox), center track rod and idler arm (if equipped) at the various ball joint connections. Determine where the movement is originating. An assistant can help with this task (one inspects the joints while one wobbles the rotor). Any joint that is found to have play is in need of replacement. If all of the joints are tight and the play appears to be in the steering rack or gearbox (the rack or gearbox output is moving, but the input shaft from the steering column is not moving), this indicates internal play. More than 1/8" of movement is enough to consider replacement. As with the ball joints (in step 9), deteriorated or torn rubber boots on the joints will allow the grease to leak out and dirt and water to enter, leading to early failure of the joint.

continued on page 6...

As always, if you have any questions about any of the procedures shown here, e-mail Otto@BavAuto.com, or call him at 800.535.2002.

How easy is this?! do-it-yourself

(continued from page 5)

11) Check the sway bar links.

Inspect the links that connect the ends of the sway bar to the control arm or strut tube (fig. 15). The links will have either rubber bushings in each end or small ball joints. The rubber bushing ends should not be excessively deformed or pushed out of the link's eyelet ends. Test the ball joint ends for play or deteriorated boots. A common cause of front end "clunking" is worn out sway bar links.



12) Check your control arms.

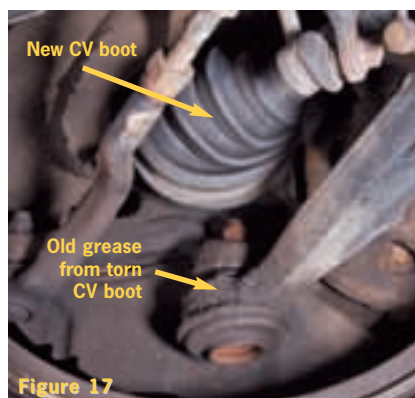
We have already inspected the outer ball joints on the control arms. We'll now inspect the inner ball joints (if applicable) and the inner bushings. Inspect and test the inner ball joints (3 series and Z series through 05 only) in a similar manner to the outer ball joints (fig. 16), as in step 9. Inspect the inner control arm bushings. There should be no cracks or deterioration. Grasp the control arm with a pair of channel-lock pliers and twist the arm. There should be a fair amount of resistance in the bushing to the twisting force. A worn/loose bushing can cause front-end vibration and should be replaced.



“Coolant leaks should be taken care of immediately.”

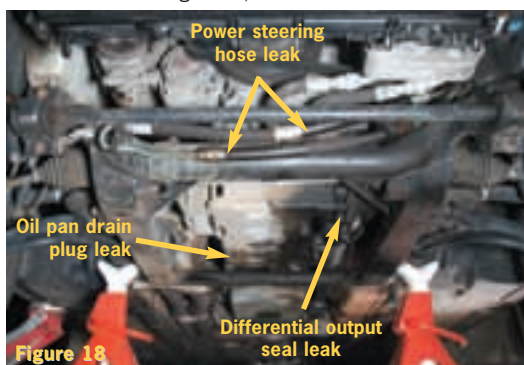
13) On MINIs and all-wheel drive BMWs, check the CV boots.

Inspect the inner and outer axle constant velocity (CV) joint boots for cracks, deterioration or tears. Holes in the CV boot will allow grease to leak out and dirt and water to enter. This will destroy the CV joint in short order. If the boot has not been damaged very long and the CV joint is not showing signs of wear/damage (noise, clunking, etc.), the boot can be replaced and the CV joint re-greased. (Notice the caked grease on the balljoint, tie-rod end and brake backing plate in fig 17. This is evidence of a previous failure. The boot shown is new.)



14) Check for fluid leaks.

In inspecting for various fluid leaks (coolant, engine oil, transmission oil, power steering fluid, brake fluid, washer fluid, etc.), it is worth noting that a dry underside on a BMW is not common. Most BMWs will have a variety of fluid leaks. You are in search of the sources of the leaks so you can determine if they are in need of repair. (We naturally encourage you to correct any leak that is found, but some may not be in dire need while others would be imperative to fix.) In searching out the source of a wet spot or obvious leak, sometimes you can simply follow the trail of wet fluid to the source of the leak. Other times, the underside may be so covered in fluids that you cannot tell where the leak originates, or there is so much machinery jammed into the area, you simply can't see past the myriad of hoses, brackets and other assemblies. In these cases, it helps to get the area as clean as possible so that you can take note of fresh fluid as it leaks out and down. A spray-can of brake parts cleaner works quite well for cleaning a fluid-covered underside (purchase a few cans). It will, however, make a mess as it drips down. We like to use the large (about 24" x 30"), shallow, drip pans that are available at most auto parts stores. Or you can park over a sheet of cardboard or white paper (e.g. disposable, paper table covering), so that you can see exactly where a fresh drip is coming from, making it easier to trace upward to find the source. Here's how to identify a few common fluid leaks (fig. 18).



- **Engine oil leak.** Engine oil will be brownish to black in color. Common sources of leaks are the oil pan gasket, oil pan drain plug seal, oil filter housing, front engine timing cover, valve cover gaskets and crankshaft seals. Once the source of the leak is determined, you can replace the offending gaskets or seals. A less common, but potential, source of an oil leak would be the hoses that run from the oil filter housing to the oil cooler, near the radiator.
- **Automatic transmission fluid leak.** This fluid will be red to reddish brown, or clear to brownish. The only sources for transmission fluid leakage, forward of the transmission itself, are the hoses that run from the transmission to the fluid cooler in, or near, the radiator. Fluid leaks from the transmission itself can be due to a failed fluid pan gasket, input seal, output seal or shifter shaft seal.
- **Power steering fluid leak.** Power steering fluid will be similar in appearance to the automatic transmission fluids, but it has a nasty odor. Typical sources of leaks include the hoses, the steering rack or gearbox, and the pump. Hose leakage is also very common.
- **Engine coolant leak.** Engine coolant will most typically be blue (if original BMW), green, yellow or orange. Old leaks will leave a trail of white-ish residue, which may help to locate the source. Common leakage points are hose ends, the radiator side tanks, the coolant expansion tank and the water pump (on the engine). Coolant leaks should be taken care of immediately: without warning, a slow leak of small amounts of coolant can become an almost instant loss of all coolant, leading to catastrophic engine failure caused by overheating.
- **Windshield washer fluid.** This is most commonly blue, green or pink. Typical sources of leaks include the grommets around the pumps that are mounted on the reservoir, a cracked reservoir or a cracked, broken or disconnected hose. Headlight washers can also be a source of leaks, so check for spots on the ground under the front bumper.

If you have any questions about this inspection, give us a call.

Ask Bavarian Otto *continued from page 3*



months now. Now recently, when the car is cold, the transmission slips for a while until I have driven it for about 10 minutes, then it's fine. Any suggestions as to what the problem might be?

Anthony

Otto's first response:

Have you changed the transmission fluid and filter recently?

Anthony responded:

Various sources tell me not to replace transmission fluid – just wait for the tranny to burn out because, if I change the oil, it will destroy the transmission. I also have an X5 with 60,050 miles. Neither BMW dealer in my area will change the fluid, saying, “It's lifetime.” I asked two local mechanics – they said don't. I read that changing the fluid around 60,000 miles is okay, but after 80,000 miles, new fluid would make the transmission lose the “grip” produced by the old fluid and cause the transmission to fail. Your thoughts?

Anthony

Otto replies:

I understand the concerns that others have, however I will always make a fluid change, no matter how many miles are on the never-changed-before fluid. Definitely change the fluid and filter in the X5 and do as you wish with the 323i. If it were my car, I'd change them. If the transmission is so worn that fresh fluid allows it to start slipping, it is near failure anyway. (FYI: Over a year ago, a co-worker replaced the “lifetime” fluid in his 2001 325xi with 105,000 miles on it and his 2001 325xiT with 130,000 miles. Both are running fine.) As for your original question about the 323i delaying engagement, old fluid can become sluggish when cold, or you may have a sticking valve in the valve body. Fresh fluid should help on both counts. We have the proper fluids and filters for both your cars.

Product Focus: Our exclusive Pagid Red brake pads

Pagid is a "Tier 1" supplier of brake pads to many race teams and car manufacturers, including BMW. Pagid's replacement brake pads are known for having the same performance and feel as original BMW brake pads, but with less dust and for a lot less money. So we asked the folks at Pagid if they could build us a line of replacement brake pads that would perform *better* than BMW pads and still cost less. A few months later they sent some pads for us to test. We tried them and we loved them!

A better performing compound...

The rotor-friendly compound is a medium metallic, resin-bonded material containing steel and acrylic fibers, (no asbestos or heavy metals). It has a slightly higher coefficient of friction than Pagid's original replacement pads, giving you better stopping power and pedal feel, and it maintains a

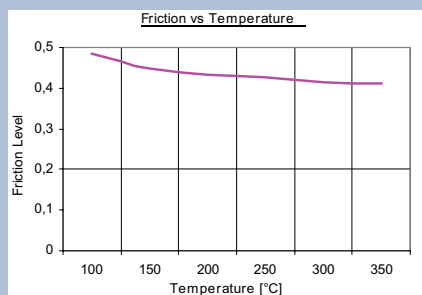


Fig. 1: Friction stays constant over temperature.

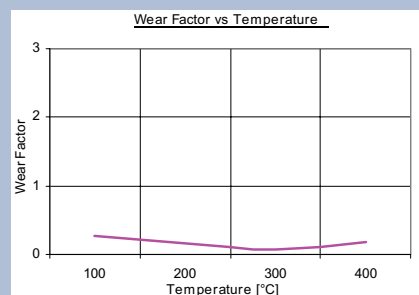


Fig. 2: Wear factor is low at all temperatures.

constant friction level over a wide range of temperatures (*fig. 1*). It also displays consistently low wear, whether hot or cold (*fig. 2*). Plus it has a high "cold friction" rating, making it suitable for road vehicles like your BMW or MINI, and it meets both existing (1999 R90) and proposed European standards.

... all the same great features!

Like their original replacement pads, Pagid's Red pads produces much less brake dust than BMW pads, so your wheels stay cleaner longer. These Red pads also feature integral anti-squeal shims for quiet operation. And they're painted red so you can easily distinguish them from ordinary pads. The result is a line of pads that perform better than OE yet cost less. And they're backed by our 2-year/24,000 mile warranty.

Save 10% when you buy front and rear pads!

During April, if you buy front and rear Pagid Red brake pads at the same time, we'll take 10% off the total, making them an even better value. They're available for many popular BMW and MINI models. Ask your phone rep about your year and model or visit www.BavAuto.com.



NEW! Scorpion exhaust for 3 series 06 on

More horsepower – better sound.

For years, Scorpion exhausts have been the choice of tuners throughout Europe. The company was formed in 1991 by two partners with over 30 years of combined experience in the development and manufacture of stainless steel, performance exhausts.





In the U.S., Scorpion for BMWs and MINIs is available only from Bavarian Autosport.

Each system has been engineered to provide a specific BMW or MINI with a boost in horsepower and a more assertive sound. Scorpion has built a world-wide reputation for quality and has

developed a proven, race-winning formula, with several teams competing in World Rally Car, Touring Car

and club events in Europe. When you choose a Scorpion exhaust, you're benefitting from a high level of engineering excellence and decades of experience. In addition, Scorpion exhausts are manufactured from T-304 stainless steel throughout, including the tubing, the perforated tubing, the sheets and the bars. The tips are also made from T-304 stainless steel that's hand-polished to a mirror finish. State-of-the-art, computerized tube-bending machines are used to produce all the bent pipe, and a seam welding machine is used in the manufacture of the cans. All components are assembled in purpose-built jigs and finish-welded by hand. Everything is done under ISO 9001:2001 quality system guidelines. That's why we back them with a limited lifetime warranty.

Buy before April 30 – save up to \$80!

Scorpion exhausts are available for 2002 thru 74, most 3 series 79 on, 5 series 97 thru 03, Z3 and MINI. During the month of April, we're offering them at 10% off. Normally \$419.95–799.95, they're now \$377.95–719.95. For model-specific pricing, ask your phone rep or visit www.BavAuto.com.  

Did Old Man Winter punch your BMW in the nose?



Every Spring we find more and more little nicks and paint chips (a.k.a. "road rash") in the noses of our BMWs and MINIs. The cost to have a body shop repaint a nose can be over \$1,000. And repairing each one of those little blemishes individually is a painstaking, time-consuming task.

Dr. Colorchip™ to the rescue!

The Dr. ColorChip™ "Road Rash" paint repair system was developed so car dealers could recondition trade-ins without sending them to a paint shop. It's ideal for cars that have more than two dozen, small paint chips. We showed you how easy to use and effective it is in the Spring 2008 issue of *Fast Times*. (Read it at www.BavAuto.com/newsletter). And now through April 30, we'll take \$5 off the price – normally \$59.95, it's now just \$54.95.

 Save even more – install it yourself! See the Spring 2008 *Fast Times* at www.BavAuto.com/newsletter...

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