

fast times

the newsletter of **Bavarian Autosport**

Summer 2010

Have a tech question about your BMW/MINI? The answer might already be on our blog...

bavauto blog
Bavarian Autosport's blog about BMWs & MINIs

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BMW Squeak at Rear When Entering & Exiting Car - E39 & All
May 18th, 2010
This answer is applicable for many BMWs in addition to the one listed below.
Q
car year: 1997
car model: 540i
When I enter or exit the car I hear a squeak noise from rear of car, by the rear wheel. Can it be the swing arms(trailing arms)?
A
Without having the car here to physically diagnose, I can only give you some suggestions in backing down the squeak noise.
I would suggest that you have a helper create the noise (enter/exit the car), while you poke around on your hands and knees to try to get a general or actual location for the noise. Once you have determined the general location, you can then work on narrowing it down (control arm bushings, swaybar links, shocks, etc.).
If the noise does seem to be coming from the rear, and happens when you enter/exit, it is likely suspension related (suspension being compressed as you enter and extended as you exit). This could be any of the rear suspension bushings, the swaybar end links, swaybar mount bushings or the shocks. Additionally, it could be the park brake assembly. If you normally have the park brake applied when this happens, try leaving it off (put the shifter into gear if it is a manual trans, or PARK if it is automatic).
Feel free to let us know what you find.
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BMW E90 / E91 / E92 / E93 - Microfilter Reset (Micro Filter)
May 26th, 2010
Q
2006 325i
How do I reset service light after replacing the microfilter. I do have a fault code reader for this model. Is it capable of resetting this service light when it says "service overdue".
A
On the E90 chassis (3-series 06-11, 4dr) and E91 / E92 / E93 (3-series 07-11, 2dr, conv, wagon): after replacing the heat & A/C cabin microfilter, you can reset the service reminder as follows:
1) Insert key
2) Press START/STOP button without pressing clutch/brake, wait for the service reminder to disappear
3) Immediately, after service reminder goes out, press and hold the odometer reset. After 3 seconds a warning triangle will appear. Keep the odometer reset button pressed. After another 2-3 seconds the oil-can symbol will appear. If you hold the button too long, about 10 seconds, the system will go into an internal coding mode. In this case, shut everything down and start over.
4) After properly performing step-3, the system will be in the service menu mode. Use the push button (BC button) on the end of the left steering column switch (wipers, high/low beams) to scroll through the various service items.
5) When the item you wish to reset is displayed, press the BC button on the end of wiper switch. "Reset" should now appear in the display. Press and hold the BC button for 2-3 seconds. A small clock display will show as the reset is being performed.
6) You can now select another item to reset (as in step-4) or press the START/STOP button to end.

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ask Bavarian Otto

Since 2003, when we first introduced our free, tech Q&A service "Ask Bavarian Otto", Otto has answered thousands of questions submitted by BMW and MINI owners. The only downside - Otto would send his answer directly to the questioner: nobody else would benefit. We decided it would be great to make all that knowledge available. We are now in the process of making those Q&As available to everyone by posting them on our new blog - blog.BavAuto.com (left). As of this writing, several hundred Q&As have already been posted; more are being added every week. Our goal is to create the largest, free BMW/MINI tech knowledge-base on the worldwide web.

"What's in it for me," you ask? The next time you're faced with a tech task, be it diagnosing a problem or figuring out how to do an installation yourself, just visit blog.BavAuto.com and type a word or phrase into the search box in the upper right. You can also click on your car's chassis in the left hand column (e.g. "BMW 5 series 97-03 - E39") and see all Q&As related to that chassis. Or click on one of the popular tags on the right hand side (e.g. "brake") and see all Q&As related to that topic; the more popular a tag is, the larger its type size. (See E23, vs. E30, vs. E46). If you don't find what you need on the blog, you can always click on "Ask Bavarian Otto" (lower right) and perhaps help other enthusiasts by contributing your own Q&A to this ever-growing, free knowledge-base.

Other cool features of the blog:

- "BMW news" keeps you up to date.
- Sign up for the RSS feed and receive alerts when we post something new.
- "Share this" lets you pass important info on to other BMW/MINI owners.

Even if you don't have a tech question at the moment, you should go check it out by visiting blog.BavAuto.com. It's fun, free and informative!

Help us fight breast cancer and win up to \$2,500 in gear!



Our 2010 charity raffle is underway! Details can be found on page 2...

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Bavarian Autosport
275 Constitution Ave.
Portsmouth, NH 03801

phone 800.535.2002 • fax 800.507.2002 • www.BavAuto.com

Our “Komen for the Cure” raffle now gives you 21 chances to win!



Over the past few years, Bavarian Autosport and its generous vendor-partners have run a charity raffle in support of Susan G. Komen for the Cure, an international foundation whose goal is to find a cure for breast cancer. Thus far the raffle has raised more than \$20,000.

This year's raffle tickets are now on sale, and while the price of the tickets has remained the same (\$5 for one; \$20 for 5), the number of prizes has increased from 13 to 21, with values ranging from \$200 to a grand prize worth more than \$2,500.

Prizes include: aFe cold-air intake kit and stainless steel exhaust; Billy Boat Performance Exhaust; Bilstein shocks; Eibach Pro-Kit springs; Cool Carbon S/T brake pads; Power Programmer; Bavarian Autosport high-performance ignition wires and coils; Infinity Basslink subwoofer kit; Bavarian Autosport Ultimate car cover; \$250 gasoline card; flat screen color TV and more.

All prizes are donated by Bavarian and its generous vendor-partners, with 100% of ticket sales going to Komen for the Cure. Drawings will be held at our Show & Shine event on Sunday, October 3, 2010. You do NOT need to be present to win.

To purchase tickets, or for more information, ask your phone rep or visit www.BavAuto.com/komen. Please join the fight!

Product Focus:

Create an “exotic” interior with our coco or oriental-style mats.

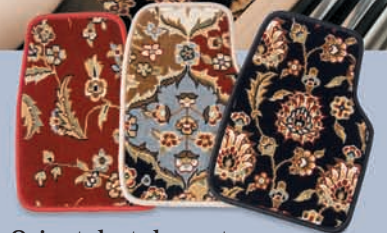
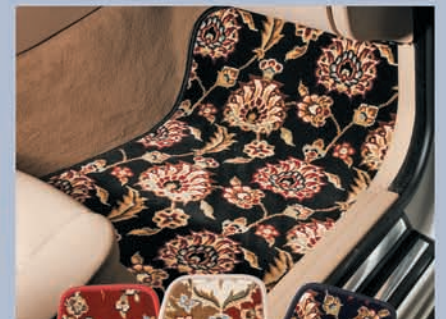
ex•ot•ic [ig'zätik] adjective – 1. Originating in or characteristic of a distant, foreign country; 2. Attractive or striking because colorful or out of the ordinary; 3. Certain custom-fit floor mats backed by a Lifetime Warranty and on sale at Bavarian Autosport thru August 31.



■ Coco mats originated in the Pacific and are made from durable coco fibers.

These updated versions have rubber backings to catch dirt and nibs on the bottom to hold them in place. Seven colors/patterns to choose from. Normally \$144.95 set, they're now just \$129.95 set.

For more details, give us a call or visit www.BavAuto.com.



■ Oriental-style mats feature a super-dense weave and pattern inspired by carpets from Asia and the Middle East. Rubber backing with nibs on the bottom to hold them in place. Three patterns to choose from. Normally \$229.95 set, they're now just \$199.95 set.

NEW! aFe cold-air intake for 335i adds 14 hp and 27 ftlb. of torque.

Producing up to 14 horsepower and 27 ftlb of torque, this radically different, Stage 2 cold-air intake system is engineered to let the maximum amount of air in while keeping engine heat out. The innovative design features two uniquely shaped, molded intake ducts that replace the single, stock intake channel. The dual ducts smoothly direct increased air flow from two directions, improving volumetric efficiency and maximizing performance. In fact, this new design is so effective that Intake Air Temperature (IAT) at normal running speeds with this aFe system is 11 degrees lower than the factory intake. (Translation: you get more powerful combustion.)

Complementing the dual intake ducts are two Dynamic Air Scoops (D.A.S.) that, when mounted in the front grill, guide colder, outside air directly into the ducts before it has a chance to circulate under the hood and heat up. A cleanable/reusable conical air filter is enclosed in a molded plastic housing and mounted on an oval intake tube that smoothly supplies maximum air to the twin turbos. The filter is easily accessible under a satin black, powder-coated, aluminum cover. The full effect of this system cannot be felt on a stationary dyno and can only be fully appreciated on the wide open highway. The entire system weighs just 15 lb and comes with the Dynamic Air Scoops (D.A.S.) and both a Pro5R oiled filter and a ProDryS non-oiled filter. The MSRP on this system is \$1243.75 – our price is \$994.95, a savings of nearly \$250.



aFe cold-air intake fits BMW 335i sedans, coupes and convertibles from 2007 thru 2010.

ask "bavarian otto"

from our tech team

Over 240 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 240 years. That's a lot of knowledge under one roof. And it's all yours, free! Have a question? Ask that savvy, BMW and MINI enthusiast, "Bavarian Otto." Just call 800.535.2002, e-mail Otto@BavAuto.com or check out his searchable knowledge-base on our new blog – blog.BavAuto.com.

3 series overheating, even after bleeding. 🔧🔧

Dear Bavarian Otto,

My 1989 325i seems to overheat to a boil, even after a decent bleeding. There doesn't seem to be water flowing through the radiator. The water pump has been replaced and the radiator seems to be relatively clean (I did a thorough vinegar soak). Also, a small tapered shaft "appeared," left over after replacing the water pump – 7cm long with one end narrow-tapered to a blunt point and the other end thicker, with something like a washer with a stub. Could this be a thrust shaft of some sort, perhaps for the water pump? Phil D.

Otto replies:

First, the pin that you have is for the timing belt tensioner. There is a spring that fits over the long end of the pin and this assembly fits between the water pump housing and a tab on the timing belt tensioner bracket. The spring provides initial tension on the belt prior to bolting down the tensioner. When the water pump was removed, the pin and spring fell out. This is not a big issue. Just keep the pin (and the spring, if you can find it) and when you replace the timing belt, you can re-install it. As for the overheating, jumper the harness plug for the auxiliary fan switch (in the radiator) so that the fan runs on high speed. This will help with your bleeding procedure. You won't be overheating, due to no air flow, while you are trying to bleed the system. Also, make sure that the small passage in the neck of the reservoir, where the radiator vent hose connects (below the cap) is not clogged. If you can see fluid coming from the hole inside the neck it is OK. If not, remove the hose and apply a bit of air pressure to the nipple and see if an obstruction blows through to open the passage. If the vent is not clear, you will have a large pocket of air in the top of the radiator. When bleeding, add fluid as you can, open the bleeder until fluid comes out, rev the engine a bit and watch the temp gauge. If the gauge gets up to the red, shut the engine off and let it cool for a bit. Work the bleeder screw as it cools and add fluid once the pressure is relieved in the system (via the bleeder). Keep repeating all of this until it will not take any more fluid, there is no more air and the gauge stays steady (all with the fan on high).

Phil D. replies:

Thanks very much, Otto. I found the spring last night and reassembled the tensioner pin and spring. That problem is solved. I also put some radiator flush into the radiator while it was out. I'm also planning to check the metal water pipe at the back of the block to see if there might be some sediment in there. Then, I'll reassemble the radiator and do the bleeding and checks you suggested. Thanks for a very clear answer!

5 series heating when it should be cooling. 🔧🔧

Dear Bavarian Otto,

I recently put freon in the A/C system of my 1995 540i and it blows cold on the driver side and hot on the passenger side. The back vent and the drivers side foot vents also blow cold air. It seems like the right vents are not opening. There are ten stepper motors in the box controlling the flaps. It would be great to know which motor is not working. I already tested the individual switches on the dash and they work, so I'm thinking that one fresh air flap and one a/c flap on the right side are not working, do you know of a diagram that charts the flow, location and where to get the new stepper motors? A lot of blogs talk about a final stage unit/resistor (FSU) on new models. Does this E34 have one and could that be the problem?

Eric.

Otto replies:

Your later model E34 (5 series 89 thru 96) has a dual-zone climate control system. Since you said that the passenger side is hot with the A/C on, we should check the heater/water control valve before going into any further diagnostics. The heater/water control valve may have a stuck valve for the passenger side (the valve may not be closing). Let's manually close the flow of coolant through the heater control valve and see if the passenger side then gets cold. This would be an applicable "first stage" test for any model that is having issues with hot air when the A/C is on. Using a pair of hose-clamping pliers (or a pair of needle-nose vise-grips with multiple layers of duct tape around both jaws or a piece of rubber tubing slipped over them so they don't cut the hose), clamp the inlet hose for the heater/water valve until it is closed. Of the three nipples on the heater/water valve, the inlet is the one closest to the firewall. The hose on this nipple comes from the auxiliary water pump, located below the valve assembly. If, with the hose clamped off, the passenger side now blows cold when the A/C is on, you'll need to replace the heater/water valve. If the passenger side is still not cold, we'll have to go to further diagnostics. Let me know what happens.

Eric replies:

You were right on, Otto – the heater control valve was the problem. Thanks!

Bavarian Profile



Gerard R. "Iggy" Pelletier

If you've ordered anything from Bavarian Autosport the last 20 years, chances are Iggy had a hand in getting it to you. As one of the key players in our warehouse, Iggy has personally packed and/or shipped more than a million orders. He joined us in 1990, when we were located in Newmarket, NH (Iggy's hometown). In those early days, if we ran out of shipping boxes, Iggy would collect and "re-cycle" empty corrugated boxes from local businesses. ("Florist boxes were perfect for spoilers," says Iggy. "The boxes sinks and toilets are packed in were great, too – roomy and strong. I was friends with all the plumbers back then.") Prior to joining Bavarian Autosport, Iggy spent time in the U.S. Air Force in Texas, Korea and Wyoming, plus 15 years at the Portsmouth (NH) Naval Shipyard. When he's not slapping UPS labels on boxes or doing manifests for international orders, Iggy loves to play golf. A lot! (He even tries to play once a month during the winter – quite a challenge in NH.) And when he is slapping UPS labels on boxes, if there's a Red Sox, Patriots, Celtics or Bruins game on the radio, Iggy's listening. ("Go Sox!" adds Iggy. We concur.)

How to replace serpentine belts and pulleys.

All of our BMWs and MINIs (and almost every other vehicle) use flexible rubber based belts to run various accessories, from the engine. These accessories are typically; the water pump, alternator, power steering pump and the air conditioning compressor. These units are connected to the engine's crankshaft via a system of pulleys and reinforced, rubber-based belts. (Think of the belt that drives the beater bar in your vacuum cleaner, from the main drive motor.) These belts and pulleys do wear out and, hence, require periodic replacement. Ignoring them until they fail can be a bit more traumatic than if the beater bar in your vacuum stops spinning. Failure of any of the belts or pulleys can cause problems ranging from a roadside inconvenience and big towing bill, to a catastrophic failure of the associated accessories, to full engine failure. With these points noted, it is more than wise, it is essential to plan a periodic, preventive replacement of the accessory drive belts and the associated idler and tensioner pulleys. We recommend a replacement interval of 60,000 miles or 4-years.

There are two basic types of accessory belt drives:

■ **V-belt system** – This system is used on most BMWs produced up through the late '80s. The V-belt system employs up to three individual belts that, in cross-section, are shaped like a "V". The V of the belt fits into a similar V in the circumference of the pulleys. Tensioning is accomplished by pivoting the drive accessory (such as the alternator) on its mounts, lengthening the distance between the pulleys.

■ **Serpentine belt system** – The Serpentine belt system is used on most BMWs from the early '90s on and MINIs 02 on. A serpentine belt is a flat, wide belt (similar to the vacuum cleaner belt, but wider) and has a series of small V grooves (typically, 3 to 6 grooves) on the inside surface. The Serpentine belts are capable of being wrapped clockwise or counter-clockwise around the accessory pulleys. Therefore, one serpentine belt can drive multiple accessories. Most BMWs have just two serpentine belts; one for the water pump, alternator and power steering pump, and the other for the air conditioning compressor. MINIs use just one belt. The serpentine belts are tensioned via a spring or hydraulically-loaded pulley and are guided around the various driven accessories by idler pulleys.

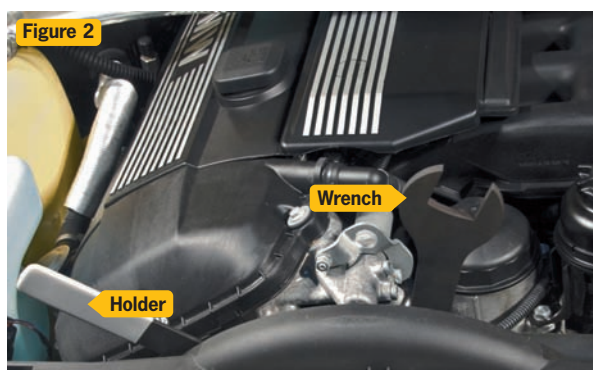
In this article, using a 2001 Z3 3.0i (M54 6-cylinder engine), we will show you how to replace a typical BMW serpentine belt and pulley. Most BMW 6-cylinder engines from 1991 through 2005 (except 91 325i, 535i, 735i, M5) will be very similar to this procedure. V8 models, later 6-cylinder models and MINI will be somewhat similar in the overall procedure.

Please note: On these pages, we will show you a few photos illustrating the basic belt replacement procedure. A more detailed presentation, with photos for each step, can be found on our blog – blog.BavAuto.com. There you will also be able to watch a video that shows the belt replacement procedure. These resources will help you decide if you can "do it yourself" and save money on labor charges.

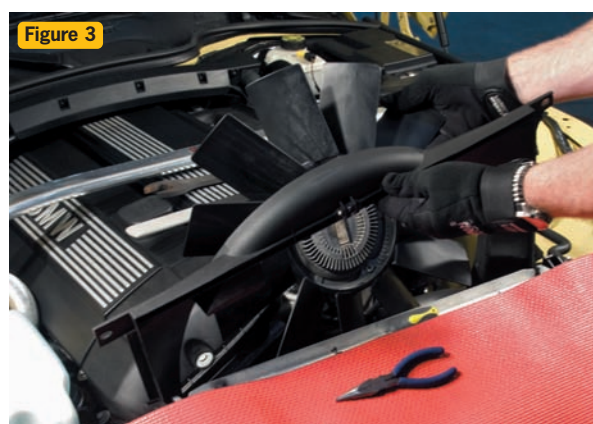
1. Remove the air filter box assembly by releasing the clips securing the MAF (Mass Air Flow sensor) to the filter box, unplugging the MAF harness plug and loosening the air filter box mounting nut. (Note: while removing the filter box is not required, it does give you more room and visibility.) Pull the MAF out of the air filter box flange (watch for the large sealing o-ring shown in figure 6) then pull the box from the engine bay (fig. 1).



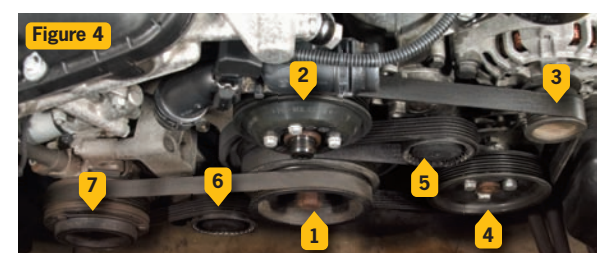
2. Remove the engine fan and clutch assembly and the radiator fan shroud. Use a 32mm fan clutch wrench (#115040, \$34.95) and a pulley holder tool (#115050, \$39.95) to loosen the 32mm nut that secures the fan clutch to the water pump drive flange (fig. 2). Note that the nut is a left-hand thread; in other words, when you have the wrench on the nut, at the 12-o'clock position, the wrench turns toward the driver side to loosen the nut. If the nut is tight and will not initially loosen, give the top of the wrench a quick rap with a hammer (while holding the pulley holder tool). This will usually loosen the nut. Once the nut is loose, just spin the fan in order to unscrew the nut. In most cases you cannot yet fully remove the fan and clutch assembly.



3. Remove the fan shroud. The shroud is typically secured to the radiator via a few clips and/or plastic push-pin rivets. This model uses two push-pin rivets. Pry the center pin out on the rivet and then pry the rivet assembly out. Pull the shroud and the fan and clutch assembly up and out (fig. 3).



NOTE: At this stage, we have removed the radiator in order to achieve a better view of the belts and pulleys with our cameras (fig. 4). This is not necessary for servicing the belts and pulleys, however it certainly does give you more room to work and to see what you're doing – especially if this is your first time. If you remove the radiator, take this opportunity to perform a coolant flush as well.



Shown above: 1) Engine crankshaft & pulley, 2) Water pump pulley, 3) Alternator pulley, 4) Power steering pump pulley, 5) Tensioner pulley, 6) A/C tensioner pulley, 7) A/C compressor pulley.

4. Notice that the A/C belt must be removed first. In order to remove the belt, de-tension the pulley by using a socket, extension and ratchet on the hex-shaped protrusion on the tensioner's pivot arm. Rotate the ratchet clockwise to de-tension the assembly and pull the belt off the pulleys (fig. 5).



Shown above: A & B – hex shaped de-tensioning nubs

5. In a similar manner to Step 4, de-tension the main belt and remove the belt from the pulleys. Before removal, note the routing of the belt – more than one mechanic has been baffled by trying to install and properly route a new serpentine belt.

6. Remove the two bolts that secure the main tensioner assembly to the engine and remove the assembly. Install the new tensioner assembly. Note

that the tensioner may have a locking pin running through two eyelets in the two halves of the tensioner body.

The pin must be removed after installing the tensioner. Use the ratchet and socket to de-tension the assembly and pull the pin out. Repeat for the A/C tensioner.

NOTE: The tensioner and pulley assemblies shown in this application are of the “mechanical” type (e.g. they use an internal radial spring to apply the tensioning force). Some applications have hydraulic tensioners. Instead of the radial spring in the body of the tensioner, these use an external hydraulic piston (looks like a short, fat shock absorber) to apply tension to the pulley and belt. The de-tensioning and removal of these units is a bit different, but the overall idea is the same. See the Bentley repair manual for detailed information.

7. Install the new main belt. Wrap the belt around the various pulleys, leaving the belt off of one of the pulleys (such as the tensioner, water pump or alternator). Use the ratchet and socket to de-tension the tensioner pulley assembly and slip the belt into the final position over all of the pulleys. Double check to assure that the belt is fully and properly seated into the grooves of all of the pulleys.

8. Repeat for the A/C belt.

9. Install the fan assembly and shroud. As with the removal, these typically must be slid into place at the same time. Thread the 32mm nut onto the water pump flange. You may find it easier to hold the fan blades and rotate the fan hand-over-hand or you may find it easier to use the 32mm wrench directly on the nut, while holding the fan. Once the nut has started to thread, spin the fan to run the nut down. Finish by using the wrench to snug the nut. Torque of the nut is not all that important; since the threading is left-

hand, the clockwise engine rotation will actually keep the nut securely in place.

10. Slide the shroud into place and install the securing clips or rivets. The rivets (used here) are pushed into place, then the center pin is pressed in to lock the rivet in place.

11. Install the air filter box. Lubricate the MAF O-ring with silicone grease (fig. 6) or Vaseline and work the box into place while inserting the MAF into the flange on the box. Secure the MAF clips, connect the MAF harness plug and tighten the mounting nut.

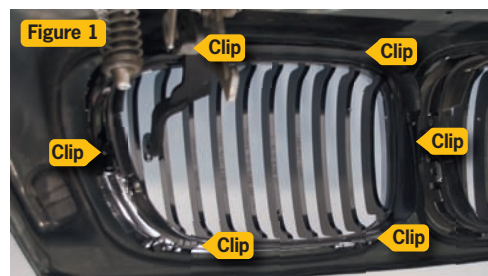


“If you remove the radiator, take this opportunity to perform a coolant flush...”

How to replace in-hood kidney grills on many newer BMWs.

Otto regularly receives questions regarding front grill replacement on various BMW models. The questions range from, “How do I replace my broken grill?”, to “How can I black out my grills?”, to “How can I upgrade my grills to mesh?” (See blue box below.) For most BMW models, replacing the front grills is relatively easy. Here we’ll show you how to remove and replace the grills on an E46 chassis (3 series 99–05). The procedure shown here will also be applicable to the E39 chassis (5 series 97–03), E38 chassis (7 series 95–01), X5 and Z3. For additional details and photos, visit blog.BavAuto.com. While you’re there you can also watch a video showing these in-hood grills being replaced.

1. Open hood. The grill assembly (grill frame, vertical slats and outer trim) is secured into the hood via six snap-clips around the perimeter of the grill frame, on the inner side of the hood opening. We will be depressing and releasing these clips in order to remove the grill assembly (fig. 1).



2. Use a non-marring pry tool to depress the clips. Insert the tool at the outer edge, between the clip and the sheet-metal tab on the hood (fig. 2). Work the tool toward the middle of the clip so it is fully between the clip and the metal tab, and push the grill out of the hood opening. Note that the grill will only move a small amount until more clips are released; you will have to keep pressure on the grill to keep the clip from re-seating, as you work on the next clip location. We found it most effective to start at the two lower clips and then move to the side clips. Once the lower and side clips are released, the upper clips will release as you push the grill out of the opening.

3. Press new grill assembly evenly into place until all snaps are seated.

That’s all there is to it! Grill replacement procedures on earlier models vary and can be a bit more involved. They are outlined in the appropriate Bentley manuals.

When it comes to grill upgrades, you have lots of choices...

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Black grill trim covers (mount on grill trim rings).



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How to spray paint trim pieces, lip spoilers, etc. ✂

In previous issues of *Fast Times* (Spring 2008 and Special Edition June 2008, available at BavAuto.com/newsletter), we showed you how to repair minor paint chips and scratches using the various touch-up paints and repair kits that we offer. [Ed. note: our Road Rash paint repair kit is on sale thru August 31 – see page 8.] We now offer high-quality spray paints in most BMW and MINI factory colors. Spray paints are great for larger touch-up projects and for painting new parts that come primed or unpainted (e.g. replacement mirror covers, lip spoilers, etc.). These spray cans are nothing like your hardware or parts store versions: this is real automotive paint made by the same folks who make our popular Paint Pens. And the spray nozzle is of the highest quality, allowing you to lay the paint out almost as evenly as a pro with a spray gun. You may have to practice a bit if you do not have spray-painting experience, but you can do a good job if you follow the proper steps and procedures. In this article we're going to discuss two methods of spray painting. The first is a basic, two-step process which provides acceptable results for many applications: it involves some simple prep, then applying the paint. The second method is a multi-step procedure that will give results rivaling the original factory finish; it entails prepping the part, priming (if needed), sanding, painting and applying a final clear coat. Before we begin, here are some things to consider.

■ **Preparation:** For both the basic and multi-step methods you will have to figure out how you are going to support the part while painting it. Some parts lend themselves to simply laying flat on a clean surface. Other parts may require a support structure or need to be hung from a hook or wire. Determine what surfaces of the part need to be painted and then figure out your support fixture. (E.g. a block of wood that fits inside a mirror cover and holds it up off the work surface.) You want to be able to spray all of the required areas without touching the part.

■ **Cleaning:** (Make sure you have figured out your support structure, if needed, prior to cleaning the part so you don't have to handle it after cleaning.) In prepping the part, it is important to use lint-free cloths such as Sontara for final drying and cleaning. Do not handle the cleaned part with your bare hands: oils from your skin will transfer to the part and may interfere with proper paint adhesion. Try to work in a dust-free area. If you are painting a smaller part, keep it covered with a clean cardboard box when you are not spraying it.

■ **Spraying:** Before spraying the part, practice spraying on a scrap piece or old part. Using gentle sweeping strokes, start the spray before hitting the part and end the spray after going past the part. Cover the part in overlapping strokes. Do not change your speed or stop in the middle of a stroke. Picture this as mowing the lawn in overlapping passes. These initial coats should produce a lightly misted and even covering of paint. This will not cover the part completely with color: you will need to apply coats in multiple stages, waiting about 15 minutes in between. After 4 or 5 coats, the part will be just about completely covered. At this stage, you will work on the final coats. These last 2 or 3 coats will be applied just a bit heavier than the prior, misted coats. We want to apply the paint so it looks wet and glossy as it is sprayed on. Overlap the strokes by about 50% and point the spray angle toward the area of the next stroke. BE CAREFUL HERE: this is where you can get over-anxious and apply too much paint, creating a run. Practice this until you can apply a wet, glossy outer coat without runs. Even if you have painting experience, practice with this can so that you will know how the sprayer and the paint work with your technique.

Now follow along as we use the two methods to paint a mirror cover for an E39 (5 series 97–03) and a complete replacement mirror for a Z3.

Basic procedure: mirror cover

Supplies:

- "Scotch Bright" pad & dish detergent (grocery/dept store)
- Würth auto-body masking tape
- Würth part prep/cleaning fluid
- Sontara lint-free cloths **On sale!**
- Autovisuals spray can of factory-color paint **On sale!**
- Optional: Polishing compound (SmartPolish or Glacier Polish)

1. Use a "Scotch Bright" pad to scuff up the bare part (fig. 1). Use even, moderate, pressure and scuff the entire surface evenly.



2. Wash the part with dish-soap and water. Dry with a lint-free towel. If you have compressed air, use it to blow away residual moisture. (If you have an oil-type compressor or if you add oil to your compressor air, do not use it to blow-dry the part.) Let the part dry completely.

3. If you see any imperfections in the surface of the part, these will show through the final paint. Make the decision now as to whether the imperfection is OK with you or you want to repair the areas. If you do want to repair the area, see step 2 in the multi-step procedure. Do this before continuing.



5. Mount the part in the manner that you have determined works best for the spraying (as noted above). Start your initial light misting coat (as detailed above). Wait a few minutes (up to 15) and apply another mist coat. Repeat these mist coats until the part is fully and evenly covered and all traces of the base material color are gone (fig. 3). Wait 30 minutes before Step 6.

4. Wipe the part with paint prep fluid, using a lint-free cloth (fig. 2). After this, do not handle the surfaces that will be painted with your bare hands (the oils from your skin will transfer to the part).



6. Apply the final 2–3 gloss coats (fig. 4) as described in the "Spraying" section above. Be sure you have practiced this before applying paint to your finished part: a little too light is better than too heavy, which will produce runs. (You can easily fix a final coat that is too light; too heavy requires a lot of work.)



7. Let the part "dry" (or cure) at least 24 hours before handling. For best results, wait 48 hours before handling. Even then, be very gentle when handling the part.

8. You can enhance the gloss of the paint by going over it with a polishing compound. However, you should wait two weeks before doing this.

Multi-step procedure: complete replacement mirror

Supplies:

- "Scotch Bright" pad & dish detergent (grocery/dept store)
- Würth auto-body masking tape
- Würth part prep/cleaning fluid
- Sontara lint-free cloths **On sale!**
- Würth spray can of primer paint
- Autovisuals spray can of factory-color paint **On sale!**
- Autovisuals spray can of clear coat **On sale!**
- Polishing compound (SmartPolish or Glacier Polish)
- Würth 400, 600, 1000 & 1500 grit wet/dry emory paper

1. Follow steps 1 & 2 of the basic procedure.

2. If you see any imperfections in the surface of the part, these will show through the final paint. Make the decision now as to whether the imperfection is OK with you or you would like to repair the area. If you wish to repair the imperfection (such as mold casting marks in plastic parts), wet-sand with 400-grit emory paper to clean up the imperfection. Wet-sanding acts as a lubricant and also flushes away the sanding particles. When wet-sanding, keep the paper and the part wet with water. As the imperfection is removed, lighten the pressure and use plenty of water on the emory paper. When satisfied, change to 600-grit and continue wet-sanding and feathering out the repair area into the surrounding areas. Finish with the Scotch-Bright pad. You should not be able to discern any individual sanding marks from the original 400-grit wet sand.

3. Using a quality, auto-body masking tape, mask any areas that are not to be painted.

4. Apply the primer spray paint using the technique described in "Spraying Technique" (previous page). Build up the light coats until you have a full even coverage of the primer. Most primers will be ready for sanding within a couple hours. If you are unsure, wait until the next day.

5. Lightly wet-sand the primer with 600-grit emory paper (fig. 5). The key word here is "lightly" – we do not want to sand the primer off, just smooth out the surface. Wash and dry the part as you did in step 2. Finish with the paint prep fluid.

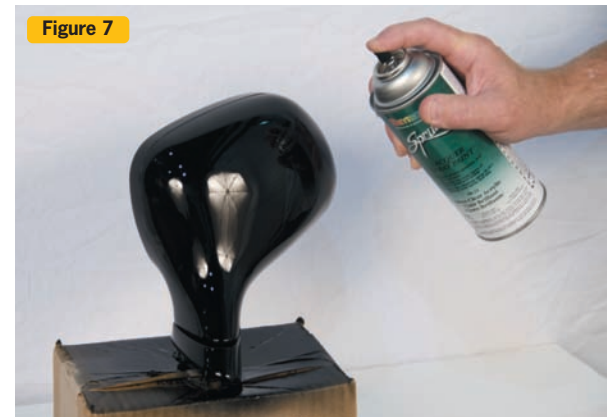


6. Following steps 5, 6 & 7 (figs. 3 & 4) of the basic procedure, apply the color coat until glossy (fig. 6).



7. If you have runs or dust in the finish coats and you wish to repair them, let the part dry for at least a couple of days and then use the 600-grit emory paper (wet) to work out the imperfections. If you sand through the color coat, continue to finish the area with 600-grit until no sanding marks remain. Once you have the area cleaned up, wet-sand using 1500-grit emory paper. Clean the part as you did in the initial prep and re-spray the color coats.

8. The clear coat can be applied an hour (or longer) after the final color coat. Use the same techniques used to apply the final color coats (fig. 7). You want the clear to go on "wet" rather than "fine" but you must be careful not to apply too much or you will end up with runs. Note: for the smoothest, glossiest finish, wet sand the final color coat with 1500-grit paper prior to applying the clear coat(s). This will remove any minor roughness on the paint surface and produce a very smooth, glossy finish.



9. Let the clear coat dry for 48 hours before handling. If you are satisfied with the results, wait 24 more hours before installing the part, to prevent accidental damage to the paint, which is not fully cured. If you have any runs or rough areas, these can be repaired with the 1500-grit wet emory paper after two weeks. Runs may require that 600-grit be used first, then 1000-grit and then 1500-grit paper (always wet). Apply polishing compound after two weeks.

If you have any questions, give us a call or e-mail Otto@BavAuto.com.

In a painting mood? Repair those paint chips in your hood – Road Rash kits (right) are on sale! See page 8...



Winner! BMW in Summer: Michael Rahn of Connecticut and his 1998 323is. Upgrades and modifications include Remus exhaust, Power Flow intake kit, clear lenses, pre-painted rear wing and more. For this photo, Michael received a \$100 Bavarian Autosport savings certificate. For more information, visit www.BavAuto.com/photocontest...

NOTE: The deadline for this year's photo contest is earlier than in years past – entries must be postmarked by September 30th, 2010, so start shooting!