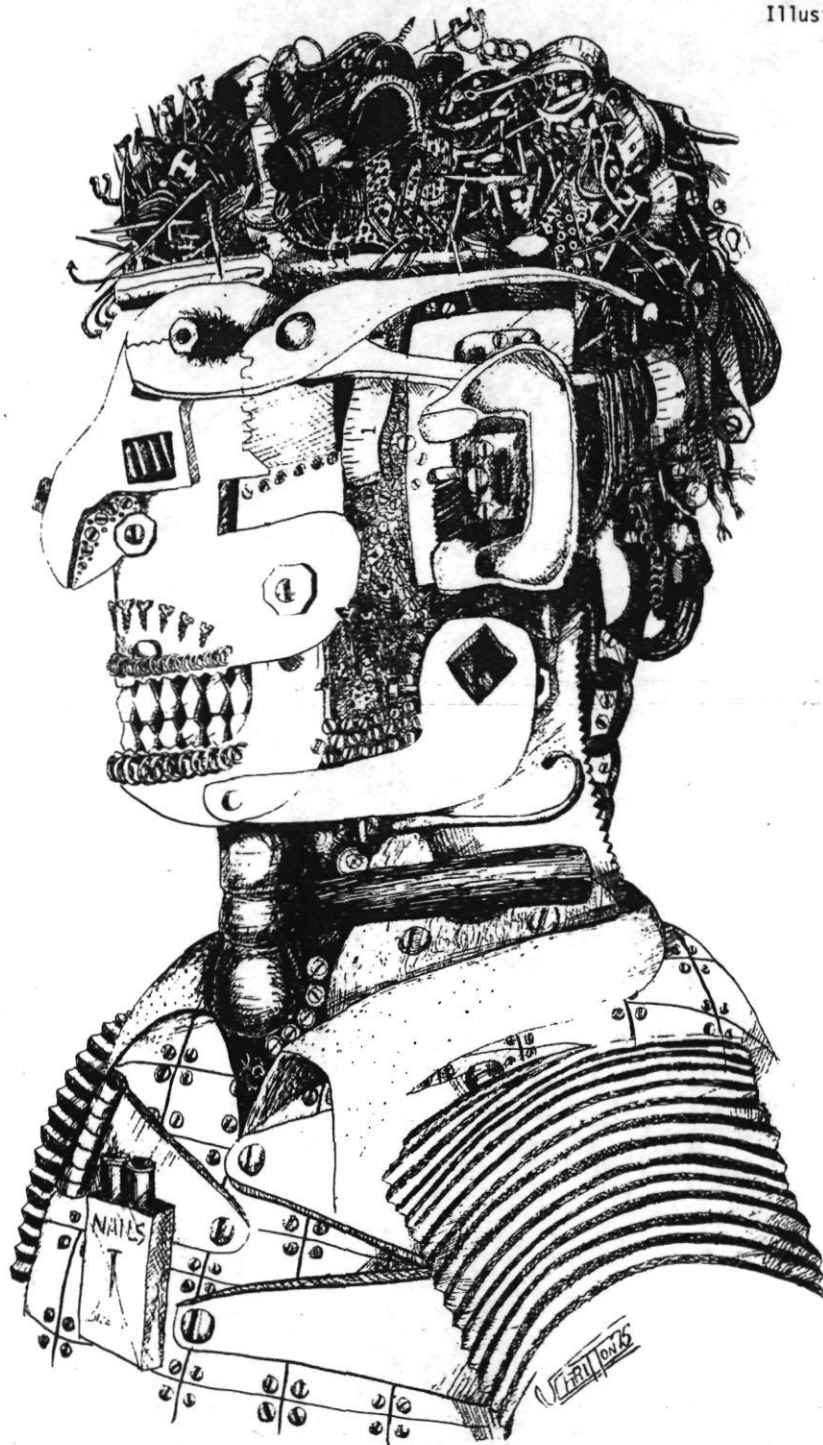


der bayerische

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Illustration by Vicki Chritton



THE TECH MAN COMETH !

der bayerische

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Editor's Notes

THE TECH MAN COMETH! He cometh to giveth technical information to the members in this special technical issue of der bayerische which has been pre-occupied this year with OKTOBERFEST '76. So this is my way to "catch up" on technical subjects that we lacked in the past issues.

Also, traditionally the club does not have a December issue. But, here it is, although we will not have a January issue because my term as Editor will come to an end with this issue. Unless someone comes forth to take over this responsibility, not only will there not be a January issue, but maybe no more after that!

There are several people who are helping out now. I receive each month written reports from the Secretary (meeting minutes), the Treasurer, and occasionally Service and Technical reports. Also, Bill Haines has been a great help with the C.B. column, and Virginia VanPoole handles the calendar of events each month. In addition, Barry Livingston is the very active Advertising Manager, as you can see from this issue. A Report From the President should also be seen in each issue. Several members contribute articles from time to time in addition to all of the above. Much information comes to us from newsletters of other chapters. Carol Kingsbury has faithfully helped process the mailing of the 350+ newsletters.

If you want to take this publication job over, give me a call soon! I'll help the new Editor get started as much as possible.

I would like to take this opportunity to thank all of those who have contributed and helped out over the past year--its been rough going sometimes but it certainly is not without rewards!

Aufwiederschen!

Some BMW Silver Anniversary books are still available--please contact me--Editor. (301) 937-8910.

Letter to the Editor:

Your review of Schwing Motors (Oct. issue) was very misleading. Nearly every BMW owner I've ever talked to in Baltimore (which is several dozen) wouldn't go near Schwing because of being ripped off by them, and perhaps more importantly, they're almost sneeringly contemptuous attitude towards repair customers--particularly when one complains about their not fixing something or their bad workmanship. As Mr. Schwing Sr. said to one customer in my presence outside the shop, when that customer was complaining bitterly because they broke the A/C dash house when doing a repair--"Go away, we don't need customers like you anyway, for every customer we lose, we gain two new ones." (Fairly accurate seeing how popular new BMW'S have become as late) Many former Schwing Motor customers, such as myself (who got ripped off just once--for \$300+, and was told to leave after complaining) consider it a duty to warn people about Schwing--and I am constantly meeting others who either feel that way, or who have heard the same comments from friends.

I have found one good reliable, honest mechanic at Brooks Buick (a BMW dealer, too) in Towson, Md., and one in Hanover, Pa. D. Katz, Baltimore, Md.

"FRIENDS OF BMW. Want to help some of your fellow BMW drivers? The directory for the "Friends of BMW" network is being compiled and we want you in it! Our goal is to have enough people included so that if a member is stranded while travelling in a part of the country with which he is unfamiliar, he will be able to call a "network" contact who is close enough to help the member or direct him to help.

We need only your name, town and phone contact, both day and evenings if possible. The "Friends of BMW" should turn out to be a very helpful aid for any member who travels - and what BMW driver doesn't!

Please send the information to me at 10 Hibernia Road, Rockaway, NJ 07866. Availability of the finished directory will be announced through the Roundel.

Thanks for your help.

Holly Lenhardt
National Secretary"

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The high beams in both H4 and Amplilux units are unencumbered by the shields. The H4 emits light from the entire reflector area. The Amplilux concentrates its high beam through the secondary reflector and a non-dispersant, clear lens. When the high beam is selected the filament or bulb

for the low beam is extinguished. This is a disadvantage in the Amplilux, as the spread beam is eliminated for the narrow beam piercing the blackness. The Amplilux only may be wired to maintain low beam operation when the high beam is selected. This will be explained further on.

5-3/4" Options

Quad quartz conversions are much less involved. Both high and low beam units are single bulb and single reflector. Both use the H1 bulb. What changes is the beam pattern (through lens design) and bulb placement within the reflector. Quad systems employ a relay to maintain low beam operation when the highs are switched on. This relay is a part of the wiring system and not the headlights.

Marchal has recently announced a new type of low beam quad light employing a dual filament. This system has not been seen by the author. Presumably, this dual-filament low beam is quite similar to the H4, providing a flat-tipped spread on low. When the high beam is engaged, the relay would activate the second filament (the first would be extinguished), also providing a spread beam, but a little further ahead. If this is the case, it is a most worthwhile alternative.

The relay mentioned above providing simultaneous high/low beam operation may be adapted for use on the 7" Amplilux. It must never be used with the H4: the quartz envelope and filaments could not withstand the heat of two filaments burning in such close proximity.

The relay is an electromagnetic switch. Current passes by the interior light switch, activates a coil making it an electromagnet. A spring contact is drawn toward the electromagnet and in the process engages a fixed contact. Unenergized and energized relays are depicted in figures 3A and 3B respectively.

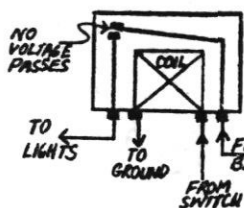


FIGURE 3A

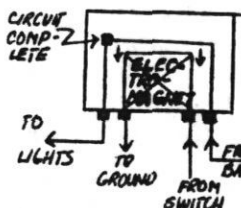


FIGURE 3B

The relay is fused to prevent a short circuit (and fire hazard) should the spring contact somehow make contact with the coil.

The application of a relay for simultaneous high/low operation is shown in figure 4.

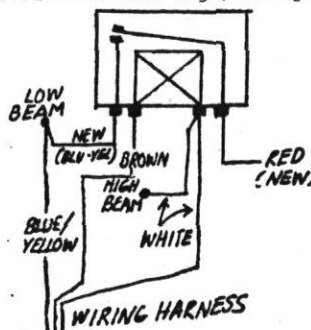


FIGURE 4

Then the low beam (only) is activated, the relay coil is bypassed. Switching to high beam power is passed to the high beam and relay coil. The coil closes the switching contacts and battery power to maintain power to the low beam.

This system is already installed in BMW cars with quad headlights. How it is to be installed with 7" headlights will be explained shortly.

A popular modification in quad headlights is replacing the standard 55-watt H1 high beam with Norma-100 att H1 bulb. The H1/100 has the drawbacks of 50% higher cost and only a 6-8 hour lifespan. Such a burning time is reasonable, however, when one considers the actual amount of time the high beams are used. Should the Bosch dual-H1 7" headlight be released, it would be an obvious choice for the 100-watt high beam.

Consider several factors before you purchase a 7" quartz headlight system. The H4 is a simple drop-in unit, complete with three-prong SAE plug. Nothing else is required. A plethora of H4 conversions exist, with an average retail price of \$43 per pair. Excellent discounts (approaching 40%) are available to BMWCCA members. The Amplilux has three pigtail leads which must be fed into the correct contacts on the SAE receptacle. For maximum performance, a relay must be added and wiring altered. Important: the Amplilux reflector is too deep and round to drop into a standard Hella mounting bucket! The bucket must be removed from the car - a laborious task - and treated with smart, well-aimed blows from a hammer if the amplilux is to fit. The Amplilux lists \$59.95 per pair. The same discount information applies.

How much more powerful is the Amplilux than the average H4? The low beams are virtually undistinguishable. A relayed Amplilux will provide noticeably superior output and reach on the high beams. Bear in mind the relative use time of the high beams, however.

One relay is required to operate two Amplilux units, as left and right headlights are wired in parallel. Mount the relay in the left headlight well and on the battery bulkhead. Using diagonal cutters, clip the SAE headlight receptacle, leaving about 6" of wire attached to it. Strip and tin the cut wire ends and crimp on 14-18 gauge female spade connectors (available at most auto supply houses) where required. Note where two wires feed into a single connector. Nylon spade insulators are available from BMW dealers; or you can obtain heat-shrink tubing from the ubiquitous hobby electronics stores.

A single wire must be added to the system: a 12-gauge stranded wire with red insulation, running from the battery to the relay. Crimp a 10-12 hole type connector on one end and attach this underneath the lead from the voltage regulator at the "+" battery terminal. Tape the wire neatly to the existing harness and feed it through the headlight well grommet. Spread an 18-14 female spade connector, crimp on the red wire, and push in place on the relay. End of wiring.

You must use a fused relay! Should a wiring error be made or damaged insulation come in contact with sheet metal, nothing would prevent a fire.

Aiming instructions are supplied with all quartz headlight conversion sets. They must be rigorously adhered to. Quartz lights can blind oncoming traffic if improperly directed.

Because the lens and reflector in quartz conversions are permanently attached, it is difficult to internally clean them. But clean, you must, because dirt is inexorable. Remove the entire unit from the car and remove the quartz bulb. Make a 4:1 solution of warm distilled water and household ammonia; pour two or three ounces into the lens/reflector assembly and agitate vigorously for about one minute. Then drain thoroughly. If you share the author's aversion to ammonia, take solace that the cleaning need be done but twice a year. Rinse thoroughly several times with four or five ounces of distilled water (if a gallon of distilled water was purchased, the balance may be used in the battery cells, cooling system and windshield washer reservoir). Shake as much water from the housing as possible and place on the rack of a warm (175 to 200 degrees Fahrenheit) oven with the lens upward. A half hour should be adequate for complete drying.

One burning question remains to be answered: who makes the best quartz conversions? Reflector design and bulb placement are virtually identical, regardless of manufacturer. All use the same bulb configuration. Any differences, therefore, must come from precision assembly, shield design and lens design.

The Germans are workmanlike but somewhat uninspirational. The Italians are brilliant but imprecise. The English are off in their own corner, oblivious of accepted designs and conventions. That leaves only the French.

Wine, perfume and headlights make odd bedfellows of excellence. But when the French decide to do it right, they do it better than anyone else.

Two French firms dominate the quartz lighting field: Cibie and Marchal. The author does not use H4 conversions in his 2002 and thus cannot objectively compare the Cibie and Marchal units.

He has replaced rusted (and discontinued) Cibie "Biode" twin-bulb lights with the Marchal Amplilux. The Cibie was superior in evenness of light dispersion, freedom from "scatter", and high-beam penetration.

In auxilliary lighting equipment, competing Cibie and Marchal units always found the Cibie the victor. One can easily extend this pattern to cover the entire lines. Cibie is better.

Mitigating circumstances which make a number of things equal include the fact that for any given equivalent Cibie and Marchal unit, the Cibie always has a higher price. Add to that the fact that BMWCCA has more advantageous discounts on Marchal products, the performance-per-dollar approach balances the performance-per-unit advantage held by Cibie.

Count your cash, your convenience, your courage. But convert to quartz! You will see and be seen. It might save your life.

-Nelson Barnes
Windy City Chapter

BEFORE INSTALLING QUARTZ LIGHTS

Since BMW has changed the grill design around the headlamps in 1972 and again in 1974, rain water (or the car wash spray) can flow past the headlamp housing and, in the case of QI lamps, seep past the bulb dust shield and into the reflector area. Not much will condense on the inside of the lens but over a period of six months you will notice your high beam reflector beginning to rust. The remedy is simple.

Do what the Europeans do... tape the dust cover (rubber or plastic boot) to the back of the reflector to seal out the water. This worked three years until a squirrel broke my other set of lights. Use gray racers or duct tape or 1" or wider plastic electrician's tape. Do it before you install your lights and DON'T TOUCH THE BULB! If you do touch it, clean the glass with alcohol to remove the oil and sand from your fingerprints...which will blow out the bulb. Once you've driven with quartz-halogen headlamps, you'll wonder why we still use directed illumination.

-Warren Markey
Granby, Conn.

WATER IN YOUR SIGNAL LIGHTS, RUNNING LIGHTS?

The rubber seals around most auto signal and running lights don't always work, resulting in a light that is frequently filled with water, or at least a lot of moisture condensing on the lens. This eventually will cause trouble with the bulb, fixture or wiring.... and if it is the fixture which rusts badly..., well, you and I know how much BMW parts cost. Solve the problem by drilling a tiny hole in the lowest point of the plastic lens, or use a heated needle to burn a hole (just like you used to do

on your plastic models). The hole is too small to let any harmful dirt in, but will let any heavy moisture out. If your car is caught in a flood, you'll be happy to know that your signals drain, though the rest of the car might be a write-off.

-Jack Tippens
Windy City "Breeze"

ABOUT THE DIMMER DIMMER

Changing the headlight dimmer switch in your 2002 (at least in a '73) does not require the removal of your steering wheel. But removing the steering wheel insures that the two hazards which may be encountered, broken steering wheel horn contact and misaligned horn contact ring, will not occur. Removal of the steering wheel is readily accomplished by means of a 19 or 22 mm socket. Mark the wheel and shaft so that it is re-aligned correctly and pull on the wheel. This makes the job far simpler.

First remove the padded cover beneath the steering column (4 phillips screws). Then, remove the 2 phillips screws from the front of the plastic case. Remove the panels from beneath the dash to expose the connector.

There are now 6 screws left in the plastic cover under the steering column. Removing 4 slotted screws allows the padded panel to be removed by raising the edge near the wheel and gently pulling upward and towards you. Now remove the 2 remaining phillips screws and let the plastic case dangle from the ignition switch. Be careful not to damage the horn contact ring. The entire dimmer switch is now visible.

Remove the center of your steering wheel by grasping it along the edge and pulling. Note that the 3 holes that the studs on the center cap of the wheel fit into are cleverly placed the right distance from the shaft to allow you to insert the phillips screwdriver and remove the dimmer, after removing the horn wire. (Note: if you dislike the key buzzer, it can be easily removed. It's now hanging at the left side of the column.)

Putting the case back around the column is done in a different order. First, gently slip the upper padded cover down and back into place. Next, swing the lower plastic cover into place with the horn contact ring held in place between the upper and lower covers. Before you put in any screws, try the horn and the lights. If the horn doesn't blow, you may have broken the horn contact protruding from the back of the wheel. If the horn doesn't stop blowing, the horn contact ring is not properly in place. Now, put the 2 phillips bolts nearest you in place. Put in the long slotted screws next then replace under dash panels.

QUICK TIP

If you need a tap into the instrument lighting circuit so that you can vary the brightness of auxilliary gauge illumination or put a small lamp that shines on the ignition lock (as in Bavarias) on the steering column, it's easy. Under the driver's side dash, right above the steering column tube is an unused quick-disconnect plug with 2 or 3 gray-blue wires going into it. It's taped to one of the factory wiring harnesses. If you have an automatic transmission, a wire will be plugged in here to supply variable voltage to your shift quadrant light. At any rate, the circuit will handle a couple more instrument lamps without problems.

- N. J. Bulletin

BAVARIA REPLACEMENT BATTERY

I recently had need to obtain a battery for my 1973 Bavaria. The high cost of original battery replacement is prohibitive; however, my BMW dealer had an American replacement, reasonably priced. Since it was an emergency and the dealer is some distance away, I decided to look around locally.

All Bavaria owners have been warned that just about all American batteries are about 1/2 inch too high, and the round bar that goes across the hood will crush the filter caps in the middle of the battery when you close the hood.

I replaced mine with a "K-Mart" Maintenance Free #24F battery which has no filler caps because it is permanently sealed. I believe that it is a good battery and cost \$40. It is guaranteed for as long as you have it in the car in which it was installed. It is a full, no-proration guarantee.

I suggest you check the top clearance carefully in case there is any variance in clearance among Bavarias. I assume that other maintenance free batteries which have no filler caps would also fit.

-Wallace A. King, Boston Chapter

MORE ON REPLACEMENT BATTERIES FOR 2002 SERIES

Sears Die Hard, size 22F fits perfectly with absolutely no modifications necessary. It's rated at 62 AH (oem is 55 AH) and costs \$42.99 with trade-in when ordered through the catalogue (oem is \$84.00).

-Ned Saltzberg, Boston Chapter

A distributor cap for the 1200cc 36hp beetle carries the same Bosch part number as that for the 2002, and it sells for much less. The key is the last 3 digits, 187. It must be a 36 hp beetle- the 40 hp caps are larger.

-Flustern Bombe, Golden Gate Chap.

SIX CYLINDER OWNERS ALERT by D. Patzer, Puget Sound Chap.

The driver's side motor mount has failed on several cars recently. This mount (unlike the 2002) does not have a built-in bump stop, which would limit the movement of the engine if the mount should fail. Structural failure of this mount can and has resulted in rapid opening of the throttle, particularly while turning left.

Remember the same torque which rotates your drive shaft on direction is acting to turn your motor over in the opposite direction. If the motor mounts fatigue, the entire engine will shift its position a considerable amount. This movement is sensed at the carburetor as movement in the throttle linkage and the engine response unfortunately is acceleration, until the block has moved so far as to pop the throttle linkage from its attached points. This has happened to several cars here in Seattle.

At this time, there is no safety device available from your dealer as a retro-fit item which would prevent this hazardous condition.

OVERHEATING reprinted from Das Bimmer Bomber

An engine that has been running normally will overheat for three basic reasons: 1) It has run out of water in the cooling system, 2) the water is circulating too slow or not at all, or 3) the water is not being cooled.

Lack of water can be caused by leaks or overfilling. Failure to circulate could be a bad water pump, a faulty thermostat or a thermostat with too high an opening temperature, or the radiator or the cooling passages in the engine itself may be clogged. Check to see that air is passing freely through the radiator. Cooling systems are pressurized and are designed to operate at temperatures above the normal boiling point of water. Check the rubber seal on the pressure cap.

Finally, it is also possible that you may be asking too much of your engine. A hot day, with a full load and perhaps with some high altitude thrown in may be just too much. You'll have to stop and wait for it to cool off periodically.

If you get caught in traffic by such things as frequent freight trains which successfully stop traffic for 15 or 20 minutes at a time, TURN YOUR ENGINE OFF. The cooling

system of your car is designed to keep the temperature of the engine within safe limits while the car is moving. When idling at a standstill for extended periods of time, your car will overheat. The stock fans simply won't pull enough air through the radiator to do the job and ultimately might result in a highly costly warped head or blown gasket.

About 90% of all driving excursions are local, that is, within 5 miles or so. A good practice to follow is to start your car's engine and let it idle for 30 seconds or so. This will allow the oil to warm up and circulate easier. This will eliminate some engine wear and may increase mileage due to more efficient burning of gasoline-air mixture at the higher temperature.

TECH TIPS by Bob Gotshall, Buckeye Chapter

DRIVE TRAIN

When attacking any problem, always look for the easy explanation first. Don't take out the transmission unless you have to. The information presented here concerns the 2002.

Shifting problems can be traced to several possible solutions. Changing the transmission oil to 30W30 or 20W20 motor oil can cure a number of shifting ills. Cold weather shifting can be greatly improved with 20W20 oil. If the down shift from 3rd to 2nd has been getting worse, you may be pleasantly surprised at what changing the transmission oil can do (the synchros can finally do their job). It may take 2 or 3 days before the shifting will smooth out, as the old oil gunk is removed. Do not use hypoid gear oil in the transmission... this will cause problems. Remember to take out the fill plug first.

If you are actually having trouble getting the car into and out of gear, regardless of weather (especially first and reverse), the shifting tower may be loose. You can check this the same time you do the oil. The shift linkage is mounted to the transmission via two 8mm hex recessed bolts. Use a straight piece of 8mm hex stock and an 8 mm wrench or an 8mm Allen wrench. You will have to temporarily disconnect the seat belt warning switch to get at the right side bolt.

Still not shifting right? Feels like the clutch is not doing its job? Have you checked your brake fluid lately? Often the dirty brake fluid leads to a less responsive clutch (its hydraulic too). To be safe, bleed the clutch slave cylinder every 6 months. This will rid any air bubbles in the system. Check as per owner's manual for clutch wear. If it shows less than 5 mm travel, your clutch may not be worn. Change the brake fluid and include the clutch slave cylinder. Change the brake fluid anyhow- it needs it! Chances are this will solve your problem.

While you're at it, lift the rubber boot on the shift lever and WD-40 the ball and socket. OK, that's the easy part.

Does your clutch chatter when you let it out? Do not change the clutch yet. Check and replace the rear rubber transmission mount by simply raising the transmission slightly with a jack, then loosen, remove and replace. Check and replace the rubber donut on the foreward end of the driveshaft which connects the transmission to the driveshaft. When these wear and deteriorate, they permit wrap-up as torque is applied by engaging the clutch. Check the donut at least every 10,000 miles, more often if you drive the car hard.

Good, caught you with your driveshaft down! Now, will you check that output flange? If you own a 71 through 74 2002, have this checked or do it yourself. You may not have any symptoms; but, if you have any clunking underneath when shifting (try this with the car coasting and the clutch pedal in...shift back and forth from 1st to 2nd) or clunking upon accelerating or decelerating, check this now! While you're checking this, put in a new rear transmission seal, especially if there is evidence of oil leakage from

the rear of the transmission. The seal only costs \$4 or \$5 and is simple to install.

Not done yet! Check the center bearing of the driveshaft while you are under there. This has a rubber support which deteriorates. Any signs of cracks, or if the bearing is not situated in the center of the support, and it probably needs replacing. As it wears, a thumping or drumming sound occurs from the middle of the car as the driveshaft rotates eccentrically.

Finally, you are a member of the BMWCCA. Any concern you have with your car, feel free to approach any other member. That's one of the reasons we got together in the first place...to help each other out.

MINI TECH TIPS

1. You say that your 2002 windshield washer motor has expired and a new replacement will cost a bundle! Is that your trouble? Well, cheer up Bucko... there is an inexpensive and reliable alternative. The 2002 will accommodate a washer bottle/pump from a Datsun with only a slight bending of the BMW bottle bracket. Cost, about \$10 complete.

-Clint Stiger, BMWCA, Portland Chapter

2. Backfiring at higher speeds and failure to idle under 2000 rpm in a 1600/2002 can be cured by cleaning the slow speed idle jet on the passenger side of the carburetor body. It can be removed easily with a screwdriver.

-Bill Machrone, N. J. Bulletin

3. MUFFLER PATCH- For a temporary fix if you have a small pinhole muffler leak, try some Dow Corning or GE silicone cement. Allow 24 hrs. for it to set. This should last until you replace your muffler. If you notice any exhaust fumes in the car while driving, replace muffler immediately! Note: Loctite makes a muffler and tailpipe sealant, part 53091. It works and is non-toxic and can also be used for radiator and gas tank leaks.

-Die Zeitung, Conn. Valley Chap. newsletter

4. J.C. Witless has a chrome-plated dip stick for a 1938 Ford that is an exact fit for the 2002. Readings are about 1/2 quart off, but this is easy to adjust to if you can remember which way. Oil does not readily cling to the chrome so you lose very little each time you take a reading.

-Rust Johnson, N. J. Bulletin

6 Cylinder Tip

There are many 6 cylinder owners in our club who need helpful hints once in awhile. After having put \$15,000 to \$20,000 on your Bavaria, 3.0 CS, 530i, etc., it is a good move to have your vacuum lines replaced as they have a tendency to crack after a period of time. Your 2002 may need this service also.

Get Spoiled Without the Hassle

If you have purchased a front spoiler for your 1600-2 or 2002 and have decided that the unit you received has no intention of fitting the car, you will need special tools. Spoilers sold by Racemark, Pacesetter, and Interpart come from the same mold and are a bit tricky to install. Special tools needed include a pizza oven, or an aluminum garage roof, an ice pick and several very cold beers.

DATSUN PARTS (FOR YOUR BMW, OF COURSE!)

Those people at Nissam supply the 280Z car with a really sharp trouble light (part #26740-89904) which you can install anywhere in the Bimmer engine compartment or trunk as an excellent portable source of light. It includes a 6 foot cord in the casing for moving about and is a great deal at \$3.00.

VINYL CARE AND STEERING WHEELS

In response to Mark Powell's letter last month about a cleaner for the interior vinyl and a non-stock steering wheel: Vinyl which is not very dirty can be cleaned with mild soap and water, but if you have a very dirty interior (it happens to some of us) step up to using a product like Fantastic or Formula 49. These are usually strong enough to remove almost any grease or dirt which hasn't been given several years to age into a permanent part of the vinyl. Sometimes a stiff brush may have to be used to lift the most stubborn spots. Rinse the surface with a clean towel and clear water, then try using Armorall GT to put good color back in the vinyl and to slow up future dirt accumulations. You might find that the Armorall makes your seats too slick for you, so avoid that area if you like staying put.

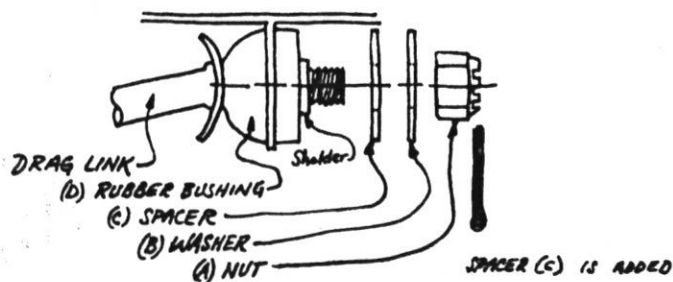
There are several good non-stock steering wheels available for BMW, with names like BWA, Racemark, President and Nardi among the best for your car. I'd suggest that you look in as many of the Bimmers as you can at the next few events to see the many kinds of wheels BMW members have chosen - and if you see one that you really like, ask about it. Most of these run between \$49 and \$75. There are few sources which get much below a \$50 price, so expect to pay that much, unless you have a chance to get a used wheel or a special discount. Oh, and unless you are a very strong person you will probably not want a wheel smaller than a 14" diameter - parking would become a task to be avoided.

-Dennis Pabich
Windy City Chapter

BMW HANDLING

In these trying times when it's costing more and more to do less and less, it is refreshing to find an inexpensive way to do something. Here's a way to "firm up" the steering and it costs about 15¢. No typo - 15¢!

Go to your friendly hardware store and purchase 2 washers approximately 1/8" thick with a 3/4" center hole; the outside diameter doesn't matter. Look under the front of your car and under the sway bar (if you don't know where your sway bar is, don't go any further - wait for a tech session!) you will notice a rubber bushing with a bar through it that goes to the strut. This is called a drag link. It locates the strut as far as fore/aft movement is concerned. The rubber bushing is fairly soft as some give is necessary for a soft ride. But this softness also gives a sloppy feeling to the steering. When you turn the steering wheel, it takes up the amount the flexing of the rubber gives before the wheel turns. Looking at the rubber bushing, you will see a nut (A), then a large washer (B) and behind it the rubber bushing (D). Behind the washer is a shoulder moulded into the bushing. This is smaller



than the washer; thus, when the drag link moves, the washer deforms the bushing easily. By placing a spacer behind the washer, you lessen this flexibility, resulting in a firmer and more responsive steering. To do this, obtain the size of washer mentioned above, then remove the cotter pin and nut A and washer B. Slip spacer C (the 3/4" washer) over shoulder of the bushing and replace washer B and nut A. Tighten the nut firmly and insert a new cotter pin - this is important.

-Dave Toy

Autoy

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** The 19mm front bar will clear stock smog pump and A/C compressor. The 22mm front bar will not. We recommend the 22mm bars for autocrossing or racing only.

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ANSWERS TO QUESTIONS MOST FREQUENTLY ASKED ABOUT THE BILSTEIN "RISING RATE" GAS PRESSURE SHOCK ABSORBER.

1. Q: WHAT DO YOU MEAN BY "GAS PRESSURE" SHOCK ABSORBER?

A: The BILSTEIN Gas Pressure Shock Absorber is a telescopic, mono-tube unit filled with nitrogen gas and hydraulic oil. The gas, sealed in a special compartment at 25 times atmospheric pressure, exerts constant high pressure on the oil column eliminating cavitation and foaming. The absolute elimination of foaming results in uninterrupted damping, for even the smallest wheel deflections, (2mm); a performance which no other type of shock can claim or match.

2. Q: WHAT DO YOU MEAN BY "RISING RATES"?

A: Rising rate means that the rate or damping coefficient increases as suspension movements become more rapid, such as on rough surfaces or high speed cornering. With BILSTEINS, a smooth comfortable ride is provided at all times with exactly the right amount of control for changing terrain, road and driving conditions.

3. Q: WHAT ARE THE ADVANTAGES OF SINGLE TUBE DESIGN?

A: The advantages are:
a) better heat dissipation, which means, better performance. A shock absorber is an "energy converter"; "spring energy" has to be converted into "thermal energy" and the resulting heat has to be dissipated as fast as possible.

A shock absorber's effectiveness is directly proportional to its ability to dissipate heat. A BILSTEIN shock can handle working temperatures of up to 480 degrees without changing characteristics.

b) Much greater piston area: greater sensitivity for small piston movements.

c) They are lighter; reduced "unsprung mass" allows wheels and tires to respond more readily to surface irregularities for improved control; also, by lowering the unsprung masses, wear of suspension and steering components is reduced.

4. Q: HOW LONG WILL THEY LAST?

A: Like any precision machine, they cannot last forever. Operating conditions will determine their life. However, BILSTEINS contain no ball check valves or moving parts other than the pistons; no springs and no hinge pins to wear out, deteriorate or get weak with age, use and heat. They outlast almost any other shock absorber in the same application.

5. Q: HOW DOES BILSTEIN COMPARE WITH OTHER SHOCK ABSORBERS?

A: BILSTEIN "rising rate" shocks cannot be compared with any multi-tube reservoir shock. BILSTEIN technology is so far ahead and so different that performance cannot be equaled.

6. Q: WHY AREN'T BILSTEINS ADJUSTABLE?

A: A BILSTEIN doesn't need adjustment to compensate for wear or for varying surfaces. The shock responds instantaneously to the speed of suspension movement to provide the exact damping characteristics required for maximum control, safety and performance. Other shocks need adjustment because the settings are a compromise. They need adjustment according to how they are to be used.



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10% OFF all suspension Kits on any order between now and the end of the year!!!!!!

"Your Aching Back"

Alas, all BMWs have one terrible fault, let's admit it. BMW seats are among the world's worst. If you have never been in a Recaro or Scheel bucket or driven hours on end in the other great German car, you're lucky. You just don't know what real seat comfort is like and you won't miss it. But as a motoring enthusiast, what's good for your back is good for your BMW.

The fault with BMW seats is that they have terrible thigh support and miserable back support. The seat bottoms are too short, from to back and the rear upright cushion does not provide any lumbar support.

Short of spending lost of money on a rally seat, nothing much can be done about the short bottom cushion. However, if you tilt the seat about its transverse axis so that the front of the cushion is higher, additional and welcome thigh support will be offered.

Slide the seat, all models, to its most forward position. Loosen only the two bolts holding the runners to the frame. Move the seat to the rear and remove the two front bolts on the runner. Insert washers, to whatever angle is best for you, 1/4" to 5/16", between the runners and the frame. Insert and tighten the front bolts, slide the seat forward and retighten the rear bolts. Your seat now slides up and down at an incline. This tilt will give you the extra thigh support. Don't go up too much, though, since the amount of reasonable bend in the runners is just so much.

Undo the six upholstery screws at the rear of your seat. Using a downward motion, lift the rear cover away from the seat and look inside. The seat shape is controlled by a series of zig-zag flat springs. You can't bend them but you can add padding to either reshape a worn seat or to super-contour what you have.

Take 2 pieces of carpet remnant, each 5" x 13.5", put the nap faces together so that the hard backing is to the outside. Slip this cushion under the flat springs across the seat. A good starting point is about 6" up from the seat bottom. After the padding is in position, sit down. Is it comfortable, should the padding be higher? Your back is different from mine. Adjust the padding depending on your own needs.

When you sit squarely on the seat and you have your hands on the steering wheel, press back into the seat cushion. If you feel your backbone creaking into shape and you can actually sit with a normal or expanded chest, no slouching here, you've got your own ideal position. Now go ahead and do the same to the passenger seat. After all, someday you may be tired and someone else may be driving!

-Dave Rivkin
N. Y. Chapter

To repair little cracks in the vinyl upholstery, try applying Duro Clear Formula V Vinyl adhesive (price about \$1). You can hold the crack together with masking tape until it dries.

-Rocky Mountain BMW

Safety Tip: When was the last time you washed your seat belt? Yes, sport fannies, they work much better if there is no grit or oil, etc. imbedded in the webbing. So give them a once-over with diluted dish soap in water or with Glamorene upholstery shampoo. Make sure you rinse very thoroughly and try them extended (you can hook them after passing them around the door handles, and most of their length will be withdrawn. Verstehen?)

-Rocky Mountain BMW

On your newer cars, a rattle that sounds as though it comes from the speedometer may be caused by a worn accelerator pedal bushing! If so, turn the bushing 90 degrees on the link and your noise is gone as well as the sticky linkage.

Also, the tool kits in the 530 and 3.0 models may appear incomplete, but there are several parts that at times are not furnished to the USA buyers of these cars. Do not be disturbed, you are not being cheated in any fashion.

And, finally, if you are experiencing a mid-range surge - on newer cars, some surge may be normal, but if surge is your discomfort - see your dealer. He MAY be able to correct this problem. On any model of the 3.0, some clutch noise is normal on heavy acceleration, 4-6000 rpm when clutch is depressed.

-Whispering Bomb, BMWACA

TO OWNERS OF 1975-76 MODELS

If EGR light on the dash board comes on while driving, don't panic! Your car won't explode! It is a warning that the system should be checked and is not activated by the system, but by the odometer. You should take the car to your dealer to have the system checked even if the car has been recently serviced. They will check the system and reset the warning light which comes on every 12,500 miles.

-Whispering Bomb, BMWACA

If the oil pressure light goes out, disconnect female connector of sending unit (next door to the distributor) and ground it to the valve cover with the ignition on. If the bulb is okay, sender is probably defunct. Before you replace it, clean it thoroughly with penetrating cleaner / lubricant. Reinstall it and check again. -Die Zeitung

WHAT TO DO WHEN YOUR FUEL PUMP WON'T

This article should be of some interest to you BMW owners who have over 50,000 miles or have owned your BMW for a number of years. I have 84,000 miles on my 1971 2002 and a week or so ago my fuel pump quit pumping. Some model of VW uses an identical Bosch fuel pump.

VW carries a rebuild kit for this pump priced at about \$7. Hoffman has a BMW rebuild kit for about \$14. Most BMW dealers don't stock it but can get it on a special order. The VW part number for the rebuild kit is 111-198-555.

I bought the kit and carefully took apart the old pump and replaced the diaphragm and a gasket. After bolting the pump back on the engine, I primed it a little by dripping gas down the carburetor. It finally started and has been working fine ever since.

A symptom of a pump that is starting to weaken is a miss at high rpm's caused by temporary fuel starvation. This occurred a few times to me before the pump finally gave up completely.

The pump is not rebuildable on some of the newer 2002s, but I believe it has been used on 1600s and 2002s for a number of years. A new fuel pump costs almost \$30, so rebuilding yours with the VW kit is a much cheaper way to go. Also, your chances of finding a VW dealer are pretty good if your pump quits working away from home.

-Jim Bengston
N.J. Bulletin

The small fuel line that runs from the firewall to your airfilter housing is a vent from the expansion chamber chamber on the right wheelwell of your trunk. With a full tank on a hot day, petrol can fill the chamber and run up the hose to the airfilter. This is potentially more dangerous on a tii than a carbureted 2002, since the tii air filter canister is a sealed unit with no drain holes to speak of. One good spark and your tii gets a new nose job and you might not be around to enjoy it. The remedy: unplug the hose from the airfilter (take the hole

in the filter) and run it down the transmission housing. Make sure it doesn't foul the throttle linkage. Voila! One less worry and less gas fumes when you first climb into the Bimmer.

-Richard Strout
Die Zeitung

BRIAN MISSIG SENDS WORD ON INEXPENSIVE AIR FILTERS

2002 1972 and earlier: Use Lee AFL-110, Purolator AFP-110, Fram C A-349

2002 late 1972 (large unit) to 1976: Use Lee AFL-94, Purolator AFP-94, Fram C A-338

The Lee's are the only ones he's used, but the others are cross referenced to fit by size and, therefore, should fit.

-Das Kummel

TECH LINE Reprinted from Die Vier und Sechs

This month's tech line comments are directed to fuel lines-the reinforced rubber type which has an urge to self-destruct. Irrespective of which BMW you own, the fuel lines appear to be made of the same material, so everyone faces the problem of gasoline getting into areas where it should not. In carburetted cars, the dangerous piece of fuel hose is the short piece connecting the fuel pump and the carburetor. This is a low pressure system (4 to 5 psi) with low fuel capacity (under 15 gal/hr), so your best system check is to inspect the lines for wetness when the engine is running. On fuel injected cars, the problem and potential danger is much greater because of the much higher pressure involved (almost 30 psi) and higher fuel flow rates (30 gal/hr). Routine inspection can be the same as on the carburetted cars.

What happens if the line(s) fail while driving the car and how do you know such a failure has occurred? On a carburetted car, you probably won't be aware of a small leak, which will grow only very slowly and will be found at your next inspection. On a fuel injected car, the leak will grow very rapidly and you will find out about it in one or both of two ways: heat which equals a fire or a fuel gauge which leads rapidly for the empty mark. There is another way - the car stops due to lack of fuel. If you have the pleasure of experiencing a failure of this type, turn the fuel supply off by turning the ignition off - don't turn the key to the steering lock position, however, as you want to drive the car to the side of the road to change the offending fuel line.

RECOMMENDATION: Change all fuel hoses on a 2 year cycle. Don't forget the fuel return lines on fuel injected cars, as these are also under pressure.

ATTENTION SAHARA TAN BMW OWNERS

"Plasti-Kote" touch up paint #8009 (spray) is an identical match for Sahara colored BMW's. It is available at your local parts store for about \$1.98 for the 7.75 oz can.

While enjoying the usual faceful of oil during an oil change, I noticed a brown wire that comes from the gray wiring harness (near the oil filter, to the rear of the alternator) was in a dangerous condition. It had been squashed between the oil filter and the black cylindrical projection on the rear of the alternator and had rubbed through the brown insulation. A tii makes a rather expensive weenie roast. Check your wiring and don't spare the electrician's rubber tape. Re-route and tie down the wire to prevent further chafing.

-Warren Markey
Die Zeitung

CAMSHAFT CHAIN TENSIONER

If your engine is making some strange sounds that sound something like loose rocker arms but which no amount of valve adjustment seems to cure, there is something else which makes a world of difference yet seems to be overlooked most of the time.

That is the hydraulic piston which controls the tension on your cam chain and since, like most BMW parts, tolerances in it are close, it has a tendency to get gummy and then either fails to function at all or on a part time basis. Contributing to the fact is it runs in a reservoir of oil through which there is no circulation and it seems to take anywhere from 20,000 to 40,000 miles for the stagnant oil to get dirty, aggravating the problem.

Fortunately, the cure is relatively simple, requiring only a few tools, though it is a bit time consuming. Unless you are handy at cutting gaskets, you should check in with your dealer and get a set (of gaskets) for the small front cover which sits close to the temperature-sensitive air intake box on the 4 cylinder. The procedure I'll outline here will be primarily for the 4 cylinder owners but the technique is essentially the same for the 6's.

First take off the valve cover and also the small front cover. With that off, you'll be able to look directly at the chain tensioning piston which sits in that protrudance at the front of the engine on the passenger's side. Now take a 19mm wrench and loosen the nut on that end. But be careful! There is a huge spring in there and when you finally get the cupped nut off, it could shoot all over the place, so be forewarned. With the spring out, the piston should slip into your hot little hand. Take it and dump it into a container of solvent and let it sit. While the piston is in the solvent, either take a rag or a hypodermic syringe and draw out all of the old oil in the reservoir. Take the piston out of the solvent, blow it out with some compressed air and listen if you can hear the ball bearing inside rattling around. If you can't, its back into the solvent until you can hear it.

Once you hear the ball bearing, put the whole arrangement back into the car remembering that the tapered end of the spring goes into the retaining cup which should be torqued to 25 ft/lbs when you re-install it. Once its all back together, refill the reservoir and grab hold of the part which actually pushes the chain and start pumping. The reservoir will go down as you pump so keep refilling it. Keep pumping until the piston is suddenly impossible to push.

Everything is now re-tensioned. Put the new gaskets on the small front cover, replace the valve cover gasket and drive away in new-found silence.

-George Larson
Los Angeles Chapter

FOR TII OWNERS who are having a hard time keeping your car in tune, are lacking performance and have poor gas mileage, you may have put your foot down a little too hard. Forcing the throttle pedal can bend the throttle linkage, resulting in the above problems. If you have a high rpm miss, check your fuel filter in the fuel pick-up in the gas tank. Clean this about every 24,000 miles. Also, check the wiring harness on the firewall which connects to the condensor. This fatigues (often inside the plastic insulator) and will, upon breaking, result in poor running or no running at all.

-Bob Gotshall, Buckeye Chapter

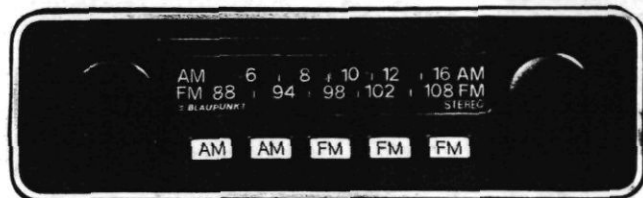
On older 2002s, if the air cleaner hits the hood when starting the engine or going over bumps, replace the left engine mount. Use the newer square mount. Support the engine, unbolt old mount and bolt in the new one. Also, the left mount from a Bavaria will fit, it's stronger and will not cost any more.

-Driving Light, Buckeye Chapter

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Frankfurt AM/FM Stereo Car Radio

The superior stereo car radio. Quality crafted to produce vibrant clarity and stereo separation that rivals the finest home stereo system! Designed for those who demand the ultimate in sound reproduction!

Automatic Band Switching, and built-in electronic tuning control to eliminate station drift.

The Frankfurt Car Stereo—A legend in its time!

Specifications

Power supply: 12 volts, DC—negative ground.
Circuitry: 23 transistors, 12 diodes.
Power output: 2x5 watts RMS.
Power consumption: 1 amp.

FM
Sensitivity for 1 W output: 0.8 μ V
Sensitivity for 26dB S/N: 1.4 μ V
—3dB limiting sensitivity: 8.0 μ V
Image ratio: 40dB
Stereo separation: 30dB

AM
Sensitivity for 1 W output: 7 μ V
Sensitivity for 20dB S/N: 22 μ V
IF rejection: 70dB

Stereo balance control
Variable tone control
Stereo/Mono switch
Pushbuttons: 2 AM, 3 FM
Connection for automatic antenna
DIN Std connection for tape player
Waveband reception: AM 515-1640 KHz
FM 87-108 MHz
Dimensions: 178x44x127mm
7" wide x 1 3/4" high x 5" deep
Weight: 1.7 Kg—3 3/4 lbs.

CR 4081 Stereo "Combo 8"

Car Radio Cartridge Combination with Adjustable Shafts

Designed for the discerning individual, the new Combo 8 is the ultimate in automotive stereo radio/cartridge equipment. Solid state performance insures the best possible AM, FM and FM Stereo reception. Clarity and the true realism in stereo play back of popular 8 track stereo cartridges.

Adjustable shafts for convenient installation in many imported and American automobiles.

Features include band selector, illuminated AM/FM/FM stereo mode, and tape program indication, Program repeat button, FM local/distance switch, stereo balance and variable tone control.

The new Combo 8-in-dash stereo radio receiver with cartridge playback—another quality sound system from Blaupunkt.

Specifications

Power Supply: 12-14 volts, DC—negative ground.
Power Consumption: 1.5 amp. max. on performance (3.2 amp. peak on track change)
Circuitry: 8 Transistors, [6 Integrated Circuits (Perform functions of 29 transistors and 21 Diodes)] 15 Diodes.
Power Output: 2x7 watts

Waveband Reception: AM 540-1600 KHz
FM 88-108 MHz
Tape: 8 Track Cartridge
Frequency response: 50Hz—10 KHz
Shaft Adjustments: 130mm—160mm
Dimensions: 171x54x182mm
6 1/2" wide x 2" high x 7" deep
Weight: 1.9 Kg—4 1/2 lbs.

CR 4090 Stereo "Combo II"

Car Radio Combination Automatic Reverse

Quality sound with all of the latest features! AM, FM, FM Stereo, with auto reverse stereo cassette player for continuous tape program play.

True sound reproduction with power to spare! Compact size for front loading into many import dashboards. Adjustable shafts to fit many

American built cars.
Features include local/distance switch, program select button, mono/stereo switch, stereo balance control, variable tone control, fast forward and rewind.
Combo II auto reverse—a remarkable, full fidelity sound system.

Specifications

Power Supply: 12-14 volts, DC—negative ground.
Circuitry: 20 Transistors (5 integrated Circuits) 26 Diodes.
Power Output: 2x7 watts.
Power Consumption: less than 2 amps. (Peak at 3.5 amps. when auto reverse activates)
Waveband reception: AM 540-1600 KHz
FM 88-108MHz

Tape: Compact Cassette
Tape Speed: 4.75 cm/sec.
1 1/2 in/sec.
Frequency response: 50Hz—10 KHz
Shaft Adjustments: 130, 142, 148mm
Dimensions: 178x44x151mm
7" wide x 1 3/4" high x 5 1/2" deep
Weight: 1.8 Kg—4 1/4 lbs.

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America's Number 1 car stereo speakers

Jensen Coaxials,
sound ideas for great listening.

The high fidelity car stereo speakers with separate woofers and tweeters for superb sound reproduction.



Perfect for those who demand living room quality sound for their car.

Jensen coaxials feature a separate tweeter for smooth, clear highs. These coaxials are available in four different sizes that fit most any car. The 4", 5 1/4" and 5" x 7" coaxials feature Jensen's "Sweeter" solid state tweeter; the 6" x 9" model boasts a direct radiating dynamic tweeter. And, like all Jensen car stereo speakers, these coaxials are covered by a one year warranty. They're the perfect compliment for a quality car stereo.

| Size | Magnet Weight |
|---------|---------------|
| 6" x 9" | 20 oz. |
| 5" x 7" | 20 oz. |
| 5 1/4" | 20 oz. |
| 5" | 10 oz. |
| 4" | 10 oz. |

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UNABLE TO ADJUST AIR-FUEL MIXTURE?

After a certain point, the air-fuel mixture screw in the carburetor may become worn. Apparently the taper of the screw may change if enough gas has passed around the metal point of the screw.

This became apparent to me after I bought rebuilding kits for my carburetors. The kits included new air-fuel mixture screws as well as gaskets. Before replacing the gaskets, I wanted to see what would happen if I just changed the mixture screws. Up until I did that, I had been unable to adjust my carburetors satisfactorily, even though I used a unison device to measure and synchronize the air flow. With the new screws in place, I was able to get definite response for each carburetor at low RPMs. This allowed me to properly adjust the air-fuel mixture. Another problem with the dual sidedraft solex carburetors is not as easily overcome, however. With sufficient wear, the shafts through the venturi enlarged the hole in the side walls which encase the shaft. This means that air may enter from the sides of the carburetor throats, through the shaft openings. One carburetor specialist has indicated that the shaft openings can be filled with lead to completely seal the air out. At this point, I had to resort to such an adjustment.

-New York Chapter Newsletter

TECH TIP

If your emergency brake lever seems unusually loose with lots of side play in the released position, lift the rubber cover and see if one of the C clips has slipped off the pivot rod that holds the lever on the mounting bracket.

-Warren Markey
Connecticut Valley Chapter

FIRE (extinguishers)

Fire is a constant hazard to you and your property. You can be careful and take the usual preventive measures, but what can you actually do if a fire occurs? If the fire is caught early, and is small enough, you can put it out with your handy extinguisher.

A little background on fires is necessary before fire extinguishers can be discussed. There are three common classifications of fire: A, B and C.

1. Type A fires are those involving burning solids such as wood, paper, rubber, carpeting, etc.
2. Type B fires are burning liquids-oil, gas, grease, etc.
3. Type C fires are those that are burning and are electrically "live". Extinguishers with a C rating use a non-conductive medium to put out the fires.

(Actually, there is a Type D fire-burning metals such as magnesium, but due to its rarity, it'll not be considered.)

There are three commonly used types of extinguishers.

1. The soda-acid extinguisher. This choice could be eliminated because it can't be used on types B and C fires, should be stored upright and (a big consideration in New England) they freeze in the winter.
2. The next type is the CO₂ type of extinguisher. It has the obvious advantage of leaving no mess to clean up and in a clutch it can be used to cool your beer, but it was found that not enough CO₂ could be put in a small size extinguisher to put out a reasonable size fire. Also due to the very high pressurization, they are thick walled and very heavy.
3. This brings us to the dry chemical extinguisher, the last and best for automotive or general use. It will not freeze, can be used on A, B and C type fires and will put out the largest fire of the 3 types of extinguishers. The

only disadvantage is the mess in the area sprayed, but when you consider that it could still be burning, it's the least of your problems.

It was decided that the extinguisher one would order would be a top rated, refillable, metal valved, pressure gauged ABC type extinguisher. The brand chosen after talking to firemen and extinguisher shops was Amerex, sizes A 2-1/2 lb unit rated 1A:10B:C with a vehicle mounting bracket and a 5 lb unit rated 2A:10B:C with a wall mount suitable for kitchen, workshop or garage.

If the prices for these extinguishers seem high, it's because they are not the usual discount house junk. Check these discount units out and you will find the ABC type fire fighting ratings are not as high. Most have plastic valves. Try to find a place that will recharge a plastic valved extinguisher. For the price, the Amerex units are a bargain.

-Ed Vozek, Conn. Valley Chapter
Portions reprinted from
Die Zeitung

DREADED RUST by Jim Craig, Tidewater Chapter

Finally all that lousy (and expensive) German metallic paint has been disposed of! In the process of tearing down and rebuilding a nearly four year old car it was interesting to see where and how much rust had grown - particularly since we live in a relatively damp area with a fair amount of salt in the air. Surprisingly, there was little rust, although that which developed was quite severe in one spot. The trouble areas were:

1. Undersides of the center sections of both bumpers.
2. Undersides of all 4 bumper overriders.
3. Body areas in contact with metal trim clips, particularly behind the lower rubber protective side molding.
4. The insides of both doors at the upper edge behind the outside window molding.
5. The transverse U-channel at the rear of the underside of the hood, that holds the rear hood sealing gasket.

Items 1,2 and 4 responded quite well to liberal applications of a wire brush followed by several coats of rust inhibiting paint. Item 3 was minor and the spots were removed in the process of preparing the rest of the body for re-painting. No. 5 was the surprise, half the channel was covered by horrendously deep rust - in some spots the channel was nothing but rust. Once again, scraping, brushing and painting cleaned the mess up reasonably well. There was even enough of the channel left to install a new gasket.

Here are a few suggestions for saving yourself some trouble with rust:

1. Eliminate as many metal trim clips as possible-particularly on the lower molding where the lower inside rim tends to trap water.
2. Periodically remove all exterior trim, clean, check for rust and replace any rusted clips.
3. Every few months, remove the rear hood gasket and check for rust.
4. About once a year remove the bumpers and clean them well. Scrape and repaint the inner surfaces as necessary. This is particularly important for the rear bumper.
5. Start the plugs in the hole with your fingers, not a spark plug socket. This will prevent crossthreading.

-Central Fla. Chapter Newsletter

CHANGING BRAKE FLUID

Your owner's manual makes much of the fact that you should change your brake fluid on an annual basis because of the "hygroscopic" (moisture-absorbing) nature of brake fluid. Loss of brakes due to boiling fluid is normally a problem only under the severest conditions, namely racing. Since most of us want the maximum performance out of our BMWs,

we do most everything the factory tells us, plus a few extras.

The problem for the average Sunday mechanic is that neither his owner's manual nor the shop manual tells him how to do the job. For those of you who are morally opposed to running to the dealer for this kind of job, here's how:

FIRST, you need two pints of the best brake fluid you can get. It must meet DOT-3 specs for disc brake systems. Although all fluids are supposed to be interchangeable, it is a good idea to stick to one brand. (Note: try to find a fluid of a different color than the one you presently have in the system. It is then easier to determine when the new fluid is through the system.)

BE CAREFUL IN HANDLING NEW OR OLD BRAKE FLUID. It's an excellent paint remover/finish destroyer and it hurts the devil if you get it in your eye.

NEXT jack the rear of your car or just the right rear if you have the standard jack. Pull the wheel. Now is as good a time as any to adjust the rear brakes. Look for the bleeder on the upper back of the drum, remove the rubber dust cap and clean away the accumulated grunge. You'll need a length of windshield washer hose or plastic tubing to channel the old fluid from the bleeder to a suitable container. By the way, I'm not slighting you 6-cylinder guys - the same applies to your rear discs.

Depending on the year and model, you'll need a 7 or 8mm wrench to loosen the bleeder. A half turn is usually sufficient. Do not remove the bleeder. Gravity is a slow but adequate way to drain the fluid, but you can speed the process by pumping the brake pedal. You need an assistant to do this right, though. In order to prevent old cruddy fluid from being sucked back into the system, the bleeder should be closed before the pedal is let up each time. This also prevents air from getting into the system. Keep an eye on the level in the reservoir and keep topping it with fresh fluid. If you allow it to go dry at any point, you'll have to start all over again to get the air out of the line.

After many pumps, or 20 minutes or so of gravity, you'll see fresh fluid coming out. The old and new fluids hardly mix at all in the lines, so the color change means that the reservoir and the line are free of old fluid.

CLOSE the bleeder (on a downstroke if someone is pumping for you) and go on to the next one. The rule is that you start farthest from the master cylinder and work back to the closest. Do this for each bleeder on each wheel: RR, LR, RF, LF. Make sure all of the bleeders are snug (no Charles Atlas stuff, please) and mash the brakes hard several times while the engine is running (for power assist). Check all the bleeders again for signs of fresh fluid and tighten up if necessary.

Replace the dust caps and finish up by draining all that nasty old fluid out of the clutch line, keeping an eye on the reservoir level. The bleeder is at the front top of the slave cylinder.

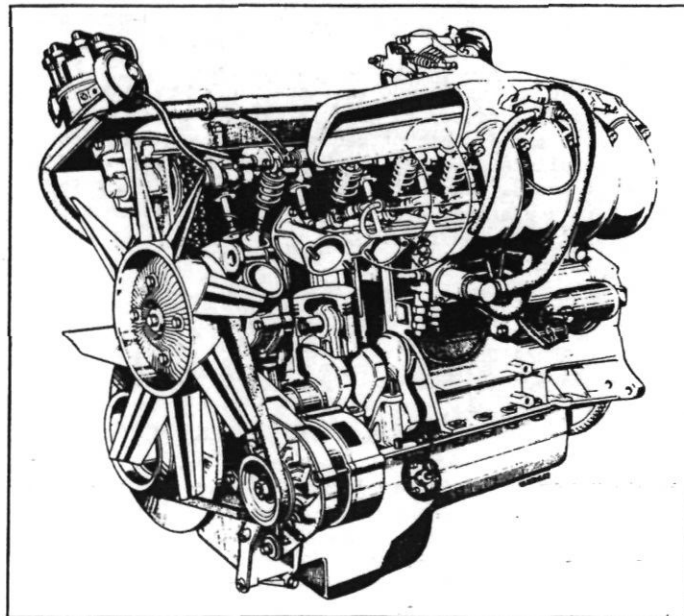
-Bill Machrone

TECHNICAL TIPS

As Tony Hogg of Road and Track puts it, "Premium fuel seems to have lost most of its premium these days..." Except for price, premium fuel seems to vary considerably from dealer to dealer and from time to time. Another and perhaps more important development is the unleaded premium which has replaced premium fuel at Standard, Mobile, Sinclair and undoubtedly other major dealers. This fuel generally has an octane rating around 92 and is not satisfactory for most BMWs. In fact, it would be quite harmful to some of the older models, particularly the 2002 tii with its higher compression ratio.

So far, by changing brands I have been able to obtain adequate leaded premium fuel but when on the road, it is becoming more and more difficult. Tony Hogg suggests the

use of 100 octane aviation gasoline obtainable at most airports at the cost of 79 cents per gallon. He notes that a 50/50 mix with automotive premium seems to work well. To me, this would not seem to be a satisfactory long term solution and probably some sort of consumer action will be necessary to maintain a supply of premium fuel in the years to come.



SPARK PLUG INSTALLATION

When changing plugs, be careful not to overtighten the new plugs, or to cross thread them. The aluminum alloy in the head is a very soft material, and the ease with which the spark plug holes can be damaged is way out of proportion to the difficulty of repairing them. Here's a safe way to change plugs.

1. Mark spark plug wires with labeling tape 1-2-3-4 near the spark plug caps and detach. Loosen all plugs two or three turns. Crank engine over with starter for 5 or 10 seconds. This will blow out any trash out from around the threads. Remove old plugs, keeping track of which plug came out of which cylinder.
2. Now is the time to look at your old plugs carefully. Normal plugs should have a reddish-tan coloring and light deposits on the center and side electrodes. Most shop manuals provide plug-reading guides to show you what oil-fouling or carbon-fouling looks like. With practice, you can tell a great deal about what's going on in your engine by the way your plugs "read". One thing I always look for in a plug is tiny gray balls in the insulator down inside the plug base. These are aluminum deposits and can indicate severe detonation. If you see any, look for problems with plug heat range or ignition timing.
3. Gap your new plugs to the manufacturer's specifications. If you're given a range, such as .024 - .026 inch, always gap them to the smaller figure. As the plug wears, the gap will widen, requiring more voltage for good spark.
4. Coat the plug threads with dry graphite lubricant. If you try to use oil, and get some on the electrode, it can cause the plug to misfire.

LOW CYLINDER PRESSURE

... may not mean a rebuild is in order. Despite fine tuning, the performance of my six-cylinder had been gradually deteriorating. A check showed the problem in the second cylinder whose plug could be disconnected without any influence on the running of the engine. A check of the electrical system and swap of plugs produced no changes. A compression test, on the other hand, showed the cylinder to rate about 20 pounds below the others. Introduction of oil in the cylinder raised the pressure about five pounds.

A quick trip to Circle Tire served to assure me that I probably had been running with a blown head gasket which would call for hundreds of dollars of repairs. After seriously considering to unload the car, I decided on one last try.

A check of the valves showed that the second cylinder valves had no clearances at all. After adjusting all clearances, a matter which takes about fifteen minutes, the second cylinder pressure was up with the rest of them. Once tuned, the engine ran better than it had for years. Sure a pleasant surprise and an easy way to save hundreds of dollars in repairs.

-Ivars Avots
Boston Bimmer

OIL LEAKS (ARRRGH!!!)

God, my seals must be busted! My driveway is a mess from the oil spots all over the place.

Try the cheapest possibilities first. (Elliot's First Law, Second Corollary).

"If your 2002 starts to drip oil from the rear of the engine onto the exhaust pipe producing dramatic clouds of smoke, don't rush the car into an expensive repair job before checking the condition of the oil pressure warning light switch located next to the distributor. Wipe it clean and if it oozes oil while the engine is still running, the plastic is probably cracked as mine was at 68,000 miles. Replace it with a new \$3.71 part."

-Windy City Breeze

Also, oil from the valve cover gasket is problematic, since the aluminum head is canted to the passenger side. The first place to check for any oil leak is along the edge of that gasket. There will probably be a little, even after a few thousand miles; but if your finger comes up gooey, with a half a quart of oil on it, you know you've got problems.

Changing the valve cover gasket is simple. Obtain one from a dealer, if a cheaper source isn't available. Unscrew the six nuts and one bolt at the front of the engine head, take off the valve cover, remove the old gasket, and wipe the surface clean on both the head and the valve cover. Replace with the new gasket, and stay away from Permatex and other gasket-sealing materials. The gasket itself is sufficient. Replace the valve cover carefully, taking care not to scrape the threads of the studs sticking up. Replace the six nuts and the bolt, and do not use a heavy hand. Too much torque, and your'll snap the stud. The best way, in the absence of a torque wrench, is to grip the socket wrench with one hand, with the palm over the ratchet unit of the socket, tightening firmly with one hand.

If you should snap the stud, breathe easy. You can get a replacement stud from the dealer, but you have have learned a lesson in the process.

While we're at it, one easy way to find leaks, and keep the engine cool as well, is to wash the engine from time to time.

TECH SESSION & report by the Tech Chairman

A technical session will be held in the latter part of January. We are working out the details of time and place now. Members interested in attending should call me at (703) 560-6224 for specific date, time, place and topic announcement.

Tech. Chairman Ken Wright

DETERIORATION OF RUBBER COMPONENTS

Concours fanatics are not the only owners who should pay attention to the condition of the undercarriage; you all should. Specifically, the rubber suspension and drivetrain components (bushings, clutch, slave boot, halfshaft boots, etc.) should be examined periodically for signs of deterioration: cracking, separation, excessive compliance. Over a period of time, the rubber dries out and rots. The resulting repair bills can range from expensive to very expensive.

While the deterioration cannot be prevented, it can be retarded significantly. On a regular basis, preferably semi-annually, you should clean these items and apply silicone (which is readily available in spray form). If you conscientiously observe the maintenance schedule and use a reputable service shop, you'll find that this is taken care of at the "major service". It would be wise to check this anyway, since this is one of those very simple chores you can do for yourself.

MOTORTECH BMW SERVICE CHECK LIST. This list is provided to you as a service guide for minor and major services on both four and six cylinder models.

8,000 MILE SERVICE CHECK LIST FOR ALL BMW FOUR AND SIX CYLINDER MODELS.

1. Torque head bolts with engine cold. Use 56.5 ft./lbs. torque.

9 3 1 5 7
FRONT
8 6 2 4 10

11 9 3 1 5 7 13
FRONT
14 8 6 2 4 10 12

Four cyl. head bolt
torque pattern sequence.

Six cyl. head bolt torque
pattern sequence.

2. Adjust valves. . . engine cold. Check specifications on cam if there is doubt about the cam being a standard production cam. For standard cams, the proper valve lash is:

4 cyl. engine 0.006" inlet cold 0.007" exh. cold
 (0.008" inlet hot) (0.009" exh. hot)

6 cyl. engine 0.010" inlet cold 0.011" exh. cold
 (0.012" inlet hot) (0.013" exh. hot)

3. Change plugs. Perform a compression test. Use anti-seize on plug threads. If condition of engine is in doubt, perform a cylinder leakage test. Use Champion N 8Y plugs on standard engines gapped to 0.024" (Use 0.040" with a capacitive discharge ignition).

Cyl. 1 ____; 2 ____; 3 ____; 4 ____; 5 ____; 6 ____
(psi)

Leakage. 1 ____; 2 ____; 3 ____; 4 ____; 5 ____; 6 ____
(%)

4. Remove distributor and spin test on machine. Check advance curve against standard specifications, check vacuum advance mechanism. Install new points and condensor as required. Dwell specifications:

BMW 1602, 1800 61-66 degrees
BMW 2002, 2002ti, Tii 59-65 degrees
BMW 6 cylinder models 35-41 degrees

Reinstall in engine, timing for firing at TDC initial. Check condition of connectors, plug wires, cap and rotor. Replace any questionable parts.

5. Check coolant system level and antifreeze protection level. Make necessary corrections. Check condition of hoses, all belts and change as required. Check water pump condition. Pressure test system, using the following specifications:

Four and six cylinder radiator cap excess pressure bleed: 14.2 psi

Four and six cylinder radiator test pressure: 21.3 psi

6. Check operation of windshield washer system, fill reservoir with washer fluid. Check nozzle operation, safety wire all hose connections. Check wiper blades for proper type and action. Replace any parts that are questionable.
7. Check brake fluid level and cleanliness. Top up or change, using a high quality disc brake fluid such as Delco 550+ or Ford disc brake fluid.
8. Check oil level in steering box. On models with power steering, check level in reservoir. Check steering for free-play and adjust box preload as required. Make sure box and steering shaft are properly aligned so that the worm and roller are centered when the steering wheel is in the straight ahead position. Make any necessary adjustments. Note the condition of the drag link and tie rod ends.
9. Clean or replace air filter element(s).
10. Check fuel pump retaining nuts for tightness. . .tighten gently. Clean strainer in pump. Replace in-line fuel filter, or install one if not already equipped. Check fuel line condition.
11. Check operation and setting of inlet preheater valve and the inlet air hoses. Repair, adjust or replace as required.
12. Clean and oil throttle linkages. On 2002Tii model, lube butterfly cam.
13. Check condition of exhaust manifold studs, nuts. Repair or replace as required.
14. Start engine. Set timing to BMW Factory specifications using strobe light. Warm engine until hot.
15. Jack up car. Change engine oil, filter. On 2002Tii, the lubrication system may have to be bled by backing off on the oil filter, cranking the engine over using the starter motor (Remove coil wire) until air is expelled from system. Be sure to use a small amount of oil on rubber filter gasket.
16. Check exhaust system, half shaft grease or oil boots, U-joints (Lube U-joints as permitted by the design). Note condition of suspension members, engine, transmission and differential for oil leakage, center support bearing. Recommend changes to owner.
17. Remove front and rear wheels (Be sure to mark wheel location on studs as wheels may have been balanced on the car). Inspect the brake pads and shoes. Adjust rear brakes and hand brake. Change any parts that are damaged or worn. Note condition of drums and discs.

18. Check front suspension: bent lower control arms, loose ball joints, tie-rod ends, rubber bearings. Recommend changes to owner.
19. Check fluid level in standard transmissions, differential. Check condition of driveshaft doughnut, bolts, center support bearing, splined section (on early model 2002 driveshafts. . .1968 to mid-1969) on driveshaft. Check for hydraulic fluid leaks at clutch slave cylinder. Adjust clutch free-play, if so equipped. Change standard transmission fluid at 24,000 mile intervals, or if type and cleanliness of existing fluid is in question. USE ONLY PURE MINERAL GEAR OIL IN STANDARD TRANSMISSION. Use 90 F.P. gear oil for the differential, except those equipped with limited slip differentials. For new customers, check the condition of the transmission output flange (All 1602, 2002, 2002Tii models) by removing the flange, inspecting the mainshaft splines and flange splines. Reassemble using Loctite #242 on splines, #271 on lock nut. Replace any questionable parts.
20. Check and adjust (If necessary) front wheel bearings. Check rear wheel bearings for excessive noise or free-play. If bearings are dry, dismantle and repack, using high temperature wheel bearing lubricant (Extra charge for any operation beyond checking and adjusting). Replace wheels, check condition.
21. Complete in-air inspection and lower car to ground. Torque lug nuts to 60 ft./lb. Set tire pressures to specified amount.
22. Check front toe-in and adjust to 0.04" toe-in on all models. Also, check camber on all wheels and note specifications found.

Specifications and comments:

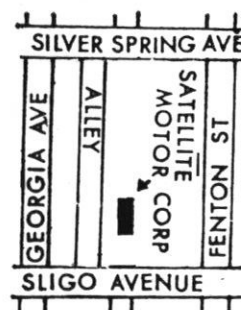
23. Start engine. Balance carburetors as required. Check operation of manual or automatic choke and make necessary corrections (to be charged out in addition to basic service charge if major work is required). Replace air filters as required.
25. Check all lighting operation and correct any problems found.
25. Test drive car, noting condition of shocks, brakes, steering, safety-related items and note recommendations below. Check hot idle speed after test and make any required readjustments. On cars equipped with air conditioning, check idle speed with unit in operation. (Summer only).

Idle speed, all models except automatic and Tii: 800-900 rpm. Same, for Tii and automatics: 950 (Tii) 600-7---rrpm in dirve.

NOTES ON GENERAL CONDITION, REQUIRED REPAIRS:

Satellite Motor Corp.
918 Silver Spring Ave.
Silver Spring, Maryland
(301) 585-7876

Complete Servicing
• Foreign & Domestic Car Service
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• Transmission Specialists





BMW's & CB's



by Bill Haines

IT GOES RIGHT DOWN THERE.....

Unfortunately, after you have purchased your equipment, it must be mounted somewhere in the vehicle. The most important thing to remember during installation is that a good ground is required. Although most cars have a negative ground (battery - to frame) some have a positive ground (battery + to frame). Before you buy equipment, make sure that its power requirements meet the capabilities of the vehicle.

Every transceiver I have seen comes with a hanger mount which is screwed to the car, usually under the dash and then the transceiver is attached to it by knurled headed bolts. This facilitates the removal of the equipment whenever desired. There are mounts which be placed over transmission humps or on the floor boards and some have a built in speaker enclosure.

More popular is the anti-theft bracket which has a cylinder lock and case-hardened rods to keep the unit where it belongs.

Removing a transceiver from a vehicle often becomes a chore when you consider the number of wires which have to be disconnected and, in the case of the power wire, protected from grounding on the car frame. One type of mount is a slip in variety which has a series of spring contacts matching the wires of the set. This means you can remove your transceiver and half of the mount when you want to take it out. However, a periodic check must be made of the contacts to insure against corrosion.

Available on the market now is another type of transceiver. Depending upon the size of your present AM/FM radio, it may be possible to obtain a replacement which has CB transmit capabilities in addition to AM/FM. The mere existence of these units is due to the problem of CB thefts. These units cost more than a simple transceiver, somewhere in the neighborhood of \$300.00.

AUTHOR'S NOTE: After reading a few of my columns even I begin to wonder if I'm being too gloomy. To tell the truth (and that's what I have been trying to do) CB is not all a bed of roses.....there are thorns and if I didn't try to tell you what I think I guess it would bother me. If you look at CB with the idea of fun that's what you get.

C.B.'S - NOT FOR MEN ONLY

By: Carla Keltner,
St. Louis C apter

If you think this is starting out to be tips for ladies who use CB radios -- you're mistaken. If, however, you fit in any of the following categories you may want to read on.

1. Long distance driving alone.
2. Frequent night driving alone.
3. Necessity of driving in unfamiliar or unsafe areas.
4. Tendency to exceed speed limits.

Through 1970 I had done all of the above and had well over 100,000 miles behind me. During the last six years the number of miles has changed but so have the personalities encountered behind the wheel! Perhaps this can be attributed to the density of population, more aggressive behavior, and more drug or alcohol influence. (Or maybe me.) The point, though, remains the same. The necessity of a single woman driver to have some type of defense is becoming imperative. The sense of security a CB radio can give will pay many times over in its cost.

The truckers haven't changed much -- they will always help a lady in distress and they sure love to talk! More importantly a "smokey" is just a call away on Channel 9 (the emergency station) and frequently can be summoned on 19, the highway channel.

A call for information will always bring an answer, thus eliminating a perhaps unnecessary stop and, of course, you will always know where the radar traps are if you're in a hurry.

By all means, if I have your interest up, shop around and buy a good one (Pace, Johnson, Midland) preferably with 23 channels. The less expensive brands will be very noisy and irritating to listen to and unless the radio is equipped with a squelch knob to filter out static you may be very disappointed.

Warner Communication on Big Bend Boulevard was very helpful and in fact installed the detachable trunk antenna for about \$30.00 including the antenna. Having tried a portable foot long antenna attached to the chrome strip on the roof, I recommend the other as the range of communication is decreased somewhat.

The next suggestion is a slide mount installation for the radio or better yet a devised method to put the radio in the parcel tray enabling you then just to disconnect and take your CB with you. CB radios are one of the hottest steal items on the market, so the portability to you is necessary.

A cigarette lighter adapter costing \$.88 from Radio Shack will put you in business. Warner Communication also has them and would probably connect the wires into the radio if no "electrical engineer" or helpful mechanical man were around. This will be the icing on the cake and you'll be ready to go anywhere!

Bill Haines
KKI 4574
1806 Cody Drive
Silver Spring, Md.
20902

NOMINATIONS FOR 1977 OFFICERS OF NATIONAL CAPITAL CHAPTER BMWCCA

Bring your nominations for someone, or yourself, to our January 18th meeting at the Diamondhead Restaurant, Silver Spring, 8:00 pm. Then vote for the slate of 1977 officers for your club. All positions are open.

PRESIDENT - Office duties are conducting executive and monthly meetings of the National Capital Chapter and corresponding with the National Board where executive matters are concerned.

VICE PRESIDENT - Office duties are substituting for the President when not available, arranging for a meeting place, obtaining a guest speaker for monthly meetings, and making arrangements for the annual Christmas party.

SECRETARY - Office duties are recording the minutes of the executive and monthly meetings and corresponding with the National and other chapters.

TRFASURER - Office duties are maintaining the Club treasury and handling all monies incoming and outgoing.

ACTIVITIES - Duties are to set up and maintain a calendar of events for the Club for one whole year, delegate event duties to interested members and oversee organization plans for said events.

COUNCIL - Duties are to attend, or make arrangements for the alternate to attend each monthly meeting of the Metropolitan Washington Council of Sports Car Clubs and report back to the Club membership; also, set up dates for the Club's championship rally and autocross.

TECHNICAL - Duties are to set up tech sessions periodically throughout the year and occasionally have short informal talks about tech problems and solutions at the monthly meetings.

MEMBERSHIP - Duties are to maintain a running list of active members, mailing of information to prospective members, sending out renewals for local dues, and maintaining the mailing list.

SERVICE REPORTS - Duties are to compile data on local established businesses doing work on BMW's and to keep the membership informed on said businesses.

RACING - Duties are to keep close tabs on the racing circuit and to keep the Club membership informed about BMW's in racing.

STOREKEEPER - Duties are to maintain a sufficient supply of BMW parts and accessories, handle the Club store at monthly meetings and tech sessions, and keep the membership informed on new items being added to the inventory.

AUTOCROSS - Duties are seeing that there is a team at each championship autocross and maintaining a running list of championship points for BMWCCA autocrossers and the BMWCCA team.

RALLY - Duties are to see that there is a team at each championship rally and organizing crews for rallies throughout the year.

EDITOR of der bayerische - Duties are to produce this newsletter on time each month to local chapter members. To write, edit and organize advertisements and articles from officers, chairpersons, reporters, writers and other sources.

Meeting Minutes

BMWCCA Monthly Meeting November 16, 1976

The meeting was called to order by president Estelle Torpy.

New members were introduced.

Estelle announced that the elections for new club officers will be held at the January meeting; and that instead of a Christmas party, the club will have a "Pick-Me-Up" party in January--probably on Saturday, January 18th.

Carol Kingsbury gave a treasurer's report.

Dave Roach gave a council report: the 1977 dates for club championship events are: July 10th for the Autocross, and August 14th for the Rally. Dave brought copies of the proposed rule changes for Autocrosses and Rallies, and suggested that discussions be held among those people interested in the events to decide on how Dave (as our council representative) should vote at the next council meeting.

Jay Williams noted, in response to a number of comments from people who had not received their Bayerische, that the newsletters were mailed on Thursday, Nov. 11th. The Post Office messed up.

Chet Kingsbury displayed a pair of front brake rotors that had been sheared off of a car--the result of allowing the front brake pads to wear to the point of causing metal to metal contact between pad and rotor. Chet suggests frequent brake pad inspections: every 8,000 miles on cars with automatic transmissions and every 10,000 miles on cars with manual gearboxes. Chet also commented on O'Fest, noting that we had about 400 participants, that the chapter did not lose any money (as other host chapters have), and that the feedback he received from participants has been very good.

There will be a party at Dave Toy's home for O'Fest workers on Saturday, Nov. 20th.

Dave Roach noted that the names of GEM Distributors and Autoy were accidentally omitted from the list of O'Fest donors.

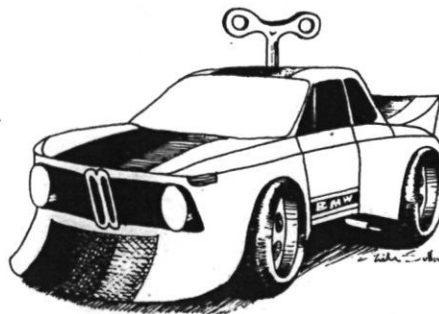
All members are reminded that the new group of club officers will be elected by the people who are PRESENT at the January meeting. Anyone who wishes to be nominated at the January meeting must present a nomination petition signed by 5 other members.

Fred Weinberg was nominated for vice-president.

Chet Kingsbury made a motion that the chapter adopt the O'Fest emblem designed by Jay Williams as the new chapter logo. The motion was tabled until the next meeting.

The business portion of the meeting was closed and a buy-and-sell session was held, followed by Chet Kingsbury auctioning off some door prize goodies left over from O'Fest.

Bob Critchlow, secretary





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frank tapsell
sales representative

8427 lee highway
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**630i 320i 2800CS bavaria 3.0CSL'
1600ti 3.0csi touring 2002tii ALPINA**

MANHATTAN BMW TAKES GREAT PLEASURE IN ANNOUNCING THE
APPOINTMENT OF FRANK TAPSELL, MANHATTAN'S BMW SPECIALIST.

MANHATTAN AUTO OFFERS SPECIAL CONSIDERATION TO BMWCCA MEMBERS

phone 560-2300

DRIVING IMPRESSIONS
of the
630i

By Frank Tapsell
Edited report by Barry Livingston

BMW has re-created a classic and crowned it the 630i. Based on the 530i, mechanically (same engine and drive-train) and appearance-wise very similar to the 320i, its performance is only comparable to the 3.0CS. This 176 hp 2 + 2 is a thoroughbred with elegance. This luxury coupe is to the letters BMW the ultimate driving machine.

Frank recently was down at the Atlanta Speedway where he nervously climbed into a 630i, in which Bob Bondurant was the pilot. As they took off, Bob lectured the handling characteristics of the car and explained what he had planned for this test flight. Out of the pits, the first cone came quickly, and standing into the curve the nose bowed down, and the body held through a ninety-mile-an-hour hairpin. In the straight-aways, the car leapt up to 120 mph until another bank turn came up to the outside, which, with a slight drift, the car held to 108 mph.

Needless to say, the car is stock, and handling may vary from driver to driver.

How much for this excellence? \$22,000-\$24,000.

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FINE THINGS LIKE NEW**

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SAVES YOU TIME AND MONEY

LPS is a clear organic liquid that displaces moisture (actually pushes it away) and forms a continuous film to protect all metals from rust and corrosion.

LPS is a perfect lubricant for fine, close-tolerance, delicate mechanisms... without causing gum or sludge.

LPS is the fastest penetrant for freeing rust-frozen bolts, nuts and parts.

LPS dries out electrical and ignition systems quickly; helps start wet engines fast.

LPS eliminates squeaks when most everything fails.

LPS is an excellent cleaning lubricant for all metals.

CLEAN SAFE

**LPS IS GUARANTEED TO CONTAIN NO
SILICONES OR CHLORINATED SOLVENTS**
Will not harm electrical wiring, nylon
brushes, rubber, plastic, paint, finishes,
or any other metal accessories.

SKID SCHOOL

If you think you know how to control a bad slide, but still worry about ruining your Bimmer and you would like to know that you know exactly what to do, Chris Jensen is forming a group to attend a day long skid school. The program is offered by the Advanced Institute for Driver Education in Huntington, West Virginia. It includes a lecture on vehicle dynamics and skid control techniques; several hours on the skid pan (in their cars); and an afternoon session involving an accident simulator, emergency evasive maneuvers, and a serpentine course (your car if you wish). Regular cost per person is \$125, but with a group of six to nine students the fee is reduced to \$100. There is a three to one student to instructor ratio. Huntington is about 400 miles from Washington and if a group is formed quickly a class could be held on a Saturday in January or February. For more information call Chris at 750-2000, extension 224 or at home at 333-3596 (until 10:30p.m.).

- Chris Jensen



WASHINGTON D.C.

*If you have a problem
Let's
Talk
About
It...*

phone 560-2300

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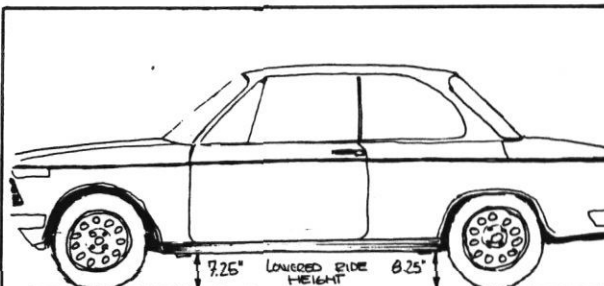
bud peterman
service manager

8427 lee highway
fairfax, virginia 22030

NEW CHAPTER LOGO PROPOSED

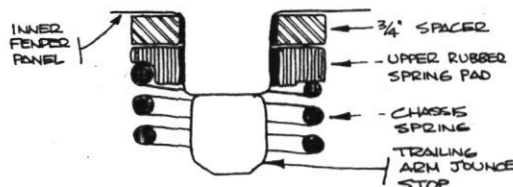
At the November meeting, a motion was made to adopt the OKTOBERFEST '76 logo (understood to be a constant reminder of a most successful OKTOBERFEST.) The motion was tabled to be voted on at the January meeting.

The adaptation variation is shown. The existing one can be seen on the back cover.



RIDE HEIGHT W/ LOWERED CHASSIS SPRINGS

1602, 2002 SERIES BODY W/ 22.5" DIA. TIRES.
MEASURE @ BOTTOM OF ROCKER PANEL TO GROUND.

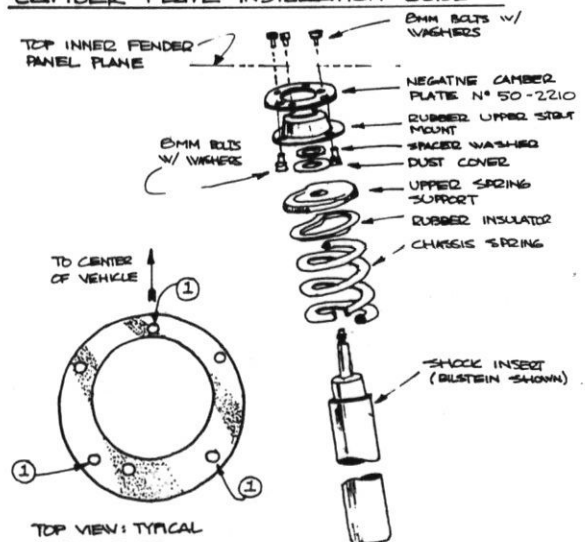


REAR SUSPENSION UPPER SPRING MOUNT

1602, 2002 SERIES TYPICAL. LOWERED CHASSIS SPRING SHOWN WITH 3/4" RIDE HEIGHT SPACER. USE B.M.W. DOT FRONT STRUT SPACER OR MOTORTECH 5/8" ALUMINUM SPACER. RECOMMEND CAPTIVATING SPRING AT BOTTOM W/ BRACKET HOLDING SPRING TO TRAILING ARM. FABRICATE FROM 1"x1/8" STEEL AND B.M.W. BOLT, HARDWARE, BOLT TO REAR OF PERCH.

CHASSIS SPRING N°50-2245 INSTALLATION GUIDE. FOR B.M.W. 1602, 2002, T1 AND T11.

CAMBER PLATE INSTALLATION GUIDE



TOP VIEW: TYPICAL
CAMBER PLATE.

MOTORTECH N°
50-2210

EXPLODED VIEW... TYPICAL FRONT
STRUT SHOWING NEGATIVE CAMBER
PLATE INSTALLATION. NO SCALE

NOTES: ① HOLES MATCH HOLES IN BODY... OTHER HOLES MATCH HOLES IN RUBBER UPPER STRUT MOUNT. BODY MUST BE RELIEVED TOWARD INSIDE OF HOLE, ALLOWING RUBBER UPPER STRUT MOUNT TO MOVE INWARD. FIT CAMBER PLATE ON TOP OF BODY TO USE AS MARKING PATTERN FOR RELIEVING HOLE.

FOR B.M.W. 1602, 2002, T1 AND T11 MODELS.

This advertisement is being placed in *der bayerische* by my employer, Howard Wickham of WICKHAM AND ASSOCIATES. I'm Jay Williams, Vice President, Executive Art Director, as well as your fellow BMWCCA member and editor of this newsletter. We design and produce various graphic needs. Please look into our capabilities for yourself, your employer, or someone you know who could use such services.

Some examples of my work that you may be familiar with are: the development of the Oktoberfest '76 logo (which may become our chapter's logo), the Bimmer Bird, logo for Autoy, the SKODA, and this newsletter in general. Please be aware that this newsletter is done without charge to the club and usually in a rush/spare-time basis, and is not a true picture of our regular work.



You might see some of our "professional" examples when you visit the US Capital and pick up a copy of "Magna Carta and the Tradition of Liberty", or the New Air and Space Museum's book, "Celebrating the National Air and Space Museum". You may have also heard or seen American University's FM radio station, 88+ "FM with something extra", which is one of our overall campaign efforts. The latest PECO Annual Report, the design and painting of the PEPCO tourmobile, as well as the PEPCO Electric car (which I had painted at Camp Springs Auto Body

in Clinton, MD) are just a few more examples you may be familiar with.

Besides logos, stationery, brochures, posters, and books, we do exhibits and audio-visuals. So whatever is required in graphic communications, we do it well. No club discounts are available but I can say that any project I do for a member or a friend of a member, will have that extra effort put in to make it a better product.

Other samples can be seen upon request which include university and college work (University of Maryland, Howard University, George Washington University, etc.), corporations like Allegheny Airlines, and many associations and foundations in the DC area.

If you are interested in our services, stop by and visit our studio.

Jay Williams
Vice President
Executive Art Director

WICKHAM & ASSOCIATES
1717 K Street, Washington, D.C. 20036
(202) 296-4860

Camp Springs Auto Body & Repair Shop

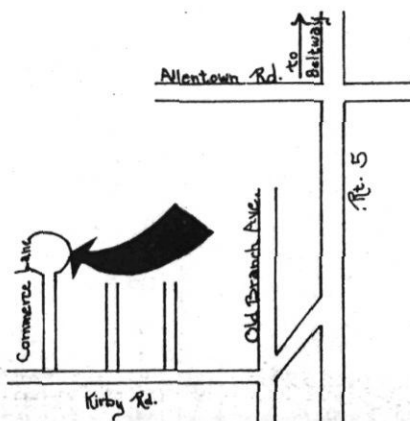
7520 COMMERCE LANE CLINTON, MD. 20735

297-7750

HARRY

WE DO DUPONT IMRON PAINTING!

SMITTY



Free Estimates

Mon. - Fri. 8 a.m. to 6 p.m.

Classifieds

For Sale: 1974 2002Tii, 17,000 miles, Bilsteins, AM/FM Stereo tape, serviced at Heishman, Perfect inside and out. Buying a 320i and need to sell for \$6,000. Fred Weisburg, Work: 638-6480; Home: 291-7796.

For Sale: Radials/Air Filter: High performance air filter for 2-bbl. 2002, \$10; Pair 165HR13 radials for spares or retread (textile), \$3/ pr.; One 175SR14 Bridgestone (textile) full tread, \$19; Pair 1755SR14 used, one steel Gislaved w/1/3 tread, one textile Bridgestone w/2/3 tread, \$15/pr. Ask for Al, not about tires or air cleaner. W.A. Rose: Work: 245-0779; Home: 966-1752.

For Sale: 1967 2000C, 85K, restored to excellent condition, AM/FM stereo, White/Blue interior, 2002 Tii head, rebuilt engine and transmission. \$4,000.00. Dr. Andrew J. Lavoie, 268-3523.



Full page-\$20, Half page-\$11, for other sizes and frequency discounts contact Barry Livingston, Advertising Manager, 5766 Apt.E, Rexford Court, Springfield, Va. 22152 (703) 569-0413.

TISCHER



VOLKSWAGEN - BMW
3225 FT. MEADE RD.
LAUREL, MD. (301) 498-7400
WASHINGTON AREA: 953-2196

INTRODUCING THE NEW 320i AND THE 630i.


I'll be glad to answer your questions on the ultimate driving machines.



JIM ATWELL
SALES REPRESENTATIVE

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(301) 459-2080

Paul would like to know from the members if they appreciate him being open on Saturdays and Sundays--give him a call. --Editor



BMWCCA

National Capital Chapter
Box 466, Bowie, Md 20715

BULK RATE

U. S. Postage Paid
Bowie, Md.
Permit No.
2118

James A Miner Jr
1909 Everglade Ct
Crofton MD 21113

Calendar of Events

There will be no BMW Club meeting in December

JANUARY

- 15 Washington Rallye Club (WRC)
Rallye School \$2.00
contact; Mike Humphry
9008 Orange Hunt Lane
Annandale, Va. 22003
987-8241



- 16 Washington Rallye Club (WRC)
Winter Rallye Series I \$4.00
(or \$14.00 for WRS I, II, III & IV)
contact; Mike Humphry (see above)
registration opens Dec. 1
- 18 BMW Club 8:00
Diamond Head Restaurant
6900 Wisconsin Ave.
Chevy Chase, Md.
Jan. meeting will be election of officers
- 22 Our BMW Club
after Christmas or whatever party
will be held at the Torpy's 8:30
13001 Margot Dr.
Rockville, Md.
- 28-29 SCCA Competition Car Show
at the Mall in Columbia, Md.
contact; Paul Anderson 890-8863
- 30 Washington Rallye Club (WRC)
Winter Rallye Series II \$4.00
contact; Mike Humphry (see above)
registration opens Dec. 1

FEBRUARY

- 5-6 Daytona 24 hours IMSA RS & GT
Daytona, Florida
- 11-13 Roanoke World of Wheels car show,
Salem Civic Center, Roanoke, VA.
- 15 BMW Club
- 20 Washington Rallye Club (WRC)
Winter Rallye Series III \$4.00
contact; Mike Humphry
registration opens Dec. 1
- 25-26 SCCA Competition Car Show
Springfield Mall
Springfield, Va.

MARCH

- 6 Washington Rallye Club (WRC)
Winter Rallye Series
IV/Championship Rallye I \$5.00
contact; Mike Humphry
- 6 Sports Car Club of America (SCCA)
Championship Autocross (CAC)
- 15 BMW Club
- 17-19 Sebring IMSA, 12 hour endurance race,
IMSA RS race, and classic car race,
Sebring, Florida,
- 20 University Sports Car Club (USCC)
Championship Autocross (CAC)
- 26-27 SCCA drivers school -
Summit Point, W.Va.

Send Calendar of events items to Virginia
Van Poole. 2219 North Roosevelt Street,
Arlington Virginia 22205