



Das Kummel

The Tidewater Chapter (Bey Em Vey Corporation) of the BMW Car Club of America, Inc. is an independent group of BMW owners and is not associated with the manufacturer, importer, or dealers of BMW automobiles. Meetings are held at the JANAF branch of the Norfolk Public Library on the third tuesday of every month unless otherwise noted in "Das Kummel". The meeting time is 8pm.

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PRESIDENT'S COLUMN

The biggest news this month is the acceptance by National of our offer to host the Atlantic Zone Chapter Congress this year. This event will take place on July 23-24, 1977 and it will be headquartered at a hotel in the area. Basically the chapter congress is a business meeting, including two representatives from each chapter in the zone plus the executive director and one or two members of the National Board. In our case this will mean we have to arrange the congress for about 25 to 30 people. The planning will be done on a committee basis with board members plus any other interested people in the chapter on the committee. If you did not attend the dinner meeting in february and would like to serve on the committee please give me a call.

The dinner meeting at Nick's Steak House Pavilion went very well, I thought. The food was good and prices were very reasonable. Some expressed concern over the ability of just one waitress to adequately serve us, but she did a good job, actually taking care of us - 37 in all - in the span of an hour and a half. My only complaint was that she had to abandon the bar so soon in order to attend to the food, but then I saved some money as a result! I was gratified at the large turnout and I think everyone had a good time.

February's tech session also proved to be a success with 10 cars parked at various places on and around my house. I believe we accomplished some worthwhile training of some of our more inexperienced members. It was nice to see former member, and new member, Paul Honea in attendance. He spent a couple of years between BMW's but is now back in the fold. The Bullias' accomplished a major tune up on their car after what Dennis said has been a year without one. Debbie Payne, one of our newest members, learned something about tune ups by carefully observing Roger Richman at work on his 2002. The only problem that arose was when I helped Chet McGinnis tune his 74 tii. For some reason his Number 3 spark plug gave up the ghost and the resulting roughness had us baffled until after dark when we finally decided to check the plugs:



das Experiment

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P.O. BOX 62145
BMW EM VEY CORP.

PRESIDENT'S COLUMN



the seal with a razor blade if it is too long, tap the chrome molding back on and your all set. The new seal will make a difference, not only in appearance, but in sealing out water as well. The part number for the new seal is 51 21 1 847 798 and lists for \$2.34.

Bob Mitchell
Boston Bimmer

TURBO TRAUMA

By Ethan Schuyler

I am the owner and developer of a turbocharged 2002. With two years and 30,000 miles behind me I've been asked to share my experiences with others interested in turbocharging their BMW's. It is so complex, I hardly know where to begin.

A turbocharger is a small compressor, driven by exhaust gases, that will, upon demand, force the fresh air fuel mixture into the engine under pressure. There is a growing interest in turbocharging as it can double horse power without significantly affecting economy, emissions, driveability, longevity, or durability, provided the installation and tuning are done correctly. "Wait a minute," you ask--"you mean I can't just bolt it on and amaze my friends?" That's right. Unless you are prepared to spend more time on your engine than the pistons, cam, and carbs approach, then turbocharging is not for you. In fact a turbo with only one moving part affects every system in the engine on the car! If your looking for a bit more power and economy get your self a set of TI pistons and maybe a carb or two. But if you have a Kamikazi personality, plenty of spare time, a very understanding wife, \$1000 play money a spare 2002, and a garage loaded with tools begging for a big project to justify their existence, then lets get started. But first, a few precautions. Don't turbo a til as the injection pump can't tell the difference between natural and compressed air. Don't turbo an automatic as it has trouble hauling down to the next higher gear under boost. Don't turbo a car you can't do without for a month or two! Finally, don't do anything until you've read several times "Turbochargers" by Hugh MacInnes from H. P. Books and sold by Jim Green's Speed center in Lynnwood.

My turbo is a 377B flow Rayjay with a .7 exhaust housing purchased from Pacific Diesel in Seattle. Its center is mounted slightly below the valve cover gasket line and just ahead of the shock tower. It's fed by a two inch SU carburetor borrowed from a Jaguar 6. The air fuel mixture leaving the compressor travels over the valve cover and 6 inches straight down to the stock intake manifold (1 barrel). After combustion the exhaust gases are collected in a home made manifold, built with 1/8-inch wall steel, and fed up into the exhaust turbine. After the turbine it's down and aft to the muffler. This system starts producing boost at 3000 rpm with a maximum of 17 pounds at 5500rpm.

Seems simple enough doesn't it? So how does th turbo affect so many systems on the car? Let's start where it all begins, in the combustion chamber under boost. For any given compression ratio (c/r) there is limit to the amount of boost pressure an engine will accept before pre-ignition or detonation occurs. My BMW with 8.5-1c/r would detonate at 9psi boost without water injection to cool things down, and at 13 psi with injection. After I dropped th c/r to

8 to 1 the limits went up to 15 psi. Currently my c/r is 7.2-1 and the limits are up to 18 psi under certain conditions. I dropped the c/r removing a small amount of metal from the combustion chamber squish band areas. As the chamber size increases it takes more boost pressure to fill the chamber to critical limits at any given engine speed. Think of my engine as displacing 121 cu. in. and yet the combustion chambers are the same size and develop the same pressures as those of a high compression V-8 displacing more than 400 cu. in. That's where all the power and torque comes from. But with that power comes pressure and heat. The turbo thrives on pressure and heat but everything else suffers. The valve seats should be wide for good heat transfer and new valve springs will assure good contact. Check out those rockers and shafts while everything is apart and don't miss the chance to have the head boiled to speed up cooling of the combustion chambers. A new set of rings will boost compression and help transfer heat away from the pistons. Also have the rotating parts balanced if you want it to stay together. Replace the cam chain if its sloppy. We're talking about a lot more horse power, so do it right the first time, not the second or third time like I did! That reminds me of those four innocent little bolts that hold the cam gear in place. Don't let their size fool you, new keepers and locktite are in order here.

continued next month (from "Zundfolge" of the Puget Sound Chapter)

But should synthetic/petroleum base stock blends be classified as synthetic if they contain say 50% of synthetic base stocks? The consensus is that only lubricants with a 100% synthetic base should be labeled this way. Any combinations should be identified as a blend of synthetic and petroleum stocks.

Now, to the strengths and weaknesses of synthetics. The strengths would include high natural viscosity indices, giving good fluidity at low and very low temperatures, even down to -65f.

Their high viscosity index also provides good viscosity characteristics at high temperature in a properly compounded lubricant.

The main virtue of synthetic base stocks is their outstanding response to oxidation inhibitor additive treatments. Oil thickening problems are minimal when any one of a number of antioxidant additive systems are used. Thus, their performance in high temperature applications is outstanding.

I mentioned earlier that both synthetic base stocks and petroleum base stocks require complicated additive systems to improve engine oil performance. And here is where one of the synthetic problems is found. Performance additive packages applied to synthetics simply have not yet reached the same stage of sophisticated development as the additive packages used to supplement petroleum base stocks.

Another potential problem with synthetic based engine oils is their compatibility with the seal materials used in current engine designs. Seals now being used were developed for petroleum products. Seal/lubricant compatibility requires additional attention if synthetic based products are to gain greater acceptability.

A third weakness in synthetics stems from the difficulty involved in the manufacture of viscous, synthetic base stocks. Some synthetic bases lack the viscosity required for satisfactory lubrication at normal design clearances, operating temperatures and other conditions. These synthetic bases are generally thickened with polymers which experience some temporary as well as permanent viscosity loss in a higher shear rate environment. This leaves an element of doubt regarding the high temperature viscosity characteristics of such blends.

Finally the inherent high cost of synthetics is an obvious problem. Many synthetics use petroleum components and processed petroleum fractions as raw materials. These synthetic base stocks, as a result, have a higher cost than comparable petroleum based stocks because of the additional processing required in the chemical synthesis. This differential will always exist but it could narrow somewhat as higher volume production of synthetics makes the synthesis more efficient. At the moment, however, it is questionable whether the advantages of synthetic motor performance are worth the additional price.

In our laboratories in Bradford, Kendall has been evaluating synthetic motor oils. However, to date, we have not been able to develop what we consider to be a satisfactory cost/performance ratio. Currently, our development work is aimed at synthetics for long drain interval service (the annual oil change concept as an example). So far, our work has not convinced us that synthetics are the best way to achieve long drain interval capability.

The facts are that synthetics are with us. The volume of their use probably will be miniscule at least well into the 1980's. Should our customers indicate that real demand for synthetics--despite the fancy price--exist, we have the background to meet that demand on relatively short notice. In the interim, we will continue our development work-- and keep on top of all the factors related to automotive lubrication.

WINDOW SEAL REPLACEMENT

If the outside rubber seal against the glass of the roll-up windows in your 2002 has cracked, deteriorated, or shredded itself, you can easily replace it in a few minutes time with a newer plastic seal that comes on the newer cars.

The old seals had the rubber trailing edge against the window, so even if the rubber was treated often with a preservative, the action of rolling the window up and down tended to damage them. The new seals are not only made of plastic, but the edge against the glass is a bend and it incorporates a built in felt molding against the glass.

To replace the seal, begin by removing the entire strip at the outside base of the window. To do this, tap up gently against the chrome molding with the edge of a block of soft wood and a light hammer. When the molding is removed, the seal for the window and the bottom of the vent window will come off with it. Simply pull on the seal to remove it. You will see that it is held in place in a "V" track. You should have no difficulty in removing the old seal, but installing the new one takes a little more effort. I tried to spray it with silicone and slide it in from the end, but could only get it about one third of the way. Instead I placed the entire seal over the track and pushed it in from the top with the aid of a very small screw driver to seat it. By the way, the old seal had a single strip which slid into the track. Trim

deliver its fullest power sooner. Price is \$60.

Another item for the tii owner is the cold start relay. price for this important part is \$25.

Don't forget we can get Koni and Bilstein (street setting only) shocks for both 4 and 6 cylinder BMW's. Also available are CoGo mats, front and rear (\$16 per set for 4 cyl, \$20 per set cyl.), exhaust systems (stock only) and most any kind of tune up parts (mostly in stock). So don't hesitate to call me when you need something. 393-0235 evenings

Rusty

TECH TIP

When setting the gap on a set of points it is sometimes difficult to get the cam on the high lobe especially if you are alone. Instead of the old trial-and-error-bump-the-starter method, try this:

1. Note approx. position of distributors part number or other distinguishing feature.
2. Loosen the distributor locking nut as if you were going to set the timing.
3. Rotate entire distributor until fiber arm of point set rests on high point of cam.
4. Set point gap with feeler guage as usual.
5. Rotate distributor back to original location.
6. Check dwell angle if you have a meter.
7. After points are set, check the timing and reset if necessary (be sure to disconnect and plug the vacuum line).

William Wray

LOST AND FOUND

A Craftsman open end 17+19mm wrench, found after the last tech session. Call Bill Wray at 497-6583.

SYNTHETIC MOTOR OILS--FACT OR FANCY?

by Wil Hart, Research and development
Kendall Refining Company
Division of Witco Chemical Corporation

Bradford Pa.--The fortunes of synthetic motor oil have risen and fallen like the well known yo-yo-- depending upon both technological and marketing developments.

Synthetic motor oils always have had a certain amount of glamour because of their successful use in aircraft jet engine lubrication. However, application of synthetics to more mundane service, such as piston engines of cars, is and will remain so, in my opinion, for some time to come.

The technology supporting the use of synthetics in jet aircraft engines is not automatically transferable to car engines. Extensive programs, many of them still underway, are continuing to determine whether such transfer is technologically sound, can be executed in a cost effective way, and is capable of eliminating some serious deficiencies in earlier formulations.

Some of the current lack of credibility for synthetic may be blamed on irresponsible marketers who label as "synthetics" products which do not fit the generally accepted definition of synthetic engine lubricants. While, there is no official definition of synthetics, manufacturers of lubricant base stocks are pretty well agreed on what the word should mean.

They agree that synthetic engine lubricants are those compounded from base stocks manufactured by chemical synthesis. The principal classes of compounds being considered at present for automotive service are alkylated aromatics, polyalphaolefins, esters and polyglycols. The finished products will contain greater or lesser quantities of necessary performance additives. Additive packages required for synthetics are similar to those required for petroleum products but need a different balance and perhaps even some different chemistry.

Additives are necessary in both petroleum base stock and synthetic base stock engine lubricants. These chemical additives supplement base stock engine lubricant performance characteristics, including anti-wear, anti-foam rust and corrosion protection, metal deactivation, pour depression, viscosity index improvement, oxidation inhibition, detergency and dispersancy. These chemicals are generally synthesized from petroleum, animal, and vegetable sources and may also include some inorganic materials. While these materials are manufactured by chemical, their use in a petroleum base stock would not permit the resulting product from being classed a synthetic. This is because the additives mixed with the stock are generally in relatively minor quantities.

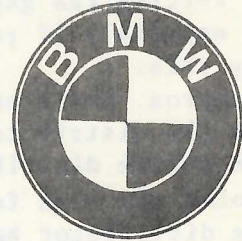
it goes to show you check the simplest things first! Despite the cool weather we had to buy more beer and Janis and the wives had a good time chewing the fat inside (where it was warm). All in all, a good day; fun as well as beneficial.

Don't forget our autocross on March 20th. Eric Thompson is OD and he will need all of us to help him put on a smooth running event. The event will be held rain or shine, so don't let a little rain stop you should it be wet that day.

Rusty

ACTIVITIES

- MARCH 6 PSCC AUTOCROSS AT NEWMARKET SOUTH
IN NEWPORT NEWS: REGISTRATION AT 12
FIRST CAR OFF AT 1:00 \$4non SEVSCO
\$3 SEVSCO
- " 13 COLONIAL RALLYE MASTERS RALLYE
COMPETITION POINTS SERIES AND COLONIAL
CUP SERIES. STARTS AT CLAYTON RESTAURANT
AND THE CHESAPEAKE AND PORTSMOUTH AIRPORT
ON US460 REGISTRATION 10am FCO 10:46am
- *15 BEY EM VEY MONTHLY MEETING AT THE JANAF
BRANCH OF THE NORFOLK PUBLIC LIBRARY 8pm
- *20 BEY EM VEY SPRING FEVER AUTOCROSS AT
MILITARY CIRCLE. REGISTRATION AT 11am
FCO AT 12. THIS IS A CPS AUTO CROSS
\$3 SEVSCO \$4 NONSEVSCO
- *27 BEY EM VEY TECH SESSION (SEE BELOW)
- APRIL 2 BEY EM VEY BIRTHDAY PARTY AT BOB WAYNE'S AT
8 pm. DETAILS TO BE DECIDED AT THE MARCH
MEETING. PLAN IN ADVANCE TO COME



KEN TODD
Sales Representative

MEEKINS PONTIAC CORPORATION
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THE SPRING FEVER AUTO CROSS

This is the first autocross of the year and Eric will need all the help he can get. It is very important that every body in the club that can come does come as the success or failure can hinge on whether or not there are enough workers to make things go smoothly

February 20th TECH SESSION

This month our tech session will have a special purpose. Spouses and or siblings are invited also. Hopefully I will have an activity planned for both, but if not the big lake (Atlantic) is just across the street and will make nice walking (with a lower temp.).

Hope to see everyone.

Ann Williams..422-3359

Location: 304 49th Street
Va. beach

ATLANTIC

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□
304 49th St.

RT44

PARTS STORE UPDATE

Yes Virginia, we do have SAE 80 non hypoid gear oil for those four speed gear boxes. Anyone in need of the proper oil for their manual transmission can now buy it at \$1.50 per quart from the parts store. This is most important since Hypoid oil in BMW manual gear boxes will cause disintegration of the synchronizer rings. If you aren't sure what you have in your transmission, remove the filler plug (on the side of the case) stick your finger in and smell. If you detect a sulphur odor, you should change the tranny oil ASAP. Use SAE 30 motor oil until you can get some gear oil from me. By the way, please bring your own container - the trans hold one quart.

Also newly available is the 71/72 2002til distributor. This is the complete unit and will interest those of you interested in more power and drivability since it uses straight centrifugal advance, no vacuum retard, giving a quicker advance curve and enabling your engine to