



January 1996

# Zündfolge



BMW Calendar, See Page 17

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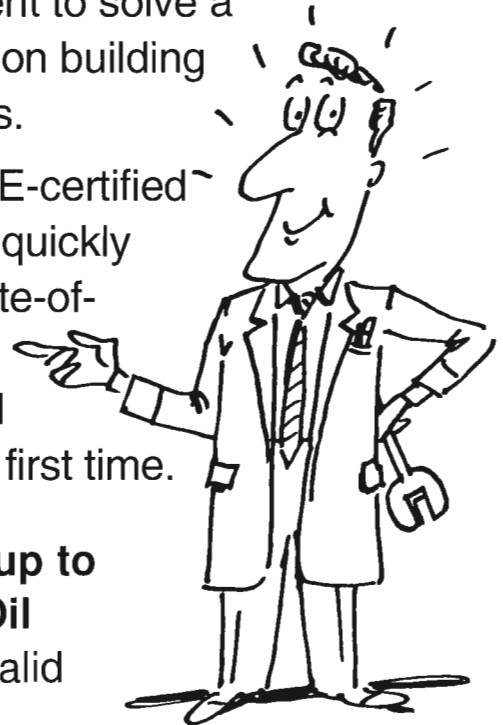
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Cover:  
Z3 roadster on  
Queen Anne Hill.  
Photo by Walt Hughson.

# Zündfolge

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# Calendar

- January 12, 13** **Instructor Clinic** at Bremerton Raceway. See the item on page 3.
- January 20** **Annual Banquet** featuring Ross Shafer. Reserve now!
- February 24** **General Meeting** hosted by Richard Griot of Griot's Garage.
- February 1** **Board Meeting** hosted by the Lightfeet.

**BMW ACA events are partially supported by a generous grant from BMW of North America, Inc.**

## Griot's Garage

On February 24th, we'll have a general meeting hosted by Griot's Garage. Griot's Garage is the well known mail order company who's slogan is "products for your garage." No doubt you've seen their beautiful catalogs full of things for your car and garage.

You may not have realized that Griot's Garage is located in Tacoma. That makes it handy to visit and see, up close and personal, the cool items from the catalog. Better yet, Richard Griot will be talking to us about some of his most special products. Richard will speak to us about their four lines of business:

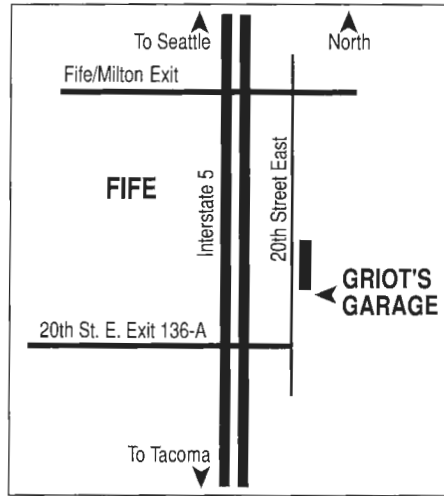
- Car care
- Accessories
- Garage organization
- Unique tools

Griot's Garage will be open to us starting at 8:30. We expect to be done before noon. There will be refreshments provided. Follow the map and driving directions adjacent to this article.

## 1995 Vice-President's Report

This year I felt that we, once again, had an interesting and entertaining line-up of general meetings. At the beginning of the year Gary Parr challenged members of the board to set some goals for the year. One of the responsibilities of the Vice-President is to schedule general meetings so I felt that a good goal would be to increase the quality of the meetings and to increase the membership attendance at club events. While we always seek feedback on the quality of the meetings, we were lacking any measure of member participation. I felt that we needed to establish a baseline so we could determine if we were making improvements. We have gotten a good start this year and have some statistics I would like to share with you. While we do have counts for the general meetings, last year's banquet and those of you who showed cars at the concours, we do not have a count of members who simply came to the concours or those who participated in our many track events. Given these shortcomings, here is the data for 1995.

Average number of members	~700
Members attending at least one event	141
Members attending two or more events	38



**Griot's Garage**  
3500-A 20th St. E., Fife, WA 98424

**From Seattle:** Motor south on I-5 to the Fife/Milton exit. Turn left at the light and go over the freeway. Turn right at the next light on to 20th St. E. Continue 1 mile. Griot's Garage is on your left, across from Smith Tractors in the west end of the long building with the green stripe on top.

When we began this effort, we felt that the club was like others, in that ten percent of the members participate in activities but as you can see from the table we have a higher degree of participation — even with incomplete data. Next year I hope we can have more complete data and an increase in participation. If you have any suggestions for events and/or ideas that would improve existing events, please contact me or any member of the board. We are

## Instructor Clinic

Have you ever wanted to become an instructor for our high performance driving schools? If so, here's your chance.

On January 12 and 13, we will be holding a Driving Instructor Clinic. On the 12th, Friday, we will hold a ground school at a hotel in Bremerton. The ground school will feature several guest speakers.

On the 13th, Saturday, we will spend the entire day at Bremerton Raceway. There will be potential instructors from several of the other local car clubs participating in this Clinic. The whole idea is to "teach the teachers," so we will have a large group of instructors to draw on for schools.

To be eligible for the Clinic, you must have significant prior track driving experience, the desire to teach others, and common sense, especially related to safety issues. The cost of the Clinic is \$50, which includes a very special instructor shirt.

To register for the Clinic, call me at 206-582-0803.

— Dan Alvis

anxious to make your club more enjoyable for you.

— Stephen Niver

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# Stalls

By Thomas B. Nast

## Intel, the Prince of Tyre

It was when Intel announced it was getting into the tire business that I began to get worried.

"It's very simple, really," I was told at the Consumer Products Division in Hillsboro. "Nobody builds a tire that does the job, really. Warm weather tires don't perform we in cold weather. Treads that do well on snow have lousy traction in dry weather. We thought we could do better." He didn't need to mention that, having dominated its traditional markets, Intel was looking for untapped opportunities.

Still, I am more that a bit hazy on how programmable tires are going to be made. "Proprietary information," is all they would say. And, old equipment can be used to make them; none of this sub-micron stuff is needed. All I know is that changing the treads pattern, compound characteristics and sidewall stiffness on-the-fly is a darn good use of polymorphous silicon.

We BMW owners are already making Siemens, Phillips, Motorola et alia filthy rich, and Intel should certainly join the gravy train. And we have a cornucopia of blessings from them all. What would we do without Service Interval lights to tell us our oil needs changing every 30,000 miles or so (except when the battery in the dashboard collapses every fourth year, requiring replacement of an expensive circuit board)? How would we find the ignition switch on a dark night without an interior light that turns on when the door handle is pulled (except when the cheesy >\$100 switch that activates it crumbles)?

How could we drive without an on-board computer to tell us when the outside air temperature is below 34° F (except when the OBC doesn't tell us anything at all)? Or a heated steering wheel (gloves are obsolete!)? Or heated seats (sheepskin is obsolete, too!)? Or a heated doorlock (assuming that switch works, perfect for vandals to prop open the door handle and drain your battery, melt the lock or worse)? Or electric

headrests (which remain permanently at rest, electrically)?

Our electronic fuel injection systems have proven a model of efficiency and reliability, when they work. Emissions are down, consumption is down, power is up, and several thousand-dollar repairs can be counted on during the car's lifetime. Idle control valves and O2 sensors are routine replacement items, and fuel injectors, air flow/mass sensors and black boxes are not far behind. A popular feature is when the car won't start after washing the engine bay, often caused by a saturated connector to a flywheel sensor you didn't even know existed.

It is a little-known fact that the early 750iL has self-leveling rear springs to compensate for the wiring diagrams stowed on the bookshelf in the trunk. Turns out the factory did not know how much these would weigh before the car started shipping (ultimately 55.2 kg), so BMW designed enough flexibility in to accommodate the unknown. Unfortunately, the car's electronics would drain the battery flat if the car was parked for three or four days. But at least normal rear springs could be installed when BMW started supplying the wiring diagram on CD-ROM.

You may have noticed that BMW has not adopted electronic ("active") suspension systems. This may seem strange at first, passing up a chance to install more chips and transducers, especially when their Asian counterparts are doing so. "Sure," you are thinking. "That's because these suspensions don't work as well as conventional ones, and are much heavier to boot. This is a technology which is where ABS was in the sixties."

Wrong again, bucko. It's an image issue. Turns out the suspension PROM chip can be reprogrammed to turn the car into a low rider. The sight of a 325 hopping up and down at a stop sign induced paroxysms in the Munich top brass, causing the entire scheme to be shelved.

But no such impediments stand in the way of wiring up your standard transmission. Coming to a dealer "real soon now" will be a gearbox which only requires a pull in one direction to go up a gear, and a push in the other to downshift. This dispenses with such mind-numbing tasks as choosing the correct gear, and puts to rest the already-lost art of double-clutching. I have little doubt that this gearbox will have an ample collection of relays, solenoids, switches and a black box or two. All of it with the durability we've come to expect. I wonder which gear will be selected for "fail-safe mode"?

At least we have been spared the talking car feature with which Chrysler (among others) offended our ears in the eighties, and the fluorescent dashboards GM affronts our eyes with currently. BMW has resisted these temptations, along with others, such as an oil pressure gauge (no electricity required) which might be more useful. But the trend is to install a semiconductor in every cavity and portal, damn the cost and KISS off (KISS, if you don't know, is Keep It Simple, Stupid — the only road to reliability, in the view of most engineers).

So you can imagine how I am looking forward to Intel's semiconducting tires. In for an especially interesting life will be the early adopters. I can picture someone, in wool suit and tie, on the side of the highway, his M8 down on one corner, trying to bum an EPROM to fix his flat.



Michael Helton, left, and David Lightfoot, right, present a check to Ruth Velozo of NW Harvest.



December 21, 1995

Mr. Gary Parr, President  
and the Members of the  
BMW Automobile Club  
of America  
P.O. Box 1259  
Bellevue, WA 98009

Dear Friends:

Thank you for your recent contribution to Northwest Harvest. It couldn't have come at a better time. Your gift has helped to brighten the holiday season for so many.

Contributions like yours give in two ways. First, they help us provide nutritious food to hungry families through more than 280 hunger programs statewide. Second, they remind us there are people in our community who care about those suffering hard times. Together, we really can make a difference.

The generous donation of \$2,980.82 as a result of your "Racing for Food" campaign these last months has already been put to good use to help supply much-needed nutrition.

We appreciate your support and thank you for caring.

Sincerely,

Ruth M. Velozo  
Executive Director

## NEW MEMBERS

### Member

Michael & Elizabeth Matson

Jo Phola

James & Lila Jacobs

Patricia Lee

Thomas & Saovanee Borthwick

Brent & Jennifer Evans

Oscar Nock

Will & Susan Fischer

John Hembroff

Chris Carter

Gregg Siegfried

David Emerson

Bill Sils

### Referred By

Milo Johnstone

Lucetta Lightfoot  
Gift

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### BMW's

'87 325iC

'86 325

'95 318ti

'58 Isetta 300

'83 633i

'84 528e

'80 528iA

'76 2002

'69 2000CS

'88 535i

'87 325is

'95 M3

'76 Alfa Spider

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# BMW ACA 25th Anniversary Banquet

It only happens once, a 25th Anniversary. It's been a lot of good times, a lot of great people and a lot of hard work. It's time to celebrate and remember all those times and people. We have worked very hard on the banquet this year and I personally don't think you will find a better buy anywhere. There was a great deal of "discussion" this year over the increases in the cost of the banquet. It is \$3 more than last year to the members, only due to the fact that our cost for the dinners has increased by that amount.

But look at what you are getting for your money. An exquisite dinner in an elegant private club with an unsurpassed view of Puget Sound (this is a private club, it's not like you can have dinner there next week if you miss the event). Add beautiful dinner music performed on the concert piano in the dining area, plus entertainment performed by one of the Puget Sound area's best comedians. And there will be wonderful auction items, some of which can be purchased at great discounts. We will have a live auctioneer to "help" you into buying. Free covered and attended parking within the building. The event is just an elevator ride away. And a surprise this year, wine glasses etched with the BMW ACA 25th Anniversary logo to be provided with each dinner. These are limited to the first 100 registrants for dinner. These glasses will not be available at any other time. Sounds like a real deal to me.

What I am trying to say is that we have gone all out this year to try to make this a banquet to remember. If it's been a while since you have attended an event, this is the time to show up. We would especially like to invite all the members who have never attended an event. The

banquet is a great event for meeting new people and making new friends.

The dinners this year will begin with seasonal mixed greens in a vinaigrette sauce and your choice of either:

*Prime Rib of Beef with Au jus*  
*Twice Baked Potato*  
*Medley of Winter Vegetables*  
*Or*  
*Salmon in Lemon Dill Sauce*  
*Wild Herb Rice*  
*Medley of Winter Vegetables*

*Rolls & Butter*  
*Coffee, Tea and Decaf*

*Vegetarian dinners are also available upon request*

*Dessert will be a surprise again this year*

So please join us in the celebration. We think 25 years of friendship is something very special and we would very much like to meet you (yes, you) so we can be friends for the next 25 years.

Here's the evening's schedule:

No Host Bar / Silent Auction	6:00 pm
Live Auction	7:30 pm
Dinner	8:00 pm
Speaker/Program	9:00 pm

And here's the other particulars:

January 20, 1996  
Saturday Night  
The Harbor Club  
801 Second Avenue  
17th Floor, Norton Building  
Downtown Seattle

— Al Lancaster

## Ross Shafer



Ross Shafer is a Seattle native who attended the University of Puget Sound on a football scholarship. In college he began singing (for money) and doing stand-up comedy. In time he was opening shows for the likes of Dionne Warwick, Eddie Rabbitt and Crystal Gayle.

In the summer of 1984, Ross became the original host of *Almost Live*. In fact, the show was originally called *Almost Live* with Ross Shafer. In four years with Ross at the helm, *Almost Live* won thirty-five Emmy awards; six to Ross for his work as actor and host.

Ross also hosted a show on KJR radio in the mid-1980s. Then Hollywood called.

Ross hosted the game show, *Love Me, Love Me Not*. Two *Ross Shafer Comedy Specials* followed. Next, he replaced Joan Rivers as host of *The Late Show*.

Ross has continued to do comedy on *Evening at the Improv*, *Comic Strip Live*, *Hollywood Squares* and others. He also co-hosted *Day's End*, a nightly ABC entertainment magazine show. Then came a year-long run as host of the new *Match Game* on ABC.

But LA's earthquakes, floods and fires drove Ross back to the Northwest. Today he hosts his own weekly celebrity interview show called *Off Stage with Ross Shafer*.

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## Diane Pearce, Pianist

An eighteen-year resident of San Juan Island, Diane has recently shifted the focus of her musical activity from teaching to performing. In addition to performing locally, she has released her first CD and tape, "A Little Dinner Music" (available as part of the silent auction), and is in production on her second album, titled "Shades of Romance."

Playing solo piano is her primary means of musical expression, and her selections tend toward the romantic composers, whether classical, as in Chopin, Beethoven, Granados, or jazz, as in Gershwin, et al. She loves selecting music that is seldom heard, along with well-known favorites, and includes in her performances music from a broad range of composers and arrangers: from Scott Joplin to local Renton resident Suzanne Bowen for the former, and from Dan Coates to Marion McPartland for the latter.

She is a member of the BMW Club, along with her husband Walt. They drive 2002s, and participate in driver's schools as often as possible. In fact, Diane feels that driving a well-balanced, agile vehicle is comparable on some levels to playing a finely tuned, responsive piano - the medium is different, but the thrill is the same.

## Northwest Harvest

Once again this year, we will have a basket at the banquet check-in table for food donations to Northwest Harvest. The food will be given to Northwest Harvest shortly after the banquet.

### BANQUET RESERVATION

NAMES OF THOSE ATTENDING:

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Contact phone: Home: \_\_\_\_\_ Work: \_\_\_\_\_

#### Dinner Choices

	No.	Cost
Steak	_____	\$35.00
Seafood	_____	\$35.00
TOTAL ENCLOSED		\$ _____

All dinners are served with seasonal greens with Cabernet vinaigrette, potatoes or rice, fresh market vegetables, coffee or tea and roll and butter. Dessert will be a surprise this year, you'll just have to come and see . . .

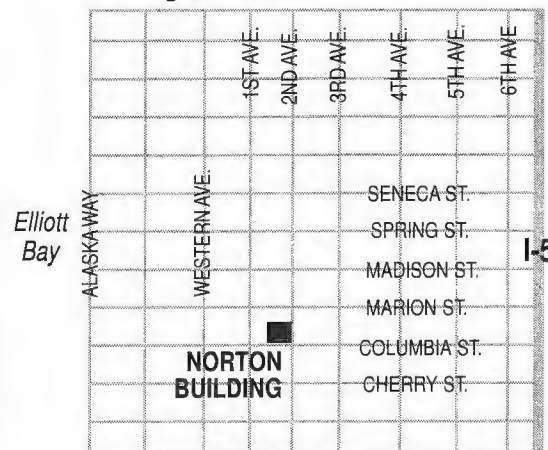
Make checks payable to BMW ACA. Mail reservations to: Al Lancaster  
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Federal Way, WA 98023

## Auction Donors

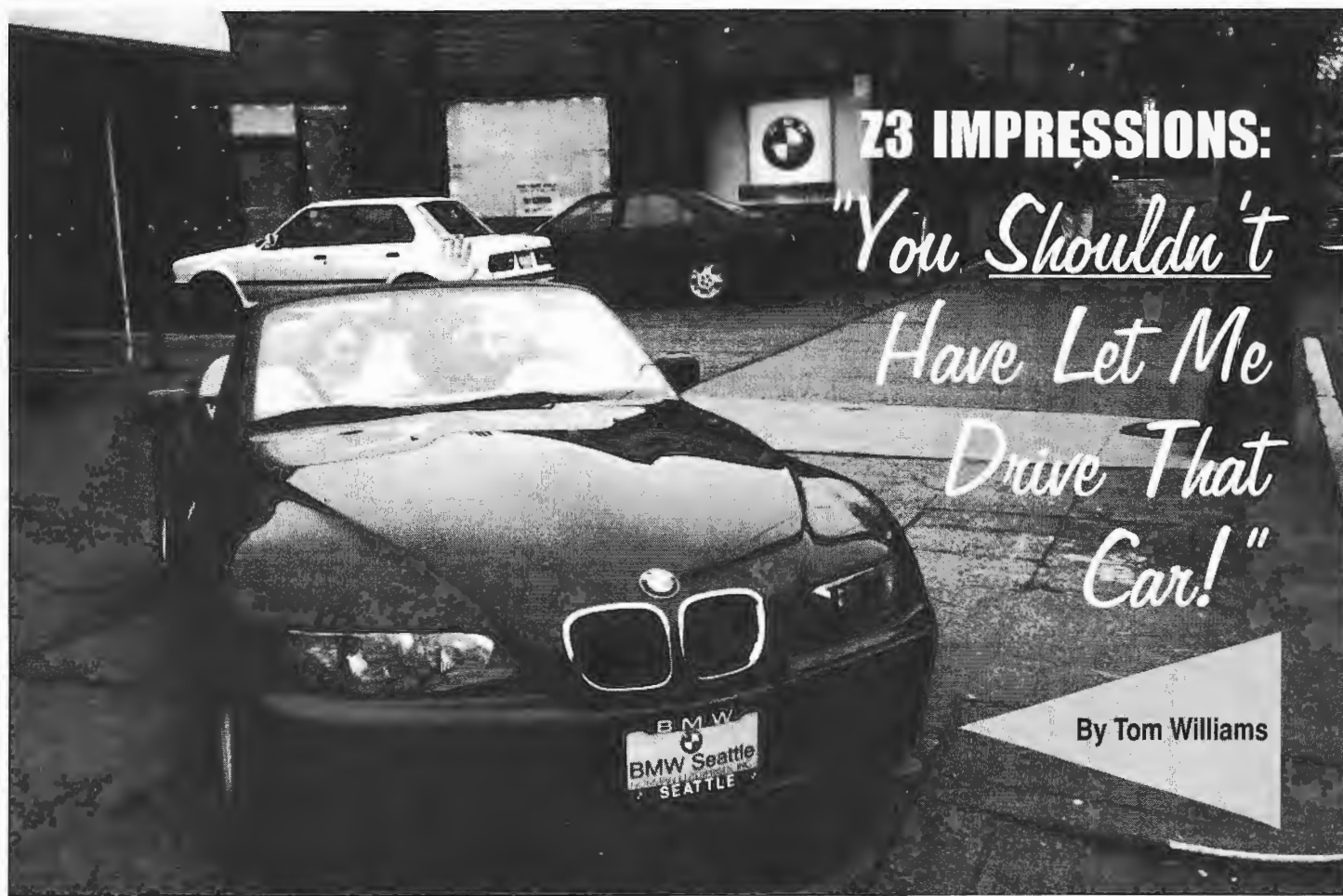
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Griot's Garage  
National Motorists' Association  
Diane Pearce  
Racer Magazine  
Strictly BMW  
Tire Rack

## Driving Directions



**Directions to the Harbor Club** located in the Norton Building: **From Northbound I-5**, exit at Seneca St. Go downhill on Seneca. Turn left on 1st Avenue. Go three blocks south. **From Southbound I-5**, exit at Columbia St. Go downhill on Columbia. Turn right on 1st Avenue. The Norton Building Garage is located on the east side of 1st Ave. between Marion St. and Columbia St. Parking is prepaid by the club. Just tell the attendant you are with the BMW Club. Take the elevator to the top floor.



## Z3 IMPRESSIONS:

*"You Shouldn't  
Have Let Me  
Drive That  
Car!"*

By Tom Williams

### Z3 SPECIFICATIONS

Length	158.5 inches
Width	66.6 inches
Height	50.7 inches
Weight, man./auto.	2690/2767 lbs.
Engine displacement	1895 cc
Compression ratio	10.0:1
Horsepower	138 @ 6000 rpm
Torque	133 @ 4300 rpm
0-60 mph, man./auto.	9.1/9.7 sec.
EPA est. mpg, city/highway-man.	23/32
-auto.	23/31

### Cover Photo

This month's cover photo is by Seattle resident, Walt Hughson. Walt works in Boeing's photo lab and takes photographs as a hobby. He sells a series of photos featuring some of the great Art Deco roadside architecture of the area, such as the Hat 'n Boots and the Twin Teepees. We hope to feature more of Walt's work in the future.

So said Lucetta Lightfoot to her spouse and erstwhile *Zundfolge* editor David, after returning from a test drive in the new Z3. She loved it, and I'm sure most of you will, too. But the big surprise to me was the reaction of Seattleites to the car. One would think that this latte-swilling, Volvo-loving burg would view the Z3 with indifference or, in the more PC precincts, with disdain. But no! This car turned heads with the best of them. And the response, surprisingly enough, was overwhelmingly favorable. The car is a stunner, all right; the question is whether the hardware under

the skin is capable of living up to the expectations created by the stylish sheet metal. For the most part, it is.

The Z3 started life as an offshoot of 318ti (Compact). As well as using a common floorpan, shared components included the engine, gearbox, and suspension. However, at some point BMW made some significant modifications, most notably to the wheelbase, which is shortened by 10 inches.

At the end of the day, what will sell this car more than anything else is its style. The car is stunning! The proportions are just right, and the car

looks great from virtually any angle. Addition of the 507-style side louvers is a very nice retro touch. Overall, like so many BMWs, it looks much nicer than the photos. The interior, though, is nothing special. The dash is taken from the Compact, and the gauges are standard 3-series issue. The seats were very comfortable, but the test car's seats and door inserts leather suffered from an unattractive speckling treatment. Fit and finish were very good, however. Everyone has their own opinion on the car's styling. What was it like on the road? DL and I

hardly got to drive the car; just back and forth from the dealer to Kerry Park for the cover photo shoot. But our wives did. What follows are primarily their impressions:

**Engine/transmission:** The test car's 1.9 liter powerplant (shared with BMW's other 318i models) was paired with a serviceable 4-speed automatic. Subjectively, the car

cylinder is not.  
**Handling/braking:** Discretion prevented any of us from verifying the car's handling at anywhere near its limits. The car turned in nicely, steering was responsive, and, with the 4-cylinder at least, the grip provided by the huge 225/50ZR-16 tires should be more than enough for all but the terminally crazy. Ride quality was surprisingly good

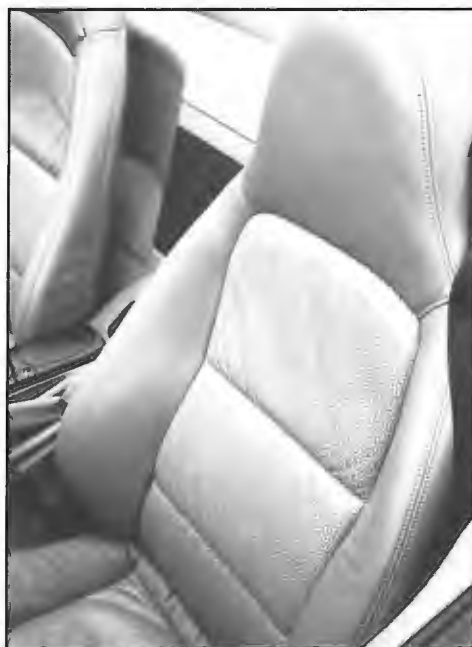
for a car with such a short wheelbase, even when driving over some of Seattle's notoriously poor city streets. Brakes were, in a word, excellent.  
**Comfort/convenience:** A strong suit. Great heater, and with the heated seats, open-top motoring should be possible on very cold days. This desirable characteristic is also due to the fact that the air



The Z3 gathers a crowd anywhere it's parked.

felt slow, although if one romped on it, the gearbox shifted down briskly and propelled the car ahead nicely. While those who have driven the car with both the auto and the 5-speed manual say the latter helps acceleration (9.1 seconds 0-60 as opposed to 9.7), this car won't win many stoplight duels. Whether the car's potential owners would be concerned with this is debatable; the fact that the driving experience would be much more compelling with a 6-

**Speckled leather inserts are the low point of the interior.**



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 (by Furney's Nursery)

around the windshield seems to be very well managed and doesn't disturb driver or passenger as much as other droptops (this from someone who's previously owned two convertibles). Visibility was fine, with the usual caveat about rearward visibility with the top up. Speaking of the top, its manual operation was easy to master. Not so the tonneau cover, which was reluctant to snap into place. But that's all for the complaints. Even the radio works fine, which is not always the case with BMWs.

**The competition:** On the upper end, the new Mercedes and Porsche offerings. Both will be significantly more expensive, but also (until the six-cylinder comes to fruition) significantly more powerful as well. But the Z3 is getting to market first, no small advantage. On the other end of the price continuum, there is the ever-popular Mazda Miata, a formidable competitor indeed. It will be interesting indeed to see how the Z3 deals with that particular brand of shark.

**The verdict:** A styling triumph, perhaps a future classic (but get rid of the speckled bits on the inside!). More power would be nice, but the suspension and brakes are superb. A car as good as this one deserves to top the charts, and if the dealers' order books are any indication, the Z3 is well on its way there.

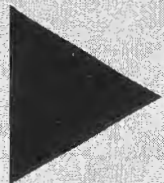
*(Thanks to BMW Seattle's Steve Norman for use of the Z3.)*



**The classic 507's side vents inspired those on the Z3.**



## **Z3 COLOR CHOICES**



### **Standard Colors**

Black Black  
Bright Red  
Alpine White

### **Special Colors**

Turquoise Green  
Dark Green  
Violet Red

### **Metallic Colors**

Montreal Blue  
Atlanta Blue  
Boston Green  
Artic Silver

### **Leatherette**

Black  
Grey

### **Leather**

Black  
Tanin Red  
Beige  
Violet

### **Folding Top**

Black  
Beige

*Note:* Not all combinations of exterior/interior/top colors are available.

## **The BMW Z3 Roadster Standard & Optional Features**

### **PERFORMANCE & EFFICIENCY**

1.9-liter DOHC 16-valve inline 4-cylinder engine  
5-speed manual transmission  
Digital Motor Electronics engine-management system  
Direct ignition system with knock control  
Limited slip differential

### **HANDLING, RIDE & BRAKING**

Strut-type front suspension  
Semi-trailing-arm rear suspension  
Front & rear anti-roll (stabilizer) bars  
Twin-tube gas-pressure shock absorbers  
Engine-speed-sensitive variable-assist power steering  
4-wheel disc brakes, vacuum-assisted  
Antilock braking system (ABS)  
16 x 7.0J cast alloy wheels  
225/50ZR-16 performance radial tires

### **EXTERIOR & AERODYNAMICS**

Body-color bumpers with hydraulic energy absorbers  
Vibration dampers built into rear bumper mountings  
Halogen Free Form low-beam headlights  
Halogen Free Form foglights  
2-speed + intermittent windshield wipers with single-wipe control  
Dual power outside mirrors  
Illuminating master key  
Courtesy lights with time delay  
Cruise control  
Electronic analog speedometer & tachometer  
LCD main & trip odometers  
Service Interval Indicator  
Multi-function digital clock  
4-way power driver's seat & 2-way power passenger's seat  
Leatherette upholstery, combination of finely grained & woven surfaces  
Leather-covered steering wheel, shift knob, handbrake grip & boot  
Power windows  
Air conditioning & heating with CFC-free refrigerant  
Manual roadster top  
Anti-theft AM/FM stereo radio/cassette audio system with 6-speakers, flexible mast antenna on rear fender  
Pre-wiring for BMW CD Changer, BMW Cellular Phone & BMW Remote Keyless Entry Security System

Dual cupholder  
Coinholder  
Toolkit in spare-tire compartment

### **SAFETY & SECURITY**

Central locking system with double-lock anti-theft feature  
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Dual-airbag Supplementary Restraint System  
Automatic front seatbelt tensioners  
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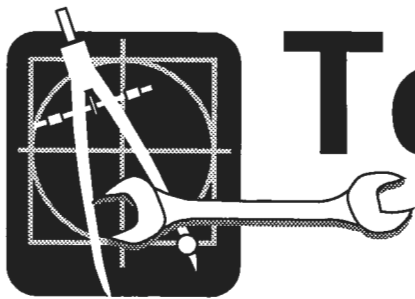
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# Technik

edited by Greg Mierz

## Here is the second part of Sam Chien-shin's excellent FAQ on the Idle system.

This covers the basic troubleshooting of the system.

### Vacuum Leaks

First, look for vacuum leaks! Vacuum leaks introduce unmetered air, causing a lean mixture and rough running.

- Is your oil filler cap tight?
- Is your oil dipstick tight?
- Any cracked vacuum hoses or loose connections?
- Any cracks in the intake boot?

One good trick is to spray a little carb cleaner where you suspect a leak. If the RPMs change, then you know you've found a leak.

### Throttle Cable

If your idle is too high, make sure your throttle is really closed at the rest position. On my 325e, the previous owner had adjusted the throttle cable so that the throttle was cracked open when my foot was off the gas pedal. To adjust the throttle, take off the intake boot. Adjust the cable until you can just barely slip a .0015" feeler gauge between the throttle plate and the throttle housing. The purpose of this tiny clearance is just to prevent the throttle plate from gouging a groove into the housing. After adjusting the throttle plate, don't forget to recheck the throttle rest position switch; you may have to readjust it. See below for a description of how to do that.

### Fuel Pressure

A bad fuel pressure regulator can cause the following symptoms:

- 1) rough idle
- 2) running rich (black smoke) - this can cause black soot on your spark plugs
- 3) buzzing noises from the fuel pump which may vary with engine speed
- 4) general lack of power

My 528e manifested the problems only when warm. It ran fine until the temp gauge got in the mid-range, and then would not idle the next time I got to a red light. Then it would lose power and wouldn't idle. Large clouds of black smoke and power loss ensued. Interesting thing, too, was that the car wouldn't stall as long as I left the A/C running - I guess the idle circuit's compensation for the extra load of the A/C did the job (TIP: if the car won't idle, try turning on the A/C!). At first, I thought it was a bad transfer pump, because the fuel pump would buzz loudly once the car was running badly, varying with the RPMs.

Lacking a fuel pressure gauge, and being the buffoon I am, I swapped out the transfer pump, main fuel pump, and cold start valve from my 325e, as well as replacing the oxygen sensor before I realized the fuel pressure regulator was the culprit. Then, reading the old digests from the list, I found a posting which mentioned the fuel pressure regulator as a possible cause. Voila, with the new regulator, it runs perfectly now.

For the '85 325e and '84 528e, the regulators (last three digits of part number are 225) are rated at 2.5 bar; most regulators have the rating stamped on the side. I won't go into detail here about checking it, but suffice to say that if it's way off spec, your regulator is bad - you can consult Bentley for more details on test procedures.

The fuel pressure regulator is located at the front of the engine, and is attached to the front of the fuel rail. It's easy to identify as a brass colored metal cylinder about 2" in diameter. It has a fuel hose going to it on one end, and a vacuum line on the other end which goes to the manifold. If you see other metal cans in the fuel line with fuel hoses coming out of both ends, those are vibration dampers - they cut down on fuel pressure variations caused by the injectors opening and closing. The vacuum line is attached to a diaphragm in the regulator which allows it to adjust itself according

to manifold pressure. To check the diaphragm, unplug the vacuum line from the regulator and plug the hose with your thumb. You should see a change in the pressure (or if you don't have a pressure gauge, you should at least see a change in idle speed). Alternatively, you can unplug the hose from the manifold and suck on the end of the hose. If you can't build up a vacuum, then the diaphragm is leaking and the regulator needs to be replaced.

### Cold Start Valve

The symptoms described above (except for the fuel pump buzzing) could also be caused by a bad cold start valve. The cold start valve is an extra fuel injector which is mounted on the intake manifold, usually above the valve cover. There is a two-pin electrical connector going to it, as well as a fuel feed hose. The valve is supposed to inject a little extra fuel into the engine to help cold starting. Controlled by the thermo-time switch, it's supposed to shut off after a few seconds. A worn valve could constantly drip fuel, causing a rich mixture.

To test it, unbolt the two allen bolts which affix it to the manifold, plug the hole in the manifold, and have someone else start the motor while you observe the cold-start valve (leave the electrical connector attached). If the motor is cold, it should spray for a few seconds and stop. If it's hot, no fuel at all should emanate from it. If it keeps spraying forever or drips, either the valve is stuck on or the thermo-time switch is stuck on. Disconnect the electrical connector. If it keeps spraying or dripping, the valve is bad. If it stops, then the thermo-time switch needs to be replaced. NOTE: Check the fuel feed hose to the cold-start valve for cracks while you're at it. On both of my cars, it started to drip fuel on my valve cover. Lucky I discovered it before the engine blew up!

### ICV Diagnosis

NOTE: The diagnoses below don't all make sense unless you follow the steps in the sequence shown.

- 1) Turn the ignition key to run position, but don't start the car. You should hear quiet buzzing sound from the ICV, and if you touch it with your fingers, a vibration. If not, either the ICV is bad or there is no control current.
- 2) Start the car. Run the system "open loop" by pulling the electrical connector from the ICV. The RPM's should climb



to about 1500-2000, and then oscillate back and forth between about 600-1500rpm. If reconnecting the electrical connector has no effect on RPMs, your ICM is probably at fault. (For the curious, your RPMs fluctuate because when the ICV is disconnected, the valve is stuck wide open, and the DME is the only thing controlling your idle. The RPMs rise until it cuts the fuel flow, which causes RPMs to dip. Then it restores fuel flow, and the cycle begins again.)

3) Cut the motor. Pull the electrical connector from the ICV and connect an ohmmeter across the terminals. The reading should be about 9-10 ohms at temp 73+-9F(23+-5C). If you get an open circuit, it's time for a new ICV. If the resistance is much lower, you've got a short, and your ICM may be roached too, from the resultant excessive current draw.

4) Disconnect the ICV hoses, and look into the outlet. Obtain jumpers and connect 12V across the ICV terminals. The valve should close tightly when voltage is applied, and open strongly when the voltage is removed. (Yes, it might look grungy and black in there, but resist the temptation to clean it with solvent for now - it could throw it out of whack!) If there is no movement or the movement is sluggish, your ICV is bad.

5) Plug in the ICV electrical connector and turn on the ignition (engine not running!), all accessories turned off. Looking into the outlet again, the valve should be partly closed. If the valve is wide open and there is no vibration, you aren't getting any control current. To verify, unplug the ICV connector, and verify that you're getting voltage across it. If there's no voltage, your ICM is at fault.

6) Reconnect the ICV hoses and electrical connector. Hook up an ammeter in series with the ICV. With the engine fully warmed up and idling with all accessories turned off, the current should be between 400-500 mA. If the current is wrong, adjust the ICV current. Turn the adjusting screw until you get 460+-10 mA at 700+-50 rpm.

**KLUDGE:** If you can't get the current in the proper range, just try to adjust the screw until your idle stabilizes at 700 RPM and ignore the current reading. If you can't adjust the control current properly, proceed to ICM Diagnosis. If the ICM checks out ok, then the ICV is probably out of whack. Maybe an ICV

Kludge can help you peg the diagnosis (or fix the problem well enough for you to live with it).

### ICM Diagnosis

First, check to make sure the ICM is getting the proper input signals. Checking the ICM inputs:

Disconnect the 28-pin connector from the ICM, and perform the following measurements on the connector with the ignition on.

1,5) ICV - This is actually an output (the only one). These two pins connect directly to the ICV. Hook up an ohmmeter between pins 1 and 5. You should get 9-10 ohms, the ICM DC resistance. See ICV testing section for more details.

2) Power supply - A voltmeter hooked up between pins 2 and 4 should read battery voltage.

3) RPM sensor - Hook up an LED test light between pins 3 and 4. While cranking the starter, the light should flicker.

The resistor is connected in series with the LED, and alligator clips are connected to the resistor and LED leads.

alligator>>-----|>-----<< alligator  
clip 1-2K ohm LED clip

4) Ground - Use a continuity tester between pin 4 and any unpainted part of the chassis. There should be almost zero resistance.

6) Coolant temperature switch - Measure continuity between pins 6 and 4. It should be open below 86F(30C) and closed above 118F(48C). If it doesn't close, check the connection at the switch. The temperature switch is mounted on the cylinder head coolant outlet, to the front of the thermo-time switch. It is the only sensor in that area which has two separate push-on spade terminals. The brown wire goes to ground and the white wire goes to ICM pin 6.

7) Automatic transmission range switch - Hook up a voltmeter between pins 7 and 4. With manual transmission, you should get battery voltage. With auto transmission you should get battery voltage with gear selector in Neutral and Park positions, 0V in other positions.

8) N.C.

9) A/C switch - A voltmeter between pins 9 and 4 should read battery voltage when the A/C is turned on, zero when the A/C is off.

10) Air temperature switch - Voltmeter between pins 10 and 4 should read

battery voltage below 18F(-8C) and 0V above 39F(4C).

11) Coolant temperature sensor Hook up an ohmmeter between pins 11 and 4. Verify the resistance at the following coolant temperatures.

Model	325, 325e, 325es	325i, 325is
Connector Color	White	Blue
Temp	Resistance (Ohms)	
14+-2F (-10+-1C)	7000-11600	8200-10500
68+-2F (20+-1C)	2100-2900	2200-2700
176+-2F (80+-1C)	270-400	300-360

If you just get an open circuit, check the connection. The sensor is located on the cylinder head coolant outlet, behind the thermo-time switch. You can also measure resistance directly across its terminals.

12) Throttle rest position switch - Ignition doesn't have to be on for this one. Hook up a continuity tester between pins 12 and 4. You should get continuity when the accelerator is in the rest position, and open circuit otherwise. If not, check the switch.

At the bottom of the throttle housing, there is a 3-pin connector. First make sure it receives voltage. Pull the harness connector. With the ignition on, you should get 12V between the center and either of the outer terminals of the harness connector. Next, test the switch. The left and center terminals are for rest position. Open the throttle part way by hand. Slowly let it return to its stop. The switch should close when the throttle lever is approximately .2-.6mm from its stop.

While you're at it, even though it doesn't affect idle, you should test the full throttle switch. Move the ohmmeter probes to the center and right terminals. Open the throttle slowly. When the throttle is within 10+-2degrees of full-open, the switch should close. If the switch is out of whack, unbolt the throttle body via the four retaining nuts. There are two screws on the switch body. Loosen the screws and rotate the switch body until it works as specified. If it's broke, replace it.

For comment/suggestions I can be reached at GregM2002@aol.com or GregM2002@gnn.com

*(For those not part of the techno-elite, you can also reach Greg by telephone at 206-768-0376. - editor)*

# M formation

...from the  
editors

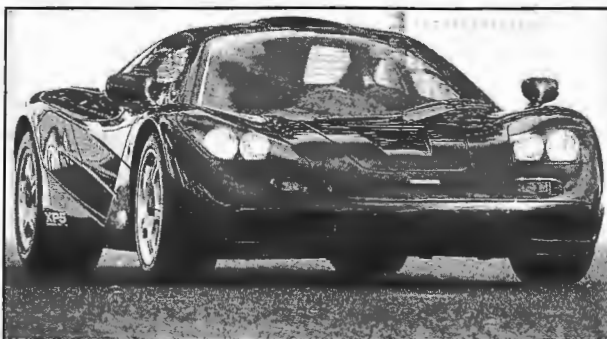
## Detroit & LA Auto Shows

The Detroit Auto Show in early January has become the defacto U.S. national show. The LA Show is held at the same time, and simultaneous debuts of significant cars are common.

It's long been known that the Z3 roadster would make its "official" debut at Detroit. The Z3 will also be at the LA Show. Plus, the new 5-series will make its North American debut at these two shows.

At the LA Show, BMW will also show its "Olympic Signature" car. We don't know what this is, but suspect it's a standard BMW model with some Olympic badging. The Olympic Signature car debuts in LA, because this is the starting point for the Olympic torch on its journey to Atlanta.

At the Detroit Show, BMW's stand will include a McLaren F1 super car. Why? Well, BMW developed the engine, but they're showing the whole car. Is the McLaren going to be sold through BMW dealers? Has BMW bought McLaren? Time will tell, since no one seems to know.



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## BMW Buys Jolly Olde

BMW seems to be on a buying spree in England. The Rover purchase is old news, although managing the subsidiary seems to remain a challenge (see last month's M-formation). Now, *Car* magazine reports that BMW's dynamic duo of Bernd Pischetsrieder and Wolfgang Reitzle have cut a deal to buy Rolls-Royce. This has been long rumored in the industry. But *Car* says that a date to announce the merger has been set. And rumor has it, that a pair of ambitious development programs have begun. P1000 (formerly project Java) should yield a luxury coupe/convertible, and P2000 will develop a replacement for the antiquated Silver Spirit/Bentley Turbo R. This dovetails nicely with the previously announced deal which has BMW supplying engines for all future Rolls and Bentley models.

Last month's M-formation also carried the news that BMW's Motorsport division will move to England and work with McLaren on touring car racing and the McLaren F1 GTR endurance racer. ESPN says it goes further: they claim that BMW has bought McLaren; lock, stock and Formula 1 team! No other media source has confirmed this, so it seems doubtful. However, speculating is fun. If BMW did buy McLaren, they'd have the best race team in the world, the F1 street car as an incredible upmarket sports car, and a Formula 1 team ready-to-go. Plus, they'd knock Mercedes, who currently supplies engines to McLaren, to another team, to start over. Adding to the speculation will be the presence of a McLaren F1 on BMW's stand at the Detroit Auto Show in January. Hmm.

There is no truth to the rumor that BMW has made a tender offer for the Queen's crown jewels, according to BMW AG spokeswoman, Princess Diana. (Well, she's looking for a new role. Plus she drives a 323i. Really.)

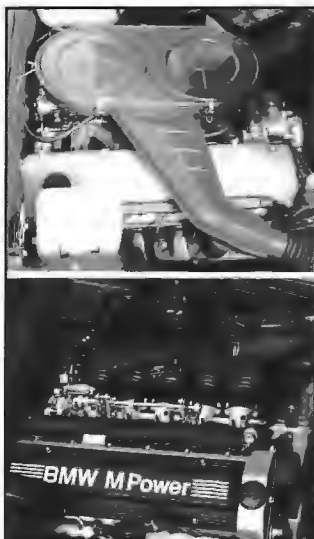
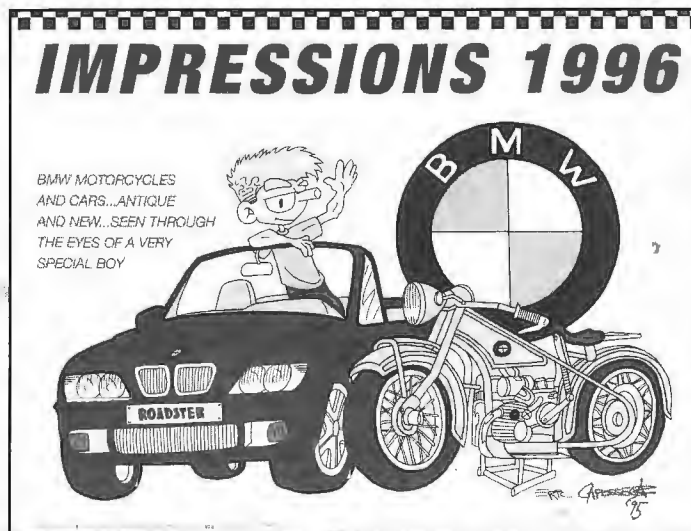
## BMW in Formula 1

*BMW Car* reports that rumors of BMW's return to Formula 1 were fuel by BMW officials arriving for the British Grand Prix in a Williams team helicopter. Williams is one of two top F1 teams, and shares Renault engines with its chief rival, Benetton. Williams is said to be unhappy about not having an exclusive engine deal.

*Roundel* reports that BMW came very close to signing an F1 engine-supply deal, but not with Williams. Sponsors were in place, contracts were set and the team was ready. But the BMW board balked at the \$22 million per year price tag. BMW continues to consider its options.

## Impressions 1996

BMW automobile and motorcycle dealers are selling a calendar called Impressions 1996. The calendar features artwork by 15-year old Eric Capossela. Net proceeds from the sale of the calendars benefits the Crohn's and Colitis Foundation of America. The CCFA is devoted to research on Crohn's disease and ulcerative colitis, collectively known as inflammatory bowel diseases (IBD). Approximately two million Americans suffer from IBD. The calendar is available under BMW part #71 601 469 490 and sells for \$17.15. The cover of the calendar is shown here.



66 years of BMW roadsters at a glance: from left to right, the 3/15 (1929-1932), 315/1 (1935-1936), 328 (1936-1940), 507 (1956-1959), Z1 (1988-1991), and in the foreground, the new BMW Z3.

## A Great Engine is Retired

After almost three decades the big BMW six-cylinder engine is on its way to the museum. In 1968 the BMW 2500 was introduced with the then 150 HP strong six-cylinder in-line engine. In its strongest and last version the BMW M5 made 340 HP. This engine unit laid the foundations of the reputation of the smooth turbine-like operation of all BMW engines.



## Monterey 1996

As announced last month, BMW will be the featured marque for the 1996 Monterey Historic Races. The Races will be held August 16-18, 1996 at Laguna Seca Raceway.

BMW plans to bring many of the historic racers from the factory's collection. Private owners will also bring lots of interesting historic BMW race cars. Pre-'67 BMWs are especially wanted.

BMW plans to use the Monterey Historics to showcase "BMW roadsters through history" and promote the Z3. Our photo gives you an idea of the street cars you can expect to see. Plus, there will be every kind of M-car ever built. In fact, you will probably be able to view one of every BMW model ever built.

It is not too early to plan for this event, and even make room reservations. You don't want to miss it. Many of you kicked yourself for missing the 20th Anniversary of BMW Motorsports in Florida in 1992. The Monterey event will be bigger, better and closer. Do not let this one pass you by!



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## Popular Science Award

BMW of North America, Inc. has won *Popular Science* Magazine's 'Best of What's New in Automotive Technology' award for BMW's innovative side impact airbag system.

'BMW is the *first* in the industry to introduce a side impact restraint system protecting *both* the head and torso of the front occupants, and this enhances our leadership position in the critically important area of automotive safety," said Victor H. Doolan, President of BMW of North America, Inc. Doolan continued, "BMW's F.I.R.S.T. (Fully Integrated Road Safety Technology) program, which facilitated the company's being the first in the industry to make standard both anti-lock brakes and dual airbags, utilizes BMW's unique combination of both *active* and *passive* safety features to provide the ultimate in customer safety."

BMW's new automatic side impact airbag system provides two new sets of inflatable airbags. The door-mounted side airbag will protect the occupant's torso and be available in 1996.

BMW's new airbag protecting the head of front occupants is called the Inflatable Tubular Structure (ITS) and will, upon its 1997 arrival, be the industry's first automatically deployed protection for front occupants' heads. The front end of the ITS is anchored near the bottom of the vehicle's "A-(or windshield) pillar," with the opposite end anchored in the roof just above

the rear door.

*Popular Science* annually presents awards for 'The year's 100 greatest achievements in science and technology.' According to the magazine's editor, Fred Abatemarco, the new technology must retain "The ability to make a positive difference in our lives." (BMW NA)

## Spartanburg - The Good News

We've reported previously on both good and bad news from Spartanburg. Fortunately, most of the news has been good. The good news has included an extraordinarily quick "ramp up" of production and high quality levels - even higher than Germany. The bad news has included paint quality problems (since solved) and culture clashes between the American managers and the big bosses from Germany.

Leif Anderberg from the Los Angeles BMW ACA recently visited the Spartanburg factory. He talked with many of the production line workers and came back with glowing reports. The line workers take tremendous pride in their work. They believe they are building the highest quality cars in North America, and they are probably right. But they are not satisfied. They want to be the best in the world. Many workers wear a small tool around their necks. Shaped like a cross, it is actually a gauge for measuring the gaps between body

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A Spartanburg "associate" installs the wiring in a 318i.

panels. The workers are encouraged to check the panel fit, and often do.

BMW employees are offered very favorable terms to purchase a BMW, any BMW. Employees at the Spartanburg plant have mostly opted for the 318i sedan - the only car built at Spartanburg until Z3 production started. They want to drive the car they build.

And things are going so well that a second shift will begin in February. Once completely up to speed, output of the plant will be doubled.

A South Carolina state agency does all the hiring and training of employees. They must be doing a good job because turnover is virtually nil. And in the public school system, the favorite foreign language is now German.

Many of BMW's German suppliers have built plants near Spartanburg. What is being created is an industrial base of quality jobs in the previously rural area. Spartanburg seems to be working well for all concerned.

## Dear Zundfolge Editors:

I am fortunate to belong to two single marque car clubs as a '63 Morgan Plus 4 shares my garage with a '75 BMW 2002. On the same day I received the newsletters from the two clubs - the December issue of *NW Magazine* and *Zundfolge* contained a very interesting comparison by listing the price of a new (1995) Morgan Plus 4 and the newly released BMW Z3 roadster.

	Z3	+4
Base Price	\$28,750	\$29,816
Metallic paint	475	448
Leather interior	1,150	1,200
Onboard computer	300	N/A
Scuttle roll bar	N/A	216
Bonnet strap	N/A	61

So for your \$30K you can either get a thoroughly modern, computer controlled overhead cam roadster with heated seats or 1930s styled wood framed sliding pillar suspension "last of the real sports cars" with blow-up seat cushions and almost no weather protection at all. And there is a waiting list for each. Someone even suggested that the front of the Bimmer looks a bit like a Moggie that was left in the sun (or was it a Dodge pickup?).

Now if I could just get a Z3 with a bonnet strap and wire wheels...

Freeman Keller

P.S.: The Morgan people are probably wondering what the hell a zundfolge is and the BMW guys are looking for their scuttle and bonnet.

## Belleuve Motor Works

2040 152nd Avenue N.E.  
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**\$25** off any repair  
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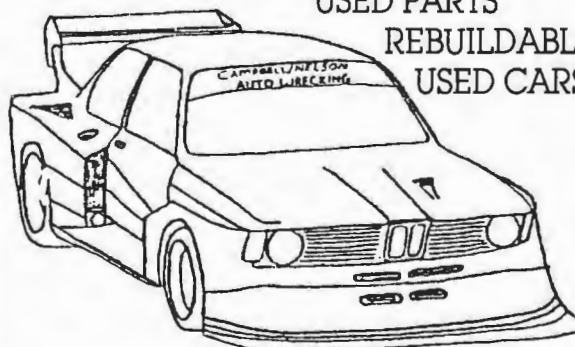
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# Classified Marketplace

## Cars For Sale

**1991 735i.** Black/black, chrome wheels, automatic, 66,000 miles. Dealer maintained, garaged, nonsmoker, excellent. \$26,000 OBO. Call Richard at 313-0540 or 486-8035.

**1988 M6 Convertible.** U.S. car, 47K miles, red/grey, New top and BMW leather interior, just serviced. Immaculate, straight car. Interna-



tional move forces sale. \$22,500 OBO. Pete 915-9610.

**1983 528e.** 5-spd, bahama beige, leather. Garaged and meticulously kept, very clean inside, outside and underneath! Full service records. Hate to sell but owner has succumbed to the lure of more power, speed and room. \$5500. W/extra parts. Paul 522-0548.

**1980 MGB Limited Edition,** 24,000 miles. Beautiful condition, always garaged and stored winters. Tonneau, boot and overall cloth covers. New spare tire on new wheel. \$9,500 OBO. Contact Herb

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Kiekenapp, PO Box 626, Ocean Park, WA 98640. 360-665-4145.

**1975 2002.** 1300 miles on long blk. New front brakes complete. Needs body. \$1500 OBO. 206-862-0235.

**1969 2002.** Beat-up but drives great. 43,000 miles on new engine, \$850. Also have parts car and 8 steel wheels. Fred 525-9609.

## Parts For Sale

**Snow Tires.** TRX \$140/pr. 195/60/15 studded \$200/4. 13" studded, 2002 rims \$80/pr. **Snow wheels,** steel, 318/325 14" 4-bolt \$80/pr.; 530i/BAV \$20 ea. w/caps; 2002/320i, \$10/20 ea. **Real Wheels,** alloy, M5 Turbines 17" x 8", 2002ti 5-spoke; 3.0cs 5-spoke; 5-6-7 ser 16" x-spoke. Lots more! Bill 824-8242.

**Pair, Black Recaro Buckets** from 1980 320is. In great condition, well kept \$350 includes mounting brackets. Update your 02? Call JR at 946-5032, from 4:00 to 9:00 pm.

For E-28 5-Series and '83 -on 6-Series: new Racing Dynamics F/R **sway bar kit** in blister pack \$200. Strut bearings (also fit '84-'91 3-Series) \$60/pr. Paul 522-0548.

## Wanted

**Roundel,** August 1995 issue. Jake or Lila Jacobs. 206-243-7327.

**1980 or 1981 528i** 5-speed to replace mine that got squashed. Must be clean, straight, rust and bondo free & in very good to excellent overall condition. Please contact Terry MacDonald (503) 240-5279.

**Deadline for the February issue  
is January 19.**

### Classified Advertising Policy:

Classified ads are free to members in good standing (paid up dues). There is a \$10 fee to non-members. Photo classifieds are \$15 to members, \$25 to non-members. *Zundfolge* staff reserves the right to edit all classified ads. Ads must be typed or neatly printed and sent to *Zundfolge*, c/o Lucetta Lightfoot, 2641 39th Ave. W., Seattle, WA 98199. Attn: Classified ads. Make checks payable to BMW ACA.

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# Club Discounts

The following businesses have generously agreed to extend price discounts to BMW ACA Puget Sound Region members. To get the discounts, members must show their membership cards before the purchase is transacted. Discounts may not be made after the sales form is completed. Extra paperwork cost the discounting business money just when that business is offering to save us money. So, please make sure to take your card and show it when you place your order. This will protect this program for all.

The Club intends to keep this list current and publish it on a periodic basis. If anyone has any questions or suggestions of businesses to be added to the list, please call Roger Wales at 743-9246.

These businesses, like all others, undergo personnel changes from time to time. Because of this, it is possible that you may not get the correct response when you present your card. Please make sure that you confirm the discount directly with the business as you place your order. If you have any questions, please call Roger Wales. He will be happy to assist in resolving any misunderstanding, however, the Club cannot guarantee a favorable outcome.

## BMW of Bellevue

15% on Parts and Service  
13617 Northup Way  
Bellevue, WA 98005 643-4544

## BMW Northwest

10% on Parts  
4011 20th St. E., Tacoma, WA 98424  
922-8700

## BMW Seattle

15% on Parts and Accessories,  
10% on Labor  
714 E. Pike St., Seattle, WA 98122  
Sales: 328-8787; Service: 328-2300;  
Parts: 328-7788

## Hahn BMW (Yakima)

15% on Parts and Accessories  
1201 S. 1st St., Yakima, WA  
1-509-453-9171

## AAA Fire and Safety

Wholesale Prices  
3103 3rd Ave. N., Seattle (West of  
Fremont Bridge on S. side of canal)  
284-1721

## Bap-Geon

Seattle and Tacoma  
Varying discounts depending on type  
of part or accessory  
1325 E. Madison, Seattle 322-4366  
5002 S. Washington St., Tacoma  
475-9421

## Bellevue Motor Works

15% on Parts (New only)  
2040 152nd Ave. NE, Bellevue  
746-7141

## Bimmers Only

10% to 40% on OEM parts. Independent service. Free set back of service interval lights for do-it-yourselfers. Same location but address has changed to:  
318 140th SW, Everett 743-2002

## Collision Craft, Ltd.

15% discount on deductible  
9125 Willows Road, Redmond  
883-8556

## Exeter Garage

10% off on Meguiar's Mirror Glaze Professional Products  
Next to Freeway Park  
7th Ave. (Hubbell Pl.) & Seneca  
Seattle, WA 622-9800

## German Car Specialists

15% on parts  
12408 SE 38th, Bellevue 644-7770

## Jessica N. Greenway, CFP

Financial Consultant  
Complimentary consultation to club members  
605 First Ave., Mutual Life Bldg.  
Suite 505, Seattle 292-8483

## Kevin P. Bailey, LUTCF

Insurance and Investment Planning  
Free consultation to members  
11911 NE 1st St., B-306  
Bellevue, WA 98005 688-0550

## Sound Tire

Approx. 10% discount except for Motorsports Tires and Specials  
11011 Pacific Highway S., Seattle  
763-1273

## Shaw & Assoc., CPA

10% discount to club members  
1333 N. Northlake Way, Suite G,  
Seattle 548-0102

## Strictly BMW

10% on everything subject to a maximum discount of \$30.  
2111 140th Ave. NE, Bellevue  
747-6044

## TNT

Up to 25% on Parts and Accessories  
6717 Roosevelt Way NE, Seattle  
524-5151

## Walt's Radiator & Muffler

20% discount on parts  
18 locations (location managers should know about discount. If one doesn't, ask him to call Rich at the main store)





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