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Puget Sound Region

November 1996

Zündfolge

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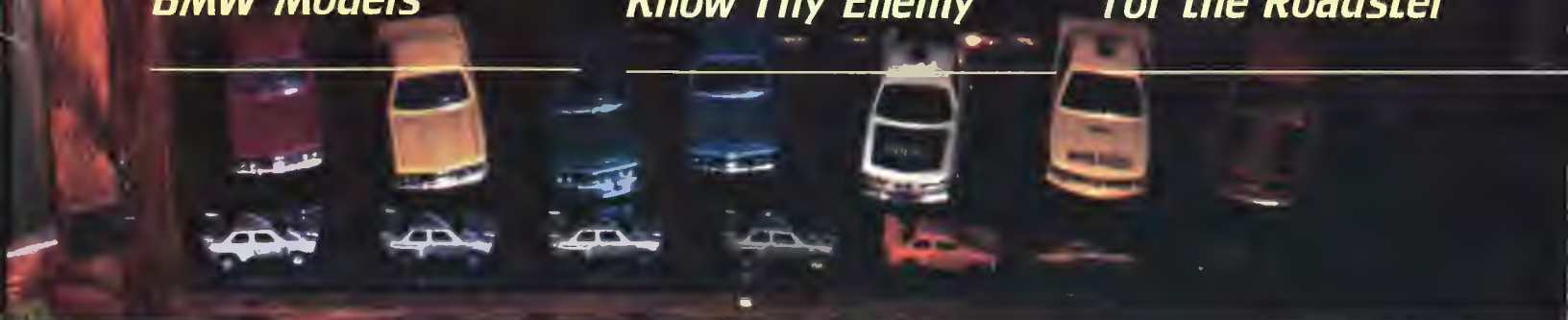
Police Radar: Know Thy Enemy

Z3 2.8: A Six for the Roadster



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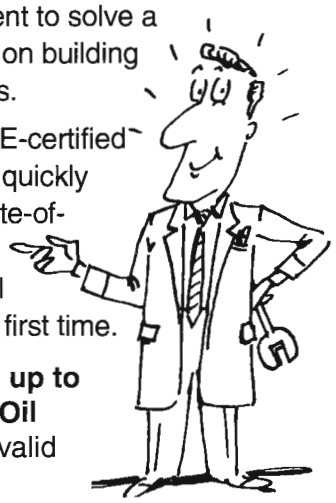

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Zündfolge

Volume 26 Number 11 November 1996

Cover: BMW Models from the Anderberg Collection.

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Inhalt

Calendar

November 23 **Turkey Rally** hosted by the Alfa club. Information on page 3.

December 5 **Board Meeting** hosted by Al and Bea Lancaster.

January 25 **Annual Banquet** on the Spirit of Puget Sound. A boat ride, a great view, dinner, music and a slide show of Monterey. What more could you want? And only $35 if you reserve early!

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

Turkey Rally

The Alfa Romeo Club has invited us to participate in their Turkey Rally, November 23rd at 11:30 a.m. The contact for the event is Ellen Haugen at (206) 840-2812. The rally is open to all members of European marque clubs. Cost of the rally is $10 the day of the rally, which includes rally book.

The Turkey Rally will start in the Puget Power parking lot, 420 106th Avenue NE in Bellevue. To get there, take the 4th St. exit off 405 (exit 13), and go west about a half mile. A drivers' meeting and registration will begin at 11:30. The rally will take about two hours to complete.

Make sure to bring a clipboard, full tank of gas and a navigator. The end point will be a social get together with prizes at a restaurant in Issaquah that you will (of course) have to find.

For anyone that is interested in learning about rallies, this is an excellent chance because it will be run in the daylight, on surface roads at legal speeds. You can save money and get a leg up by contacting Ellen early. For $8 she will send you the rally rule book and pre-register you. Her address is 424 2nd St. NW, Puyallup, WA 98371.

—Ray Kirkland

Club Banquet

The annual banquet plans have been finalized. The date is Saturday, January 25, 1997. The location is the Spirit of Puget Sound dinner cruise. The ship will be open for boarding at 6:15 pm. The silent auction will begin at 6:30 and run until 7:30 pm. The ship will cruise from Pier 70 on Alaskan Way out into Elliot Bay from 7:00 until 10:00 pm. After the silent auction, we will have a verbal auction and dinner. The dinner will consist of Caesar salad, followed by a buffet of:

Hand-Carved Top Round of Beef
Braised Northwest Salmon with Sour Cream Dill Sauce
Sunset Chicken Saute
Chef's Pasta Selection
Seasonal Vegetables
Roasted Rosemary Potatoes
Freshly Baked Rolls
Choice of Dessert & Coffee

SPIRIT OF PUGET SOUND SM
HARBOR CRUISES

The food is very good, and each table will be escorted through the buffet by a staff member. Then when each table has been served, any one may go back up to the buffet for an item they might have missed the first time. When dessert is finished there will be a slide show highlighting the Monterey Historics. When the lights come back up, the band will play the remainder of the evening for our dancing and listening pleasure. My wife, Patrice, and I cruised on the Spirit of Puget Sound just recently and had a wonderful evening. The boat is large enough, so you don't feel the motion of the waves, and the view of Seattle is fantastic.

The club has decided to offer a discount to members who make their reservation early. If you reserve before December 31, 1996, the cost is $35 per person. After December 31, the cost is $40 per person. To reserve a spot, please send a check for the full amount to Hugh Golden, 23610 51st Avenue South, Kent, WA 98032. Any questions can either be included with your check, or feel free to call me at 859-5947.

There is a free public parking lot at the intersection of Boren and Alaskan Way, approximately 100 yards from where the ship boards. You can park on Pier 70, outside right next to the ship, or inside for $6.

I am trying to focus on expanding the size and diversity of goods and services that we will auction off this year. Please contact me if you have either an item or service you would like to donate to be auctioned. I will be donating a gift certificate to my restaurant, Gambardella's Pasta Bella — I put up so I don't have to shut up.

— Hugh Golden

Stalls

By Thomas B. Nast

Fitzmotor

You get what you pay for, or a little bit less.

BMW is trying to rewrite this rule by partnering on an engine plant in South America with Chrysler. How can a child of this marriage be anything but a bastard? In deference to the Rover adventure, we will call the proposed powerplant "Fitzmotor."

Let us briefly turn to the parents. Chrysler is best known for its wide variety of 2.2 liter four-pots. You could buy these carburetted, injected, turbocharged or race-ready (Remember the GLH? Remember the oil pressure problems the lack of windage trays caused in it?). Problem is, they were awful, and so were the Omnis and K-car chassis they powered. That's why Chrysler is trying to sell V-6's today, along side the infamous 2.2.

I don't know if they were awful because Chrysler can't design an engine, or because Chrysler can't build an engine. Based on an almost-new Neon I rented last summer in Torrance, Chrysler can't do either. The build quality of this car cannot be criticized, because there wasn't any. Windows could barely be moved, everything rattled, bits were already falling off, fit was unfinished and fuel consumption was considerable (circa 22 mpg) for such a small car. (Rented, if you can believe it, as an "intermediate." A "compact" comes with helmet, knee pads and a choice of in-line or tandem rollers.) The Neon is the first car Chrysler designed entirely by computer; I would suggest Chrysler retire its Apple II's and order up some new drafting tables.

BMW, bless it, has been having a little trouble of its own in the engine department. Its 1.8 liter engines have been routinely blowing a water gasket (the infamous "profile gasket") at medium mileages. The repair runs about $1200, and BMW refuses to warranty this despite it being an obvious design defect (can you hear a class-action suit rumbling in the distance?). The 4.0 liter V-8's have heard this line before: remember the recall to walnut-shell blast intake valves and require Techron, due to crud build-up caused by fuel incompatibilities? The notion of designing an engine that can't burn available fuel strikes me as a bit odd, and an inability to learn from past mistakes even odder.) At least the V-8 warranties are being handled more honorably than claims regarding the 1.8 liter engine.

Then there are the spalled camshafts and broken head bolts in the small sixes, intake gasket issues on the 4-cylinder M3's, the general failure of the V-12 line, which few either choose or can afford to buy or maintain. This list could go on and on, entailing such nadirs as cracking 530i heads, but perhaps that is ancient history. At least the water pumps are improved. The point is that, as much fun as they are to drive, BMW engines could do with development, improvement and long-term testing; their engines are far from bullet-proof. They suffer from too much revolution and not enough evolution. These chinks in BMW's armor are not going to be caulked by Chrysler.

Chrysler and BMW have looked at each other across the ballroom floor but have not, to my recollection, danced before. BMW's second biggest cash drain right now must be the jet engine it is developing with Rolls Royce (the largest drain, probably more of a canal, has to be Rover). The launch customer for this is Gulfstream, which was a Chrysler division until spun off not too long ago.

And both are no strangers to international ventures. Chrysler was the proud proprietor of Simca, the Rootes group and the ever-popular Talbot until it had to divest them about when the U.S. government bailed out the then-bankrupt company. Quite a bit of its production is currently in Mexico, where build quality is as good as the supervision and, apparently, the factories are unsupervised. BMW has had ventures hither and yon, such as South Africa and England, but the Spartanburg plant is by far their largest foreign venture. At least the factory there is supervised.

(And why is there no American delivery program for Europeans buying the Z3? They could fly into Miami, where they are issued a bullet-proof vest before taking the bus to Spartanburg, stopping for a pecan pie along the way. Alabama could invent and patent the tourist license plate, the revenues from which would allow the repeal of its income tax. After delivery, the tourists will be detained, videotaped and searched by the local sheriff, a popular Spartanburg tradition. The Euros could then be pointed toward Disney World, to further explore American culture and constitutional liberty. But I digress.)

Just where is Fitzmotor going to be used? Chrysler presently builds Cherokees in Argentina, so presumably the 1.4 liter goes into it, and the 1.6 liter goes into the Grand Cherokee. Just kidding. Maybe they'll open a Neon line down there; if the South Americans like that, we can ship them our eight-tracks, too.

BMW is taking 200,000 Fitzmotors, half the proposed production, but it builds no cars in South America, and its present chassis are inappropriate for 1.4 liter engines. Hell, that's only 200cc larger than its coming crop of motorcycle engines. Is BMW going to build a plant in Brazil or Argentina to produce a Rover Samurai? My analysis is that BMW will build a Mini Cooper sort of car, front wheel drive, under the MG or Cooper nameplate, in Brazil or Argentina. It will at once be sporty and utilitarian (read, "small but space-efficient and corners like stink"). Don't be surprised to see DeTomaso involved. There will be no near-term plans to export these cars or engines to Europe or North America by BMW (though there's no telling what DeTomaso might try).

Americans demand a very high standard be met in their cars, in both performance and reliability. The wreckage of those that haven't made the grade litter our landscape, from Alfas to Zimmers. I can recall only one car imported in quantity from South America, the VW Fox (from Brazil). There is a reason why VW no longer imports the Fox. BMW will have learned that lesson. Ah, but has Chrysler?

RADAR Detection & Avoidance

by Clyde Romero

To explain how a RADAR detector works, you have to know how RADAR works. Speed RADAR consists of a low-power, high frequency transmitter and a receiving unit with a built-in computer. A directional antenna transmits a beam of microwave energy down a roadway. When that beam of energy strikes an object, such as a rock or tree, the echo bounces back at the same frequency (which is more than 10 billion cycles per second). If the object is moving, the echo will bounce back at a slightly different frequency. If the automobile or truck is moving towards the transmitter, as is usually the case, the frequency echo will be higher than the one that went out, about 31 cycles per second for each mile per hour of speed. A sensitive receiver picks up this frequency change, and a computer translates it into miles per hour of speed. That transmitter operates at a very low power, and its range is limited by the size of the moving object. For example, the echo from a compact car can't be picked up by the receiver until it is within one-third of a mile or less from the unit. On the other hand, a large tractor-trailer can produce an echo strong enough to be recorded at three-quarters of a mile away. The microwave beam continues out in an ever-widening path until it goes off the horizon.

A RADAR detector is nothing more than a radio tuned to the frequency used by police RADAR. Most detectors have sensitivity of 1/100,000,000th watt, or about the strength of the RADAR beam at three miles. When a RADAR detectors picks up the fringe signal from the RADAR beam, a warning tone is sounded and a light usually comes on. The detector alerts you as long as there is a RADAR signal within the range of the detector.

Basic Principles of RADAR Speed Measurement

1. Fundamental Concept

The word "RADAR" is an acronym. It is an abbreviation of the phrase RAdio Detection And Ranging. This acronym implies that all RADARs have the capability of providing information that a target is present (detection) and the range to target. However, police RADAR differs. It provides you with a speed reading on a detected target, not the range to that target. The acronym that included "range" is correct for about 90% of the RADARs in use today. The police RADAR is one type of small family of RADARs that provide no range information. Even though there are many variations and different features between types and families of RADARs, the underlying principles remain the same.

A. Radio-frequency energy is generated by a transmitter, the antenna forms the energy into a beam and the energy is propagated into space. When the energy (or signal) strikes an object, a small amount is reflected back to the antenna. From the antenna, it is sent to the receiver where - if the signal is strong enough - it is recognized or "detected."

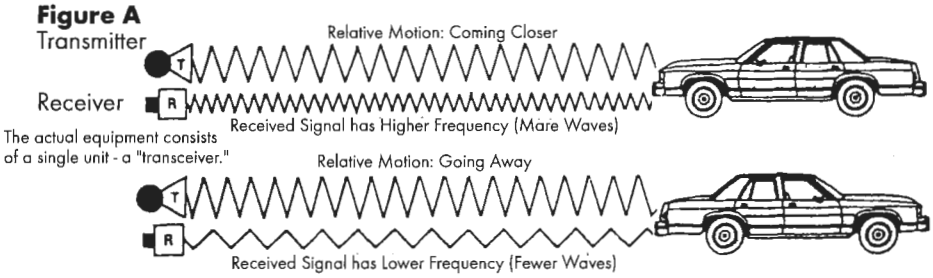
B. Radio energy always travels at the speed of light, 186,000 miles per second. This makes the radio energy signal a constant and can be used as the base figure in all computations relative to speed. The frequency and wave length of the signal may vary, however, the speed at which travels stays the same.

C. If the relative motion is taking the object and the RADAR farther apart, the reflected signal will have a lower frequency than the transmitted frequency.

D. The speed of the relative motion determines exactly how much higher or lower the reflected signal's frequency will be.

The key point to the Doppler Principle is that the frequency change only happens when there is relative motion between the RADAR and the solid object. If the RADAR and the object are both standing absolutely still, then there is no relative motion and the received signal has the same frequency as the transmitted signal.

When we apply the Doppler Principle, all that we can do is to compare the transmitted and reflected frequencies and determine the speed of the relative motion. We cannot tell whether the object is moving or the RADAR is moving or both. All we can tell is how fast they are moving relative to one another. The RADAR instrument cannot even determine whether the object and it, itself, are getting closer together or going farther apart. All it can tell is how fast the distance between them is changing.



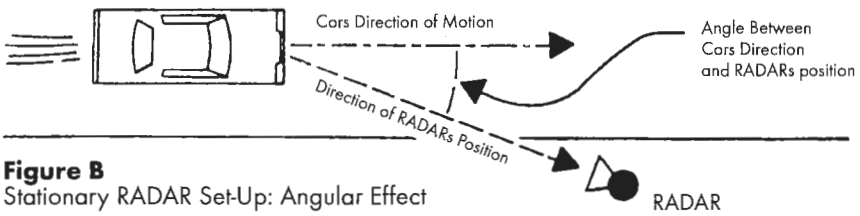


Figure B
Stationary RADAR Set-Up: Angular Effect

2. The Doppler Principle

We can express the Doppler Principle in RADAR terms as follows:

A. Whenever there is relative motion between a RADAR and a solid object, the frequency of the transmitted signal will be different than the frequency of the reflected signal.

B. If the relative motion bringing the object and the RADAR closer together, the reflected signal will have a higher frequency than the transmitted signal.

3. Angular Effect in RADAR Speed Measurement

When a RADAR unit is stationary, any relative motion must be caused by the solid target itself. Now, it might happen to be the case that the target is moving directly toward or directly away from the

RADAR. If that is the case, then the speed of the relative motion will be exactly equal to the target's true speed. But usually that is not the situation. For obvious safety reasons, RADAR is normally set alongside a roadway, at least a short distance off the traveled portion of the road surface. Whenever that common situation occurs, what is created is an angle effect between the car's direction of motion and the RADAR's position. Figure B illustrates that situation.

It is an established scientific and mathematical fact that when a car's direction makes an angle with the position of a stationary RADAR, the relative speed will be less than the true speed. Since the change in the signal's frequency is based on relative speed, the RADAR speed measurement will be lower that the car's true speed. This is known as the angular effect or cosine effect, which we can state in stationary RADAR terms as follows:

Figure E
True Speed as Affected by Angle of RADAR

	True Speed MPH					
Angle	30	40	50	55	60	70
	Measured Speed					
0°	30	40	50	55	60	70
1°	29.99	39.99	49.99	54.99	59.99	69.99
3°	29.96	39.94	49.93	54.92	59.92	69.90
5°	29.89	39.85	49.81	54.79	59.77	69.73
10°	29.54	39.39	49.24	54.16	59.09	68.94
15°	28.98	38.64	48.30	53.12	57.95	(67.61)
20°	28.19	37.59	46.99	51.68	56.38	65.78
30°	25.98	34.64	43.30	47.63	51.96	60.62
45°	21.21	28.28	35.36	38.89	42.43	49.50
60°	15.00	20.00	25.00	27.50	30.00	35.00

EXAMPLE: If an automobile traveling 70 miles-per-hour moves in a direction that makes an angle of 15° with the RADAR beam, the RADAR speed measurement will be 67.61 miles-per-hour. (See circled entry in the above table.)

not always completely sensitive to all types of moving objects. Also, they are not always selective in measuring the speed of a particular object as opposed to others that may be nearby. This lack of complete sensitivity and selectivity affects how RADAR devices can and should be used.

To understand how problems with target sensitivity and selectivity can occur, we need to understand how the RADAR beam spreads and how it is reflected by the objects it strikes. The RADAR transmitter does not send out energy in all directions. Instead, the transmitter antenna focuses most of the energy into a cone-shaped beam. This RADAR beam is very similar to the beam of light that is sent out by a searchlight. A RADAR beam, if visible, would resemble a cone containing a cigar-shaped or elongated football-shaped core. Most of the energy in the RADAR beam is concentrated in the cigar-shaped central core. A small

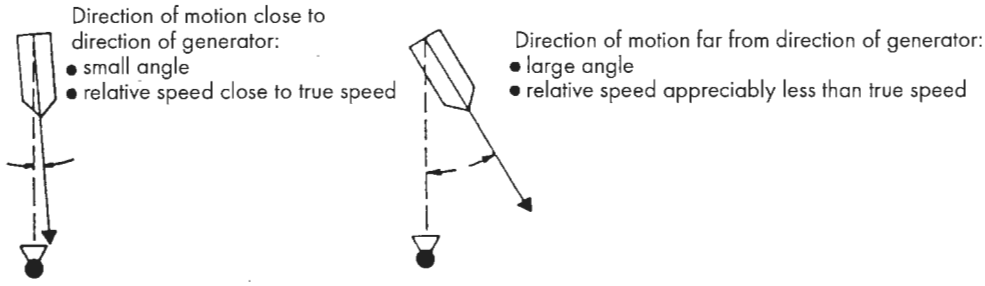


Figure C
Relationship between Angle and Relative Speed

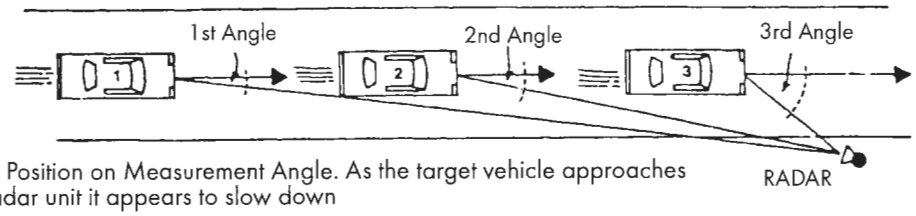


Figure D
Effect of Vehicle's Position on Measurement Angle. As the target vehicle approaches and passes the radar unit it appears to slow down

A stationary RADAR will measure the true speed of an object only when that object is moving directly toward or directly away from the RADAR. Under any other circumstance, the angular effect will cause the stationary RADAR speed measurement to be lower than the object's true speed. The amount of difference between the measured speed and true speed depends upon the angle between the object's motion and the RADAR position; the larger the angle, the lower the measured speed will be. Figures C, D, & E show how much influence the angular effect will have on RADAR speed measurement.

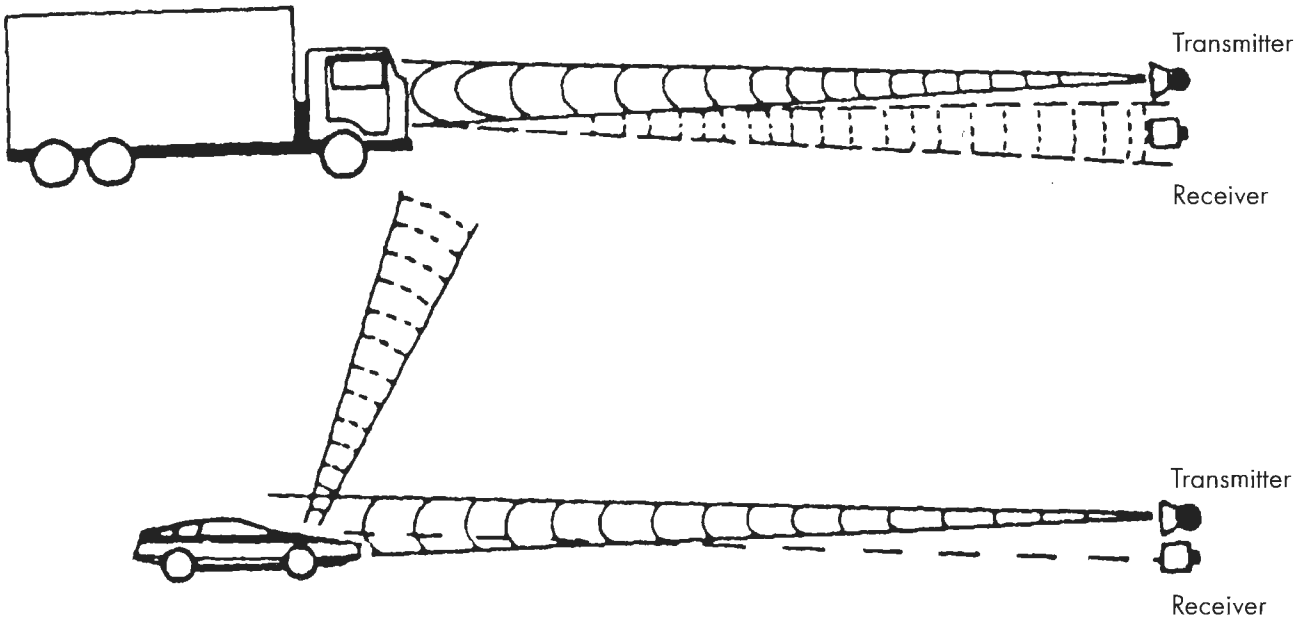
4. RADAR Target Selectivity and Sensitivity

In all of our discussions thus far, we have implicitly assumed that a RADAR device always will detect the reflected signal from any moving object it points toward. That is not quite true. Depending on the size, shape, speed, and exact location of the object, its reflected signal may not be "seen" by the RADAR unit. In other cases, when there are additional moving objects nearby, the RADAR unit might "see" the signal that is reflected from one of these additional objects instead of the wave reflected from the object with which we are most concerned. Therefore, RADAR devices are

portion of the energy escapes outside the main beam into what is known as the side lobes. These side lobes are caused by minor imperfections in the RADAR antenna. They usually are insignificant in power. Within the central core of the beam, the concentration of energy, or beam strength, drops off the farther we go from the transmitter. If an object is far from the transmitter, it will be struck with very little energy and relatively little energy will be reflected back towards the RADAR unit. If an object is close to the transmitter, and directly in the path of the maximum beam strength, it will receive and reflect back more energy.

One factor that has very little effect on

Figure G
Effect of Vehicle Shape on Strength of Received Signal



(Note: This drawing shows the transmitter and receiver functions separately only to simplify the illustration.)

target selectivity is the RADAR aim. It might seem logical to think that if we use very careful aim, we can put the RADAR beam right on the particular vehicle that we are interested in and keep the beam off any other vehicles that happen to be in the area. The problem is that a RADAR beam is fairly wide. The narrowest beam RADAR currently available creates a beam that expands at an 11 degree angle while other units have beams as large as 20 degrees. An 11 degree beam will be more than 38 feet wide at a point 200 feet from the transmitter. It will be 57 feet wide at a distance of 300 feet away. Obviously, by the time the beam extends just a few hundred feet away, it is impossible to keep all of the beam focused within a single lane of traffic, let alone on a single vehicle.

Not all objects reflect RADAR energy equally well. Metal objects reflect RADAR beams quite well, as do objects made of concrete and stone. Glass and plastic objects allow most of the beam to pass right through. Some other objects, such as leaves and tall grass absorb a good deal of the RADAR energy that strikes them, thus cutting down on the amount of energy they reflect. The net result is that the amount of energy reflected back from the object depends on what the object is. It also depends on how big the object is. A large mass of metal will be reflect more energy than will a smaller mass of metal.

What this basically means is that a RADAR unit will be more sensitive to certain objects than to others, depending upon where the objects are, what it has to receive at least some minimum amount of energy from the object. If the object is too small or too far away, or made of transparent material, the RADAR might not be sensitive enough to "see" it. For example, a motorcycle is relatively small, and contains relatively little metal in comparison to other vehicles. Therefore, motorcycles reflect little energy back towards the RADAR. Very often, a RADAR simply will not measure a motorcycle's speed until it is quite close to the transmitter. On the other hand, a tractor-trailer truck contains a great deal of metal mass and reflects a relatively large amount of energy. Therefore, a RADAR might be able to measure a truck's speed even when the truck is much farther away from the transmitter.

The shape of a vehicle or other object will also effect how much energy it reflects back to the RADAR receiver. A RADAR beam will bounce off a surface at the same angle at which it strikes the surface. If the surface is perpendicular to the beam, most of the reflected energy will head back towards the RADAR. But if the surface is slanted, like most newer autos, most of the reflected energy will head off into space and not be picked up by the RADAR receiver. Figure G. illustrates the phenomenon. There we see two objects, a truck, and a sports car, both being hit by transmitted RADAR beams. The truck has a large, verticle surface that directs the reflected energy right back towards the RADAR. The sports car has a streamlined, slanted surface that allows much of the RADAR beam to ricochet up, away from the receiver. Thus, a streamlined vehicle may not be "seen" by a RADAR as easily as a box-shaped vehicle. The problems we have been discussing deals with factors that affect the detection range of a given size target.

Figure H. illustrates this situation. In the illustration, three different vehicles are traveling in adjacent lanes towards a patrol car with RADAR. The closest vehicle, a motorcycle, is within range of the maximum beam strength. However, because the motorcycle is small, only a small amount of energy is striking it and reflected back. The next vehicle, a standard passenger car, is in the medium strength beam range. Less energy per square inch is striking the car than is striking the motorcycle, but the car has many more square inches of metal surface with which sends back more energy to the RADAR unit. Therefore,

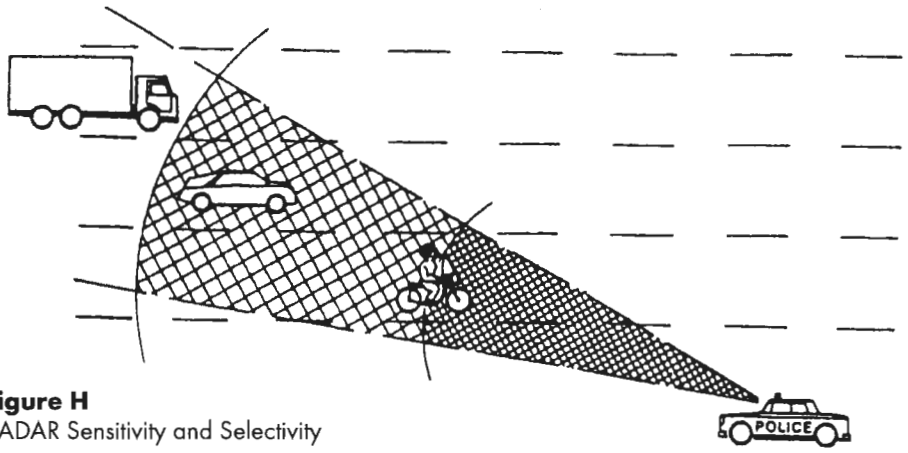


Figure H
RADAR Sensitivity and Selectivity

the car might actually send back a stronger signal than the motorcycle. The third vehicle, a truck, is even farther away, in the minimum beam strength region, but the truck is much larger and therefore more reflective than either the car or the motorcycle. Again, the signal reflected back from the truck might be stronger than the other two reflected signals.

In the situation shown in Figure H., the RADAR unit might obtain a speed measurement, but we could not be certain whether it was the truck, the car, or the motorcycle speed we were measuring, and in an instant later, after these vehicles had moved somewhat closer, the relative strength of each of their signals will change and we might obtain a different speed measurement as the RADAR switches from the truck to the car, or from the car to the motorcycle, etc. The RADAR would not be able to select a particular vehicle to measure, it would simply respond to the strongest reflected signal at any instant of time. Some RADAR units are designed so that they will not show any speed measurement if they happen to be receiving two different signals having nearly the same strength; other units will always show the speed of the strongest received signal.

5. Other common Factors and How They Influence RADAR.

Interference occurs more commonly because of man-made objects. Moving objects, such as rotation signals, alongside the road will reflect the RADAR beam and, because they are moving, cause Doppler shifts that are interpreted by the RADAR unit as moving targets. The rotating blades of fans, such as those found on building roofs and air conditioning units also can cause false targeting. Indeed, the patrol vehicle's own defroster fan sometimes can create interference when the RADAR is transmitted through the front windshield. Also, many man-made objects give off RADAR frequency waves that can be "seen" by the RADAR as apparent vehicles. Fluorescent lamps, neon signs, and similar devices are examples of objects that can create these false signals.

Interference was the cause of some of the more bizarre and highly publicized inaccuracies that surfaced in Dade County, FL and other places where RADAR has been challenged. The infamous "85 mph Tree" is a case in point: the news has been well circulated that a RADAR was pointed at a banana tree, which obviously was not moving, and that a reading of approximately 85 mph appeared on the display window. Not so widely reported was the fact that a CB radio transmitter located in the same vehicle as the RADAR was "keyed" on at the instant and the reporter whistled into the microphone. Some of the radio signal sent out from the CB was picked up by the RADAR and was inaccurately read by the unit as motion and that caused the 85 mph reading. It did not matter that the RADAR happened to be pointed towards a tree, it could have been pointing at the ground, a house, or anything for that matter. The source of the reading was the CB radio, not the tree.

It might occur to you to wonder why a CB radio can interfere with a RADAR unit, and whether this is likely to be a common problem since so many cars are equipped with CB. The fact of the matter is that CB and RADAR operate on very different frequencies. The operating frequency of any of the CB channels is about 27 million waves per seconds (Hertz). The X-band RADAR operates at approximately 10 billion waves per second (10 billion Hertz). Then how can a RADAR possible pick up a CB signal? Under ordinary circumstances, the RADAR will not pick up a CB signal, but when the CB and RADAR are extremely close together (as in the same car), interference can result. The problem is that the RADAR receiver is a broad-band device and if enough energy is present, even at far-removed frequencies, the receiver might sense a signal if the offending object is close and there are not stronger signals from legitimate sources being received.

Another well reported incident from Dade County was the case of the 28 mph house. Here again, interference was the culprit. The RADAR was aimed at a house through a car's windshield. The car's front windshield defroster unit was turned on at the time and what the RADAR actually measured was the speed of the defroster's fan blades.

In summation, police RADAR by itself is nothing more than a radio transmitter/receiver that sends out electronic waves that reflect off of various objects and are received back at the receiver of the RADAR unit. However, the electronic signal in the process of being sent and returned can be adversely affected by angles, size, and shape of it's target, the distance it must travel to it's target, and any one of thousands of other man-made objects. We must also be aware the police RADAR is the means to untold millions of dollars of revenue for a multitude of municipalities. So even though it has been proven not to be a fool-proof method of determining speed, it is not going to go away.

Florida, as in other states, has shown that police RADAR is not infallible. RADAR units are only receivers and will read the strongest signal it receives. Because of these forever present variables, the National Highway Safety Administration has recommended that any RADAR operator should have a minimum of 40 hours of training relative to RADAR operation and reading. Unfortunately, most municipalities only receive a minuscule amount of training in comparison to the recommendation of the NTHSA. Most training is provided by the manufacturer of the RADAR unit that is being used by a law enforcement agency and that training is basically about the proper use and operation to the RADAR unit and not about erroneous readings that can be caused by situations previously discussed.

— Reprinted from the Peachtree Pit, BMW CCA, Peachtree Chapter)

Collecting BMW Models

by Leif Anderberg

The circle of BMW model collectors is pretty small and tightly knit, numbering around 200 worldwide. Author Leif Anderberg has one of the largest collections extant, with 3,300 to 3,400 models on display, plus hundreds of kits waiting to be built, drawers full of literature and all sorts of other interesting automobilia.

Since the beginning of time, people have been collecting one thing or another. Me, I collect miniature cars—BMWs only. I also collect other things connected with my favorite make of car: brochures, pamphlets, pins and press kits, as well as any other BMW memorabilia.

It all started when we bought our first BMW automobile, a 2002, back in September of 1969. Immediately, both my wife and I fell in love with the car. It had a roomy back seat for a child, ease of driving and a huge trunk, which all appealed to my wife. It also had plenty of pep, handling and that special BMW feel that made it a favorite of mine. In other words, a perfect car for the young family.

The model that started the collection was an orange Matchbox 3.0CS with a big BMW logo on the hood, which my wife found at the local drug store. That model is still in the collection, of course, but it has since been joined by five other variations—and more than 3,000 other models.

As the collection grew, it needed more room. What started as a display on the dresser soon moved into a gun cabinet from the local unfinished furniture store, with first five—later nine—glass shelves. That cabinet was sufficient as a display case for well over five years. Then, around the middle of the '70s, I subscribed to *Trader's Horn*, and the collection really took off. We purchased about 100 models from a person tired of collecting, and soon needed another display case.

Over the years, more and more cases were added, until there were too many for the TV room. With my wife's permission, the guest room became a BMW museum.

It now contains about 3,300 to 3,400 models, all BMWs, ranging in size from 1/10 scale down to 1/187 scale. They are housed in nine oak cases (soon to be 11), all lit, with wallmounted spotlights illuminating the lower parts of the displays. The larger models are hung on the wall. Flags and banners are fastened to the ceiling, and posters are pasted on the closet doors. Two large filing cabinets house the brochures, pamphlets, BMW club newsletters, press kits and other paper memorabilia, and a large bookcase holds all the BMW books. The collection is constantly growing; about 20 to 25 items, sometimes more, are added every month.

A couple of years or so ago, the proliferation of BMW models had slowed, and most items were toys in various scales depicting the 850 model. However, about a year or so ago, BMW started winning big on race tracks around the world with its M3 and 318i. The German model makers, such as Paul's Model Art/Minichamps, Herpa and Schuco, as well as the French model kit makers, started the current trend of adding 10 to 15 new models per month. It's not hard to spend several hundred dollars a month staying on top of the collecting. (For the serious collector, it is important not to fall behind on the monthly issues. Should you fall behind a month or two, it would be almost cost-prohibitive to catch up—unless, of course, you win the lottery.)

Finding Models

If you have checked the local toy/hobby store for BMW models, I am sure you didn't find many. About the only ones available there would be the plastic kits from Japan or German Revell, a Hot Wheels or Matchbox toy, and maybe a Maisto or two.

For the serious collector, then, mail order is the way to go. Several overseas establishments are more than happy to ship to the United States with the help of your VISA or MasterCard. One of the best suppliers of BMW models is Mini Bimmers in New Jersey, a mail-order model store run by fellow model collector Michael Lenhardt.

There is even a club of sorts dedicated to the collecting of BMW miniatures, headed by Michael Izor. It would be very hard to find a more dedicated and knowledgeable BMW model fanatic. As far as I know, Michael's collection is about the same size as mine, and probably growing at least as fast. Michael publishes a newsletter called *Baby Bimmer News*, which is considered the bible of BMW collecting. It includes announcements of new models, new sources and short reviews of what is newly released on the market. It would be unthinkable for the serious BMW model collector not to subscribe to BBN.

Another great source for high-quality BMW models at a reasonable price is your local BMW dealer. BMW regularly issues models made especially for dealerships, including several Herpa and Minichamp models made for BMW only, and in special color combinations and variations only available from your local BMW dealer.

Size Does Matter

Of all the currently available models, the 1/87- and 1/43-scale pieces are probably the most common for collectors. Most of the 1/43-scale cars are made in China currently, even though they are issued by German model makers (not that this should be a deterrent in any way—on the contrary, these models are extremely well-made and very accurate).

As for the smaller 1/87-scale, or HO, cars, most still are made in Germany, and those by Herpa truly stand out. Herpa's attention to detail is legendary, and its models are remarkably accurate and precise. Other German HO-scale makers include Wiking, Brekina, IMU and Praline.

The only problem with Herpa, as I see it, is the sheer proliferation of models and variations thereof. Many of the Herpa models are issued only in Germany, others only in Austria and some only in Italy. To stay on top of all the Herpas, it is necessary to develop penpals overseas.

There is even a Danish company selling through a German supplier (Katjas Truck Design) making trans, or conversion kits in the hundreds for Herpa base cars. A trans kit contains certain parts, such as wheels, rollcages and decals in certain liveries, which transform a base car into a specific race car. To accurately put these kits together, one needs to develop a very close relationship with tweezers and a magnifying glass.

Continued on page 12

Here's a bunch of 6-series cars.

A group of 850s. The largest is 1/18 scale, the smallest are 1/786.

A flock of Isettas. Some of the specialty ones (the Jurassic Park model, the Coca-Cola car and the pickup) were made by CG Productions in Littleton, Colorado, which also made a neat Isetta sled for Santa - pulled by reindeer, of course. The specialty cars all started life as Gamma Isettas.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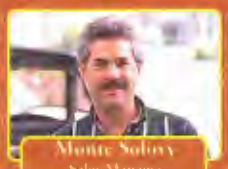

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95 993 C4 Coupe...	Black/Black....	Fikse Wheels
93 968 Cabriolet ...	Midnight Blue.....	12k Miles
92 C2 Cabriolet	Diamond Blue	27k Miles
90 C-4 Cabriolet....	Black Slantnose ...	13k Miles
88 911 Cabriolet ...	Dk. Red/Linen	45k Miles
88 928 S4 Coupe ...	Guards Red/Blk...	44k Miles
85 911 Cabriolet ...	Mdnt Blue/Slant...	45k Miles
53 550 Spyder.....	Beck Replica.....	6900km

"30 OTHER PORSCHES IN STOCK"

JAGUAR

94 XJ-12 Sedan	Flamenco Red	8k Miles
94 XJ-12 Sedan	Oyster/Magnolia..	21k Miles
94 Vanden Plas	Black/Cream	19k Miles
94 XJS Roadster	Flamenco Red.....	21k Miles
92 XJ6 Sovereign...	Diam. Blue/Navy .	36k Miles
91 XJS Roadster	British R. Green...	38k Miles
87 XJ6 Sedan	Ice Blue/Bisquit...	58k Miles
85 XJ6 Sedan	White/Tan.....	29k Miles
68 XKE Roadster...	Red/Black	Restored

"35 OTHER JAGUARS IN STOCK"

CORVETTE

95 Roadster.....	Green/Charcoal	2k Miles
94 Roadster.....	Red /Black.....	37k Miles
88 35th Aniv.....	Callaway Turbo.....	4k Miles
67 Coupe	White/Black.....	34k Miles
57 Roadster.....	Orange/Beige.....	"Fuelie"
53 Roadster.....	Red/327/Replica ...	4k Miles

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51 Chevy Hot Rod PU.	High Quality....	New Arrival
92 Acura NSX	Red/Black.....	Lo Miles
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91 300 E Sedan	Black/Gray	64k Miles
90 500 SL Rdstr	Black/Black	55k Miles
88 560 SL Rdstr	Red/Palomino	65k Miles
86 560 SL Rdstr	Blue/Gray	33k Miles
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94 325i Conv	Black/Black	41k Miles
92 750il Sedan	Green/Tan	44k Miles
92 735il Sedan	White/Gray	58k Miles
91 M5 Sedan	White/ 5 Speed	1 Owner
91 850i Coupe	Black/Black	54k Miles
90 325i Conv	Ice Blue/Navy	43k Miles
87 535is Sedan	Red/Black	5 Speed

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FERRARI

94 348 Spyder	Diamond Blue	10k Miles
92 348 TS	Fly Yellow	3k Miles
87 328 GTS	Red/Black	20k Miles
81 400 i Conv	Gray/Gray	18k Miles
73 246 GT Dino	Orange/Black	Restored
64 330 America	Red/Tan	31k Miles

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75 Maserati	Khamsin	12k Miles
74 Jensen Rdster	Silver/Blue	Restored
70 Monteverdi	Red/Black	1 of 20
69 Shelby GT500	Green/Black	"1 Owner"
68 Jaguar XKE	Red/Roadster	Restored
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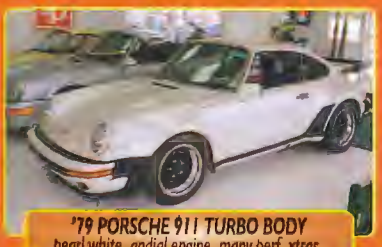

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Notice the various paint schemes on these M1s. Leif collects every version, even if it's just another number on the side.

Here's a flock of race cars, mostly 6-series.

BMW race team transporters also are a part of the Anderberg collection.

Displaying Them

The really good reason for collecting the HO-scale models is that they are very easy to display, since they take very little space. One shelf in my display cabinets can hold 50 or more cars, while (not surprisingly) the cars in 1/43 scale use more than twice as much space.

Recently, 1/18 scale has become popular. Several manufacturers, such as Maisto and Revell, have issued very well-detailed versions of modern models, such as the current 3-series convertible and the 850CSi, as well as the older 328, Isetta and 502 convertible. Although these 12- to 15- inch-long cars are hard to display in a cabinet, they can be hung on the wall.

I hang the cars diagonally, with the nose down at a 45-degree angle. The easiest way to hang a car without damaging it is to use a large-head nail, hammered into the wall except for a quarter of an inch or os. This will hold the upper rear wheel/tire. There is usually enough room between the body of the car and the edge of the tire/wheel to grab the nail head. A second nail with no head is hammered into the wall at the lower front wheel to hold the car in place. Believe it or not, even during the last couple of Southern California earthquakes, my cars stayed on the wall.

Caveat Collector

If someone is seriously contemplating getting into collecting BMW models, be forewarned: It becomes an obsession very easily. I started out collecting just a certain model, then just one version of each model, then just one or two scales, then only new models. However, it quickly escalated to encompass every model, every color, every version of every BMW.

Some of My Favorite Sources for BMW Models:

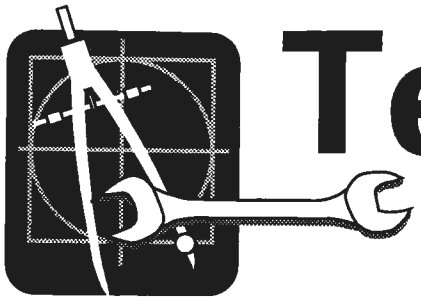
Baby Bimmer News
36 Winnemay St.
Natick, MA 01760

BMP Design
3208 Park Center Dr.
Tyler, TX 75701

BMW
For the dealer nearest you, call
800-334-4BMW

Grand Prix Models
3 Noke Lane Business Ctr.
St. Albans, Herts,
AL2 3NY, England

Mini Bimmers
10 Hibernia Rd.
Rockaway, NJ 07866



Technik

edited by Greg Mierz

This month's column was written by John Lawerence, a Houston BMW CCA member and taken from their Web page on the Internet. It concerns the problem some people have had with missed shifts on their E36 M3s.

Each and every rotating mechanical device on the face of the earth has a maximum rpm at which it can operate safely. From lawnmowers to Lear jets, engines have a safe limit, with a margin to boot, commonly known as redline. It's clearly marked, right there on your tach, for all to see. Older cars with distributor-and-points type ignition would make spark at any engine speed, no matter if that engine speed was way over that engine's efficient redline. Our more modern engine management systems have the capabilities to omit spark and fuel at predetermined rpm. This is commonly known as a rev limiter. Rev limiters keep you from blowing the engine, right? Let's clear up a misconception: Rev limiters keep you from blowing the engine up with the throttle. The throttle could be held wide open with the gearbox in neutral and, in theory, the engine would not suffer. Don't try this at home. So, what exactly is over-revving and how does it occur? Let's start with some definition of terminology.

Overrev is to greatly exceed the given mechanical limits of rotating equipment. *Reduction Gearbox*: the standard transmission is a reduction gearbox, converting engine speed down to a lower speed. Automatics do the same thing but are not in discussion here. *Transmission output* drives the driveshaft, sending power to the differential, which is also a reduction gearbox. Thus, the engine has great leverage over the rear wheels. *Downshift* :to shift the gearbox from fifth gear, to fourth, to third, etc. Motorcycles have a sequential gearbox, meaning the shifts only precede from one gear to the next. Automobiles have shifters that can select any gear, any time. Can you see a window for mistakes here? Can you say miss a shift;?

Three times this year alone, I have had M3s fall into my hands . One came in running on five cylinders, the other two had been overreved so bad, engine replacement was required. All three had bent exhaust valves, with the fatal two having bent intake valves as well. The piston crowns had round imprints and crescent-shaped hammer marks from the valve heads. In both cases, the final blow was identical: each engine had valves bent over so far, a spark plug was broken and a piece of the porcelain center cone had lodged itself beside the piston and scarred the cylinder wall too deep to rebore. From one moment to the next, from a healthy engine to expensive junk.

How can this happen so often? What caused this to begin with? There is only one way possible and that is to miss a downshift and accidentally stick the gearbox into too low of a gear at too high a roadspeed. In most cases, I believe this to mean missing a fifth-to-fourth downshift and making a fifth-to-second downshift. Ouch!! When this happens, the events that follow are swift and sure. For the sake of demonstration, let's say we are motoring along at a nice, safe 100mph. All is well and we are in top gear, with a corner in sight. We slow down and attempt to downshift to fourth gear. The shift is fumbled, second gear is selected by mistake, the clutch is re-engaged. Suddenly, the leverage the engine had over the rear wheels is history. Those big, wide rear tires have quite a bite on the road and do not slide. The transmission becomes an induction gearbox as the car and rear wheels are now driving the engine. The hapless engine is now being spun far faster than it's mechanical limit.

What does mechanical limit; mean in real life terms? Let's step inside the engine and see what happens. An internal combustion engine of such high specific output is a well choreographed procession of parts narrowly missing each other and vulnerable pieces. Let's keep our eye on one cylinder to simplify things. When the valve is closed, there is a small amount of clearance between the cam lobe and the lifter. As the camshaft turns at half engine speed, the cam lobe touches the lifter, raising the valve off its seat to full lift. The cam continues to turn and the valve springs keep the lifter in contact with the backside of the cam lobe. The valve is well. In our situation, however, the engine is suddenly spun so fast, the cam actually throws the valve open and the valve springs cannot overcome the inertia to keep the lifter in contact with the backside of the cam lobe. Known as valve float, the valve is open longer than the cam's intended duration. This also means that the exhaust valve is still extended into the combustion chamber as the piston reaches Top Dead Center (TDC). The piston slams into the valve head, bending it over like a nail. At these high rpms, the piston and valves crash into each other hundreds of times per second. By now, the driver has realized his mistake, kicked in the clutch and, as they say, it's all over but the shouting. The loudest sound to be heard now us the sound of his wallet screaming.

Can this horrible outcome be avoided? Yes, with careful and deliberate placement of the shifter. Does this happen only to M3s? No. Any car with a standard gearbox is a potential victim. Know the top speed of each gear and learn it well. Must shifts be in sequence? No. Professional race drivers have different driving styles including downshifting. Two prime examples come to mind: Check out old Indy in-car camera shots of Nigel Mansell. Nigel downshifts so fast in sequence, the engine speed is never out of the powerband or far from the redline. Michael Andretti, on the other hand, slows for each corner in whatever gear he is in, then shifts to the proper gear at the apex of the corner and accelerates out at full-tilt-boogie. Either method is correct when applied correctly. Novice drivers new to sport driving, or an old pro, anyone can miss a shift in the heat of the moment. Presence of mind is the key here. Learn your limits and the limits of the car and mark it in your mind as clearly as that redline on your tach.

(James Williams is a service technician at Advantage BMW in Houston. James also serves as Houston BMW CCA's Technical Advisor, helping Houston Club members whenever they have problems or question about their cars. Thanks to the Houston BMW CCA chapter and James Williams for this article.)

Greg Mierz
GregM2002@aol.com

New Members

Member	Referred By	BMWs
Roger & Wendy White	BMW Seattle	'96 Z3
David Quick	Internet	'96 328is
Evelyn & Jim	Strictly BMW	'92 325i
Gustavo Aramburu	BMW Seattle	'90 525ia
Robert Bergquist	Dan Alvis	'96 328i
Linda Vomaske	Zundfolge	'96 Z3
Norm & Pat Austin	BMW Seattle	'96 Z3
James & Terrie Clifford	Request	
Karen & David James, Jr.	Request	
Neal & Nancy McLemore	BMW Seattle	'94 540i
George & Marilyn Young	BMW Seattle	'88 528e
		'89 528e
		'90 733i
Cordell Bahn	Driving School	
Ken Ong	Driving School	'96 328is
Kip & Diane Bankart	Driving School	'72 2002tii
		'81 528i
Jacqueline Tower	BMW Seattle	'97
Donald & Marie Mihovich	Comp Card	'93 325i
Hugh & Robin Poling	Internet	No BMW yet!
Manolo Strange		'76 2002
Curtis Dyckman	Gor Markovcic	'91 M5

M formation ...from the editors

Z5 Gets Closer

Z5 prototypes are undergoing testing at the Nurburgring. The Z5 is scheduled to make its debut early next year at the Geneva Auto Show. The Z5 is based on the Z3 roadster, but is a closed car with an extended roof and a hatchback. The rear luggage area can be made quite large by folding down the token rear seats. The Z5 will be produced exclusively at Spartanburg. Planned annual production is about 25,000 to 30,000 per year. Insiders say that there will be two versions of the Z5 for Europe when sales begin in October 1997. The early version will get the familiar 2.8-liter six with 193 hp. The other version will have the Euro M3 motor with 321 hp and will be the basis of a BMW Motorsport version for racing. BMW may also build a lower priced version with the 1.9-liter four with 138 hp. BMW sees the Z5 as a cut-price alternative to the Porsche 911. The goal is to make the Z5 competitive with the 911 from a dynamic standpoint. It seems to be working: the Z5 laps the Nurburgring ten seconds faster than a 911. The Z5's rear suspension will be the same as on the Z3. Z5s for the North American market will have softer springs and shocks than European cars. The Z5 with 2.8-liter motor is projected to sell in Germany for the equivalent of $41,000. (*AutoWeek*)

Appealing

The APEAL Study is the only J.D. Power and Associates' survey that measures owners' feelings about their vehicles without asking about defects. The Study asks the owners about styling, engine and transmission, comfort and convenience, ride and handling, seats, HVAC, cockpit and instrument panel, and sound system. The second annual survey rated the BMW 328i as the best in the Entry Luxury class. (*AutoWeek*)

Motorsport

Ray Bellm and James Weaver clinched the title in the International GT Championship (BPR) by winning the second to the last race at Nogaro, France. Driving a McLaren F1 GTR, powered by BMW, Bellm/Weaver succeded Thomas Bscher and John Nielson who had won the title last year in a McLaren.

In the Italian Super Touring Car Championship, Johnny Cecotto won the last two races at Vallenlunga, Italy in front of a crowd of 35,000. As a result, BMW won the manufacturers' championship. The drivers' title went to Audi driver Rinaldo Capello with Cecotto second and BMW works driver Emanuele Naspetti third.

1997 Model Line-up

A four door model of the 3.2-liter M3 that was introduced in 1996, will arrive in '97, and it will have an automatic transmission as an option. The Z3 roadster will be available with the 2.8-liter six beginning in December. A four-speed automatic is optional on the Z3 2.8. The 318ti hatchback is available in the California model with a huge fabric sunroof that opens electrically. The 5-series now gets standard side airbags. An optional GPS-based navigation system will available for the 5 and 7-series. The 8-series coupes continue unchanged. (*Car & Driver*)

The 8-series is unchanged for '97.

Sound Sense

When driving from a dry to a wet surface both visual and aural cues alert a driver to the change in coefficient of friction. Now Porsche and BMW are working together on an acoustic system to assess the amount of water on the road and its likely effect on braking and roadholding. Optical measurements of the depth of water on a road surface have proved too costly to be viable, so Porsche engineers examined the potential of using acoustic measuring. Fitted to a BMW test car, it measures the level of "solid borne" sound in the interior cavity of the wheel arch. Says BMW: "This level of sound varies in direct relationship to the car's speed, its engine revolutions, and the amount of water on the road—or, more precisely, the amount of water spinning off the tires inside the wheelarch."

Measurements have been taken between 2.5 and 5 kHz, a frequency range which covers all relevant sound, particularly where water is a medium, says BMW. The level of sound is recorded by a microphone, then filtered, converted to a direct current signal proportional to the water level and compared with reference values with the utmost precision. Data on the water level, the car's speed, and driving dynamics, allow determination of the coefficient of friction even on wet roads, and thus the point at which roadholding will be endangered. The final stage of the system is either an automatic reduction in speed through an adaptive cruise control system, or a warning to the driver to slow down and avoid aquaplaning. The aural facility would be part of a comprehensive system embracing automatic stability control (ASC) and ABS. (*Automotive Engineering*)

Princess Di

Princess Diana no longer drives a BMW 3-series. But don't despair - she's gone upmarket. She ditched Chuck and bought a 5-series.

Chris Bangle

American Chris Bangle is head of BMW design in Munich. His father was a forest ranger and one of Bangle's first jobs was wearing a Smokey the Bear hat and putting out forest fires. He attended the Art Center College of Design in Pasadena, where he was a star.

Bangle is married to a European, Catherine, an elegant, distinguished Swiss. She speaks several languages and very obviously has the cosmopolitan outlook that allows her to live happily anywhere. Which is a good thing, as in their married life the Bangles have been in Russelsheim, where he was at Opel from 1981 to 1985, and then in Turin, where son Derek was born in 1987, from 1985 to 1992. By that time Bangle was head of Fiat design. BMW then recruited him. It is not the first time BMW has used foreign designers. Albrecht Goertz might have been a German count, but he had lived outside Germany and been an American citizen for two decades when he designed the 507. BMW also used Giovanni Michelotti as a consultant and had Paul Bracq, a Frenchman, as head of design in the 1970s.

Bangle attended Art Center from 1977 to 1981 and was apparently something of a superstar there. Those who knew him there speak admiringly of his work. He is a good people person, although he is given to a bit more sarcasm in conversation than is usual for a design boss. His company car is a short wheelbase 740i. His wife drives a 3-series cabriolet. He's restoring a 1950 B-series Fiat Topolino and has just acquired a silver 1972 3.0Csi.

Bangle is trilingual, usually using English, but sometimes Italian. He also speaks German, of course. Bangle grew up with three sisters and believes that family attachments are important, especially when living in another culture, so his wife's family is important to him. Bangle went to Opel when he was 24 and he's 39 now. He has lived outside the US most of his adult life and will probably always be a European. *(Automobile)*

Monterey Coverage

For more coverage on the Monterey Weekend '96 featuring BMW, there's a couple of magazines with good coverage in their November issues. The British *BMW Car* has a great color spread in the November issue. There's one photo clearly showing members Nancy and John Martin in their 328. *BMW Car* is carried by a few specialty magazine stores. Or call the American distributor, EWA, at 908-665-7811. The BMW CCA *Roundel* will also be covering Monterey in their November issue. To join BMW CCA call 1-800-878-9292.

South African Expansion

BMW has announced plans for a $200 million expansion of Rosslyn, its South African plant. Some sources say that Rosslyn could become the sole source of right-hand drive BMWs. But, BMW cautions that a continuation of South Africa's recent wave of violent crime could put the investment at risk. (*Car*)

BMW Adds Second Model to Z3 Roadster Line

Woodcliff Lake, NJ, October 7, 1996 . . . BMW of North America, Inc. announced today that it will add a second model to its successful Z3 line of two-seat roadsters — the six-cylinder Z3 2.8. The announcement was made in conjunction with the car's North American debut at the California Designer of the Year and Rising Star Awards program. Using the refined 190-horsepower DOHC 2.8 liter engine which also powers BMW's 3 and 5-series automobiles, the new Z3 2.8 takes the performance of this open-air sports car to new heights. BMW further announced that the base price for the Z3 2.8 would be $35,900.

As is the case with BMW's V-12 and V-8 engines, the 2.8-liter six-cylinder engine in the Z3 features lightweight aluminum engine block construction, the first such application in a BMW six-cylinder engine for the U.S. market.

In addition to the more powerful six-cylinder engine of the Z3 2.8, the running gear has been upgraded to match the performance of the engine. The rear axle has been modified with the track increased from 56.2 to 58.8 inches. A limited slip differential with 25 percent locking action is standard along with BMW's All Season Traction, a sophisticated system for helping the driver maintain control in slippery conditions. The front disc brakes are vented for increased resistance to fade under extreme braking conditions and the suspension is tuned to handle the increased power of the six-cylinder engine.

The Z3 2.8 can be distinguished from its four-cylinder stablemate by a number of exterior differences. Light alloy road wheels in a round-spoke 7 x 16-inch design are fitted with 225/50-16 high performance tires. The rear fenders of the 2.8 are flared out more muscularly than those of the four-cylinder car, giving this roadster a very broad rear profile. The front spoiler is newly created for the six-cylinder car with larger inlets to increase the flow of cooling air.

The level of standard equipment is also appropriately elevated in the six-cylinder roadster. The individual seats are upholstered in genuine leather as are the door panel inserts and an extended leather interior, which also includes the side panels of the center console, the door handles, the door capping, the steering wheel rim, the handbrake boot and the instrument and passenger dash pods is optional. The 2.8 is also set apart by its standard wood trim on the center console and a wood and leather gear shift knob.

BMW of North America's head of sales and marketing operations, Victor H. Doolan noted that "BMW has the most complete range of open-air cars in this price segment, including our 318i and 328i four-seat convertibles, and now two choices in roadsters. With the addition of the Z3 2.8, we believe BMW offers the best performing open-air car in this category." (BMW NA Press Release)

Big 3 Market

The M1 market remains firm, or stagnant, depending on your point of view. *AutoWeek* has an ad for a 1980 BMW M1, orange with black leather, with only 12,000 miles. The asking price is $110,000.

The other two "big-three" collector BMWs, the 328 and 507, also have values that hover around $100,000.

BMW, Chrysler Announce Joint Venture to Produce Four-Cylinder Engines

Paris 10-1-96 - BMW Group and Chrysler Corporation announced today at the Paris Motor Show that they have entered into a memorandum of understanding regarding the design, development and production of an all-new family of four-cylinder engines.

The 1.4 and 1.6-liter engines - derived from a Chrysler design - will power future small cars from Chrysler and Rover Group (a BMW Group subsidiary). They will be built in a new plant to be constructed in South America.

The production of the engine will be undertaken by a joint venture company in which BMW Group and Chrysler Corporation both have an equal interest of 60 percent. A specific location for the plant has yet to be determined.

This $500 million joint venture will result in a plant that is capable of producing up to 400,000 engines per year with the production split evenly between Chrysler Corporation and Rover Group.

Chrysler will take the lead in the plant's processing systems and construction of the new facility, which is expected to be in operation by the end of 1999.

"Latin America will be an important market for products of BMW Group in the future", said Bernd Pischetsrieder, Chairman of BMW AG. "Being present in this market with the production facility therefor follows the Group's strategic principles. With Chrysler Corporation as a partner, not only the joint production was made possible, but also an excellent engine will be available at affordable investment levels to power future Rover products in a very competitive market segment."

"Developing new engine families is a costly business, and partnering in this way makes good economic and business sense," added Chrysler's Chairman Robert J. Eaton. "This kind of venture will even benefit our current operations - in the US and Europe - because it will increase our [illegible] small cars.

Added [illegible] Executive Officer of Rover Group: "The partnership with Chrysler Corporation provides an excellent basis to realize an ambitious small-car product program, as planned."

BMW Group currently has no production operations in South America. For Chrysler, this is the second venture in the region announced in the last 45 days. In August, Chrysler announced that it will build a plant in Brazil to produce compact pickup trucks for distribution throughout Latin America. Chrysler also is nearing completion of an assembly plant in Argentina, to produce Jeep Grand Cherokee and Jeep Cherokee vehicles.

The joint venture brings together two companies with a similar sense of purpose, adds Chrysler's Tom Gale, Executive Vice President - International Operations and Product Design, who led the Chrysler team that put this venture together.

"Both companies focus on the core elements of the automotive business," said Gale. "This partnership meets our respective strategic production and distribution needs."

The project is subject to BMW Group and Chrysler Corporation reaching definitive agreements, which is anticipated prior to year end, and obtaining the necessary approvals and consents. *(BMW AG Press Release)*

Classified Marketplace

Cars For Sale

1994 530i 5-speed, black/black, full warranty to March 1998, factory alarm/keyless entry, always garaged, non-smoker, 18,500 miles, perfect. $29,500. Call 285-6581.

1989 M3, local club member owned (lived in Seattle until two years ago). Alpine white, black leather interior, 70K adult owner miles, all usual options plus Momo wheel (original too), stainless exhaust. Unmolested, not tinkered with. Owner maintained, Castrol every 2,000, new 225X50 Dunlops. $16,900 OBO. Delivery possible. Mike 503-363-7545 (OR).

1985 535i 5-speed, 109,000 miles. Cosmos blue with blue leather , Ungo passive alarm, all power, ABS, sunroof. Terrific condition, never been smoked in, no dings. I have all records of 100% BMW service and parts since new. Owned by a physician. Never been raced, crashed, abused, etc. No significant sun exposure (garaged during the day). Recent $3500 major service, repairs and preventative maintenance. You name it, it's probably been replaced, including clutch and linkage, heater fan, front end bushings, idler arm, BMW muffler, major brake work including accumulator, master cylinder and more. Purchase of a 1989 635Csi lets me sell a car that I had planned on keeping indefinitely. Great opportunity. $8500 OBO. 206-324-4812. Bob Wilkus, 1919 Broadway East, Seattle, WA 98102.

1978 320i Custom "ground up" restoration. Tii engine, '80 5-speed and diff. Euro front bumper, air dam, vented discs and lowered 5/8th inch. Rear stabilizer bar, sunroof. Jade green and gold x-spoke factory alloys, blacked out chrome. $7000 CDN or $5000 US. 1-250-748-0832. Duncan, BC.

Trio of Coupes 1967/68 2000CS In need of restoration. All three for $4800 CDN or $3500 US. 1-250-748-0832. Duncan, BC.

Parts for Sale

Factory manuals for '88 735i: electrical trouble shooting manual and maintenance and general data manual. Both new condition for $40. Also one original equipment wheel (with hub cap) for '88 735i. New condition. $100. John Nickerson, 25001 70th Avenue E., Graham, WA 98338.

BWA Alloys Classic four-spoke. Very good condition with new 205-60-13 tires and extra set 185-70-13 tires with 50% tread. Fits 2002 $375 for all. **Recaros**, Navy blue vinyl, from '85 325. Need upholstery, otherwise good condition. $175. Call 783-6348.

Factory Repair Manual for 524td—535i 11/85. Supplement 3 11/85. $25 OBO. 206-772-2112 or e-mail hbrooml@aol.com.

Convertible Hardtop. Fits 1987-1993 325I (E30) convertibles. Comes with rack and cover. Perfect for winter. Was $4000, asking $1300 OBO. Please call Tiffany at 828-1452.

Parts Wanted

2002 Tii mechanical distributor, shortened driveshaft for 5 speed conversion, rebuildable or good running E-12 motor, advice in this area welcome. Ray 868-1089 anytime.

635Csi Need both winter wheels and summer wheels and tires, 15 inch wheels with (if possible) snow tires. Want sharp 15 thru 17 inch wheels to replace TRXs. I believe that wheels from 5, 6, 7s thru '94 should fit. Ray 868-1089 anytime.

Internal trunk upholstery for a later model six series. No tool kit tools required, just the trunk lining materials. Nick Yotz at 360-825-0720.

Other Wanted

Roundel Magazine August '95 Special Isetta issue. Call Jake or Lila at 206-243-7327.

I'm 14 Years Old! Working on my first car, need all the help I can get! It's a '76 2002! Need nice seats! Help! 747-6422.

Deadline for the December issue is November 26.

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.

Service Specials

BMW Service Inspection I or II

Determined by the Service Interval indicator in your vehicle or at approximately 15,000-mile or 12-month intervals. Ask your Service Advisor for details.

This service includes:

All operations recommended by BMW. A complete listing of operations for your vehicle can be found in your Owner's Service Warranty information Manual—or ask your Service Advisor for a BMW Inspection II Service Maintenance checklist.

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This coupon is good for a free loaner during all scheduled Inspection I, II, or other recommended maintenance services.

Call your Service Advisor for details.

BMW Annual Body Inspection

To maintain your BMW 6-year rust perforation warranty.

This service includes:

- Inspect the body and undercarriage
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(No charge with this coupon.)

Floor Mats

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