

miles. I hear what appears to be a small fan running behind the in-dash temp-controls, just below the radio. It runs most of the time, even with the engine shut off and sitting idle overnight. Is this normal operation, and would it run down my battery eventually, were I to leave the car sitting for many days?

I can remove the radio-control panel, but I'm not quite sure how to get behind the dash. I usually connect my Battery Tender overnight if the car is in the garage, so it hasn't yet run down my battery. I replaced my original battery late last year; it was still okay, but I replaced it anyway.

I will be going on a two-week trip, and I am leaving my car in a parking lot, so I am bit concerned that I may find my battery dead when I return.

David Yuk
Jackson, New Jersey

BMW Master Technician John Franchetti replies: "I think you're probably talking about the interior-temperature-sensor fan on the control unit. This fan is on a delay, and it will normally run for a while after engine shut-down, and then go off. If you think it never shuts off, then try this: Shut off the engine and get out of the car. Flip the driver's door latch so the general module thinks the door is closed, but leave it open. Check back in about twenty minutes. If there is no fan noise, you've got normal vehicle operation. If the fan is still running, replace the final-stage resistor unit. Unlatch the driver's door by pulling the inside or outside door handle."

OCTANE-SHMOCKTANE

I drove a 2001 540i for nine years, and recently traded up to a 2003 M5 with 50,000 miles, purchased from Enthusiast Auto in Cincinnati. The co-owner, Eric Keller, seems very knowledgeable, but insisted that I use only Shell's 93-octane V-Power gasoline. He claims that it will prevent carbon buildup on the valves, and adds that the higher octane provides more power, and the improved gas mileage will more than make up for the higher cost per gallon. The manual states that 93-octane is required, as opposed to simply recommended. I don't recall what the 540i manual said about required versus recommended, but I always used 87-octane from either Mobil or Shell and

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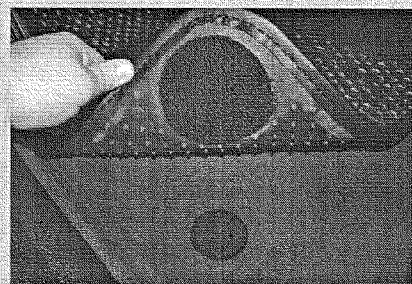
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never had any problems.

I understand that octane ratings have nothing to do with power per se, but are simply a measure of anti-knock qualities. I also understand that electronic ignition systems sense pre-ignition and retard the timing to compensate. This reduces the power output, so I appreciate that the dealer's point might have been that, compared to reduced power from a lower octane forcing a change in the engine timing, a higher octane won't cause this problem.

Can I continue to use 87-octane or even 89-octane fuel in the M5, or should I stick with the manual's "required" 93-octane gas? Second, if I cough up the extra money for 93-octane, is Shell's V-Power any better than Mobil's Super-Plus gas?

By the way, while the M5 is a tremendous car, I'd say that the 540i is 90% of the M5 at two-thirds the price. My 540i had the M Sport package with a six-speed, and hauled the mail pretty well. I also prefer its orange instrument lighting at night versus the M5's white light, and miss not being able to stick a CD in the dash. The M5 navigation system is acceptable, but I know exactly where I'm going 95% of the time, and when I don't, I get out a folding map, route my trip on my PC before I leave the house, or use the GPS in my smart phone. Compared to losing the in-dash CD player, the navigation system is a poor trade.

Bruce W. Graham
Hanover, Massachusetts

Your understanding of the relationship between octane ratings and knock-sensing engine-management systems is largely correct; the knock sensors detect detonation (also known as knocking, pre-ignition), and then the ECU retards ignition timing in an effort to stop the detonation. This has the side effect of reducing engine-power output, and the ECU can only retard ignition timing so much before drivability is affected. At that point, the ECU will retard the ignition timing as far as it can without affecting drivability, and if that is not enough to stop the detonation, then, clearly, the octane level is too low for the engine. The question then becomes whether the driver can hear the detonation and know what to do about it—it's not always obvious to every ear,

and automotive knowledge isn't as broad as it used to be.

Now, whether the ECU is successful in eliminating detonation by retarding timing depends to a certain extent on the engine compression ratio; there are other factors, such as combustion efficiency, but compression ratio is the biggie. The S62 DOHC V8 engine in the E39 M5 is a hand-built, detuned racing engine with 11:1 compression. Your 540i engine has 10:1 compression. I think the S62 will knock like an old Mercedes diesel if you put 87-octane gasoline in it, and I would not recommend trying it. But that would be the difference between "recommended" and "required."

Your S62 is installed in a superlative BMW Motorsport special—basically a race car for the street, with leather and luxury appointments, that cost over \$70,000 new. The engine alone is nearly one-third of that figure if you were to order a factory-remanufactured one today. It is an extremely expensive car to own, properly maintain, and repair. It requires specialized and unwritten service knowledge, special tools, and precision assembly. Moreover, when it is problematic, the problems occur most often when the engine is used for metropolitan commuting in and around a big city. Does that driving profile sound familiar?

The typical failure involves carbon build-up in the air/fuel passages of the cylinder head, on the valves, and on the tops of the pistons. The repair requires both cylinder heads to be removed, disassembled, manually cleaned, and reinstalled. The cost easily runs into five digits. Use of Shell V-Power 93-octane fuel is not a guarantee against carbon build-up, but it helps a lot, especially when combined with BMW Fuel System Cleaner Plus now and then. The S62s I know that do not get carboned up are the engines that get all this—and they get driven hard. The best-running S62 I've ever experienced gets redlined every time the car is driven—once the oil is up to operating temperature, of course. And it lives in rural Vermont.

As for brand, every technician I have discussed it with—and there have been plenty—agrees with me that American gasoline sucks, and far and away the best of the worst is Shell V-Power 93. I've

seen it personally in my own cars: My 1977 320i has no knock sensors and 9.3:1 compression. With static timing, it knocks on Sunoco 93 and it does not knock on Shell V-Power 93. In fact, your M5's ECU is retarding timing with 93-octane fuel, I can assure you. This engine should have about 95-octane or so. (Note to the young: We manually retard ignition timing on old BMW engines that do not have electronic knock sensors or Motronic engine management by turning the distributor. Timing can be tweaked on Motronic cars with a custom-burned ECU chip.)

People who buy cars like this new should be required to pass a psychological examination and attend a mandatory driving school. Secondary purchases should be closely regulated by a Special Board of Government Psychologists, Accountants, and Driving Instructors endowed with police powers to undo sales to unqualified owners in the interests of national security and the greater good of the automotive-enthusiast community.

It's up to you, Bruce—but you might want to consider parting with that extra five bucks per fill-up. Eric Keller is exactly correct.

GIMME ANOTHER BELT

I have a 1988 535i with 220,000 miles. I'm wondering if I should replace the seat belts. The rear receptacles still hold the belts, but most of the covers are missing or broken, so I'm concerned about whether they are a safety hazard. The front passenger receptacle will hold the belt, but only after playing with it a bit. Also, the belts are kind of hard and cupped, and do not retract anything like the belts in my other like-new E28; I read somewhere that when belts get that way, they should be replaced.

I searched online and didn't find any OEM belts, but I did find new OEM front receptacles. Bavarian Auto Recycling sells the belts and receptacles, but how do I know I won't get belts that are in a condition similar to mine? There are a few aftermarket places that make non-model-specific belts, but I'm not sure if these are okay or not. Should I replace belts based on this information? If so, can you recommend a seller?

I recently purchased a used OBC for my