

Wheels: *Ron K. writes by e-mail: "I recently bought a 1990 Lexus 400 with 80,000 miles. It has the standard (for that vehicle) V-8 250 hp engine, and the owner's manual recommends using 91 or higher rated octane gasoline. I know some of the newer vehicles tolerate lower than recommended octane-their computers adjust the combustion timing. My question is, will my car handle 87 octane gasoline? I've tried using it once with no apparent noise or change in performance. Also, will there be any damage to the engine as a result of using it?"*

Halderman: It should not hurt a thing. That engine is equipped with a knock sensor that will retard the ignition timing if spark knock is detected. Using premium grade fuel with an octane rating of 91 or higher will result in little or no knock sensor activity. As a result, the engine will provide the highest performance and fuel economy possible. I have always recommended that readers follow the instructions found in the owner's manual. There are two possible wording issues that you should check before trying a lower octane fuel.

- **Premium Required**-If this term is used in the owner's manual and it states that premium grade fuel is required, always use premium grade fuel or possible damage to the engine could occur.
- **Premium Recommended**-If this term is used, you can try using a midgrade (Plus) grade fuel or even regular. Usually the performance difference is not noticed by most drivers, but the fuel economy can be reduced. No harm to the engine will likely occur if the lower octane fuel is used if premium is just recommended and not required.

