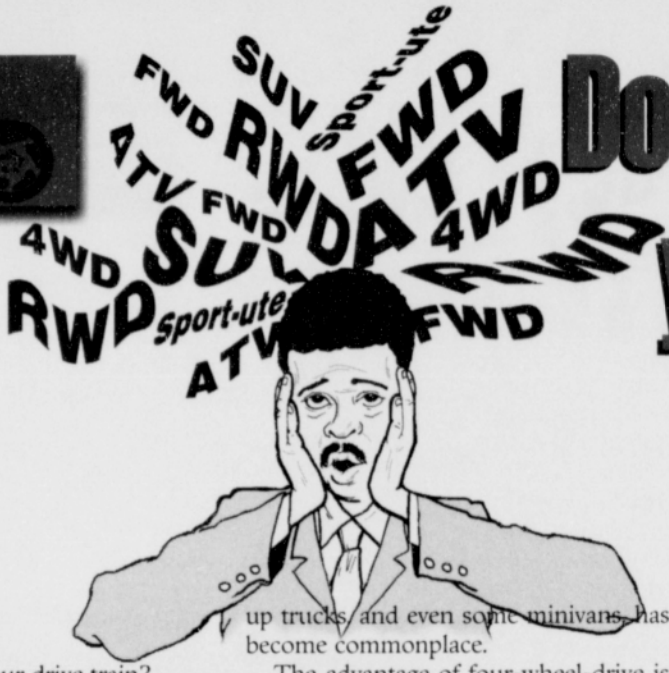

Do you know your drive train?

By Paul A. Eisenstein

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Today's new car buyers are faced with a perplexing array of options that often confuse rather than clarify the search for the right vehicle.

Nowhere is that more apparent than when it comes to drivetrains.

Until the early 1980s, almost every car sold in America came in rear-wheel-drive configuration. The engine was up front and the driving wheels were in back.

However, front-wheel-drive is nothing new: the 1929 Cord L-29 featured front-wheel-drive. But until recently, such systems were most common on quirky imports like Sweden's Saab and France's Citroen.

Yet front-wheel-drive does have a number of potential advantages. For one thing, it's easier to package in a small car. By eliminating the driveshaft that connects the rear driving wheels to the engine and its hump, which runs through the middle of the car, a manufacturer can offer more interior space in an otherwise downsized vehicle.

This setup became quite appealing in the wake of the 1979 energy crisis, when manufacturers started downsizing their fleets to smaller, more fuel efficient vehicles. And since the front wheels pulled rather than pushed, front-wheel-drive vehicles tended to handle better on snow and ice.

Then four-wheel-drive, which had been reserved for trucks used by construction crews, farmers and outdoors men, became popular. The use of four-wheel-drive in SUVs, personal use pick-up trucks and even some minivans, has become commonplace.

The advantage of four-wheel-drive is that all four wheels are getting power simultaneously and that improves the grip you get on the road, whether you're driving down the freeway, through a snowstorm, or on a rutted backwoods trail.

There are a variety of four-wheel-drive systems. The most basic type operate part-time and should normally not be engaged on dry pavement. You manually switch to four-wheel-drive when surface conditions get slippery.

Other four-wheel-drive systems, commonly known as all-wheel-drive, operate full-time and use a variety of technical methods to measure road conditions.

On a dry road, most power may be channeled to the front wheels. But if road conditions deteriorate, some of the power is diverted to the rear wheels, if they're getting better grip.

We'll skip the detailed technical differences between all-wheel-drive and four-wheel-drive, suffice it to say that most all-wheel-drive systems also operate full-time, quietly redirecting power to the wheels that can use it the best at any particular moment.

Like four-wheel-drive, all-wheel-drive systems tend to add weight and complexity to a vehicle, and that's likely to translate into a modest reduction in fuel economy and an increase in maintenance costs.

Now that we've got the basics out of the way, which drive system is best for you?

From the early '80s until recently, the consensus favored front-wheel-drive. But more than a few experts are now rethinking their recommendations, especially when it comes to luxury and performance vehicles.

Front-wheel-drive has trouble handling lots of power. Stomp on the accelerator and your car may veer to one side or the other, a phenomenon known as torque steer. That's why most sports cars and import luxury vehicles use rear-wheel-drive layouts.

Better tires and electronic control systems, such as Mercedes-Benz's Electronic Stability Program, have resulted in a dramatic improvement in the way rear-wheel-drive vehicles handle slippery pavement. That's why some front-wheel-drive manufacturers, like Cadillac, are switching back to rear-wheel-drive.

If you live in serious snow country, you're a prime candidate for a four-wheel drive or all-wheel-drive vehicle. And this technology is becoming increasingly common on passenger cars, as well as light trucks.

It's essential to understand that no drive system is an automotive panacea. Go into a corner too fast and nothing will keep you from losing control. When you're on a slushy or icy road, even four-wheel drive will be hard-pressed to prevent a skid.

That's all too apparent in places like Chicago and Detroit, where many drivers mistakenly believe the "sport" in "sport-ute" means their vehicles should handle like sports cars even in the worst weather.

Mix that attitude with inclement weather and SUVs are the first vehicles that end up on the side of the road.