

Smaller car size needs very careful maintenance

Smaller cars may bring motorists the extra miles per gallon they are seeking, but the fuel savings could easily "slip out the exhaust pipe" if they neglect the maintenance small cars require.

"Because parts are fewer and smaller in size, four-cylinder engines have to work harder than larger engines to provide the same performance," explains Dave Bowman, Technical Services Manager for Fram/Autolite, a major automotive parts manufacturer.

"Engine miles"

Four-cylinder engines require more revolutions per minute than six-or-eight cylinder engines to travel the same distance.

For example, Mr. Bowman explains, the average eight-cylinder engine in a large car with an automatic transmission requires 1,663 revolutions to travel one mile. The average four-cylinder engine requires 3,130 revolutions to travel that same distance.

"These figures can be translated into 'engine miles.' When the odometer reads 10,000 miles, the four-cylinder engine will have worked the equivalent of 18,800 miles," says Mr. Bowman.

"Smaller engines need to be protected against engine miles. The best way is through more frequent preventive maintenance. It is vital for keeping your small car healthy and fuel efficient."

"Unfortunately," he adds, "most motorists are not aware of the importance of small car maintenance." In a recent national survey of 22,200 motorists conducted for Fram/Autolite by Market Facts Inc., more than two-thirds said they do not believe small, four-cylinder engines require more frequent maintenance.

"These owners need to learn how small cars operate and should look at frequent maintenance as low-cost insurance that can keep up the vehicle's resale value and save them money at the gas pumps," he adds.

Severe driving

Mr. Bowman suggests motorists base maintenance schedules on their driving habits.

"Severe" drivers are those who primarily drive short, stop-and-go trips of 10 miles or less, who drive in dusty areas, who idle extensively, as in heavy traffic, or who tow heavy loads.

Fram/Autolite surveys show that nearly 85 per cent of the country's drivers fall into this category. "Severe drivers, particularly those with small cars, should maintain their vehicles more often, at least according to the severe driving schedule listed in owner's manuals," says Mr. Bowman.

To keep small cars running smoothly and efficiently, Fram has these maintenance tips:

- Oil & oil filters—Since combustion temperatures in smaller engines are hotter, the motor oil works harder lubricating, sealing and protecting parts and may break down sooner. Smaller engines also have smaller oil capacities so there is less oil to do this job.

Oil filters also are smaller and there is twice as much oil flowing through these filters. Fram tests have shown smaller filters for most small cars clog faster than the larger filters usually found in eight-cylinder engines.

If you are a severe driver, change the oil and oil filter every three months or 3,000 miles, whichever comes first. If you drive under "ideal" conditions, such as constant highway driving, change these parts every 6,000-7,000 miles or six months.

- Spark plugs—"When RPMs increase, so do the number of times spark plugs must fire," Mr. Bowman says. "This can shorten plug life and lead to misfiring."

"If one out of four plugs in a four-cylinder engine misfires, it could shake your back teeth out; one bad plug in a small engine is more apparent than one in larger engines. So give your small car a tune-up at least once a year and be sure to replace all four spark plugs at the same time."

- Fuel filters—Many small cars are, or will be, equipped with fuel injectors which improve performance. Therefore, check the fuel filter at each tune-up and replace if necessary. A clogged fuel

Using cables

Batteries produce hydrogen gas when they discharge or are exposed to extreme loads such as cranking the engine for a long period of time.

An explosion can be caused by a spark near this hydrogen gas when the car is being jump-started.

If you ever need to jumpstart your car or someone else's, the Automotive Parts and Accessories Association suggests the following procedure so as to avoid any chance of your car's battery exploding.

1. Pull the two cars close enough to avoid over-extending the jumper cables.

2. Connect one end of the other cable to the positive terminals of each battery.

3. Connect one end of the other cable to the negative terminal of the good battery.

4. Connect the other end of the cable to the engine block of the vehicle being started. Do not connect the cable to the negative terminal of the bad battery under any circumstances!

Avoid damage to the electrical components of the vehicle being started by making certain the engine is running at idle speed before disconnecting the jumper cables.

filter can reduce gas mileage and allow contaminants to enter and damage the fuel injectors.

- Wheels and tires—Smaller tires revolve more times per mile than larger tires. This can produce more heat and increase tread wear. Check the treads monthly and replace the tires when necessary.

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