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What you should know about options and energy

In these days of added conveniences, high energy input gadgets, and luxury accessories, anyone considering buying a new car should be aware of what benefits and penalties will be derived by adding " goodies " to a car. Most accessories will add extra weight to your car, instantly reducing fuel economy, and resulting in more gadgetry to go haywire. With the wide range of accessories available today, the informed consumer should be aware of which ones are valuable and which are needless.

The following list is intended to act as a guide to help you decide which accessories and options you would like to include in your new car. Use the list as such and make your decisions before you shop. Don't let the salesman talk you into buying extras that you don't want or need.

1. Engine - Many North American cars offer choices in engine size. A V-8 may add as much as \$200.00 to the price of a car normally equipped with a six-cylinder engine. In tests comparing two identical cars (one with a V-8, the other with a "6"), the V-8 averaged 15-20 per cent poorer fuel economy (that could amount to as much as \$130.00 per year). Both cars will travel easily at 100 kph but the "6" is much more economical.

A similar situation exists where a small V-8 is standard and a larger V-8 is offered as an option. V-8s are available for trailer towing and so on, for the most part the standard sized engine will result in the best economy and adequate performance.

2. Transmissions - Manual transmissions make sense in small cars they make a good situation in terms of cost even better, and almost always cost less than an automatic. A typical small car will average 11 per cent better fuel economy with a 4 speed manual transmission than with an automatic. Any car that offers a manual as standard is offering a good thing. However, to get the best out of a manual transmission, it must be used properly. Driving around "over" in fifth gear will definitely not perform adequately. Consult your owner's manual if you are unfamiliar with proper gear choices for economical operation.

However, many full sized North American cars come equipped with automatic transmissions that are easy to drive, reliable and make the car easier to sell. Since the market-place acceptability of manuals is currently

limited to small cars, it is useful to consider the best automatic available. Any transmission with a higher number of gears will generally deliver better economy than a transmission with fewer gears. This holds true for manuals as well as automatics. A 3 speed automatic is better than a 2 and a 4 is better than a 3. For cars with similar characteristics a 4 speed automatic can give as much as 5 per cent increased economy over a 3 A 5 speed manual is currently offered in some cars and is the best possible option. But if you must have an automatic, get the one with the highest number of gear choices.

Any transmission with an over-drive gear will offer better economy while highway driving. Overdrive is an added gear, either a fourth or fifth gear, which reduces engine speed while maintaining the same overall highway speed reducing both fuel consumption and engine wear.

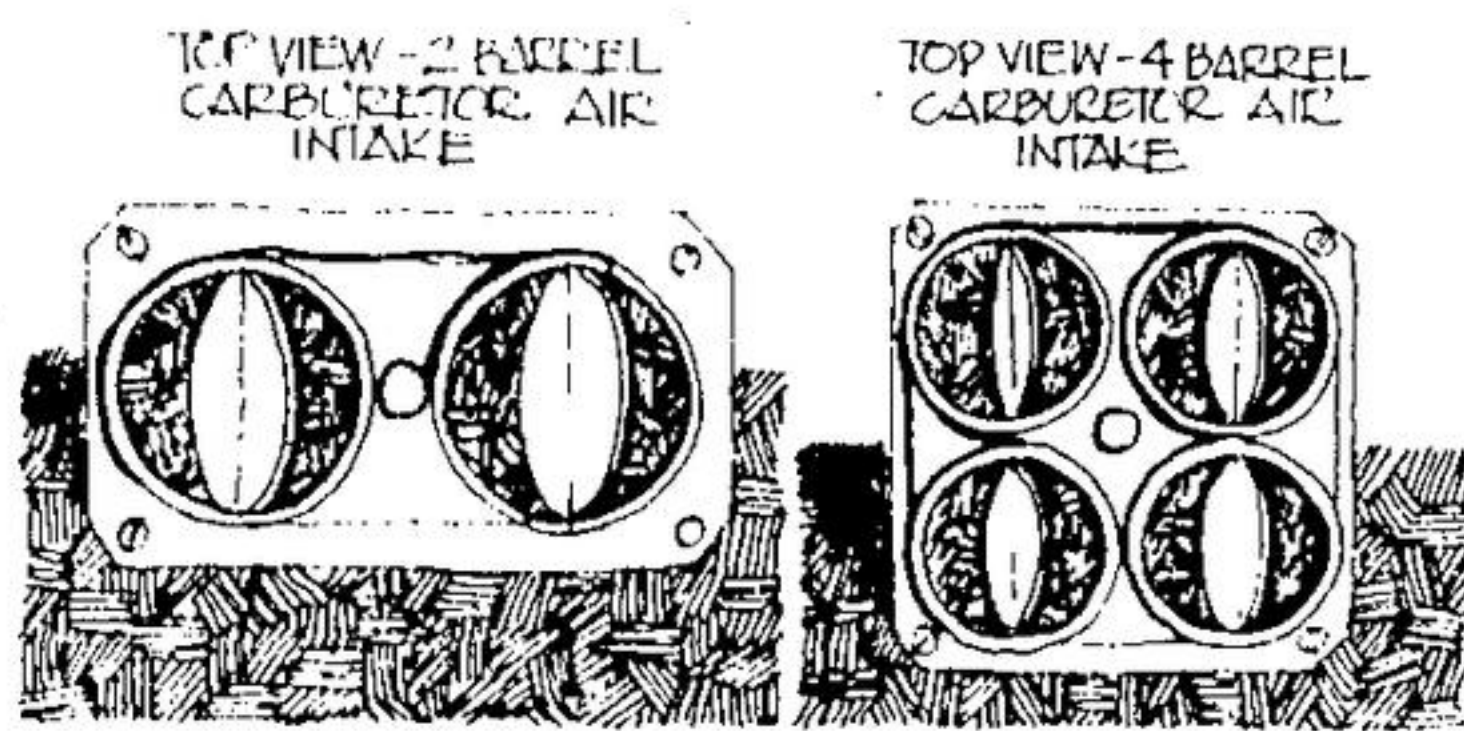
3. Automatic Transmission Torque Converter Lock-ups - This device is presently available on some cars and will increase fuel economy by about 6 per cent. Currently automatic transmission torque converters always have a certain amount of slippage, especially during acceleration. The lock-up device will prevent this slippage and thereby reduce the energy waste because of it. Watch for this option - it will save you fuel.

NOTE: Another option to watch for in the future is electronic gear selection for automatic transmissions. These will change gears electronically and result in a more precise matching of gears with power demand.

4. Carburetors - Some automotive manufacturers offer different carburetors on their models. The "carb" is the device that measures the air fuel mixture to be burned and is therefore a very important engine component in terms of fuel consumption.

In terms of options the two which are usually offered on V-8 engines are 2 and 4 barrel carburetors. Basically the larger the individual barrel the more fuel it passes on to be burned. The individual barrels in a 4 barrel carb are smaller in diameter than the ones in the 2 barrel and under normal driving only 2 of the 4 barrels are being used.

Therefore the 2 barrel carb will use more fuel than the 4 barrel carb. But as soon as you tromp down on the gas, all four barrels will be active and down goes the fuel. There is definitely more potential for increased fuel



consumption with a 4 barrel carburetor.

What does all this mean? It means that if you drive carefully using the tips in this book, the 4 barrel carb can deliver reasonable economy. However, if you are the type to be tempted by the feeling of added power when the car surges ahead and pins you to the back of your seat, remove the temptation, get a small engine with a one or two barrel carburetor.

5. Fuel Injection - Low pressure fuel injection systems offer lower emissions and increased fuel economy. They can use less fuel by properly measuring how much gas your car needs. They reduce the need for add on pollution control devices by more efficient burning of fuel. However fuel injection systems (especially high pressure) are difficult and costly to repair.

6. Differentials - Some manufacturers give the consumer a choice in "rear end" ratios. Generally a low ratio (1.5 to 2.5) will deliver better fuel economy than a high ratio (4.1:1) differential. The low ratio will also put less strain on the motor at highway speeds but it will be slower during acceleration.

7. Power Steering - This feature is now standard on almost all large cars. It is a reasonable option for full and mid sized cars but considered unnecessary in compact and small sized cars. In short, if it is an option it is probably not necessary. The unit reduces steering effort, quickens response, which are definite assets in low speed maneuvers, such as parking, but also decreases the "feel of the road" which many drivers consider desirable. Because of the added weight and added strain on the engine, there is a minor adverse effect on fuel consumption (approximately 3 per cent).

8. Brakes - On cars which do not offer power brakes as standard equipment, it is usually an unnecessary option. Disc brakes are however, far superior to drum brakes and provide improv-

ed directional stability. Power brakes where optional, cost from \$35.00 to \$70.00. Their effect on gas mileage is minor.

NOTE: If you have power brakes and power steering and, if for any reason emergency, out of gas, etc.) you must stop your car with the engine off, significantly increased manual effort is needed to stop. Practice for emergencies by turning off your motor and controlling the car to a stop, but do it carefully.

9. Tires - Often different types of tires are offered as options. Radial tires are most expensive, but last longer, use less fuel and offer increased handling abilities. They are therefore, a desirable option.

NOTE: Beware of the special "Spare Saver" spare tire, the tire does take up less space, costs about the same as a real tire but has no useful tread life. It's not intended to serve as a replacement tire. It merely gets you to a gas station in an emergency. For the same price you'd do well to get a normal spare which will allow tire rotation.

10. Air Conditioning - The first question to seriously ask yourself when considering this option should be "Do I really need it?" Air conditioning is one of the most expensive options available for most cars, ranging in price from \$300.00 to \$850.00 extra and it also costs heavily in terms of increased fuel consumption. On smaller engines the fuel penalty is even larger, but if you get the large engine to cope with the A-C you lose there as well.

Some A-C units don't circulate fresh air properly which can cause a build up of carbon monoxide - a potentially dangerous situation while driving. Some cars with factory air conditioning may also have heavier front springs to cope with the extra weight.

Air conditioners operating at maximum output can increase fuel consumption up to 10 per cent in highway driving and as much as 20 per cent in stop and go traffic. Even when the unit is not operating the extra 100 lb weight or so results in increased fuel consumption.

NOTE: The federal government has added a tax of \$100.00 to any car equipped with air conditioning.

11. Flow through Ventilation - Many manufacturers now offer "flow through ventilation" as standard or optional equipment. It reduces the need to drive with open windows to maintain a continuous supply of fresh air. It also decreases the need for an air conditioner.

12. Tinted Glass - For \$40.00 - \$70.00 extra your car can be equipped with tinted glass. Though it does keep cars cooler, and lowers driver eye

strain in bright sun, it also reduces visibility at night. You may find that a good pair of sunglasses will do a similar job and cost much less.

13. Automatic Speed Control - With this \$70.00 to \$120.00 option you can set your cruising speed and take your foot off the gas and relax. In terms of fuel economy, it may reduce consumption on long trips by maintaining a constant, even speed. However, it also may lull the driver into inattention and lengthen reaction time in an emergency.

14. Power Windows and Seats - These options are initially expensive, require added energy input to manufacture, they are mechanically complicated and therefore susceptible to breakdown and expensive to repair, add extra weight to the car, and usually necessitate a high output alternator which extracts extra energy from the engine and thereby reduces fuel economy.

15. Rear Window Defogger - For Canadian winters, this option should be standard in all cars.

16. Fuel Economy Reminders - These are gadgets (manifold vacuum gauge) which allow you to determine how much fuel your car is using at any given time. However, they can act to remind you to use these tricks.

17. Instrument Packages - Some models offer the choice between instruments and "idiot lights". The instruments give detailed information concerning oil pressure, water and oil temperatures, charging rate, engine speed and so on. These are generally more useful than "idiot lights".

18. Exterior Trim Strips - These are chrome-vinyl strips placed along the widest portions of the car's sides. They are useful in preventing paint chips in parking lots which can be useful in preventing the beginning of rust. However, they are often offered only as part of a more expensive, trim package which you may not want in its entirety. Outside trim also adds to wind resistance.

19. Heavy Duty Suspension - This stronger suspension system will improve handling characteristics and last longer than the standard one. The added weight is minimal and cost nominal.

20. Vinyl Roof - This expensive plastic roof performs no useful function and can be quite expensive.

21. Undercoating - Undercoating is often applied as part of a sound deadening package. It is useful for that purpose. Do not mistake a sound deadening undercoating for rust proofing. It also adds significantly to the weight of the car.

22. Rust Proofing - In areas where salt is used extensively

ly in winter, rustproofing can be a useful option. It can extend the life of the car (by reducing rust perforation) thereby reducing the energy requirements for making more new cars. Make sure a written guarantee (5 years) accompanies any rustproofing job. Many problems have arisen recently because of sloppy and improper applications. The work is difficult if not impossible to check up on.

23. Quartz Head Lamps - If you do a lot of night driving on dark unlit roads, these are useful options, as they significantly increase night visibility. (Some regulations exist restricting their use, check with your provincial government.)

24. Electric Gadgets - Any additional electric accessories take power from the engine and may require a high output alternator. This extra load on the engine and extra weight increases fuel consumption.

25. Block Heaters - These are useful to not only assist in cold starting but they also reduce fuel consumption by allowing you to start out with a semi warm engine.

However, they need not be plugged in all night long, two or three hours before start-up time is all that is really needed. Since you probably won't want to get out of bed at 5:00 a.m. to plug the car in, you can solve the problem by adding a timer which automatically turns the block heater on at a predetermined time.

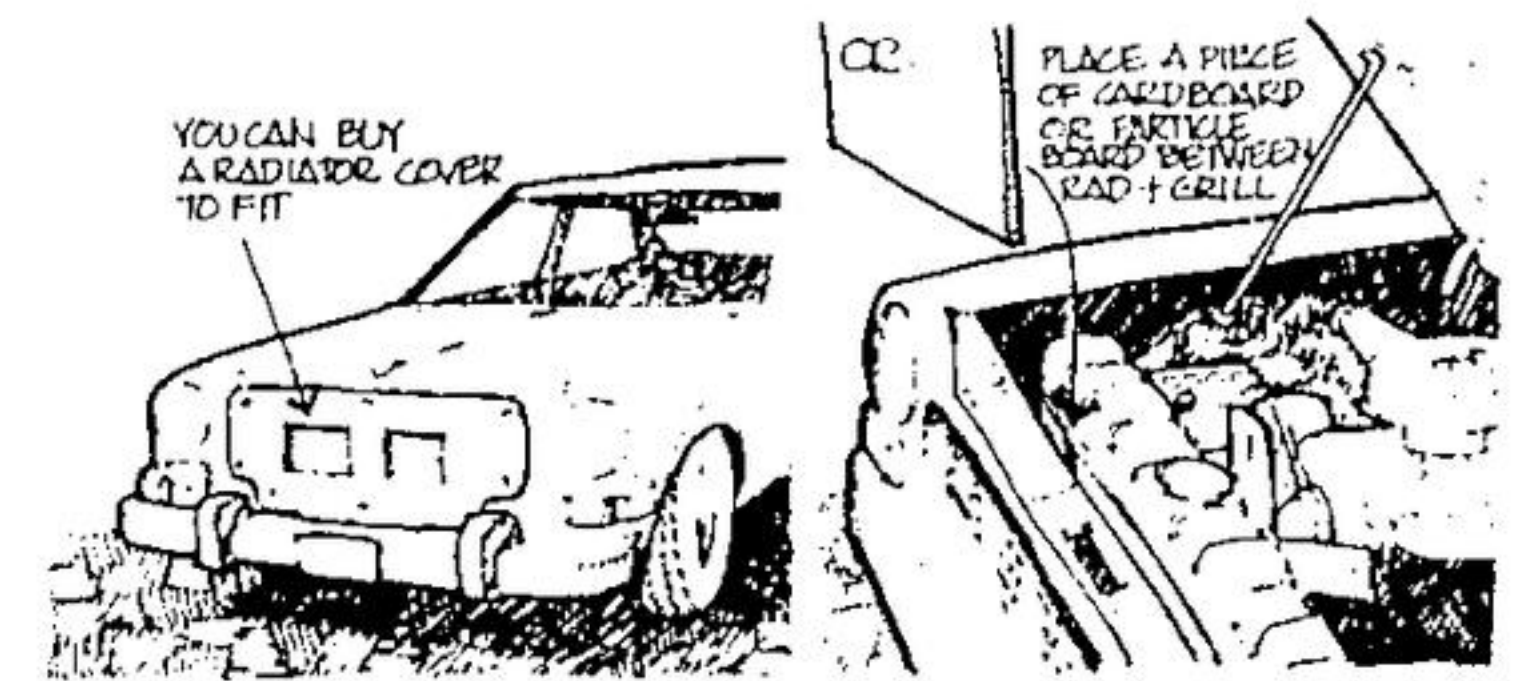
26. Sun Roofs - This option is expensive but can reduce the need for an air conditioner. However, open sunroofs also increase wind resistance thereby reducing fuel economy at highway speeds.

27. Radiator Shutters - These are not always available as factory options but can be home-made. They prevent the engine from "over cooling" in winter by partially covering the radiator. They allow the engine to heat up faster and thereby help restore "summer conditions" under the hood.

NOTE: Improvements in fuel economy of up to 70 per cent have been realized on truck fleets with the use of these devices. They can have a similar effect on cars. (Remember to remove them in warm weather.)

(CAUTION: Consult the advice of a competent mechanic or technician before you block all or part of the radiator. Too much of a blockage can result in overheating, loss of antifreeze and possible engine damage. There is also danger in blocking off the part which may cool the oil or automatic transmission fluid.)

28. Add-On Devices - Lately a number of add-on devices have come available on the market. These range from simple to sophisticated, and usually involve the carburetor or fuel delivery system. These manufacturers claim either increased power, economy or both. Many have been tested by independent government laboratories and only a few have proven to be effective. Some of these are nothing more than gimmicks which have been thrown to-



gether to make a "fast buck."

Exercise caution if you are interested and intend spending your money on any of these devices. They are not manufactured by the auto industry and may even invalidate your warranty. Contact the Consumer Association of Canada before you buy - they may have data applying to the unit you are interested in.

29. Automatic Starters - These devices automatically

start your car from time to time throughout a cold winter night to keep the engine warm all night. These are expensive gadgets which waste a lot of energy and cause needless extra wear on your engine. Avoid them! Using a block heater with a timer will ensure easy starting, use less energy, be less expensive and safer for your engine.

30. Magnesium Wheels - These expensive options do little but improve wheel ap-

pearance. If they are truly light-weight they may improve the ride slightly and may give a very small improvement in fuel economy.

This list distinguishes the accessories which are useful in terms of decreased fuel consumption or safety from the ones which increase fuel consumption. Some items are included which do not affect economy but can add extra cost to the car. They also require energy to manufacture so not buying them eliminates that extra energy input. In short the simpler the better.

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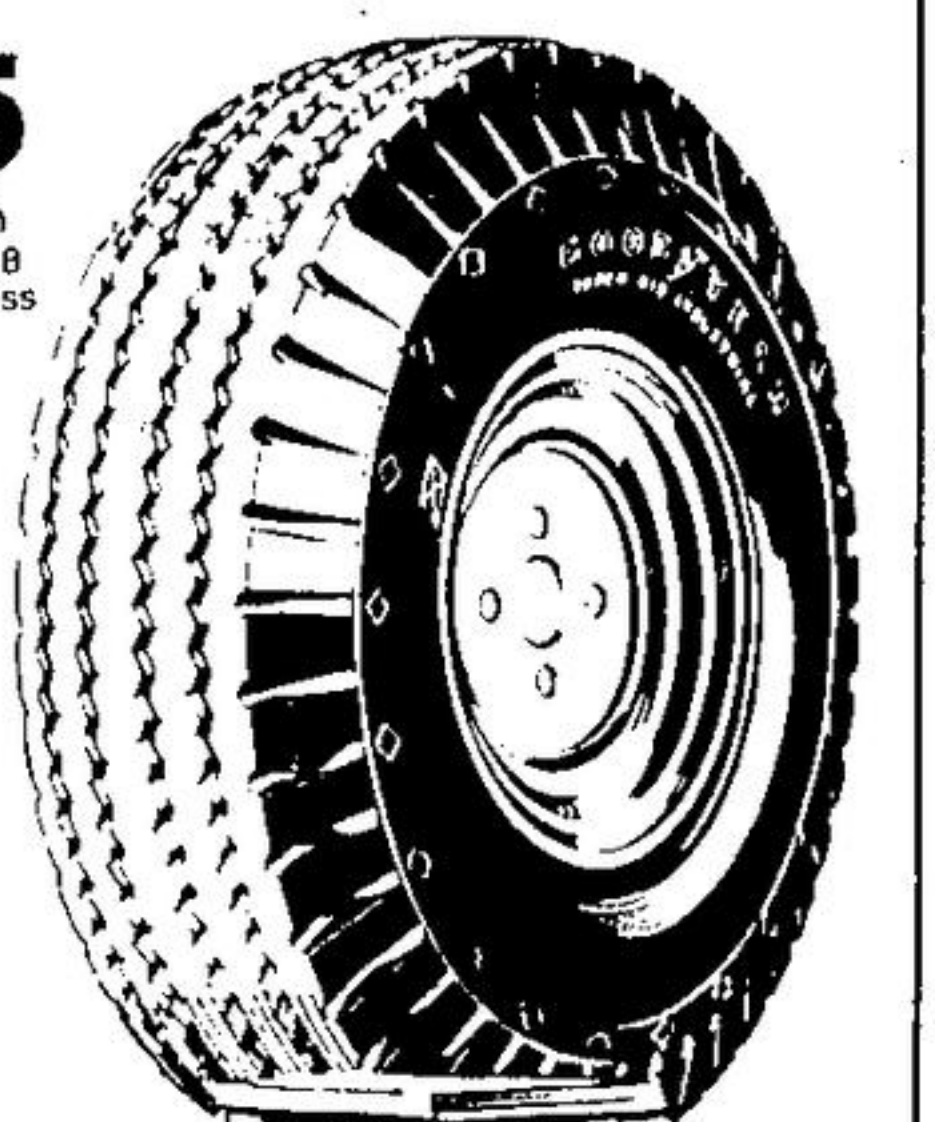
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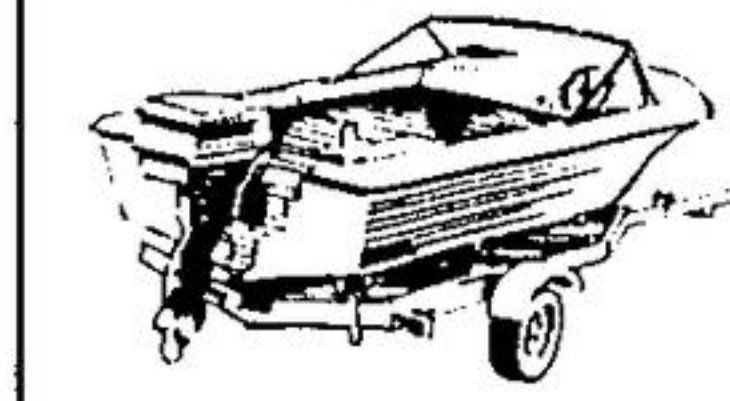
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GOOD YEAR

This list distinguishes the accessories which are useful in terms of decreased fuel consumption or safety from the ones which increase fuel consumption. Some items are included which do not affect economy but can add extra cost to the car. They also require energy to manufacture so not buying them eliminates that extra energy input. In short the simpler the better.

ACCESSORY CHART			
ENERGY CONSERVATION OPTION	PERSONAL PREFERENCE SMALL OR NO EFFECT ON ECONOMY	DECREASED ECONOMY BUT SOMETIMES JUSTIFIABLE	DECREASED ECONOMY AND SELDOM JUSTIFIABLE
small engine	power steering	V-8 engine for hauling loads etc.	air conditioning
diesel engine	power brakes	automatic transmission	power windows
manual transmission	tinted glass	4 barrel carburetor	power seats
overdrive (manual or automatic)	automatic speed control	sound deadening under coating	additional electric gadgets
automatic transmission torque converter lock-up	exterior trim packages	sun roof	automatic starters
smaller carburetor	quartz head lamps		
low ratio differential	fuel injection		
radial tires	magnesium wheels		
fuel economy reminders	heavy duty suspension		
rust proofing	instrument packages		
radiator shutters			
block heater with timer			

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