

Save Money !

National Bestseller

Get  
Smart



Fuel Conservation Tips  
And **Secrets**  
Your Mechanic Won't Tell You!

E . U . R a n d o l p h

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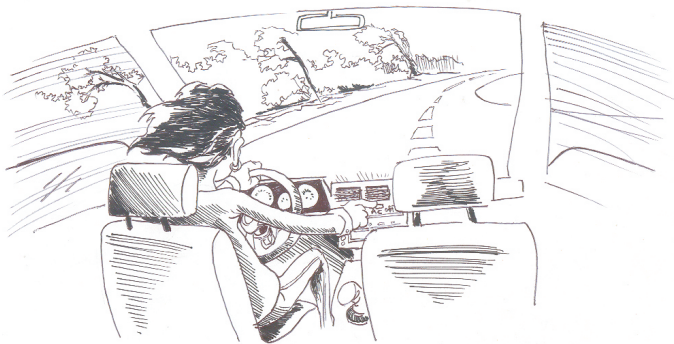
# 6

## I can drive!

*Can you?*



2



### **Why not use it?**

Most modern vehicles are equipped with a five speed manual gear box. However a lot of misconceptions surround this fifth gear or the overdrive.

The general idea of the fifth gear is to reduce the engine speed while keeping the road speed relatively constant. However, the fifth gear normally does not have enough pulling force for going up hill, but on a flat road its best to get the car to the fifth gear as soon as it is practical for you to do so.

Driving your car on the first , second and third gear all the time might not be a very efficient driving habit because you can be wasting over a quarter of your fuel tank driving this way. This is particularly common for most middle aged women as they associate the fifth gear with speed.

### **What a man can do...**

Most ladies I interviewed complained that the car feels too light if they shift to the fifth gear, i.e. the car seems to move too fast . However the truth appears to be that the older and richer people get , the more they fear speed ( death actually).

The country could save huge amounts of money on fuel if a literacy program can be instituted to convince these ladies to use the fifth gear of their vehicles. This is because women constitute a large and growing number of drivers and car owners.

I know women who have never used their fourth gear while driving because they believe or were trained to believe it is the speed gear - the gear to engage when you want to drive fast .For any one with this level of misconception about the fourth



gear -, the fifth gear must represent the joy stick for getting air borne .

Since most of these women never want to drive fast, you usually hear the engine of their vehicles screaming at about forty kilometers per hour while the transmission is still in the first gear.

### **You have one too !!!**

In particular I have a close acquaintance who has never used the fourth gear of her vehicle in twenty years. She proudly admits this as a testament of her excellent safety record. One can only imagine the amount of fuel she wasted in those twenty years.

Driving around a whole day on just the first and second gear, you must waste at least one gallon of petrol. I don't even want to think of doing this for twenty years.

### **How to save fuel going down hill**

It is best to select a high gear like the fourth or fifth gear with your foot off the throttle pedal when going down hill.

This is because most vehicles have what is called a deceleration cutoff switch that cuts off fuel supply to the engine if the vehicle is traveling above a predetermined speed with your foot off the throttle and brake pedal.

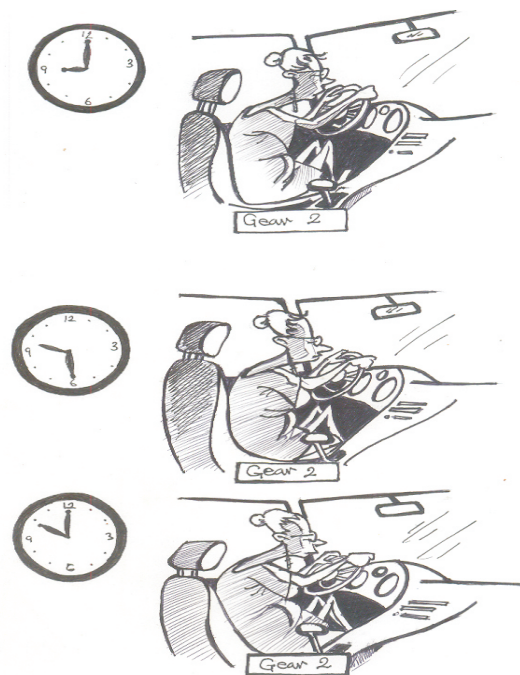
Manufacturers designed this in order to help in the conservation of fuel when power is not needed. However , this system does not work if you leave the gear lever in the neutral position because the vehicle interprets this as an idling

command.(that is, you just want to warm up the vehicle).

### **Driving Automatic Trans!**

Most drivers get the impression that all you have to do to drive an automatic transmission equipped vehicle is to move the lever to the D-shift position and 'fire'. This is acceptable if your driving conditions are ideal (you have to define 'ideal' yourself )

However , if you are towing a vehicle , stuck in the mud or you are climbing a very long and steep hill or caught in between traffic during overtaking, manually shifting the transmission might lead to not having to withdraw large amounts of money for transmission replacement or a not-so-short stay in an orthopaedic ward.



Don't disturb me , I will change gear by 12.00 pm

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# 7

## Half education

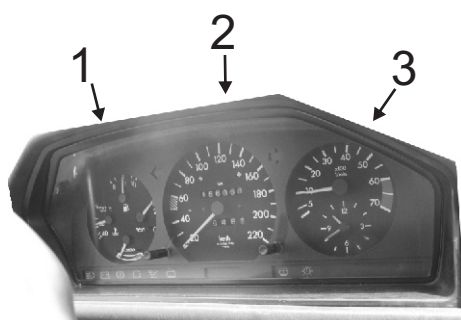
*is poor fuel economy*



**Hey! Where is my tachometer?**

## Driving 101

The image in Fig 7.1 shows the instrument panel of a mid nineteen eighties Mercedes Benz 230E . The circular area labeled 1,2 and 3 contain the necessary indicators the driver must monitor in order to make the best use of every gallon of petrol in the fuel tank.



1. The economy meter

2. The speedometer

3. The Tachometer

Fig 7.1

## The speedometer

indicates the road speed of the vehicle. Ensure you keep the needle just under one hundred kilometers per hour in order to conserve the most fuel.



Fig 7.2

Vehicles imported from the USA have their speedometer calibrated in Miles per Hour and Kilometers per Hour.

Do not travel at one hundred miles per hour if fuel conservation is your goal, because that would be one hundred and sixty kilometers per hour. This speed has absolutely nothing to do with fuel conservation, rather it is usually associated with stolen vehicles and armed robbery.

### **The Tachometer**

This instrument shows the speed at which the engine is turning. Whenever you depress the throttle pedal, the dial on this indicator moves to show the speed at which the engine is turning. This happens even if the vehicle is stationary. The speedometer dial will only move if the vehicle is in motion.

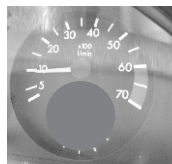


Fig 7.3

When ever possible, shift to a higher gear when the tachometer indicator gets to just above 2 or 20, this represents 2000 revolutions per minute of the engine. This is essential if you are driving inside the city.

This tip might not apply if you are climbing a steep hill or if your vehicle is heavily loaded. The general idea is to keep the car moving at the least possible engine speed.

**The Economy meter** - Alerts you of your fuel consumption pattern.

Your vehicle may or may not have this indicator . If the dial moves into the marked zone , it means you are wasting fuel .

Bad driving habit is also indicated by the economy meter flashing a red or yellow light on the instrument panel of some vehicles.

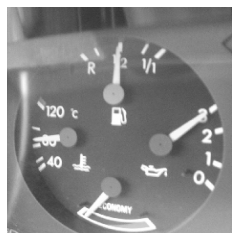


Fig 7.4      ↑  
The Economy meter

To test the meter, under heavy acceleration, the economy indicator light should come on or the dial indicator moves into the marked zone. If this does not happen , please repair the meter immediately.

The cost of repairing this meter is much lower than the extra fuel consumption that you might incur. Failure of this meter is usually traced to a blown fuse or a wrongly connected vacuum hose .

### **Caught in the act**

The main threat to the economy meter in your vehicle is your mechanic or your local re-wire ( auto electrician).It is almost impossible that any of these people can repair your vehicle without creating a new problem like disabling the economy meter.

Its understandable that any one can make a mistake , but its pure evil to try to convince your customer that your mistake is actually an improvement on the original design of the vehicle.



Whenever you do any type of repair to your vehicle, ensure your economy meter is working . Insist it is fixed before you make your final payment for the job done.

### **The Trip Odometer**

This instrument is used to measure distance to a particular location. Depressing the closest button to the trip odometer will set it to zero.

To measure the distance between any two locations, set this meter to zero at the start of the journey, when you arrive at the other location , the value displayed in the trip odometer represents the distance in miles or kilometers ( depending on the calibration of the odometer) between the two locations.

To check your actual fuel consumption , fill your fuel tank and set this meter to zero. Keep driving until you are due for the next fill up then note how many liters you had to purchase to fill up .

Divide the number of kilometers displayed on the trip odometer by the number of liters purchased. The result is the number of kilometers your vehicle can travel on a liter of fuel.

As you modify your driving habit with the information in this book, notice any improvement or lack of, in your vehicles fuel consumption.

Finally, monitoring the fuel consumption of your vehicle leads to early detection of problems with the engine and can save you lots of money.

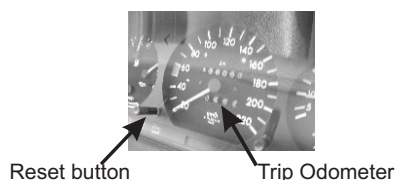


Fig 7.5

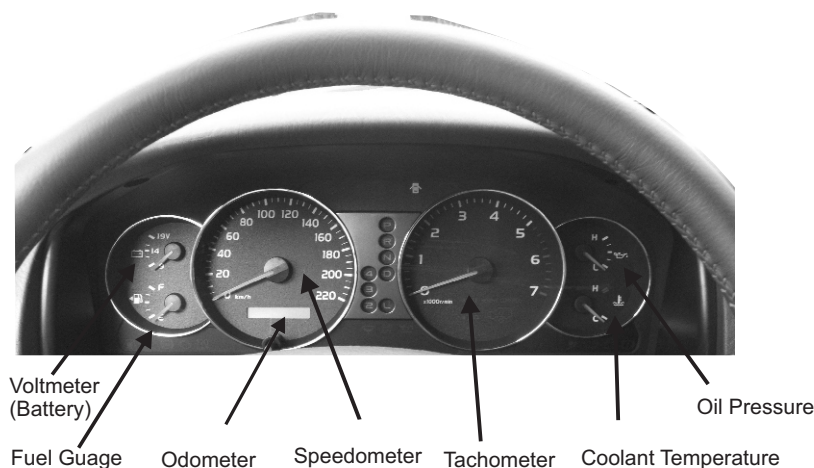


Fig 7.6 . A modern instrument panel(Ford Explorer)

# 8

## ***Don't Emulate Local Commercial Vehicles***



### **Don't emulate local transporters**

Driving pattern has a very great effect on fuel consumption of any vehicle. Frequent starts and stops are very inefficient in terms of fuel. You probably have noticed that your car consumes more fuel when driving around the city than during a longer distance intercity travel.

### **You experience this too**

Using my trip odometer, I found out that I could do almost 500kilometers on a full tank of fuel while traveling on the highway but about 180kilometers when using my vehicle inside the city.

This is because short driving cycles mean frequent acceleration and braking which consumes a lot of fuel. Also the vehicle barely has time to warm up before it is stopped. A cold engine is not economical with fuel.

Considering the factors above, it is best to plan your driving. Choose to drive the car as long as possible before stopping. Frequent start and stop will amount to wasting over a third of the fuel in your tank.

That could mean up to two gallons of fuel wasted for each full tank of fuel. If you fill your vehicles' fuel tank twice weekly, this might translate to a loss of over two hundred gallons of fuel in a year (52 weeks) or 832 liters in one year. At seventy five naira for a liter of petrol, this amounts to a financial loss of over sixty thousand naira..

## Data analysis

No one goes around doing this calculation in his head but the net effect is that you will notice that quite a lot of people find themselves in serious financial crises because they own a car.

They appear broke most of the time , the fuel gauge of their vehicle never gets above reserve level , they can hardly change their shirt. The vehicle just sucks the life out of them. Frequent starts and stops lead to early wear of every moving mechanical component , from brake pads to pistons and to even early brake light failure.

Ever wondered why many local taxi drivers never seem to break even !

## Facts and Figures

Table 8.1 and Table 8.2 below shows the average fuel consumption rates of some vehicles models when driving inside the city and when driving on the highway. The data consistently supports the fact that continuous cruising at high way speeds leads to lower fuel consumption of any vehicle regardless of make or model.

### Express Way Driving

Average number of kilometers traveled on a gallon(3.75litres) of petrol for 2005 models

Make	Model	Year	Engine size	AUTOMATIC (km per gallon)	MANUAL (km per gallon)
HONDA	Civic	2005	1.7 Litres	60.8	60.8
TOYOTA	Corolla	2005	1.8 Litres	60.8	65.6
KIA	Rio	2005	1.6 Litres	54.4	52.8
VW	Jetta	2005	1.8 Litres	46.4	49.6

Data from [www.fueleconomy.gov](http://www.fueleconomy.gov)

Table 8.1

### City Driving

Average number of kilometers traveled on a gallon(3.75litres) of petrol for 2005 models

Make	Model	Year	Engine size	AUTOMATIC (km per gallon)	MANUAL (km per gallon)
HONDA	Civic	2005	1.7 Litres	49.6	51.2
TOYOTA	Corolla	2005	1.8 Litres	48	51.2
KIA	Rio	2005	1.6 Litres	38.4	40
VW	Jetta	2005	1.8 Litres	35.2	38.4

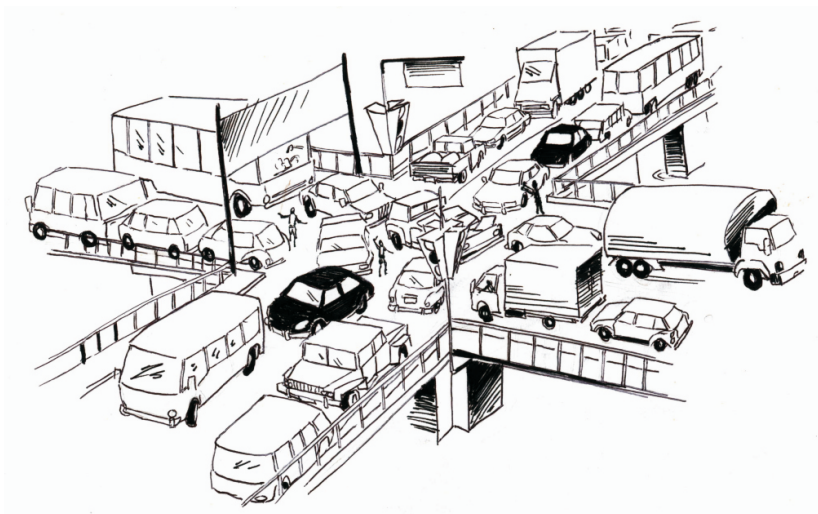
Data from [www.fueleconomy.gov](http://www.fueleconomy.gov)

Table 8.2

# 9

## Motor. Jam. Police

*Police. Jam. Motor*



Another condition that leads to fuel wastage is the classic traffic jam. You usually get the feeling that cars will soon start moving but they don't.

If your vehicle does not have starting problems, it is best to turn off the engine at the slightest hint of a traffic jam.

If you are lucky to be on an incline then its best to let the vehicle roll with your ignition off. Be careful when braking because you will need more pedal pressure for stopping the vehicle when the ignition is off.

From the information above, it means that if you are really interested in saving fuel, you must master the traffic pattern in your area. Timing your trip so as to avoid traffic jams is the surest way to save fuel.

Avoid movement during mission critical hours if you can help it.  
Avoid school dismissal times, work closure hours, market



closure hours, movement of important dignitaries. Always remember to turn on your car radio so that you can be informed of any form of civil demonstrations.

Depending on how badly your business is doing if you are self employed, you may have to adjust the time you go to work in the morning. There is really no point leaving your house at all if you are certain you will end up in a traffic jam lasting several hours.

### **Alternate Energy Source?**

Quite a lot of car owners cannot imagine owning a motor-bike and as such spend at least one quarter of their active lives in various traffic jams if they live in a major city. For many people, motorbikes are generally associated with accidents, broken bones and orthopaedic wards. If you are really this biased about motorbikes then skip to the next chapter.

Biased or not, if you have ever considered alternate forms of transportation either because you were stranded or because your unfairly used car disappointed you yet again, you should seriously consider owning a motorbike.

### **Safety issues**

So long as you are not a drunk or a speed freak, and you wear your helmet, boots, safety goggles, tough clothing and limit your biking to areas of relatively slow moving traffic, chances of a major accident are very slim.

To depend on commercial motorbikes where you have no idea of the driving ability, state of mind of the biker or the state of disrepair (including but not limited to the total absence of brake pads) of the motorbike and still insist that you do not want to

With most of these motorbikes , you can ride around for a week on a gallon of fuel.

I know some people cannot be caught dead on a motorbike because they associate it with poverty, hardship and 'bottom of the corporate ladder'.

Really, for congested city dwellers, nothing beats a motorbike. Some parts of Europe encourage the riding of motorbikes as an alternative to cars in city centers and developing nations should seriously consider this.

## The city dwellers dream machine

The Suzuki GSXR- 1000



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# 10

## The longer route

*is often the better route*



### **Bumps are bad news**

Though the amount of fuel saving that can occur by choosing an alternate route where available cannot be easily estimated, this can have a noticeable effect on fuel economy at a national level.

Billions of naira could be saved if more planning is done in construction of these roads. Judging by the US Department of Energy estimates, a bad or bumpy road will result in about thirty percent increase in fuel consumption, while a badly planned road will invisibly cost a country billions in the long term.

Avoid roads with bumps and potholes whenever possible and choose a road to the same destination that is longer and smoother. Also routes with a lot of inclines (hills) are very wasteful in terms of fuel.

### **The Engineering ‘Challenge’**

In advanced countries, roads are built with a minimum gradient even if it means cutting a tunnel through a mountain. Aside other safety related considerations, the amount of fuel saved by the total number of cars plying that particular route over a period of time justifies the engineering cost of tunneling. In other cases, the sections of the road are suspended to keep the road as level as possible.

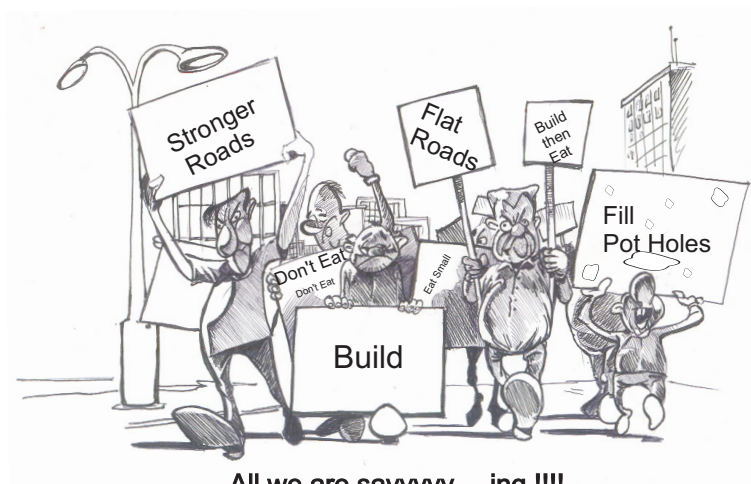
In checking some of the roads in some developing countries, one can only imagine the amount of wastage incurred in the attempt to ‘lower’ construction cost by following the topography of the areas where some of these roads are constructed.

### **Remember safety while economizing**

If you are really low on fuel, then use the topography to your advantage whenever you can. This might mean shutting off the engine when you are on an incline if you own a pre-iraq-1-war vehicle.

For safety reasons, remember the steering has a mechanism that locks the steering wheel when the ignition key is turned to the off position.

Forgetting this fact might lead to a very serious accident particularly if the vehicle is at cruising speed. So when you turn off the engine, ensure you turn the ignition back to the on position without restarting.



All we are sayyyy.....ing !!!!

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# 11

## Watch that load!



*Madam No -o oooo !!! I have only one gallon left*

### **The Unbreakable rule**

Like I said before, anything that constitutes a load to the engine requires fuel for the engine to overcome the load. A heavy vehicle will always consume more fuel than a lighter vehicle all other things being equal.

### **What's in your trunk?**

Have you ever seen the contents of the trunk of most people's cars? A lot of load is carried around that is not necessary. The assortment of objects I have encountered include - 'Monday' (Sledge) hammer , empty cooking gas cylinder, a complete history of all replaced automobile components, Battery and various farm implements. Quite a lot of people literally drive refuse disposal vehicles .

If you are interested in fuel economy, please always check the contents of your trunk. Individually these items that you carry around does not constitute much weight but when its starts adding up you might not notice.

### **Create temporary enemies**

If you are quite low on fuel and have to cover a specific distance, then it's best not to even try and carry any passenger. Remove any extra weight from the vehicle and drive with economy in mind. Don't even stop to explain to your friend why you can't pick them up, you can resolve that later.

Though the effect of carrying passengers might not be that much , it could be the difference between getting to your destination on a Sunday with all the filling stations closed and

having to abandon your car somewhere midway.

Every five percent increase in weight over the curb weight of your vehicle will result in up to two percent increase in fuel consumption.

Assuming you drive a vehicle that weighs about one ton or 1000 kilograms (Honda Civic, VW Golf, Nissan Sunny ) , for every extra fifty kilograms you carry, your fuel economy decreases considerably. This also means that a heavier vehicle is less affected by the same load.

### **Still not clear ?**

If you own a small car that can do thirty kilometers to a gallon of fuel , carrying four adults will affect the fuel consumption of your vehicle . This means that by the time you run out of your last gallon of fuel you might be about three kilometers from your destination with four angry people to deal with.

Remember that the average man weighs about 65 kilograms. If you are very low on fuel, carrying four people is not a very good idea on a light subcompact vehicle. However, carrying the same number of people in a two ton vehicle ( Mercedes 500 , Navigator et al - remember that the correct rating for such vehicles is not in miles per gallon but throttle openings per gallon) will make very little difference in the overall fuel economy .

### **How to drive a taxi for life**

It is not easy to correctly estimate the cost of hauling load for a given distance. This is especially true if you are using a vehicle not specifically designed for haulage.

Similarly, shipping companies charge by the volume (space) occupied by cargo because the fuel consumption of the vessel is related to the displaced volume (Nobody really cares what you load up in your forty-foot container so long as its not explosives).

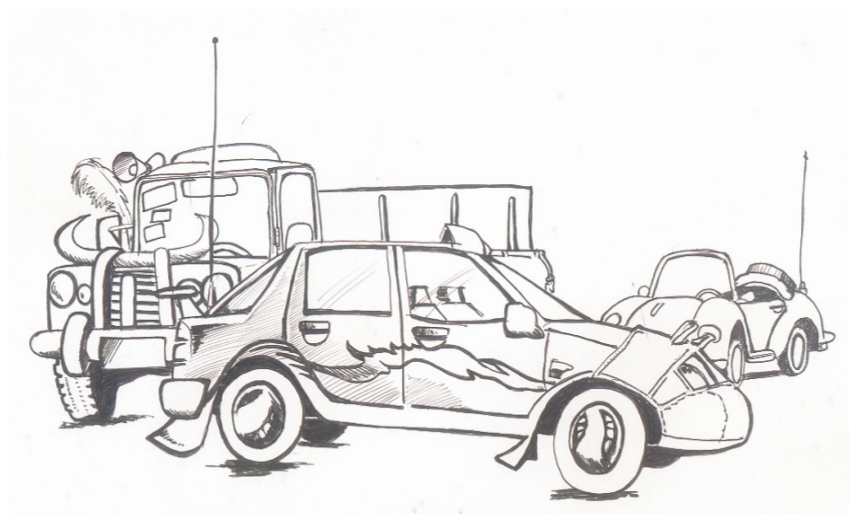
The cost of the load is not just affected by the increased fuel consumption but by the following factors : tire wear rate, engine wear, suspension - shock absorber life span and chassis distortion.

Finally, using a light subcompact vehicle designed for carrying four people is not the best way to haul bags of cement because its like using a pocket knife to cut down a tree. You are likely to injure yourself, waste your time and worst of all, you might not cut down the tree.

# 12

## Showing off

*comes at a cost*



## Aerodynamics: Air flow vs Fuel flow

Vehicle manufacturers invest a lot of time and money on research and development, and when necessary engage in espionage activities in order to get the best possible design for their new vehicles.

Extensive testing is undergone before the final shape of a vehicle is selected. This is to combine the best of aesthetics, performance and fuel economy. In most cases, the car is already in the optimal configuration in terms of shape before it is released to the consumers.

However, a lot of enthusiasts love to tamper with the original design of their vehicles to create some owner uniqueness and here in lies the problem.

*Save me from the man who wants to take that which  
Works for me and promises to make it work better...*

*A Russian adage*



Fig 12.1

Adding a rear air spoiler or a front air dam by an amateur enthusiast

Can lead to serious fuel economy issues. The picture of the rear of the vehicle in fig. 12.1 shows clearly what you should not do if you are interested in fuel economy. In some cases, the

vehicles actually look uglier and one is left to wonder at the intended effect.

Buying an after market add-on effects panel that has not been tested in a wind tunnel is not advisable because there is no way you can visually know if it will increase or reduce the wind resistance of a vehicle and hence affect fuel economy.

Also, these add-on parts are for specific vehicles though they will fit many other vehicles. If these add-on parts are not used in the vehicle they were designed for, they usually result in reduced fuel economy.

Some after market add-ons however are well tested. This is especially true for trucks. The wind deflector in the trucks in Fig 12.2 is known to reduce fuel consumption by over ten percent for fleet operators in long distance haulage business.



*Without wind deflector*



*With after market wind deflector*



*Factory installed*

Fig 12.2

These add-on parts were made for earlier trucks that were not designed with truck aerodynamics in mind. Modern trucks integrate the wind deflector on the roof line resulting in improved fuel efficiency and aesthetics.

**Think before you carry that**

On a more practical level, roof racks used for carrying loads on most estate type vehicles affect aerodynamics and hence fuel economy but not by much ( Fig 12.3). However, using these roof racks to carry load ( Fig 12.4) on a long distance journey is not advisable. It is best to put the load inside the trunk or inside the vehicle.

The amount of drag created by carrying load on the roof is so great for highway speeds that you could be wasting over one gallon for every four gallons in your tank even when the weight of what you are carrying is small.



Fig 12.3



Fig 12.4



## Practical beauty

Have you noticed how pretty modern pickup trucks look. Most of these trucks now come with plastic covering for the cargo area (Fig 12.5).

Resist the temptation to remove this seemingly unnecessary component because they can reduce the fuel consumption of these trucks by up to ten percent during long distance trips.



Cargo area covering  
Fig 12.5



Bull Bars  
Fig 12.6

## Cleanliness is next to ... .Fuel economy

Washing and waxing a vehicle can significantly reduce fuel consumption on very long distance trips. This will be most advantageous to long distance fleet operators with several vehicles since the savings could translate to zero fuel cost for one of the vehicles during a one year period.

Several years ago, it was reported that the Japanese Air Lines spent millions of dollars on robots for washing their aircrafts. The decision was based on an anticipated five percent improvement in fuel economy of their aircraft fleet. Except the cost is justified, such an amount cannot be spent to clean aircrafts regularly.

The effect of cleaning is most noticeable for very long distances, so most of the luxury buses could try this for long distance routes. Please do not ignore the term waxed. Waxing makes the body more slippery enabling easier air flow.

### **Macho-nomy**

Bull bars ( Fig 12.6) fitted to most modern Sports Utility Vehicles or Pick up trucks are good posing devices and give the trucks a decidedly macho look and feel. However, vehicle manufacturers rarely include these after market attachments to their vehicles as standard equipment because it might lower their competitiveness since they have to publicly advertise the fuel economy figures. These devices are not fuel efficient.

Recent studies have shown that these bull bars can reduce fuel efficiency by up to six percent. Considering that most of these SUVs are not very fuel efficient ,attaching these bull bars just makes a bad condition worse.

### **What about safety ?**

Modern vehicle chassis are designed with front crumple zones that are expected to collapse on impact in order to reduce the force transmitted to the vehicle occupants. These bull bars might cause more force to be transmitted to the occupants since they are not designed to collapse.

Also the vehicles Air bag (Supplemental Restraint System) monitors the rate of deceleration of the vehicle - the rate at which the vehicle is compressing during an accident - to know when to deploy itself in order to protect the occupants . These bull bars can interfere with the air bag control system resulting in late or non deployment of the air bag in an accident situation.

Finally, pedestrians have been knocked senseless by these bull bars at very low speed collisions like those that obtain in traffic jams. The degree of body injury sustained is much higher than with vehicles without these attachments.

**Yeah , But I want to protect my Head Lamps !**

The last time my vehicles Head Lamps broke, a youngster back from school threw a stone through the bull bars and shattered my vehicle headlamps! I gave him the chase of his life, on foot, to save fuel.

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# 13

## Riddle of the century

*What is vapour ware?*



My study into the effect of the fuel level in your petrol tank on fuel economy yielded very interesting results.

What ever represents load to the engine leads to fuel consumption. So having a full tank apparently leads to more fuel consumption negligible though it might be.

Any observant driver will notice that the rate at which the fuel gauge drops from full to empty is not linear. The fuel gauge seems to be saying that you are not even consuming fuel when the tank is full , i.e. you can travel for a long time without any deflection of the fuel gauge and when it starts dropping it drops rather fast and even faster on empty.

My initial investigation led me to suspect that most fuel gauges are not calibrated linearly which turned out to be true. However another variable seem to be at work here.

I came across an article on the Popular Mechanics magazine of the late 1980's that insisted that the effect was not due to the non linear calibration of the fuel gauge. Below is a possible explanation for this phenomenon.

When the tank is full, there is no fuel vapor in the tank as it is filled with liquid. As the fuel level drops, vapor is formed to fill

the empty space left by the fuel.

In brand new vehicles where everything is working, the hoses, tank cap, evaporative control system\* of the engine (carbon canister frequency valve) there may be no difference in fuel economy.

In older cars, it is highly probable that most of the hoses are leaking. Also the fuel tank cover may have cracked, the evaporative control system non-functional and all the insulation for the fuel lines/ fuel tank worn off.

This causes more heat to get to the fuel system, thereby leading to a noticeable drop in fuel economy. A brand new car will definitely be better off with a few liters in the tank as it will result in better fuel economy.

### **Opposite People**

Except you own a new car or a car in top condition, it is best to have your tank full if you want the best economy. This is because the evaporative losses are very high and gets higher as the tank gets empty. This means that it's better to top up your fuel when it is still almost full than to add a few liters to an empty tank if you own an unfairly used car.

In the real world however, the guy with the new car is most likely to have his tank full and the guy with the old car, poor guy, is likely to have his tank empty.

### **I still don't agree**

Please send your own hypothesis on this issue. the author will be glad to know more about this phenomenon.

GET SMART 94



# 14

## Tom Cruise

*Cruise control...*



## **The Days of thunder**

If you have not seen this movie, please watch it if you can find it. It's basically an example of what you should not be doing with your car if you are interested in fuel economy.

## **Controlling Tom**

To reduce the tedium of long distance driving, manufacturers started installing cruise control systems in most vehicles designed for European and North American markets.

Basically, this device enables you to set the specific speed you want to travel at and remove your foot from the throttle pedal . The cruise control system then maintains the preset speed regardless of the nature of the road. The cruise control automatically disengages any time you apply the vehicles brakes.

Recently, a lot of used cars arriving in the developing countries are equipped with this device. However our local mechanics ensure the device stops working on your first visit because it adds too much complexity to the already complex engine they have to contend with.

## **Is yours still working**

Using cruise control can improve your gas mileage by helping you maintain a steady speed, but only if you are driving on mostly flat roads.

If you are driving on hilly terrain, using cruise control typically causes your vehicle to speed up faster (to maintain the preset speed) than it would if you were operating the accelerator yourself. Before you engage the cruise control of your vehicle,

think about the terrain ahead .

**Australopithecus** - *I have never seen this device...*

For those coming from the ice age, the picture shows how far the modern man has come in the area of locomotion.



*Steering wheel with cruise control*

The cruise control buttons are usually located on the steering wheel, the turn indicator lever or wiper control lever. The names and functions of the cruise control buttons found in most vehicles are listed below.

Button name	Function
<b>Start (ON)</b> -	<i>This activates the cruise control module</i>
<b>Stop (OFF)</b> -	<i>Deactivates cruise control</i>
<b>Set</b> -	<i>Press this button when you want the vehicle to maintain the current speed your vehicle is currently traveling</i>
<b>Resume</b> -	<i>Use this to get the vehicle back to the preset speed after you have used the brake.</i>

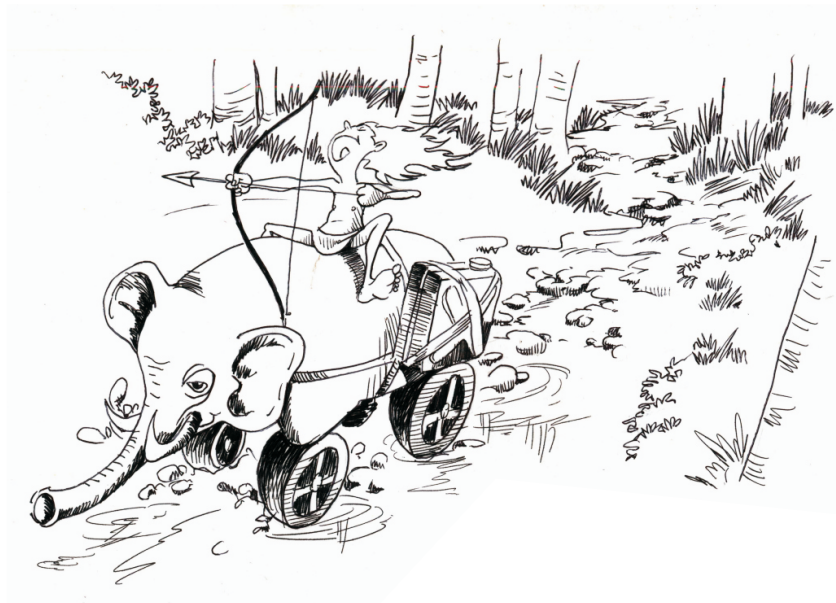
**NB.** *Applying the brakes automatically disengages the cruise control function.*



# 15

## The perfect vehicle

*...for Tarzan*



## **All wheel drive**

You must have seen those four-wheel-drive vehicles roaming the streets. Driving the four wheels is unnecessary except you live in the forest like Tarzan where you are sure the road will never be constructed in the near future.

In terms of fuel economy, why would you like to drive the whole four wheels of your vehicle when driving on two wheels will do. Turning four wheels requires more energy than turning two wheels. You can experiment with any size of wheels if in doubt.

If you are in the towing business or really live in swampy areas then you have no choice because these four-wheel -drive vehicles thrive in mud.

However you have to be able to differentiate between full time four-wheel-drive in which all the wheels are turning all the time and the part time four-wheel-drive where you engage the extra wheels on demand, such as in cases where you are stuck in mud or in a ditch.

For fuel economy purposes, go part time with your four wheel drive if you must drive one.

## **Hard data**

The table in Fig 15.1 compares the fuel consumption figures of some popular four wheel drive vehicles.

**Fuel consumption of Two wheel Drive (2WD) and  
Four Wheel Drive (4WD) Utility trucks (city driving)**

Data from [www.fueleconomy.gov](http://www.fueleconomy.gov)

Make	Model	Year	Engine Size (Litres)	2 Wheel drive (Kilometers per gallon )	4 Wheel drive (Kilometers per gallon )
FORD	F150	2005	4.6	24	22.4
TOYOTA	TUNDRA	2005	4.7	25.6	24
NISSAN	TITAN	2005	5.6	22.4	22.4
CHEVROLET	AVALANCHE	2005	5.3	22.4	17.6

Average number of kilometers traveled on a gallon(3.75litres) of petrol for 2005 models

Fig 15.1

While most drivers know that these vehicles consume a lot of fuel, they really do not quite understand how much they lose in the course of one year.

When these vehicles are used for the limited applications they are designed for, they are excellent. But, when used as a means of regular transportation - buying groceries, taking kids to school, going to church, outright posing operations, then quit complaining about the bad economy.

Even when the four wheel drive is not engaged as in the part-time version remember you are carrying extra load- extra axle, transfer case, drive shaft and a heavier gear box because these are the extra components that make up the four wheel drive vehicle.

*See chapter 11: 'Watch that load'*

## **Machismo**

The new term for luxury four-wheel-drive vehicles is SUV. This stands for Sports Utility Vehicle. While these vehicles are advertized as very capable of overcoming the most daunting terrain, in practice, their owners cannot stand scratching the

paint of these expensive vehicles and as such, avoid any road that is not paper-smooth.

Many years ago , my dad owned a Range Rover and there was a legend circulating in those days of how the vehicle can practically jump out of a gully.

Once on a journey, the vehicle got stuck in less than three inches of sand. We waited expectantly for the magic to happen and the dude did not have a clue on how to engage the differential lock of the four wheel drive system. After several tries, we had to find people to help push the vehicle.

Many drivers and owners of these four-wheel-drive vehicles still do not know how to engage the four wheels , will not read the owner manual and are brave enough only to go through a water logged portion of a paved road.

Besides, these vehicle are a complete embarrassment when stuck, except in the hands of a competent driver, and not many there are! With most drivers they huff and puff and sink more in the mud or sand.

The advertisers of these vehicles do a great job photographing them in the most rugged terrains, although you get the feeling that these vehicles were deposited there by an helicopter. This is because even armored personnel carriers used by the military will have a hard time getting to the location where the shots are taken..

Don't let your ego compel you to drive around on four wheel drive vehicles if you are thinking about fuel economy.



## Unveiling the masquerades



Source: [www.google.com/images](http://www.google.com/images)

Fig 15.2

*Q: Which of the vehicles shown in Fig 15.2 is a four wheel drive ?*

*A: You can't tell from above photos.*

Virtually all manufacturers have marketing departments that feed off the male ego and to accommodate those who just need the look and not the guts of an actual four wheel drive, have vehicles tailored for this very purpose.

The vehicles shown in Fig 15.2 are all masquerading as four-wheel-drive vehicles.

The only way to confirm their identity is to bend down and look for the front and rear axles because both the four-wheel-drive and the two-wheel-drive versions of the same vehicle are built on the same body type.

You can make a lot of money selling one in place of the other or lose a lot of money buying one and believing it's the other. Just a tip!

### **Looking is not Seeing**

While some four wheel drive vehicles are obvious, others are not so obvious. This is very important if you are a used car buyer as you might not quite know what you are getting into.

Flee from any vehicle that has the letter four written on it, or any thing that suggests four in any language or hints to the fact that