TANIA THE TOOLWOMAN

YOU AND YOUR CAR - PART 2

Hi, girls. Tania here again with a follow on from my last article on YOU AND YOUR CAR.

But first, guess what I have done?

I've gone and bought myself a brand new car! Nothing flash or fast or sporty or anything like that, just an ordinary Toyota Corolla but - what a change from the old Nissan Pulsar that has been living in my garage for the past few years.

Automatic transmission, power steering, air conditioning, EFI, OHC (just a bit of jargon), and even a little gadget that automatically locks all the doors when you press the button!

What luxury after driving an old bomb around for so long. But, what a surprise I got when I lifted the bonnet to take a peek at the workings.

I hardly recognised anything in the engine bay, let alone felt confident in sticking my hands down into the guts of my new toy.

New cars are a big "No No" to home mechanics these days, who thought nothing of whipping bits of the engine out over the weekend just for the hell of it. No more home oil changes or services.

These days, modern cars are literally computerised! Yes, would you believe that my humble Toyota actually has a mini microprocessor located somewhere in the engine that tells the car when to change gear, when to engage the cooling system, when to squirt fuel into the cylinders, plus a number of other checks and balances that analyses such things as the pollutants in the car's emission.

So, looks like my new car will be having regular services at the local Toyota dealers (at a much greater cost I might add) than the old Nissan which was used to home services and repairs.

But, basically, the engine of a new car and an old still work the same - so even if you do have a newer car, it is still helpful for you to have some more vocabulary and knowledge of the car's working so you can make informed decisions when getting your car serviced (or at least know what the mechanic is telling you!)

Last article, we went through some of the systems that make up the workings of your car, as well as described simplistically how the engine works.

This time I would just like to go through some of the other systems that make up your car.

THE FUEL SYSTEM

Most of us drive a car that needs petrol to fuel it (although some cars run on diesel or LPG).

First step - we put petrol into the fuel tank of our car! Speaking of petrol, can any of you remember the good old days when you went into a service station and just sat in your car! And, hey presto, an attendant rushed over to fill your car, and usually offered to check your oil and water and then washed your windscreen as well. They even checked the air in your tyres if you asked them to!

Those were the days when we bought petrol by the gallon, and it usually cost us about $2.00 or $3.00 to fill the tank of your average car. How times change - I know my kids have never known anything but self serve petrol stations.

These days, if you break down - forget about looking for a service station because not many actually know anything about cars anymore! They are better at selling groceries and fast food than taking care of our motoring needs.

I can remember clearly when they first introduced self service into the Sydney Metropolitan area. I was terrified of actually having to handle the petrol pump myself and

can remember driving miles out of my way just to find a petrol station that still had "driveway service".

Sorry, just reminiscing a bit.

OK - so the fuel goes in the fuel tank, which is usually located in the rear of the car. Through fuel lines, it is pumped (by the fuel pump) from the tank, through a fuel filter and into the carburetor.

The carburetor is usually round in shape and sits just below the air filter (that is the big circular flat thing that sits on top of the engine). The air filter contains a disposable filter that needs to be changed from time to time.

The carburetor takes the fuel and mixes it with air (which has been filtered) and then delivers the right amount into the combustion chamber.

In modern or newer cars the carburetor has been eliminated through EFI or electronic fuel injection.

This means that the correct amount of fuel is injected directly into each cylinder which is considered more efficient for better running.

Carburetors can be temperamental things and the fuel system is one of the causes of cars breaking down or simply refusing to start. How many times have you heard someone say the engine is 'FLOODED'. This simply means that, at times, through overzealous pumping of the accelerator (which - with each pump lets more fuel into the carburetor) there is just too much fuel in there and the carburetor is unable to function. Usually, this is rectified by simply waiting until some of the fuel has evaporated and trying again.

DON'T CONTINUE TO PUMP THE ACCELERATOR - this will only add more fuel into the carburetor.

Incidentally, this is how we make our cars go faster. When we put pressure on the accelerator, we open the "Throttle" more - this allows more petrol to flow through the carburetor and thus more petrol goes into the engine - we go faster!!

If buying a really old car, be aware that it will probably need to use LEADED petrol. If you use unleaded petrol in some old cars, it can affect its running.

Better check with a mechanic first to see if your car can run on unleaded petrol.

THE LUBRICATION SYSTEM

Oil is pumped from the sump by the oil pump, is passed through an oil filter then is squirted under high pressure onto the bearings and cylinder walls to enable them to move freely at such great speeds.

The oil in your engine needs to be changed fairly regularly - in newer cars at least every 10,000 kms but in older cars it needs to be done at least every 5,000 kms depending on the condition of your engine. As an engine wears down, minute particles of metal and other impurities circulates through the system. They are partially filtered by the oil filter but not completely. The oil filter also needs to be changed regularly - usually every couple of services.

The oil in your engine is contained completely within the main block and head of the engine. If all the seals and gaskets are intact and functioning properly, the engine bay should be clean.

When buying a car - particularly a second hand car - this is the first thing you MUST look for. Any oil present in the engine bay is suspicious and usually indicates a leakage somewhere. Areas around the oil filter or pump or where the head joins the block or the block joins the sump are particularly worrisome. If oil is present - it probably means that some gaskets are failing and repairs are imminent!

If you own an old car, it is really important to check you oil levels regularly (as well as your water in the radiator)

There is a special device called the "DIP STICK" which is usually located in the front or on the side of your engine (depending on which way your engine sits). You will see a long rod protruding from the engine - usually with a loop on the top.

The end of the dipstick sits in the sump where all the oil settles when the engine is not going.

Pull the dipstick out of the engine and WIPE IT CLEAN. You will notice two indicator levels marked on the flattened end of the dip stick about an inch apart. The

top mark indicates the maximum level the oil should be at, the lower means the minimum level of the oil.

Replace the dipstick into its hole, then draw it out again and you will see the level the oil is at.

If it is somewhere between the two indicator marks then it is OK - however, if it is under the bottom level, you will need to add more oil.

On the top of the rocker cover you will see a largish plug. Remove the plug and you will see into the rocker compartment. This is where you pour the oil.

When topping up oil, only pour a little in at a time. Remember, it has to find its way down into the sump, so take some time adding oil and keep checking the levels so as not to add too much oil to the motor (which I did once with disastrous results - caused a smoke screen James Bond would be proud of!)

When checking your oil level, it is probably best that the car has been sitting for a while. If you check it just after you have driven it around, some oil is probably still circulating in the block and hasn't settled back into the sump. This could give you a false indication and you could add oil when it is not really needed.

THE EXHAUST SYSTEM

The exhaust system is a grouping of pipes that takes all the harmful gases away from the engine (and out into the atmosphere).

From the head of the engine you will see a series of pipes coming from each cylinder position and then joining into one pipe. This is called the manifold and this is the first part of the exhaust system.

The gases travel through the pipes, pass through (usually) two mufflers and are then expelled through the exhaust pipe in the rear of the car.

The mufflers are cylindrical pieces of metal that contain 'baffles' which are designed to deaden the noise of the engine.

When you get a hole in your muffler the car suddenly sounds a lot louder and rougher. Some people like this sound - it sounds "hot" and "sporty". However, I think that in our urban environment we put up with enough noise pollution without adding to it by the sound of "hot" cars. Besides, a leaky muffler can cause compression problems and your car will not go as well.

With the increasing pressure from environmental groups - modern car manufacturers have had to come up with better ways to make cars more environmentally friendly and stop them from producing harmful emissions that pollute the atmosphere. One major modification has been the use of unleaded fuels which should reduce the amount of harmful lead in the air.

Newer cars are fitted with CATALYTIC CONVERTERS - which is a collection of computer driven sensors that monitor and adjust the amount of harmful emissions, and burn off any unused fuel and other chemicals in the exhaust.

So, with modern technology, and intense lobbying by green groups, we are now seeing the emergence of safer and cleaner cars on the roads (which is one reason I got rid of the old Nissan)

I know that it is expensive to get a new car - but really we need to think carefully about cleaning up the environment and getting old cars off the road would be a good start.

It would be great if we did not need to rely on our cars so much and governments put more resources into public transport systems instead of building more and more freeways. But the reality is that many of us really do need to use our cars to get to places of employment, study or for other activities, so have no choice.

THE VALVE SYSTEM

We mentioned last time the valves - one an intake valve which opens to put the fuel/air mixture into the cylinder, and the other the exhaust valve which opens to let spent gases escape into the exhaust system.

The valves must open and close at precisely the right time. The opening/closing mechanism is called a CAM SHAFT. A Cam shaft is a rod with egg shaped lobes attached to it, that, when rotated, opens and closes the valves.

In newer cars you will sometimes hear them described as OHC or Overhead Cams. This means that the cam shaft is located directly over the valves.

In older cars, the cam shaft is usually located near the sump and valves are opened by way of rods which are the links from the cam shaft to the rockers. The rockers are small pieces of metal that literally “rock” back and forward as they are pushed up and down by the cam shaft rods. It is the rockers that push the valves open and then let them close.

A timing belt (or chain) links the crankshaft and the camshaft together so that the valves will open and close in synchronisation with the pistons.

An engine is a complex piece of machinery that needs to be timed to precision. When a car runs “rough” it usually means that something is out of sync. and the “timing” needs adjustment.

Sometimes a slight adjustment is all that is needed to have the car running in synchronised harmony again!

THE COOLING SYSTEM

Cars run at extremely high temperatures and must be kept at a certain temperature to enable it to work properly. Most engines are cooled by water (the main exception here is the old Volkswagen Beetle - but then again there are many differences in their engines generally - I had one in the early ‘70’s!)

At the front of the engine bay is the radiator. This strange looking contraption cools the heated water as it is pumped through the block. Usually there is a fan behind the radiator which helps to cool the water. Most fans are now electrically operated, but very old cars may still have fan belts.

The water is pumped through the block then back to the radiator to be cooled before passing through the engine again.

Some cars have a tendency to “boil” especially in extremely hot conditions when the temperature of the water is not cooled sufficiently, or when there is some problem in the cooling system. One of the usual causes is that the rubber hoses that connect the radiator to the engine are leaking. There are two hoses - one at the top of the radiator and one at the bottom. It is a good idea to regularly check these hoses for leaks because, as they get old they get soft and are prone to splitting. If the hoses are OK then there could be a fault in the thermostat.

If your engine boils (you will notice the temperature gauge on the dashboard go sky high) and you will sometimes see steam rising from the engine.

Stop immediately - if you continue driving you will risk running out of water and the engine could seize up completely if allowed to get overheated.

NEVER TAKE THE CAP OFF THE RADIATOR WHEN THE ENGINE IS BOILING. The water is under high pressure and will be extremely hot - literally boiling. It could spray up causing severe burns to whoever is foolish enough to want to do this.

When the engine has cooled slightly, you can try to release some pressure by placing a rag over the radiator cap and slowly rotating it until the pressure is off.

When putting more water into the radiator after the engine has boiled, always start the motor again as you pour in the water. This will start circulating the remaining water through the engine, thus ensuring the cold water being added does not suddenly hit the overheated engine thus risking some damage.

This is about it on this topic for now, but keep tuned because in the future I’ll bring you other interesting articles in our LET’S GET DOWN AND GET DIRTY section.

But, before I go, I’d like to extend an invitation to any women out there who have some great stories to tell about YOU AND YOUR CAR. You may have had a bad experience with some mechanic, or you may have broken down in the middle of nowhere and have a great story about how you survived, or you may just want to tell us about your car - how much you love it or how much you hate it.