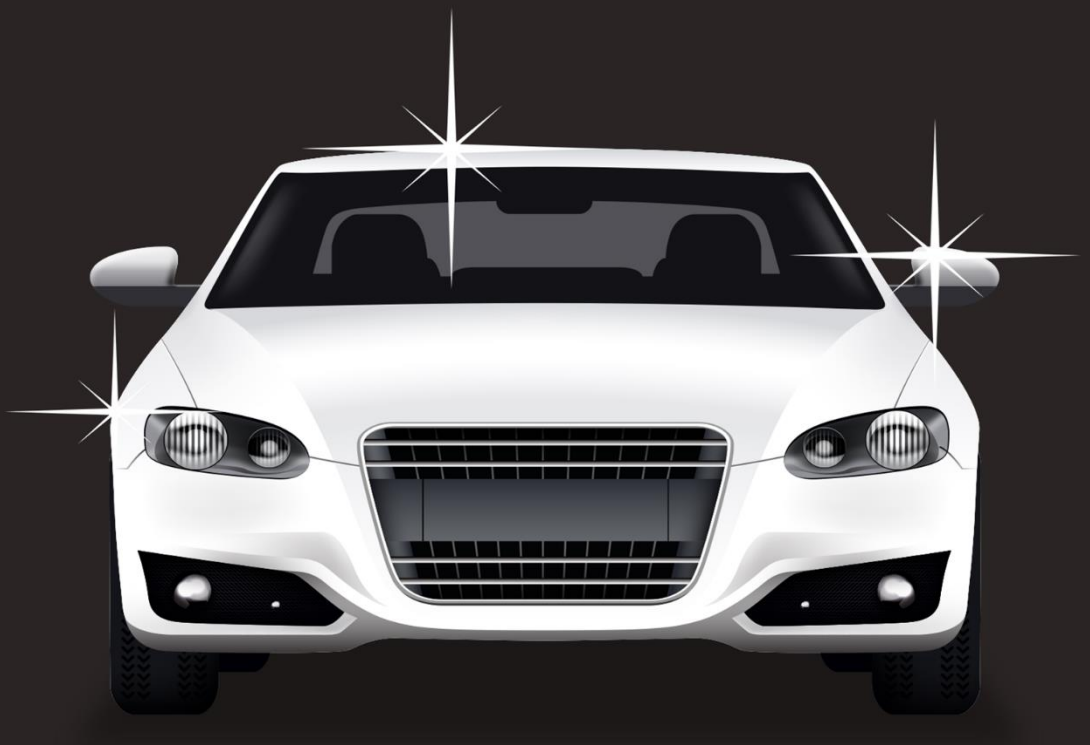
CAR CARE

BLACK BOOK



MIKE PINEDA

CAR CARE BLACK BOOK

1

TIPS AND ADVICE SO YOU CAN DEPEND ON YOUR CAR

A car is an expensive investment, so knowing how to keep your vehicle in tip-top shape can save you tons of money. Overall, the cost of owning a car is a lot higher than many might think – there is the cost of car insurance, taxes, interest on the car loan, repairs, fuel costs, and the cost of the vehicle itself. By implementing all or some of these car care tips, you can begin to save a significant amount of time and money.

Just a little time spent on research can save you future repairs and tons of money. You don't need to be mechanically savvy to detect common vehicle problems. You just need to be able to use your sense of smell and sight.

Take a Look Around

Are there stains under your vehicle? Do you see drips? They may not be a problem but if you see wet spots, it can be a symptom of something far more serious. What color is the liquid you are seeing? Is it blue, orange, yellowish green? Then it could indicate a radiator leak, damage from an overheated engine, or a water pump that needs repairs. Leaks such as these should be addressed quickly.

Black oily fluid or dark brown could indicate an oil leak on the engine. A bad gasket or seal can cause this type of leak. These types of repairs can quickly run into a lot of money so it's a good idea to take your vehicle to a mechanic you trust.

A red oily spot could indicate power steering fluid leak or transmission leak. Sometimes you will see clear liquid, which is usually just condensation and nothing to worry about. If you see light smoke coming from your wheel while you are driving it could mean you have a brake that's stuck and you should pull over. Any type of smoke means you need to see a mechanic regarding a vehicle repair.

Put Your Nose to Work

Don't be afraid to sniff around and see if you can detect a problem with your vehicle. If you smell burned toast it may be burning insula-tion or an electrical short. Don't risk driving it. If you have a rotten egg smell it's likely the catalytic converter and it will need to be repaired.

A thick sharp odor is often a symptom of burning oil. Have a look under the car to see if you can spot a leak. You may also see a bluish smoke coming from your vehicles tailpipe – you need to have this looked at as soon as possible.

If you smell gas after your vehicle fails to start the engine may have become flooded. Wait a few minutes and try again. If you continue to notice a gas odor you may have a leak somewhere in your fuel system, which can be dangerous, so have your vehicle taken to a mechanic as soon as possible.

These simple tips will help to alert you of a potential problem with your vehicle that should be addressed.

2

HOW TO PROPERLY CHECK YOUR FLUIDS

Part of keeping your vehicle in tiptop shape is to make sure you regularly check your fluid levels. In fact, monitoring of these levels is vital to the health of your car. It's a great idea to read your owner's manual. There should be diagrams of the engine there that will show you where to check all the important fluids. It's a great way to get an idea of where the vital fluids can be found. You can also use the internet to pull up a similar picture that can help you.

Engine Oil

1. You'll find towards the front of the engine a cap marked "Oil." Check your oil with the engine off. Remove the dipstick
2. Wipe the oil off with a rag
3. Put the dipstick back in
4. Pull it out and get your reading
5. There will be two marks on the dipstick – minimum and maximum – anything in-between means your oils good.

Below the minimum and you need to add oil. In older vehicles it's a good idea to check your oil every couple of weeks. In newer vehicles check monthly.

Transmission Oil

If you have an automatic transmission you will find a dipstick to check your fluid level. It's usually found towards the back of the engine. There are different methods for checking transmission fluids, which can be found in the owner's manual. For most vehicles they have to be running and the transmission needs to be in neutral or park. To get a true reading the transmission should be warmed up so take it for a short drive to bring it up to operating temperature. Checking the level follows the same steps as with checking the oil. Check annually.

Engine Coolant

You should never open the radiator cap when the engine is hot. You can be splashed by the hot coolant and suffer serious burns. The majority of cars have an overflow bottler with visible level markings. You should make sure your coolant is between these markings.

Power Steering Fluid

Your car uses oil to assist with the power steering. This fluid should be checked regularly. Often it is checked at the pump but sometimes the reservoir is separate and away from the pump.

Brake Fluid

Most of the newer cars allow you to check the brake fluid levels without ever having to remove the master cylinder cap. There marking on the side of the reservoir identifying the different levels.

When you are removing the cover be careful none spills on the paint as it lifts paint quickly.

Windshield Washer Fluid

You'll see the jug that contains the blue liquid that's magical for keeping your windshield clean. Most of the reservoirs are visibly marked. However, in some of the newer vehicles the reservoir is buried making it hard to see. Just pull the top off and start filling – you can't hurt anything if you it overfills. A funnel can make it much easier to fill your washer fluid and other fluids as well.

3

6 SUMMER CAR CARE TIPS THAT ARE ESSENTIAL

Before you jump in the car and head out on that summer voyage it's a good idea to make sure your vehicle is in ready to go condition. After all, there's nothing worse than sitting on the side of the road waiting for a tow truck when what you wanted to do was enjoy a day at the beach.

1. Check Your Fluids - Run your car for a few minutes and then check the oil. It should be in the ok range and it should also be clean on your dipstick. Oil changes are recommended at different intervals ranging from 3,000 miles to 7,500 miles. Check your owner's manual for the recommendations for your vehicle. If the dipstick is at the add mark, you need to add oil. Regardless of mileage if your oil is dirty you should consider an oil change.

2. Check Your Windshield Wiper Blades - Good wiper blades will be a real benefit during summer rainstorms and thunderstorms, which can occur without much notice. Winter conditions tend to cause blades to become hard and inefficient. Check all your fluid levels

including, wiper fluid to make sure everything is topped up before you leave.

3. Know Your Tires – You should know the proper inflation for your tires. You can find this in your vehicle documentation, tire documen-tation, or on the sidewall of the tire. Then grab your tire pressure gauge and check their inflation. The heat of summer will increase your tire pressure so it's a good idea to test before you drive far. Remember to include your spare in your tire check.

If you are driving with tires that are underinflated you a blowout, while an overinflated tire puts you at risk of hydroplaning in rainy weather. Properly inflated tires will increase your fuel efficiency by as much as 3% so there's a real benefit to making sure you check your tires.

While you are at it, take a minute to check the tire tread. Use a penny – stick it in the gaps with the head face down. If you can see the head it's time for new tires.

4. Visit Your Mechanic – A visit to your mechanic is a good idea before any long trip or for your regular maintenance if you don't do it yourself. Your car will need regular tune-ups and regular oil and filter changes.

5. Check Belts and Hoses – Check for heavy wear or cracking and replace before they fail.

6. Be Prepared – Always carry an emergency kit with you that includes a first aid kit, jumper cables, air compressors, blankets, and it is also a good idea to carry water and energy bars.

4

8 WINTER CAR-CARE TIPS

Winter brings along a whole new list of concerns for your automobile. The severity of winter depends on where you live. While newer cars require less intervention from us humans, they still need to be prepared for winter. By imple-menting all or some of these car care tips you can begin to save a significant amount of money.

1. **Watch Your Tire Pressure** – Watch your tire pressure, which will drop when the temperature drops. When you keep your tires prop-erly inflated your will get better fuel economy, and it will also help against flat tires.

2. **Keep Your Fuel Tank Above One-Quarter** – On older vehicles, this was done to ensure the fuel lines did not freeze. While it doesn't happen as often with new vehicles it can still happen so why not ensure it doesn't. In addition, during winter driving it's a good idea to be prepared in case you become stranded.

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3. Check Your Fluids – Some of your vehicle's fluids are affected by winter conditions. Take a few minutes to inspect your vehicle's cooling system, and every year you should do a coolant flush. Cooling system failure is the main reason for engine related breakdown, which can lead to repairs costing thousands. You'll need to add antifreeze at a ratio of 50/50 antifreeze/water. You should invest in an antifreeze ball tester so that you can check your ratios throughout the winter season and add antifreeze whenever necessary. Make sure your windshield washer fluid is topped up with winter fluid.

4. Check Your Battery – Older batteries can have trouble during the winter months with the cold. Make sure your terminal posts do not have any corrosion, because when the posts are corroded it can make it harder for the battery to start the car. When there's extremely cold weather the life expectancy of the battery can be shortened. Finally, make sure you always have jumper cables, just in case your battery goes dead.

5. Do an Oil Change – Even if your vehicle isn't quite due for an oil change, now's a good time to do an oil change. With older vehicles lighter weight oil can be used to keep your vehicle's parts better lubricated during the winter. Newer cars use lighter weight oil year-round.

6. Change your Windshield Wiper Blades – Changing your wiper blades at the start of the winter season will ensure they are new. Winter wiper blades do a better job of pushing the slush off your windshield and scraping away the ice.

7. Put Snow Tires On – Winter driving conditions mean you want to have good traction. Depending on where you live and what you drive

snow tires are often a good investment. In some areas where snowfall is minimal you can away with a solid all season radial tire.

8. **Carry an Emergency Kit** – Your emergency kit should include cold weather gear such as hats and gloves, jumper cables, flares, flashlight, and basic tools.

5

55 TIPS ON HOW TO EXTEND YOUR CAR'S LIFE

Keeping your car in top-notch condition means you can reduce the costs of repairs and you can relax because you know you can depend on your vehicle.

1. Your Vehicle Break-In Period

You spent your hard-earned money to buy your dream car, so you want to take care of it in a manner that will give you the most number of years of reliable transportation. Here are some things to keep in mind once you are the proud new owner of that car.

- During the first 1000 miles or 1600 kilometer you should keep your speed under 55mph or 88kpm or whatever the manufacturer recommends.
- Never let your new car idle for long periods both during the break in and throughout its life. Idling doesn't send adequate oil through the engine.
- During the break in avoid heavy loads, such as trailer towing, during the break in period.

- When accelerating keep the engine below 3000 rpm for the first few hours of your driving.

2. Each Day Drive With Care

You should drive your car with care every day, not just during the break in periods.

- During start up don't race your car engine, especially in the cold as it adds years of wear to the engine.
- You should not let your car idle to warm the engine. Because the engine isn't operating at peak temperatures the fuel combustion is incomplete, causing a build up of soot on the cylinder walls, contaminate oil, and damage other components.
- Shifting to neutral at red lights reduces the strain on the engine.
- When it is extremely hot or cold avoid driving at high speeds or accelerating too quickly. This behavior leads to the need for repairs more frequently.
- You can extend your tire's life by driving carefully. Watch for posted speed limits and comply. Avoid fast starts, turns, and stops. Do not burn rubber, avoid hitting curbs and avoid potholes.

3. When You are Stuck Take it Easy

When one gets stuck the first action is to rock the car by throwing into reveres then forward repeatedly, as well a spinning the tires. These acts are okay for a very short period of time, but if you are really stuck call a tow truck because the damage you can do will far exceed what the cost of tow truck will be.

4. Go Light With Your Keys

Does your keychain look like it could be used as an anchor? All those keys hanging off the ignition put unnecessary strain on the ignition, which can lead to the wear of the ignition tumblers. It's best if you can keep your ignition key separate, or at the very least make sure to keep the weight on your keychain down.

5. Take the Time to Find the Best Car Insurer

No matter how careful you are disaster can strike whether it's in the form of an accident, break in, or wind storm. It's important that you know you have insurance with a reputable provider that's quick to settle your claim. Make sure the insurer has a good reputation for claim payout and that they are known for being fair.

6. How to Preserve Your Car During Storage

If you are going to store your car for a month or longer, it's impor-tant that you prevent unnecessary repairs and damage from occurring.

- Top off the gas tank to reduce/prevent condensation from being able to accumulate in the gas tank. Add a fuel stabilizer, then drive around the block to distribute it through the engine components.
- To protect the car wash and wax before storing.
- Place a 4-mil polyethylene drop cloth on the floor to act as a vapor barrier.
- Disengage your parking brake to aid in reducing corrosion.
- Put your car on jack stands. This will take off weight of the wheels and tires.
- Disconnect and remove the battery. You can place the battery on a trickle charger, or you can periodically drain

the battery, with a small light bulb, and then use a low volt charger to recharge it.

- Use a rag to plug the tailpipe to prevent moist air.

Your Car Interior

Your car's interior needs special attention to stay looking as good as it did the day it came off the assembly line.

- Park in the Shade – A garage always offers the best place to park your car, but when a garage isn't available you can minimize damage from UV sunlight and heat by parking in the shade. If there isn't any shade available of if you are getting too many bird droppings from parking under the tree, invest in a car shade to maximize your protection. This will also keep your car cooler.
- Clean the Interior – Regularly wipe down the interior every time you wash your car. Dirt particles, spilled liquids such as soda pop , and abrasive liquids can be corrosive and cause damage. You can clean using a mild detergent and water. You should also vacuum each time. You should wipe the dust from the lenses of the dash gauges. Don't apply too much pressure or it will scratch them.
- Use Floor Mats – Floor mats can protect your vehicle's carpeting especially during the winter when there is slush, salt, and even mud. The waffle style mats don't slip and they are easy to vacuum and wash off.

7. Preserve Your Door and Window Seals

First clean with soap and water, then use a rubber protectant like Armor All ® or a silicone based product on the weather stripping on the windows and doors to keep them conditioned and stop them

from drying out. You should never use a product that is oil based such as WD-40®, which can damage your rubber.

If your weather stripping is allowing water to leak into the interior it's time to have it replaced or repaired. Most small leaks can be fixed with brush on seam sealer. Repair torn section with a special rubber caulking that can be purchased at most auto parts stores.

8. Stop Leather from Drying and Cracking

Leather interiors are rich and durable if they are maintained properly, but when neglected they quickly become cracked and unappealing. Leather becomes soiled over time. You should use a leather cleaner to remove dirt and the follow that with a leather protectant that will resist stains, and keep your leather soft and supple. It will also make it easier to clean in the future.

9. Caring for Upholstery

If you have an upholstered interior any home upholstery cleaner or car upholstery cleaner can be used. You won't need much as you don't want to actually soak the fabric. Apply then wipe off with a clean cloth. If the fabric has a nap use a brush to lift the texture back up.

Applying a fabric protector such as Scotchgard ™ will help the upholstery to resist dirt and reduce stains. It will also make it easier to clean the next time. Before you apply a fabric protector you should clean the fabric.

To reduce staining from children riding in baby seats take a towel and place it under the car seat or you can use a piece of heavy uphol-stery plastic. This will save on your seat becoming permanently damaged from food and/or liquid spills.

Your Car's Exterior

- **Protect Car Paint From the Sun –** When your paint looks good your vehicle looks good but when exposed to the sun's ultraviolet rays it can begin to break the paint down and cause it to fade. A garage is your first line of defense but most of us don't have a garage. The next best thing is to use a car cover, which can protect it from all of the elements.

10 . Washing Your Car

Washing your car makes it look nice, but it has a much more important function removing dirt and debris that can scratch your paints surface. You should also wash your vehicle during the winter months so the sand, road salt, and slush is removed before it can damage your paint finish. It's easiest if you can visit a car wash but it can be done at a home with a bucket of warm water as long as the temperature is above zero. Use a mild soap designed for washing your car. At least a few times a year you should use tire and rim cleaner.

11. Waxing Protects Your Car

Wax is important to your car's paint. It not only makes the paint look new it also slows down oxidation and it creates a barrier that protects your paint from pollution, sap, bird droppings, etc. Here's what to do to get the best protection:

- While liquid waxes may be tempting because you can get a nice shiny car with a lot less work, the bottom line is that paste wax is stronger, harder, and lasts much longer. Look for a past that's high in carnauba wax.
- Next using a sponge apply a very thin coat of wax to the paint. Make sure it's even, and don't apply too thick (a

common mistake). If you apply it too thick it's really hard to remove all of the residue.

- A soft cloth works best to remove the dry wax. It won't scratch the paint.
- Because the wax on the hood wears away quicker from the engine heat, it's a good idea to apply an extra couple of coats of wax to the hood.

12. Put a New Skin on Your Car

Paint is vulnerable but there is a way to protect the areas that tend to see the most stone chips using a self-adhesive urethane film. These urethane films are best applied professionally; however, if you are handy at this type of thing you can give it a try yourself. 3M™ and Scotchgard™ both make a product. Once it's applied to the vehicle you can wash and wax as normal.

13. Touch up Nicks

Even when we are ultra careful nicks occur to our paint. Touch-up paint is available and for newer vehicles it's pretty easy to match up colors. Use touch up paint to touch up nicks before the rust can begin to rust.

14. Quick Repair for Light Covers

If you find yourself with a cracked turn signal or taillight cover you can replace the entire You can use tape to do the repair, which will hold you over until you can properly repair it. You must use the orange or red tape that is made for this. Others will not adhere.

15. Changing Bulbs Properly

When you are changing burnt out bulbs, clean away dirt. If the socket has become corroded use a small wire brush or steel wool to clean away corrosion. Then wipe away the debris and install the replacement bulb.

16. Preparing Small Chips in the Windshield

Rock chips or cracks in the windshield can impede visibility and when left unattended they tend to get much larger when temperatures change. It's a lot cheaper to stop into the windshield repair shop and have a chip or crack repaired, which restores the original integrity of the glass and keeps visibility clear.

17.When Hauling on the Roof

You might be tempted to overload your roof. Check your owner's manual for your vehicles specifications. It's usually some-where between 150 to 200 lb. or 68 to 90 kg. What does that mean in items? That's about eighteen 8' 2x4's or three ¾" sheets of plywood. To protect the roof you can place a piece of card-board or a blanket down. You can also invest in a set of luggage racks.

18. Secure Your Load

Always make sure your load is secured to protect your car's paint from being scratched or dented. It pays to buy the proper bicycle, cargo, or luggage racks. You can also use cargo straps and place a blanket first to protect the vehicle surface.

19. Inspect your Wheel Well Splashguards

Splashguards are designed to keep water and slush from splashing up into the engine compartment doing damage to electrical components. For the most part these splashguards are quite flimsy and are often torn off without the driver being aware. You

should check these guards on a regular basis and if loose refasten or replace.

Tires, Wheels, and Brakes

20. Check for Uneven Tire Wear

When tire inflation is maintained and you still suffer from uneven wear, it may indicate you need a wheel alignment. It can also indicate you have been improperly using your brakes, shock problems, internal tire damage, worn bushings, or a bent wheel.

21. Check Tire Tread

Different countries have different requirements pertaining to tread. In North America all tires sold must have “wear bars” molded into the tires. This makes it easy to know when tires must be legally replaced. The general rule of thumb is that when the tread is worn down to 1 1/16” or 1.5mm the tires need to be replaced.

22. Keep Caps on Valves

One small piece can cause so much grief. When the valve cap goes missing it can lead to a slow leak. These caps stop moisture and dirt from getting in. Check your valve caps often and make sure they are not damaged or missing. When you have tires replaced ask the shop to ensure the tires have new valves.

23. Keep Tires Properly Inflated

Make sure your tires are properly inflated. When tires are under-inflated it causes excessive heat and stress that can result in tire failure. To get the most life out of your tires, invest in a pressure gauge so that you can check your tires regularly. Once a month is recommended, but during hot weather it should be more often. For an accurate reading check when vehicle has been driven less than one

mile and when the tires are cold. Inflate according to manufacturer's recommendations.

24. Do the Wet Thumb Test

When you are using a service station air pump before you being to put the air into your tire, depress the inflator valve pin with your thumbnail. You are checking for moisture. If your thumb becomes wet go into service station and let the staff know the tank needs to be drained. Find a different service station. Why is this so important? Well because if that moisture gets trapped in the tire it can lead to variations in the tire pressure and it can also corrode rims.

25. Rotate Your Tires

Regular tire rotation aids in tires wearing evenly and it will lead to the maximum tire life. Your first rotation is very important. Your owner's manual will provide you with a rotation period and pattern. If you aren't able to locate this schedule then rotate your tires every 6000 to 7500 miles or 9700 to 12000km.

26. Temperature and Tire Inflation

Temperature affects tire pressure. When the temperatures drop or soar your tire pressure decreases. When tires are underinflated they can wear and faster and result in poor driving

27. Using Wheel Cleaner

Your wheels take a beating contacting with the road. Combine that with brake dust and you've got some tough stains to remove. Regular car wash soap just can't remove this grime and grit. You need to use a cleaner that is specifically designed for stains. There are different wheel cleaner formulas for different wheel finishes such as

chrome and aluminum. You can also add a layer of protection by using wheel polish on metal wheels, and wax on painted wheels.

28. Always Lubricate Your Lug Nuts

If you don't occasionally lubricate your lug nuts they will seize to the studs as a result of corrosion. Repairs can be costly and if you have a flat tire you could find yourself in need of a tow. Each time you rotate your tires it's a good idea to use an anti seize lubricant, which you can buy at your local automotive store. Use a wire brush to clean the studs then wipe the lubricant on. It's formulated to stop lug nuts from seizing while at the same time stops them from working their way off while you are driving. If you do find yourself with a seized lug nut try spraying Liquid Wrench or WD-40 on the affected lug nut. Wait 10 to 30 minutes for it to penetrate. Then use your ratchet to remove the lug nut.

29. Stop the Loss of Hubcaps

How often have you been driving down the road, only to be passed by one of your hubcaps. Hubcaps become damaged, work themselves loose, or not reinstalled properly and can then dislodge themselves from your car. They can be expensive to replace. You can stop this from happening by:

- Newer plastic hubcaps are held in place by a retaining wire ring that you snap into the wheel tables. Be careful not to bend or break these tables.
- With the older metal hubcaps pry the metal clips just slightly outwards. This should take care of any
- issues. Use a rubber mallet and tap gently as you go around the hubcap in a circular motion. Don't hit too card because you'll break the clips.

30. Have a Regular Wheel Alignment

Wheel alignments are important. When your wheels are not properly aligned your tires will wear out sooner, you'll have poorer handling, and it can cause wear to the rack and pinion or other steering components. Refer to your owner's manual for recommended schedule, otherwise at least once a year have your wheel alignment checked. If you have a 4x4 or you do a lot of off road or rough road have your wheel alignment checked more often. If your vehicle pulls to the right or left have your wheel alignment.

31. Top Off Your Brake Fluid

Each month you should check your brake fluid. Prior to opening the master cylinder lid wipe away any dusts. If you need to add fluid refer the manufacturer's recommendations. You should never substi-tute fluids. For example, never use power steering fluid in place of brake fluid. Never use brake fluid that has been opened, because once it has been exposed to air it can quickly become contaminated.

32. Caring for Your Anti Lock Brakes

The anti lock brake system found in modern cars is sensitive to moisture, which can easily destroy the expensive ABS pump and cause the inside of the brake lines to rot. Since brake fluid tends to attract moisture every couple of years your brake lines should be bled. They will also be checked when you have your annual wheel alignment check. If you have a 4x4 or you spend a great deal of time off road have them checked more often.

CAR ENGINE AND RELATED SYSTEMS

3. Check Your Oil

This is very important!

- Start by draining your old oil.
- Then clean the drain plug on the oil pan, and wash off before you reinstall your oil plan.
- To check your oil run your car for at least 15 minutes so that the oil warms up.
- Park the car on level ground.
- Turn the engine off, wait 15 minutes so the oil can drain back to the oil pan.
- Remove the dipstick and wipe it clean
- Reinsert it and push it all the way in.
- Again pull the dipstick out and read the oil level.
- It should be somewhere between the hash marks. If in the add region add oil according to your manufacturer's specifications.

34. Change Your Oil

Today's manufacturers recommend a longer period between oil changes, the fact remains the more often abrasive dirt and metal particles are removed from your engine the longer it will purr like a kitten. It extends your engines life. If you want to maximize your engine refer to the schedule for severe intervals in your owner's manual. This is especially important if you drive in stop and go traffic regularly. For years it was recommended your oil be changed every 3000 miles. Those intervals are increasing but there's no harm in sticking to the old numbers.

35. Which Oil to Use

There are a number of oils on the market. Let's quickly review them.

- **Detergent Oil** – Almost all modern multi weight oils are detergent oils, which remove soot from the internal engine parts, and then suspend those particles in the oil. These particles are too tiny to become trapped by the oil filter so they stay floating in the oil. This is what makes your oil turn darker. These particles don't hurt your engine. However, when the oil becomes saturated it cannot continue to hold these microscopic particle. Current oil change schedules occur before this happens.
- **Oil Viscosity** – The viscosity of the oil is specified using two numbers. The first number is the viscosity when the oil is cold. You will then see the letter W followed by another number. The W stands for "winter." Most people think it stands for weight. There will then be another number, which tells you the viscosity when the oil is at operating temperature. The oil gets thicker as the number gets bigger.
- **Climate Considerations** – Your owner's manual will list which oils are acceptable to use at different temperatures.

For example, if you live in a warm climate 10W30 is an acceptable alternative to 5W30. In the past there was a summer oil and a winter oil. That's no longer the case. However, if you live in a warm climate and you are using 10W30 then make sure you switch to 5W30 for the cold season.

36.Changing the Oil Filter

When you change your oil you will also change your oil filer. The easiest is to follow what the manufacture recommends for filter, but there after also after market filers provided by companies like Valvo-line, Pennzoil, Casite, Motorcraft, and many more. These filters will match to the manufacturer's filters. Keep in mind the quality of manufacturers filters is much higher than the aftermarket filters.

There are also what are referred to as trade brand filters, which are found at many of the quick oil change places. For those who use synthetic oil premium filters are often used. They are higher priced but the benefits have been proven.

37. Changing the Fuel Filter

In recent years manufacturers have been telling us that we don't need to change our fuel filters so often. We still recommend changing your fuel filter at least once a year. When a fuel filter gets clogged it will cause your engine to perform poorly, and it will reduce your gas mileage. It's also a warning sign for a gas tank that's beginning to corrode. You will see those particles in the filter.

38.Improve Gas Mileage with a Clean Air Filter

Check your air filter every couple of months and when it's dirty replace it. Air filters are easy to change. With carbureted vehicle you just remove the big metal lid – you can't miss it. With fuel injected

cars you remove the rectangular box. Your manual will show you exactly where to find it.

39. Keep Your Transmission Healthy

It's important to change your transmission fluid after the first 5,000 miles or 8,000 km in a new car and then after that every two years or 25,000 miles or 40,000 km.

40. Never Overfill the Crankcase

Don't overfill your crankcase with oil, because if you do air bubbles will form in the oil and then the oil pump will not be able to function properly. This can lead to engine overheating and stress on a variety of engine components. It can also cause fouled sparkplugs.

41. Remember Your PCV Valve

The PCV valve or positive crankcase ventilation valve is part of the emissions system in older cars. The valve's job is to re-circulate partially burned gases from the engine crankcase to the combustion chamber. It's very important and should be changed every 30,000 miles or 48,000 km. It also help to improve gas mileage by preventing the buildup of harmful corrosion and sludge.

42. If You Tow You Want an Oil Cooler

If you use your vehicle to tow a trailer of some kind you should have an oil cooler installed. You could also install a transmission cooler. They are easy to install, cost very little, and save you huge bucks in major engine and transmission repairs.

43. New Spark Plugs Equals Better Gas Mileage

Electronic ignitions, and cars with computers on board have elim-

inated the need for a regular tune-up. However, it is still important to change your spark plugs regularly. Most manufacturers recommend you change your spark plugs every 30,000 to 40,000 miles or 48,000 to 64,000 km. Good spark plugs means your engine will perform better and you'll enjoy improved gas mileage.

44. Check Your Hoses

Hoses become brittle and can break with time. When the car is shut off and has cooled, squeeze the hoses. If they are extremely stiff, make a crunch sound, are soft or sticky, have bulges, or looked collapsed in any section, it means the hose is weak and should be replaced. You should never drive with a damaged coolant hose and your engine could overheat and you could land up with a very expen-sive repair bill.

45. Belt Tension

You should check the tension of all your belts. You should also check for wear. You'll find belts that run your AC compressor, power steering pump, and water pump. To check for tension press in the center of the belt where the longest exposed part is found. If you can depress the belt ½" to 1" or 13mm to 25mm, but no more, the tension is good. If not you can either take your car to auto shop for adjust-ment or if you are handy do it yourself. Watch for cracks and fraying, which mean you should replace the belt(s).

46. Proactive Check the Timing Belt

Your manual will tell you when you should replace the timing belt at 50,000 miles but it does vary. When a timing belt fails it can result in thousands of dollars in engine damage so it's best to be proactive.

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47.The Engine Clean

It’s a good idea to do an engine clean every couple of years. By removing all the grime and dirt it becomes much easier to see any leaks you may develop. When washing your vehicle remember to take care to not soak important engine components such as distributor caps, or electrical parts. You can cover them with plastic bags. Liquid dish soap works well to cut grease. There are also many excel-lent grease cutting detergents on the market.

7

CAR BATTERY, AC, AND OTHER IMPORTANT COMPONENTS

48. Turn Your AC on in Winter

If you think I've lost my mind I haven't. You should turn your AC on at least a couple of times in the winter to prevent your AC compressor from seizing. Also, when the refrigerant circles it helps to keep all the hoses soft and healthy.

49. Maintaining Your Car Battery

It's important for your car battery to be in tip top shape, and for this to happen it should have regular maintenance. Maintaining your car battery isn't that difficult.

- It begins with keeping your battery clean. Wipe with damp rag using a mild dish detergent.
- Clean the batter posts or terminals – first remove the negative cable, then the positive cable. Black = negative, Red = positive. Dip a brass wire battery brush into a baking soda and water mix. Just a few tablespoons of baking soda added to a little bit of water and you'll have the right mix.

- Check for cracks on the battery itself. Also watch for bulging. These are signs the battery needs to be replaced.
- Reinstall your battery cables starting with the positive.

50. Maintaining Your Battery

If a battery has a vent cap you'll want to remove it and check the electrolyte level. It needs to cover the battery's top plates by at least a ½" or 13mm. You should not use tap water because it can contain minerals that may be damaging to your battery. Instead use distilled water.

51. How to Seal a Leaky Radiator

If you have a radiator that is leaking there are a number of radi-ator sealant that come in a powder or liquid form. The products circulate through the radiator and when they get to the hole the product comes in contact with air and forms a seal.

52. Dilute the Coolant

Your cooling system must include water and coolant-antifreeze. You do not use coolant undiluted. Generally the mix is a 50-50 ratio. You should also never use straight water in your radiator. Check your coolant-antifreeze at least a couple of times a month and during cold weather make sure you have adequate coverage to ensure your radi-ator does not freeze.

53. You Must Flush Coolant

Coolant-antifreeze loses its strength and becomes contaminated. You need to flush your system every two years for some coolants and every five years for other coolants. Read your coolant label for detailed directions. If you do not do a flush regularly you risk

damaging your radiator, and clogging the heater core. You can also have the thermostat and water pump fail.

54. Never Mix Your Coolants

You must never mix coolants of different colors. If your coolant is green then don't add pink coolant, because if you do you will land up with a thick solution of goop that can't do its job.

55. Checking Power Steering Fluid

Every month you should check your power steering fluid once the car has warmed up. If the level is low you should have the pump and hoses inspected for any type of leak. If the power steering fluid is low you can damage the power steering pump.

8

TIPS FOR A HEALTHY FUEL SYSTEM

The fuel system is key to your car running smoothly. The fuel system fees the engine the gas/diesel it requires to run and if any part of the fuel system isn't running properly it can lead to major problems.

The Fuel Sending Unit

This is where the fuel is help. The fuel reaches the tank via the filler tube. There is a sending unit that send information back to your gauge about the amount of fuel you have. If this sending unit stops functioning your will not get an accurate reading of how much fuel you have. If your fuel gauge stops working the problem will be either with the gauge itself or with the fuel sending unit.

The Fuel Pump

In the newer vehicles the fuel pump is almost always inside the fuel tank. On older vehicles it is attached to the engine or on the frame rail. If the fuel pump begins to malfunction your vehicle can stumble and run very rough. If the fuel pump fails your vehicle will

not run. Most modern fuel pumps can be heard when you turn the ignition key on. If you do not hear the pump running and your car won't start it could be your fuel pump.

Fuel Filter

A clean fuel filter is important to the performance of your engine and its life expectancy. Fuel injectors have very tiny openings that can quickly become clogged so the fuel filter stops these particles from getting through. If your vehicle has high mileage change the fuel filter annually. For new vehicles follow the manufacturer's direction. Signs of a clogged fuel filter include sputtering at high speed or the engine not starting. This is the most common problem with the fuel system.

Fuel Injectors

Since 1986 most domestic cars have been fuel injected. The fuel injector is a tiny electric valve, which is opened and closed by an elec-tric signal. Dirty injector happen over time deposits sneak by the fuel filter. This can cause fuel injectors to stick open sending too much fuel to the engine or to become plugged sending to little fuel to the engine.

The use of a regular fuel system cleaner helps to keep the injectors clean and can be purchased at auto stores, department stores, and most gas stations. Put it in your empty tank and then fill up. This will clean your injectors. Repeat every 3 months.

Where You Buy Gas Matters

You may be surprised to learn that it does matter where you buy your gas. You should always purchase from a well known recognized national brand. Gas stations with no affiliation buy what's left on a truck at the end of the day and the mix can make some vehicle run badly. Also any water in the gas will cause your

engine to run poorly and it will promote rust development in your fuel system.

When it comes to octane upping the octane is a waste of money unless the car manufacturer specifically recommends it. You will not get better gas mileage or better performance. For most of us the lowest octane at the pump is all that the vehicle requires.

Some Last Minute Fuel Tips

- Make sure you tighten your gas cap.
- When your cap is lose or missing gas will evaporate off, so make sure your cap is tight.
- Did you know if you park in the sun you will experience fuel loss due to evaporation, so park in the shade.
- Don't bother topping off your gas tank. When the automatic nozzle clicks off stop pumping otherwise it slops around and seeps out, which is a waste of your money.
- Properly inflated tires means better gas mileage. Underinflated tires means poorer gas mileage.
- Keep your engine tuned up. A properly tuned vehicle can boost your gas mileage by about 5%. A misfiring spark plug can reduce your fuel efficiency by as much as 30%.

9

CAR BODY CARE TIPS

Keeping your vehicle looking great doesn't have to be hard.

Even an old car can look like new with regular care.

We've all seen those collector cars that have never been repainted. Your vehicles paint can look that good decades from now too.

Washing Your Car

Wash your car at least once a month. Limestone, bugs, bird drop-pings – they can all leave permanent stains on your paint if not washed off. The moisture quickly dries on a clean car but when the car is dirty the moisture accumulates in the dirty areas, which can lead to corrosion. It's best to use a wash product designed for the paint on your auto.

At least every now and then you should also use a pressure washer. The ones at the coin car washes work well. The pressure washer is able to remove dirt from hard areas. Don't put the pressure water too close to the paint as it can cause peeling.

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Waxing Your Car

Wax your car regularly. The wax makes your car nice and shiny and it protect the paint from fading, environmental factors, and stain-ing. It takes only about an hour to wax an entire car. A quality wax will last around 3 months. By waxing your car just four times a year you can keep your paint looking like new.

There are a number of wax products on the market. So many that it can be overwhelming trying to decide. Sticking to a carnauba car wax is a good choice. It offers some of the best protection, is easy to apply, and holds up well.

How to Repair a Stone Chip

If you do not quickly repair a stone chip on your paint it will begin to corrode. It's not as difficult as it may seem.

- Go to your dealer to match a spray paint to your vehicles paint color.
- Wash the car and let it dry.
- Grab your spray paint and shake well.
- You'll also need a sharp wooden stick.
- Spray a small amount into the cap.
- Dip the stick into the cap.
- Place the stick end into the chip and dab.

10

TEN TIPS FOR A HEALTHY AUTOMATIC TRANSMISSION

1. Become Well Acquainted With Your Automatic Transmission and Have it Serviced

Your automatic transmission carries the engine power to the drive wheels using a series of gear sets, clutches, and bands. The brain of the transmission is the valve body, which responds to either hydraulic or electrical signals that instruct the transmission on when to shift. The pump is the heart of the transmission providing the hydraulic pressure needed for lubrication and applying the necessary amount of lubrication to friction devices. The transmission is the most complex component in your vehicles entire drive shaft. There are more than 1,000 moving parts and each must function flawlessly for the next piece to operate correctly.

With so many moving parts it's not hard to understand why maintenance is so important. Invest in regular fluid and filter changes and inspections and you'll save yourself thousands of dollars in repairs. There is nothing cheap about repairing a transmission.

2. 10 Ways to Extend Your Transmissions Life

1. **Regularly check transmission fluids.** See owner's manual for servicing details.
2. **Check the transmission fluid anytime after it has been running hot.** Hilly terrain, stop and go traffic, towing a trailer, and hot weather can all lead to excessive transmission heat that can lead to the loss of fluid, damage the fluid, or both. You should regularly check the fluid when the transmission has run hot. By regularly we mean the very next gas station.
3. **Install an external cooler.** If you tow a trailer, find yourself continuously stuck in traffic, or regularly haul heavy loads can lead to excessive heat off the transmission. An external transmission cooler brings the transmission temperature down into the normal operating range, extending your transmissions life.
4. **Change transmission fluid often when vehicle used in high stress conditions.** Your transmission fluid is designed to cool the transmission, clean, and lubricate the transmission parts while providing the hydraulic pressure so all the components can work together. When the transmission fluid is no longer able to efficiently carry out these tasks, the life of the transmission is significantly shortened. If your vehicle operates under high stress conditions it's a good idea to change the transmission fluids twice a year.
5. **Have the transmission linkage checked and adjusted regularly.** This is especially important for vehicles under heavy work load.
6. **Promptly have malfunctions checked.** Transmission repair bills rise in relation to how long the vehicle is driven after the first signs of trouble. The longer you ignore a transmission that is acting up the more you can expect the repairs to cost.
7. **Make sure your engine is properly tuned**. If your engine

is not running properly the symptoms can sometimes resemble transmission issues.

8. **Have drive train components regularly checked**. There are some drive train components that are directly related to the transmission functioning. Drive axles, universal joints, driveshaft's, constant velocity joints, flex plates, flywheels, cooling system, computer system, engine mounts, transmission mounts, and sensors all play a role in your transmission functioning properly.
9. **Check cooling system twice a year**. Have your cooling system checked for proper coolant strength, levels, and leaks. Antifreeze deteriorates over time so it needs to be replaced to keep its effectiveness.
10. **Annually have a complete physical on your vehicle.** Annually your vehicle should be checked from top to bottom including brakes, steering, lights, and other safety components.

3.20 Symptoms of Possible Transmission Problems

There are all kinds of things that can happen to a transmission and many of these repairs can be very costly. There are a number of symptoms that indicates there may be transmission problems in the future. Let's look at the top 20 symptoms.

1. Shifter doesn't go into drive or reverse. You place the shifter into driver (D) or reverse (R) but nothing happens.
2. When the vehicle is cold and you put it into driver there is a delay. The vehicle shifts late during the first couple of minutes of operation.
3. You cannot get the shifter to go into any position. Even when the engine is racing it doesn't move.
4. Fresh stains under your vehicle.

5. Slippage. The engine rpm is high but the vehicle moves very slowly and will not accelerate.
6. Shifting occurs at the wrong speed levels resulting in early or late shifting.
7. Rough shifting that causes clunking or a rough feeling when the transmission is put into gear.
8. Unable to put into passing gear, or it goes into overdrive but there is no surge in power when you give it gas.
9. There is a burning smell or rancid smell.
10. 10. Erratic shifting. Speed where shifting occurs is never the same.
11. Vehicle attempts to move when in park.
12. Engine braking doesn't work in one or more positions.
13. Vehicle stalls on take off.
14. Check engine or service engine light keeps coming on.
15. The shifter has become difficult to move out of or into any position.
16. The shifter indicator no longer points to the correct gear.
17. The shifter indicator is slightly off neutral (N) and/or park (P) when you go to start the car.
18. You are hearing strange noises. Grunts, groans, hisses, etc.
19. When inspected, here is an excessive amount of debris and filings in the transmission pan.
20. Shifting unexpectedly.

4. 10 Things You Should Not do if You Want to Extend Your Trans-missions Life

1. Never leave your vehicle in park without putting your parking brake on. If your vehicle was even just tapped by another vehicle it could result in the parking pawl, a part inside your transmission, to

break and your vehicle would roll. Unattended this could cause significant damage.

2. **Never brake by downshifting.** It's a common practice to downshift at traffic lights rather than using brakes. A forced downshift at a higher RPM cause excessive wear on the transmission clutches and bands.

3. **Never shift from drive into reverse when the engine is at a fast idle.** This abrupt engaging of the transmission can result in failure of the bands, clutches, driveline components, and gear sets, as well as transmission and engine mounts.

4. **Don't drag race.** If your vehicle was designed for racing that's fine but stock transmissions and drivelines aren't designed for that type of torque or abuse and you could damage your transmission and a number of driveline components.

5. **Never rock your car in the snow or sand.** Dig yourself out or get towed but don't do that rocking from reverse to drive that you see so many people doing. The excess heat that this causes can result in burning your transmission out in short period of time. A tow is far cheaper!

6. **Don't drive until your engine has warmed up.** For your transmis-sion to be properly lubricated the fluid needs to be at operating temperature. It may take you a few minutes longer to get going but it will save you a large transmission bill.

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7. Never tow your vehicle with the drive wheels on the ground. Front wheel drive vehicles must have the front wheels in the air. Rear wheel drive vehicles must be towed with the rear wheels off the ground. Four wheel or all wheel drive vehicles need to be towed flat. Refer to your owner's manual for proper towing direction to avoid serious damage.

8. Never stop suddenly. Sudden stops (and fast starts) can result in damage to your drive train and its components including transmis-sion and engine mounts, and direct transmission damage.

9. Don't try to fix your own transmission. Over the counter quick fixes in the form of additives that are designed to make your trans-mission shift better or stop leaks contain a lot of different chemicals that can cause seals that are already worn to become swollen, or they can affect the function of rubber parts that lead to more serious damage. It doesn't pay to play around because you can cause more damage and the end result will be a bigger repair bill then if you had just visited the transmission shop.

10. Get regular maintenance. Make sure your transmission gets the regular servicing it needs to stay in good operating condition.

5. 10 Sounds that Indicate You May Have Transmission Problems

Your vehicle has normal sounds that you become comfortable with. When those sounds change you'll probably notice it pretty quickly. If you experience a new sound that you have not previously heard it could the start of a problem. Here are the top 10 sounds to be aware of.

1. Buzzing

2. Clicking
3. Groaning
4. Squealing
5. Humming in any gear
6. Screeching
7. Clanking when put into drive (D) or reverse (R)
8. Grating in gear
9. Chattering when put into drive (D) or reverse (R)
10. Rumbling in gear

11

TIPS FOR CHOOSING A MECHANIC AND AN AUTO REPAIR SHOP

It's tough to know where to take your vehicle if you think you are in need of repairs or maintenance. Let's have a look at what you should watch for.

Experience

Look for an automotive shop that has experience. Watch for length of service and areas of expertise. For example, if you need an engine repair you want a mechanics shop that has a reputation for quality work. If you need a transmission repair than you want to know they are experienced in transmission repair.

Reliability and Capability

Look for a service center that has mechanics and technicians that are up to date in their training taking seminars and staying current. You also want to take your car to a shop that has a reputation for being reliable – getting the work they promised done on time and on budget.

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Check the Better Business Bureau

It's a good idea to give the BBB a call and find out whether the auto center has had any complaints and if so which mechanic and what type of complaints.

Check Online

Online offers some terrific services relating to grading auto mechanic shops. There are message boards, forums, sites that rate auto repair shops, and the list goes on. There's so many excellent resources online. Be sure to take advantage of them.

Ask for References

In cases where you may find yourself facing a large repair bill, don't be afraid to ask for references from the auto service center. If the garage chooses not to provide you with references, you should look elsewhere.

Check for Certification

Make sure the mechanics on staff are certified in the areas you require work in. Look to see how many certifications the mechanic has. The more certifications, the more likely the mechanic is really into what he does and shows a real interest for the trade itself.

Ask Plenty of Questions

When you find yourself with an automotive problem, don't be afraid to ask the service writer and/or mechanic questions. You likely have concerns and you should be able to get answers so that you can confidently move ahead with getting the repairs done.

There you have it. Tons of great tips to help you keep your vehicle looking and running great. These tips will leave you with time and

money on your hands. Taking care of your vehicle means you can look forward to years of problem free driving. What more can you ask for? A car that’s reliable, dependable, and costs little in repairs is everyone’s dream car. These tips will help you own that car.