AIR CONDITIONING

What is happening to auto Air Conditioning these days?

Auto A/C systems are taking the heat on the environment. Leaking R-12 damages the ozone layer, many believe. Government rules have stopped the manufacture of R-12, although there are still large stockpiles available for replacement refrigerant.

Prices have gone up dramatically for R-12, up to $30 or more a pound in the peak summer season. Since your car's A/C system will take around three pounds, "recharging" your A/C can be an expensive proposition.

There are options for retrofitting an R-12 system. First is to upgrade it to an R134-a system, like the ones going into new cars. This is extremely expensive if you have to replace major components of the system. Usually you can do a simpler retrofit, but at the cost of slightly reduced performance from what you have been used to with your R-12 system.

Another option is to use a "substitute" for R-12. There are many on the market, but none are a perfect replacement. Some don't cool as well. Many are based on the R-22 that is in your home air conditioner, but R-22 leaks through hoses much more quickly than R-12, requiring an expensive replacement with barrier-style hoses. Some black-market suppliers have even sold flammable coolants, like propane, which is both illegal and dangerous. In any case, when a different refrigerant is put into your system, all the old R-12 must first be removed and the fittings on your system changed so that no one will accidentally add R-12 to it in the future.

Leaks are not normal in your car's A/C. If you are adding more than a pound of R-12 every other year, you most likely have a leak. Unless major components of your R-12 system have failed, we recommend sticking with your system, fixing your leaks and keeping it in top shape so that you need to put only minimal amounts of R-12 into it in the future.

What does it mean to flush the A/C System?

Flushing must be performed when the system is contaminated or you suspect there is debris in the system from compressor failure. When a/c compressors fail, bad things can happen. The typical a/c compressor is built like a small reciprocating engine. They have cylinders, pistons, piston rings, valves, bearings, etc. When a compressor fails it often sheds fragments of these internal components. This can happen all at once or slowly over time. Little bits of compressor can end up in your condenser, hose assemblies, orifice tube/expansion valve, evaporator and accumulator/filter-drier. The photo below illustrates what you might find after a compressor failure. It was obvious we would need to flush the system after inspecting the debris on the orifice tube.

When should the A/C System be flushed?

We believe if the a/c system is opened for service, it's a good time to flush. A clean system minimizes the chance of a comeback. On systems that utilize an orifice tube, you can usually judge the condition by looking at the inlet side of the orifice tube screen. If a substantial amount of debris is found, flushing would be recommended. Likewise, visual inspection of the refrigerant oil may indicate it's time to flush.

BATTERIES

What is a Battery Service, and why do you recommend them?

Nothing works in your car without electricity. All of that electricity comes from your battery. It is the nature of electricity that the connections between your cables and battery attract crud and corrosion. That corrosion will cut your electrical connection. At best, it will make your battery work harder than it should, shortening it's life. At worst, it will strand you in a parking lot somewhere without warning. Many of our tow-ins need nothing more than cleaned connections.

Our Battery Service includes pulling, checking and cleaning the battery cables, cleaning the battery posts and installing protective pads.

How long can I expect my Battery to last?

The average Battery will last up to four or five years, although in harsh conditions (hot, cold) it may last only two to three years.

However, it's life will be significantly shorter if the battery is constantly undercharged (from constant short trip driving or an electrical problem) or if the water level drops too low.

What is a VAT test and why do you recommend it when my battery is dead?

Our goal is to keep you on the road. That is why we always recommend doing a VAT (Volt Amp Test) test whenever you have a dead battery. Your battery may be dead simply because it is old and tired. But it may also be dead because your alternator is malfunctioning, or for a dozen other reasons. The VAT test is designed to identify problems in your electrical system so that we don't simply treat the symptom of a dead battery, and thus leave you stranded (again) down the road because we didn't catch the problem that caused your battery to go dead in the first place.

BELTS-N-HOSES

How long do the belts in my car typically last?

Your belts drive critical systems of your car, including your alternator which recharges your battery, your water pump which keeps your engine cool, your air conditioner which keeps you cool, and your power steering pump. If a belt breaks, the effects can range from the simple inconvenience of not having your air conditioning, to leaving you stranded in traffic, to overheating and ruining your engine.

V-Belts will typically last three years or 30,000 miles. Serpentine belts will go farther, lasting five years or 50,000 miles. Belts will sometimes show visible signs of age before they break, including cracking, fraying and glazing. However, modern belts often show no visible signs of deterioration before they break.

How often should the hoses be replaced?

Like belts, hoses harden, split, or soften with age. Sometimes the aging is visible. Often, however, there are no outward signs of problems before a hose bursts or starts leaking. According to one study, internal corrosion caused by electrochemical reactions in the cooling system is the leading cause of hose failure. Hose manufacturers recommend replacing hoses every four years.

How often should I replace the timing belt in my car?

Many of the vehicles on the road today have timing belts. They keep the valves and pistons in sync. These belts take the place of a timing chain. The advantage is that they are lighter and more fuel efficient. The drawback is that they wear out quicker. Like a fan belt, a timing belt needs to be replaced before it breaks. The timing belt needs to be replaced every 50,000 - 60,000 miles on most vehicles, but the exact interval depends on the make and model of your vehicle, so check your owner’s manual.

If you wait too long and your belt breaks while you are driving down the road, your engine loses it's coordination. This can have horrible results. Your pistons may hit your valves, causing major damage to the head of your engine. It is common for repair bills to run $1000 to $2000 for this problem. Replacing your timing belt is one maintenance item you never want to skip. If you don't know whether your engine has a timing belt, or how often it needs to be replaced, give us a call at 610-328-9183.

Do you advise replacing the Water Pump when you replace the Timing Belt?

Replacing either a water pump or a timing belt is essentially the exact same job, labor-wise. That is why we often recommend doing them together, even if one doesn't need immediate replacing. For most

vehicles, the labor is more than the part, so it makes sense to take care of both at the same time. Water pumps also have a fairly predictable lifetime and need replacing periodically. And, when they do go, you suddenly have a severe overheating problem. Don't drive your car another yard when that temperature gauge pops into the red! Without your coolant being pumped through your radiator, you can damage your engine ***FAST***.

BRAKES

Why do my Brakes squeal?

In the old days, brake pads were made of asbestos, which has since been outlawed by the federal government. Most brake pads now are made of hard, semi-metallic materials. One result is that brake squeal has become common, as the hard brake pad grinds on the steel rotor. This is normal and is not necessarily an indication of brake failure. On the other hand, squealing brakes may also mean your pads are worn out and the metal behind the pad is scraping against the rotor. A brake inspection is the only way to find out for sure.

Why should I have a Brake Flush done?

We often recommend that you flush your brake fluid; sometimes because it is dirty, but sometimes simply because it has been 30,000 miles since your last brake flush.

New brake fluid is both clean and clear. Dirty brake fluid is obvious. That dirt and contamination will wear on all of your hydraulic brake parts, particularly your seals, causing them to fail prematurely. But more important than the dirt in your brake fluid is what you can't see: *water*.

Brake fluid is hygroscopic, which means it absorbs moisture. If you leave a can of brake fluid open overnight, it will be ruined by the moisture it soaks up from the air. This is intentional. Your brakes get so hot that they can boil water. If water in your brakes evaporates, your brakes will fade or fail. The brake fluid prevents the water from evaporating.

Over time, water will seep into your brake system through the brake lines and whenever the brake fluid cap is off. Brake fluid absorbs 1%-2% water each year. Old brake fluid can be 5%-10% water, which drops its boiling point by 25%-50%. In addition, the water will corrode all the brake parts it touches.

Dot 3 & Dot 4 brake fluid are common in most brake applications. Dot 5 does not attract water and is occasionally used in brake systems for that reason. However, Dot 5 must never be mixed with Dot 3 or Dot 4, and it must never be used in an ABS brake system.

What are ABS brakes?

Anti-lock brake systems are both very simple and very complicated. The systems are marvels of engineering. The principles are simple: the ABS computer will "pump" your brakes for you thousands of times a second and brake the wheels with the most traction hardest, maximizing the efficiency of your system. If anything goes wrong, the ABS will simply stop working and your brakes will revert to standard operation.

ABS computer systems assume a properly functioning brake system, so their efficiency goes way down if your brakes are grabbing, pulling, or pulsating. ABS makes it more important than ever to have your brake work done by skilled technicians and with the best parts.

It is doubly important to keep your brake hydraulics in good shape. This means doing periodic brake fluid flushes, as well as quickly replacing any leaking components. Leaks will allow foreign material into your system, potentially damaging extremely expensive ABS hydraulic parts.

CHASSIS

What can you tell me about Steering Racks and Pumps?

Steering racks usually fail gradually. They operate under very high pressures (up to 1,400 pounds per square inch) particularly when you do sharp turns, as when parallel parking. That pressure will gradually weaken the valves and seals in the rack. Typical symptoms include visible leaks and "morning sickness," where the steering is heavy and sluggish first thing in the morning, but improves after the car warms up.

If you have a total loss of power steering, chances are it won't be the rack, it's more likely going to be the power steering pump or complete loss of steering fluid through a bad hose. Another sign of pump failure is buzzing or whining noises.

Also, the sharp, high-pitched squeal or chirping sound you often hear in parking lots is usually nothing more than a loose or bad power steering belt.

What do Shocks and Struts do for my vehicle?

Shocks and struts dampen the movement of your wheels as they roll over ruts and potholes in the street. They make your ride smoother and more comfortable. More importantly, they make your ride safer. Without a shock or strut, your wheel will bounce out of a pothole and then keep bouncing. Watch the other cars on the freeway. Ones with worn out shocks will recover much more slowly from road obstacles. The most important job of the shocks and struts is to keep your wheels on the road, where they belong, so you can maintain control.

A strut serves the same function as a shock, but a strut is also an integral part of your suspension system. The struts replace the upper control arms and ball joints on most cars, carry the springs, and serve as the steering pivots. Their exact functions vary from car to car, however. A bent or miscounted strut can affect your wheel alignment.

Why should I get an Alignment for my vehicle?

The wheels on your vehicle will often get "out of align," causing premature tire wear, as well as handling problems. On older vehicles, this problem was limited to the front wheels, but on most newer vehicles it affects all four wheels, which is why the 4-wheel alignment has become the standard. Many parts of your suspension (tie-rod ends, idler arms, control arm bushings, ball joints, struts, etc.) have a part in keeping your wheels in line over a wide variety of conditions. If any of those are bent or worn, they will throw your wheels out of alignment.

There are a couple of technical alignment terms:

Toe - Whether your tires are parallel to each other. If the front edges of your tires are farther apart than the rear, you have "toe-out." If the front edges are closer, you have "toe-in."

Camber - This is a measure of how vertical your wheel is relative to the road. If your wheel isn't vertical (perpendicular), it will tend to turn your car as you drive, causing "pull."

A 4-point alignment goes beyond the toe and camber adjustments by also aligning the 4 wheels to each other. It also checks for vibrations at different speeds.
Tires being out of balance can also cause vibration. We can take a tire and run it at the speed that you experience the vibration and check to see if it is out of balance. (Balancing is done by attaching small weights to the wheel rim to bring the weight of the tire into balance).

What do CV Boots do?

Most newer vehicles have fully independent suspensions, which means that power is transmitted to the wheels through flexible axles. Where the axles flex, they are covered with rubber "boots" to keep road dust and dirt out of the joints. Over time, the rubber boots harden and crack. The road dirt then seeps in and rapidly wears out the joints, requiring replacement of the axle. When your boots have lost their flexibility, it is time to replace them and save your axle.

Tell me about CV Joints?

The Constant Velocity Joints on your axles will last a long time, often 80,000 miles or more. You have two joints on each axle, an inner and an outer. When the joint goes bad, the most common symptom will be a clicking or popping sound as you turn a sharp corner. Try putting the vehicle in reverse and backing in a circle and it may be even louder. Almost always the cause of a bad CV joint is a CV boot that has gotten hard and cracked. Since the outer CV boot flexes more than the inside one (on most vehicles), usually it is the outer joint that goes bad.

CV joints can be rebuilt. Usually, however, we find it is more cost effective to buy an entirely new or rebuilt axle. Because there is little or no difference in cost, we usually recommend replacing the axle, even when only one joint is bad.

It is not safe to ignore your CV boots and joints. A bad joint can seize, or even cause the driveshaft to drop out of the vehicle, causing loss of control.

EMISSIONS

Can you help me with Emissions problems?

Absolutely! We have three licensed emissions inspectors and a top-of-the-line enhanced emissions machine.

What is the OBD II pollution standard?

OBD II (On Board Diagnostics) is a federal pollution standard applied to all newer automobiles. It is essentially an on board emissions policeman. If it detects pollution problems, it will turn on a light (the MIL - Malfunction Indicator Lamp) on your dashboard.

OBD II is requiring many changes in newer vehicles, including more powerful computers, more O2 sensors, electronic EGR valves, and in some vehicles, sequential fuel injection.

What does the O2 Sensor do?

Modern vehicles have one or more O2 sensors. The O2 sensor measures the unburned oxygen in the exhaust gases coming out of the engine. The engine's computer varies the air / fuel mixture depending on what the O2 tells it. Over time, the O2 sensor slows down, giving the computer bad information. The computer then sets the wrong mixture, often leading to a rich-running engine that wastes gas and pollutes the atmosphere. A recent EPA study found that 70% of vehicles failing the I/M 240 emissions test had a bad O2 sensor. The over-rich fuel mixture will also lead to premature failure of your catalytic converter.

An O2's voltage output can be tested, but the test is not perfect. Considering how many problems a bad O2 sensor can cause, some experts recommend replacing the O2 sensor as a preventive maintenance item, usually every 60,000 miles. Considering that a sluggish O2 sensor can easily cost you an extra $100 a year in poor gas mileage, it may not be a bad investment.

What does the PCV valve do?

The PCV (Positive Crankcase Ventilation) valve (along with the Breather Element) recirculates unburned gases back into the engine to be reburned, cutting air pollution. A plugged PCV can cause rough engine idle and many other problems, including engine damage. It is quite important that the PCV valve be working properly in your vehicle.

Why do you recommend a Fuel Injector Service?

Fuel injectors can cost a hundred dollars or more a piece, and you may have one for each cylinder. Cleaning them before they are clogged can remove harmful deposits and keep them spraying in top form. After they clog, replacement is sometimes the only option.

The most common form of injector fouling comes from unused gasoline evaporating inside the injector after you turn the car off.

Fouling injectors may give no overt symptoms, even while they are cutting your mileage and pumping extra pollution into the air. When they get bad enough, they can cause hard-starting, hesitation and loss of power. On a scope, they will show the cylinders out of balance on a power balance test.

The first two things to try for cleaning your injectors are: using premium fuel, which has more detergents, and/or putting a fuel additive in your gas tank. These will be only partly successful, however. For the best results, our technician will disconnect the engine from its gas supply and feed pressurized solvent directly into the fuel rail in order to flush out the injectors.

Failing that, injectors can be removed from the vehicle, their fuel spray patterns tested, and they can be more extensively cleaned. Sometimes, nothing works and the injectors must be replaced.

FLUIDS

What can you tell me about doing a Coolant Flush?

Your coolant keeps your engine operating at proper temperatures. As it ages, its efficiency slowly declines. It is more important than ever to keep it operating up to par. Older vehicles had huge radiators with excess capacity. Today's cooling systems are designed "just big enough." A little deterioration can soon cause big problems.

Keeping your coolant system working properly is extra important when your vehicle has an aluminum head or block, because they are much more prone to warping or cracking at high temperatures.

The two main ingredients in "coolant" are water and antifreeze, to keep the water from freezing and cracking your engine. Antifreeze is ethylene glycol, which never wears out.

On the other hand, all coolant includes a variety of additives to minimize corrosion in your system and keep your cooling system healthy. Your cooling system includes a variety of metals along with hot water, turning it into a little battery. Electrolysis will attack metals in the engine and radiator, redepositing them in places you don't want them to be. The additives slow this process.

Unfortunately, these additives quickly deteriorate as they do their job. Some people recommend a coolant change every year in engines with aluminum heads and iron blocks, which have the highest levels of electrolytic activity. For most people, we recommend changing your coolant every two years or every 30,000 miles.

How do I best care for my Automatic Transmission?

The fluid in an automatic transmission transmits power from the engine to your drive wheels, while simultaneously lubricating and cooling your transmission. Over time it breaks down and becomes dirty. Operating temperatures will rise and lubrication will decrease, leading to premature wear and transmission failure.

Changing your transmission fluid regularly will extend the life of your transmission. On most new transmissions, there is also a filter that needs to be changed at the same time. Most transmission specialists suggest changing the filter and fluid every 30,000 miles, even if the fluid looks clean. With rebuilt transmissions costing $1,500 to $4,000 or higher, it makes sense to protect your investment.

How important is it to change the Manual Transmission fluid?

Like an automatic transmission, the fluid in your manual transmission needs to be changed regularly. Changing the fluid will extend its life by removing dirt and moisture and by maintaining lubrication and minimizing high speed foaming.

Should I change the fluid in my vehicle's Differential?

Yes. Changing the fluid in your differential will extend its life by removing dirt and moisture and by maintaining lubrication and minimizing high speed foaming.

Should I change the fluid in the Transfer Case?

Yes. Changing the fluid in your 4x4's transfer case will extend its life by removing dirt and moisture and by maintaining lubrication and minimizing high speed foaming.

Please note that your transfer case must be serviced even if you almost never use your 4-wheel drive. Your transfer case is operating at all times, regardless of whether all four wheels are engaged.

Should I change the Power Steering fluid?

Changing the fluid in your power steering system will extend the life of your power steering pump and rack.

FUEL FILTER / AIR FILTER

What can you tell me about the Fuel Filter in my vehicle?

Fuel filters are more important than ever to the proper functioning of your engine. Fuel injected vehicles are far less tolerant of gas problems than the older carbureted vehicles. If the filter clogs, it can starve the engine of fuel. If it fails it can release debris into injectors, causing expensive repairs. Also, a restricted filter will stress the electric fuel pump, leading to early failure. Generally, your fuel filter should be replaced once a year or at no more than 30,000 miles.

How important is it to have a clean Air Filter?

Your engine gulps about 9,000 gallons of air for every gallon of gas that you burn. That air is full of dirt particles. The air filter's job is to keep that dirt out of your engine. In the process, your filter will fill up with dirt, just like your vacuum cleaner. Over time, your engine will start gasping for breath, causing all kinds of problems.

Refer to your vehicle's manual for replacement intervals. If you do not have the manufacturer's manual, contact us at 610-328-9183 and we'll be happy to print your specific vehicle's maintenance schedule.

MAINTENANCE

What about Manufacturer Recommended Services?

All manufacturers have schedules of recommended services for each of their vehicles. They include most of the items listed below. We have the specific recommendations for your car in our computerized automotive database.

We strongly urge you to do these services. Today's automobiles are designed to go 150,000 - 200,000 miles or more, ***with proper maintenance***. With today's high vehicle prices, vehicle maintenance is a great investment.

We recommend these interval services for ***most*** vehicles:

Every 3,000 Miles:

- Change Oil
- New quality oil filter
- Lubricate chassis

- Inspect wiper blades
- Check windshield fluid level and top off
- Check differential fluid condition, level and top off
- Check transfer case fluid condition, level and top off
- Check coolant condition and chemistry, and top off
- Check brake fluid condition and level
- Check steering fluid level and condition
- Check transmission fluid level and condition
- Check tire pressure, front and rear
- Check tire wear and condition, front and rear
- Check air filter
- Check PCV
- Visually inspect the exhaust system
- Visually inspect the front end suspension
- Visually inspect the shocks and struts
- Visually inspect the CV boots
- Visually inspect the Universal Joints
- Visually inspect oil, coolant, transmission, steering, differential and transfer case for fluid leaks
- Check emergency brake adjustment
- Visually inspect the battery connections and cables
- Visually inspect belt condition and adjustment
- Visually inspect radiator and heater hose condition
- Check brake pedal adjustment
- Check clutch adjustment

Every 15,000 Miles:

All of the services at 3,000 miles, plus:

- Rotate wheels
- Inspect brakes: brake linings, lines and hoses, disc and drum systems, check and adjust parking brake
- Lubricate and inspect shift linkage
- Lubricate and inspect steering linkage
- Lubricate and inspect throttle linkage
- Check clutch reservoir fluid condition and level
- Adjust clutch, as required
- Inspect idle speed control system
- Inspect power steering lines, steering gear, linkage and drive shafts
- Inspect rear suspension system
- Check lights and horn for proper operation: (headlights, high and low, hazard lights, running lights, backup lights, tag light, brake lights, turn signals and horn)

Every 30,000 Miles:

All of the services at 15,000 miles, plus:

- Automatic Transmission Service (including filter and pan gasket where appropriate) or Standard Transmission Service
- Battery service, including remove, clean and lubricate the battery cables, and install battery pads
- Visually inspect fuel lines and connections
- Inspect fuel cap and gasket
- Replace spark plugs

- Visually inspect cap and rotor
- Inspect EGR system
- Inspect emissions filter (charcoal canister)
- Check and set ignition timing
- Visually inspect ignition wiring
- Visually inspect the vacuum lines
- Inspect the operation of the heater
- Inspect operation of the air conditioner
- Inspect operation of the windshield washers
- Reset the service light
- Road test the vehicle

Maintenance Services Meet All Manufacturer Warranty Requirements

Your vehicle may also need additional maintenance services, based on mileages or manufacturer recommendations. These are typical items (which may be added to a 15,000 or 30,000 mile maintenance service at reduced rates):

- Balance 4 wheels
- 4-wheel Alignment
- Coolant drain & fill
- Coolant flush & treatment
- Brake fluid flush
- Clutch fluid flush
- Fuel Injection Service
- Replace fuel filter
- Replace PCV
- Repack non-drive wheel bearings
- 4x4 Hub & Lubrication Service
- Valve adjustment
- Replace Timing Belt
- Replace O2 Sensor

In addition, your manufacturer will sometimes have special recommendations for your specific vehicle, which you will find listed in your vehicle manual. Secane Auto and Truck Works also uses an extensive computer database, which includes manufacturer recommendations for all makes and models.

MISCELLANEOUS

How have Tune Up's changed with newer vehicles?

The "tune-up", properly speaking, no longer exists. It is not a term you will find in any literature from today's manufacturers. Traditionally it included checking all of the ignition components (such as the distributor cap, points, and plug wires), replacing the spark plugs, adjusting the carburetor and resetting the engine timing.

On newer engines, many of these parts and procedures no longer exist. You cannot "set the timing" on most engines anymore. The auto repair industry has been left confused about what to do when the customer asks for a "tune-up". For some, it means nothing more than replacing the spark plugs.

If requested to do a "tune-up", our shop policy is to scope and adjust (if applicable) your engine, inspect your ignition parts, and report the results to you, including any codes that your vehicle's computer is displaying, along with recommended work to resolve any problems.

We do not automatically replace spark plugs. Spark plugs will last for a long, long time if everything else is functioning properly in your engine. We will only suggest replacing them if they need to be replaced.

Two things more to note about a "tune-up":

- A "tune-up" will almost never cure a running problem. A "tune-up" is for maintenance purposes only. It does not "fix" anything. If you have a problem, please give us the symptoms so that we can focus on finding what is causing the problem.

- We always recommend that you follow your manufacturer's interval maintenance recommendations for your vehicle. They reflect the best, most expert, most professional advice for your particular vehicle. So instead of doing that "tune-up", ask us for the complete printout of manufacturer maintenance recommendations on your vehicle from our automotive computer database.

What do you do in a Used Car check?

When you buy a used vehicle, you can pretty much expect a few problems. After all, it is *used*. That is why you are buying it: to save a ton of money. Today's vehicles can easily go 150,000 - 200,000 miles. One with only 80,000 miles is still a baby. Still, it pays to be careful.

Our technicians use all of their experience, judgment, tools, references and equipment in a used vehicle check to come to an overall conclusion on the general condition of the vehicle. The typical used vehicle checkout will include a visual inspection and a road test to check the functions of various mechanical systems. Problems known by the technician to be common to your type of vehicle will be reviewed. Based on symptoms uncovered by the technician's review, additional procedures will be performed as warranted.

A used vehicle check is primarily focused on finding major problems: a bad engine, bad suspension, a vehicle that has been badly wrecked. We are looking for things that can lead to thousand dollar repairs that may exceed the value of the vehicle. It is surprising how many vehicles we look at that appear okay, but actually are money pits.

While looking for the big problems, we also keep an eye out for everyday, run-of-the-mill problems. We will provide you with a list of these, along with estimated repair costs. This list alone will usually pay for the cost of the used vehicle check because it provides a negotiating tool. You can take it back to the seller of the vehicle and either demand that the problems be fixed or negotiate a lower price.

Our review will never catch every possible problem on a used vehicle. That level of checkout would cost several hundred dollars. In any case, there will always be internal and invisible wear which will not be detected in our review. But our inexpensive check-over will often pay for itself, and may save you from a nightmare.

My vehicle has an intermittent problem. What can I do about it?

It seems to be some kind of natural law that any kind of intermittent problem you are having will quit as soon as you bring it to us.

Have patience. Try to be as explicit as possible about the exact times and conditions when the problem occurs. We'll stick with you and find it as soon as possible.

Can you tell me what is wrong with my vehicle over the phone?

In most cases we cannot accurately diagnose your vehicle over the phone. Your vehicle is an extremely complex piece of machinery that requires hands on testing and inspection.

OIL

What weight of oil should I use?

Generally, 10W-30 is best for all engines in year-round driving. 10W-40 is also popular, but its additive package does not hold up as well. General Motors does not recommend 10W-40 in any of its vehicles.

5W-30 is approved for most late model engines as well. It is what many new vehicles come with, because it lubricates the engine more quickly on start-up, makes cold weather starting easier and reduces fuel consumption. However, it is not appropriate for many turbo charged or diesel engines, high-performance V-8s, or for sustained highway speeds or towing in hot weather.

Straight viscosity oils have become less common as the multi-grade oils have become better. 10W, 20W, 40W and 50W oils are only used in very specific applications. Ask one of our service technicians if you have any questions about which oil to use.

I hear a lot about 3,000 mile oil changes. Is it really that important?

Absolutely! Today's engines will run 150,000 - 200,000 miles. Your engine won't get there, however, if you don't change the oil.

Manufacturers generally recommend changing oil every 7,500 miles, unless you are operating your vehicle in "severe service" conditions. Read the fine print and you will discover that means short trips, stop-and-go driving, or dirty driving conditions. In other words, if you own a vehicle in the United States, you are probably driving it under "severe service" conditions.

We recommend changing your oil every 3,000 to 3,500 miles. Three thousand miles should start you thinking about an oil change. Get it done in the next thirty days and you should be fine.

What can I expect after I get an oil leak fixed?

We have just repaired an oil leak on your vehicle. It is important that you understand what can happen in this situation.

Your car may continue to leak slowly for a period of time, due to all the little nooks and crannies where residual oil can hide. The leak size should diminish (as residual oils burn off) and eventually disappear. Even after steam cleaning an engine, it may continue to drip for a short time thereafter. If the leak size *does not* get progressively smaller and/or disappear, please return in 5-10 days for further inspection.

Are there any conditions where you would recommend NOT fixing an oil leak?

Yes. There is one repair we often recommend <u>not</u> doing: fixing oil leaks in old engines. Most old engines leak. There are two reasons. First, the engine seals weaken over time, letting oil out. Second, your valves and rings also wear, letting high-pressure gases from your cylinders into parts of the engine that were not designed to handle that pressure. The result when high-pressure oil hits old seals: leaks.

The seals can be replaced, but it tends to be a hopeless task. If you replace only the seal that is leaking today, the pressure will simply find the next weakest seal to seep out. Even if you replace all of the seals, they will weaken far quicker than the original seals because of the extra pressure.