

110,000 Mile Maintenance Guide

<i>Maintenance Item</i>	<i>Recommended</i>		<i>Actual I/R & Date</i>	<i>Brand Used</i>	<i>Warranty Period</i>
	<i>Inspect</i>	<i>Replace</i>			
<i>Example-Battery</i>		X	R 11/5/02	AC Delco	5 yrs
<i>Battery</i>	X				
<i>Brakes-Pads/Fluid</i>	X				
<i>Differential</i>	X				
<i>Fuel Filter</i>		X			
<i>Engine Oil</i>	X	X			
<i>Power Steering Fluid</i>	X				
<i>Tires</i>	X				
<i>Transmission Fluid</i>		X			
<i>Wiper Blades</i>	X	X			
<i>Washer Fluid</i>	X				
<i>Exterior Care</i>	X				
<i>Lights and Bulbs</i>	X				
<i>A/C System</i>	X				
<i>CV Boots/Joints or Drive Shaft/U-Joints</i>	X				
<i>Front Suspension</i>	X				

* Tires should also be rotated and balanced every 15,000 miles.

Vehicle:

Performed by:

Cost:

Owner's Notes:

Shop's Notes:

(items noted during vehicle inspection, repairs needed, etc.)

Maintenance guide courtesy of www.trustmymechanic.com. This schedule is a general guide for most cars and trucks. It does not replace your specific manufacturer's maintenance recommendations. This schedule is meant to be a helpful way for you and your repair shop to perform needed maintenance and build a repair history log.

Explanations and Recommendations

Air filter - Replace the air filter about every 12,000 miles for normal driving conditions. A dirty air filter will not cause the engine to run bad, stall, or misfire. A dirty filter *can* cause reduced fuel economy and higher exhaust emission gases.

Antifreeze/Coolant -

Inspect: Check the fluid level in the plastic “overflow reservoir” and the actual level of coolant inside the radiator. You should be able to visually see the coolant level inside the radiator when the engine is cold. Caution: remove the radiator cap *only* after engine has cooled, and it is safe to do so.

Replace: Drain and flush old coolant from the radiator and reservoir bottle, inspect the heater and radiator hoses and clamps for replacement, and install a new radiator cap. A vented replacement radiator cap safely removes hot steam from the radiator and makes emergency road side coolant inspections easier and safer.

Battery - Check terminals and cables--loose or dirty battery cables are a common “no start” condition. Cable ends and battery terminals should be cleaned with a wire brush and light sand paper periodically to remove any corrosion build up. Caution: remove all metal objects like wrist watches and rings before working around a battery—a spark or fire can occur.

Battery Load - Battery "load" is how much load or drain can be placed on the electrical system before the battery begins to discharge itself. Think of it as how much electricity the battery can store before having to be recharged. It is not uncommon for batteries to go completely "flat" or discharged without ever giving a warning signal to the operator.

Have the mechanic check the battery condition and **load levels at every oil change interval if the battery is over 2 years old** to ensure the battery will not leave you unexpectedly stranded. A weak battery that is not storing enough power will cause the alternator to work harder and possibly cause premature alternator failure.

Dirty or corroded battery terminals can severely reduce the lifespan of the battery and alternator. A quick and inexpensive battery check and cable inspection can be done at each oil change. The replacement battery should be the same size, have the same battery cable connections, and should be the same electrical capacity as the original battery. To learn more about automotive batteries, go to www.acdelco.com. We recommend ACDelco as our premium replacement battery supplier.

Belts - Check for worn or loose belts. Belts should be replaced if they are worn on the edges, frayed, or cracked. Do not spray silicone or WD40-type chemicals on a noisy belt—it will usually just make the noise worse. Check the tension on each belt, and see if anything is rubbing or coming in contact with it.

Brakes -

Inspect: Check the brake fluid level. The fluid level should only need to be slightly topped off occasionally. If more than 2 oz. of fluid is needed, the brake system should be inspected for leaks and component wear. Add only the recommended type of brake fluid as listed in the owner's manual. Do not add any other fluid to the brake fluid reservoir, and keep all foreign objects like fingers out of the fluid.

The fluid in the reservoir should be clear in appearance and free of dirt and debris.

Replace: Brake fluid retains moisture and should be flushed and re-bled (remove the air from the system) to keep brakes working effectively.

Check brake pad and shoe wear. *Don't* wait until you hear grinding noises to have the brakes inspected. Have brakes checked periodically for wear. Some warning signs of brake problems are: noises when brakes are applied, the steering wheel shakes when brakes are applied, needing to add more than 2 oz of brake fluid to the brake fluid reservoir, a soft or squishy brake pedal, or the brake pedal goes to the floor slowly while brakes are applied.

Differential Fluid – (A rear differential is only found on rear wheel drive cars and trucks.)

Inspect: The rear differential (commonly referred to as the rear end) fluid or grease should be checked during each routine oil change and topped off as needed with the fluid prescribed in the owner's manual.

Replace: Drain and flush the rear end fluid periodically to remove any metal filings that have normally accumulated in the differential housing. Replace the differential cover gasket and add any recommended supplemental additive prescribed in the owner's manual.

Radiator and Heater Hoses -

Inspect: To check for leaks or bulges with the engine cold, squeeze the radiator hoses with one hand at all points along the hose. If soft spots, bulges, or a "cracking feeling" is identified, replace ALL water hoses at the same time.

Replace: Replace all water hoses including heater, bypass, and radiator hoses at the same time. The coolant and radiator cap should also be replaced at this time.

Engine Oil -

Inspect: Check oil level when engine is cold and with vehicle on level ground.

Replace: Change oil and filter. Check all fluids, tires and air pressure, air filter, belts and hoses and spare tire condition when changing the engine oil. This is also a great time to clean the corrosion from the battery cables.

Power Steering Fluid –

Inspect: Check level. Power steering fluid can either be pink or clear in color, usually only a very small amount is needed to top off fluid level. If more than 2 oz. is needed, have the system checked for leaks or wear.

Replace: Power steering fluid just like any other fluid becomes dirty and contaminated and should be replaced with clean fluid periodically. Dirty power steering fluid can cause the power steering pump or the power steering gear assemblies to fail and can cause premature wear to occur.

Shock Absorbers and Struts -

Inspect: Check for fluid leaks around the shock. Some shocks are filled with oil. Excessive bumpy ride, leaning, or swaying in one direction more than normal on brake application or around turns can also indicate worn or damaged shocks.

Replace: Replace all four shocks/struts at the same time to get maximum benefit and drivability.

Tires --

Inspect: Check pressure and tread wear. Check air pressure cold unless otherwise described in the owner's manual. Inspect tires for uneven tread wear, punctures, bulges, or cuts in sidewall of the tire.

Rotate and balance: Routine rotation and balancing can greatly extend the life of your tires. Most front end "shake and shimmy" complaints can be attributed to out of balance, or out of round tires. Ask your mechanic to inspect the brakes for free when rotating and balance tires.

Transmission Fluid (automatic transmission) -

Inspect: Usually the transmission fluid level is checked with the engine hot and in park, and with engine running. Check your owner's manual for proper fluid type and proper fluid level inspection procedures. Automatic transmission fluid is usually pink in color. Most standard shift transmissions will have a drain plug to service the fluid. Some stick shift transmissions use engine oil as a lubricant; consult your owner's manual when servicing. It could also be a good idea to have the replacement fluid type information available for the repair shop.

Replace: Consult vehicle owner manual for proper fluid type and service interval. If applicable, replace the internal automatic transmission filter or clean the re-usable screen when changing the transmission fluid. A transmission pan gasket will also be required during a filter change. Some newer model vehicles require special additives and detergents be used—consult owner's manual for fluid specifications.

Windshield Wipers --

Inspect: Check wiper blades for wear and washer fluid level during a regular oil and filter change. Don't make the mistake of never thinking about replacing or inspecting the wiper blades until you really need them.

Replace: Some wiper blades are different lengths for driver and passenger side. Measure old blades before replacing with new ones. Some manufactures like Anco offer different replacement wiper blade types (i.e. for snow and ice, off road, and severe duty).

Windshield Washer Fluid - Check level. Anti-freezing and water repelling additives can also be added to the washer fluid reservoir. Not only will washer fluid aid in removing dirt from the windshield, but also it will act as a lubricant to prolong the life of the wiper blade. Adding rubbing alcohol to the washer fluid can be harmful to the rubber on the wiper blades.

Exterior Care- There are all types of automotive finish waxes on the market, find one that is right for your vehicle surface and your pocket book. Some waxes are expensive and time consuming to apply, and may or may not be worth the extra expense and effort. A visit to a detail shop might be well worth the additional expense to obtain a professional long lasting waxed finish, or at least some advice or a product recommendation.

Lights and Bulbs – Save yourself the hassle of failing a vehicle inspection or being pulled over by the police for a tail or brake light bulb out. Have all lights checked when performing a regular engine oil change.

A/C Refrigerant Level and Pressures - Air conditioning refrigerant commonly known as "Freon" should be checked for proper pressures and level of refrigerant oil periodically. Low Freon and refrigerant oil levels can cause premature wear on air compressors, and decrease overall performance of the a/c system. Although the a/c system is a sealed unit, it is not uncommon to have to add small amounts of refrigerant (Freon) periodically due to small leaks and seepage. Freon is a gas that is under high pressure and should only be serviced by a trained professional.

CV Boots and CV Joints - Used mostly on front wheel drive cars, Constant Velocity (CV) joints are shafts that connect the transmission to the wheels with knuckle joints on either end of the shaft. The shafts provide the power to turn the wheels by linking the transmission to the wheel. There are two shafts and four joints on most front wheel drive cars. CV boots are made of pliable rubber to cover the CV joint. Torn CV boots allow grease meant to lubricate the joint to escape, and allows dirt and debris to enter inside the joint. A worn CV joint usually produces a clicking noise from the wheel area on hard turns.

Drive Shaft and U-Joints - Rear wheel drive cars and trucks have drive shafts in place of CV joints that are found on front wheel drive cars. The drive shaft links the transmission to the rear differential to provide power to turn the wheels. Most drive shafts have two or three U-joints connecting the shaft to the transmission and rear differential. The shaft and joints should be checked for wear during regular engine oil changes. Some U-joints can and should be greased during the "grease job" portion of the oil change.

Front End Alignment - The front end components of a vehicle can be out of alignment, but not give any indication or warning signs. Shimmying and shakes in the front end are usually not caused by the car being "out of alignment," but by out of balance or lack of rotation with the tires. The vehicle pulling to one side, or unusual tire wear are the two most common "out of alignment" warning signs. Check the alignment and all wearable parts in the front end periodically. Always have the front end aligned when replacing tires. A front end alignment is commonly referred to as a "four wheel alignment" these days. Some adjustments to the rear alignment are available on most newer model vehicles, thus the term four wheel alignment.