

Introduction to Automotive Service


Vehicle Maintenance

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Introduction to Automotive Service

Vehicle Maintenance

- Proper vehicle maintenance can extend a vehicle's service life and reduce expensive repairs
 - Attention to detail
 - Correct parts, fluids, lubricants and specs
- Service intervals are often defined by mileage and/or time
- Normal versus severe service



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Under Vehicle Inspection


- Check for fluid leaks
- Suspension components
- Steering gear and linkage
- Brake lines
- Engine and transmission mounts
- Exhaust system



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Engine Oil Ratings

- Oil Performance
 - API - American Petroleum Institute
 - SN is currently recommended for today's vehicles
- Viscosity Grade
 - SAE - Society of Automotive Engineers
 - W - winter
- Energy Conservation Rating



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Oil and Filter Replacement

- Loosen the oil filler cap before raising the vehicle
- Inspect the drained oil for contamination
- Be certain to use the correct replacement oil and filter
- Be certain to remove the old filter gasket
- Lubricate the new filter gasket and tighten to specifications
- Tighten the drain plug and fill with the recommended oil
- Check for leaks and proper oil level before driving the vehicle
- Dispose of the old oil and filter properly



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Lubricating Suspension

- Locate the vehicle lubrication fittings
- Newer vehicles may not have any lubrication points
- Tire and wheel assemblies may have to be removed for access
- Clean the grease gun nozzle and all lubrication fittings
- Do not over fill



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Checking Drivetrain Lubricants

- Many manual transmissions and differential lubricants are checked under the vehicle
- Be certain the vehicle is level
- Remove the filler plug
- Check the lubricant level with your finger or a wire



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Inspecting Tires

- Foreign objects
- Tread damage
- Sidewall damage
- Excessive wear
 - 1/16" minimum tread
 - wear indicator bars
- Abnormal wear patterns
- Mismatched tires



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Tire Pressure

- Use the vehicle's tire placard
- Do not use the maximum pressure listed on the tire's sidewall
- Vehicles may have different front and rear tire pressure specifications
- Improper pressure can cause pull, noise, premature tire wear and affect vehicle handling



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Tire Rotation

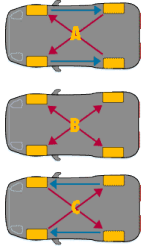
- Carefully inspect the tires
- Rotate the tires as recommended by the tire or vehicle manufacturer
- Watch for directional tires and/or different tire sizes used on front and rear wheels
- Start the lug nuts by hand and use a torque wrench or torque stick to tighten



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Common Rotation Patterns

- Modified X for front wheel drive
- Alternate X for front, rear or all wheel drive
- Modified X for rear or four wheel drive

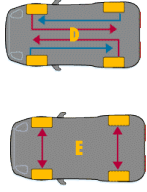


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Special Rotation Patterns

- Directional tires that are the same size front and rear
- Non-directional tires that are a different size from front to rear

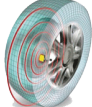
- What must be done to properly rotate the tires on vehicle E if it is equipped with directional tires?



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Computer Balancing a Tire


- Check the condition of the tire and wheel
- Check the tire's air pressure
- Carefully follow the equipment manufacturer's operating instructions



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Engine Coolant

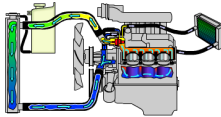
- A 50/50 mix of coolant and water provides optimum performance
- The standard green coolant and orange coolant are both ethylene glycol based
 - green – silicate corrosion inhibitors
 - orange – organic acid corrosion inhibitors
- Do not mix or interchange coolant types



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Cooling System Inspection

- Check coolant level and condition
- Check coolant protection level with a hydrometer
- Inspect the vehicle for any trace signs of coolant leakage
- Pressure test the cooling system if leaks are suspected



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Inspecting and Replacing Hoses


- Inspect all hoses for:
 - swelling
 - soft spots
 - hard spots
 - cracking
- Carefully remove old hose to prevent damaging radiator or heater core
- Lubricate new hoses before installation



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Accessory Drive Belt Types

- V drive belts
 - commonly used to drive one accessory
 - manually adjusted
- Serpentine drive belts
 - one belt is often used to drive all accessories
 - an automatic belt tensioner may be used



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Belt Inspection and Adjustment

- Inspect the belts for
 - damage
 - cracking
 - glazing
 - proper tension
- Adjustments are commonly made by loosening bolts and moving the driven accessory or an idler pulley

