SUMMER VEHICLE STORAGE

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I have spent many years storing collector cars from winter elements of cold and inactivity. Now we are in a different environment where many of us leave our cars in storage in the heat of an Arizona summer.

I wrote a winter storage "how-to" for our car club in Minnesota and decided to do some research into what can be done to best store a car for several months in Arizona. For car enthusiasts, our winter weather offers a great time to drive and enjoy the open road.

Usually when fall comes and you get back to Arizona, it is not as easy as starting up the car for the fall season. Dead batteries, low tires, non-starting, and fuel deterioration are among the issues that sometimes occur

The goal of this article is to provide ideas on how to protect the car from deterioration as well as other damage, such as rodents and weather. I've set out some storage preparation ideas and their rationale.

You be the judge about how much, or how little, you want to do. There are plenty of theories and options here. The first thing to do is to read your car's owner manual or web site to see what the manufacturer recommends about storage.

Minimum work

What is the minimum to do before storing a car?

- Wash it
- Top off the gas tank after adding a fuel stabilizer.
- Increase tire pressure
- Pull it in the storage area,
- Kill the engine,
- Put a battery tender charger on the battery
- Cover it up.

Further preparation

The following material details things that can be done to further protect your vehicle during storage.

EXTERIOR

Wash and wax the car

Wash the car and wax it to preserve the paint before storing it. This will also prevent dirt and other debris, such as bird excrement, from being cooked into the body over the summer from the heat of the garage.

This is mandatory if you are going to cover the car during storage.

Clean the wheels

Brake dust is very corrosive. You do not want this sitting on your wheels for the summer.

Clean the outside and the inside. The cleaning process is slightly different depending on the type of wheel you have.

Body seals

If storing your car in a garage with covered or shaded windows, the constant high temperatures should not cause much harm.

Rubber and seals may dry out from the heat, so put lubricant on the rubber seals of the doors, trunk, t-tops, or removable top so they do not dry out.

Car cover

Covering the car helps limit dust accumulation. We do cover our car if it is clean. The garage will get a lot of dust buildup and dust will filter through the cover, so you should expect to wash it when you return.

If you cover your car, use a cloth car cover or cloth sheets, since plastic sheets may trap moisture or react with the paint, so should not be used.

Wiper Blades

Place clean rags between the wiper arms and windshield to hold the blades off the glass. This will keep them from sticking to the glass, which could both leave marks and ruin the rubber.

If your car has the windshield wiper arms that pop out and away from the windshield, you can store them in the "out" position

Convertible Top

If you have a convertible top, leave it up. A convertible top and plastic window can develop permanent creases when folded for long periods and dust can find its way into the creases.

INTERIOR

Clean the interior

Spend some time and get everything really clean: glass, upholstery and carpeting. Apply a high quality furniture wax to any woodwork.

Remove all liquid or gel products such as Chap Stick, suntan or skin lotions that may melt or dissolve in the heat.

When Fall comes, you won't want to clean it. You will get in and start driving.

Air circulation

In Arizona, we do not have to be too concerned about moisture during most of the summer, but moisture is created when the temperature fluctuates and created condensation, or the humidity is high, which may happen during Monsoon.

To avoid concern about mold, leave the windows open about 1/2 inch to allow air to circulate.

Do not treat the interior with Armor All® or similar products; these contain water, which

may promote the growth of mold. If you used these products, wait until you get back in Fall to apply them.

Do not block your upper and lower garage vents. Blocking them will prevent air circulation and possibly trap vapors including gasoline, cleaning products and carbon monoxide from water heaters.

Adjusting seats

If you have manual seats it has been suggested that you move the front seats forward so that the spring on the tracks under each is at rest and not extended and under stress while your car is stored.

Good smells

You can put a dryer sheet or two under the front seats to keep it fresh smelling.

Avoiding critters

We will discuss some preventative measures in detail further in this story.

MECHANICAL

Battery

I do not recommend disconnecting the battery or removing it.

In most cars, all of the radio and seat memory will be lost when the battery is disconnected. With some cars disconnecting the battery for any period of time, (even 10 to 15 minutes) may put the computer into a "limp" or "delivery" mode, and it will need to be taken to a dealer to be reset. At a minimum, there is a chance of activating the anti-theft provisions of the radio if the battery removed, requiring entering some kind of code to get it back working.

Maintaining the battery

As we know, Arizona heat is hard on batteries. The ultimate goal is to have the vehicle able to start up when you return.

When I store my car for more than a month, I leave the battery in the car and use a battery maintainer (also called a battery tender) to keep the battery charged without over-charging it. Since we leave our car stored several times per year, I have the cables hard-wired to the battery cables for easy connection.

When I do attach the battery maintainer, I am careful about where the cables and extension cord are run, so they are not pinched by the hood. I also place the charging unit on the windshield as I do not want it to damage the vehicle or finish if it overheats during the summer.

Putting a maintainer on the battery will mean that you will not have to jump-start your battery when you get back because it's dangerous and can be expensive. With today's complicated vehicles, jumpstarting your car incorrectly can destroy a computer module.

Even maintenance-free batteries are not immune to evaporation during the dry summer heat. The battery-tender maintains voltage but will not ensure capacity

(cranking amps) if there is a low liquid level.

If your battery does discharge over the summer, it can typically be recharged several times as long as the fluid level and connections are in good condition.

Jump-starting

Each manufacturer has their recommendations for jump-starting their vehicles. As you park your car for the summer, be sure that it is possible to get to the battery if a jump-start will be necessary in Fall.

Tires

Flat spots

Modern radial tires typically do not retain flat spots, which are created by the weight of the car sitting for a period of time on one spot on the tires. Some tires flat spot more often and more permanently than others depending on the material in the tire. The tires most likely to flat-spot are bias-ply tires on collector cars.

You might experience flat spots for a while when you first drive the car but that will probably go away as the tire warm back up. After storage expect some thumping tires until they are driven 10 miles or so.

Higher pressure

Tires will often lose 1 or more pounds of pressure per month, and the weight of a car sitting on a low or flat tire may damage the tire. To reduce the possibility of getting flat-spots in your tires while your car sits for a long time in one spot, set your pressures to around 10 psi over the recommended air pressure.

Nitrogen-filled tires may lose less pressure during storage, so this step is not as necessary. Pumping the tires up is not as easy as going to the gas station for air. However, you can get the tires filled with nitrogen to their maximum recommended standard pressure.

Raising the tires off the ground

Some people like to raise the car off of the ground so the weight of the car is taken off of the tires. While that can be done as additional work, there are some cautions.

To avoid having the suspension stressed by being fully extended, the jack stands should be put under the suspension components ((front A-arms and rear axle), not the frame. This way the suspension remains in a normal position with the tires off.

If the suspension is fully extended, it will place load on different parts of the car than were designed to take the load and components not normally exposed to the environment will be exposed and can rust.

Brakes

Brake rotors

It is not uncommon for the brake rotors to develop light surface rust during storage. This is most often just a cosmetic problem and can be eliminated during a few driving stops. Heavier surface rust can be burnished off the rotors by performing some moderate

stops from 35–40 mph with cooling time in between.

Parking brake

It's usually a good idea to use the parking brake, but don't do it when you leave a car in storage.

If the brake pads make contact with the rotors for too long, there is a chance that they might stick to the rotors or brake drums.

Manual transmission

If you have a manual transmission, it is best to leave the car in neutral and use tire chocks to prevent the car from moving, rather than leaving the car in gear or using the parking brake.

A car left standing will sometimes develop a frozen clutch because the friction disc is trapped under pressure between the flywheel and pressure plate, and either the metallic particles in the friction disc or the adhesive matrix in the disc fuse to the flywheel or pressure plate. To avoid the risk of the clutch and flywheel rusting together, I wedge a board on the clutch pedal to partially depress it, leaving it released from the flywheel.

However, if you have a hydraulic clutch this approach places pressure on the seals and cylinders for a long time and might cause problems depending on the condition of the system. If you have a hydraulic clutch, check in your owner's manual or with the dealer on their recommended storage method.

FLUIDS

One of the best ways of preventing the interior destruction of the engine is by making sure all of the fluids are at their proper levels and have been changed at proper intervals.

Oil

First and foremost if your vehicle is even close to needing an oil change, this is the time to do it. Changing the oil will ensure that the acids and other corrosive contaminants that build up in used motor oil does not eat away at the internal parts of your engine.

Synthetic oil can better handle the heat and storage. I typically rely of the regular intervals for oil changes and do not do anything different before putting the car into storage. If I am close to the mileage limit, I will change the oil and filter before storage, so it is one less thing to do when I return.

Gasoline

Try to run the gas nearly empty a day before you store it, then add the fuel stabilizer (such as Sta-Bil or Seafoam) to the tank at the gas station right before you fill the tank all the way up. A full tank of gas is better because there's less air in your tank which will prevent oxidation (rust) in any open space on the top on the tank. By driving the car home, the gas stabilizer will circulate into the fuel rail and injectors.

Most gasoline now sold is blended with an amount of ethanol. Although these blended fuels burn cleaner than pure gasoline, the ethanol absorbs moisture from the air. Many of us prefer gasoline without ethanol, especially for the last tank of the season before storage. From what I have learned, selling non-ethanol fuel varies from station to station, and it's up to the station owner whether or not to sell pure gas. To find stations selling pure gasoline, go to pure-gas.org, a site dedicated to listing gas stations in the U.S. and Canada that serve ethanol-free gasoline.

Coolant

The most important part of storing the car for a long period is to protect the cooling system from unnecessary corrosion.

Check antifreeze quality, protection level, and pH level of antifreeze. Antifreeze should be slightly alkaline at 7.5 to 8 pH.

Brake Fluid

Brake fluid is hydroscopic. This basically means it absorbs moisture. Car manufacturers recommend flushing the brake system and changing the brake fluid at certain intervals, primarily to avoid the absorption of water, which reduces braking efficiency and corrodes brake lines.

By making sure the brake master cylinder is full, you will reduce the exposed surface area of the fluid and water absorption can be reduced.

RODENTS AND CRITTERS

Protection from rodents and other critters is important. They not only chew on wires, but they can crawl into openings and set up residence or use the space to store food supplies.

Interior & trunk

I do not recommend using mothballs at repel critters. There is no question that mice hate the smell of mothballs, but so do most people.

Instead, some people have used Irish Spring soap. I used it for many years by placing the bars into open coffee cans in the trunk and front and back floors. I also left my sun visors down so rodents would have more problems getting into the headliner. This was my solution of choice. I don't know if it works or I was just lucky, but I never had a problem with rodents during winter storage, which is typically when mice are looking for a home. Irish Spring soap also adds a nice scent to the interior.

Exhaust system

Plug the tailpipes, engine air intake and the fresh air intake in front of the windshield, unless it's covered by mesh (or a cabin air filter). This can keep critters from climbing in and nesting or using the areas for food storage.

Some materials used to plug these openings are steel wool, dryer sheets, aluminum foil, or even a balloon or a plastic bag.

INSURANCE

You should check with your insurance agent or insurance company for their input on your coverage while your vehicle is in storage.

Requirements for insurance coverage vary by state, so if you vehicle is registered and licensed in another state, you should check on their requirements for maintaining insurance coverage.

Following are some suggestions I have seen for handling insurance for a car in storage.

- You may be able to temporarily cancel your collision insurance. That is the most expensive part. Don't cancel comprehensive coverage (the "other than collision" coverage).
- Contact your insurance agent to see whether the company offers any kind of rate reduction for vehicles in storage.

If you do adjust your insurance, just make sure to call your agent or company once the season changes so that you don't find yourself on the road without coverage in the event of an accident.

LAST THING BEFORE STORAGE

Tape a note to the steering wheel to remind you what needs to be done in Fall to get the car ready for the next season.

Leave your key fobs at the house in case the vehicle needs to be moved.

SOME CAUTIONS

What about starting or driving the car during the summer?

I do not recommend it.

If you are going to start the car while in storage, it requires more than just getting the water temperature gauge off of the peg. The oil temperature should also be brought up to normal operating conditions, and this isn't possible if the car just sits in the garage. If the car is started, it should be driven for at least a half-hour to allow all systems to get up to proper operating temperature and cook off any condensation in the engine and oil. Condensation is moisture - and moisture causes rust.

If the car is driven, remember that whoever drives it should:

- Put full insurance coverage back on the car
- Check everything before driving
- Lower tire pressure to factory-recommended levels

After driving, the drill includes:

- Topping off the gas tank
- Boosting tire pressures to storage pressure
- Reconnecting battery minder

- Re-storing the car

A lot of work, arguably without benefit.

OUT OF STORAGE - GET BACK IN ACTION

Here is a list of a few things to get ready for the driving season.

This is mainly a matter of undoing what you did in Spring, as well as making certain that everything is functional and safe.

Pre-drive

- Make sure that you have insurance coverage back on the car.
- Get the new license tags on the car.
- Take a look at the note you taped to the steering wheel last Spring to remind you what you need to do in Fall.
- Look on and underneath the engine and drivetrain for fluid puddles.
- Make sure that the battery is charged and ready to go.
- Check the tires for any unusual bulges or cracks and tire pressure. (Remember we inflated the tires 10 lbs. to 15 lbs. over normal.). Don't forget to check tire pressure in the spare tire.
- Did you put steel wool or something else in tailpipes last fall to keeps critters from climbing in? Remove it.
- Check and top off all fluids, including brake fluid.
- Check all mechanisms (clutch, brakes, shifter, etc.). Is everything working?
- Do a quick visual inspection under the hood to be sure nothing will impede the engine when you crank it over.
- Start the engine, let it warm up to get it off high idle.

Perform a few basic checks:

- Cycle the transmission through its positions if it is an automatic or work the stick shift and clutch if it's a manual.
- Test the brakes: pumping the brake pedal a few times, making sure you have pedal pressure.
- Check lights and turn signals.

With the engine warmed up, change oil and filter, lubricate the chassis.

In the past, it was recommended to change oil again coming out of storage to remove contaminants that may have developed in the engine. This was recommended for cars that were stored in a cold climate in winter, with high humidity and large temperature swings. With our warmer temperatures, less temperature swings, low humidity and synthetic oils that may no longer be necessary.

The First Drive - Take it slow and easy.

Check all gauges. Is everything working properly?

Slowly turn the steering wheel back and forth to be sure the steering is working correctly.

Put the car in gear and drive away slowly at idle and test the brakes. Don't forget to test the emergency brake.

Listen for unusual noises and sniff for odd smells.

Take it to the gas station, top off the tank.

Go for at least a half hour drive to heat up the powertrain, and then check everything again. Bring along the cell phone in case something goes wrong.

Spend some time getting reacquainted by doing your usual body and interior clean-up.

Optional solution

Have someone (possibly your own mechanic) go to your car just before you arrive, and jump-start it if necessary, run it, air it out, have it washed if necessary, and prepped for your arrival.

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