

Preparing Your Vehicle for Winter Storage



by SK Staff

We do not normally publish an annual 'Get your vehicle ready for storage' article; reason: it gets so repetitive. But out of deference to the many new readers that we have, perhaps it is time to offer a complete storage procedure article.

Although readers in the colder areas are the primary target of this information, even those in milder climates can and should take advantage of the time and perform certain maintenance on their cars. Although in the deep South and the Southwest, freezing is not generally a problem, driving is often reduced and it gives us an opportunity to do those jobs which we chose not to do during the summer/prime driving season.

Most of the information in this article pertains to non-freezing climates as well as those which do experience a 'hard-freeze.' In the case of 'anti-freeze,' substitute the word 'coolant.'

The time to begin 'Winterizing' a car or truck is well before the first freeze or the first snow. Once the hard cold arrives, there are many things that you cannot (or just don't want to) do. Unless you have a heated garage or storage facility, working on the car in freezing temperatures makes crawling around on the concrete floor unpleasant, and having you bundled in an over-stuffed ski jacket, sweatshirt, heavy boots, etc. makes it tough to crawl around. You will not be able to do all of these things in a single day, or even a single weekend. Plan enough time so that you can be ready by the time the freeze sets in.

Let's start with an 'analysis drive.' Have a buddy ride along taking notes. It's easier for you to dictate than to try to remember or try to write as you drive. How does the vehicle start? Is it balky? Electrical? Fuel? If it doesn't start right up, that is something that should be addressed before the car is put away for the winter, or perhaps it calls for removing the distributor, wiring, fuel pump or carburetor for rebuilding over the winter.

Take the car out on the road. Does it accelerate well or does it sputter or have other acceleration problems? Do you feel a rubbing or 'dead spots' while turning? Listen for squeaks, rattling, rubbing noises, or any other noise that doesn't belong. Find an empty parking lot (often Sunday in an industrial area is best), accelerate up to about 25 or 30 mph, release your grip on the steering wheel (but keep your hands ready to grasp it), and apply the brakes. Does the car pull? Do you feel a throbbing in the brakes? Does the car decelerate in a straight line? Are there any noises from the brakes? Whether the brakes are hydraulic or mechanical, rod or cable operated, you are looking for problems. These are things that perhaps you didn't notice, or ignored during the driving season.

Have your buddy get out of the car and watch as you accelerate from a stop, and then brake to a stop. He can often hear noises that you cannot inside the car. He can see smoke or steam, or even smell something that is not normal on the outside. He can spot many things while watching the car that you might not be able to see, hear or sense. If he does a good job, stop the car, let him back in and drive him home.

Are any of the gauges acting strangely or erratic? Does the fuel gauge bounce around, or does the speedometer fluctuate while driving? Is the speedometer in need of calibration? Ammeter? Oil pressure gauge? Might as well pull the gauges out and have them repaired while the car is laid up for the winter. Oh, if you send the fuel gauge in for repair, don't neglect to send the sender unit as well. They should be calibrated together.

Check all of the lights – headlights, cowl lights, brake and taillights, instrument panel lights – and replace burned out bulbs. If there is a wiring problem, frayed connections, old wire, loose

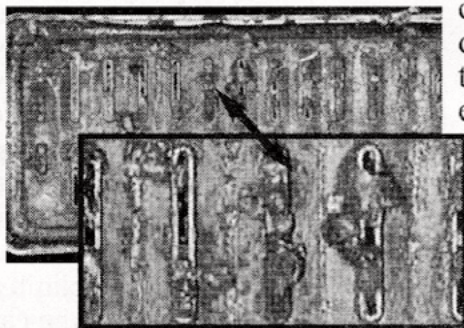


grounds, make a note and you'll have another project for the winter months.

While the oil is still hot, drain the crankcase and refill with fresh oil. If you have any plans for starting the vehicle during the winter, consider using a winter-weight oil. Don't forget to drain it before the warmer weather though.



Put a pan or bucket under the radiator drain, and drain off a quart or so of coolant. If it is rusty, you probably have a bigger job ahead of you. That rusty coolant means rust in the radiator and in the engine block. The entire cooling system will have to be drained and flushed, perhaps even using a commercial cleaner to wash out any oil or grease in the cooling system. Follow the instructions on the package. Don't forget to open (and then close) any petcocks or drains on the block itself. It may mean starting the engine and idling it for 30 minutes or so, draining and then re-flushing. Once the flushing water runs clear, and before you refill the system with fresh coolant, think about pulling the radiator and having it professionally boiled out. The radiator



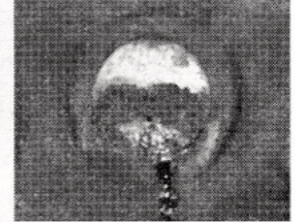
consists of hundreds of tiny tubes that can easily clog with bits of rust or sediment. Even though the water flow seems good, there

may be clogged tubes which are impeding the heat transfer within the radiator. Having the radiator boiled out is cheap insurance. Check the hoses for soft spots or signs of deterioration. Hoses are cheap. It's best to replace them, if in doubt.



If the rust was very heavy, or if particles of rust drain out while flushing, you may have heavy rust deposits in the block. On many early side-valve engines there is a metal plate covering the

cooling jacket in the block. You can remove that and use a wire brush, a piece of wire coat hanger or other tools to clean out the rust deposits. (Most often the rust settles near the rear of the block in the cooling galleries. Before taking anything apart, add water, bring the engine up to normal operating temperature and use a non-contact laser thermometer to measure the block's temperature. If it is cooler near the front than at the back, it is a pretty good bet that rust is preventing the coolant from doing its job.) Use a good light and examine the freeze plugs on the engine. Are any of them leaking or do they show rust tracks running down the block? It's time to replace them. While the cooling system is drained you may want to replace the thermostat, too.



If all is good with the cooling system, refill it with a mixture of anti-freeze and water. Make sure that the concentration is such that you are protected to a freezing temperature suitable for your locale. (See typical concentration chart on page 34) Don't waste your money on the pre-mixed 50/50 mixture. It's half water, and you are paying a heavy premium for having it mixed at the factory. Buy the concentrate, buy distilled water at the supermarket (about a buck a gallon, maybe less) and mix it yourself. By the way, filling the entire



cleaned cooling system with distilled water is not a bad idea. Distilled water does not contain the minerals that normal tap water does, and softened water contains salt - never a good thing for the cooling system. Even if the old coolant is good and you are not replacing it, be sure to add an anti-freeze booster. The chemicals in anti-freeze which lubricate the water pump and prevent rust have a limited life span. Three years is about the maximum. Please, do not allow old coolant to run into the street or into sewers. Capture it, and dispose of it properly at a haz-mat facility. Be careful that the drained antifreeze - ethylene glycol - does not drip onto the driveway where pets are liable to lick it. It has a sweetish taste which animals like, but it is a poison. Do not leave trays of ethylene glycol anywhere where an animal or child could drink it.

We are almost ready to bring the vehicle inside. But first a couple of more things. First, crawl under the car and, with the help of a good flashlight, check the gas tank for leaks, pin holes or rusted spots. If you find any, plan on draining the gas from the tank, and then cleaning and re-sealing the gas tank with a special material which will coat the clean metal and provide a barrier against moisture in the future. Make sure that the coating is ethanol resistant.



If the tank appears to be in good condition, add a gas preservative to the gas and then top off the gas tank. Condensation occurs in half empty tanks. The moisture in the air precipitates out and settles to the bottom of the gas tank where it can rust the steel. Drive the car enough so that the treated gas runs through the fuel line, fuel pump and carburetor.

Next, clean the car, inside and out. First crawl around under the car with a spray bottle of degreaser, a long stiff brush and a garden hose. You're going to get wet and dirty, so don't wear your good dinner jacket. Spray and scrub the underside of the engine, transmission, driveline, behind the wheels, the differential and the frame. Get as much of the old oil, grease and road crud off as you can. Use the garden hose (on a jet stream from the nozzle if possible) to wash all of the chemical away.

Next, wash the body of the car. Be really thorough. Make sure that you get into all those nooks and crannies. Lift the hood and wash the vent well under the windshield. Remove the leaves that have collected there. Dry the car, and this would be a good time to pull out a fresh clay bar, clean the paint, polish and then wax. Use a polish-wax on the chrome/nickel. Clean the glass, use a dressing on the now-



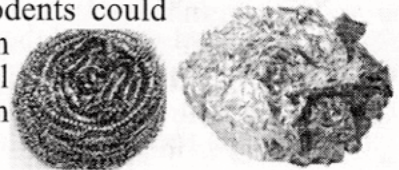
clean tires. Vacuum the interior, empty the ashtrays, make sure that any food particles left over from the summer's picnics are cleaned out, check the trunk for stuff left over from your last trip, and make sure that you vacuum under the seats. And in the door pockets. Any food left over in the car is going to attract mice.

Ready? Pull the car into the garage where it will rest until spring. If you have a downdraft carburetor, then with the engine idling slowly pour Marvel Mystery Oil into the throat of the carb until it stalls out. The MMO will coat the internal parts of the carburetor and valves and help protect them during the winter. As the oil burns, it is going to smoke. Make sure that the garage door is wide open and have a fan going to keep the air circulating. If you have an updraft carburetor, drain the fuel pump (vacuum tank), fuel lines and the carburetor so that the gas doesn't spoil and turn to gum or varnish over the winter months.



Jack up the vehicle, and place a sturdy jack stand under the frame at each corner. Quality jack stands are doubly important, if you are going to be crawling under the car. Make sure that the wheels are clear of the ground (mice can easily climb a tire and get into the car

– the engine compartment, the trunk or the cabin itself). Reduce the pressure in the tires to about 60% of normal. Make a note you will hang inside the car to remind you to pump up the tires in the spring. Use a piece of aluminum foil over the end of the exhaust pipe; hold it in place with a rubber band. It will keep rodents out of the exhaust system. Make a note to remind you, months from now, to remove the foil. If there are any openings in the body or trunk into which rodents could crawl, plug them with stainless steel wool balls or aluminum foil balls.



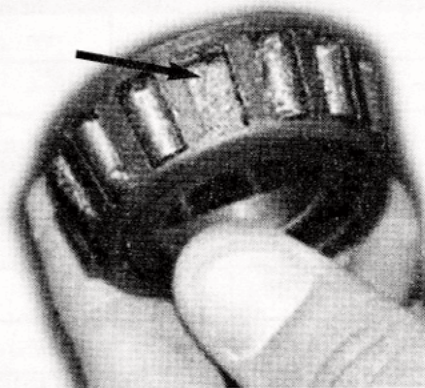
Disconnect and remove the battery. Move it to a warm location, and hook it up to a float charger. Examine the cables, and if corroded or frayed, replace them with a comparable size cable. The cables that you buy at auto parts stores are designed for 12-volt systems and are too light for the older 6-volt electrical systems.

A discharged, or partially discharged battery is subject to freezing. A fully charged battery will not freeze under normal circumstances. The electrolyte composition changes when charged and it resists freezing. Keep the battery charged when in storage - and when not in use, even during the summer months - by connecting a float charger.



With the vehicle up on jack stands, drain and refill the transmission and the differential. If you have a newer car, be sure to drain the windshield washer reservoir.

Start at the front of the vehicle. Pull each wheel and examine 1) the tire - for cracks, splits, tread wear indicators, and unusual wear patterns, 2) the brakes - hoses, cables, springs, linings, drums, cylinders for wear, leaking and lubrication, and 3) the steering linkage - for wear, looseness or other problems. With the wheel removed it is easier to grease all of the fittings. If there is resistance in getting grease into the fitting, remove the grease fitting and clean or replace it. Next, repack the wheel bearings. Be sure to clean the bearing of any old grease, and examine the bearing and race for wear, score marks, broken cages or any other evidence of damage or wear. If so, replace the bearing and the race. Use a product like Eastwood's 'Pre' to remove any residue from the cleaning solvent that you used before repacking the bearing.



Carefully check the bearing for damage, including the rollers, the cage or evidence of other wear or damage.

Complete any necessary work like brakes or replacement of steering linkage. Clean up any excess grease and replace the wheel. Make a note to bleed the brakes in the spring after you start the engine (for hydraulic brakes).



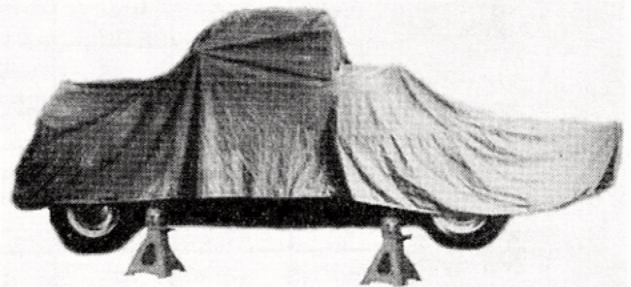
If yours is a Model T Ford, why not pull the coils and have them all rebuilt over the winter? It will make a big difference when you fire up the car in the spring.

Place a mat or pad under the engine/transmission to catch any drippings. In the spring it will be easy to see exactly where the leak is coming from, and to fix it.

Remove any parts which have to be rebuilt over the winter. Place each in a box, and label the box so that there is no confusion later on. (A suggestion: go to a local shoe store, and ask for empty shoe boxes. They get thrown out anyway, and they make a great container for all those parts. And they stack neatly on a shelf.) If the removal of the part leaves an opening in the engine (like the carburetor, fuel pump, etc.), cover those openings with a piece of aluminum foil or a stainless steel wool ball. You do not need oil-drowned mice in your crankcase. (Rodents will eat through a piece of towel or a rag but will not chew on aluminum foil or stainless steel wool balls.)

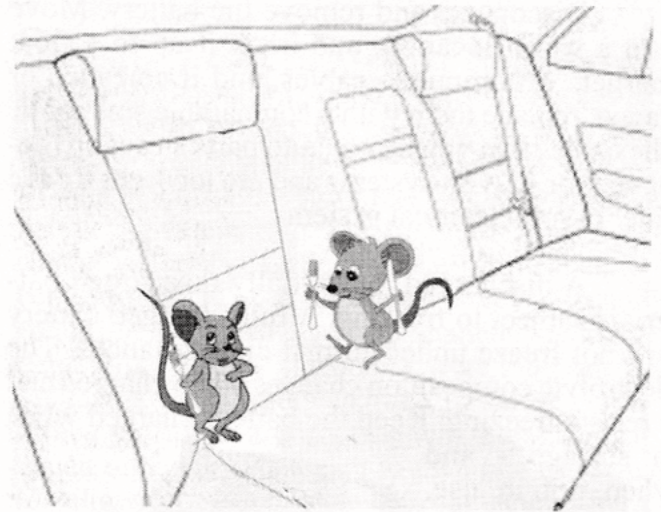
Examine all of the wiring, the belts, hoses, seals, and filters, and replace as needed.

Cover the car with an old bedsheet or a fabric car cover. Do not use a plastic or non-breathable tarpaulin over the car. It will keep condensation in, and that could cause rust. Make sure the cover or sheet does not reach to the floor. Mice can scurry up the fabric and be inside eating the stuffing out of your seats for months before you discover them.



A couple of other things. First of all, do not cancel your insurance for the time that the car is in storage. Depending on your policy (check with your agent) if there is a problem or injury, the car/human body might not be covered under your homeowner's insurance. Make sure that a fully charged fire extinguisher is accessible away from the car. In case of a fire, you don't want to start pulling off covers to get to the extinguishers in the trunk. Change the battery in the fire/smoke detector in the car's storage area and test it.

S.K.



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Automotive Antifreeze Table

Quarts of Antifreeze Required for Temperature Rating (in °F)								
Cooling System Cap. in Quarts	3 Quarts	4 Quarts	5 Quarts	6 Quarts	7 Quarts	8 Quarts	9 Quarts	10 Quarts
8 Quarts	-7°	-34°	-68°	==	==	==	==	==
9 Quarts	0°	-21°	-50°	-84°	==	==	==	==
10 Quarts	4°	-12°	-34°	-62°	-84°	==	==	==
11 Quarts	8°	-6°	-23°	-47°	-69°	-84°	==	==
12 Quarts	10°	0°	-15°	-34°	-58°	-74°	==	==
13 Quarts	13°	3°	-9°	-25°	-45°	-66°	-84°	==
14 Quarts	15°	6°	-5°	-17°	-34°	-53°	-74°	-84°
15 Quarts	16°	8°	0°	-12°	-26°	-43°	-62°	-76°
16 Quarts	17°	10°	2°	-7°	-19°	-34°	-53°	-68°
17 Quarts	18°	12°	5°	-4°	-14°	-27°	-43°	-59°
18 Quarts	19°	14°	7°	0°	-10°	-21°	-34°	-51°
19 Quarts	20°	16°	9°	2°	-7°	-16°	-28°	-42°

NOTE: Typical antifreeze-to-water mixture is 50%-50%, and should never exceed more than 70%-30%, as the freezing/boiling properties of the mixture do not improve significantly after that point.

Portions of the data in this table were taken from information supplied by Prestone Anti-Freeze, a product of the Union Carbide Corporation.