THE COMPLETE GUIDE TO

PREVENTATIVE MAINTENANCE & STORAGE

Protecting Your Corvette—The Right Way

There comes a moment every autumn when the driving season winds down. The days grow shorter, the roads turn hostile with salt and moisture, and the time arrives to put your Corvette away until spring. How you handle this transition matters more than most owners realize.

We've spent over fifty years maintaining, restoring, and storing Corvettes of every generation at Corvette Connection. Through that experience, we've learned a truth that surprises many owners:

> *Corvettes don't suffer from being driven. They suffer from being neglected while sitting.*

Moisture, contaminated fluids, and small oversights during storage cause far more damage than normal driving ever will. The good news? With thoughtful preparation, nearly all of these problems are entirely preventable.

This comprehensive guide combines everything we've learned—from fluid maintenance to rodent prevention, from storage preparation to spring recommissioning. It doesn't just tell you what to do; it explains why each step matters.

PART ONE

The Case for Driving

Before we discuss storage, let's acknowledge the best alternative: the healthiest thing you can do for your Corvette is drive it. When conditions allow, take the car out at least once a month on a nice day and bring it fully up to operating temperature.

A short monthly drive delivers remarkable benefits. Heat evaporates moisture that would otherwise accumulate in the engine, exhaust system, and intake. Fluids circulate and coat the surfaces they're designed to protect. Seals remain pliable instead of drying and cracking. Brakes, suspension, and drivetrain components stay free rather than seizing from disuse. The tire contact patch rotates to a new position, preventing flat spots.

CRITICAL DISTINCTION

Letting the car idle in the driveway is NOT a substitute for driving. Idling doesn't bring the engine and drivetrain to proper operating temperature. Worse, it causes water to condense on the inside and outside of metal components—the exhaust system, intake system, and even internal engine surfaces. The tire contact area doesn't change. Idling is one of the worst things you can do to a vehicle.

Drive the car around the block at least once a month to get it to normal operating temperature. This keeps everything lubricated and burns out the moisture. When regular driving isn't possible—and we understand the realities of northeastern winters—proper storage preparation becomes essential.

PART TWO

Fluid Maintenance

Changing your Corvette's fluids as recommended in the regular maintenance schedule is still the lowest cost and most effective way to ensure maximum vehicle life and performance. Think of storage preparation as setting your Corvette up for a healthy, trouble-free rest.

Engine Oil & Filter

Fresh oil is one of the most important protections you can give your engine during storage. Corrosive substances form in used motor oil—you do not want these sitting in your engine all winter. Change the oil when the engine is at normal operating temperature; hot oil flows more easily and absorbs any moisture present in the motor. Draining at operating temperature helps remove moisture from the entire engine.

This service should be performed at least twice a year, or every six months, or every 2,000 to 3,000 miles for conventional motor oil—whichever comes first. Synthetic oils allow 5,000 to 25,000 miles between changes depending on how hard you drive the Corvette. However, always follow the recommended oil change interval in the Corvette owner manual.

CRITICAL WARNING

If the oil smells like gasoline or the level is higher than normal, DO NOT START THE CAR. The smell of gasoline in the engine oil may indicate a serious problem. Before starting the engine, change the oil and oil filter, then find out what caused the gasoline to enter the engine and correct the problem.

For extended storage periods, there is equipment available today that can remove almost all of the oil in the engine. They can pickle the motor, fuel system components, and on engines with push rod drive chains, back off the valve spring pressure.

Cooling System

Flush and fill your Corvette's cooling system with a fresh 50-50 mixture of antifreeze and distilled water. Check the anti-freeze pH and freeze/boil protection point to make sure it's appropriate for the area the car is being stored. Draining and refilling the

radiator only removes less than a third of the fluid—there is equipment available today that will flush and replace 100% of your car's cooling system fluid.

When storing the car for a long time, or if the car does not run, totally drain the cooling system. If you do this, be sure to leave all the plugs open to let all the moisture in the cooling system evaporate. Remember to close them all when it's time to go again.

Important: There are different antifreeze types. Green antifreeze was mainly developed for 1995 and earlier Corvettes and should be replaced every 1 to 1½ years. The red Dexcool was developed for 1996 and newer Corvettes and should be changed every 2 to 5 years depending on driving conditions. You should use the type of antifreeze originally recommended for your car. The European, Asian, Ford, and Chrysler antifreezes are also different. Different antifreezes should never be mixed. Always check the freeze/boil protection point and the pH balance before storage or before putting the car on the road.

Brake & Hydraulic Clutch Fluid

Brake and hydraulic clutch fluid will deteriorate over time. In normal operation, brake fluid absorbs moisture from the air, pulling it through vents, past seals, and even through brake hoses. At just 3% water, the fluid may lose about 25% of its boiling point temperature. Moisture in the brake fluid can cause brake calipers, master cylinder, slave cylinder, and expensive ABS hydraulic valves to corrode and need replacement.

Evacuate all the old fluid and fill the system with clean new fluid. While bleeding the brakes, inspect the brakes, pads, shoes, drums, calipers, rotors, master cylinder, hoses, and steel lines. DOT 3, 4, and 5.1 brake fluid can be used in almost any car. The new 5.1 brake fluid is superior to DOT 3 and 4 in anti-lock brakes. DOT 5.1 is not silicone. DOT 3, 4, and 5.1 should be changed every 1 to 2 years.

ABOUT DOT 5 SILICONE BRAKE FLUID

DOT 5 SILICONE BRAKE FLUID (DOT V) is a silicone-based fluid (Polydimethylsiloxane CAS# 63148-62-9) formulated specifically for use in hydraulic brake systems to provide corrosion protection and lubrication. This type of brake fluid is only for NON anti-lock brake systems (older Corvettes 1953 to early 1980's). DOT 5 Silicone is recognizable by its bluish-purplish color. In comparison to DOT 3 & DOT 4, DOT 5 provides higher thermal stability and higher dry and wet boiling points. Being silicone-based, DOT 5 is hydrophobic and will not absorb water. DOT 5 brake fluid never has to be changed. DOT 5 is excellent for older restored cars because it does not hurt paint. Never use racing brake fluid in your street car because it absorbs

moisture very quickly—race car builders change the brake fluid after every race. Do Not Mix DOT 5 with DOT 3, 4, or 5.1 Brake Fluid.

Transmission & Differential Fluid

Fresh fluid protects gears, bearings, and seals during storage. There is new equipment available to completely flush and fill manual transmissions and differentials. Don't forget to use posi-traction additives if your Vette has a posi-rear—some fluids already include posi-additives. Never put fluids with posi additives in the transmission; it causes gear clash.

We recommend synthetic fluids over conventional fluids, but do not mix conventional and synthetic fluids. Consult your owner's manual for recommended weight. These fluids should be changed every 30,000 to 50,000 miles.

Automatic transmissions need to have the transmission filter and fluid changed. State of the art equipment is available today to replace 100% of your Vette's transmission fluid. Draining only removes 33% of the old fluid. Transmission fluid can contain corrosive compounds and abrasive contaminants that need to be eliminated. Fluid should be changed every 1-2 years or 15,000 to 30,000 miles.

Power Steering Fluid

Flush and fill power steering fluid. New equipment is now available to change 100% of your car's power steering fluid. This service should be performed every 30,000 to 50,000 miles.

Gasoline & Fuel System

Gasoline can deteriorate over time just sitting in your Corvette's gas tank. For short term storage, keep the tank FULL and add a fuel stabilizer using the amount recommended by the manufacturer before you top off the tank. By adding stabilizer before filling the tank at the gas station, you allow the stabilizer to mix with the gasoline in the tank and fuel injection system lines while you drive the Corvette back to your storage area.

CAUTION: Do not mix fuel stabilizer with synthetic additives and octane boosters. If you drive your Vette monthly as we prefer, top off the tank with fresh gas at the gas station and add fuel stabilizer appropriate to the amount of gas you put in.

Suitable products for fuel stabilizer include CAM II, STABIL, and Seafoam—all registered trademarks. CAM II can last up to two years while STABIL can last up to one year. Note that CAM II does not have the additives that pump gasoline has.

For storage longer than 6 months, contact a professional for tank procedures. Do not leave the tank empty because condensation and moisture will cause rust.

PART THREE

Tune Up & Engine Care

As most cars are harder to start in the cold weather, we suggest you tune up your car in the fall.

Spark Plugs & Ignition

Change your plugs every 15,000 to 50,000 miles. Use anti-seize compound on the spark plug threads. On new aluminum head engines, plugs tend to seize in place after about 60,000 miles. On older cars, plugs need to be changed more frequently—points, cap, and rotor in older cars should be changed every 15,000 miles.

On cars with fuel injection systems, injectors should be cleaned at 15,000 miles along with the air induction system. Cars with electronic high energy distributor systems should have the cap, rotor, and wires changed between 30,000 and 50,000 miles.

Oxygen Sensors & EGR Systems

Vehicles equipped with oxygen sensors: One (1) wire and two (2) wire sensors are good for 30,000 miles. Oxygen sensors with three (3) wires can last about 60,000 miles. The new 4-wire oxygen sensors are good for 90,000 miles. Today's gasoline additives and EGR systems can cause deposits on valves and induction parts. The fuel injectors and air induction system should be cleaned every 15,000 miles. EGR systems and valves need to be cleaned every 30,000 miles.

Air & Fuel Filtration

Air and fuel filtration systems require replacement of paper air filters and gas filters annually. As needed, change the PCV and the breather element if so equipped. Check owner manual for exact replacement schedules. Note: K&N cotton gauze air filters will last a lifetime.

Air Conditioning

Never put the car away with the air conditioning uncharged or with the belt disconnected. You need to run your air conditioner to make sure things don't freeze up. Between the late seventies and early eighties, GM and Corvette started making the air

conditioner turn on every time you ran the defogger/defroster. This not only helped as a reminder to run the air conditioner, but it worked as a dehumidifier too.

If you own a 1994 or newer Corvette, all you have to do is recharge with R-134A as required. If you own a pre-1994 Vette and the system is working well, try to keep it topped off with Freon while it is still available. If your system needs major repair, think about converting to R-134A—change everything. The R-134A molecules are much smaller than the Freon (R-12), which means they can pass right through the old style hoses and "O" rings. When having any A/C work done, have fluorescent dye installed, then check in the spring to see if you have any leaks. A new service is available to clean and refreshen A/C evaporators—this process restores the efficiency of your A/C and freshens interior air.

Air conditioning system service requires a licensed technician to have work done on them.

PART FOUR

General Inspection

This general inspection should be done every time you change the oil and lube the chassis, and especially before you put the car back on the road. Things do corrode while the car is sitting.

Belts & Hoses

Inspect belts and hoses. Look for cracking and other signs of wear. On hoses, check for bubbles or leaks. If you install a new belt and/or hose, be sure to recheck tension on the belt and hose clamp tightness. Recheck after 200 miles for all items replaced for correct tension/tightness.

Tires & Suspension

Be sure to put sufficient air in the tires. Bias ply and radial tires should be inflated to your Corvette's recommendation—recommended tire pressures are on a tag located on the driver's side door frame and the owner's manual. Check the tire side walls for cracks. Check tread depth using a dime—insert the rim of the coin so that the head is going into the tire between tread. If you can see the whole head above the tread, it's time to replace the tire. NOTE: if only one tire has this wear pattern, your car may have a problem. Tires should be replaced in sets.

Suspension: Bounce the car. If it doesn't stop bouncing, you may need new shocks and/or struts. When you bounce the car, be sure to spread your hands apart so you don't put too much pressure in one area. Putting your car on jack stands is a good idea; this will allow you to check the steering rack and the CV rubber boots for cracks and leaks.

Wipers, Washers & Lights

Inspect windshield wipers and washer system. If you are using the car, a 6 month/6000 mile maintenance interval is recommended. Even without use, the rubber will deteriorate over time. When washing the car, have someone run the wipers to see if they streak. Never run the wipers on a dry windshield—it may cause scratches. Lift the wiper arm to see if the tension spring is corroded. If it is, or if the spring tension is weak, replace the arm. Try the washer system. Be sure to open or replace any clogged

nozzles. Inspect hoses for cracking, kinks, or leaks. Make sure the washer fluid tank has an anti-freeze type washer fluid.

Inspect lights. Have a friend turn on the various lights while you walk around the car to make sure they are all working. Don't forget the high beams, brake lights, and emergency flashers.

Chassis Lubrication

Lubricate the chassis and repack wheel bearings on older Vettes where parts are not sealed. Don't forget to lube U-joints and clutch linkage. There is a fine needle attachment for lubricating the new sealed chassis parts.

PART FIVE

Clean & Polish

Exterior Care

Wash and clean your car's exterior as if you were getting it ready for a car show. Dirt will cause cosmetic damage and can become permanently embedded in some surfaces, especially aluminum and clear coated wheels. Wash the vehicle chassis as well.

Wax, polish, or glaze your Vette with a polish appropriate for the finish. Most manufacturers of polishing products have developed a complete system including a pre-wax cleaner, a sealer glaze, and wax. We do NOT recommend one step or paste wax. Never wax a freshly painted car—wait at least one year. We prefer cotton gauze cloths for detailing.

Interior Care

Totally vacuum and clean your Corvette's interior as if you were getting it ready for a show. Make sure there are no crumbs left from your last trip or cruise night to draw creatures into the car. Insects and mice can cause major problems in stored vehicles. Clean the window interiors and gauge lenses.

Apply vinyl dressing and/or leather protectant to seats, dash, and door panels. Clean and apply vinyl or rubber dressing to weather-stripping, tires, rubber bumpers, and moldings.

Note: We do not recommend dressings that contain silicone and formaldehyde.

PART SIX

Pre-Storage Tasks

Battery Care

Disconnecting the negative terminal on your battery is the first thing to do before putting your car away. The milliamps drawn by the car's computer and radio clock will kill an old battery. Use a battery tender to maintain the charge. We do not recommend removing the battery—leaving it in means you can more easily take it for a ride if a good day occurs.

When reconnecting the battery, be sure the ignition key is in the OFF position. You do not want to spike and possibly burn out your computer system and/or relays. Reconnecting the negative battery terminal is the last thing you want to do when getting ready to drive again. There is no advantage to removing the battery.

Rodent Prevention

Plug the exhaust and air intake with clean rags. Insert moth balls inside rags before placing the rags in the exhaust pipes and air intake pipe(s). This will discourage mice from taking up residence. On side pipe or open header cars, placing rags in the pipes while they are still WARM (NOT HOT) helps prevent moisture in the exhaust system and motor. DO NOT USE PLASTIC BAGS—rodents eat plastic.

DO NOT PLACE MOTH BALLS IN THE INTERIOR OF YOUR CAR

You will never get the smell out. Instead for protection from rodents in the interior, use peppermint oil on cotton balls. Place the peppermint oil cotton balls in trays on the car floor in front and rear interior areas. If rodents are a problem, you can use traps (crunchy peanut butter is a good bait)—be sure to place them far from your vehicle and at possible entry points to the storage area. You do not want to draw rodents to the car.

Tires & Jack Stands

We do not recommend the use of jack stands for storage. Bias ply and radial tires should be inflated to manufacturer's recommendations at maximum pressure. To prevent flat spots, tires also need to be turned once a month—mark each tire with chalk so you know what section of the tire is in contact with the ground, then rotate to a new spot.

If you do want to put the car in the air, put the jack stands under the suspension. Contrary to popular belief, our experience has shown that letting the suspension hang tends to weaken the shocks and destroy bushings. Incorrect placement of jack stands may distort the body and can create problems on weak frames. If the undercarriage of your Vette has been detailed, you might want to place urethane pads between the jack stands and the vehicle. Protech makes an excellent product for this use.

Parking Brake

DO NOT leave the parking brake engaged. This can cause the brake pads/shoes to adhere themselves to the rotor/drum over the storage period. If you need to secure the vehicle from moving, use wheel chocks. Lubricate parking brake cables to help prevent rust and corrosion. Inspect all rubber boots for cracks and repair as needed.

Car Cover

After completing your pre-storage checklist, cover the car. Today's Gore-Tex car covers are excellent—cars must be able to breathe. Use a high-quality, breathable car cover designed specifically for storage. Avoid plastic tarps or non-breathable covers that trap moisture against the paint.

PART SEVEN

It's Spring — Undo Everything

Reverse what you did to put your car away for the winter. If storage had been for an extended period, contact a professional before starting the engine.

1. Check All Fluids

Check all of your Corvette's fluids and look under the car for leaking fluids. Check the level of the oil, especially if there is a little spot of oil under the car. Start with the engine oil—if the oil is over full or smells like gasoline, DO NOT START THE CAR. The smell of gasoline in the oil may be a serious problem.

Check the cooling system if you did not complete this before storage. Check the anti-freeze pH and freeze/boil protection point, making sure it is ok. Follow manufacturers' recommendations for changing the anti-freeze and distilled water mixture for minimum life time of the mixture.

Check and fill all fluids levels including transmission, differential, brake, power steering, window washer, battery, and gas tank.

2. Tune-up

If you tuned up your vehicle at storage time, you should be OK. If not, tune up the car now and change air and fuel filters.

3. Air Conditioning

If the AC works, enjoy it. If it does not, the dye you installed will show you where it leaked. See a professional for service.

4. Repeat General Inspection

Things can happen even when your car is sitting. Go through all the steps from the General Inspection section: check fluids, belts, hoses, tires, suspension, lights, and wipers.

5. Clean and Polish

Give your Corvette a good wash and detail.

6. Final Steps to Getting Your Vette Road-Ready

- Remove rags and mothballs from the intake and exhaust systems
- Disconnect the battery tender (if used)
- Remove jack stands (if used)
- Adjust air pressure for all tires to the correct PSI for your Vette
- **Make sure the ignition key is in the OFF position, then reconnect the battery negative terminal. This must be the final step.**

A FINAL WORD

We recommend you drive your car at least once a month rather than placing the car in storage for the winter. Short monthly trips will make sure you get all systems—engine cooling, oil temperature and pressure, etc.—up to normal operating parameters. This will keep everything lubricated and burn out the moisture. This will mean you do not have to do many of the items needed for longer storage.

If you do place your Corvette in storage, follow the simple maintenance suggestions we have outlined here. This should go a long way toward preventing costly and aggravating problems down the road.

Remember, if you do all those maintenance and repair jobs in the winter, your Vette will be ready to go in the spring. Having your car serviced, painted, or restored in the winter when shops are slower means you won't be storing your car. Plus, you may be able to get a better price.

We've specialized in Corvette maintenance, restoration, and storage since 1974. Every generation has its own characteristics, and we've seen firsthand what works—and what leads to expensive repairs. If you'd prefer complete peace of mind, we offer professional pre-storage inspections and storage preparation services designed specifically for Corvettes.

> *"When buying a used car — a good rule of thumb is to assume that maintenance has not been done, and have your car completely serviced. The peace of mind will be worth it."*
>
> — Dana

Protect your investment properly. When it's done right, storage doesn't have to be stressful at all.

Corvette Connection, LLC

Corvette & Fiberglass Specialists Since 1974