

SMALL ENGINE TIPS

When the seasons change many people are caught with their summer lawn tools not ready for startup or winter storage, and their winter power equipment unprepared for the cold and snow. Improperly stored gear often becomes less effective in the spring season, a problem that could easily be prevented with a little preventative maintenance.

Small Engine Storage: Why Draining the Fuel Tank Is a Mistake

If you've checked your manufacturer's guide, you've probably seen a suggestion to perform some preventive maintenance prior to storage. This is always a good habit to get into. Some manufacturers will also recommend running your equipment dry before putting it away for the winter.

WHILE DRAINING THE FUEL TANK MAY SOUND LIKE A GOOD IDEA, IT COULD HARM YOUR ENGINE.

Running a lawn mower dry will make it harder for it to fire right up when it comes time to take it out of storage. This is true of *all* your outdoor equipment and tools, from mowers and blowers to trimmers and chainsaws.

Lawn equipment rely on three basic elements to work. If you don't have all three, your engine will not run: Air - Spark - Fuel. Clean air will always be available if you take time to clean or replace your air filter. And a clean, properly-gapped spark plug usually takes care of the spark. But fuel? If you don't maintain components that help properly distribute gas at the right time and in the right amount, your equipment might not perform well. In fact, it may not run at all.

Draining fuel allows oxygen to enter the carburetor.

It's impossible to get every last drop of gasoline out. When oxygen attacks the small fuel droplets left behind, it causes gum and varnish. If this debris settles in the wrong place, such as a needle valve tip, the carburetor will need cleaning to work properly.

Where there is air, there is water (damage).

Allowing your gas tank to sit empty for long periods leaves a huge area for water vapor to condense. When moisture collects, it can trigger corrosion in the tank, fuel lines, carburetor and cylinders, and can even cause catastrophic engine failure if a big "gulp" is taken into the engine all at once. (If your mechanic says there is "white rust" in the carburetor, this is why.)

Fuel system plastics and rubbers are designed to live in fuel. These parts can become brittle and crack when exposed to air.

WHAT TO DO INSTEAD: AVOID RISKS WITH STABILIZER.

Manufacturers sometimes recommend draining the tank because **the worst thing you can do is leave old fuel in an engine during lengthy periods of storage.** You may have followed this advice in the past without noticeable issues, but that doesn't mean you're in the clear. If draining the tank becomes a yearly habit, there's a good chance you're shortening the lifespan of your lawn mower and other tools, and may accidentally put your family in danger.

There's a much easier way to properly store your lawn equipment. To avoid damage, simply use a quality fuel stabilizer and fresh fuel before putting equipment away for the season.

Step 1: One month before the end of the season, start putting fuel stabilizer in every gas can.

This is an easy way to provide some basic protection for your engine, even if you forget the next three steps.

Step 2: Buy and stabilize fresh fuel for maximum protection.

Adding fuel stabilizer to old fuel will stop it from degrading further, but the fuel may already have broken down.

Step 3: Fill your tank 95% full with fresh, stabilized fuel.

Leaving a little room prevents the fuel from expanding and spilling in warmer weather, and reduces the risk of water vapor that can condense and contaminate fuel.

Step 4: Run the engine for a couple of minutes.

This gets the stabilized fuel into the carburetor and fuel lines.

While you should still consult with your manufacturer for product-specific equipment and engine maintenance tips, these simple steps apply to all engines, big and small.

Fuel Storage

There are some differing opinions about the best methods for storing fuel.

While people are still generally encouraged to run all lawn and power equipment until leftover gas is gone, many people are beginning to investigate the possibility of adding a stabilizer to the fuel instead. With reports that fuel left in the equipment can become oxidized, cause deposits to form in the fuel lines and potentially ruin the entire mechanics of the gear.

Adding a stabilizer to the leftover fuel and running the engine for a few minutes has shown success in preventing this oxidation for up to 12 months of fuel storage. This is more than enough time until spring and summer weather comes back around.



Lawnmowers

One of the largest pieces of equipment and one of the most important to fix if a problem occurs is the lawnmower. While homeowners need to replace their mowers approximately every six years, that figure could become much more frequent without proper winter storage precautions.

With such a large apparatus, there are many different parts that need attention prior to winter storage:

- Before starting **prevent an accidental engine start** by disconnecting your sparkplug wire. Give the mower a thorough cleaning, making sure that all mud, leaves and debris are removed from the body and the blades. A putty knife works well for thoroughly cleaning the bottom of the mower deck. Once all grass clumps and debris have been removed, spray the deck bottom with a corrosion protection product and put the sharpened blade back on.
- Tip the mower toward the side with the oil opening and carefully remove the blade. Check the blade for cracks. An out-of-balance blade cuts poorly, can damage the engine and should always be replaced. Sharpen the blade, removing equal amounts of metal from each side of blade. Use a blade balance to ensure the blade is in balance after sharpening.
- Change the oil in the mower. (See How to Change the Engine Oil in a Lawn Mower below)
- Replace the spark plug and add a teaspoon of oil to the spark plug cylinder.
- If your engine has a paper filter, replace it with a new one. Most foam filters, on the other hand, can be reused after a simple cleaning process—wash with soap and water, soak the clean filter in fresh oil and then squeeze out the excess.
- Examine all the belts and gear drives, Tighten loose belts. Replace any that look worn or cracked.
- Make sure all the wheels are sturdy and do not need to be replaced.



- While in storage, engine oil drains away and leaves internal engine components exposed. This results in corrosion and metal-to-metal contact (cylinder scuffing) at start-up next spring. Our recommendation is to treat the engine with a fogging oil prior to storage.
- Fuel can deteriorate in as little as 60 days, causing gum and varnish to build up in your lawn mower engine. That means difficulty starting the engine, poor performance and reduced engine life. The simplest, easiest fix is using a fuel stabilizer to prevent fuel deterioration during storage. Per recommendations explain under “Why Draining the Fuel Tank is a Mistake” *Do not run the tank dry.* Instead:
 - Add stabilizer to fresh fuel first
 - Fill your fuel tank to full capacity
 - Run engine for a few minutes to spread treated gas throughout the system and circulate new oil
- Find any grease fittings and apply grease, then lubricate other parts as instructed by your owner’s manual.
- Store the mower a safe distance from fertilizers, cleaners and chemicals that could cause corrosion if in contact with the mower.

How to Change the Engine Oil in a Lawn Mower

PREPARATION AND SETUP

Location is important when preparing to change your lawnmower's oil. You're going to want to avoid servicing the machine on grass or near flower beds and foliage due to the chance of oil spillage which can kill your plant life. Select a hard, flat surface such as a driveway or sidewalk and be sure to employ a drop cloth to catch any mess that may occur.

Warm oil is better. While it is certainly possible to change the oil in a cold engine, remember that this lubricant becomes more viscous in higher temperatures. A good rule of thumb is to run your mower for a minute or two to heat it up a bit. In doing this, you'll have much less trouble extracting the old oil. It's also good to take precautions with handling a warm mower as the likelihood for engine burns increases. It is recommended that you use work gloves to mitigate the risk of injury. Finally, you will want to remove the spark plug wire from the plug itself and keep it away to avoid any sort of accidental engine start. The last step in your preparation should also include cleaning the area around the oil fill opening as this prevents any outside debris or dirt from entering the oil reservoir.

REMOVING THE OLD OIL

Extracting the old oil is one of the most important steps in the process. You'll want to ensure that you remove as much of the old product as possible. Here are three methods to help you do so:

- Use a siphon: If using a siphon place one end of the tube into the dipstick / oil fill hole until it reaches the bottom of the oil reservoir. Place the other end of the siphon into a structurally sound container that you will specifically use for this and future oil changes. Make a note to use a container that is easy to handle as you will need to transfer your oil into approved containers for proper disposal. Finally, place wood blocks or other sturdy material under the wheels of the mower on the opposite side of the oil fill hole. This helps to remove as much of the oil as possible.
- Remove the oil plug: Depending on what type of mower you have, you can remove the oil plug to drain out the old lubricant. Refer to your owner's manual for the location of your drain plug and be sure you have the proper sized socket wrench for the job. Once located, position the plug over your catch container and remove it. When the oil is fully drained, replace the plug securely.

- **Tilt Method:** If you do not have access to a siphon, you can drain by tilting the mower on its side. When tilting the mower, position the oil fill cap over the container you are using to collect the used oil. Once positioned correctly, remove the fill cap and let the oil drain completely. You should be aware of the fuel level of the mower when using this method and should only attempt to do so with an empty or near empty tank to avoid spillage. This method also requires you to make a note of where the air filter is located as you do not want to contaminate it with draining oil.



FILL WITH NEW OIL

Once again, refer to your owner's manual for the approved type of oil for your mower and the proper amount your machine requires. Keep in mind that both over and under filling your oil reservoir can be harmful to the life of your mower. Fill the oil tank and replace the dipstick cap. Let the oil settle for at least two minutes and then check the level with the dipstick to ensure you have a proper fill.

FINAL STEPS

Once you have the oil reservoir filled to the proper level, you will need to place the spark plug wire back on the spark plug. Your used oil is recyclable and most towns and counties have ordinances on proper disposal. You should check with your local government to find out the specifics, but chances are you'll need to transfer it from a catch pan into a sealable container. Empty household detergent containers are perfect for this - just be sure the oil has cooled before you do this. Seal the cap tightly and bring your oil to a recycling center.

Be sure you change your mower's oil annually or after 50 hours of use to keep it in top working condition. If your machine has an air filter, you'll want to change that annually as well.

String Trimmers

After the final grass mowing of the season, it is time to clean up and store string trimmers as well. Proper care for this equipment is somewhat dependent on its type.

- Electric string trimmers should be checked to ensure that all the fasteners are tight and that all the straps are strong. Unplug these trimmers, and store them in a dry place.
- Gas-powered string trimmers need to have the spark plugs and filters checked for maintenance or replacement. Then they should be run until the gas runs out before stowing. For 2-Cycle premix engines using a stabilized 2-cycle oil such as Tall Timber Universal One Mix has shown success in preventing this oxidation for up to 12 months of fuel storage.
- Check the trimming line to be sure that it is full and wound correctly. It is a good idea to replace the line each year, and this is the perfect time to do it for next year.
- Clean the string head, and sharpen the string-cutting blade as necessary.
- Store a string trimmer by hanging it or placing it in a clean, dry location.



Snowblowers

As the most frequently used piece of winter power equipment, it is imperative that the snowblower be in perfect working order when winter begins.

- Follow many of the same provisions suggested for a lawnmower or string trimmer to get the snowblower in good working order before the first big snowfall.
- We recommend using Synthetic Motor Oil 4-Stroke engines.
- Test the equipment before the first snow of the season.
- Keep spare parts, such as shear pins, a drive belt and bolts or clips, on hand throughout the winter season.



Garden Tillers

Whether a garden tiller was recently used to turn over the soil of a completed plot or not used since last spring, care must be given to this equipment that will be one of the first to be enacted in the warm weather.

- Begin by running the tiller until all the fuel has been used before storing it. For 2-Cycle premix engines using a stabilized 2-cycle oil such as Tall Timber Universal One Mix has shown success in preventing this oxidation for up to 12 months of fuel storage.
- Carefully clean the body of the tiller, washing off caked mud and plant pieces.
- Check the tiller blades, and sharpen or replace them as needed.
- Make sure that all the nuts and bolts of the equipment are properly tightened, and lubricate connections and levers that should move easily.
- Check that the tires are properly filled to the optimal weight.
- Store the tiller in a dry location that is kept under cover and out of the winter weather.



Chainsaws

Although a chainsaw can be run during any season, most are not frequently utilized during the winter months when it can be difficult to access, cut and haul trees or tree branches. If it is a possibility that the chainsaw will be used even during the winter months, there are a few maintenance suggestions that would save a lot of time and money.

- Instead of using regular fuel, carefully mix high-octane winter fuel and fuel stabilizer to help protect the engine of the chainsaw. For 2-Cycle premix engines using a stabilized 2-cycle oil such as Tall Timber Universal One Mix has shown success in preventing this oxidation for up to 12 months of fuel storage.
- Check the spark plug for proper working condition.
- Very thoroughly examine the chain for broken links and weaknesses before it becomes time to use it, and the chain breaks or falls off. Always keep an extra chain on hand, as well as a chainsaw lubricant.

