



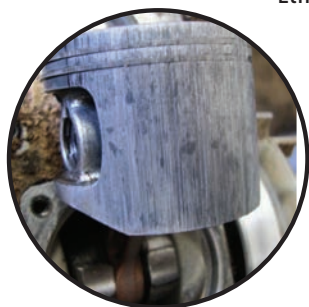
WINTERIZATION & STORAGE TIPS FOR POWER EQUIPMENT



Insight on Modern Fuel:

Modern fuel today contains up to 10% Ethanol (E-10). Most modern power equipment is designed to handle E-10, but problems arise when fuel is left to stand for prolonged periods of time, especially with older equipment not designed to handle any ethanol.

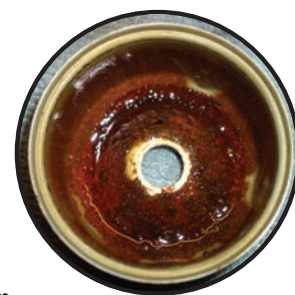
The high amount of oxygen present in ethanol naturally decays gasoline, which is organic. Imagine if you left a jug of milk in the fridge and another outside in the middle of summer, both OPEN. Of course the milk outside will decay much faster. This is what happens to the fuel in your fuel system. Even under good conditions ethanol blended fuel can deteriorate causing hard starting and the formation of gum or varnish in your fuel system in as little as 60 - 90 days.



**Seized Engine
Due To Phase
Separated Failure**

Ethanol also attracts water (hygroscopic) causing the already corrosive nature of this blended fuel to become more corrosive. If enough water is absorbed, phase separation will occur. This is more prone to happen over the winter months when the temperature drops below freezing. Phase separation looks like water at the bottom of a fuel tank, but in reality, this is mostly ethanol with a little bit of water.

This mixture is now extremely corrosive and is what destroys carburetors and fuel system components. In 2-cycle equipment, this will destroy the engine if it is run on this almost pure ethanol at the bottom of the fuel system. E-85 and E-15 may be good for automobiles, but are not approved by the EPA for use in power equipment and can cause serious damage to the engine or fuel system.



**Gum And Varnish
Deposits**

Mechanic In A Bottle (MIB) is designed to clean the fuel system without removing the carburettor. By not disturbing the original factory seals or introducing other contaminants inadvertently, this will not only speed up repair time, it will also reduce further technical complications. If there is physical damage to fuel system components such as torn / rotted rubber components or scale (white rust) from phase separated fuel, the fuel system will have to be serviced further.

Ethanol Shield year round fuel stabilizer is used for your power equipment with 2-cycle and 4-cycle engines. This preventative maintenance formula eliminates then prevents ethanol related problems. It removes water, prevents corrosion, provides easy engine starting all year, and keeps stored fuel fresh.



UP TO 80% OF ENGINE REPAIRS START WITH BAD GAS
FIX these problems with Mechanic In A Bottle &
PREVENT future problems with Ethanol Shield!

USE ETHANOL SHIELD WHEN STORING YOUR EQUIPMENT.
USE MECHANIC IN A BOTTLE THE FIRST TIME YOU START
YOUR EQUIPMENT EVERY SEASON FOR
EASY STARTING AND TOP PERFORMANCE!





WINTERIZATION & STORAGE TIPS FOR POWER EQUIPMENT



B3C's Top 10 Tips for Winterization & Storage

Snow has recently been in the forecast for parts of the country which means it is time to get your power equipment ready for its winter hibernation. Too many people simply shut their power equipment off and put it in the shed not even thinking what will happen if it sits too long. The gasoline will go bad causing many issues within the fuel system; batteries will die simply because they were neglected. Many other issues will happen that can be avoided by some simple storage steps. When putting equipment away for a length of time, storing it properly is key. By following a few simple steps when putting away equipment for the season, time, money and aggravation will be saved when it is time to start using the equipment again. Below are 10 items to do to your equipment before it is put away for the season.

1. **Gasoline** – Gasoline starts to go bad in as little as 30 days. The ethanol in the gasoline will cause many issues including phase separation, corrosion, varnish, deterioration, etc. Ethanol attracts water and separates (phase separation) in fuel to create a corrosive mixture that settles on the bottom of fuel tanks. Over time, this mixture can corrode metal and deteriorate plastic and rubber fuel system components. To prevent this from happening, treat the gas in the tank with Ethanol Shield. By doing so, the fuel will not have to be drained from the tank. Make sure to run the engine after adding Ethanol Shield to work it into the carburetor. You will know when it is in the carburetor by the subtle change in the smell of the exhaust. Do not forget to treat the gas in the storage containers as well.

2. **Oil** – Always change the oil per the manufacturer's specifications or at least once per season. This will ensure that the oil is fresh and will give the engine the best lubrication. Also, always change the oil after the engine has run for a few minutes. This will help to "mix-up" any sediment/debris that may have settled onto the bottom of the engine. Also, be sure to use a quality and weight of oil that the manufacturer recommends.

3. **Filters (Oil, Gas, Air)** – When changing the oil, make sure to change the oil filter if the engine is equipped. The air filter should at least be checked several times during the season. A lot of air filters have 2 parts, the prefilter and the filter itself. The prefilter can be cleaned with warm soapy water and add a drop of oil on the prefilter then squeezed out. The main filter can be made out of several types of materials. The only one that is washable is foam. Clean it the same way as the prefilter. If it paper or other material, they can only be replaced. The gas filter, depending on the type of equipment, can be located anywhere between the carburetor and the fuel tank. For most "wheeled" equipment, the filter is in the fuel line. For most hand-held equipment, the filter is in the fuel tank. These can be tricky to replace, so be careful.

4. **Battery** – Believe it or not, a dead battery (or discharged battery) can freeze in the winter time. The best solution is to put a battery minder on the battery. This device pugs into the wall and hooks to the battery and maintains the charge as long as it is hooked up. If you do not have one, make sure the battery is fully charged before storing the unit. It is also a good idea to disconnect the ground cable. This will prevent any shorts or the key getting turned on accidentally. If the battery is serviceable, make sure the fluid level is where it is supposed to be. There is normally a line on the battery to indicate the full mark. Only use distilled water to fill a battery.

5. **Belts** – Most people do not realize that belts stretch over time. Inspect all of the belts on the equipment. If they are worn out, cracked, or chunks missing from them, replace them. It is a lot easier to replace parts when the mower is not needed. If you do replace the belt(s), keep the old ones if they are still in somewhat good shape. You may be able to use them if the new belt breaks.





B3C's Top 10 Tips for Winterization & Storage

6. Blades – A few days after the grass is cut, look at the tips of the grass; did they turn brown? If so, the grass is not being cut, it is being ripped off by a dull blade. Some blades are hard to sharpen as the blades are wavy. These are the mulching blades, and yes, they can be sharpened, it is just difficult. When sharpening, always try to maintain an approximately 30 degree angle for best results. Also, make sure the blade is balanced. Hammer a nail into the wall and hang the blade from it. Does the blade balance from side to side? If not, the heavy side needs more grinding. Another point to remember is not to overheat the blade when sharpening. Overheating can remove the temper from the blade and weaken it. Some people will have two sets of blades. Put the sharp blades on the machine then bring the dull set to a shop for professional sharpening. Do the same thing with chainsaws; have two sets and keep one sharp all of the time. People hand sharpen chains all of the time which is fine. However, after every third hand sharpening, bring the chain into a shop to get professionally sharpened. The shop will not only sharpen the chain but also adjust the rakers (the part of the chain that dictates the size of a bite that the saw takes).

7. Tires/Wheels – Many people overlook their tires on a mower however, they are critical for a nice level cut. Check the tires over for tread depth and cracking. If the tread is almost gone, you will want to replace them. Be aware though that the cost of tires can be expensive. Another item to remember when replacing tires is to replace them two at a time. If only one tire is replaced, the machine will not cut level from side to side. Also, check the air pressure. The proper air pressure is in the owner's manual and on the tires themselves. This simple act will allow a nice even cut of grass. If the machine is to be stored on a dirt floor, put a piece of wood under each tire to keep it off of the ground.

8. Spark Plug – Spark plugs go bad over time. Spark plugs will also tell you how the engine is running. A normal running engine should have a brownish color to it. Anything other than this, a service shop may need to inspect the engine. Replacing the spark plugs, will help ensure that the engine performs at its peak performance. The spark plugs need to be gapped properly as well. For most wheeled goods, the gap is .030" and handhelds are .026-.028". Improperly gapped plugs may not allow the engine to start/run or it may not run correctly.

9. Wash/Clean – A simple wash to get rid of the last year's debris will allow you to start off with a clean slate next year. It is surprising how much grass can build up under the deck after a season of cutting. A scraper may be needed to get rid of all the old grass. Decaying grass is also very corrosive; as it decays, nitrogen and other chemicals are released which will eat metal. This is another reason to wash out the deck.

10. Major Repairs – Look the machine over thoroughly. Look under the machine; check around all parts that swing, swivel, etc. Look for metal cracks, broken pieces, worn parts etc. If anything is suspect, getting it into a service shop during the slow season will make sure the unit is fixed by the time it is actually needed. If the mower is taken in during the season, expect a 4-6 week wait to get the mower fixed.

When changing any part, always use the manufacturer's recommended parts. This will prevent voiding any warranties. Benjamin Franklin said, "An ounce of prevention is worth a pound of cure." By following the above 10 steps, you will not only save money, but time and frustration as well. If a person spends an hour or two getting a piece of equipment ready for storage, it will be ready to run when the time comes to actually use the equipment.

