



# Recommended Cold Weather Starting for Small Gas Engines

1. Use engine oil rated for cold temperatures.
2. Use fresh winter grade fuel (87+ Octane).
3. Spray starting fluid into the carburetor.
4. Warm the engine oil.

*Cold weather makes small engines difficult to start for two reasons. First, oil thickens when it's cold, which makes it harder for the engine to turn over. Secondly if the engine's gas tank has summer blend gasoline, this will contribute to difficulty in starting in cold temperatures.*

## 1. Use engine oil rated for cold temperatures.

Two of the most common oils are 5w30 and 10w30. Multi-grade oils are designed to perform at both cold starting temperatures and normal operation temperatures without sacrificing performance. Viscosity measures a liquid's resistance to flow (aka its thickness). The first number in the viscosity grade is the low temperature, winter rating (i.e. 5w and 10w). In fact, that's what the "w" stands for: winter. The second number in the viscosity grade is the high temperature rating (i.e. 30). The viscosity is measured at 210° F to represent the normal operating temperature of an engine.



Switch to a lighter-weight oil in the winter. SAE 5W30 is recommended for operating temperatures below 40°F (4°C). **Follow the engine manufacturer's recommendations in the engine Owner's Manual.**

## 2. Use fresh winter grade fuel (87+ Octane).

There is summer blend and winter blend gasoline. RVP (Reid Vapor Pressure) is the measure of the vapor pressure, or volatility, of gasoline at 100 degrees Fahrenheit. Refineries, pipelines and fuel storage facilities will add butane to gasoline to keep the RVP high enough in the winter



months so gasoline has sufficient volatility. In the winter time approximately 10% to 12% of the makeup of gasoline is butane. Gasoline engines need the higher volatility to help start when it is cold. If your equipment's engine has summer blend gasoline in its fuel tank, then it will contribute to difficulty in cold weather starting.

Drain the gasoline from the engine's tank (or run the gasoline out if the engine will start) and replace with fresh winter grade fuel that is 87+ Octane rated.

## 3. Spray starting fluid into the carburetor.

Starting fluid is a volatile, flammable liquid which is used to aid the starting of internal combustion engines, especially during cold weather or in engines that are difficult to start using conventional starting procedures. Starting fluid's main ingredient is ether. It is highly flammable, so it should be used with extreme care. Spray directly into carburetor, air cleaner or air intake for a few seconds, then start engine. Do not flood engine before using. In order to prevent a backfire, do not start engine with the air filter off. Do not use while the engine is running.



## 4. Warm the Engine Oil.

There are several ways to warm the engine's oil the simplest being to move the equipment into a warm place overnight. There are pad heaters available from auto supply stores that attach to the engine's oil pan and plug into a standard 110V electrical outlet. These heaters slowly and uniformly heat the oil pan so the oil becomes thinner enabling the engine to start. The wattage of these pad heaters can vary and so will the actual time (1 - 2 hours) that it takes to warm the oil in the engine's pan. **Always follow the manufacturer's instructions for connection and safe use.**

