SERVICE BULLETIN

Petrol Power Machines

HAYTER PRODUCTS
RLC General #15
19th August 2021

Transition from E5 to E10 Petrol

SUBJECT:

E10 petrol is being introduced into the UK from September 1st, 2021 and will become the standard 87 octane regular unleaded petrol.

E5 will still be available in the 95 octane super unleaded petrol.

What is E10

E10 petrol is made up of 90 percent petroleum-based petrol and 10 percent ethanol. Ethanol is an alcohol-based fuel produced from the fermentation of a range of plants, including sugarcane and grains, along with their by-products.

Unlike regular unleaded petrol, ethanol fuel is said to be partially atmospherically carbon neutral. This is because as the plants that will become biofuel grow, they reportedly absorb more carbon dioxide than will be released into the air during fuel production and combustion.

Petrol with up to 10% ethanol (E10) by volume is acceptable– Keep in mind that ethanol fuel blends will absorb water from the atmosphere and can cause corrosion of fuel system components. Since most carburetors and the petrol tanks are vented to the atmosphere in some manner there is nothing to prevent petrol from absorbing moisture over time.

Using fresh petrol (less than 30 days old) will help prevent water absorption from becoming a problem.

Temperature variance **can** cause condensation to collect inside your storage tank if it is not properly sealed. **Store** in dry areas, with low humidity. **Ethanol** will absorb any condensation that forms inside **storage** containers.

Do not use petrol with more than 10% ethanol by volume – Engines produced to date for use in outdoor power equipment are not designed for petrol with more than 10% ethanol (such as E15 and E85); using higher ethanol fuel blends may lead to engine damage and/or performance issues.

How to minimise fuel system problems

Purchase only the amount of fuel that will be used within 30 days – Petrol deteriorates over time. Deterioration begins with the most volatile compounds evaporating. Once evaporation reaches a certain point it will be hard/impossible to start the machine. As more compounds evaporate, the petrol will form brown gummy deposits in the system. Given enough time the gummy deposits will become a hard varnish. Gummy deposits and varnish can plug passages in the carburetor preventing the engine from running or causing the engine to run poorly (e.g. surging, lack of power, stalls, etc.). Deposits can also cause the carburetor to leak fuel if they prevent the float needle from sealing properly.

Note!
In vented fuel tanks and fuel systems the rate of oxidation increases.

Add fuel treatment / stabiliser. A fuel treatment should be used to minimise the oxidation rate of the petrol and extend the storage life. Always add the fuel treatment to the container filled with new pump purchased fuel on the day you buy it, never into the fuel tank of your lawnmower.

There are two types of fuel treatment / stabilizer:

i. Form a layer over the top of the petrol and greatly reduce the rate the fuel's volatile compounds evaporate. They also prevent absorption by the fuel.

ii. Protects the petrol at the molecular level and does not just form a film on top of the fuel.

Hayter / Toro's fuel treatment works at the molecular level and has three key functions:

Fuel stabiliser – Protects the fuel by bonding with the petrol gas molecules at a chemical level which prevents the fuel from oxidizing.

Cleaner Additives – Cleaners in the additive neutralizes and decomposes carbon and gum deposits

Corrosion Inhibitors – Forms a barrier on metal parts of the fuel system against rust, oxidization and corrosion.

Fuel Treatment:

	Part Number
Hayter	111-9366
Toro	131-6572

<u>Engines</u>

All current production machines using Hayter, Toro, Briggs and Stratton, Honda, Kohler or Kawasaki engines can safely use E10 fuel, but no higher.
For older machines we recommend that you refer to your Engine Operators Manual for guidance.

As a general guide machines produced from the following dates are compatible for use of E10 fuel:

Year	**Engine Brand**
2000	Hayter, Toro, Briggs and Stratton, Honda
2011	Kawasaki
2020	Kohler

Prior to these dates engines may not be compatible but clarification should always be made via the Engine Operators manual or engine manufacturer.

<u>Warranty coverage</u>

Note: This is a summary of what the warranty covers related to the fuel system. For complete warranty coverage details see the warranty statement for the specific machine.

Warranty covers:

- **Defects in material or workmanship, or if it stops functioning due to the failure of a component.** For example, if during the warranty period the carburetor's float leaks resulting in the inlet needle not closing, then replacement of the float is covered under warranty.

Warranty does not cover:

- **Repairs necessary due to the failure to use fresh fuel (less than 30 days old) or fuel with stabiliser.** Gummy deposits, varnish, and/or corrosion due to old petrol are not covered by warranty. Since we have no control over the quality of petrol and we know it deteriorates with age, the warranty defines "fresh" fuel as less than 30 days old.
- **Failure to properly prepare the machine prior to any period of non-use over a month.** Fuel left in a machine deteriorates and will absorb moisture. Both of these issues are beyond our control.
- **Contaminants in the fuel system.** Some examples are water, rust, dirt and grass. Corrosion in the float bowl may indicate excessive moisture in the fuel.
- **Improper fuel.** For example, if the machine calls for regular petrol and the customer uses a 2-cycle mix instead, the warranty will not cover repairs needed due to the wrong fuel being used.

<u>Tips for proper service when problems occur</u>

Replace the fuel line and filter (some systems do not have a replaceable filter) – If the carburetor has gummy deposits, varnish or any debris in the bowl you should also replace the fuel line and fuel filter (if present) since these components could contain debris and cause a repeat problem. We strongly recommend you purchase OEM fuel line to ensure compatibility with the engine and the rest of the machine.

Silicone spray on inlet needle tip can prevent sticking – When you rebuild a carburetor you may find it leaks when you fuel the machine up for the first time. Applying silicone spray to the float inlet needle during the rebuild process can prevent this.

Consider replacing a small inexpensive carburetor, rather than cleaning it – due to the extremely small passages, and the turns they take, cleaning a carburetor completely can be very difficult. If you find deposits just in the bowl, then cleaning the bowl and main jet may be successful. Internal corrosion indicates the carburetor should be replaced.

Carburetor cleaning - The only things that should go through carburetor passages:

- Fuel
- Carburetor cleaner or cleaning solution
- Compressed air
- Designated carburetor cleaning tools

Make sure you have adequate ventilation, eye protection and gloves that can handle the solvent you are using. Carburetor cleaning chemicals typically produce hazardous fumes, can injure your eyes (and damage spectacle lenses) and may be absorbed through your skin. Read and follow the instructions from the maker of the carburetor cleaner you are using. Do not clean passages with unauthorised tools. Never use fuel nozzle cleaners to clean carburetor passages as they can change the shape and/or size of the passage and harm performance.

Ultrasonic Cleaning Systems – If you decide to clean a carburetor, using an ultrasonic cleaning system is probably the most effective method. These systems typically produce few fumes (some use just a solution of soap and water) and do an excellent job of loosening deposits on or in the carburetor. You still need to disassemble the carburetor for cleaning, and use carburetor cleaning spray or compressed air to blow out the passages. Unfortunately, there is no way to guarantee this will remove all foreign material, and there could be damage (i.e. corrosion) so you may ultimately need to replace the carburetor.