



## Fueling

Use regular pump gasoline or petrol for passenger cars and good quality 2-stroke engine oil – your first bottle of oil is included with your Octane to get you going. **Higher octane/RON gasoline/petrol will NOT improve the performance, and may stop your engine from running.**

Mix the fuel at precisely a 25:1 ratio of gasoline to 2-stroke oil. Store your fuel in a clearly marked 2-stroke fuel containers.

Shake the mix really well to blend the oil with the fuel. Be sure to mix the fuel in the canister every time you refuel. With the radio and fuel switches in the off position, fill up the fuel tank to the bottom of the fuel tank neck.



## Starting the engine

Read through your manual first to make sure you understand the starting procedure.

Turn on the radio and engine system in this order: radio transmitter, radio switch on the truck, then the engine ignition system. Press the primer bulb on the engine a few times until fuel appears in the yellow fuel return line.





Make sure the choke lever is in the OPEN position, pointing DOWN.



Pull the starter cord sharply a few times. Don't pull it more than 50 centimeters or 20 inches.



Your Octane should start after 4-5 pulls.

If this is your first time starting the Octane you MUST follow the First Tank instructions below!

## **First tank**

Once the engine is started, drive it slowly for the first full tank of fuel. It should last over 20 minutes. DO NOT try to get it to top speed yet! The engine is still breaking in, and needs to be driven carefully while it warms up and the internal parts start to wear in.

DO NOT adjust anything on the engine while the engine is breaking in.

Be patient and don't rush this part, because the more time you take here the better the engine will perform when the break-in process is completed.



Remember: DO NOT touch the engine or the pipe while the engine is running or after it's stopped – these are VERY HOT surfaces and you will easily hurt yourself.

You can now refill the fuel tank, start up the engine and have some fun! As you drive the Octane, the engine will break in more and more, and will become easier to start. We advise you not to make any engine adjustments for at least another 2 full fuel tanks. We have information below for tuning the engine and 3-speed transmission.



After you are finished running, turn off the engine ignition switch first, turn off the radio switch on the truck and then the transmitter switch.

## Engine won't start?

If the engine doesn't start after about 10 pulls:

### For a cold engine



1. Put the choke lever in the UP, or CLOSED position:
2. Pull the starter cord a few times until you hear the engine almost start. Stop before the engine gets flooded, otherwise it will be more difficult to start.
3. Return the choke lever to the open position



4. Pull the starter cord again – the engine should start after a few pulls

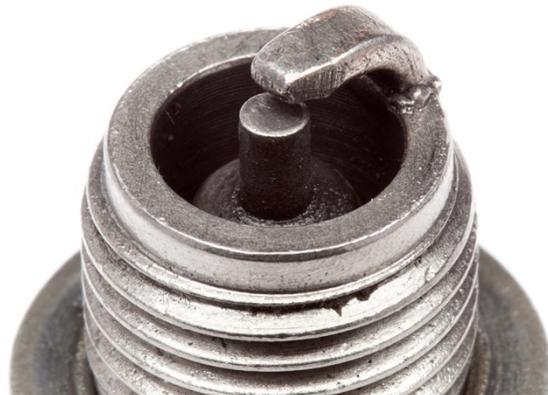
### For a warm or hot engine



1. Keep the choke lever in the down, or open, position and don't touch any other settings
2. It should start with another few pulls on the cord

### If the engine still doesn't start

1. Try having a friend pull the trigger slightly (about 1/3<sup>rd</sup> of full throttle) or advance the throttle trim about ¼ to 1/3 forward to get a little more fuel into the engine – move the trim setting back to neutral after the engine starts.
2. Make sure the engine ignition system is switched on
3. Check the spark plug connection – press it down to make sure it's secure
4. Make sure the choke lever is in the down, or open, position whenever you're running
5. You may be out of fuel - remember to always use a 25-to-1 mixture
6. Check the spark plug is clean – remove it and make sure it's a metallic or light brown color, like this:





If it's black and crusty like this use a wire brush to clean the sparking area.



7. Check the spark plug is working – remove it, connect it to the spark plug wire and observe it carefully while pulling the starter cord. You should see a spark between the spark plug element and the wire, as in the example. You may need to do this test in a shaded area so you can see the spark.



8. While the spare plug is removed, check the spark plug gap with a gap gauge – the gap should be between 0.3mm and 0.4mm
9. After breaking in the engine, you will probably need to install a new plug. Make sure the gap for any new spark plug is set between 0.3mm and 0.4mm
10. Make sure the air filter isn't blocked up with dirt, and clean it if necessary. A spare air filter is provided in your Octane kit.
11. The engine tuning screws may need to be checked or re-set. The factory positions are: High Speed Needle: 1 turn from fully closed; Low Speed Needle: 1 and 7/12ths from fully closed; Idle Speed: 2 and 2/3rds from fully closed.
12. The battery for the engine's ignition system may be low on power – recharge it if necessary.
13. The engine may be too hot. Let the engine cool down for several minutes and be aware that constant drag races or speed runs will make the engine get hotter than normal driving.

There are other things you can check, but these are the most common. See your manual for a more comprehensive list of troubleshooting tips. There are rare instances when the Ignition System may be faulty – please see the end of this document for a series of steps to check your Savage XL Octane's Ignition System.



## The 3-speed transmission

Don't try to adjust the 3-speed transmission while the engine is still breaking in. This occurs during the first 2-3 tanks of fuel, so be patient!

The transmission can be tuned so that the 2<sup>nd</sup> and 3<sup>rd</sup> gear shift sooner or later, depending on the size and terrain of your driving area. You should be able to hear the transmission shift from first into second, then again into third gear. The gear changes can happen very quickly, so listen carefully! You can also tune the transmission so the Octane shifts later, for example in large driving areas you may want to get more top speed.

To tune the transmission, turn off the engine and radio gear and use a 2mm hex wrench.

1. Find the rubber seal on the left side of the transmission case and carefully pull it open from the right side. 2 large holes allow you access to the transmission internals. The left hole allows you to tune the 2<sup>nd</sup> gear shift point, and the right hole lets you tune 3<sup>rd</sup> gear.
2. Turn the spur gear with your hand until you see the opening appear in the spinning gear
3. Hold the spur gear in place and rotate a wheel until you see the hex screws turn into view, as seen here. The picture shows 3<sup>rd</sup> gear as an example. Do not touch the top screw. Use a 2mm hex wrench to make adjustments only in 1/6 turn increments.

4. To make the truck shift into gear earlier, turn the bottom screw counter-clockwise.





5. To make the truck shift into either gear later, turn the bottom screw clockwise.



Test drive the Octane to see the effects of your tuning changes. Remember to only make changes in 1/6<sup>th</sup> turn increments, and only on one gear at a time.

If you can't hear or see the truck shift gears as you're driving, try 'locking out' third gear so that only second gear is active by turning the third gear adjustment screw all the way clockwise. Accelerate from a standing start and you should be able to hear the transmission shift into second, and the Octane will start to accelerate again on its own. Tune second gear so that it shifts earlier or later, depending what you want to achieve.

Once you're happy, start adjusting the third gear screw 1/6 counter-clockwise at a time until you're satisfied with its shift point.

### Factory setting

If you get mixed up and forget how many adjustments you've made on the adjustment screws, the factory setting is easy to get back to. Turn the adjustment screw all the way clockwise until it is fully tightened, then turn the screws counter-clockwise as described below:

- 2<sup>nd</sup> gear adjustment screw: 7 turns from fully closed
- 3<sup>rd</sup> gear adjustment screw: 6 turns from fully closed



## Tuning the Engine

Don't try to adjust the engine while it is still breaking in. This occurs during the first 2-3 tanks of fuel, so be patient!

The standard settings on the engine are good for most weather conditions, but in some areas the factory settings may not allow you to get the best out of the GT15C engine. We'll show you how to tune the engine for more power and speed.

Make sure the engine is fully warmed up and that you have a small, thin flat screwdriver ready. We'll only make one small adjustment at a time so we know what each change has done.

### Tuning the Engine

To get more speed, we'll **only** adjust the high end needle screw. Look to this adjustment if you feel the Octane needs more speed. No matter what, **you should never adjust the low end needle.**

#### Engine Tuning Symptoms: Too Rich or Too Lean?

If the engine's fuel-air mix is too rich, the engine will make a deeper exhaust note and slow down as it's getting too much fuel. If the mix is too lean, the engine will make a higher exhaust note as it's being starved of fuel. You'll also notice less smoke coming out of the exhaust, which means not enough oil is getting through the engine. In extreme cases, the engine will shut off completely.

#### How to Tune the Engine

Before making any adjustments, we need to be clear that you must not turn this tuning screw more than one-quarter turn in either direction. When adjusting the screw, you'll need to do so in the tiniest adjustments: only  $1/24^{\text{th}}$  of a turn at a time.





For a little more speed, turn the high end needle screw  $1/24^{\text{th}}$  of a turn clockwise. This slightly leans the high end fuel-air mixture and you should get more top speed from the engine. Start the engine and do a test run. You should see more speed from the tuning change. If you still want more speed, shut off the engine and adjust the needle again, remembering to turn it only  $1/24^{\text{th}}$  of a turn at a time.

Make sure that you always see a light trail of smoke coming out of the exhaust, and remember that the more you run the engine, the more speed you'll get, so we advise not to make any changes to the engine settings for at least the first 2-3 tanks, so be patient! The engine will get more and more powerful as you drive the Octane.

If the engine is too lean, make the adjustment counter-clockwise, remember to turn the screw only  $1/24^{\text{th}}$  of a turn at a time. Again, make sure you always see a light trail of smoke coming out of the exhaust.

**Never turn the high speed needle screw more than  $1/4$  turn in total.** If it will help you remember where the starting point is for the screw, put a mark in paint or pen on the adjustment screw.

### Factory setting

If you get mixed up and forget how many adjustments you've made on the high end needle screw, the factory setting is easy to get back to. Turn the needle screw all the way closed, then open it exactly one full turn counter-clockwise. The low speed needle screw should be 1 and  $7/12$ ths turns from fully closed.

## Idle Speed

After you've adjusted the high or low end needle screws, you may need to adjust the idle speed up or down, so the truck remains still when the engine is idling, but is ready to accelerate when you want. This is easy to adjust using the idle stop screw.

Make sure the throttle trim is at its central setting. Put your Octane on a block so the wheels are off the ground.

### Engine RPM is too high

Turn the idle stop screw slowly clockwise until your truck's wheels aren't moving when the engine is running.





### Engine RPM is too low

Turn the screw counter-clockwise until the wheels start to spin slowly, then turn it back clockwise until the wheels don't move.



When you're adjusting the idle stop, be careful not to damage the washer on the rotating arm behind the screw position. Push the arm out of the way of the screw if you need to, so the washer doesn't get bent.

### Factory setting

The factory setting for the idle stop screw is 2 and 2/3 turns turned counter-clockwise from fully closed.

## Ignition System Testing

Please use these testing procedures to determine if your Savage XL Octane Ignition System (also called a 'CDI') is faulty. Follow all the steps thoroughly to properly test your Ignition System.

You will need these supplies to perform an initial test on the ignition box:

- A fully charged receiver pack to plug into the Ignition System
- A new spark plug to fit the GT15C engine
- A thin screwdriver

You can perform all the steps of this testing at home without running the engine. Please perform these steps in a quiet area (so you can listen for the spark arcing) and where you can dim the lights (so you can watch for a spark).

### Step 1 – Testing Ignition System

1. Remove the spark plug cap from the engine and insert a brand new spark plug into the spark plug cap.
2. Carefully observe the spark plug tip while slowly pulling the starter cord
3. You should see a spark between the spark plug element and the tip, or hear a snap/crack



- If you do see a spark or hear a snap/crack, proceed to Step 2
- If there is no visible spark or no snap/crack then you will need to test the Ignition System more thoroughly. Proceed to Step 4 for instructions on how to do this.

### Step 2 – Testing Spark Plug Cap Insulation

1. Remove the spark plug from the spark plug cap.
  2. Slowly pull the starter cord and observe the interior of the spark plug cap carefully
- If you see a spark arcing through the silicone boot to the metal shell of the cap, the Ignition System needs to be replaced
  - If there is no visible spark but you hear a snap/crack, proceed to Step 3

### Step 3 – Testing Spark Strength

1. Insert a small screwdriver into the spark plug cap, making sure it touches the central metal cap inside the clear silicone insulator. The screwdriver should not touch the outside of the spark plug cap.
  2. Slowly pull the starter cord, you should see a spark between the screw driver to the metal cap
- If you hear a spark but do not see one in the spark plug cap, the Ignition System needs to be replaced
  - If you see a spark between the screw driver and the metal cap, the Ignition System is working and no further testing is required.

Please follow the next set of testing procedures if you found that there was no visible spark or no snap/crack during Step 1 - Complete Ignition System Testing. Please note that some tests require removal of the engine from the car.

You will need these supplies to fully test the ignition box:

- A fully charged receiver pack to plug into the Ignition System
- A new spark plug to fit the GT15C engine
- A servo extension lead (with male and female ends). You will need the female end of the extension intact. Cut the opposite end off, then separate and strip the ends of the 3 wires
- A voltmeter or multimeter set to record Volts
- A magnet (a bar-style magnet is best but any will do)



#### Step 4 – Testing Ignition Box Power Output

1. Plug in the modified servo extension lead into the sensor connection of the ignition system
  2. Remove the spark plug lead from the engine and install a new spark plug all of the way into the lead
  3. Plug the fully charged receiver pack into the ignition system
  4. Use the voltmeter to check the voltage on the red and black wires on the test lead
- If there is a voltage reading, proceed to Step 5.
  - If there is no voltage, the Ignition System needs to be replaced

#### Step 5: Testing Ignition Box Function

1. Hold the black and white wires on the test lead, and tap the exposed part of the wires together
  2. As you separate the wires, watch the end if the new spark plug carefully
- If you see a spark or hear a snap/crack, proceed to Step 6
  - If there is no visible spark or no snap/crack, the Ignition System needs to be replaced

#### Step 6 – Testing Timing Sensor Function

1. Remove the test lead from the ignition box
  2. Remove the engine from the car
  3. Remove the Timing Sensor from the engine and connect it to the Ignition Box
  4. To simulate flywheel magnet operation, bring the south pole of a magnet towards the underside of sensor tip until contact is almost made.
- If you see a spark or hear a snap/crack, proceed to Step 7
  - If there is no visible spark or no snap/crack, the Timing Sensor needs to be replaced

**Important** - When reinstalling the Timing Sensor onto the engine, use the information in the manual to position it correctly. The position is very important as it determines the spark timing.

#### Step 7 – Testing Flywheel Magnet

If you have reached this step, the only remaining component of the Ignition System that can be faulty is the Flywheel or Flywheel Magnet. Possible faults are:



1. Magnet missing from flywheel
2. Damaged or weak magnet
3. Magnet too far away from Timing sensor to be detected.
  - Replace the Flywheel and re-perform Step 1 to check that the Ignition System is now fully working.



Savage XL Octane Running Tips  
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