



## 12~15 Engine Instruction Manual

SH series engines have been specially designed and manufactured using modern computer-assisted equipment combined of R/C racing experience and hold a concept of the highest quality for developing and designing engine, resulting in a engine that's both powerful and easy to tune.

It not only can satisfy racers' strict requirement of high torque, high speed, and lasting, but also with easy-tuned and well-cooled outstanding functions. Especially, it is the most favorite engine for the beginners.

SH series engines have many sorts of types, which will be appropriate for various 1/10 and 1/8 R/C brands' cars and boats.

©In order to elaborate completely the highest power and the longest lasting period of the engines, please do the following points specifically before breaking in.

1. Before installing the engine onto car, please open the engine rear cover, clean antirust and all the dust or remaining with fuel.
2. Set the carburetor to the engine transfer hole in accordance with the cars directions.

**Note:** Lock the carburetor screws set certainly to prevent loose, or the engine can't tuned smoothly.

3. Choose the fuel and glow plug as your own preference. (SH glow plug #3 or #4 are suggested, 5%~30% fuel for common use.)

### Starting Your Engine and Adjusting the Carburetor

Due to the lasting and power output of an engine will depend on well-prepared brake in and carburetor adjustment, so please do the followings preparations for brake in.

1. Completely turn off the throttle shaft around the position of 1.00m/m as photo1-① showed.
2. Both of the high speed needle and low speed needle mixture screw have been pre-adjusted at the factory. Should you lose the factory settings, firstly, simply turn high speed needle clockwise until you begin to feel the resistance (do not force it!) Then, turn the needle counter clockwise 4 complete turns as photo 2-①. Secondly, simply turn low speed needle clockwise as high speed needle until you feel the resistance (do not force it!) Then, turn the needle counterclockwise 1 1/2 turns as photo 2-②.

3. With the throttle set at idle, start the engine and observe the speed rotation at which it operates. If the RPM is excessive (above 3,000 RPM), turn the low speed needle valve counterclockwise around 30° until the speed decreases to a safe idle setting. If the engine stops because of a "rich" condition, turn the low speed needle valve clockwise around 30° until the engine idles reliably. (If the engine idle is in an increasing condition, which means "too lean", so turn the low speed needle valve counterclockwise 30°. However, if the engine idle is slowing down, which means "too rich", so turn the low speed valve clockwise 30°.

4. Increase the throttle slowly by manually opening the throttle side. Adjust the high speed needle valve so that the engine is running in a very rich condition. Lots of smoke and oil exiting from the exhaust while bottom end is running. If the engine rotation is too high, please slowly turn the high speed needle valve counterclockwise, 30° per time till at the bottom end condition. If the engine stops due to a "too rich" condition, turn the high speed needle clockwise 30° per time till engine can keep "rich" condition with 3 tank fuel bottom end running.

**Note:** Please pay attention to the engine rotation and fuel amount to prevent the top is higher than the middle.

5. Find a spacious and straight track to operate the car, so that it will be convenient to observe the model car speed. The initial running will be slower and the engine will be under "rich" condition, lots of thick smoke spreading out form crankcase adapter. If the engine stops under "rich"

condition, you should adjust the idle adjustable screw as photo 1-②. Turn the idle adjustable screw clockwise a little bit to have a smooth car running.

**Note:** Please pay attention to the engine temperature, not over 60° is proper.

6. After 2 tank fuel running, turn the high speed needle valve clockwise 30° accurately; then start running and record the power output. High speed needle valve settings adjusted with clockwise 30° per time is allowed after every one tank fuel. Objective is to reach the highest straight line speed.

**Note:** If the high speed needle valve rotation is too tight, constant fuel insufficient will happen while accelerating, so the engine will be over heat. At this moment, you must stop the engine operation, return the high speed needle valve 30°~45°.

7. Observe the operation again, and does a little adjustment with high speed needle valve, which enable the vehicle with high speed running without engine overheat. Lastly, return the high speed needle valve 20°~30° and keep in mind with its position as the safe setting range.

**Note:** Please pay attention to the engine temperature, not over 80° is proper.

8. To proceed the low speed needle valve mixture setting after having the perfect high speed needle valve setting.

9. With the engine running, close the throttle and allow the engine to idle for about 5 seconds. Pull the throttle open and observe the performance of the vehicle. If the engine produces lots of smoke from the exhaust and does not accelerates smoothly, the idle mixture is too rich. Turn the low speed needle valve clockwise 30° per time as photo 2-② until the engine acceleration is crisp and reliable. If engine is with insufficient fuel condition when pull the throttle open for acceleration, the idle mixture is too lean. Turn the low speed needle valve counterclockwise 30°.

**Note:** Per adjustment for low speed needle valve is limited with 30°, make sure to observe the carburetor response with patience after each adjustment of the low speed needle valve!

10. Carry out these adjustments slowly and patiently under actual running conditions until carburetor response your engine is properly set. When the carburetor closes, engine rotation is too high or stops, please adjust the idle adjustable screw as photo 1-② to have your idle.

**Note:** Please pay attention to the engine temperature, not over 90° is proper.

**⚠Warning!! The adjustment of the carburetor ( no matter do the adjustment through high speed needle and low speed needle), all the adjustments are done on the track, or the engine will broke because of overheat.**

11. By this time, your carburetor settings and brake in period are almost complete. Because your engine is a piece of precision equipment, the brake in period is critical to allow the different parts of the engine to properly mate together and establish the correct operating tolerance. Running your vehicle on a track during the above break in period will ensure that it will deliver maximum power with long service life.

**Note:** Please pay attention to the engine temperature, not over 115° is proper.

### Some Additional Recommendations

1. If your engine will not run properly and/or the carburetor is difficult to adjust and tune, check to see if there are any cranks, leaks or blockages in the fuel lines. It is highly recommend that you install a quality fuel filter between the tank and the carburetor.
2. Use the same brand of glow plug and fuel for break in as you intend to use when racing. Keep in mind that changes in fuel ,plug, gear ratio, etc. will affect the carburetor setting. With SH # 3 and # 4 glow plug for buggy car enable you to tune the engine easily and elaborate its highest functions.
3. You must use a quality air cleaner at all times. Make certain to clear or replace the filter element often, as dirt and dust are the enemies of your engine!
4. Should you find a problem that you believe may have been caused by a defect in materials or manufacturing, contact your local distributor or retailer. Under no circumstances will improper use or owner-caused problems be considered as a sufficient reason for returning the engine for service.

#### ⚠Carb. setting at the factory

