

# **STINGER ENGINES BY RCGF OPERATION MANUAL**

## Introduction to Stinger Engines

Congratulations to your purchase of this new Stinger engines which are the high-end engines produced by ZHEJIANG RCGF MODEL CO.,LTD. You have in your possession one of the strongest and most powerful engines in its class today.

Our line up of engines are designed and engineered for RC giant scale aircraft . All our engines are modeler tested across the world. Real world results shape the engines. Performance is your reward.

The Stinger engines are built to a higher level of quality, and are engineered to provide years of trouble free service. To give you the best engine possible, we have completely redesigned everything in our Stinger Engines. We are using a more robust metallurgy for the cast parts and the stronger crank system with high quality bearings, to provide more power per cc, plus an all-around better-looking engine. Higher standard Aluminum Alloy material are used in the Stinger Engines which make them much stronger and more stable . So, check it out for yourself at [www.rcgfservice.com](http://www.rcgfservice.com).

It is important for you to go through the manual to familiarize yourself with the engine and how its operations. Contact us via email or telephone if you have any question. We are here to help you enjoy your engine.

### Notice

All instructions, warranties and other collateral documents are subject to change at the sole discretion of ZHEJIANG RCGF MODEL CO.,LTD . For up to date product literature, visit [rcgfservice.com](http://rcgfservice.com) and click on the support tab for this product.

**WARNING:** Read the ENTIRE instruction manual to become familiar with the features of the product before operation. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

This is a sophisticated hobby product and NOT a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision.

Do not attempt disassembly, use with incompatible components or augment product in any way without the approval of ZHEJIANG RCGF MODEL CO.,LTD.

**CAUTION :** This product can become extremely hot when in use ,which could lead to burns.

**Age Recommendation : Not for children under 14 years . This is not a toy .**

### Safety Tips and Warnings

**IMPORTANT SAFETY INFORMATION FOR THE USE OF STINGER ENGINES**  
**WARNING:** This motor can cause severe harm to you and or others ,if misused or if these safety precautions and instructions are not observed. We're not responsible for any loss, injury or damage resulting from the use of its products.

- This engine is not a toy. Please place your safety and the safety of others paramount while operating. Zhejiang RCGF Model Co.,ltd will not be responsible for any safety issues or accidents involving this engine.

- Operate the engine in a properly ventilated area.
- Before starting the engine, please make sure all components including the propeller and the engine mount are secure and tight. It is strongly recommended that a good quality screw sealant is used during engine installation.
- During the break-in period, it is recommended that the engine be installed on the aircraft or a test stand with an appropriate shock absorber. Otherwise it is probable that vibration could rebound back to the engine and serious damages may occur during the break-in period.
- For your safety and the safety of others, please do not stand in front or in line with the propeller when the engine is running. Keep onlookers away from the running engine, especially small children.
- Always use a balanced spinner and a balanced propeller. An unbalanced spinner and propeller combination will cause high levels of vibration and may cause the propeller shaft to break. Always use a lightweight spinner on your engine. Lightweight spinners are considered to be those with a cone wall of 1mm or less. Heavy spinners could cause the propeller shaft to break. Securely tighten the spinner and propeller on the engine to prevent it from being thrown off the engine while running.
- Never use a propeller that has hit the ground. Even though it may look good from the outside, it may be cracked on the inside which may cause it to disintegrate while in use. Do not use a nicked, cracked or split propeller.
- Keep foreign objects away from the propeller. Make sure that nothing can be “sucked in” by the propeller.
- Never start the engine on loose gravel or sand.
- Do not attempt to stop the engine by throwing anything into the path of the propeller.
- Make sure the fuel line is well-secured to the engine and to the fuel tank so that it won't come off in flight.
- Do not use silicone fuel line because it will be dissolved by the fuel. Use gasoline approved vinyl or neoprene rubber fuel line. Always secure the fuel line away from the cylinder. The engine's heat can damage the fuel line.
- Never touch the engine immediately after a run. The engine will be hot.
- Before transporting your model, remove all the fuel from the fuel tank and fuel lines.
- Always use high-quality oil intended for 2-stroke (2-cycle) engines. It's a good idea to use a petroleum based 2-cycle motor oil like Lawn Boy All Season – Ashless, Generation II oil for the break-in period. Break-in should be considered about the first 3-5 gallons you run the engine. A high quality synthetic 2-cycle oil is recommended for optimum performance and a longer engine life. Synthetic 2-cycle oils leave fewer combustion by products than natural oil which can foul the engine and exhaust ports, resulting in reduced performance. Synthetic oils also reduce friction and provide more fluidity at low temperatures.
- Do not install your throttle servo or kill switch servo inside the engine compartment. Doing so could cause radio interference. Install all electronic radio devices as far away from the engine as possible.
- The throttle and choke pushrods should be non-metallic.
- If the engine is not to be used for more than a month, drain the fuel tank and remove any fuel from inside the carburetor. Do this by running the engine at idle until it quits by running out of fuel. Keeping gasoline inside the carburetor over an extended period of time will damage the diaphragm valve and clog passages inside the carburetor. Due to the carburetor being more complicated than those used in glow engines, keep the fuel clean by using a fuel filter. Use a filter intended to be used with gasoline engines. Metal filters intended for glow engine are too coarse and will not screen out finer particles.

- Always filter your fuel by using an appropriate filter before putting it into the airplane's fuel tank.
- Gasoline is extremely flammable. Keep it away from an open flame, excessive heat or sources of sparks.
- Do not smoke near the engine or the fuel tank.
- This engine was designed for use in a model aircraft. Do not attempt to use it for any other purpose.
- Always install an ignition system kill switch on the aircraft used.
- Caution: Running the engine with a lean gas mixture will cause the engine to overheat and burn the electrode of the spark plug. Pay close attention to the High-speed Needle adjustment. Running the engine with the proper gas mixture will cause the spark plugs to appear yellow at the ignition point.
- For optimum performance please use fresh or recently purchased 93 octane gasoline (87 octane gasoline will suffice) with a 30:1 gas/oil mixture
- Always fly in accordance with the safety rules, regulations and recommendations of the AMA(American Modeling Association). Read and understand all of the safety material on their website [www.modelaircraft.org](http://www.modelaircraft.org) before using the engine. In Canada, the representing body is MAAC (Model Aeronautics Association of Canada) and their website is [www.maac.ca](http://www.maac.ca).

Model engines produce a substantial amount of power, which can create unsafe situations if not used correctly. Always use common sense and observe all safety precautions when operating, handling or performing any procedure involving your engine, Failure to follow safety precautions could result in serious injury and property damage.

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## GAS/OIL Mixing Chart

1 Gallon Gasoline (128 fl oz/3.78L) / 2-Cycle Oil (4.26fl oz/125.68ml) = 30:1 ratio

- Excessive running of the engine at idle speed can result in a seriously carbonized spark plug.
- Keep the surface of the engine clean to ensure proper heat dissipation. Ensure proper cooling/ventilation around the cylinder with adequate air exhaust.
- To avoid permanent damage to the electronic ignition system, never rotate the propeller on your Stinger engine with the electronic ignition system switched on and the plug not installed in the plug cap.

## Engine Installation Instructions

Before beginning installation it's a good idea to plan location of the various components of the engine. Many of the following steps may need to be completed in a different order than listed.

1. Check to see that all screws and bolts are tight. Check carefully for any cracks, broken, or missing parts. Tighten or replace any damaged or missing parts before proceeding.
2. Install the silicone wire cover over the pick up lead coming from the engine (cut the excess silicon wire cover) and connect the lead to the pick-up lead from the Electronic Ignition Module. Secure the connection with the included three pin connector securing clip.
3. Connect the kill switch lead to the red connector from the ignition control module using the lead from the kill switch or with the included three pin connector with pig tail. Use one of the included three pin securing clips to secure the connection.

4. Connect the ignition module battery to the kill switch. Any 6-14V, 1000mAh and above capacity battery will work well for this. Use heat shrink tubing to secure this connection.
5. Install the ignition kill switch and charge jack on the aircraft so that it is easily accessible from the outside of the plane.
6. Install the ignition module securely in the airplane forward area. It is recommended that a thin piece of foam rubber is placed between the module and the mounting surface and that Velcro® is used to hold the module in place.
7. Secure all connections with heat shrink tubing .
8. Install the silicone ignition wire cover over the ignition wire.
9. Install the spark plug into the engine head (6-9lbs torque).

## Installing the Stinger engine on Your Airplane

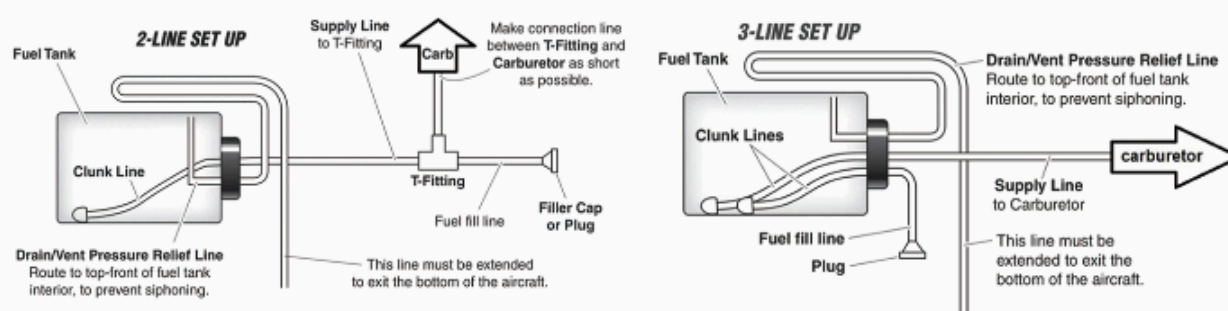
If using mounting brackets, they should be installed with the closed end to the firewall and the open end to the engine.

If using the mounting stand offs ,the cut ends should be mount to the engine.

If additional mounting height is needed ,it should be placed between the mounting hardware(brackets/stand-offs) and the firewall. Make sure that all spacing is flat and of the same size and surface plane so as not to induce any twisting force into the mounting hardware or damage to the engine or mounting hardware failure may result. Spacing should never be used between the mounting hardware and the engine. In all cases ,the firewall /airframe mounting surface must be absolutely flat or potentially damaging forces can be exerted to the engine or mounting hardware which can cause the failure.

Check to see that the carburetor has adequate clearance(at least 1 in.) to anything for proper breathing. If it doesn't ,make appropriate adjustments. Make sure that your airplanes fuel tank and lines are made for gasoline use, that the tank is adequately vented and that the feed line clunk can move freely in all directions and not get hung up anywhere. We recommend using a filter between your gas supply and airplane fuel tank. If you use a fuel filter between the airplane tank and the carburetor ,make sure it is of adequate size to supply an unobstructed flow of fuel to the carburetor . The engine can run correctly.

Install the fuel tank in the airframe. Use only gasoline-safe fuel lines and a gasoline safe stopper. One line should go to the carburetor and the other is to be used as a vent (a vent line is simply an open ended fuel line from the fuel tank which exits the engine compartment or the fuselage; most vent lines exit at the bottom of the firewall).You can fill the tank by using the carburetor line as fill line if you have access to it or install a third line to be used as fill line. Installing a third line is the cleanest and easiest way to add fuel. An alternative fueling set up is a 2-line system with a T-fitting approved for gasoline use. Be sure to use a filler plug with either a 2 line or 3 line set-up. It is a good idea to add an extension to the vent line as shown, that goes up and to the rear of the tank. This helps to avoid draining fuel from the tank when the model is pointed down.



Make sure that the cowl openings on your plane provide enough airflow for proper cooling . Ideally all of the cooling fins of cylinder should be exposed directly to unobstructed flow of cooling air and there should be 3 times as much air exist area as intake area. Many planes have cowl openings that actually inhibit proper appearance of the full size planes they are patterned after . Along with the openings described above ,blocking the scale opening either partially or wholly can significantly help promote cooling airflow over the cylinder fins.

Many types of fueling device(fuel dots, filler valves, etc.)are available for your use. Our experience has shown that.

Often the simplest is the best. Regardless of which device you decide to use, be very wary of air leaks, as they can be detrimental to the proper operation of your engine.

**Note :** Always use Loctite on engine mounting hardware and make sure your models firewall and engine box are adequately reinforced(pinned soaked in thin CA,etc .)

## Engine Break in

Break in running should be done with regular 90 octane gas missed with a high quality petroleum based 2 cycle oil at ratio of 30:1. The engine should be run installed in the airframe with wings attached ,on the ground for at least 20 minutes at 2500 rpm. Ground running should be done with a slightly smaller prop and with the cowl off to promote good cooling. It is recommended that you run the engine in a test stand , as they do not allow vibration energy to be properly dissipated. Plus, it is not needed. Your engine is ready to go .

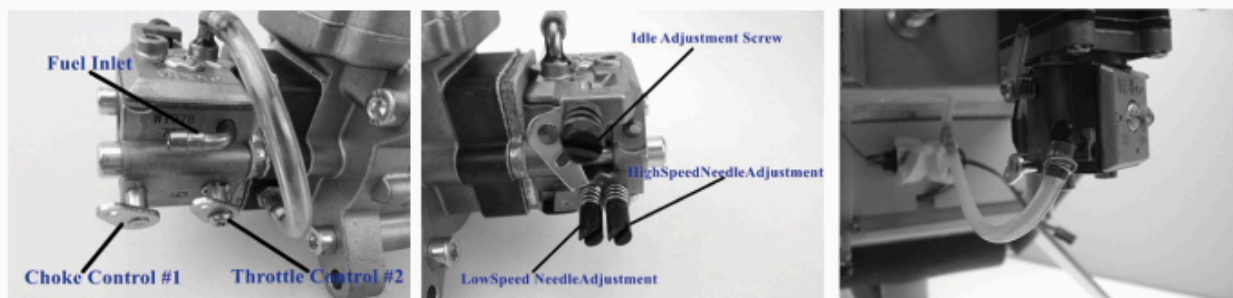
During the break-in process (a couple of gallons of gas) the carburetor may need to be adjusted and the engine should be flown at light load and varying speed for enough time to have the oil/gas run through it.

After you have run a couple of gallons of fuel through ,you can switch to a good quality full synthetic 2 cycle oil mixed at a ratio of 40:1. Note that when you switch to synthetic 2-cycle oil ,it is likely that the carburetor mixture and idle speed will need to be adjusted.

We recommend high quality fully synthetic 2 cycle oil such as Motul 800 2T 100% Synthetic racing motor oil , Red Line Two-stroke racing motor oil , STIHL Ultra High Performance 2 Cycle fully synthetic Engine Oil. DELUXE Materials R/C Specific full synthetic 2 stroke oil etc. Never use outboard motor 2 cycle oil . (Unsuitable lubricating oil will cause the engine damage).

**Note :** Make sure that there is no air in the fuel pipe and fuel tank. If there is air ,it will cause the engine unstable work.

## Carburetor Adjustment



1. Choke Control (the choke control should be used when the engine is cold)
2. Throttle

### 3. Idle Adjustment Screw (adjust the idle speed)

Usually we don't suggest you to adjust the idle screw, for the idle screw is with default setting. Because of safety reasons we also recommend that you do not adjust the idle screw.

### 4. (L) Low-speed Needle (adjusts the fuel/air mixture at low speeds)

Turning the Low-speed Needle clockwise will lean the fuel/air mixture at low speeds. Turning the Low-speed Needle counter-clockwise will richen the fuel/air mixture at low speeds.

### 5. (H) High-speed Needle (adjusts the fuel/air mixture at high speeds)

Turning the High-speed Needle clockwise will lean the fuel/ air mixture at high speeds. Turning the low-speed Needle counter-clockwise will richen the fuel/air mixture at high speeds.

Every engine has been adjusted to average mixture settings, which will mostly allow the engine to start and run in most locations.

However, as altitudes and barometric pressures vary by location and even by day, it is very likely that the carburetor mixture settings will need to be adjusted to obtain optimum performance.

**NOTE :** Never made adjustments to the carburetor while it is running. Always use a tachometer to aid in making adjustment to your carburetor.

Do not remove the carburetor spring (2) as the spring helps keep the carburetor butterfly aligned properly. Merely release the ends of the spring so that it no longer holds the butterfly closed.

Carburetor mixture adjustment starts with the low speed circuit. The low speed should be set such that transition from idle to full throttle is smooth, even if the throttle is snapped to full. This will likely result in a slightly rich idle mixture but you're better off with that than a rough transition. If the engine dies when the throttle is advanced, the mixture is likely too lean. If the engine stumbles when the throttle is advanced, the mixture is likely too rich. Since the low speed mixture has some effect on high-speed mixture, always adjust the high speed after adjusting the low. (Please check the carburetor default or factory setting for each engine in the electronic manual on [rcgfservice.com](http://rcgfservice.com) )

The high-speed circuit is properly adjusted when the engine can reach maximum rpm while in the air, which is usually slightly richer than when it is on the ground. A general rule of thumb is to richen from the maximum in the ground rpm by about 200rpm. If ever the engine slows or dies while at full throttle, the high speed mixture is likely too lean and you should adjust it as soon as possible or damage can result.

**NOTE :** Be careful not to run the mixture screws in too far as damage to the screw and/ or carburetor body may result. Also, don't be tempted to run an overly rich mixture. Gas engine lubrication comes from the oil concentration in the gas, not from a rich fuel/air mixture. If you want more lubrication, you can vary the oil mix ratio. A too rich mixture will only result in poor engine performance and a fouled plug and combustion chamber.

## Needle Setting

Turning the needle clockwise **LEANS** the fuel mixture. Turning the needle counter-clockwise **RICHERS** the fuel mixture . The general factory setting of the carburetor needle are as follows :

Engine	Low Needle	High Needle
10cc SE	1.6 circles	1.5 circles
10cc RE	1.6 circles	1.5 circles
15cc SE	1.5 circles	1.6 circles
15cc RE	1.5 circles	1.5 circles
20cc SE	1.5 circles	1.5 circles
20cc RE	1.5 circles	1.5 circles
35cc SE	1.4 circles	1.5 circles
35cc RE	1.4 circles	1.5 circles
20cc Twin	1.6 circles	1.5 circles
30cc Twin	1.4 circles	1.75 circles
40cc Twin	1.7 circles	1.75 circles
70cc Twin	1.2 circles	2.2 circles

Needle setting will vary according to different conditions ,such as altitude , atmospheric pressure, temperature , humidity and so on. So that you can adjust a little according to your actual situation .

**Caution :** The adjusting needle must not be tightened with too much strength as this can cause damage to the needles . If the needles are damaged , it will no longer be possible to make adjustments to the carburetor and a new one must be obtained .

## Carburetor Adjustments Troubleshooting

**Problem:**

If the engine hesitates when accelerated rapidly, or the rpm increases at idling, or the engine stops when the throttle is moved from high to low.

**Solution:**

The low-speed needle "L " is too lean. Open it up about 1/8 of a turn and try again.

**Problem:**

If the idle is not steady.

**Solution:**

The low-speed needle "L " valve is too rich. Close it 1/8 of a turn and try again.

**Problem:**

If engine stops at full throttle.  
Or the engine hesitates when accelerated rapidly.  
Or the engine will not come up to full rpm at full throttle.

**Solution:**

The high-speed needle valve "H" is too lean. Open it up 1/8 of a turn and try again.

**Problem:**

If your engine does not reach full rpm.  
Or carbon build-ups appear consistently on your spark plug.

**Solution:**

The high-speed needle valve "H" is too rich. Close it up 1/8 turn and try again.

If the fuel pipe can't connect to the carb firmly, please use iron wire to connect firmly.

# Starting the Engine

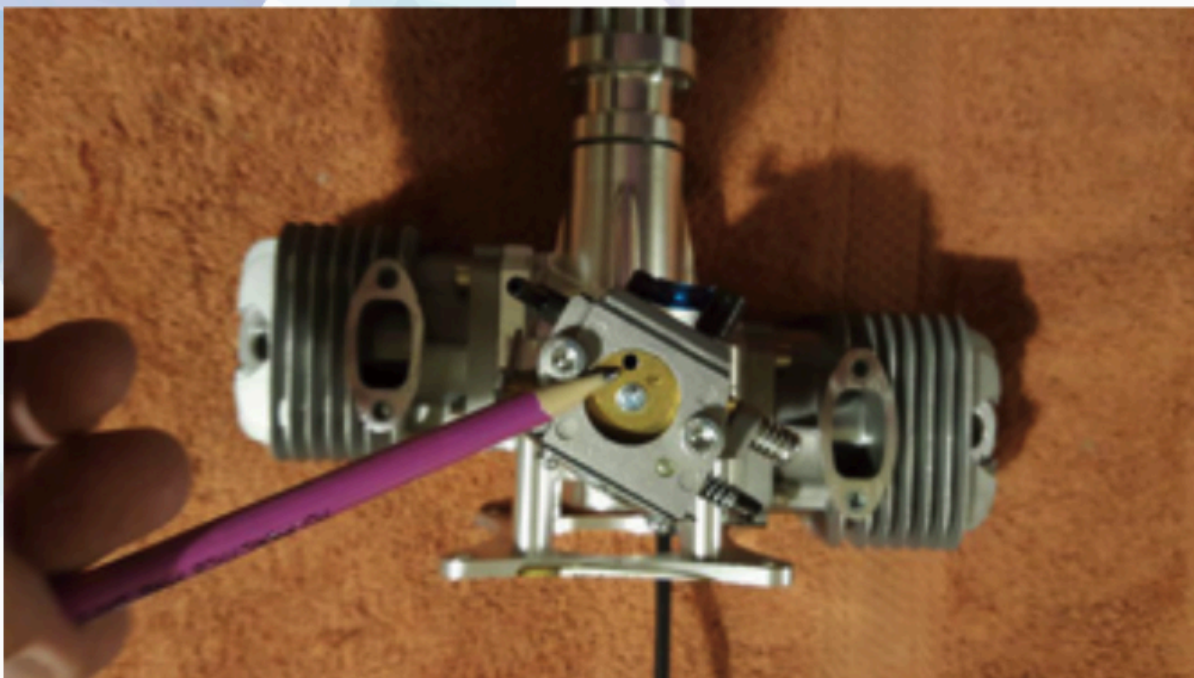
## Starting Procedures

The new style carburetors that we are using require you to get the carb "wet" before trying to start it. When starting the engine the first time and during break-in it's recommended that you run the engine without the cowling. Also, for safety reasons do not adjust the carburetor while the engine is running. There are two recommended ways to start the engine:

### A. Manual Starting

**Note:** When hand starting the engine, use a thick glove or heavy duty starter stick to protect your hand.

1. The propeller should be installed on the drive washer at the one o'clock position and at the beginning of the compression stroke so that it's comfortable to flip it through compression.
2. Have someone help you hold the airplane while you start the engine.
3. The new type carbs can be a little different when you first try to start your new engine. You will need to force the carb to intake fuel for the first time. To do this first switch the ignition to "OFF", close the choke on the carburetor and open the throttle slightly from the idle position, Block off the hole in the chock butterfly with your finger. This will cause the crank case vacuum to draw fuel from the gas tank.



4. Flip the propeller counter clockwise several times briskly, until a your finger is a little damp from the fuel. Now turn your ignition switch to the "ON" position. Flip the propeller counter clockwise several times briskly until you hear your engine make a popping sound. This indicates that the engine is firing.
5. Move the choke lever to the OPEN position.
6. Set the throttle to a high idle. Set the propeller so that it is at the beginning of the compression stroke.
7. Flip the propeller through compression rapidly. If this is done properly, the engine will start after several brisk flips of the propeller.

8. After starting, let the engine idle for 30 to 45 seconds. Open and close the throttle slowly until the engine runs smoothly at idle and at full throttle. Acceleration should also be smooth. If acceleration is not smooth, adjustments to the carburetor may be necessary (see Adjustment of the Engine.)
9. If your engine does not start, repeat steps 2-8.

### **B. Electric Starter Starting**

A 12-24V electric starter is recommended to start the Stinger Engines.

1. Make sure you use a good quality, lightweight aluminum spinner.
2. Have someone help you hold the airplane while you start it.
3. Switch the ignition to ON, close the choke plate on the carburetor and open the throttle slightly from the idle position.
4. Use your electric starter to turn the engine over for several seconds, until a popping sound is heard. This indicates that the engine is firing.
5. Move the choke lever to the open position.
6. Set the throttle to high idle and use your electric starter to turn over the engine until it starts.
7. After starting, let the engine idle for 30 to 45 seconds. Open and close the throttle slowly until the engine runs smoothly at idle and at full throttle. Acceleration should also be smooth. If acceleration is not smooth, adjustments to the carburetor may be necessary (see Adjustment of the Engine).
8. If your engine does not start, repeat steps 2-7.

## **Engine Maintenance :**

Fuel tubing through out the fuel system should be changed periodically and should never allow any air to enter the system, If your gas line starts to get hard ,soft or changes colour, there is a good chance it needs to be replaced. Keep in mind that the tubing inside your tank deteriorates more quickly that anywhere else in the system.

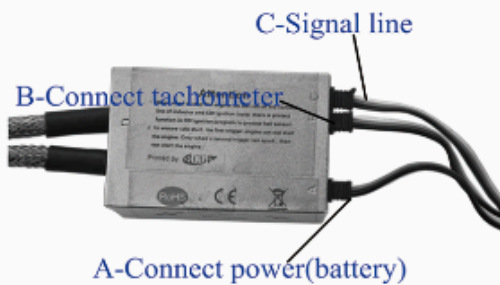
The exterior of the engine should be kept clean and inspected regularly. Tucked away inside the cowl, it would be easy to miss loose nuts and bolts without carburetor. It should be kept clean and free of dirt build up.

The carburetor fuel screen should be cleaned periodically also. Carefully remove the pump cover (inlet side of the carburetor),gasket and pump membrane. The screen will be visible and can be cleaned after careful removal. If ever the carburetor seems to need frequent mixture adjustment or acts like it's starving for fuel, a dirty screen is a likely candidate for a cause. The carburetor should be inspected ,cleaned or reconditioned with every flying season or after being stored for a long period of time.

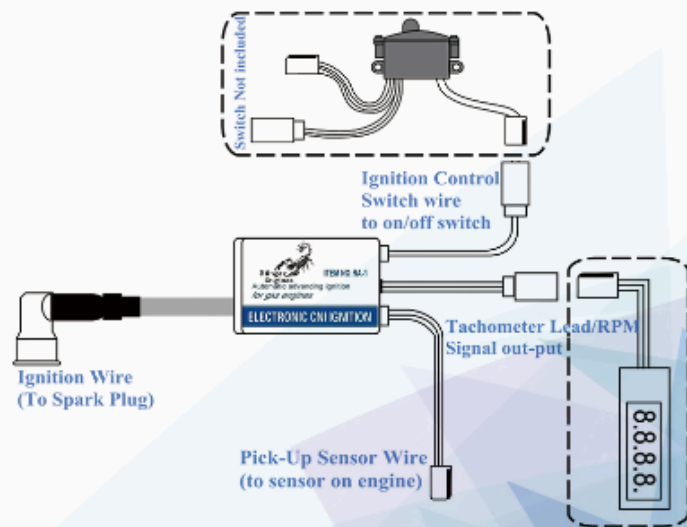
The spark plug should be inspected ,cleaned and gapped periodically and replaced if it is fouled or worn. A new plug with every new season is a worth while maintenance step.

Please clean the fuel filter in the Carburetor periodically. Failure to do so may result in miss-calibration of the needle adjustments. In order to do this it is necessary to remove the Phillips head screw which secures the carburetor filter cover and the carburetor filter gasket. Use only carburetor cleaner to clean the opening around the filter

# Ignition System



- A: Connect power(battery)
- B: Connect tachometer
- C: Signal Line



## 1, Specifications

(1), **WARNING:** Our CDI Ignition were designed for use in model aircraft and should never be used in a Human Carrying Vehicle !!

## 2, Selecting a Power Source

(1), Our CDI Ignition is rated 6 to 14 volts.

**Note:** Please connect the battery line correctly.

Wrong connecting will cause the Ignition burned and will not be covered by the free warranty.

+ : red line    - : black line

## 3, Installation

(1) Spiral Wrapping

Use the supplied Spiral Wrapping included with your ignition to protect the wires from heat and chafing. Wrap the braided Spark Plug lead, Hall Sensor Harnesses and Battery Harnessed.

(2) Mounting :

Mount your ignition on the engine box if possible.

Reduce the effects of engine vibration on the circuitry. You can use the mounting tabs on the ignition but we recommend using zip ties or Velcro ties to secure it. Do not install your igniton in the fuselage. Keep the ignition as far away from you receiver as possible and never use the same power source to run your ignition and receiver jointly.

(3) Connecting the Battery:

Our CDI ignition utilizes the Futaba style plug ends and comes with an additional pigtail to add to your ignition switch if necessary . Be sure to follow the color coding.

**Note :** There are no serviceable parts in the ignition system. Opening the case will void the engine warranty.

## 4, Trouble shooting your Ignition

(1),Battery Check the voltage on your battery and make sure it's healthy and fully charges. Insure that voltage is 14V or less to the ignition.

(2),Connections : Check that all connections are correct from the battery, to the switch , to the ignition . Use a volt meter on the switch to ensure the ignition is getting power and the polarity is correct.

(3),Hall Effects Sensor: Ensure that the orientation of the hall sensor is correct with the orientation of your hub magnet.



Connect battery  
(Red line +,Black line -)

## 5, Ignition Timing Adjustment

The ignition timing is preset at 28-30° before Top Dead Center (TDC).

The ignition timing can be advanced or retarded by loosening the ignition sensor Phillips head screws and sliding the sensor to the full extent clockwise (32° advancing the ignition) or counter clockwise (26° retarding the ignition). Be sure to retighten the Phillips head screws after adjusting the ignition timing. It is best to attach the sensor with the screws centered in the slot as a starting point.

Advancing the timing causes combustion to occur earlier resulting in higher performance of the engine. However, advancing the timing also causes higher engine temperatures and can cause premature wear of internal engine components

## 6, Safety Precautions

Never power the ignition with the plug in the head when you're working on your engine, it could fire off ! Always wear a glove when starting your engine ! After turning off your ignition , be aware that the ignitions still have a charge and fire the motor. Always range check your model !

## Engine Troubleshooting

If your engine fails to start after the preceding starting procedures please check the following.

Symptom	Diagnosis	Fix
Engine does not fire	Ignition battery voltage low	Charge or replace battery
	Battery wires faulty or loose	Replace wires or Re-connect/check connections
	Faulty spark plug or not firing	Replace spark plug or check for spark
	Engine flooded	Remove plug, disconnect fuel line, rotate prop to remove fuel
Engine starts, then rpm increases till engine cuts out	Fuel not reaching engine	Check for: a) fuel in tank b) fuel tubing cut, blocked, kinked or whether any air in the fuel tubing c) carburetor clogged d) fuel tank whether is too far away from engine

This can be done by removing the spark plug from the cylinder and attaching the plug on the outside of the crankcase. Have an assistant turn the engine over while checking this and be sure to have the spark plug firmly plugged into the ignition wire.

**Warning:** The high voltage from the ignition can cause bodily harm, especially when checking for spark in this manner.

If the engine stops soon after starting even when the starting procedure has been followed , it is probably because the low needle is too lean . Turn the low needle counterclockwise a little .

If the engine does not reach a normal RPM at full throttle , shift back the muffler to the original needle setting . If the problem remains , it may result from a low battery ; the wrong needle setting ; the diameter of the propeller is larger than recommended ; the gasoline and oil mixture may not be correct ; the muffler system affecting the RPM ; or bad ignition timing .

If the engine is running roughly or vibrating strongly : Make sure the low needle setting is not too rich . Check the balance of the propeller and spinner . Ensure the engine's mount bolts are secure , check the ignition timing . , Check the structure of the engine box and firewall on your plane.

## **Optional Digital Tachometer (not included)**

An optional Digital Tachometer is available that can be directly connected to the ignition and display the RPM of the engine. The Futaba ® DSC Charge Adapter can be mounted in the fuselage and allows easy external plug-in of the Digital Tachometer.

Many of the Ignition modules have an additional lead to plug into the Digital Tachometer. If your ignition module does not have this additional lead, the Digital Tachometer can still be used. Simply use the Y-harness (included with the Digital Tachometer) to connect to the pick-up lead from the engine. Be sure to secure all connections and to secure the Digital Tachometer or leads on the aircraft used.

## **Propeller Choosing**

Propellers of same dimensions produced by different manufacturers tend to vary . Even propellers of the same dimensions made by the same manufacturer can vary . Environmental factors , such temperature and atmospheric pressure , the weight of plane, the exhaust system etc., will have an effect on the propeller load . Carbon fiber propellers usually produce higher RPM than a wood propeller of the same diameter and pitch.

## **Warranty & Service**

### **WARRANTY POLICY**

All new Stinger Engines carry a One Year Limited Warranty on materials and workmanship at the time of sale.

This Warranty only applies to engines purchased through ZHEJIANG RCGF MODEL CO.,LTD or its authorized distributors.

Since we don't provide worldwide warranty service for our engines. The warranty service will be a little different in different areas. Please contact your local Stinger Engine service center or authorized distributors for the detail warranty information.

If there is no authorized distributors or service centers in your country,ZHEJIANG RCGF MODEL CO.,LTD will provide the warranty service (The warranty doesn't cover the shipping cost and expenses to and from service centers or its authorized distributors for warranty service.). Engines purchased from China mainland, Hongkong or Taiwan will be covered by One Year Limited Warranty at the time of sale , and the warranty service will also be provided by ZHEJIANG RCGF MODEL CO.,LTD in China

(Consumers afford the shipping cost themselves). Stinger Engine authorized distributors don't offer free service for these engines. If consumers want to get service from local service center, they will need to pay for the reasonable labor cost to local service center.

The Warranty is void if the engine is disassembled without express authorization from ZHEJIANG RCGF MODEL CO.,LTD or authorized distributors. RCGF Products or its Authorized Sales, Parts and Service Center will not accept returns sent freight forward to COD.

Please review our website : [www.rcgfservice.com](http://www.rcgfservice.com) for detail information of Stinger Engine distributors, service centers and warranty policy.

## **This Warranty does not cover the following items:**

Propellers, spark plugs, mufflers.

Crash damage, This includes propeller strikes of any type.

Damage caused by using improper additives or fuel.

Damage to an engine that has been modified or altered from its original design.

Damage caused by improper handling, operation or maintenance. This includes the ignition system where damage is caused by excessive input voltage, vibrations damage or use without a spark plug installed and connected to the engine.

Damage caused when the engine is shipped to the Stinger Engine service centers or its authorized distributors. Please Pack carefully.

Shipping cost and expenses to and from Stinger Engine service centers or its authorized distributors for warranty service.

**Note :** We can not ship replacement parts until we inspect the suspect items and they are deemed defective by our service centers or its authorized distributors.

### **Customer Procedures for Warranty Work**

When your engine is hurt, and you want your problem fixed. The engine is still under warranty. So what do you need to do, to get things done and your engine fixed.

1, Contact our Service Center. Please by contacting us first we might be able to help you with your issue before sending the engine back to us. We might be able to resolve your problem or even ship you the replacement parts, depending on your claim.

2, If it is determined that you need to ship your engine to our service center or our RCGF authorized distributors. You will need to pack your engine. Here are some items to think about:

(A) Protruding items like mufflers, spark plugs, and prop adapter should be removed from the engine and carefully wrapped separately if they are being included.

(B) Make a list of needs to be checked out or repaired. Be as specific as you can.

(C) Include your name, address, telephone number and email address.

(D) Please do not use Styrofoam peanuts or pellet to pack your engine.

(E) Wrap the engine in bubble wrap-use the large bubbles ones. Go about 4 or 5 times around the engine and tape it down.

(G) Once the wrapped engine is in the box, put the other items in next. The other items should also be packaged with bubble wrap.

(H) When all items are in the box, use crushed paper to stuff into any gaps around the engine and box.

(I) Put your note into the box and seal the box.

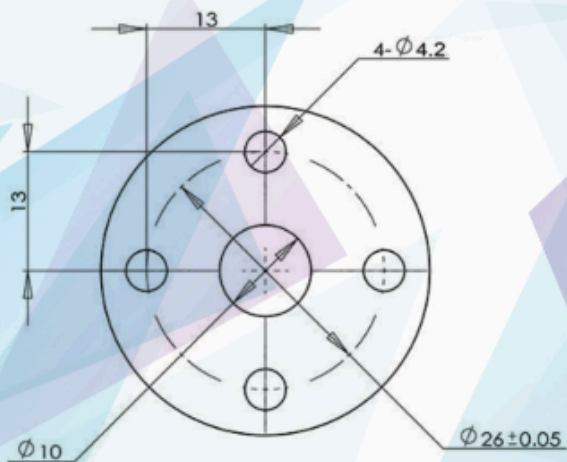
# Stinger Engine data

## 1.Engine prop hub center screw data

ENGINE ITEM	Diameter and screw thread
10cc SE ,10cc RE	1/4-28
15cc SE, 15cc RE , 26cc SE ,26cc RE	M8X1
20cc SE , 20cc RE , 20cc Twin , 30cc Twin	M8x1
35cc SE, 35cc RE	M5X0.8
40cc Twin , 60cc Twin ,70cc Twin	M5X0.8

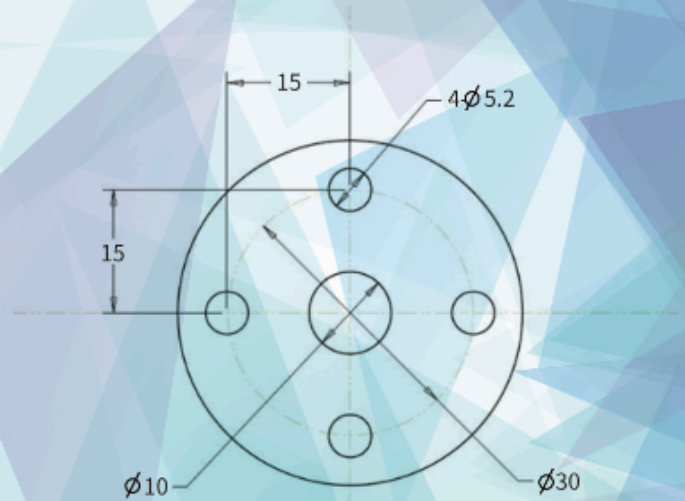
## 2.Engine Prop Drill Guide :

Stinger 35cc SE , 35cc RE



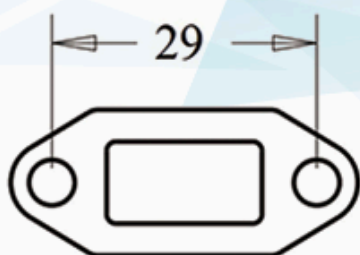
**prop drill guide**

Stinger 40cc twin , 50cc twin , 70cc twin

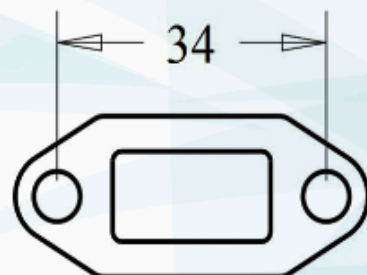


## 3, Stinger Engines Dimension Photo:

Muffler bolt pattern

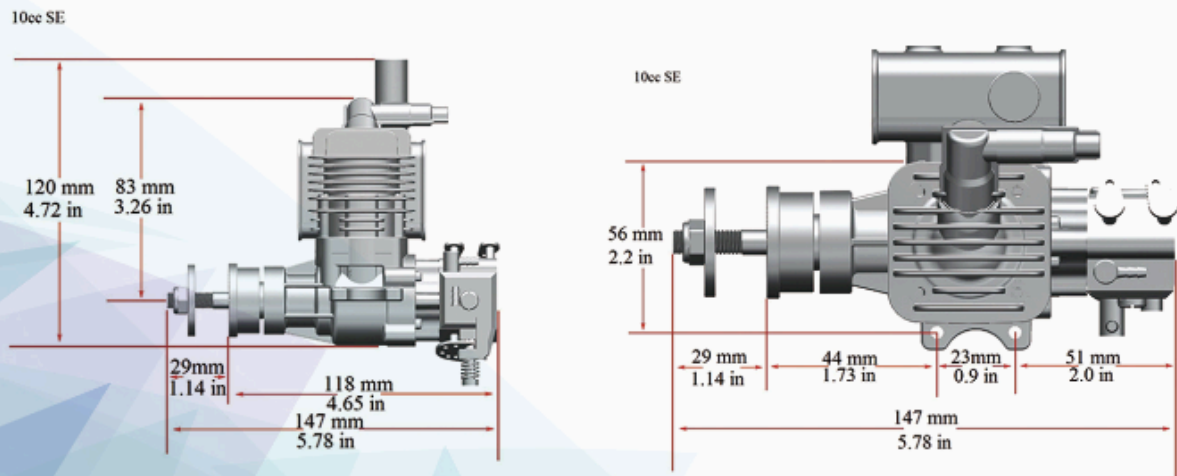


10cc/15cc/20cc/26cc  
20cc-Twin/30cc-Twin  
40cc-Twin/50cc-Twin

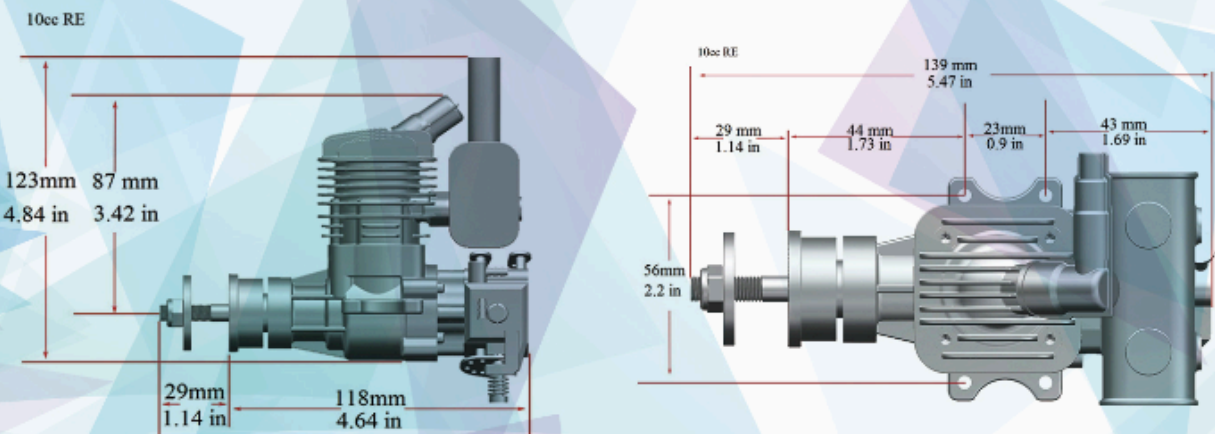


35cc/70cc-Twin

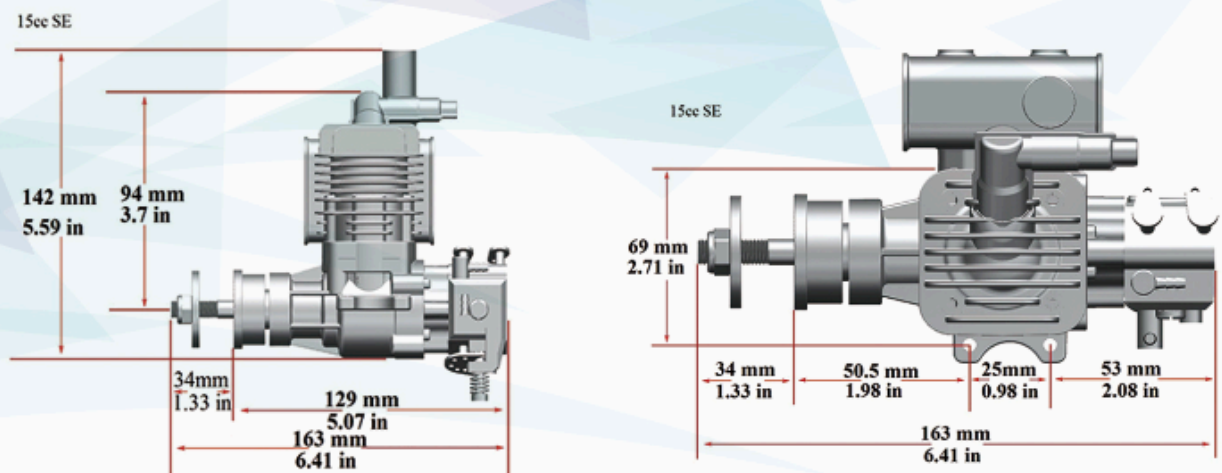
## Stinger 10cc SE Dimension Photo



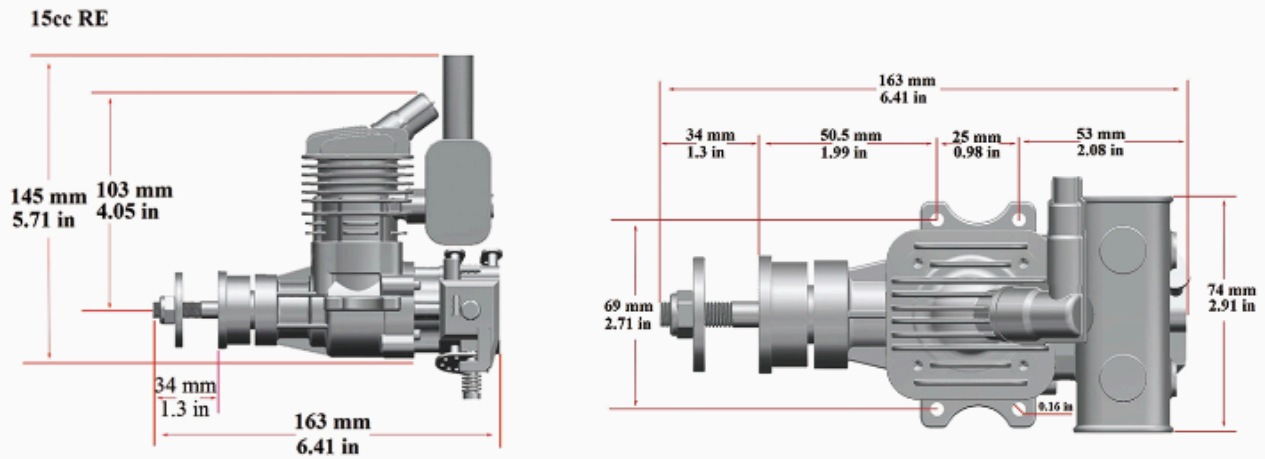
## Stinger 10cc RE Dimension Photo



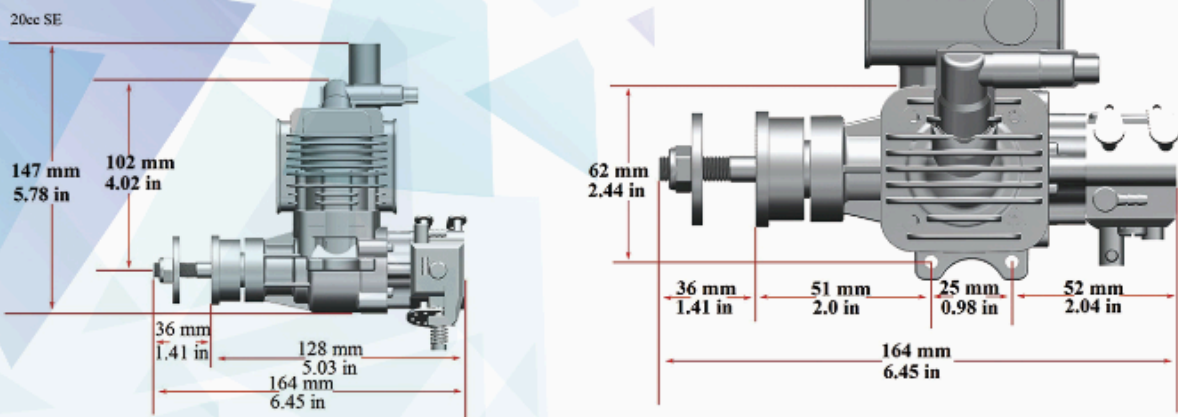
## Stinger 15cc SE Dimension Photo



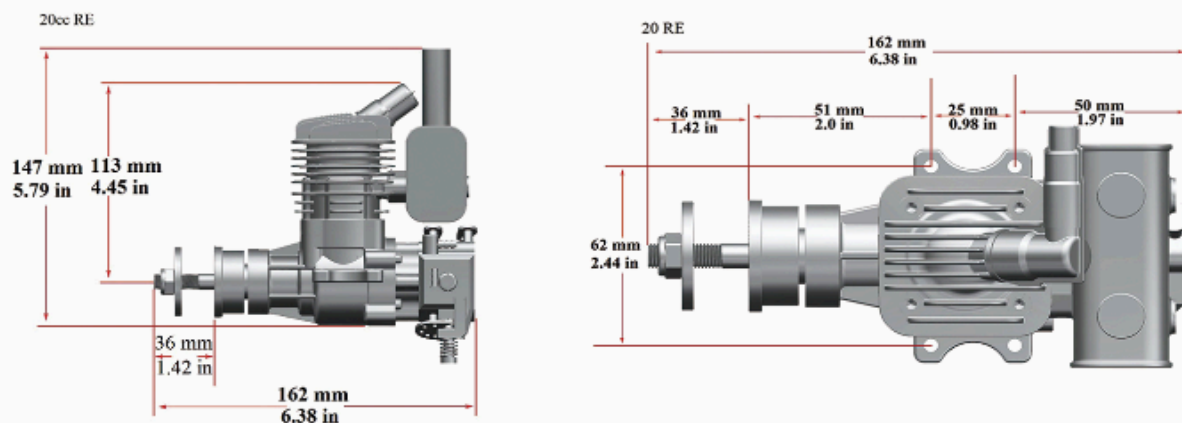
## Stinger 15cc RE Dimension Photo



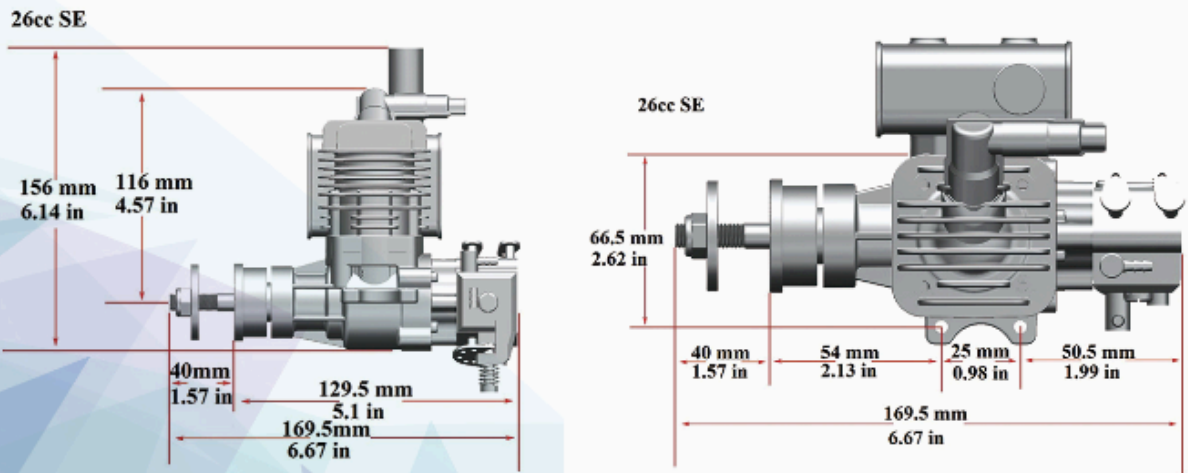
## Stinger 20cc SE Dimension Photo



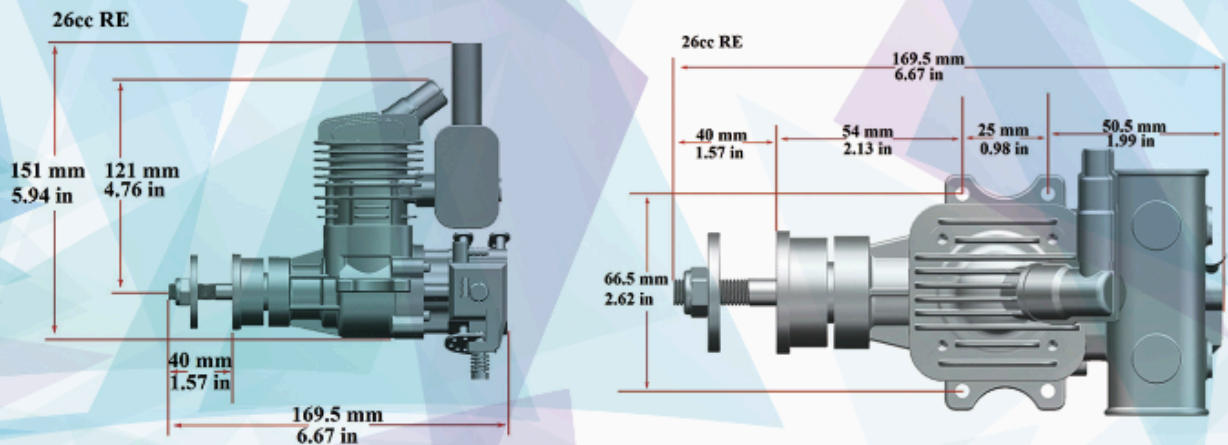
## Stinger 20cc RE Dimension Photo



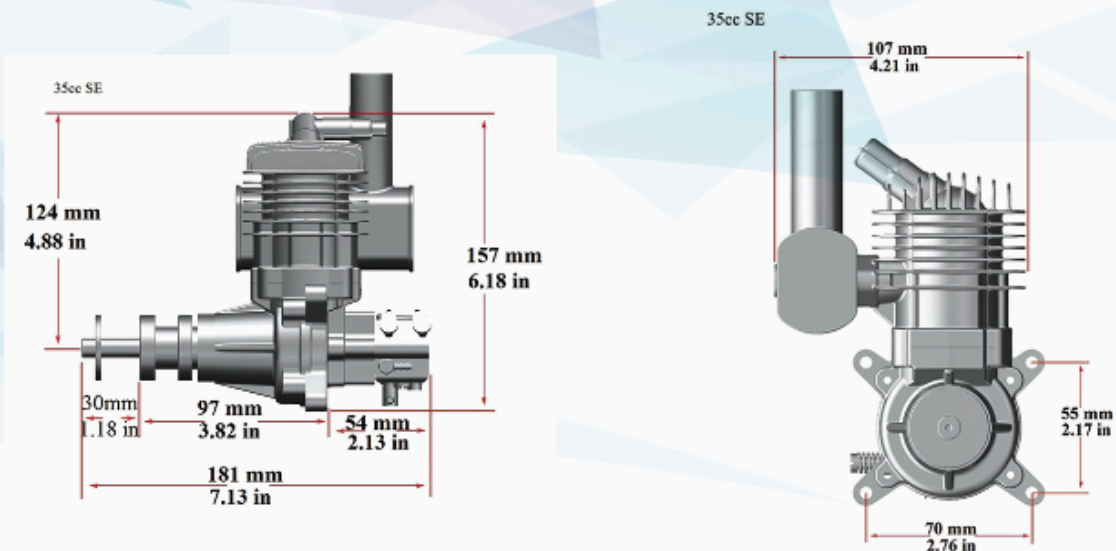
## Stinger 26cc SE Dimension Photo



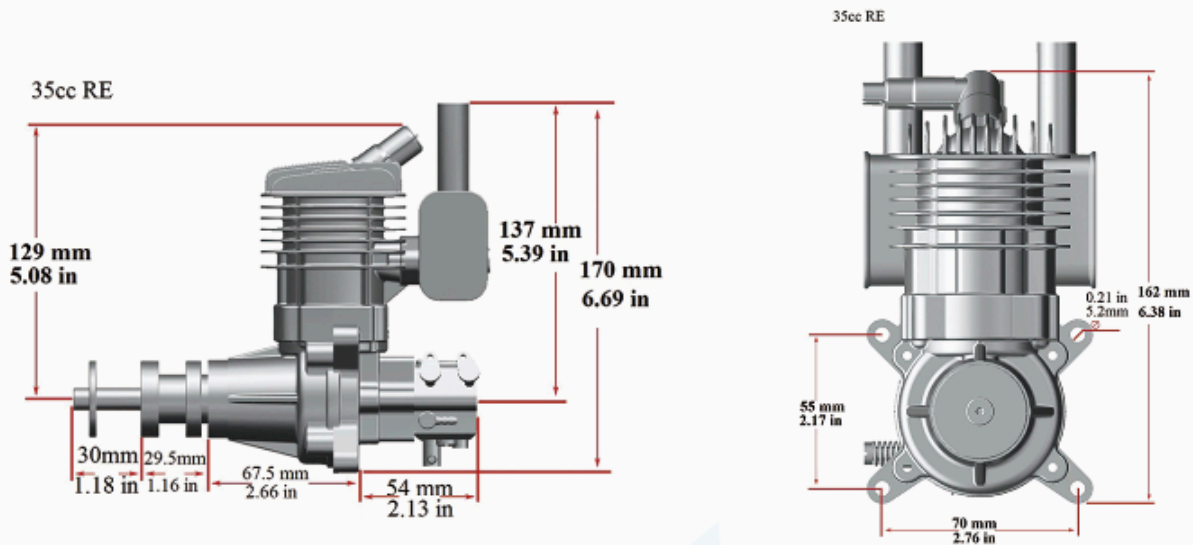
## Stinger 26cc RE Dimension Photo



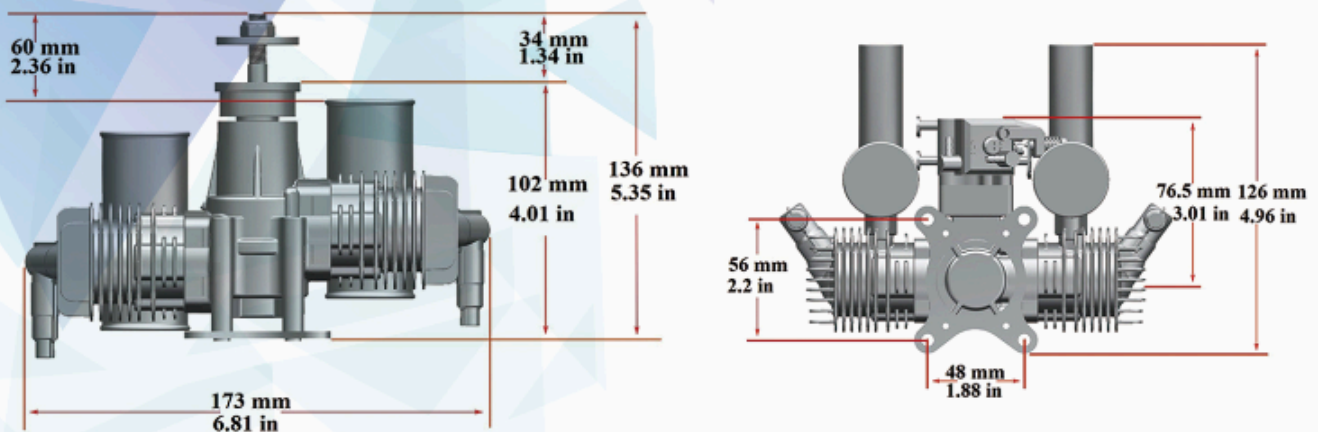
## Stinger 35cc SE Dimension Photo



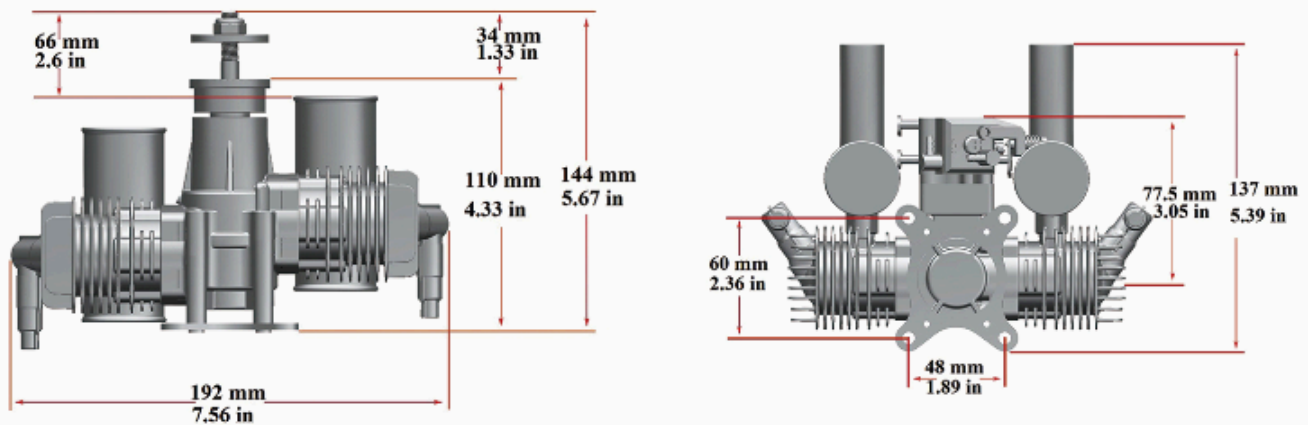
## Stinger 35cc RE Dimension Photo



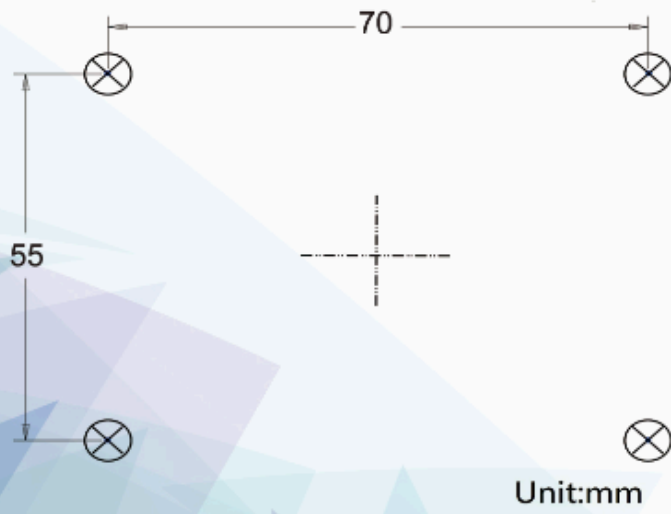
## Stinger 20cc twin Dimension Photo



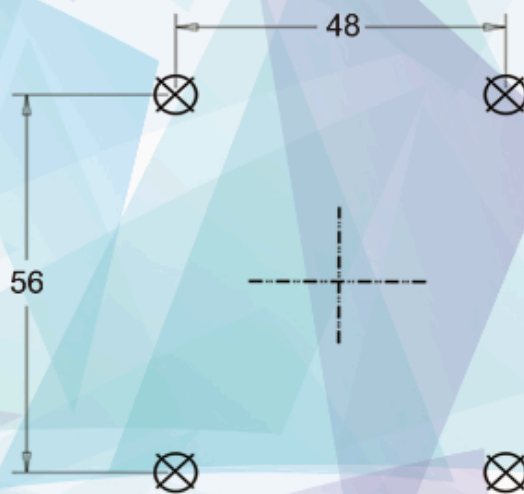
## Stinger 30cc twin Dimension Photo



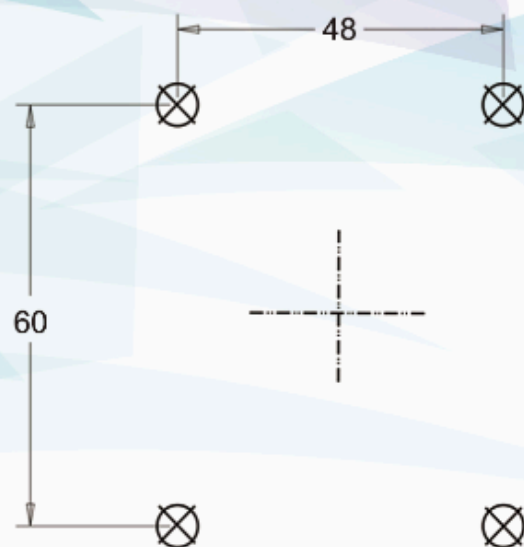
### Stinger 35cc SE , Stinger 35cc RE



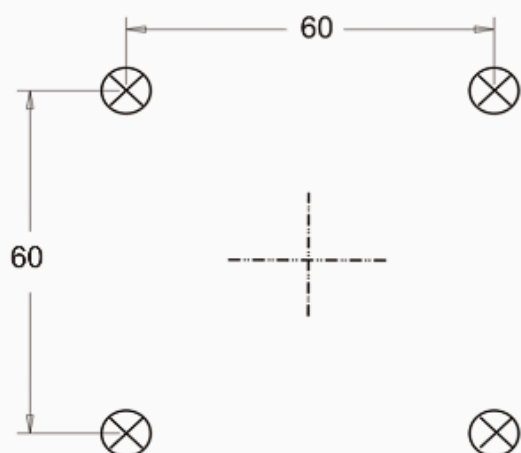
### Stinger 20cc Twin



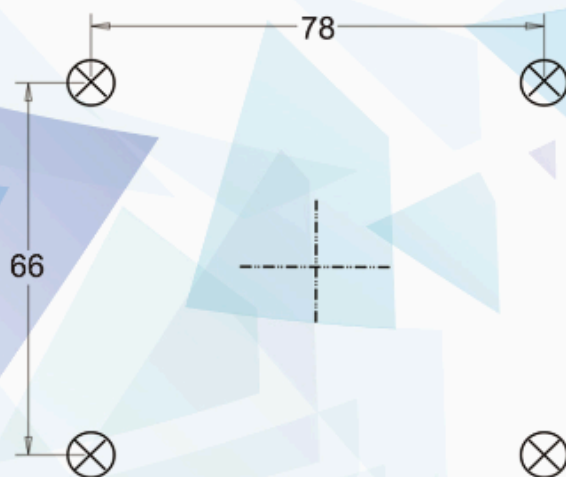
### Stinger 30cc Twin



## Stinger 40cc Twin , Stinger 50cc twin



## Stinger 70cc Twin



All the above data unit is mm .

You can review our website [www.rcgfservice.com](http://www.rcgfservice.com) for more information.



**ServiceCenter**

### **RCGF Official Service Center :**

(for customers from all over the world )

Email : [rcgfservice@zjrcgf.com](mailto:rcgfservice@zjrcgf.com)

Add: No 6 Qinglong Road , Longyou , Quzhou ,Zhejiang Province, China

### **RCGF US Service Center**

(for customers from US or Canada)

Email : [service@rcgfusa.com](mailto:service@rcgfusa.com)

Add : 4126 La Linda Way , Sierra Vista, AZ . 85635 ,USA