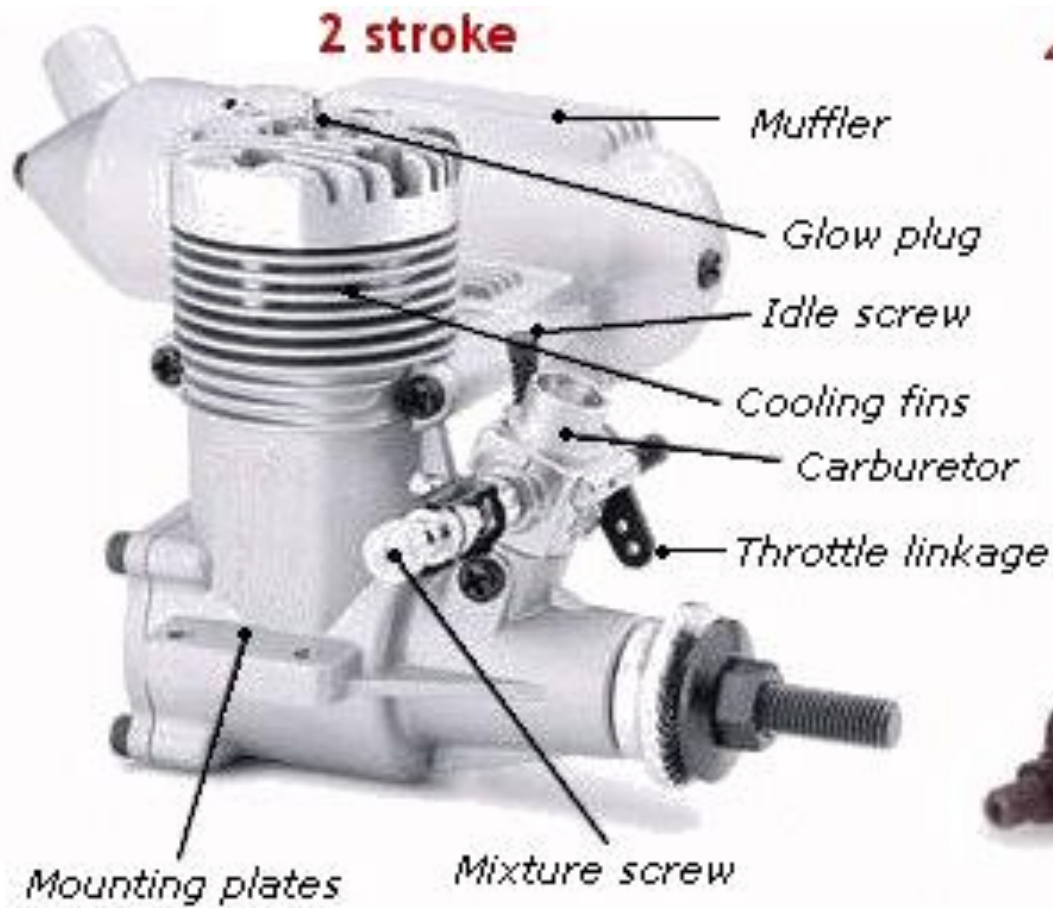


Aeromodelling components

engines, propellers, motors, ESC

Internal Combustion engines



IC Engines

- Just like standard gasoline powered engines, there are **2 stroke** and **4 stroke** model airplane engines, also sometimes referred to as *2 cycle* and *4 cycle*.
- 2 stroke model airplane engines produce more power for their size and are generally more 'user-friendly'. They are cheaper to buy and easier to run, and the majority of rc training airplanes will be designed around using a 2 stroke engine rather than a four.
- 4 stroke engine produces more torque at lower revs and also produces less noise at a lower frequency. Because of this more realistic sound, it is quite normal for 4 stroke engines to be used in **scale** model airplanes.

Size of Engine

This size refers to the engine's capacity in terms of 1/100th of a cubic inch but is usually expressed as just the number eg a **.40cu.in.** engine would be referred to as a **40** and a **.60cu.in.** engine would be called a **60** etc.

In our club we have two **.52**, one **.46** engine and one gasoline engine (50 cc).

Fuel

.46 and **.52** engines use a mixture of **Methanol and Castor oil** in the ratio **3:1** respectively.

Methanol acts as the fuel while the castor oil is for lubrication.

Parts of engine



- **Glow Plug** plug filament needs to be heated up initially using a **glow plug igniter(booster)**, once the engine is running the heat generated within the combustion chamber keeps the filament glowing continuously and is thus able to ignite the fuel/air mixture on each revolution.
- **Carburettor** : device that blends air and fuel for an internal combustion engine. It controls the air intake of the engine hence controlling the throttle.



Breaking in

- New engines require to undergo a procedure called Break In.
- Breaking in is required for proper working of the new engine.
- Breaking in is done by running the engine at low throttle and rich fuel.

Electric components

- Brushless DC motor
- Battery
- ESC

Motor



- **kv rating:** It is the revolutions/volt. For ex: 1000 kv will give 1000 rpm at one volt.
- So if the voltage of battery is 12 V then the RPM is $1000 \times 12 = 12000$ rpm.
- The rpm is the function of voltage only and irrespective of propellor size or pitch.
- **Power:** It is the power supplied by the battery given by volt X current.
- Propellor size, ESC and voltage & power ratings are given in specification.



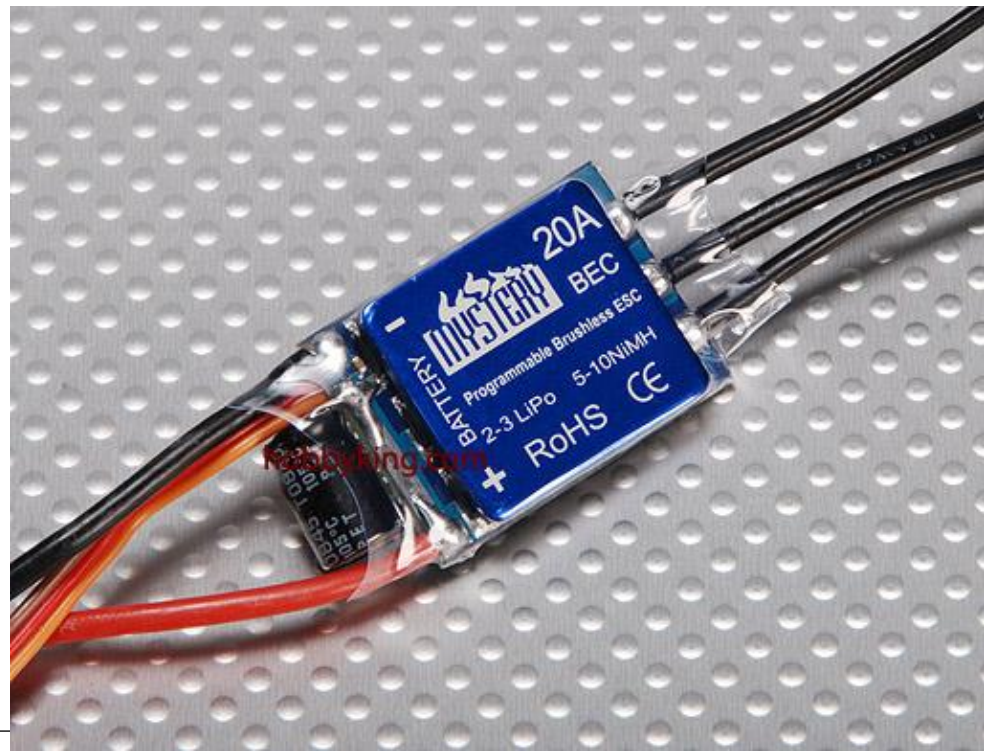
battery



- Can have one or more than one cell. One cell gives 3.7 V. so the net Voltage is given by :
- Voltage = no. of cells X voltage of each cell
- Also there is charge rating in mAh.
- 1 mAh is equal to charge supplied at the rate of 1mA for 1 hour.

ESC

- Electronic Speed Controller
- Is connected with battery, motor and receiver.
- Is either without or with BEC.
- Has current rating.



Propellers

- Have diameter and pitch usually written in the form Diameter X pitch.
- Pitch is the distance moved by the propeller in one revolution under ideal conditions.
- High pitch propeller generally provides more speed than a low one.
- Propellers can be double or triple blade.
- Distance moved by an ideal propeller = pitch * RPM