Gears

Gear Ratio = Spur Gear ÷ Pinion Gear
Transmission Ratio = Diff gear ÷ Input Gear
Final Drive Ratio = Gear Ratio ✕ Transmission Ratio

A pinion gear is placed on the shaft of the motor (bottom left gear)
The Pinion gear rotates the big spur gear (top right gear)

Gearbox:

Top Right gear is the input gear, it is connected to the spur gear on the outside.
This rotates the idler gear (middle gear)
The idler gear then rotates the diff gear (gear with differential)

Bevel Diff Gear: my idea of a traditional diff gear (ex. used on cars)
Ball Diff Gear: wears out easily, was designed for RC Cars

32 Pitch gears are strong

Gear Mesh: proximity of Spur gear to the pinion gear

Battery

To keep Lipo's in good order, try and keep max amps to around 50~60% of the capacity/C rating of the Lipoly Pack, for example, if you purchase a 2200mAh 20c pack, then it is rated for 44A constant discharge, so keep the max amps at around 20A~25A.

Motor

5000KV means 5000 rpm per volt

Turn (A.K.A. Wind)—The number of times a length of wire is wrapped around a stack in a brushed motor or the stator in a brushless motor. The more turns a motor has, the more wire was used in its construction. Having more wire not only increases the rotating mass of a brushed motor's armature, but also increases the resistance, reduces efficiency and slows the motor down. The lower the turn of the motor (generally speaking) the faster it will be.

ESC

Look at the MAX AMPS figure given by the motor manufacturer in the data section and generally add 25% headroom

Next make sure that the ESC voltage is compatible, in other words, if you are using a 4s Lipo, that the ESC is rated for 4s voltage.

Next, check if it has functions you desire, if you are flying a glider for instance, you will want a brake facility. We strongly advise purchasing a programme card to make programming the ESC easier.

Also look at BEC rating, the BEC supplies radio receiver power for servo's without the need for a separate receiver battery

Things needed

- bumper
- Servo saver
- Metal Geared Servo
- Gearbox motor
- Tilt switch location

Sources

https://www.teamassociated.com/pdf/cars_and_trucks/shared/gear_ratios.pdf
https://hobbyking.com/en_us/electric-flight-basics