TOPGUN PARK FLITE R/C Aircraft

CESSNA 182 SKYLANE

INSTRUCTION MANUAL

CONTENTS

READ THIS BEFORE BEGINNING ASSEMBLYOF YOUR AIRCRAFT!

THIS IS NOT A TOY!
Only to be used by people over the age of 14 with RC flight experience. Serious injury, destruction of property or even death may result from the misuse of this product.
This product must be assembled by the end user to produce a flying model.
However it is beyond our control to monitor the finished aircraft that you produce.
Top Gun Park Flite will in no way accept or assume responsibility or liability for damages resulting from the use of this user assembled product. This aircraft should be flown in accordance with the BMFA safety guidelines.
It is highly recommended that you join the BMFA in order to be insured for third party damages and only operate this aircraft at approved flying sites. Top Gun Park Flite also highly recommend that you practice model RC flight on one of the many computer simulators such as Reality Craft Plane Master. If you are not willing to accept ALL liability for the use of this product please return it to the place of purchase immediately.

PROPELLER
Keep your hands and face away from the propeller as injury can occur. Keep loose items that could get entangled in the propeller away from the prop such as loose clothing, pens and paper.

SMALL PARTS
This contains many small parts and should not be left unattended near children as choking and serious injury could result.

BATTERIES
When misused, Lithium Polymer batteries are much more volatile than Alkaline or NiMH.
Please read the charging instructions and Safety Notes on page 4, 14 & 15 as mishandling can cause serious injury and fire.

WARRANTY
All warranty claims must be made with your proof of purchase. Warranty is extended only to the original purchaser of the aircraft kit.

Brief Introduction

Thank you for purchasing the "CESSNA" remote control model airplanes from Top Gun Park Flite , and we hope this plane will bring endless joy to you after you choose it.

- With the EPO foam materials, it is very light and strong;
- Used the perfect structure design, easy to assemble and maintain,and crash resistance.
- Used the perfect power system, it has the strong power and can fly long time;
- It can finish the inverted flight,inside loops, outside loops, axial rolls ,and other aerobatic performance.
- High scale, and beautiful appearance.

Main Specification

Wingspan	980mm
Length	800mm
Weight	680g
Thrust	≥6 80g
Flying time	≥6 min

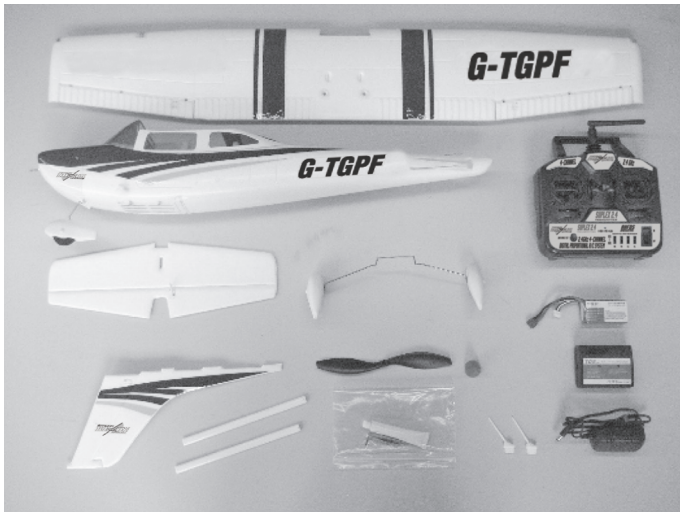
Main Configuration

Radio system	4ch 2.4Gzh Suplex Radio
Motor	1500 KV Motor
Battery	1000mAh 7.4 V 15C
ESC	12 A
Servo	9g X4

Product Components

RTF Version

fuselage,main wings, horizontal wings, vertical wings, front landing gear, main landing gear, propellor, stay bar, cowling set, battery, radio, charger, antenna, accessary bag



ARF Version

Kits without radio

PNP Version

Kits without radio,charger and battery

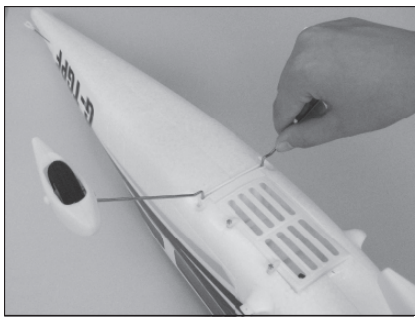
Kit Version

Without any electronic parts

Assembly Process

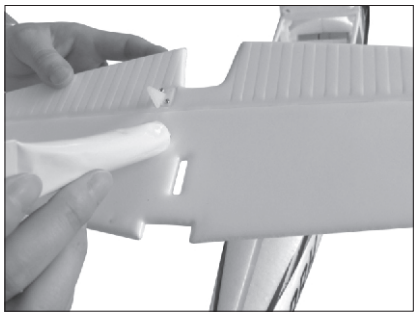
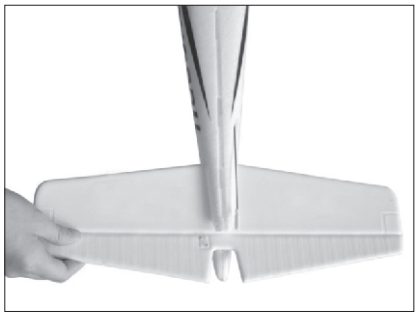
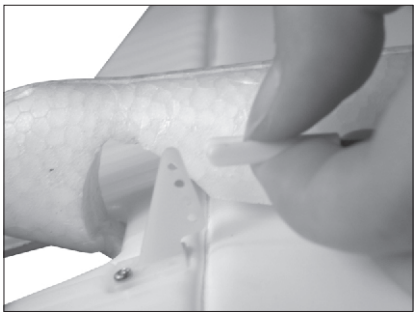
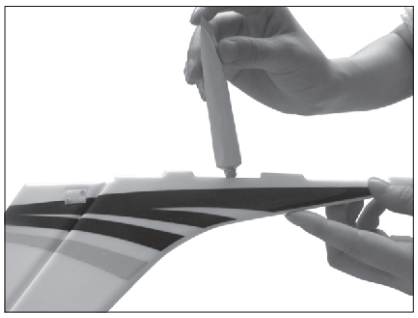
1. Install the main landing gear

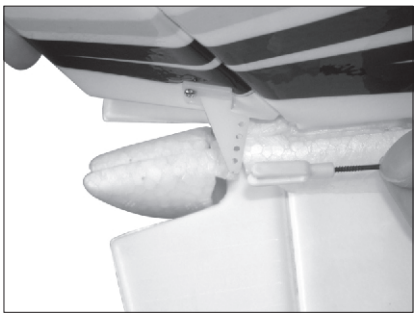
Take of the fuselage& main landing gear from the box. Assemble the main landing gear into the slot of the fuselage.



2. Install the tail surfaces.

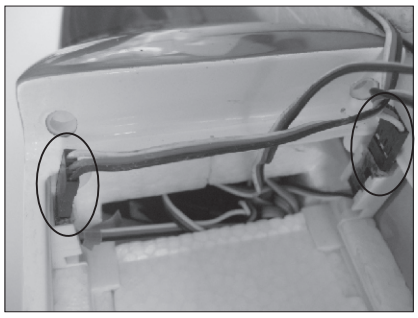
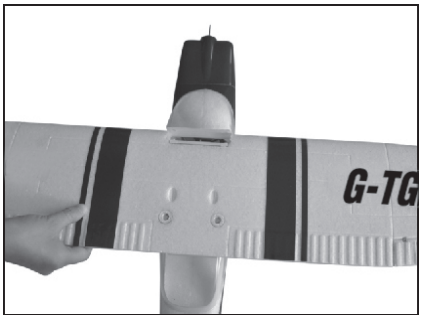
Take out the horizontal and vertical and tail sections & foam glue from the box. Add the foam glue to tail sections and fuselage,then insert the tail sections to the slot of the tail parts and connect to the fuselage. Use the same method to connect the vertical tail fin to the fuselage.

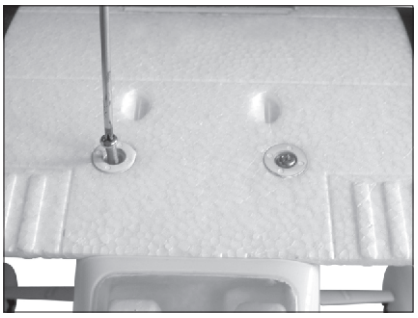





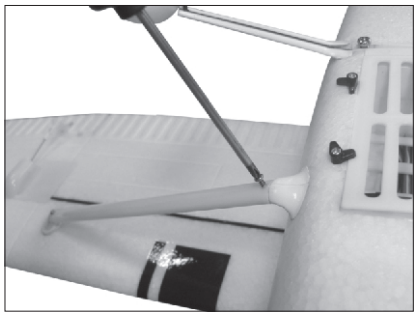
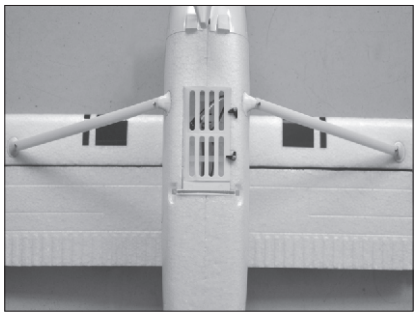
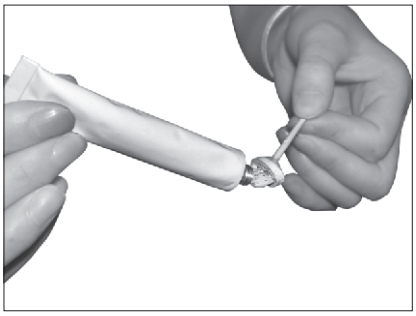
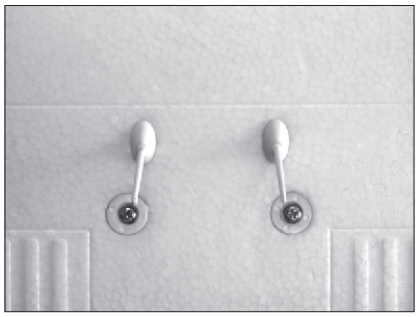



3. Install the main wings

Take out the main wings, stay bar, antenna & screws from the box.Connect the navigation light and aileron wire (Make sure the positive and negative cannot be reverse connected). Insert the main wings into the slot of the fuselage, and use the PM5* 35MM screw to lock it,then lock the stay bar by the PA1.7X10mm screws. Finally, please use the foam glue to connect the antenna to the slot of the main wings.

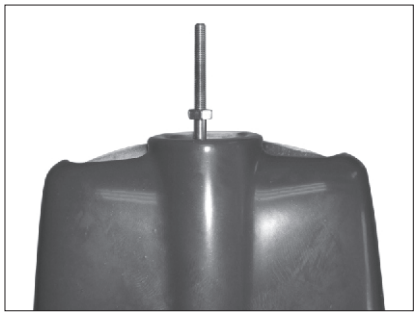
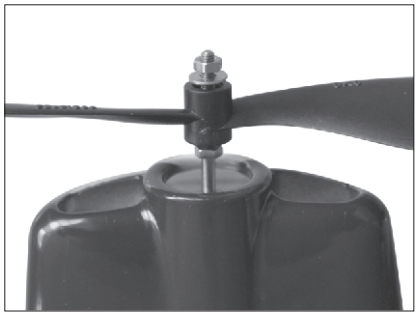
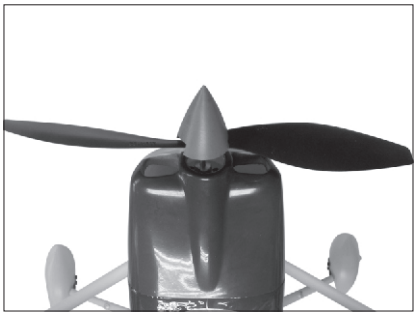





4. Install the propellor

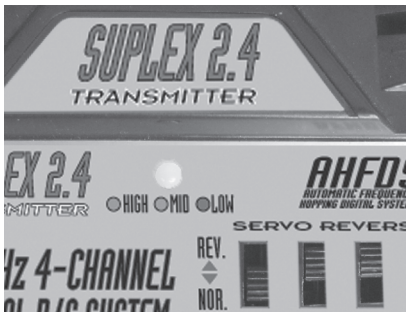
Take out the cowling, propellor, nut and spanner from the box and install as per the photos below.
Use a 5.5 box wrench or small pliers to tighten securely.

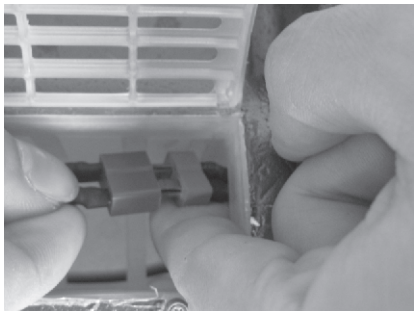
5.Finished the assembly of the Cessna.

Adjustment Steps

1.Turn on the transmitter and please make sure that there is enough power for the transmitter. Push the joystick for throttle and throttle trim switch to the lowest position,and other trim switch should be in the neutral position.

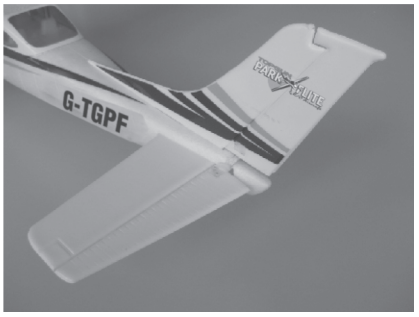


2.Please make sure that the battery is full power ,and connect to the ESC plug , then install the battery into the battery case.



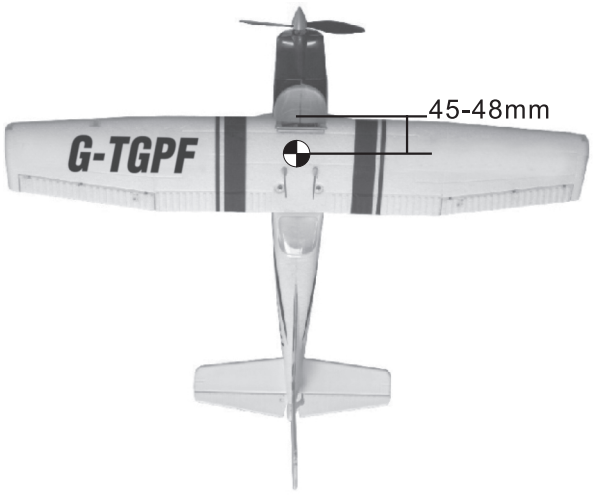
3.Please catch the back part of the fuselage and push the throttle slowly to make sure that the motor can work normally.

4.Please check the control surface and front wheel can work or not.Do not make it reverse, and make sure that the control surface &free wheel and the joystick are in the same direction.



Adjustment Steps

5.Check the center of gravity and make sure that the CG of the plane should be within the range as indicated by the arrows. Move the battery fore or aft to change the centre of gravity.



6.Finished the adjustment for CESSNA.

Safety Precautions

1.If you have the simulator, we suggest that you can practise your skill by the simulator before you fly this model,which will bring some help for you.

2.Please climb the plane above the 50 meters with half throttle to fly it when you fly it for your first time, then you will be familiar with the performance of this plane.

3.You should learn how to control this model, it will reduce the possibility of crash and prolong the usage life of the plane.

4.The turn radius should not be too little,or it will stall and it will increase the possibility of crash.

5.When taking off or landing the plane, you should into the wind.

6.Do not fly the model over your head or behind you, you should fly the model in front of you.

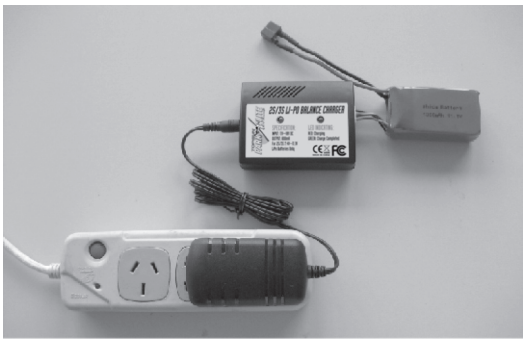
Charging Method and Precautions

Li-Po battery(balance charger)specifications

Specifications:
Input voltage: DC 10V~15V
Output voltage:2S-3S Li-Po battery
Charging current: 1.0A

Indicator state:
Green: Charge complete & no battery
Red: Charging
The batteries are inspected separately. When the voltage reaches 4.20V, the charging process stops.

Operating



1. Then plug cigarette into its socket in car (Adapter should be connected if charge at home: connect the adapter to home power socket, then plug the adapter' DC end to charger). The LED will turn green indicating it is ready for charging.
2.Connect the battery to charger per its interface mark. The LED becomes red, which means charging is on the way.
3.When LED flashing, the charger will enter the stage of drip current charging. The LED turns green when fully charged , and the battery will be used at any time.

Notice

1. While charging is in process, please do not make it near flammable materials.
2. Only use this charger on the supplied LiPo battery.
3. While charging, please keep it out of the reach of Children.
4. When this charger is in use, please do not go away and leave it unwatched, if any abnormality occurs (such as the power indicator is off, the temperature of the battery rise rapidly, etc.) stop charging immediately.
5. Please do not use power with output voltage higher than 15V.
6. Please do not disassemble the charger or its accessories.
7. Allow the battery to cool down before charging.

Notice

1. Maximum charge rate is 1 Amp.
2. Discharge rate should be no greater than 10 C.
3.When the Li-poly battery was stored more than 3 months, it needs to be recharged to maintain its voltage, and ensure its life time.

Safety Instructions for LiPo/Ni-MH batteries

1. Do not disassemble or reconstruct the battery.
2. Do not short-circuit the battery.
3. Do not use or leave the battery nearby the fire, stove or heated place (more than 80).
4. Do not immerse the battery in water or sea water, do not get it wet.
5. Do not charge the battery under the blazing sunlight.

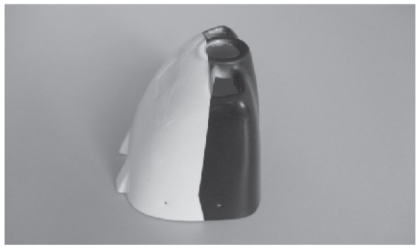
6. Do not drive a nail into the battery, strike it by hammer or tread it.
7. Do not impact or toss the battery.
8. Do not use the battery with conspicuous damage or deformation.
9. Do not charge a warm battery. Allow it to cool completely before attempting to charge.
10. Do not reverse charge or over discharge the battery.
11. Do not connect the battery to the ordinary charger socket or car cigarette jack.
12. Do not use the battery for unspecified equipment.
13. Do not touch the leaking battery directly, please wash your skin or clothes with water if they are bedewed by liquid leaking from the battery.
14. Do not mix the Li-Poly battery with other un-chargeable battery in using.
15. Do not continue charging the battery over the prescribed time.
16. Do not put the battery into the microwave oven or high-pressure container.
17. Do not use the abnormal battery.
18. Do not use or keep the battery under the sunlight.
19. Do not use the battery nearby the place where generates static electricity (over 64V).
20. Do not charge the battery when the environmental temperature is under 0℃ or over 45℃.
21. If you find the battery leaking, smelling or abnormal, stop using it and return it to the seller.
22. When the battery is charging, please do not make it near the flammable materials!
23. Keep the battery away from the children.
24. Use the specified charger and observe charging requirement (under 1A).
25. When used by minors, parents should show them to the correct instruction.

Notification for ESC

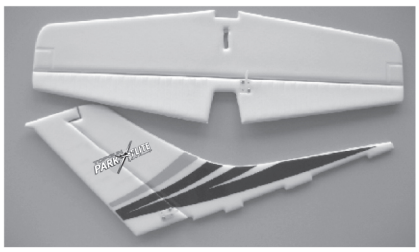
1. The function of this ESC was in the best condition after factory setting; please do not change it by yourself.
2. Before connecting the battery, please make sure the throttle and trim were in the lowest position. If the throttle and trim were not in the lowest position by mistake after connecting the battery, you can cut off the battery; move the throttle and push to the lowest position, then connect the battery.
3. The ESC of the airplane was in a good cooling position after factory assembly; please do not move its position.
4. The ESC should be connected to the brushless motor correctly, otherwise the motor will be reversed turning, and the model airplane can not fly correctly.

Part No: TGP0358 B TGP0358 R
Fuselage(blue) Fuselage(red)

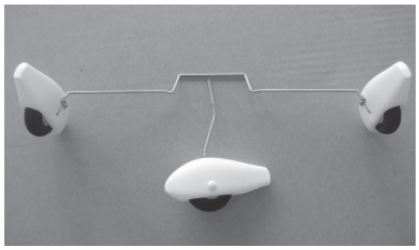
Part No: TGP0359B TGP0359R
Main wings(blue) Main wings(red)



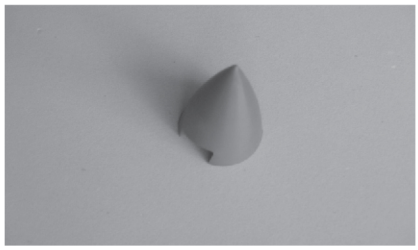
Part No: TGP0360B TGP0360B
Canopy(blue)) Canopy(red)



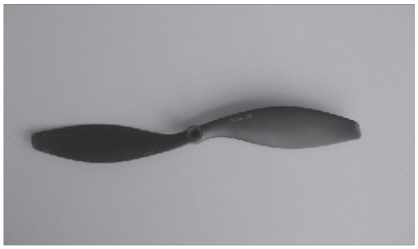
Part No: TGP0361B TGP0361R
Tail wings(blue) Tail wings(red)



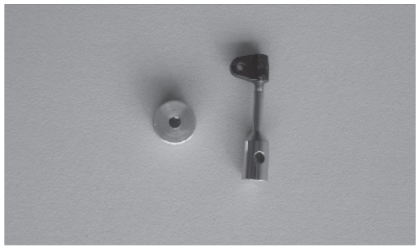
Part No: TGP0362
Landing gear



Part No: TGP0363
spinner

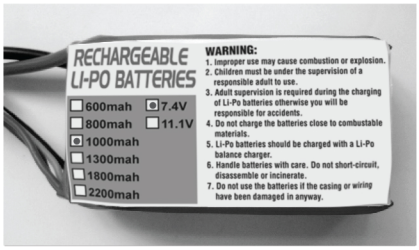


Part No: TGP0364
Propellor

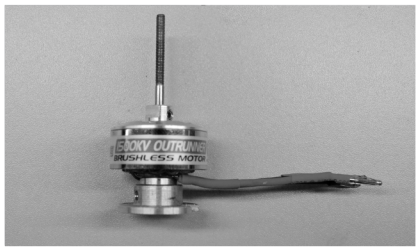


Part No: TGP0365
screws set

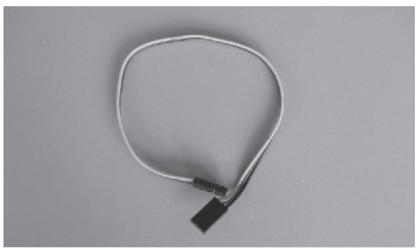
Part No: ET0152
12A Brushless ESC



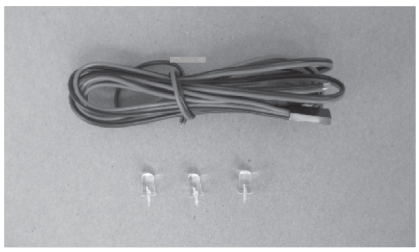
Part No: TGP0372
7.4V 1000mAh LiPo Battery



Part No: TGP0374
1500 kV Motor



Part No: TGP0366
connector wire



Part No: TGP03667
LED lights

Learning to Fly RC Aircraft: The Basics

GETTING STARTED

These instructions are an extremely basic introduction to the exciting hobby of flying radio controlled aeroplanes and the science of aerodynamics. We recommend that beginners visit their local model flying club for first hand guidance and training in the safe use and operation of flying models.

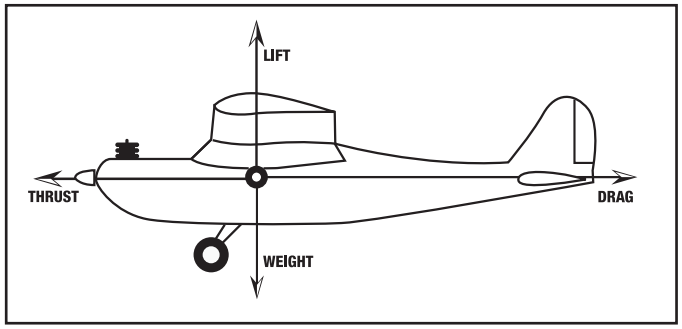
Further guidance on aerodynamics is available from specialist publications and monthly magazines with a great deal of useful information available from the internet. The BMFA provides new members with an excellent flying handbook 'UP & AWAY' that is highly recommended reading.

Please take time to read through these instructions and definitions.

Flying – Basic aerodynamics

Flight requires a balance of FOUR primary forces and these are Weight, Thrust, Lift, and Drag.

Weight is a term that everyone understands and is one of the few parameters that we can readily put figures to. Placing the complete



model on a set of kitchen scales gives us a figure for weight. For the aeroplane to fly the wing must provide lift at least equal to the weight.

Lift is created by the wing travelling through air, the faster the wing travels the more lift it provides and similarly the slower it travels the less lift it produces. The shape formed as a cross section through the wing is called the aerofoil. Aerofoils are carefully designed to provide the best compromise of strength, lift, speed and drag. Trainers tend to use low speed, medium lift aerofoils with soft stalling characteristics. The fin/rudder and tailpane/elevator are also classed as aerofoils even if they are flat in cross section. The control surfaces on the wing, rudder and elevator change the aerofoils shape and hence lift, causing the model to roll, yaw or rotate in pitch.

Drag is a term used to describe the resistance of the air over the wings, fuselage and all other parts of the airframe. Drag is the biggest feature that limits the maximum speed of a model. Trainers and beginners models tend to be quite draggy to limit top speeds.

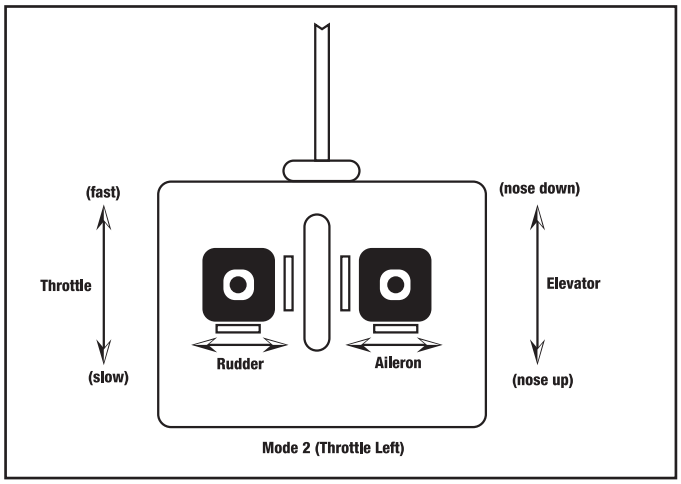
Thrust is obtained from the propeller, ducted fan or by using the earth's gravity to dive and convert height into speed. To fly our trimmed model straight and level, thrust must equal drag and lift must equal weight.

It is vitally important that you understand these four simple forces and how they interact because applying any control input will affect the balance of forces and in turn the models behaviour. For instance: increasing power will give an increase in thrust and speed, as the speed increases the lift too will increase and the model will begin to climb. If no down elevator input is made the model will continue to climb until it slows. As the speed reduces the wing loses lift and the model can stall.

The Transmitter & Control Surfaces.

Looking at the transmitter you will note that the throttle stick is fitted with a ratchet to hold its set position. All other axes of stick movement incorporate a spring return to the centre or neutral position.

Alongside each of the sticks and in line with each axis of stick movement is a small slide control, these are the trims and are used to input and hold small corrections, effectively altering the servo centre



or neutral position.

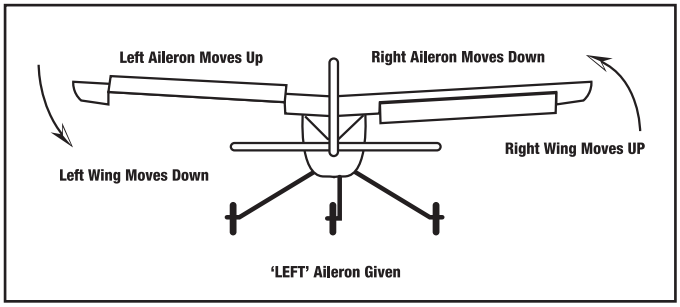
Viewed from the rear of the model the following control surface movements apply relative to stick movements

Throttle is used to control the amount of power with stick fully forward being full power and fully back being stop. The Primary function of the throttle is to control the rate of climb or descent. Most beginners consider throttle to be the speed control but this is a secondary function. On a trimmed model speed will only increase with more throttle when combined with some down elevator input. Full power is used for take off, steep climbs and aerobatics. Cruise throttle

is around half way. Reducing power on a trimmed model will cause it to slow and descend.

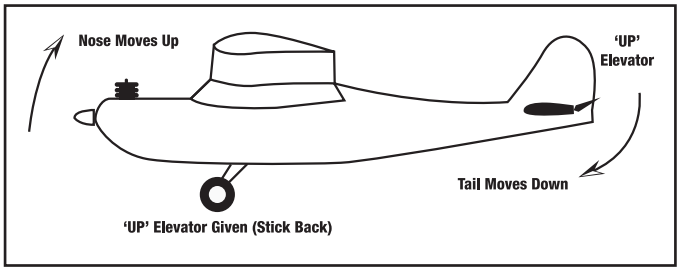
Aileron controls the aircrafts ROLL axis, which controls the wings angle to the horizon. Tilting the wing creates a turning force. Applying left input on the stick makes the left aileron rise and right aileron fall, causing the wing to tilt to the left. On simple models rolling the model causes it to turn. More advanced models need up elevator to be applied to pull the model through the turn (known as bank and yank).

Elevator controls the aircrafts longitudinal PITCH, ie its nose up or

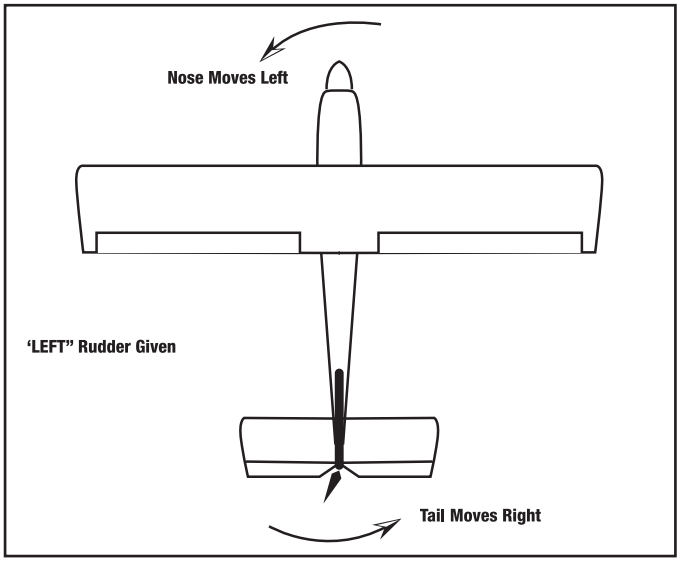


nose down attitude. This in turn controls speed and the wings angle of attack. Pushing the stick forward is down elevator and back stick is up elevator. In flight up elevator forces the tail down and nose up, notionally pivoting through the balance point. This changes the wings angle of attack will give an increase in lift and drag, the model may climb slightly and will then slow down unless more power is applied. Continued application of up elevator will cause the model to slow to a point where there is insufficient air flow over the wing and the model will stall and fall towards the ground.

Rudder controls YAW, which controls direction of travel or



heading. On training models the rudder is primarily used for ground steering. On high wing and large span models the rudder can be used to assist the ailerons in turning. Left rudder makes the surface deflect to the left (viewed from the rear) which pushes the tail to the right and the nose of the aircraft moves left.



Footnote

Controlling an aero plane is very different from driving a car or sailing a boat. While the transmitter's controls look similar the balance of forces and movement in 3 axes adds a great deal of complexity. An experienced model pilot will use a combination of all four controls to perform a smooth constant height, constant speed turn and will continually adjusting the sticks to make the model fly smoothly through circuits and aerobatics.

FLYING

Pre-Flight

If flying at an authorised site follow the frequency control procedures before switching on the transmitter and extend the telescopic antenna. Always switch on the transmitter before the model.

Before attempting to fly ensure that the batteries are healthy and fully charged. Do a final check of the controls; are they level and moving in the correct directions? Is the aircraft assembled correctly or damaged in any way?

R.O.G

To take off from the ground (R.O.G = Rise Off Ground) requires a closely cut smooth grass or a hard runway. The model should be lined up into wind and the throttle slowly advanced to full power as the model accelerates along the runway. Rudder should be used to steer the model during the take off run. Allow the model to build up to its maximum speed and it should rise off the ground without further input. If the model will not unstick, even at top speed, apply a touch of up elevator to lift the wheels off the floor then immediately release the control. Models with a tail wheel may initially require a touch of up elevator to prevent nosing over as they accelerate. This up elevator must be released as the speed increases. Concentrate on keeping the wings level as the model climbs to a safe altitude.

Hand launch

It is best to use a helper when hand launching, you need to keep both hands on the transmitter. The model should be held at or near to the balance point and launched into wind at full throttle towards the distant horizon with the wings level.

Do not attempt a javelin style launch; the model must not be thrown up into the air. An extended over arm launch at a walking pace is all that is required.

If the model sinks from the initial launch do not panic and do not apply up elevator, allow the propeller and gravity to accelerate the aircraft to flying speed and concentrate on keeping the wings level.

If the launch is too strong the model may pitch up steeply; quickly apply some down elevator to prevent the wing from stalling.

Climbout

Aim to maintain a gentle climb angle by reducing throttle or applying a little down elevator. Do not apply any aileron or rudder input unless it is absolutely necessary to keep the wings level. Only start turning the model when it has achieved some altitude and be very gentle on the controls. Note any stick inputs that are being held in to fly the model, these will be the starting adjustments required when adjusting the trims.

Trimming

A trimmed model will fly straight and level with hands off the controls, neither turning nor climbing on a fixed power setting. To trim the model fly to a safe height of perhaps 50 to 60m altitude and slowly reduce power one click at a time until the model stops climbing and levels out. Adjust each of the trims to allow the model to

fly straight and level without any stick inputs. This may require a few clicks on the aileron and elevator trims.

Turning

To turn you tilt the wing in the direction that you want by gently applying aileron in the direction of turn. Aim to tilt the wing no more than 20 degrees from the horizon. The plane will turn for as long as the wing is tilted. Unlike a car or boat you do not need to keep holding the control stick to maintain the turn, the control stick will be at or near to NEUTRAL during the turn. Tilting the wing has the effect of splitting the lifting forces between the vertical lift and sideways lift that allows the model to turn. With less vertical lift, the same thrust and weight the model will begin to descend during the turn. As it descends the model gains airspeed from gravity and the wings lift increases, reducing the rate of descent. To stop turning gently apply opposite aileron to level the wings. When the wings are leveled out the increased airspeed causes extra lift and the model climbs until the speed bleeds off. The control movements need to be smooth and gentle to prevent over control. Most trainers or beginner's planes are high wing and have built-in stability that will level the wing (given enough height) if you let go of the control stick.

Circuits

With the model trimmed out continue the flight as a learning exercise in preparation of the landing phase. Fly the model in large circuits over flying the take off and landing area while experimenting with throttle settings to practice climbs and descents. To prevent becoming handed fly figure of eight circuits to give equal numbers of left and right turns.

Landing

When it comes to flying model aircraft there is only one compulsory manoeuver and that is the landing. Whatever happens, we know that it is coming back down; our aim is to bring it down in a safe, controlled and undamaged manner. Following a successful flight we should have a stable trimmed model that climbs on increasing power and descends on reduced power. Landings must always be into the wind to reduce groundspeed. Line up the model with the runway and reduce power to lose altitude, adjust the power as necessary to control the sink rate and fly the model with the wings level until it is just inches off the ground. Cut the power and apply a gentle dab of up elevator to stall (flare) the wing and the model will settle on its wheels.

Deadstick – emergency landing

Electric models have an inbuilt protection circuit to prevent the batteries from over discharging. If the motor cuts unexpectedly during flight do not panic but remember the four forces in balance. If the motor does not provide thrust the trimmed model will slow, lift will reduce and the model will descend to build up air speed. The model effectively becomes a glider and can be flown under full control to a safe landing. Do not apply up elevator but steer the model into wind to reduce its groundspeed and keep the wings level to maximize lift until it touches down. Do not worry about landing the model on the runway, instead concentrate on keeping the wings level as it nears the ground. Only turn at high altitude and do not use the elevator until the final flare. Remember that It is better to walk 100m to fetch the model than 10m to pick up the bits.

Post Flight

Collect your model from the landing area and switch off- remove the battery before turning off the transmitter.

Check the trim positions and mechanically adjust the control surfaces as detailed in the instructions to maintain their trimmed positions when the transmitter trims are centered.

TOP 10 FLYING TIPS FOR BEGINNERS

1. Choose a BIG flying field for your first flights. You will need lots of open and unobstructed space for your first flights. An authorized club site is always the best option as you can get help from a competent flyer or instructor.

2. Use a simulator, it will condition your reflexes to the stick movements required and save damage to your model. A simulator is not a substitute for an experienced instructor.

3. Always check your controls before take off. Elevator up-down, aileron left-right, rudder left-right, and throttle fast-slow.

4. Only fly your aircraft once you are insured and if it is safe to do so.

5. Always takeoff and land your airplane into the wind.

6. If you hand launch your airplane throw it hard into the wind and throw it straight ahead, not up.

7. If you take off from the ground let the airplane reach maximum speed before applying "UP" elevator, When it leaves theground try to climb at a very small angle, a steep climb will reduce airspeed and may result in a stall.

8. Always fly facing the wind so that the model is blown back towards you. If you fly downwind the model can quickly disappear in the distance.

9. Be gentle on the sticks and use small smooth movements. Remember that once trimmed the model should fly at around half throttle straight and level without any stick inputs.

10. if you lose control or orientation, concentrate on leveling the wings only. The model should recover if it has enough height allowing you time to establish the next course of action.

GLOSSARY & DEFINITIONS

Aileron

Control surfaces at the trailing edge of the wing. Surfaces deflect up & down on opposite sides of the wing to provide a rolling force. Right roll is right aileron up, left down (viewed from rear).

Airspeed

The true flying speed of an aircraft in a mass of air.
A trimmed model flys at a constant speed in a moving mass of air although it may appear slower when viewed from the ground. See ground speed.

Angle of Attack (AoA)

The direction that the wing is travelling through the air. This is not always the direction that the models nose is pointing.

Cruise speed.

A point somewhere between the stall and maximum speeds, normally around half throttle so the model flies slowly but well above the stall speed.

Deadstick

The term used when the engine- motor cuts. Electric models have an inbuilt protection circuit to prevent the batteries from over discharging. If the motor cuts unexpectedly during flight do not panic but remember the four forces in balance. If the motor does not provide thrust the trimmed model will slow, lift will reduce ands the model will descend to build up air speed. The model effectively becomes a glider and can be flown under full control to a safe landing. Do not apply up elevator but steer the model into wind to reduce its groundspeed and keep the wings level to maximize lift until it touches down.

Elevator

Control surfaces at the trailing edge of the tail plane. Surfaces deflect up & down to control the vertical pitch and speed of the model.

Ground speed

The models speed as seen by the pilot and compared to the ground. Despite flying at a constant airspeed the model appears to fly faster downwind than it does across or against the wind. For instance, a model cruising at an airspeed of 30mph is flying in a wind of 15mph. Flying against the wind the model passes the pilot at its constant airspeed of 30mph but its ground speed is just 15mph (30mph - 15mph). Turning down wind at the end of the strip the model now passes the pilot at its constant airspeed of 30mph but its ground speed is now 45mph (30mph + 15mph).The groundspeed is three times faster downwind than upwind!

Maximum speed

The top speed that the model will attain at full power. Maximum speed is affected by flight attitude since at full power the model will fly considerably slower when climbing and a lot faster in a dive

Rudder

Control surfaces at the trailing edge of the vertical fin. Surfaces deflect left or right to control the yaw or heading of the model.

Stall

If the model is flown too slowly or the AoA is too great the airflow reaches a point where it can no longer follow the top surface of the wing and the flow breaks away giving a loss of lift.

Throttle

Controls motor power and thrust to adjust the rate of climb or descent.

Notes:

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