PBY Catalina 1900mm Flying Boat

Assembly Manual

PNF
PLUG N FLY

Please read this manual carefully before operating this aircraft

CATALINA

PBY5-A,USCG,1900MM,PNF

FEATURES:

- A stand-off scale model of the legendary PBY Catalina flying boat
- Scale, electronic retractable tip floats
- Mounting options for a servo operated nose turret
- It has the ability to take off from water or grass surfaces with ease
- Click on system for the wing tips w/quick connections for the aileron servos
- Optional water rudder included
- Stunning US Coastguard scheme
- Day bright LED lights
- Large canopy/battery hatch
- Counter rotating props for better handling and safety
- Supplied with pre-installed 40A Aerostar G2 RVS ESCs w/reverse function

CONTENTS OF MANUAL:

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⚠ WARNING:

Read this instruction manual fully so as to become completely familiar with the features of this product before operating. Failure to operate this product correctly could result in damage to the product, personal property and cause serious injury. This is a sophisticated hobby product and is NOT a toy. It must always be operated with caution, common sense and some basic mechanical ability. This manual provides instructions on the assembly, safe operation and maintenance of this hobby product. It is highly recommended that you read, and follow fully the instructions and warnings stated in this manual. This includes the safety, assembly, set-up, and flying guidelines in order to operate this product correctly to avoid damage or serious injury.

SAFETY PRECAUTIONS:

As the user of this product you and you alone are responsible for operating it in a manner that does not endanger yourself and others around you or result in damage to the product or property of others. This product is operated via a radio controlled system that in some cases can be subject to interference from sources outside of your control. Interference may result in a momentary loss of control so it is always recommended that this product be used in a suitably open outdoors space.

- This is a radio controlled flying model and as such must always be flown with caution and care. This is not a toy.
- This model is designed for intermediate to advanced pilots.
- Alway exercise great caution when using the recommended battery to power this product. For full safety notes and operating procedures, please see information provided by your battery supplier.
- Take great care when connecting/disconnecting the battery. See battery supplier for full safety procedures.
- Never power up the model in confined spaces and always keep the prop clear of obstructions.
- This product is not a toy. Children must be accompanied by a capable and responsible adult at all times if operating this product.
- Only fly this model in an open area away from crowds of people, buildings, trees, power lines, and other obstructions.
- Always put safety first when operating this model and consider the warnings stated above.
- The supplier/manufacturer accepts no responsibility for damage or injury caused through the use of the product. Not suitable for children under the age of 14. THIS IS NOT A TOY.

INTRODUCTION:

Avios has excelled yet again in bringing you an interesting and great flying high-quality RC model with the Avios PBY Catalina. Avios are at the forefront of floatplane/seaplane/flying boat technology, they have produced more types than any other manufacturer in this class of model. The Avios model captures the looks and great flying characteristics of the full-size plane with this stand-off scale model of the iconic WW2 seaplane. The Catalina was one of the most widely used seaplanes of the 2nd World War. It served with every branch of the United States Armed Forces, and the Avios version depicts a Catalina in the stunning US Coast Guard scheme.

The Catalina is full of outstanding features, these include a pair of scale, electronic retractable tip floats, counter-rotating props for excellent handling, scale outline with detailed surface finish, and mounting options for a servo-operated nose turret. Other features include a simple click on system for the wing tips with quick connections for the retractable wing tip floats, the aileron servos, and the day bright LED lights, there is also an optional water rudder. Both of the options, the turret and the water-rudder, will require the addition of a 9g servo; these are not supplied.

The Catalina has the ability to take off from water or grass surfaces with ease, and the included Aerostar RVS speed controllers make flying from water a breeze. They allow you to maneuver and taxi even in the more challenging conditions and situations that can be found on inland waters. The supplied optional water rudder also makes for increased maneuverability on the water, but if you set up differential thrust as explained further on in this manual, the fitting of the water rudder is not necessary.

Supplied as a PNF (Plug-N-Fly) model made in tough EPO foam, the Avios PBY Catalina includes the following factory-installed components. 2 x 3748-820KV brushless motors, 2 x Aerostar 40A G2 RVS instant reverse ESC, 2 x 10x6 3-blade scale looking propellers (CW & CCW), and 5 x 9g digital servos. Pre-installed quick connections in the removable wing tips for the wing servos and LED lights make for quick assembly at the field or disassembly for transport or storage, and the battery and radio access is also very easy, courtesy of a large access canopy hatch. The servos and wing float retraction system are splash-proof.

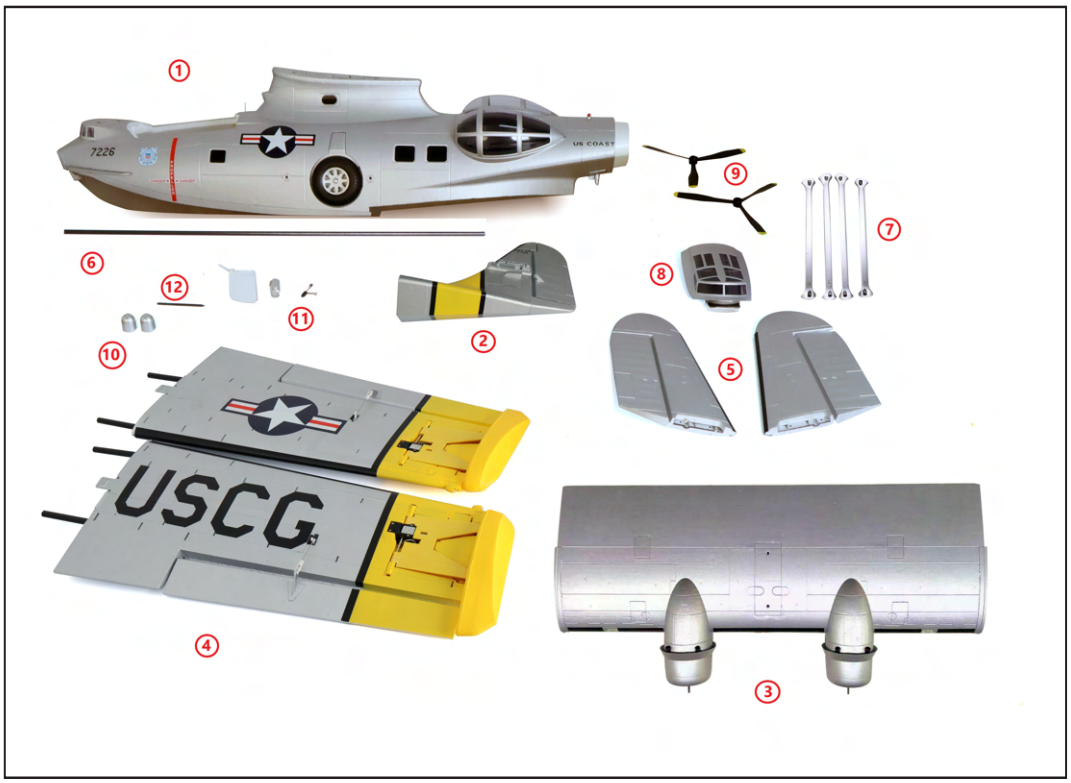
The initial assembly takes a little time as there is a bit of gluing to do, and there are a number of screws used, but once assembled it can pretty much be transported in one piece with the wing tips removed. As mentioned above, once at the field or lake, it is then just a simple matter of clipping the wing tips into place.

The AVIOS team hopes you enjoy putting together and flying your PBY Catalina, and they look forward to bringing you more exciting models in the near future.

CATALINA

PBY5-A,USCG,1900MM,PNF

CONTENTS OF KIT:



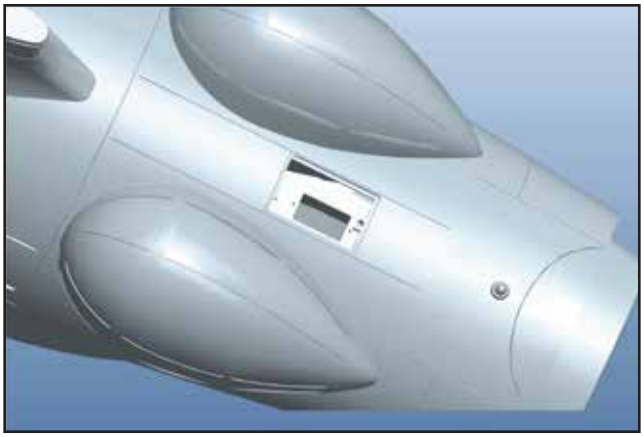
1. Main fuselage section
2. Tail section
3. Center wing section
4. Out wing tips w/floats
5. Horizontal stabilizers
6. Horizontal stabilizer spar
7. Wing struts
8. Canopy/battery hatch
9. 10x6 propellers (CW & CCW)
10. Propeller spinner nuts
11. Water rudder parts
12. Cannon for front turret

SPECIFICATIONS:

- Wingspan: 1900mm (75")
- Length: 1174mm (46")
- Motor: 2 x 3748-820KV
- ESC: 2 x Aerostar 40A G2 RVS
- Servo: 5 x 9g digital
- Propeller: 2 x 10x6E (1 x CW, 1 x CCW)
- Battery: 4S (14.8V) 3200~4500mAh w/XT60 connector (not supplied)
- All Up Weight: 3100g (6.8lb)

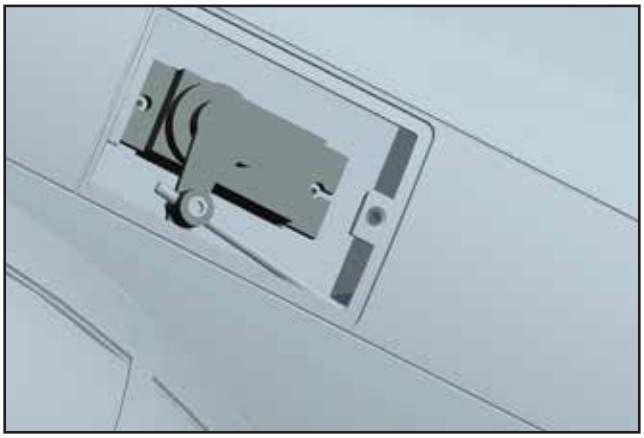
SPECIFICATIONS:

Important Note: The first stage in the assembly of the Catalina is the joining together of the two fuselage halves. However, if you have opted to fit the optional water-rudder this must be done first. So, the first steps below show the fitting of the water-rudder, if you have chosen not to install this assembly then move straight onto step 11.



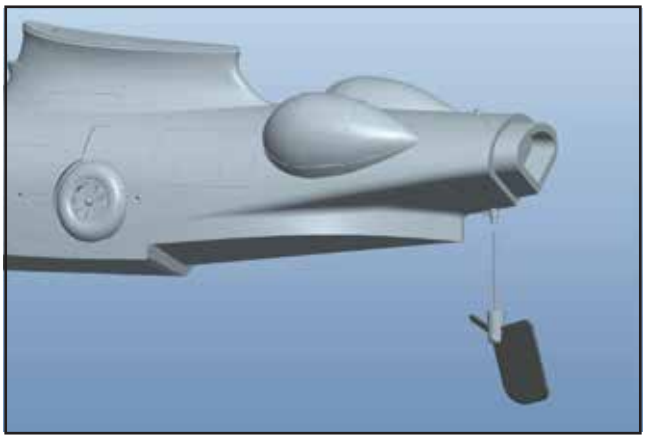
1. Remove the rudder servo access hatch that is between the two observation blisters.

2. Install a 9g servo, please note this is not supplied.



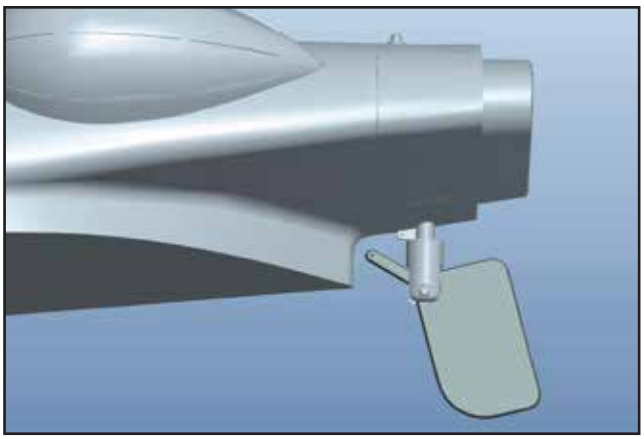
3. Attach an adjustable servo control connector to the servo horn.

4. Feed the water-rudder pushrod Z link onto the water-rudder control arm. Then feed the pushrod through the rear of the fuselage and into the adjustable servo connector, leave the hex grubscrew loose for now in the servo connector.

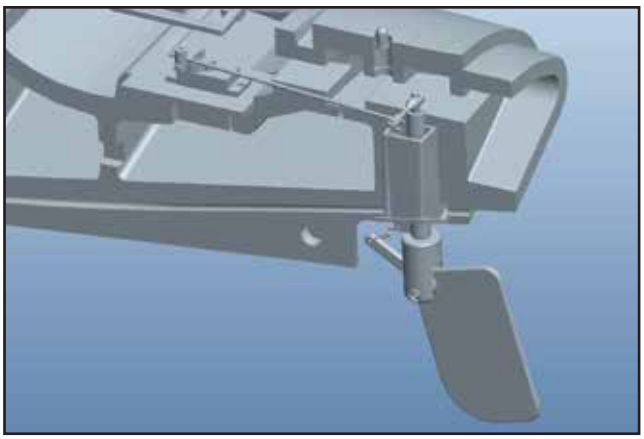


5. Insert the rudder shaft into the bearing in the rear of the front fuselage section, do not push all the way in at this point.

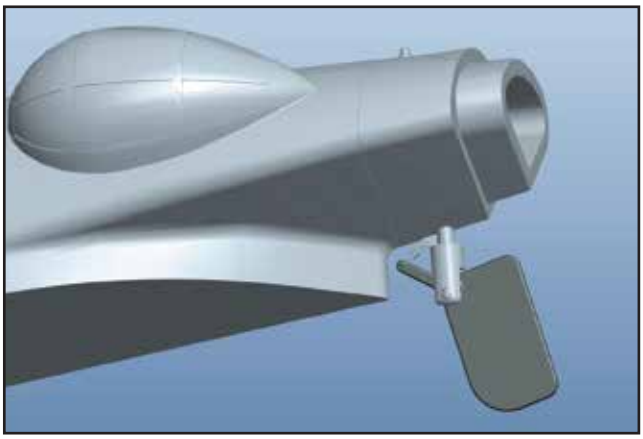
6. Position the water-rudder control arm above the exit in the bearing, then push the shaft through the hole in the control arm. Once the shaft is through the control arm lock the arm to the shaft using the hex grubscrew.



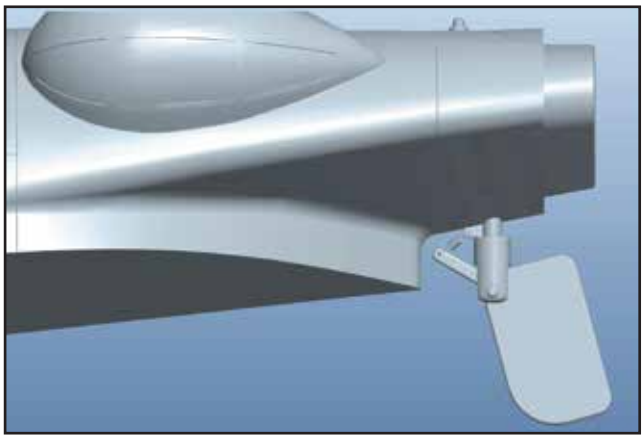
7. Ensure the arm is set at 90° to the rudder when tightening the screw. Also make sure that the rudder shaft does not bind, or move up and down.



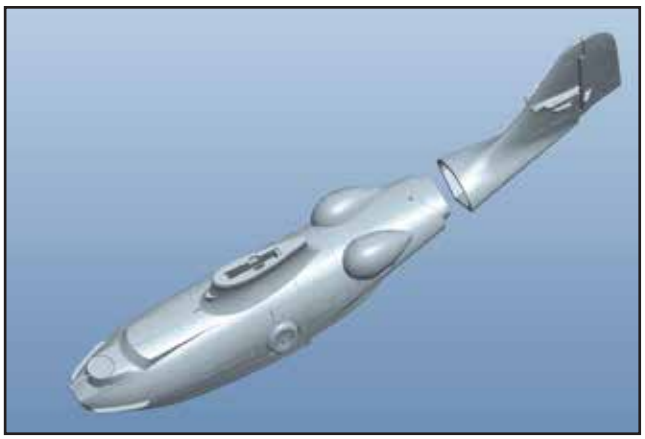
8. Make sure your water-rudder servo has been centered, then tighten the hex grubscrew in the servo control connector. Ensure the rudder stays straight with the line of the fuselage as you tighten the screw.



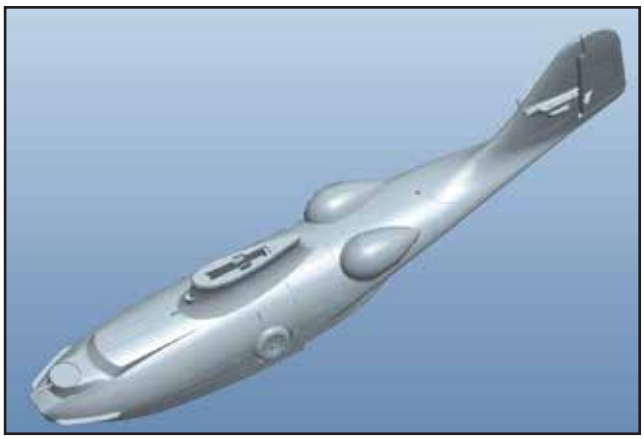
9. Fit the safety/return spring to the shaft and the rudder as shown.



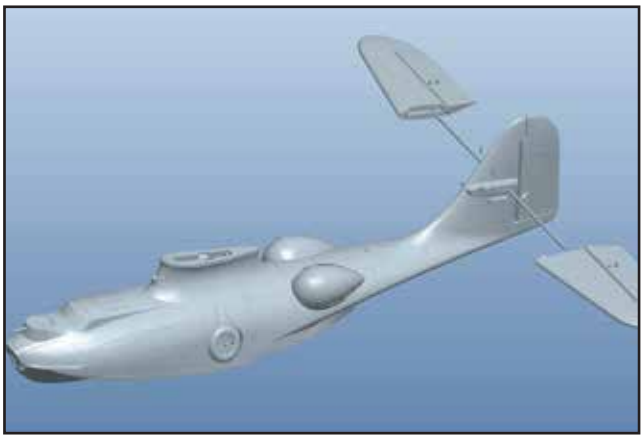
10. The water-rudder assembly is now complete.



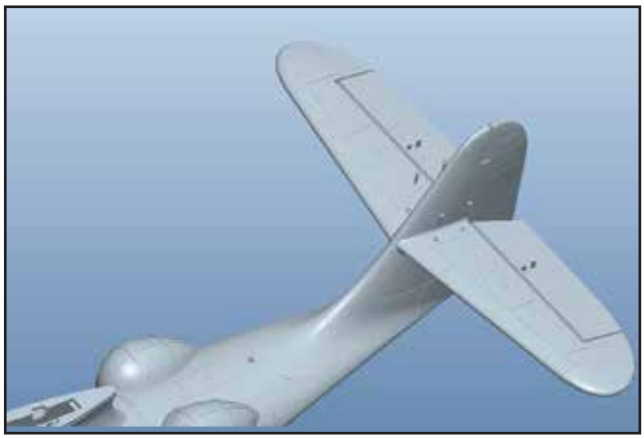
11. Use a good quality foam glue to join the rear fuselage half to the front, ensure that it stays aligned while the glue sets. We recommend that while the glue is drying you stand the assembly on its nose so that the weight of the rear half keeps the joint tight. If using a slow setting glue, then leave to set overnight. Don't forget to feed the cables from the tail servos through to the RC compartment before gluing together.



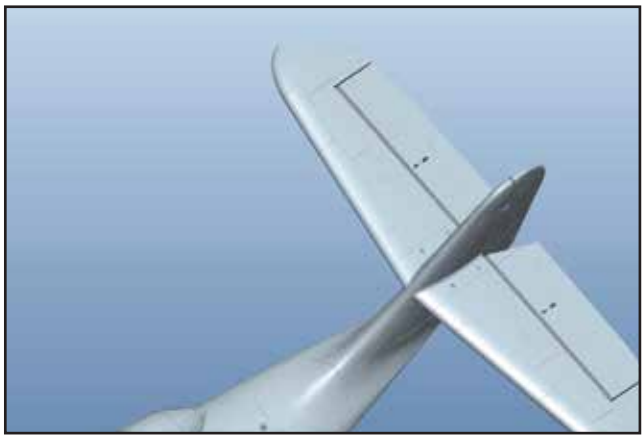
12. Once the joint has fully set, cover the joint with the supplied color matching tape.



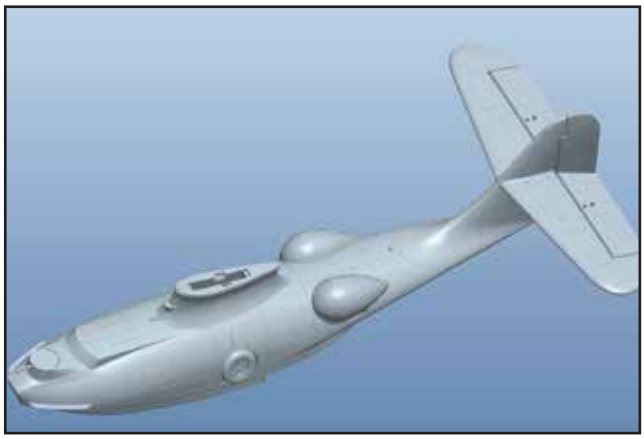
13. The next step is to fit the horizontal stabilizers, first slide the supplied spar through the fuselage as shown above.



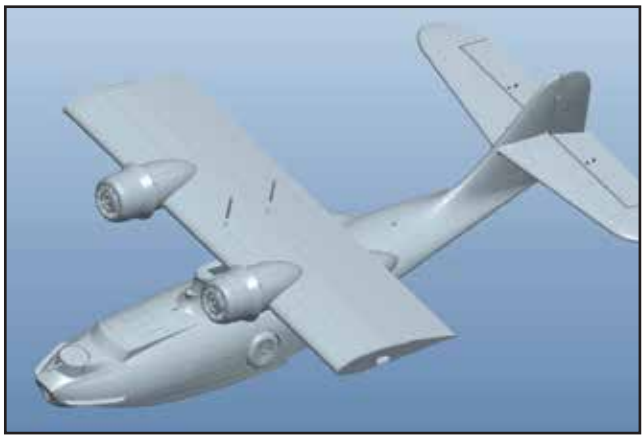
14. Slide into position the 2 horizontal stabilizer halves, making sure you connect the elevator servo leads.



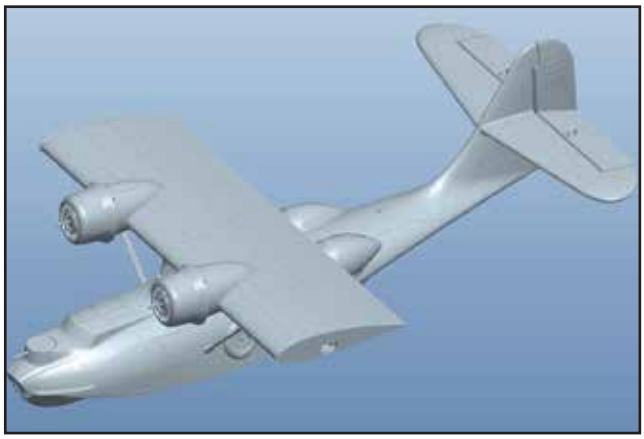
15. Secure the 2 stabilizer halves using the 4 3mmx16mm hex-head self-tapping screws supplied (2 each side).



16. This assembly can be glued as well for extra security if you wish.

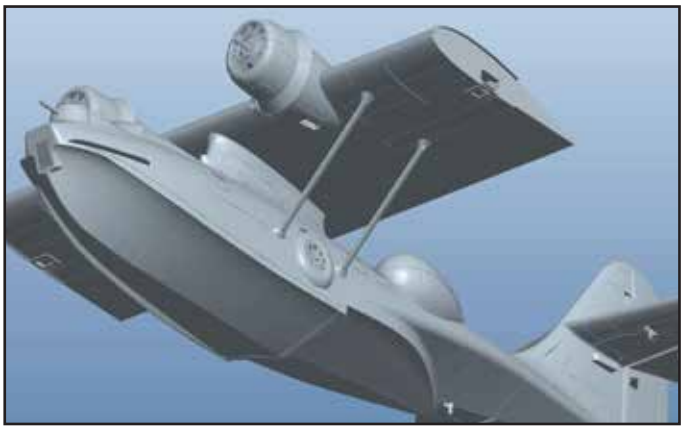


17. Position the wing center section on the fuselage wing pylon, please make sure you feed the cables from the wing into the fuselage RC compartment.

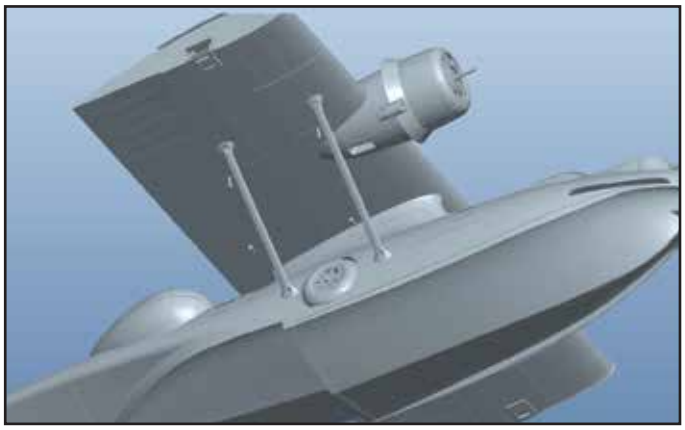


18. Secure the wing center section with the 2 M4x45mm hex-head screws provided.

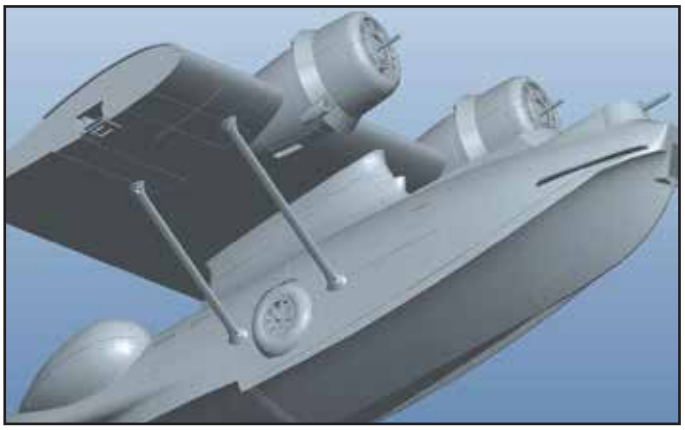
18. The next step is to attach the wing struts, the slightly longer ones go at the front, and the slightly shorter ones to the rear. Start with the lefthand side.



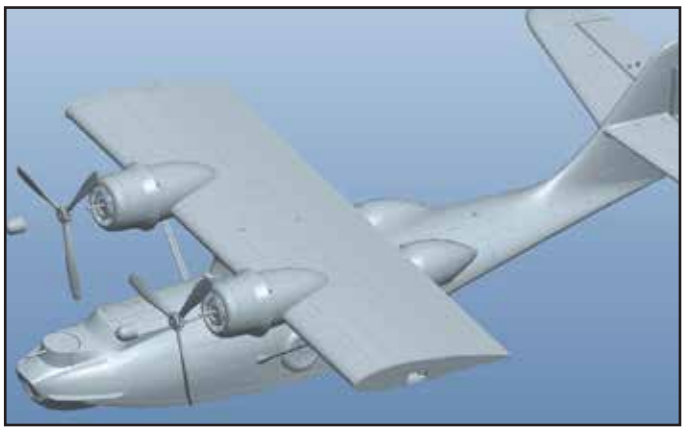
19. Retain the lefthand struts using the 4 3mmx16mm hex head self-tapping screws provided.



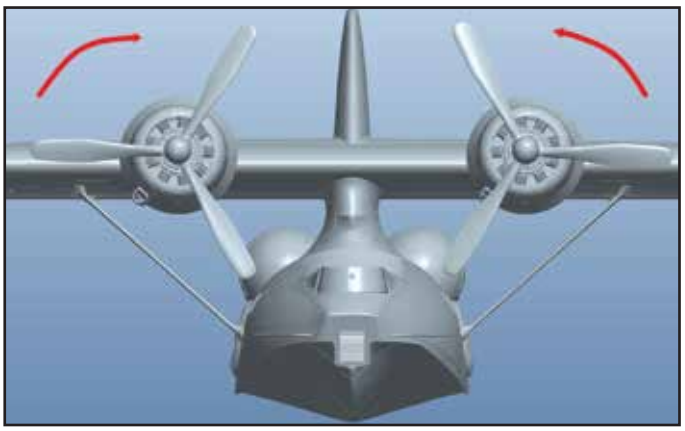
20. Attach the righthand side struts.



21. Retain the righthand struts using the 4 3mmx16mm hex head self-tapping screws provided.

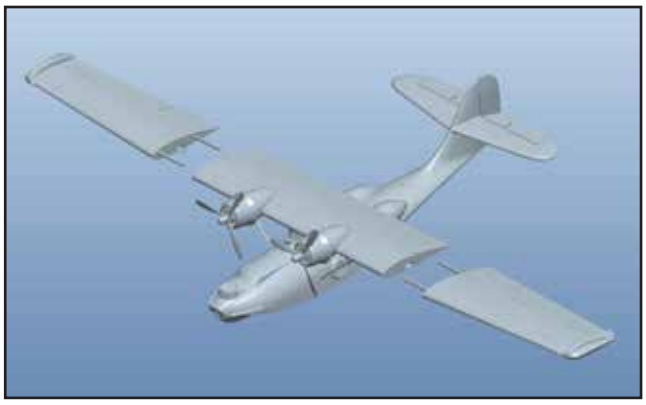


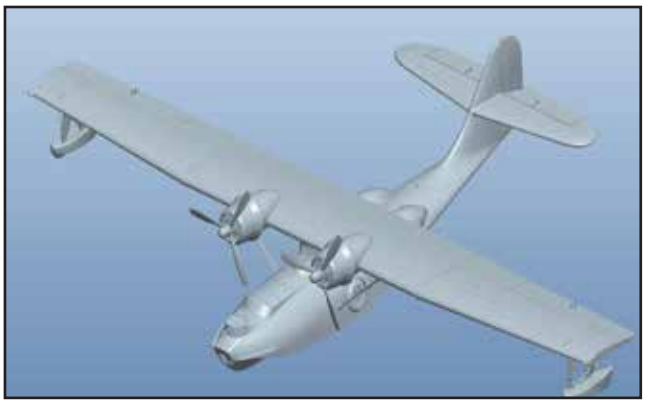
22. The next step is to fit the props, these rotate towards the fuselage. Looking from the front the lefthand prop rotates counter-clockwise, and the righthand prop rotates clockwise.



23. Secure the props using the spinner nuts provided. It is recommended that the fitting of the props is held off until you have set up your radio and the control throws, etc.

Note: When screwing on the spinners, if a spinner does not screw all the way down tight onto the prop, then follow this step. Using an M3 bolt, screw it in firmly into the spinner thread, this will clear the thread of any plastic. It will then allow the spinner to screw down fully onto the prop by hand.



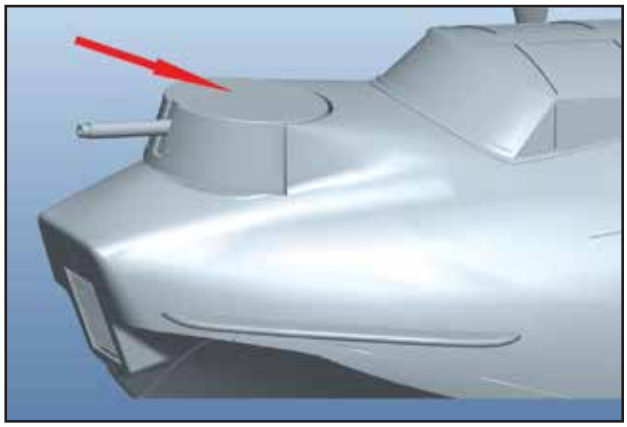


24. The last step in the basic assembly is the fitting of the wing tips, using the supplied spars, these slide into the center section.

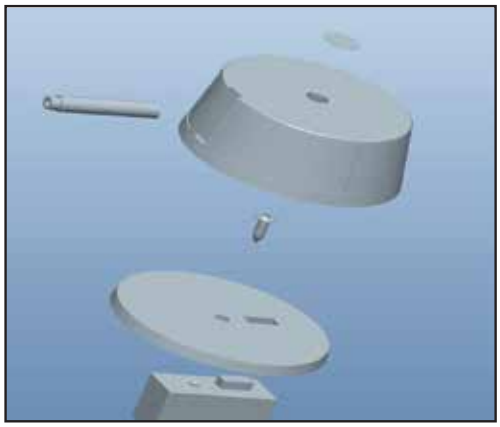
25. Ensure the connectors line up correctly and the tips click firmly into place. We have found that in some instances (very few) the clips may need a slight trim with a sharp modeling knife if they are a tight fit. Once the tips are fully located, if you wish to remove them, just press the release clip and they slide off.

The basic assembly of the Avios PBY Catalina is now complete. Further on in the manual are the instructions for the fitting of the optional servo operated rotating gun turret.

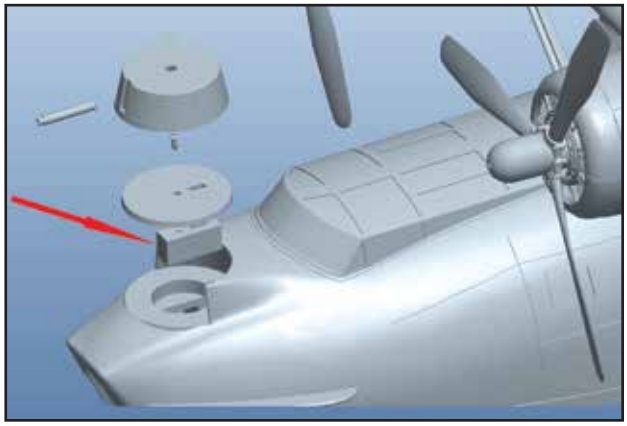
Installation of the optional servo operated nose gun turret



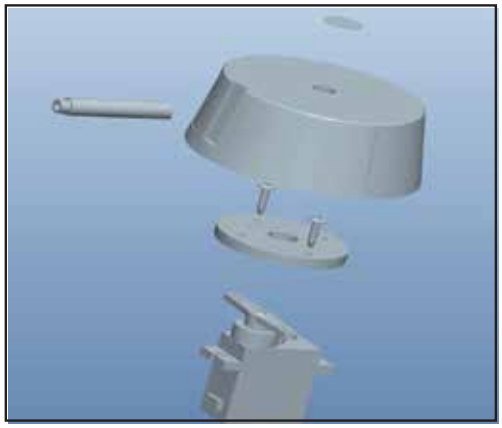
1. Peel off the silver sticker covering the screw hole on the top of the turret.



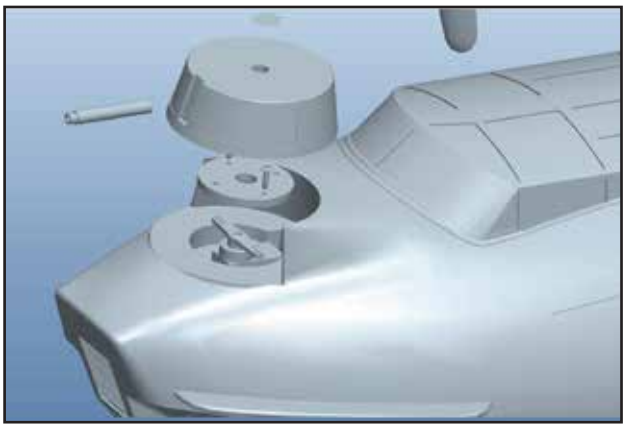
2. Insert a crosshead screwdriver into the hole and unscrew the plate that holds the turret in place.



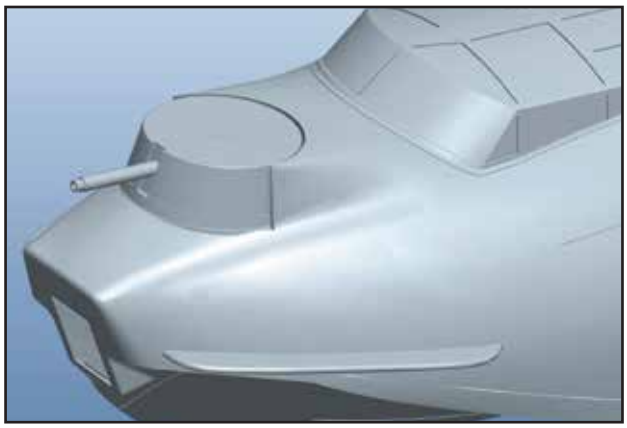
3. Remove the insert shown by the arrow in the picture above to reveal a recess for a 9g servo (not supplied).



4. Attach the plywood disc (supplied) to the servo arm of your servo using 2 screws as shown.



5. Feed the servo lead through into the RC compartment and re-assemble the turret as shown.



6. Glue into place the gun barrel as shown.

SETTING UP THE PBY CATALINA :

1. Install your receiver and connect the servos into their corresponding channels. Also, the PBY Catalina has LED lights which will need plugging into a spare channel on your receiver or a Y-Lead.

It is also worth noting at this point that if you wish to make use of differential thrust on the twin motors then you will need to follow these steps. Do not use the supplied Y-lead, connect one ESC to your normal throttle channel, and one ESC to an auxillary channel on your receiver separate channel on your receiver. Differential thrust requires the use of two separate throttle channels which are then mixed in your transmitter. There are some notes further on concerning a basic mixing setup.

Aerostar ESC Start-up Procedure.

1. Turn on your transmitter and set the throttle to the low/off position.
2. Connect your flight battery to the model.
3. The motor will beep 4 times denoting a 4S has been connected.
4. When the motor emits 2 beeps, the self-test procedure has finished and the ESC is ready to go.

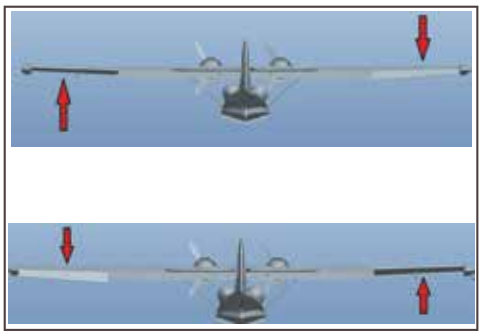
The Reversing lead (RVS) will be marked from the servo box in the wing. The RVS function requires a spare channel with a 2 position switch assigned to it. Simply plug the RVS lead from the wing mounted servo box into the spare channel, and when you flick your 2 position switch you should see RVS activated (when motor is at 50% throttle or lower).

If for any reason the RVS function of your ESCs has not been set, then please download a copy of the Aerostar RVS manual from the HobbyKing website which details how to set this function.

4. Check that all the control surfaces are moving in the correct direction when operated by the transmitter as shown below.

Roll left

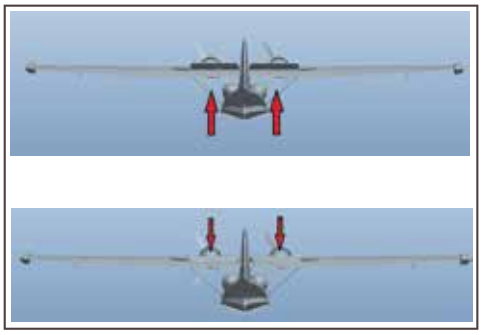
Roll right



Aileron (Roll)

Pitch up

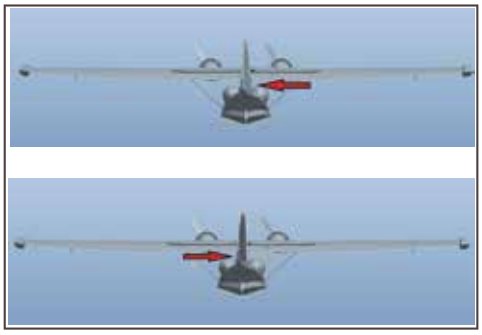
Pitch down



Elevator (Pitch)

Yaw left

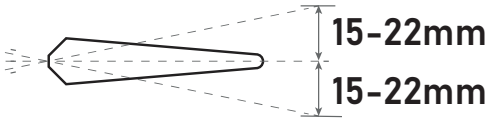
Yaw right



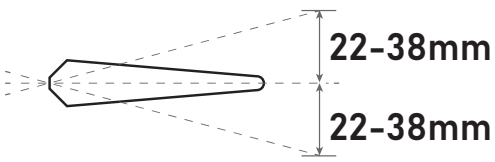
Rudder (Yaw)

CONTROL THROWA LOW-HIGH :

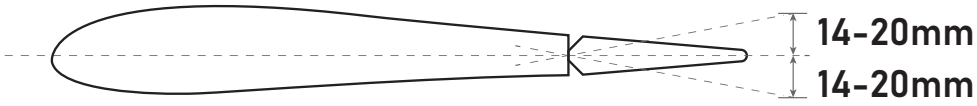
Elevator low 15mm, high 22mm



Rudder low 22mm high 38mm



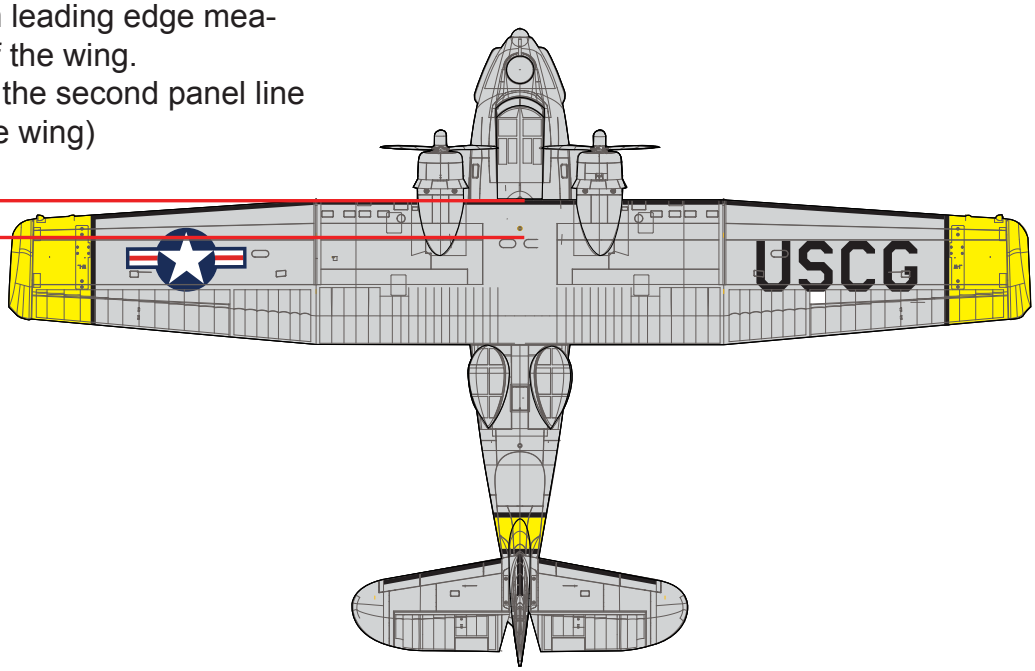
Aileron low 14mm, high 20mm



CG LOCATION :

C of G is 75-80mm from leading edge measured from the center of the wing.
(which is approximately the second panel line back from the L/E on the wing)

C of G 75-80mm



EXAMPLE OF OPTIONAL DIFFERENTIAL THRUST SETUP :

For those of you with radio's that allow mixing of channels you can set-up differential thrust on the motors. This makes it even more fun to fly, but more importantly it helps immensely if you are operating of off water with the floats fitted. You need a radio that has at least 3 "Free Mixers", that is 3 mixers where you can assign which channels you want to mix rather than pre-set mixers. You will also require a minimum of a 6ch radio and receiver so that you have an AUX 1 channel available. We cannot go into all the different types of radio's and how they are mixed but we have given some guidelines below which should help.

1. First thing you need to do as mentioned above is to remove one of the ESC servo plugs from the wing mounted distribution box and connect it into AUX 1 on your receiver. You then need to plug the other lead into your throttle channel.

2. The first mixer you need to make is "Throttle to AUX1". So Mixer 1 is THR>AUX1. Rate will be + or - 100%, Offset + or - 100%, Trim (Active) and Switch (On). If you have a display monitor on your transmitter then at this stage check that the throttle and AUX 1 channels move together. If they move in opposite directions reverse as necessary.

3. The second mixer you need to make is "Rudder to Throttle". So Mixer 2 is RUD>THR. Rate will be -25% both ways (you can use more but we have found this is more than sufficient), Offset 0%, Trim (Inhibit), Switch (Select the switch you prefer to use on your Tx such as "Gear", etc).

4. The third mixer you need to make is "Rudder to AUX1". So Mixer 3 is RUD>AUX1. Rate will be the same as you set in Mixer 2, ie: 25% each way or whatever you set, Offset 0%, Trim (Inhibit), Switch (same as you selected for Mixer 2). If you get stuck there are plenty of video's on YouTube which are very easy to follow for quite a few different makes of transmitter.

With assembly and set-up now complete, your Avios Twin Otter should be ready for flight. However we recommend your read and follow the advice given in the pages further on in this manual before flying your model.

MODEL FLYING PRECAUTIONS:

• Select your flying area carefully. Always choose an open space that is clear and not obstructed by trees, poles, pylons, and buildings etc. Also ensure you are away from people and crowded areas. Avoid flying in areas with roads, near water, or within close proximity to full size air traffic.
• Do not fly this model in poor weather, for example: high winds, low visibility, inclement temperatures, and rain and storms are also to be avoided.
• Never attempt to catch the model whilst it is in flight, even a slow moving model can cause harm to yourself and risks damage to the model.
• This model is not recommended for children under the age of 14 years old. All children no matter what age, should be supervised by a capable and responsible adult when operating this model.
• Always unplug your model battery when not in use, never leave the battery installed in the model.
• Please remember to keep clear of the propellers at all times when your flight battery is connected.
• Before flying, always turn ON your transmitter first, then plug your flight battery into the model.
• After flying, always unplug your battery first in the model and then turn OFF your transmitter.
• Exercise caution when charging your batteries, and follow in full your battery manufacturers safety guideline when doing so.

PRE-FLIGHT CHECKS:

1. Always range check your model before any flying. Follow your radio manufacturers guidelines for performing this check.
2. Check all screw and mounting points are firmly secured including control horns and clevises.
3. Only fly with fully charged batteries. Failure to do so could result in loss of control, damage to the model and possibly property around you. Make sure your batteries are fully charged.
4. With the model powered up check that all control surfaces are free from damage, moving in the correct directions and with no binding.
5. Inspect the model and props for any damage that may have occurred during transit to your flying site. Listen for any unusual sounds from the electronics when powered up, if in doubt, do not fly.
6. With the model held securely and the propellers free of obstructions, increase the throttle just slightly to confirm the rotation of the propellers is correct . The model should want to pull straight forward when the throttle is applied.
7. If this is your first flight with the model double check that the C of G is at the correct position. If not, adjust the battery position inside model as necessary.
8. If you are an inexperienced model pilot, seek the help and assistance of an experienced pilot to perform these final checks, and to test fly the model for you.

FLYING THE AVIOS PBY CATALINA.

Although not aimed at the beginner, the Catalina is a very straightforward aircraft to fly; its characteristics are very stable and forgiving in flight, and it will take off from water or from smooth grass. It looks superb in the air, and low passes over water really make it look the part. Whilst the full size was not aerobatic, the model performs all the usual aerobatic manoeuvres with ease, even inverted flight.

TAKING OFF FROM GRASS.

Have the wing tip floats in the down position and line the model up into wind and check all the controls to ensure they are functioning correctly and in the correct direction. Hold in a small amount of up elevator, then smoothly apply the power up to full throttle. Due to the contra-rotating props, there should be no swing; if there is, then correct with rudder and hold the wings level with the ailerons. It may need an extra tweak of up elevator to unstick, be careful not to overdo this or it could leap into the air and catch you unawares. Once airborne, retract the wing tip floats and climb to a satisfactory height, and get used to the Catalina; it is a joy and a delight to fly. Touch and goes are great fun, and can be done with the floats retracted or with them down. For landings, it is best to have them in the down position.

TAKING OFF FROM WATER.

If you haven't set up differential thrust, then the powerful water rudder will steer the Albatross quite easily while you are taxiing on the water. But differential thrust makes manoeuvring and taxiing even easier. Place the model in the water with the wing tip floats down, and check the controls and ensure they are functioning and operating in the correct direction. Once satisfied all the controls are working as they should, apply some up elevator and apply a small amount of power to get the Catalina moving across the water. Taxi out to the take-off area and line it up into wind. Apply full up elevator and smoothly advance the throttle, keeping the Catalina straight with rudder and the wings level with ailerons. Once on the step, reduce the elevator so that it balances on the step, then, when ready, the Catalina will lift itself off and climb away. Once climbing, retract the floats. Landing on the water is also very easy, lower the wing tip floats and line up with the landing area into wind. Reduce power to about 15-20% so that you have a gentle descent, round out about 1 or 2ft above the water, take the power off, and flare enough so that the step touches first in a slightly nose-up attitude. The Catalina will then very quickly settle onto the water.

TROUBLE SHOOTING:

• Motors do not run:
1. Battery is not fully charged (Charge the battery).
2. Transmitter battery is low (Charge or install a fully charged battery).
3. Motors are not connected properly (Check the motor to ESC connections and the ESC to battery connections.
4. Receiver is not bound to the transmitter (Consult your radio manual and go through the binding procedure.
5. ESC is in set-up mode (Hold model and move throttle up to full then back to idle, or reverse the throttle channel on your transmitter. Switch everything off before doing this). For ESC issues, refer to the Aerostar V2 G2 RVS manual on the HobbyKing website.

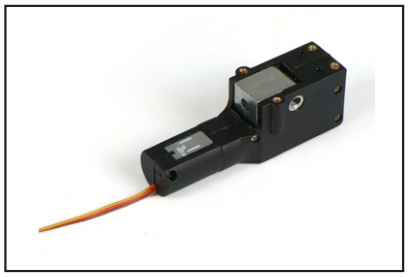
• Model moves backwards:
1. Propellers installed on the wrong motors (Swap the propellers around).
2. ESC's are in reverse mode (select normal mode on the auxiliary switch on your transmitter).

• Control surfaces not moving with stick input:
1. The servo leads are not connected properly (Check the servo connections).
2. The servo is damaged (Replace the servo).

• The model does not fly straight:
1. Control surfaces are not at neutral (Adjust the trims/sub trim on your transmitter).
2. C of G is not correct (Re-position the battery to achieve correct balance).

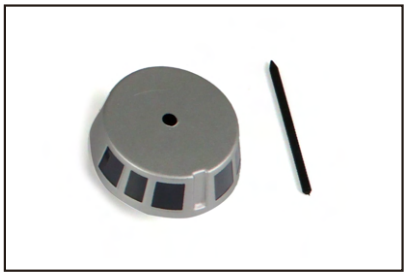
• Model does not climb well:
1. The battery is not fully charged (Charge the battery).
2. C of G to far forwards making it nose heavy (move battery backwards or add weight to tail).

SPARE PARTS:



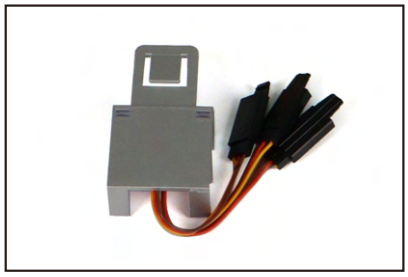
Wing Tip Float Retract Unit
SKU: 9310790527

Decal Set
SKU: 9310790544

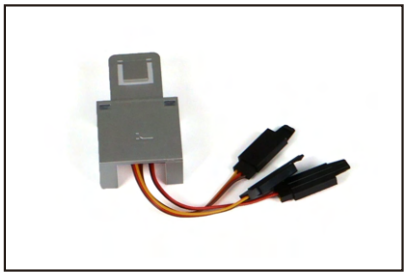


Nose Gun Turret Set
SKU: 9310790545

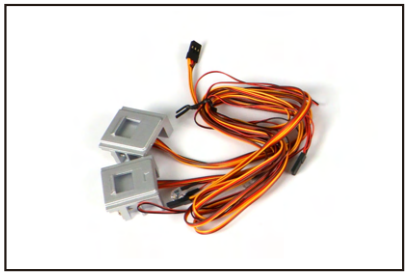
Rear Blister Canopies x 2
SKU: 9310790546



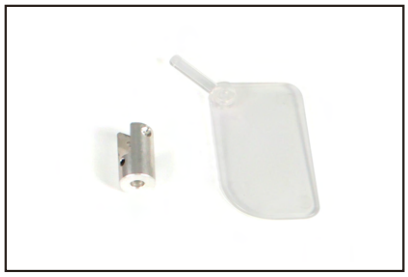
Left Outer Wing Connector Set SKU: 9310790547



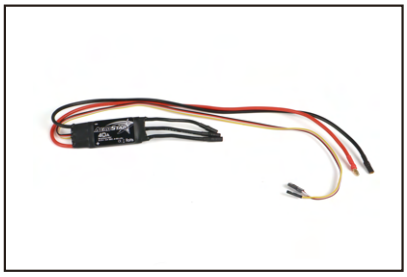
Right Outer Wing Connector Set SKU: 9310790548



Center Wing Panel Connector Set
SKU: 9310790549

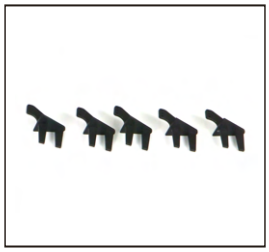


Water Rudder
SKU: 9310790550

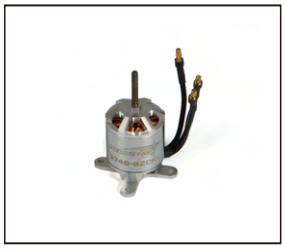


Aerostar 40A ESC
SKU: 9310790524

Horizontal Stabilizer Spar
SKU: 9310790552



Control Horns x 5
SKU: 9310790551



3748-820kv Motor
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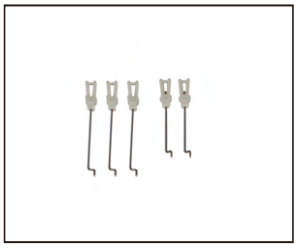
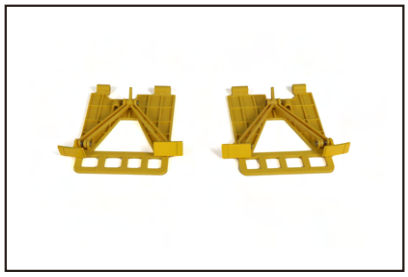


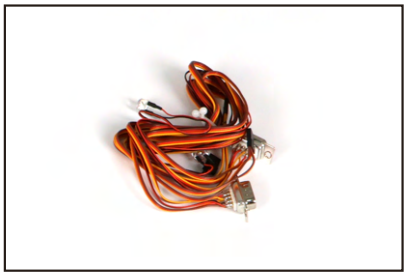
Pushrod set
SKU: 9310790523

SPARE PARTS:

Canopy/Battery Hatch
SKU: 9310790518

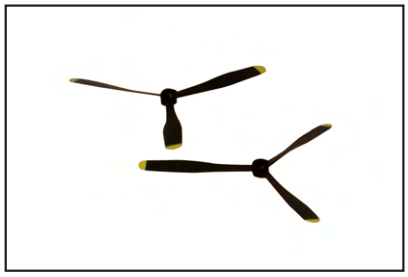


Wing Float Retract Set
SKU: 9310790525



LED Light Set
SKU: 9310790522

Spinner Nuts
SKU: 9310790521



Propeller Set
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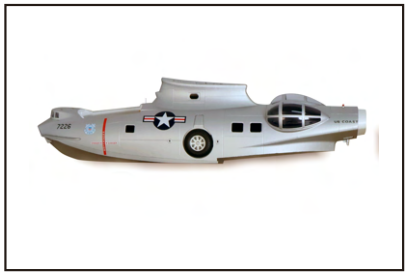
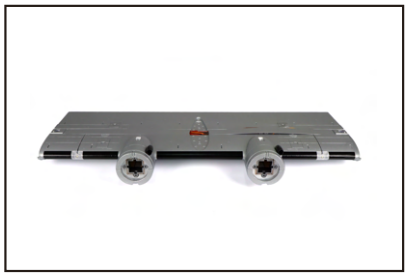
Motor Cowls
SKU: 9310790519



Main Fuselage
SKU: 9310790512

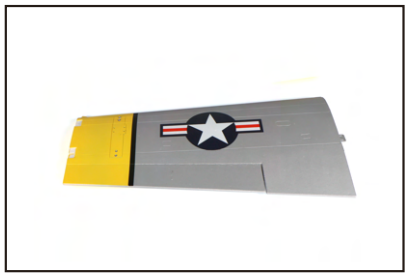
Tail Section
SKU: 9310790517

Horizontal Stabilizers
SKU: 9310790516



Wing Center Section
SKU: 9310790513

Left Outer Wing Panel
SKU: 9310790514



Right Outer Wing Panel
SKU: 9310790515

RECOMMENDED ACCESSORIES:

Turnigy 4000mAh 4S
30C LiPo Pack w/XT-60
SKU: 9067000268-0

Turnigy 3300mAh 4S 30C
LiPo Pack XT-60
SKU: 9067000259-0

Turnigy 3300mAh 4S
30C LiPo Pack XT-60
SKU: 9067000259-0

Turnigy Nano-Tech 4000mAh
4S 30C LiPo Pack w/XT60
SKU: 9210000279-0

Turnigy 3600mAh 4S 30C
LiPo Pack w/XT-60
SKU: 9067000263-0

Turnigy Nano-Tech 3300mAh
4S 35C Lipo Pack w/XT60
SKU: 9210000314-0

Turnigy Accucell C150 AC/
DC 10A 150W Smart
Balance Charger
SKU: 995900001-3

ToolkitRC Q4AC 1~4S 5A
200W AC/DC Quad Balance
Charger/Discharger
SKU: 9914000075-0

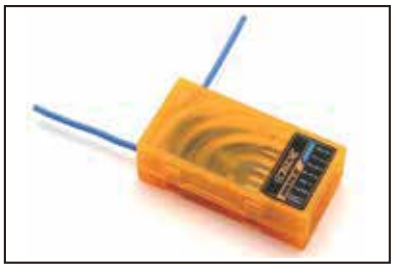
ToolkitRC M7 1~6S 200W 10A
DC Multifunction Balance
Charger/Discharger
SKU: 9914000080-0

Turnigy/FrSky TWIN X14 ACCESS 2.4GHz Transmitter
SKU: 9236720209

FrSky TW R6 Dual 2.4GHz 6ch TW Protocol SBUS/FBUS/ S.Port Receiver
SKU: 9236720013

FrSky TW R8 Dual 2.4GHz 8ch TW Protocol SBUS/ FBUS/S.Port Receiver
SKU: 9236720012

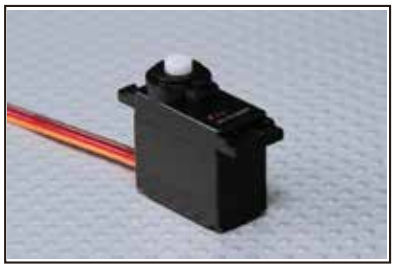
Helloradiosky V14MAX ELRS 2.4GHz Transmitter
SKU: 1043720006



OrangeRx R615X DSM2/ DSMX Compatible 6Ch 2.4GHz Receiver
SKU: 9101800001-0

Helloradiosky HR7E ELRS 8 Channel 2.4GHz Receiver
SKU: 1043720013

Turnigy TGY-50090M MG Servo 1.6kg/0.08sec/9g
SKU: 9468000001-0



Corona DS-918MP Digital Servo 1.8kg / 0.06sec / 9g
SKU: 014000014

FrSky TW R8 Dual 2.4GHz 8ch TW Protocol SBUS/ FBUS/S.Port Receiver
SKU: 9236720012

UK REP

APEX CE SPECIALISTS LIMITED
89 Princess Street, Manchester,
M1 4HT, UK

EC REP

APEX CE SPECIALISTS LIMITED
Unit 3D North Point House,
North Point Business Park,
New Mallow Road, Cork, T23 AT2P, Ireland

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