

# **ASSEMBLY MANUAL AND USER GUIDE**



**North American P-51B**

**Mustang**

**1200mm**

By 3D AEROWORKS

## HISTORY:

The P-51 Mustang was an American long-range, single-seat fighter aircraft that was used during World War II and the Korean War. The P-51B was a variant of this iconic airplane that played a significant role in the Allied victory in World War II.

The development of the P-51 began in the early 1940s, as the United States Army Air Corps looked for a longer-range, high-altitude fighter to escort its bombers deep into enemy territory. The P-51B was one of the later variants of the Mustang, and it was introduced in 1943. It was the first Mustang variant to use the potent Rolls-Royce Merlin engine, which gave it a significant increase in speed and altitude capabilities.

The P-51B featured a unique airframe that was designed to be fast and maneuverable. Its wings were thin and efficient, and it had a sleek, streamlined fuselage that reduced drag. These features, combined with the powerful engine, allowed the P-51B to fly at speeds of up to 440 mph (700 km/h) and reach altitudes of over 40,000 feet (12,000 meters).

The Mustang's ability to fly high and fast made it an exceptional escort fighter for the heavy bombers of the Allies. As the Allied bombing campaign increased in intensity, the P-51B was used to perform deep strikes into enemy territory to attack strategic targets, such as airfields, factories, and other infrastructure. The Mustang's long range meant that it could also be used for reconnaissance missions, guiding the bombers to their targets and gathering valuable information about enemy movements and defenses.

The P-51B Mustang became famous for its role in air-to-air combat against the German Luftwaffe. Its high speed and exceptional maneuverability made it a formidable opponent, and its pilots were credited with shooting down hundreds of enemy aircraft. The Mustang's most significant contribution, however, was its ability to dominate the skies over Europe and help to establish air superiority, which played a crucial role in the Allied victory in Europe.

In addition to its combat duties, the P-51B was also used in a number of other roles, such as reconnaissance, ground attack, and even anti-shipping missions. It was also exported to a number of Allied nations, including the United Kingdom, where it was used by the Royal Air Force. The P-51B remained in service until the end of World War II, and it was replaced by the P-51D Mustang after the war.

In conclusion, the P-51B Mustang was a crucial aircraft in the Allied victory in World War II. It was fast, powerful, and maneuverable, and it played a critical role in the Allied bombing campaign and air-to-air combat. Its legacy was cemented in the annals of aviation history, and it remains one of the most iconic aircraft of the Second World War.

## OVERVIEW:

This replica of the P-51B Mustang is designed for quick and easy construction and printed using a combination of regular PLA and lightweight PLA (LW-PLA). Designed to suit the 3548 900kv motor this model has a significant amount of power and is happy to cruise around at 40% power thanks to its lightweight yet sturdy construction. Utilizing up to 8 channels; Ailerons, Elevator, Rudder, Throttle, Flaps, Landing gear and Gear doors, this model is sure to turn some heads at the local flying field. Links to components used can be found on the last page of the user guide.

## **HELP US CONTINUE TO PRODUCE QUALITY MODELS**

This model has taken many hours of hard work and testing in order to provide a nice flying aircraft. Please do not share it. Please show your appreciation by directing interested parties to the link below.

<https://cults3d.com/en/3d-model/various/p-51b-mustang-1200mm>

### **GENERAL SPECIFICATIONS**

WINGSPAN:	1200mm
PRINT WEIGHT:	1200g
FLYING WEIGHT:	2400g
CENTER OF GRAVITY	65mm aft of L.E at wing root. (Marked with indentation)
MINIMUM BED SIZE	300 X 300 X 300

### **ELECTRICS**

MOTOR:	3548 900kv
ESC:	60 amp (min)
SERVOS:	standard 9g
BATTERY:	4500mah 4S 50c (420g) (or similar)

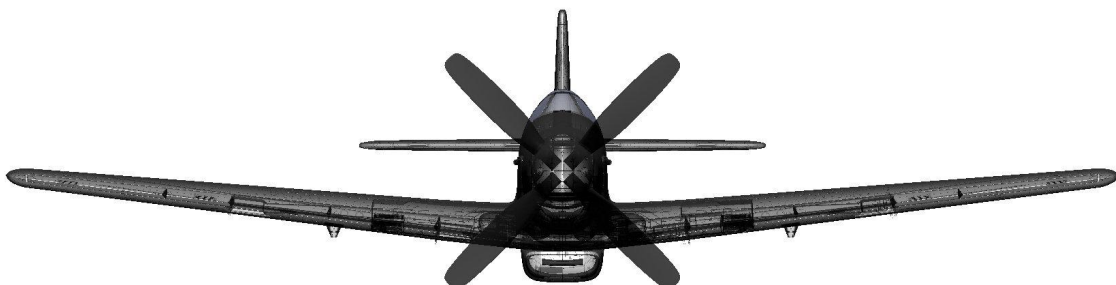
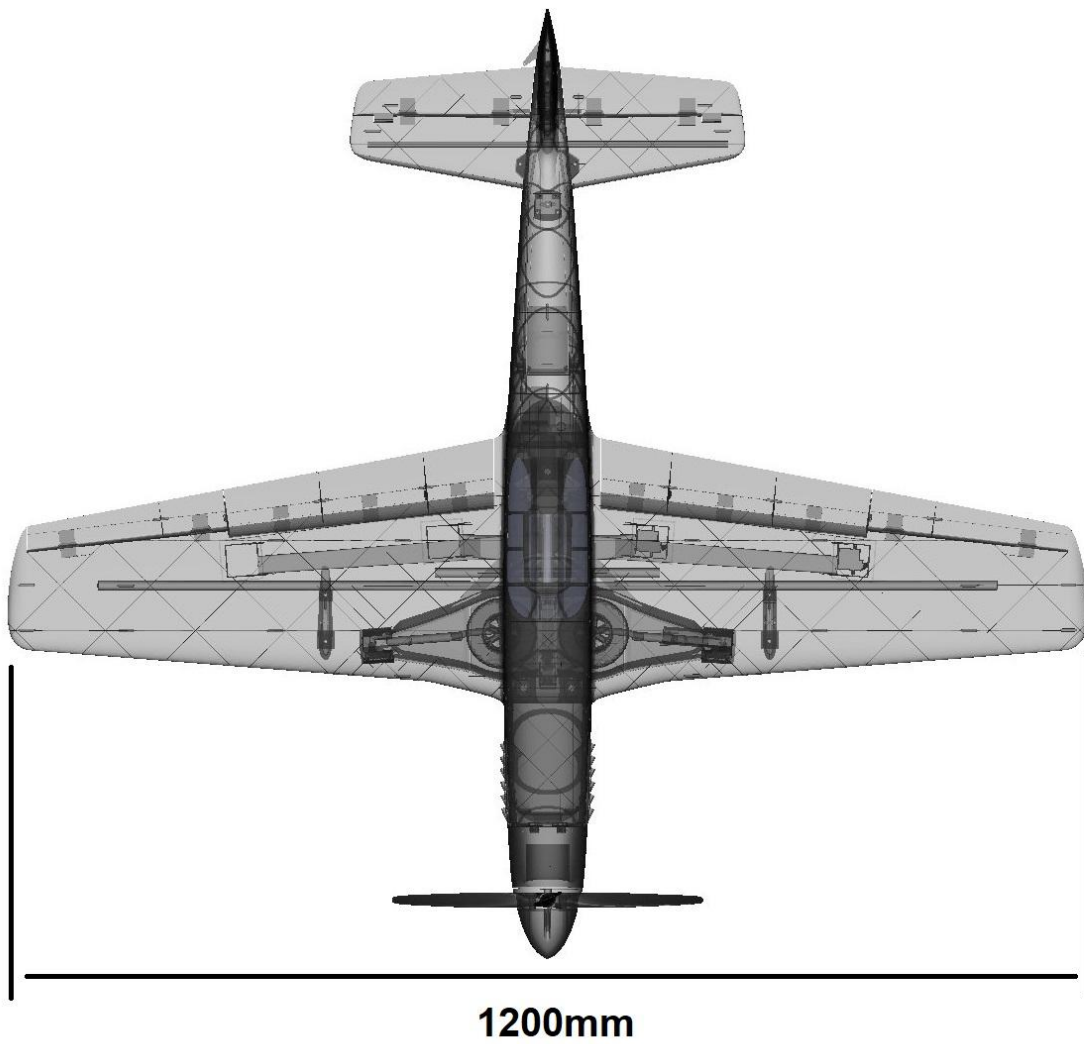
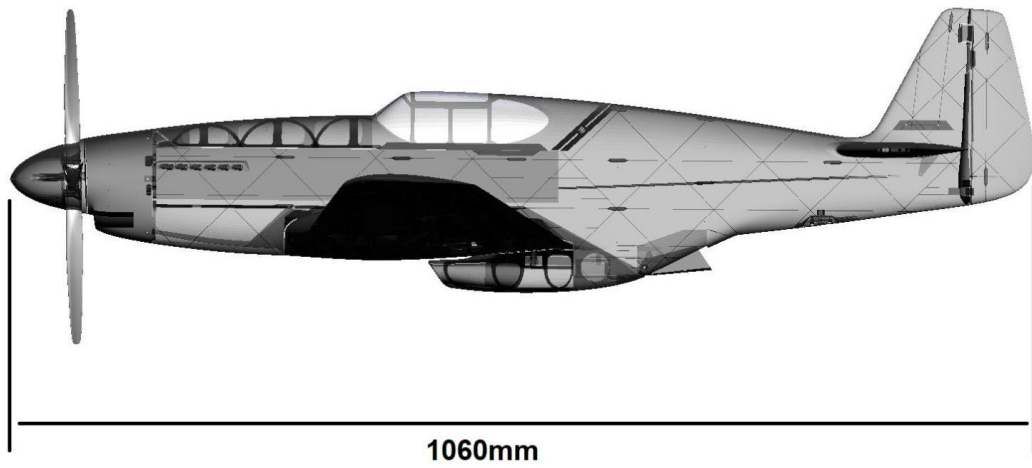
### **INCLUDED WITH THESE FILES**

**STL** files for all parts

**FFF** factory files for Simplify 3d

**GCODE** files for all components



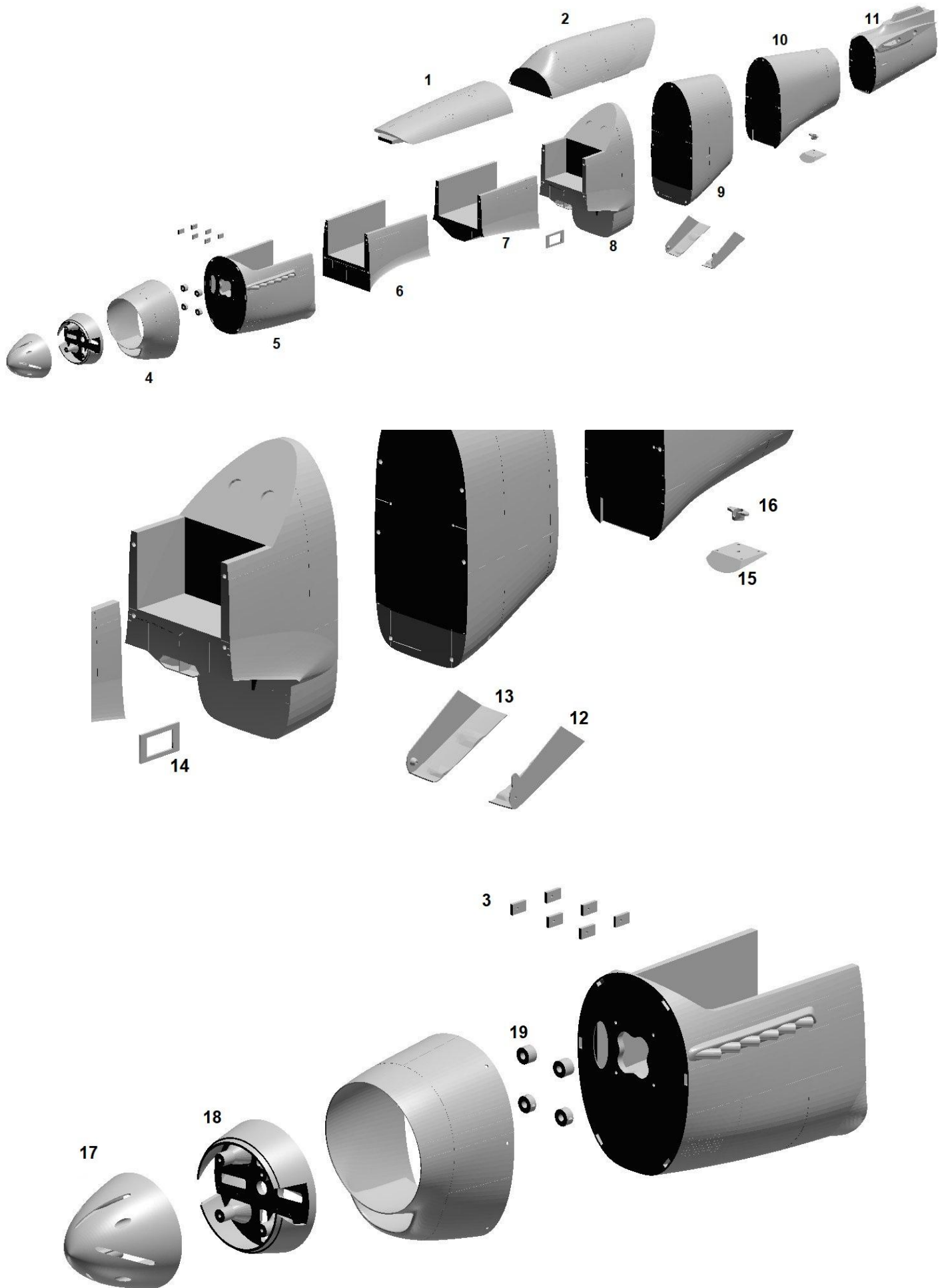


**COMPONENT LIST AND WEIGHTS:****FUSELAGE**

<b>PART NUMBER</b>	<b>PART NAME</b>	<b>PART WEIGHT</b>
1	CANOPY FRONT	34g
2	CANOPY REAR	36g
3	COWLING MOUNT (each)	0.3g
4	COWLING	32g
5	FUSE 1	89g
6	FUSE 2	60g
7	FUSE 3	56g
8	FUSE 4	61g
9	FUSE 5	39g
10	FUSE 6	32g
11	FUSE 7	30g
12	RADIATOR SCOOP DOOR LEFT	2.5g
13	RADIATOR SCOOP DOOR RIGHT	2.5g
14	RADIATOR SCOOP DOOR SERVO MOUNT	1g
15	TAIL WHEEL MOUNT PLATE	2g
16	TAIL WHEEL STEERING ARM	0.7g
17	SPINNER	15g
18	SPINNER BACKPLATE	33g
19	MOTOR MOUNTS (each)	0.5g



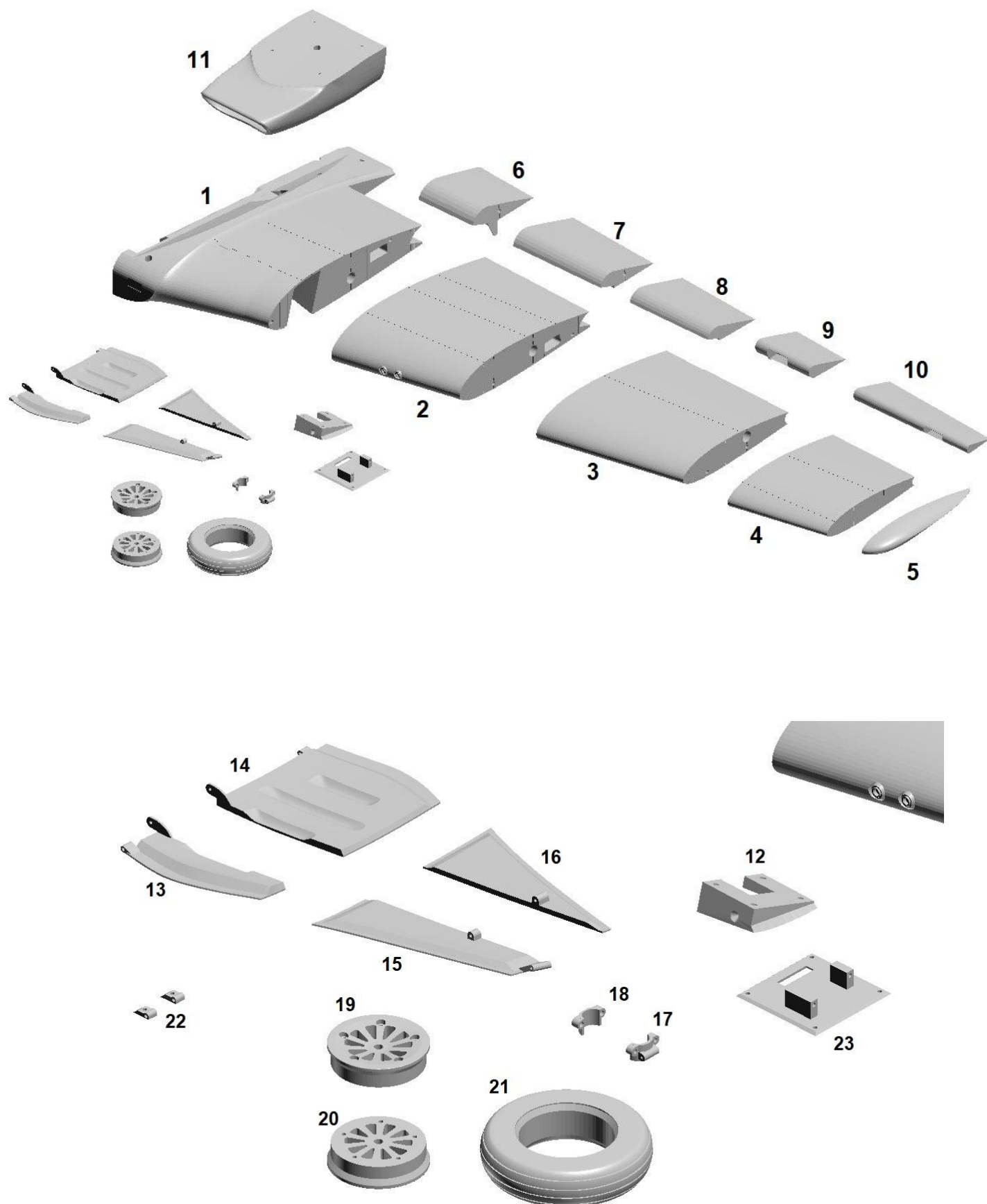
## FUSELAGE



## WINGS

PART NUMBER	PART NAME	PART WEIGHT
1	WING 1	115g
2	WING 2	76g
3	WING 3	49g
4	WING 4	25g
5	WINGTIP	5.5g
6	FLAP INNER	10g
7	FLAP MIDDLE	10g
8	FLAP OUTER	10g
9	AILERON INNER	6g
10	AILERON OUTER	8g
11	RADIATOR SCOOP INTAKE	42g
12	MAIN GEAR MOUNT PLATE	9g
13	INNER GEAR DOOR FRONT	5.5g
14	INNER GEAR DOOR REAR	11.5g
15	OUTER GEAR DOOR FRONT	6g
16	OUTER GEAR DOOR REAR	4.5g
17	GEAR LEG CLAMP A	0.25g
18	GEAR LEG CLAMP B	0.25g
19	MAIN WHEEL HUB PART A	6.5g
20	MAIN WHEEL HUB PART B	6.5g
21	MAIN TIRE (TPU)	14g
22	INNER GEAR DOOR HINGE MOUNTS (each)	0.1g
23	SERVO COVER	3.5g

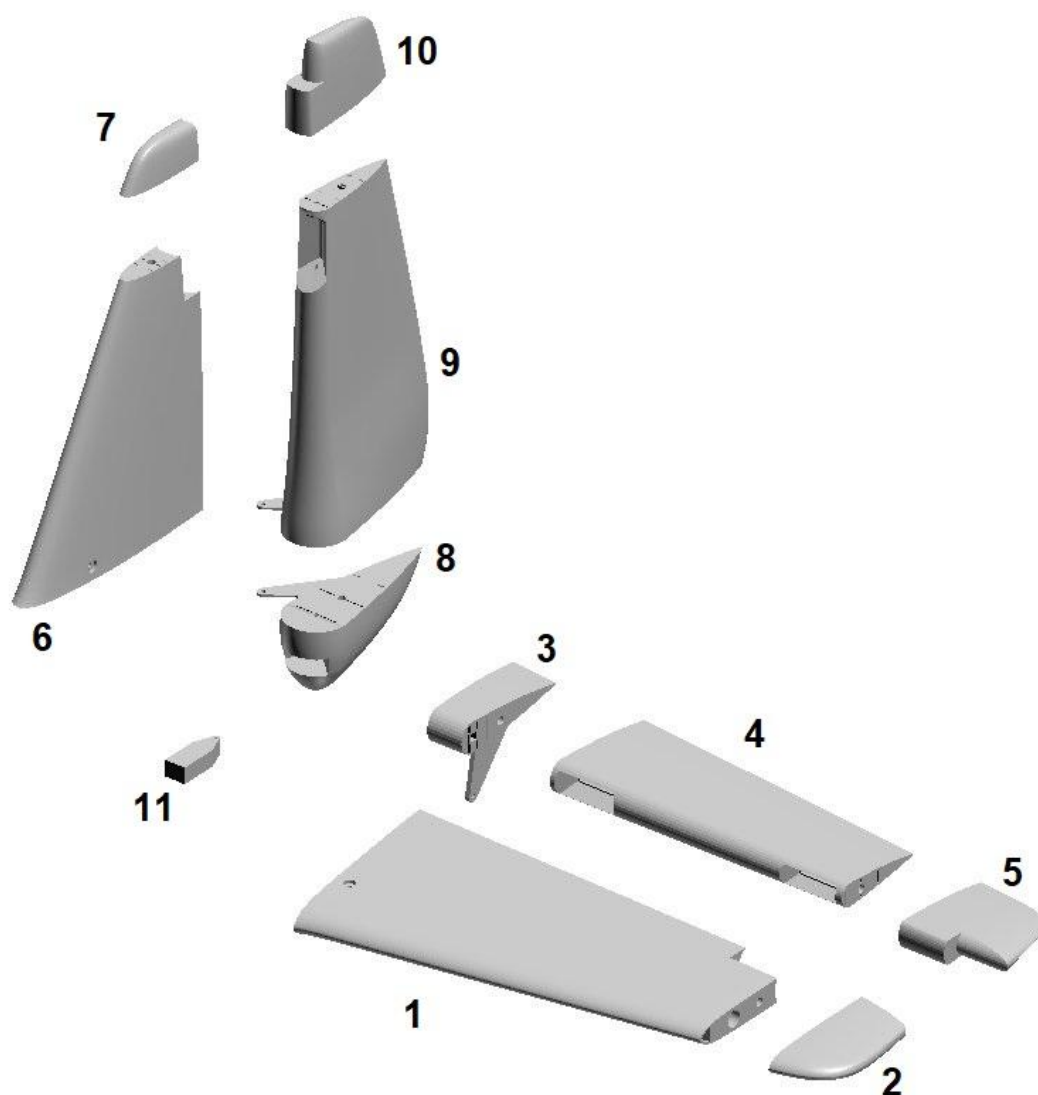
# WINGS





## TAIL

PART NUMBER	PART NAME	PART WEIGHT
1	HORIZONTAL STABILIZER INNER (LW-PLA)	13g
2	HORIZONTAL STABILIZER OUTER (LW-PLA)	1.2g
3	ELEVATOR INNER	3.5g
4	ELEVATOR MIDDLE (LW-PLA)	5g
5	ELEVATOR OUTER (LW-PLA)	2g
6	VERTICAL STABILIZER LOWER (LW-PLA)	8g
7	VERTICAL STABILIZER UPPER (LW-PLA)	1g
8	RUDDER LOWER (LW-PLA)	3.5g
9	RUDDER MIDDLE (LW-PLA)	10g
10	RUDDER UPPER (LW-PLA)	2.5g
11	RUDDER LOWER HINGE	1g



## REQUIRED TOOLS:

KNIFE

LIGHTER

SANDPAPER (MEDIUM (320) GRIT)

PLIERS

CA GLUE + HOT GLUE

SCREW DRIVERS (PHILLIPS AND HEX 1.5mm)

FILE (flat)

DRILL AND BITS (1mm, 2mm)

## REQUIRED COMPONENTS:

X1 3548 900kv

X1 12x6 propeller

X1 60amp esc

X1 4500mah 4s 50c LIPO OR SIMILAR (420g)

X7 9g servo

X2 2.5kg retracts

X2 gear leg (3/4mm or E-flite p51 legs)

1mm Piano wire

X2 1.2mm Piano wire (520mm min)

X4 10mm X 10mm X 2mm Magnet (ROUND)

X14 16x29mm nylon hinges (OPTIONAL)

X1 M2 Wheel stop collar

X2 M3 Wheel stop collar

X9 m1 linkage stopper

M2 screws (6mm, 10mm, 14mm, 20mm)

X3 M6 nylon bolt and nut (50mm min)

X3 10mm round carbon tube (500mm)

X1 6mm wooden dowel (400mm)

X1 3mm square carbon tube (80mm min)

X2 75mm foam wheels (or printed tpu)

X1 25mm foam wheel

Velcro

Braided fishing line 20lbs (or similar)

Bamboo skewers 3mm



## ASSEMBLY INSTRUCTIONS

### FUSELAGE ASSEMBLY

#### **1 Prepping parts**

After all parts have been printed, any that are printed in LW-PLA may require to be cleaned as LW-PLA is prone to stringing. Do this by gently sanding back the rough sections with a file, sandpaper or blade until the surface is smooth.

#### **2 Prepping parts**

All faces which are to be glued to other parts need to be given a light sanding (scuff the surface) to assist with glue adhesion.

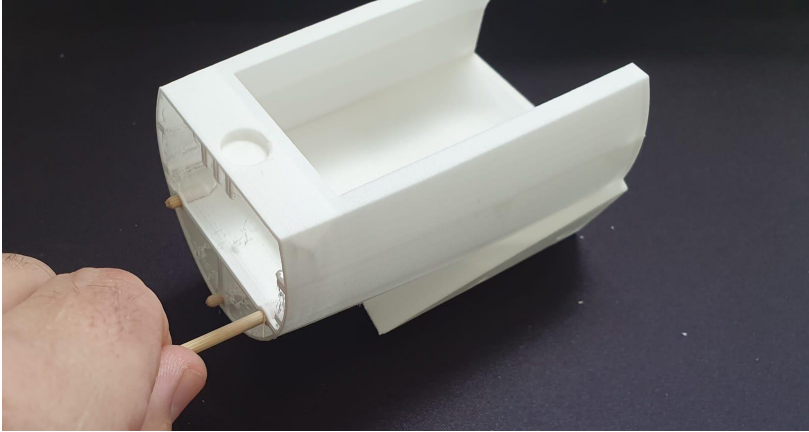


### 3 Alignment pins

Cut 15mm sections of skewer and place into alignment holes in the fuselage sections.

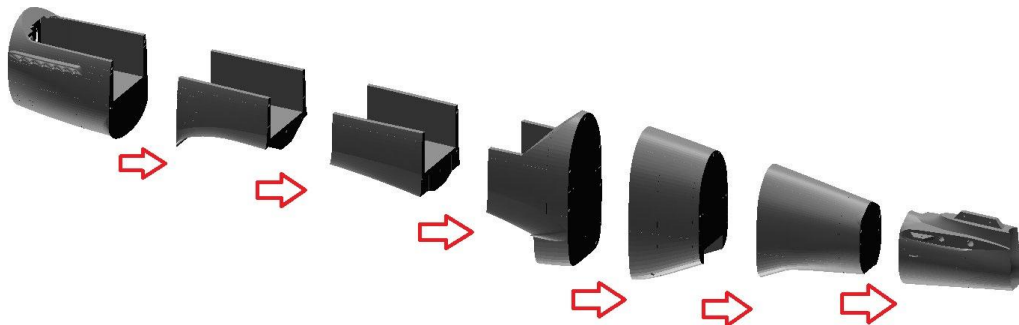
**NOTE** - It may be required to open up the holes a small amount if the fit is too tight. Do this by using a 3mm drill bit. Gently spin it in reverse as you insert it into the hole. This will ensure the bit does not tear the print.

Test fit the sections of the fuse before gluing to ensure a clean fit.



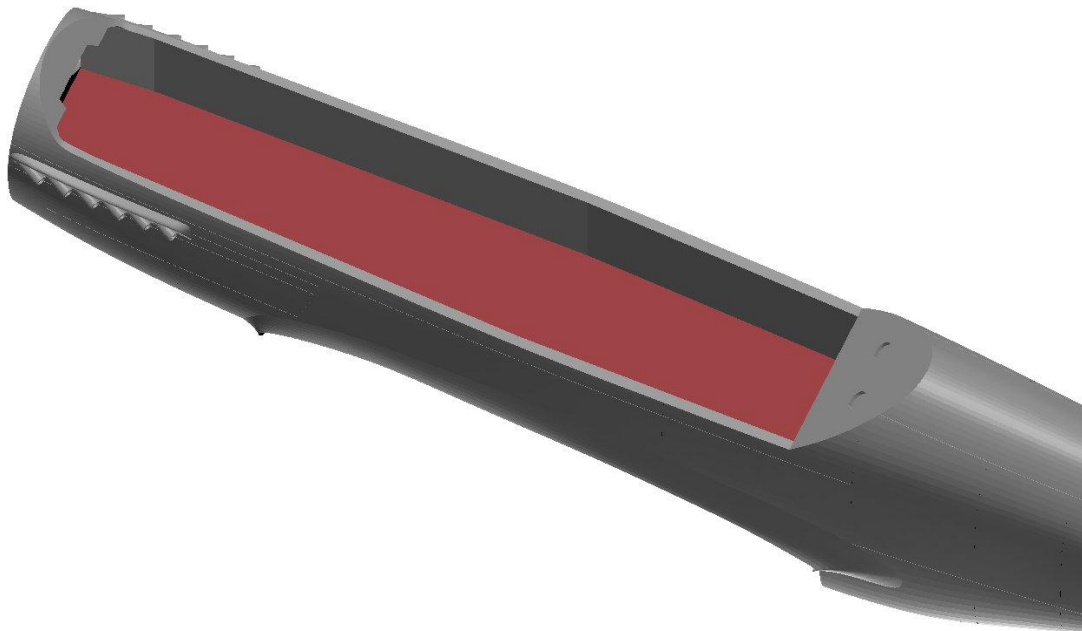
### 4 Fuselage assembly

Glue sections 1-5 of the fuse together.

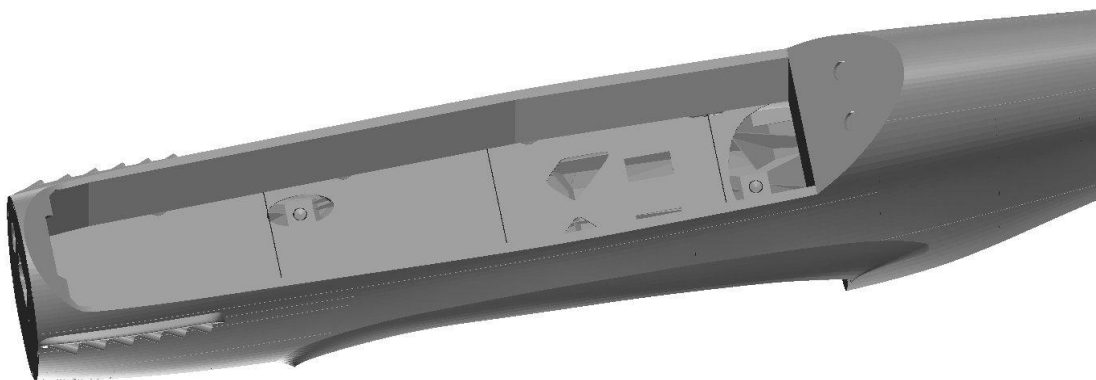


## 5 False floor removal

Once glued, with a sharp knife, remove the false floor of the battery hatch. (see pic/ highlighted faces)



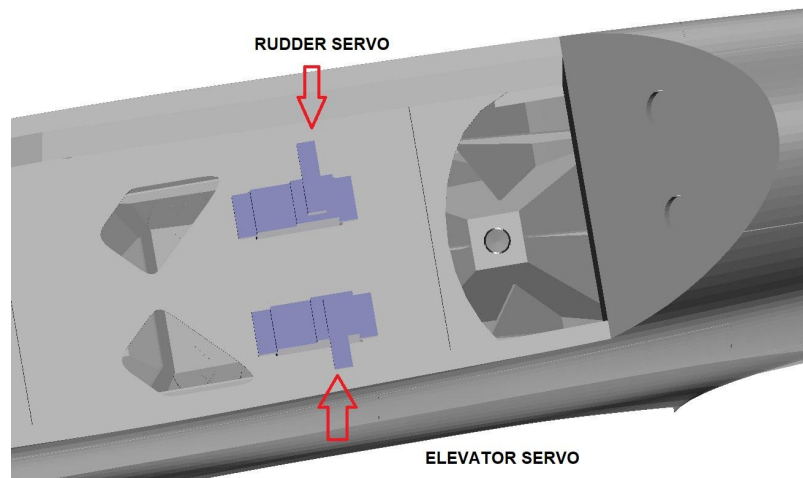
**Should look like this!**





## 6 Servo installation

Install the Elevator and Rudder servos.

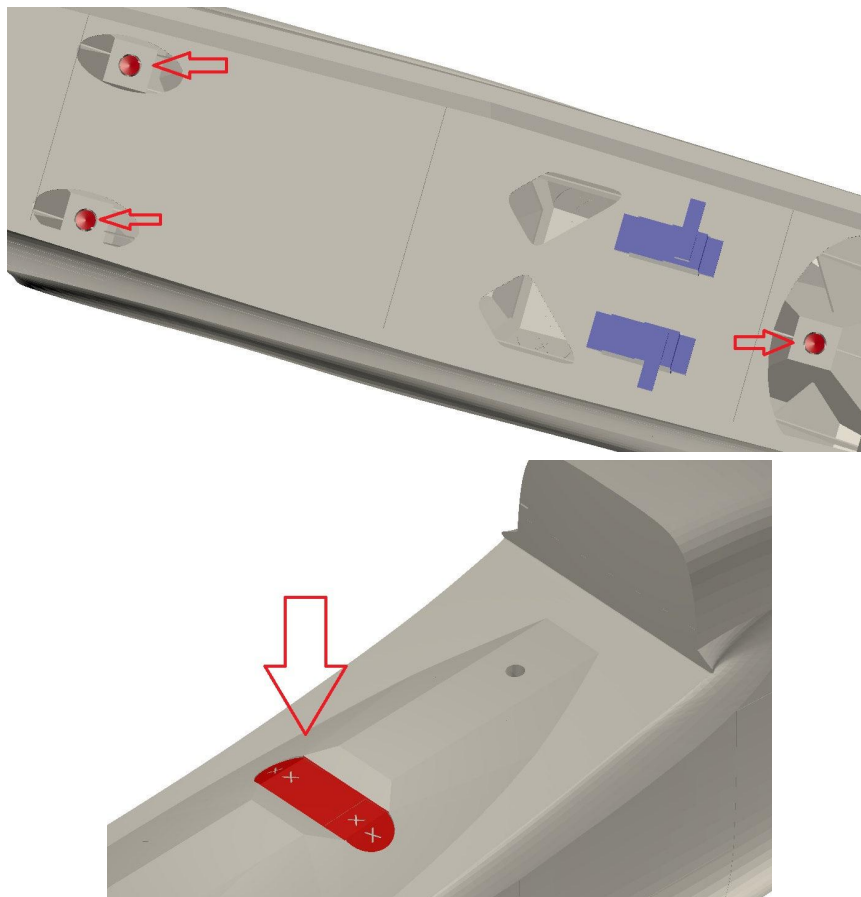


## 7 Canopy assembly

Glue the sections of the canopy together and fit the magnets to the fuselage and the canopy.

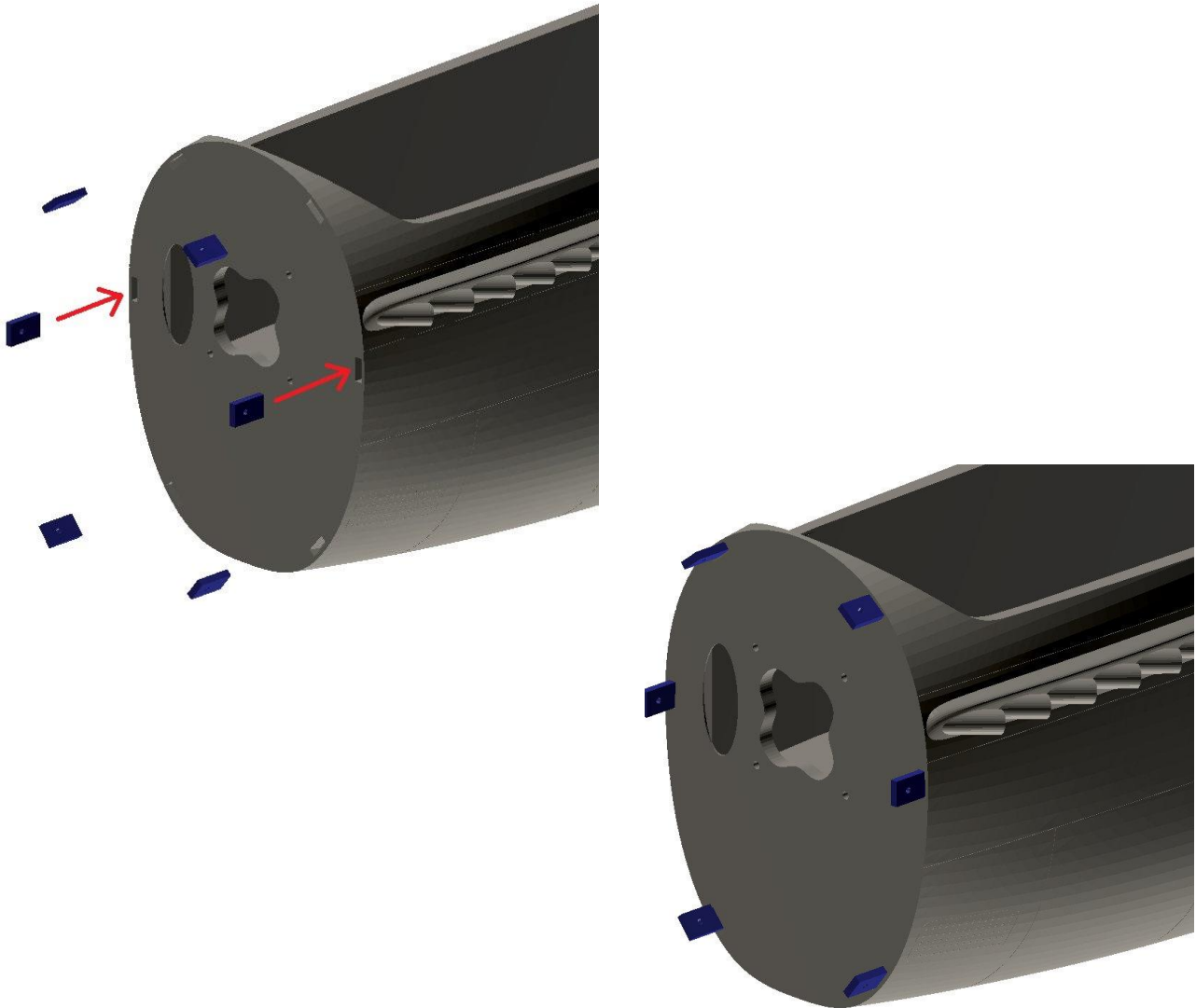
## 8 Wing bolt and access slot removal

Using a soldering iron, remove the covers from the wing bolt mounts and the wing servo wire access slot.



## 9 Cowling mount installation

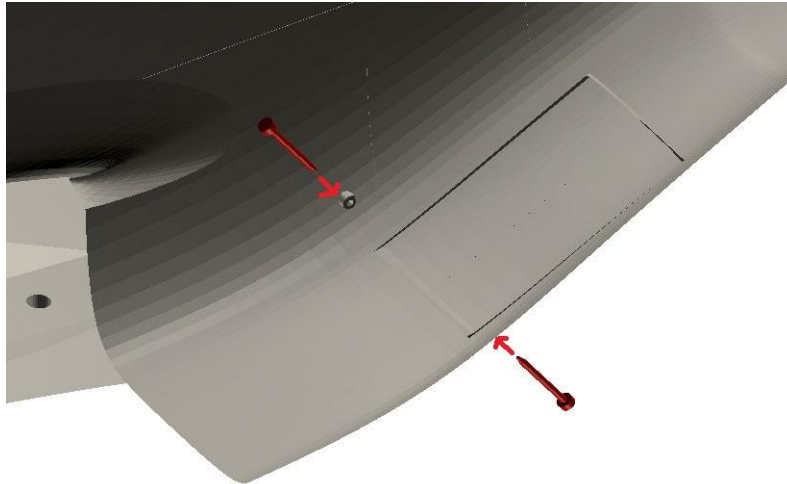
Install the cowling mount points to the front of the Fuselage with CA .



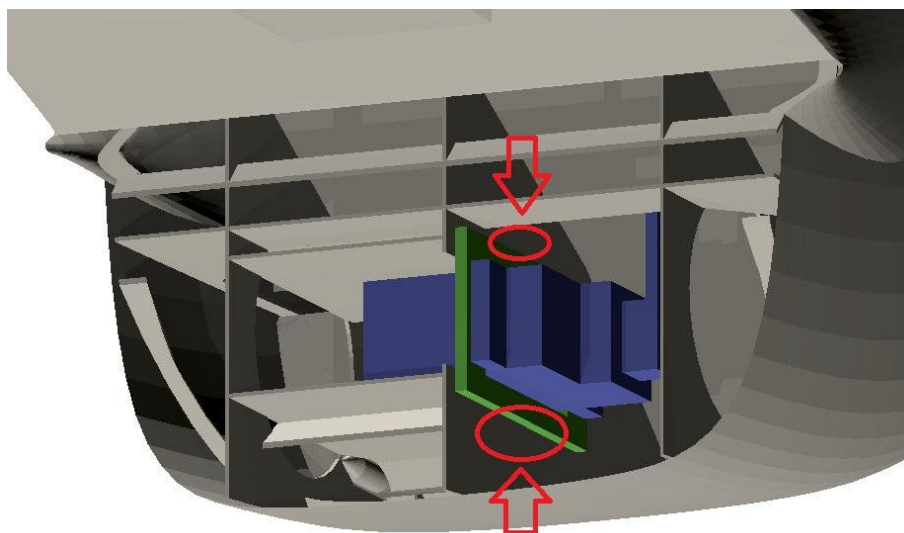
## RADIATOR DOOR INSTALLATION

- 1
  - Glue the two halves of the radiator door together.
  - Install a servo to the radiator door mount plate with and connect a length of 1mm wire so that it will reach the radiator door arm.
  - Fit a linkage stopper to the door

- Install the door to the fuselage using m2 x 20mm screws. NOTE - the screws should be loose enough so that the door swings easily. ( add image)



- Using hot glue, install the servo mount plate into the slot through the fuselage. (this will make adjusting or changing the servo possible in future) (add image)



**hot glue here**

- Connect up the push rod to the servo

### **Tuning the radiator door:**

The radiator door should be slaved to the throttle and tuned so that it will open progressively more at any point past 50% throttle.

## TAIL-WHEEL ASSEMBLY

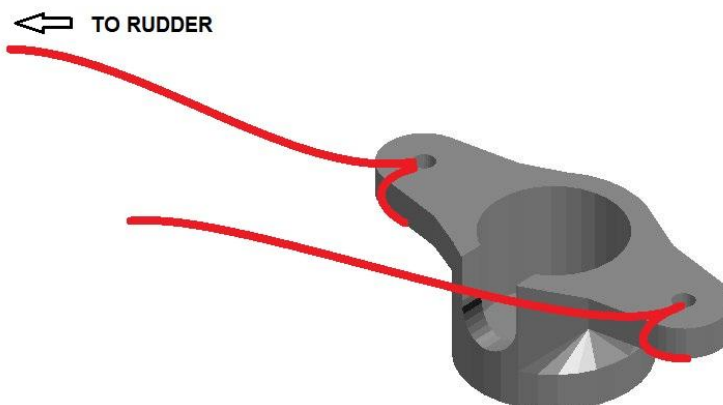
### 1 Access slot removal

Remove the Tail-wheel steering arm slot from the underside of the rear of the Fuselage using a hot piece of wire or soldering iron. (face marked in red)



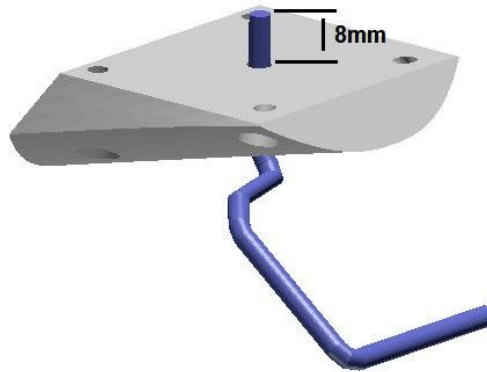
### 2 Wiring up the steering arm

Secure a line to each of the Tail-wheel steering arms, making sure they are long enough to reach the rudder servo.



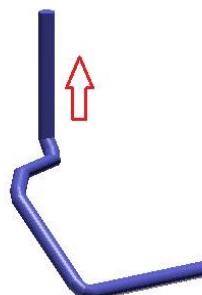
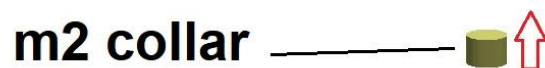
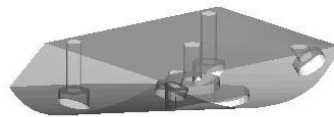
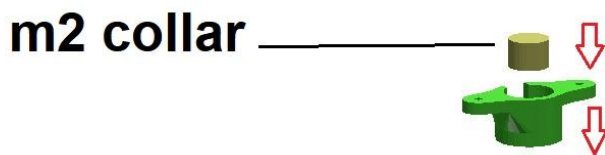
### 3 Tail wheel axle

Bend up a section of 2mm wire to fit the Tail-wheel to the Tail-wheel mount plate. Ensure the pivot arm is long enough that the collar will be able to secure the shaft in place. It should protrude through the mount plate by at least 8mm when the collar is fitted to the underside.



### 4 Axle assembly

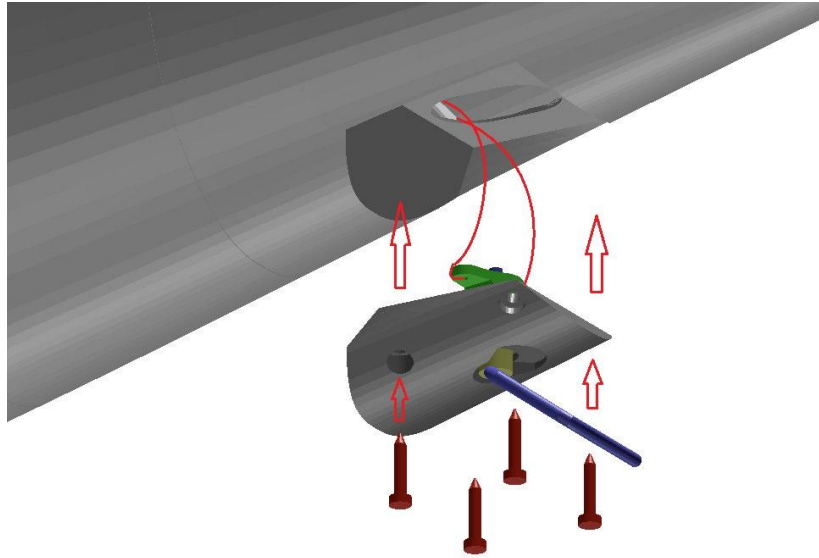
Assemble the Tail-wheel steering assembly as directed by the image below.





## 5 Tail wheel assembly installation

Thread the steering lines up through the fuselage and install the Tail-wheel assembly using m2 screws. (Pre-drilling pilot holes for the screws with a 1mm or 1.5mm bit is advised)



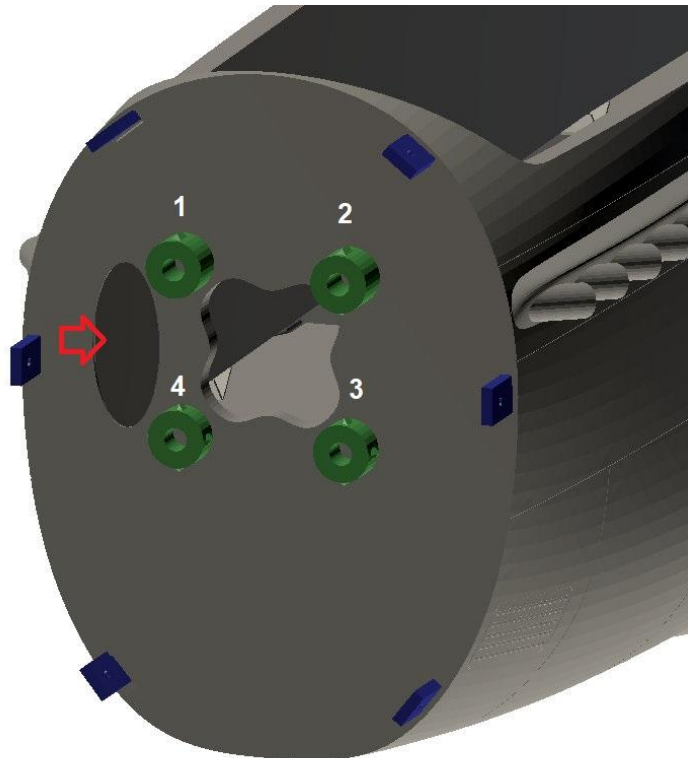
## 6 Fitting the wheel

Connect the Tail-wheel steering wires to the innermost holes on the Rudder servo arm. Check the control through of the Tail-wheel before finalizing the connection. The Tail-wheel should have a 45 degree travel either side of center. Lastly, fit the tail wheel and secure it with an m2 linkage stopper.

## MOTOR INSTALLATION

### 1 Motor mounts

Install the motor using the offset mounts as shown below using either m2 screws or bolts. The mounts are designed to give a 1 degree offset right and 2.5 degree down to allow for the thrust line and gyroscopic forces. The offset mounts are identified by small protruding notches. (top left) #1 has one notch, #2 has two notches etc. Ensure the motor is installed so that the motor wires are able to be fed through the small hole on the left of the firewall (when viewed looking directly at the firewall)



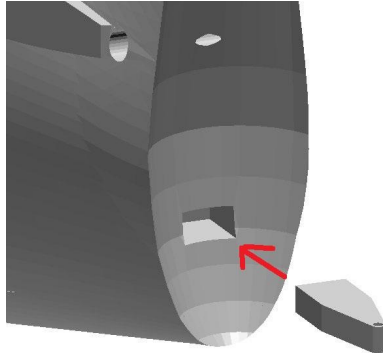
### 2 Cowling install

Fit the cowling using m2x6mm screws.

## TAIL-PLANE ASSEMBLY

### 1 Lower rudder hinge point

Glue the “Lower rudder hinge point” into the fuse using CA as shown below. (it should press neatly into place).



### 2 Preparing the control surfaces

Open up the Pilot holes for the push rod in the control arm using a 1mm drill bit.

### 3 Installing the control surfaces

- Glue the nylon hinges into the horizontal stabilizers using CA.
- Test fit the elevators to the horizontal stabilizers and check the fitment and travel. When happy with them, glue the elevators in place with CA.

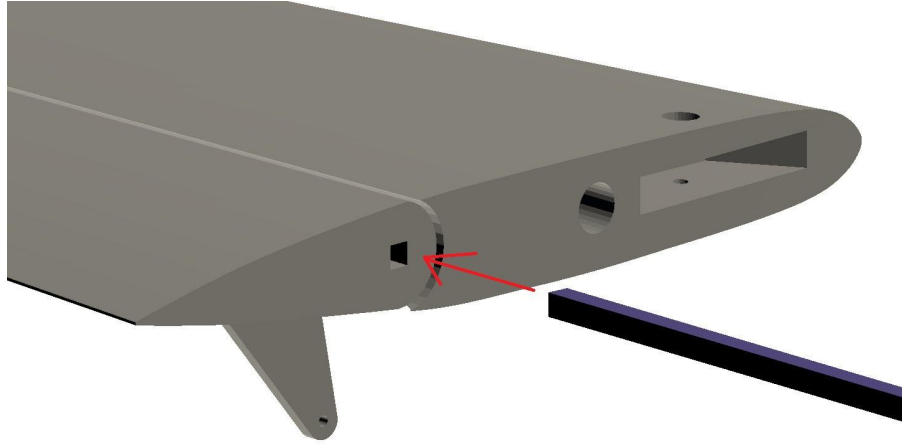
**NOTE:** Be sure that the CA is only inside the hinge slot. Wipe away any excess CA from the entrance otherwise the hinge will bind and render the part useless.

### 4 Control surface connection

Run a length of 1.2mm push rod from the tail end of the fuselage through each of the bowden tubes (elevator and rudder).

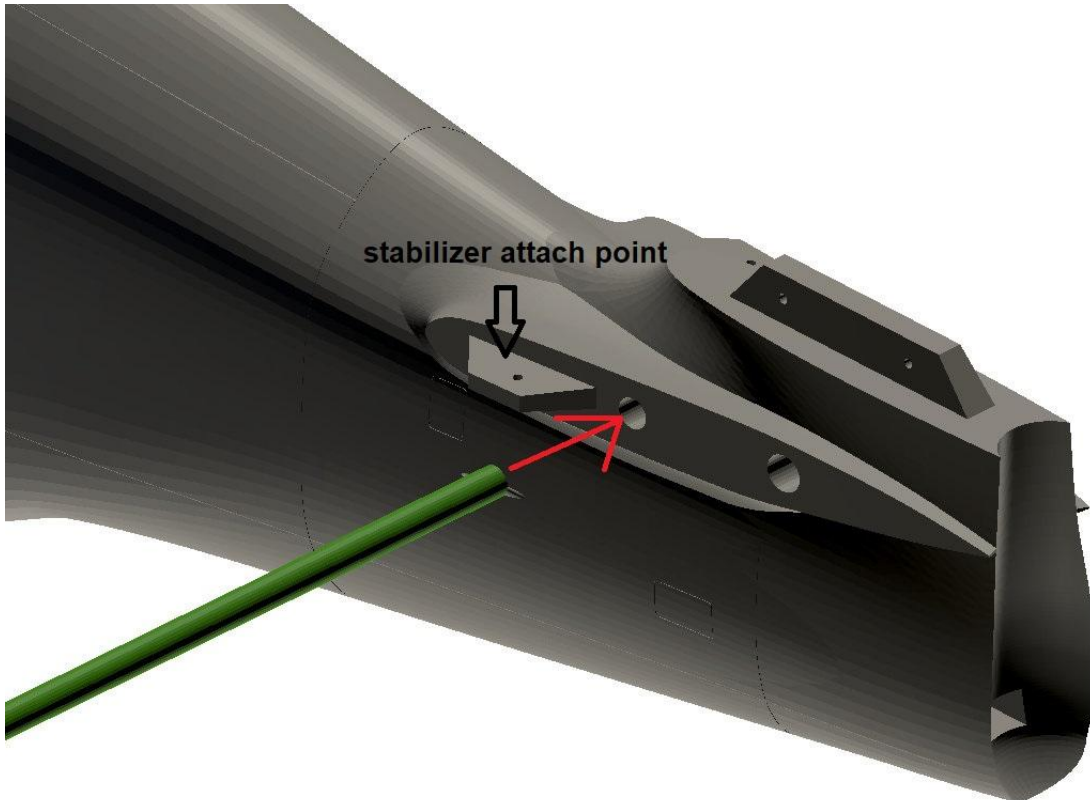
## 5 Elevator torque tube (test fit)

Cut a 75mm length of 3mm carbon square tube and test fit it into the elevator sleeve at the root of the elevators. The connection should be able to be removed easily but also have “very little” to “no” play. If the connection is too tight, rub the surfaces of the carbon rod with some medium grit (320) sandpaper until the correct fitment is attained. (REMOVE THE TORQUE TUBE TO BE FITTED SHORTLY)



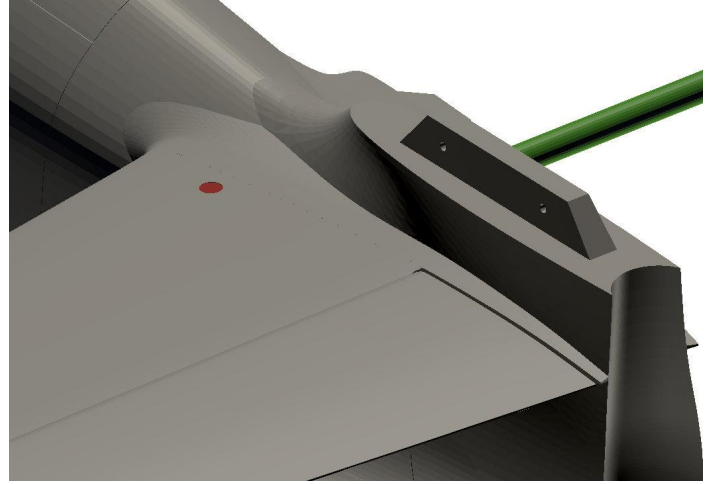
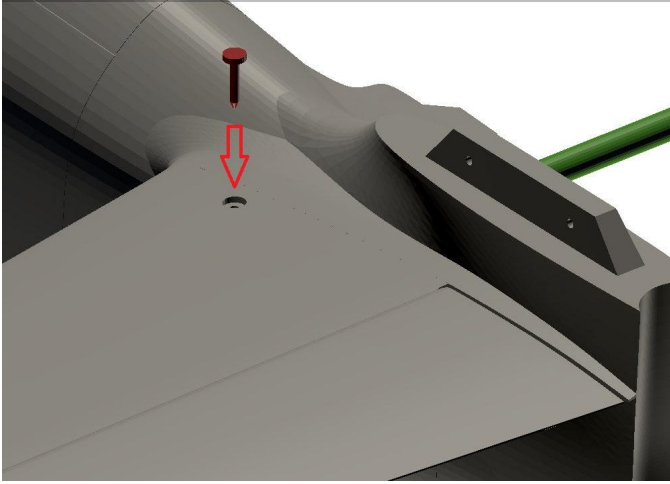
## 6 Horizontal stabilizer spar installation

Cut a 40cm section of 6mm wooden dowel and insert it through the fuselage at the point just aft of the stabilizer attach points.



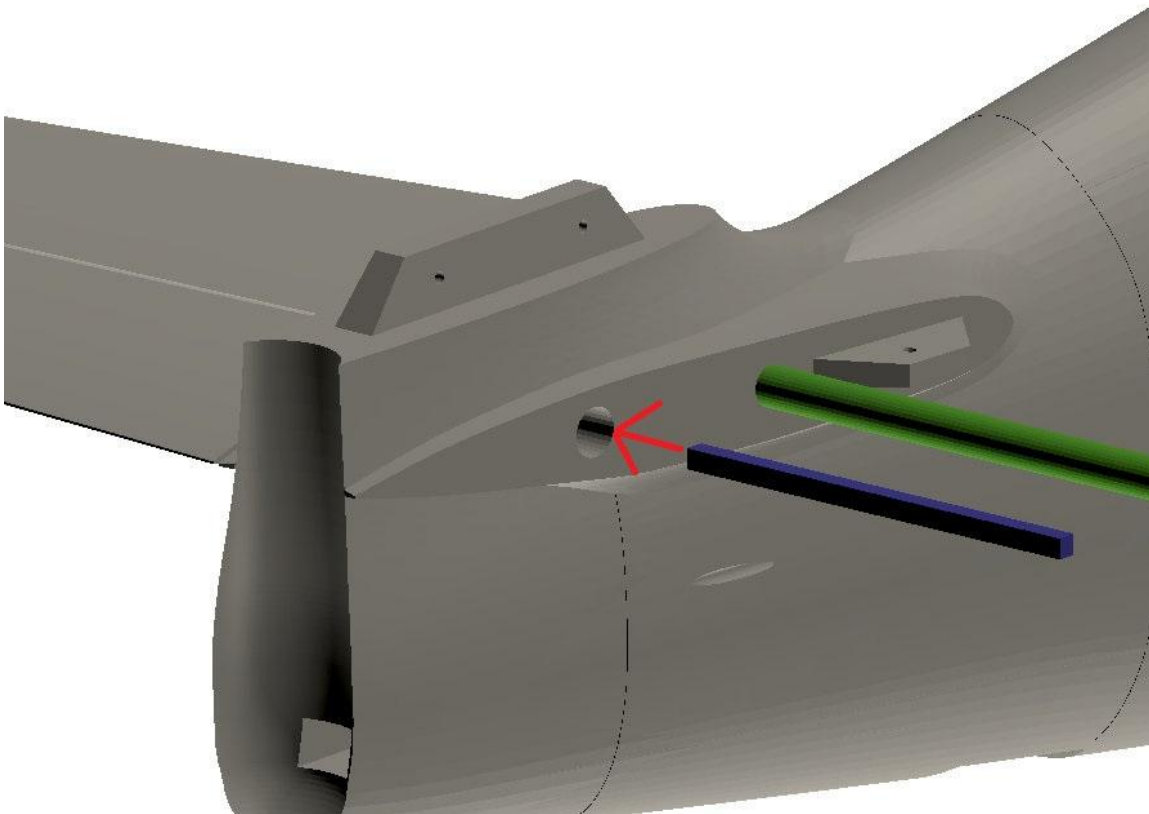
## 7 Horizontal stabilizer installation

Fit the elevator push rod to the elevator control arm and slide the left horizontal stabilizer on to the wooden dowel. Secure the stabilizer in place using a small m2 x10mm screw. **Be careful not to over-tighten the screw!** It should only be “nipped” up tight enough that it will not come out on its own.



## 8 Elevator torque tube installation

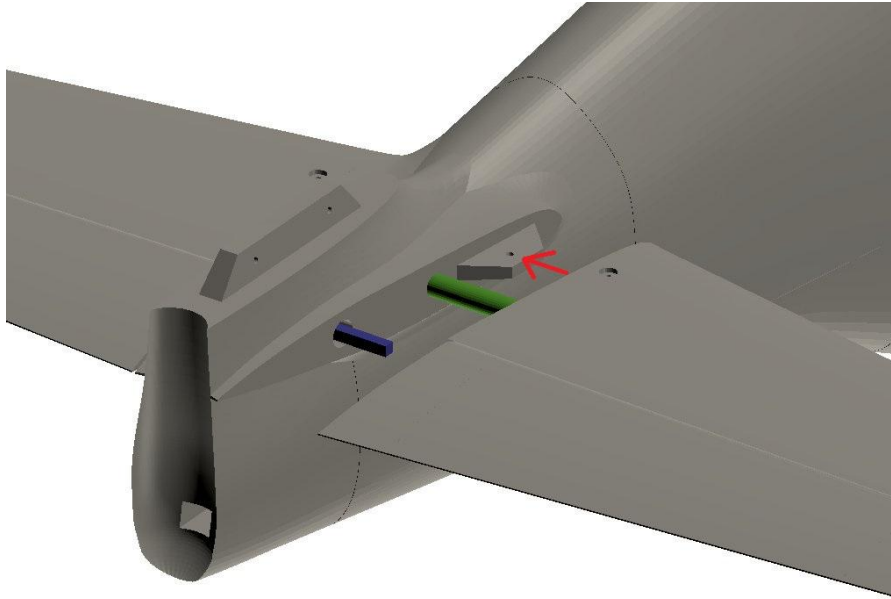
Install the carbon square torque tube into the right elevator through the opening in the fuselage.





## 9 Horizontal stabilizer installation

- Fit the right horizontal stabilizer and elevator to the 6mm dowel and carbon torque tube.



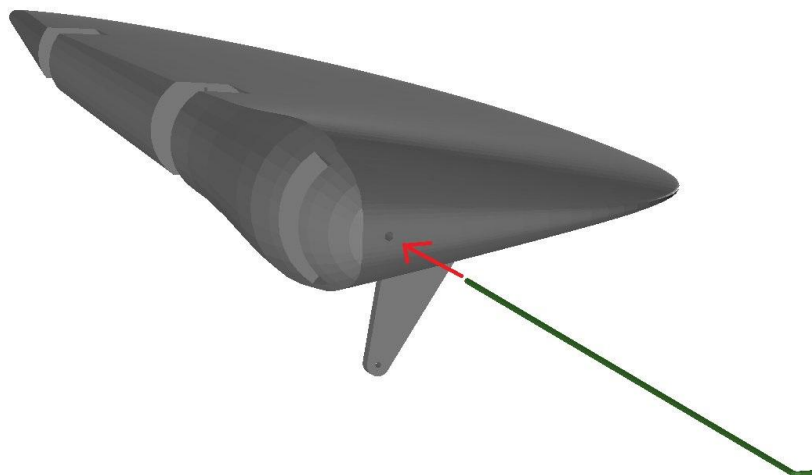
- Secure the left stabilizer using an m2x10mm screw the same as the opposite side.

## 10 Vertical stabilizer installation

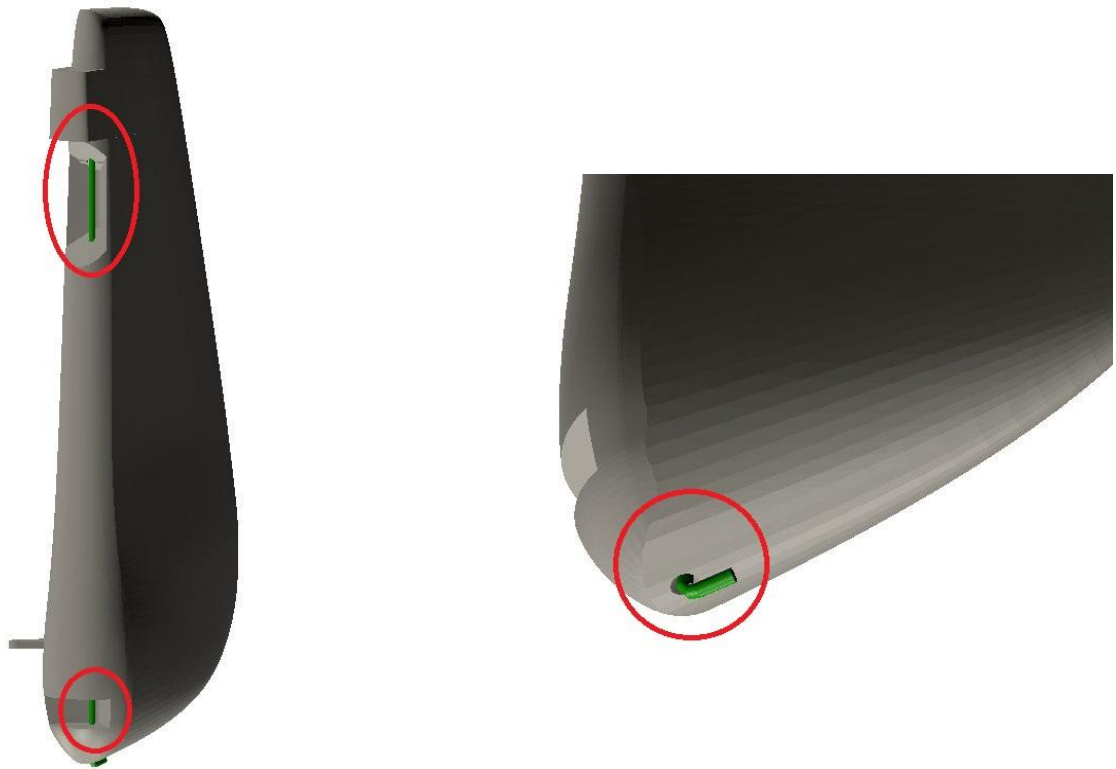
Install the Vertical stabilizer to the Fuselage and secure in place with two m2x10mm screws.

## 11 Rudder Installation

- Cut a 190mm section of 1mm piano wire (Rudder hinge wire), bend one end to 90deg so you have something to grip on to if you need to remove it. Test fit the Rudder hinge wire into the Rudder from the opening in the underside. (if the slot is too tight, it can be loosened by installing the wire into a drill and gently feeding it into the rudder as the wire is rotated by the drill. Use caution)



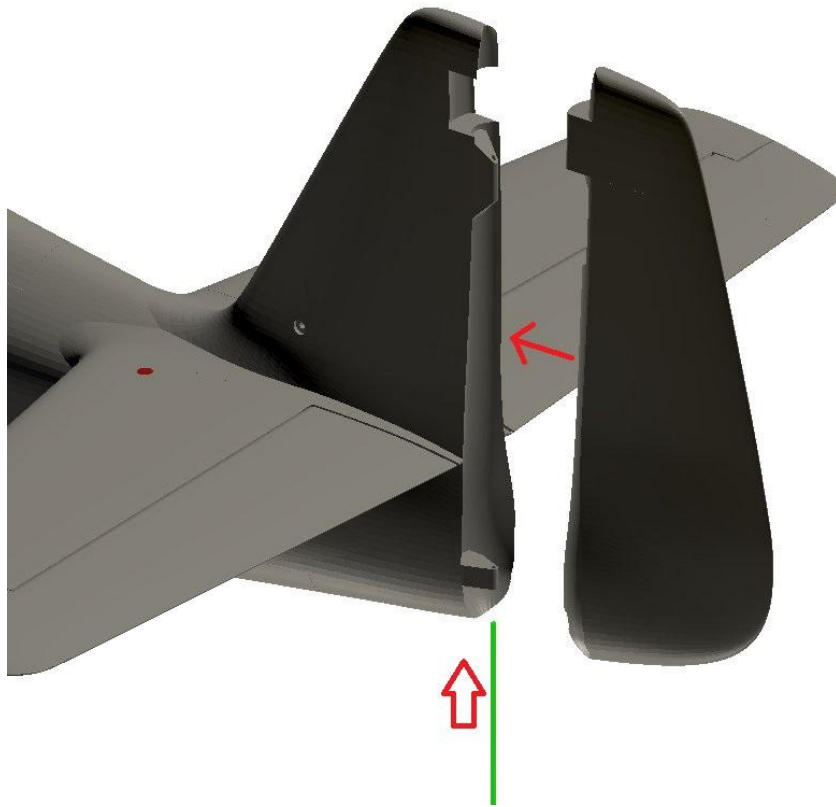
- Ensure that the Rudder hinge wire easily travels all the way up just past the top hinge opening. The bent end should sit flush with the bottom of the Rudder.



- Test fit the Rudder hinge wire into the hinge points in the Fuselage and vertical Stabilizer.



- Connect the Rudder control arm to the push rod and Install the Rudder by holding it in place and feeding the Rudder hinge wire up through the slot.



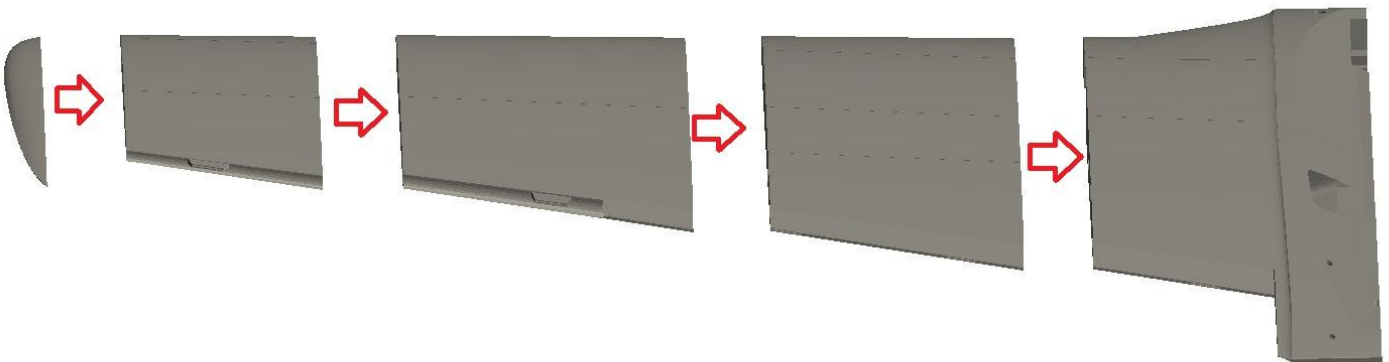
## WING ASSEMBLY

### 1 Checking the spars

Test fit the 10mm carbon spars into the individual wing sections and their respective slots before gluing the wing sections together. (advised to slowly run a 10mm drill bit through the slots to clean any over-extrusions that may cause binding)

### 2 Wing assembly

Glue the sections of the wings together using CA. Use sections of 3mm skewer to align the parts. (refer step 3)



### 3 Control surface assembly

Glue the wing control surface sections (Ailerons and Flaps) together using CA. Open up the Pilot holes for the push rod in the control arm using a 1mm drill bit.

### 4 Spar installation

Install the main (500mm) carbon tube into the wing.

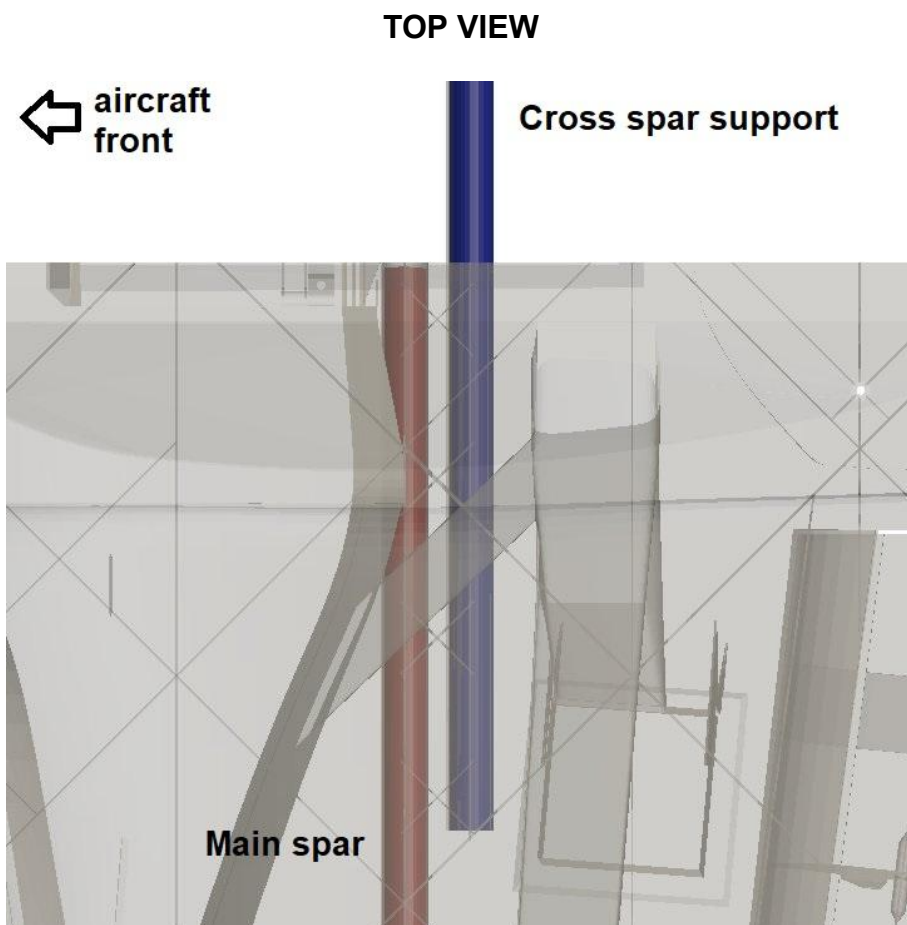
### 5 Control surface installation

Glue the Ailerons and Flaps to the wings using nylon pinned hinges (16x29mm). Glue the hinges into the wing first, then Glue the control surfaces in place.

**NOTE:** Be sure that the CA is only inside the hinge slot. Wipe away any excess CA from the entrance otherwise the hinge will bind and render the part useless.

### 6 Joining the wings

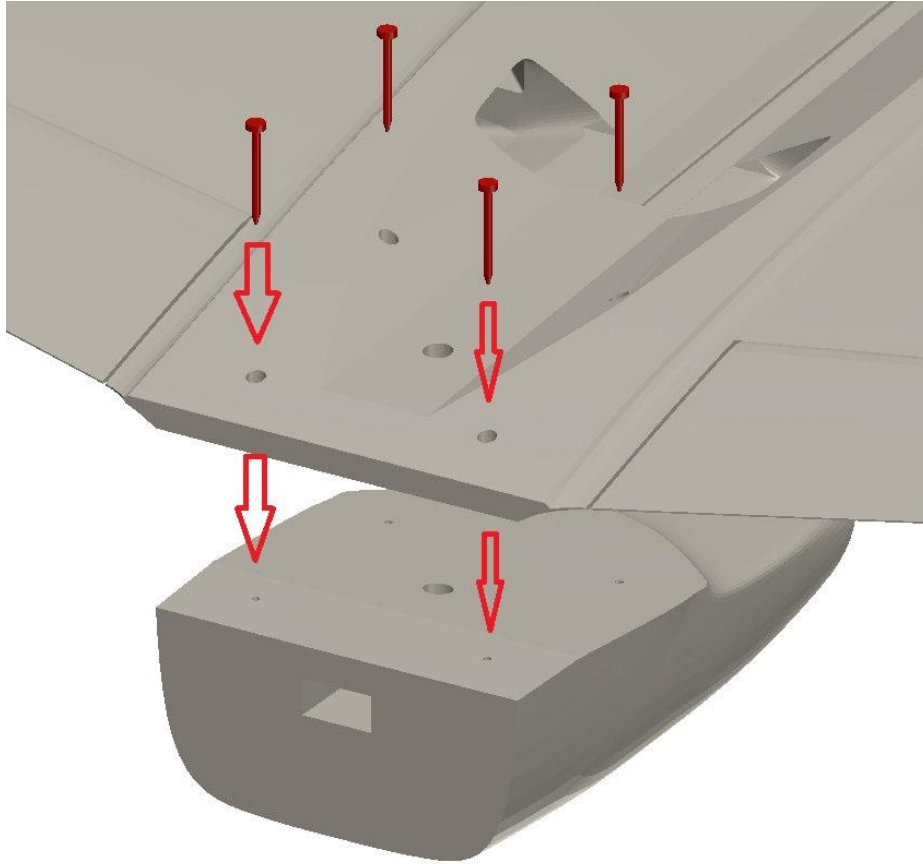
Cut a 250mm length of 10mm carbon rod and insert it into the wing halves either side of the main spar. Test fit the wing together to make sure that the wing root faces will easily meet.



- Glue the two wing halves together.

## 7 Radiator scoop installation

Screw the Radiator scoop intake to the under-side of the wing using m2 x 20mm screws.

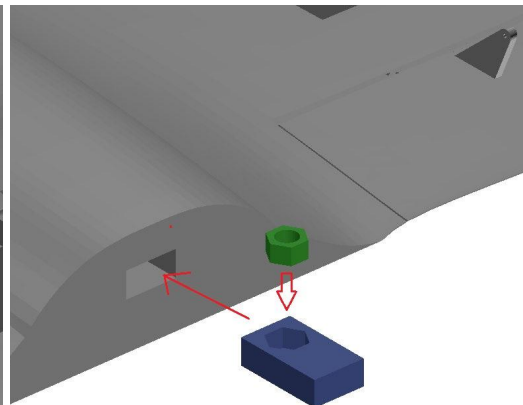
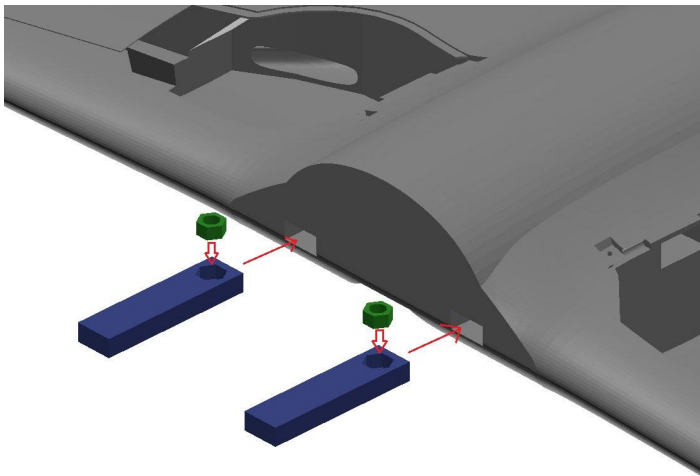


## 8 Wing mount block installation

Place a nylon m6 nut into the wing mount blocks and insert them into the slots at the front and rear of the wings. (do not glue these in place)

Front of wing

back of wing





## 9 Wing bolt trimming

Cut three m6 nylon bolts to be the following length:

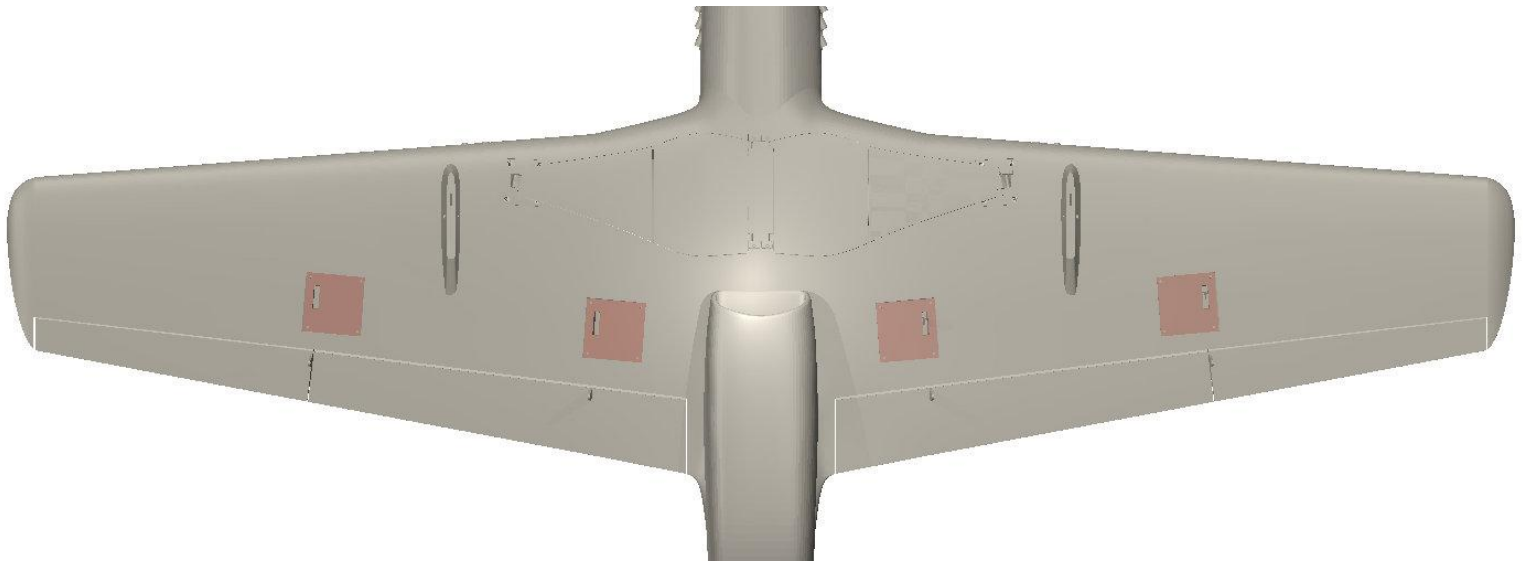
X2 @ 30mm

X1 @ 47mm

Test fit the wings to the fuselage and check the bolt fitment.

## 10 Wing servo installation

Fit the servos to the servo mount plates and install them into the wing. Connect up to the control surfaces. (note the position and orientation of the servo mount plates)

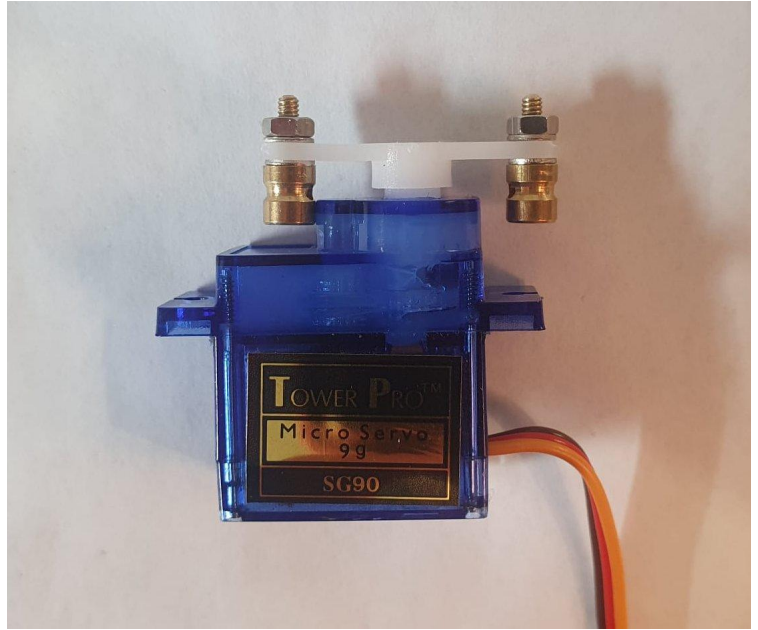


The flaps will need to use two channels. This arrangement was used so that the accuracy of the flap deployment could be programmed and therefore easier than adjusting by hand.

## LANDING GEAR AND GEAR DOORS

### 1 (inner gear doors) - preparing the inner gear door servo

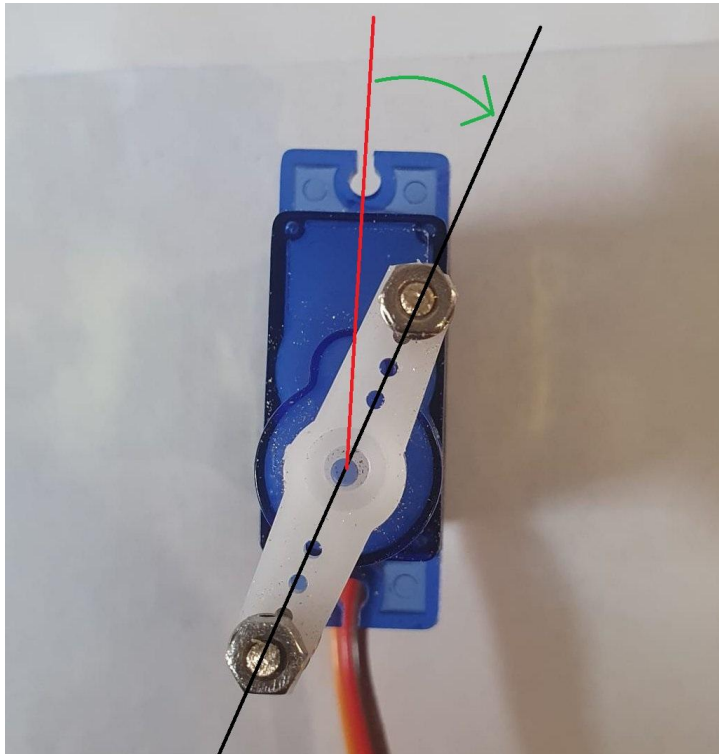
- Using a 2mm drill bit, open up the fourth outermost hole on each side of the servo arm and install the control linkages.
- Ensure that a washer is on each side of the arm.
- Trim the outer edges of the arm



- Grind the thread of the control linkages down to the height of the nut.

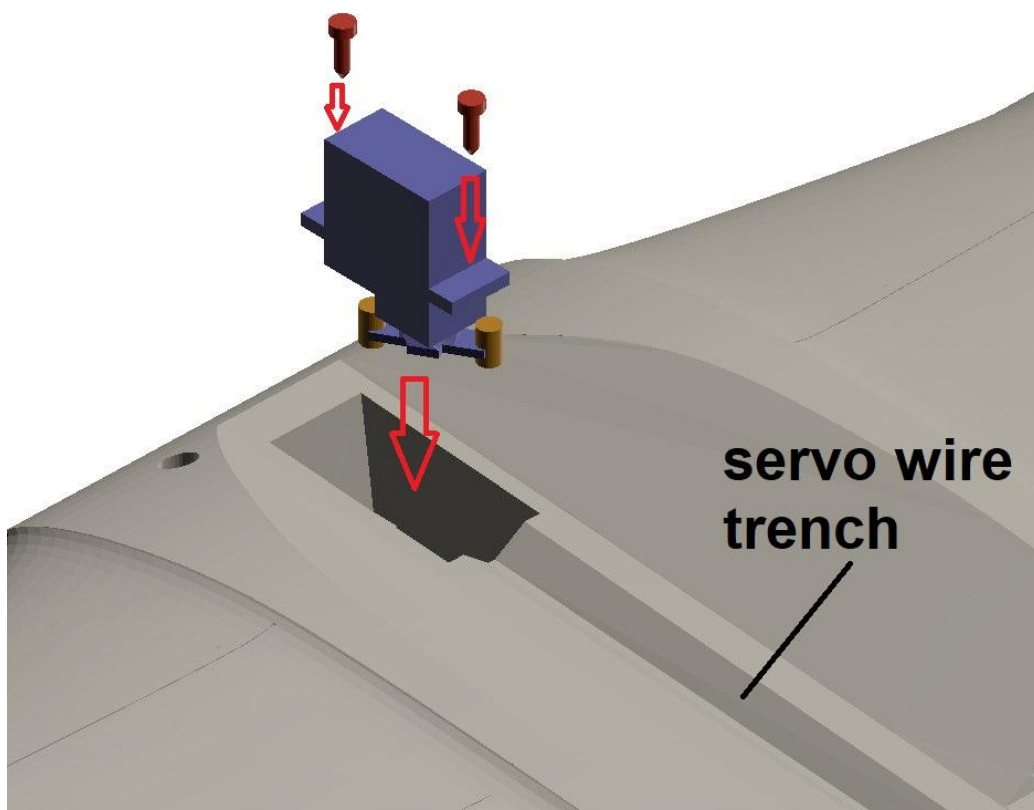


- Install the servo arm so that it is “1 tooth off from center” in the clockwise direction.

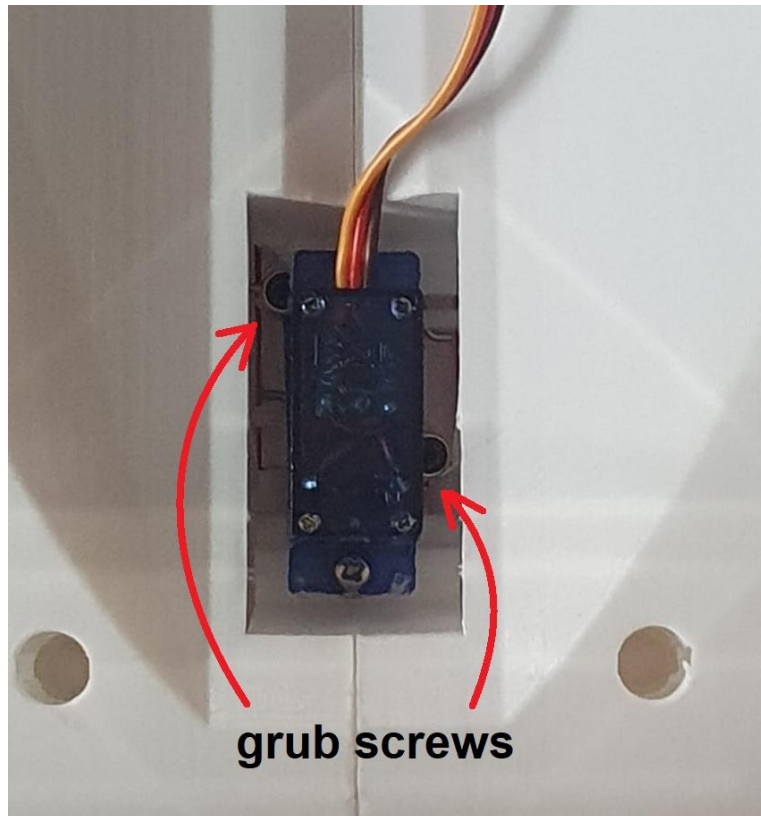


## 2 Inner gear door servo installation

Install the servo into the slot in the front of the wing. Secure in place with m2 x 6mm screws.

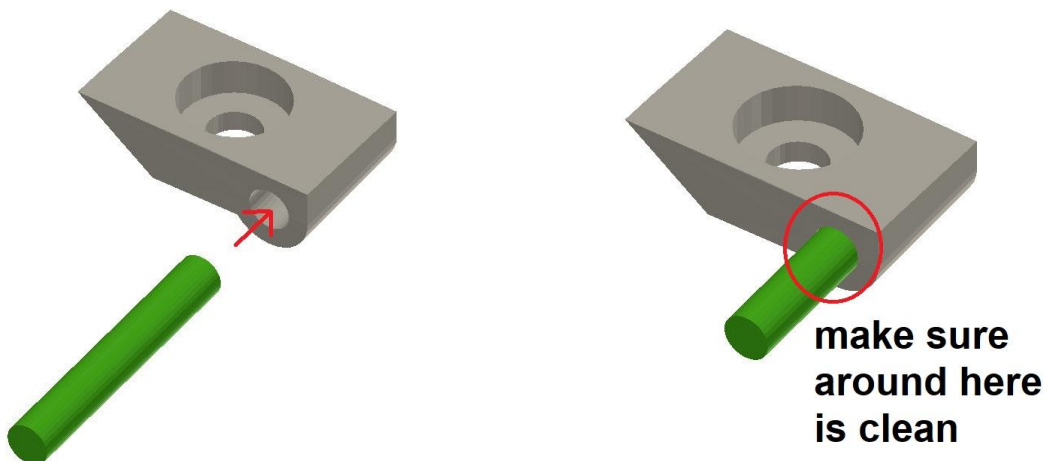


You should have access to the grub screw through the side of the wings.

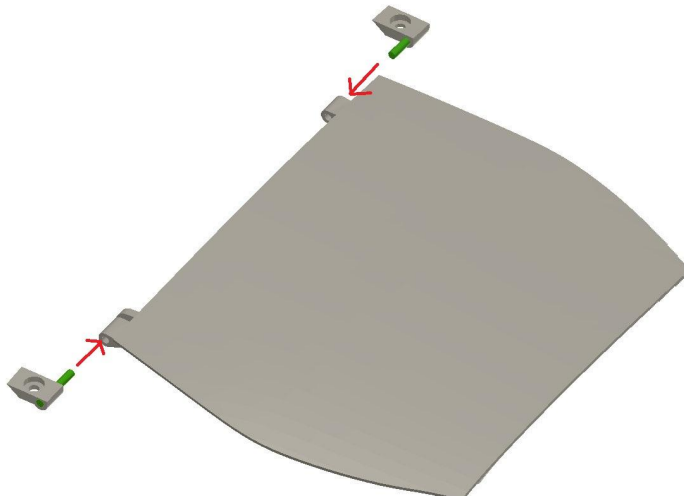


### 3 Inner gear door installation

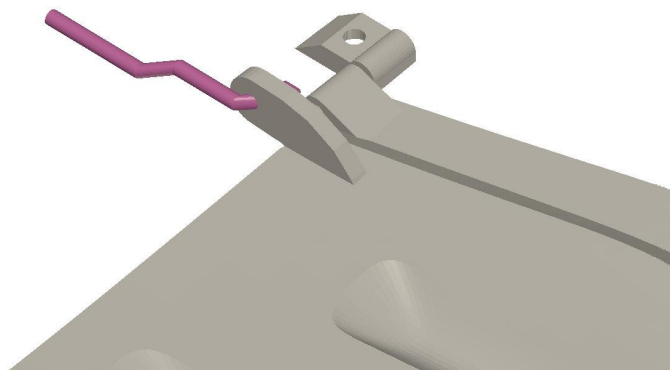
- Glue the two halves of the inner gear door together
- Cut two 10mm lengths of 1mm wire and install them into the “inner gear door hinge mounts” with a small amount of hot glue.



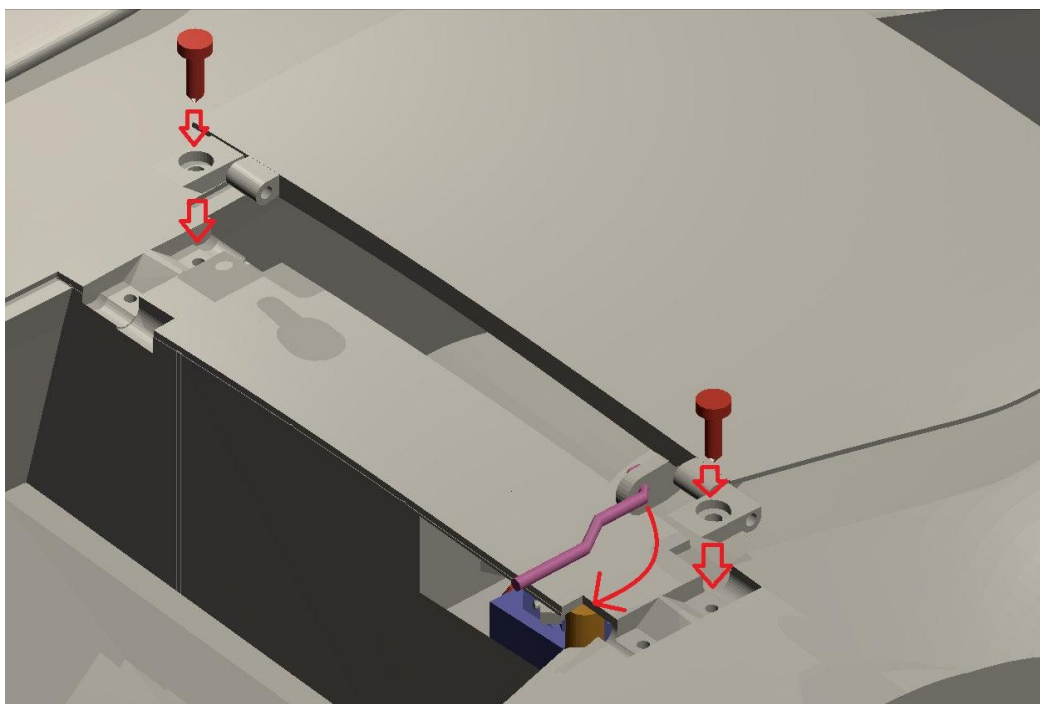
- Push the hinge mounts on to the inner gear door



- Bend up a length of 1mm pushrod to be installed into the inner door servo linkages. The wire might need some bending to get the perfect fitment.



- Install the inner gear doors with m2 screws. Also install the push rod into the linkage stopper while you fit the gear door (pictured below).





### **Gear door timing:**

Depending on the brand of transmitter you use, you will need to setup the gear doors so that the inner gear doors operate with the following condition:

- gear up/down switch is “toggled”
- inner gear doors open:
  - “open” servo speed slowed to 1.5sec for full travel
  - once open, a delay of 2.5 sec before closing again (time for gear transition)
- gear extends/retracts
  - “extension/retraction” delayed by 1 sec (to allow gear doors to open)
- inner gear doors close
  - “close” servo speed slowed to 1.5sec for full travel

For Ethos users, the gear sequence is run through logic switches, the settings for the setup can be found here:

<https://www.rcgroups.com/forums/showpost.php?p=46708519&postcount=3621>

### **Fine tuning the inner gear doors:**

The left gear door is controlled by the aft linkage on the servo arm. This linkage is the most restricted with regards to space. It should be tuned to function as required first. After which the right gear door should be adjusted to match. The best way to tune the right gear doors is suggested as:

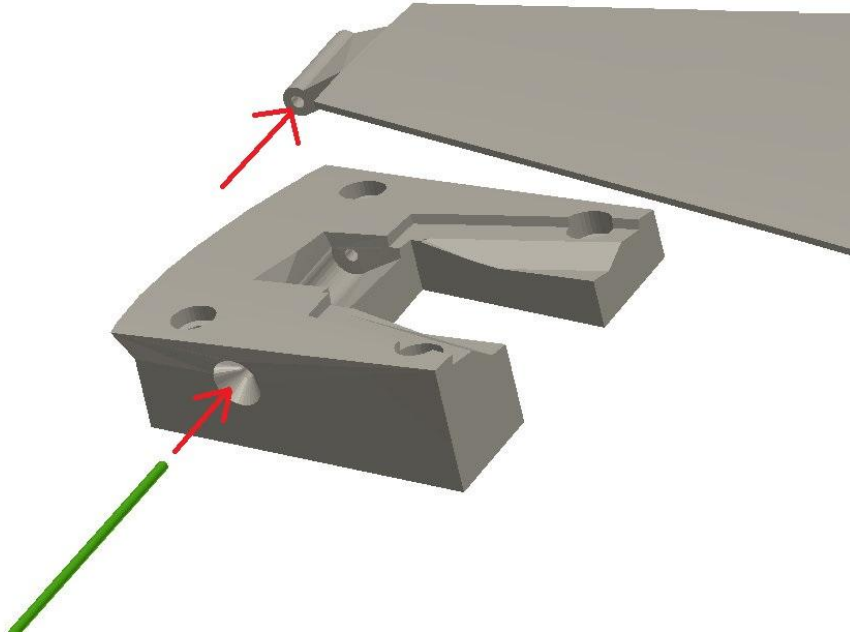
- Close both gear doors
- Note the resting position of the left gear door
- Adjust the right gear door so it matches the left door.
- Plug the servo back in and check the travel

NOTE- ensure that the servo is not under too much tension/load when the gear doors are closed or you will burn out the servo. Adjust the travel limits in your transmitter so that there is just enough tension to hold the doors up. In flight the air pressure should hold the doors closed.

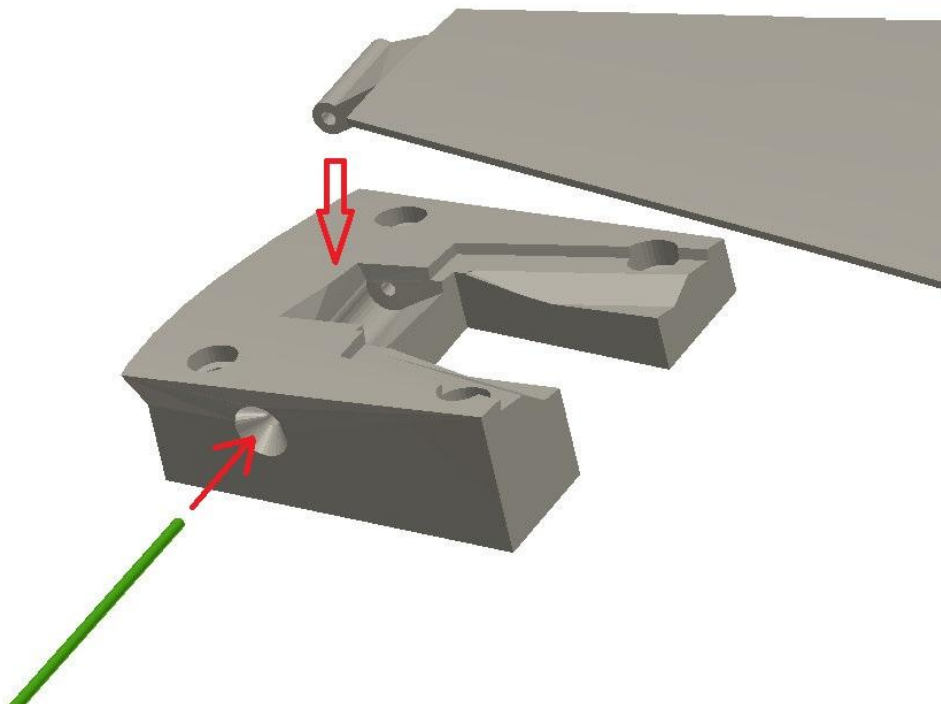


#### 4 Outer gear door installation

- Glue the two halves of the outer gear doors together.
- Run a 1mm drill bit through the main gear mount plate hinge pin slot and gear door hinge slot.

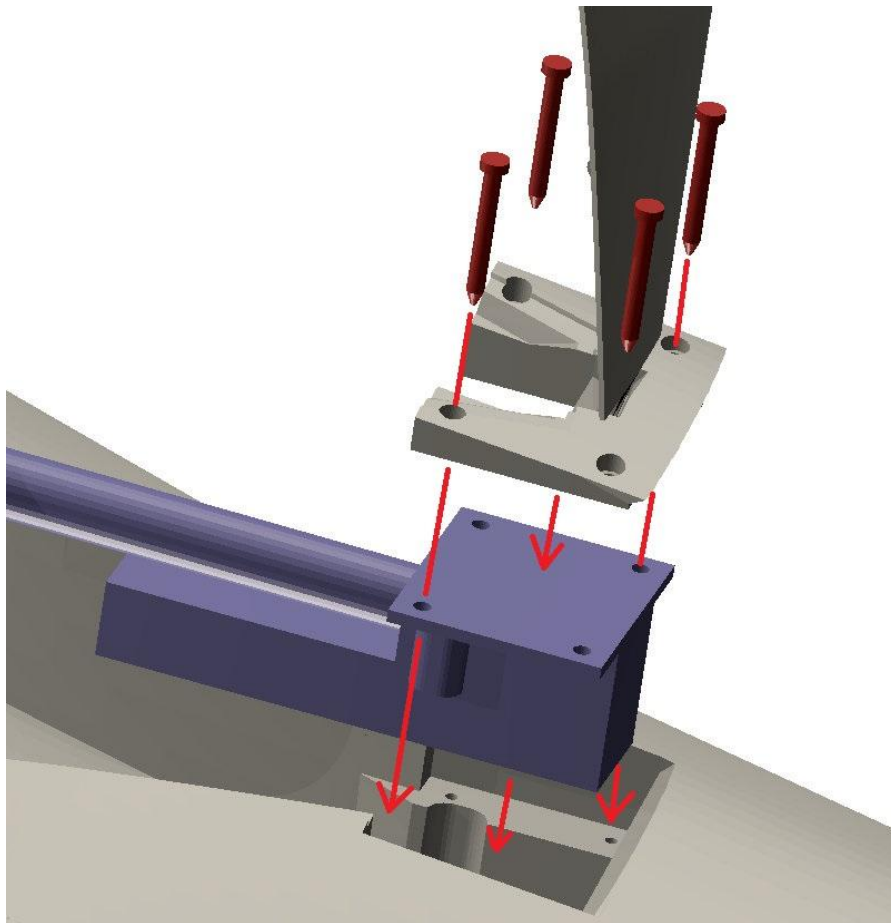


- Cut a 30mm length of 1mm wire and install the outer gear door to the main gear mount plate (add image)

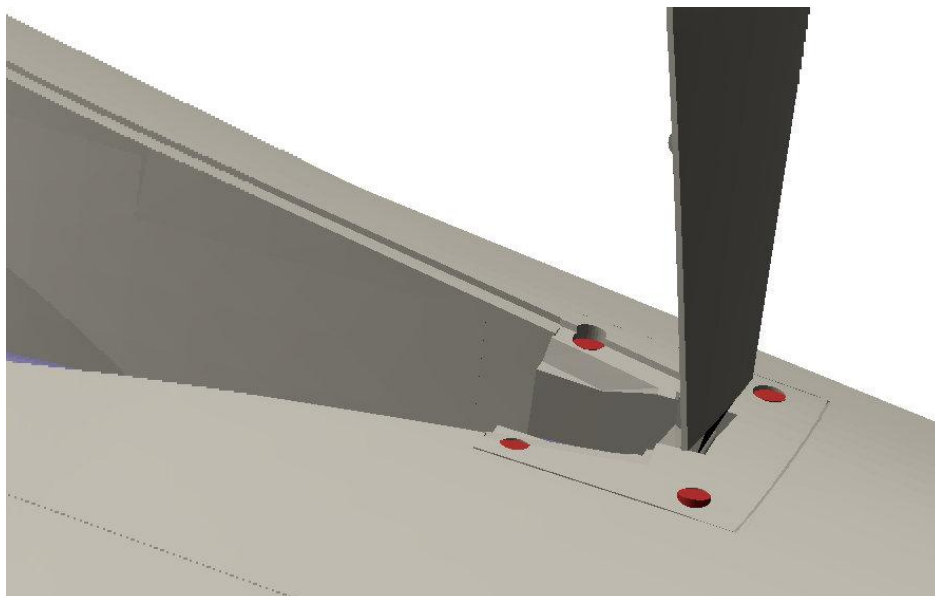


## 5 Retract installation

- Fit the gear leg to the retract and tighten the grub screw.
- Place the retract into the slot provided in the wings.
- Install the main gear mount plate over the retract with m2 x 20mm screws.

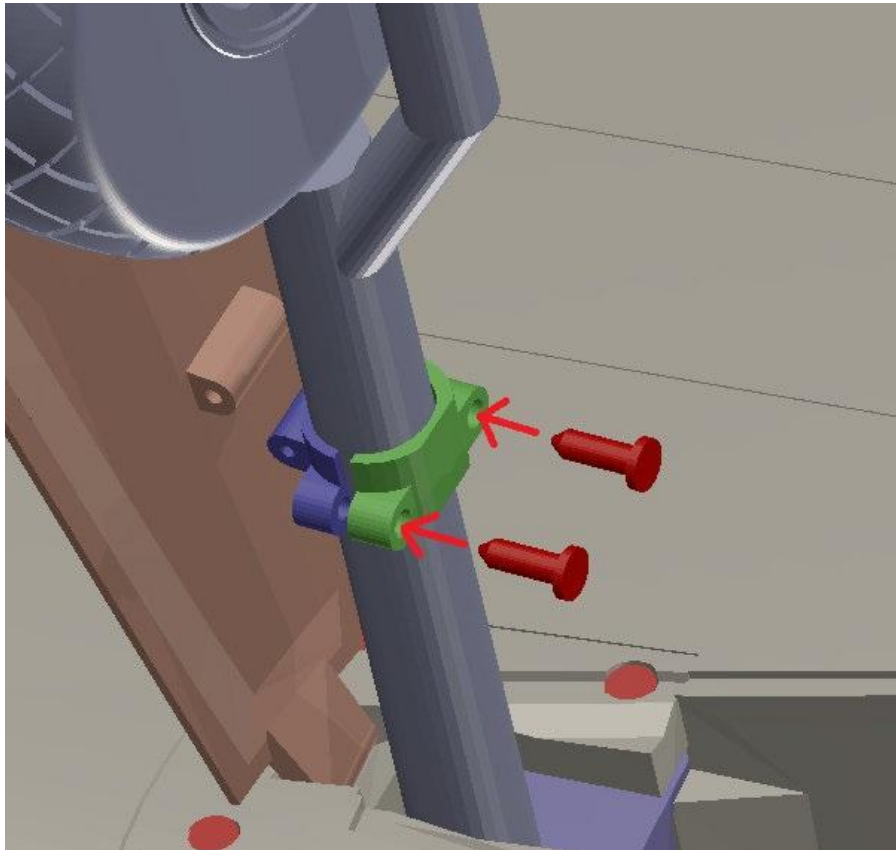


**Installed**

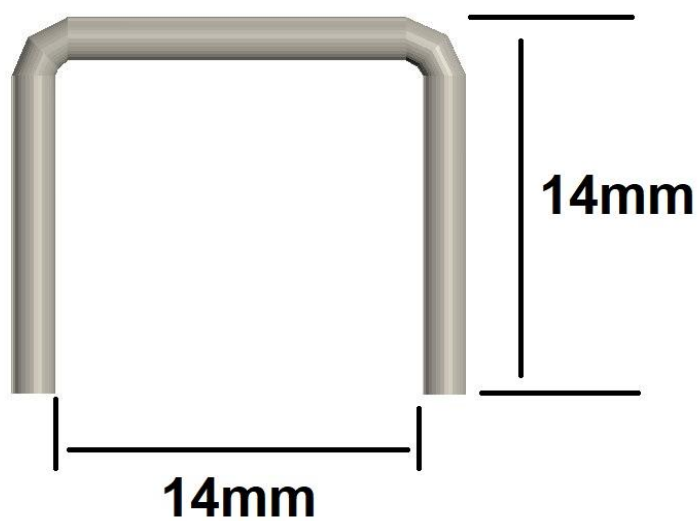


## 6 Outer gear door - retract connection

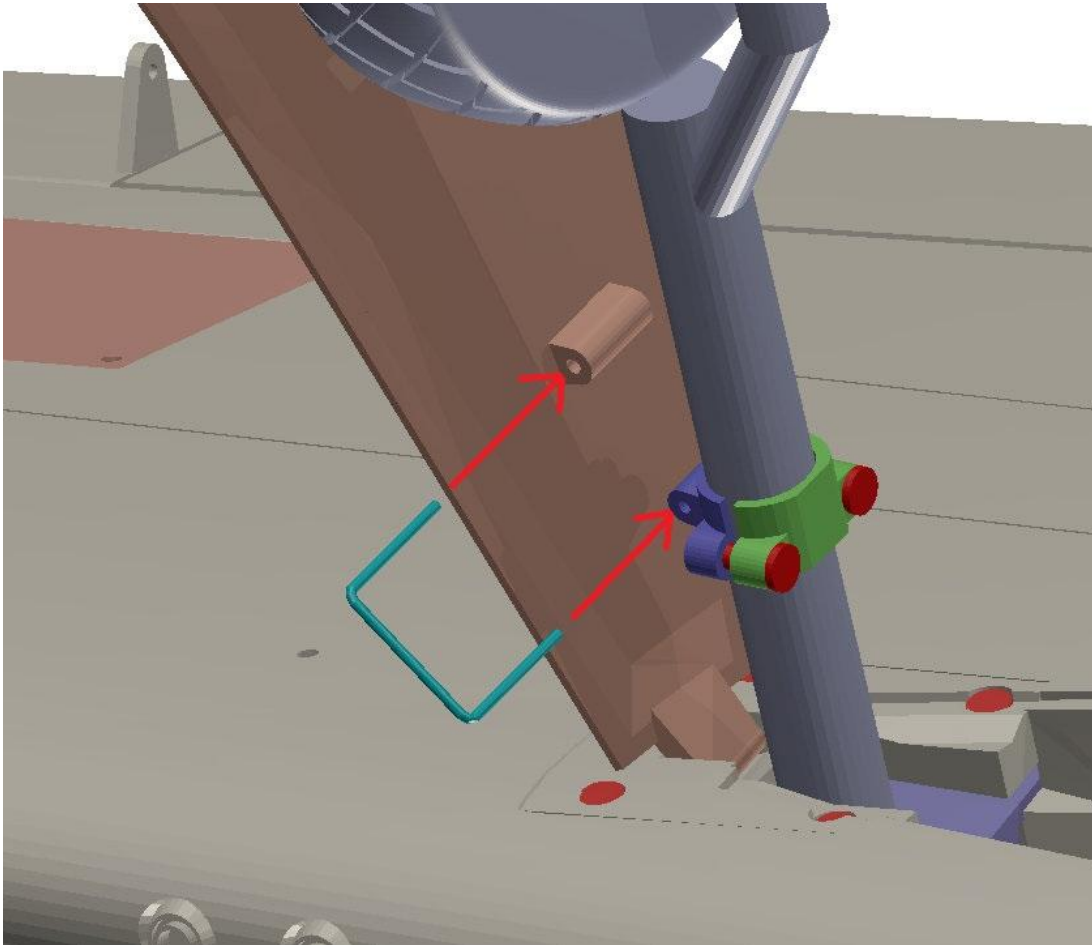
- Loosely fit the main gear clamps to the gear leg using m2 screws.



- Cut and bed a length of 1mm wire to act as the “gear leg - gear door” connecting rod.



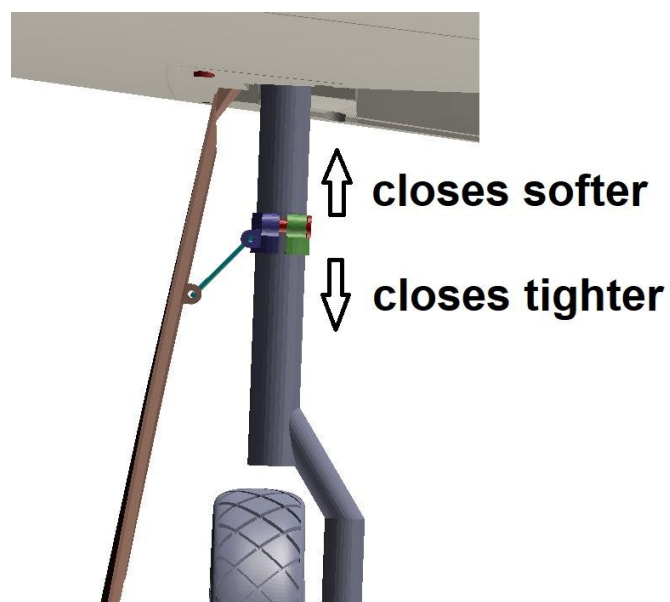
- Fit the connecting rod to the gear leg and gear door.



- When happy with the fitment, place a bend on one end of the wire to stop it falling out.

### Tuning the outer gear door:

When tuning the fitment of the outer gear door, moving the collar towards the wheel will cause the door to be more tightly closed when the gear is retracted. Moving the collar towards the retract will have the opposite effect. **The adjustment required to get perfect fitment is extremely fine so take your time.**



## 7 Wheel installation

Fit the wheel to the axle, securing it in place with a wheel collar.

Note - If using the TPU printed wheel, the rims are held together with m2 x 12mm screws.



## PROPELLER INSTALLATION

1

- Mount the Spinner backplate to the motor shaft.
- Mount the propeller to the motor shaft inside the spinner backplate.
- Secure the spinner to the back plate with m2 x 8mm screws.

### Centering the spinner:

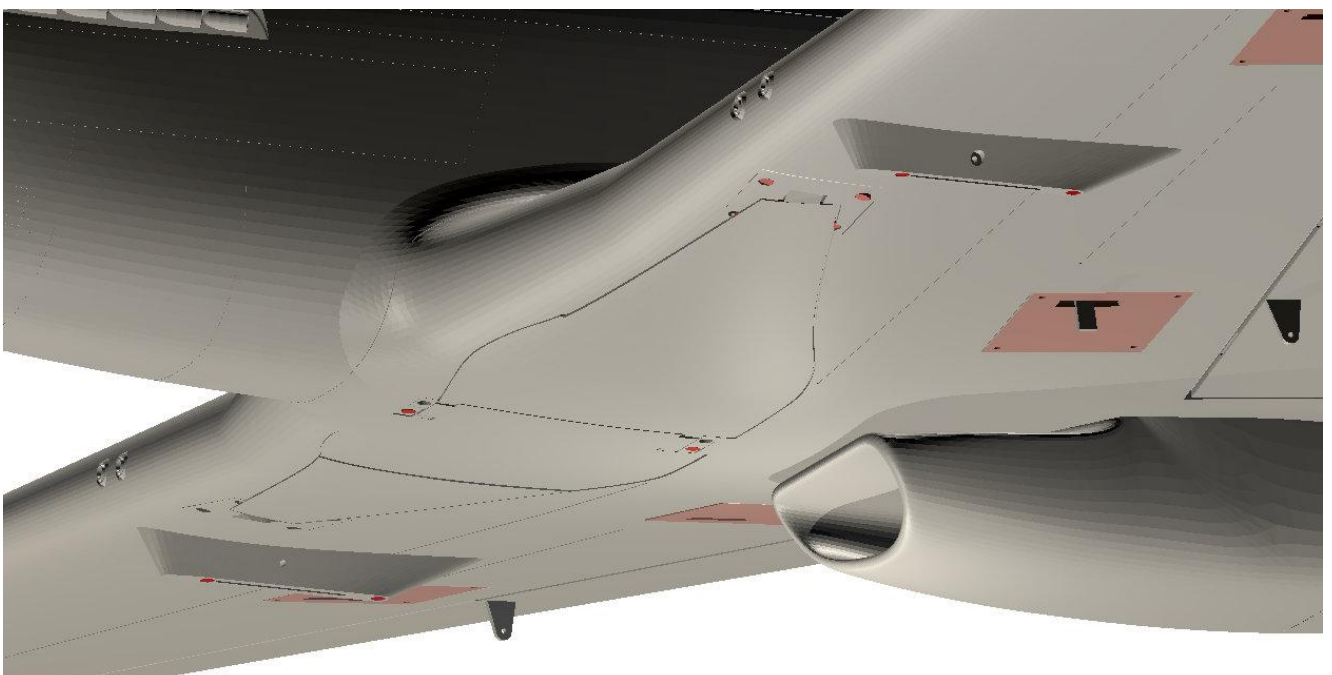
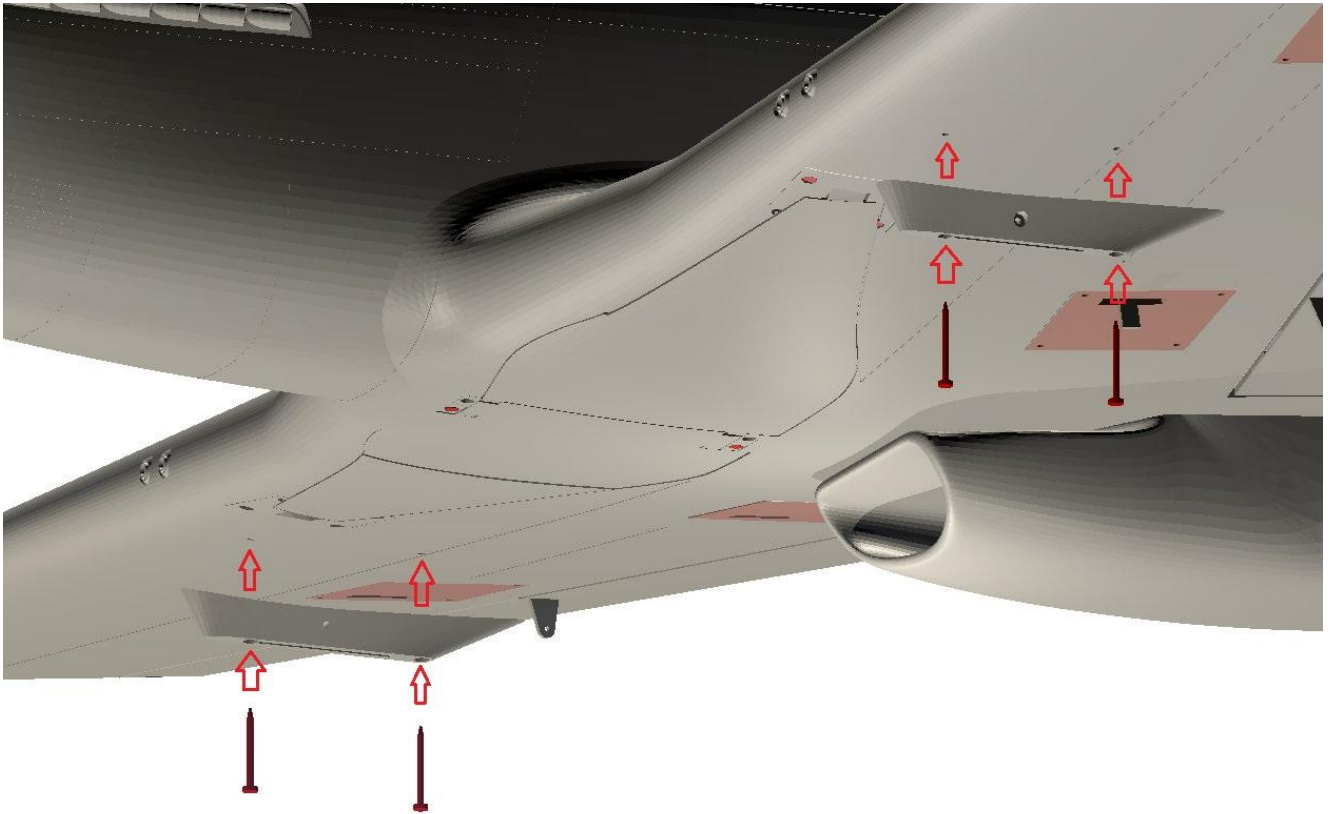
Don't over tighten the screws. The screws should be tightened in a staggered manner, the same as fitting a car wheel. This will prevent the spinner from being out of center.

When fitted, run the motor up slowly to test if there are any vibrations, if there are, remove the spinner and rotate 90deg and try again.

Once you find the fitment with the least vibration, place a small reference mark across the spinner to the backplate with a pen so you have a marking to line up if you need to remove the spinner.

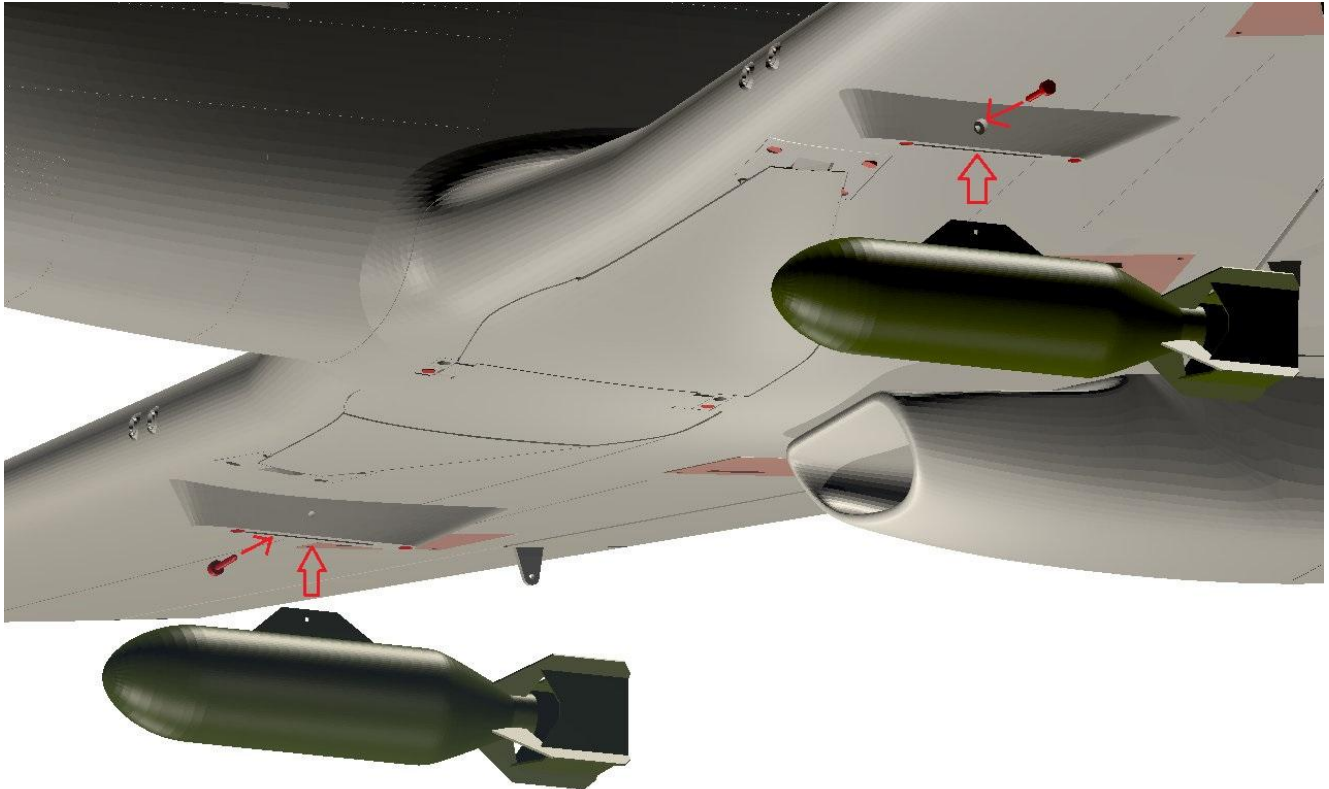
## FINISHING TOUCHES (armament racks)

- Glue the sections of the armament rack together.
- Using m2 x 20mm screws, install the racks onto the underside of the wings. **NOTE-** don't overtighten, it will crack the rack.





- The scale 250lb bomb or long range tanks can now be easily fitted with a m2 x 6mm screw.



## **BALANCING AND CG**

Fit the battery using Velcro as required and balance the aircraft inverted on the CG marking points located **66mm aft of the leading edge at the wing root.**

## **RANGE OF TRAVEL:**

### **MAIDEN FLIGHT:**

Elevator	+/- 10mm
Rudder	+/- 15mm
Aileron	+/- 10mm

### **AEROBATIC FLIGHT:**

Elevator	+/- 20mm
Rudder	+/- 30mm
Aileron	+/- 15mm

Flaps Take-off / Approach	20 degrees
Flaps Landing	60 degrees

## **PARTS LINKS:**

X1 3548 900kv

[https://hobbyking.com/en\\_us/propdrive-v2-3548-900kv-brushless-outrunner-motor.html?queryID=0c6168bd15eaaf0dde6d5909e3f425eb&objectID=58899&indexName=hbk\\_live\\_products\\_analytics](https://hobbyking.com/en_us/propdrive-v2-3548-900kv-brushless-outrunner-motor.html?queryID=0c6168bd15eaaf0dde6d5909e3f425eb&objectID=58899&indexName=hbk_live_products_analytics)

X1 12x6 propeller

[https://hobbyking.com/en\\_us/apc-style-propeller-12x6-bone-1pc.html?queryID=82419ffb51b6d93e65a3f28053dac377&objectID=23021&indexName=hbk\\_live\\_products\\_analytics](https://hobbyking.com/en_us/apc-style-propeller-12x6-bone-1pc.html?queryID=82419ffb51b6d93e65a3f28053dac377&objectID=23021&indexName=hbk_live_products_analytics)

X1 60amp esc

[https://hobbyking.com/en\\_us/hobbyking-2-4s-60a-esc-4a-sbec.html?store=en\\_us](https://hobbyking.com/en_us/hobbyking-2-4s-60a-esc-4a-sbec.html?store=en_us)

X1 4000mah 4s 30c LIPO OR SIMILAR (or similar 420g)

[https://hobbyking.com/en\\_us/turnigy-battery-4000mah-4s-30c-lipo-pack-xt-60.html?queryID=c95091d4c2e2d39847387fe69c7d306e&objectID=69426&indexName=hbk\\_live\\_products\\_analytics](https://hobbyking.com/en_us/turnigy-battery-4000mah-4s-30c-lipo-pack-xt-60.html?queryID=c95091d4c2e2d39847387fe69c7d306e&objectID=69426&indexName=hbk_live_products_analytics)

X7 9g servo

[https://hobbyking.com/en\\_us/turnigytm-tg9d-digital-micro-servo-1-8kg-0-09sec-9g.html?queryID=5140502f0f9e21619bc511d4a45d6cf1&objectID=41779&indexName=hbk\\_live\\_products\\_analytics](https://hobbyking.com/en_us/turnigytm-tg9d-digital-micro-servo-1-8kg-0-09sec-9g.html?queryID=5140502f0f9e21619bc511d4a45d6cf1&objectID=41779&indexName=hbk_live_products_analytics)

X2 2.5kg retracts(standard 90deg)

<https://de.aliexpress.com/item/32807161553.html?gatewayAdapt=glo2deu>

X2 landing gear leg (e-flite mustang)

[https://www.horizonhobby.de/en\\_DE/product/landing-gear-struts-and-door-set-p-51d-1.2m/EFL8207.html](https://www.horizonhobby.de/en_DE/product/landing-gear-struts-and-door-set-p-51d-1.2m/EFL8207.html)

X2 landing gear leg (m3 or m4)

[https://de.aliexpress.com/item/4000656976953.html?spm=a2g0o.order\\_list.order\\_list\\_main.567.21ef5c5fApqZFY&gatewayAdapt=glo2deu](https://de.aliexpress.com/item/4000656976953.html?spm=a2g0o.order_list.order_list_main.567.21ef5c5fApqZFY&gatewayAdapt=glo2deu)

1mm Piano wire (200mm min)

[https://de.aliexpress.com/item/32975279180.html?spm=a2g0o.order\\_list.0.0.707b5c5fPDMJL&gatewayAdapt=glo2deu](https://de.aliexpress.com/item/32975279180.html?spm=a2g0o.order_list.0.0.707b5c5fPDMJL&gatewayAdapt=glo2deu)

2mm Piano wire (520mm min)

[https://de.aliexpress.com/item/32975279180.html?spm=a2g0o.order\\_list.0.0.707b5c5fPDMJL&gatewayAdapt=glo2deu](https://de.aliexpress.com/item/32975279180.html?spm=a2g0o.order_list.0.0.707b5c5fPDMJL&gatewayAdapt=glo2deu)

X4 10mm X 10mm X 2mm MAGNET (ROUND)

[https://www.aliexpress.com/item/1005001362617359.html?spm=a2g0o.productlist.0.0.5da3607dAATh5j&algo\\_pvid=b9e32b8a-0d4f-469a-b838-b478442dda50&algo\\_expid=b9e32b8a-0d4f-469a-b838-b478442dda50-0&btsid=0bb0623a15991797178681785e1811&ws\\_ab\\_test=searchweb0\\_0.searchweb201602\\_.searchweb201603\\_](https://www.aliexpress.com/item/1005001362617359.html?spm=a2g0o.productlist.0.0.5da3607dAATh5j&algo_pvid=b9e32b8a-0d4f-469a-b838-b478442dda50&algo_expid=b9e32b8a-0d4f-469a-b838-b478442dda50-0&btsid=0bb0623a15991797178681785e1811&ws_ab_test=searchweb0_0.searchweb201602_.searchweb201603_)

X14 16x29mm nylon hinges (OPTIONAL)

[https://de.aliexpress.com/item/4000785269166.html?spm=a2g0o.order\\_list.0.0.773d5c5f110Bxa&gatewayAdapt=glo2deu](https://de.aliexpress.com/item/4000785269166.html?spm=a2g0o.order_list.0.0.773d5c5f110Bxa&gatewayAdapt=glo2deu)

M2 WHEEL STOP COLLAR

[https://hobbyking.com/en\\_us/landing-gear-wheel-stop-set-collar-6x2-1mm-10pcs.html?queryID=d4b3223d5d9e549f7d13a50df4ad9d7c&objectID=5482&indexName=hbk\\_live\\_products\\_analytics](https://hobbyking.com/en_us/landing-gear-wheel-stop-set-collar-6x2-1mm-10pcs.html?queryID=d4b3223d5d9e549f7d13a50df4ad9d7c&objectID=5482&indexName=hbk_live_products_analytics)

X2 M3 Wheel stop collar

[https://hobbyking.com/en\\_us/landing-gear-wheel-stop-set-collar-8x3-1mm-10pcs.html?queryID=d4b3223d5d9e549f7d13a50df4ad9d7c&objectID=5483&indexName=hbk\\_live\\_products\\_analytics](https://hobbyking.com/en_us/landing-gear-wheel-stop-set-collar-8x3-1mm-10pcs.html?queryID=d4b3223d5d9e549f7d13a50df4ad9d7c&objectID=5483&indexName=hbk_live_products_analytics)

X9 m1.3 linkage stopper (hex type)

[https://de.aliexpress.com/item/1005001507975588.html?spm=a2g0o.order\\_list.order\\_list\\_main.165.21ef5c5fApqZFY&gatewayAdapt=glo2deu](https://de.aliexpress.com/item/1005001507975588.html?spm=a2g0o.order_list.order_list_main.165.21ef5c5fApqZFY&gatewayAdapt=glo2deu)

M2 screws (6mm, 10mm, 14mm, 20mm)

[https://de.aliexpress.com/item/1005001870799002.html?spm=a2g0o.productlist.main.27.7c7c275fOdXxvR&algo\\_pvid=e8a79481-9e7c-4b7d-b73c-713a2b629955&algo\\_exp\\_id=e8a79481-9e7c-4b7d-b73c-713a2b629955-13&pdp\\_ext\\_f=%7B%22sku\\_id%22%3A%2212000017972648994%22%7D&pdp\\_npi=2%40dis%21EUR%219.77%214.98%21%21%21%21%40212248ba16673934615254497d0766%2112000017972648994%21sea&curPageLogUid=GidAFVMwfUh3](https://de.aliexpress.com/item/1005001870799002.html?spm=a2g0o.productlist.main.27.7c7c275fOdXxvR&algo_pvid=e8a79481-9e7c-4b7d-b73c-713a2b629955&algo_exp_id=e8a79481-9e7c-4b7d-b73c-713a2b629955-13&pdp_ext_f=%7B%22sku_id%22%3A%2212000017972648994%22%7D&pdp_npi=2%40dis%21EUR%219.77%214.98%21%21%21%21%40212248ba16673934615254497d0766%2112000017972648994%21sea&curPageLogUid=GidAFVMwfUh3)

X3 M6 nylon bolt and nut (50mm min)

[https://de.aliexpress.com/item/1005003552668675.html?spm=a2g0o.productlist.main.33.505573470pvtwB&algo\\_pvid=ff8d2a88-e615-4f36-9dc7-8241276ee557&algo\\_exp\\_id=ff8d2a88-e615-4f36-9dc7-8241276ee557-16&pdp\\_ext\\_f=%7B%22sku\\_id%22%3A%2212000026259386907%22%7D&pdp\\_npi=2%40dis%21EUR%2111.66%216.18%21%21%21%21%21%40211bf12316673936387387553d0732%2112000026259386907%21sea&curPageLogUid=pNbb66m68qTS](https://de.aliexpress.com/item/1005003552668675.html?spm=a2g0o.productlist.main.33.505573470pvtwB&algo_pvid=ff8d2a88-e615-4f36-9dc7-8241276ee557&algo_exp_id=ff8d2a88-e615-4f36-9dc7-8241276ee557-16&pdp_ext_f=%7B%22sku_id%22%3A%2212000026259386907%22%7D&pdp_npi=2%40dis%21EUR%2111.66%216.18%21%21%21%21%21%40211bf12316673936387387553d0732%2112000026259386907%21sea&curPageLogUid=pNbb66m68qTS)

X3 10x8x500mm round carbon tube (500mm)

<https://de.aliexpress.com/item/32751747710.html?gatewayAdapt=glo2deu>

X1 6mm x 400mm wooden dowel

Local hardware store

X1 3x3x2mm square carbon tube

[https://de.aliexpress.com/item/4001086545108.html?spm=a2g0o.productlist.main.13.542f41ee4r8AaQ&algo\\_pvid=7a3ceec5-57fd-44a1-9e47-757557a9708d&algo\\_exp\\_id=7a3ceec5-57fd-44a1-9e47-757557a9708d-6&pdp\\_ext\\_f=%7B%22sku\\_id%22%3A%2210000014296523704%22%7D&pdp\\_npi=2%40dis%21EUR%217.72%217.72%21%21%21%21%21%40211bea7b16673938668831536d0730%2110000014296523704%21sea&curPageLogUid=kNXT6vmUYIZX](https://de.aliexpress.com/item/4001086545108.html?spm=a2g0o.productlist.main.13.542f41ee4r8AaQ&algo_pvid=7a3ceec5-57fd-44a1-9e47-757557a9708d&algo_exp_id=7a3ceec5-57fd-44a1-9e47-757557a9708d-6&pdp_ext_f=%7B%22sku_id%22%3A%2210000014296523704%22%7D&pdp_npi=2%40dis%21EUR%217.72%217.72%21%21%21%21%21%40211bea7b16673938668831536d0730%2110000014296523704%21sea&curPageLogUid=kNXT6vmUYIZX)

X2 75mm foam wheels + X1 25mm foam wheel

[https://de.aliexpress.com/item/1005003141503276.html?spm=a2g0o.detail.1000014.4.3f7157e2QoKtNP&gps-id=pcDetailBottomMoreOtherSeller&scm=1007.40050.281175.0&scm\\_id=1007.40050.281175.0&scm-url=1007.40050.281175.0&pvid=d21cf73a-3035-47b2-8701-08f0cebe8f36&t=pcDetailBottomMoreOtherSeller,scm-url:1007.40050.281175.0,pvid:d21cf73a-3035-47b2-8701-08f0cebe8f36.tpp\\_buckets:668%232846%238112%231997&pdp\\_npi=3%40dis%21EUR%216.65%216.12%21%21%21%21%40211b5e1d16860354700878376e2926%2112000024316114092%21rec%21DE%21118672630](https://de.aliexpress.com/item/1005003141503276.html?spm=a2g0o.detail.1000014.4.3f7157e2QoKtNP&gps-id=pcDetailBottomMoreOtherSeller&scm=1007.40050.281175.0&scm_id=1007.40050.281175.0&scm-url=1007.40050.281175.0&pvid=d21cf73a-3035-47b2-8701-08f0cebe8f36&t=pcDetailBottomMoreOtherSeller,scm-url:1007.40050.281175.0,pvid:d21cf73a-3035-47b2-8701-08f0cebe8f36.tpp_buckets:668%232846%238112%231997&pdp_npi=3%40dis%21EUR%216.65%216.12%21%21%21%21%40211b5e1d16860354700878376e2926%2112000024316114092%21rec%21DE%21118672630)

VELCRO – (local hardware store)

Braided fishing line (or similar)

BAMBOO FOOD SKEWERS (3mm diameter)

**Thank you for supporting us! We hope you enjoy many hours of flying your P-51 B Mustang. If you have any questions regarding the build process or set-up of your model, please contact us at:**

**[Aeroworks3d@outlook.com](mailto:Aeroworks3d@outlook.com)**

