

ASSEMBLY MANUAL AND USER GUIDE



X-88
FUN JET

By 3D AEROWORKS

OVERVIEW:

This custom design of a high speed futuristic fighter is designed for quick and easy construction printed in PLA. For best results the canopy should be printed with clear PLA and the motor mount and propeller assembly in regular PLA or PETG. Designed to suit the 2826 2200kv outrunner on a 5x5 propeller. Utilising only elevons, this model performs high speed and aerobatic flight extremely well. Links to components used can be found on the last page of the user guide.

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/x-85-funjet>

GENERAL SPECIFICATIONS

WINGSPAN:	800mm
PRINT TIME:	66 hrs
PRINT COST:	\$10 USD
PRINT WEIGHT:	595g
FLYING WEIGHT:	930g

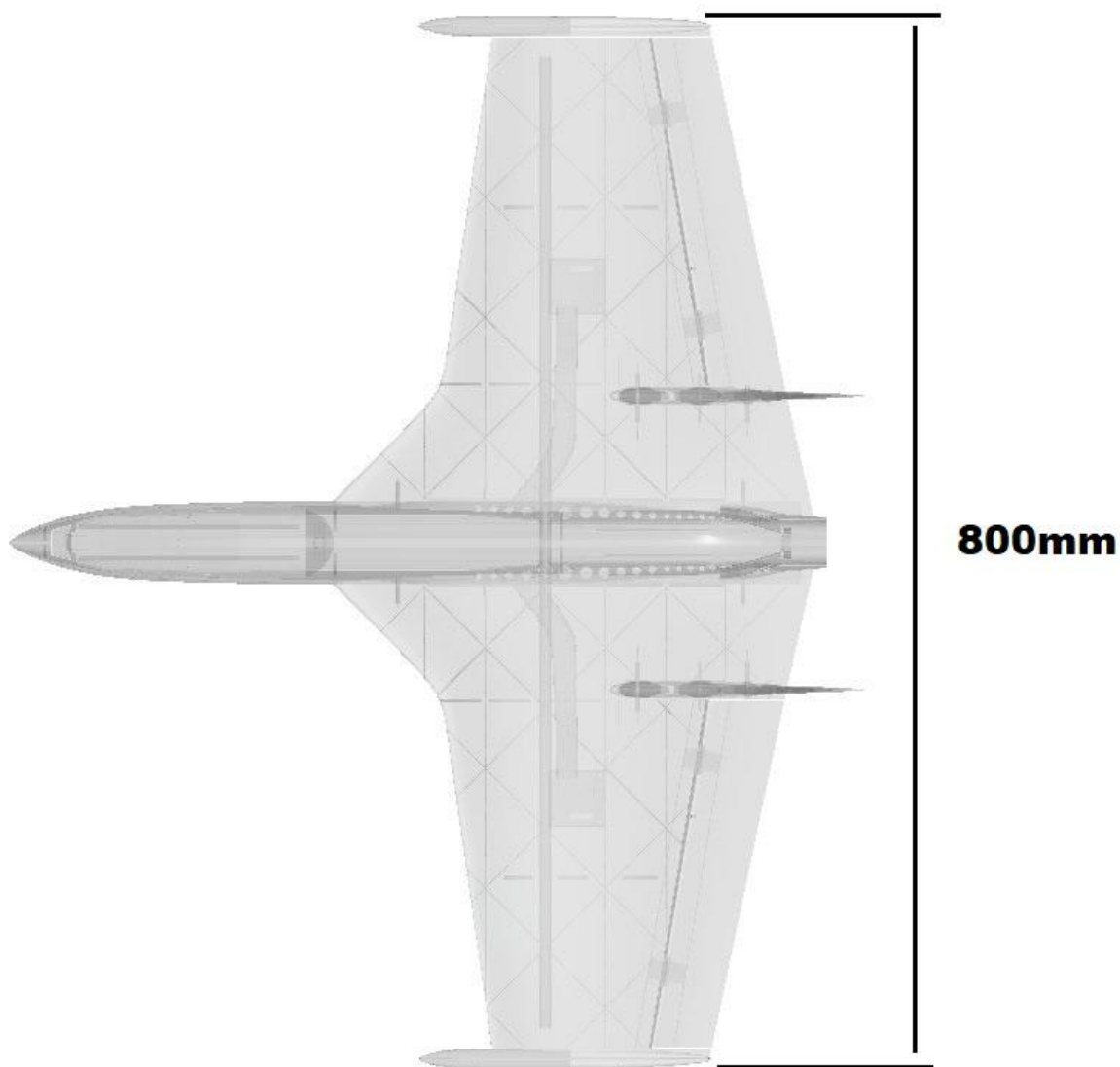
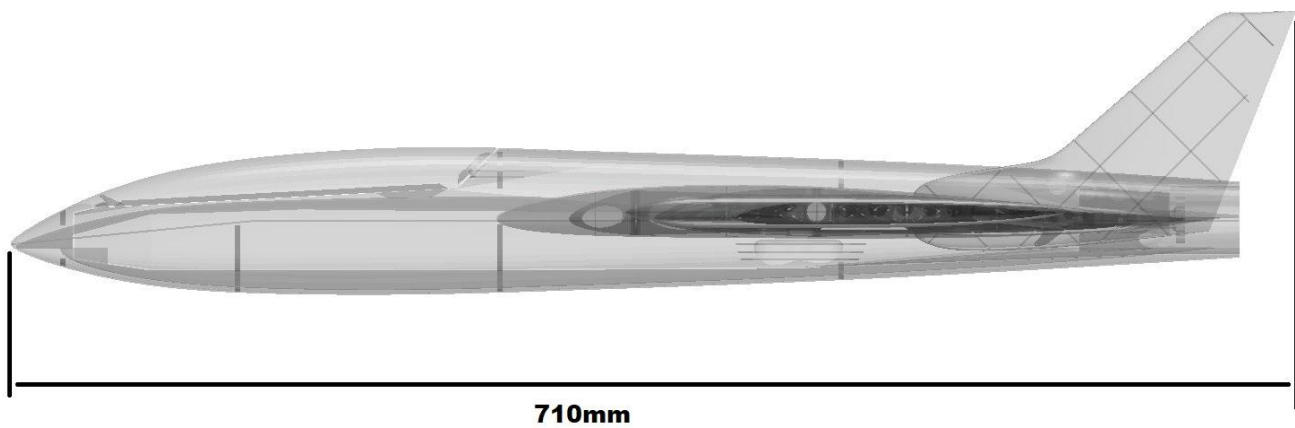
ELECTRICS

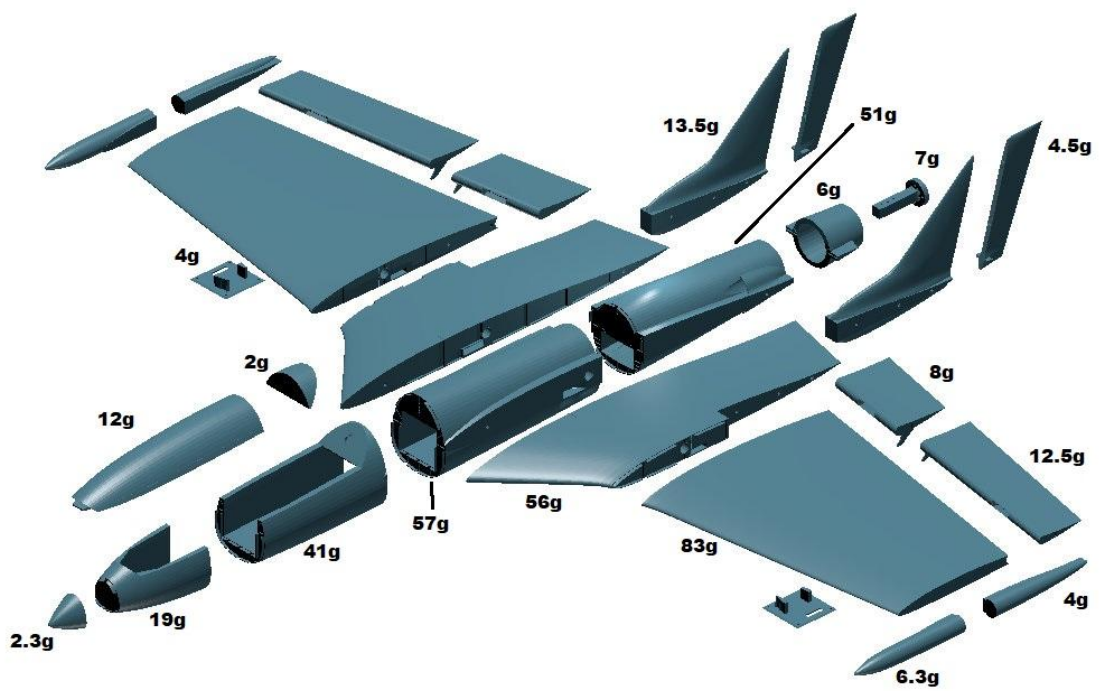
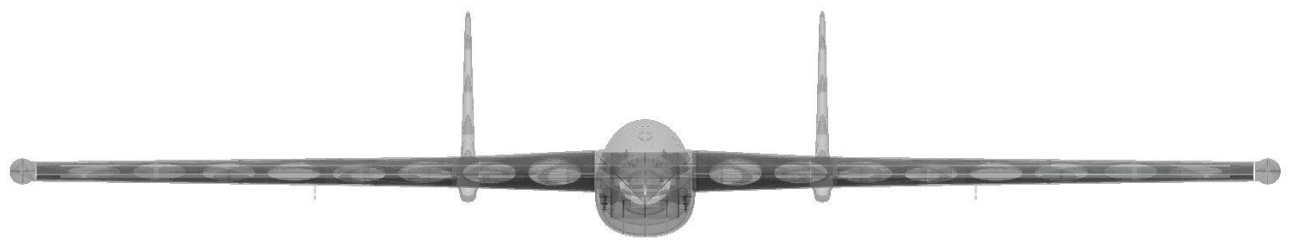
MOTOR:	2826 2200KV or (2836 2500kv high power)
ESC:	30amp (min) recommend 40amp
SERVOS:	9g MICRO
BATTERY:	2200mah 3s (or similar)

INCLUDED:

STL FILES OF ALL COMPONENTS **(scale to 1000% if not using S3D)**

FACTORY FILES FOR (S3D) SIMPLIFY 3D FOR PRINTERS:	200x200x200
	300x300x400





REQUIRED TOOLS:

KNIFE

LIGHTER

SANDPAPER (MEDIUM GRIT 320 recommended)

PLIERS

CA GLUE

SCREW DRIVERS

FILE OR RASP

REQUIRED COMPONENTS:

X1 2826 2200KV MOTOR (or similar)

X1 30AMP ESC

X1 2200MAH 3S LIPO OR SIMILAR

X2 9G SERVO

3mm BAMBOO FOOD SKEWERS

X2 10mm X 10mm X 2mm MAGNET (ROUND)

X4 16mm x 29mm HINGES

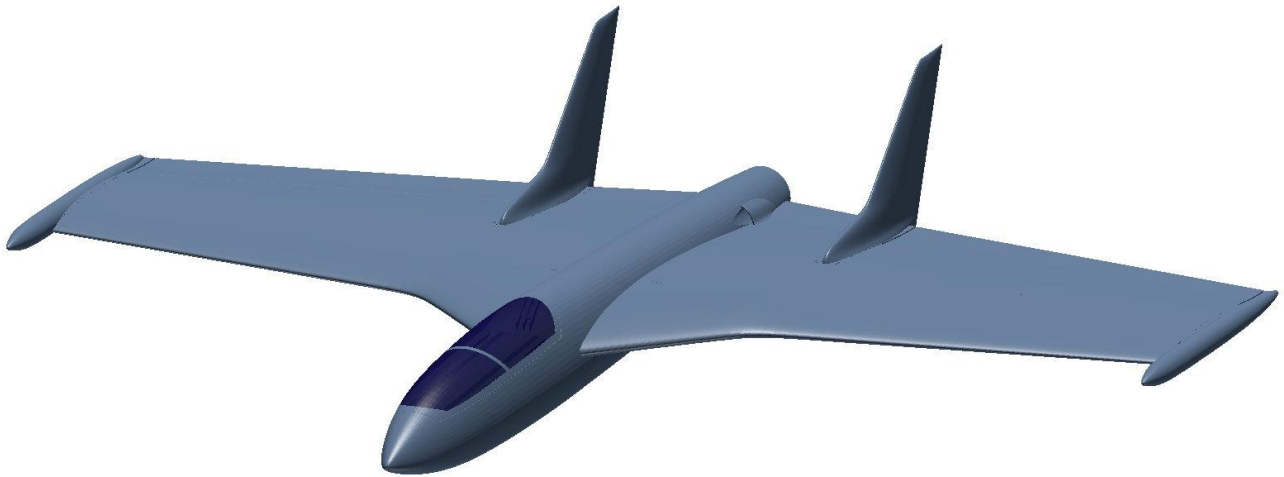
X1 10mm x 800mm or 500mm carbon tube or pine rod (OPTIONAL)

M2 x10mm screws

1mm piano wire

M2 push rod (110mm min length) < FOR RDS ONLY

VELCRO



ASSEMBLY INSTRUCTIONS

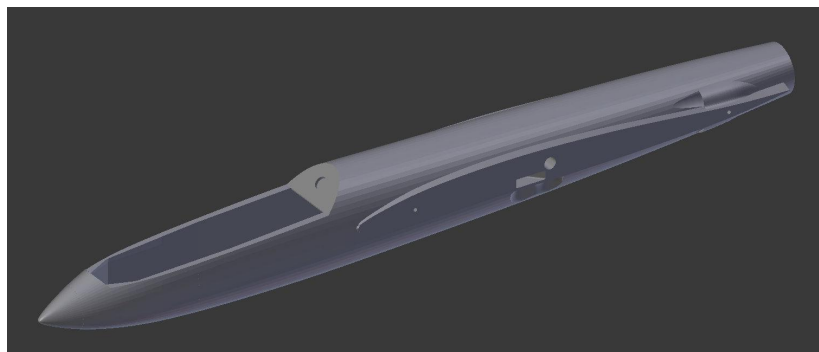
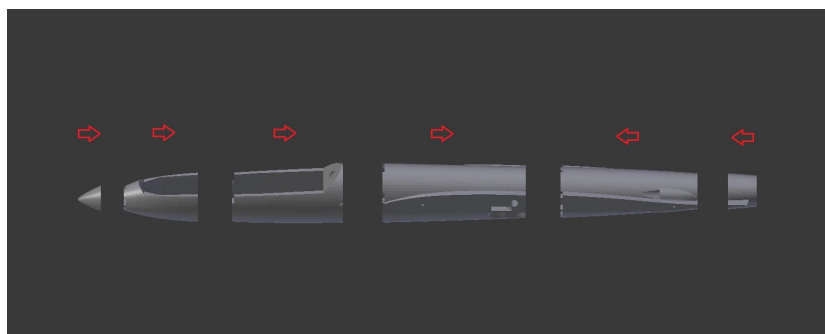
1

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.

2

Check the fitment of all parts before gluing to make sure a good bond takes place. There should not be any gaps visible in the joins.

Glue sections of the fuselage together using CA glue. (see images)

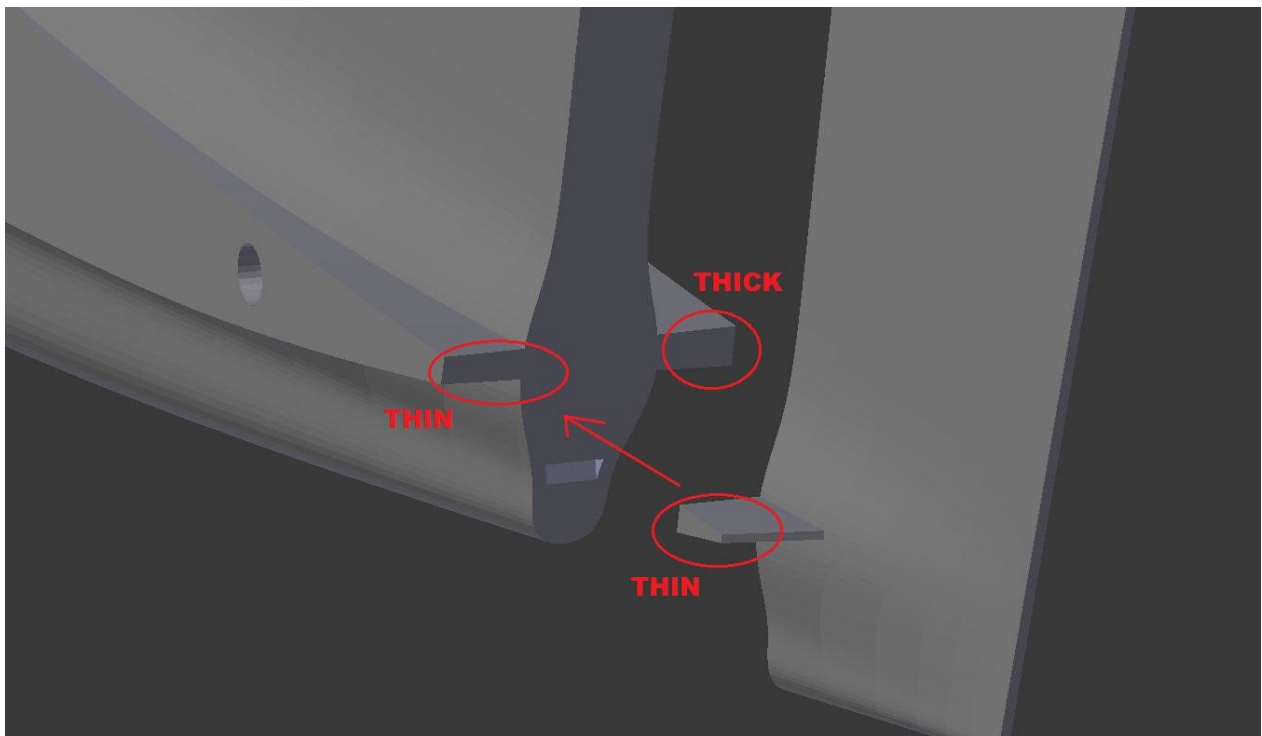


3

Glue the sections vertical stabilisers together.

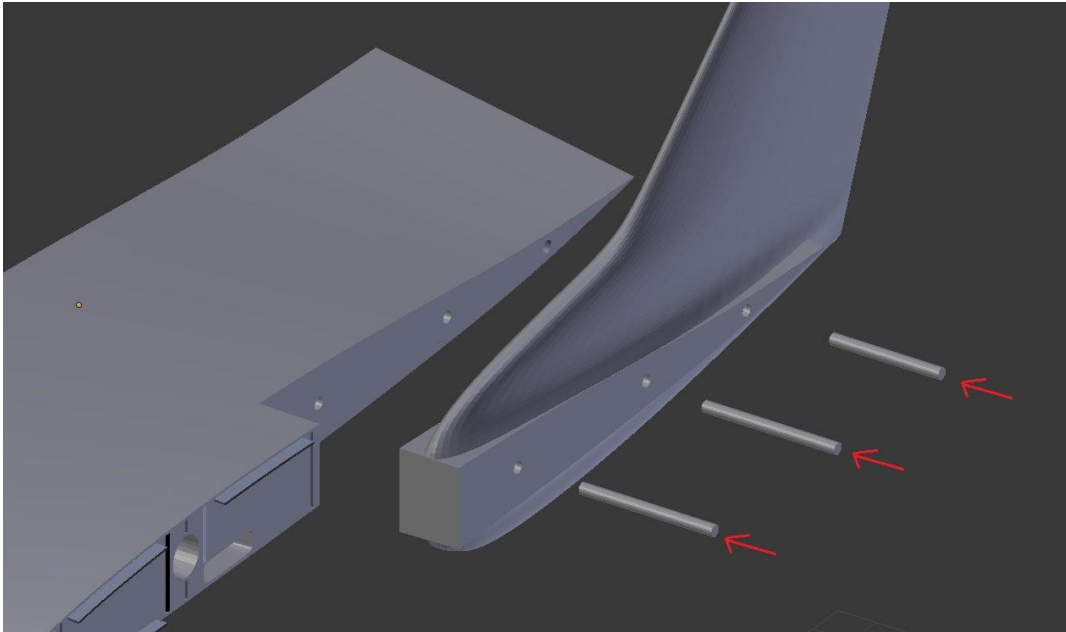


NOTE: be sure to match up the side correctly. (example of left vertical stabiliser below)

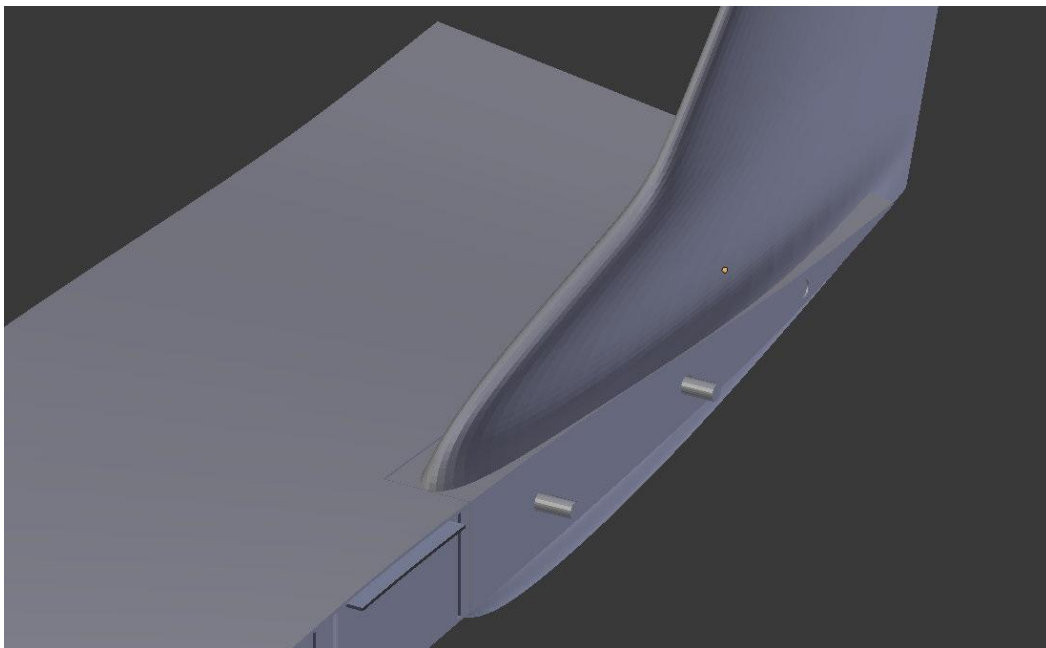


Cut two 35mm sections and one 25mm section of food skewer. Insert the 35mm sections in the front two holes and the 25mm section into the aft holes of the vertical stabiliser.

Fit the vertical stabiliser to the Inner section of the wing using the skewers to align the parts.

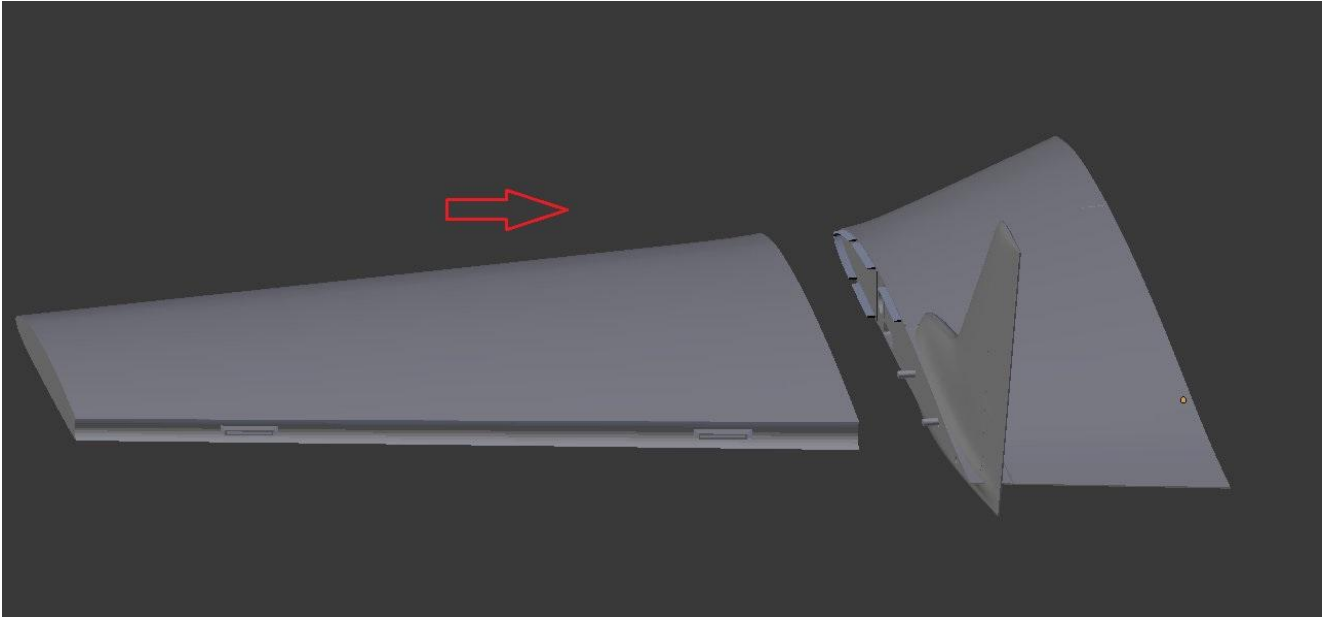


The completion of this section should have the front two skewers protruding from the vertical stabiliser which will assist the fitment of the outer wing. The aft skewer should be slightly recessed so as not to interfere with the aileron travel.



5

Fit and glue the outer section of the wing to the already assembled inner section and vertical stabiliser. The carbon or pine main spar should be test fit before gluing.



6

Glue the aileron sections together. Insert the hinges into the ailerons and test fit the aileron to the wing.

NOTE: The hinge length may need to be trimmed slightly if it does not seat all the way into the hinge slot.

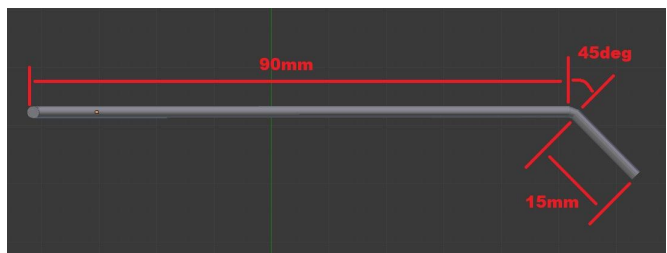
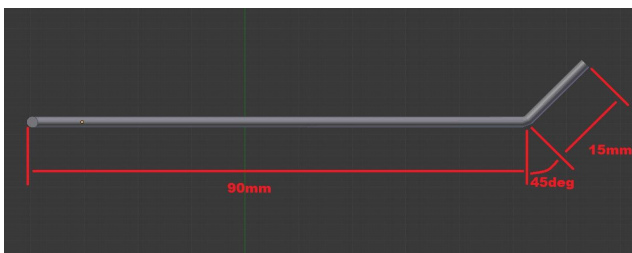
7a (RDS option)

- Cut two 110mm lengths of 2mm push rod and bend according to the images below.

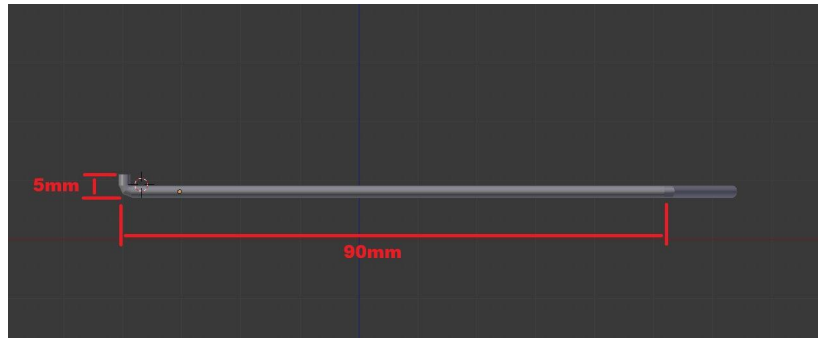
TOP VIEW

Left side

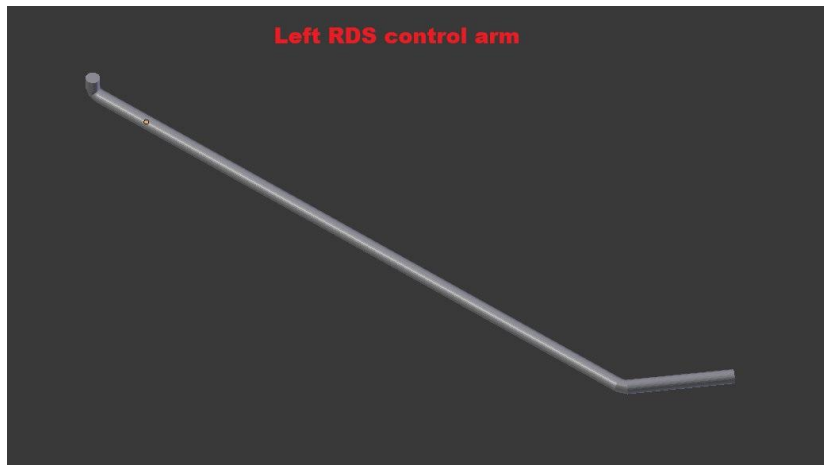
Right side



SIDE VIEW



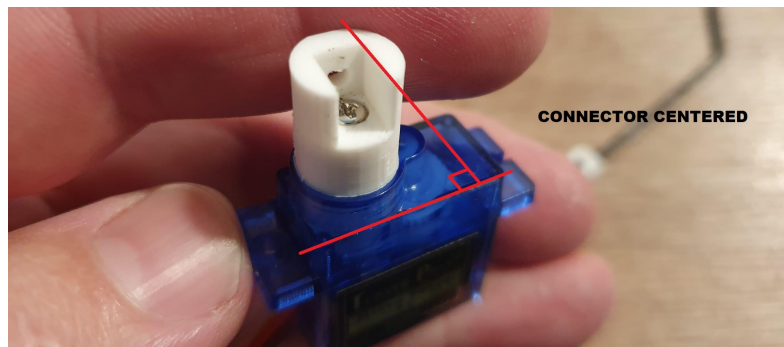
ISOMETRIC VIEW



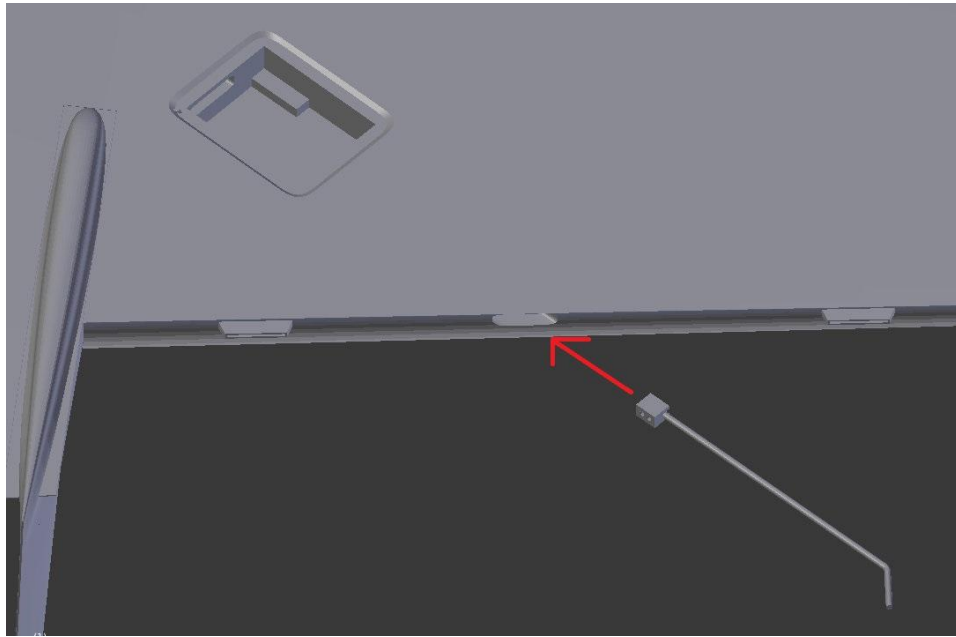
- Fit the torque link to the end of the push rod with the short 90 deg bend.



- Fit the servo connector to the servo. (be sure the connector is centered in the neutral position when the servo has power.)

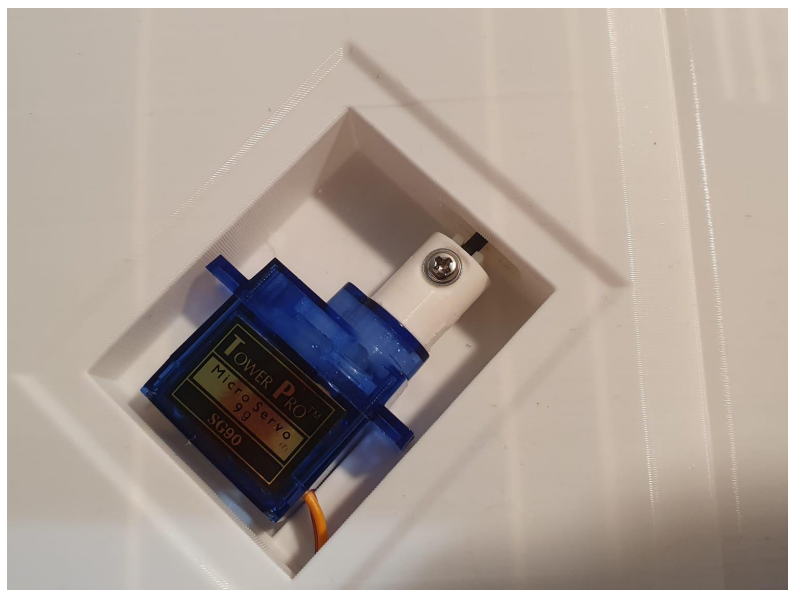


- Insert the torque link and rod through the aileron end of the torque link tube and secure it to the servo.



- Install the servo into the wing, the servo gear needs to be on the same side as the tube for the torque link (see below). Secure with either hot glue or attach the servo adaptors and screw into place. (the mount plates in the wing for the servo consist of 4 layers and are quite thick. Pre-drilling with a 1.5mm drill bit is advised before mounting with either m2 screws or the mount screws that come with the servo.)
- Assemble the connector and the torque link using a small screw. NOTE - The torque link needs to be fitted to the connector so that the screw holds the push rod in the torque link. See image. (fitting it the other way will allow the rod to fall out of the torque link)

RDS INSTALLED



CORRECTLY SECURED EXAMPLE



7

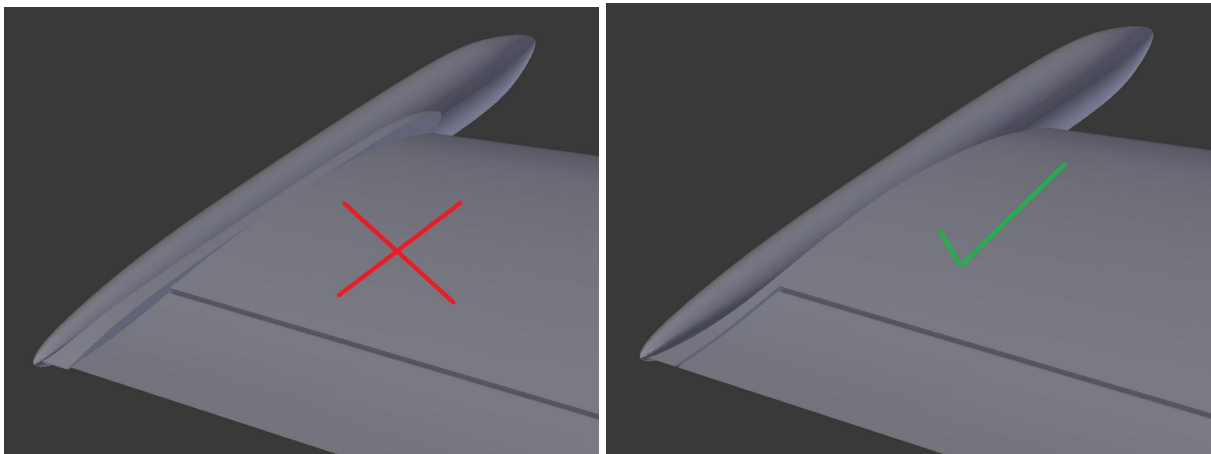
Glue the hinges to the aileron first, then the aileron to the wing.

IMPORTANT! Only 2 drops of CA is needed for each slot for the hinges. Too much CA and the hinge will bind and be unusable.

TIP: After adding the CA, use a tissue to wipe away the excess.

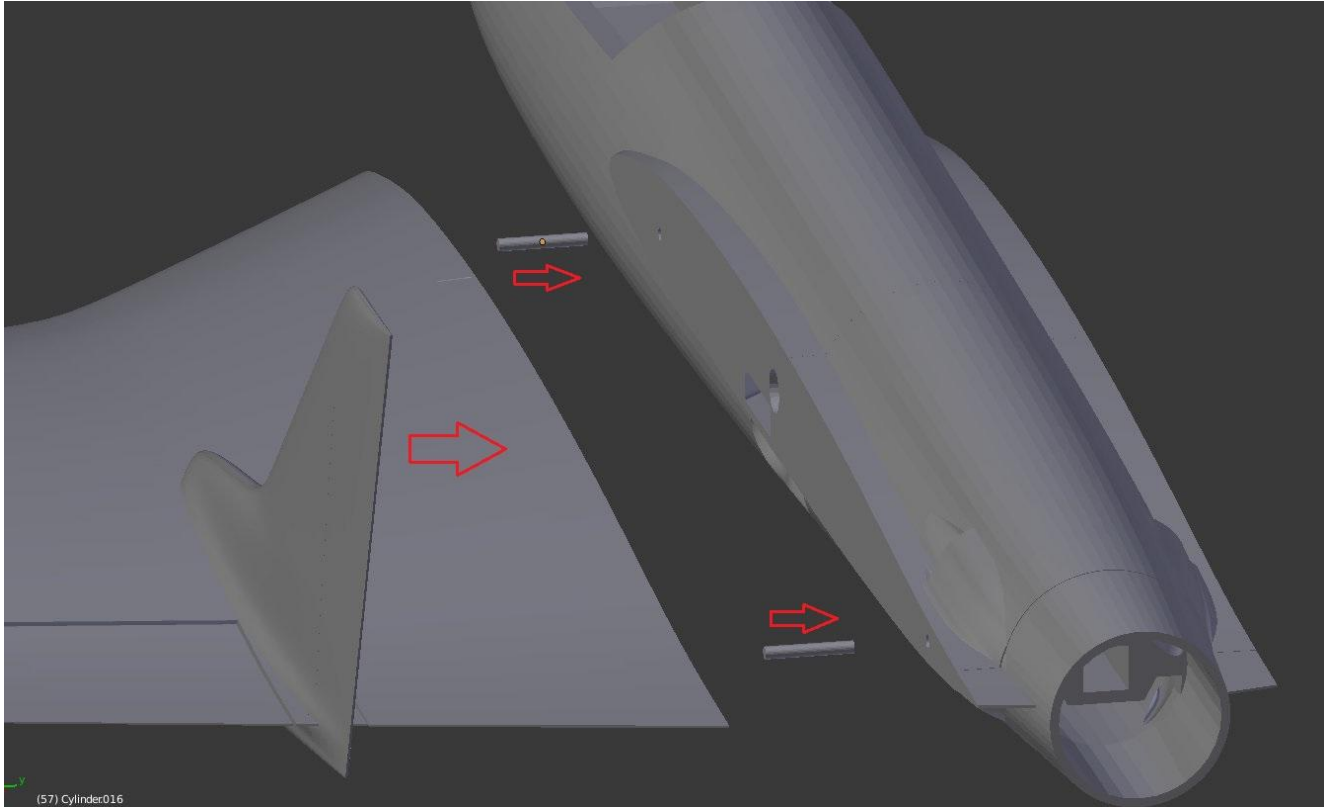
8

Glue the wingtips together and then onto the outer wing section. Be sure to match up the correct wingtip with each wing.



9

Cut two 20mm sections of skewer and fit to the inner section of the wing. Glue the wing to the fuselage. **The carbon or pine main spar should be test fitted before gluing.**



Repeat steps 3-9 for the right wing

10

Glue the sections of the canopy together.

11

Glue the magnets into the canopy and fuselage.

12

Fit the motor to the motor mount and connect to the esc. The motor mount is designed to be a relatively firm fit. Do not glue it in place, as designed as a pusher it should not fall out during flight and should be able to be removed for servicing if required.

13

Hot glue or screw the servos to the servo covers and install the aileron servo wires through the wing into the fuselage. The servo covers can be screwed to the insert of the wing with m2 screws.

14

Install all servos using a small amount of hot glue to secure it in place.

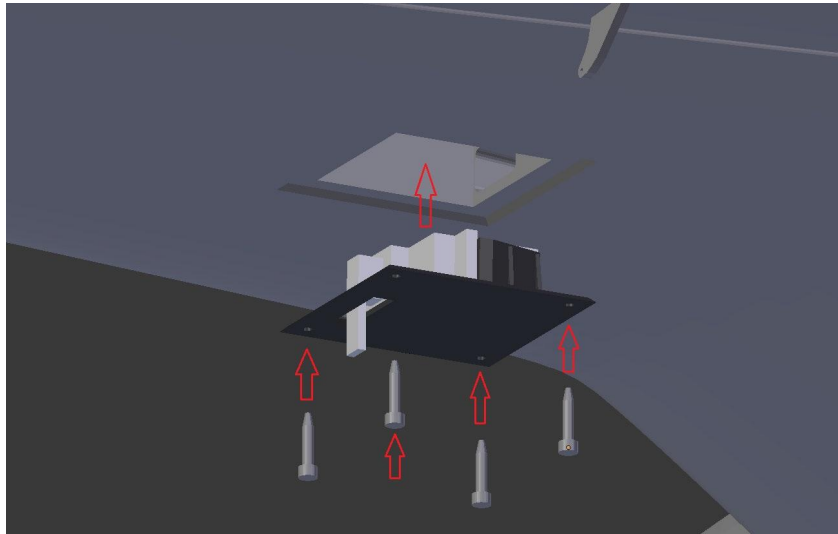


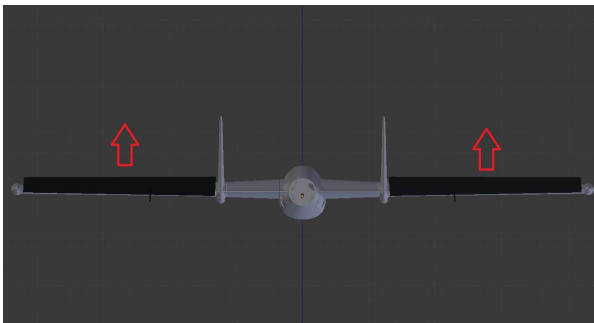
Image of left wing

15

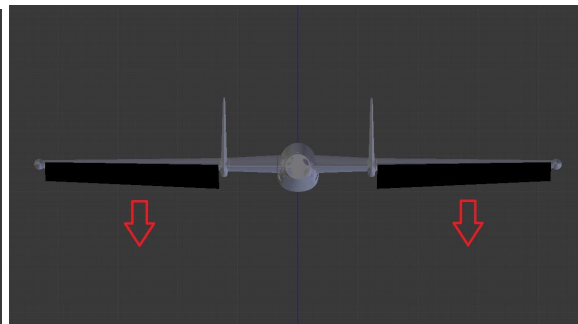
Connect up the control surfaces with 1mm piano wire and check the movements.

(ARROWS INDICATE DIRECTION CONTROL SURFACE DEFLECTION)

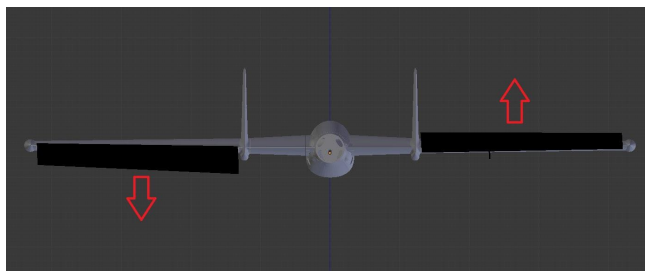
CLIMB



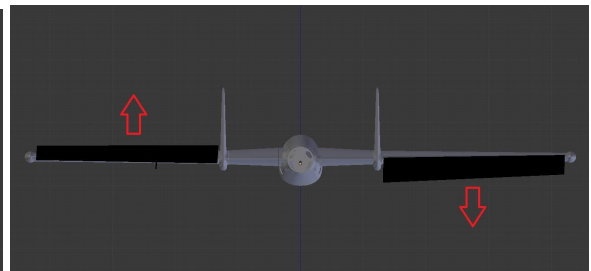
DESCEND



RIGHT TURN



LEFT TURN



BALANCING AND CG

Fit the battery using Velcro as required and balance the aircraft on the CG marking points located **125mm aft of the leading edge at the wing root.**

It is advisable on the first flight for the aircraft to be balanced on the cg markings, then move forward or aft as desired.

The design of the wing incorporates “up-trim” into the trailing edge, Resulting in the neutral position of the elevons to be in line with the trailing edge of the wing.

RANGE OF TRAVEL:

NORMAL / MAIDEN FLIGHT:

Elevator +/- 15mm

Aileron +/- 15mm

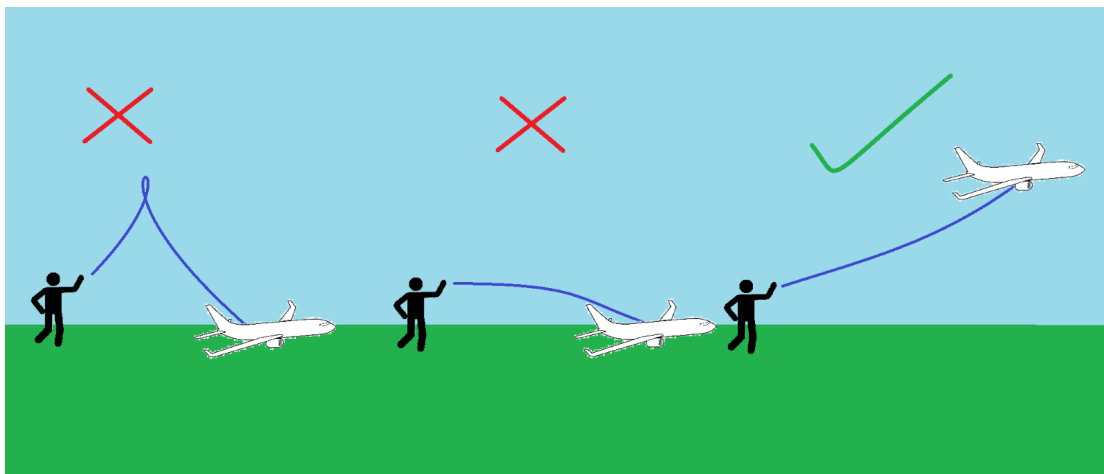
AEROBATIC:

Elevator +/- 30mm

Aileron +/- 30mm

LAUNCHING:

It was found that the safest and most successful launch technique for this model was the over-arm style. The aircraft should be launched at approximately 10deg nose up at 50% to 75% power. Too steep and the aircraft will stall, too shallow and it will contact the ground.



PARTS LINKS:

2826 2200KV (medium power option)

https://de.aliexpress.com/item/1005002196959683.html?spm=a2g0o.productlist.0.0.686554692gBgqu&algo_pvid=2a35bba8-713a-4d82-be03-7d09757fa32e&algo_expid=2a35bba8-713a-4d82-be03-7d09757fa32e-0&btsid=2100bdf016211821631778504e2ed8&ws_ab_test=searchweb0_0,searchweb201602_,searchweb201603_

2836 2500kv (high power option)

https://hobbyking.com/en_us/turnigy-aerodrive-sk3-2836-2500kv-brushless-outrunner-motor.html?__store=en_us

30AMP ESC

https://de.aliexpress.com/item/32905648461.html?spm=a2g0o.productlist.0.0.edb7519evyB8Nr&algo_pvid=52adfa0e-b4fe-41e1-8092-1d356607a5ba&algo_expid=52adfa0e-b4fe-41e1-8092-1d356607a5ba-0&btsid=2100bdf016211822080491111e2ed8&ws_ab_test=searchweb0_0,searchweb201602_,searchweb201603_

2200mah 3s LIPO

https://de.aliexpress.com/item/32833411481.html?spm=a2g0o.productlist.0.0.64ef480aYCzI2n&algo_pvid=f86fc7a0-0324-4584-9081-c8b4b1a543a2&algo_expid=f86fc7a0-0324-4584-9081-c8b4b1a543a2-1&btsid=2100bdf016211822705142563e2ed8&ws_ab_test=searchweb0_0,searchweb201602_,searchweb201603_

9g servo

https://de.aliexpress.com/item/32898059654.html?spm=a2g0o.productlist.0.0.7d394771z9xfZq&algo_pvid=26dd1d90-4d3b-4f94-955c-e26a127ba26c&algo_expid=26dd1d90-4d3b-4f94-955c-e26a127ba26c-3&btsid=2100bdf016211823001362964e2ed8&ws_ab_test=searchweb0_0,searchweb201602_,searchweb201603_

X2 BAMBOO FOOD SKEWERS (3mm diameter)

HEAT SHRINK TUBE 3mm

https://hobbyking.com/en_us/turnigy-3mm-heat-shrink-tube-black-1mtr-1.html?queryID=c16c094bb26b18e39fabcb12a93a96cb&objectID=46911&indexName=hbk_live_magento_en_us_products

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_

16x29 HINGES

https://de.aliexpress.com/item/32659926010.html?spm=a2g0o.productlist.0.0.5e7f7ef2zlc3qX&algo_pvid=478c4573-19ad-4939-ba11-475e3dc6139e&algo_expid=478c4573-19ad-4939-ba11-475e3dc6139e-0&btsid=2100bdf016211823370763498e2ed8&ws_ab_test=searchweb0_0,searchweb201602_,searchweb201603_

VELCRO – (local hardware store)

10mm x 1000mm carbon tube

https://de.aliexpress.com/item/4000390835692.html?spm=a2g0o.productlist.0.0.63ab4e77kVW2VnK&algo_pvid=3877bd8c-0e1c-46e8-8888-d99e4a90ccd2&algo_expid=3877bd8c-0e1c-46e8-8888-d99e4a90ccd2-2&btsid=2100bdf016211824187545230e2ed8&ws_ab_test=searchweb0_0,searchweb201602_,searchweb201603_

m2 x10mm screws

<https://www.ebay.com.au/itm/400PCS-M2-M2-6-Pan-Head-Self-Tapping-Screws-Assorted-Kit-Stainless-Steel-Black/254399626404?hash=item3b3b663ca4:g:CLEAAOSwQLZdsqkd&frcectupt=true>

1mm Piano wire

<https://de.aliexpress.com/item/32975279180.html?spm=a2g0s.9042311.0.0.2e0f4c4d0HE2dZ>

M2 pushrod (min length 110mm)

<https://de.aliexpress.com/item/4000682811650.html?spm=a2g0s.9042311.0.0.27424c4dJCDkps>

Thank you for supporting us! We hope you enjoy many hours of flying your X-88 fun jet. If you have any questions regarding the build process or set-up of your model, please contact us at:

Aeroworks3d@outlook.com