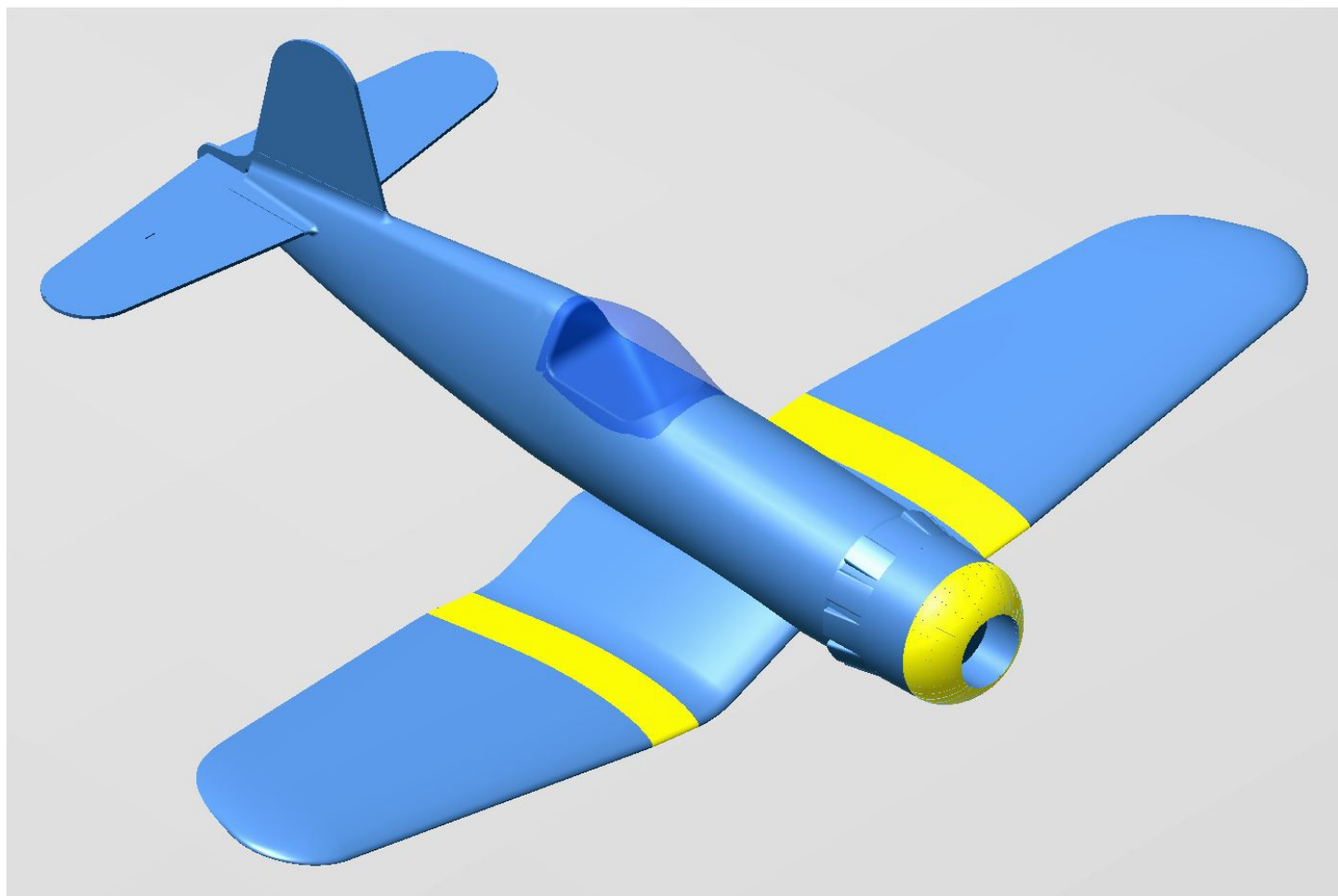




3D Lab
Gang

Vought F4U CORSAIR
scale:1/12 for ACES Air-Combat
by
Frank Lesch



This air plane is designed for ACES Air-combat. The fuselage is designed for optimum airflow inside (for cooling electric) and outside. This means it become really fast.
The construction allows a rouge and all day using. The elevator is one of the most important parts for flight stabilisation and safety. So I decided to make the elevator and ruder in a polypropylene multi-wall sheet.

Please have a look to the [Flight video!](#)

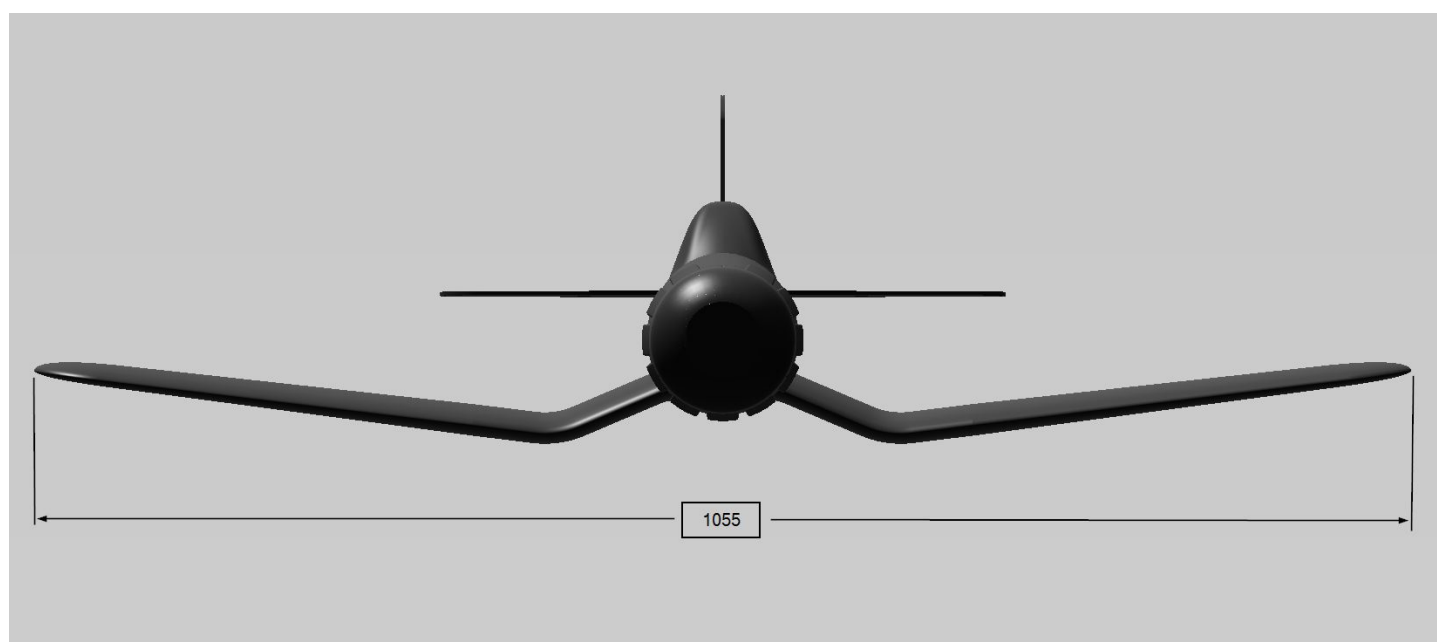
General specifications

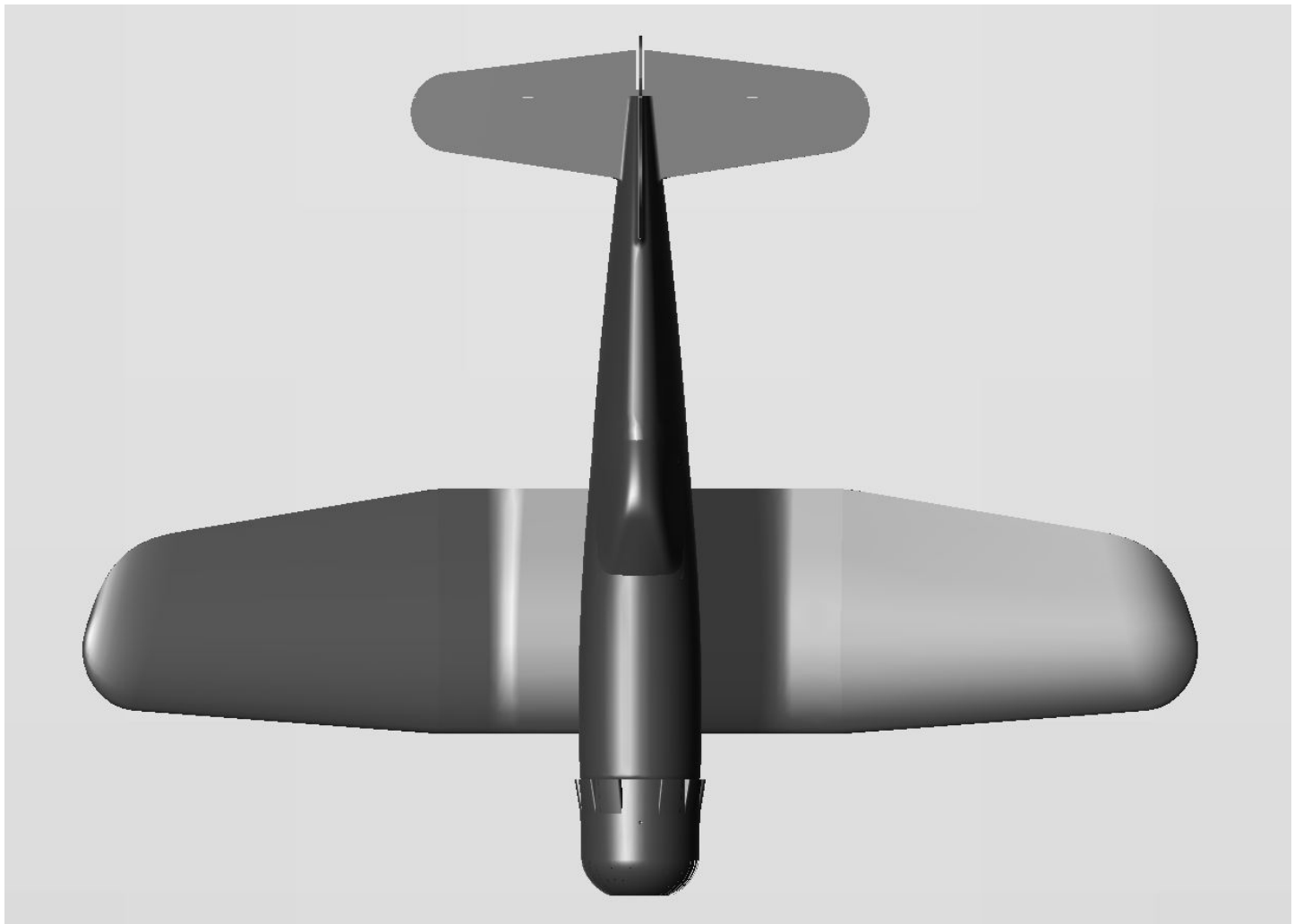
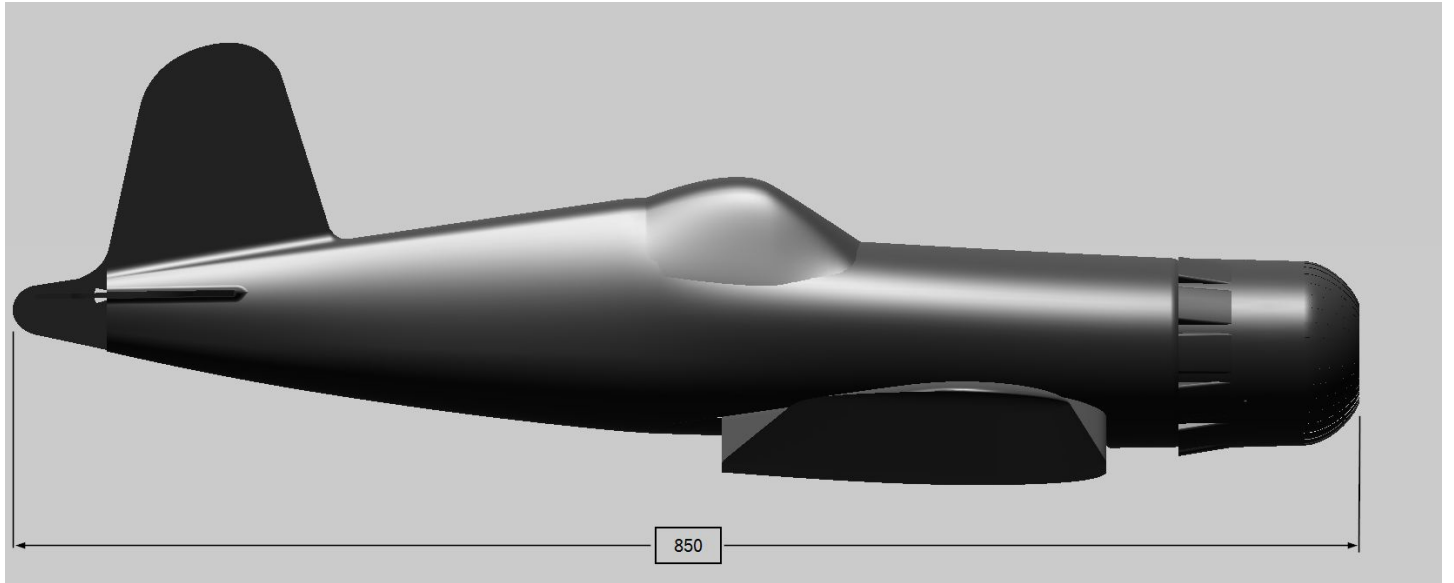
Length:	850mm
Wingspan:	1055mm
Height:	290mm
Air-foil:	SD6060
Print weight:	685g
Take-off weight (6s 1800 lipo):	1200g
Max take-off weight:	1500g
Never exceed speed, VNE:	200km/h
Design manoeuvring speed, VA:	160km/h
Stall speed, VS:	ca. 30km/h

Power-plant

Propeller:	APC-style 9X6 like this
Motor:	Racerstar 4108/600kv , Racerstar 3508 580KV , Racerstar 3508 700KV (with a 9x5 Prop)
ESC:	Castle Creations Talon 25 or any 30-40/6s ESC
Battery:	LI-PO 1800mAh/6s/22.2V 30C or more (I use this)
<i>This is a „Fighter“ set-up. It is possible to use a bigger air-screw and Li-Po but be aware of weight.</i>	
Servos:	3x Emax ES08MA or any other Mini-servo (metal-gear is always a good choice) 2x Servo extension cables 300mm

You are welcome to use your own set-up. A 3536 motor fits also in the front for a 3S set-up.





Recommended materials: screw M3x16 (4x)
self tapping screw PT3x8 (8x)
carbon-stick 1mm x1000mm (6x)
carbon-stick 2 or 2,5mm (500mm)
PP multi-wall sheet 3mm (for elevator and ruder) like [THIS!](#)
CA glue and Activator spray
Rubber band 2x
Velcro for fixing battery and motor-cowl
1mm steel wire for push rods
2mm steel wire for elevator connection

Needed tools: sharp knife
screwdriver
soldering iron
file or sanding paper

Printing:

The printer should have a build volume approx **250/200/180** or bigger and nozzle diameter **0.4mm**.

The **minimum** printer size is **200/200/180** mm.

Simplify3D is the recommended software for this project. There are factory files for S3D included.

Printing material: **good quality PLA** or PETG

I used PETG for the fuselage, motor mount and ruder horn to get good flexibility strength. PLA for the wing and the under-fuselage because there is much less warping.

Use the G-codes for the most printer like the Prusa or use the **3DS factory files** to prepare your own printer.

The most parts are printed with 0,5 or 1mm solid bottom and than in a spiral-vase mode. This means there are no retract points and no travel movements. Just a smooth continuous print.

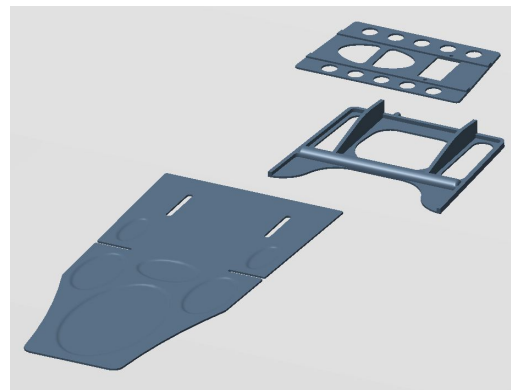
The layer-height is always 0,25mm.

You can print the motor-cowl with alternate nozzle diameter **without changing the nozzle!** Just use the setting in software. So you get a stronger motor-cowl for longer life. Its printed as just a spiral vase.

Feel free to try several diameter settings. I think 0,8mm is maximum value.

Parts for massive printing (100% Infill):

Rubber support:	9g
Servo support:	5g
Akku support:	15g
Ruder-linkage:	1g
Wing connectors:	0,1g
Motor-mount 1:	14g
Motor-mount 2:	4g

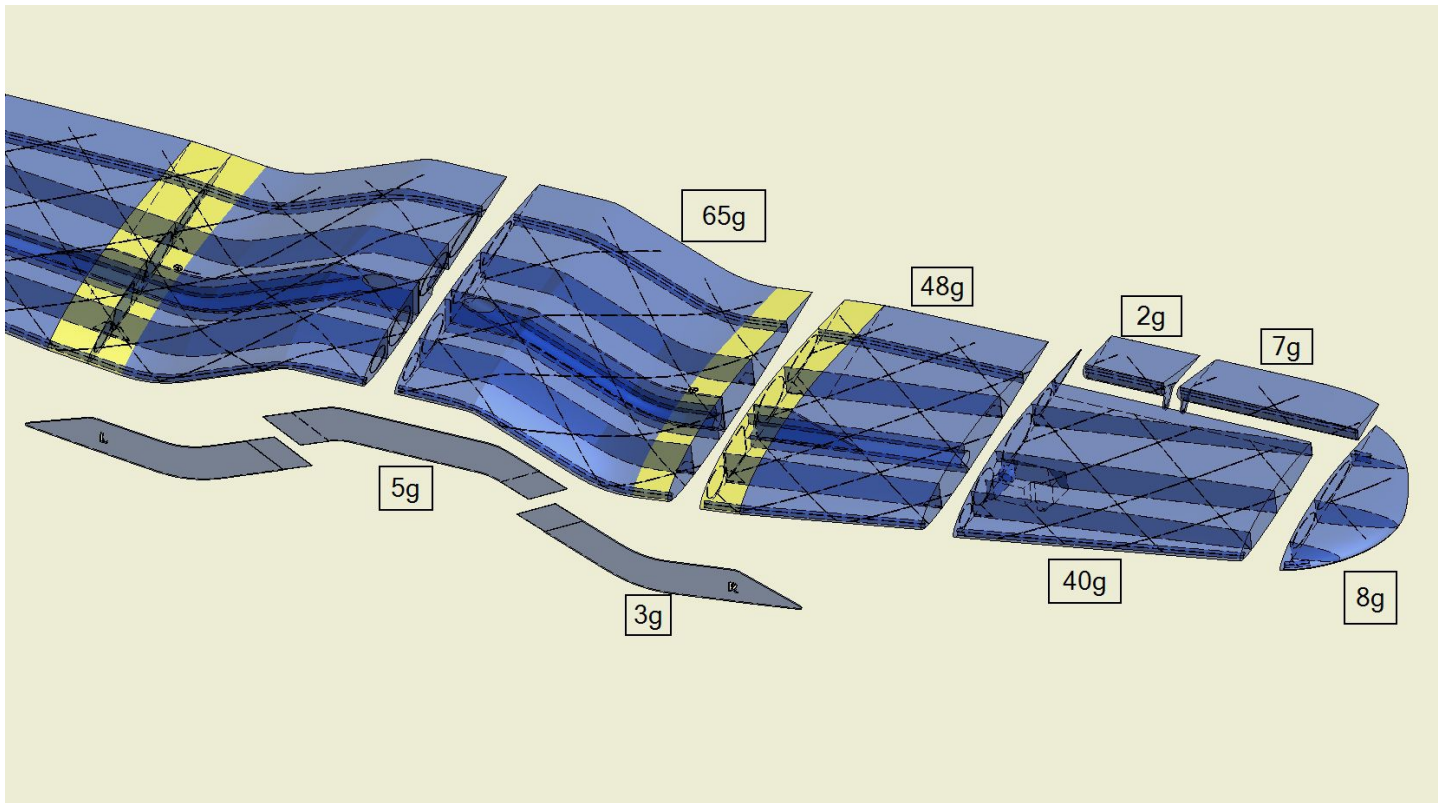
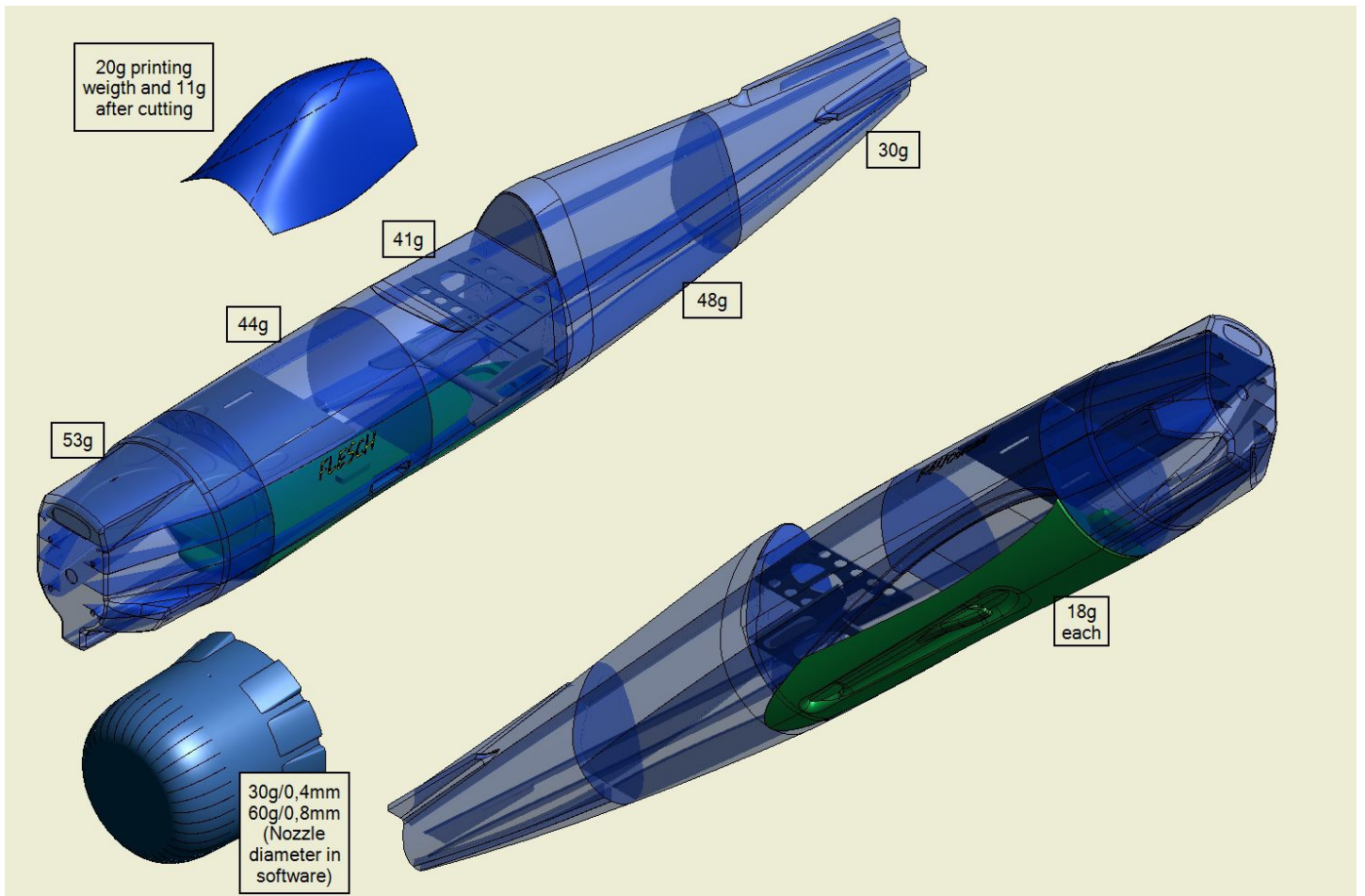


Templates:

The templates for elevator and ruder needs just 1 or 2 outline perimeter and 20% infill. Top and bottom layers are not needed. I used 1 perimeter with 0.8mm nozzle diameter in software.

Follow the instructions in the video guides: [print settings 1](#) and [print settings 2](#)

[Yo can also use included the factory files for Simplify3D or the ready for print g-codes.](#)



Assembling:

1. Fuselage

First install the Velcro for fixing the battery. It is not easy to do this later. Snap the battery support in the fuse_2 part and glue the servo support in the fuse_3 part. Then you can put the 1mm carbon sticks in fuse_1 and thread the other parts together. Glue the parts with CA glue and activator.

Follow the instructions in the [video guide 1](#)

2. Tail

Bend a U of 25x25mm from the 2mm steel wire.

You need parts of carbon-stick 2 or 2,5mm in 420mm and 80mm length.

Use the templates to cut the PP multi-wall sheet in elevator and tail fin. Note the markings to align the template to the material. Its also the position of one wall cut-out for the hinge.

Follow the instructions in the [video guide 2](#)

3. ESC / motor mount

Mount the your ESC in the fuselage. I always use a safety plug outside. Its not necessary but helpful to protect you and others of injury wile ground handling.

Follow the instructions in the [video guide 3](#)

4. Wing mounting

Glue the parts with CA glue and activator. Use two of the 1mm carbon-sticks.

The small wing connectors give extra strength.

Follow the instructions in the [video guide 4](#)

5. Servo mounting

Mount the servos to the wing. If you use other servos as the ES08MA, it might be necessary to make some place for it with a snap-knife. Use 1mm steel-wire for push rods.

Follow the instructions in the [video guide 5](#)

6. Servo adjustment and final check

When you are sure the ailerons working the right way, glue in the servos.

Rudder deflections:	Elevator deflection:	+/- 7mm (this is the maximum and near to stall)
	Aileron deflection:	+/- 15mm (maybe more if you can fly it)

I use **30% Expo** on elevator and aileron. If you're not sure for the first flight, use 50% or more to calm your inputs.

Follow the instructions in the [video guide 6](#)

Painting:

You can paint the plane with any color. I use acryl spray for it.

There are printable painting masks for the US emblem. So it will look like the real one.

Pilots Please Attention!!!

**This is an air plane for ACES Air-combat fights!
Its flying really great and stable but its no choice for beginners.**

The air foil allows fast flying. The fuselage is designed for optimum airflow inside (for cooling electric) and outside. This means it become really fast and needs time to slow down. Its a good idea to program the ailerons to flaps. In this way its easier to slow down.

The ways for rudder movements are maximum values for best manoeuvrability and near to stall. Please decrease elevator and maybe also ailerons deflection for the first flight and testing your self step by step to the maximum.

It's no good idea to fly aft positioned CoG!

Now have fun with your printed F4U Corsair!

**And Please use this files only for
your own purpose, do not send further...**